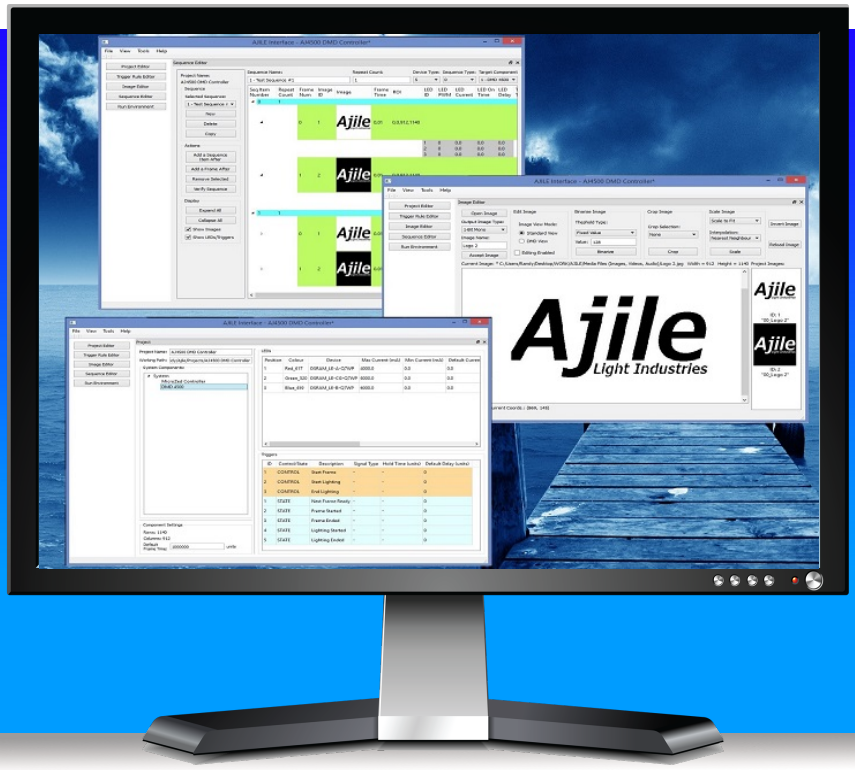
Ajile *AJ-4500* Series DMD Control Systems

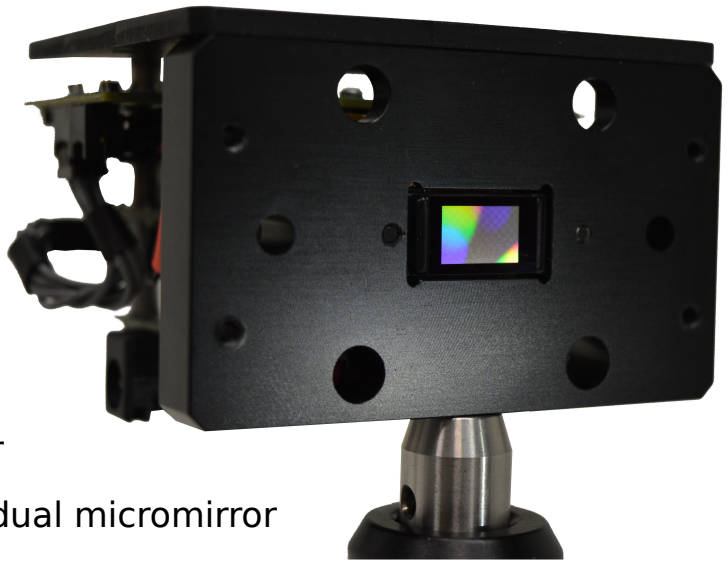


Scientific DMD Control

Ajile DMD controllers simplify the precise control of digital micromirror devices to achieve their full potential. Ajile systems allow for frame-by-frame control of DMD-based devices with the accuracy requiredfor scientific, medical, and industrial applications.

Key Features:

- Scientific controller for 0.45" DMD
- Ajile GUI and SDK support
- Drive the DMD at 6,500 binary fps
  (or more, with reduced region of interest)
- Per frame control of timing and lighting
- Low-latency sync with external devices
- Arbitrary bit-depth for grayscale and color
- Direct control of the DMD and each individual micromirror
- On-board Linux processor and FPGA for smart control

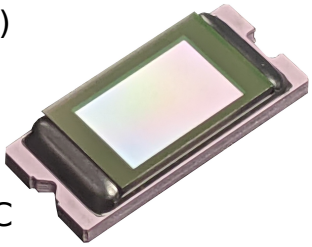


FOR MORE INFORMATION EMAIL info@ajile.ca OR VISIT www.ajile.ca

Configuration Options

Supported DMDs

- Both FQD and FQE chip versions of 0.45" DMD chip
- Visible light optimized (420-700nm)
- NIR optimized (700-2500nm)



Interface

- USB2 communications at 200fps
- USB3 streaming at 2300fps from PC
- PCIe streaming at 6500fps
- TCP/IP Ethernet streaming at 700fps

Opto-isolated Triggering

- Low-latency connection to external devices
- 2 inputs, 2 outputs
- Manage photogates, lighting, cameras

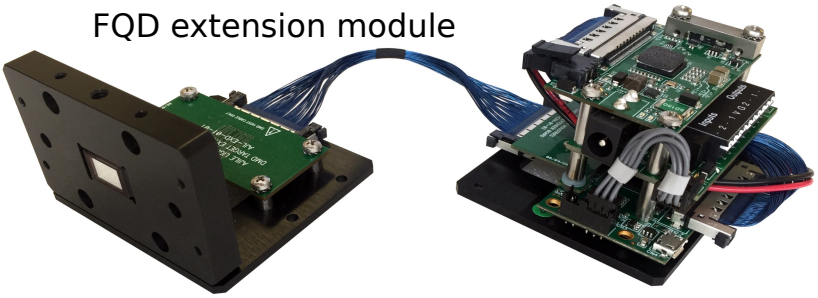
Extension Modules

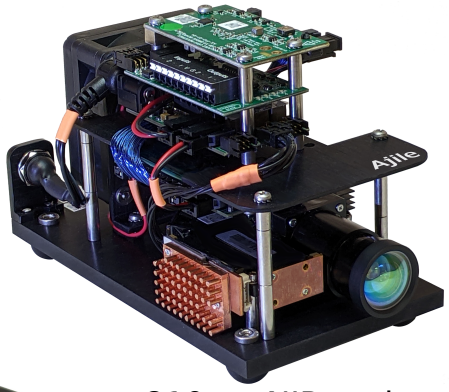
- Control DMD at a distance from electronics
- 100mm or 800mm options standard
- Ease of fit in product designs
- Enables enhanced cooling, easy servicing

Lighting Controls

- Full projector with RGB LEDs
- Single-channel NIR projector (810nm, 850nm or 940nm)
- Controller board for user-provided LEDs

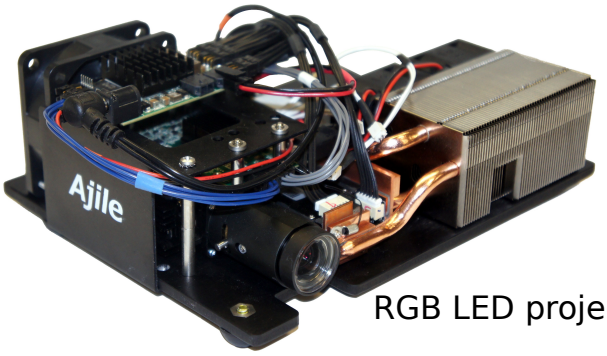
FQD extension module





810nm NIR projector

FQE extension module



RGB LED projector

Software Package

Ajile GUI

- Straightforward setup of key parameters
- Includes several sample projects to get started quickly
- Includes image editor, sequence setup, triggering, and lighting controls
- Ability to interface directly with Ajile smart cameras
- Supports Windows and Linux (Ubuntu) systems

Ajile SDK

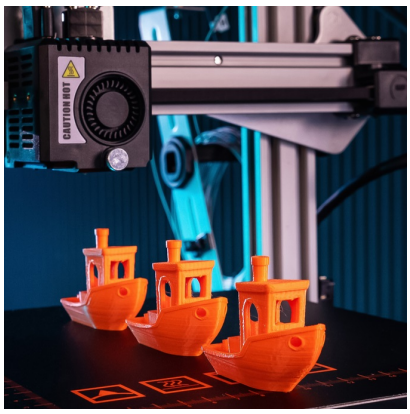
- Has all capabilities included in GUI software package
- Supports Python, C++, C#, Matlab
- Code snippets and examples available in system documentation
- Custom project development available upon request

System Specifications

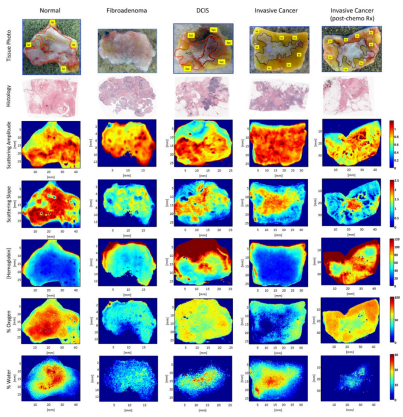
	AJD-4500 Standalone DMD Controller	**AJP-4500 Structured Light Projector**
DMD Chip	0.45" – visible light optimized (420nm-700nm)	
	0.45" – NIR optimized (700nm-2500nm)	
Interface	USB2 (native)	
	USB3.0	
	PCIe (subject to availability)	
On-board memory	1GB RAM	
Frame rates	0.02Hz – 6,500Hz (full resolution) Up to 100,000Hz (16 x 1140 resolution)	
Frame times	150 microseconds – 43 seconds	
Triggers In	Start frame, start lighting, end lighting	
Triggers Out	Next frame ready, frame started, frame ended, lighting started, lighting ended	
Region of Interest	From 16 x 1140 to 912 x 1140	
Image Store	7000 binary images (912 x 1140 resolution)	
Non-Volatile Storage	Micro SD card – up to 32GB for project storage	
Power Supply	5V DC	15V
Controller Chip	Xilinx Zynq 7010 SoC with dual-core ARM and FPGA	
LEDs	N/A	RGB - Osram LE X Q8WP series
		NIR – Luminus SST-10-IRD series
Lighting Controls	Per channel - PWM percentage, pulse time (microseconds), drive current, delay time (microseconds from frame start)	
Cooling	Passive	Fan for control electronics
		Heat-pipe with fans (RGB projector)

Application Areas:

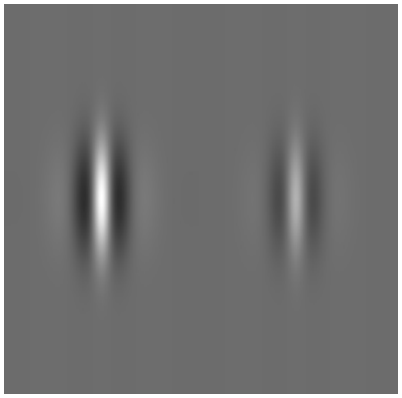
Microscopy/
Micropatterning



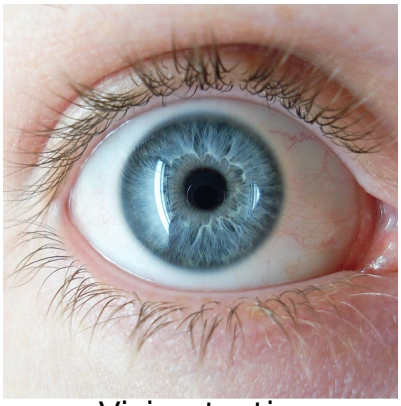
3D printing



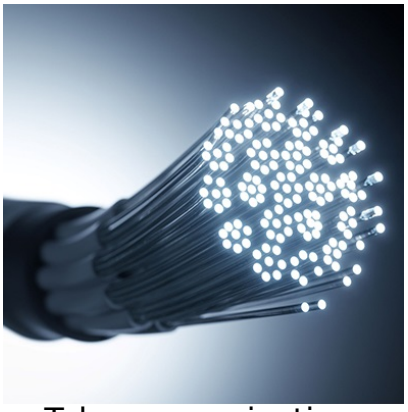
Spatial domain frequency
imaging (SFDI)



Psychophysics

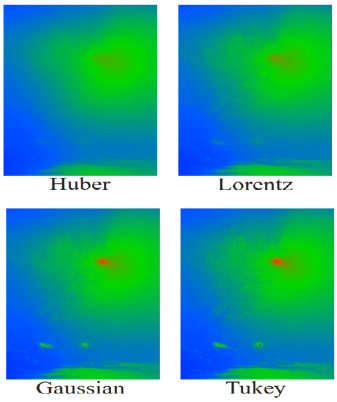


Vision testing

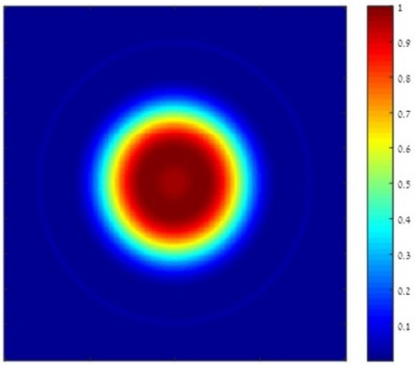


Telecommunications

Structured light
3D imaging



Computational Imaging



Beam Shaping

System customization available upon request.
Contact us for details.

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