

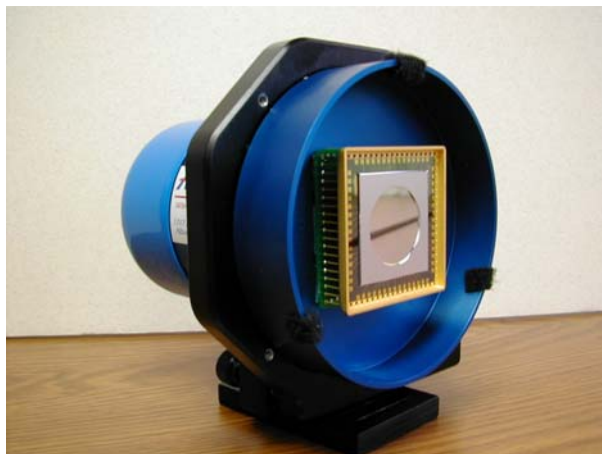
## *Aeri™ Atmospheric Turbulence Simulator*

### Device Description

Based on the Unifi Deformable Mirror System, the Aeri™ ATS is a complete unit consisting of an AgilOptics' deformable mirror and a specially modified D64USB high-voltage driver. Control circuitry within the driver can store a 3-D pattern representing arbitrary turbulence patterns and rapidly display the pattern on the mirror surface.



Using the provided software tool the user can create the desired aberrations on his computer and then download the pattern file to the Aeri over a USB cable. The ATS will then start driving the mirror to generate the specified aberrations.

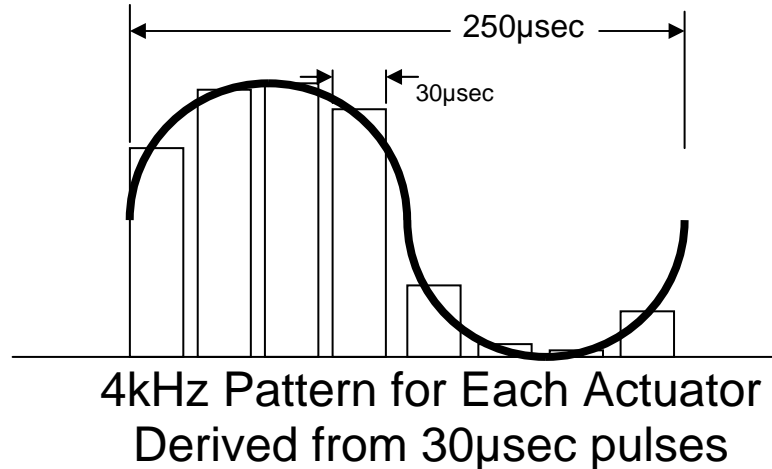


The Unifi™ Deformable Mirror System is the next generation of AgilOptics' powerful adaptive optic systems. Unifi operates on a single 5V wall block using 2.5W of energy. Even though the package is small and low-power, the output on the mirror face can achieve a bandwidth of 4 kHz.

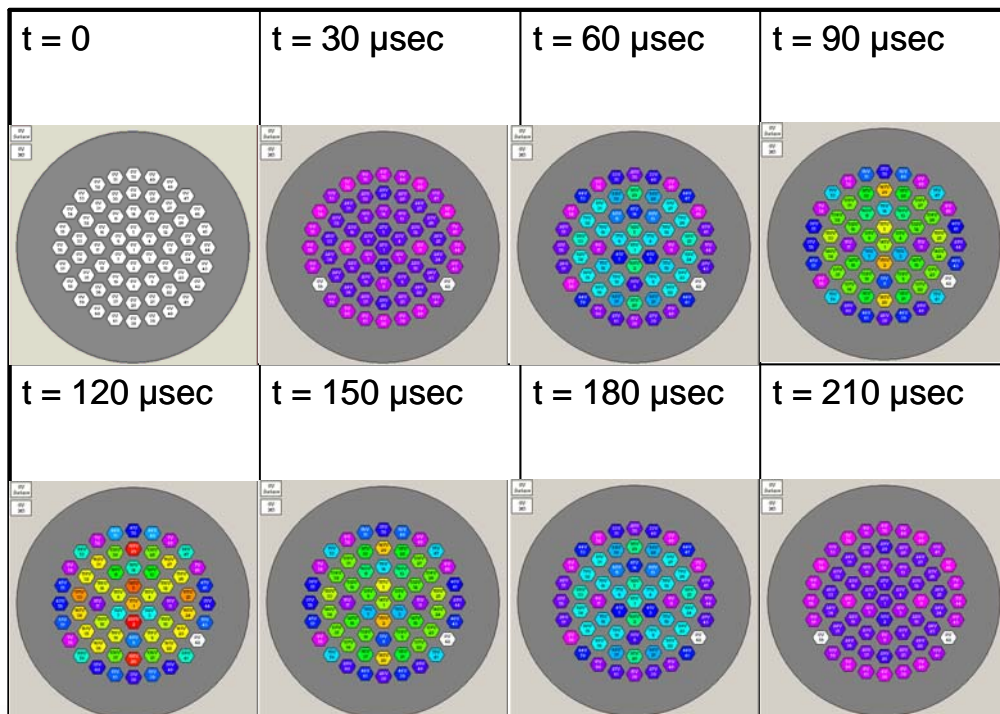
### Features

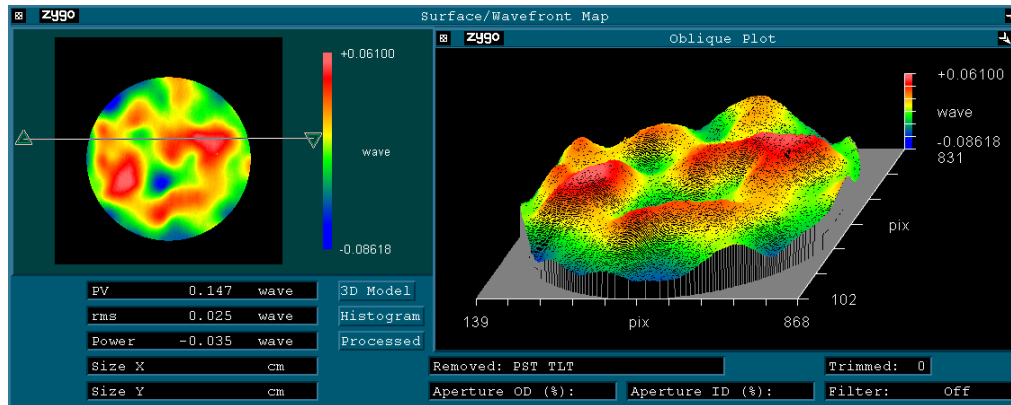
- Fits in standard 4" optical mounts
- Includes 61-actuator Deformable Mirror (50mm-61 actuators) (typical),
- Uses USB 2.0 Interface (Type B Connector)
- 4 kHz Mirror Bandwidth (updates in 250µsecs cycles)
- System sends ~2 Million actuator updates per second, serially, one every 0.5µsec
- 61 actuator updates, every 0.5 µsec, means full frame updates are every 30µsec

- System sends about 8 voltage updates per 250µsec cycle, mirror integrates and smoothes temporal performance



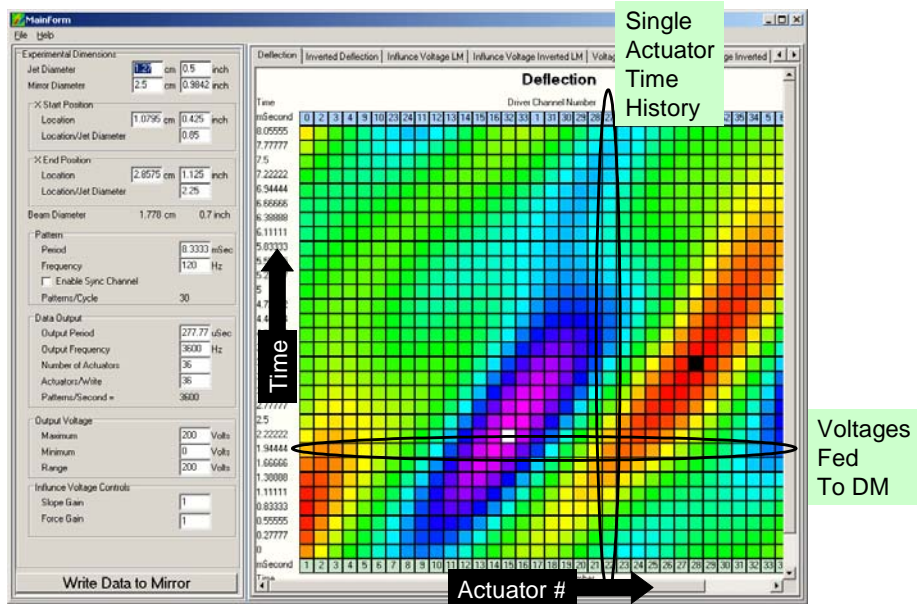
At 2 M Updates/sec, entire pattern updates in 30 µsec -- 8-step cycle generated at 4 kHz



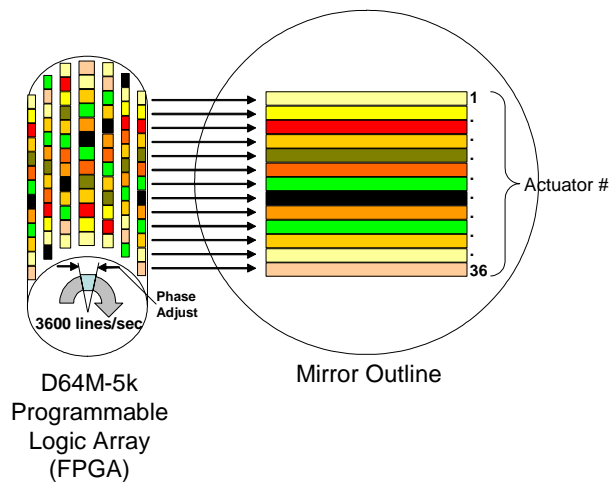


Typical Atmospheric Aberration

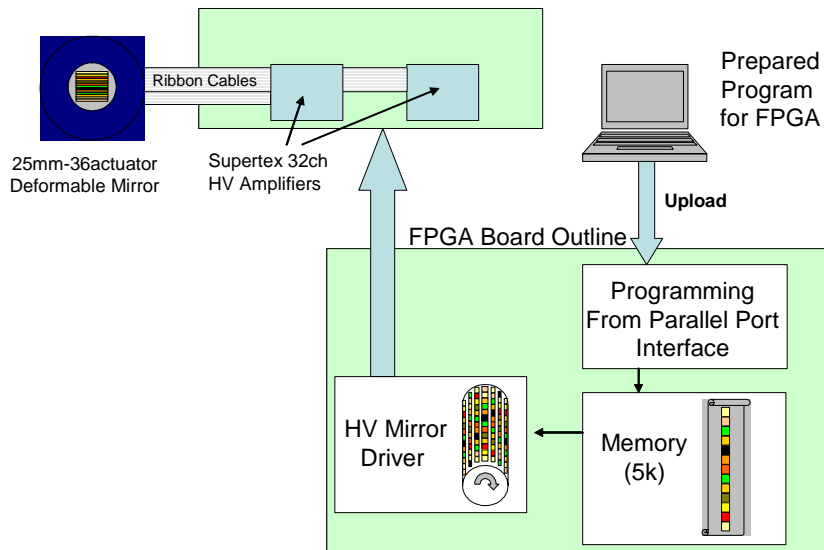
Derived Voltage Pattern Map



## Mechanics of DM Pre-correction



## Electronics Block Diagram



Ordering Information

UATS – 50/61 – HR1064

Series Name      A    B                      C    D

Series Name: Unifi Deformable Mirror System

A: Mirror Diameter in millimeters (mm)

B: Actuator Count

Standard Mirror Diameter/Actuator Count Combinations:

- 5/4
- 10/4
- 10/8
- 16/37
- 25/37
- 25/61
- 30/37
- 50/37
- 50/61

Custom diameter/actuator counts available to user's specifications. Contact AgilOptics for delivery and pricing.

C: Coating Type

- HR – High Reflectivity
- AR – Anti-Reflective

D: Wavelength

Standard Wavelengths

**Multi-Wavelength Coatings**

- Vis – Broad-band visible spectrum
- Al – Standard
- AgProt – Protected Silver

**Single Wavelength Coatings**

- 1064nm
- 800nm
- 820nm
- 633nm
- 349nm
- 266nm

Custom coatings can be added to any mirror. Contact AgilOptics for delivery and pricing.



### Functional Block Diagram

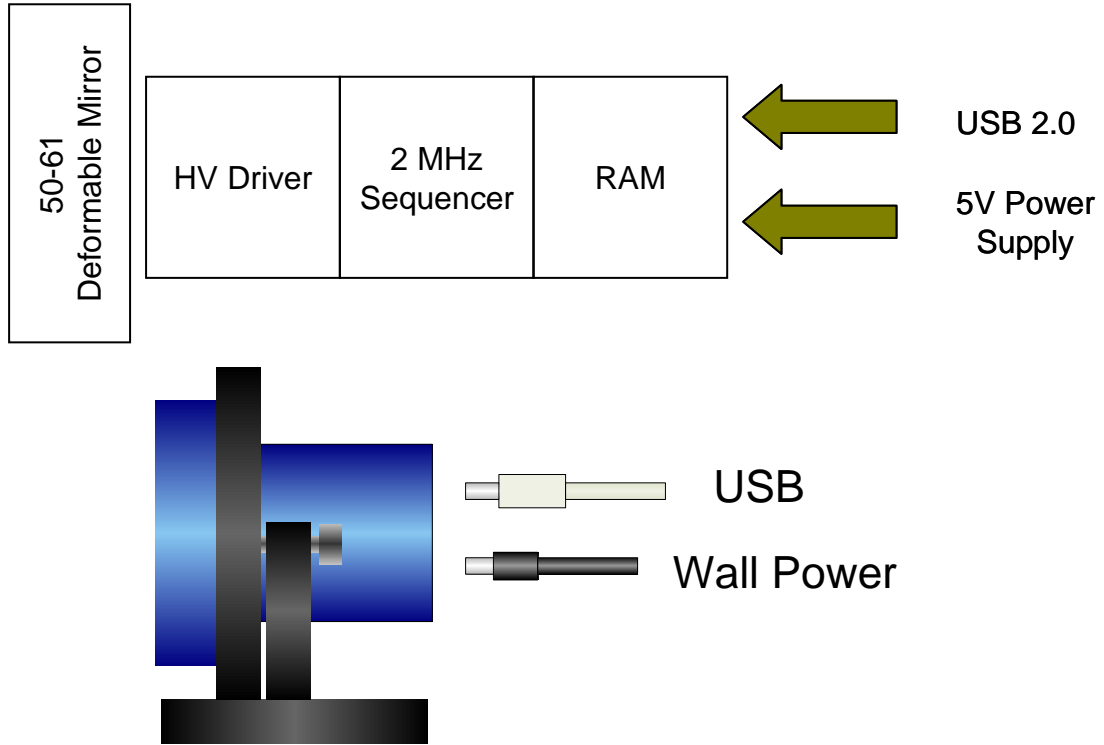


Figure 1 Unifi Simplified Block Diagram

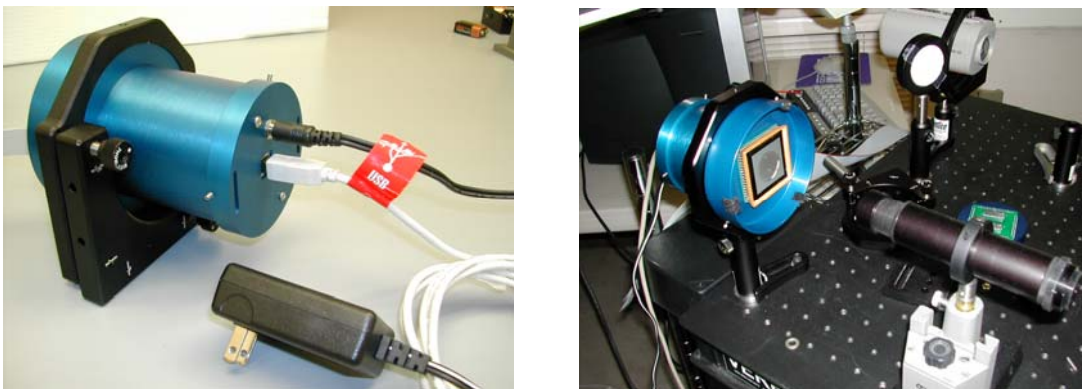


Figure 2 Unifi in working setup

## Driver Specifications

### Absolute Maximum Ratings

Output Voltage per Channel                      295V

Parameter	Test Conditions	MIN	TYP	MAX	UNITS
Power			2.5		W, quiescent
Actuator Bandwidth	Small Signal			4	kHz
	Full Swing, all channels from 0 – 295V – 0		782	790	Hz
Current Output per channel			550		µA
Output Voltage per Channel		280	290	295	V

## Other Specifications

### Communication

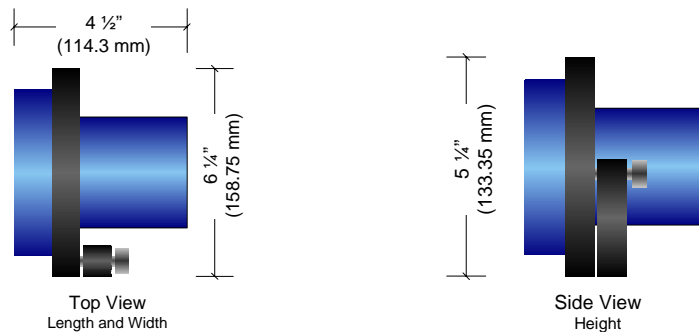
USB 2.0

### Enclosure Dimensions

Tube: 3.5" (88.9 mm) x 3" (76.2 mm) OD

Mirror Housing: 4.157" (105.6 mm) OD at widest point x 1.46" (37 mm)

Total Enclosure length: 4.5" (114.3 mm)



### Weight

Total weight with 4" Optical Mount: 2.625 lbs. (1191 g)

Total Weight without mount: 1.75 lbs. (794 g)

Electronics: .25 lbs. (114 g) [3 boards]