

# Mid-Infrared Lasers

The MIR Series Mid-Infrared Laser delivers >1 mJ, <10 ns laser pulses with factory-selectable infrared wavelengths from 1.5 microns to 4 microns. The Mid-IR laser was developed in partnership with Bridger Photonics and offers software-selectable output pulse energies in a compact and robust package. The system is diode pumped, which eliminates the need for scheduled maintenance and water cooling. These features facilitate hassle-free integration into laboratory experiments, or for use as an OEM unit.

## SPECIFICATIONS:

- Factory selectable emission from 1.5 to 4 microns
- Single longitudinal mode pump
- Compact form factor (3.5"x6"x8")
- <10 ns (<6ns typical) pulse durations
- >1 mJ max pulse energy
- Programmable pulse energy
- 10 or 20 Hz repetition rate
- <1% pulse energy fluctuations
- $M^2 < 5$  beam quality standard ( $M^2 < 3$  optional)
- No water cooling required

## Pointing Stability

The monolithic design of MIR Series laser results in excellent beam pointing stability. Figure 1 shows a five hour measurement of the laser pointing stability in both the vertical and horizontal directions.

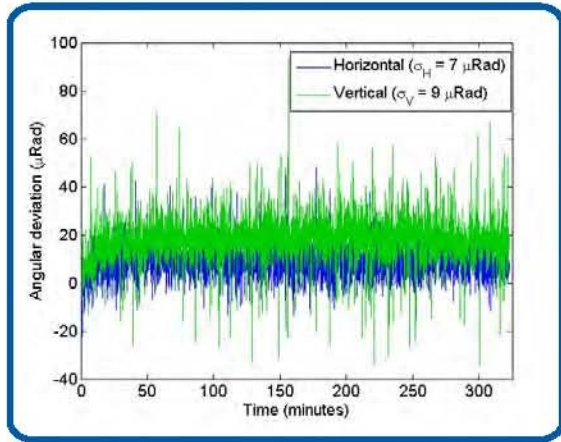


Figure 1. Pointing stability during a 5 hour measurement period showing less than 10 micro-radians of angular standard deviation

## Spatial Mode Quality

The MIR Laser has been designed to emit a low-divergence spatial mode. Figure 2 shows an M2 beam quality measurement and the output beam profile for 3 micron emission. The spot size measured with a f=50mm singlet lens is 35µm FWHM.

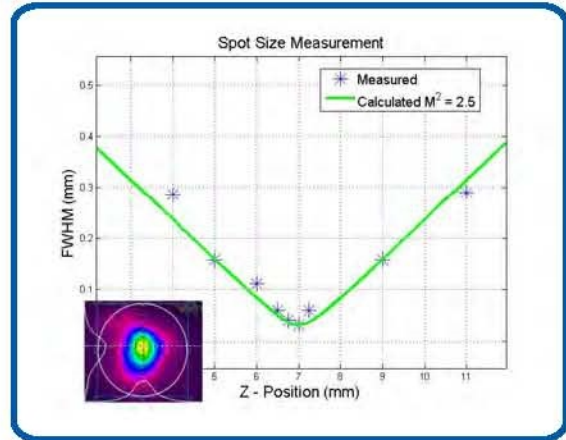


Figure 2. Beam quality measurement showing  $M^2 = 2.36$ .

## Pulse Energy Stability

Figure 3 shows the pulse energy stability over a 130 minute time span. The diode pumped, single-mode operation enables very low pulse-to-pulse fluctuations. Typical shot-to-shot energy fluctuation is less than 0.5% RMS of the mean pulse energy.



Figure 3. Pulse energy as a function of time showing 0.3% fluctuations over 130 minutes of operation.