GuideStar™ II
Laser Beam Steering Correction System

The GuideStar II provides high-reliability high-precision compensation of laser pointing and position drift. Two independent New Focus™ Picomotor™ actuated motorized mirror mounts provide both manual and active 4-axis control with excellent passive stability. Two miniature position-sensing Cameras provide continuous tracking of both laser beam positions and laser beam profiles. The position data is fed back to the mirror motion using our patented control algorithm (US Patent # 7,528,364 Optical Beam Steering and Sampling Apparatus and Method, 2009), the only technique that completely corrects the laser beam alignment in both x and y and near and farfield. The system is anchored by the small GuideStar™ II Controller and controlled through your own computer with a host of user-friendly and convenient features. Full beam profiles and position and shape data are available live or can be tracked, stored and analyzed. An easy Set-up Menu guides new users through the install and simple settings menus allow complete control of a wide range of camera and beam stabilization parameters including >100:1 dynamic camera exposure time adjustment to optimize profile levels and complete control of beam position target sizes and signal time averaging.

Designed for accuracy, reliability, and ease-of-use, the GuideStar™ II System is the answer to laser beam drift correction for the most demanding laser applications.

**HIGHLIGHTS**

- Guarantees critical alignment of complex systems
- High precision control with outstanding intrinsic stability
- Complete position, pointing and profile tracking
- User friendly and flexible intelligent position sensing that never mis-steers the beam

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**● Picomotor Mirror Mount Actuators**
**● Miniature CMOS Camera Sensors**
**● Dedicated Controller**
**● Computer Interface and Display**
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Setting up the GuideStar II Laser Beam Drift Correction System is easy. The 8783 controller is the heart of the system. Simply connect any two of our 8807 picomotor mirror mounts to the RJ-22 motor ports, two model 8784 miniature cameras to their USB ports and your Windows computer to its USB port. The software is loaded from the install DVD and ready to run. A simple set-up menu leads you through making sure the connections are correct and the algorithm is optimized. Push Lock and you are done.

Example: 1 kHz Ultrafast Ti:sapphire Amplifier warm-up, free-running (left) versus with GuideStar II (right).

GuideStar II System Specifications*

Laser
- Laser Wavelength: 355 nm - 1200 nm
- Laser Repetition Rate: > 500 Hz** to CW
- Laser Beam Size: <10 mm diameter
- Detected Power Required: <1 mW

Beam Position Control
- Beam Pointing Adjustment Range: +/-3 degrees, +/-50 mrad
- Minimum Pointing Step Size: <1 μrad
- Response Time: <10 seconds
- Refresh rate for beam profile and display: >3 Hz

GuideStar II System Components

GuideStar II Controller Model 8783
- USB connections to Cameras and Computer
- RJ-22 connections to Picomotor Mirror Mounts

GuideStar II Camera Sensor Model 8784 (two per system)
- Image Size: >10 mm diameter
- Beam Position Resolution: <1 μm

Picomotor Mirror Mounts Model 8807* (two per system)
- *Alternate Model #: 8809, 8812, 8816, 8852, 8885, 8886, 8887

User Computer
- Full HD Display: 1920 x 1080
- 64 and 32 Bit Windows 7

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*Specifications are subject to change.
**Low repetition rate external trigger available on request. Contact New Focus for more information.

US Patents # 5,394,049, #5,410,206, #6,476,537 & #7,528,384.

For more information visit www.newport.com or call 877-835-9620. Models 8783, 8784 and 8807 shown.

www.newport.com/newfocus