

## PLX Electronic Autocollimator - ACT

All PLX Autocollimators high-accuracy instruments feature built-in lasers for coarse alignment and a base with leveling adjustments and bubble level. Included is a software suite for recording and documenting measurements.

PLX Autocollimator and Alignment Telescopes are high-accuracy measurement instruments capable of resolution down to fractions of an arc-second. They are primarily used to detect and measure small angular deviations. A complete software suite is included for recording and documenting measurements.



### PLX Autocollimator

**ACT-25B Electronic Autocollimator**

**ACT-25FO Autofocusing Electronic Autocollimator**

**ACT-HR High-Resolution Electronic Autocollimator**

**ACT-WF Wide-Field Electronic Autocollimator**

#### ACT-25B Electronic Autocollimator

The ACT-25B is designed as a complete system and is practically ready to use right out of the box. It features a built-in laser for coarse alignment, a base with leveling adjustments and bubble level and focusing adjustment. When the ACT-25B is used as an autocollimator the unit has a 42-minute horizontal measurement range. In alignment telescope mode, the field of view is 84 minutes horizontally. The PLX ACT-25B autocollimator has a 0.01 arc-second resolution and a focusing range from 30cm to infinity.

#### ACT-25FO Autofocusing Electronic Autocollimator

A unique feature of the ACT-25FO is that it comes with a built-in motorized focusing knob, controlled via the software package which is supplied with each unit. This allows focusing on objects along the optical axis of the Autocollimator with LOS deviations smaller than 2.5 seconds. Using the software, you can go to infinity focus and use the system in conventional autocollimator mode.

#### ACT-HR High-Resolution Electronic Autocollimator

Designed for use in tool rooms, inspection departments and quality control laboratories, this sensitive High-Resolution ACT-HR Electronic Autocollimator will measure extremely small angular displacements, squareness, twist and parallelism.

#### ACT-WF Wide-Field Electronic Autocollimator

The ACT-WF has a built-in computer-controlled laser pointer for easy alignment as well as built-in pan and tilt adjusting mechanics. It has a 2.4-megapixel wide spectral range camera, and features a resolution of 0.01 arc-seconds (0.05  $\mu$ Rad), with a clear aperture of 45mm.

# Product Datasheet

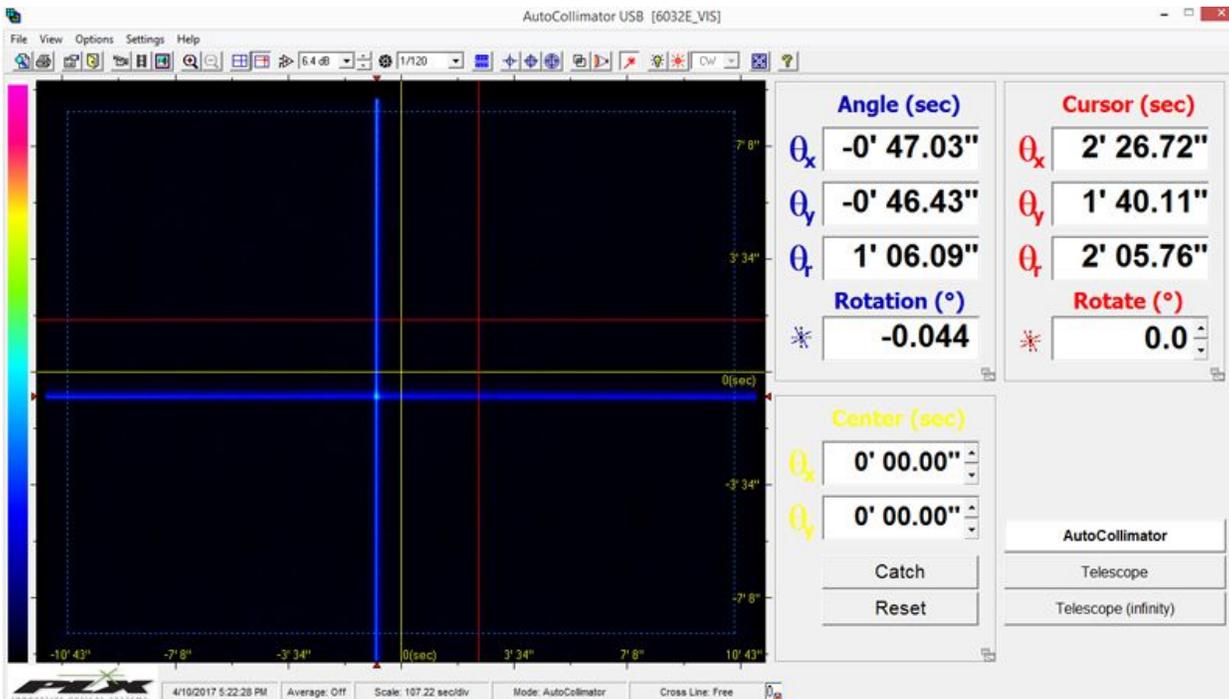
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### Software

All PLX autocollimators come with software, and the software automatically displays angle deviation and can give the relative position of multiple targets.

Data logging is supported and can be configured to record for a predetermined time or a fixed number of data points. The recording interval can also be set. The data can be saved to a file or streamed to a remote location via RS-232 or TCP/IP. The communication setting for both RS-232 and TCP/IP is fully configurable from the software.



Besides taking interval measurements, the software supports video recording of the screen image for later playback and analysis.

Another analysis tool is the ability save images and then to tile multiple saved images and view them simultaneously.

To account for different measuring conditions the software can average measurements or merge them. Average will reduce the fluctuations in the reading in cases where there is a slight jitter or vibration in the object being measured. Merge integrates several (2 to 10) measurements to account for low light levels.

All measurements and displays can be saved and printed for later study and analysis.

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### Applications

#### Machinery Alignment

The Autocollimator/Telescope can be used for checking the accuracy of machine slides. To check the slides, mount a mirror to the machine table. The mirror is facing in the direction of travel. The autocollimator is aligned to the mirror, and the table is then moved either continuously or in discrete steps. Any error in the movement of the table shows up as the reticle image moving.

#### Optical Testing

The electronic autocollimator can be used for testing various optical components. Some can be measured directly, and others would require the use of supplemental optics.

When using the autocollimator mode, it is important to understand the display readout. The autocollimator scale is set up to measure mirror tilt, not the beam angle. When a mirror is tilted, the reflected beam is deviated by twice the angle of the tilt.

#### Boresighting

Boresighting is the aligning of a targeting system or systems with the barrel of a weapon, or the co-alignment of different targeting systems (visible and infrared). Boresighting will typically require some additional set-up/equipment. This could take the form of an accurate translation stage or an LTHR or periscope possibly equipped with a beam splitter.

PLX autocollimators can be utilized in numerous applications and a variety of areas including:

- Straightness measurement of linear stages
- Characterization of rotary stages
- Measurement of wedge, prism and polygon angles
- Measurement of reflecting surface parallelism
- Measurement of surface flatness
- Alignment of optical setups including lasers
- Measurement of mirror angles
- CD/DVD-Rom alignment
- Thermal stability measurements
- Vibrations analysis
- Adjustment of LD position to represent a certain illumination distance
- Adjustment of a laser diode to best collimating position
- Calculating beam divergence by a dedicated software addition
- Testing distance of reflective surfaces (such as silicon wafers)