The CONEX-LDS autocollimator performs high-resolution, non-contact angular measurements for alignment, quality assurance and metrology applications. The controller is integrated in the body of the autocollimator making it ideal for systems integration or as a portable metrology tool. The CONEX-LDS is used in the highest precision applications performing high resolution angular measurements at over distances of up to 5 meters.

Sensitive Angular Measurements

The resolution of the CONEX-LDS is actually 0.003 μrad. Including the sensor noise, the sensitivity stays at 0.01 μrad, which is a very excellent value for angular measurement.

Fast Data Acquisition

The CONEX controller works in junction with the internal position sensor detector to provide high speed data acquisition rates up to 2 kHz. This feature is ideal for vibration measurements, structural drift, or even metrology applications like wobble measurements of bearings.

Convenient Alignment Window

Newport’s CONEX-LDS supplies an intuitive, built-in alignment window used for coarse alignment of the optics. This allows the user to manually and quickly setup the autocollimator.

Certification and Quick Verification of Calibration

A calibration report is provided with each individual unit, certifying its performance. CONEX-LDS-VER is available to easily verify the unit’s calibration on a regular basis. If the unit is out of calibration, it can be returned to the factory for re-calibration.

Ideal Tool for Many Applications

The CONEX-LDS is ideal for:

- pitch and yaw measurements
- rotation stage accuracy measurements
- rotation axis orthogonality measurements
- surface flatness measurements
- settling time and stage damping analysis
- vibration analysis
- wobble control
- beam set-up and alignment
- machine alignments
Easy-to-Use GUI with Out-of-the-box Control

For out-of-the box control, the CONEX controller is preconfigured and delivered with the sensor. To start using the CONEX-LDS, the device simply requires plugging in the power supply, connecting the USB communication, and starting the free GUI. Once the GUI has started, the layout is intuitive and straightforward. From the front panel, the user can access graphical displays of gathered data.

Built-in Controller

A very compact controller is integrated into the autocollimator head of the CONEX-LDS. This allows for easy setup, smaller footprint, lightweight design, and easy connections directly to the PC and power.

### Details and Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamic Resolution (µrad)</td>
<td>0.01</td>
</tr>
<tr>
<td>Accuracy (µrad)</td>
<td>±5 ±(0.02 x measurement)</td>
</tr>
<tr>
<td>Beam Diameter (mm)</td>
<td>22.5</td>
</tr>
<tr>
<td>Beam Divergence (µrad)</td>
<td>100</td>
</tr>
<tr>
<td>Beam Direction (µrad)</td>
<td>500 in relation to autocollimator body</td>
</tr>
<tr>
<td>Equivalent Focal Length (mm)</td>
<td>250</td>
</tr>
<tr>
<td>Measuring Range (m)</td>
<td>5</td>
</tr>
<tr>
<td>Measurement Field (µrad)</td>
<td>±2000</td>
</tr>
<tr>
<td>Ocular Field - Eyepiece (mrad)</td>
<td>±15 (±0.85°)</td>
</tr>
<tr>
<td>Reflector Min. 2% reflectivity</td>
<td></td>
</tr>
<tr>
<td>Noise RMS (µrad/V)</td>
<td>0.003 (at 100% reflectivity)</td>
</tr>
<tr>
<td>Weight (lb. (kg))</td>
<td>2.4 (1.1)</td>
</tr>
<tr>
<td>Communication Interface</td>
<td>RS-422 accessible through a USB to RS-422 converter or Ethernet to RS-422 converter</td>
</tr>
<tr>
<td>Protocol</td>
<td>ASCII</td>
</tr>
<tr>
<td>16-Bit Analog Outputs</td>
<td>±5 V, adjustable filter and gain</td>
</tr>
<tr>
<td>Data Acquisition Frequency (Hz)</td>
<td>2000</td>
</tr>
<tr>
<td>2nd Order Low Pass Frequency</td>
<td>Adjustable from 1 to 2000 Hz</td>
</tr>
<tr>
<td>Source</td>
<td>Visible laser diode modulated at 5 kHz, circular polarized</td>
</tr>
<tr>
<td>Wavelength (nm)</td>
<td>670</td>
</tr>
<tr>
<td>Peak Power (mW)</td>
<td>&lt;1 (Class II)</td>
</tr>
<tr>
<td>Operating Temperature Range (°C)</td>
<td>+15 to +25</td>
</tr>
<tr>
<td>Storage Temperature Range (°C)</td>
<td>-10 to +50</td>
</tr>
<tr>
<td>Power Supply</td>
<td>90/264 V, 50/60 Hz, 30 VA</td>
</tr>
</tbody>
</table>

### Dimensions

![Dimensions Diagram]

### Ordering Information

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONEX-LDS</td>
<td>Electronic Autocollimator</td>
</tr>
<tr>
<td>CONEX-LDS-VER</td>
<td>Verification Kit</td>
</tr>
<tr>
<td>CONEX-LDS-USB-422</td>
<td>USB to RS-422 Converter</td>
</tr>
<tr>
<td>ETH-RS422-EU</td>
<td>Ethernet to RS-422 Converter</td>
</tr>
<tr>
<td>CONEX-LDS-CABLE20</td>
<td>20 m Cable</td>
</tr>
<tr>
<td>CONEX-LDS-PS</td>
<td>Power Supply</td>
</tr>
</tbody>
</table>

1) The verification kit is a stand alone kit which includes a calibrated optical wedge fitted into a mechanical mount and all associated clamps and rod. The slide is delivered with a calibration certificate which provides the value of the angle of deviation which it produces on the autocollimator’s beam. This kit allows user to verify that the CONEX-LDS is still within its calibration limits set in the factory. The applet will guide you through the verification process.

### Accessories

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Axis Height (mm)</th>
<th>Angular Range (°)</th>
<th>Centering Travel (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONEX-LDS-SLXY</td>
<td>Precision Adjustable</td>
<td>100</td>
<td>±2</td>
<td>±12.5</td>
</tr>
<tr>
<td></td>
<td>Four Axis Mount, XY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONEX-LDS-SL</td>
<td>Precision Adjustable</td>
<td>75</td>
<td>±2</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Two Axis Mount, X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mounts are available to facilitate setting up the CONEX-LDS autocollimator. With two angular and two linear axes, the CONEX-LDS-SLXY is the most flexible mount. The CONEX-LDS-SL mount provides only two angular adjustments.