



## MLS02-50 LASER TRIANGULATION SCANNER



- **Laser Triangulation** with 10 or 50 deg arch rotating mirror scan
- **Non-Contact Measurement** of distance and angle of all surfaces.
- **High temperature versions** for surface temperatures of 1200°C
- **Measurement ranges:** 100 to 13000 mm
- **Stand off :** 200 to 1500 mm stand offs.
- **Radial resolution:** 0.03 mm to 0.8 mm
- **Robust, yet compact size** of 310 x 190 x 64 mm
- **RS232 or RS422 (115200—230400 Baud) Serial Interfaces**
- **2 kHz Class 2 / 3R Laser Output Models** with 300 or 600 scans/min

### Performance

Model	MLS02-250	MLS02-325	MLS02-450	MLS02-750	MLS02-505	MLS02-1155	MLS02-1950	MLS02-1350
Measured range (mm)	100	250	500	700	100	300	900	1300
Radial Distance (mm) (From Rotary Mirror)	200-300	200-450	200-700	400-1100	450—550	1000—1300	1500—2400	700—2000
Scan at 50 deg arch (Close /far (mm))	186-253	186-379	186-591	372-928	419/ 464	932 / 1098	1398 / 2028	652 / 1688
Radial / Polar Resolution / Reproducibility mm <sup>1)</sup>	0.03/±0.03	0.05/±0.05	0.1/±0.1	0.2/±0.2	0.05/±0.05	0.2/±0.2	0.6/±0.6	0.8/±0.8
Radial / Polar Linearity	±0.10	±0.2	±0.2	±0.4	±0.1	±0.5	±1.2	±1.6
Laser Class 2 / 6 kHz	IEC 2 / IEC 2	IEC 2 / IEC 3R	IEC 2 / IEC 3R	IEC 2 / IEC 3R	IEC 2 / IEC 3R	IEC 2 / IEC 3B	IEC 2 / IEC 3B	IEC 2 / IEC 3B
Laser Spot Size	1 mm	2 mm	3 mm	3 mm	1 mm	1 mm	2 mm	3 mm

Angular Resolution <sup>1)</sup>:10 deg Scan 2kHz - <0.08 or < 0.04  
6 kHz - <0.08 , < 0.04 or <0.02

Angular Resolution <sup>1)</sup> at 50 deg Scan 2kHz - <0.4 or < 0.2  
6kHz - <0.4, <0.2 or <0.1

### Typical Applications

- **Width Measurement**
- **Thickness Measurement**
- **Weight/Volume Control**
- **Profile Measurement**
- **Molten Metal Level**
- **Tension Control**

Namely provide 2D profile measurement in any kind of industrial application with the output in a software converted form. Namely the Y coordinates used possibly for width or thickness according to the resolution and scan angle.

### General Description

These MLS02 Laser Triangulation Scanners provide precision measurement in two dimensions. The measurement is performed by oscillating the triangulation plane by up to 50 deg. A fine collimated and focused laser beam is diffusely reflected from the surface of the material or liquid being measured and the internal CCD Camera records the image. This image is then processed by digital signal processor to calculate the radial distance from the centre of the mirror axis to the object surface as well providing an angular track off its position.

These Scanners are compact stand-alone units containing the optics, signal processing and camera unit. The Scanner view shown illustrates the scan line. The distance and angular values are provided at frequency of 2kHz or 6 kHz as a digital signal for application running under Windows using the MLS02 driver DLL.

The scanners are delivered with a CD containing the DLL and a Windows test/demo program. The PC application programme receives the output data from the Scanner over RS422/RS232 serial interface and a COM port via the DLL. The software either converts the polar coordinates of a measured point to orthogonal X,Y co-ordinates or presents a profile (table of X, Y values) for each sweep from one side to the other. The user can specify the size of the Y increment in the application programme and thus the length the output and thus the length of time the output contains the profile data.

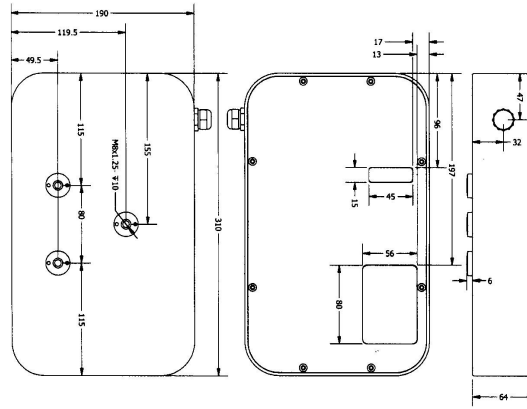
Each Scanner can be supplied with 3 differing scan rates of 1800, 900 or 450 scans/min and with differing measuring angle of either 10 deg or 50 deg. Also can be provided with 2kHz or 6 kHz output format giving high or lower resolution. Where required, customized versions can be supplied with non-standard scan angles and measuring ranges. Models are available for measuring off product at 1250 deg C.

**MODULOC<sup>®</sup> Technology - Lasers for Precise Product Measurement**

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## Dimensions

**Housing:** Aluminum  
**Housing Rating:** IEC IP65  
**Weight w/o Cable:** 4.5 Kg  
**Cable Length:** 2.5 M



## General Specifications

Serial Output	RS232 Standard or RS422/RS422	Supply Voltage	22—36 VDC
Baud Rate	115200 / 230400	Power Consumption	12 Watt
Digital Output	Digital output 1/10 values of full range	Humidity	Max 90% RH (non condensing)
		Operating Temperature	0°C to +45°C (32°F to 113°F)
Measuring Frequency	2000 Hz <sup>2)</sup>	Storage Temperature	-20°C to +70°C (-4°F to 158°F)
Temperature Deviation	±0.03% of F.S./°C	Product Temp. Limit	Standard 450°C/842°F
Laser Source	Visible 655 nm Laser	Laser Class <sup>4)</sup>	Class II, IEC 2 <sup>2)</sup>

- 1) Stated Resolutions determined with reference to white surface.  
 2) Optional 5000 Hz and 10000Hz measuring frequency is available.

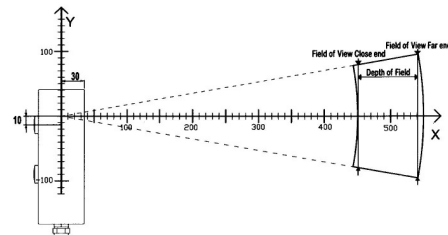
## General Description

These MLS02 Scanners precisely measure in two dimensions. The measurement is performed by oscillating the triangulation plane by up to 50°. The fine collimated laser beam diffusely reflects from the surface of almost any kind of material or fluid, and the internal camera records the image. This makes it possible for the Processor to calculate the (radial) distance from the centre of the mirror axis to the object surface, as well as keeping track of the angular reference position.

The schematic drawing to the right shows the scanner seen from the side. In this orientation of the scanner, the triangulation plane sweeps from - 25° below the horizontal plane to + 25° above the horizontal plane.

The measured distance data is available as a digital signal for running under Windows and using the MLS02 driver DLL. The scanner is delivered with CD's containing the mentioned DLL and a Windows test/demo program. The application program receives data from the scanner over the serial interface and a COM port via the DLL.

## Scan Angle configuration



The software either converts polar coordinates of a measurement point to orthogonal X, Y-coordinates or presents a profile (table of X, Y-values) for each sweep from one side to the other. Within the application program the user can specify the size of the Y-increment and thus the length of the output table containing the profile data.

The MLS02 scanners are also available in a synchronized version, where the units are programmed to operate as either a SLAVE unit or as a MASTER unit controlling one or more SLAVE units.

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 Control Systems

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We reserve the right to alter specifications without prior notice. Specifications without tolerances are typical values.

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