

LIMAB®

PreciCura Road™

**High precision
laser sensors
for road profiling!**



In compliance with:
ASTM, ASSHTO, ISO

Optimized for RoadProfiling

PreciCura Road is a series of sensors specially developed for road profiling. It is derived from our well known sensor family PreciCura.

Coming from an already very rugged and reliable sensor, PreciCura Road has improved mechanical stability, improved climate protection, increased laser effects and improved testing procedures.

Today LIMAB offers sensors for:

- Rutting
- IRI
- Longitudinal profile
- Transverse profile
- etc

We continuously develop our portfolio of ROAD products to make sure to offer our customers cost effective solutions.

Interfaces

PreciCura Road are available with 2 types of interfaces.

LSI (LIMAB Standard Interface) features:

- RS232
- Analogue
- CANbus
- Service interface

LIMAB Road Interface:

- RS422 (compatible with Selcom)
- Service interface

Measurement principle

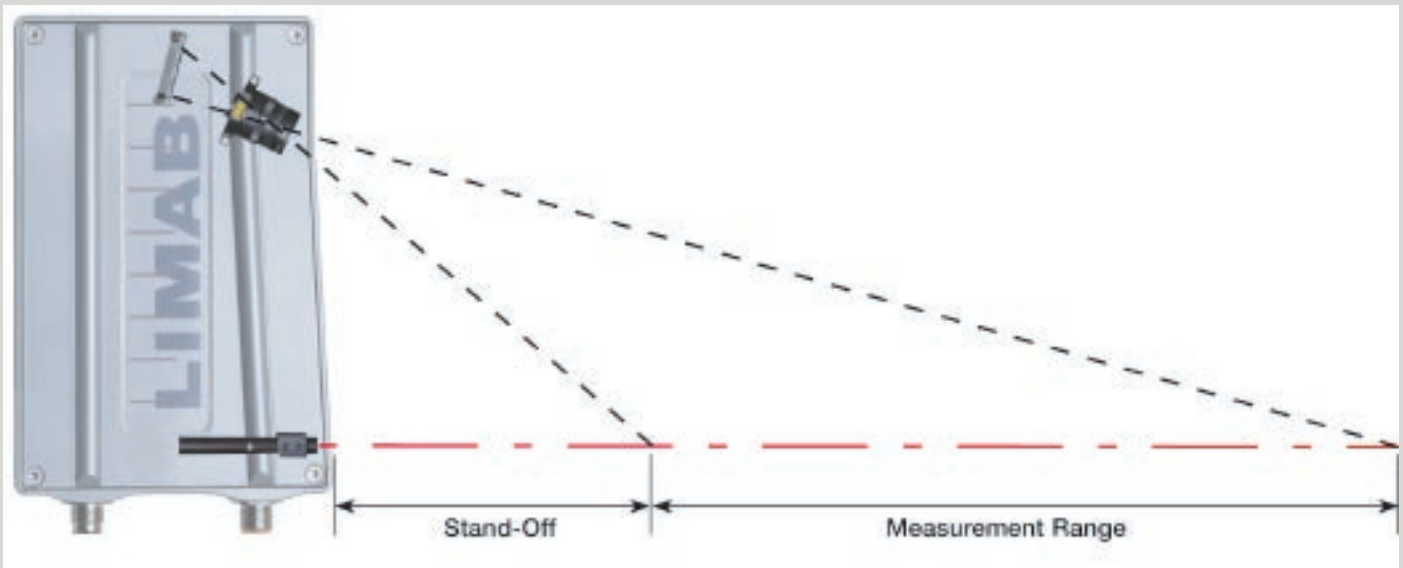
PreciCura Road measures distance using laser based optical triangulation. The sensor uses a CCD (Charged Coupled Device) detector and is digital. This allows advanced signal processing which improves performance considerably.

The PreciCura Road utilizes a center-of-gravity algorithm to determine the distance. This method uses all information from the light spot image. The resulting resolution is an impressive 32000 pixels.

Post processing of the distance value includes filtering (averaging, moving average, median) and reduction of measurement frequency and data output frequency.



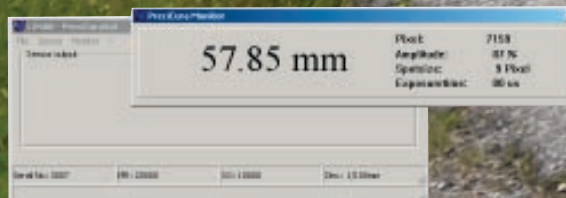
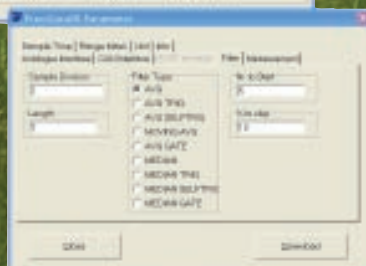
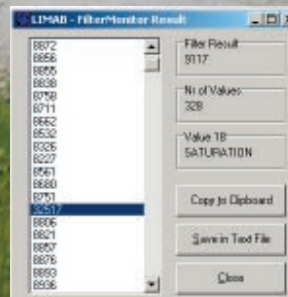
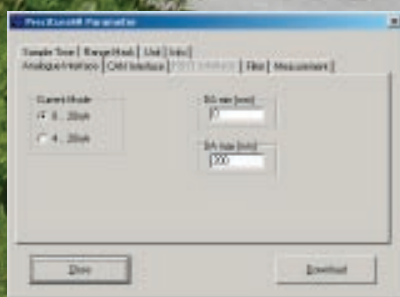
PreciCura Road uses standard locking industrial connectors, 5- and 8-pin M12. All sensors have status LED's.



Definition of stand-off and measurement range

Height Vision

For special applications the normal laser spot can be exchanged to a 35 mm line. Combined with special receiver optics this allows you to collect average distance to the road surface over the length of the line. This feature makes it easier to reproduce IRI or to smooth out unevenness that could adversely affect the IRI.



The sensor setup software is Windows® based and runs on a standard laptop or desktop PC.

PreciCura SR

PreciCura Road is available in 2 sizes. The SR (Short Range) which has a fixed stand-off and measurement range is used for vertical projection in the middle of the beam

PreciCura MR

The MR (Mid Range) has customized properties and is used for side projection on the sides of the beam. PreciCura Road MR has a Range Mask function. By masking the measurement range the active part can be selected and the same sensor can be used in several positions of the beam. This reduces the number of spare parts needed.



PreciCura SR Road on a Profiler.

7 pcs PreciCura MR Road for side projection.



Specifications PreciCura SR Road LSI and PreciCura SR Road

| PERFORMANCE | Metric | US |
|---------------------------|---|------------------|
| Stand-off* | 200 mm | 7,9" |
| Measurement range* | 200 mm | 7.9" |
| Resolution | 0.01 mm | 0.001" |
| Repeatability close end | 0.04 mm | 0.0016" |
| Repeatability far end | 0.09 mm | 0.0035" |
| Sample speed | 2 kHz | |
| Detector type | CCD | |
| Power supply | 18-36 VDC | |
| LASER | | |
| Wavelength | 635-670 nm | |
| Laser power | < 5mW | |
| Laser class | 3R | |
| Exposure time | 3 – 500 µs | |
| Enclosure | | |
| Dimension | 175x108x42 mm | 6.89x4.25x1.65" |
| Weight | 1.0 kg | 2.2 lbs |
| Protections class | IP 65 | |
| Operating temperature | 0 .. +40 °C | 32 .. +104 °F |
| Storage temperature | -20 °C .. +70 °C | -4 °F .. +158 °F |
| Material | Laquered aluminium | |
| Interfaces | | |
| Service interface | RS232 | |
| CAN-bus | (only Road LSI) | |
| Analogue | 0-20 mA, 4-20 mA (only Road LSI) | |
| RS422 Clock/Data | Output rate 16 kHz (only Road) | |
| Functions/Features | | |
| Measuring algorithm | Triangulation with modified "centre of gravity". Suppression of background light and second reflections. | |
| Measurement functions | Distance Distance+offset | |
| Filtering | Average Moving average Median Adjustable median (0-100%) | |

*For definition see figure page 3

Specifications PreciCura MR Road LSI

| PERFORMANCE | Metric | US |
|---------------------------|--|-------------------------|
| Stand-off* | 100-2000 mm (Customized) | 3.9"-78,7" (Customized) |
| Measurement range (MR)* | 200-600mm (Customized) | 7.9"-23,6" (Customized) |
| Resolution (MR<320 mm) | 0.01 mm | 0.001" |
| Resolution (MR>320 mm) | 0,1 mm | 0.01" |
| Repeatability close end** | 0.08 mm | 0.0031" |
| Repeatability far end** | 0.55 mm | 0.022" |
| Sample speed | 2 kHz | |
| Detector type | CCD | |
| Power supply | 18-36 VDC | |
| LASER | | |
| Wavelength | 635-670 nm | |
| Laser power | 3 mW up to 20 mW | |
| Laser class | 3R, 3B | |
| Exposure time | 3 – 500 µs | |
| Enclosure | | |
| Dimension | 331x148x56 mm | 13.03x5.83x2.2" |
| Weight | 3.0 kg | 6.6 lbs |
| Protections class | IP 65 | |
| Operating temperature | 0 .. +40 °C | 32 .. +104 °F |
| Storage temperature | -20 °C .. +70 °C | -4 °F .. +158 °F |
| Material | Laquered aluminium | |
| Interfaces | | |
| Service interface | RS232 | |
| HOST Interface | RS232 (only Road LSI) | |
| CAN-bus | up to 1Mbit/s (only Road LSI) | |
| Analogue | 0-20 mA, 4-20 mA (only Road LSI) | |
| RS422 | Output rate 16 kHz Compatible with Selcom (only Road) | |
| Functions/Features | | |
| Measuring algorithm | Triangulation with modified "centre of gravity". Suppression of background light and second reflections. | |
| Measurement functions | Distance Distance+offset | |
| Filtering | Average Moving average Median Adjustable median (0-100%) | |

*For definition see figure page 3

** For a sensor with standoff= 300 mm and measurement range=1000 mm. Please, contact LIMAB for information about other sensor constellations.

Since it was founded in 1979, LIMAB has supplied non-contact measuring sensors and solutions. The company currently extends to the in-house development, manufacturing, service and maintenance as well as marketing and sales of sensors and solutions based on laser technology and optical triangulation.

More than 10000 LIMAB sensors have been installed world-wide.

LIMAB supplies measuring solutions to the steel industry, e.g. continuous casting operations, rolling mills for long and fl at products etc. and to the timber industry, for example sawmills, planing mills and furniture factories. In addition, we supply industries that produce building materials such as gypsum boards, composite panel boards and engineered wood products. The sensors are generic distance measurement devices and measure on most non-transparent material.

Our equipment is highly robust. It is designed to function in tough environments. Therefore good design, component selection, assembly and calibration is important. The same applies when it comes to support and service.



We reserve the right to introduce modifications without prior notice.

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