

LIMAB[®]

PreciCura line

High precision laser sensors
for dimensional measurement



Built for industrial applications

Coming from 25 years of experience in laser sensor development, the **PreciCura** is a robust, rugged and versatile laser triangulation sensor for dimensional measurements. The non-contact sensor is ideal for most measurement situations and especially on soft delicate surfaces, sticky and hot materials as well as on discrete objects at high speed. The combination of LIMABs application know-how and constant development of sensors and solutions has formed a family of distance measurement sensors with unmatched performance and user friendliness.

Optimizing the PreciCura for the application

The **PreciCura** is an intelligent sensor that adapts exposure time automatically to be able to get accurate and repeatable measurements even with varying target conditions, such as an unlevelled surface, color changes and loss of data due to varying surface characteristics.

The inherent intelligence is also used to set filtering and mode of operation to the most suitable conditions for each application.

The **PreciCura** can be delivered with a combination of Stand-Off (SO) and Measurement Range (MR) that is customized for the application.

Easy to use

The **PreciCura** sensors are powered by a single +24 VDC supply. They deliver data on a number of industrial interfaces, both analog and digital. The built-in intelligence allows the sensor to be used to the maximum for a given application and data collection situation.

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

Integration into systems

The **PreciCura** family of sensors are equipped with both analog and digital interfaces. The analog interface is mostly used in PLC based systems. In PC based systems the built-in CAN-bus is a powerful and easy way to connect one or several sensors in a sensor network. The benefit of using a high speed digital interface is that error messages are also obtained as a complement to the data that is sent from the sensor. These error messages also carry information about the measurement situation and can be used to treat previous valid data points differently or to indicate that process conditions have changed.

- Measuring range up to 8000mm (315")
- Synchronization for improved differential thickness measurement
- Industrial interfaces for easy connections to different controllers
- Integrated signal filtering and processing
- Sensors designed for industrial applications in harsh environments
- Patented Height vision™





LIMAB - PreciCuraMR
Sensor output: 3.355"

PreciCuraMR Parameter
Current Mode: 0 (0...20Ah), 4 (4...20Ah)
DA min [ms]: []
DA max [ms]: [200]

LIMAB - Filter/Monitor Result
Filter Result: 9117
No. of Values: 328
Value 18: SATURATION
Copy to Clipboard
Save in Text File
Close

LIMAB - PreciCuraMR
Sensor output: 91.17 mm

LIMAB - PreciCuraMR
Sensor output: 57.85 mm
Pixel: 7159
Amplitude: 87 %
Spatsize: 9 Pixel
Exposuretime: 88 us

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

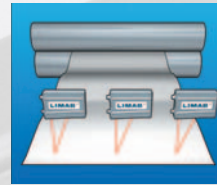
Measurement principle

The **PreciCura** measures distance using laser based optical triangulation. A laser spot is projected on the surface of the material to be measured. The laser spot is diffusely reflected by the surface (water levels, window glass thickness and distance to perfect mirrors can not be measured). When the material surface is inside the Measurement Range of the **PreciCura**, a portion of the light is picked up by a lens system that focuses the image of the spot on the CCD (Charged Coupled Device) detector. The CCD is an image device with light sensitive cells (pixels). The image of the laser spot being focused on the CCD will cover several pixels.

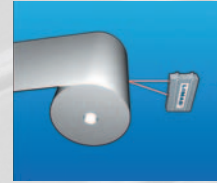
The **PreciCura** family utilizes a center-of-gravity algorithm to determine the pixel value. This method uses all information from the light spot image. The limiting factor for the resolution will be the internal data bus (in the **PreciCura** 16-bit). The resulting resolution is an impressive 16 x 2000 (physical pixels) = 32000 pixels.

The processor in the **PreciCura** will then convert this pixel value to a distance value from an individual calibration table stored in the sensor.

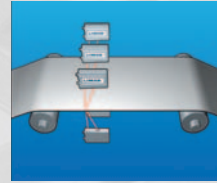
Post processing of the distance value includes filtering (averaging, rolling averaging, median) and reduction of measurement frequency (sampling frequency) and data output frequency (measurement speed). The **PreciCura** also has a number of measurement modes that can be selected depending on the measurement task.



Flatness measurement



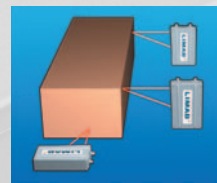
Diameter measurement



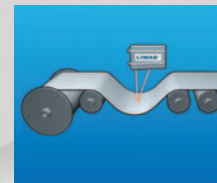
Multi-track Thickness measurement



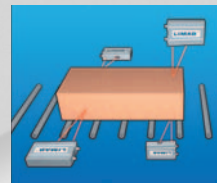
Runout measurement



Position and Alignment measurement



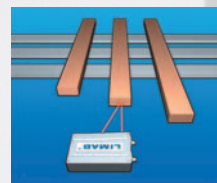
Loop measurement



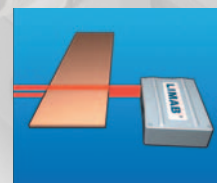
Thickness and Width measurement



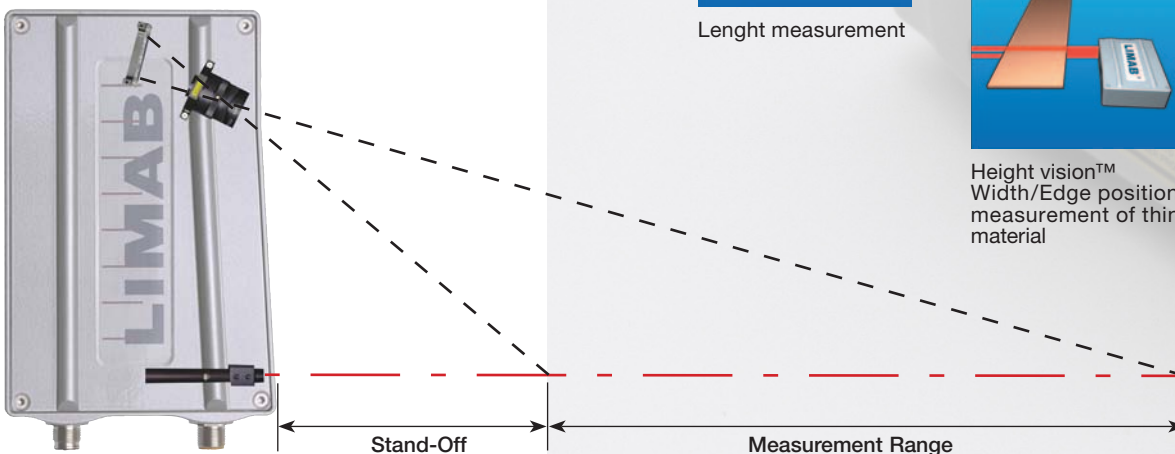
Profile measurement



Length measurement



Height vision™
Width/Edge position
measurement of thin material





PreciCura provides three interfaces simultaneously: Analog, Serial RS232C and CAN-bus. **PreciCura** use standard industrial connectors, 5- and 8-pin M12 with locking. All sensors have status LED's.



Technical data, common for **SR/MR/LR**:

Measurement frequency	2 kHz
<i>(User adjustable between 1,95 Hz – 2 kHz. After adjustment frequency is constant and independent of exposure time)</i>	
Wave length	635-670 nm
Power supply	18-36 VDC
Operating temperature	0 – 40° C (32-104° F)
Protection class	IP 65, NEMA 4
Interfaces:	
RS232C, Service	38400 bit/s
CAN-bus	50-1000 kbit/s
Analog (With accept signal for valid output)	16 bit, 0-20 mA, 4-20 mA
Meas. mode	Distance, Distance/Offset, Thickness
Meas. filters	Average, Avg. Trig, Avg. Self Trig, Moving Avg, Avg.-Gate, Median, Med. Trig, Med. Self Trig, Med. Gate
Filter length	1-1000 values

Technical data, **PreciCura SR/SR system/SR Hot system**:

Measurement Range	200 mm (7,9")
Stand-Off	100 mm (3,9")
Resolution	0,01 mm (0,001")
Laser Class	2, 2M
Dimensions	175 x 108 x 42 mm (6,89 x 4,25 x 1,65")
Weight	1,0 Kg (2,2 lbs)

Technical data, **PreciCura MR**:

Measurement Range	100-2000 mm (3,9-78,7")
Stand-Off	200-600 mm (7,9-23,6")
Resolution (Meas. Range up to 320 mm)	0,01 mm (0,001")
Resolution (Meas. Range 320 mm up to 2000 mm)	0,1 mm (0,01")
Host Interface RS232C	1200-115200 bit/s
Laser Class (Application dependent)	2, 2M, 3R, 3B
Dimensions	331 x 148 x 56 mm (13,03 x 5,83 x 2,2")
Weight	3,0 Kg (6,6 lbs)

(Not all combinations possible)



Technical data, **PreciCura LR**:

Measurement Range	300-8000 mm (11,8-315")
Stand-Off	650-2000 mm (25,6-78,7")
Resolution (Meas. Range up to 320 mm)	0,01 mm (0,001")
Resolution (Meas. Range 320 mm up to 3200 mm)	0,1 mm (0,01")
Resolution (Meas. Range 3200 mm up to 8000 mm)	1 mm (0,1")
Host Interface RS232C	1200-115200 bit/s
Laser Class (Application dependent)	2, 2M, 3R, 3B
Dimensions	551 x 148 x 56 mm (21,69 x 5,83 x 2,2")
Weight	5,0 Kg (11 lbs)

(Not all combinations possible)

LIMAB® Accessories

Along with the sensor **LIMAB** can offer a full range of accessories to the **PreciCura**. Accessories include mounting brackets, air-cooled protection boxes, fan/filter units and air knives using compressed air for cleaning the optical windows from dust or debris.



Mounting brackets. Three point brackets for easy mechanical fine adjustment of the sensors.



Calibration fixture. Motorized rotating disc for exact calibration of thickness.



Programming kit. Windows® based Set-Up software and communication cable between sensor and PC. For configuration and monitoring of individual sensors.



Air knife. To keep optical windows clear from dust and debris. Easy to install on the sensor. Snap-on connector for compressed air.



Side Channel Blower and Filter. A wide range of blowers are available. **LIMAB** can advise a suitable blower to suit your environment.



Protection box. Can also be equipped with Temperature Controlled Heating for outdoor applications. Blower keeps optical windows clean.



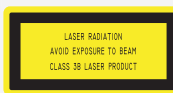
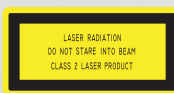
Big display. LCD type, 5 digits, 100 mm height. Very high visibility at long distances and seen from the side.

Cables. 5 and 8 pin, M12 in 2, 5 and 10 meter lengths. Straight and 90° connectors available.

Configurations, options and accessories

PreciCura	Option No.	SR	SR system	SR Hot system	MR	MR Hot	LR	LR Hot
Product No.		96247	96248	96249	96250	96251	96252	96253
Custom Configuration		—	—	—	●	●	●	●
Stand-Off (mm)		100	100	100	200-600	200-600	650-2000	650-2000
Measuring Range (mm)		200	200	200	100-2000	100-2000	300-8000	300-8000
High Power Laser	23110	—	—	●	○	●	○	●
Height Vision™	23111	—	—	—	○	○	○	○
Analog Interface		●	—	—	●	●	●	●
CAN-bus Interface		●	●	●	●	●	●	●
RS232C Interface		—	—	—	●	●	●	●
RS232C Service Interface		●	●	●	●	●	●	●
Trig Input		●	—	—	●	●	●	●
Synchronisation		—	●	●	●	●	●	●
Air Knife SR	96234	○	○	○	—	—	—	—
Air Knife MR	96343	—	—	—	○	○	—	—
Air Knife LR	96344	—	—	—	—	—	○	○
Mounting Bracket SR	96233	○	○	○	—	—	—	—
Mounting Bracket MR & LR	96342	—	—	—	○	○	○	○
CAN Connection Box	96305	○	○	○	○	○	○	○
Programming Kit	96235	○	○	○	○	○	○	○
Big Display	96016	—	—	—	○	○	○	○
Calibration Fixture	96306	○	○	○	—	—	—	—
Blower Unit SR	96307	○	○	○	—	—	—	—
Blower Unit MR	96345	—	—	—	○	○	—	—
Blower Unit LR	96346	—	—	—	—	—	○	○
Air Cooling / Heating Box SR	96314	○	○	○	—	—	—	—
Air Cooling / Heating Box MR	96347	—	—	—	○	○	—	—
Air Cooling / Heating Box LR	96348	—	—	—	—	—	○	○

- Standard
- Can be used as option
- Not possible

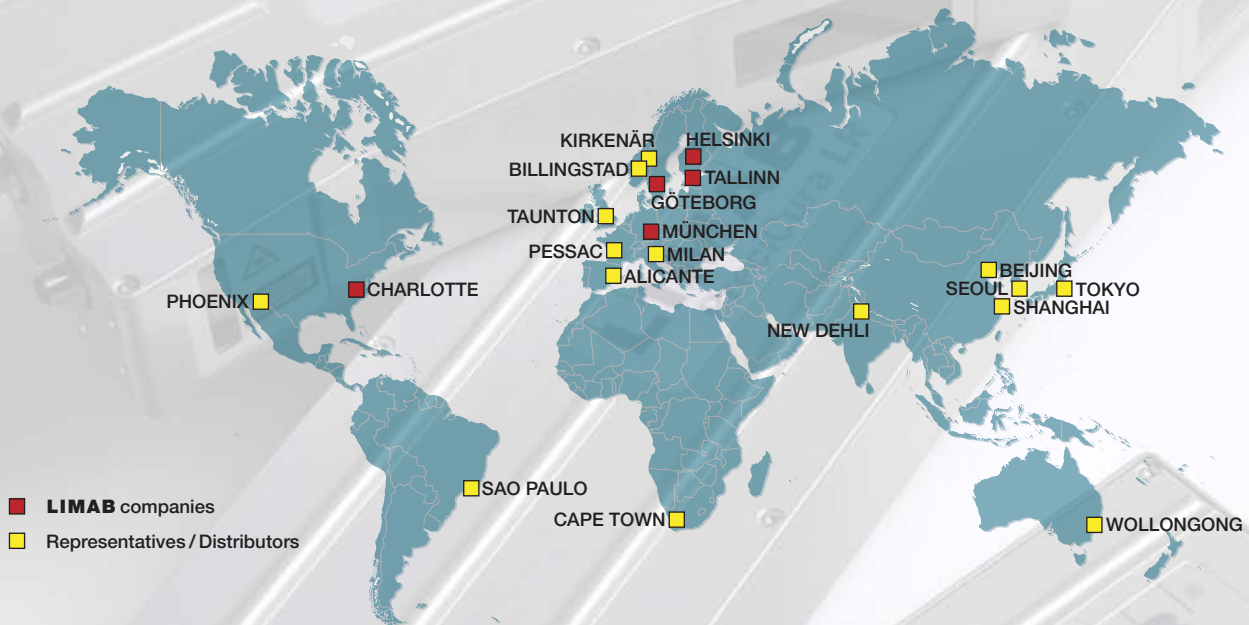


Since it was founded in 1979, **LIMAB** has supplied non-contact measuring sensors and solutions. The company currently extends to the in-house development, manufacturing, service and maintenance as well as marketing and sales of sensors and solutions based on laser technology and optical triangulation.

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 flat 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.



LIMAB North America Inc.

9301 Monroe Road, Suite B
Charlotte, NC 28270
Phone +1-(704) 321-0760
Toll free 866-LIMAB-NA
Fax +1-(704) 321-0761
sales@limab.com
www.limab.com

LIMAB Oy

Henry Fordin katu 5K
FIN 00150 HELSINKI
Phone +358 947 80 36 68
Fax +358 947 80 36 67
sales@limab.fi
www.limab.fi

LIMAB GmbH

Mitterlängstraße 28
D-82178 PUCHHEIM
Phone +49(0)89-84 05 83 20
Fax +49(0)89-84 05 83 21
info@limab.de
www.limab.de

LIMAB OÜ

Sakala 18-2
TALLINN, 10141, ESTONIA
Phone +372 66 10 780
Fax +372 66 10 782
info@limab.ee
www.limab.ee

LIMAB®

Exportgatan 38 B
SE-422 46 HISINGS BACKA, Sweden
Phone +46 (0)31 - 58 44 00
Fax +46 (0)31 - 58 33 88
sales@limab.se
www.limab.com