

# LASER PRECIPITATION MONITOR



**The approved generation of high quality sensors for the reliable measurement of precipitation characteristics.**

- Maintenance-free
- Technology with best cost-performance ratio

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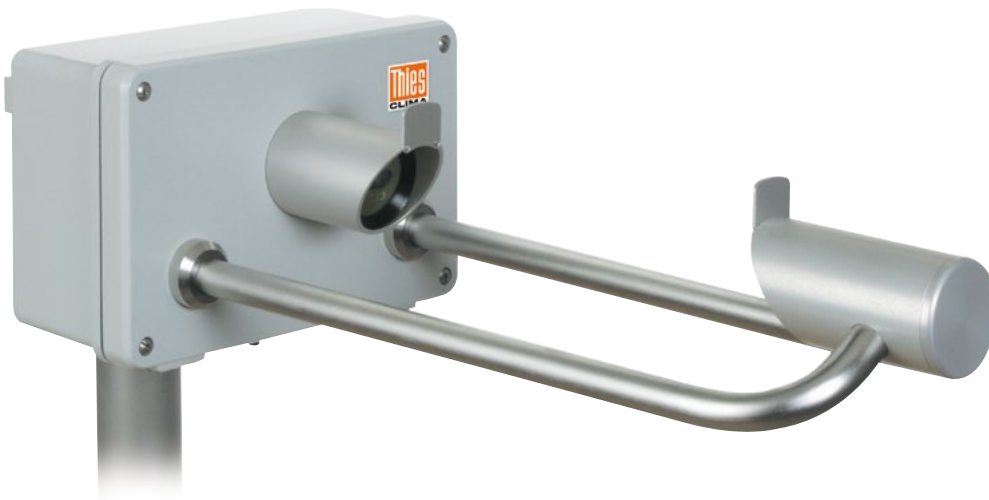
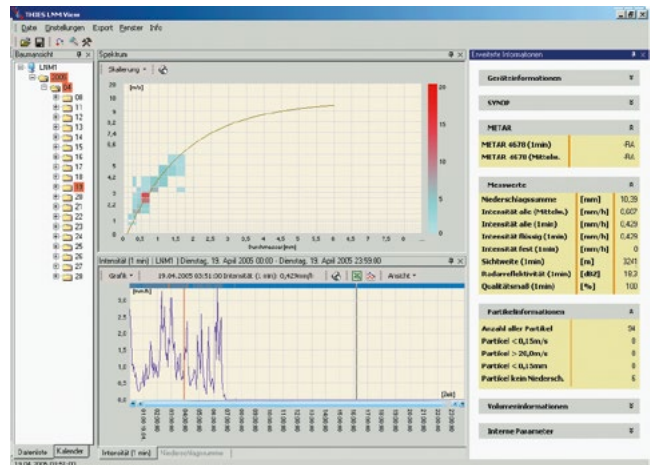
The Thies Laser Distrometer is especially designed for the use in several applications, and the entire precipitation characterization. Thanks to the wide range of provided measurement parameters and its flexible configuration, the usage of a Distrometer is now advisable in numerous fields of applications.

The laser based measuring approach guarantees a reliable and accurate measurement of all known kinds of precipitation. It is possible to measure the amount, the intensity also as the particle size, and the velocity of precipitation. A main advantage of this sensor is to measure particles down to 0.16 mm diameter.

The reliable, maintenance-free laser-optic of the instrument detects and discriminates different kinds of precipitation, such as drizzle, rain, hail, snow, snow-grains, graupel (small hail/snow pellets), and ice pellets. The system calculates intensity, volume (as water equivalent), and the spectrum of precipitation (diameter and velocity), as well as the meteorological visibility (MOR in rain), and the radar reflectivity (Z). State-of-the-art DSP technology and high quality optical components guarantee, precise measurements, and faithful results in real-time. All data are transmitted via a galvanic-isolated RS485 interface for further processing. SYNOP-codes acc. to table 4680/4677 and METAR acc. to table 4678 are fixed implemented.

By the PC software LNM-view, available as accessory, all measurement values from the Laser Precipitation Monitor can be acquired, stored and analysed in an user friendly way. By the progressive Client Server architecture it is possible for several user to access the data simultaneously (multi-user ability).

The software supports several instruments in parallel, the maximum number being limited only by the PC hardware. To reach a high efficiency during data analysis, the user can select the data and its graphic rendition individually to adapt the software to the respective measurement task.



- Typical applications**
- Meteorological applications
  - Hydrology
  - Traffic control
  - Research and Development
  - Airport weather observation systems
  - Alignment of weather radar systems



Accurate measurements even in harsh environmental conditions

The device is almost maintenance-free. The integrated, temperature-regulated heater facilitates guarantee a reliable use all-the-year. A special technology eliminates a possible influence of extrinsic light. The sensor compensates automatically fluctuations of temperature or soiling of the optics.

**Output of the following parameters:**

- Total precipitation quantity
- Particles speed and diameter
- Intensity mm/h
- Class of precipitation (SYNOP/METAR)
- Radar reflectivity (Z/R Ratio, calculated by LPM-View)
- MOR ( in rain)

**Optional \***

- Wind speed
- Wind direction
- Temperature
- Rel. Humidity

\* It is possible to connect additional sensors to the device

For the communication the RS485 interface as well as two digital opto-coupler outputs are available. In order to acquire further meteorological parameters, additional sensors such as wind speed, wind direction, temperature and humidity, can be connected to the optional inputs. The measured values are integrated in the various output data telegrams, and transmitted via the RS 485 interface.

The opto-coupler outputs provides an easy connection to standard data logger systems with pulse-/frequency input.

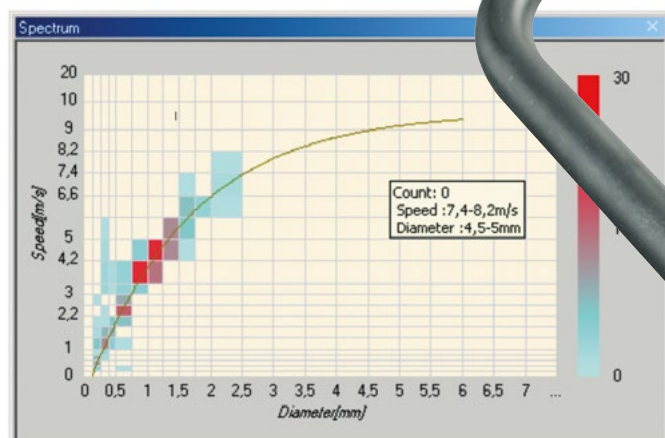
The use of flash-memory allows an easy up-dating of the instrument software also within the scope of the possible remote maintenance.

For the use in harsh environmental conditions, for example in the mountains, is a special model with extended heater available.

**The main advantages on one view:**

- Rugged and compact
- Maintenance-free
- Particle size from 0.16 mm diameter
- Future-oriented by flexible DSP technology
- Extended heaters for use in the mountains
- Remote support
- Easy mounting

Rain spectrum



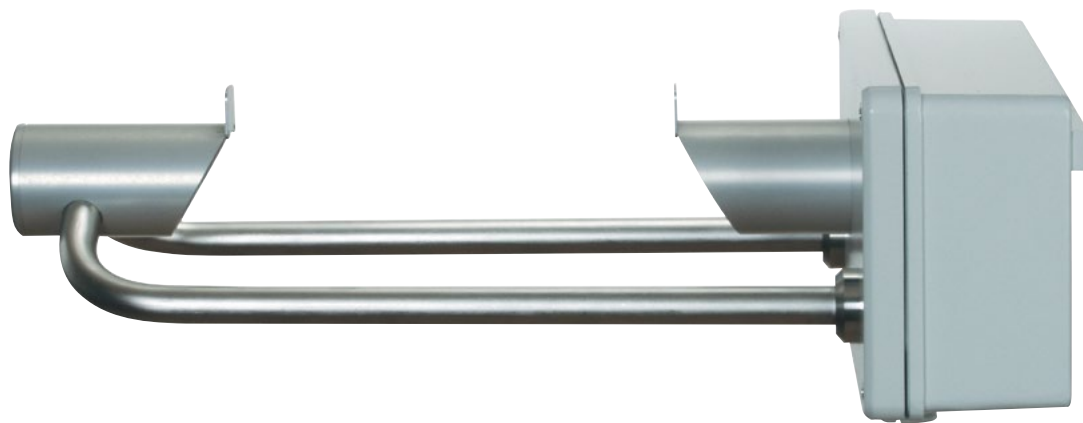
# LASER PRECIPITATION MONITOR

## TECHNICAL DATA

Order no.: 5.4110.xx.xxx

Principle of operation	Laser 785 nm max. 0.5 mW Optical power, laser class 1M
Measuring area	46 cm <sup>2</sup> (23.0 x 2.0 cm)
<b>Distrometer</b>	
Classification	440 classes (22 diameter *20 speed)
<b>Precipitation</b>	
Particle size	Ø 0.16 ... > 8 mm
Particle speed	0.2 ... 20 m/s
Distinction of Precipitation kinds: drizzle, rain, hail, snow	> 97% compared with synopt. observer
Minimum intensity	< 0.001 mm/h drizzle
Maximum intensity	1000 mm/h
Visibility in precipitation	MOR 0 ... 99.999 m
Weather codes Synop Metar	Tab. 4680, Tab. 4677 Tab. 4678
Radar reflectivity	Z = -9.9 ... 99.9 dBZ
Data output	RS 485 1200 ... 115200 Bd., Full duplex, half-duplex 2 opto-couplers 24 V DC, 1 mA for precipitation amount pulses (resolution 0.1, 0.01 or 0.005 mm) resp. frequency for kind of precipitation

Optional Inputs	PT100 (temperature), 0-1 V (rel. humidity), 0-1000 Hz (wind velocity) Serial synchronous (wind direction)
Ambient temperature	-40 ... +70 °C; 0 ... 100% rel. hum.
Protection	IP 65
Mounting	Mast 48 ... 102 mm; 1.9 ... 4 inch
Power supply	24 VAC/DC 750 mA, alternatively 230 V AC or 115 V AC
Optionally	12 ... 24 V DC
Add. heater	230 V AC/150 VA or 115 V AC/150 VA
Housing	Al die-cast, stainless steel (270 x 170 x 540) mm
Weight	4.8 kg 6.5 kg (option. add. heater)
Accessories	PC program LNM view 9.1700.99.000 Software for graphic presentation and analysis for Windows



Please contact us for your system requirements. We advise you gladly.



**ADOLF THIES GMBH & CO KG**  
 Meteorology and Environmental Technology  
 Box 3536 + 3541 · 37025 Göttingen · Germany  
 Phone +49 551 79001-0  
 info@thiesclima.com

[www.thiesclima.com](http://www.thiesclima.com)

