

# 3D Stereo Disdrometer

**Part number: 5.4120.xx.xxx**

The instrument consists of a light source and a stereo camera. Particles pass through the measurement volume defined by the viewing angles of the cameras as well as minimum and maximum distance from the cameras.

All particles cause extinction of the light seen by the cameras. Particle sizes are deduced from the area seen by the cameras and their position within the measurement volume. Particle speeds are deduced from the movement of the particle during a predefined time. Furthermore, the characteristics of the particle image allow the system to distinguish between rain, snow, hail, graupel, seeds, and insects.

The calculated data are memorized over one minute, and then transmitted via serial interface, Ethernet (TCP/IP connection, up to 5 clients at a time) or store on the SD card as a file.

The type of precipitation is determined from the statistic proportion of all articles referring to diameter and velocity. These proportions have been tested scientifically (e.g. Gunn, R., and Kinzer, G.D., 1949, "The terminal velocity of fall for water droplets in stagnant air." J. of Meteorology, Vol. 6, pp. 243-248). In addition, the temperature is included in order to improve the identification.

The instrument is almost maintenance-free. Only the glasses of camera module head and LED pane should be cleaned, if necessary. For application in areas of extreme weather conditions (for example high mountains), we recommend a model with "extended heating". By using a flash-memory the internal software can be updated any time via Ethernet connection.

Various ways for data output:

- Ethernet
- RS485
- Stored on an internal SD card

## Specification

**Part number: 5.4120.xx.xxx**

### Precipitation

Meas. principle	Camera
Particle size	0.08 ... 40 mm
Particle speed	0.2 ... 20 m/s
Intensity	0.001 ... 1000 mm/h



Precipitation types	Drizzle (DZ), freezing drizzle (FZDZ) Rain (RA), freezing rain (FZRA) Hail (GR) Snow (SN) Snow grains (SG), ice needles (IC) Soft hail (GS), ice grains (PL)
Accuracy	Identification of precipitation types:  Drizzle (DZ), freezing drizzle (FZDZ) > 99% Rain (RA), freezing rain (FZRA) > 99% Hail (GR) > 99% Snow (SN) > 99% Snow grains (SG), ice needles (IC) > 99% Soft hail (GS), ice grains (PL) > 99%
<b>Temperature</b>	
Measuring range	Pt 100, -40 ... +80 °C
Accuracy	± 0,2 K
<b>Data output digital</b>	
Interface	<ul style="list-style-type: none"> <li>• Ethernet</li> <li>• RS485</li> <li>• Stored on an internal SD card</li> </ul>
<b>General</b>	
Heating	With camera heating
Ambient conditions	-40 ... +50 °C, 0 ... 100% r.h.
Mounting	Mast mounting Ø 48 ... 70 mm
Protection	IP 65
Dimension	0.24 x 0.39 x 0.72 m (9.5 x 15.4 x 28.4 inch)
Weight	6.2 kg

## Versions

As per 5.4120.xx.xxx, but:

**Product number 5.4120.00.000**

<b>General</b>	
Heating	With: Camera heating
Power supply	24 VAC ±15% / 20...30 VDC 50 W
Current load	AC / DC current (max): 2 A

Product number 5.4120.01.000

General	
Heating	With: Camera heating Camera arm heating LED heating
Power supply	24 VAC ±15% / 20...30 VDC 200 W
Current load	AC / DC current (max):7 A

Product number 5.4120.10.000

General	
Heating	With: Camera heating
Power supply	85 ... 264 VAC, 120 ... 370 VDC 47 ... 63 Hz
Current load	AC current (max): 0.4 A / 115 VAC, 0.2 A / 230 VAC 55 W

Product number 5.4120.11.000

General	
Heating	With: Camera heating Camera arm heating LED heating
Power supply	85 ... 264 VAC, 120 ... 370 VDC 47 ... 63 Hz
Current load	AC current (max): 1.6 A / 115 VAC, 0.8 A / 230 VAC 205 W

Accessories

Product	Product name	Brief description
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Instrument  
Support  
4.3187.61.x00

For the vibration-reduced operation of the LPM on an available concrete foundation, provided by the customer.

#### General

Material	steel, zinc plated
Tube diameter	Ø 60 mm
Mounting distance	424 mm
Dimension	645 x 645 mm
Weight	30 kg



LNM-View  
9.1700.99.000

The Thies LNM View program is used to display data generated by the Thies Laser Precipitation Monitor and/or Thies 3D Stereo Disdrometer.

#### Compatibility

Connectable instruments	<ul style="list-style-type: none"> <li>• Laser precipitation monitor 5.4110.xx.xxx</li> <li>• 3D Stereo Disdrometers 5.4120.xx.xxx</li> </ul>
System requirements	PC with: <ul style="list-style-type: none"> <li>• 1GHz, 256 MBRAM, recommended 2 GHZ, 512MBRAM</li> <li>• Graphics resolution: 800 x 600</li> <li>• Graphics colours: 16bit TrueColor</li> </ul>
Operating system	Recommended operation system: <ul style="list-style-type: none"> <li>• Windows 8</li> <li>• Windows 10</li> </ul>