

3D Stereo Disdrometer

The 3D Stereo Disdrometer essentially consists of a suitable light source and a stereo camera. The measurement volume is defined by the viewing angles of the cameras and the minimum and maximum distance to the cameras.

When particles pass through this measurement volume, they change the light signal registered by the cameras. The size of the particle is determined from the captured image area and the position of the particle in the measurement volume. The speed is calculated from the measured movement of the particle within a specified time interval. In addition, analysis of the image characteristics allows a distinction to be made between different types of particles such as rain, snow, hail, sleet, seeds, or 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 particles 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%
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Temperature

Measuring range Pt 100, -40 ... +80 °C

Accuracy ± 0,2 K

Data output digital

Interface

- Ethernet
- RS485
- Stored on an internal SD card

General

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

General

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

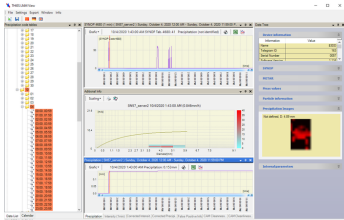
Current load AC current (max): 0.4 A / 115 VAC, 0.2 A / 230 VAC 55 W

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
	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 • Laser precipitation monitor 5.4110.xx.xxx • 3D Stereo Disdrometers 5.4120.xx.xxx System requirements PC with: • 1GHz, 256 MBRAM, recommended 2 GHZ, 512MBRAM • Graphics resolution: 800 x 600 • Graphics colours: 16bit TrueColor Operating system Recommended operation system: • Windows 8 • Windows 10

