

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%

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

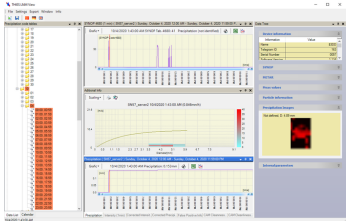
Product number 5.4120.11.000

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	For the vibration-reduced operation of the LPM on an available concrete foundation, provided by the customer.
	Support	
	4.3187.61.x00	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

