

PRECIPITATION

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%
Temperature	
Measuring range	Pt 100, -40 ... +80 °C
Accuracy	± 0,2 K
Air pressure	
Measuring range	300 ... 1100 hPa
Accuracy	±6 hPa
Data output digital	
Interface	<ul style="list-style-type: none"> • 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 125 W
Current load	AC / DC current (max): 1 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 250 W
Current load	AC / DC current (max): 5.2 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 125W AC inrush current cold Start 45 A / 230 VAC

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 250W AC inrush current cold Start 45 A / 230 VAC

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 <table border="1"> <tr> <td>Material</td> <td>steel, zinc plated</td> </tr> <tr> <td>Tube diameter</td> <td>Ø 60 mm</td> </tr> <tr> <td>Mounting distance</td> <td>424 mm</td> </tr> <tr> <td>Dimension</td> <td>645 x 645 mm</td> </tr> <tr> <td>Weight</td> <td>30 kg</td> </tr> </table>	Material	steel, zinc plated	Tube diameter	Ø 60 mm	Mounting distance	424 mm	Dimension	645 x 645 mm	Weight	30 kg
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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 <table border="1"> <tr> <td>Connectable instruments</td> <td> <ul style="list-style-type: none"> Laser precipitation monitor 5.4110.xx.xxx 3D Stereo Disdrometers 5.4120.xx.xxx </td> </tr> <tr> <td>System requirements</td> <td>PC with: <ul style="list-style-type: none"> 1GHz, 256 MBRAM, recommended 2 GHZ, 512MBRAM Graphics resolution: 800 x 600 Graphics colours: 16bit TrueColor </td> </tr> <tr> <td>Operating system</td> <td>Recommended operation system: <ul style="list-style-type: none"> Windows 8 Windows 10 </td> </tr> </table>	Connectable instruments	<ul style="list-style-type: none"> Laser precipitation monitor 5.4110.xx.xxx 3D Stereo Disdrometers 5.4120.xx.xxx 	System requirements	PC with: <ul style="list-style-type: none"> 1GHz, 256 MBRAM, recommended 2 GHZ, 512MBRAM Graphics resolution: 800 x 600 Graphics colours: 16bit TrueColor 	Operating system	Recommended operation system: <ul style="list-style-type: none"> Windows 8 Windows 10 				
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