

Laser distrometer Parsivel-01

Instrument name: Parsivel-01

Instrument type: Parsivel²

Manufacturer: OTT

Location: Institute of Geoscience and Meteorology, Bonn

Coordinates: Lat: 50.731233° N, Lon: 7.070733° E, Alt: 72 m asl

The OTT **Parsivel²** is a laser-based optical system for precipitation measurements. The optical sensor is able to detect all types of precipitation from liquid to solid. Precipitation is classified into 32 size classes and 32 speed classes. Liquid precipitation is classified into particles from 0.2 mm to 8 mm, solid precipitation is classified into particles from 0.2 mm to 25 mm, and particle speed is classified from 0.2 m/s to 20 m/s. The detected precipitation is classified into 8 classes: Drizzle, drizzle with rain, rain, rain with drizzle and snow, snow, snow grains, graupel, hail.

The Parsivel-1 is mounted on the top roof of the Institute of Geoscience and Meteorology at the University of Bonn, in the city of Bonn.

Instrument specifications

Parameter	Specification
Wavelength	780 nm
Output power (peak)	0.2 mW
Laser class	1 (IEC/EN 60825-1:2014)
Light strip surface (W x D)	30 x 1 mm
Measuring surface (W x D)	180 x 30 mm
Measuring range	
Particle size (liquid)	0.2 ... 8 mm
Particle size (solid)	0.2 ... 25 mm
Particle speed	0.2 ... 20 m/s
Design	32 size classes 32 speed classes
Radar reflectivity Z	-9.999 ... 99.999 dBz
Rain rate	
Minimum intensity	0.001 mm/h drizzle rain
Maximum intensity	1200 mm/h
Accuracy	+5 % (liquid) / +-20 % (solid)
Weight	Max. 6.4 kg
Temperature range	-40 ... +70 °C
Size (H x W x D)	670 x 600 x 114 mm

Instrument time-line

19/09/2011 – today Institute of Geoscience and Meteorology, University of Bonn, Bonn

Available measurement modes

- 30 s measurement of full spectrum, speed, diameter, and precipitation type (for full data description take a look into the specific instrument manual provided by OTT)

JOYCE-CF Standard Operation Procedures

- 30 s repetition of standard OTT observation procedures
- Full observation of spectrum, speed, diameter, precipitation type, etc.

Data quality assurance procedures

- Raw data provided by processing standard from OTT. No additional calibration.

Available datasets

The data can be requested via the 'Messdatenportal' (<https://www.meteo.uni-bonn.de/messdaten/messdatenportal>) from the Institute of Geoscience and Meteorology, or via the 'JOYCE-CF Data Request' sheet.

Level 1

- Data: spectral density, rain intensity, rain sum, weather code (Table 4680), reflectivity, signal amplitude, number of particles, total precipitation, average volume diameter, average particle speed, number of particles per speed and diameter class
- The file size per day is approx. 7 MB

Contact

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