

Laser distrometer Thies-02

Instrument name: Thies-02

Instrument type: 5.411.xx.x00

Manufacturer: ADOLF THIES GmbH & Co. KG

Location: University of Bonn, Bonn

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

The **Thies** laser distrometer is a laser-based optical system for complete and reliable precipitation detection and classification. The sensor is able to distinguish between drizzle, rain, hail, snow and mixed phases. The sensor also captures the features of the precipitation such as intensity, visibility, radar reflectivity and the spectrum width.

The Thies-1 is mounted on a 2 m high mast on the top roof of the Institute for Geoscience and Meteorology at the University of Bonn in the city of Bonn. During summer the distrometer is used for the student laboratory and mounted at different sights for specific field campaigns.

Instrument specifications

Parameter	Specification
Wavelength	785 nm
Output power (peak)	0.5 mW
Laser class	1M (EN 60825-1:1994 A2: 2001)
Light strip surface (W x D)	20 x 1 mm
Measuring surface (W x D)	20 x 228 mm
Measuring range	
Particle size (liquid and solid)	0.16 ... >8 mm
Particle speed	0.2 ... 20 m/s
Design	22 size classes 20 speed classes
Radar reflectivity Z	-9.9 ... 99.9 dBZ
Rain rate	
Minimum intensity	< 0.001 mm/h
Maximum intensity	> 250 mm/h
Accuracy	<15% (liquid) / <30% (solid)
Weight	4.8 kg
Temperature range	-40 ... +70 °C
Size (H x W x D)	270 x 170 x 54 mm

Instrument time-line

07/08/2007 – today Institute of Geoscience and Meteorology, University of Bonn, Bonn
07/08/2007 – today during summertime used for student laboratory

Available measurement modes

- 1 min measurement of full spectrum, speed, diameter, and precipitation type (for complete and detailed data description take a look into the specific instrument manual provided by ADOLF THIES GmbH & Co. KG)
- Additional locations can be requested by 'Installation request' sheet

JOYCE-CF Standard Operation Procedures

- 1 min repetition of standard Thies observation procedure
- Full observation of spectrum, speed, diameter, precipitation type, etc.

Data quality assurance procedures

- Raw data provided by processing standard from ADOLF THIES GmbH & Co. KG. 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: 5 min averaged, and 1 min weather code (Table 4677, Table 4680), 5 min averaged and 1 min meta data (Table 4678), 5 min intensity, 1 min total intensity, liquid intensity, solid intensity, accumulated precipitation, visibility in precipitation, radar reflectivity, maximum hail diameter, number of particles, number of minimum speed particles, number of maximum speed particles, number of min diameter particles, number of particles per diameter and speed class
- File size per day: approx. 7 MB

Contact

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