

# Optical Precipitation Sensor



**Innovative Laser-Based Disdrometer**

## PREFACE

The Scintec PARSIVEL<sup>®</sup> M300 is a new optical disdrometer and Present Weather Sensor for measuring all types of precipitation accurately and reliably.

It measures the amount (rate) of precipitation and distribution of particle size and velocity. Also it identifies the type of precipitation such as drizzle, rain, sleet, hail, snow and mixed precipitation. Addi-

tionally, radar reflectivity, visibility and precipitation kinetic energy is derived.

All results can be transferred to a data logger or a PC via the serial interface.

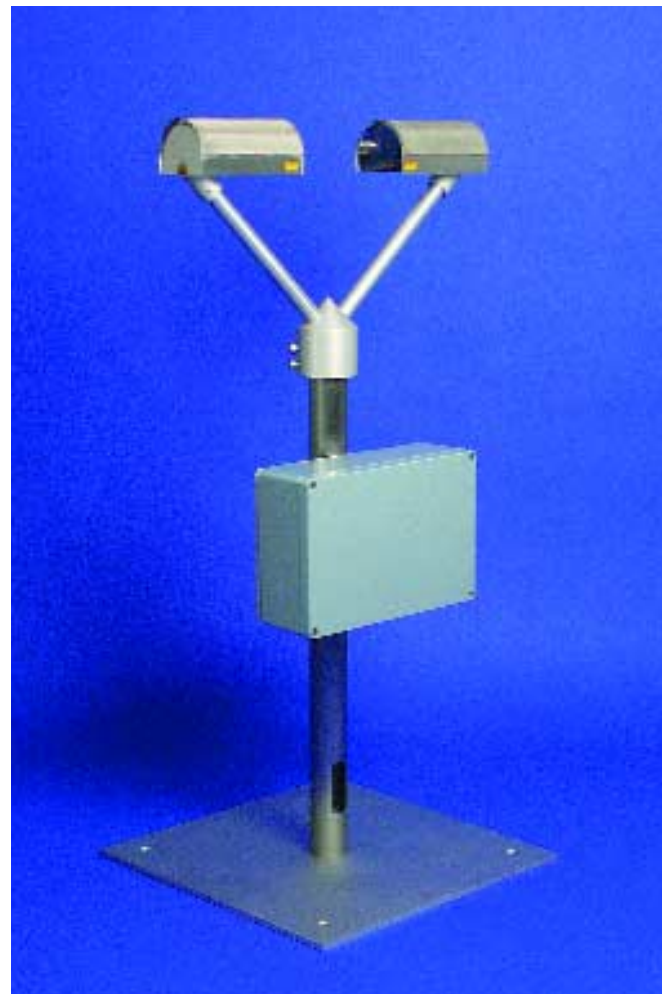
Extensive measurement capabilities, a robust, weatherproof design and easy handling makes this device a perfect choice for all unattended and maintenance-free environmental monitoring tasks.

# INNOVATION

# SENSOR

PARSIVEL<sup>®</sup> is a development and trademark of the Forschungszentrum Karlsruhe

Patent No. DE19724364



PARSIVEL<sup>®</sup> M300

## ADVANCED TECHNIQUE

The Scintec PARSIVEL<sup>®</sup> M300 uses an infrared laser which generates a shallow and broad horizontal radiation band. After passing through the atmosphere, the radiation is focused onto a photodiode line.

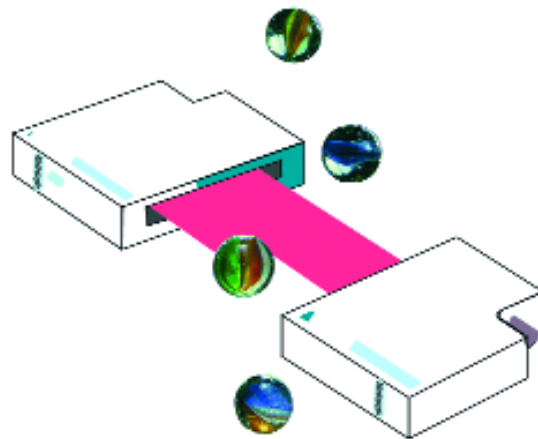
Hydrometeors falling through the measurement area cause variations in the detected radiation intensities. A DSP calculates particle size and particle velocity and categorizes the precipitation into different classes.

OPERATION

PRINCIPLE



Sensor module of the Scintec PARSIVEL<sup>®</sup> M300



The measurement principle is simple and powerful

## ACCURATE AND RELIABLE

The advantages of the Scintec PARSIVEL<sup>(R)</sup> M300 include:

- measurement of particle size, velocity and precipitation amount
- reliable recognition and identification of pure and mixed precipitation
- integrates four instruments into one unit: precipitation sensor, present weather sensor, disdrometer for radar reflectivity and precipitation kinetic energy
- highest accuracy
- maintenance-free laser technology
- designed for unattended operation in harsh environments
- internal temperature control and lightning protection
- low initial and operating costs
- remote access facility



Remote weather sensor



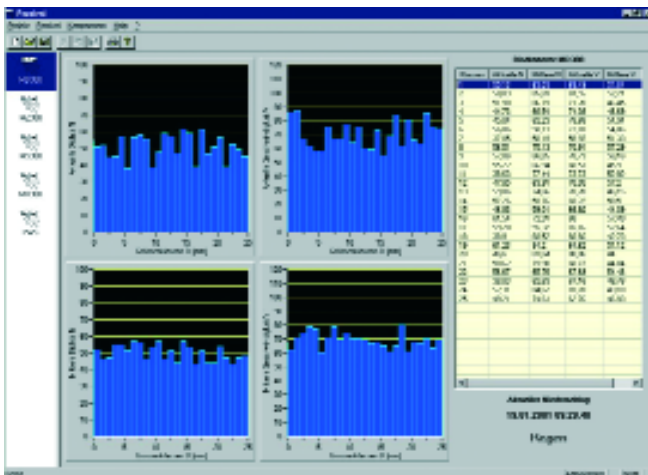
PARSIVEL<sup>(R)</sup> M300 in weather station

# ADVANTAGES

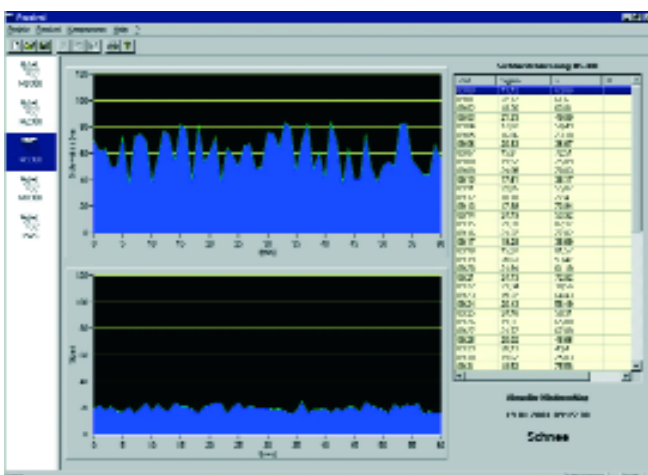
## DETAILED OUTPUT INFORMATION

The PC-based evaluation and visualizing software for Windows™ controls data transfer to the PC and data storage. It provides graphical and tabulated data output of:

- particle size and velocity
- precipitation rate and accumulated precipitation amount
- histogram of precipitation size and velocity
- precipitation kinetic energy
- precipitation code in correspondence to WMO table 4680
- histogram of precipitation type
- visibility through precipitation
- radar reflectivity



All measured data...



... are plotted graphically and in tabulated forms.

SOFTWARE

## APPLICATIONS

Applications of the Scintec PARSIVEL<sup>®</sup> M300 include:

- scientific measurements
- present weather measurements
- traffic control
- agrometeorology and hydrology
- measurement of precipitation in disposal sites
- radar calibration
- high water early warning

# INDUSTRY AND SCIENCE

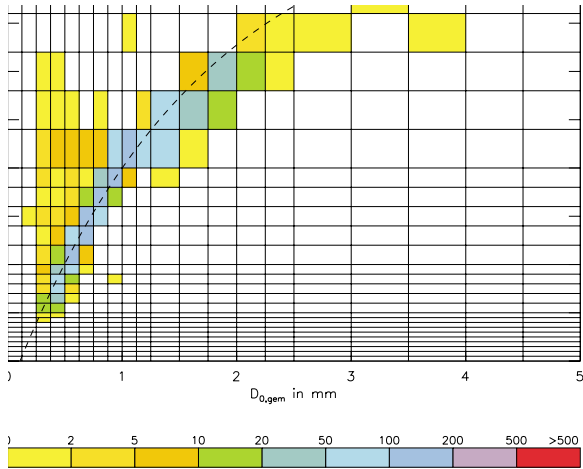


Present weather monitoring for traffic control

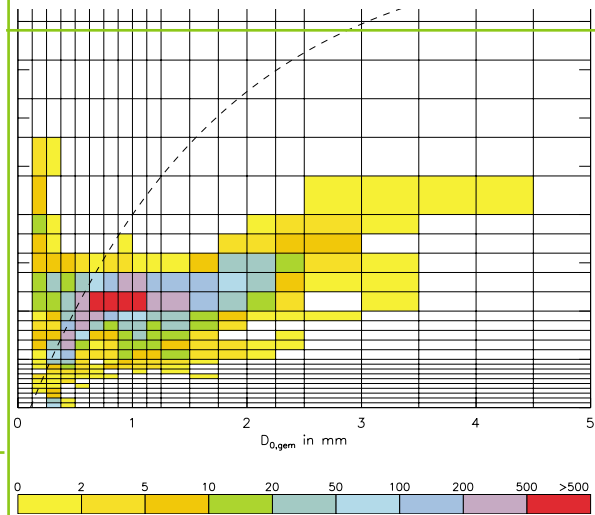


Application in agriculture

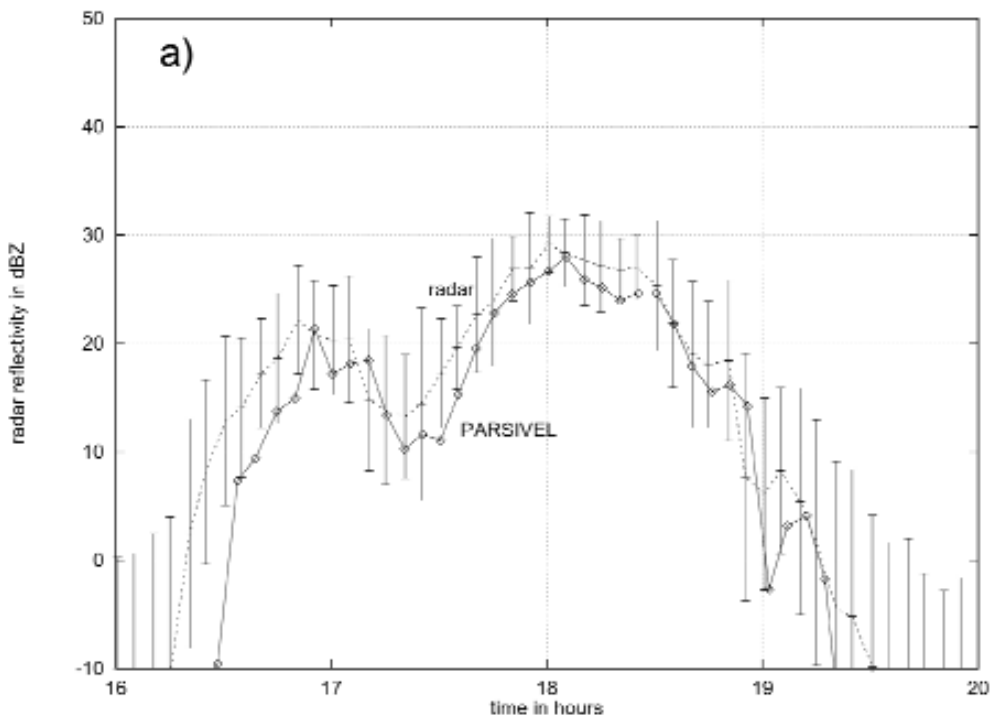
# SAMPLE DATA



Histogram of particle size and velocity during rain



Histogram of particle size and velocity during mixed precipitation (snow and hail)



Comparison of radar reflectivity between radar and PARSIVEL<sup>(R)</sup> M300

## SPECIFICATIONS

specifications	PARSIVEL <sup>®</sup> M300
transmitter wavelength	780 nm
measuring area	48.6 cm <sup>2</sup>
power supply	12 V, 600 mA
interface	RS232
weather protection	IP65
operation temperature	-30 °C to +50 °C
material	anodised aluminium, sensor housing stainless steel
dimensions <sup>1)</sup>	60 cm x 60 cm x 100 cm
weight <sup>1)</sup>	15 kg

measurement ranges	
particle size	0.25 - 25 mm
particle velocity	0.1 - 20 m/s
type of precipitation	according to WMO table 4680
precipitation rate	0.01 - 999.99 mm/h
accumulated precipitation amount	0.01 - 99999.99 mm
radar reflectivity	-9.999 - 99.999 dBZ
precipitation kinetic energy	0 - 999.999 Nm <sup>2</sup> h <sup>-1</sup>
visibility through precipitation	1 - 99999 m
averaging time	10 - 999 s

Specifications are subject to change without notice

<sup>1)</sup>Includes sensor, electrics and mounting platform

**Scintec AG**  
 Europaplatz 3  
 D-72072 Tübingen  
 Germany

Tel. [+49] 70 71-92 14 10  
 Fax [+49] 70 71-55 14 31  
<http://www.scintec.com>  
 E-Mail: [info@scintec.com](mailto:info@scintec.com)

**Scintec** 