PRECIPITATION ANALYZER

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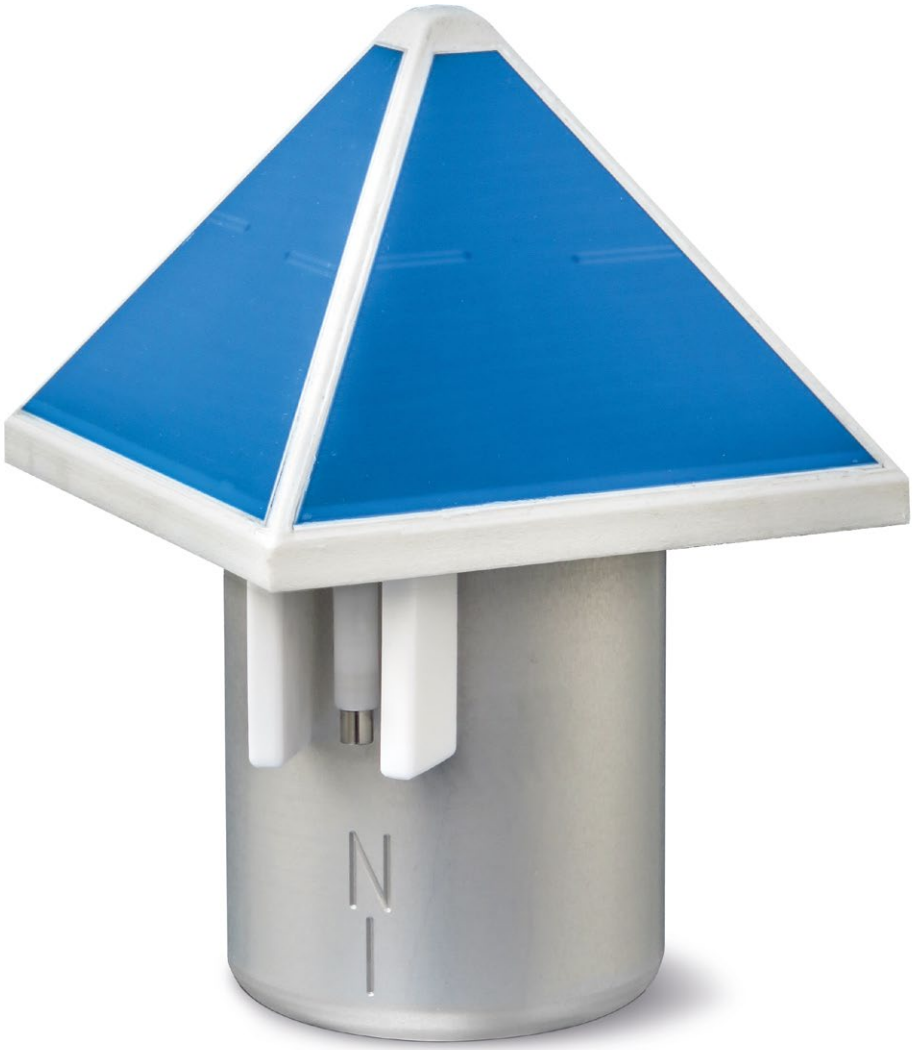


The next level in precipitation measurement.

Fast and reliable preparation of critical precipitation data, e.g. for:

- Transport (airports, roads, ports)
- Meteorology
- Renewable energies

THE WORLD OF WEATHER DATA

PRECIPITATION ANALYZER

The PRECIPITATION ANALYZER is a compact precipitation measurement device designed to detect supercooled liquid precipitation. The term "supercooled" describes liquid precipitation that exhibits a temperature of less than 0 °C before reaching the ground. Supercooled precipitation is formed when liquid precipitation falls through a layer of air close to the ground that itself has a temperature below 0 °C. If the precipitation does not crystallize at this point, but instead cools down to below 0 °C without changing state, we call it supercooled precipitation.

The following types of precipitation are measured:

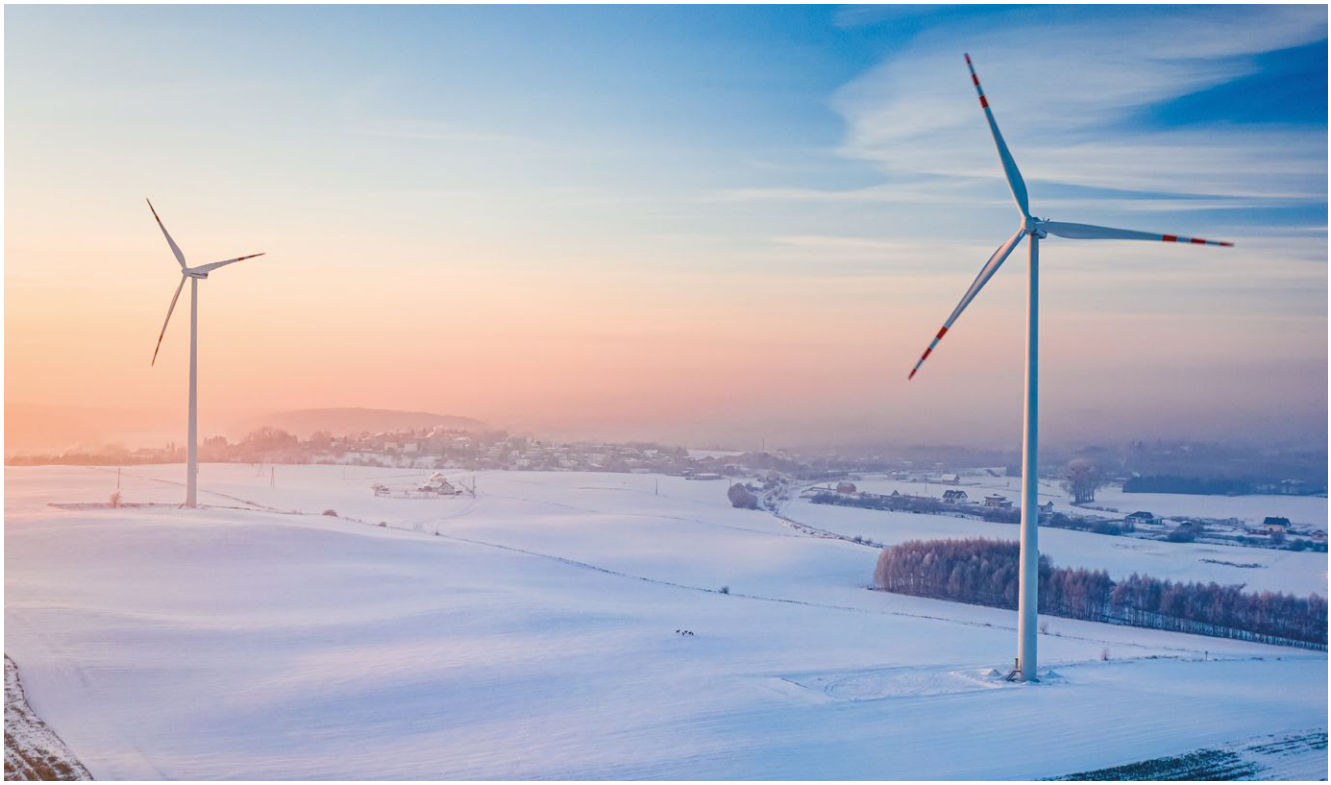
- Freezing fog (FZFG)
- Freezing drizzle (FZDZ)
- Freezing rain (FZRA)
- Supercooled water on the sensor
- Hail
- Ice
- Drizzle
- Rain
- Sleet
- Snow
- Dew
- Hoar frost

Supercooled precipitation can freeze very quickly when it meets a surface, forming what is commonly known as black ice. Supercooled precipitation is therefore a particular concern for street, air and shipping traffic. Since supercooled precipitation covers entire regions, there is also a risk of infrastructure, such as power lines and masts, as well as shrubs or trees collapsing or breaking when encased by layers of ice.

The PRECIPITATION ANALYZER reliably detects supercooled precipitation so that the resultant freezing conditions can be accurately assessed. Supercooled precipitation occurs in the form of freezing fog, freezing drizzle, and freezing rain.

The PRECIPITATION ANALYZER detects all three types of supercooled precipitation. What's more, the sensor can detect and distinguish between non-supercooled liquid precipitation (fog, drizzle, rain), solid-liquid mixed precipitation (sleet, snow), and dew and hoar frost. It can also be used to determine the intensity of the precipitation.

The PRECIPITATION ANALYZER differs from conventional devices designed to detect freezing conditions. Up until now, devices aim to detect a layer of ice, and are therefore also known as ice detectors. The PRECIPITATION ANALYZER, by contrast, also detects supercooled precipitation that does not initially freeze over, but rather lies on the surface in a supercooled liquid state and then suddenly freezes at a later stage.



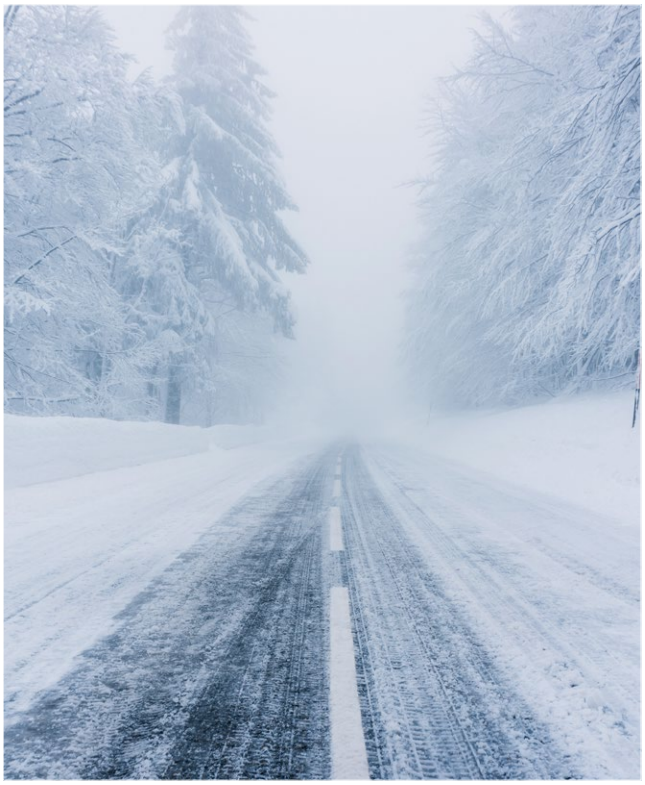
The PRECIPITATION ANALYZER is primarily used in the following areas of application:

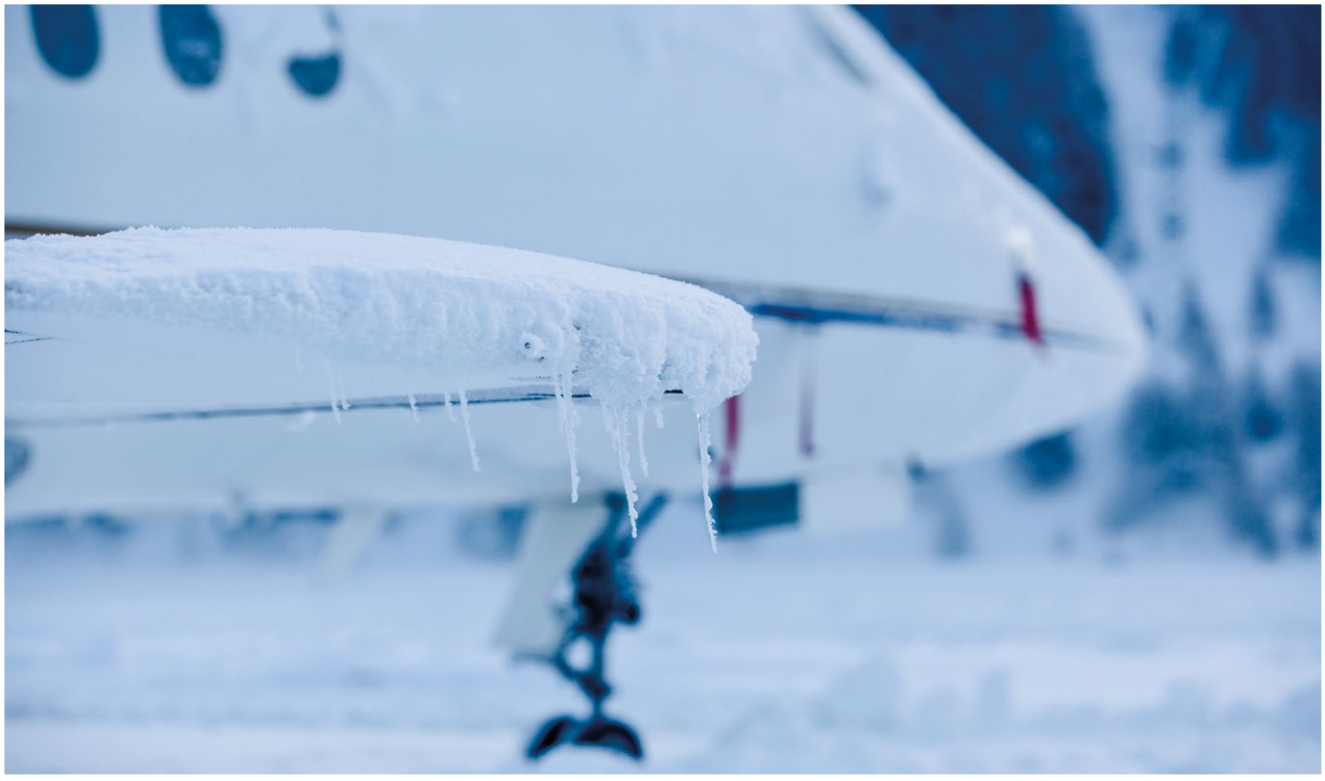
- Transport (airports, roads, ports)
- Meteorology
- Renewable energies

The device has a digital interface comprising an RS485 interface in half-duplex mode. Combined with the ID-based communication, this interface enables the sensor to be operated in a bus.

The PRECIPITATION ANALYZER has four sensor surfaces. When these become wet, their electrical capacity changes, indicating precipitation is detected and from which the precipitation intensity is calculated. Furthermore, the device uses a calorimetric measuring method, whereby the heat released through crystallization is measured and evaluated as characteristic temperature increase. The capacity of the device is also calculated at multiple frequencies, enabling a distinction to be made between solid and liquid wetting on the device.

Please contact our sales team to request detailed information for your projects.





PRECIPITATION ANALYZER
TECHNICAL DATA

Order no.: 5.4107.00.100

Detecting crystallizing and non-crystallizing supercooled precipitation		
Measuring range	Yes/no	
Minimal intensity	≥ 0.4 mm/h	
Time until precipitation signal	≥ 5 mins from minimal intensity	
Accuracy (supercooled precipitation detection)	≥ 95% of results (Reference relative to DWD weather watcher)	
Type of precipitation / measured quantities		
Liquid precipitation	Intensity in mm / h	
Freezing drizzle (FZDZ)	Yes / no	Combined quality indices for crystallizing and non crystallizing freezing drizzle
Freezing rain (FZRA)	Yes / no	Combined quality index
Freezing fog (FZFG)	Yes / no	Combined quality index
Crystallization (type 3)	Yes / no	Quality index
Supercooled water*	Yes / no	
Ice**	Yes / no	
Hail	Yes / no	
Non-supercooled liquid precipitation: Fog and drizzle	Yes / no	
Mixed precipitation: Sleet and snow	Yes / no	
Dew	Yes / no	
Hoar frost	Yes / no	
Precipitation	Yes / no	Quality index
Sensor contamination	Yes / no	
Serial interface		
Type	RS485	
Operating mode	Half-duplex mode	
Data format	8N1	

Baud rate	4800 to 230400 baud, Bootloader 9600 baud
Data format	ASCII (command interpreter: THIES)
General	
Operating voltage	11 ... 28 V DC
Current consumption	‹ 100 mA (max. 800 mA, with heating on)
Electrical switching contact	24 V AC/DC max. 2 A
Heating	4 x isolated heating controls for ceramic surfaces
Permitted ambient conditions	-30 ... +50 °C 0 ... 100% rel. humidity, including dew
Installation	Installation on mast external diameter ≤ 34 mm internal diameter ≥ 22 mm Note: Can be installed on other mast sizes using a separate adapter (optional extra).
Casing	
Material	Anodized aluminum / plastic / ceramic
Dimensions	Width 108 mm, height 112 mm, diameter 50 mm
Weight	approx. 0.25 kg
Protection class	IP 67
Connection type	8-pin plug connection for shielded line in the shaft

* Refers to non-crystallized water on the sensor, despite the temperature being below 0 °C. Surrounding surfaces may be crystallized already.

** Ice is detected on the sensor. The conditions of surrounding surfaces may differ, despite the expectation of a close correlation.

Accessories / spare parts (optional)

Order no.	Description	Version
510597	Cable Assembled connection cable for PRECIPITATION ANALYZER. Version: Cable with plug connector to connect to device and bare ends to connect at other end.	Length: 4 m
507550	Female connector/male connector	8-pin, EMC, with knurl

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