



IDS - Ice Detection System-20

Precise and reliable ice detection with contact free technology

Ice Detection Sensor to measure icing and freezing rain for various fields of application. The IDS-20 system is setting the standard for the next generation of ice detection systems. The IDS-20 is the first non-contact ice detection system which is able to measure from 0,01mm up to 80mm of ice thickness. The IDS-20 system is an extremely flexible system to cope with different situations and applications. The system contains of a central controller and three different sensors. The sensors have different measurement ranges and applications. There are two cube sensors for icing measurement and icing detection for two different measurement ranges. Therefore, the IDS-Cube 1 sensor has a measurement range of 0,01mm until 1mm and is for the recognition of extremely fine ice layers and icing events. The design of the IDS-Cube 5 sensor is to recognize ice layers and icing events from 0,1 mm up to 5 mm. Additionally there is a rod sensor which is designed to measure the total ice thickness thru out the season or year. The measuring range of the IDS-Rod sensor is from 1mm up to 80mm. The IDS-system design is made to be used with one sensor or up to max two IDS-sensors at the same time.

FEATURES AND ADVANTAGES

- Continuous and non-contact measurement
- Detection of icing and freezing rain
- Distinction between ice and water Distinction between ice and water
- Ice detection 0.01 mm to 80 mm ice thickness Ice detection 0.01 mm to 80 mm ice thickness
- Different sensor versions according to specific applications - cube and rod sensors
- Very reliable measurement results due to plausibility check
- Suitable for existing and new systems, easy and quick installation
- Maintenance-free operation, low power consumption

PARAMETERS MEASURED

- Icing
- Rain
- Dew point, frost point
- Air temperature and humidity
- Analysis Quantity and duration of icing events
- Recognition of freezing rain

FIELDS OF APPLICATION

The IDS-20 system is an extremely flexible system to cope with different situations and applications like weather forecast, road forecast, condition monitoring in the wind power sector, cableway, railway, tram and traffic control. The system contains of a central controller and three different sensors. The sensors have different measurement ranges and applications. There are two cube sensors for icing measurement and icing detection for two different measurement ranges.

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Due to the development of the three different sensors the system had to be develop to the highest extend of flexibility. With this flexibility and the different sensors, the developers enabled the system to combine the three different sensors with each other and so the system got very customizable and can now be used in many different applications.

IMPLEMENTATION

There are four different versions already available. Each version is designed to work for different applications. There is a version for the measurement of total ice thickness thru out the whole season or year. This bundle contains a single sensor application with just an IDS-Rod 80 sensor. The target with this installation is monitoring and measuring the total ice thickness. Possible applications are ice monitoring on constructions, masts, towers, antennas, landlines and power lines.

The second single sensor application is the IDS-20 system with the IDS-Cube 5 sensor. This bundle is designed to measure thin ice layers and icing events between 0,1mm up to 5mm of ice thickness. Here the target is to measure the icing events and the thin ice layers. With the internal software control and adjustment possibilities it is easy to set the sensor to exactly the range you interested in measuring. The internal heating system helps to deice the sensor as soon as a customer-defined threshold is reached. Possible applications is ice monitoring in wind power industry.

The first double sensor setup is the combination of both above sensors. In this bundle, we combine the total ice thickness measurement IDS-Rod 80 and the icing measurement of the IDS-Cube 5 into one system. Due to the combination of the two technologies and the advantages of these to sensors, the system can measure the thin ice layers and icing events and in parallel the IDS-Rod 80 sensor measures and monitors the total ice thickness at the same spot.

The second double sensor application is for applications where the ice detection of extremely thin layers or amounts of ice important is. In this bundle, the IDS-System is using two of the IDS-Cube 1 sensors to measure and recognize ice layers starting at 0,01mm. For continues data and uninterrupted time series of data the IDS-Cube 1 sensors operate in an alternating mode. That means if one sensor is heating and deicing the second one is still measuring. In applications where uninterrupted time series of data is a requirement, this bundle is the solution. Possible applications are ice monitoring in aviation.

TECHNICAL DETAILS

- Measurement principle complex impedance measurement
- Temperature measurement range -40°C to +60°C (-40°F to +140°F), resolution 0,1°C
- Humidity measurement range 0% to 100%, resolution 0,5%
- Frost point measurement range -20°C to +20°C, resolution 0,1°C
- Dew point measurement range -20°C to +20°C, resolution 0,1°C
- Digital interface RS-485 various ASCII formats or MODBUS, SDI-12
- Relay interface three relay-outputs (rain, ice, hart-beat)
- Power supply 10 ... 28VDC
- Power consumption max 50 mA at 12 VDC
- Power supply heating 24VAC/VDC
- Power consumption heating max. 7A at 24VAC/DC
- Total energy consumption xx Ah/d (1 min intervall)
- Ambient temperature -40 °C to +60 °C (-40°F to +140°F)
- Protection class IP 66
- Bracket for 61 mm (2 inch) mast diameter

IDS-CUBE 1

- Range 0,01mm - 1mm ice thikness
- Material measurement range -40°C to +60°C (-40°F to +140°F), resolution 0,1°C

- Heating separate heating for cube and mounting pole, ceramic sensor plates hermetically sealed and glass surface
- Weight 0,7 Kg
- Length 560mm
- Ambient temperature -40 °C to +60 °C (-40°F to +140°F)

IDS-CUBE 5

- Range 0,1mm - 5mm ice thickness
- Material Aluminium cube and mounting pole, ceramic sensor plates hermetically sealed and glass surface
- Heating separate heating for cube and mounting pole
- Weight 0,7 Kg
- Length 560mm
- Ambient temperature -40 °C to +60 °C (-40°F to +140°F)

IDS-ROD 80

- Range 1mm - 80mm ice thickness
- Material Aluminium
- Heating not available
- Weight 2,3 Kg
- Length 580mm
- Ambient temperature -40 °C to +60 °C (-40°F to +140°F)