

## Vaisala Remote Road Surface State Sensor DSC111



### Features and Benefits

- Remote surface state sensing
- Spectroscopic measuring principle, individually identifying the presence of:
  - Water
  - Ice
  - Slush
  - Snow or Frost
- Unique measurement of grip
- Cost effective visibility measurement
- Accurate measurement even with intense traffic
- Eye-safe laser technology
- Easy installation and service
- Low maintenance costs
- Weather-proof, durable design
- Easy integration with Vaisala ROSA Road Weather Station, or can operate as a stand-alone solution with solar/gsm options

The unique DSC111 sensor eliminates the service disruption, which was previously associated with the installation of a road weather station. Remote installation means that there is no requirement to slot-cut the surface or close the road. The sensor may be installed in a remote location on a pole adjacent to the road, or as an addition to the Vaisala ROSA Road Weather Station.

The spectroscopic measuring principle enables accurate measurement of the amounts of water, ice, and snow. Water and ice are measured independently of each other, enabling DSC111 to accurately report the surface state.

DSC111 provides an accurate measure of the presence of ice crystals well before they cause the road to become slippery. The Winter Service engineer is therefore able to carefully monitor all of the weather elements which create a hazardous driving surface

in order to take the appropriate remedial action. As an additional feature of DSC111, the visibility measurement offers a useful, compact, and extremely cost-effective way to measure the Meteorological Optical Range (MOR). It extends the capabilities of DSC111 to detect low visibility conditions - without any external hardware.

Additional sensors can be directly connected to DSC111 to form a versatile stand-alone weather station.

Measurements include:

- surface and air temperature
- surface depth temperature
- relative humidity
- present weather
- visibility
- wind speed and direction
- atmospheric pressure

DSC111 has proven its capabilities during two years of intensive field testing in collaboration with Vaisala customers. DSC111 is now operational at hundreds of sites throughout the world.

# Technical data

## Electrical

Power supply	9 ...30 VDC
Power consumption for operation	1.2 W above -10°C max 1.9 W below -10°C
Power consumption for lens heaters	0 ...4 W user adjustable
Interfaces	RS-485 isolated, RS-232
Connectors	3 x M12 (5 pins)
1:	RS-485 and power, male
2:	RS-232, male
3:	RS-485 and power, female
	Extension connector for the DST111
Cables	3 ... 150 m One end without connector 0,6 m extension cable to the DST111

## Environmental

Sensor support	DST111, PWD10/12/20/22, WXT510, WMT50, analog sensors via DRA411
Operating temperature	-40 ...+60 °C
Operating humidity	0 ... 100 % RH
CE Compliant	IEC(EN) 61326-1, For use in industrial locations
Safety	Eye-safe, Laser class 1
Vibration	IEC 60068-2-6, level 2g

## Installation

Measuring distance when the visibility measurement is disabled	2 ... 15 m
Measuring distance when the visibility measurement is enabled	8 ... 15 m
Measuring area	Diam. 20 cm at 10 m
Installation angle from the horizontal line	30 ... 85°
Fits onto the standard sensor arm DM32ARM with cross-section of 40 mm x 40 mm	

## Measuring Range

Layer thickness	0.1 µC
Water	0.00 ...2 mm
Ice	0.00 ...2 mm
Snow	0.00 ... 10 mm
Resolution	0.01 mm
Level of Grip	0.01 ... 1.00
Resolution	0.01 units
Surface states	Dry, Moist, Wet, Snow/ Frost, Ice, Slush
Visibility (optional)	
Measurement range	(MOR) 10 ... 2000 m
Resolution	1 m
Accuracy (fog and snowfall)	±20 % (average)
Response time	60 s

## Mechanical

Dimensions (mm)	448 x 210 x 133
Weight	3.7 kg



*DST111 Remote Road Surface Temperature presented with the DSC111 Remote Road Surface State Sensor.*

**VAISALA**

For more information, visit [www.vaisala.com](http://www.vaisala.com) or contact us at [sales@vaisala.com](mailto:sales@vaisala.com)

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