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Mobile Detector MD30 Datasheet

Vaisala Mobile Detector MD30 is a mobile road sensor for winter maintenance operations. The compact MD30 measures all key surface weather parameters and is suitable for snow plow trucks and other vehicles. MD30 data is targeted to enable more accurate maintenance decision-making and salt usage optimization.

Measurements

- Grip
- Surface state
- Surface layer thickness
- Surface temperature
- Air temperature
- Dew point and frost point
- Relative humidity

Reliable in any weather

To provide a quick response time and high sensitivity in road condition reporting, MD30 uses an improved, fast-measuring version of the proven DSC laser technology. In cases where external heat sources could disturb the temperature measurements, the surface and air temperature sensors can be separated from the MD30 body and placed in the desired locations.

Robust for any vehicle

The rugged design allows MD30 to operate in snow plow trucks and other vehicles. The core is molded to withstand continuous vibration and to prevent water ingress. Further, the hood has a special vented double structure that directs the air flow to protect the window from dirt and splashes.

Easy to use and maintain

MD30 provides simplicity for both use and maintenance. It starts to measure automatically when the vehicle starts, and constantly monitors the sensor status, such as the window contamination. The window is heated to avoid dew and frost formation. The sensor automatically indicates the need to clean the window. When cleaning is needed, the window can be accessed by simply removing the hood by hand, without any tools.

Compact and cost-effective

MD30 provides grip, as well as other key measurements in one package. The cost-effective product allows you to use the full potential of your vehicle fleet as a data collection platform.

Output and visualization

MD30 outputs a binary data message over an RS-232 interface, which can also be turned wireless with an external Bluetooth module.

MD30 data can be collected and locally visualized with MD30 mobile app. The app can also be set to record video or take photos.

The powerful combination of sensor data, images, and video can be visualized in Vaisala Wx Horizon or Vaisala RoadAI online maps.

In Wx Horizon, MD30 data can be used to improve road weather forecasts and it can be combined with fixed weather station data in the same map.

Technical Data

Measurement specifications

Grip and surface state

Reported level of grip	0.09–0.82
Reported surface states	Dry, moist, wet, snowy, icy, slushy

Surface layer thickness

Water	0–5 mm (0–0.20 in)
Ice	0–2 mm (0–0.08 in)
Snow (water equivalent) [1]	0–1 mm (0–0.04 in)
Accuracy, water and ice [2]	±10 % at 0–2 mm (0–0.08 in)

Surface temperature

Measurement range	−40 ... +60 °C (−40 ...+140 °F)

Air temperature and relative humidity

Humidity range	0–100 %RH
Temperature range	−40 ... +60 °C (−40 ... +140 °F)
Dew point range	−40 ... +60 °C (−40 ... +140 °F)

[1]   1 mm (0.04 in) snow water equivalent corresponds to snow depth of approx. 10 mm (0.39 in).
[2]   According to laboratory measurement method as described in EN 15518-4.

Measurement details

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Measurement interval	40 times/s
Light source	Laser
Layer thickness reporting	3 layers simultaneously (water, ice, snow)
Window dew/frost protection	Heated window
Window contamination reporting	Clean, contaminated, heavily contaminated
Window cleaning access	Hand-removable hood

Operating environment

Operating temperature [1]	−40 ... +60 °C (−40 ... +140 °F)
Storage temperature	−40 ... +60 °C (−40 ... +140 °F)
Operating humidity	0–100 %RH

[1]   In +35 ... 60 °C (+95 ... 140 °F), surface layer thickness measurement performance may be degraded.

Inputs and outputs

Powering	12–32 V DC
Power consumption, maximum	15 W
Protocol	RS-232
Protocol, with optional Bluetooth module	RS-232-to-Bluetooth
Data output	Binary
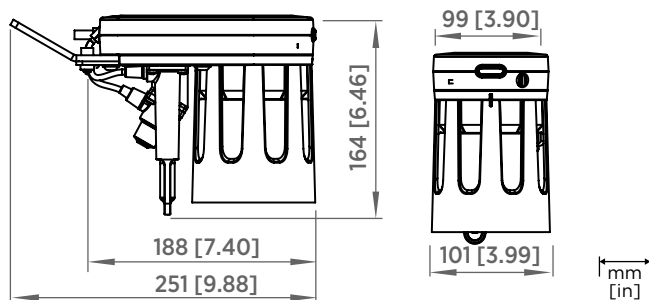
MD30 dimensions

Mechanical specifications

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Sensor structure	Encapsulated and molded
IP rating	IP68
Installation height, mobile sensor	20–110 cm (7.87–43.31 in)
Weight, mobile sensor with bracket	1.8 kg (4.0 lb)
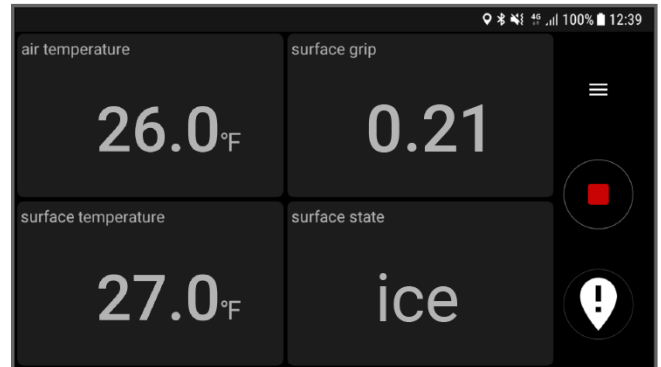
Data visualization on MD30 Mobile app

Compliance

EU directives and regulations	EMC Directive (2014/30/EU)
Electromagnetic compatibility (EMC)	EN 61326-1, industrial environment CISPR 32 / EN 55032, Class B FCC part 15 B, Class B ICES-3 / NMB-3 (Class B)
Eye safety	EN 60825-1:2014 + A11:2021 Class 1 laser product
Compliance marks	CE, China RoHS

Environmental tests

Cold	IEC 60068-2-1
Dry heat	IEC 60068-2-2
Change of temperature	IEC 60068-2-14
Shock	IEC 60068-2-27
Damp heat, cyclic	IEC 60068-2-30
Vibration	IEC 60068-2-64
Corrosion and salt mist	VDA 621-415
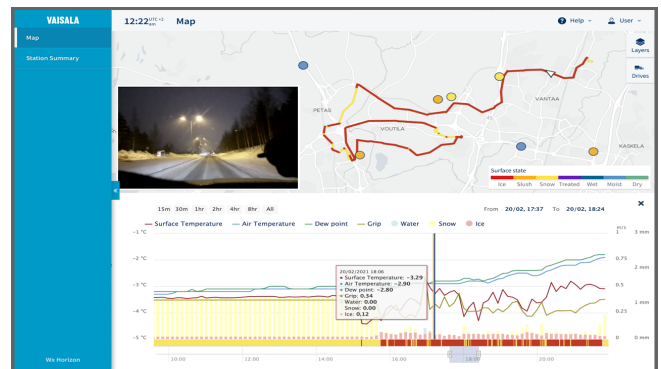
Data visualization on Vaisala Wx Horizon online map

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