VAISALA

Condition Patrol DSP310

Typical vehicle installation

Vaisala Condition Patrol DSP310 offers a unique solution for road weather maintenance professionals.

Observations

- Road condition (Dry, Moist, Wet, Snow, Ice)
- Surface temperature
- Grip (slipperiness)
- Dew point temperature
- Air temperature
- Humidity
- Layer thicknesses

DSP310 uses the most advanced technology to provide decision-makers with a complete mobile weather solution to monitor their road network. DSP310 uses sensors that have been trusted for many years by maintenance operators around the world. The system collects the data and displays it on a smart phone on the dashboard of the vehicle. The data can be transferred over the mobile network to Vaisala road weather management software to be viewed at the office.

Proven Sensor Technology

Measurements from DSP310 begin with Vaisala Remote Road Surface State Sensor DSC111, which consists of a spectroscope that scans the road surface to detect water and ice crystals. Pavement temperature measurements are taken from a Vaisala Surface Patrol DSP101 infrared sensor mounted with a view of the road. Air temperature and atmospheric moisture readings are collected by Vaisala HUMICAP® Humidity and Temperature Probe HMP155. The three core sensors provide a strong backbone for the product, and they are perfectly suited to operate in the harsh exterior mobile environment.

All the data is collected by an interface unit that resides inside the vehicle. The communication is based on the wireless network within the vehicle and the DSP310 phone application.

Flexible Viewing

DSP310 application data can be viewed on a mobile phone inside the vehicle or, optionally, the data can be transmitted to the Vaisala road weather management software.

Mobile weather data compliments fixed road weather stations or it can be used standalone, filling in gaps between fixed weather station data, and providing data on the go. DSP310 allows you to create a network of mobile weather stations vital to your operations.

DSP310 Interface Unit
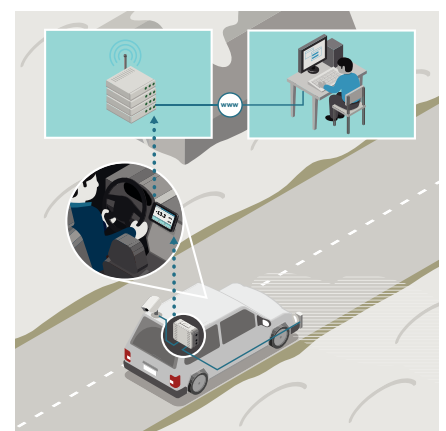
DSP310 data viewing

Technical Data

Measurement Performance

Start-up time	6 min (chemical purge on HMP155)
Sensor Cables, Data/Power	5 m (16 ft 5 in)
Length	PUR
Material temperature	−40 ... +80 °C (−40 ... +176 °F)

Operating Environment

Storage humidity	5 ... 95 %RH, non-condensing
Operating humidity	0 ... +100 %RH
Storage temperature	−40 ... +60 °C (−40 ... +140 °F)
Operating Temperature	
Interface unit	−25 ... +50 °C (−13 ... +122 °F)
Parts outside car	−40 ... +50 °C (−40 ... +122 °F)

Interface Unit Inputs and Outputs

Output voltage (sensor power)	+12 V, ±0.5 V
Output current	5 A (max. operating) 10 A (max. short circuit)
Input voltage	10 ... 33 VDC
Input current	1.5 A (typical with basic system at +12 V) 0.8 A (typical with basic system at +24 V) 10 A (max.)
Power consumption	15 W (typical with basic system) 72 W (typical with 5 A load)
Backup time	180 s (typical with basic system)

Interface Unit Mechanical Specifications

Dimensions	402 × 320 × 167 mm (15.83 × 12.60 × 6.57 in)
Weight	6.6 kg (14.5 lb)
Material	Polycarbonate
Tightness class	IP64
IP rating	IP54

DSP101 Measurement Performance

Accuracy of surface temperature [1]	±0.28 °C at 0 °C (±0.5 °F at +32 °F)
Field calibration	Adjustable ±2.8 °C at 0 °C (±5.0 °F at +32 °F)
Measurement units	°C or °F (user selectable)

1) RF immunity test according to IEC 61000-4-3 at 3 V/m field intensity and 1658 MHz frequency may cause additional deviation of 0.83 °C (1.5 °F)

DSP101 Operating Environment

Operating temperature	−40 ... +71 ºC (−40 ... +160 ºF)
Storage temperature	−40 ... +71 ºC (−40 ... +160 ºF)

DSP101 Mechanical Specifications

Dimensions (H × W × L), display unit	50.8 × 88.9 × 139.7 mm (2.00 × 3.50 × 5.50 in)
Weight, infrared surface temperature sensor	57 g (2.01 oz)
Weight, sensor with cables and connectors	284 g (10.02 oz)
Housing/Optical assembly of infrared surface temperature sensor	Injected molded housing with lens protecting cone
Temperature indicators	User selectable audio and visual temperature indicators
Optics	Precision crystal (germanium lens)
Cable length, both sensors	5.5 m (18 ft) standard
Dual digital meter	High-brightness red LED, showing both ambient air and pavement temperature

DSC111 Measurement Performance

Measurement time interval	3 s
Reported surface states	Dry, Moist, Wet, Snow, Ice, Slush
Layer Thickness	
Water	0 ... 2 mm (0 ... 0.08 in)
Ice	0 ... 2 mm (0 ... 0.08 in)
Snow (water content)	0 ... 1 mm (0 ... 0.04 in)
Resolution	0.01 mm (0.0004 in)

DSC111 Mechanical Specifications

Typical mounting height	1.5 ... 3 m (4 ft 11 in ... 9 ft 10 in)
Typical installation angle from the horizontal line	45°
Level of grip	0.01 ... 1.00

HMP155 Operating Environment

Operating temperature for humidity measurement	−80 ... +60 °C (−112 ... +140 °F)
Storage temperature	−80 ... +60 °C (−112 ... +140 °F)
Operating humidity	0 ... 100 %RH
EMC (industrial environment)	EN/IEC 61326-1, EN 55022

Display

	Specified by manufacturer

CE

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