Marwis: Professional Mobile Weather Data Recording

Complement the stationary monitoring network with dynamic (mobile) data. Automatic optimization of gritting material. Dynamic route optimization for winter maintenance operations. Real time thermal mapping.

The measurement principle (optical spectroscopy): water and ice absorbs certain wave lengths differently. In case there is a water or an ice layer on the road, the spectral characteristics change.

Through these characteristics the road condition, the waterfilm height as well as the ice percentage are determined. Further integrated sensors specify the road surface temperature and the dew point.

The road surface sensors are mounted on vehicles in accordance with the requirements for a road traffic meteorological monitoring network.

MARWIS for the detection of water, ice and snow as well as friction can be installed on vehicles with a distance of 1-2 meters between the measuring instrument and the object of measurement.

Features:
- Road surface conditions such as dry, moist, wet, ice and snow.
- Road surface temperature
- Waterfilm height
- Dew point temperature
- Ice percentage
- Friction
- Rel. humidity above road surface
Marwis
Advantages

When the number of ice particles on the road surface increases, the friction coefficient falls and can thus serve as an important element of decision-making with regard to preventive gritting.

Due to the open interface protocols, MARWIS can be easily integrated into existing winter maintenance monitoring networks. Similarly, MARWIS can communicate directly with the control system on gritting vehicles.

The measurement data output supports the following protocols: UMB binary.

Advantages

- Determined black holes in your weather forecast. Mobile weather sensors help to record reliable measurement data in real time – anywhere, any time. For a better forecast in a mobile world.
- Better optimal amount
  The sensor relays microclimatic measurements in real time and records all relevant environmental measurement data direct to the controller in the gritting vehicle.
- MARWIS converts your vehicle fleets into rapid response weather stations. Every navigation system requires reliable weather data in order to reliably calculate travel time. Away from single point information to specific, route-related weather data.
- MARWIS makes weather networks mobile. The same real time information in the winter maintenance service for both mobile personnel and control center – for operational planning purposes. Optimize routes and avoid unnecessary operations.

In the vehicle, an iPad or iPhone displays the measurement data graphically in real time.
Different types of asphalt
The mobile sensor, which is sealed against dirt in a protective housing, measures 100 times per second and works reliably under extreme conditions.

There are hundreds of different types of asphalt for roads. Whether low noise asphalt, porous asphalt, mastic asphalt or concrete, MARWIS automatically adjusts the recording of the conditions to the surface structure.

Specifications
The specifications for mobile measurements are completely different to those for stationary sensors:

- Vibration of the vehicle must not distort the measured value
- Even on extremely dirty roads, the sensor must provide maintenance-free, reliable operation while driving
- The sensor must be removable from the housing, easily and quickly, for cleaning purposes
- The sensor must operate automatically with different surface materials (asphalt, concrete), without special calibration
- Damage and potholes in the road must not cause incorrect measurements (preprocessing of measured value in sensor)
- The sensor data must be transmitted to different interfaces (display and gritting controller) in parallel, both wirelessly (Bluetooth) and by cable (CAN bus)
Marwis Data Summary

DATA SUMMARY

TECHNICAL DATA
• Dimensions H. ca 110mm, W. approx 200mm, D. approx 100mm.
• Weight 1.7 kg

STORAGE CONDITIONS
• Ambient air temperature -40°C … 70°C
• Ambient rel. humidity < 95% rel humidity, non condensing

OPERATING CONDITIONS
• Operating voltage 10 - 28 VDC
• Heating 65W for 24V
• Temperature -40°C … 60°C
• Protection class IP68

DEW POINT TEMPERATURE
• Measurement range -50°C … 60°C
• Accuracy ±1.5°C (temperature 0...35°C)

WATERFILM HEIGHT
• Measurement range 0...6000µm
• Accuracy 0.1 µm

ROAD SURFACE TEMPERATURE
• Principle Pyrometer
• Measurement range -40°C … 70°C
• Accuracy ± 0.8°C@0°C
• Resolution 0.1°C

RELATIVE HUMIDITY ABOVE ROAD SURFACE
• Measurement range 0 … 100% rel.humidity
• Sampling rate 10Hz

FRICTION
• Measurement range 0 … 1 (smooth ... Dry)
• Sampling rate 100Hz

ROAD CONDITIONS
Dry, moist, wet, ice, snow/ice, critical/chemical wet

ACCESSORIES
• Protective housing short (car) with mounting flange
• Kit for magnetic bracket
• Protective housing long (truck) with mounting flange
• iPad Mini
• Data providing per year and MARWIS
• Connection cable 15m, incl. Connector
• Plug connector excluding cable
• Connection cable 5m, incl. Adapter for cigarette lighter

The Observator range is in continuous development and so specifications may be subject to change without prior notice.