IRS31Pro

Intelligent Passive Road / Runway Sensor

The passive road sensor IRS31Pro convinces by its two parthousing design and accurate detection of road surface temperature, water film height, freezing temperature, ice percentage and many more.

- Replaceable sensor / electronics
- Easy maintenance / recalibration
- Low energy consumption (solar operation)
- Radar principle to measure water film

The passive road sensor IRS31Pro is flush-mounted in the road. The two part housing design allows the combined sensor/electronics unit to be removed for maintenance or calibration at any time. The following variables are recorded: road surface temperature, water film height up to 4 mm, freezing temperature for different de-icing materials (NaCl, MgCl, CaCl), road condition (dry/damp/wet/ice or snow, damp with salt, wet with salt), friction (Grip), ice percentage. Optional: 2 additional depth temperatures, e.g. at 5 cm and 30 cm. The measurement data is available for further processing in the form of a standard protocol.

Parameters measured

- Road surface temperature
- Water film height up to 4 mm
- Freezing temperature fordifferent de-icing materials (NaCl, MgCl, CaCl)
- Road condition (dry/damp/wet/ice or snow/moist with salt/wet with salt)
- Friction
- Ice percentage
- 2 additional depth sensors
- Freezing point

Measurement technology

- Conductivity measurement (ice percentage)
- Radar measurement (water film)
- NTC (road surface temperature)

Interfaces

- RS485
- SDI-12
- Analogue outputs

Technical specifications

General

Dimensions	diameter 120 mm, height 50 mm
Detectable road / runway conditions	dry, damp, wet, moist with salt, wet with salt, ice
Weight	approx. 800 g without cable and without external temperature probe
Storage temperature	–40 °C to +70 °C (in packaging)
Rated current	< 200 mA
Interface	• RS-485, • baud rate: 2400 to 38400 bit/s (default: 19200) • SDI-12
Protection type	IP 68
Power supply	9 to 14 V DC, nominal 12 V
Connector	cable 0.5 mm^2
Operating temp.	–40 °C to +80 °C
Operating relative humidity	0 to 100 %RH
Road / runway dampness	dry, damp, wet, damp with salt, wet with salt
Slippery road (runway) conditions	no ice / snow, snow, ice

Road surface temperature & below ground temperature

Principle	NTC
Measuring range	–40 °C to +80 °C
Accuracy	±0.1 °C (–20 °C to +20 °C), else ±0.2 °C
Resolution	0.1 °C

Freezing point

Measuring range	–40 °C to 0 °C
Unit	°C
Accuracy	±0.5 °C (0 to -2.5 °C), else ±20 % of average value (at de-icingagent NaCl)
Resolution	0.1 °C

Water film height

Principle	radar
Measuring range	0 to 4 mm
Unit	mm
Accuracy	0.2 to 3 mm (better than ±30 %)
Resolution	0.01 mm

Friction (Grip) [slippery to dry]

Measuring range	0 to 1

Ice Percentage

Measuring range	0 to 100 %
Unit	%