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

- **Parameters measured**
  Road surface temperature, water film height up to 4mm, freezing temperature for different 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

- **Measurement technology**
  Conductivity measurement (ice percentage), radar measurement (water film), NTC (road surface temp.)

- **Product highlights**
  Two part housing design allows easy maintenance/re-calibration, low energy consumption allows solar operation, radar principle to measure water film

- **Interfaces**
  RS485, SDI-12, analogue outputs

- **Article number**
  8910.U050, 8910.U051, 8910.U052, 8910.U100, 8910.U101, 8910.U102

The passive road sensor IRS31Pro-UMB 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,

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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 (Lufft UMB protocol).

Measuring parameters	
Road Conditions	Dry/moist/wet/moist with salt/wet with salt/ice, snow, frost
Sampling rate	10 ... 60 sec

Road surface temperature & below ground temp.	
Principle	NTC
Measuring range	-40 ... 80 °C
Accuracy	±0.1°C (-20 ... 20°C), otherwise ±0.2°C
Resolution	0.02°C (-20...+20), otherwise 0.1

Freezing point	
Measuring range	-40 ... 0 °C
Accuracy	±0.5 °C (0 ... -2.5 °C), else ±20% of average value (with de-icing agent NaCl)
Resolution	0.1

Water film height	
Principle	Radar
Measuring range	0 ... 4000 µm
Accuracy	200 µm <3 mm, otherwise +/-30%
Resolution	10 µm

Friction (Grip)	
Measuring range [slippery...dry]	0 ... 1

Ice Percentage	
Measuring range	0 ... 100 %
Resolution	0,10%

Communication	
Standard interfaces (out)	RS485 or SDI-12, 2 wire , half dublex
Baud rates	1200, 2400, 9600, 19200, 38400
Communication Protocols	UMB, SDI-12
Connector	cable wires 0.5 mm^2

Electrical parameters	
Power supply	9-14 VDC, nominal 12V
Power consumption (typ.)	
Protection class	III (SELV)

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Operating Conditions

Operating temperature	-40 ... 80 °C
Ambient storage temperature	-40 ... 70 °C
Relative humidity (ambient)	0 ... 100 %
Relative humidity storage	0 ... 95 % (non-condensing)
Operating altitude	-500 ... +3000 m

Safety and compliance

Protection level housing	IP68
Electrical Safety	EN 61010-1:2011-07
Electromagnetic Conformity	IEC 61326 – 1:2012
Certifications	CE, FCC
Surface condition standard	EN 15518-3:2011 tests carried out regarding CEN/TS 15518-4:2013

Physical

Dimensions	Ø 120mm, height 50mm
Weight	Approx. 800 g without cable and without external temperature probe