



## Lufft Intelligent Road Sensor IRS31 Pro-UMB, 328 ft Supply Cable, 2 Temperature Depth Sensors

**Product #:** 8910.U102  
**USD Price:** Contact Hach

The passive intelligent 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, 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 are available for further processing in the form of a standard protocol (Lufft UMB protocol).

### Invasive precise point measurement of the road condition

Invasive sensors embedded in the road allows all time measurements of water film height, road surface and depth temperature and road condition even at heavy traffic conditions.

### Maintenance, calibration and replaceability

Sensor consists of two parts: replaceable sensor head with electronics and fixed mounted socket.

### Power consumption

Low energy consumption allows solar operation.

### Invasive technology allows

Permanent usage on runways where non-invasive sensors cannot be used.

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## Specifications

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| *Parameters Measured: | 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/moist with salt/wet with salt)                               |
|                       | Friction  |
|                       | Ice Percentage  |
|                       | Depth (2 additional depth sensors)  |
| Accuracy:             | Road surface temperature: $\pm 0.2$ °F (-4 - +68 °F), else $\pm 0.4$ °F                               |
|                       | Freezing point: $\pm 1$ °F (32 - +27.5 °F), else $\pm 20$ % of average value (at de-icing agent NaCl) |
|                       | Water film height: 0.2 mm - 3 mm: better than $\pm 30$ %  |
| Cable Connection:     | Open wires 0.5 mm <sup>2</sup>  |

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| Cable Length:                          | 328 ft (100 m)  |
| Communication:                         | SDI-12, RS485-UMB   |
| Connector (text):                      | Cable 0.5 mm <sup>2</sup>   |
| Cooling Sensor:                        | N.A.  |
| Detectable road conditions:            | Dry/moist/wet/moist with salt/wet with salt/ice                           |
| Dimensions:                            | Ø 4.72441 in, H 1.97 in (Ø 120 mm, H 50 mm)                               |
| Height above Absolute Altitude:        | 9843 ft (3000 m)  |
| Interface:                             | RS485   |
|  | Baud rate: 2400 - 38400 bit/s (Standard: 19200) or SDI-12                 |
| IP Rating:                             | IP68  |
| Material Enclosures:                   | Salt , UV resistant modified PTFE   |
| Measurement distance:                  | in-situ   |
| Measurement technology:                | Ice percentage: Conductivity measurement                                  |
|  | Water film: Radar measurement   |
|  | Road surface temperature: NTC   |
| Measuring Range:                       | Road surface temperature: -40 - +176 °F                                   |
|  | Freezing point: -40 - +32 °F  |
|  | Water film height: 0 - 0.16 in  |
|  | Friction (Grip) [slippery-dry]: 0 - 1                                     |
|  | Ice Percentage: 0 - 100 %   |
| Number of Depth Sensors:               | 2   |
| Number of Depth Temperature Sensors:   | 2   |
| Number of Related Temperature Sensors: | 2   |
| Operating Humidity:                    | 0 - 100 % RH  |
| Operating Temperature Range:           | -40 - +176 °F   |
| Parameters Measured:                   | 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/moist with salt/wet with salt    |
|  | Friction  |
|  | Ice Percentage  |
|  | Depth: 2 additional depth sensors   |
| Power Supply:                          | 9 - 14 VDC, nominal 12 V  |
| Product highlights:                    | Two part housing design allows easy maintenance/re-calibration            |
|  | Low energy consumption allows solar operation                             |
|  | Radar principle to measure water film                                     |
| Resolution:                            | Road surface temperature: 32.18 °F (0.1 °C)                               |
|  | Freezing point: 32.18 °F (0.1 °C)   |

|                               |   |
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|                               | Water film height: 0.0004 in (0.01 mm)                                      |
| Road dampness:                | Unit: dry/damp/wet/damp with salt/wet with salt                             |
| Slippery road conditions:     | Unit: no ice/snow, snow, ice  |
| Standard storage temperature: | -40 - +158 °F (in packaging)  |
| Weight:                       | Approx. 1.8 lb (800 g) without cable and without external temperature probe |