LUFFT KELIO BŪKLĖS NUSTATYMO PRIETAISAI

Eil. Nr.	Pavadinimas	Aprašymas
1.	 8900.U01 MARWIS-UMB Mobile Sensor Measurement of Dew point temperature, Road surface temperature, Relative humidity above the road surface, Waterfilm height 1m measurement distance to road surface	**Description:** 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. MARWIS delivers the following data: Road surface temperature, waterfilm height, dew point temperature; road conditions: dry, moist, wet, snow, ice; precipitation; friction; rel. humidity above road surface. 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 systems on gritting vehicles. The measurement data output supports the protocol UMB binary. **Supplementary description:** 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. Further information you can find under the MARWIS product website. **Special features:** • 1m measurement distance to road surface Download - product data sheet
2.	 8900.U02 MARWIS-UMB Mobile Sensor Measurement of Dew point temperature, Road surface temperature, Relative humidity above the road surface, Waterfilm height 2m measurement distance to road surface	**Description:** 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. MARWIS delivers the following data: Road surface temperature, waterfilm height, dew point temperature; road conditions: dry, moist, wet, snow, ice; precipitation; friction; rel. humidity above road surface. 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 systems on gritting vehicles. The measurement data output supports the protocol UMB binary. **Supplementary description:** 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. Further information you can find under the MARWIS product website. **Special features:** • 2m measurement distance to road surface Download - product data sheet
3.		**Description:** With 50m cable **Supplementary description:** 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, MgCl, CaCl), road condition (dry/damp/wet/ice or snow/residual salt/freezing rain), friction (Grip), ice percentage. Optional: 2 additional depth temperatures, e.g. at 5 cm and 30 cm. The sensors are addressable and can be networked. The measurement data is available for further processing in the form of a standard protocol (Lufft UMB protocol). **Special features:** • Freezing temperature output already from pre-set dry-damp threshold (e.g. 10µm according to new TLS specification). • Replaceable sensor electronics • Polling via RS485 interface • Low energy consumption (solar operation) • Radar principle to measure water film • Analogue outputs in combination with 8160.UDAC Download - product data sheet
4.	 8910.U051 Intelligent Passive Road Sensor IRS31Pro-UMB Measurement of Road surface temp./belowground temp., Freezing point, Water film height, Friction (Grip) [slippery...dry], Ice Percentage with 50m cable and one depth temperature sensor	**Description:** with 50m cable and one depth temperature sensor **Supplementary description:** 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, MgCl, CaCl), road condition (dry/damp/wet/ice or snow/residual salt/freezing rain), friction (Grip), ice percentage. Optional: 2 additional depth temperatures, e.g. at 5 cm and 30 cm. The sensors are addressable and can be networked. The measurement data is available for further processing in the form of a standard protocol (Lufft UMB protocol). **Special features:** • Freezing temperature output already from pre-set dry-damp threshold (e.g. 10µm according to new TLS specification). • Replaceable sensor electronics • Polling via RS485 interface • Low energy consumption (solar operation) • Radar principle to measure water film • Analogue outputs in combination with 8160.UDAC Download - product data sheet
5.	 8910.U052 Intelligent Passive Road Sensor IRS31Pro-UMB Measurement of Road surface temp./belowground temp., Freezing point, Water film height, Friction (Grip) [slippery...dry], Ice Percentage with 50m cable and two depth temperature sensors	**Description:** with 50m cable and two depth temperature sensors **Supplementary description:** 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, MgCl, CaCl), road condition (dry/damp/wet/ice or snow/residual salt/freezing rain), friction (Grip), ice percentage. Optional: 2 additional depth temperatures, e.g. at 5 cm and 30 cm. The sensors are addressable and can be networked. The measurement data is available for further processing in the form of a standard protocol (Lufft UMB protocol). **Special features:** • Freezing temperature output already from pre-set dry-damp threshold (e.g. 10µm according to new TLS specification). • Replaceable sensor electronics • Polling via RS485 interface • Low energy consumption (solar operation) • Radar principle to measure water film • Analogue outputs in combination with 8160.UDAC Download - product data sheet
6.	 8910.U100 Intelligent Passive Road Sensor IRS31Pro-UMB Measurement of Road surface temperature, Freezing point, Water film height, Friction (Grip) [slippery...dry], Ice Percentage With 100m cable	**Description:** With 100m cable **Supplementary description:** 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, MgCl, CaCl), road condition (dry/damp/wet/ice or snow/residual salt/freezing rain), friction (Grip), ice percentage. Optional: 2 additional depth temperatures, e.g. at 5 cm and 30 cm. The sensors are addressable and can be networked. The measurement data is available for further processing in the form of a standard protocol (Lufft UMB protocol). **Special features:** • Freezing temperature output already from pre-set dry-damp threshold (e.g. 10µm according to new TLS specification). • Replaceable sensor electronics • Polling via RS485 interface • Low energy consumption (solar operation) • Radar principle to measure water film • Analogue outputs in combination with 8160.UDAC Download - product data sheet
7.	 8910.U101 Intelligent Passive Road Sensor IRS31Pro-UMB Measurement of Road surface temp./belowground temp., Freezing point, Water film height, Friction (Grip) [slippery...dry], Ice Percentage with 100m cable and one depth temperature sensor	**Description:** with 100m cable and one depth temperature sensor **Supplementary description:** 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, MgCl, CaCl), road condition (dry/damp/wet/ice or snow/residual salt/freezing rain), friction (Grip), ice percentage. Optional: 2 additional depth temperatures, e.g. at 5 cm and 30 cm. The sensors are addressable and can be networked. The measurement data is available for further processing in the form of a standard protocol (Lufft UMB protocol). **Special features:** • Freezing temperature output already from pre-set dry-damp threshold (e.g. 10µm according to new TLS specification). • Replaceable sensor electronics • Polling via RS485 interface • Low energy consumption (solar operation) • Radar principle to measure water film • Analogue outputs in combination with 8160.UDAC Download - product data sheet
8.	 8910.U102 Intelligent Passive Road Sensor IRS31Pro-UMB Measurement of Road surface temp./belowground temp., Freezing point, Water film height, Friction (Grip) [slippery...dry], Ice Percentage with 100m cable and two depth temperature sensors	**Description:** with 100m cable and two depth temperature sensors **Supplementary description:** 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, MgCl, CaCl), road condition (dry/damp/wet/ice or snow/residual salt/freezing rain), friction (Grip), ice percentage. Optional: 2 additional depth temperatures, e.g. at 5 cm and 30 cm. The sensors are addressable and can be networked. The measurement data is available for further processing in the form of a standard protocol (Lufft UMB protocol). **Special features:** • Freezing temperature output already from pre-set dry-damp threshold (e.g. 10µm according to new TLS specification). • Replaceable sensor electronics • Polling via RS485 interface • Low energy consumption (solar operation) • Radar principle to measure water film • Analogue outputs in combination with 8160.UDAC Download - product data sheet
9.	 8710.U101 Non Invasive Road Sensor NIRS31-UMB Non invasive road sensor with optical principle	**Description:** Non invasive road sensor with optical principle **Supplementary description:** Measurement of surface conditions such as wetness, ice, snow, or frost; measurement of water film height; measurement of ice percentage in water and determination of freeze temperature; measurement of friction level; fully integrated surface temperature measurement (pyrometer) as option; electric isolation of RS485 interface for network with other UMB sensors; easy to mount; firmware-updates via UMB-technology **Special features:** • UMB-Config Tool Software for: Configuration of sensors Onsite calibration Real-time data of sensor • Firmware-Update for UMB sensors • Analogue outputs in combination with 8160.UDAC Download - product data sheet
10.	 8810.U051 Intelligent Active Road Sensor ARS31Pro-UMB Measurement of External road surface temperature, Freezing point The active ARS31Pro-UMB sensor is flush-mounted in the road/runway surface and measures the freezing temperature by means of	**Description:** The active ARS31Pro-UMB sensor is flush-mounted in the road/runway surface and measures the freezing temperature by means of active cooling and heating of the sensor surface. The sensor unit measures the road surface temperature; this surface temperature sensor is integrated into a second housing which is connected with the ARS31Pro-UMB. The distance between the two housings is 50 cm. One additional measurement is carried out in order to find out critical conditions in the next few hours. This early alert message is an extra road surface condition information in addition to the road conditions which are measured „now". The freezing temperature measurement is independent of mixture. The two-section housing design allows the combined sensor/electronics unit to be removed for maintenance purposes at any time, in just a few minutes. In conjunction with the interface converter 8160.USO, the sensor can be built into new and existing UMB networks. The sensors are addressable and can be networked. **Supplementary description:** The active freezing temperature sensor ARS31Pro-UMB from Lufft was proven successfully by the BASt following the valid inspection rules of CEN/TS 15518-2:2013. **Special features:** • Replaceable sensor/electronics • Simulation of critical surface conditions in the every near future • All-in-one sensor including active measurement of freeze point temperature • Mixture-independent measurement • Analog outputs in combination with 8160.UDAC Download - product data sheet
11.	 8610.U050 Active road sensor, ARS31-UMB Measurement of Freezing point	**Description:** With 50m cable **Supplementary description:** The active ARS31 sensor is installed flush with the road/runway surface and calculates the freezing temperature by means of active cooling and heating of the sensor surface. The freezing temperature measurement is independent of mixture. The two-section housing design allows the combined sensor/electronics unit to be removed for maintenance purposes at any time, in just a few minutes. In conjunction with interface converter 8160.USO, the sensor can be built into new and existing UMB networks. Previous sensor IRS31 and active sensor ARS31 can be combined without difficulty, in fact this is recommended. The sensors are addressable and hence can be networked. **Special features:** • Replaceable sensor/electronics • Mixture-independent measurement
12.	 8160.WST1 Passive Road Surface Temperature Sensor WST1 Measurement of Temperature	**Description:** The surface temperature sensor measures runway and highway-temperatures highly precise, both on asphalt and concrete. Works also in conjunction with ARS31pro **Special features:** • Is able to be connected with any WS family sensor of Lufft UMB-Technology. Download - product data sheet
13.	 8160.WST2 Passive Road Surface Temperature Sensor WST2 Measurement of Temperature	**Description:** The surface temperature sensor measures runway and highway-temperatures highly precise, both on asphalt and concrete. Works also in conjunction with ARS31pro **Special features:** • The runway/road surface temperature sensor 8160.WST2 can be used with Lufft UMB-ANACON converter (8160.UANA). Download - product data sheet