Lufft NIRS31-UMB – Non Invasive Measurements Using Optical Principle

Lufft road sensors use optical measuring principles. Without a need to install the embedded sensors, these non-intrusive multi-sensor-systems have integrated microprocessors to identify all road and runway conditions.

The measurement principle (optical / spectroscopical): Water absorbs certain wave lengths differently. If there is a water layer on a runway or a highway, then the spectral characteristics are changed.

Measurement of surface conditions such as wet ice, snow, or frost.

Dependent on the requirements of any traffic-related weather network, there is a need for embedded and/or non-invasive/ non-intrusive sensing equipment. Luffts NIRS31-UMB adds to Lufft series of pavement sensors: an intelligent sensor which is part of the pole or part of bridge surpassing the motorway. Mainly on bridges, which do not allow in all cases embedded sensors, the NIRS31-UMB is an alternative to Luffts IRS31-UMB. Microclimates that need frequent asphalt reconstruction prefer non-invasive technology as well to reduce the maintenance costs.

The typical distance between the surface measurement spot and the sensor is 6 ...15 meters. In addition to the well-known measurements in winter-related road networks
-waterfilm
-surface temperature
-freeze point temperature
the sensor delivers the new information “friction”. Whenever the quantity of ice particles increase on the measured spot, the friction reading will be changed and herewith can be used for on-time treatments. Non-invasive sensors cannot measure depth temperature(s).

Measurement output can be accessed by the following protocolls:
UMB-Binary, SDI-12

Lufft NIRS31-UMB Non Invasive Sensor			Order No.
- 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 - Fully integrated surface temperature measurement (pyrometer) - Electric Isolation of RS485 interface for network with other UMB sensors - Easy to mount - Firmware-Updates via UMB-technology			**8710.UT01**
Technical data	Dimensions	H. approx. 425mm, W. approx. 225mm, D. approx. 285mm	
	Weight	10kg	
Storage-conditions	Ambient air temperature	-40°C ... 70°C	
	Ambient rel. humidity:	< 95% RH, non condensing	
Operating conditions	Operating voltage	24VDC +/- 10% (22 – 30VDC)	
	Power consumption	approx. 40VA	
	Temperature	-40°C...60°C	
	Protection type	IP65	
Layer thickness	Water, Snow, Ice		
	Principle	Optical	
	Measurement range	0...2mm (snow 0 ... 10 mm)	
	Resolution	0.01 mm	
Surface temperature	Principle	Pyrometer	
	Measurement range	-40 ... 70 °C	
	Accuracy	±0.8°C	
	Resolution	0.1 °C	
Surface conditions	Dry, Damp, Wet, Snow, Ice		
Friction	Measurment range 0 ... 1 (critical ... dry)		
Accessories	Surge protection		**8379.USP**
	Power supply 24V/4A		**8366.USV1**
	UMB Interface converter ISOCON-UMB		**8160.UISO**
	Digital-analog-converter DACON8-UMB		**8160.UDAC**
	Connection cable, 15 m incl. connector		**8371.UK015**
	Connection cable, 50 m incl. connector		**8371.UK050**

UMB-Config-Tool Software for:
- Configuration of sensors
- Onsite calibration
- Real-time date of sensor
- Firmware-Update for UMB sensors
- Analoge outputs in combination with 8160.UDAC

For further information about our products p.r.t. www.lufft-messtechnik.de/lufft_e