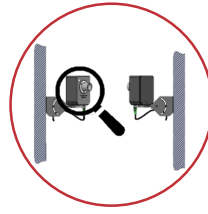


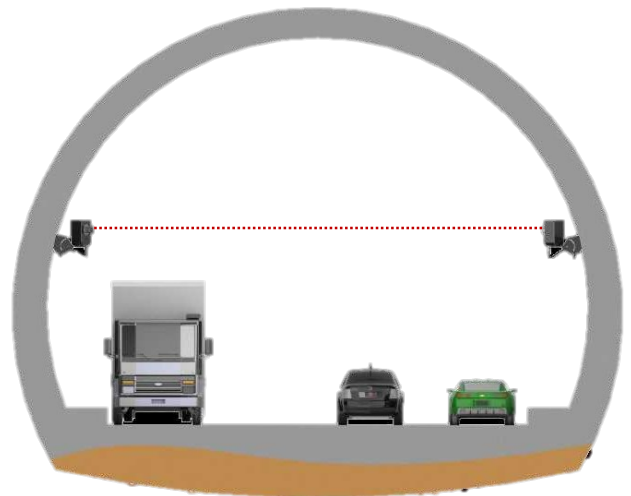
MeteOS131, In-Tunnel Air Speed and Direction Sensor is a cross-bore air flow monitor designed to measure air speed and direction in uni-directional and bi-directional traffic flow tunnels.

MeteOS131 consists of a pair of self-contained ultrasonic transceivers mounted on either side of the tunnel wall that relay intelligent and reliable ultrasonic air speed measurements.



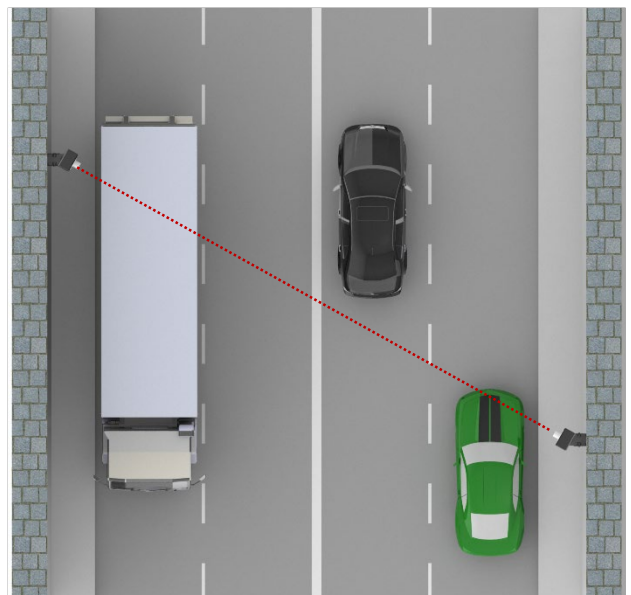
MeteOS131 Specification

- MeteOS131 measures airflow velocity and airflow direction.
- The environmental protection class is rated IP66.
- This can be used as part of the tunnel's ventilation and energy management system.
- It has no moving parts and no regular service requirement other than regular cleaning, making it a very reliable "fit and forget" sensor.
- Front multi-colour LED indicator for system status.
- Long-life time aluminum cast mechanical housing.



Advantages

- Special design for tunnel applications
- The driven air temperature inside the tunnel is provided using the sound velocity obtained by measurement
- Accurate and monitorable measurement
- High mechanical strength
- Low maintenance requirements and costs
- Compact design
- Easy installation and maintenance
- Integrated solution that supports many different communication protocols (all in one) and does not require different ordering options



*Tunnel crosssection and top view for installing MeteOS131

Product Specifications

PERFORMANCE		PHYSICAL	
Measuring Principle	Ultrasonic	Weight	1590g <i>(Pair Without Mounting Brackets)</i>
Measuring Path	5m – 25m	Dimensions	100 (w) x 130 (h) x 105 (d) mm
Air Flow Range	-12m/s... +12m/s	Mounting Height	4 – 5 meters
Resolution	0.1m/s	Mounting Angle	45° Horizontal <i>(30° - 60° Adjustable)</i>
Accuracy	2%	Body Material	Aluminum <i>(Ra19005 Black)</i>
Drived Air Temperature			
Measurement Range	-50°C to +80°C	POWER	
Resolution	0.05°C	DC	24VDC <i>(18...32VDC)</i>
Accuracy	0.5°C	Power Consumption	1.5W
ENVIRONMENTAL			
Temperature		-45°C to +85°C	
Humidity		%0 RH to %98 RH	
Protection Class		IP66 <i>(EN / IEC 60529)</i>	
OUTPUTS			
PORT 1		RS485, UMB Protocol	
		RS485, MODBUS over Serial Line	
		RS485, NMEA-0183 Protocol	
		CANBus (*)	
		4-20mA DC	
		0-10V DC	
PORT 2		Pair Connectivity <i>(Internal use only)</i>	
PORT 3		RS485, Service and Calibration	
		Diagnostic Relay Output	
<i>Alternative output types using the same port can be set in the field using DIP-SWITCHES.</i>			
<i>* Future Options</i>			
ACCESSORIES			
Mounting Bracket		88mm x 100mm, 540g <i>(Each Mounting Bracket)</i>	
Connection Cable with Connector		10-meter cable with connector included <i>(Pur-Halogen-Free Black (Li9y11y) (8 x 0,25mm²)-AWG24) (Two cables for a pair.)</i>	

STANDARDS			
	EN / IEC 60529		EN / IEC 61326-1: 2020
			EN / IEC 55011

MeteOS152, Visibility Distance Sensor measures atmospheric visibility (meteorological optical range) by measuring the amount of light scattered by particles in the air (fog, mist, haze, smoke, dust, rain, and snow).

The integrated solid-state design with a high insulation class performs well in all harsh environmental conditions.

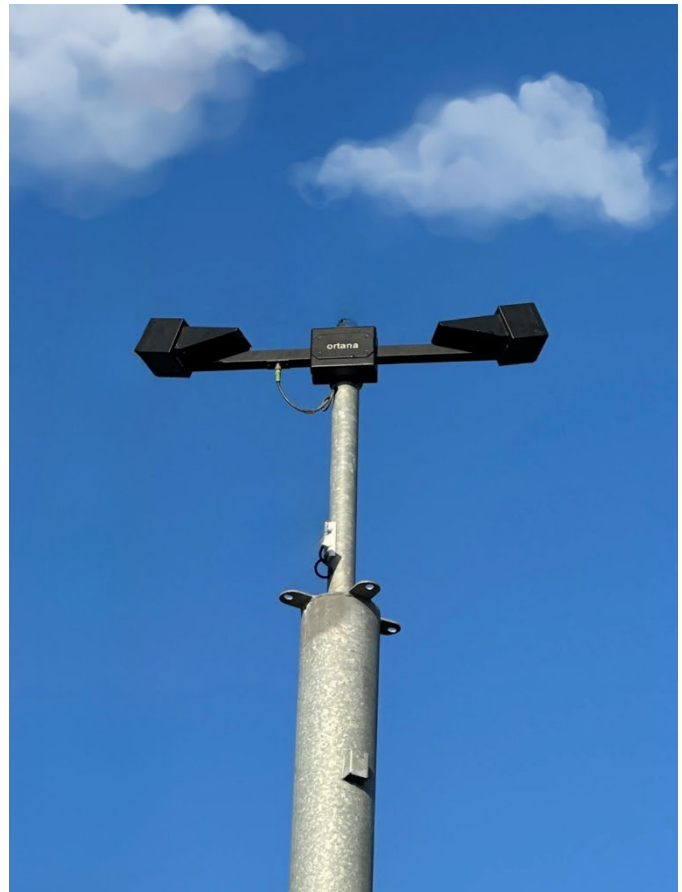


MeteOS152 Specification

- Fully solid-state design.
- Environmental protection class is rated IP66.
- The sensor uses a 21° 'look-down' geometry to reduce optical window contamination.
- The optical windows have continuous duty anti-condensation heaters.
- MeteOS152 measures visibility and/or opacity.
- Aluminum cast mechanical housing.

Advantages

- Special design for transportation applications
- Ideal for collecting long-distance visibility data
- Accurate and monitorable measurement
- High mechanical strength
- Low maintenance requirements and costs
- Compact design
- Easy installation and maintenance
- Integrated solution that supports many different communication protocols (all in one) and does not require different ordering options



Note: The international definition of fog is a visibility of less than 1 km (3,300 ft); mist is a visibility of between 1 km (0.62 mi) and 2 km (1.2 mi) and haze from 2 km (1.2 mi) to 5 km (3.1 mi).

Product Specifications

PERFORMANCE		PHYSICAL	
Visibility Range	0m – 50km	Weight	3650g
Extinction Range (<i>Opacity</i>)	15 – 0.15km ⁻¹	Dimensions	993 (w) x 226 (h) x 208 (d) mm
Accuracy	5 % (0m-1km)	Mounting	60mm or 100mm diameter pipe mount.
	10 % (1km-5km)	Body Material	Aluminum (<i>Ral9005 Black</i>)
	20 % (5km-50km)		
Time Constant	1 min	POWER	
Scatter Angle	42°	DC	24VDC (18-32VDC)
Source	850 nm LED	Power Consumption	24W (<i>Heater On</i>) 2W (<i>Heater Off</i>)

ENVIRONMENTAL	
Temperature	-45°C to +85°C
Humidity	%0 RH to %98 RH
Protection Class	IP66 (<i>EN / IEC 60529</i>)

OUTPUTS	
PORT 1	RS485, UMB Protocol
	RS485, MODBUS over Serial Line
	CANBus (*)
	Diagnostic Relay Output
PORT 2	RS485, NMEA-0183 Protocol
	4-20mA DC
	0-10V DC
	Diagnostic Relay Output
PORT 3	RS485, Service and Calibration
	Diagnostic Relay Output
Alternative output types using the same port can be set in the field using DIP-SWITCHES.	
* Future Option	

ACCESSORIES	
Connection Cable with Connector	10 meter cable with connector included (<i>Pur-Halogen-Free Black (Li9y11y) (8 x 0,25mm²)-AWG24</i>)
Calibration Kit	Optional

STANDARDS			
	EN / IEC 60529		EN / IEC 61010-1
			EN / IEC 61326-1: 2020

MeteOS252 Road Sensor uses optical IR spectral measurement and sub terahertz radar imaging techniques to provide vital road condition information from a distance of up to 8m.

MeteOS252 provides road surface condition, surface temperature, water film height and snow depth information.

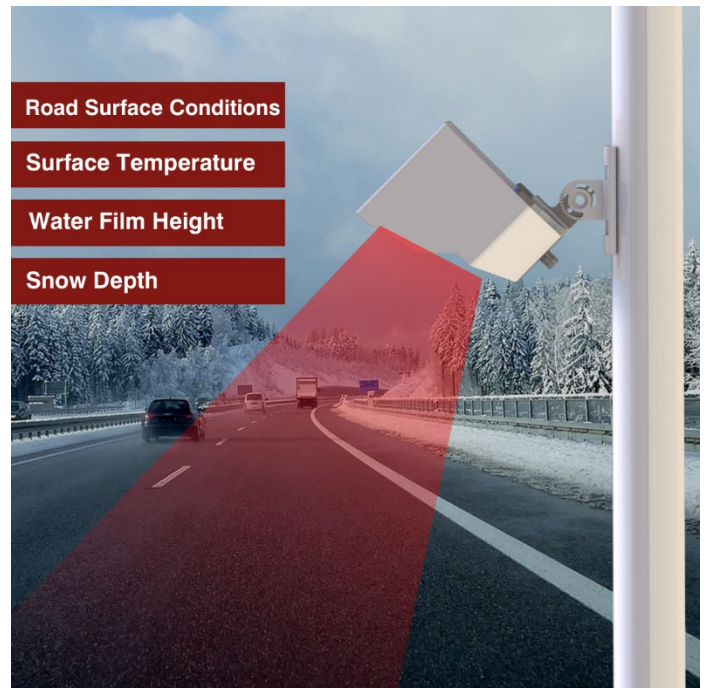
Road sensors in general can be either installed in the road surface (intrusive pavement sensors such as MeteOS202) or above the road mounted on a pole (non-intrusive overhead mounting road sensors). As an innovative non-intrusive overhead mounted road sensor, MeteOS252 provides reliable and detailed road conditions information while maintaining long life time, low-cost maintenance, and sustainable operation.

MeteOS252 Specification

- Detects dry, wet, damp, snow, ice, black ice, and salty water.
- Provides road state and grip based on the amount of water, ice, or snow.
- MeteOS252 works in 45° to 90° 'look-down' geometry.
- The measurement distance between the sensor and the road surface can be within the range from 3m to 8m.
- The optical windows have continuous duty anti-condensation heaters.
- Environmental protection class is rated IP66.

Advantages

- Special design for transportation applications
- Complete solid-state design
- Ideal for collecting road condition data
- Accurate and monitorable measurement
- High mechanical strength
- Low maintenance requirements and costs
- Compact design
- Easy installation and maintenance
- Integrated solution that supports many different communication protocols (all in one) and does not require different ordering options



Product Specifications

PERFORMANCE			
Measurement Principle	Optical IR Spectral Measurement and Sub Terahertz Radar Imaging		
IR Source Safety Class	Class 1		
Diameter of Measuring Area at 8m	1.5m		
Level of Grip	0.09 to 0.82		
	Road Surface Water Thickness	Road Surface Snow Thickness	Surface Temperature
Measurement Range	0 to 2mm	0mm to 1m	-40°C to +100°C
Accuracy	100µm for 0µm to 4000µm	1mm	±1.5°C or ±1.5%

ENVIRONMENTAL		PHYSICAL		POWER	
Temperature	-40°C to +80°C	Weight	1750g	DC	24VD (18-32VDC)
Humidity	%0 RH to %98 RH	Dimensions	135(w)x157(h)x105(d)	Power Consumption	25W (Heater On)
Protection Class	IP66 (EN / IEC 60529)	Body Material	Aluminum		5W (Heater Off)

OUTPUTS	
PORT 1	RS485, UMB Protocol
	RS485, MODBUS over Serial Line
	CANBus (*)
	Diagnostic Relay Output
PORT 2	RS485, NMEA-0183 Protocol
	4-20mA DC
	0-10V DC
	Diagnostic Relay Output
PORT 3	RS485, Service and Calibration
	Diagnostic Relay Output
Alternative output types using the same port can be set in the field using DIP-SWITCHES.	
* Future Option	

ACCESSORIES	
Connection Cable with Connector	10-meter cable with connector included (Pur-Halogen-Free Black (Li9y11y) (8 x 0,25mm²)-AWG24)

STANDARDS		
 EN / IEC 60529	 EN / IEC 61326-1: 2020	 EN / IEC 55011