

VISIBILITY MONITOR FOR TUNNELS

Gas Detection for Life

Vipa Model



Features

- Visibility measurement using the universally accepted single pass light transmission opacity technique
- User selected unit display options of Opacity (%), Extinction Coefficient (k) or Meteorological optical Range (MOR)
- Choice of interface options enabling easy integration into tunnel control system
- IP65 / NEMA 4X rated external enclosure supplied with quick release dust protection tubes and wall brackets
- Supplied complete with PC based utility software for set-up and control of the instrument

BENEFITS

- Designed specifically for monitoring in tunnels
- Rugged design to withstand corrosive atmosphere and regular tunnel washing
- Simple installation and alignment
- No moving parts and low maintenance requirements
- Right or left hanging option to enable compliance with regulations governing tunnel light emissions facing on-coming traffic flow
- Flexible integration options

APPLICATIONS

The VIPA tunnel monitor makes a visible opacity measurement to determine the visibility within the tunnel. These measurements can be used as part of an air quality management system for ventilation control and/or secondary smoke detection within a traffic tunnel, rail tunnel or other confined space.

OPERATION

The VIPA sensors, consisting of a Transmitter (TX) and Receiver (RX), are mounted “facing” each other on the wall or ceiling along the length of the tunnel. The VIPA uses a single pass light transmission technique to measure dust, smoke and particulate concentration present in the atmosphere. The TX emits a visible (green) optical beam which is received by the RX. Any dust or smoke particles present will attenuate the light beam and cause the intensity of the light received by the RX to fall. This reduction in light intensity is used to determine visibility in the tunnel.

SYSTEM COMPONENTS

- VIPA sensor consisting of Transmitter (TX) and Receiver (RX)
- Operator Interface with local or remote mounting configurations
- Wall mounting brackets (right hanging / left hanging option)
- PC based utility software package for set-up and control of the instrument
- Optional LSZH cable
- Optional variable input AC power supply



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VISIBILITY MEASUREMENT PERFORMANCE	
Measuring Principle	Light transmission
Measurement Reading	Transmission Extinction Coefficient (k) Meteorological Optical Range (MOR) Opacity
Measuring Range: Transmission (t) Extinction Coefficient (k) Meteorological Optical Range (MOR) Opacity	0 – 1.000 0 – 1.000 m ⁻¹ 0 – 15,000 m 0 – 100 %
Path Length	6.0 – 20.0 m (10.0 m optimum)
Accuracy	+ / - 2 % as opacity
Temperature Stability	+ / - 2 % as opacity
POWER REQUIREMENTS	
Voltage	+24 VDC
Nominal Current Consumption	400 mA
Power Up Current Consumption	400 mA
INTERFACE OPTIONS	
Serial Comms	RS485 and ModBus RS232 Profibus, DeviceNet, Ethernet (optional interface modules)
Analogue Outputs	4.0 – 20.0 mA (isolated and scalable) 0 – 10 V (isolated and scalable)
Digital Relay Contacts	3 A @ 30 VDC (level alarm and data valid alarm)
PHYSICAL	
Ambient Operating Temperature	-20 - +50 °C (air temperature around the equipment)
Operating Humidity	5 – 100 %
Ingress Protection - TX/RX Heads	IP65 for external use
Materials – TX/RX Heads	Powder coated stainless steel and polycarbonate
Dimensions (incl. dust tube)	500 x 122 x 160 mm (measuring head)
Weight – TX/RX Heads	3.5 kg per head
Weight – Operator Interface	1.0 kg

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