

VISIBILITY MONITOR FOR TUNNELS

Gas Detection for Life

VCom Model



Features

- Proven infrared spectroscopy technique for measurement of carbon monoxide (CO)
- Visibility measurement using proven light transmission opacity technique
- Temperature compensated measurements to ensure stable readings across all tunnel conditions
- 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
- Optional Operator Interface with display and keypad

BENEFITS

- Designed specifically for monitoring in tunnels
- Rugged design to withstand corrosive atmosphere and regular tunnel washing
- Simple installation and alignment
- 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 VCOM tunnel monitor measures the concentration of carbon monoxide (CO) in tunnel atmospheres and 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 or other confined space.

OPERATION

A VCOM sensor consists of a Transmitter (TX) and Receiver (RX) mounted “facing” each other on the wall or ceiling of the tunnel. The sensors are located at various points along the length of the tunnel. The distance between the sensors varies depending on national or regional legislation but typically they are installed 250 – 500 m apart. The TX emits two optical beams, one visible (green) for the visibility measurement and the other infrared (IR) for CO measurement. Both optical beams are received by the RX, where the signals are conditioned and processed on independent internal optical benches.

SYSTEM COMPONENTS

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



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CO MEASUREMENT PERFORMANCE	
Measuring Principle	Infrared Absorption
Measurement Reading	Concentration in ppm
Measuring Range	0 - 300 ppm (user selectable)
Path Length	6.0 m (optimum)
Accuracy	± 2 ppm
Temperature Stability	± 2 ppm (over any 20° C)
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 m (optimum)
Accuracy	± 2 % as opacity
Temperature Stability	± 2 % as opacity
POWER REQUIREMENTS	
Voltage	+24 VDC
Nominal Current Consumption	1.0 A
Power Up Current Consumption	2.0 A
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)	790 x 160 x 230 mm (measuring head)
Weight – TX/RX Heads	8.5 kg per head

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