

VCOM
Combined CO and Visibility
Monitor for Tunnels



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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

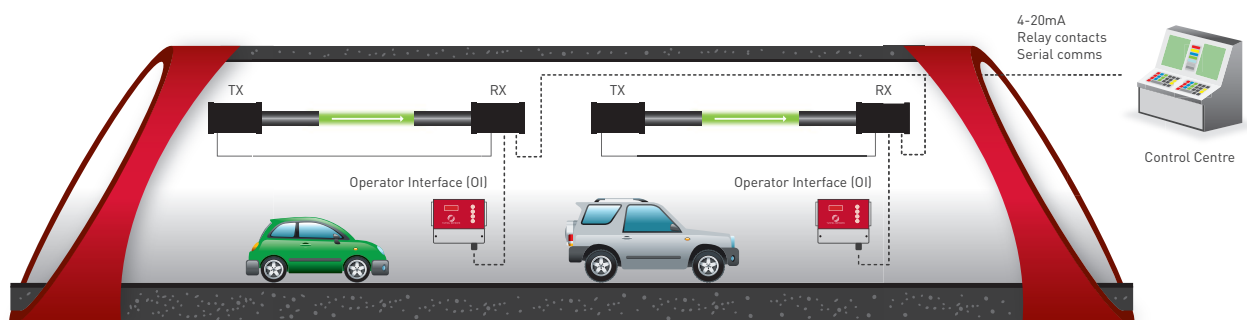
- Designed specifically for monitoring in tunnels
- Rugged design to withstand corrosive atmosphere and regular tunnel washing
- Simple installation and alignment
- Low maintenance requirements
- Right or left hanging option to enable compliance with regulations governing tunnel light emissions facing 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

The 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 at 250 – 500m intervals. 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)
- LSZH cable with connectors for connecting between the RX and TX
- Wall mounting brackets (right hanging or left hanging option)
- 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

TECHNICAL SPECIFICATION

CO MEASUREMENT PERFORMANCE

Parameter	Comment
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

VISIBILITY MEASUREMENT PERFORMANCE

Measuring Principle	Light transmission
Measurement Reading	Transmission Extinction Coefficient (k) Meteorological Optical Range (MOR) Opacity
Measuring Range	
Transmission (t)	0 – 1.000
Extinction Coefficient (k)	0 – 1.000 m ⁻¹
Meteorological Optical Range (MOR)	0 – 15,000 m
Opacity	0 – 100 %
Path Length	6.0 m (optimum)
Accuracy	+ / - 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	ModBus RTU via RS485 External USB
Analogue Outputs	4.0 – 20.0 mA (isolated and scalable)
Digital Relay Contacts	3 A @ 30 Vdc (level alarm and data valid alarm)

PHYSICAL

Ambient Operating Temperature	-20 – +55 °C
Operating Humidity	0 – 100 %
Ingress Protection - TX/RX Heads	IP65 for external use
Materials – TX/RX Heads	Powder coated stainless steel
Dimensions (incl. dust tube)	790 x 160 x 230 mm (each measuring head)
Weight – TX/RX Heads	8.5 kg per head

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