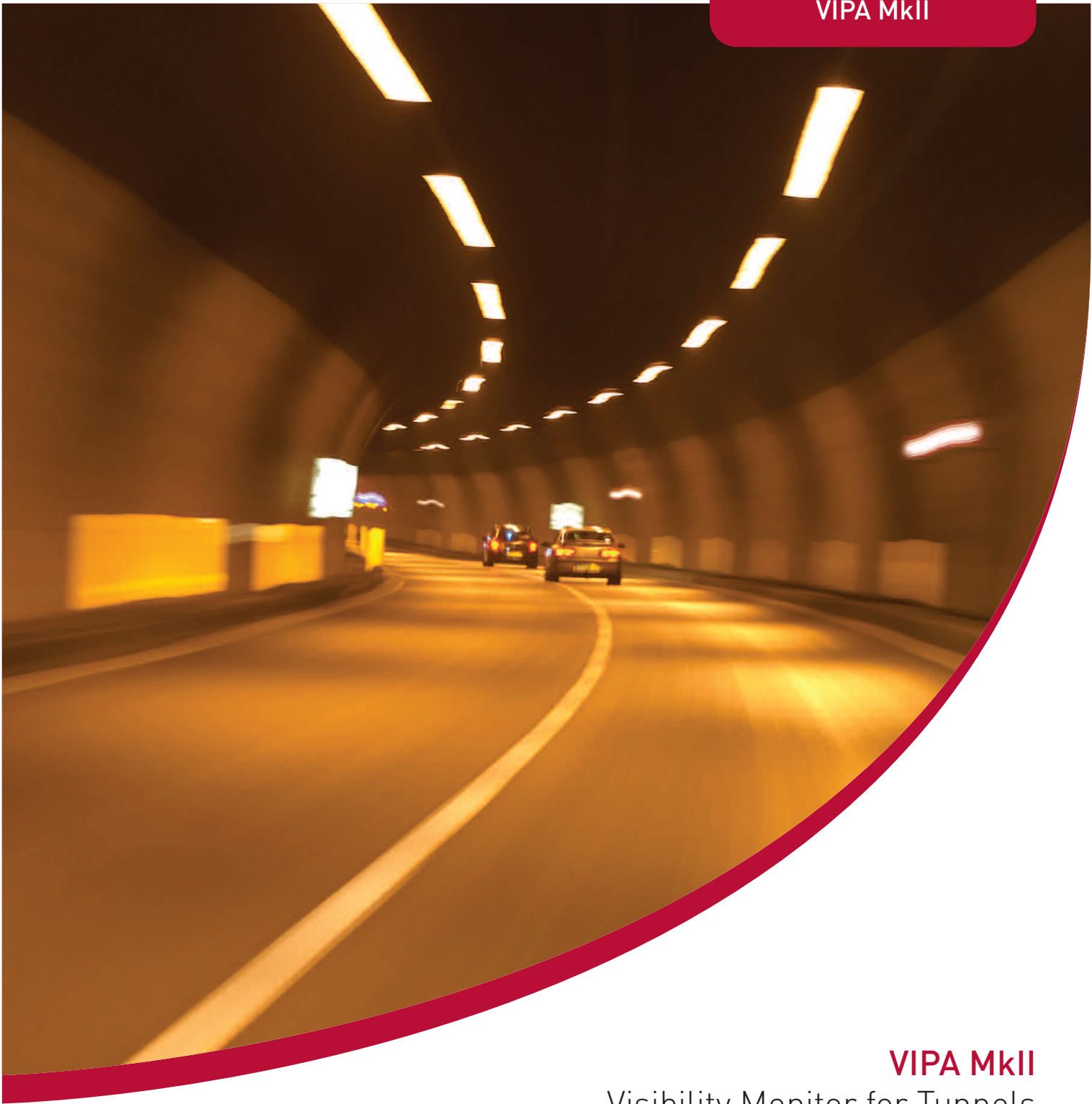# VIPA MkII
Visibility Monitor for Tunnels

TUNNEL SENSORS

VIPA MkII
Visibility Monitor for Tunnels

FEATURES

- Visibility measurement using the widely accepted single pass light transmission opacity technique
- User selected unit display options of Opacity (%), Extinction Coefficient (k), Meteorological Optical Range (MOR) or Transmission
- 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
- Intelligent analyser with optional TSCU operator interface
- Choice of interface options enabling easy integration into tunnel control system

BENEFITS

- Designed specifically for monitoring in tunnels
- Rugged design to withstand corrosive atmosphere and regular tunnel washing
- Plug and socket connection enabling simpler installation
- No moving parts and low maintenance requirements
- Suitable for right or left hanging to enable compliance with regulations governing tunnel light emissions facing on-coming traffic flow

APPLICATIONS

The VIPA MkII 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 or environment.

OPERATION

The VIPA MkII uses the standard single pass light transmission measurement technique, with Transmitter / Receiver arrangement, to measure dust, smoke and particulate present in the tunnel atmosphere. The Transmitter (TX) and Receiver (RX) are mounted "facing" each other on the wall of a tunnel. 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.
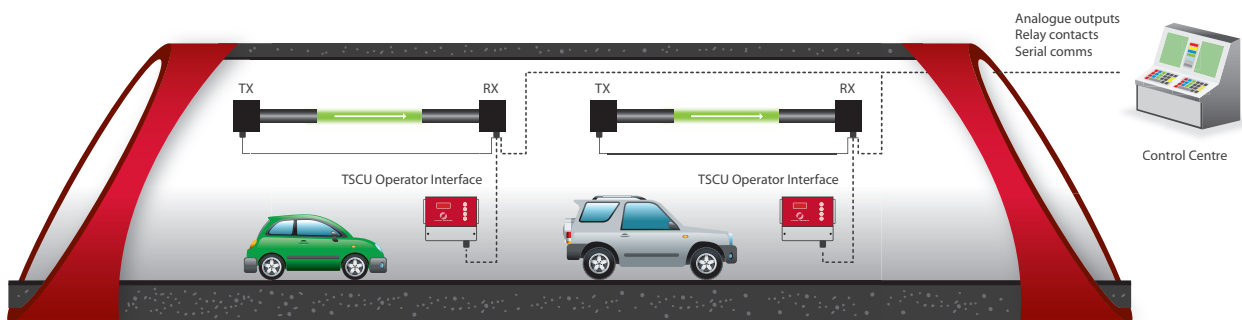
SYSTEM COMPONENTS

- VIPA MkII sensor consisting of Transmitter (TX) and Receiver (RX)
- LSZH cable with connectors for connecting between the RX and TX
- Power-Comms cable for connection to the RX, made to suitable length (required accessory)
- Integrated wall mounting brackets
- PC based utility software package for set-up and control of the instrument
- Optional TSCU operator interface with remote or local mounting configurations
- Optional variable input AC power supply
- Optional reference filters for routine calibration check of the instrument

VISIBILITY MEASUREMENT PERFORMANCE

Parameter	Comment
Measuring Principle	Light transmission
Measurement Reading	Transmission Extinction Coefficient (k) Meteorological Optical Range (MOR) Opacity
Measuring Range Transmission Extinction Coefficient (k) Meteorological Optical Range (MOR) Opacity	 0 – 1.000 0 – 0.1000 m^{-1} 0 – 15,000 m 0 – 100 %
Path Length	5 – 11 m (10 m optimum)
Accuracy	+/- 1 % as opacity

POWER REQUIREMENTS

Voltage	+24 Vdc
Nominal Current Consumption	200 mA
Power Up Current Consumption	200 mA

INTERFACE OPTIONS

Serial Comms	ModBus RTU via RS485 External USB
Analogue Outputs	0 / 2 / 4 – 20 mA (isolated and scalable)
Digital Relay Contacts	3A @ 30 Vdc (level alarms and data valid alarm)

PHYSICAL

Ambient Operating Temperature	-20 – +55 °C
Ambient Operating Humidity	5 – 100 %
Ingress Protection	IP65 for external use
Materials	Powder coated stainless steel
Dimensions (incl. dust tube)	499 x 158 x 197 mm (each measuring head)
Weight TX Head (excl. dust tube) RX Head (excl. dust tube)	 2.3 kg 2.5 kg

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