

DIRECTION MONITOR FOR TUNNELS

Gas Detection for Life

Airflow Model



Features

- Proven ultrasonic transit time measurement technique
- Measurement independent of the temperature, pressure and composition of the tunnel atmosphere
- Single and dual axis models available
- Optional temperature monitoring facility
- Choice of interface options enabling easy integration into tunnel control system
- IP65 / NEMA 4X rated external enclosure
- 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 single point installation on one wall, requiring no alignment and no calibration
- Fixed ultrasonic path length, calibrated when built making it a “fit and forget” monitor
- No moving parts and no regular service requirement
- Flexible integration options

APPLICATIONS

- Traffic tunnels for ventilation control
- Rail tunnels for ventilation control
- Power / cable tunnels
- Mining tunnel applications

OPERATION

The AIRFLOW tunnel monitor is a self contained Transceiver (TRX) designed to be mounted on the tunnel wall. It consists of a square enclosure base, which is populated with four ultrasound transceivers and a reflection “roof”, suspended over the ultrasound transceivers. Ultrasound signals are emitted from the transceivers and are bounced off the “roof”. The reflected signals are then received by the transceivers. The time taken for the ultrasound to travel this reflected path is accurately measured and the velocity (and direction) of air can be calculated.

SYSTEM COMPONENTS

- AIRFLOW sensor
- PC based utility software package for set-up and control of the instrument
- Optional Operator Interface with remote or local mounting configurations
- Optional LSZH cable
- Optional variable input AC power supply



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TECHNICAL SPECIFICATION	
Measuring Principle	Ultrasonic Transit time
Measurement Reading	± 60 m/s (user selectable)
Accuracy	± 2 ppm
Response Time	1 – 100 s (selectable)
POWER REQUIREMENTS	
Voltage	+24 VDC
Nominal Current Consumption	200 mA
Power Up Current Consumption	200 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 – Enclosure	Powder coated stainless steel and polycarbonate
Materials - Transceiver	Flame retardant UL rated polycarbonate
Dimensions (incl. dust tube)	200 x 200 x 160 mm
Weight – TX/RX Heads	3.5 kg per head

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