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A Forbes Marshall Company

Product Brochure

TunnelTech 801 Series

Cross Tunnel Flow Monitor

Monitoring system for continuous evaluation of air flow rate and flow direction in tunnels

ISO 9001:2015
Quality Certification

ISO 14001:2015
Environmental Certification

Monitoring Solutions

TunnelTech

www.codel.co.uk

TunnelTech 801 Series

Tunnel ventilation systems are designed to enable a sufficient throughput of air to be maintained to ensure a safe operating environment for users. These systems consume large amounts of power and need to be operated as efficiently as possible. To do this it is necessary to know the effectiveness of the system in terms of air flow and direction developed within the tunnel. Three decades of development, knowledge and practical experience have been utilised to produce the advanced.

TunnelTech 801 air flow sensor that combines the reliability of ultrasonic technology and delivers superb accuracy and reliability.

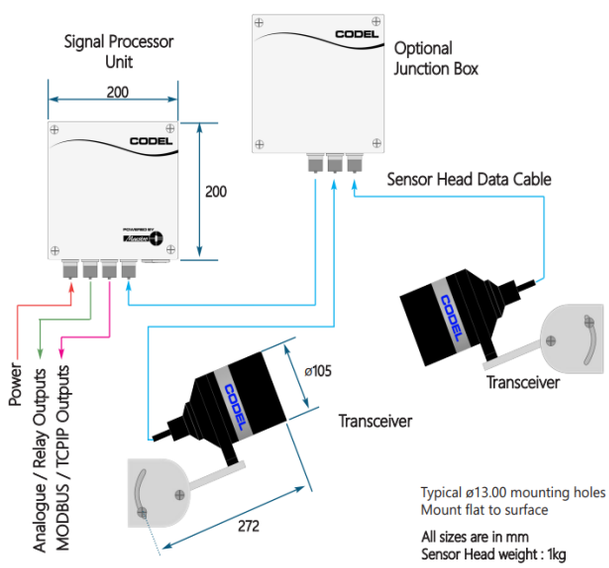
The TunnelTech 801 has been specifically designed for road, rail and civil tunnel and ventilation shaft applications and represents the latest in compact ultrasonic sensor-head design. Ultrasonic time-of flight measurement across any tunnel delivers a highly accurate airflow value and virtually eliminates traditional high-maintenance measurement techniques.

The TunnelTech 801 provides real-time accurate measurements of air velocity and volumetric airflow under demanding environmental conditions. Unlike other measurement devices, the sensor is not affected by temperature, humidity or dust.

The sensor heads pre-process the raw data locally and send velocity values to the transmitter controller digitally thereby ensuring robust performance in high noise and moisture environments.

The two ultrasonic sensor heads are positioned diagonally across the tunnel in which the air flow is to be measured.

Placing the sensors so that they are diagonal to the tunnel in both the horizontal and vertical directions, but unobstructed from the traffic flow will provide the truest measurement of air speed. The measured velocity is a result of the average velocity between the two sensors instead of a single point velocity used by other measurement techniques. This technology enables the most accurate flow measurement in tunnel and ventilation shaft applications.



- Ultrasonic time-of-flight measurement across any tunnel
- Real-time accurate measurements of air velocity and volumetric airflow
- Designed to withstand the harshest of tunnel environments
- Signal output by analogue/relay or RS 485 MODBUS
- Extremely low maintenance requirements
- Class leading Accuracy, Repeatability and Resolution

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Technical Specification

Sensor Unit

Measurements	Airflow velocity, Airflow direction, Temperature
Measuring units	Metric or Imperial units for all parameters
Path Length	Up to 19m
Measurement Technique	Across the tunnel, dual sensor, ultrasonic transit time principle
Measurement Range	-40 to +40 m/sec, range is user configurable
Accuracy	±0.1 m/sec*
Averaging Time	1 second to 8 minutes
Ambient Temerature Range	-40 to +55°C
Construction	Corrosion resistant designed to IP65 / NEMA 4X enclosure (Kynar® 720)
Sensor mounting Brackets	Corrosion resistant 316L brackets, adjustable in all three planes to allow easy alignment

**depending on calibration, installation, flow profile, temperature and measuring distance Signal Processor Unit*

LCD Display	Internal LCD Display, tri-colour backlit, 2 line, 20 character
Power	24 VDC Power Supply or Power Over Ethernet (POE)

Compliances

Protection Class	Designed to IP66/NEMA 4X
IK Code	IK7
EMC	EN61326-1:2006 & EN50270:2006 directive compliant
Low Voltage	73/23/EEC directive compliant

Customer Interface

Analogue Outputs (Optional)	2x 4-20 mA optically isolated output (Airflow Velocity & Temperature), 500Ω maximum load (metric or imperial units)
Relay Outputs	2 x Form C SPDT relay, isolated, 120-240 VAC or 24 VDC, 8 AMP@ 250 VAC, 5 AMP@ 30 VDC (user configured for low/high airflow, sensor blocked, sensor communication error or system error)
Communications Port	RJ45 Port- For local connection to a laptop or PC using any web browser like Internet Explorer, Firefox, etc. Complete system can be configured using webpages and without the equirement of any additional software.
Digital Serial Communications	Modbus RS485 (Optional)
Digital Ethernet Communications	Digital Ethernet Communications

Customer Interface

Sensor Junction Box	Designed to IP65 / NEMA 4X corrosion resistant sensor junction box to allow greater separtion distance from transmitter/ controller to airflow sensors.
316 Ti Brackets	316 Ti available depending on application
Signal Processor Unit (SPU)	316 Ti available depending on application

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