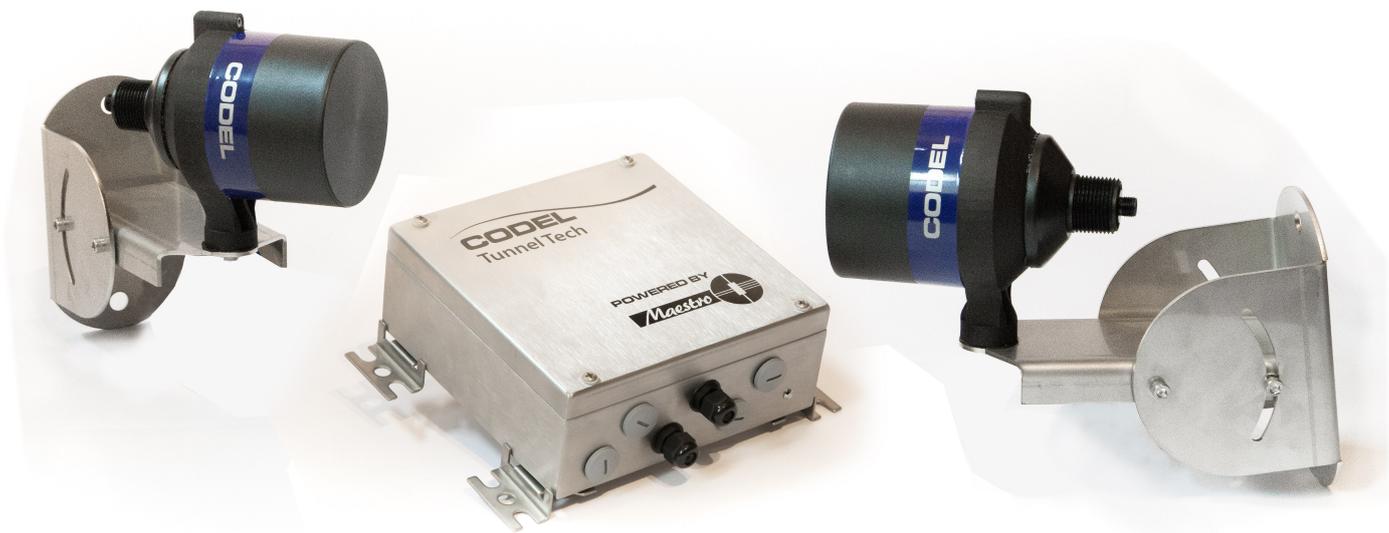


CODEL

Monitoring Solutions

TunnelTech 801 Series - Cross Tunnel Flow Monitor



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

- ✓ Dual sensor, non-contact ultrasonic transit time measurement technology
- ✓ No moving components providing maintenance free operation
- ✓ Reliable and accurate measurement across the tunnel
- ✓ Unaffected by traffic flow and sound reflections
- ✓ Built in laser alignment

ISO 9001:2015

Quality Certification

Monitoring Solutions

TunnelTech

www.codel.co.uk

The TunnelTech 801 Air Flow Monitor (AFM) is CODEL's industry proven tunnel air flow monitor.

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.



Brackets vary depending on application

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

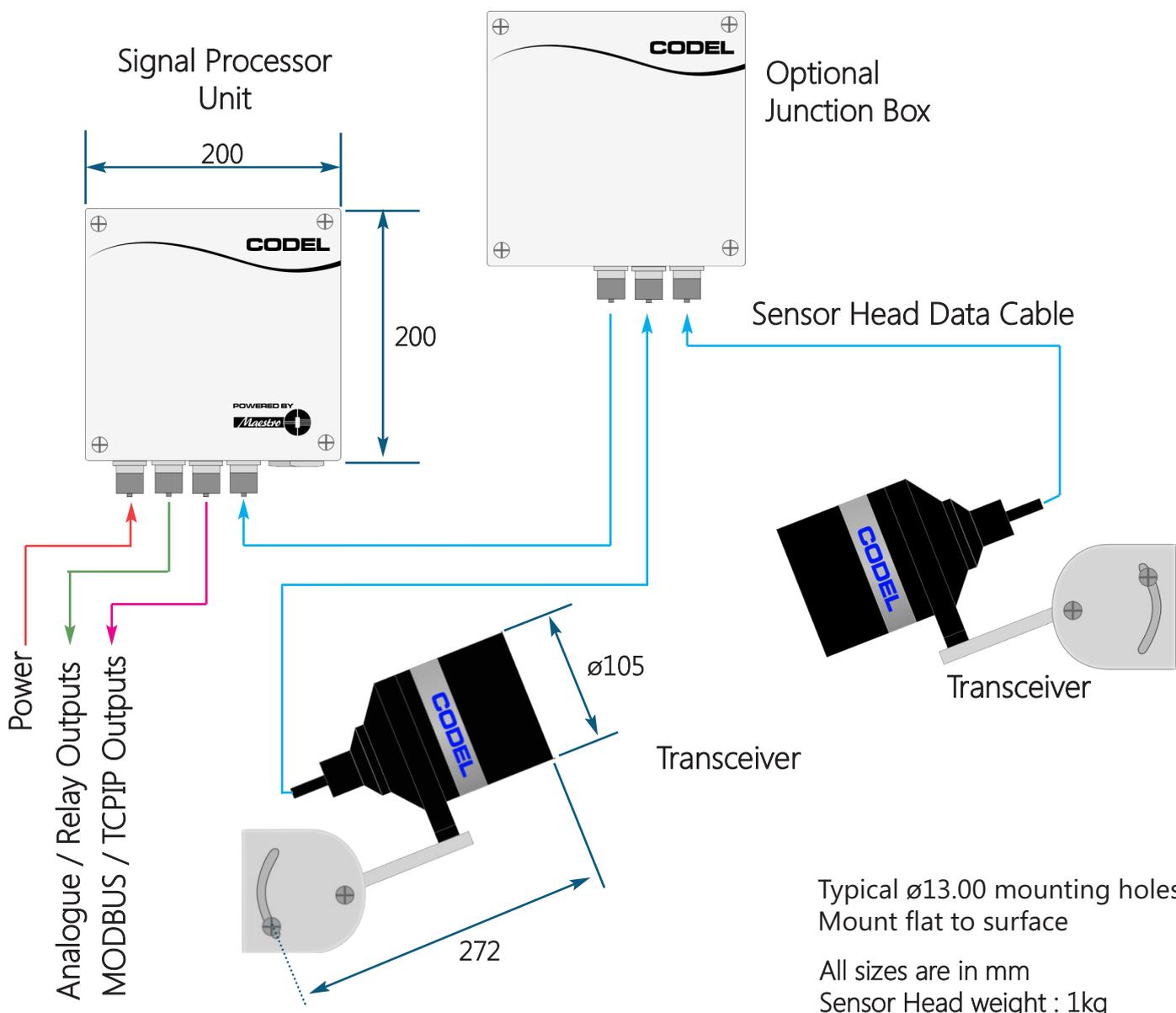
Class leading Accuracy, Repeatability and Resolution

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.

Over the last 15 years CODEL tunnel sensors have been supplied to hundreds of road and rail tunnels throughout the world. Our impressive reference list includes Eurotunnel France, Mont Blanc Tunnel France, Dartford Tunnel UK, Lane Cove Tunnel Australia, Snow Mountain Tunnel Taiwan and the SMART Tunnel in Malaysia, plus many others throughout China, Italy, Germany, Switzerland and South Korea placing CODEL as a world leader in tunnel atmosphere monitoring.

CODEL's tunnel sensor range is further extended by additional sensors for the measurement of CO, NO, Visibility and NO2.



Technical Specification

Sensor Unit

Measurements	Airflow velocity, Volumetric flow, Airflow direction, Temperature
Measuring units	Metric or Imperial units for all parameters
Path Length	Up to 40m
Measurement Technique	Across the tunnel, dual sensor, ultrasonic transit time principle
Measurement Range (Typical)	-40 to +40 m/sec, range is user configurable
Accuracy	±0.1 m/sec*
Averaging Time	1 second to 8 minutes
Ambient Temperature Range	-40 to +55°C
Construction	Corrosion resistant 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	IP65
IK Code	IK7
EMC	EN61326-1:2006 & EN50270:2006 directive compliant
Low Voltage	73/23/EEC directive compliant

Customer Interface

Analogue outputs	2x 4-20 mA optically isolated output, 500Ω maximum load, can be configured for either velocity or volumetric airflow (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 Windows Explorer, Firefox, etc. Complete system can be configured using webpages and without the requirement of any additional software.
Digital Serial Communications	Modbus RS485 (Optional)
Digital Ethernet Communications	Modbus TCP/IP (Optional)

Optional Items

Sensor Junction Box	IP65 / NEMA 4X corrosion resistant sensor junction box to allow greater separation 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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