

CODEL

Monitoring Solutions

TunnelTech 700 Series - CO, NO, NO₂ & Visibility Air Quality Monitor



A low cost precision road & rail tunnel monitor using well-proven technology providing accurate and rapid results.

The tunnelTech 700 is an advanced technology analyser which gives complete flexibility in the choice of measurement options whilst delivering superb accuracy and reliability at a very competitive price.

- ✓ Measure CO, NO, NO₂ & Visibility in one compact sensor
- ✓ Advanced electrochemical cell technology
- ✓ Integrated display and keypad, no external computer required
- ✓ Class leading NO₂ Measurement
- ✓ Minimal maintenance requirements
- ✓ Easy to calibrate



Monitoring Solutions

ISO 9001:2015
Quality Certification

www.codel.co.uk

Designed exclusively for road and rail tunnel applications building on years of experience and proven technology.

Uses the latest Electrochemical Cell Technology for the measurement of CO, NO and NO₂.

Class leading Accuracy, Repeatability and Resolution



The TunnelTech 700 Series consist of varying configurations such as:

TunnelTech 701 : CO · NO · NO₂ · Vis

TunnelTech 702 : CO · NO · Vis

TunnelTech 703 : CO · Vis

TunnelTech 704 : NO · Vis

TunnelTech 705 : NO₂ · Vis

TunnelTech 706 : CO · NO₂ · Vis

TunnelTech 707 : NO · NO₂ · Vis

TunnelTech 708 : Vis Only

The TunnelTech 701 Air Quality Monitor, is an essential part of any road or rail tunnel safety system. Firstly, it monitors the atmosphere within the tunnel and ensures that the tunnel ventilation system provides sufficient clean air to protect tunnel users health and for drivers to clearly see the road ahead.

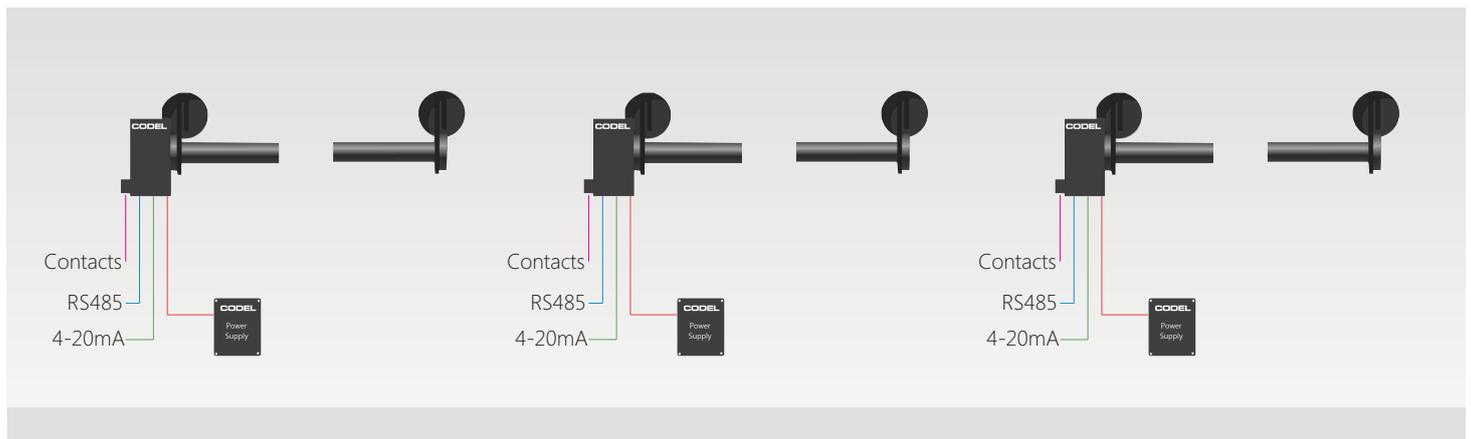
The TunnelTech 701 analyser electrochemical cell technology to determine CO, NO & NO₂ concentrations and optical attenuation to monitor Visibility levels. As there are no moving parts, reliability levels are very high and maintenance requirements are low. The sight tubes have been designed to ensure that airborne dust and contaminants do not reach the optical windows and cause drift.

Data is connected via RS485 serial port delivering a bi-directional modbus interface to the tunnel SCARDA system or optional CODEL TunnelTech 710 remote display panel.

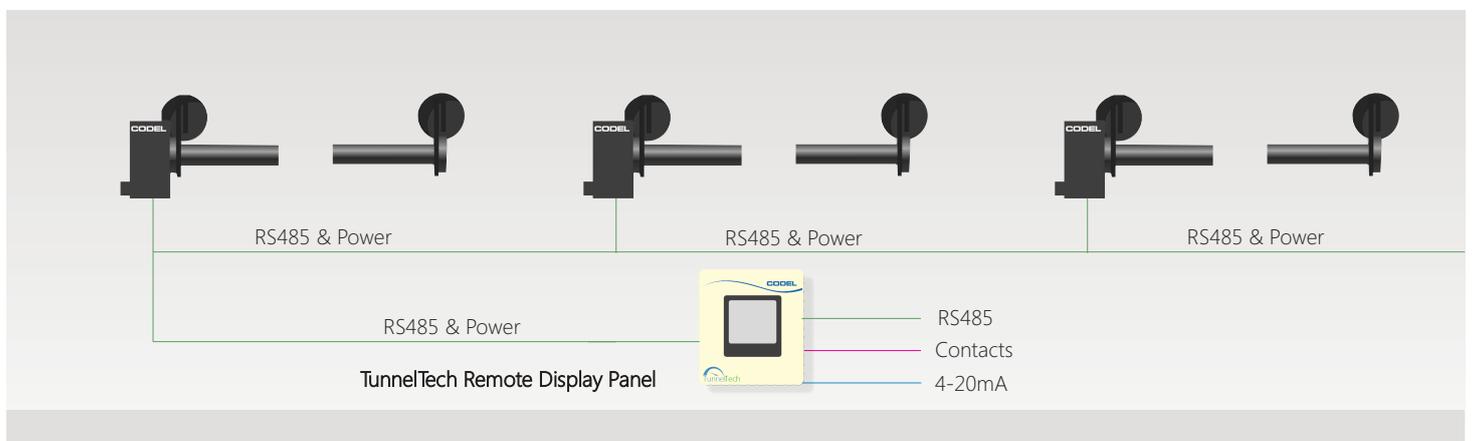
Optional 4-20mA and contact outputs are available, to be mounted either directly in the sensor heads or in the TunnelTech remote display panel providing flexibility of installation and reduced cabling costs.

In addition, IP65 rated enclosures are constructed to resist attack from aggressive gases, road salt and the effects of heat.

System Layout Option 1 - Stand-alone systems



System Layout Option 2 - Integrated package



Technical Specification

Sensor Unit

Gas Species Options	Single or multi-gas measurements available: CO, NO ₂ , NO & Visibility			
Measuring units	ppm for CO & NO, PPb for NO ₂ , m ⁻¹ or m Visibility			
Path Length	3m (6m folded beam)			
Calibration	Automatic zero calibration - manual span check			
Measurement	Carbon Monoxide (CO)	Nitric Oxide (NO)	Nitric Dioxide (NO₂)	Visibility
Measurement Technique	Electrochemical Cell	Electrochemical Cell	Electrochemical Cell	LED Transmittivity
Measurement range (typical)	0 - 300ppm	0 - 30ppm	0 - 5/10ppm	0 - 0.015m ⁻¹
Accuracy	1ppm	1ppm	< 100ppb	+/- 0.002m ⁻¹
Resolution	< 0.1ppm	< 0.1ppm	1ppb	+/- 0.001m ⁻¹
Response Time	< 1 Minute	< 1 Minute	< 1 Minute	10s - 2min Selectable
Detection Limit	< 2ppm	< 2ppm	10ppb	
Zero Drift	< 1ppm per month	< 1ppm per month	< 0.05ppm per month	
Measurement Drift	< 5% per year	< 5% per year	< 5% per year	
Ambient Conditions	-20°C to +55°C			
Power supply	24V DC, 30 VA from separate power supply.			

Compliances

EMC	EN61326-1:2006 & EN50270:2006 directive compliant
Low Voltage	73/23/EEC directive compliant
IK Code	IK07 to EN60529
Enclosure IP	Corrosion resistant epoxy coated aluminium housing sealed to IP66 (EN60529). S/S version available in 316L (1.4404) or Ti (1.4571) to IP6K9K (EN60529).

Customer Interface

Serial Data	Bi-directional RS485 Modbus Protocol
Display	32 Character alpha-numeric back-lit LCD
Keypad	4-key soft-touch entry

Optional Items

Power Supply	90/264V AC, 47-63Hz, (24V DC @ 2.5A)
Tunnel Display Unit	For local display of sensors outputs
Analogue Outputs	2 or 4 x 4-20mA current outputs as standard, isolated, 500Ω load max, fully configurable
Relay Outputs	2 or 4 x volt-free SPCO contacts, 50V, 1A max, configurable as alarm contacts
Check Filter	Visibility span check optical cell available in different values
Span Check	NO, NO ₂ , CO span check using bottled audit gases

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