

Specification

Measurement Principle	: specific absorption of blue light	Construction	: Measurement Chamber - 316L stainless steel
Measurement Path	: 1m chamber (2m folded beam)		: Instrument Housings - corrosion resistant epoxy coated aluminium, sealed to IP67
Measurement Range	: 0 - 1ppm standard, configurable up to 0 - 2ppm	Comms.	: via CODEL serial digital data bus
Accuracy	: ± 0.04 ppm	Analogue	: 2 x 4-20mA, 200V common mode isolation, max. load 500 Ω
Detection Limit	: 0.01ppm	Logic	: 2 x volt-free contacts SPCO, 0.25A @ 125V AC, 1A @ 30V DC, 0.25A @ 100V DC
Response Time	: 10 minutes standard, configurable from 3 - 30 minutes	Compliances:	EMC - 89/336/EEC directive compliant
Data Refresh	: 1 second		Low Voltage - 73/23/EEC directive compliant
Light Source	: blue LED		
Power Requirement	: 48V DC, 50VA from separate power supply unit		
Ambient Temp. Range	: -20 to +50°C		

Air Quality Monitor for NO₂



No.1 in Tunnel Atmosphere Monitoring

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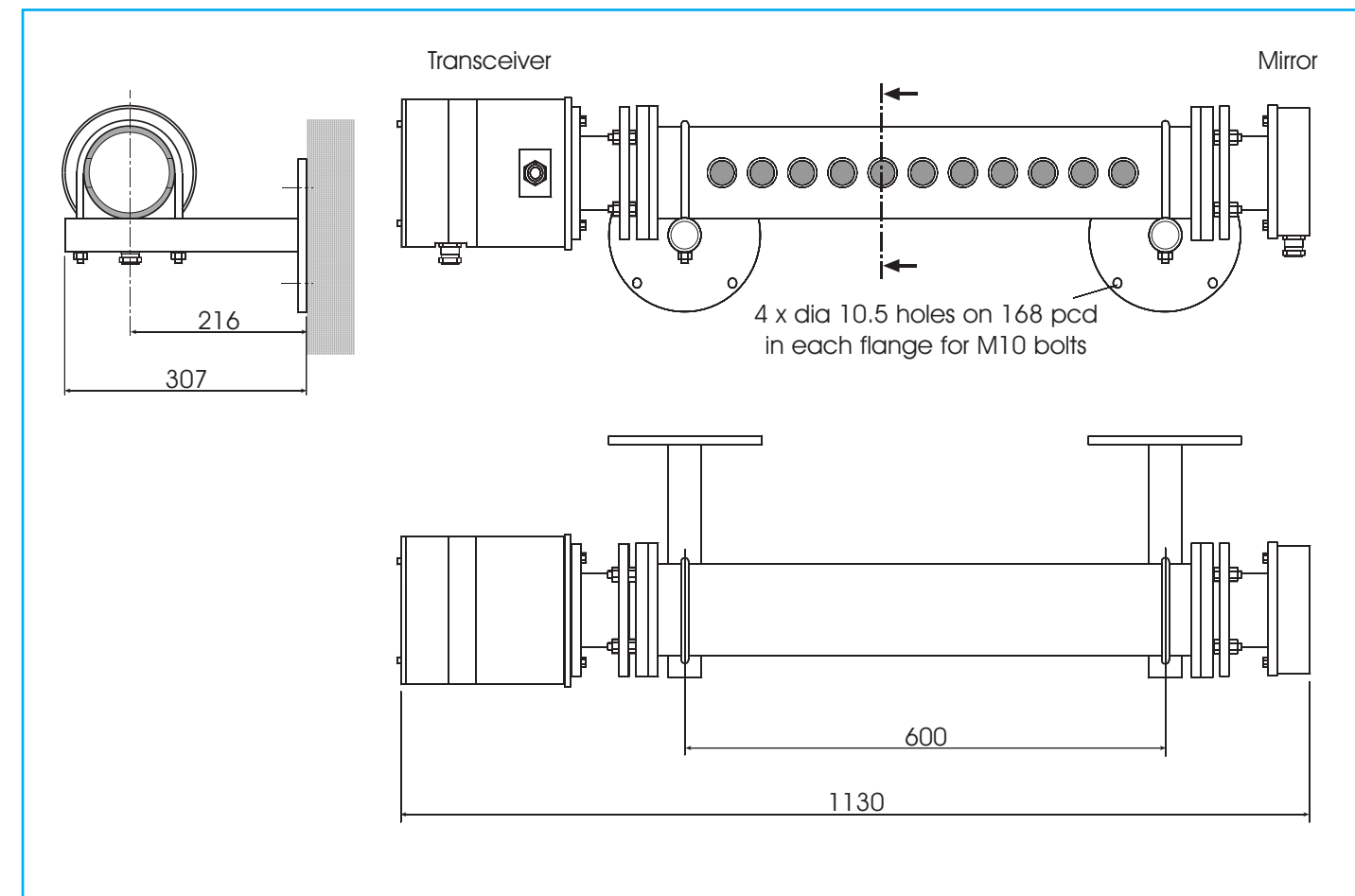
part of the *SmartCem* range of continuous emission monitors by CODEL

Air Quality Monitor for NO₂

The NO₂ Air Quality Monitor is a highly efficient transmissometer configured for the continuous measurement of nitrogen dioxide in road tunnel atmospheres. This extremely stable and reliable monitor incorporates a high-power blue LED to utilise the capacity of nitrogen dioxide to absorb UV and blue light and provide accurate readings in parts per billion.

- high accuracy & stability
- high reliability
- zero maintenance
- simple operation - no moving components
- auto zero calibration
- low cost
- output in ppb NO₂
- span verification by span gas injection

The System Schematic



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The Problem

NO₂ is produced naturally by the combustion processes within the internal combustion engine and is emitted from the tail pipes of all types of vehicles. NO₂ is also particularly toxic and prolonged exposure to levels as low as a few hundred parts per billion will have a detrimental effect on human health. There is a growing international requirement to measure and limit the levels of NO₂ within road tunnels to reduce the exposure of tunnel users to this toxic gas.

Previous attempts to continuously measure NO₂ levels in tunnels have failed due to either insufficient accuracy of measurement or too great a complexity and cost of the measuring instrument resulting in unacceptable levels of maintenance and measurement unavailability.

The CODEL Solution

The CODEL NO₂ Air Quality Monitor resolves these issues by means of a very simple but accurate measurement. NO₂ absorbs UV and blue light very strongly. The CODEL sensor is a precision transmissometer which measures the attenuation of UV/blue light by NO₂ in the tunnel atmosphere. The light source is a simple LED and the interfering effects of particulates in the atmosphere are eliminated by making the measurement within a 1m long diffusion cell into which the atmospheric gases, but not the particulates, can freely diffuse.

The result is a very accurate and stable sensor having no moving components and requiring no maintenance throughout its lifetime. Even the optics remain clean because they are contained within the diffusion cell which prevents the deposition of dirt on the optical surfaces. The filters through which the gas diffuses do not become blocked because the diffusion process exerts no forces on particulates to force them into the filter pores.