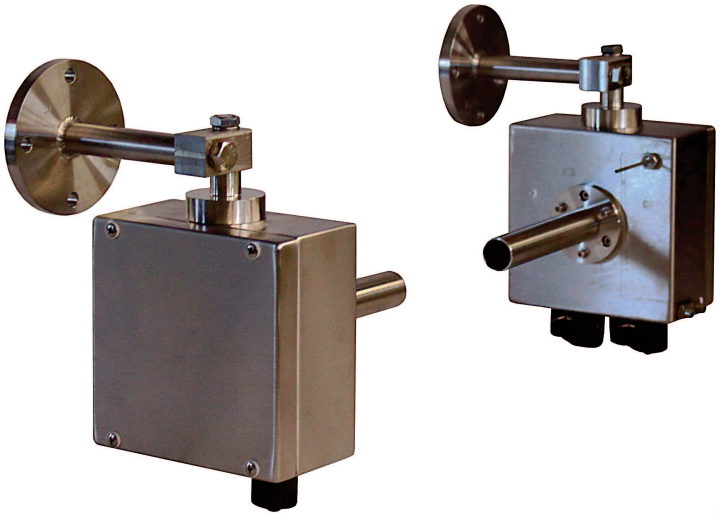
CODEL

TunnelTech 101

Road Tunnel Atmosphere Monitoring Systems

Visibility Monitor

- Continuous measurement of Visibility in road and rail tunnels
- Optional, integral ambient temperature measurement for locating fires
- No moving components providing maintenance free operation
- PC based software for commissioning and maintenance
- Accurate optical attenuation technology
- Optional Modbus RTU serial outputs
- Analogue 4-20mA output



Tunnel Atmosphere Monitoring

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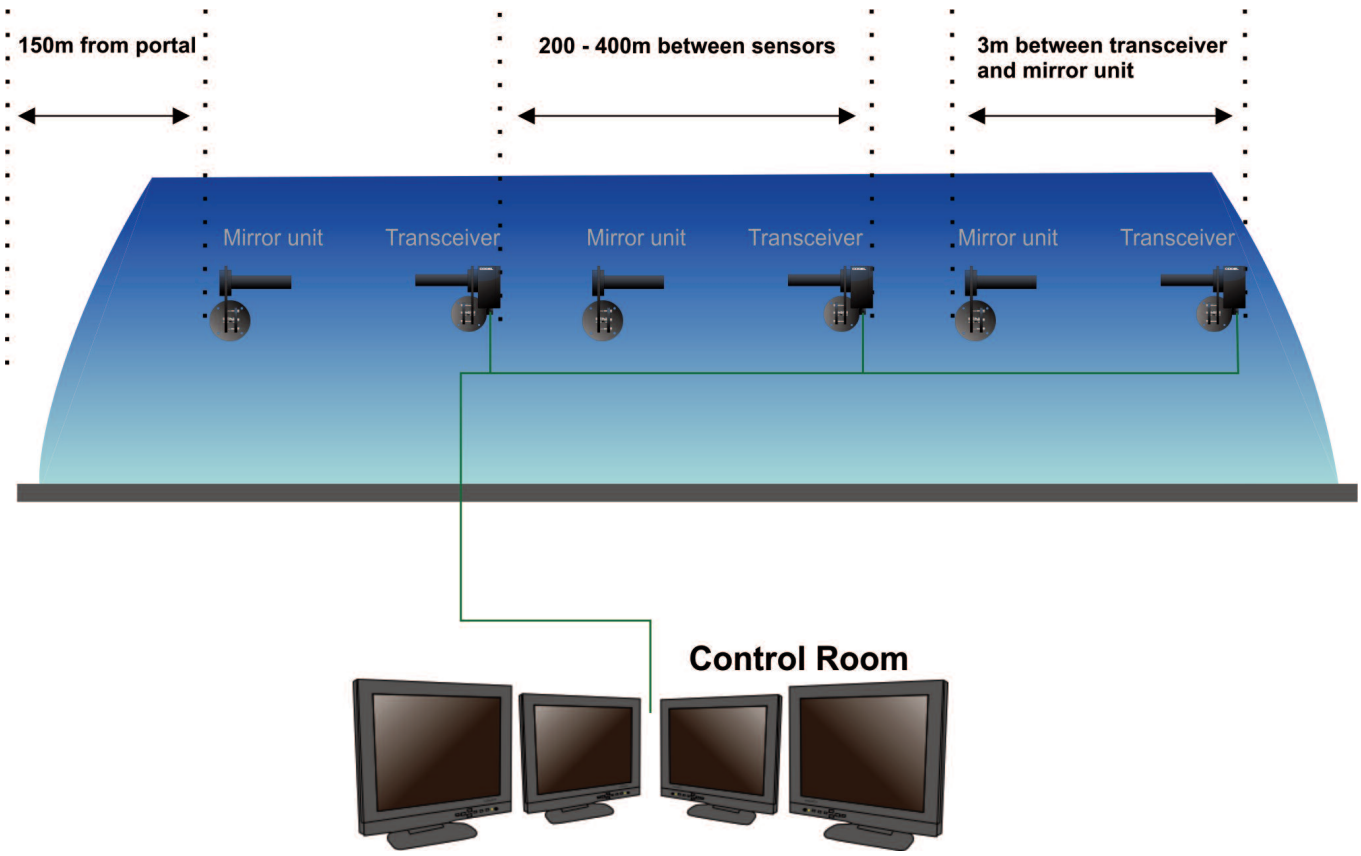
TunnelTech 101- Visibility Monitor

The TunnelTech 101 Visibility Monitor (VIS), is an essential part of any road or rail tunnel safety system. Firstly, it monitors the Visibilty within the tunnel and ensures that the tunnel ventilation system provides sufficient clean air for drivers to clearly see the road ahead.

Secondly, used in combination with other TunnelTech 101 VIS monitors, the operator can quickly detect the focus of the fire if it is also equipped with the optional PT100 temperature sensor to accurately measure ambient air temperature in a range of -15 to 105^{0}C.

Fully configurable analogue and alarm outputs are exportable to the tunnel data acquisition system to provide real-time visibility data. This data is also exported via the RS 485 serial port along with the temperature data. This link delivers MODBUS RTU encoded data to a SCADA system located in the tunnel control centre and/or a local display module. In addition, the IP65 rated enclosure are coated to resist attack from aggressive gases, road salt and to resist the efects of extreme heat.

In areas where extremely low temperatures may be experienced, optional transmitter and receiver insulation jackets are available to reduce the effect. Another option is a local display, driven from the RS485 output which enables operators to view output data, diagnostics and alarm setpoints.

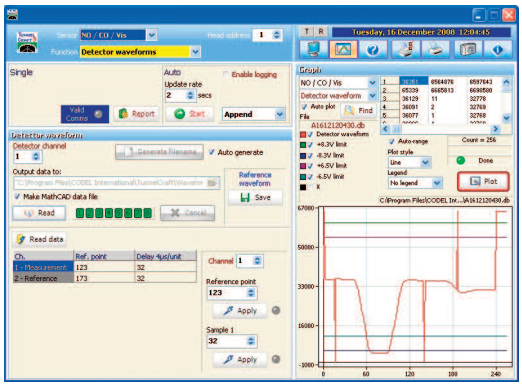


TunnelTech Software

- Easy installation and set-up
  Will operate on any Windows based operating system
- User friendly Alignment Mode to aid initial set-up and optical alignment
- Allows sensor configuration settings to be adjusted
- Fault diagnostic logging for sensor troubleshooting

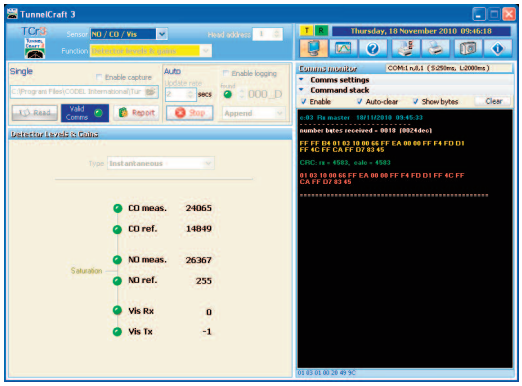
TunnelTech Software is supplied with all CODEL Tunnel Sensor's as standard for the purpose of commissioning and maintenance of the sensors. With simple installation and set-up routine to any Windows based laptop PC, the program takes only minutes to load and configure and comes with a comprehensive on-board help feature.

The software enables the sensor's complete data and control functions to be accessed via a PC using either an RS232 or optional RS485 communications box, also supplied with the sensor.



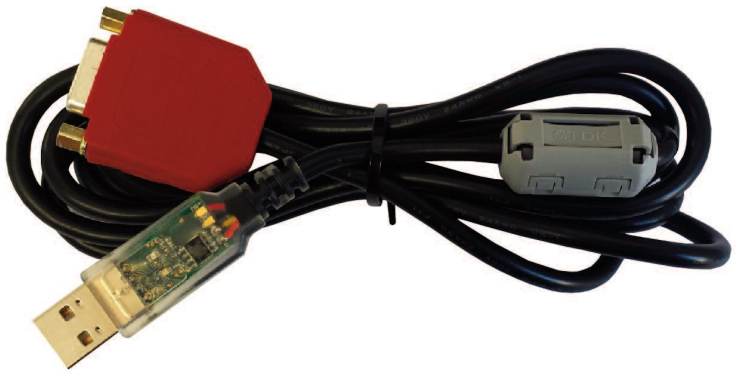
A built-in alignment feature aids the initial set-up and commissioning routine by giving a display of the detector signals to the engineer to ensure that optical alignment is maximised and the sensor operates to its optimal performance

Zero calibrations and span checking using a CODEL Check filter can be initiated via the software after commissioning or a maintenance period. Should it be necessary to alter the initial factory-set current and relay output configuration then this can also be carried out with ease.



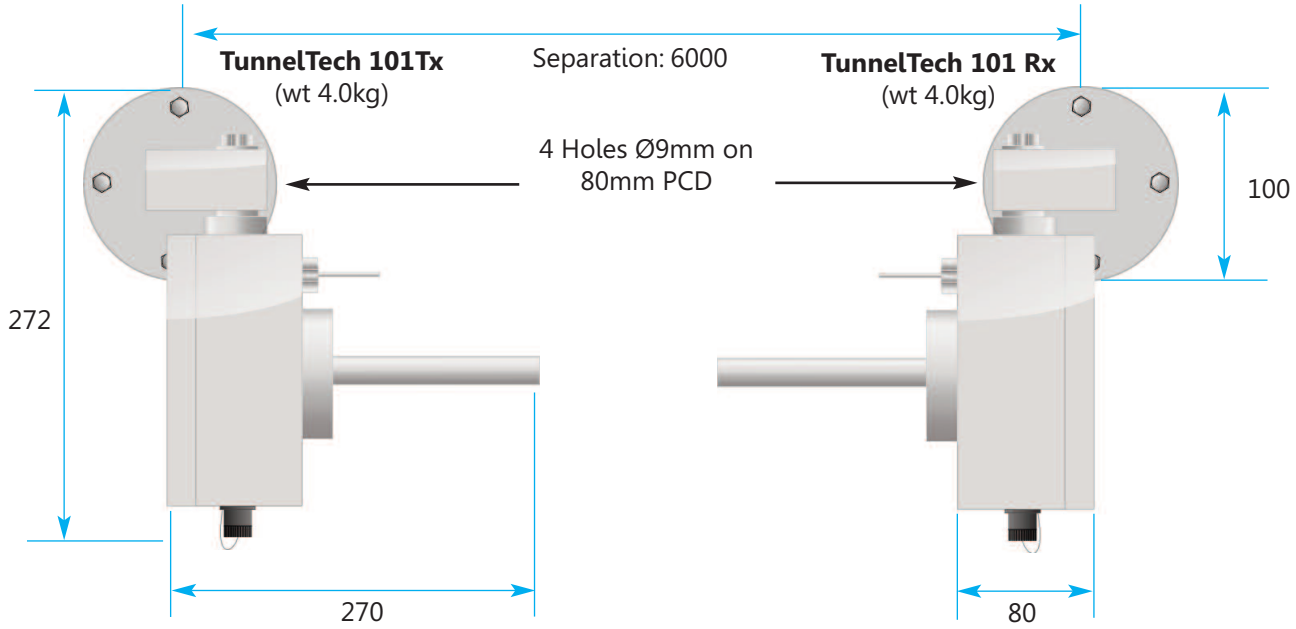
For maintenance the software includes short-term logging and trending of diagnostic data for fault analysis.

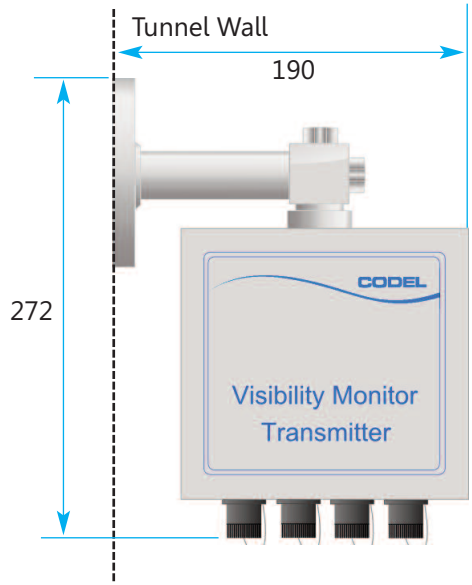
Communication Interfaces



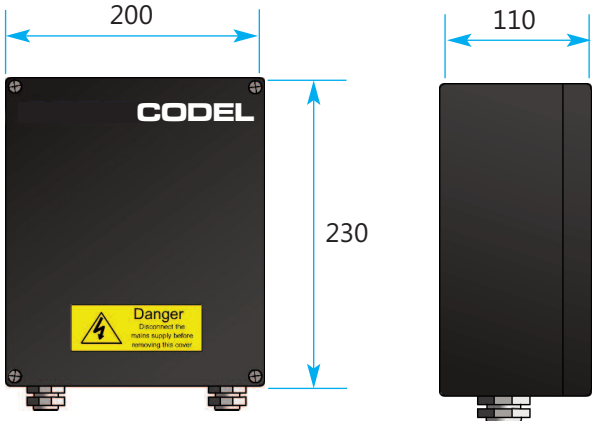
RS485 Unit

TunnelTech 101 - Overall Dimensions



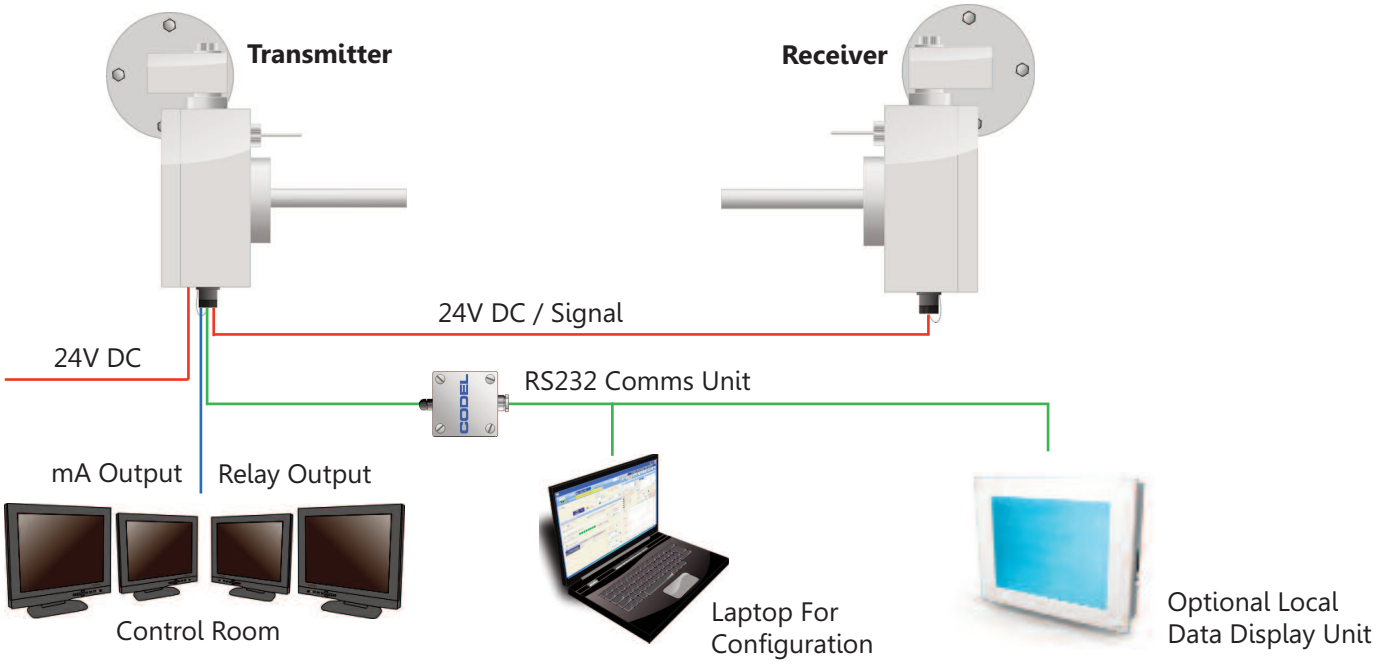


Power Supply Unit (PSU) (wt 4kg)



Note: All dimensions are in mm

TunnelTech 101 - System Arrangement



TunnelTech 101 - Technical Specification

Sensor Unit

Measurement	Visibility
Units	K factor(M^{-1}) or metres
Measurement Technique	Transmissometry (de Beer Lambert Law)
Measurement Range (Typical)	0 - 0.015m^{-1}
Accuracy	+/- 0.0002 m^{-1}
Resolution	+/- 0.0001 m^{-1}
Averaging Time	From 10 seconds to 2 minutes
Ambient Temperature Range	-20°C to +50°C
Temperature Sensor (Optional)	P100, -15°C to +105°C
Power Supply	24V DC
Construction	Aluminium enclosures
Power Requirements	24V DC

Compliances

EMC Directives	EN61326-1:2006 & EN50270:2006 directive compliant
Low Voltage	73/23/EEC directive compliant
Protection Class	IP65
Tunnel Regulations	RABT 2006, RVS 09.02.22 2007

Communications & Outputs

Analogue outputs	1 x 4-20mA isolated current output, 500Ω maximum load, fully configurable through TunnelMaster software.
Relay Outputs	1 x volt-free SPCO contacts, 50V, 1A maximum load, configurable as alarm contacts
Communications Port	RS485 - Modbus RTU

Optional Items

Power Supply	110/220VAC, 50Hz +/-10%, 60W @ 24V
Optical Density Filter	For manual calibrations
Insulated Sensor Jacket	For low temperature applications

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