



- Proven optical measurement techniques
- Rugged construction
- Simple installation/operation
- Low maintenance
- Designed specifically for tunnels
- PC utility software included
- 0-300ppm CO measurement with 0.5ppm resolution
- Visibility in Extinction (k), or MOR (m) with a resolution of 0.1% opacity
- Temperature compensated measurements
- Isolated 4-20mA analogue outputs
- Alarm relay contacts
- Choice of serial comms protocols

The VCOM tunnel monitor uses proven IR spectroscopy techniques to determine the level of carbon monoxide (CO) in tunnels. The measurement range is 0-300ppm with a resolution of 0.5ppm.

The VCOM uses standard light obscuration techniques to determine visibility in the tunnel atmosphere also. Measurements are made as opacity (%) and presented as the Extinction Coefficient (k), or Meteorological Optical Range (metres visibility), to a resolution of 0.1% opacity.

The VCOM also measures temperature, and all measurements are compensated for changes in temperature to ensure stable readings across all conditions.

Having been designed specifically for tunnel environments, the VCOM is of rugged construction using powder coated stainless steel and flame retardant polycarbonate to achieve an IP65 / NEMA 4X protection rating. This instrument can withstand the corrosive atmosphere and regular tunnel washing that the tunnel environment endures.

The VCOM is a self contained intelligent analyser with on-board industry standard SCADA/PLC interface options, such as 4-20mA outputs, alarm relay contacts, and a choice of serial communications protocols (ModBus is provided as standard). As such the VCOM has no need for a control unit (although one is available as an option) and can be set-up and controlled (using the PC based utility software supplied) in a "stand-alone" configuration.



An optional control unit (known as an Operator Interface, or OI) is available and can be connected to the VCOM with a single cable length up to 1km. The OI has a display and keypad allowing for direct human interface, but also a complete duplicate set of electrical interface options to those found in the VCOM itself. Using an OI, the operator has the option of making SCADA/PLC interface connections at the instrument, at the OI, or at both – offering complete versatility.



Specification:

CO Measurement Performance

No.	Parameter	Units	Min	Max	Comment
1	Path length	m	5.5	6.5	
2	Display range	ppm	0	300	
3	Accuracy	ppm %	-2 -10	+2 +10	Whichever is greatest
4	Resolution	ppm		0.1	Display resolution
5	Damping / response time	s		100	
7	Drift with temperature	ppm	-2	+2	Over 20°C
6	Angular alignment sensitivity	deg.	-0.5	+0.5	Tolerable change in angle between the Tx and Rx for a 5ppm change in reading.
7	Signal level sensitivity	%	-10	+10	Tolerable change in optical power level at Rx for a 5ppm change in reading.

Visibility Measurement Performance

No.	Parameter	Units	Min	Max	Comment
8	Path length	m	5.5	6.5	
9	Display range				
	Transmission	t	0	1.000	
	Extinction Coefficient (k)	m ⁻¹	0	0.0150	
	Meteorological Optical Range (MOR)	m	0	15000	
	Opacity	%	0	100	
10					
11	Resolution				Display resolution
	Transmission	t		0.001	
	Extinction Coefficient (k)	m ⁻¹		0.0001	
	Meteorological Optical Range (MOR)	m		1	
	Opacity	%		0.1	
12	Accuracy	%	-2	+2	
13	Damping / response time	s	0	999	
14	Drift with temperature	%	-2	+2	Over 20°C
15	Angular alignment sensitivity	deg.	-0.5	+0.5	Angle change between Tx and Rx for a 5% change in transmission





Specification (cont.):

Power

16	Voltage	VDC		+24	
17	Voltage Tolerance	%	-10	+10	
18	Nominal Current Consumption	A		1.0	
19	Power Up Current Consumption	A		2.0	

Interface Options

20	Serial outputs				RS485 and ModBus (on terminals) RS232 (on 9 pin D header) ModBus, ProfiBus, DeviceNet, Ethernet etc. (on plug in modules in optional OI)
21	Analogue Outputs (1 output)	V mA	0.0 4.0	10.0 20.0	Isolated and scalable Isolated and scalable
22	Digital Relay Contacts	A	0	3	@30VDC (Service alarm, velocity alarm, direction indicator)

Physical

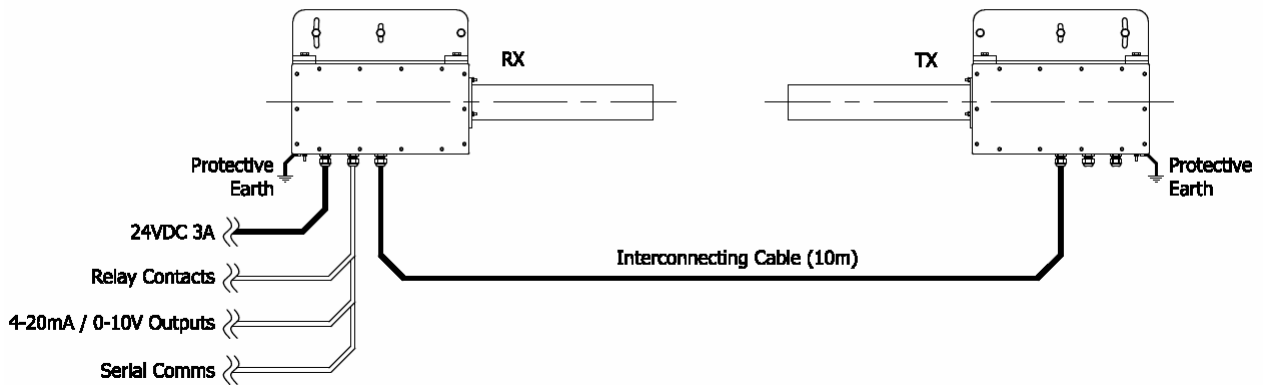
23	Ingress Protection			IP65	
24	Operating Temperature	°C	-20	+50	
25	Storage Temperature	°C	-20	+50	
26	Operating Humidity	%	5	100	
27	Regulatory Compliance				89/336/EEC (Electromagnetic Radiation) 73/23/EEC (Low Voltage)
28	Materials				Powder coated stainless steel
29	TX/RX dimensions (each)	cm		79x16x23	L x W x H
30	TX/RX weight (each)	Kg		8.5	
31	Warranty	Months		12	Return to base warranty. Extensions available.
31	Mean Time Between Failure	Years		10	



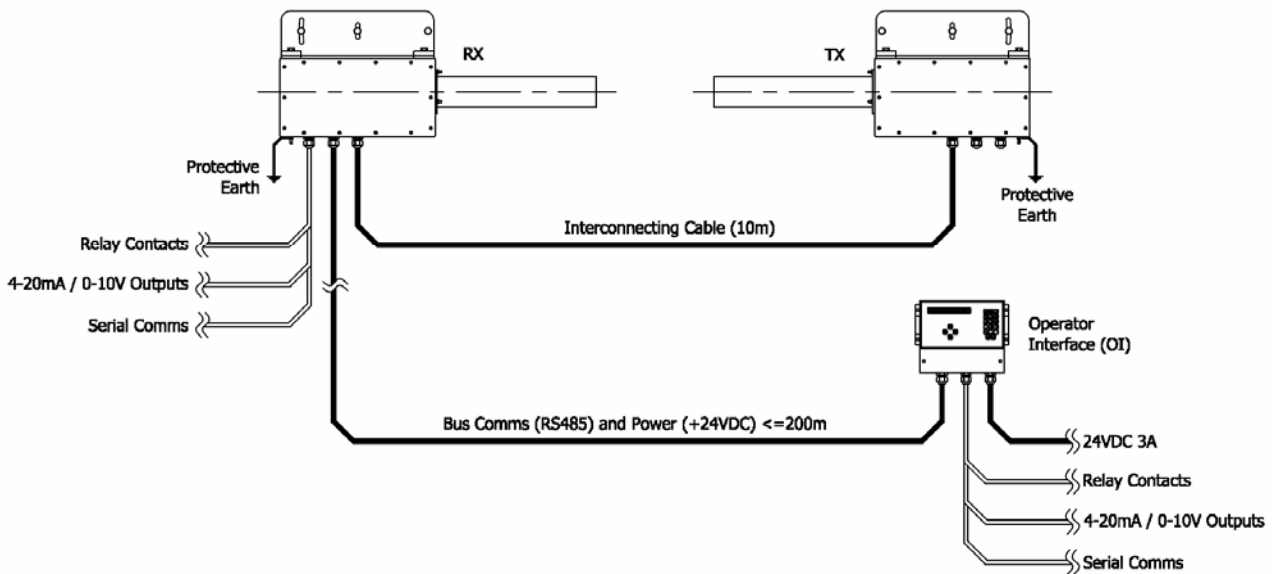


Configuration Options:

Stand-alone Configuration



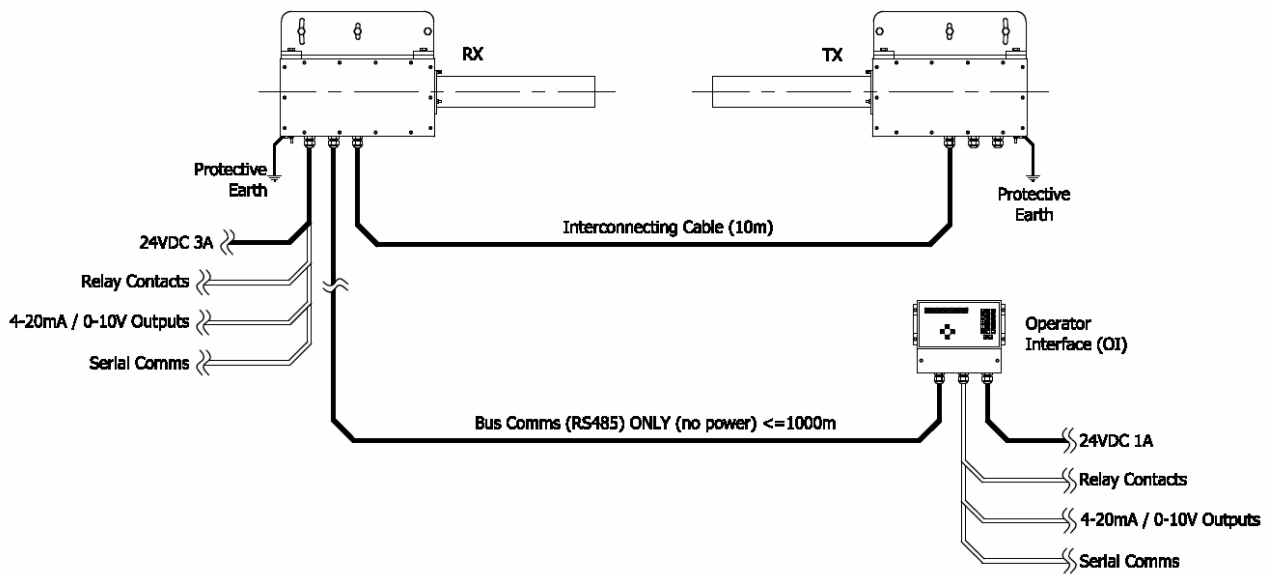
Remote OI <=200m Configuration





Configuration Options (cont.):

Remote OI <=1000m Configuration

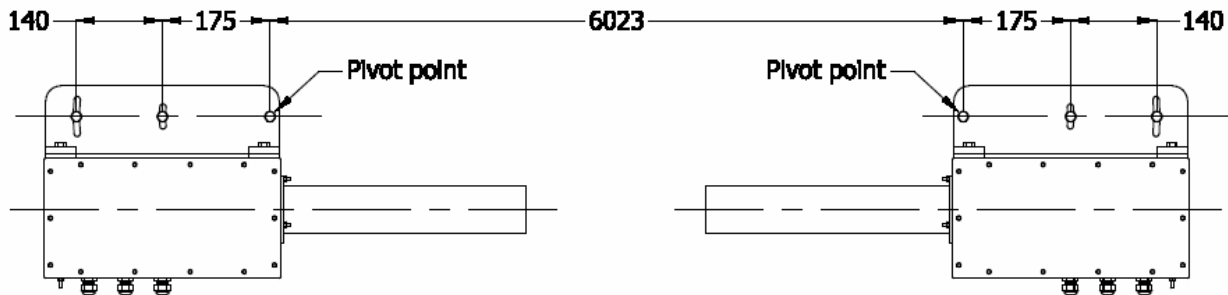
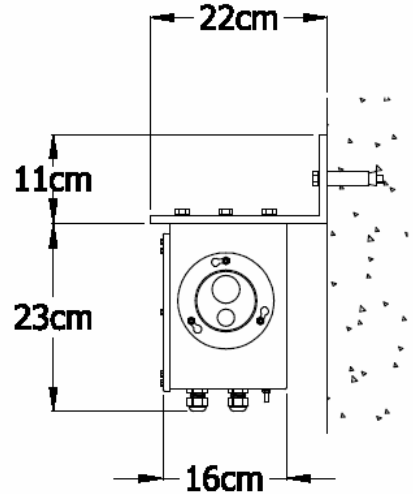
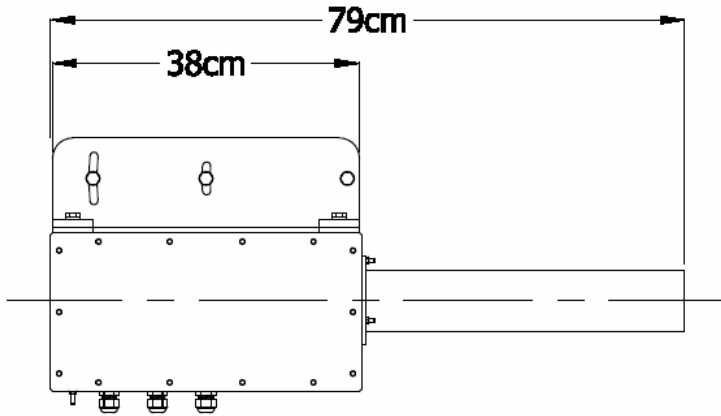




TUNNEL SENSORS

VCOM Combined CO and Visibility Monitor for Tunnels

Dimensions:



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All technical details and specifications are subject to change without notice

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TUNNEL SENSORS

VCOM Combined CO and Visibility Monitor for Tunnels

Accessories & Ordering:

Ordering Details

Description	Order Code	Notes
VCOM combined CO/NO/Vis tunnel monitor, right-hand hanging 	TSL-VCOM	24VDC power supply required
VCOM combined CO/NO/Vis tunnel monitor, left-hand hanging 	TSL-VCOM-L	24VDC power supply required
Operator Interface (OI) for standard VCOM 	TSL-OI-VC-02	24VDC power supply required
CO check cell with snout for sight tube mounting 	TSL-NC-001	
Visibility attenuation grid with snout for sight tube mounting 	TSL-NC-003	



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TUNNEL SENSORS

VCOM Combined CO and Visibility Monitor for Tunnels

<p>75W 24VDC power supply with universal single phase AC input, boxed in IP67 protected polycarbonate enclosure with dual gland entries</p> 	PSU-005	
<p>LSZH screened multi-core cable for VCOM/OI connection</p> 	CBL-046	Order by the meter i.e. for 10m order 10off
<p>Belden equivalent screened multi-core cable for VCOM/OI connection</p> 	CBL-078	Order by the meter i.e. for 10m order 10off



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