- **Designed for in-situ monitoring in tunnels or similar confined spaces**
- **Proven electrochemical measurement of CO**
- **Pre-calibrated "plug-in" sensor modules for ease of replacement**
- **Backlit LCD display providing clear sensor information and diagnostic data**
- **Rugged and reliable, with ingress protection to IP65**
- **Compatible with BS EN 50545-1:2011**

The ECOM tunnel monitor measures the concentration of carbon monoxide (CO) within an ambient environment such as road, rail, meteorological or other industrial application. These measurements can be used as part of an air quality management system for ventilation control and/or secondary smoke detection within a traffic tunnel or other confined space.

The ECOM is a fixed sensor, which uses an electrochemical cell for CO detection. The ECOM consists of a Sender Unit and a 'plug-in' Sensor Module, which are mounted together on the wall or ceiling of the tunnel. The Sensor Module is pre-calibrated and stores all necessary data relating to type identification, sensing range and specific calibration. This data is automatically recognised by the Sender Unit when the module is fitted.

Using an electrochemical cell means that the ECOM combines good sensitivity at low gas concentrations with high range capability and excellent stability. Electrochemical cells contain an electrolyte that is gradually consumed during use, influenced mostly by the duty cycle, ambient temperature and humidity. Therefore, the Sensor Module requires replacement / recalibration every 6 to 12 months to ensure accuracy of response. The sensor modules are pre-calibrated plug-in units which can be quickly and conveniently replaced, which means calibration gases are not required. Replacement sensor modules are available from Tunnel Sensors.

The ECOM is an intelligent sensor with 4-20 mA output and the option of RS485 serial communication protocols. It has two visual output alarm signals for GENERAL alarm and HIGH alarm. Default values are entered during manufacture and these can be adjusted to preferred values.

Specification:

Measurement Performance

Item	Parameter	Units	Min	Max	Comment
1	Measurement Range	ppm	0	300	
2	Resolution	ppm		1	Display resolution
3	Accuracy	ppm	−2	+2	
		%	−2	+2	
4	Response Time – T90	s		40	
	– T63			20	
5	Temperature Stability	%	−3	+3	Over full temperature range
6	Span Drift	% / Month	−1	+1	
7	Calibration Interval	Months	6	12	Replace or recalibrate sensor module

Power

| Item	Parameter	Units	Min	Max	Comment
8	Voltage	Vdc	+24		90 – 260 Vac with optional PSU
9	Voltage Tolerance	%	−10	+10	
10	Nominal Current Consumption	mA		40	
11	Power Up Current Consumption	mA		50	

Interface Options

Item	Parameter	Units	Min	Max	Comment
12	Analogue Output	mA	4	20	(ESU−420 only)
13	Serial output				Modbus RTU via RS485 (ESU−485 only)

Physical

Item	Parameter	Units	Min	Max	Comment
14	Ingress Protection			IP65	Gas port IP54
15	Operating Temperature	˚C	−20	+50	
16	Operating Humidity	%	15	90	Non condensing
17	Ambient Pressure	mBar	800	1100	
18	Materials				Reinforced Polymer
19	Dimensions	mm	140 x 98 x 57		
20	Weight	kg		0.6	

Compliance & Design

Item	Parameter	Units	Min	Max	Comment
21	Warranty Sender Unit / Sensor Module	Months	24 / 6		Return to base warranty.
22	Regulatory Compliance				2014/30/EU (Electromagnetic Radiation) 2014/35/EU (Low Voltage) 94/9/EC (ATEX)

Dimensions (mm)

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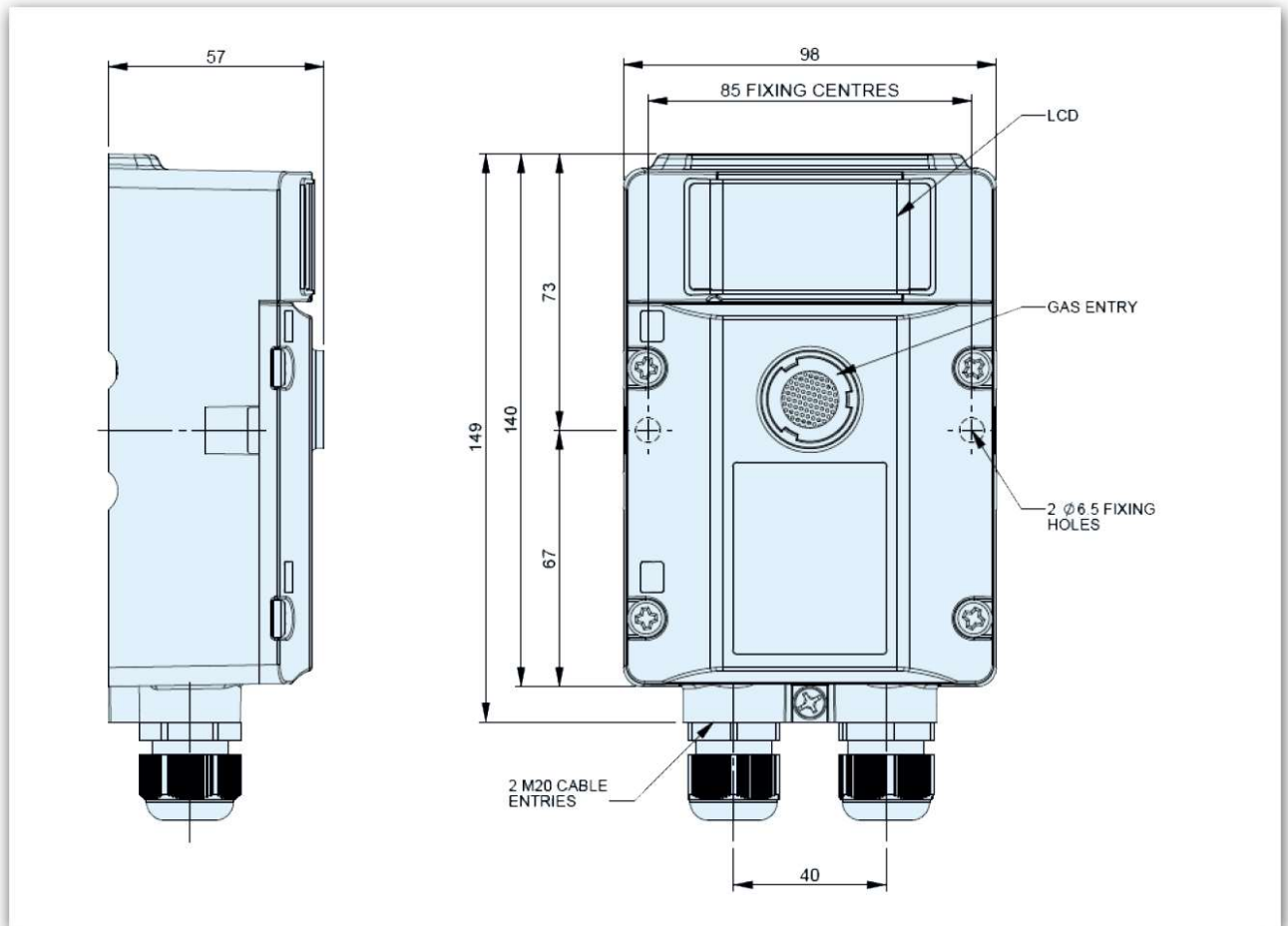
Options & Accessories:

Description	Order Code	Notes
ECOM Instrument	TSL-ESU-420 TSL-ESU-485	Sender Unit 4 to 20mA version RS485 Version
Calibrated CO Sensor Module	TSL-ECOM-SM1	Plug-in Sensor Module CO calibrated 0 to 300ppm.
Boxed PSU	TSL-PSU-75	Multi AC input, 24Vdc output, 75W, IP67 rated enclosure
Cable	CBL-099	7-core, screened, LSZH cable.
TSCU (Operator Interface)	TSL-TSCU-1	Operator Interface for use with RS485 version only. 1 analogue output and relay
Calibration Check Adapter Hood	OEM-006	Gas hood to fix over the gas entry port for calibration checking.
Calibration Check Tubing	OEM-007	1m tubing to connect gas cylinder to calibration hood.

Note that the actual part may differ from the above representative pictures.

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