AIRFLOW MkII

Air Speed and Direction Monitor for Tunnels

- Designed specifically for tunnels
- Reliable ultrasonic transit time measurement
- Pre-calibrated "Fit and Forget" sensor with low maintenance requirements
- Measurement range of +/-60 m/s
- Single and dual axis mode available
- IP67 rated enclosure.
- Choice of interface / comms protocol

The AIRFLOW tunnel monitor uses proven ultrasonic transit time technology to deliver a reliable measurement of air speed and direction in tunnels. It is a dual axis monitor that can measure air speeds of up to 60m/s with a resolution of 0.01m/s.

Having been designed specifically for tunnel environment, the AIRFLOW monitor is of rugged construction using powder coated stainless steel and UL rated flame retardant polycarbonate to achieve an IP67 / NEMA 6P protection rating. This instrument can withstand the corrosive atmosphere and regular tunnel washing that the tunnel environment endures.

The AIRFLOW monitor is a self-contained intelligent analyser with on-board industry standard SCADA/PLC interface options, such as 0/2/4-20 mA outputs, alarm relay contacts and a choice of serial communications protocols. As such the AIRFLOW has no need for a control unit although one is available as an option. As a standalone instrument the AIRFLOW is be set-up and controlled using the utility software supplied, installed on a PC or laptop and connected via the USB connector.

The AIRFLOW can also be connected to a Tunnel Sensors Control Unit (TSCU or TSCU-R), which is a remotely located, multi-instrument control unit with a full range of interface capabilities to match those found in the AIRFLOW itself. This offers the flexibility to accommodate a wide range of wiring schemes.

The AIRFLOW monitor has no moving parts and no regular service requirement, making it a very reliable "fit and forget" monitor. The instrument also performs detailed self-diagnosis to provide information on any instrument faults as well as warnings that should be checked at the next scheduled maintenance. The routine maintenance is typically every 12 months consisting of an instrument check and clean. In the unlikely event of a faulty AIRFLOW the use of cable sockets, makes it very easy to remove or replace an instrument.

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Specification:

AIRFLOW Measurement

No.	Parameter	Units	Min	Max	Comment
1	Measuring Principle				Ultrasonic transit time
2	Measurement Range	m/s mph	-60 -134	+60 +134	User selectable (also available as ft/min or kph)
3	Resolution	m/s		0.01	Display resolution
4	Accuracy	m/s %	-0.1 -2	+0.1 +2	Relative to reading
5	Lower Detection Limit	m/s		0.02	
6	Damping	seconds	1	100	Response time ~3x damping

TEMPERATURE Measurement (AIRFLOW-T only)

No.	Parameter	Units	Min	Max	Comment
7	Measuring Principle				RTD
8	Measurement Range	ºC	-20	+70	User selectable (also available ºF)
9	Resolution	ºC		0.1	Display resolution
10	Accuracy	ºC	-0.5	+0.5	
11	Damping	seconds	1	100	Response time ~3x damping

Power

12	Voltage	Vdc		+24	
13	Voltage Tolerance	%	-10	+10	
14	Nominal Current Consumption	mA		200	
15	Power Up Current Consumption	mA		200	

Interface Options

16	Serial Outputs				ModBus RTU via RS485 External USB
17	Analogue Outputs (two or four)	mA	0 / 2 / 4	20	Isolated and scalable (user selected)
18	Digital Relay Contacts (five)	A	0	3	@30Vdc (signal level and data valid)

Physical

19	Ingress Protection			IP67	
20	Operating Temperature	°C	-20	+70	
21	Operating Humidity	%		100	
22	Operating Pressure	hPa	600	1300	
23	Regulatory Compliance				2014/30/EU (Electromagnetic Radiation) 2014/35/EU (Low Voltage)
24	Materials Enclosure Transceiver				Powder coated stainless steel Flame retardant UL rated polycarbonate
25	Dimensions	mm	220 x 240 x 160		
26	Weight	kg		3.5	
27	Warranty	Months	24		Return to base warranty. Extensions available

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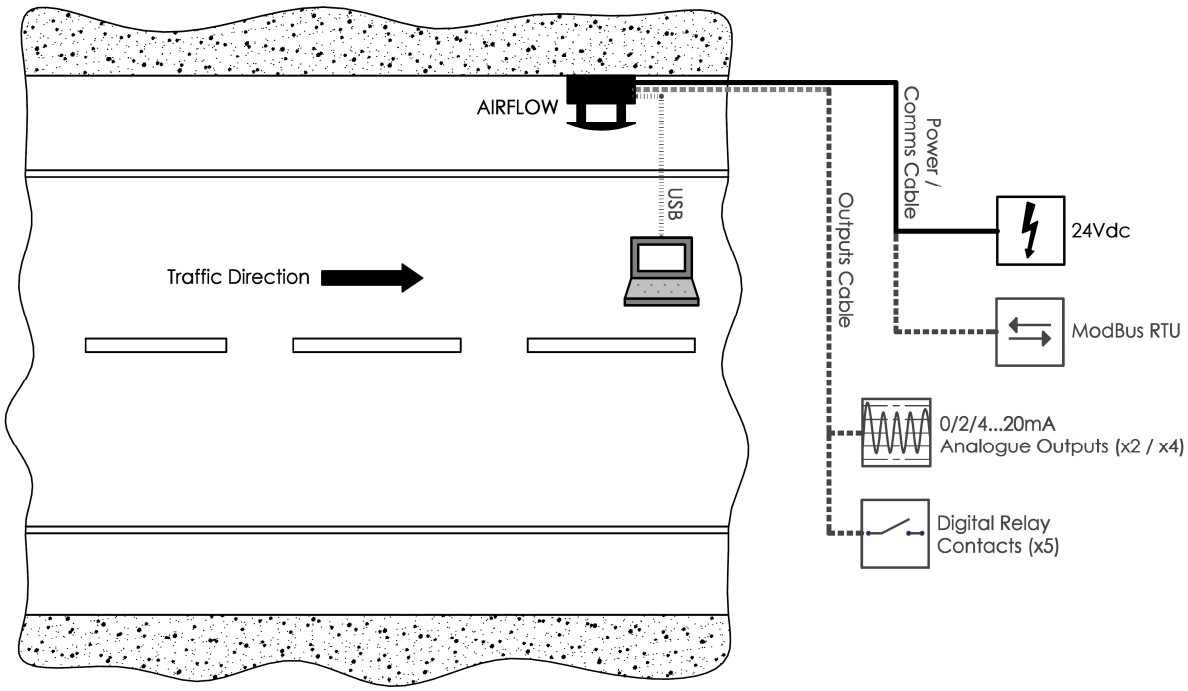
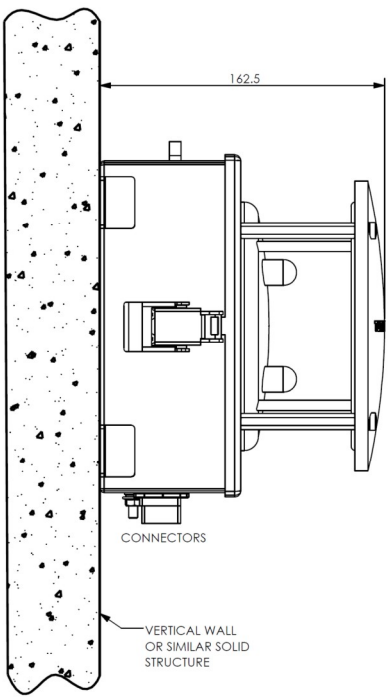
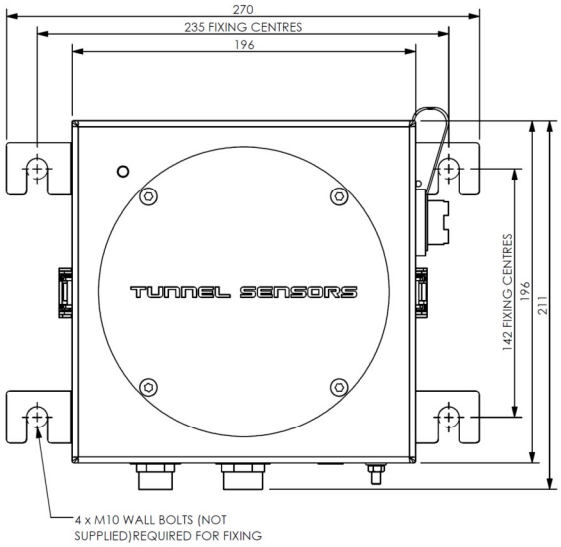
System Overview:



Dimensions and Fixing:





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Options & Accessories

Description	Order Code	Notes
AIRFLOW Instrument 	TSL-AIRFLOW TSL-AIRFLOW-4 TSL-AIRFLOW-T	Standard instrument, 2-analogues With 4-analogue outputs With external air temperature monitor
Cable	CBL-098 CBL-099	7-core screened LSHZ cable 20-core screened LSHZ cable
Cable Assemblies 	CBL-194 CBL-103 CBL-105 CBL-195 CBL-104 CBL-106	Power / comms cable – 5m length Power / comms cable – 10m length Power / comms cable – 20m length Outputs cable – 5m length Outputs cable – 10m length Outputs cable – 20m length
Boxed PSU	TSL-PSU-75	Multi AC input, 24Vdc output, 75W, IP67 rated enclosure
Junction Box 	TSL-JB-6	Junction box with 6 free terminals, for local termination of power / comms. IP67 rated enclosure.
Combined PSU / Junction Box 	ASY-206	Junction box with PSU. 6 free terminals. Multi AC input, 24Vdc output, 75W. IP67 rated enclosure.

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

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