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AIRFLOW MkII

Air Speed and Direction Monitor for Tunnels

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 environments, 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.

Benefits

- **Designed specifically for tunnels**
- **Reliable ultrasonic transit time measurement**
- **Choice of interface / comms protocol**
- **IP67 rated enclosure**
- **Pre-calibrated “Fit and Forget” sensor with low maintenance requirements**
- **Measurement range of +/-60 m/s**

Specification

AIRFLOW Measurement

Item	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	+0.1	
		%	-2	+2	Relative to reading
5	Damping	seconds	1	100	Response time ~3x damping

Temperature Measurement (AIRFLOW-T only)

6	Measuring Principle				RTD
7	Measurement Range	ºC	-20	+70	User selectable (also available ºF)
8	Resolution	ºC		0.1	Display resolution
9	Accuracy	ºC	-0.5	+0.5	
10	Damping	seconds	1	100	User selectable (response time ~3x damping)

Power

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

Interface Options

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

Physical

18	Ingress Protection			IP67	
19	Operating Temperature	ºC	-30	+70	
20	Operating Humidity	%		100	
21	Operating Pressure	hPa	600	1300	
22	Material				
	Enclosure				AISI/SAE 316L stainless steel
	Transceiver				Flame retardant UL rated polycarbonate
23	Dimensions	mm	220 x 240 x 160		
24	Weight	kg		3.5	

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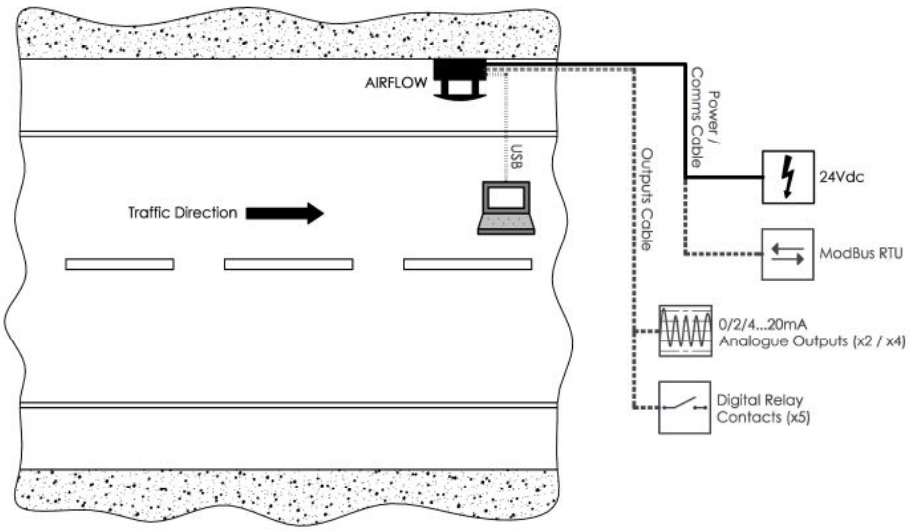
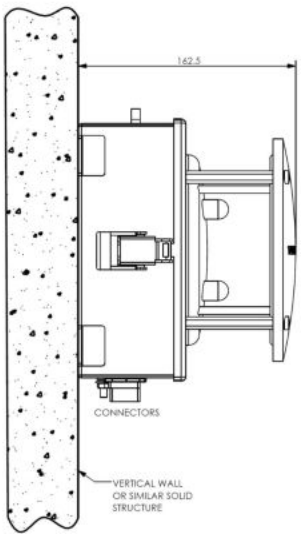
Compliance & Design

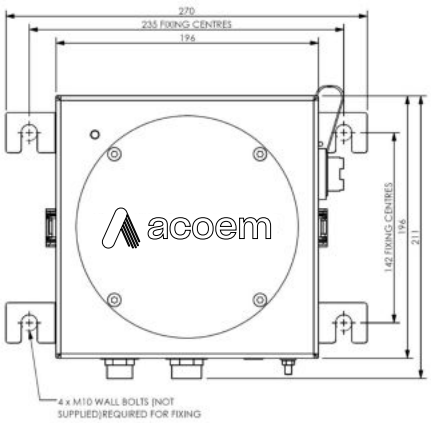
Item	Parameter	Units	Min	Max	Comment
25	**Regulatory Compliance**				2014/30/EU (Electromagnetic Radiation) 2014/35/EU (Low Voltage)
26	**Design Life**	Years	20		
27	**MTBF**	Years	>20		
28	**Warranty**	Months	24		Return to base warranty. Extensions available.

System Overview:



Dimensions and Fixing:





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-099 CBL-098	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
Combined Termination Unit 	TSL-CTU	Local cable termination unit for AIRFLOW MkII electrical connections, based on a choice of DIN rail terminals - see separate datasheet for details.
	TSL-CTU-P	Local termination unit with integral 24V PSU for AIRFLOW MkII electrical connections, based on a choice of DIN rail terminals and a 75W PSU - see separate datasheet for details.

Description	Order Code	Notes
Large Combined Termination Unit 	TSL-CTU-L1	Local cable termination unit for AIRFLOW MkII electrical connections, based on a choice of DIN rail terminals - see separate datasheet for details.
	TSL-CTU-L1-P	Local termination unit with integral 24V PSU for AIRFLOW MkII electrical connections, based on a choice of DIN rail terminals and a 75W PSU - see separate datasheet for details.

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

ISO 9001

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