ECHOLINE®

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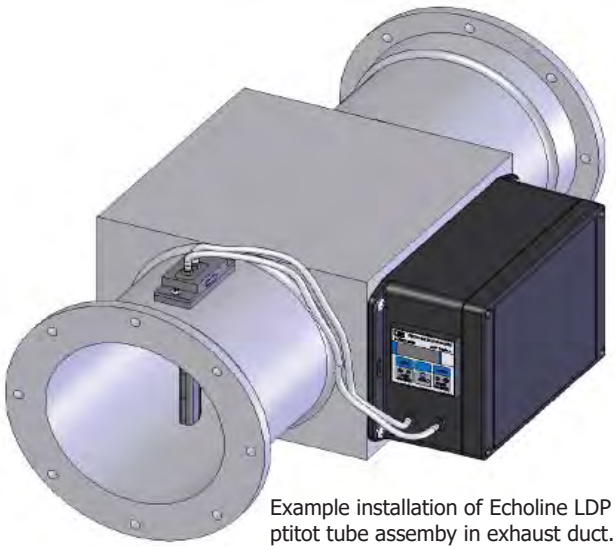
VELOCITY SENSOR

Precision Sensors' Echoline® Velocity Sensor monitors exhaust velocities in Semi Fabs and processes allowing users to optimize flow rates to reduce operating costs, increase production yields and improve safety.

Precision Sensors is now offering our proven Echoline® Low Differential Pressure sensor with a Pitot Tube Assembly for air velocity measurements. When installed into duct work, the pitot tube allows the Echoline sensor to measure static and pitot pressures within the duct. Velocities can then be calculated using the pressure measurements and Bernoulli's Principle.



Example installation of Echoline LDP sensor and ptitot tube assemby in exhaust duct. Installations will vary.

BENEFITS

• Reduction of Operating Expenses: Velocity measurements allow for real time monitoring of exhaust gases. The real time data offers end users the ability to adjust exhaust system velocities to reduce the cost associated with replenishing exhausted gases with conditioned air.

• Velocity readings allow for improved system tuning, potentially improving yield by minimizing contamination associated with condensation within duct work due to insufficient air flow.

• Improved Safety: Velocity measurement provides a safer more direct measurement to ensure potentially dangerous gases are exhausted from critical areas.

• Conformance to S2-0200 and CE, complies with the requirements of UL 991 and UL 508

FEATURES

- LED display of process and alarm state
- Alarm status indicator
- Front panel zero adjustment
- Independently-set low and high set points
- Conformance to S2-0200 and CE, complies with the requirements of **UL 991** and **UL 508**
- Conforms to EN61326-1:1997
- Option for latching or non-latching relay output with adjustable time delay
- LED status indication
- Self-diagnostics
- Adjustable time delay to eliminate false trips and unwanted system shut down
- Custom pitot tube options
- Velocity calibration data sheet

PRECISION SENSORS

SEMI S2-0200 SAFETY CONSIDERATIONS AND UL 991

ECHOLINE® was created using widely accepted best practices in an AS 9100 / ISO 9001 quality environment. Components used in the design and production of ECHOLINE® have been selected for their time proven performance, availability and reliability. ECHOLINE® contains no moving parts that can wear out, or microprocessors that are susceptible to hidden software problems.

Operation

Optional high and low limit alarms are independently set from the front panel. In normal operation, the LED display will indicate the sensed pressure and the High Limit/Low Limit LED status indicators will be green. When a preset limit is exceeded, the LED signals an alarm condition by turning red. After a customer selected time delay, the electromechanical relay contacts will be latched open and the LED display will flash the process pressure once every second. Manually depressing the reset button will cause the relay contacts to close if and when the process pressure is within set limits. A non-latching relay is available.

ECHO Diagnostics

The ECHO function is an internal electronic check of certain circuit parameters. In the event of an internal failure, the ECHO output relay immediately opens to communicate the fault condition and the unit display goes blank. The electromechanical output relay has isolated contacts that monitor the circuit in real time.

Time Delay

ECHOLINE® includes an adjustable "stand alone" time delay to prevent intermittent tripping due to brief transient upsets. When the unit senses a pressure outside the limits, the status LED will immediately turn red, but the relay will not open for a pre-selected time delay. The time delay will reset to zero if the process pressure returns to within the limits during the transient conditions. This feature provides a degree of "fault tolerance" for exhaust flow interlock applications. The time delay is field selectable through a jumper located on the rear of the enclosure for 1, 10, 20 or 30 seconds.

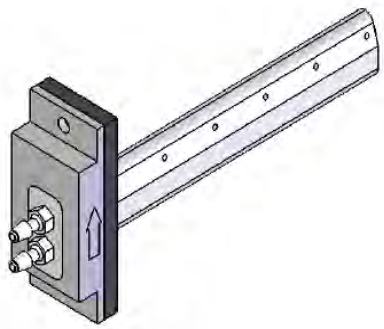
Product Configurations:

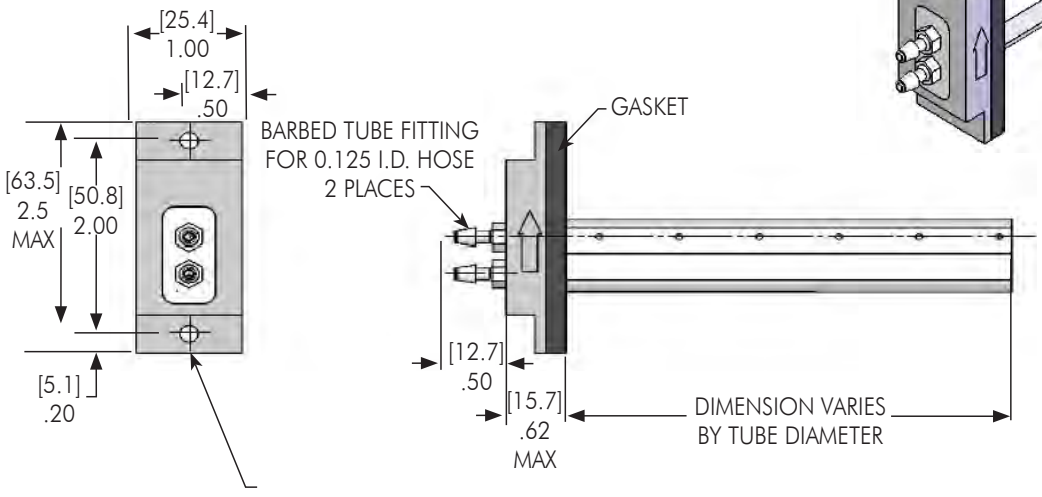
Pitot Tubes can be configured in different lengths and materials to meet specific customer requirements. Custom pitot tubes options are available upon request. Please contact Precision Sensors for additional information.

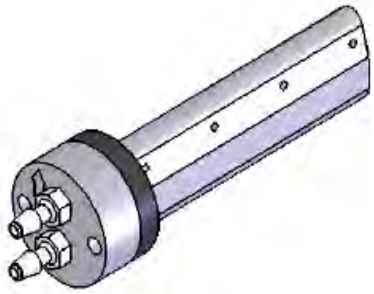
Velocity Sensor Package Includes:

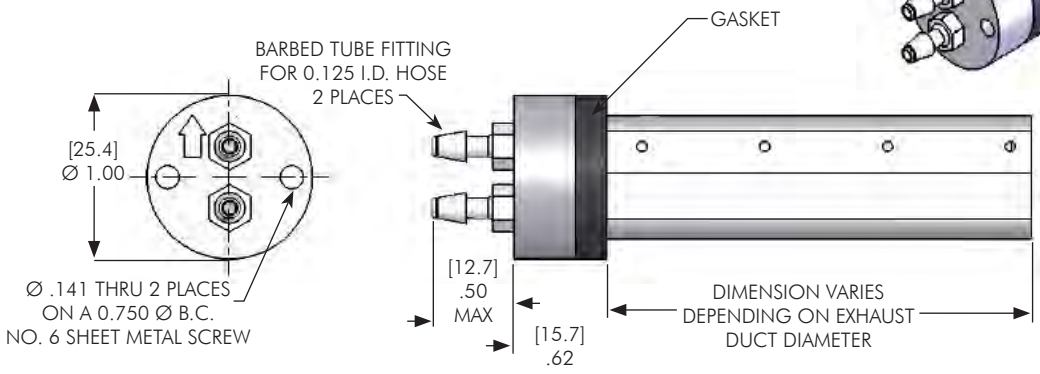
- ECHOLINE LDP Low Differential Pressure Sensor
- Pitot Tube Assembly
- Six meters of PVC installation tubing
- Mounting hardware
- Velocity calibration chart

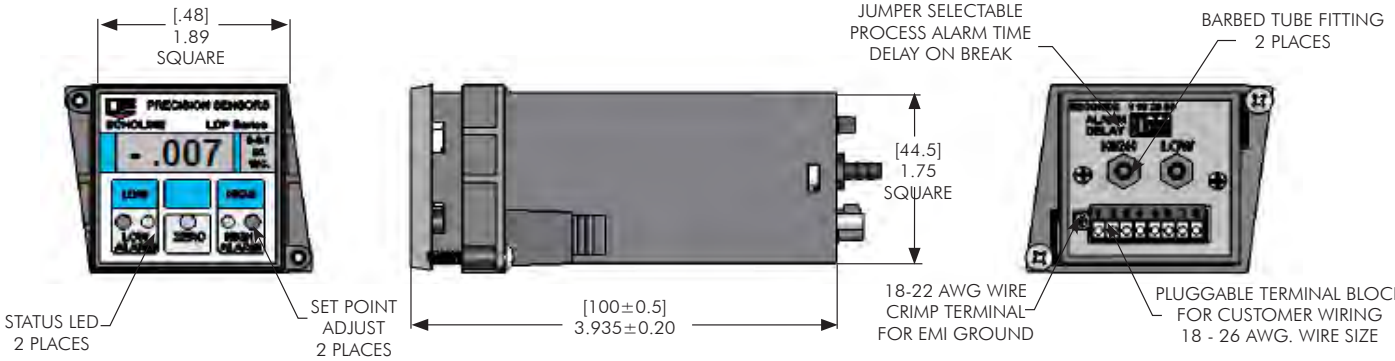
DIMENSIONAL DRAWINGS











SPECIFICATIONS

Media	Clean dry air, Inert gas	**Operating Temp. Range**	0° to 40°C
Type	Field adjustable	**Display Accuracy, Pressure**	1% F.S., 0° to 40°C
Range	0 to 0.1", 0 to 0.2"	**Accuracy**	1% for pressure - 5% for velocity
Proof Pressure	± 80" < 1" WC	**Repeatability**	0.25% for pressure - 1% for velocity
Burst Pressure	20 psig	**Min. Operating Life**	5 Million cycles
Switching Response	1 Sec. to 30 Sec.	**Approvals**	UL508, UL991, CE
Switching Output	1A @ 30 VDC	**Warranty**	36 Months
Input Power	16 to 24 VDC	**Media Connections**	Barbed hose fitting
Analog Output Option	0-10 VDC	**Status LED**	Red/Green
Pitot Tube Length	Up to 6" in length, consult factory for custom configurations	**Pitot Tube Material**	300 CRES Stainless Steel, PVC, PFA/PTFE consult factory for custom configurations

HOW TO ORDER

Create a part description by using the system below. The part description will follow this form. A drawing based on the part description will be submitted for user approval.

			*Sample
Type	LDP		LDP
Setting Range	0.1 WC 0.2 WC	0-0.1" WC 0-0.2" WC	0.1WC 0.2WC
Pressure Connection	D	Dual barbed tube fittings for static and impact pressure connection	D
Standard Features	V	0-10 VDC Output	V
Options	M01	Non-Latching Alarm	-
	M05	D-Sub 9 Pin	M05
	M07	No Low Alarm	-
	M08	No High Alarm	-
	M17	Pitot Tube	M17
Pitot Tube Length	L	Specify length in inches	4
Pitot Tube Material	SS, PVC, PFA/PTFE	300 CRES stainless steel, PVC, PFA/PTFE	PVC
Mounting Flange	RT, RD, Other	RT = Rectangular, RD = Round, Specify size	RT 1"x2"
The above sample configuration is for a LDP0.1WC sensor with dual barbed tube fittings, 0-10 VD ouput, 9 pin D-sub electrical connector and 4" PVC pitot tube assembly.			
Consult factory for custom configurations.			

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