RaceGrade Specification

Document Number		RG_SPEC-0014	
Title		UltraSonic Ride Height	
Revision	**Date**	**Prepared By**	**Change History**
1.0	02/06/2012	Chris Brown	Initial release.

Introduction

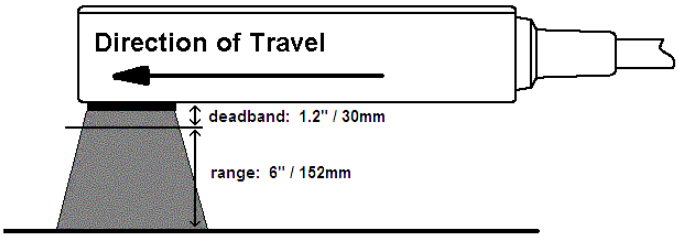
A low cost alternative to laser ride height, this ultrasonic sensor has been developed specifically for motorsport use. Available in either 0-10v or 0-5v output.

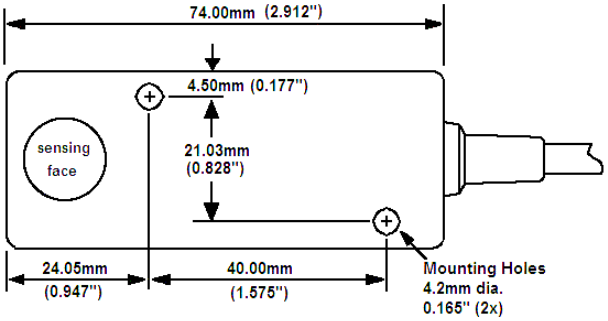
Mounting

This sensor should be mounted with soft Velcro to help absorb vibrations. It should be mounted in an area where laminar flow will exist and no hot exhaust gases flowing underneath.

Specifications:

Output Voltage: 0 to 10v or 0 to 5v
Output Resolution: 9.77mV
Response Time: 9.99 ms max.
Zero Offset: +43 mV/-0 V max.
Full Scale Offset: ± 53 mV max.
Slope Error: < 2% for 4" range
Non-Linearity: ± 0.69 mm (0.027")
Sonic Frequency: 500 KHz
Sonic Cone Angle: 7° minimum
Amber LED: intensity increases with output
Supply Voltage: 12 to 24 VDC
Current Consumption: 50 mA max.
Power Consumption: 1.2 W max.
Protection: current-limited over-voltage, ESD, reverse polarity
Operating Temperature Range:
0° to 60° C @ 15 VDC supply
0° to 50° C @ 24 VDC supply
Storage Temperature: -10° to 120° C
Operating Humidity: 100%
Cable: 24 AWG, foil shielded
Protection Ratings: IP67
Overall Length: 16”





Position Resolution:

The ultrasonic sensor has a 10-bit DAC. The full output resolution is applied to the configured range of the sensor. The output error would be the greater of the two error factors: timer resolution or DAC resolution.

Timer Limitation: resolution due to timer resolution = .25us * 343m/s * 39.374 = .0017"

DAC Limitation: 0-10V output: span/ DAC resolution = span/ (210-1) = span /1023

for example: 8.5" Span: 8.5/1023 = .0083"

1" Span: 1/1023 = .00098"

Connection:

Part #:	M ADL RHS AS		M ADL RHS DTM	
Harness:	AS 106-05 SN HE		DTM 4 Pin	
Sensor:	AS 606-05 PN HE		DTM 4 Socket	
Pin 1 -	blue	Ground	blue	Ground
Pin 2 -	white	0v	white	0v
Pin 3 -	black	Signal	black	Signal
Pin 4 -	N/C		brown	Power
Pin 5 -	brown	Power		

Note: When ordering please specify your measurement range, and voltage output requirements.