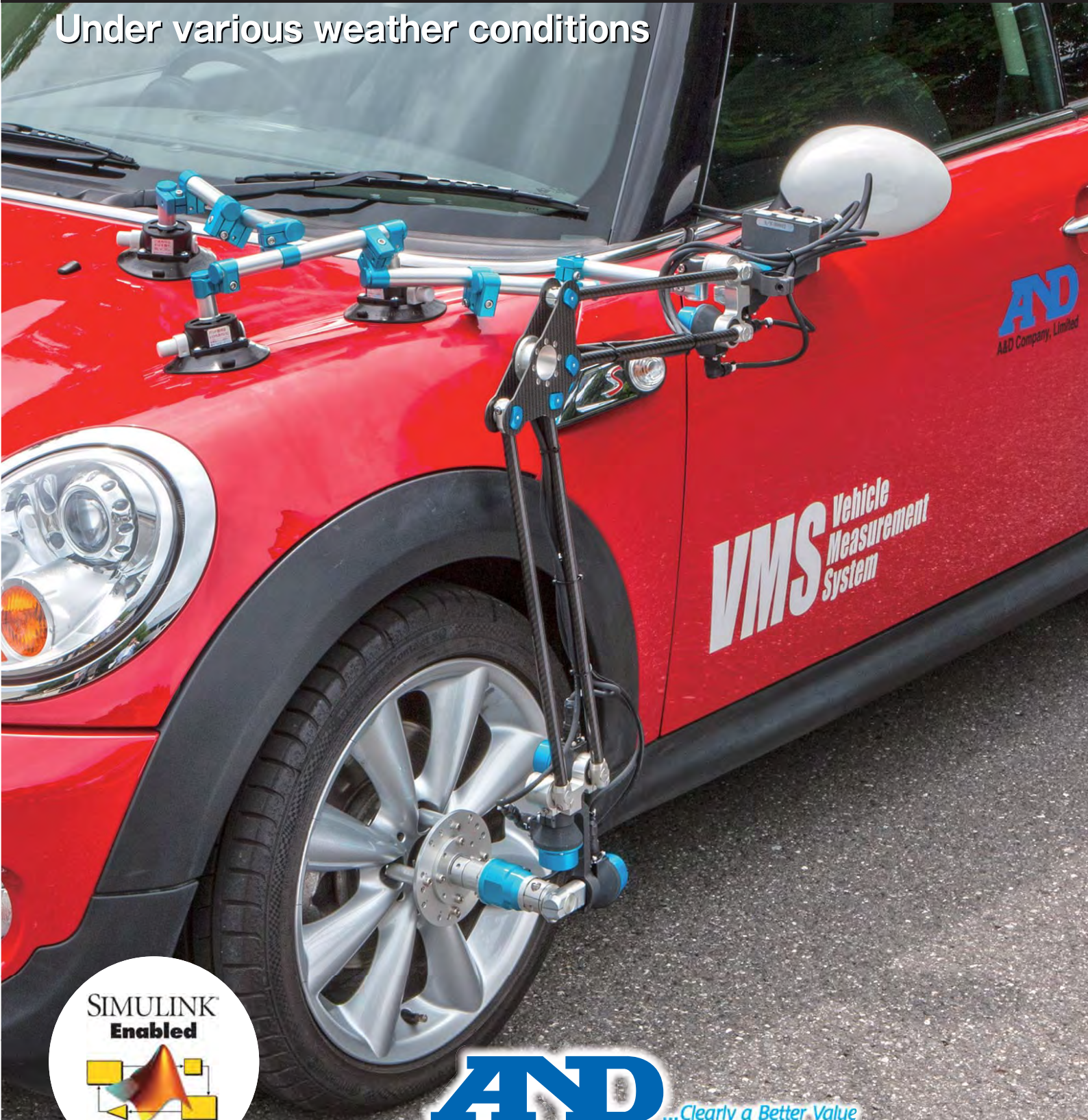


Dynamic vehicle measurement series

# AD7852 Wheel Position Sensor

For the collection of wheel position data

Under various weather conditions



**AND** ...Clearly a Better Value  
A&D Company, Limited  
<http://www.aandd.jp>

## Features



- High resolution 17 bit rotary encoder
- Absolute value measurement system - no need for calibration
- Attachable to a standard wheel
- IP65 waterproof rating
- Measured data is stored in Micro SD card
- Connectable to CAN logger

### Principles of operation

WPS - Wheel position sensors have individual sensors at joints to measure the angle. Angle data is aggregated to describe the vehicle position.

Tire movement in relation to the vehicle body is measured using an original A&D model.

5 individual sensors output the angle data which is converted into the following 6 values:

X displacement( $P_x$  : mm) : Vehicle movement direction

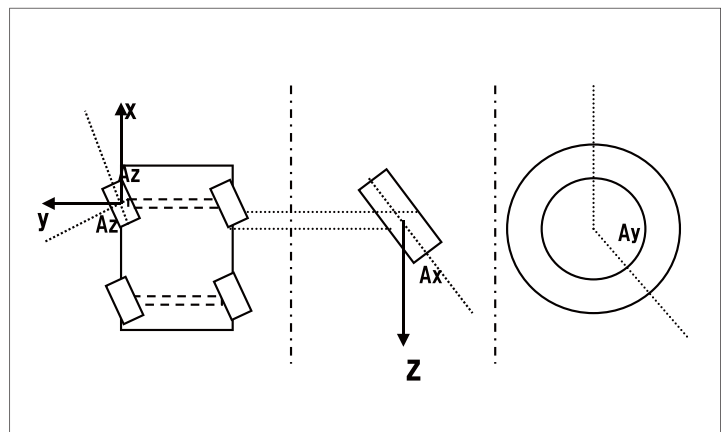
Y displacement( $P_y$  : mm) : Shaft direction

Z displacement( $P_z$  : mm) : Gravity direction

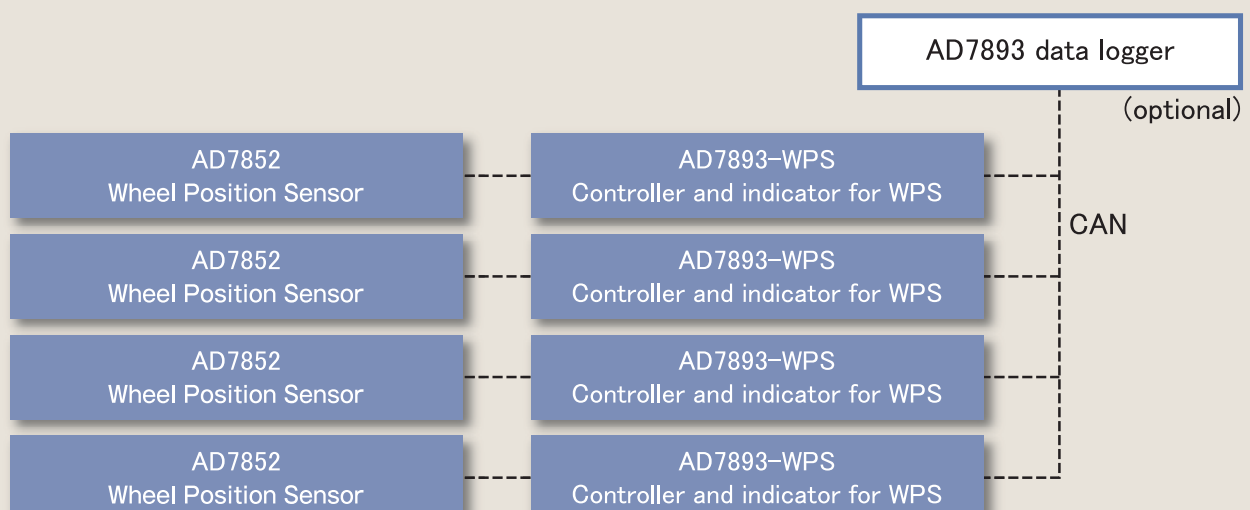
$A_x$ (deg) : Angle of gravity direction and wheel diameter direction

$A_y$ (deg) : Wheel rotation angle

$A_z$ (deg) : Angle of vehicle movement direction and tire direction.



### System configuration



## Logic



### Position

Px / ②,③

Py / ①,②,③

Pz / ②,③

### Angle

Ax / ⑤

Ay / ⑥

Az / ④

6 individual sensors measure the angle independently.

This simultaneous data is integrated into absolute values by the AD7853. Relative data is therefore not required.

## Appearance



WPS+LGS

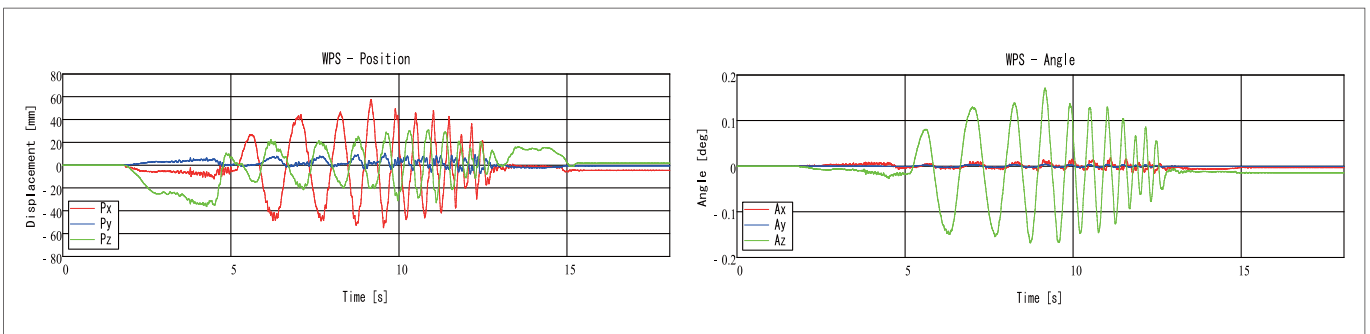


WPS+WFS



WPS+WFS+LGS

## Data example



Vehicle used : Mini Cooper S

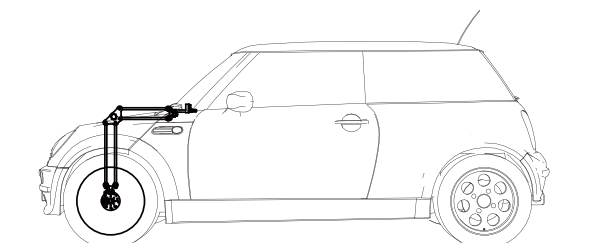
Testing pattern : Sweep steering

Sampled wheel : Front left

Measured values : Px, Py, Pz, Ax, Ay, Az,  
Pitch angle and Tire radius

Measurement duration : 15 secs

Vehicle velocity : Up to 40km/h



## Specifications

### Sensor specifications

Measurement range	x	±30
Angle (deg) *1	y	Unlimited
	z	±180
Resolution	x	0.024
Displacement (mm)	y	0.024
	z	0.01
Resolution	x	0.0027
Angle (deg)	y	*2
	z	0.0027
Resolution		
Encoder		17bit /rotation
Tire rotary encoder (deg)	range	0 to 360
	resolution	0.09
Maximum tire rotation (rpm)		3000
Fixture Suction, magnet and safety belt	Upsprung	2.38
Weight (kg)	Unsprung	1.22

\*1 : Dependent on the cable and fixture  
\*2 : See tire rotary encoder range

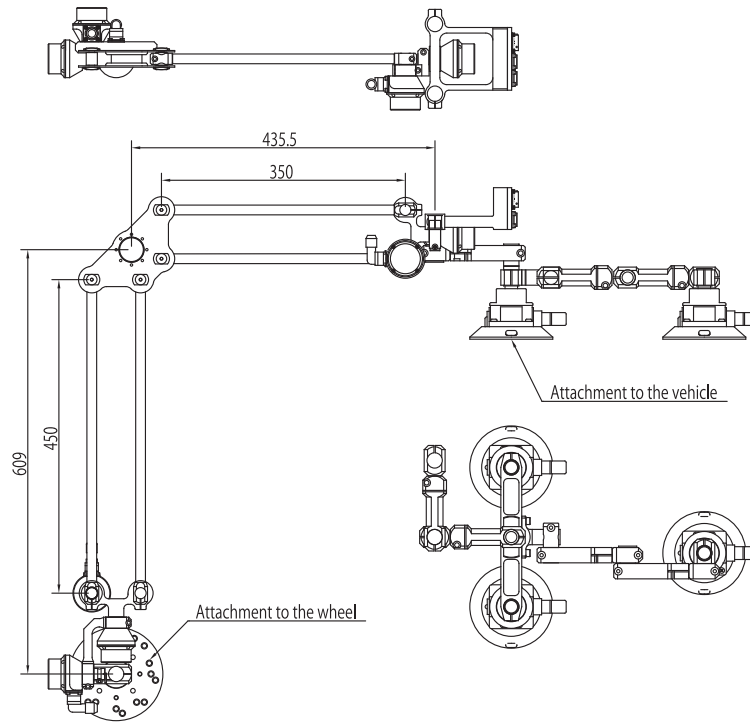
### AD7893 - WPS

Calculation rate		1kHz
Measured factors		Displacement x, y, z
		Angle around x, y, z axes
		Wheel speed
		Angle speed
Low pass filter		4 dimension butterworth
		Selectable from 1, 2, 5, 10, 20, 50, 100, 200, 500 (Hz)
Data output	Format CAN	CAN
		Frequency : Selectable from 1, 2, 5, 10, 20, 50, 100, 200, 500, 1k (Hz)
Size	Width 97mm x Height 97mm x Depth 208mm	
	Width 110mm x Height 115mm x Depth 310mm	Including handling frame
Power supply	AC 100 to 240V	DC 12V AC power adaptor
	DC 12V ±10%	
Operating temperature		5 to 40 °C
Operating humidity*1		5 to 90%RH
Weight (kg)		1.2

\*1 No condensation

## Dimensions

### Sensor parts



	<p><b>Safety Warning!</b></p>	<p>● Please read instruction manuals carefully before use.</p>
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● Appearances and/or specifications subject to improvement without notice.  
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