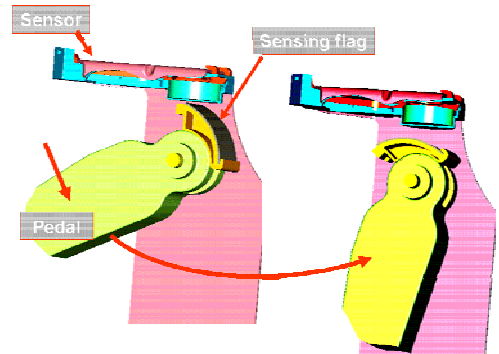


# Smart Position Sensor for Automotive Applications

## Features and Functional description

Methode's innovative sensor technology allows the direct position sensing of a metallic target, hence eliminating the need of magnets. It also offers a high degree of flexibility in terms of the geometrical configurations that are possible, sensing range, electrical interfaces and operational environmental conditions.



The position sensor is Smart because it has in-built self diagnostics by continuously monitoring for internal failures. This enhances the system safety by driving outputs into a fail safe state. Also, self diagnostics eliminates the need of a plausibility check by the main ECU and the need of additional sensing elements to achieve a fail safe operation (i.e. SIL 2). To compensate for mechanical tolerances, an in-built self learning system continuously learns the end stops and compensates for any system life-time variations.



Figure 1: Series production application for clutch pedal position sensing

## Typical Applications

- Clutch, Brake and Accelerator Pedals
- Transmissions
- Gear Shifters
- Steering Axis
- Valves
- Clutch plate
- Suspension

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## Performance and Packaging Specifications

Packaging - Linear configuration	Size A	Size B	Size C
Min. dimensions Ø [mm] x h [mm] <sup>(1)</sup>	24 x 18	16 x 22	11 x 20
Linear detection range [mm]	10	6	4
Standard Resolution [mm]	0.01	0.01	0.005
Standard Accuracy / Repeatability [mm]	0.03	0.02	0.01
Hysteresis [mm]	< 0.01	< 0.01	< 0.005

<sup>(1)</sup> Sensor head with electronics, without connector

Signal resolution [bit]	8, 10, 12
Linearity [R <sup>2</sup> ]	> 0.99
Internal position update rate	min. 0.25 ms
External signal update rate	min. 0.33 ms
Operating temperature range	- 40 °C / +150°C

Standard signal outputs	PWM, LIN, SPI
Optional	CAN

## Product Highlights

- Robust eddy current sensing principle for harsh and high temperature environments, which is also insensitive to static magnetic fields
- Robust sealing to IP5k5 standard
- Built-in intelligence permits diagnostics and dynamic adaptive learning
- Can be used as an open sensing system (target is separate to sensor) to save on part count
- ASIC with continuous PWM / LIN outputs of the continuous position, velocity and with programmable switching points

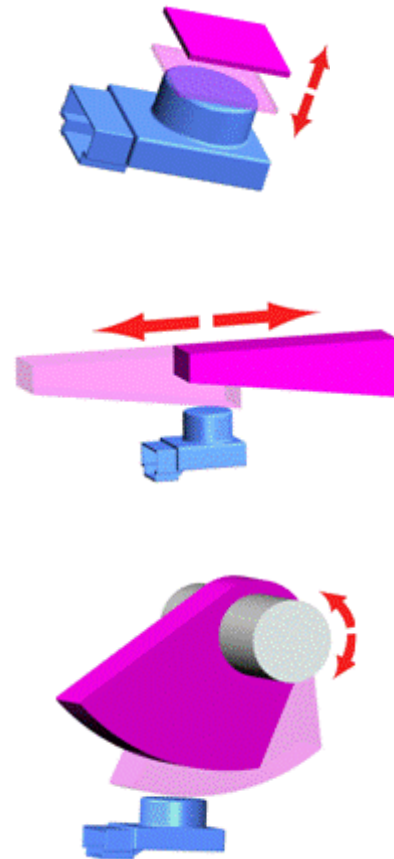


Figure 2:  
Typical Sensor-Target  
configurations