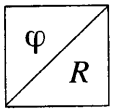
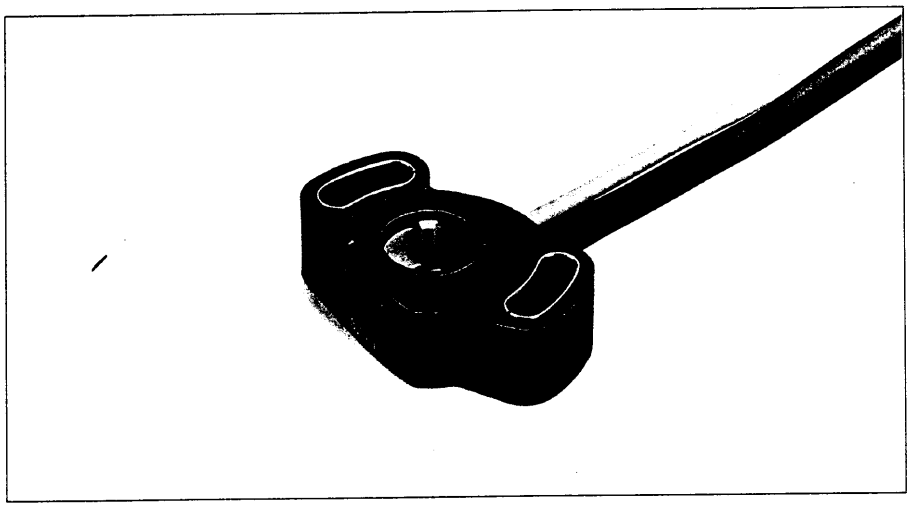
Potentiometric angular-position sensors

Measurement of angles up to 93°



- Potentiometric angular-position sensor with linear characteristic curve
- Automatic return from angular position to basic position
- Sturdy design for exacting demands
- Compact sizes



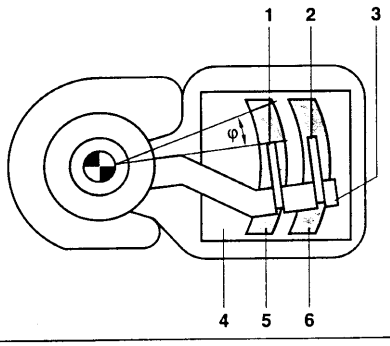
Application
The angular-position sensor is in a plastic housing. It is used in underhood applications where it is exposed to extreme environmental stressing. The sensor is resistant to fuels, oils, saline fog, and industrial climate.

Design and function
The angular-position sensor is of the potentiometric type.
It is used in electronic fuel-injection (EFI) engines where it serves to generate a voltage ratio which is proportional to the throttle valve's angle of rotation.
It also features a return spring for moving it back to the zero position.
This angular-position sensor has a linear characteristic curve when used as an unloaded voltage divider. The accuracy is 3% (of the stroke) at a voltage of 5 V.

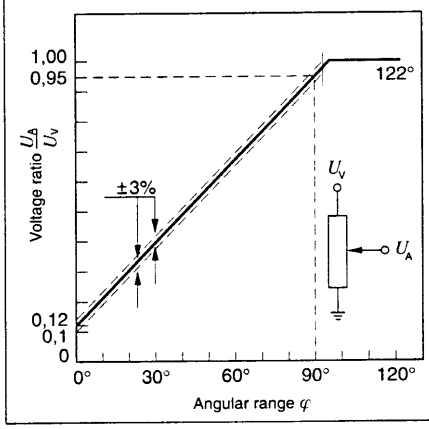
Design
The angle sensor is available for clockwise rotation (I) and counterclockwise rotation (II).

Explanation of symbols:
U_A Output voltage
U_V Supply voltage
φ Angle of rotation

Angular sensor (block diagram)
1 Pick-off brush, 2 Main brush, 3 Wiper arm, 4 Potentiometer plate with resistance track, 5 Pick-off track, 6 Measurement track, φ Angle of rotation (throttle angle).



Voltage ratio as a function of angle of rotation



Accessories

Available from AMP Deutschland GmbH, Amperestr. 7–11, D-63225 Langen, Tel. 0 61 03/70 90.

Socket housing	AMP No. **826 886-4**

Contact pins

Cable cross section	
0.5 ... 1 mm²	AMP No. **827 396-1**
1 ... 2.5 mm²	AMP No. **827 397-1**

3 contact pins are required for one housing.

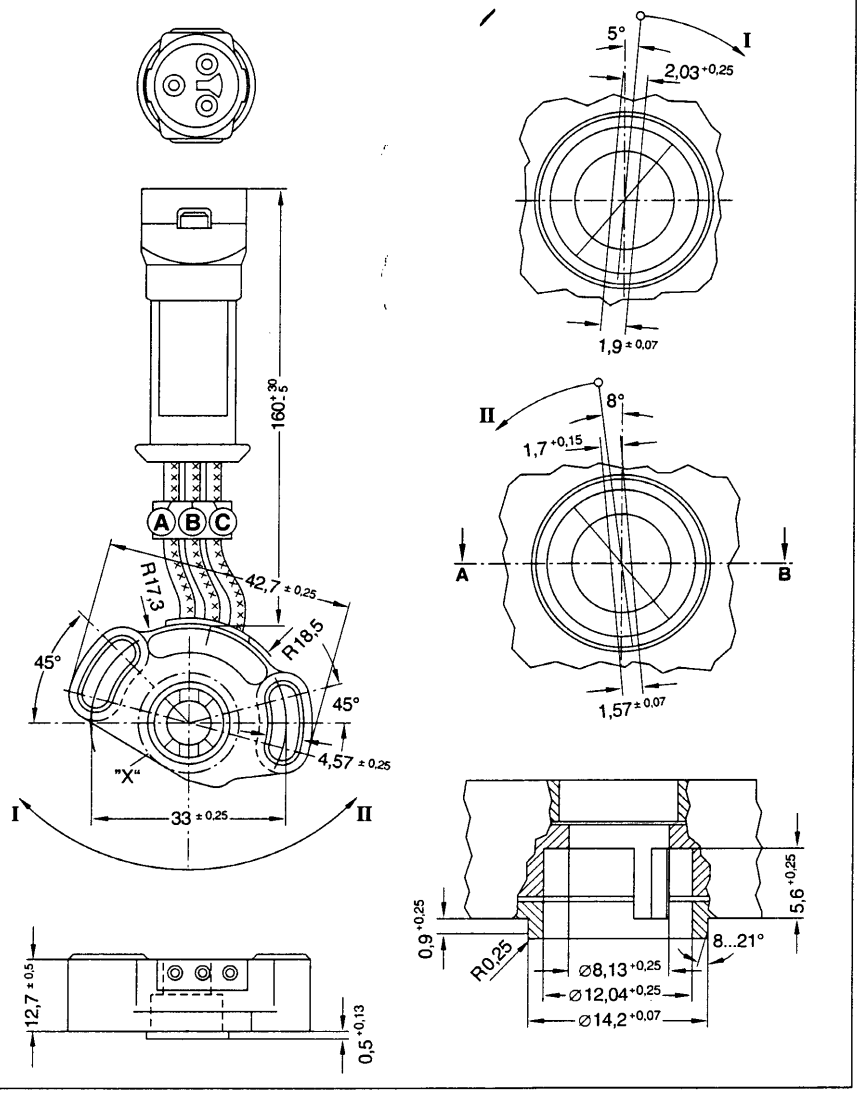
Technical data / Range

Part number		**0 261 211 004/003**
Direction of rotation (definition as per dimension drawings)		I/II
Total resistance		4 kΩ ± 20 %
Angle of rotation max.	Electrical	93 ± 2 °
	Mechanical stop	122 ± 8 °
Wiper current max.		10 mA
Operating voltage	U_V	5 V
Operating voltage max.	U_{Vmax}	43 V
Temperature range	Sensor	–40 ... +135 °C
	Plug	–40 ... +105 °C
Vibration loading	Frequency 500 Hz	30 g[1]
	Frequency 500 ... 1000 Hz	15 g
Functional reliability		
Angle range 0 ... 85	Complete operating cycles	500 000
Angle range 0 ... 45	Half operating cycles	1 000 000
Angle range 2	Jitter cycles	10 000 000
Max. end-stop loading (Direction of rotation I and II)		11.5 N · cm
Degree of protection		IP 54A

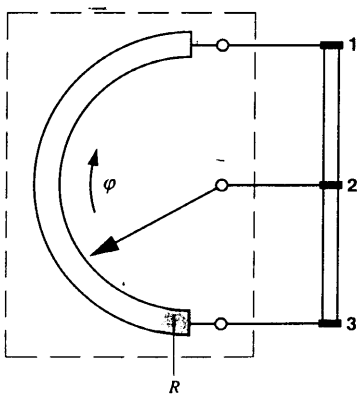
[1]) g = 9.81 m · s^{-2} (acceleration due to gravity)

Dimension drawings

Part number	Direction	Contact assignment in plug/color A	B	C
0 261 211 004	I	3/black	2/green	1/orange
0 261 211 003	II	1/orange	2/green	3/black



Wiring diagram
(*R* remaining/residual resistance).



Note on wiring diagram

When connecting, pay attention to correct polarity. False polarity can destroy the potentiometer.