Angle sensor

Measurement of angles up to 88°

Input quantity: φ
Output quantity: R

- Potentiometric angular-position sensors with linear characteristic curve.
- Sturdy design for exacting demands.
- Compact size.

Application

Sensors of this type are used in motor vehicles to record the angle of rotation of the throttle valve. They are exposed to extreme operating conditions, being attached directly to the throttle valve housing by means of an extended throttle valve shaft in the engine compartment. To maintain reliable operation under such conditions, the sensors are resistant to fuels, oils, saline fog and industrial atmospheres.

Design and operation

The throttle-valve angular-position sensor is a potentiometric angular-position sensor with a linear characteristic curve. It is used with fuel-injection engines to convert the angle of rotation of the throttle valve into a proportional voltage ratio. To do so, the rotor with its special wipers connected to the throttle-valve shaft travels along corresponding resistance tracks, with the position of the throttle valve being converted into the above-mentioned voltage ratio. The throttle-valve angular-position sensors have no return spring. The throttle-valve angular-position sensor 0 280 122 001 has one linear characteristic curve. The throttle-valve angular-position sensor 0 280 122 201 has two linear characteristic curves. This permits a particularly high resolution in the angle range 0° 23°.

Explanation of characteristic quantities

U_A Output voltage U_V Supply voltage φ Angle of rotation U_{A1} Output-voltage characteristic curve 2 U_{A2} Output-voltage characteristic curve 3

Robert Bosch GmbH
Automotive Aftermarket
Postfach 410960
76225 Karlsruhe
Germany

www.bosch-sensoren.de

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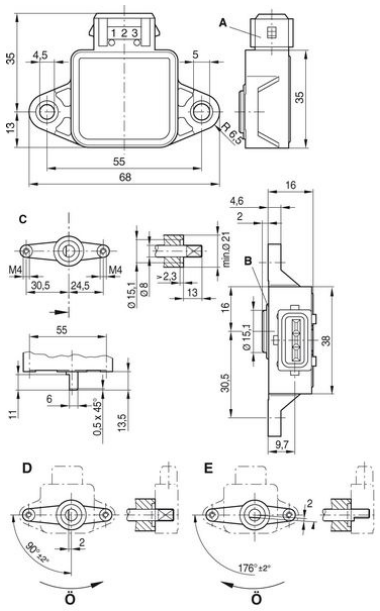
Part number 0 280 122 001

Technical data

Useful electrical angle range	degrees	≤ 86
Useful mechanical angle range	degrees	≤ 86
Angle between internal stops (must not be reached when fitted)	degrees	≥ 95
Direction of rotation		Any
Total resistance (term. 1-2)	kΩ	2 ± 20 %
Wiper protective resistor (wiper in zero position, term. 2-3)	Ω	710 ... 1380
Operating voltage U_V	V	5
Load		Ohmic resistance
Permissible wiper current	µA	≤ 18
Voltage ratio from stop to stop - characteristic curve 1		$0{,}04 \le U_A/U_V \le 0{,}96$
Slope of nominal characteristic curve	deg^{-1}	0,00927
Operating temperature		- 40 °C ...+ 130 °C
Approximate value for permissible vibration acceleration	m/s^2	≤ 700
Service life (rotary cycles)	Mill.	2

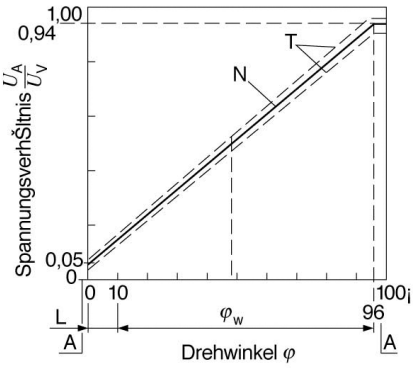
Accessories are not included in the scope of delivery of the sensor and are therefore to be ordered separately as required.

Dimensional drawing



A Plug connection
B O-ring 14.65 x 2 mm
C Attachment dimensions for throttle-valve housing
D Clockwise
E Anti-clockwise
Ö Throttle-valve opening direction

Characteristic curve



A Internal stop
L Positional tolerance of wiper when attached NNominal characteristic curve
T Tolerance limits
φ_w Useful electrical angle range

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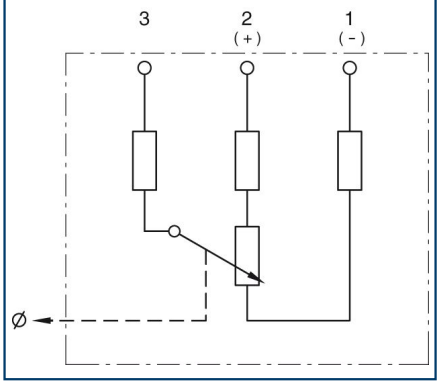
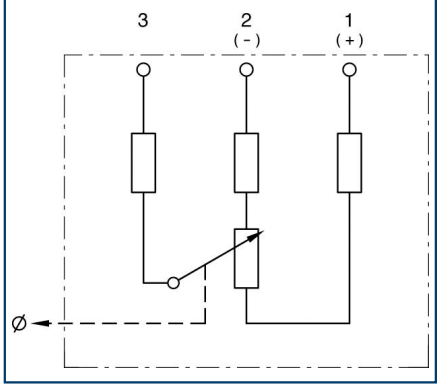
Circuit diagram 1



Circuit diagram 2



Accessories	Part number
Connector	1 237 000 039

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