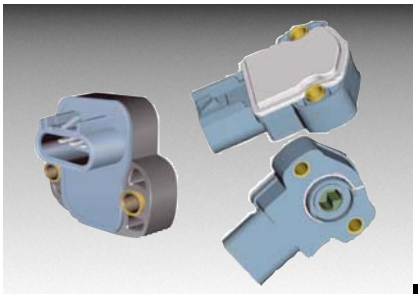


BOURNS®

Features

- Non-contacting sensor technology
- Programmable output characteristic

Non-Contacting Angle Sensor

Introduction

Bourns® Non-contacting Angle Sensor is based on a two-axis Hall sensor element. The rotor is connected to a magnet that is mounted above the sensor ASIC-chip. Its angular position is measured and an output signal proportional to the rotor orientation is generated. The output characteristic can be programmed to meet specific customer specification.

Electrical Specifications (Prototype Samples)

Absolute Maximum Ratings:

Supply Voltage, V_{dd} (Overvoltage) ..... 20 V
Reverse Voltage Protection ..... -10 V
Positive Output Voltage ..... 10 V, 14 V during 200 s
Positive Output Current, I_{OUT} (Pull Down) ..... 20 mA
Reverse Output Voltage ..... -0.3 V
Reverse Output Current ..... 50 mA
Operating Temperature, T_A ..... -40 °C to +150 °C
Storage Temperature Range, T_s ..... -40 °C to +150 °C

Parameter	Symbol	Comment	Min.	Typ.	Max.	Units
Nominal Supply Voltage	V_{dd}		4.5	5	5.5	V
Supply Current	I_{dd}	Programmable	10		16	mA
Output Current	I_{out}		-8		8	mA
Output Load	R_l	Pull-up to 14 V Pull-up to 5 V (if required, the Output Signal of the sensor can be programmed as analog, PWM or pull-down to GND)	3.3 1	5.6 10		kΩ
Step Response Time	T_s	Programmable		300	500	µs
Watchdog	W_d				5	ms
Start-up Cycle	T_{su}				15	ms
Broken V_{ss}		< 10k			100	mV
Broken V_{dd}		Pull-up to 14 V Pull-up to 5 V	V_{dd}-100 V_{dd}-800			mV
Clamp Low		Programmable			3	% V_{dd}
Clamp High		Programmable			97	% V_{dd}
Resolution	R	Over 360 °		< 0.1		°
Linearity Error	L_e	Over -178 ° to 178 °		≤ 0.6		%
Linearity Error	L_e	Over 0 ° to 94.5 °		≤ 0,6		%

Electrical Connections

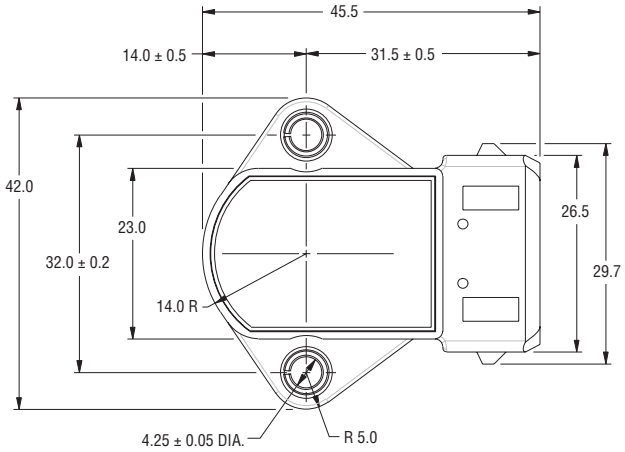
Pin No.	Symbol	Min.	Typ.	Max.	Units
1	GND1				
2	V_{dd}	4.5	5	5.5	V
3	Output1	0.15		4.85	V
4	Output2	0.15		4.85	V

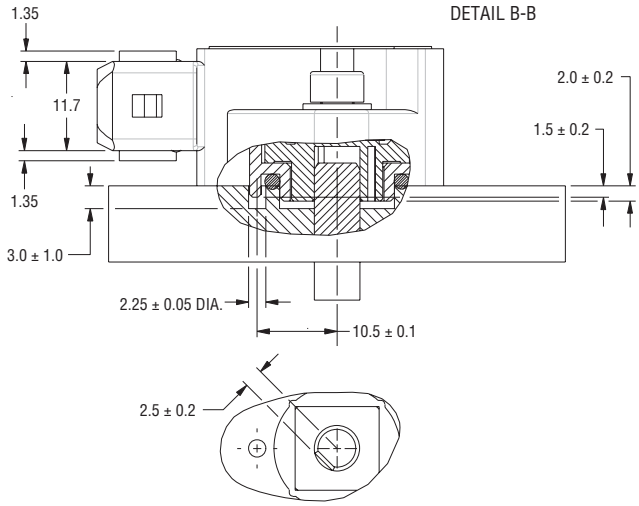
Programmable Items

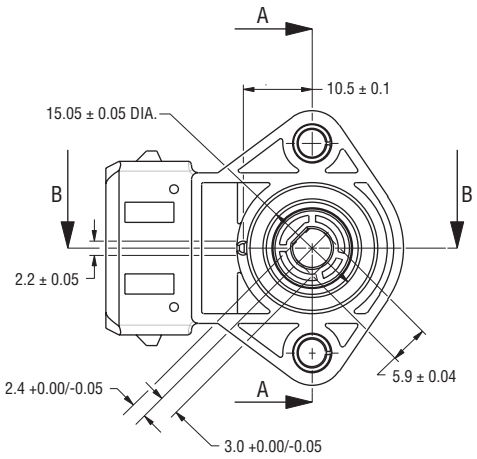
The output of the sensor is programmable to offer an analog or PWM output, selectively. Furthermore, it can be programmed for offset, gain and clamping to meet any rotary position sensor output transfer characteristic.

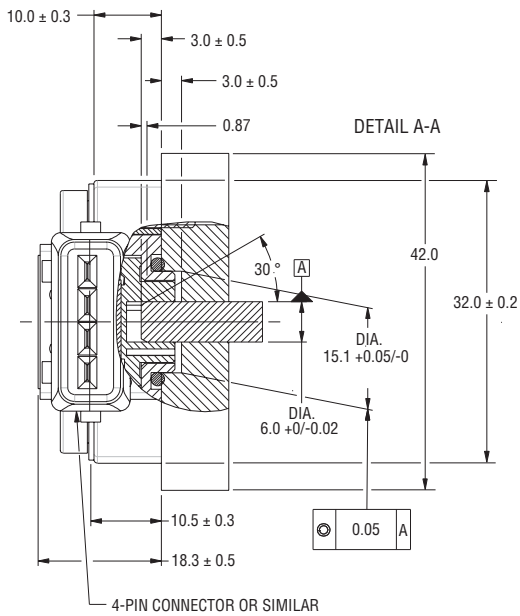
The angular range is adaptable from 20 ° to 360 °.

Product Dimensions



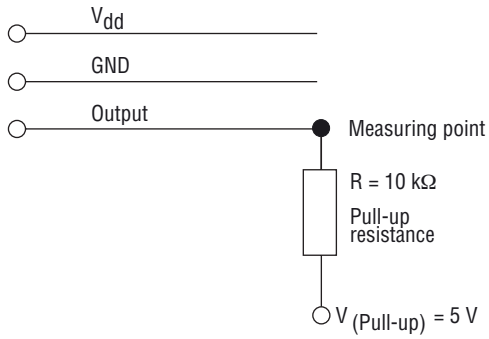




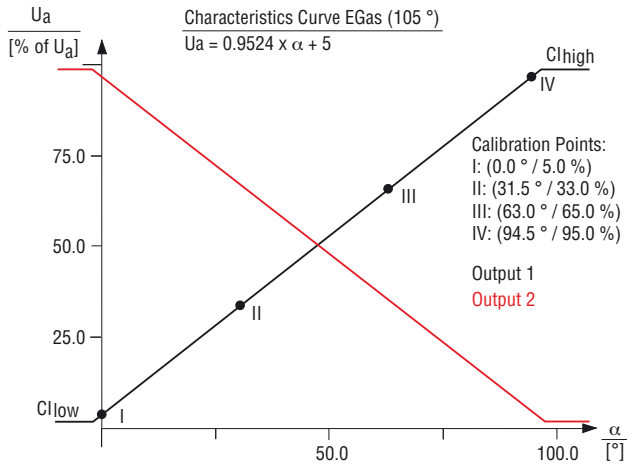


DIMENSIONS: MM

Pull-up Resistance Circuit



Characteristc Curve for a TPS Sensor (Example)



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