# INSTALLATION INSTRUCTIONS FOR THE **SPEED SENSORS, SNG-S SERIES**

### **GENERAL SPECIFICATIONS**

Honeywell's SNG-S Series Speed Sensors use a magnetically biased Hall-effect integrated circuit (IC) to accurately sense movement of ferrous metal targets. The specially designed IC and a permanent magnet are sealed in rugged, probetype packages. The IC detects the alteration of the magnet's flux density when it is approached by ferrous metal. A sensor positioned at the circumference of a revolving gear wheel detects the teeth and spaces, and supplies a digital pulse output with frequency proportional to gear wheel speed. Optimum performance is dependent upon a combination of variables such as target material, geometry and speed, sensor/ target gap, and environmental temperature.

TABLE 1. ELECTRICAL SPECIFICATIONS					
		PARAMETER			
CHARACTERISTIC	CONDITION/COMMENT	SNG-SPRF-002	SNG-SPRD-002 SNG-SPSC-001 SNG-SPRC-001	SNG-SPRD-003 SNG-SPRC-002	SNG-SPRD-004 SNG-SPRC-003
Supply voltage	regulated supply and 12 V battery ISO 16750-2	4.5 V to 24 V —	_ 8 V to 16 V	_ 4.8 V to 16 V	_ 4.8 V to 24 V
Supply current	-	20 mA max.		15 mA	
Reverse voltage protection	– ISO 16750-2	-24 V -		_ -14 Vdc	
Over voltage protection	_ ISO 16750-2	26.5 V —		_ 26 V	
Short circuit protection	- ISO 16750-2	16V _		_ 16 V	
Load dump	ISO 16750-2:2012 11 01 (US* = 40 V, UA 13.5 ±0.5 V)	5b —			
Insulation resistance	ISO 16750-2:2012	>10 MOhm at 500 Vdc _			

TABLE 2. MECHANICAL SPECIFICATIONS				
	PARAMETER			
CHARACTERISTIC	SNG-SPRF-002	SNG-SPRD-002 SNG-SPSC-001 SNG-SPRC-001	SNG-SPRD-003 SNG-SPRC-002	SNG-SPRD-004 SNG-SPRC-003
Carrier material	PBT thermoplastic		PBT	
Bushing material	SS304	SSTL		
O-ring material	70 durometer fluorocarbon, PTFE coating, 17,17 mm ID x 1,78 CS	fluorocarbon, brown, 17,17 mm ID x 1,78 CS		
Housing material	PBT	PBT		
Connector: integral mating	Bosch 928000453 Bosch 1928403966	Amp Superseal 1.5 282087		
Mounting torque	8 ±0,5 N m with M6 screw	20 ±3 N m with M8 screw		
O-ring lubrication	mineral oil-based grease			

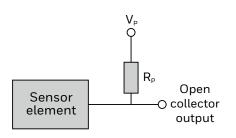


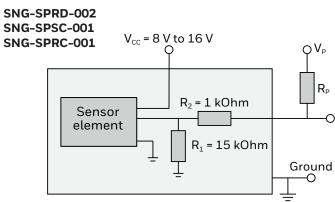
CHARACTERISTIC     ONDITION/COMMENT     IDENTIFY       Radiated immunity     ISO 11452-2: 2004 101452: 2: 2004 105 11452: 2: 2004 105 1125 11, 2a, 2b, 3a, 3b 105 113 100 105 110	TABLE 3. ENVIRONMENTAL SPECIFICATIONS				
Radiated immunityImage: Constraint of the constraint of th			PARAMETER		
Radiated immunity     S0 11452-2: 2004 (S0 11452-2: 400 MHz to 2.5 GHz     200 MHz to 2.7 GHz 100 V/m a	CHARACTERISTIC		SNG-SPRF-002	ALL OTHER CATALOG LISTINGS	
SAE J1113/13 ISO 1060544 W contact, ±8 W air - - - BK W contact, ±15 W air- - - - BK W contact, ±15 W airConductive transientsISO 7637-2, for 12 V systemTEST PULSE 1, 2a, 2b, 3a, 3b -  PULSE 1, 2a, 3a, 3b, 5aConducted emissionsCISPR 25. 150 kHz to 108 MHz-Class 3Radiated emissionsCISPR 25. 150 kHz to 12.5 GHz-Class 3Thermal cycle-40°C to 140°C-Class 3Humidity-100 cycles-95 %RH at 55°C-100 cycles, ISO 16750-4Salte dunk0°C to 110°C-100 cycles, ISO 16750-4Salte dunk0°C to 110°C-100 cycles, ISO 16750-4Salte dunk5% salt solution by mass at 35°C and the sensor packaging area5% salt solution by mass at 35°C and 93% RH for 2000 hr96 hoursSalte for0°C to 110°C-96 hoursCombined temperature and vibration testsinusoidal: 25 hr/axis, 3 perpendicular axes 30 g at 60 Hz to 1000 Hz and 15 g at 1000 Hz acou 01 Hz and 15 g at 11000 Hz acou 01 Hz and 15 g at 11000 Hz acou 01 Hz and 15 g at 1200 Hz acou 01 Hz and 10 Hz acou 000 Hz andem: 25 hr/axis, 3 perpendicular axes, 48	Radiated immunity	ISO 11452-2: 2004 IEC 61000-4-3: 2008	200 MHz to 2.7 GHz, 100 V/m	  100 V/m	
ESDISO 10605- March and and an antipart of the second and antipart of the second	Bulk current injection	ISO 11452-4, 1 MHz to 400 MHz	100	A mA	
Conductive transientsISO 7637-2, for 12 V system-OutSE 1, 2a, 3a, 5b, 5aConducted emissionsCISPR 25.150 kHz to 108 MHz-Class 3Radiated emissionsCISPR 25.150 kHz to 12.5 GHz-Class 3Thermal cycle-40°C to 140°C-100 cyclesHumidity100 cycles95 %RH at 55°C-104 kH n; EN/EC 60068-2-30Saline dunk0°C to 110°C-10 cycles, ISO 16750-4Saline dunk0°C to 110°C-10 cycles, ISO 16750-4Salit fog0°S att solution by mass at 35°C and 93% RH for 400 hr, tested to 2000 hr with no ingress for 400 hr, tested to 2000 hr with no ingress for 400 hr, tested to 2000 hr with no ingress if be sensor packaging areaSolution by mass at 35°C and 93% RH solution by mass at 35°C and 93% RH solution by mass at 35°C and 93% RH solution by mass at 35°C and 93% RH for 2000 hr96 hoursSalit fog96 hoursSult fogSolution by mass at 35°C-96 hoursSult fogSult fog </td <td>ESD</td> <td></td> <td>±4 kV contact, ±8 kV air —</td> <td>– ±8 kV contact, ±15 kV air</td>	ESD		±4 kV contact, ±8 kV air —	– ±8 kV contact, ±15 kV air	
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Combined temperature and vibration testSinusoidal: 25 hr/axis, 3 perpendicular axes 30 gat 60 Hz to 1000 Hz and 15 gat 1000 Hz to 2000 HzSinusoidal: 25 hr/axis, 3 perpendicular axes 15 gat 5 Hz to 2000 HzSinusoidal: 25 hr/axis, 3 perpendicular axes at 5 gat 5 Hz to 2000 HzSinusoidal: 25 hr/axis, 3 perpendicular axes at 25 gat 5 Hz to 2000 HzSinusoidal: 25 hr/axis, 3 perpendicular axes at 25 gat 5 Hz to 2000 HzSinusoidal: 25 hr/axis, 3 perpendicular axes at 25 gat 5 Hz to 2000 HzSinusoidal: 25 hr/axis, 3 perpendicular axes at 25 gat 5 Hz to 2000 HzSinusoidal: 25 hr/axis, 3 perpendicular axes at 25 gat 5 Hz to 2000 HzSinusoidal: 25 hr/axis, 3 perpendicular axes at 25 gat 5 Hz to 2000 HzSinusoidal: 25 hr/axis, 3 perpendicular axes at 25 gat 5 Hz to 2000 HzSinusoidal: 25 hr/axis, 3 perpendicular axes at 25 gat 5 Hz to 2000 HzSinusoidal: 25 hr/axis, 3 perpendicular axes at 25 gat 5 Hz to 2000 HzSinusoidal: 25 hr/axis, 3 perpendicular axes at 25 gat 5 Hz to 2000 HzSinusoidal: 25 hr/axis, 3 perpendicular axes at 25 gat 5 Hz to 2000 HzSinusoidal: 25 hr/axis, 3 perpendicular axes at 25 gat 5 Hz to 2000 HzSinusoidal: 25 hr/axis, 3 perpendicular axes at 25 gat 5 Hz to 2000 HzSinusoidal: 25 hr/axis, 3 perpendicular axes at 25 gat 5 Hz to 2000 HzSinusoidal: 25 hr/axis, 3 perpendicular axes at 25 gat 5 Hz to 2000 HzSinusoidal: 25 hr/axis, 3 perpendicular axes at 25 gat 5 Hz to 2000 HzSinusoidal: 25 hr/axis, 3 perpendicular axes at 25 gat 5 Hz to 2000 HzSinusoidal: 25 hr/axis, 3 perpendicular axes at 25 gat 5 Hz to 2000 HzSinusoidal: 25 hr/axis, 3 perpendicular axes at 25 gat 5 Hz to 2000 HzSinusoidal: 25 hr/axis, 3 perpendicular axes at 25 gat 5 Hz to 2000 HzSinusoidal: 25 hr/axis, 3 perpendicular a	Salt fog	for 400 hr, tested to 2000 hr with no ingress in		_	
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at 25 rms Hz to 2000 Hz, -40°C to 125°Cat 25 grms at 10 Hz to 2000 HzVibration3 perpendicular axes, 48 hr per axis-29.8 GRMS, 24 Hz to 2000 Hz, MIL-STD-202-214Degree of protectionIEC 50629 IEC 60529IPX6, IPX9K, IPX7 -infoegge of performanceResistance to fluidsinfoegge of performanceOperating temperatureAccord to 150°C		30 g at 60 Hz to 1000 Hz and 15 g at 1000 Hz to 2000 Hz	15 g at 5 Hz to 2000 Hz	-	
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Degree of protectionIEC 60529–IP69K, IP67Resistance to fluids––general under-the-hood automotive fluidsOperating temperature–-40°C to 150°C-40°C to 140°C	Vibration	3 perpendicular axes, 48 hr per axis	-		
Operating temperature - -40°C to 150°C -40°C to 140°C	Degree of protection		IPX6, IPX9K, IPX7 -	_ IP69К, IP67	
	Resistance to fluids	-	-	general under-the-hood automotive fluids	
Storage temperature – -55°C to 70°C -40°C to 140°C	Operating temperature	-	-40°C to 150°C	-40°C to 140°C	
	Storage temperature	_	-55°C to 70°C	-40°C to 140°C	

## **SPEED SENSORS, SNG-S SERIES**

## FIGURE 2. SCHEMATIC DIAGRAMS AND OUTPUT SPECIFICATIONS

SNG-SPRF-002

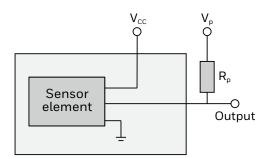




CHARACTERISTIC	CONDITION/COMMENT	PARAMETER
Signal type	open collector	square wave
Power on	-	default high and start from initial edge
Signal polarity	not dependent on target rotation	output low on teeth
Output signal: high low	-	≥V <sub>P</sub> - 0.5 V ≤0.6 V
Load current	output leakage current -10 $\mu\text{A}$	10 mA max.
Frequency	-	0 kHz to 10 kHz

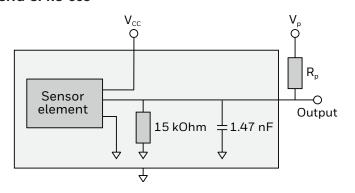
CHARACTERISTIC	CONDITION/COMMENT	PARAMETER
Signal type	open collector	square wave
Output signal: high low	dependent on target geometry and sensor-to- target orientation	$(V_p x (16.5)/(16.5 + R_p in kOhm) 0.3 V to 2.2 V  \leq (((V_p-0.4) x 1 k)/(1 k + Rp in kOhm))+0.4$
Load current	-	15 mA
Frequency	-	0 kHz to 10 kHz

#### SNG-SPRD-003 SNG-SPRC-002



CHARACTERISTIC	CONDITION/COMMENT	PARAMETER
Signal type	open collector	square wave
Output signal: high low	dependent on the controller interface	≥V <sub>cc</sub> - 0.5 V ≤0.5 V
Load current	-	20 mA
Frequency	-	0 kHz to 10 kHz

#### SNG-SPRD-004 SNG-SPRC-003



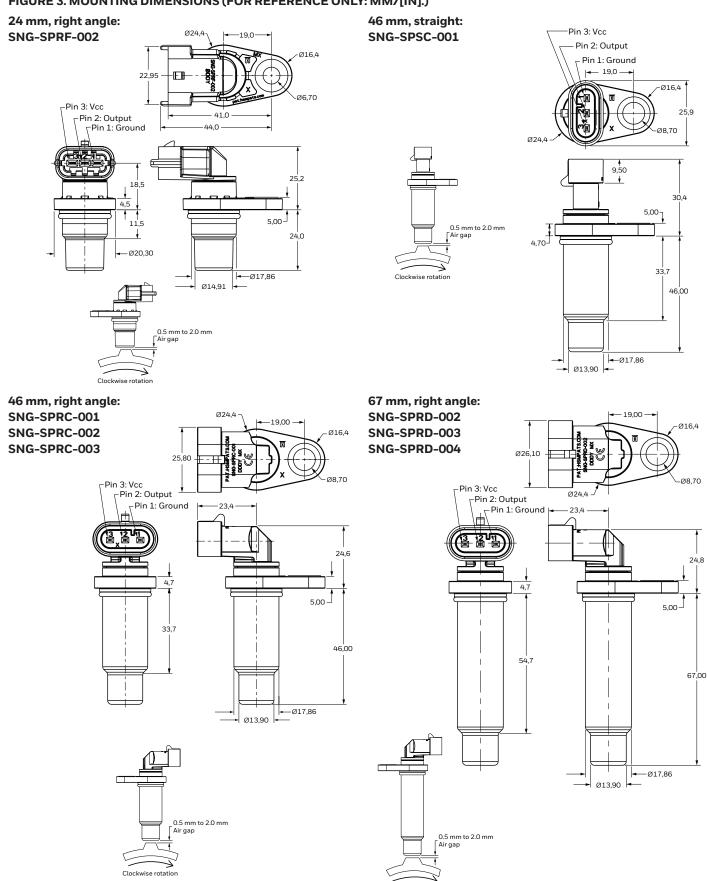
CHARACTERISTIC	CONDITION/COMMENT	PARAMETER
Signal type	open collector	square wave
Output signal: high	dependent on the controller interface	(Vp x (16.5)/(16.5+ Rp in kOhm)0.5 V
low		<0.5 V
Load current	-	20 mA
Frequency	-	0 kHz to 10 kHz

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## **SPEED SENSORS, SNG-S SERIES**

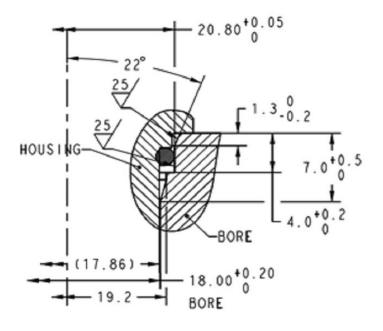
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#### FIGURE 3. MOUNTING DIMENSIONS (FOR REFERENCE ONLY: MM/[IN].)



Clockwise rotation

#### FIGURE 4. CUSTOMER INTERFACE BORE



## A WARNING PERSONAL INJURY

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

#### Warranty/Remedy

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship during the applicable warranty period. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgment or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items that Honeywell, in its sole discretion, finds defective. **The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.** 

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## Honeywell