

Quadrature Speed and Direction Sensors SNG-Q Series

32304260
Issue C

Datasheet



DESCRIPTION

Honeywell's SNG-Q Series Quadrature Speed and Direction Sensors are designed to provide both speed and direction information. Speed information is provided from digital square wave outputs; direction is provided using a quadrature output with signals 90° phase shifted from each other. With the quadrature output, target direction is determined by output lead/lag phase shifting.

VALUE TO CUSTOMERS

- Higher reliability: IP69K rating, EMC radiated immunity protection, O-ring seal and wide operating temperature range:
 - Improves equipment uptime
 - Minimizes service costs
 - Provides resistance to high electrical noise
 - Provides resistance to moisture intrusion
 - Wide operating temperature range
 - Attempts to substantially reinforce the customer's brand equity
- Cost-competitive: Designed and manufactured using a platform-based approach that enables better cost-competitiveness and mechanical and electrical configurability for customers.
- Enhanced accuracy: Dual differential Hall-effect sensor IC technology allows an enhanced ability to detect small target features.
- Flexible: Wide operating temperature range, robust electrical noise immunity and enhanced environmental sealing capability allow flexibility of use in the application.
- Expedites installation: O-ring seal for use in pressure applications and a fixed mounting flange allows for a simpler installation process, using one fastener.

FEATURES

- Wide operating temperature range: -40°C to 150°C [-40°F to 302°F]
- Environmental sealing: Moisture ingress protection rated to IP69K
- Robust electrical noise immunity: Electrical noise radiated immunity (EMC) rated to 100 V/m
- High frequency switching capability: 3 Hz to 20 kHz
- Direction information: From phase-shifted dual output signals
- O-ring seal: Enables environmental sealing to mounting surface
- Supply voltage range: 4.5 V to 26 V
- CE certified

POTENTIAL APPLICATIONS

Industrial:

- AC induction motors in material handling, agriculture, and construction machines: May be used to help control power delivered by the ac induction motor
- Escalators and elevators: May be used to help control speed and position

Transportation:

- Hybrid electric transmissions in heavy duty trucks, buses, agriculture and construction machines: May be used to help control power regulation of the hybrid system
- Wheel speed detection in material handling, agriculture, and construction machines: May be used to detect the speed and direction of the wheels, which translates to the speed and direction of the machine
- Hybrid engines in heavy duty trucks, buses, agriculture and construction machines: May be used to help control power regulation of the hybrid system

Not recommended for Aerospace or Defense applications.

PORTFOLIO

The SNG-Q Series joins the SNDH-T Series speed and direction sensors. For speed only sensors, see the SNDH-H Series, LCZ Series, ZH10 Series and 584XX Series.

Quadrature Speed and Direction Sensors, SNG-Q Series

Table 1. Electrical Specifications

Characteristic	Parameter	Comment
Supply voltage	4.5 V to 26 V	—
Output signal: type duty cycle ¹ phase shift high low: SNG-QPLA/QPCA/ QPMB/QPDB load current rise time fall time frequency	square wave 50% ±10% 90° ±45° ≥Vs - 0.5 V ≤0.5 V ≤1.75 V 40 mA max. 10 µs max. 5 µs max. 3 Hz to 20 kHz	Two channel, phase shifted by 90° either channel, may lead or lag. Dependent on target geometry and sensor-to-target orientation; see Figures 2, 3, 4, 5, 6, 7, 8, 9 for recommended orientation. Dependent on target geometry and sensor-to-target orientation; see Figures 2, 3, 4, 5, 6, 7, 8, 9 for recommended orientation. — — Applies to each output at all conditions. 1 kOhm pull-up resistor, dependent on load resistor. 1 kOhm pull-up resistor, dependent on load resistor. Frequencies >10 kHz may be dependent on target geometry and air gap.
Short circuit protection	50 mA max.	—
Supply current: normal max.	12 mA 18 mA	all conditions
Reverse voltage	-26 V max.	10 min duration

¹Duty cycle = Time high/time total.

Table 2. Mechanical Specifications

Characteristic	Parameter
Sensing air gap	0,0 mm to 2,0 mm [0.0 in to 0.08 in]
Target: width ¹ slot width ² tooth width ² tooth height ³	>5,0 mm [0.20 in] recommended; 12,7 mm [0.5 in] typ. 2,0 mm [0.08 in] min. 2,0 mm [0.08 in] min. >3,0 mm [0.12 in] recommended; 5,0 mm [0.20 in] typ.
Materials: housing bushing O-ring cable ⁴	PBT brass fluorocarbon with PTFE coating, Ø11,8 mm [Ø0.47 in] OD x Ø1,80 mm [Ø0.07 in] CS EVA, four conductor, 36AWG, 28 strand, Ø5,2 mm [Ø0.20 in] jacket
Mounting: bore size ⁵ torque	Ø15,15 mm to Ø15,40 mm [Ø0.60 in to Ø0.61 in] 10 N m [88.5 in-lb] max. with M6 X 1.0 bolt

¹Narrower targets may limit axial offsets.

²Other geometry may be suitable.

³Shorter tooth heights may limit maximum air gap performance.

⁴Applies to SNG-QPLA-001, SNG-QPCA-001, SNG-QPMB-000, SNG-QPDB-000, and SNG-QPDB-002.

⁵Application dependent.