



Installation Instructions for the Quadrature Speed and Direction Sensors SNG-Q Series

32309314
Issue E

General Information

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.

The product is designed for applications where enhanced accuracy is required to detect small target features. This accuracy is enabled by dual differential Hall-effect sensor IC technology. The SNG-Q Series is designed for a wide operating temperature range, robust electrical noise immunity and industry leading environmental sealing capability.

This product includes an O-ring seal for pressure applications, and a fixed mounting flange for simple installation using one fastener.

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 us max. 5 us 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.



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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, 36 AWG, 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.

Table 3. Environmental Specifications

Characteristic	Condition	Parameter
EMI: radiated immunity bulk current injection ESD	ISO 11452-2, 400 MHz to 1 GHz ISO 11452-4, 1 MHz to 400 MHz ISO 10605, Section 9 conforms to CE Mark standards EN60947-5-2:2007 and EN 60947-5-2/A1:2012	100 V/m 100 mA ±8 kV contact, ±15 kV air
Operating temperature	—	-40°C to 150°C [-40°F to 302°F]
Thermal shock, air to air	-40°C to 150°C [-40°F to 302°F], 60 min. soak, <3 s transfer	500 cycles
Humidity	95% humidity at 38 °C [100 °F]	240 hr
Salt fog	5% salt solution by mass at 35 °C [95 °F]	96 hr
Thermal saline dunk	100°C to 25°C [212°F to 77°F] air to liquid, 5% saline	10 cycles
High temperature exposure with power	150°C [302°F], 13.5 Vdc, 1 kOhm load	500 hr
Vibration	3 perpendicular axes, 48 hr per axis	29.28 GMS, 50 Hz to 2000 Hz MIL-STD-202-214
Degree of protection	—	IP69K
Resistance to fluids	—	general under-the-hood automotive fluids



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Figure 1. Sensor Output (All catalog listings)

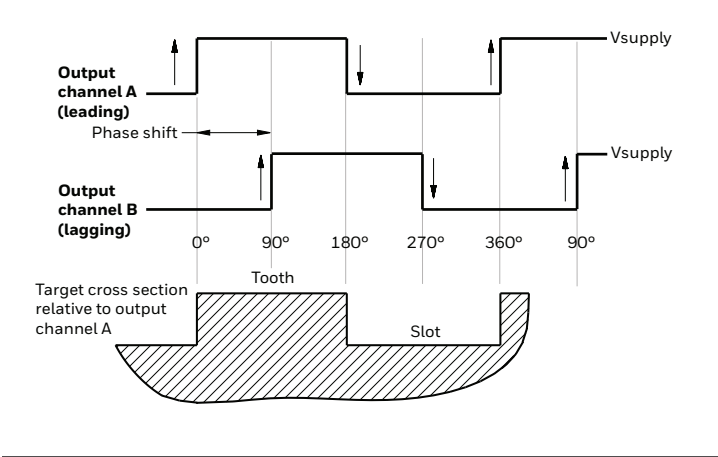


Figure 2. Possible Mounting Orientations

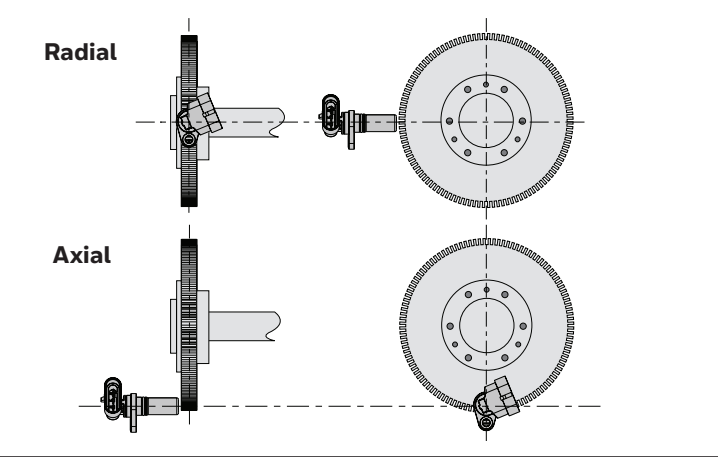
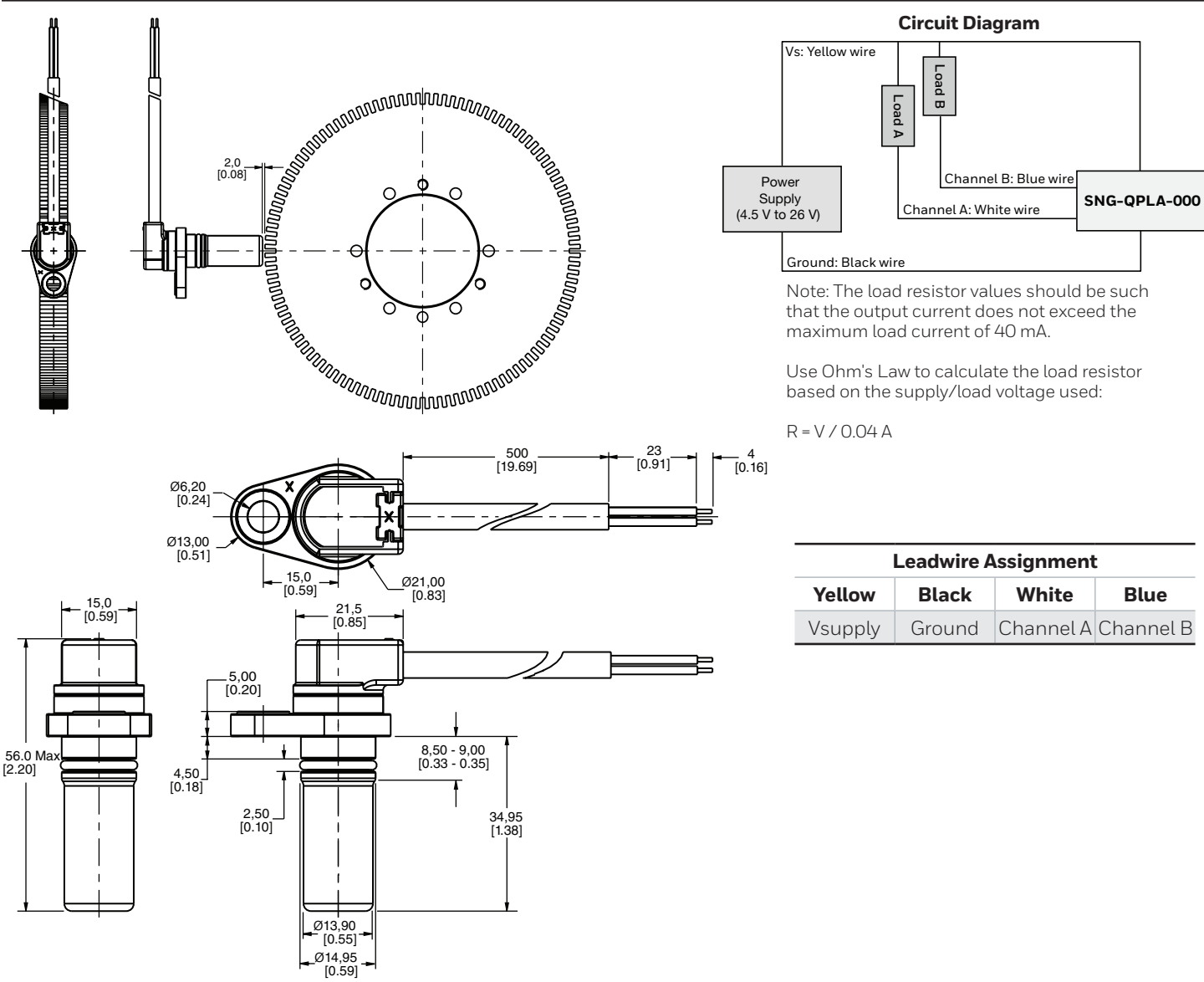


Figure 3. SNG-QPLA-000 Mounting Dimensions (For reference only: mm/[in.])

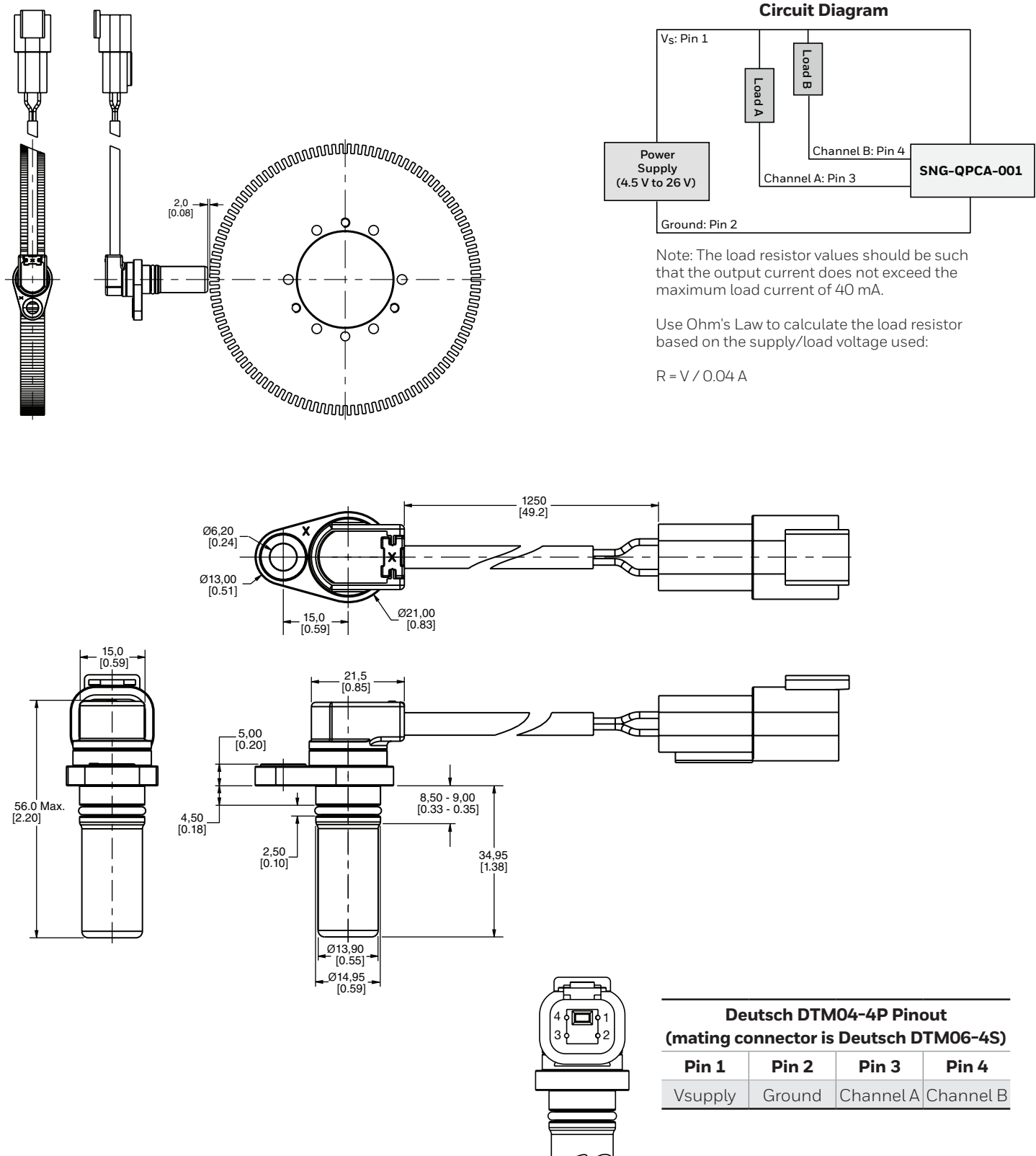


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Figure 4. SNG-QPCA-001 Mounting Dimensions (For reference only: mm/[in].)



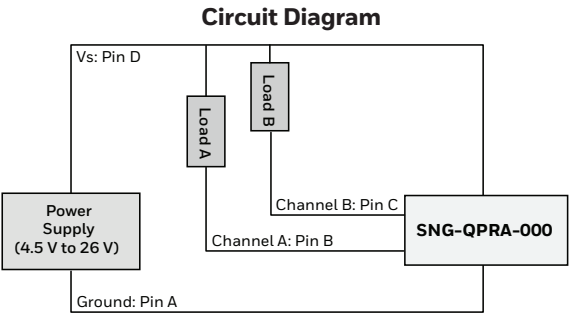
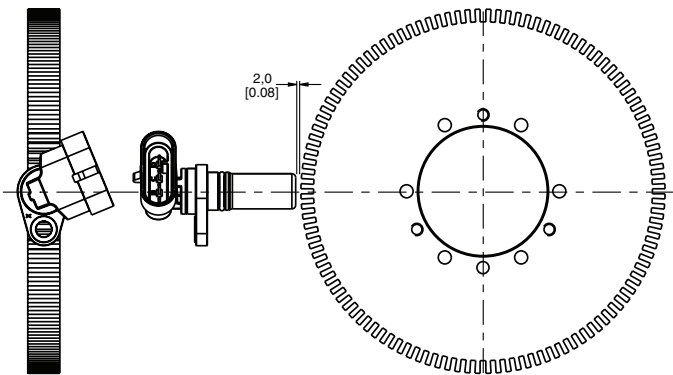
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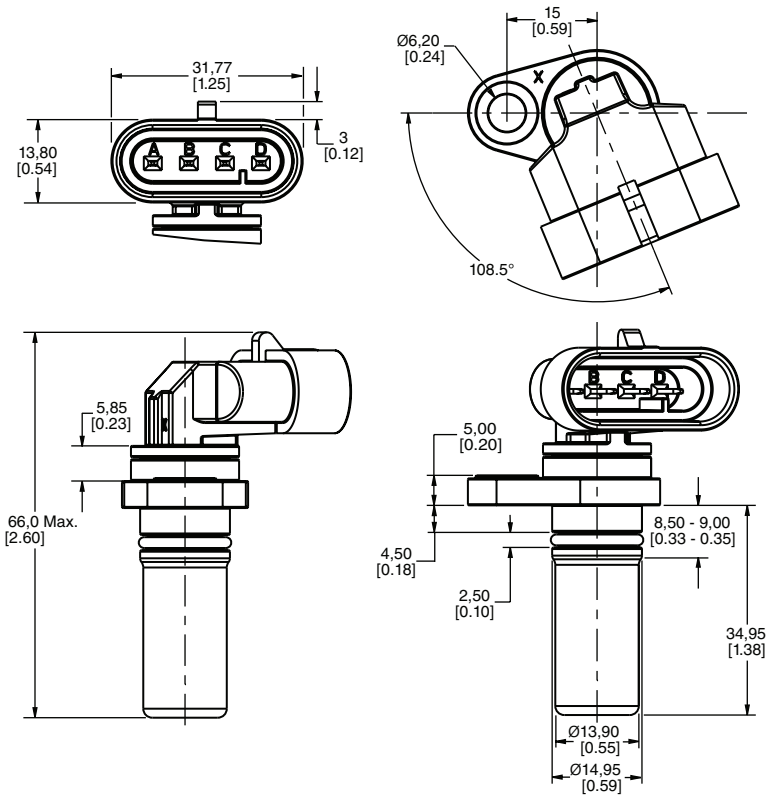
Figure 5. SNG-QPRA-000 Mounting Dimensions (For reference only: mm/[in].)



Note: The load resistor values should be such that the output current does not exceed the maximum load current of 40 mA.

Use Ohm's Law to calculate the load resistor based on the supply/load voltage used:

$$R = V / 0.04 \text{ A}$$



Amp Superseal 1.5 Connector Pinout (mating connector is Amp Superseal 1.5 282088)			
Pin A	Pin B	Pin C	Pin D
Ground	Channel A	Channel B	Vsupply

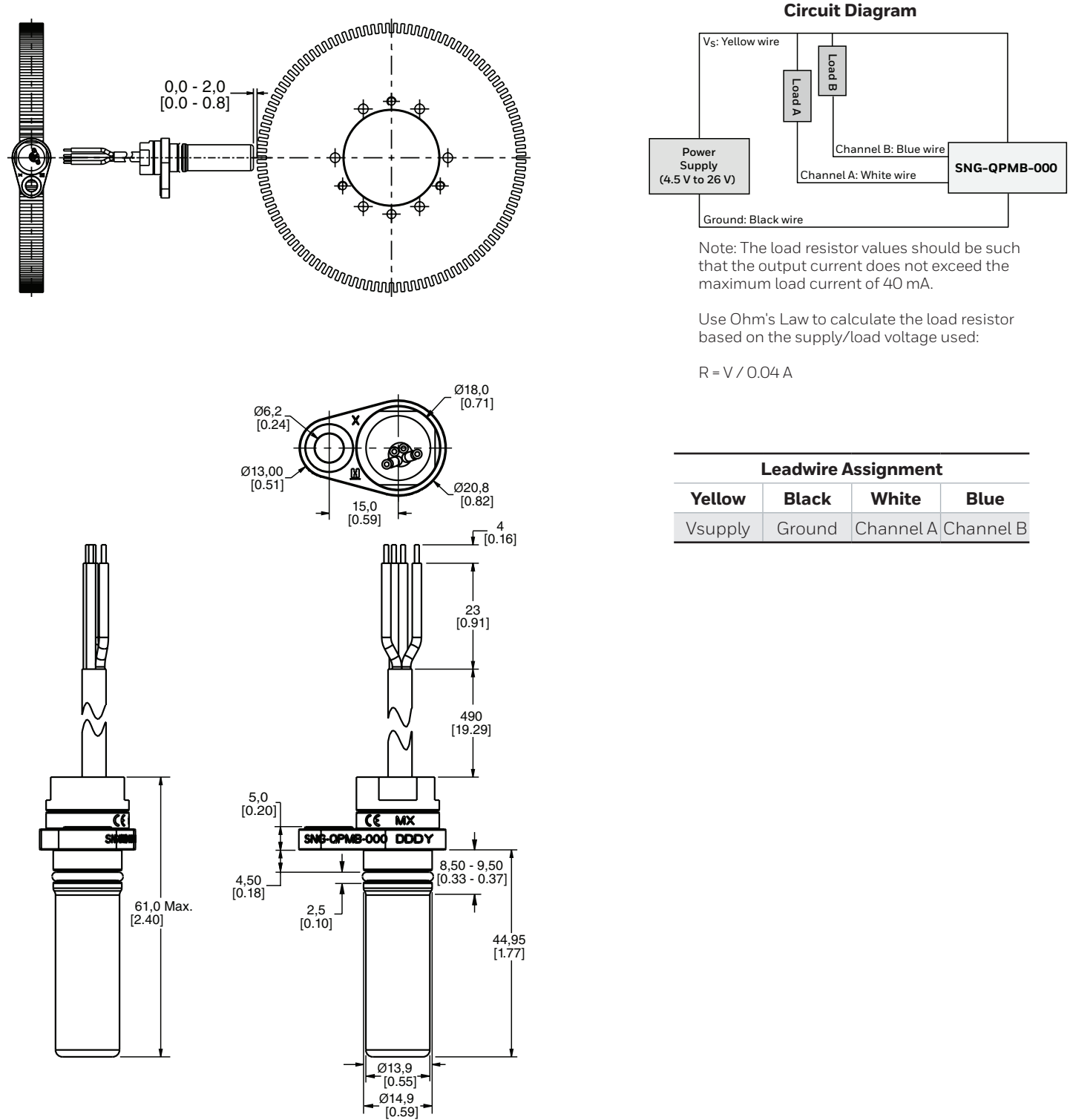
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Figure 6. SNG-QPMB-000 Mounting Dimensions (For reference only: mm/[in].)



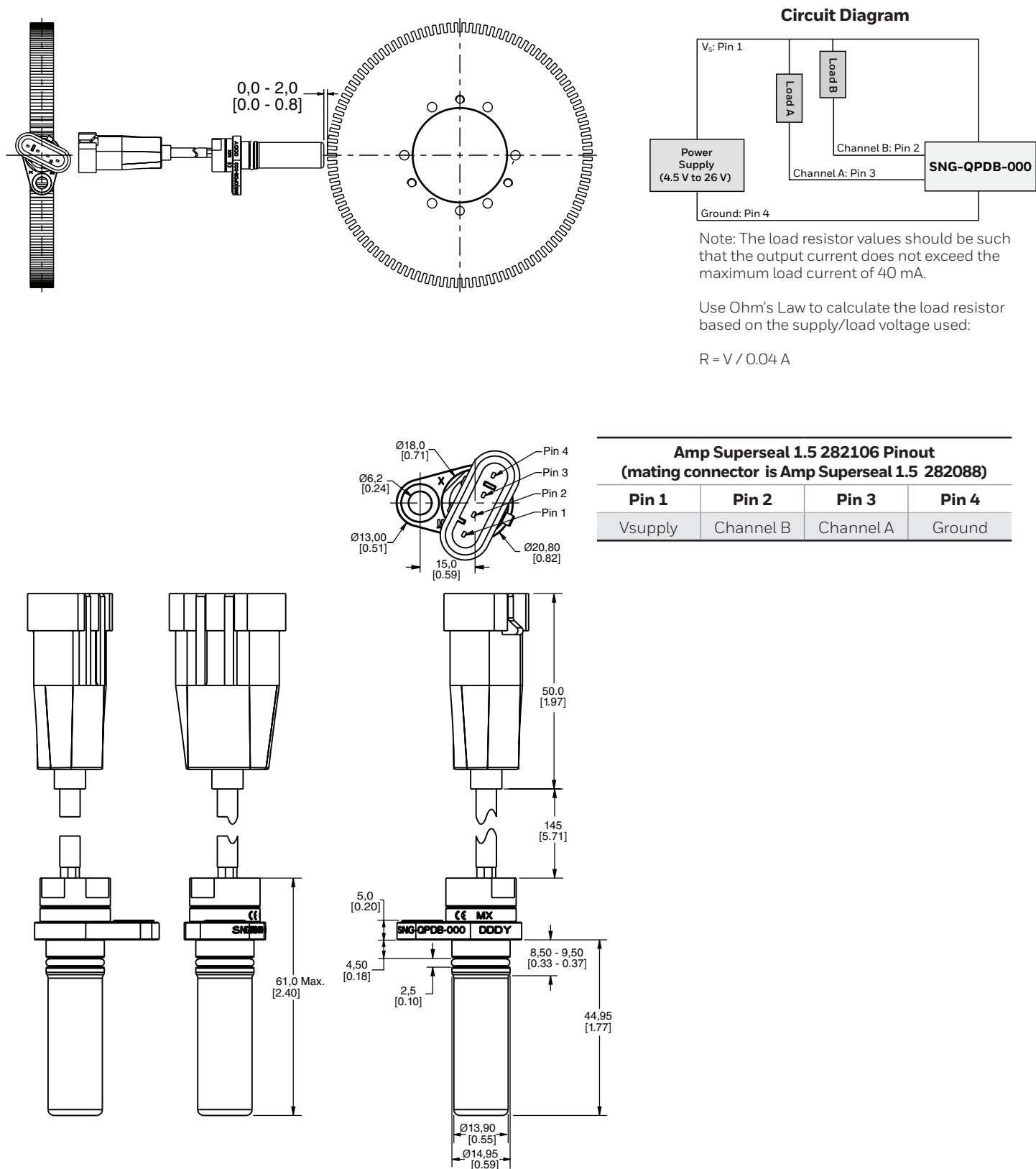
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Figure 7. SNG-QPDB-000 Mounting Dimensions (For reference only: mm/[in].)

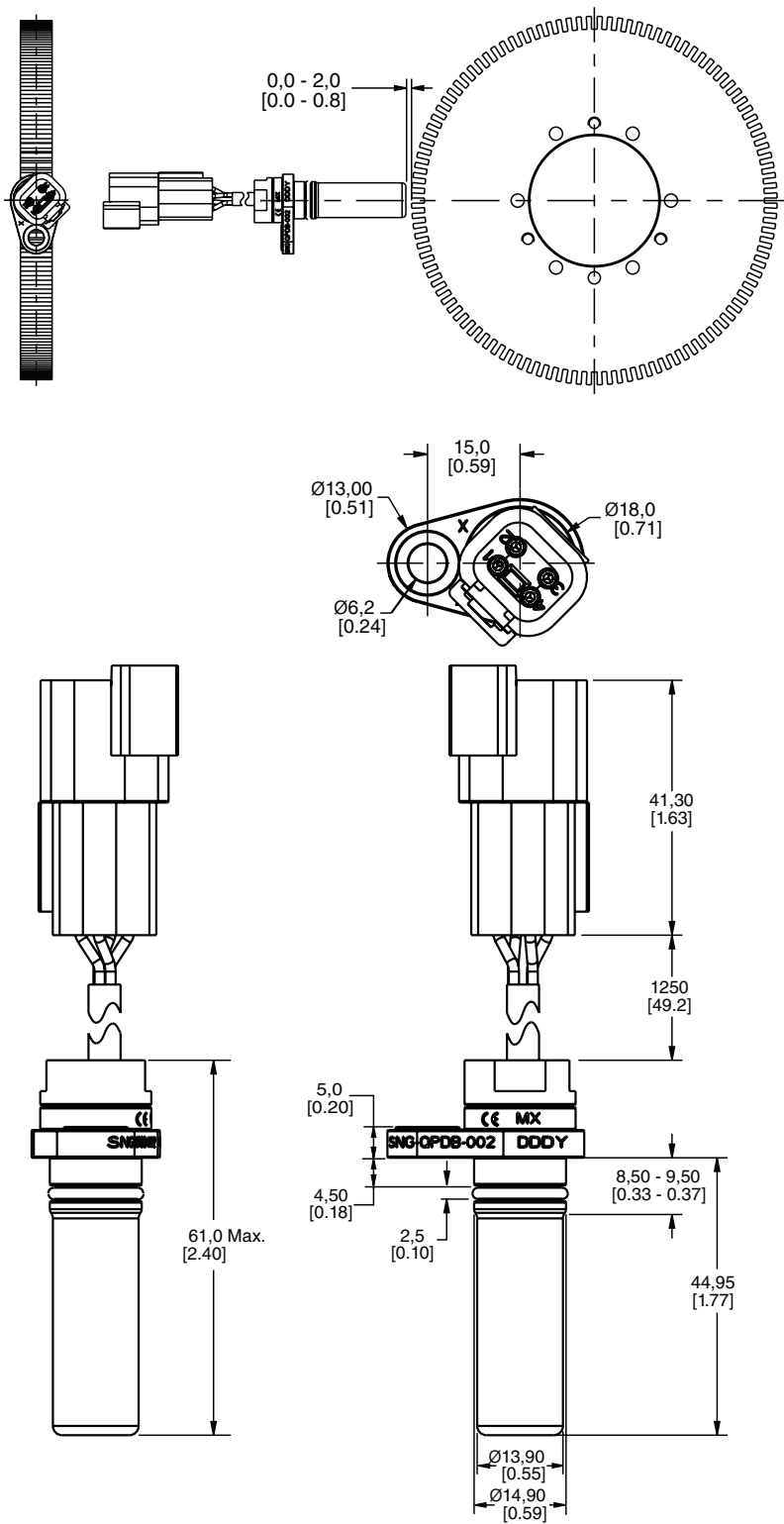


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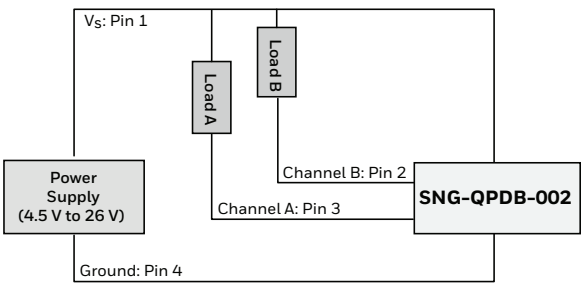
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Figure 8. SNG-QPDB-002 Mounting Dimensions (For reference only: mm/[in].)



Circuit Diagram



Note: The load resistor values should be such that the output current does not exceed the maximum load current of 40 mA.

Use Ohm's Law to calculate the load resistor based on the supply/load voltage used:

$$R = V / 0.04 \text{ A}$$

Deutsch DTM04-4P Pinout (mating connector is Deutsch DTM06-4S)

Pin 1	Pin 2	Pin 3	Pin 4
Vsupply	Channel B	Channel A	Ground

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⚠ 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 acknowledgement 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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Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this writing. However, Honeywell assumes no responsibility for its use.

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