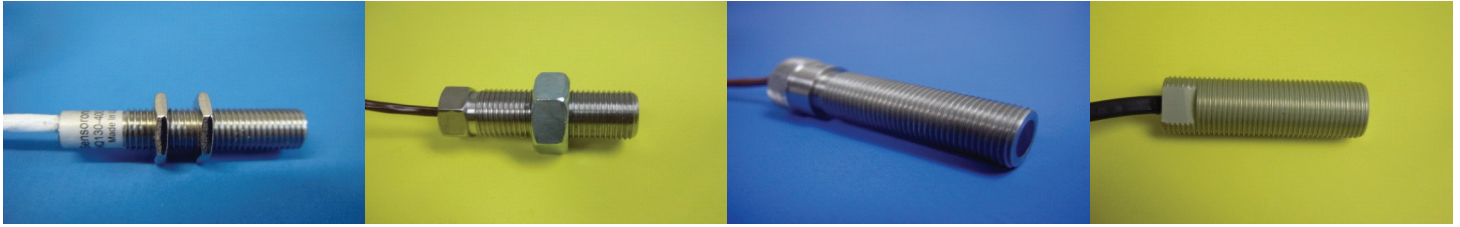
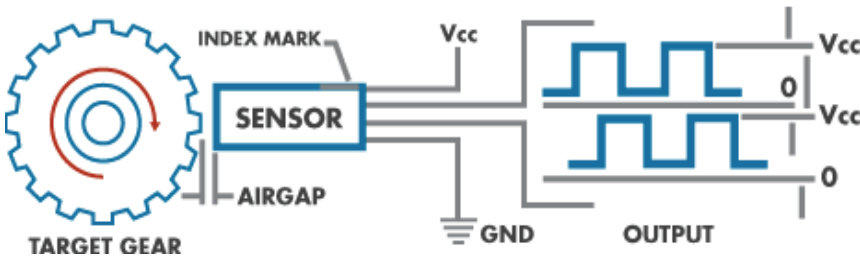


# Hall-Effect Quadrature Sensor (HQ)



Non-contact magnetic sensors that measure the distortion of magnetic field created by a ferrous target. Quadrature sensors provide two 90° out of phase digital outputs to record speed and direction. When the target wheel or gear is rotating clockwise, the output signal # 1 leads output signal # 2, and when the target is rotating counter clockwise, the output signal # 2 leads output signal # 1. Both output signals will be 50% duty cycle with proper alignment of sensor and target gear.

**Common Applications:** Dynamometers, Traction control.



| CASE TYPES | DESCRIPTION      | A |
|------------|------------------|---|
|            | SMOOTH           | 0 |
|            | ALL THREAD       | 1 |
|            | HEX HEAD         | 2 |
|            | KNURL HEAD       | 3 |
|            | CONNECTOR HEAD   | 4 |
|            | WRENCH FLAT HEAD | 5 |
|            | SMOOTH / THREAD  | 6 |
|            | WITH FLANGE      | 7 |

Target: Ferrous Material Gear Tooth with range of Min 4 to 32 Gear Pitch.

$$P = \frac{N + 2}{OD}$$

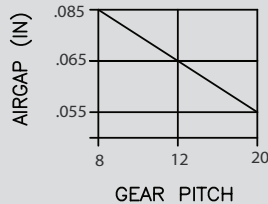
P = Gear Pitch  
N = Num. of Teeth  
OD = Outside Diameter

Frequency: 15 kHz Max

Output Type: Digital (Squar wave), TT compatible /

Quadrature Phasing:  
90° +/- 20%

Gear Pitch vs. Airgap Graph

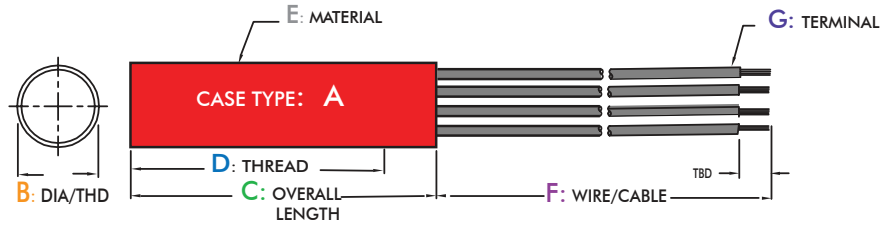


## Part Number Nomenclature

|                   |     |        |    |   |   |   |   |                       |
|-------------------|-----|--------|----|---|---|---|---|-----------------------|
| Sensor Type       | HQ  | X      | X  | X | - | X | X | Special Modifications |
| Case Type "A"     |     |        |    |   |   |   |   | Terminal "G"          |
| Case Diameter "B" |     |        |    |   |   |   |   | Connector 0           |
| 1/4" (0.250")     | 2X, | Others | 9X |   |   |   |   | Conn. & Wire 1        |
| 3/8" (0.375")     | 3X, | M-12   | 12 |   |   |   |   | Conn. & Cable 2       |
| 15/32"(0.468")    | 4X, | M-16   | 16 |   |   |   |   | Lead Wires 3          |
| 1/2" (0.500")     | 5X, | M-18   | 18 |   |   |   |   | Cable 4               |
| 5/8" (0.625")     | 6X, | M-20   | 20 |   |   |   |   |                       |
| 3/4" (0.750")     | 7X, | M-22   | 22 |   |   |   |   |                       |
| 7/8" (0.875")     | 8X  |        |    |   |   |   |   |                       |

# Standard (HQ) Products Available

Please contact Sensoronix for more detailed information on the standard sensors listed below. All Sensoronix products are custom designed to meet your exact specification requirements.



| Products P/N                | MECHANICAL SPECIFICATIONS |           |      |      |          |          |                                    | ELECTRICAL SPECIFICATIONS |                    |                  |                 |                     |                          | ENVIRONMENT           |
|-----------------------------|---------------------------|-----------|------|------|----------|----------|------------------------------------|---------------------------|--------------------|------------------|-----------------|---------------------|--------------------------|-----------------------|
|                             | A                         | B         | C    | D    | E        | F        | G                                  | INPUT Voltage (VDC)       | INPUT Current (mA) | V Out High (VDC) | V Out Low (VDC) | OUTPUT Current (mA) | Pull-up Resistor (K Ohm) | TEMPERATURE RANGE ° C |
| <b>3/8" Diameter Series</b> |                           |           |      |      |          |          |                                    |                           |                    |                  |                 |                     |                          |                       |
| HQ130-200                   | 1                         | 3/8 - 24  | 1.50 | 1.50 | 303 S.S. | 18 ± .5  | 22 AWG TEF. CABLE W/ M12 x 1 CONN. | 5.5 To 36                 | 12                 | V input          | 0.6             | 20 Sink             | Open                     | -25 To 125            |
| HQ130-400                   | 1                         | 3/8 - 24  | 1.70 | 1.25 | 303 S.S. | 12 ± 1   | 22 AWG TEF. CABLE                  | 4.5 To 24                 | 12                 | V input          | 0.6             | 20 Sink             | 4.7                      | -25 To 100            |
| HQ230-400                   | 2                         | 3/8 - 24  | 1.50 | 1.25 | 303 S.S. | 12 ± 1   | 22 AWG TEF. CABLE                  | 4.5 To 24                 | 12                 | V input          | 0.6             | 20 Sink             | 4.7                      | -25 To 125            |
| * HQ230-410                 | 2                         | 3/8 - 24  | 1.50 | 1.25 | 303 S.S. | 12 ± 1   | 22 AWG TEF. CABLE                  | 4.5 To 24                 | 12                 | V input          | 0.6             | 20 Sink             | 4.7                      | -25 To 125            |
| * HQ230-420                 | 2                         | 3/8 - 24  | 1.50 | 1.25 | 303 S.S. | 36 ± 1   | 22 AWG TEF. CABLE                  | 4.5 To 24                 | 12                 | V input          | 0.6             | 20 Sink             | Open                     | -20 To 150            |
| <b>5/8" Diameter Series</b> |                           |           |      |      |          |          |                                    |                           |                    |                  |                 |                     |                          |                       |
| HQ160-400                   | 1                         | 5/8 - 18  | 1.00 | 1.00 | 303 S.S. | 72 ± 3   | 22 AWG TEF. CABLE                  | 4.5 To 24                 | 12                 | V input          | 0.6             | 20 Sink             | 4.7                      | -25 To 100            |
| HQ360-400                   | 3                         | 5/8 - 18  | 2.72 | 2.14 | 303 S.S. | 120 ± 3  | 22 AWG TEF. CABLE                  | 4.5 To 24                 | 12                 | V input          | 0.6             | 20 Sink             | 4.7                      | -25 To 100            |
| HQ560-400                   | 5                         | 5/8 - 18  | 2.37 | 2.37 | Alum.    | 12 ± .25 | 22 AWG TEF. CABLE                  | 4.5 To 24                 | 12                 | V input          | 0.6             | 20 Sink             | 4.7                      | -25 To 125            |
| HQ560-410                   | 5                         | 5/8 - 18  | 2.37 | 2.37 | 303 S.S. | 180 ± 3  | 22 AWG TEF. CABLE                  | 4.5 To 24                 | 12                 | V input          | 0.6             | 20 Sink             | 4.7                      | -25 To 100            |
| <b>3/4" Diameter Series</b> |                           |           |      |      |          |          |                                    |                           |                    |                  |                 |                     |                          |                       |
| HQ070-300                   | 0                         | 3/4       | 2.00 | -    | 303 S.S. | 12 ± .25 | 24 AWG LEAD WIRE                   | 4.5 To 24                 | 12                 | V input          | 0.6             | 20 Sink             | 4.7                      | -40 To 100            |
| HQ270-400                   | 2                         | 3/4 - 16  | 2.30 | 1.87 | Alum.    | 72 ± 3   | 22 AWG TEF. CABLE                  | 4.5 To 24                 | 12                 | V input          | 0.6             | 20 Sink             | 4.7                      | -40 To 100            |
| <b>M 10 Diameter Series</b> |                           |           |      |      |          |          |                                    |                           |                    |                  |                 |                     |                          |                       |
| * HQ110-400                 | 1                         | M10 x 1   | 2.81 | 2.81 | 303 S.S. | 24 ± .5  | 22 AWG TEF. CABLE                  | 4.5 To 24                 | 12                 | V input          | 0.6             | 20 Sink             | 4.7                      | -40 To 150            |
| <b>M 12 Diameter Series</b> |                           |           |      |      |          |          |                                    |                           |                    |                  |                 |                     |                          |                       |
| * HQ412-000                 | 4                         | M12 x 1   | 5.06 | 4.00 | 303 S.S. | -        | M12 x 1 CONNECTOR                  | 4.5 To 24                 | 12                 | V input          | 0.6             | 20 Sink             | 4.7                      | -25 To 85             |
| <b>M 16 Diameter Series</b> |                           |           |      |      |          |          |                                    |                           |                    |                  |                 |                     |                          |                       |
| HQ516-400                   | 5                         | M16 x 1   | 2.14 | 1.67 | 303 S.S. | 36 ± 3   | 22 AWG TEF. CABLE                  | 4.5 To 24                 | 12                 | V input          | 0.6             | 20 Sink             | 4.7                      | -25 To 100            |
| <b>M 18 Diameter Series</b> |                           |           |      |      |          |          |                                    |                           |                    |                  |                 |                     |                          |                       |
| * HQ518-200                 | 5                         | M18 x 1.0 | 2.00 | 1.75 | 303 S.S. | 6 ± 1    | 22 AWG TEF. CABLE & CONN.          | 5.0 To 36                 | 12                 | V input          | 0.6             | 20 Sink             | Open                     | -25 To 100            |
| HQ518-400                   | 5                         | M18 x 1.5 | 2.14 | 1.89 | 303 S.S. | 36 ± 3   | 22 AWG TEF. CABLE                  | 4.5 To 24                 | 12                 | V input          | 0.6             | 20 Sink             | 4.7                      | -25 To 100            |
| HQ518-410                   | 5                         | M18 x 1.5 | 2.14 | 1.89 | 303 S.S. | 12 ± .25 | 22 AWG TEF. CABLE                  | 5.5 To 36                 | 12                 | 5.0              | 0.6             | 30 Source           | 4.7                      | -25 To 125            |
| * HQ518-420                 | 5                         | M18 x 1.0 | 2.00 | 1.75 | 303 S.S. | 6 ± 1    | 22 AWG TEF. CABLE                  | 5.0 To 36                 | 12                 | V input          | 0.6             | 20 Sink             | Open                     | -25 To 125            |

NOTE: ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED

\* SEALED FRONT