

## DQ Series Quadrature Gear Detection Sensor



### Key Features:

- ✓ Hall Effect Technology sensor for gear target detection
- ✓ Detects 0-32 pitch gears
- ✓ Resolves speed and direction with 2 Digital Outputs
- ✓ Detects Ferrous Targets and Pitch Between Teeth
- ✓ Easy to install Flange mount and threaded options available

### Key Markets/Applications:

- ✓ Shaft and gear speed in agricultural equipment
- ✓ Measure speed in conveyor systems
- ✓ Speed resolution in automation equipment
- ✓ Cam and Crank shaft timing
- ✓ Resolving engine RPMs
- ✓ Resolve speed of industrial and agricultural attachments
- ✓ Provide count feedback of parts in production and testing
- ✓ Measure crane / winch feed rate
- ✓ Measuring vehicle/wheel speed
- ✓ Monitoring gears in transmissions
- ✓ Aerospace & Defense, Medical Devices, Agricultural Machinery, Marine & Transportation, Automotive & Heavy Equipment, Power Generation Systems, Consumer Electronics, Manufacturing & Industrial Automation

### Key Benefits:

- ✓ Non-contact
- ✓ Easy to install
- ✓ Temperature stable
- ✓ Shock and vibration resistant
- ✓ Solid-state (no wearing parts)
- ✓ Near zero (DQO) speed operation
- ✓ True zero (DQ) speed operation
- ✓ Detect non-standard steel targets
- ✓ Harsh environment durability
- ✓ Large detection gap  
(custom air gap ranges available upon request)



### Customer Options:



#### Part Number Example:

S 1 8 - 3 7 A D Q - 5 K S A 5

|   |   |   |   |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
|---|---|---|---|

#### CUSTOMER OPTIONS

1. HOUSING=SEE PAGE 2-4
2. SENSOR TYPE & FUNCTION=###DQ
3. ELECTRICAL OPTION=SEE PAGE 5-6
4. CONNECTION TYPE=SEE PAGE 7-8

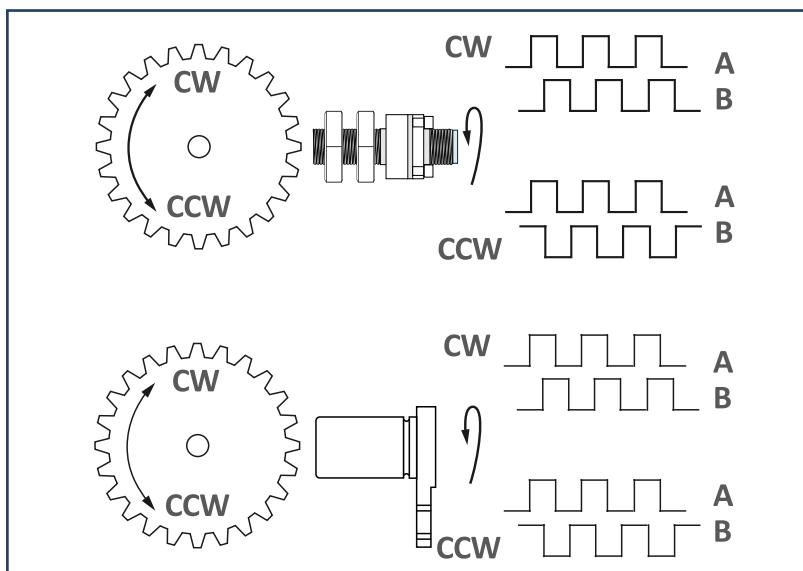
#### CUSTOMER FOCUSED ENGINEERING + MODULAR DESIGN

**\*Modify, update, or enhance any sensor with our modular features and functionality.**

##### Additional Options

- + **HOUSING** - Aluminum, stainless steel, plastic, threaded, flange mount, customer specific
- + **ELECTRICAL** - Every sensor function available in various electrical options (NPN, PNP, TTL, etc.)
- + **CONNECTION** - Deutsch, Amphenol, many other brands, free end wires, pigtails, any length

### Two (2) Outputs/Tooth, 90° Out of Phase



# DQ Series Quadrature Gear Detection Sensor

## DATA SHEET



### Housing Types and Customization Options:

The DQ Series offers a wide range of housing styles, mounting types, and material options to cover a variety of application environments. If the housing style you need is not shown, we can work with you on your custom housing needs to fulfill your application requirements.

#### Housing Materials:

- ☑ Aluminum
- ☑ Plastic (Glass Filled Nylon)
- ☑ Stainless Steel

#### Mounting Type:

- ☑ Threaded Barrel
- ☑ Flange Mount
- ☑ High Pressure

#### Thread Pitch:

- ☑ 3/4-20
- ☑ 5/8-18
- ☑ 7/16-20
- ☑ M16x1
- ☑ M16x1.5
- ☑ M18x1
- ☑ M18x1.5

**Please note:** Housings shown are only some of what are currently available, we have more than 150 active catalog options.

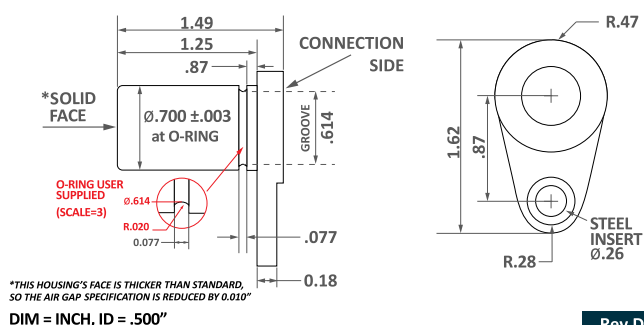
### Plastic Glass Fill Nylon:

**PART NUMBER EXAMPLE**

**S 1 8 - 3 7 A D Q - 5 K S A 5** — CONNECTION

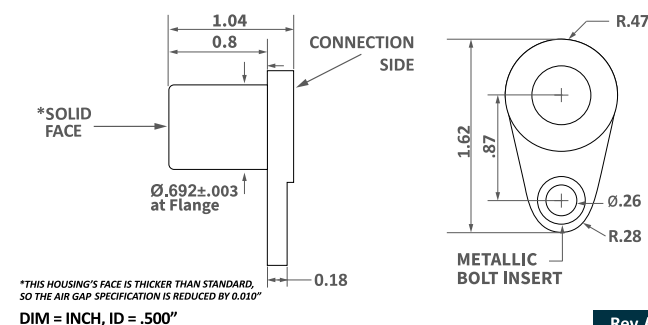
HOUSING                      ELECTRICAL

#### MF7 Flange Mount



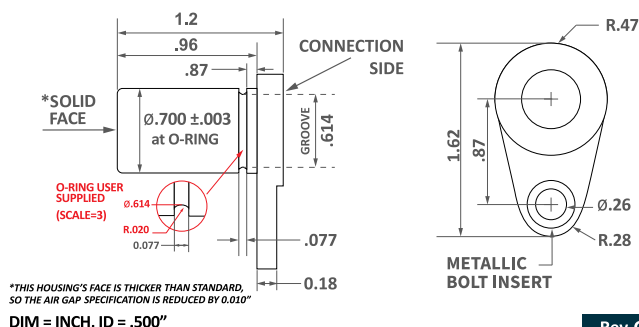
Rev D

#### MF7A Flange Mount



Rev A

#### MF7S Flange Mount



Rev C

#### Molded Housing to Gear Air Gap

|                                                           | -37ADQ        |              | -37ADQO       |              |
|-----------------------------------------------------------|---------------|--------------|---------------|--------------|
| Target Performance Gear Pitch ~ (#Teeth / Dia. In Inches) | Air Gap Range | Typ. Max Gap | Air Gap Range | Typ. Max Gap |
| 4 (.785") Tooth to Tooth                                  | .000 to .130  | .150"        | .000 to .140" | .190"        |
| 8 (.524") Tooth to Tooth                                  | .000 to .110  | .130"        | .000 to .110" | .170"        |
| 12 (.393") Tooth to Tooth                                 | .000 to .090  | .115"        | .000 to .070" | .115"        |
| 16 (.262") Tooth to Tooth                                 | .000 to .065  | .090"        | .000 to .040" | .075"        |
| 20 (.196") Tooth to Tooth                                 | .000 to .045  | .065"        | .000 to .030" | .045"        |
| 24 (.157") Tooth to Tooth                                 | .000 to .025  | .040"        | .000 to .015" | .035"        |
| 32 (.131") Tooth to Tooth                                 | .000 to .010  | .020"        | .000 to .005" | .025"        |
| Typical Output Duty Cycle                                 | 40 to 60%     |              |               |              |
| Alignment Skew Angle                                      | 360 Degrees   |              |               |              |

# DQ Series Quadrature Gear Detection Sensor

## DATA SHEET

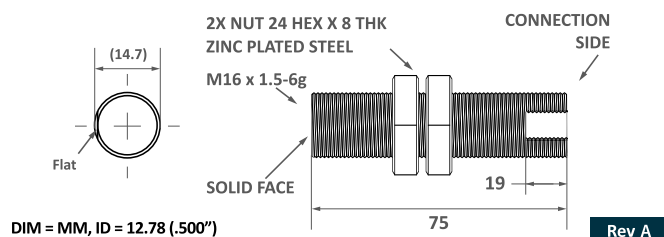
**PART NUMBER**  
**EXAMPLE**

**S 1 8** - **3 7 A D Q** - **5 K S A 5** — CONNECTION

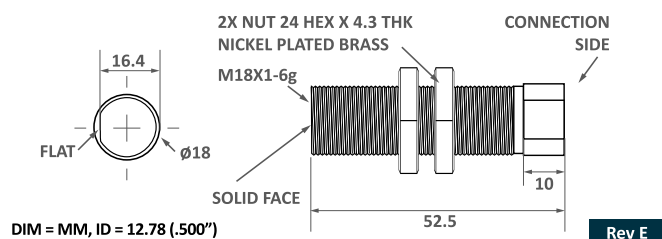
HOUSING ELECTRICAL

### 303 Stainless Steel:

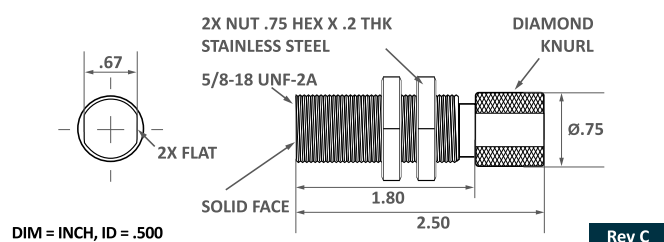
#### S16 Thread Mount



#### S18 Thread Mount M18x1mm, 53mm



#### S63B Thread Mount, MS Opt 5/8-18, 2.5" Long



#### Steel Housing to Gear Air Gap

|                                                              | -37ADQ           |                 | -37ADQO          |                 |
|--------------------------------------------------------------|------------------|-----------------|------------------|-----------------|
| Target Performance Gear Pitch<br>~ (#Teeth / Dia. In Inches) | Air Gap<br>Range | Typ.<br>Max Gap | Air Gap<br>Range | Typ.<br>Max Gap |
| 4 (.785") Tooth to Tooth                                     | .000 to .140"    | .160"           | .000 to .150"    | .200"           |
| 8 (.393") Tooth to Tooth                                     | .000 to .120"    | .140"           | .000 to .120"    | .180"           |
| 12 (.262") Tooth to Tooth                                    | .000 to .100"    | .125"           | .000 to .080"    | .125"           |
| 16 (.196") Tooth to Tooth                                    | .000 to .075"    | .100"           | .000 to .050"    | .085"           |
| 20 (.157") Tooth to Tooth                                    | .000 to .055"    | .075"           | .000 to .040"    | .055"           |
| 24 (.131") Tooth to Tooth                                    | .000 to .035"    | .050"           | .000 to .025"    | .045"           |
| 32 (.098") Tooth to Tooth                                    | .000 to .020"    | .030"           | .000 to .015"    | .035"           |
| Typical Output Duty Cycle                                    | 40 to 60%        |                 |                  |                 |
| Alignment Skew Angle                                         | 360 Degrees      |                 |                  |                 |

# DQ Series Quadrature Gear Detection Sensor

## DATA SHEET

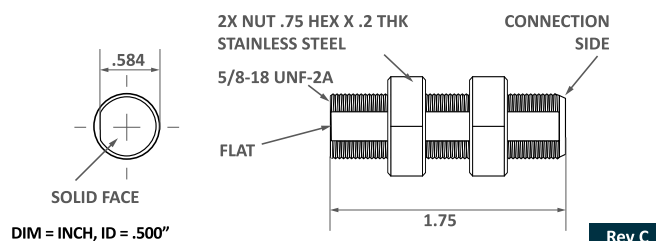
**PART NUMBER** **EXAMPLE** S 1 8 - 3 7 A D Q - 5 K S A 5 — CONNECTION

HOUSING

ELECTRICAL

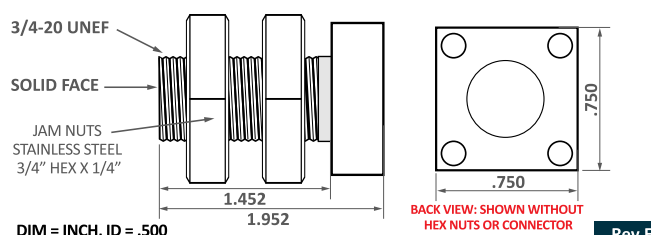
Aluminum Black Anodized:

### A63 Thread Mount 5/8



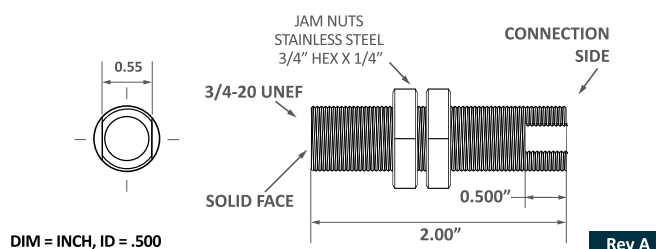
Rev C

### A75C Thread Mount 3/4"



Rev E

### A75G Thread Mount 3/4" x 20, 2" Long



Rev A

### Aluminum Housing to Gear Air Gap

|                                                              | -37ADQ           |                 | -37ADQO          |                 | -22ADQ           |                 |
|--------------------------------------------------------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|
| Target Performance Gear Pitch<br>~ (#Teeth / Dia. In Inches) | Air Gap<br>Range | Typ.<br>Max Gap | Air Gap<br>Range | Typ.<br>Max Gap | Air Gap<br>Range | Typ.<br>Max Gap |
| 4 (.785") Tooth to Tooth                                     | .000 to .140"    | .160"           | .000 to .120"    | .150"           | .000 to .100"    | .125"           |
| 8 (.393") Tooth to Tooth                                     | .000 to .120"    | .140"           | .000 to .085"    | .110"           | .000 to .060"    | .100"           |
| 12 (.262") Tooth to Tooth                                    | .000 to .100"    | .125"           | .000 to .055"    | .075"           | .000 to .045"    | .075"           |
| 16 (.196") Tooth to Tooth                                    | .000 to .075"    | .100"           | .000 to .035"    | .050"           | .000 to .030"    | .050"           |
| 20 (.157") Tooth to Tooth                                    | .000 to .055"    | .075"           | .000 to .030"    | .040"           | .000 to .025"    | .040"           |
| 24 (.131") Tooth to Tooth                                    | .000 to .035"    | .050"           | .000 to .020"    | .030"           | .000 to .020"    | .030"           |
| 32 (.098") Tooth to Tooth                                    | .000 to .020"    | .030"           | .000 to .012"    | .020"           | .000 to .010"    | .020"           |
| Typical Output Duty Cycle                                    | 40 to 60%        |                 |                  |                 |                  |                 |
| Alignment Skew Angle                                         | 360 Degrees      |                 |                  |                 |                  |                 |



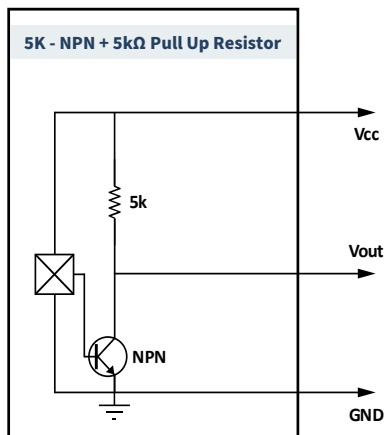
# DQ Series Quadrature Gear Detection Sensor

## DATA SHEET

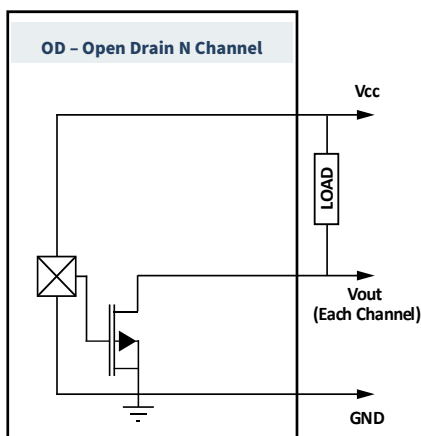
### Electrical Output Logic Options:

PART NUMBER EXAMPLE: S 1 8 - 3 7 A D Q - 5 K S A 5 — CONNECTION  
HOUSING ELECTRICAL

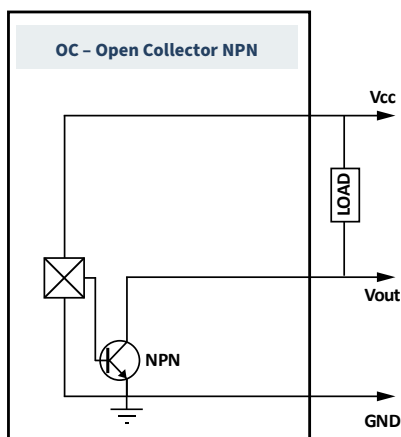
#### 5K



#### OD



#### OC



| Electrical Specifications  | Conditions          | -37ADQ |       | -37ADQO |     | Unit     |
|----------------------------|---------------------|--------|-------|---------|-----|----------|
|                            |                     | Min    | Max   | Min     | Max |          |
| Temperature Range*         | Operating           | -40    | +110* |         |     | Deg C    |
| Supply Voltage, Vcc        | Over temperature    | +4.5   | +4.1  | +24     | +25 | Volts DC |
| Supply Current, Output Off | Into Vcc, Vcc = 24V | +1.5   | +3    | +5      | +15 | mA       |
| Frequency Range            | Near zero speed     | 0.1    | 0.1   | 15k     | 15k | Hz       |
| Saturation Voltage Low     | I sink=20mA         | 0      | 0     | 0.4     | 0.6 | Volts    |
| Internal Pull Up Resistor  | Vcc to Vout         | 4.95   |       | 5.05    |     | kohms    |
| Output Rise Time 10-90%    | C < 100pF           | -      |       | 3.0     |     | μS       |
| Output Fall Time 90-10%    | C < 100pF           | -      |       | 1.0     |     | μS       |
| ESD **                     | Nondestructive      | -      |       | 2000    |     | Volts    |
| EMI **                     | 20k to 1 GHz        | -      |       | 20      |     | V / M    |

\* T max = 150°C is available, contact factory.

-37ADQ Rev A  
-37ADQO Rev B

| Electrical Specifications | Conditions           | -37ADQO |       | Unit     |
|---------------------------|----------------------|---------|-------|----------|
|                           |                      | Min     | Max   |          |
| Temperature Range*        | Operating            | -40     | +110* | Deg C    |
| Supply Voltage, Vcc       | Over temperature     | +4.1    | +25   | Volts DC |
| Supply Current            | Into Vcc             | +3      | +15   | mA       |
| Frequency Range           | Near zero speed      | 0.1     | 15k   | Hz       |
| Vol, Low Level Vout       | I sink = 20 mA       | 0       | 0.6   | Volts    |
| Output Leakage Current    | Output high          | 0       | 10    | μA       |
| Output Rise Time 10-90%   | Rpu = 1 k, C < 100pF | -       | 2.0   | μS       |
| Output Fall Time 90-10%   | Rpu = 1k, C < 100pF  | -       | 1.0   | μS       |
| ESD **                    | Nondestructive       | -       | 2000  | Volts    |
| EMI **                    | 20k to 1 GHz         | -       | 20    | V / M    |

\* T max = 150°C is available, contact factory.

\*\* CMOS IC is static sensitive. (-37ADQO)

Rev E

| Electrical Specifications | Conditions           | -37ADQ |       | Unit     |
|---------------------------|----------------------|--------|-------|----------|
|                           |                      | Min    | Max   |          |
| Temperature Range*        | Operating            | -40    | +110* | Deg C    |
| Supply Voltage, Vcc       | Over temperature     | +4.5   | +24   | Volts DC |
| Supply Current            | Into Vcc             | +4     | +15   | mA       |
| Frequency Range           | Near zero speed      | 0      | 10k   | Hz       |
| Vol, Low Level Vout       | I sink = 20 mA       | 0      | 0.4   | Volts    |
| Output Leakage Current    | Output high          |        |       | μA       |
| Output Rise Time 10-90%   | Rpu = 1 k, C < 100pF | -      | 2.0   | μS       |
| Output Fall Time 90-10%   | Rpu = 1k, C < 100pF  | -      | 1.0   | μS       |
| ESD **                    | Nondestructive       | -      | 2000  | Volts    |
| EMI **                    | 20k to 1 GHz         | -      | 20    | V / M    |

\* T max = 150°C is available, contact factory.

Rev A

Please note: Additional electrical options are available. Contact the factory with specific requirements.

# DQ Series Quadrature Gear Detection Sensor

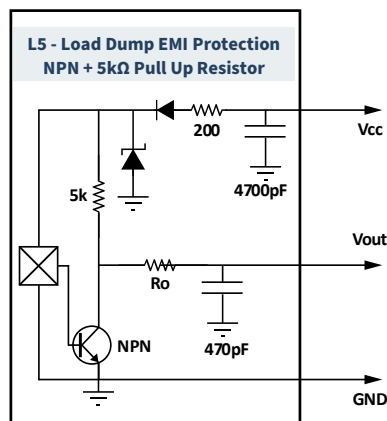
## DATA SHEET

### Electrical Output Logic Options:

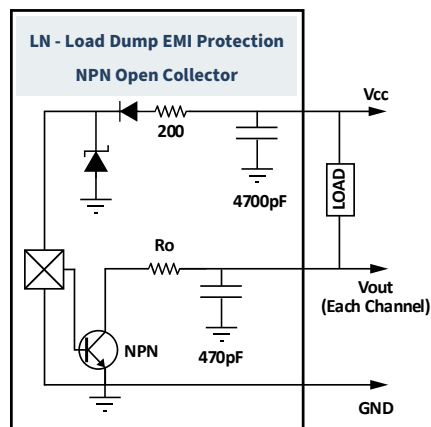
PART  
NUMBER  
EXAMPLE

S 1 8 - 3 7 A **D Q** - 5 K S A 5 — CONNECTION  
HOUSING ELECTRICAL

#### L5



#### LN



| Electrical Specifications    | Conditions              | -37ADQ | -37ADQO | -37ADQ | -37ADQO | Unit     |
|------------------------------|-------------------------|--------|---------|--------|---------|----------|
|                              |                         | Min    | Min     | Min    | Min     |          |
| Temperature Range*           | Operating               | -40    |         | +110*  |         | Deg C    |
| Supply Voltage, Vcc          | Over temperature        | +8     | +8      | +32    | +28     | Volts DC |
| Supply Current, Output Off   | Into Vcc, Vcc = 24V     | +3     | +3      | +20    | +10     | mA       |
| Frequency Range              | True zero speed         | 0      | 0.1     | 10k    | 15k     | Hz       |
| Saturation Voltage High      | Vcc = 24V, Rload > 100k | 23.5   | 23.5    | 24     | 24      | Volts    |
| Saturation Voltage Low       | Vcc = 24V, Rload > 100k | 0.02   | 0       | 0.5    | 0.4     | Volts    |
| Internal Pull Up Resistor    | Vcc to Vout (each Ch)   | 4.9    | 4.9     | 5.1    | 5.1     | Ohms     |
| Ro, Internal Output Resistor | NPN to Vout (each Ch)   | 260    | -       | 280    | -       | Ohms     |
| Output Rise Time 10-90%      | Co < 100pF              | -      | -       | 8.0    |         | μS       |
| Output Fall Time 90-10%      | Co < 100pF              | -      | -       | 2.0    |         | μS       |
| ESD **                       | Nondestructive          | -      | -       | 2000   |         | Volts    |
| EMI **                       | 20k to 1 GHz            | -      | -       | 100    |         | V / M    |

\* T max = 150°C is available, contact factory.

-37ADQ Rev A

-37ADQO Rev B

| Electrical Specifications  | Conditions           | -37ADQ | -37ADQO | -37ADQ | -37ADQO | Unit     |
|----------------------------|----------------------|--------|---------|--------|---------|----------|
|                            |                      | Min    | Min     | Max    | Max     |          |
| Temperature Range*         | Operating            | -40    |         | +110*  |         | Deg C    |
| Supply Voltage, Vcc        | Over temperature     | +8     | +8      | +32    | +28     | Volts DC |
| Supply Current, Output Off | Into Vcc, Vcc = 24V  | +3     | +3      | +20    | +15     | mA       |
| Frequency Range            | True zero speed      | 0.1    | -       | 10k    | -       | Hz       |
| Frequency Range            | Near zero speed      | -      | 0.1     | -      | 15k     | Hz       |
| Saturation Voltage High    | Vcc = 24V, Rpu > 10k | 23.5   | 23.5    | 24     | 24      | Volts    |
| Saturation Voltage Low     | Vcc = 24V, Rpu > 10k | 0.1    | 0.1     | 0.5    | 0.5     | Volts    |
| Internal Pull Up Resistor  | Vcc to Vout          | none   | none    | none   | none    | kohms    |
| Output Resistance Ro       | 0.25 watts           | 48     | -       | 52     | -       | Ohms     |
| Output Rise Time 10-90%    | Co < 100pF           | -      | -       | 8.0    |         | μS       |
| Output Fall Time 90-10%    | Co < 100pF           | -      | -       | 2.0    |         | μS       |
| ESD **                     | Nondestructive       | -      | -       | 2000   |         | Volts    |
| EMI **                     | 20k to 1 GHz         | -      | -       | 100    |         | V / M    |

\* T max = 150°C is available, contact factory.

\*\* CMOS IC is static sensitive. (-37ADQO)

-37ADQ Rev B

-37ADQO Rev B

Please note: Additional electrical options are available. Contact the factory with specific requirements.



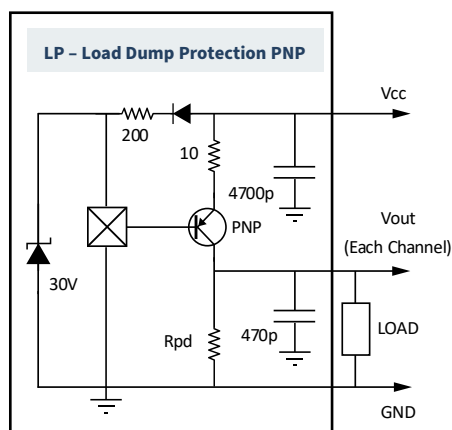
# DQ Series Gear Tooth Speed Sensor

## DATA SHEET

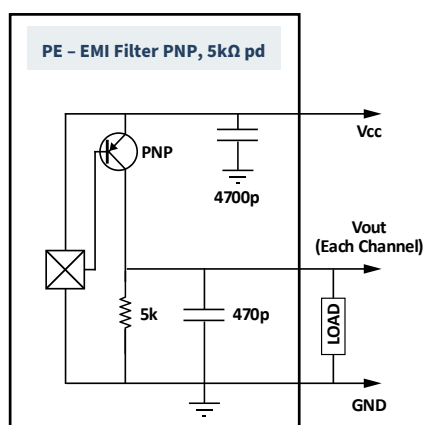
### Electrical Output Logic Options:

PART NUMBER EXAMPLE S 1 8 - 3 7 A D Q - 5 K S A 5 — CONNECTION  
HOUSING ELECTRICAL

#### LP



#### PE



| Electrical Specifications   | Conditions             | -37ADQ | -37ADQO | -37ADQ | -37ADQO | Unit     |
|-----------------------------|------------------------|--------|---------|--------|---------|----------|
|                             |                        | Min    | Max     | Max    | Max     |          |
| Temperature Range*          | Operating              | -40    | +110*   |        |         | Deg C    |
| Supply Voltage, Vcc         | Over temperature       | +8.0   | +8.0    | +32    | +32     | Volts DC |
| Supply Current              | Into Vcc               | +8     | +2.5    | +20    | +12     | mA       |
| Frequency Range             | True zero speed        | 0      | 0.1     | 10k    | 15k     | Hz       |
| Voh, High Level Vout        | Rload > 100k, Vcc = 24 | 22     | 22      | 24     | 24      | Volts    |
| Vol, Low Level Vout         | Rload > 100k, Vcc = 24 | 0      | 0       | 0.1    | 0.1     | Volts    |
| Internal Pull Down Resistor | Vout to Gnd            | 4.9    | 4.9     | 5.1    | 5.1     | kohms    |
| Output Rise Time 10-90%     | Rload = 1k, C < 100pF  | -      | -       | 1.0    |         | μS       |
| Output Fall Time 90-10%     | Co < 100pF             | -      | -       | 10     |         | μS       |
| ESD **                      | Nondestructive         | -      | -       | 2000   |         | Volts    |
| EMI **                      | 20k to 1 GHz           | -      | -       | 100    |         | V / M    |

\* T max = 150°C is available, contact factory.

-37ADQ Rev C

-37ADQO Rev B

| Electrical Specifications   | Conditions                  | -37ADQ | -37ADQO | -37ADQ | -37ADQO | Unit     |
|-----------------------------|-----------------------------|--------|---------|--------|---------|----------|
|                             |                             | Min    | Max     | Max    | Max     |          |
| Temperature Range*          | Operating                   | -40    | +110*   |        |         | Deg C    |
| Supply Voltage, Vcc         | Over temperature            | +8     | +8      | +32    | +32     | Volts DC |
| Supply Current, Output Off  | Into Vcc, Vout Low          | +8     | +20     | +2.5   | +8      | mA       |
| Frequency Range             | True zero speed             | 0      | -       | 10k    | -       | Hz       |
| Frequency Range             | Near zero speed             | -      | 0.1     | -      | 15k     | Hz       |
| Output Voltage Low, Vol     | Vcc = 24V, Rpu > 100k       | 0      | 0       | 0.1    | 0.1     | Volts    |
| Output Voltage High, Voh    | Vcc = 24V, Rpu > 100k       | 10.8   | 22      | 12     | 24      | Volts    |
| Internal Pull Down Resistor | Vout to Gnd                 | 4.9    |         | 5.1    |         | kohms    |
| Output Rise Time 10-90%     | Cload < 100pF, Rload > 100K | -      |         | 1.0    |         | μS       |
| Output Fall Time 90-10%     | Cload < 100pF, Rload > 100K | -      |         | 10     |         | μS       |
| ESD **                      | Nondestructive              | -      |         | 2000   |         | Volts    |
| EMI **                      | 20k to 1 GHz                | -      |         | 100    |         | V / M    |

\* T max = 150°C is available, contact factory.

\*\* CMOS IC is static sensitive. (-37ADQO)

Rev B

Please note: Additional electrical options are available. Contact the factory with specific requirements.



### Connection Types and Customization Options:

The DQ Series offers a wide range of connection configurations to meet diverse installation and environmental requirements. Whether you need rugged connectors for industrial environments or flexible wiring for compact assemblies, we provide tailored solutions:

### Connector Options:

- ✔ Deutsch & Amphenol: Industry-standard sealed connectors for harsh environments
- ✔ Other Brands Available: Custom connector integration upon request
- ✔ Integral Connectors: Built directly into the sensor housing for streamlined installation
- ✔ Pigtail Connectors: Short lead wires with pre-installed connectors for plug-and-play use

### Insulation Materials:

- ✔ PVC: Economical and flexible
- ✔ Teflon: High-temperature and chemical-resistant
- ✔ XLPE: Cross-linked polyethylene for enhanced thermal and abrasion resistance
- ✔ High-Temp Options: For extreme operating conditions

### Free-End Wire Options:

- ✔ Free-End Jacketed: Durable, protective outer layer for added mechanical strength
- ✔ Free-End Shielded: EMI-resistant for electrically noisy environments
- ✔ Free-End Wires: Standard stripped leads for direct wiring
- ✔ PVC, XLPE, Teflon, and other insulation/jacket options
- ✔ Wire Gauges: 18-16 AWG standard
- ✔ Lengths: Available in 6", 1', 5', 10', 20', 50', 100' or custom lengths to suit your application

### Wire, Cable, & Connector Options:

**PART NUMBER EXAMPLE**

S 1 8 - 3 7 A **D Q** - 5 K S A 5 — CONNECTION

HOUSING ELECTRICAL

### P21 Free End PVC 22 AWG Wires

## Connections

**Red** = Vcc                      **White** = Digital Vout                      **Black** = Ground

FREE END WIRE LEADS  
22 AWG, 7/30, PVC 80°C  
COLORS WILL VARY PER SENSOR MODEL

OTHER STANDARD LENGTHS:  
3", 6", 2', 5', 10', AND 20'



DIM = INCH

Rev A

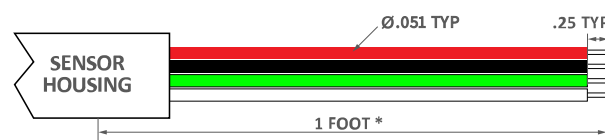
### T21 Free End Teflon 22 AWG Wires

## Connections

Red = Vcc                      White = Digital Vout                      Black = Ground

FREE END WIRE LEADS  
22 AWG, TEFLON 200°C, 19/34  
COLORS WILL VARY PER SENSOR MODEL

OTHER STANDARD LENGTHS:  
3", 6", 2', 5', 10', AND 20'



DIM = INCH

Rev A

# DQ Series Quadrature Gear Detection Sensor

## DATA SHEET

**PART NUMBER**  
**EXAMPLE**

S 1 8 - 3 7 A D Q - 5 K S A 5 — CONNECTION

HOUSING ELECTRICAL

### Wire, Cable, & Connector Options:

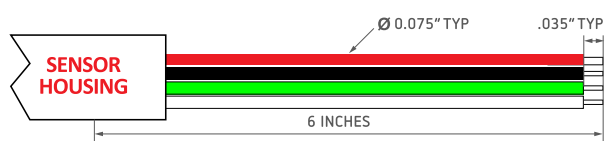
#### X0B Thread Mount M12x1mm, 35mm

##### Connections

Red = Vcc White = Digital Vout Black = Ground

FREE END WIRE LEADS  
20 AWG, XLPE, 125°C, 19/32  
COLORS WILL VARY PER SENSOR MODEL

OTHER STANDARD LENGTHS:  
3", 1', 2', 5', 10' AND 20'



DIM = INCH

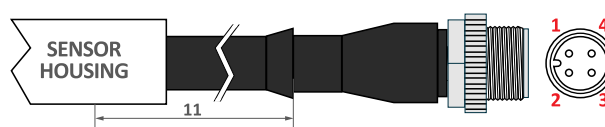
Rev A

#### CB1E 4 Pin Male 12mm Micro Connector w/11" Pur Cable

##### Connections

Pin 1 = Vcc Pin 2 = n/c Pin 3 = Ground Pin 4 = Vout

CONNECTOR: 4 PIN MALE M12 STRAIGHT OVERMOLD  
CABLE: 22AWG, STRANDED, PUR JACKET & INSULATION



DIM = INCH

Rev A

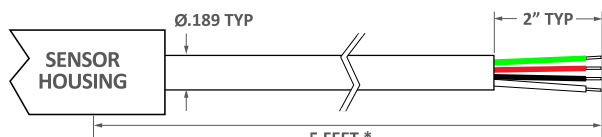
#### JG5 Jacketed, 4 Wire PVC 22AWG Wires

##### Connections

Red = Vcc Blk = Ground White = Digital Vout Green = Analog Vout

FREE END JACKETED 4 WIRE PVC, 22 AWG  
7/30, RED, BLK, GRN, WHT, 80°C

\*OTHER STANDARD LENGTHS:  
1', 2', 10', AND 20'



DIM = INCH

Rev C

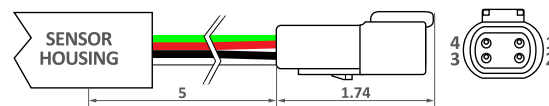
#### CD4 4 Pin Deutsch DT04 w/5" 20AWG TXL

##### Connections

Red = Vcc Blk = Ground White = Digital Vout Green = Analog Vout

CONNECTOR: AMPHENOL AT04-4P-RD01 BODY OR  
DEUTSCH DT04-4P-C015 BODY  
CONTACTS: 4 DEUTSCH PINS, PN 1060-16-0622  
WIRE: 20AWG, 19/32, XLPE TXL, 125°C

PIN 1 = RED  
PIN 2 = BLACK  
PIN 3 = WHITE  
PIN 4 = GREEN



DIM = INCH

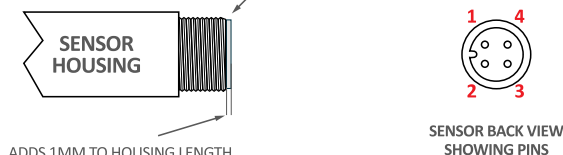
Rev B

#### CB2 Integral 4 Pin Male 12mm Micro Connector

##### Connections

Pin 1 = Vcc Pin 2 = n/c Pin 3 = Ground Pin 4 = Vout

12MM X 1 THREADS (PART OF HOUSING)



SENSOR BACK VIEW  
SHOWING PINS

Rev A

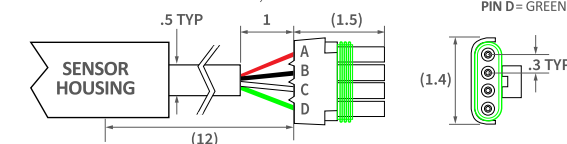
#### CP4 4-Pin Female Weather Pac w/1 FT Jacket

##### Connections

Red = Vcc Blk = Ground White = Digital Vout Green = Analog Vout

CONNECTOR: PACKARD WEATHER PAC #1201-5797  
JACKETED CABLE: 4 WIRE 18 AWG PVC, 105°C

PIN A = RED  
PIN B = BLACK  
PIN C = WHITE  
PIN D = GREEN



DIM = INCH

Rev C

**Please note:** Additional wire, cable, and connector options are available. Contact the factory with specific requirements.

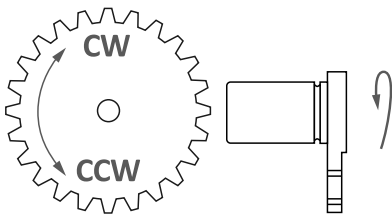
# DQ Series Quadrature Gear Detection Sensor

## DATA SHEET

### Environmental & Performance Specifications:

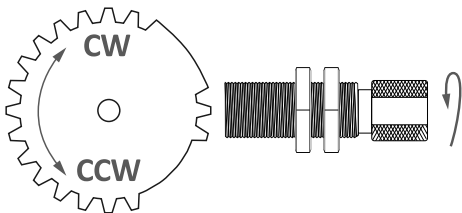
#### Sensor Function

**37ADQ, True 0 Speed, -40 to 150°C**  
**up to 32 Pitch Gears, 25 Gauss Hysteresis**



**PROPER ORIENTATION  
IS REQUIRED**

**37ADQO, Self Calibrating, Near 0 Speed, -40 to 150°C**  
**up to 32 Pitch Gears, 50 Gauss Typical Hysteresis**



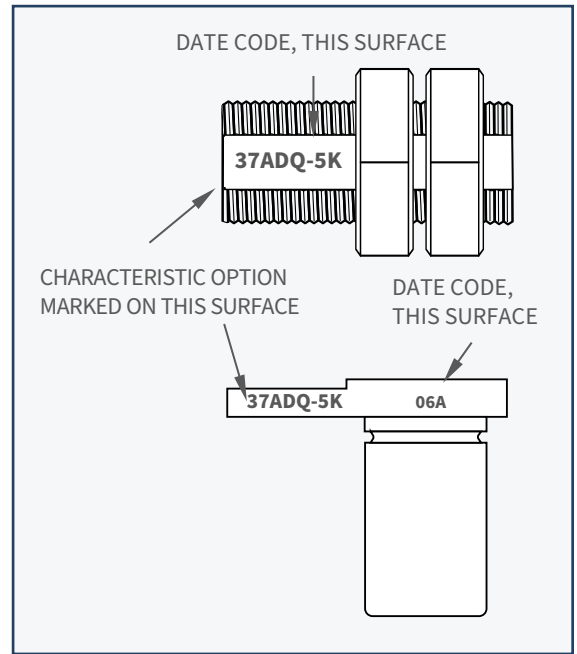
**PROPER ORIENTATION  
IS REQUIRED**

These Quadrature Speed Sensors provide 2 digital outputs as gear teeth rotate by the sensor's face. These sensors have 2 internal sensing elements that are physically placed 1/4, 3/4 or 1 1/4 tooth apart. The quadrature phase angle (phase shift from channel A to channel B) ideally should be 90 degrees. This will only happen if the correct gear pitch is used, and the sensor is aligned correctly with the target's rotation direction. Therefore, when ordering this sensor, it cannot be built until the factory receives the gear pitch for the intended target.

**Gear pitch = (the # of teeth on the gear) / (the gear's contact diameter in inches)**

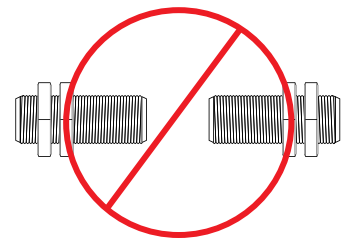
Specifications may not be valid when the application is not detecting an end-sensed, 14.5 pressure angle, steel spur gear. The presence of ferrous metals or strong magnetic fields in close proximity to the sensor's internal magnet may also invalidate the specifications. Engineers are available to assist in target design and applications with non-standard targets. Custom target specifications can only be guaranteed when the customer supplies a target along with any additional components that may affect sensor output, and the customer has validated function in the finished application.

### Marking:



### Handling Instructions:

**DO NOT CONTACT FACE TO FACE**



**CONTACT WITH OTHER MAGNETS MAY  
REDUCE THE MAXIMUM OPERATING GAP**

#### Environmental Specifications

Environmental specifications will vary depending on materials and varying combinations of modular options chosen. Consult the factory for part specific specifications.

**Please note:** All technical specifications on this series datasheet refer to the standard product range. Modifications in the sense of technical progress are reserved. For general information only. For more specific information, please consult the product datasheet, available upon request. This series datasheet could contain technical inaccuracies or typographical errors. Changes are periodically made to the information herein. These change will be incorporated in future revisions. For deviating values, most current specifications and products please contact your nearest sales office.