



- ▶ **0° to 360° Absolute Angular Position Sensing**
- ▶ **Analog or PWM Output**
- ▶ **Robust Non-Contacting Design**
- ▶ **Various Angular Ranges up to 360°**
- ▶ **Reverse Polarity Protection**
- ▶ **12 Bit Angular Resolution**
- ▶ **Operation from -40° C to +125° C**

The R2 Series absolute rotary position sensors are cost-effective devices to accurately determine absolute positions of rotating shafts. They can be configured for analog or PWM output. The analog output mode provides a rail-to-rail ratiometric output with a push-pull output stage that allows the use of pull-up or pull-down resistors. The analog transfer characteristic is programmable for sensing any range of angles between 0° and 360°. In addition to numerous standard configurations, custom output slopes and functions are available. Being a non-contact device, the absolute rotary position sensor is very well suited to industrial

environments. With sensing technology housed in a rugged, reinforced nylon housing, these sensors provide a low cost solution for demanding applications. Standard electrical protection includes reverse polarity, transient suppression and output short circuit. Central to the R2 absolute rotary position sensors are magnetic hall effect sensors that are sensitive to the magnetic flux density applied coplanar to the sensor surface. When utilized with the correct diametrically magnetized target magnet, R2 Series sensors are able to decode the absolute angular position of the magnet from 0 to 360 degrees.

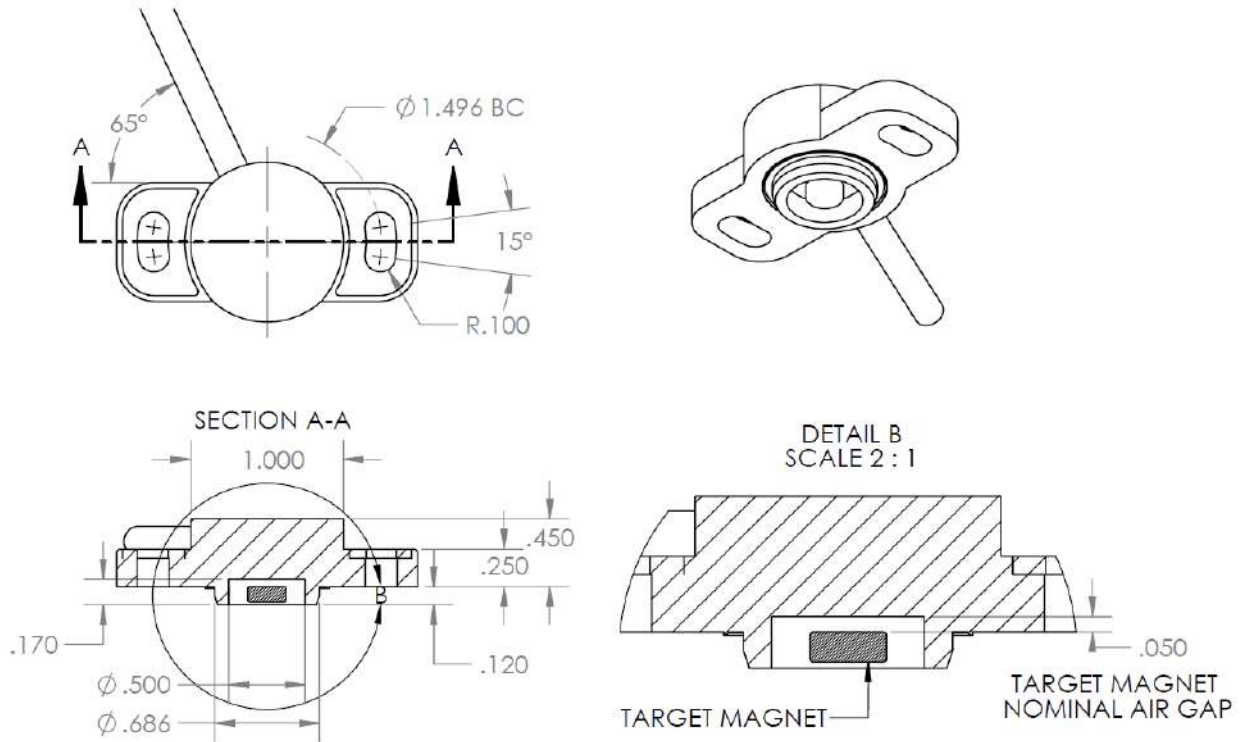
### Electrical Characteristics (T= 40 to +125° C)

| Characteristics      | Symbol    | Test Condition      | Limits |      |      |            |
|----------------------|-----------|---------------------|--------|------|------|------------|
|                      |           |                     | Min.   | Typ. | Max. | Units      |
| Supply Voltage       | $V_{CC}$  | Operating           | 4.5    | 5    | 5.5  | VDC        |
| Supply Current       | $I_s$     | Power Saving Mode   |        | 8.5  | 10   | mA         |
|                      |           | Normal Mode         |        | 13.5 | 16   | mA         |
| Output Current       | $I_{out}$ | Analog Output Mode  | -8     |      | 8    | mA         |
|                      |           | PWM Output Mode     | -20    |      | 20   | mA         |
| Output Load          | $R_L$     | Pull-down to Ground | 4      | 10   |      | k $\Omega$ |
|                      |           | Pull-up to 5V       | 4      | 5.6  |      | k $\Omega$ |
| Clamped Output Level | Clamp_lo  | Programmable        | 0      | -    | 100  | %VCC       |
|                      | Clamp_hi  | Programmable        | 0      | -    | 100  | %VCC       |

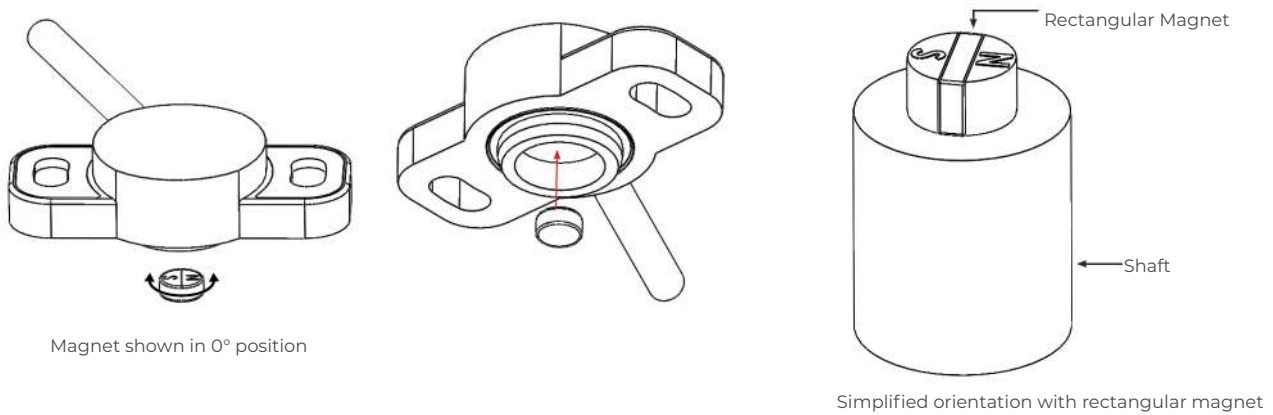
# R2 SERIES - ABSOLUTE ROTARY POSITION SENSOR



## Dimensions (in inch)



## Application Example

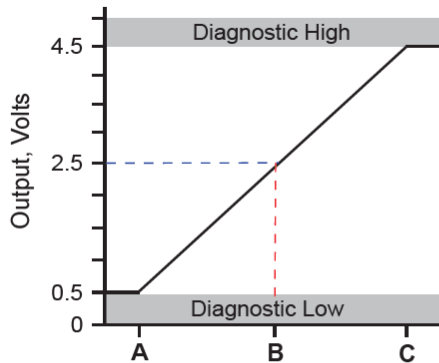


\* North and south poles shown for illustration purposes only



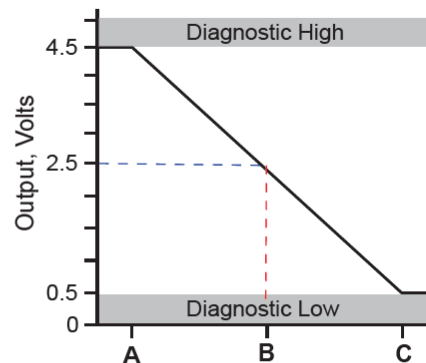
## Output curves

### Standard Output Curves

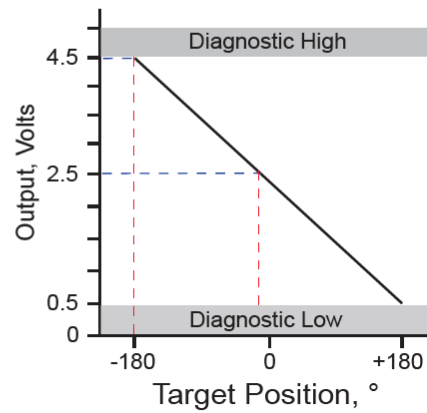
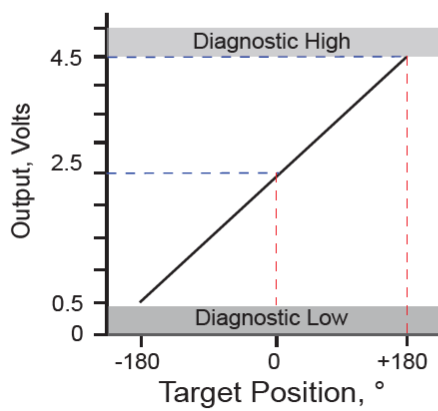


|              |      |   |      |
|--------------|------|---|------|
| 60° (±30°)   | -30  | 0 | +30  |
| 90° (±45°)   | -45  | 0 | +45  |
| 120° (±60°)  | -60  | 0 | +60  |
| 180° (±90°)  | -90  | 0 | +90  |
| 270° (±135°) | -135 | 0 | +135 |
| 360° (±180°) | -180 | 0 | +180 |

### Inverted Output Curves

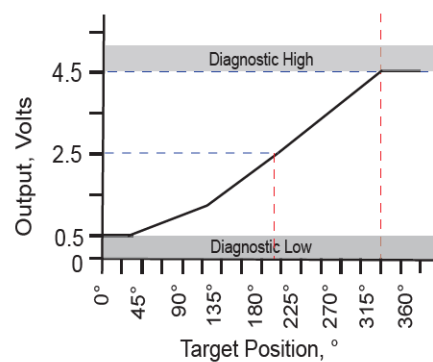
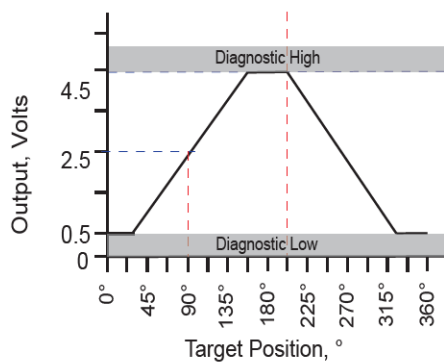


|              |      |   |      |
|--------------|------|---|------|
| 60° (±30°)   | -30  | 0 | +30  |
| 90° (±45°)   | -45  | 0 | +45  |
| 120° (±60°)  | -60  | 0 | +60  |
| 180° (±90°)  | -90  | 0 | +90  |
| 270° (±135°) | -135 | 0 | +135 |
| 360° (±180°) | -180 | 0 | +180 |



## Custom Output Curves

\* Custom and multi-slope outputs available, contact [sales@phoenixamerica.com](mailto:sales@phoenixamerica.com)



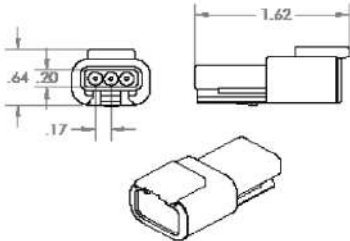
# R2 SERIES - ABSOLUTE ROTARY POSITION SENSOR



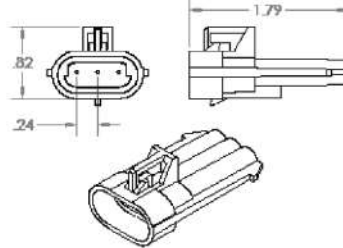
## Connector Options (measurements in inch)

### Connector Options

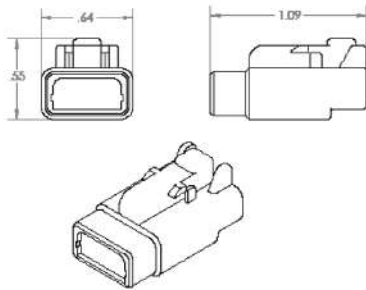
Deutsch DTM04-3P  
(Male Terminals)



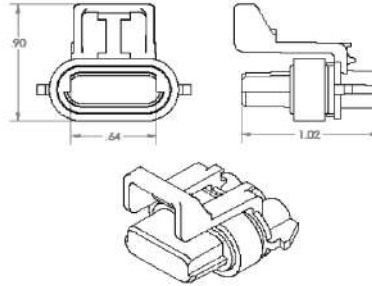
Aptiv (Delphi-Packard) Metri-Pack 150  
(Male Terminals)



Deutsch DTM06-3S  
(Female Terminals)



Aptiv (Delphi-Packard) Metri-Pack 150  
(Female Terminals)



\* Contact [sales@phoenixamerica.com](mailto:sales@phoenixamerica.com) for custom connector and wire cable configurations

### Standard Pin Out and Color Code

|        | Cable | Metri-Pack | Deutsch |
|--------|-------|------------|---------|
| +VDC   | Brown | A          | 1       |
| Output | Black | B          | 2       |
| Ground | Blue  | C          | 3       |

### Cable Definition

- 3 Conductor 18 AWG 41/34 tinned copper with PVC insulation
- 0.032" thick Black PVC Jacket AWM Style 2464 0.240" O.D.

Contact us for alternative wire and cable options

# R2 SERIES - ABSOLUTE ROTARY POSITION SENSOR



## Ordering information

(Please use the characters in the chart below to construct your product code)

**Sample Code:** R2 - 360 - 05 - C - B - X

|                        |  |
|------------------------|--|
| <b>Series</b>          | R2   |
| <b>Sensing Angle</b>   | 060 ± 30°<br>090 ± 45°<br>120 ± 60°<br>180 ± 90°<br>270 ± 135°<br>360 ± 180° (default)   |
| <b>Supply Voltage</b>  | 05 5V (default)  |
| <b>Wiring</b>          | C Cable  |
| <b>Length (meters)</b> | A 0.5 m (19.685")<br>B 0.914 m (36") (default)<br>C 1 m (39.37")<br>D 2 m (78.74")   |
| <b>Connector</b>       | X None (default)<br>P1 Aptiv / Packard Metri-Pack 150 (Male)<br>P2 Aptiv / Packard Metri-Pack 150 (Female)<br>D1 Deutsch DTM04-3P (Male)<br>D2 Deutsch DTM06-3S (Female) |