# R30D – DC Operated, Light Weight RVDT

- **Bipolar DC operation**
- **±60 degree sensing range**
- **Light-weight**
- **Non-contact design**
- **Wide operating temperature range**
- **Size 11 servo mount**
- **Anodized aluminum housing**

## DESCRIPTION

The **R30D RVDT** (Rotary Variable Differential Transformer) is a DC operated non-contacting rotary position transducer. Integrated signal conditioning enables the R30D to operate from a bipolar ±15 VDC supply, and provide a high level DC output that is proportional to the full angular sensing range of the device. Calibrated for operation over ±30 degrees, the R30D provides a +/-3.75VDC output, with a non-linearity of less than ±0.25% of full range. Extended range operation up to a maximum of ±60 degrees is possible with increased non-linearity.

Internally, the DC supply voltage is converted into an AC carrier signal which excites the primary coil of the sensor. An integrated demodulator amplifier with low-pass filter converts the differential secondary output into a smooth, high level, linear DC output signal relative to the angular position of the shaft.

High reliability and performance are achieved through the use of a specially shaped rotor and wound coil that together simulates the linear displacement of a Linear Variable Differential Transformer (LVDT). Non-contact electromagnetic coupling of the rotor provides infinite resolution thus enabling absolute measurements to a fraction of a degree.

The R30D features a rugged aluminum size 11 housing making this rotary position sensor ideal for applications where integrated signal conditioning and small size are required.

Also see our other angular position sensor models, **R60D** (±60°, bipolar DC operation), **RVIT-15 Series** (single ended DC operation, voltage or current output), **R120LC** (+5VDC operation, low cost) and **R30A/R36AS** (AC operation).

Measurement Specialties, Inc. (NASDAQ MEAS) offers many other types of sensors and signal conditioners. Data sheets can be downloaded from our web site at: http://www.meas-spec.com/datasheets.aspx

*MEAS acquired Schaevitz Sensors and the **Schaevitz**® trademark in 2000.*

## FEATURES

- Extended operation up to ±60°
- High level, low noise DC output
- Long term reliability
- Excellent temperature performance
- Rugged anodized aluminum housing
- Shielded ABEC 3 precision bearings

## APPLICATIONS

- Hydraulic pump control
- Throttle lever position feedback
- Rotary actuator feedback
- Dancer arm position
- Reeler/Dereeler
- Valve position

# R30D – DC Operated, Light Weight RVDT

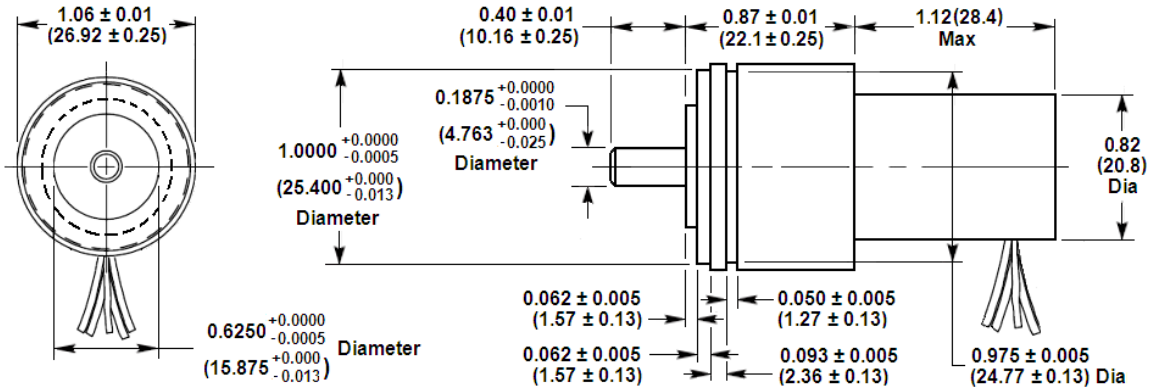
## PERFORMANCE SPECIFICATIONS

| ELECTRICAL SPECIFICATIONS | | | |
|---|---|---|---|
| Angular range, degrees | ±30º (standard) | ±40º | ±60º |
| Non-linearity, % of FR, max. | ±0.25% | ±0.5% | ±2% |
| Output at range ends | ±3.75VDC | ±5.00VDC | ±7.50VDC |
| Sensitivity | 0.125 V/degree | | |
| Temp coefficient of sensitivity | 0.04%/ºF [0.07%/ºC], over operating temperature range | | |
| Input voltage | +/-15VDC ±10% | | |
| Input current | 25mA maximum | | |
| Output current | 5mA | | |
| Output impedance | 1 Ω maximum | | |
| Frequency response | 500Hz @ -3dB | | |

| ENVIRONMENTAL AND MECHANICAL SPECIFICATIONS | |
|---|---|
| Operating temperature | 0°F to +158°F [-18°C to 70°C] |
| Storage temperature | -67°F to +257°F [-55°C to 125°C] |
| Mechanical angular range | 360 degrees (no stops) |
| Bearings | Shielded ABEC 3 precision |
| Shaft diameter | 3/16 inch [4.76mm] |
| Housing material | Aluminum, anodized |
| Mounting | Size 11 servo mount BU-ORD |
| Moment of inertia | 0.53 x $10^{-6}$ inch.lb-force.second$^2$ [0.61 x $10^{-6}$ Kg-force.cm.second$^2$] |
| Maximum torque, unbalance | 0.004 inch.ounce-force [0.3 gram-force.cm] |
| Maximum torque, friction | 0.015 inch.ounce-force [1.1 gram-force.cm] |
| Shaft load capability | 10 lb [4.5Kg] Axial; 8 lb [3.6 Kg] Radial |
| Electrical connection | 4 lead wires, 28AWG , PTFE insulation, 12 inches [30cm] long |
| Weight | 1.9 oz [54 grams] |

*Notes:*
*All values are nominal unless otherwise noted*
*FR (Full Range) is the angular range, end to end; 2xAº for ±Aº angular range*

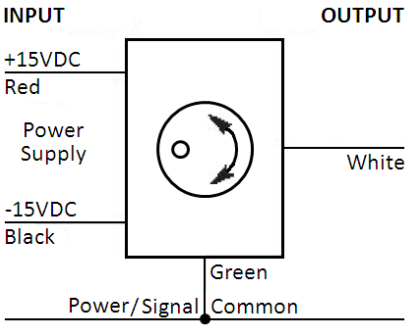
## DIMENSIONS




*Dimensions are in inch (mm)*

# R30D – DC Operated, Light Weight RVDT

## WIRING INFORMATION




## ORDERING INFORMATION

| Description | Model | Part Number |
|---|---|---|
| RVDT ±30º | R30D | 02560234-000 |
| **OPTIONS** | | |
| RVDT with ±40º calibration | R30D-040 | 02560234-040 |
| RVDT with ±60º calibration | R30D-060 | 02560234-060 |
| **ACCESSORIES** | | |
| R-FLEX multipurpose coupling kit | R-FLEX | 66530072-000 |
| Dual rail DC power supply (±15VDC) | PSD 40-15 | 02291339-000 |

*Refer to our "RVDT and RVIT Accessories" data sheet for other accessories.*

## TECHNICAL CONTACT INFORMATION


| NORTH AMERICA | EUROPE | ASIA |
|---|---|---|
| Measurement Specialties, Inc.<br>1000 Lucas Way<br>Hampton, VA 23666<br>United States<br>Phone: +1-800-745-8008<br>Fax: +1-757-766-4297<br>Email: sales@meas-spec.com<br>Web: www.meas-spec.com | MEAS Deutschland GmbH<br>Hauert 13<br>D-44227 Dortmund<br>Germany<br>Phone: +49-(0)231-9740-0<br>Fax: +49-(0)231-9740-20<br>Email: info.de@meas-spec.com<br>Web: www.meas-spec.com | Measurement Specialties China Ltd.<br>No. 26, Langshan Road<br>High-tech Park (North)<br>Nanshan District, Shenzhen 518057<br>China<br>Phone: +86-755-33305088<br>Fax: +86-755-33305099<br>Email: info.cn@meas-spec.com<br>Web: www.meas-spec.com |