



R30D

DC Operated, Light Weight RVDT

SPECIFICATIONS

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

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 ± 3.75 VDC output, with a non-linearity of less than $\pm 0.25\%$ 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.

FEATURES

- Extended operation up to $\pm 60^\circ$
- 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

PERFORMANCE SPECIFICATIONS

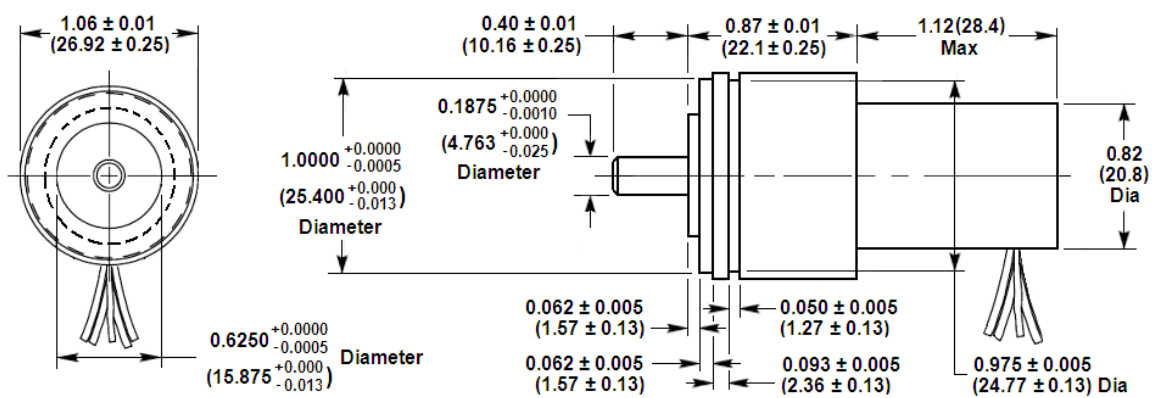
| ELECTRICAL SPECIFICATIONS | | | |
|----------------------------------|---|----------|----------|
| Angular range, degrees | ±30° (standard) | ±40° | ±60° |
| Non-linearity, % of FR, max. | ±0.25% | ±0.5% | ±2% |
| Output at range ends | ±3.75VDC | ±5.00VDC | ±7.50VDC |
| Sensitivity | 0.125 V/degree | | |
| Temp coefficient of sensitivity | 0.04%/°F [0.07%/°C], 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] |
| IEC 60529 rating | IP60 |

Notes:

All values are nominal unless otherwise noted

FR (Full Range) is the angular range, end to end; 2xA° for ±A° angular range

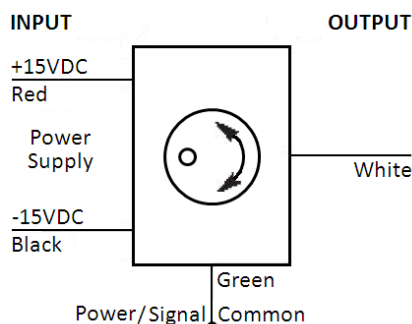
DIMENSIONS

Dimensions are in inch (mm)

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WIRING INFORMATION



ORDERING INFORMATION

| Description | Model | Part Number |
|--|-----------|--------------|
| RVDT $\pm 30^\circ$ | R30D | 02560234-000 |
| OPTIONS | | |
| RVDT with $\pm 40^\circ$ calibration | R30D-040 | 02560234-040 |
| RVDT with $\pm 60^\circ$ calibration | R30D-060 | 02560234-060 |
| ACCESSORIES | | |
| R-FLEX multipurpose coupling kit | R-FLEX | 66530072-000 |
| Dual rail DC power supply ($\pm 15\text{VDC}$) | PSD 40-15 | 02291339-000 |

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