

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 ± 3.75 VDC output, with a non-linearity error of less than $\pm 0.25\%$ of Full Range. Extended range operation up to a maximum of $\pm 60^\circ$ is possible with compromised 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 sensors, **R60D** ($\pm 60^\circ$, 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.

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

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

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PERFORMANCE SPECIFICATIONS

ELECTRICAL SPECIFICATIONS			
Angular range	±30° (standard)	±40°	±60°
Linearity, % of FR	±0.25% max.	±0.5% max.	±2%
Output at range ends	±3.75VDC	±3.75VDC	±3.75VDC
Sensitivity	0.125 V/°		
Temp coefficient of sensitivity	0.04%/°F [0.07%/°C], over operating temperature range		
Input voltage	+/-15VDC (+/-10%)		
Input current	35mA		
Output current	5mA		
Output impedance	1 Ω maximum		
Frequency response	500Hz @ -3dB		

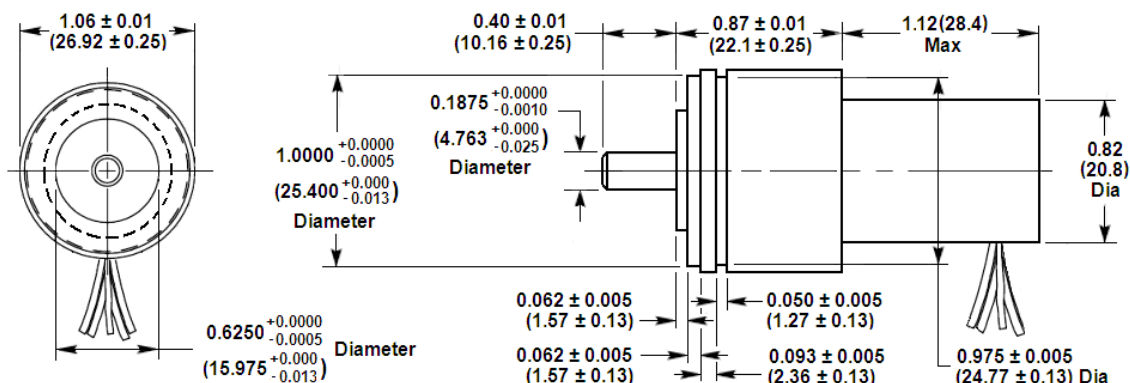
ENVIRONMENTAL AND MECHANICAL SPECIFICATIONS	
Operating temperature	0°F to +170°F [-18°C to 77°C]
Storage temperature	-67°F to +257°F [-55°C to 125°C]
Bearings	Shielded ABEC 3 precision
Shaft diameter	3/16 inch [4.76mm]
Housing material	Aluminum, anodized
Mounting	Size 11 servo mount BU-ORD
Moment of 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 , Teflon insulation, 12 inches [3 meters] long
Weight	1.9 oz [54 grams]

Notes:

All values are nominal unless otherwise noted

FR (Full Range) is 2xA° for ±A° angular range

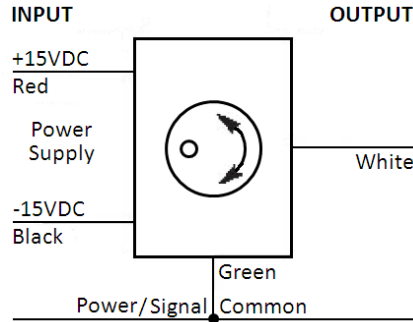
DIMENSIONS



Dimensions are in inches (mm)

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WIRING DIAGRAM



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 (± 15 VDC)	PSD 4-15	02291331-000

Refer to our [“Accessories for RVDT’s and RVIT’s”](#) brochure for our RVDT signal conditioning instrumentation and other accessories

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