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**

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

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.

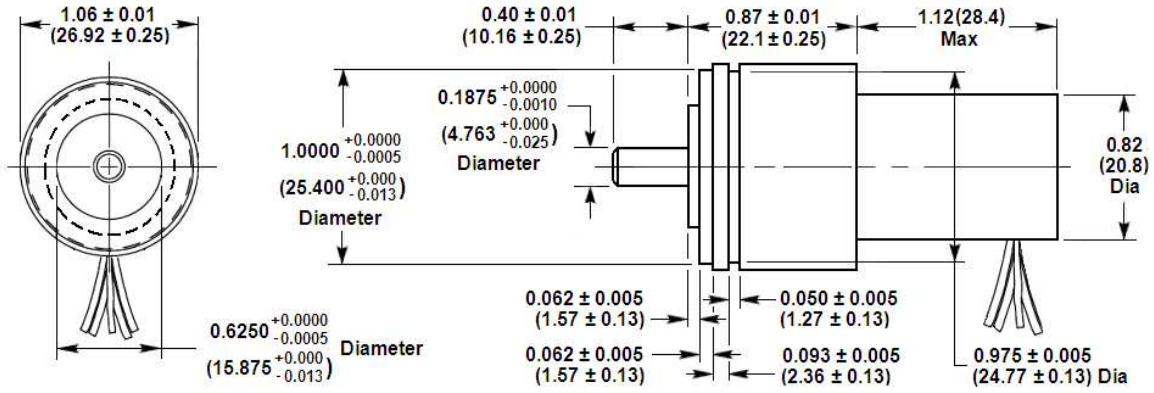
PERFORMANCE SPECIFICATIONS

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]
IEC 60529 rating	IP60

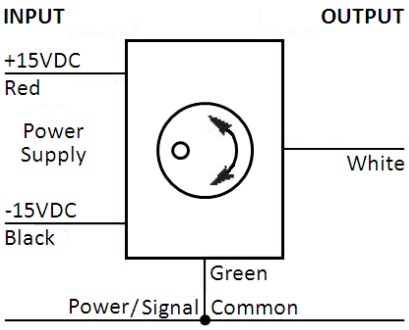
Notes:
All values are nominal unless otherwise noted
FR (Full Range) is the angular range, end to end; 2xAº for ±Aº angular range

DIMENSIONS



Dimensions are in inch (mm)

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