R30D RVDTs (DC-Operated Rotary Variable Differential Transformers)

RVDTs incorporate a proprietary noncontact design that dramatically improves long term reliability when compared to other traditional rotary devices such as syncros, resolvers and potentiometers. This unique design eliminates assemblies that degrade over time, such as slip rings, rotor windings, contact brushes and wipers, without sacrificing accuracy.

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). Rotational movement of the rotor shaft results in a linear output signal that shifts ±60 (120 total) degrees around a factory preset null position. The phase of this output signal indicates the direction of displacement from the null point. Noncontact electromagnetic coupling of the rotor provides infinite resolution, thus enabling absolute measurements to a fraction of a degree.

Although capable of continuous rotation, most RVDTs are calibrated over a range of ±30 degrees, with nominal nonlinearity of less than ±0.25% of full scale (FS). Extended range operation up to a maximum of ±60 degrees is possible with compromised linearity.

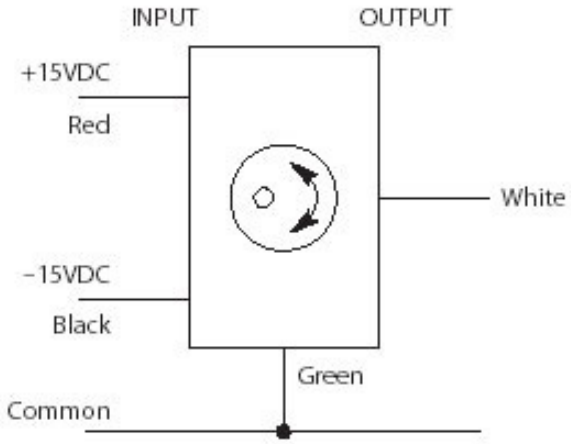
R30D

The R30D RVDT is a DC operated noncontacting rotary transducer. Integrated signal conditioning enables the R30D to operate from a bipolar ±15 VDC source with a high level DC output that is proportional to the full range of the device. Calibrated for operation to ±30 degrees, the R30D provides a constant scale factor of 125 mVDC/degree. Nonlinearity error of less than ±0.25% FS is achieved while maintaining superior thermal performance over -18°C to 75°C.

The DC excitation is internally converted to an AC carrier signal which excites the transducer's primary coil. An integrated demodulator amplifier and filter convert the differential secondary output into a smooth, high level, DC output signal that is linear with the shaft angle position. Resolution is infinite enabling measurements to a fraction of a degree.

The R30D features a rugged aluminum size 11 housing making this rotary transducer ideal for applications where integrated signal conditioning and small size are required. Typical applications include hydraulic pump control, rotary actuator feedback, and throttle lever position feedback.

wiring



Electrical Specifications

RVDT Model	Linearity		
	Percent of Range		
R30D	+/- 30°	+/- 40°	+/- 60°
	0.25	0.5	2.0

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R30D RVDTs (DC-Operated Rotary Variable Differential Transformers)

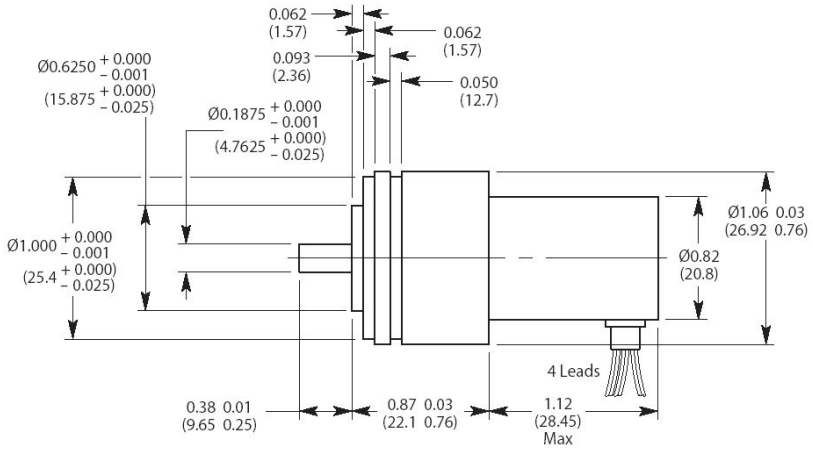
Specifications

Full Range	+/- 30°
Input Voltage (nom)	+/-15 Volts DC (+/- 10%)
Scale Factor	0.125 V/°
Output Voltage (nom)	+/- 3.75 VDC (at 30°)
Input Current	35 mA
Output Current	5 mA
Output Impedance	<10 Ohms
Frequency Response	500 Hz @ -3 dB
Storage Temperature Range	-67°F to 250°F (-55°C to 125°C)
Operating Temperature Range	0°F to 170°F (-18°C to 75°C)
Temperature Coefficient of FS	+/-0.02%/F° (0.04%°C)
Lead Wires	28 AWG, Teflon insulation, 4 wire, minimum 12" long
Torque	0.015 in-oz
Weight	1.9 oz (53 gm)
Mounting	Size 11 Servo Mount BU-ORD
Bearings	Shielded ABEC 3 Precision
Shaft Diameter	3/16 in (4.76 mm)
Axial Shaft Bearing Load Capacity	10 lbs (4.54 kg)
Radial Shaft Bearing Load Capability	8 lbs (3.6 kg)
Casing Material	Aluminum

Mechanical Specifications

RVDT Model	Moment of Inertia	Maximum Torque		Maximum Load		Weight	Servo Mount
	Pound-Inch-Second	Unbalance	Friction	Unbalance	Friction	Grams	Bu-Ord
		Inch-Ounces		Inch-Ounces			
R30D	0.53 x 10^{-6}	.004	.015	8	10	53	11

dimensions



ordering information

Specify by Model Number

Model Number	Size	Range
R30D	11	+/- 30°

R-Flex coupler available separately.

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