



RoHS

### **FEATURES**

- High accuracy
- Infinite resolution
- Long term reliability
- Wide -55° to +150°C operating temp range
- Rugged anodized aluminum housing
- Shielded ABEC 3 precision bearings

#### **APPLICATIONS**

- Valve position
- Machine tool equipment
- Rotary actuator feedback
- Dancer arm position
- Process control

# **R30A** AC Operated, Light Weight RVDT

### **SPECIFICATIONS**

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

The **R30A RVDT** (Rotary Variable Differential Transformer) is an angular position sensor that incorporates a proprietary noncontact design which dramatically improves long term reliability when compared to other traditional rotary devices such as synchros, 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 change in the amplitude of the output signal, directly proportional to the shaft angle change, while the phase of this output signal indicates the direction of displacement from the null point. Non-contact electromagnetic coupling of the rotor provides infinite resolution thus enabling absolute measurements to a fraction of a degree.

AC operation eliminates the need for integrated signal conditioning components, thereby offering the user an extremely wide operating temperature range of  $-55^{\circ}$ C to  $+150^{\circ}$ C. Factory calibrated to operate over a  $\pm 30$  degree range, the R30A offers a non-linearity of less than  $\pm 0.25\%$  of full range. Extended range operation up to a maximum of  $\pm 60$  degrees is possible with increased non-linearity. Packaged in a small, size 11 servo mount, aluminum housing with flying lead termination, the R30A is ideal for space restrictive applications.

## PERFORMANCE SPECIFICATIONS

ELECTRICAL SPECIFICATIONS								
Parameter	@10kHz Input Frequency (recommended)			@2.5kHz Input Frequency				
Angular range, degrees	±30º	±40º	±60º	±30º	±40º	±60º		
Non-linearity, % of FR	±0.25%	±1%	±2%	±0.25%	±1%	±2%		
Output at range ends (*)	87mV/V	116mV/V	174mV/V	69 mV/V	92 mV/V	138 mV/V		
Sensitivity	2.9 mV/V/degree			2.3 mV/V/degree				
Temp coefficient of sensitivity	0.02%/ºF [0.036%/ºC], 20 to +160ºF [-7 to +71ºC] Not specified							
Input / Output impedances	370Ω / 1300Ω			135Ω / 600Ω				
Phase shift	+3° +35°							
Input voltage and frequency	3 VRMS @ 2.5 to 10 kHz (10kHz recommended)							
Null voltage	0.5% of FRO, maximum							
ENVIRONMENTAL AND MECHANICAL SPECIFICATIONS								
Operating temperature	-67°F to +300°F [-55°C to 150°C]							
Mechanical angular range	360 degrees (no stops)							
Bearings	Shielded ABEC 3 precision							
Shaft diameter	3/16 inch [4.76 mm]							
Housing material	Aluminum, anodized							
Mounting	Size 11 servo mount per BU-ORD							
Moment of inertia	0.53 x 10 <sup>-6</sup> inch.lb-force.second <sup>2</sup> [0.61 x 10 <sup>-6</sup> Kg-force.cm.second <sup>2</sup> ]							
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	6 lead wires, AWG 28, PTFE insulation, 12 inches [30cm] long							
Weight	1.3 oz [36 Grams]							
IEC 60529 rating	IP60							

Notes:

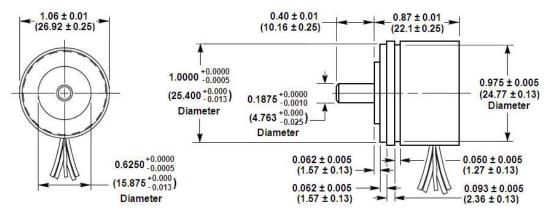
All values are nominal unless otherwise noted

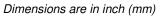
(\*): Unit for output at range ends is millivolt per volt of excitation (input voltage)

FR (Full Range) is the angular range, end to end;  $2xA^{\varrho}$  for  $\pm A^{\varrho}$  angular range

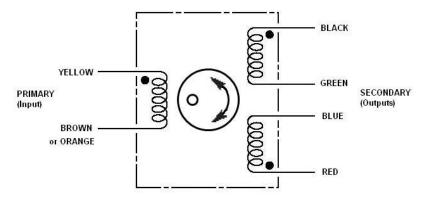
FRO (Full Range Output): Algebraic difference in outputs measured at the ends of the range

#### DIMENSIONS





### WIRING INFORMATION



Connect Green to Blue for differential output

### **ORDERING INFORMATION**

Description	Model	Part Number					
RVDT ±30°, 10KHz calibration (standard)	R30A	02560231-000					
OPTIONS							
RVDT ±40°, 10KHz calibration	02560231-140						
RVDT ±60°, 10KHz calibration		02560231-160					
RVDT with 2.5KHz calibration		02560231-2XX					
ACCESSORIES							
R-FLEX multipurpose coupling kit		66530072-000					

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