R30A – AC Operated, Light Weight RVDT

RoHS

- **AC operation**
- **+/-60° angular sensing range**
- **Light weight**
- **Non-contact design**
- **Wide operating temperature range**
- **Size 11 servo mount**
- **Anodized aluminum housing**

DESCRIPTION

The **R30A RVDT** (Rotary Variable Differential Transformer) is an angular position sensor that incorporates a proprietary non-contact 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 output signal directly proportional to change in the shaft angle, 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°C to +150°C. Factory calibrated to operate over a ±30 degree range, the R30A offers a nonlinearity of less than ±0.25% of full scale. Extended range operation up to a maximum of ±60° is possible with compromised linearity. Packaged in a small, size 11 servo mount aluminum housing with flying lead termination, the R30A is ideal for space restrictive applications.

Also see our other models, **R36AS** (stainless steel housing, MS style connector), **RSYN** (high output, shock and vibration tolerant), **R30D and R60D** (bipolar DC operation), and the **RVIT-15 Series** (single ended DC operation, voltage or current output).

Measurement Specialties, Inc. (NASDAQ MEAS) offers many other types of sensors and signal conditioners. Data sheets can be downloaded from our web site at: http://www.meas-spec.com/datasheets.aspx

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

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

measurement SPECIALTIES™

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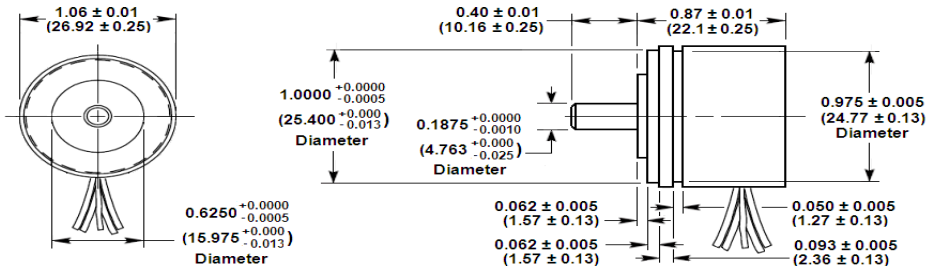
PERFORMANCE SPECIFICATIONS

ELECTRICAL SPECIFICATIONS						
Parameter	**@10 KHz Input Frequency** *(recommended)*			**@2.5KHz Input Frequency**		
Angular range	±30º	±40º	±60º	±30º	±40º	±60º
Linearity, % of FS	±0.25% max	±0.5% max	±2%	±0.25% max	±0.5% max	±2%
Output at range end (*)	87mV/V	116mV/V	174mV/V	69 mV/V	92 mV/V	138 mV/V
Sensitivity	2.9 mV/V/º			2.3 mV/V/º		
Temp coefficient of sensitivity	0.02%/ºF [0.036%/ºC], 20 to +160ºF [-7 to +71ºC]			Not specified		
Input / Output impedances	370Ω / 1300 Ω			125Ω / 500Ω		
Phase shift	+3°			+35º		
Input voltage and frequency	3 VRMS, 2.5 to 10 KHz (10KHz recommended)					
Null voltage	0.5% of FSO, maximum					

ENVIRONMENTAL AND MECHANICAL SPECIFICATIONS	
Operating temperature	-67°F to +300°F [-55°C to 150°C]
Bearings	Shielded ABEC 3 precision
Shaft diameter	3/16 inch [4.75 mm]
Housing material	Aluminum, anodized
Mounting	Size 11 servo mount per 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	6 lead wires, 28AWG , Teflon insulation, 12 inches [3 meters] long
Weight	1.3 oz [36 Grams]

Notes:
All values are nominal unless otherwise noted
(*): Unit for output at stroke ends is millivolt per volt of excitation (input voltage)
FS (Full Scale) is 2xAº for ±Aº angular range
FSO (Full Scale Output) is the output at Aº angular position for ±Aº range

DIMENSIONS



Dimensions are in inches (mm)

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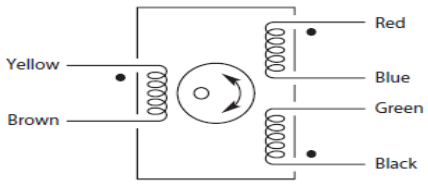
WIRING DIAGRAM



Connect Green to Blue for differential output

ORDERING INFORMATION

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

Refer to our "Accessories for RVDT's and RVIT's" brochure for our RVDT signal conditioning instrumentation and other accessories

TECHNICAL CONTACT INFORMATION

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