



## R36AS

### AC Operated RVDT for Harsh Environments

#### SPECIFICATIONS

- ◆ AC operation
- ◆  $\pm 60$  degree angular sensing range
- ◆ Non-contact electrical design
- ◆ Wide operating temperature range
- ◆ Size 15 servo mount
- ◆ Stainless steel housing
- ◆ MS style hermetic connector

The **R36AS 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 stator coil that together simulate the operation 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 signal indicates the direction of displacement from the null point. Non-contact electromagnetic coupling of the rotor provide infinite resolution.

AC operation eliminates the need for integrated signal conditioning components, thereby offering the user a very wide operating temperature range of  $-55^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$ . Factory calibrated to operate over a  $\pm 30$  degree range, the R36AS offers a non-linearity of less than  $\pm 0.5\%$  of full range. Extended range operation up to a maximum of  $\pm 60$  degrees is possible with increased non-linearity.

Packaged in Size 15 servo mount stainless steel housing, an MS style hermetic connector, and a shaft seal, the R36AS is the perfect choice for angular position sensing in harsh environments.

#### FEATURES

- ◆ High accuracy
- ◆ Infinite resolution
- ◆ Long term reliability
- ◆ Wide  $-55^{\circ}$  to  $+150^{\circ}\text{C}$  operating temp range
- ◆ Rugged stainless steel housing
- ◆ Shielded ABEC 3 precision bearings

#### APPLICATIONS

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

**PERFORMANCE SPECIFICATIONS**

ELECTRICAL SPECIFICATIONS						
Parameter	@2.5kHz Input Frequency (recommended)			@10kHz Input Frequency		
Angular range, degrees	±30°	±45°	±60°	±30°	±45°	±60°
Non-linearity, % of FR	±0.5%	±1%	±3%	±0.5%	±1%	±3%
Output at range ends (*)	66mV/V	99mV/V	132mV/V	51 mV/V	76 mV/V	102 mV/V
Sensitivity	2.2 mV/V/degree			1.7 mV/V/degree		
Temp coefficient of sensitivity	0.02%/°F [0.036%/°C] +20 to +160°F [-7 to +71°C]			Not specified		
Input / Output impedances	750Ω / 2000 Ω			2500Ω / 5400Ω		
Phase shift	+4°			-17°		
Input voltage and frequency	3 VRMS @ 2.5 to 10 kHz (2.5kHz 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 [4.75 mm]					
Housing material	AISI 304 stainless steel					
Mounting	Size 15 servo mount per BU-ORD					
Moment of inertia	1.62 x 10 <sup>-6</sup> inch.lb-force.second <sup>2</sup> [1.866 x 10 <sup>-6</sup> Kg-force.cm.second <sup>2</sup> ]					
Maximum torque, unbalance	0.012 inch.ounce-force [0.87 gram-force.cm]					
Maximum torque, friction	0.75 inch.ounce-force [54 gram-force.cm]					
Shaft load capability	25 lb [11Kg] Axial or Radial					
Electrical connection	6-pin MS type connector (MIL-C-5015)					
Weight	9 oz [255 Grams]					
IP 60529 rating	IP65					

**Notes:**

All values are nominal unless otherwise noted

Dimensions are in inch [mm] 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; 2x<sup>A</sup> for ±A° angular range

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

**DIMENSIONS**

