A Rotary Variable Differential Transformer (RVDT) is an electromechanical transducer that provides a variable alternating current (AC) output voltage that is linearly proportional to the angular displacement of its input shaft. When energized with a fixed AC source, the output signal is linear within a specified range over the angular displacement.

RVDT’s utilize brushless, non-contacting technology to ensure long-life and reliable, repeatable position sensing with infinite resolution. Such reliable and repeatable performance assures accurate position sensing under the most extreme operating conditions.

Moog offers seven frequency optimized RVDT’s in a basic size 8 configured housing. Each is designed to operate at a specific frequency. Frequency optimization provides the benefit of an increased operating range of angular displacement with a reduction in sensor size and weight.

Please contact our application engineers for more information and to discuss your specific needs.
Rotary Variable Differential Transformer

Basic RVDT construction and operation is provided by rotating an iron-core bearing supported within a housed stator assembly. The housing is passivated stainless steel. The stator consists of a primary excitation coil and a pair of secondary output coils.

A fixed alternating current excitation is applied to the primary stator coil that is electromagnetically coupled to the secondary coils. This coupling is proportional to the angle of the input shaft. The output pair is structured so that one coil is in-phase with the excitation coil, and the second is 180 degrees out-of-phase with the excitation coil.

When the rotor is in a position that directs the available flux equally in both the in-phase and out-of-phase coils, the output voltages cancel and result in a zero value signal. This is referred to as the electrical zero position or E.Z. When the rotor shaft is displaced from E.Z., the resulting output signals have a magnitude and phase relationship proportional to the direction of rotation.

Because RVDT’s perform essentially like a transformer, excitation voltages changes will cause directly proportional changes to the output (transformation ratio). However, the voltage out to excitation voltage ratio will remain constant. Since most RVDT signal conditioning systems measure signal as a function of the transformation ratio (TR), excitation voltage drift beyond 7.5% typically has no effect on sensor accuracy and strict voltage regulation is not typically necessary. Excitation frequency should be controlled within +/- 1% to maintain accuracy.

Please contact our application engineers for more information and to discuss your specific needs.

**Common RVDT Terms**
- **Scale Factor** (Sensitivity) – Slope of a best fit straight line drawn through the output data. RVDTs are ratiometric devices with the sensitivity commonly expressed in volts out per degree.
- **Accuracy** – Maximum allowed deviation from the nominal output. Specified as +/- degrees.
- **Cross talk** – Applicable when using multiple channel units. Voltage produced in the secondary of one channel by the primary excitation of another channel.
- **Temperature Coefficient** (Temperature Variation) – % change in device sensitivity over a temperature range. Expressed as % / degrees C.
- **Single Cycle** – Linear (operating) region through +/- 80 degrees.
- **Dual Cycle** – Linear (operating) region through +/- 40 degrees.

**Specifications**

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<td>0.50**</td>
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*Voltage and frequencies shown are typical. RVDTs can operate at other voltages and frequencies. Our design engineers are happy to design an RVDT to meet your voltage and frequency requirements.

**Accuracy varies with excursion angle.
Rotary Variable Differential Transformer

Typical Outline Drawings

AS-827-001-003

Dimensions are in inches

AS-827-004

Dimensions are in inches
Rotate Variable Differential Transformer

Typical Outline Drawings

AS-865-001

Dimensions are in inches

AS-887-001

Dimensions are in inches

Note: Configured for traditional servo clamp mounting
Rotary Variable Differential Transformer

Typical Outline Drawings

PRV-15-A-15A

SLH-14-E-3

Note: With respect to the U.S. export regulations, this product is controlled by the U.S. Commerce Department or the U.S. State Department. Contact Moog Components Group for additional detail on the export controls that are applicable.

Dimensions are in millimeters

Dimensions are in inches