

Rotary Variable Differential Transformer (RVDT)

TYPICAL APPLICATIONS

- Flight control / navigation
- Flap actuators
- Fuel control
- Cockpit control

FEATURES

- Brushless, non-contacting technology
- Repeatable position sensing with infinite resolution
- Standard size 8 housing

BENEFITS

- Long life
- High reliability
- Repeatable performance
- Frequency optimization



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 Components Group offers six 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.

Resolvers

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.

SPECIFICATIONS

Model No.	AS-827-001	AS-827-002	AS-827-003	AS-827-004	AS-865-001	AS-887-001
Input						
Voltage	8.0 Vrms	8.0 Vrms	8.0 Vrms	8.0 Vrms	6.0 Vrms	7.0 Vrms
Frequency	1870 Hz	1870 Hz	1870 Hz	1870 Hz	3000 Hz	3000 Hz
Impedance	65 + j475	65 + j475	65 + j475	65 + j475	50 + j455	217 + j448
Output						
Scale Factor	0.061 V / Deg.	0.068 V / Deg.	0.068 V / Deg.	0.061 V / Deg.	0.061 V / Deg.	0.052275 V / Deg.
Angular Disp.	+/- 40 Deg.	+/- 40 Deg.	+/- 40 Deg.	+/- 42 Deg.	+/- 40 Deg.	+/- 30 Deg.
Accuracy	+/- 0.2 Deg.	+/- 0.2 Deg.	+/- 0.3 Deg.	+0.4; -0.6 Deg.	+/- 0.2 Deg.	+/- 0.25 Deg.
Phase Angle	+/- 5 Deg.	+/- 5 Deg.	+/- 5 Deg.	+/- 7 Deg.	+/- 5 Deg.	+/- 7 Deg.
Impedance	78 + j88	78 + j88	78 + j88	78 + j88	82 + j194	114 + j103
Test Load	7,000 pF	7,000 pF	7,000 pF	7,000 pF	100 KOhm	40,000 Ohm
Variation with Temp.	0.05% / Deg. C Max.	0.05% / Deg. C Max.	0.05% / Deg. C Max.	0.05% / Deg. C Max.		0.01% / Deg. C Max.

