RSYN SERIES

AC Operated RVDTs for Hostile Environments

SPECIFICATIONS

- **Non-contact electrical design**
- **High output sensitivity**
- **±35 degree sensing range**
- **Very low temp. coefficient of sensitivity**
- **Wide -55 to +105ºC operating temp. range**
- **Superior shock &vibration tolerance**
- **Humidity and salt mist resistant**
- **Sizes 8 and 11 servo mounts**

The **RSYN Series are** RVDT (Rotary Variable Differential Transformer) angular position sensors that incorporate proprietary rotor and coil designs. Their non-contact electrical construction eliminates items such as slip rings, rotor windings, contact brushes or wipers that degrade over time and impair reliability. At the same time the coil design achieves extraordinarily high output and low noise.

RSYNs offer enhanced tolerance to shock and vibration, as well as humidity & salt mist resistance, which make these transducers the obvious choice where severe conditions are expected. Excellent performance over a wide temperature range provides a significant advantage over comparable sensors.

RSYN angular position sensors are also compact. They are available in two sizes: The RSYN 8-30 with a 0.75 inch [19mm] diameter, and the RSYN 11-30 with a 1.06 inch [27mm] diameter. The coil design comprises a primary and two secondary windings all placed in the stator. There are no windings in the rotor. The secondary windings act as pickup coils detecting the flux change caused by rotation of the rotor.

The stator core is a lamination stack of highly permeable magnetic alloy material and the rotor is made of the same material. A very small air gap separates these components. This combination provides for an “all-iron” flux path that provides for very high efficiency, resulting in a very high signal to noise ratio and a very low temperature coefficient of sensitivity. The linear AC output represents the rotor shaft angle position, providing the user with exceptional resolution even over very small angular ranges. Both models offer the flexibility of six lead wires to provide for a variety of connection schemes to signal conditioners. The RSYNs are factory calibrated over ±30 degrees, but may be over-ranged to ±35 degrees for a total sensing range of 70 degrees if necessary (with somewhat increased non-linearity).

FEATURES

- Non-contact sensor
- Extremely long rotational life
- High reliability
- High accuracy over temperature
- Conductive housings
- ABEC 3 precision bearings

APPLICATIONS

- Valve position
- Head box spinneret position feedback
- Rotary actuator feedback
- Hydrostatic transmissions, off-road vehicles
- Aircraft cockpit controls
- Rudder position on boats

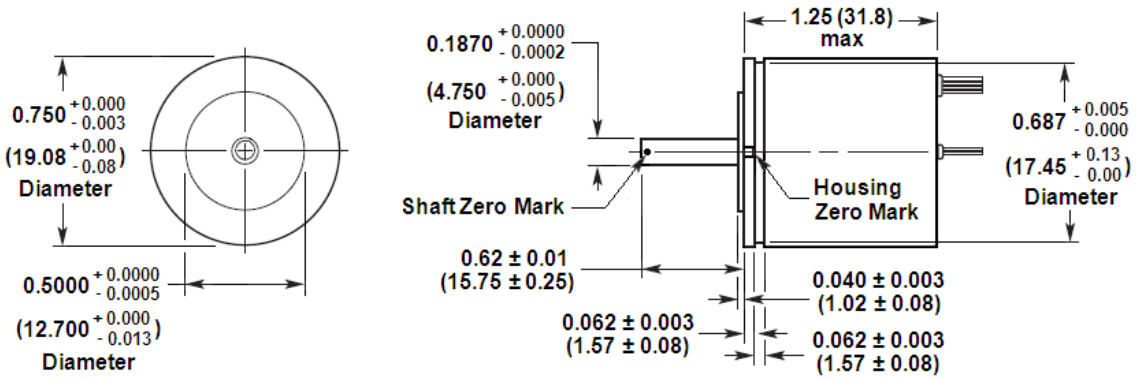
PERFORMANCE SPECIFICATIONS

ELECTRICAL SPECIFICATIONS		
Parameter	**RSYN 8-30**	**RSYN 11-30**
Linear angular range	±30 degrees	±30 degrees
Non-linearity, maximum	±0.5% of FR	±0.5% of FR
Output at range end *(*)*	400mV/V	330mV/V
Sensitivity	13.33 mV/V/degree	11.00 mV/V/degree
Phase shift	+4º	+8º
Null voltage	0.4% of FRO	0.3% of FRO
Input impedance @ 0 degree	430Ω	235Ω
Output impedance @ 30 deg.	340Ω	185Ω
Input voltage range (excitation)	1 to 10 VRMS	1 to 10 VRMS
Test input voltage	7.5 VRMS	3.5 VRMS
Input frequency range	1 to 5kHz	2 to 10kHz
Test frequency	3kHz	2.5kHz
Test output load	10KΩ resistor	10KΩ resistor
Temp. coefficient of sensitivity	0.011% per ºF [0.02% per ºC] over operating temperature range	

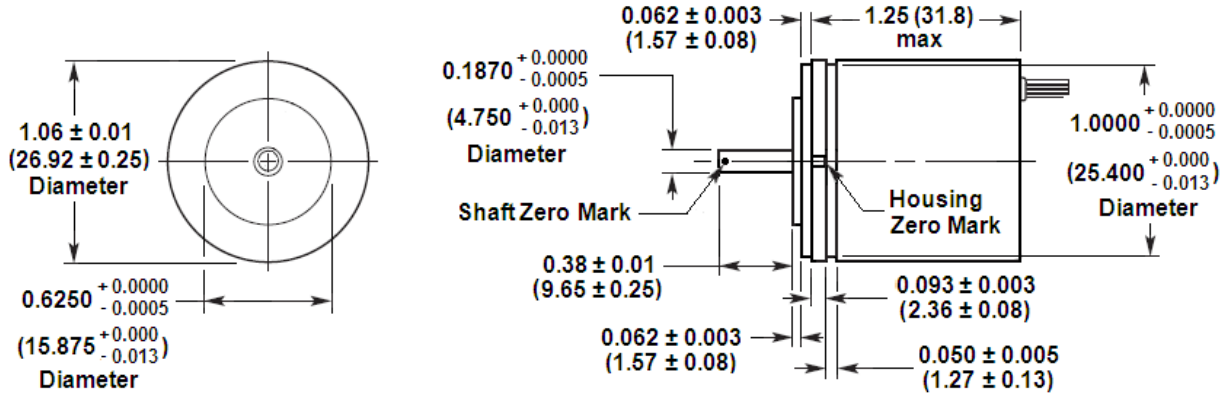
ENVIRONMENTAL AND MECHANICAL SPECIFICATIONS		
Parameter	**RSYN 8-30**	**RSYN 11-30**
Housing material	416 stainless steel	Aluminum 2024-T4, alodined
Mounting	Size 8 servo mount BU-ORD	Size 11 servo mount BU-ORD
Vibration tolerance	20g, 15 to 2000Hz, 3 axes	15g, 15 to 2000Hz, 3 axes
Weight	1.58 oz [36gm]	2.3 oz [65gm]
Operating temperature range	-67°F to +221°F [-55°C to 105°C]	
Mechanical angular range	360 degrees (no stops)	
Bearings	ABEC 3 precision, matched and preloaded	
Shaft diameter	3/16 inch [4.75mm]	
Torque	0.06 inch.ounce-force [4.3 gram-force.cm]	
Shaft load capability	10 lb [4.5kg] Axial and Radial	
Shock survival	30g, 11ms half-sine pulse, 3 axes	
Electrical connection	Six lead-wires, AWG 28, PTFE insulation, 30” [762mm] long	
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; 2xAº for ±Aº angular range
FRO (Full Range Output): Algebraic difference in outputs measured at the ends of the range

DIMENSIONS



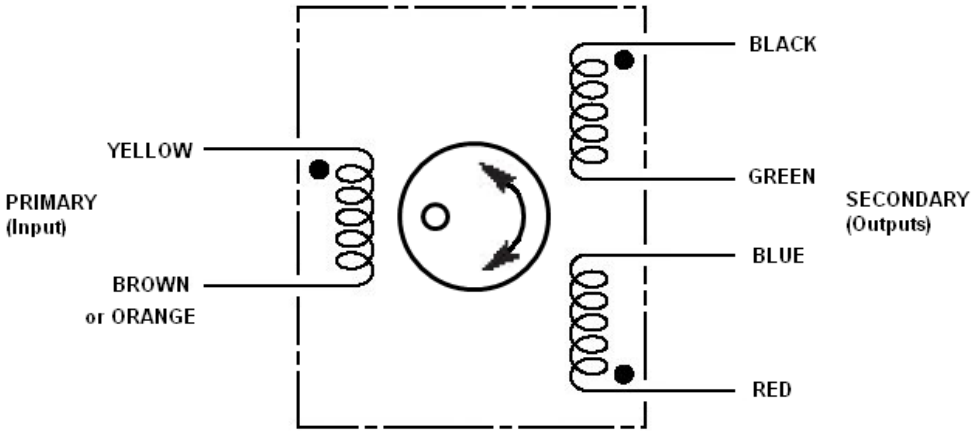
RSYN 8-30



RSYN 11-30

Dimensions are in inch (mm)

WIRING INFORMATION



Connect Green to Blue for differential output

ORDERING INFORMATION

Description	Model	Part Number
RSYN, ±30 degree range, Size 8	RSYN 8-30	02580000-000
RSYN, ±30 degree range, Size 11	RSYN 11-30	02560947-000
ACCESSORIES		
R-FLEX multipurpose coupling kit	ALL	66530072-000

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