

RSYN Series – AC Operated RVDTs for Hostile Environments



- High output sensitivity
- ± 35 degree sensing range
- Very low temp. coefficient of sensitivity
- Wide -55° to $+150^{\circ}\text{C}$ operating temp. range
- Superior shock & vibration tolerance
- Humidity and salt mist resistant
- Sizes 8 and 11 servo mounts

DESCRIPTION

The **RSYN Series** are RVDT (Rotary Variable Differential Transformer) angular position sensors that incorporate proprietary rotor and coil designs. Their non-contact 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, however with somewhat degraded linearity.

Also see our other angular position sensor models, **R30A** (AC operation, aluminum housing), **R36AS** (stainless steel housing, MS style connector), **R30D** (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.

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

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

RSYN Series – AC Operated RVDTs for Hostile Environments

PERFORMANCE SPECIFICATIONS

ELECTRICAL SPECIFICATIONS		
Parameters	RSYN 8-30	RSYN 11-30
Linear angular range	±30 degrees	±30 degrees
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	+4°	+8°
Null voltage	0.5% of FSO	0.5% of FSO
Input impedance @ 0 deg.	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 input frequency	3KHz	2.5KHz
Test output load	10KΩ resistor	10KΩ resistor
Temp coefficient of sensitivity	0.011% per degree F [0.02% per degree C] over operating temperature range	

ENVIRONMENTAL AND MECHANICAL SPECIFICATIONS		
Parameters	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]	
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 connections	Six lead-wires, AWG 28, Teflon insulation, 30" [762mm] long	

Notes:

All values are nominal unless otherwise noted

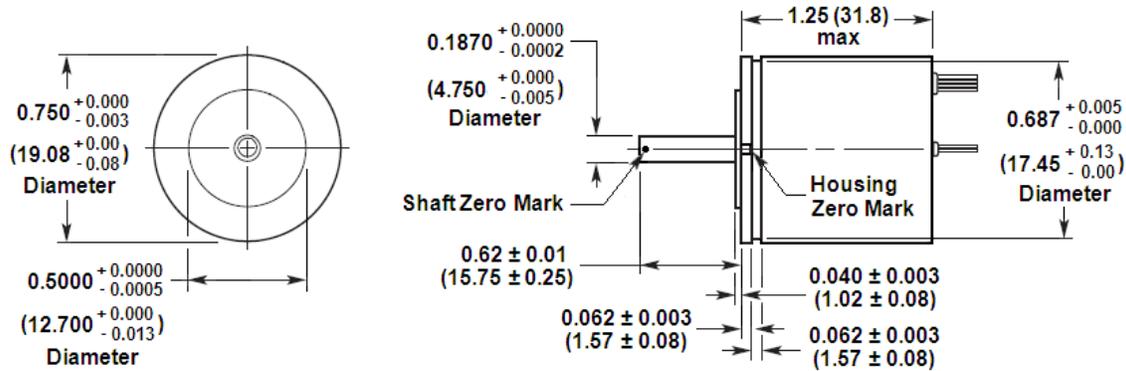
(*): Unit for output at range ends is millivolt per volt of excitation (input voltage)

FR (Full Range) is 2x A° for $\pm A^\circ$ angular range

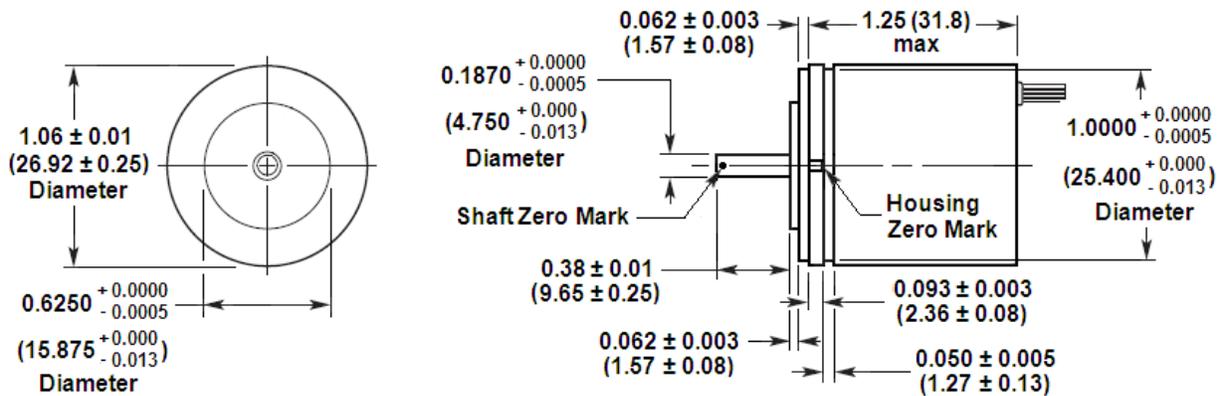
FSO (Full Scale Output) is the output at A° angular position for $\pm A^\circ$ range

RSYN Series – AC Operated RVDTs for Hostile Environments

DIMENSIONS



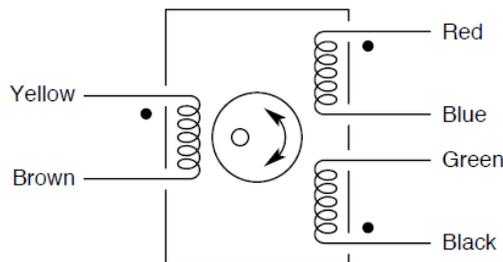
RSYN 8-30



RSYN 11-30

Dimensions are in inches (mm)

WIRING DIAGRAM



Connect Green to Blue for differential output

RSYN Series – AC Operated RVDTs for Hostile Environments

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

Refer to our [“Accessories for RVDT’s and RVIT’s”](#) brochure for our RVDT signal conditioning instrumentation and other accessories

The information in this sheet has been carefully reviewed and is believed to be accurate; however, no responsibility is assumed for inaccuracies. Furthermore, this information does not convey to the purchaser of such devices any license under the patent rights to the manufacturer. Measurement Specialties, Inc. reserves the right to make changes without further notice to any product herein. Measurement Specialties, Inc. makes no warranty, representation or guarantee regarding the suitability of its product for any particular purpose, nor does Measurement Specialties, Inc. assume any liability arising out of the application or use of any product or circuit and specifically disclaims any and all liability, including without limitation consequential or incidental damages. Typical parameters can and do vary in different applications. All operating parameters must be validated for each customer application by customer’s technical experts. Measurement Specialties, Inc. does not convey any license under its patent rights nor the rights of others.