# 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

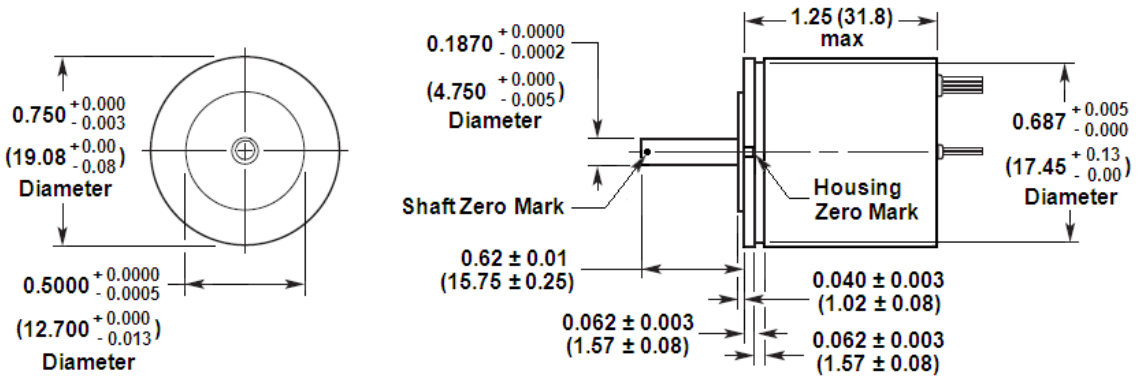
## PERFORMANCE SPECIFICATIONS

| 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 | |

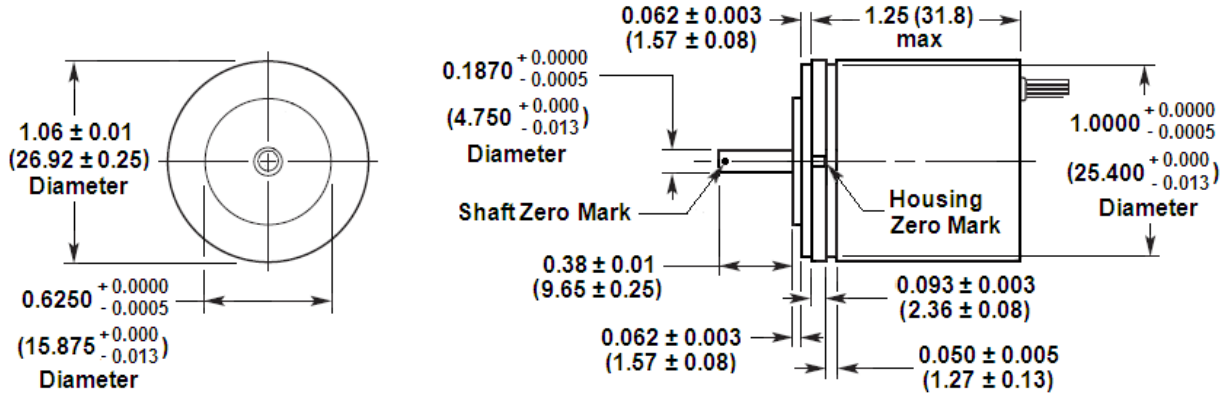
| ENVIRONMENTAL AND MECHANICAL SPECIFICATIONS | | |
|---|---|---|
| **Parameter** | **RSYN 8-30** | **RSYN 11-30** |
| Housing material | 416 stainless steel | Aluminum 2024-T4, alodined |
| Mounting | Size 8 servo mount BU-ORD | Size 11 servo mount BU-ORD |
| Vibration tolerance | 20g, 15 to 2000Hz, 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



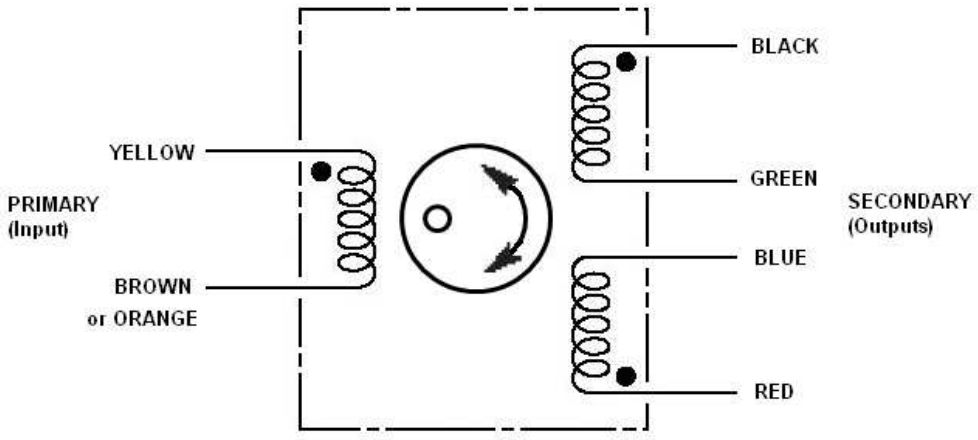

**RSYN 8-30**




**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 |

**NORTH AMERICA**
Measurement Specialties, Inc.,
a TE Connectivity Company
Phone +1-800-522-6752
Email: customercare.hmpt@te.com

**EUROPE**
MEAS Deutschland GmbH(Europe)
a TE Connectivity Company
Phone: +49-800-440-5100
Email: customercare.dtmd@te.com

**ASIA**
Measurement Specialties (China), Ltd.,
a TE Connectivity Company
Phone: +86-0400-820-6015
Email: customercare.shzn@te.com

**TE.com/sensorsolutions**

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

TE Connectivity:
02580000-000