

# RUAG HSP

## Hollow Shaft Potentiometer

RUAG's Hollow Shaft Potentiometer (HSP) for Space Applications utilizes an ITAR free rotary position sensor. Suitable for Space and based on upgraded COTS-technology it features a high linearity at a small dead band.

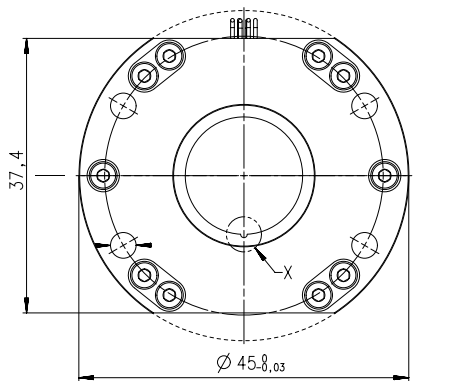
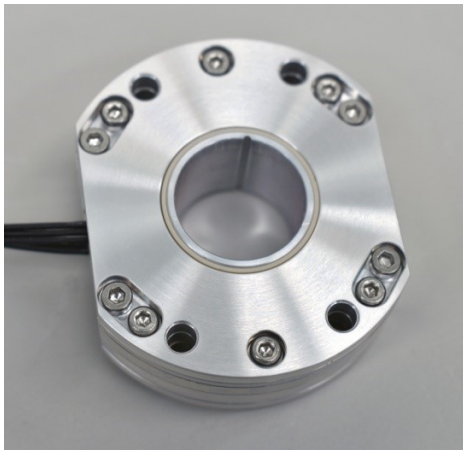
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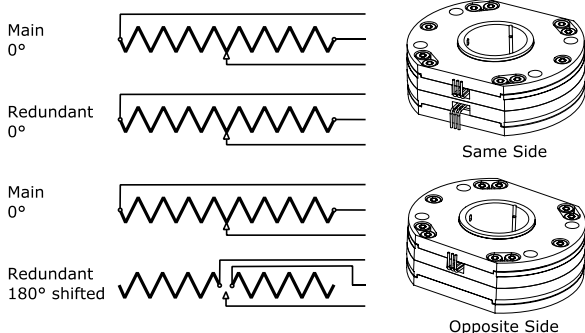
Potentiometers are very commonly used and reliable components to measure the rotary position of a device. RUAG's heritage in Solar Array Drive Mechanism (SADM) results in a deep understanding of potentiometers. RUAG enlarged their position sensor portfolio with the RUAG HSP in 2018, with the goal to assemble them into and improve the RUAG's SADM's performance and potential use in other mechanisms.

The use of for Space upgraded COTS technology keeps the costs at a low level while maintaining full functionality. Equipped with a full redundant arrangement the RUAG HSP is available in three possible configurations shifting the nominal and redundant output signal relative to each other. One of those can compensate the small dead band, another can increase the redundancy with separate signal paths. The performance is independent from the rotary direction.



Connection Scheme

Cable Outlet



| Performance                       |  |
|-----------------------------------|--|
| <b>Mechanical Properties</b>      |  |
| Inner Diameter                    | Ø16H6  |
| Height                            | 15.5 ± 0.1 mm  |
| Outer Diameter                    | Ø45 (37.4mm flat side)                                 |
| Cleanliness                       | ISO 8 Cleanroom or higher class<br>ISO7/6 upon request |
| Operational lifetime              | 100'000 revolutions in vacuum                          |
| On-ground lifetime                | 10'000 revolutions in ambient pressure                 |
| Friction Torque                   | <5-10-3 Nm   |
| Mass                              | <50g   |
| <b>Electrical Properties</b>      |  |
| Track Configuration               | 10kΩ ±10%  |
| Electrical range                  | 355°   |
| Mechanical range                  | 360° (no end stop)                                     |
| Independent linearity             | ±0.1%  |
| Rotation Speed                    | 0.004°/sec – 200°/sec                                  |
| Non op. [°C]                      | -80 to +110  |
| Operating [°C]                    | -55 to +95   |
| Output Cable Configuration        | AWG28, ESCC/3901/012/02                                |
| <b>3 configurations available</b> |  |
| Config 0/0                        | Cable output 0°, main-redundant-signal 0°              |
| Config 180/0                      | Cable output 180°, main-redundant-signal 0°            |
| Config 0/180                      | Cable output 0°, main-redundant-signal 180°            |

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