



Absolute position sensors RD50/70/85-AKSIM

Absolute magnetic multiturn encoders with hollow-shaft designed for servo kits ILM

RoboDrive encoders RD-AKSIM provide accurate absolute position data with high resolution to control RD servo motors very precisely and efficiently. Unlike optical position sensors the magnetic sensor ASIC of the RD-AKSIM encoders is robust against dust and dirt. The multiturn cycle information is stored electronically, but will not be updated during motion without power supply to the sensor. The hollow-shaft magnet ring allows to guide signals, media and fluids, rays and cable through the sensor. With less than 10 mm axial length the sensor system with its off-axis reading head was designed for integration into space-constrained applications.

RD-AKSIM encoders are available in three sizes and have been designed to fit geometrically to the corresponding RoboDrive servo kits and safety brakes to allow the design of entire actuators and joints.



Key features:

- Hollow-shaft capability
- Flat off-axis system for space-constrained applications
- Singleturn resolution up to 262,144 incs/rev (18 bit)
- Multiturn resolution 65,536 revs (16 bit)
- Absolute accuracy $\pm 0.1^\circ$, repeatability 0.002° , no hysteresis
- High speed operation up to 10,000 rpm
- Differential BiSS-C interface (update rate 28 kHz)
- Sampling rate 18 kHz
- Dimensions adapted to corresponding RoboDrive servo kits

Basic data

| | RD50-AKSIM | RD70-AKSIM | RD85-AKSIM |
|--|------------------|------------------|------------------|
| Singleturn resolution [incs/rev] | 131,072 (17 bit) | 262,144 (18 bit) | 262,144 (18 bit) |
| Multiturn resolution [revs] | 65,536 (16 bit) | 65,536 (16 bit) | 65,536 (16 bit) |
| Accuracy [deg] | ± 0.1 | ± 0.1 | ± 0.1 |
| Repeatability [deg] | 0.0027 | 0.0014 | 0.0014 |
| Sampling rate f_s [kHz] | 18 | 18 | 18 |
| Maximum rotation speed n_{max} [rpm] | 10,000 | 7,000 | 6,000 |
| Maximum acceleration a_{max} [rad/s ²] | 80,000 | 60,000 | 40,000 |
| Sensor PCB diameter D [mm] | 54 | 74 | 89 |
| Sensor length L [mm] | 9.2 | 9.2 | 9.2 |
| Weight m [g] | 13.2 | 19.8 | 26.0 |
| Inertia J [kgcm ²] | 0.022 | 0.070 | 0.141 |

Operational temperature range -40°C to $+105^\circ\text{C}$.

