

Position sensors RD50/70/85-AKSIM

Absolute magnetic 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 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 robotic joints.



Key features:

- Hollow-shaft capability
- Flat off-axis system for space-constrained applications
- Resolution up to 200.000 inc/rev
- Absolute accuracy $\pm 0.1^\circ$, repeatability 0.002° , no hysteresis
- High speed operation up to 10.000 rpm
- Differential BiSS-C interface (up to 5 MHz)
- Sampling rate 5 kHz (20 kHz upcoming)
- Dimensions adapted to corresponding RoboDrive servo kits

Basic data

	RD50-AKSIM	RD70-AKSIM	RD85-AKSIM
Resolution [inc/rev]	100,000	160,000	200,000
Accuracy [deg]	± 0.1	± 0.1	± 0.1
Repeatability [deg]	0.0036	0.0023	0.0018
Sampling rate f_s [kHz]	5	5	5
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 -30°C to +105°C.

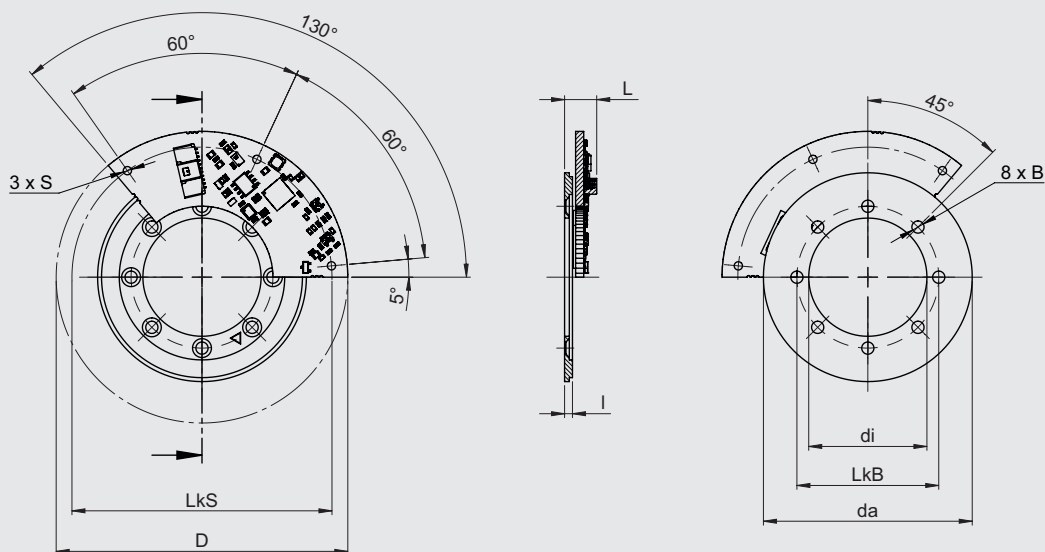
Electrical data and digital interface

	RD50-AKSIM	RD70-AKSIM	RD85-AKSIM
Supply voltage U_{dd} [V]	5	5	5
Supply current I_{dd} [mA]	150	150	150
Communication interface*	BISS-C differential	BISS-C differential	BISS-C differential
Max. master clock frequency f_{cl} [MHz]	5	5	5
CRC bits number	0 ... 5	0 ... 5	0 ... 5
Warning bit number	6	6	6
Error bit number	7	7	7
Logic of warning and error bit	Active low	Active low	Active low
Hardware sensor resolution (bits)	17	18	18
Position data number	8 ... 24	8 ... 25	8 ... 25
Position LSB number	8	8	8
Protocol total bits	25	26	26

* SSI, SPI, PWM, I2C, asynchronous serial communication interfaces can be realized on request.

Dimensions

	RD50-AKSIM	RD70-AKSIM	RD85-AKSIM
Sensor PCB diameter D [mm]	54	74	89
Sensor length L [mm]	9.2	9.2	9.2
Sensor ring diameter d_a [mm]	39	53	64
Hollow-shaft diameter d_i [mm]	20	30	40
Sensor ring length l [mm]	2	2	2
Pitch circle diameter LkS/LkB [mm]	49/25	66/36	80/46
Mounting hole S/B [mm]	2.1/2.5	2.1/3.1	2.1/3.1



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