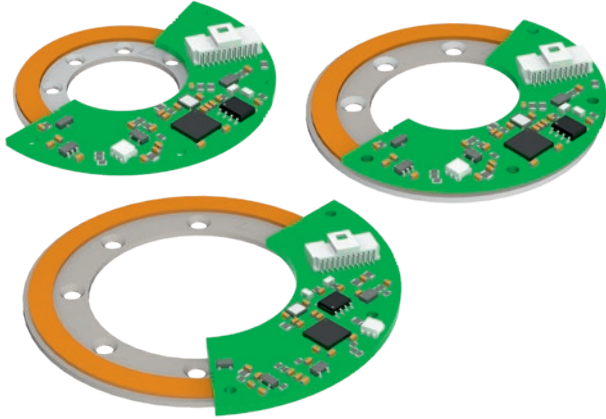


# RD50/70/85-AKSIM

## Absolute position sensors



### HIGHLIGHTS

- ▶ 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 TQ-RoboDrive servo kits

### Magnetic absolute multi-turn encoders with hollow shaft.

Designed for use in TQ-RoboDrive ILM Servo Kits and RD Servo Motors. RD-AKSIM encoders from TQ-RoboDrive provide accurate, high-resolution absolute position data for extremely precise and efficient control of TQ-RoboDrive servo motors. Because they use robust ASIC magnetic sensors rather than optical position sensors, readings are not susceptible to distortion arising from dust and dirt. Multi-turn cycle information

is stored electronically and not updated during motion that occurs when the sensor is not supplied with power.

Thanks to the hollow-shaft magnet ring, signals, media and fluids, rays and cables may be guided through the sensor. Designed for integration into space-constrained applications, the sensor system has an axial length of less than 10 mm. RD-AKSIM encoders from TQ-RoboDrive are available in several sizes, all designed to geometrically fit corresponding TQ-RoboDrive servo kits and safety brakes and enable the design of entire actuators and joints.

### BASIC DATA

	RD50-AKSIM	RD70-AKSIM	RD85-AKSIM
Singleturn resolution [inc/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]	$\pm 0.1$	$\pm 0.1$	$\pm 0.1$
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 <sup>2</sup> ]	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 <sup>2</sup> ]	0.022	0.070	0.141

Operational temperature range -40°C to +105°C.

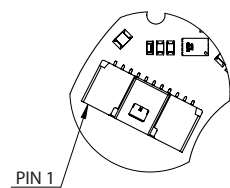
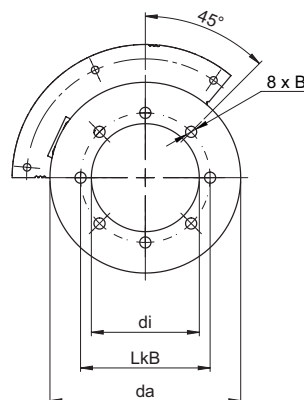
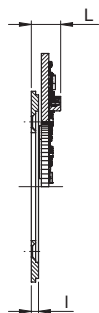
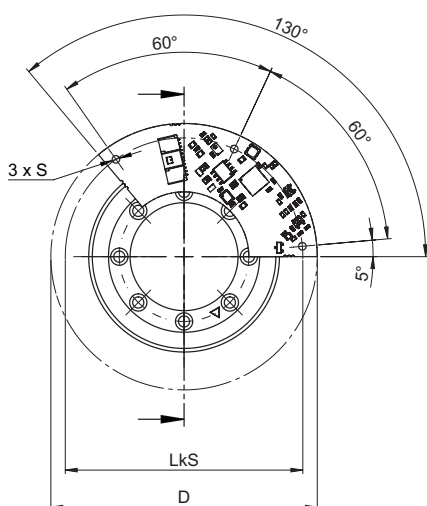
## ELECTRICAL DATA AND DIGITAL INTERFACE

	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]	3	3	3
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
Position LSB number	8	8	8
Singleturn position data number	8...24	8...25	8...25
Multiturn position data number	25...40	26...41	26...41
Protocol total bits	41	42	42

\* 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



Molex plug 501568-1107

Pin number	Signal
1	VDD
2	VDD
3	GND
4	GND
5	
6	
7	CLOCK+
8	CLOCK-
9	
10	DATA+
11	DATA-

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