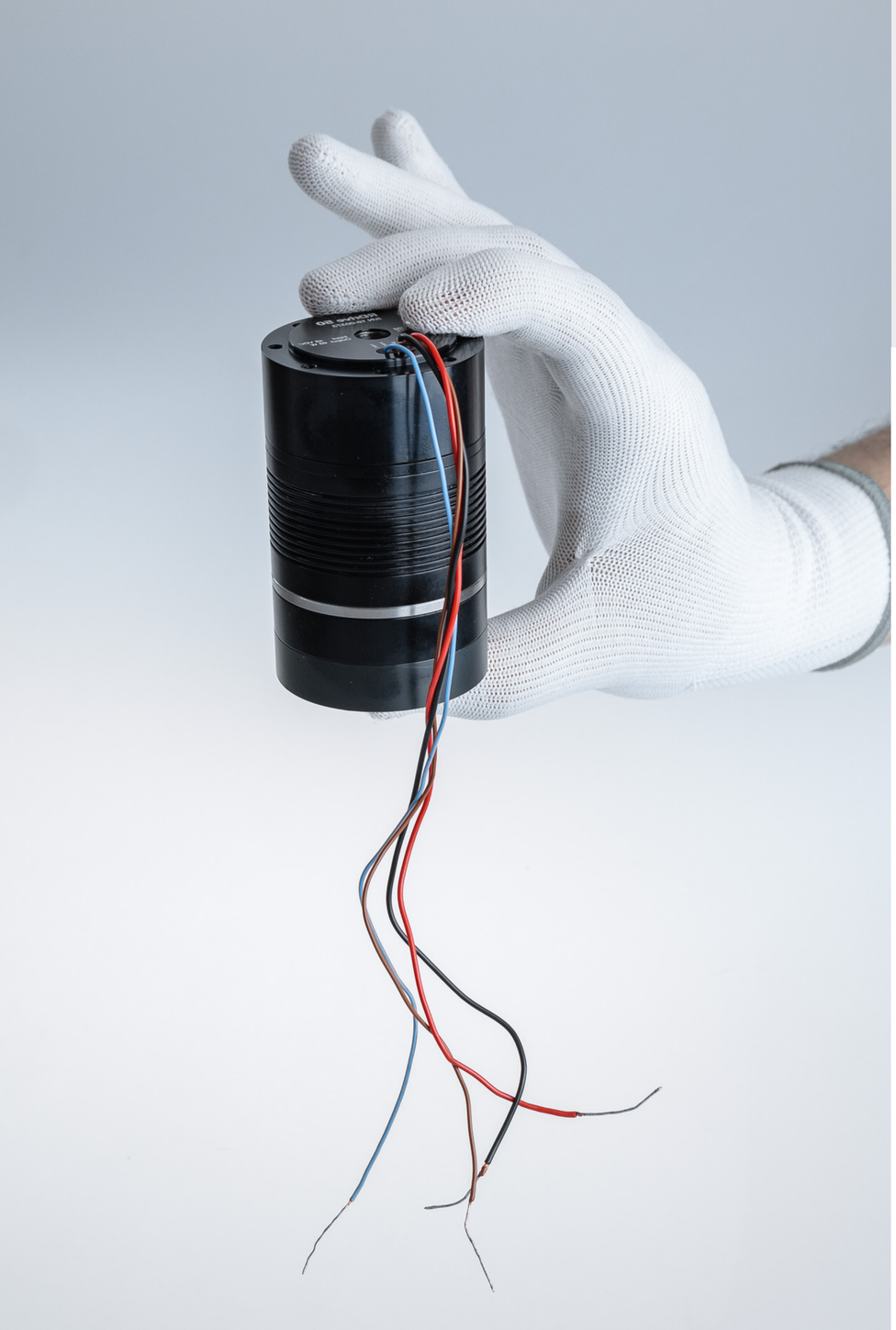


ROZUM ROBOTICS

ROBOTIC JOINTS RDRIVE

ROZUM ROBOTICS

01. PROBLEM

COMPONENTS

Robotic components need to be compact, powerful, reliable, not-costly. Combination of those feature often conflict with each other.

Vendors are not always trustworthy and not flexible with minor orders.

Average industry lead time is about 12 weeks.

AUDIENCE EXPECTATIONS

Audience is very sensitive to permanent quality, customer support and long-lasting relationship.

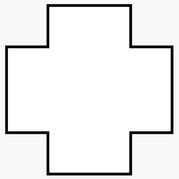
INDUSTRY BACKGROUND

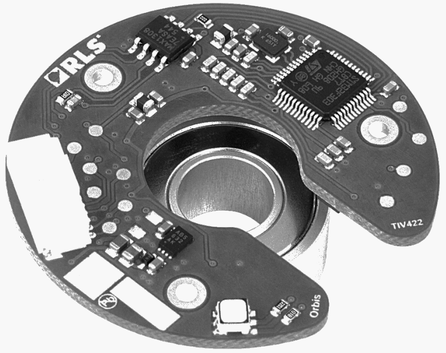
Robotic is booming. Cobots are growing at 50% CAGR a year*. Robotic components outsource is a vital factor.

* Barclay’s equity research

ROZUM ROBOTICS

02. TRADITIONAL SERVOS





ACTUATOR

That could be a kind of a rotary or linear actuator that allows for precise control of angular or linear position

ENCODER

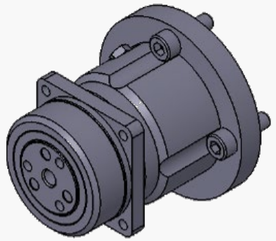
A sensor for position feedback

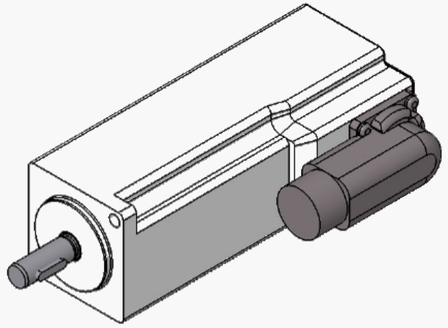
ISSUE

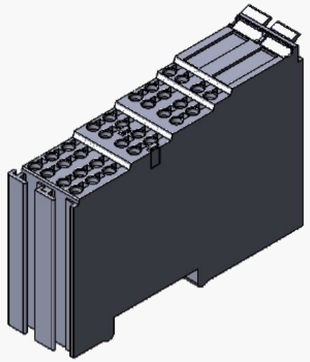
Not all-in-one solution that requires additional elements to be linked to

.

03. TRADITIONAL ROBOTIC ACTUATOR







GEARHEAD

reduces the motor RPM, while increasing torque

SERVO

A motor integrated with error-sensing hardware to make sure motion output (e.g., speed, position) matches desired values

CONTROLLER

Reads input signals and translates them into motion parameters

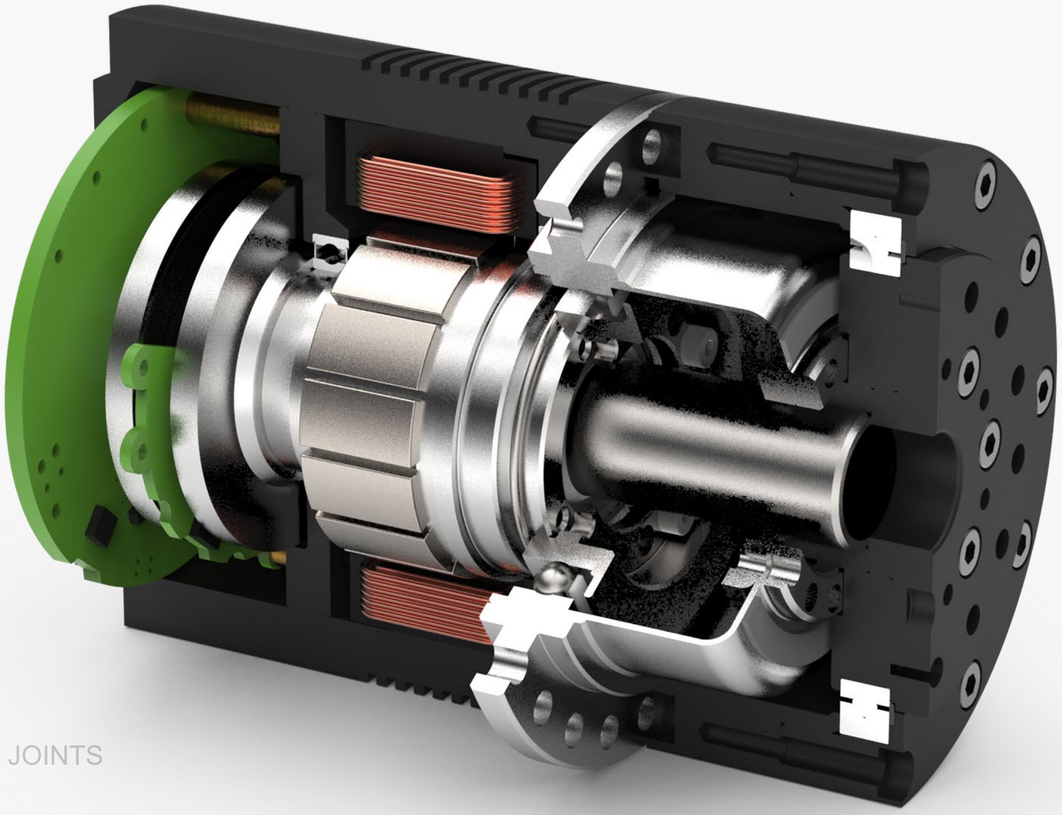
ISSUE

The size is bulky

Powered by DC current, the motor is controlled with the help of an external servo controller kit (sometimes called servo drive). In case you need a gear motor kit, you connect a gearhead to the motor. The overall design is whatever but not a compact servo motor in this case.

ROZUM ROBOTICS

04. ROBOTIC JOINTS RDRIVE



ROBOTIC JOINTS

ALL-IN-ONE SOLUTION

- Encoder
- Controller
- harmonic gear
- AC brushless motor

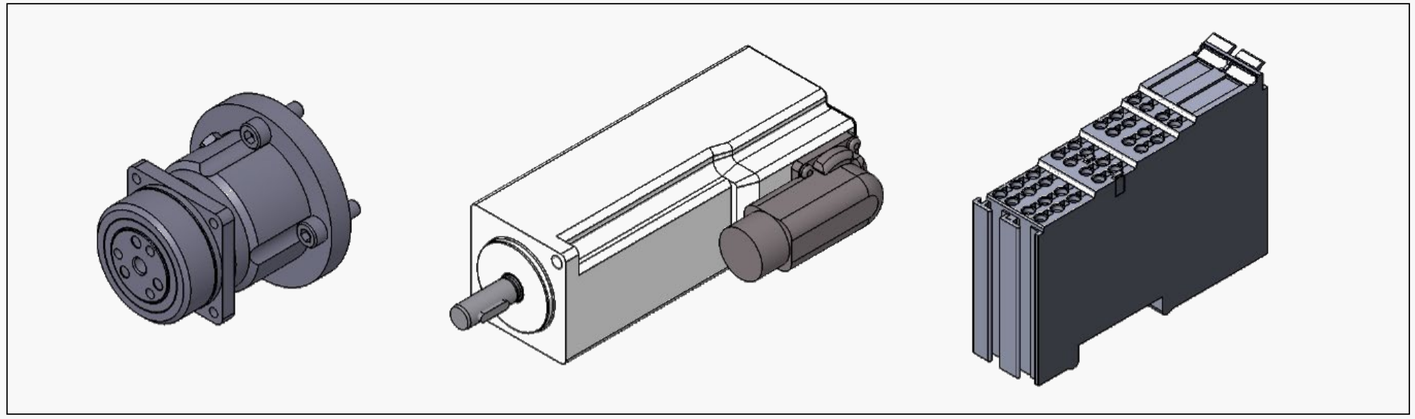
RDrive servo by Rozum Robotics unites in a single housing all the main elements. RDrive is a DC servomotor with a brushless AC core.

▷ View 4 min video

ROZUM ROBOTICS

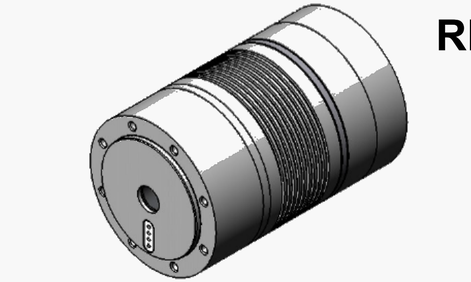
05. SCALE RATIO 1:1

TRADITIONAL SERVO

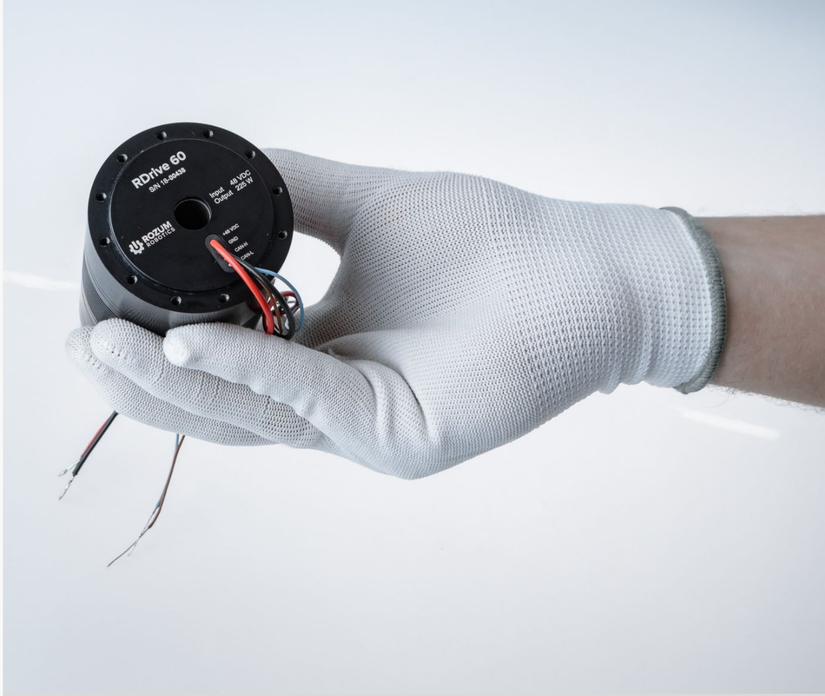


320 mm, 3 550 g, 5 Nm

RDRIVE



88 mm, 550 g, 11 Nm



SIZE/PERFORMANCE CORRELATION

RDrive robotic actuators are a perfect match for all-types of robotics solutions.

Each model incorporates **frameless AC** actuators. Coupled with metal **strain-wave gearheads** with near-zero backlash, they provide invariably high torque over the admissible velocity span. **Two printed circuit boards** (PCB), built into the housing, form the motor control circuit. One of the PCBs functions as **a controller** and the other contains **two absolute magnetic encoders**.

ROZUM ROBOTICS

06. RDRIVE ADVANTAGES

HIGH-PRECISION CONTROL

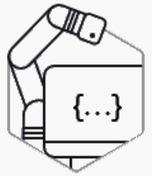
Two 19-bit absolute magnetic encoders integrated into RDrive servos enable angular accuracy of 0.01 degree

HIGH TORQUE

A built-in strain-wave gearhead enables reducing speed to increase torque by 100 times (gear ratio 1:100).

COMPACT SIZE

With diameters from 53 to 115 mm, the drives can fit easily into constricted environments.



API CONTROL

Python or C—you can use your preferred technology stack to implement motion control.

HOLLOW SHAFT

Use the hole at the servo centre to pass through utilities or structural elements—cabling, pneumatic or hydraulic hosing, etc.

ROZUM ROBOTICS

07. COLLABORATIVE SERVO

IN CASE OF DIRECT CONTACT WITH A PERSON (COLLISION) THE MOTOR STOPS IN A SAFE MODE WITHOUT CAUSING ANY INJURIES

Intellectual torque algorithms

Constant current level analysis

Sophisticated API design and direct communication with sensors

PERFECT FIT FOR SERVICE ROBOTICS

ROZUM ROBOTICS

08. RDRIVE CHARACTERISTICS

Model	RDrive 50	RDrive 60	RDrive 70	RDrive 85	RDrive 110
Power	65 W	225 W	155 W	450 W	450 W
Rated Torque	11 Nm	39 Nm	49 Nm	108 Nm	216 Nm
Peak torque	28 Nm	54 Nm	82 Nm	157 Nm	333 Nm
Rated rotation speed	55 rpm	55 rpm	30 rpm	40 rpm	20 rpm
Diameter	53 mm	63 mm	73 mm	88 mm	115 mm
Length	88,1 mm	90,5 mm	96 mm	112,5 mm	150 mm
Hollow shaft diameter	9 mm	11 mm	13 mm	13 mm	17 mm
Weight	550 g	890 g	915 g	2100 g	3900 g

GENERIC PARAMETERS

- **Voltage:** 48V
- **Encoder:** 2x19 bit, magnetic, absolute position
- **API:** /C++/Java/Python
- **Interface**: CANopen
- **Work conditions:** 0 °C to +35 °C

ROZUM ROBOTICS

09. FMI FRAMELESS MOTORS

HEART OF RDRIVE ROBOTIC ACTUATORS

HIGH POWER

Rare-earth magnets on the rotor ring generate 2 times stronger magnetic field as compared to ferrite magnets

COMPACT SIZE

Direct drive motor can boast a compact size (from 41 mm, 90 g) and high power density (up to 3500 mNm).

TEMPERATURE SENSOR

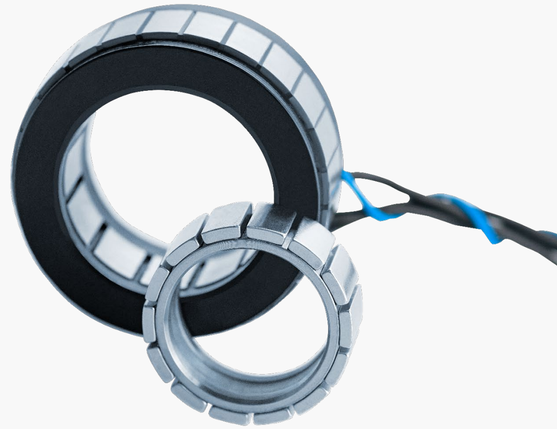
Stator winding has a temperature sensor to avoid overheating

HOLLOWSHFAT

Frameless motors is a combination of a rotor and a stator without a shaft

ROZUM ROBOTICS

10. FMI CHARACTERISTICS



	FMI501201	FMI601201	FMI702001	FMI852001	FMI1102001
Power	130 W	166 W	190 W	405 W	460 W
Current RMS	2.7 A	4.2 A	5 A	9 A	10 A
Rated Torque	200 mNm	300 mNm	600 mNm	900 mNm	2200 mNm
Peak Torque	500 mNm	700 mNm	1500 mNm	2600 mNm	3500 mNm
Speed	6000 rpm	5300 rpm	3000 rpm	4300 rpm	2000 rpm
Diameter	41 mm	51 mm	60 mm	75 mm	95 mm
Length	21,5 mm	22 mm	27 mm	32 mm	40 mm
Weight	91g	148 g	270 g	455 g	590 g

OVERALL PARAMETERS

- **Voltage:** 48V
- **Rotor + stator**
- **Working conditions:**

0 °C to +35 °C

Custom versions can boast increased temperature range and higher IP rating.

ROZUM ROBOTICS

11. SALES AND MAINTENANCE

2-8 WEEKS LEAD TIME

ONLINE LIVE TECH SUPPORT

1-YEAR WARRANTY

35 000+ HOURS SERVICE LIFE