

Servo motors RD50/70/85-VW

Compact drive units with industry-leading power density and a wide range of applications



With the servo motors of the RD series RoboDrive presents high-performance motors based on the proven stator-rotor kits. The RoboDrive technology provides the highest power density at maximum torque range and overload capability in a compact design. The variable concept offers solutions for a variety of demanding drive applications. On request alternative voltage levels, increased speeds and integrated safety breaks are available. The integrated absolute encoder enables high positioning accuracy and excellent speed stability. The design of the mounting flange allows the combination with the gearunits of the leading gear manufacturers. On request the motors are delivered with gearunits of Neugart, Wittenstein, Spinea und Harmonic Drive.

Key features:

- Industry-leading power density
- Excellent overload capability
- Compact design
- Absolute SinCos encoder up to 12 bits
- Integrated safety brake optional
- Mounting flange based on B5/B14 standard
- Customer specific flange available
- Installation space savings by optional gearhead direct mounting

Basic data

| | RD50x08-VW | RD50x14-VW | RD70x10-VW | RD70x18-VW | RD85x13-VW | RD85x26-VW |
|--|--------------|--------------|--------------|--------------|----------------|----------------|
| Power P [W] | 155 | 180 | 270 | 275 | 430 | 410 |
| Rated torque T_r [Nm] | 0,27 | 0,50 | 0,74 | 1,25 | 1,43 | 2,60 |
| Peak torque T_{max} [Nm] | 0,9 | 1,4 | 2,3 | 4,0 | 4,5 | 8,3 |
| Rotation speed n_{max}^* [rpm] | 5.500 | 3.500 | 3.500 | 2.100 | 2.900 | 1.500 |
| Diameter D [mm] | 61 | 61 | 80 | 80 | 96 | 96 |
| Length L [mm] w/o brake with brake | 54,3 70,1 | 60,7 76,5 | 63,5 81,4 | 71,4 89,3 | 70,3 88,2 | 83,7 101,6 |
| Weight m [g] w/o brake with brake | 430 595 | 495 660 | 870 1.150 | 995 1.280 | 1.300 1.700 | 1.630 2.040 |
| Inertia J [kgcm ²] w/o brake with brake | 0,07 0,11 | 0,11 0,15 | 0,29 0,43 | 0,42 0,56 | 0,82 1,15 | 1,36 1,69 |

* Theoretical no-load rotation speeds at $U_n = 48$ V. Variations can arise from operation with different inverters. Higher rotation speeds or change of the voltage level can be achieved by changing the connection scheme.

Electrical data

| | RD50x08-VW | RD50x14-VW | RD70x10-VW | RD70x18-VW | RD85x13-VW | RD85x26-VW |
|-----------------------------------|--|------------|------------|------------|------------|------------|
| Rated voltage U_r [V] | 48 | 48 | 48 | 48 | 48 | 48 |
| Rated current I_r [A] | 4,8 | 5,0 | 7,0 | 7,0 | 11,0 | 11,0 |
| Torque constant k_T [Nm/A] | 0,057 | 0,098 | 0,106 | 0,180 | 0,130 | 0,244 |
| Terminal resistance R_{TT} [mΩ] | 552 | 800 | 470 | 655 | 210 | 323 |
| Terminal inductance L_{TT} [μH] | 720 | 820 | 800 | 1.350 | 470 | 920 |
| Number of pole pairs | 10 | 10 | 10 | 10 | 10 | 10 |
| Sensor type | Magnetic encoder, differential Sin-Cos-signal, signal amplitude $1 V_{pp}$; signal offset $U_{dd}/2$; position accuracy interpolatable up to 12 bit, 4.096 inc/rev, accuracy $\pm 0,5^\circ$; supply voltage $U_{dd} = 5 V$ | | | | | |

All data relate to star-serial connection at $U_r = 48 V$. The voltage level can be changed on request.

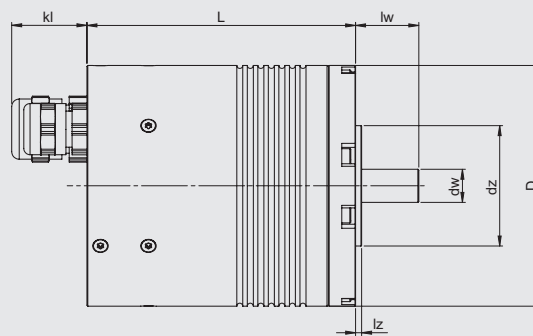
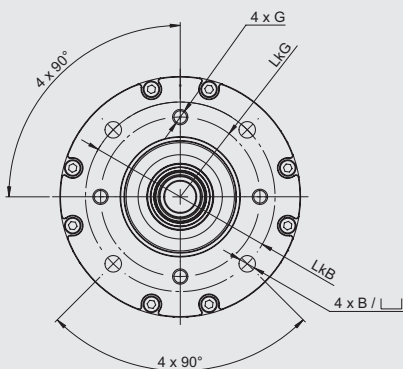
Safety brake data

| | RD50x08-VW | RD50x14-VW | RD70x10-VW | RD70x18-VW | RD85x13-VW | RD85x26-VW |
|---|------------|------------|------------|------------|------------|------------|
| Braking torque $M_{B,r}/M_{B,max}$ [Nm] | 0,30/0,55 | 0,60/1,10 | 0,84/1,54 | 1,44/2,64 | 1,68/3,08 | 3,12/5,72 |
| Thermal losses @ $U_{B,r}$ [W] | 2,6 | 2,6 | 3,7 | 3,7 | 5,0 | 5,0 |

All brakes are operated with a rated voltage, $U_{B,r} = 10 V$, to open the brake, an over-excitation voltage of 30 V is required.

Dimensions

| | RD50x08-VW | RD50x14-VW | RD70x10-VW | RD70x18-VW | RD85x13-VW | RD85x26-VW |
|---|--------------|--------------|--------------|--------------|--------------|---------------|
| Motor diameter D [mm] | 61 | 61 | 80 | 80 | 96 | 96 |
| Motor length L [mm] w/o brake with brake | 54,3 70,1 | 60,7 76,5 | 63,5 81,4 | 71,4 89,3 | 70,3 88,2 | 83,7 101,6 |
| Shaft diameter d_w [mm] | 8 j6 | 8 j6 | 11 j6 | 11 j6 | 14 j6 | 14 j6 |
| Shaft length l_w [mm] | 22 | 22 | 21 | 21 | 27 | 27 |
| Centering diameter d_z [mm] | 30 j6 | 30 j6 | 40 j6 | 40 j6 | 70 j6 | 70 j6 |
| Centering length l_z [mm] | 2 | 2 | 2 | 2 | 2 | 2 |
| Pitch circle LkG/LkB [mm] | 40/46 | 40/46 | 53/63 | 53/63 | 85/85 | 85/85 |
| Mounting thread G/Hole B [mm] | M4/4,5 | M4/4,5 | M5/5,5 | M5/5,5 | M6/6,6 | M6/6,6 |
| Cable gland length kl [mm] | 21 | 21 | 25 | 25 | 25 | 25 |



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