



HIGH EFFICIENCY BRUSHLESS MOTOR

S/SF系列高效率无刷电动机

ZD® 中大力德



中大 实现自动化应用的无限可能

Zhongda Realizes the infinite possible in automation application

宁波中大力德智能传动股份有限公司始创于1998年，是一家集电机驱动、微特电机、精密减速器、机器人结构本体及一体化智能执行单元的研发、制造、销售、服务于一体的国家高新技术企业。公司注册资本10400万元，分、子公司9家，员工1800余人，2017年8月在深交所主板上市，股票代码：002896。

公司系国家级高新技术企业，主导和参与起草国家标准10项，行业标准5项；授权专利107项，其中发明专利11项。拥有机械工业精密齿轮减速电机工程研究中心、浙江省级高新技术企业研究开发中心、浙江省级企业技术中心。

公司立足于智能化、自动化装备核心零部件设计和制造，为客户提供智能驱动解决方案。公司产品以其差异化和高性价比优势，广泛应用于工作母机、数控设备、工业机器人、智能物流、新能源、食品、包装、纺织、电子、医疗、通讯、农牧等机械装备领域。在替代进口产品的基础上，逐步参与国际竞争。

Ningbo Zhongda Leader Intelligent Transmission Co., Ltd. was founded in 1998. It is an electromechanical automation enterprise integrating R&D, manufacturing, sales and service of motor drives, micro motors, precision reducers and integrated products. It has 9 branches and subsidiaries, over 1,800 employees, and a registered capital of 104 million yuan. In August 2017, it was listed on the A-shares of the Shenzhen Stock Exchange (stock code 002896).

The company is a national-level high-tech enterprise, leading and participating in the drafting of 10 national standards and 5 industry standards, maintaining 107 patents and 11 invention patents. It's owning a Zhejiang-level enterprise R&D center.

The company is based on intelligent and automation equipment core component manufacturers and design solution providers. With its differentiated and cost-effective advantages, the company's products are widely used in industrial robots, intelligent logistics, new energy, machine tools and other fields, as well as special machinery and equipment for food, packaging, textiles, electronics, and medical treatment. On the basis of realizing domestic substitution of imported products, gradually participate in international competition.

无刷电动机用减速机 SPEED REDUCER FOR BRUSHLESS MOTOR

■ 薄型、大功率 Thin, High Power

无刷电动机的转子使用永磁体，因此实现了薄型和大功率；比如，与安装尺寸90的三相感应电动机相比总长缩短>75mm，输出功率达到1.3倍。若采用无刷电动机，有助于实现装置的小型化。

Brushless DC motors have a slim body and provide high power due to permanent magnets being used in the rotor. For example, the overall length is 75mm shorter and the output power is 1.3 times higher than that of three-phase induction motors with a frame size of 90mm. Using brushless DC motors can contribute to downsizing and space saving.

■ 主要特征 Main features

● 强大的性能与功能 Powerful performance and functionality

- 1、速度控制范围80~4000r/min
The speed control range is 80~4000r/min
- 2、速度变动率±0.2%
Rate of change of velocity ±0.2%
- 3、可限制转矩
Controllable torque
- 4、多段变速运行，最大16速
Multi-speed, maximum 16
- 5、停止时提供保持力矩（最大为额定转矩的50%）
Provides holding torque at stop (Up to 50% of rated torque)
- 6、防尘、防水（保护等级IP54）
Dustproof and waterproof (Protection class IP54)
- 7、采用了喷塑壳体工艺，保证较强的耐腐蚀性能
Spray plastic shell technology is adopted to ensure strong corrosion resistance

● 使用简单，价格便宜 Easy to use and cheap to use

- 8、备有可用于测试及避免出现故障的监控、测试功能
Equipped with monitoring and testing functions that can be used to test and avoid failure
- 9、通过驱动器主体执行数字设定、操作
Perform digital settings and operations through the drive body
- 10、小型、薄型驱动器，可实现紧密安装
Small, thin drives for tight mounting
- 11、可利用电脑及外部信号设定速度
Can use the computer and external signals to set the speed
- 12、直接连接时，电动机、驱动器之间最长10m
When directly connected, the maximum distance between motor and driver is 10m
- 13、产品种类30W~750W
Product category 30W~750W

■ 可选的两种减速机 Two optional speed reducers



平行轴减速机S齿轮型 Parallel shaft reducer S gear type					
30W	60W	120W	200W	400W	750W
长寿命减速机 Long life reducer					

直角轴高强度减速机SF中空轴型 SF hollow shaft type of high strength reducer with right angle shaft			
30W	120W	200W	400W
节省空间、节约成本 Save space and cost			

电动机 Motor	输出功率 Output power	机座号 Seat number	减速器减速比（联体型） Reducer ratio motor	保护等级 Protection level	适配驱动器 Drive
S系列 Series	30W	60	5、10、15、20、30、50、100、200	IP54	C30
	60W	70	5、10、15、20、30、50、100、200、360		
	60W	80	5、10、15、20、30、50、100、200		
	120W	90			
	200W	100			
	400W	100	5、10、15、20、30、50		
	750W	120			
SF系列 Series	30W	SF2-12	7.5、10、15、20、30、50	IP54	C30
	120W	SF2-15			
	200W	SF2-20			
	400W	SF2-25			

电动机的构造升级，以更小的机身实现了高输出功率和高效率。

The structure of the motor is upgraded to realize high output power and high efficiency with a smaller body.

无刷电动机的特征 CHARACTERISTICS OF BRUSHLESS MOTOR

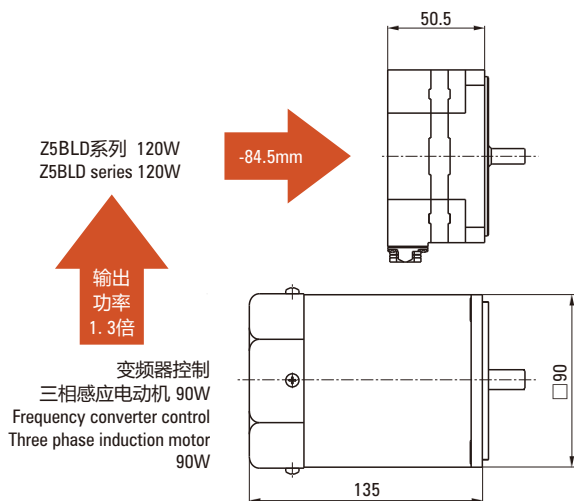
无刷电机上，无需使用通常被认为是DC电动机缺点的刷子和整流子等机械触点，DC电动机使用刷子和整流子进行旋转，因此需要定期进行维护；而无刷电动机使用霍尔IC检测到的信号，利用驱动电路的晶体管的ON/OFF进行旋转，因此无需维护。

On brushless motor, it is unnecessarily using brush, commutator and any other mechanical contact. Brush motor need brush and commutator to running, so it need to regular maintain. However, brushless motor used Hall IC to detect the signal and used driving circuit of crystal catheter's ON/OFF. So it dispense with maintain.

■ 薄型、轻量、大功率 Thin, lightweight, high power

无刷电动机的转子使用永磁体，因此，实现了薄型、轻量和大功率。可满足装置的小型化需求。

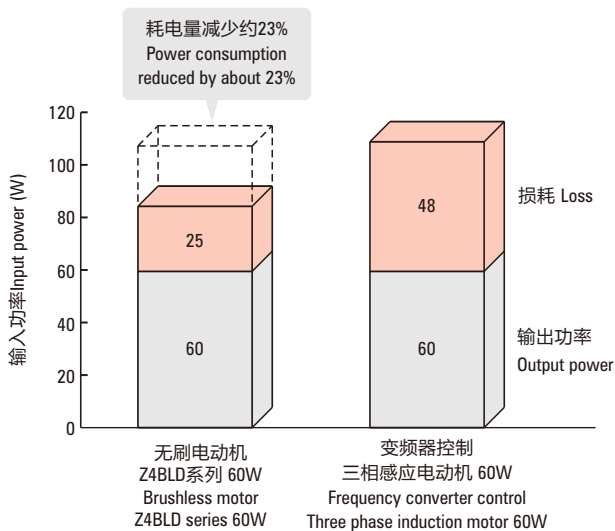
Brushless motor rotor using permanent magnet steel, so that a thin, light and high-power. The utility model can meet the miniaturization requirement of the device.



■ 以输出60W进行的比较（参考值）

Comparison with output of 60W (Reference value)

额定输出50Hz时（代表值） Rated output 50Hz (Representative value)



■ 采用新型连接器 Using a new connector

内置O型圈密封圈、密封垫、很好的提升防护性能。且插头采用扳扣形式，无需螺丝固定，操作简单。

Built-in type O ring seal ring, sealing gasket, a good promotion of protective performance. And the plug is in the form of pulling, no screw is needed to fix, and the operation is simple.

■ 广泛的速度控制范围 Wide angle of speed control

产品群 Product group	速度控制范围* Speed control range*	速度比 Velocity ratio
无刷电动机BMU系列 Brushless motor BMU series	80~4000r/min	1:50
变频器控制三相感应电动机 Three-phase induction motor controlled by frequency converter	200~2400r/min	1:12
AC调速电动机 AC motor	50HZ: 90~1400r/min 60HZ: 90~1600r/min	1:15

*不同的产品各有不同的速度控制范围。

*Different products have different speed control range.

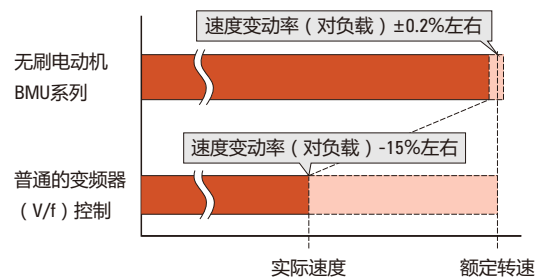
■ 可进行稳定的速度控制 Stable Speed Control

无刷电动机持续对设定速度和来自电动机的速度反馈信号进行对比，来调节施加到电动机上的电压；因此，即使负载状况发生变化，仍可以从低速瞬间调整到设定速度，并以此稳定的速度运行。使用变频器控制的三相感应电动机不进行反馈控制，因此负载变大时，速度会大幅下降；对于速度稳定性要求较高的用途，建议使用无刷电动机。

Brushless DC motors compare the setting speed with the speed feedback signals from the motor at all times and adjust the motor's applied voltage. For this reason, even if the load changes, stable rotation is performed from low speed to high speed. Common inverter-controller three-phase induction motors do not have this type of feedback control and when the load changes, the speed can be affected. Brushless DC motors are recommended for applications that require the speed to be maintained regardless of the load fluctuation.

■ 负载率80%时速度变化对比（参考值）

Comparison of speed change at 80% loading rate (Reference value)

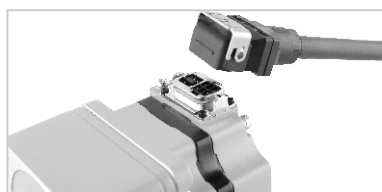


■ 有助于节能 Helps save energy

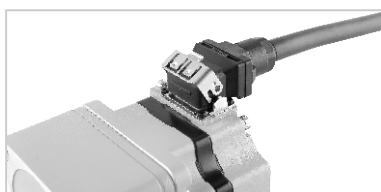
无刷电动机的转子部使用永磁体，减少了转子的二次损耗，大幅度减少耗电。有助于装置的节能。

The permanent magnet steel is used in the rotor part of the brushless motor, which reduces the secondary loss of the rotor and greatly reduces the power consumption. To help save the energy of the device.

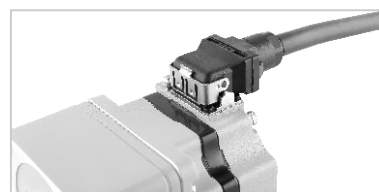
■ 安装方式 The installation is complete



插入连接器 Insertion connector



扳倒锁杆 Down the lock lever



连接完成 The connection to complete

■ 安装方式（中大常规款） The installation is complete (Standard model)



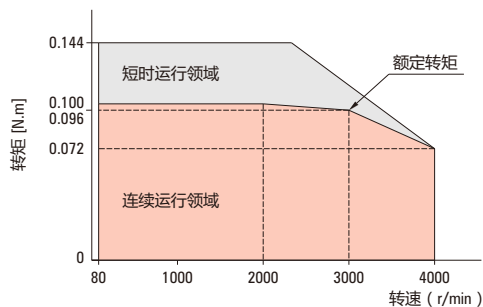
锁紧器可按两个方向出现 The wire outlet direction can be both side

转速—转矩特性 SPEED -- TORQUE CHARACTERISTICS

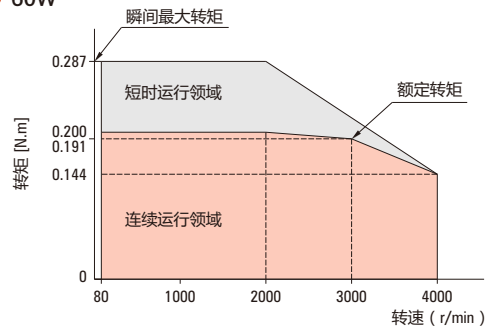
连续运行领域：可做连续运行的领域。Continuous operation field: The field in which continuous operation can be done.

短时运行领域：主要为加速时使用的领域。Short-term operation area: Mainly for use during acceleration.

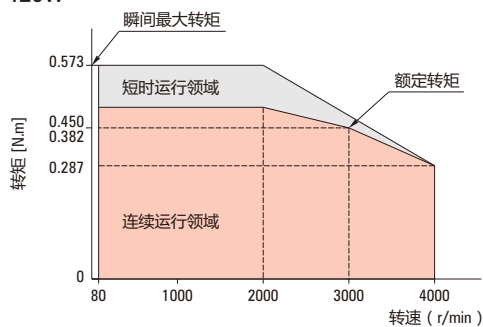
● 30W



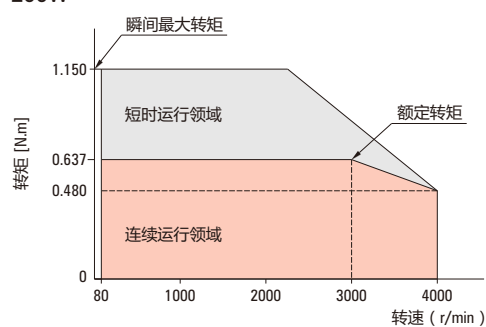
● 60W



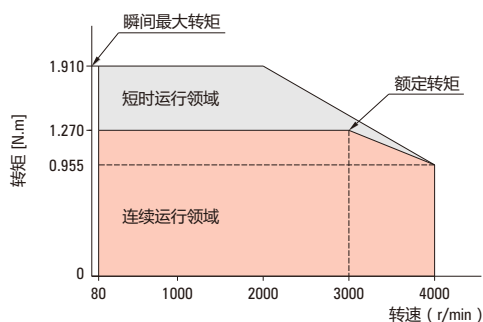
● 120W



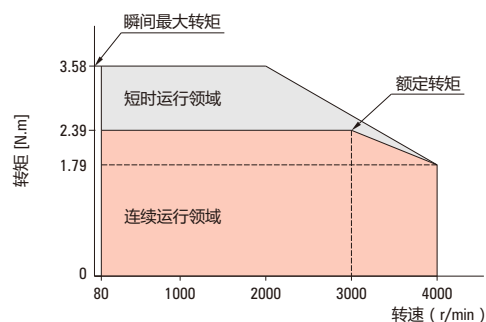
● 200W



● 400W



● 750W



一般规格

GENERAL SPECIFICATION

项目 Projects		电动机 Electric Motor	驱动器 Drive
绝缘电阻 Insulation Resistance		于常温常湿环境下作连续运行后，以DC500V高阻表测量电动机线圈与外壳之间的测量值为100MΩ以上。 After continuous operation in normal temperature and humidity, the measuring value between the coil and the casing of the motor is more than 100MΩ with DC500V high resistance meter.	于常温常湿下连续运行后，电源端子与保护接地端子间、电源端子与输入/输出信号端子间的电阻值以DC500V高阻表测量达100MΩ以上。 After continuous operation at room temperature and humidity, the resistance between power supply terminal and protective grounding terminal, power supply terminal and input / output signal terminal is measured by DC500V high resistance meter over 100MΩ.
绝缘耐压 Insulation withstand voltage		于常温常湿下连续运行后，线圈、外壳间以50Hz、AC1.5kV施加1分钟无异常。 After continuous operation under normal temperature and humidity, 50Hz and AC1.5kV are applied between the coil and Shell for 1 minute without any abnormality.	于常温常湿下连续运行后，电源端子与保护接地端子间以50Hz、AC1.5kV，电源端子与输入/输出端子间以50Hz、AC1.5kV施加1分钟无异常。 After continuous operation under normal temperature and humidity, 50Hz, AC 1.5 kV are applied between power terminal and protective grounding terminal, 50Hz, AC 1.5 kV are applied between power terminal and input /output terminal for 1 minute without any abnormality.
温度上升 Temperature rise		于常温常湿下额定连续运行后，以热电偶法测量的线圈温度上升值在50℃以下（400W为60℃以下），外壳表面的温度上升测定值为40℃以下（400W为50℃以下）*1。 After rated continuous operation at normal temperature and humidity, the temperature rise of the coil measured by thermocouple method is below 50℃ (400W is below 60℃) , and the temperature rise of the shell surface is below 40℃ (400W is below 50℃) *1.	于常温常湿下额定连续运行后，以热电偶法测量的散热板温度上升值在50℃以下。 After rated continuous operation at normal temperature and humidity, the temperature rise of the heat sink measured by thermocouple method is below 50℃.
使用环境 Service environment	环境温度 Ambient temperature	0 ~ +40℃（无结冰） 0 ~ +40℃ (no icing)	0 ~ +40℃（无结冰） [仅限将400W型的驱动器前侧朝上安装时，0 ~ +35℃（无结冰）。] 0 ~ +40℃ (no icing) [0 ~ +35℃ (no icing) only when the driver of type 400W is installed front side up.]
	环境湿度 Ambient humidity	85%以下（无结露） Less than 85% (no dew)	
	标高 Elevation	海拔1,000m以下 Below 1,000m	
	介质环境 Media environment	无腐蚀性气体、尘埃。不可在含有放射性物质、磁场以及真空等特殊环境中使用。 No corrosive gas and dust. Can Not contain radioactive material, magnetic field and vacuum and other special environment.	
	振动 Vibration	不施加连续振动或过度冲击。依据JIS C 60068-2-6正弦波振动测试方法。 频率范围：10-55Hz、单振幅：0.15mm、摇摆方向：3方向（X、Y、Z）、摇摆次数：20次。 Do not apply continuous vibration or excessive shock. According to JIS C 60068-2-6 sine wave vibration test method frequency range: 10-55Hz, single amplitude: 0.15mm, swing direction: 3 directions (X, Y, Z) , swing frequency: 20 times.	
保存环境*2 Preserve the environment *2	环境温度 Ambient temperature	-20 ~ +70℃（无结冰） -20 ~ +70℃ (no icing)	-25 ~ +70℃（无结冰） -25 ~ +70℃ (no icing)
	环境湿度 Ambient humidity	85%以下（无结露） Less than 85% (no dew)	
	标高 Elevation	海拔3,000m以下 Below 3,000m	
耐热等级 Heat resistance grade		UL/CSA规格：105（A）、EN规格：120（E） UL/CSA specification: 105 (A), EN specification: 120 (E)	—
保护等级*3 Protection level *3		连接电缆线时：IP66（圆轴型的安装面除外） Connecting cable: IP66 (except for round shaft mounting surface)	IP20

一般规格 GENERAL SPECIFICATION

*1 为了使电动机外壳表面温度能保持在90℃以下，请将圆轴型电动机安装在以下尺寸的散热板（材质：铝）上。

30W型：115×115mm 厚度5mm。 **60W型**：135×135mm 厚度5mm。

120W型：165×165mm 厚度5mm。 **200W型**：200×200mm 厚度5mm。

400W型：250×250mm 厚度6mm。 **750W型**：300×300mm 厚度6mm。

*2 保存环境也包括运送途中的短期值。

*3 表示防尘、防水性能的IP值依据IEC 60529及IEC 60034-5规定。

注意 · 请勿于电动机与驱动器连接的状态下进行绝缘电阻测量、耐压测试。

· 电动机的材质、表面处理。

[**材质**：外壳-铝，输出轴-40Cr，螺丝-不锈钢（仅外部露出部分，不包括保护接地端子）]

[**表面处理**：外壳：涂装（安装面除外）]

*1 In order to keep the surface temperature of the motor housing below 90°C, the round shaft motor shall be mounted on a heat sink plate (Material: Aluminum) of the following size.

30W type: 115×115mm thickness 5mm. 60W type: 135×135mm thickness 5mm.

120W type: 165×165mm thickness 5mm. 200W type: 200×200mm thickness 5mm.

400W type: 250×250mm thickness 6mm. 750W type: 300×300mm thickness 6mm.

*2 Storage environment also includes short-term value in transit.

*3 Ip value indicating dustproof and waterproof performance is in accordance with IEC 60529 and IEC 60034-5 regulations.

Take notice of · Please do not conduct insulation resistance measurement and voltage withstand test when the motor is connected to the driver.

· Material and surface treatment of motor.

[Material: housing-aluminum, output shaft-40Cr, screw-stainless steel (Exposed part only, excluding protective ground terminal)]

[Surface treatment: Housing: Coating (Excluding mounting surface)]

■ S系列的输出轴转速 Output shaft speed of S series

单位Unit: r/min

减速比 Ratio motor 电动机轴转速 Shaft speed	5	10	15	20	30	50	100	200	360
80r/min	16	8	5.3	4	2.7	1.6	0.8	0.4	0.22
2000r/min	400	200	133	100	66.7	40	20	10	5.55
3000r/min	600	300	200	150	100	60	30	15	8.33
4000r/min	800	400	267	200	133	80	40	20	11.11

容许径向负载 · 容许轴向负载 Permissible radial load permissible axial load

● 平行轴减速机 Parallel shaft reducer

输出功率 Output power	减速比 Deceleration ratio		容许径向负载 Permissible radial load		容许轴向负载 (N) Allowable axial load (N)
			距输出轴前端10mm (N) 10mm (N) from the front end of the output shaft	距输出轴前端20mm (N) 20mm (N) from the front end of the output shaft	
30W	5	80-3000r/min时	100	150	40
		4000r/min时	90	110	
	10、15、20	80-3000r/min时	150	200	
		4000r/min时	130	170	
	30、50、100、200	80-3000r/min时	200	300	
		4000r/min时	180	230	
60W	5	80-3000r/min时	200	250	100
		4000r/min时	180	220	
	10、15、20	80-3000r/min时	300	350	
		4000r/min时	270	330	
	30、50、100、200	80-3000r/min时	450	550	
		4000r/min时	420	500	
120W	5	80-3000r/min时	300	400	100
		4000r/min时	230	300	
	10、15、20	80-3000r/min时	400	500	
		4000r/min时	370	430	
	30、50、100、200	80-3000r/min时	500	650	
		4000r/min时	450	550	
200W 400W	5、10、15、20	80-3000r/min时	550	800	200
		4000r/min时	500	700	
	30、50	80-3000r/min时	1000	1250	300
		4000r/min时	900	1100	
	100*、200*	80-3000r/min时	1400	1700	400
		4000r/min时	1200	1400	
750W	5、10	80-3000r/min时	-	-	800
		4000r/min时	-	-	
	15、20、30、50	80-3000r/min时	-	-	800
		4000r/min时	-	-	

S系列的容许转动惯量J The admissible moment of inertia of s series J

● 平行轴减速机 Parallel shaft reducer

输出功率 Power		减速比 Ratio motor	5	10	15	20	30	50	100	200
30W			12	50	110	200	370	920	2500	5000
	瞬时停止或瞬时正反向运行时 *Transient stop or transient forward and backward run time		1.55	6.2	14	24.8	55.8	155	155	155
60W			22	95	220	350	800	2200	6200	12000
	瞬时停止或瞬时正反向运行时 *Transient stop or transient forward and backward run time		5.5	22	49.5	88	198	550	550	550
120W			45	190	420	700	1600	4500	12000	25000
	瞬时停止或瞬时正反向运行时 *Transient stop or transient forward and backward run time		25	100	225	400	900	2500	2500	2500
200W			100	460	1000	1700	3900	9300	18000	37000
	瞬时停止或瞬时正反向运行时 *Transient stop or transient forward and backward run time		50	200	450	800	1800	5000	5000	5000
400W			100	460	1000	1700	3900	9300	-	-
	瞬时停止或瞬时正反向运行时 *Transient stop or transient forward and backward run time		50	200	450	800	1800	5000	-	-
750W			-	-	-	-	-	-	-	-
	瞬时停止或瞬时正反向运行时 *Transient stop or transient forward and backward run time		-	-	-	-	-	-	-	-

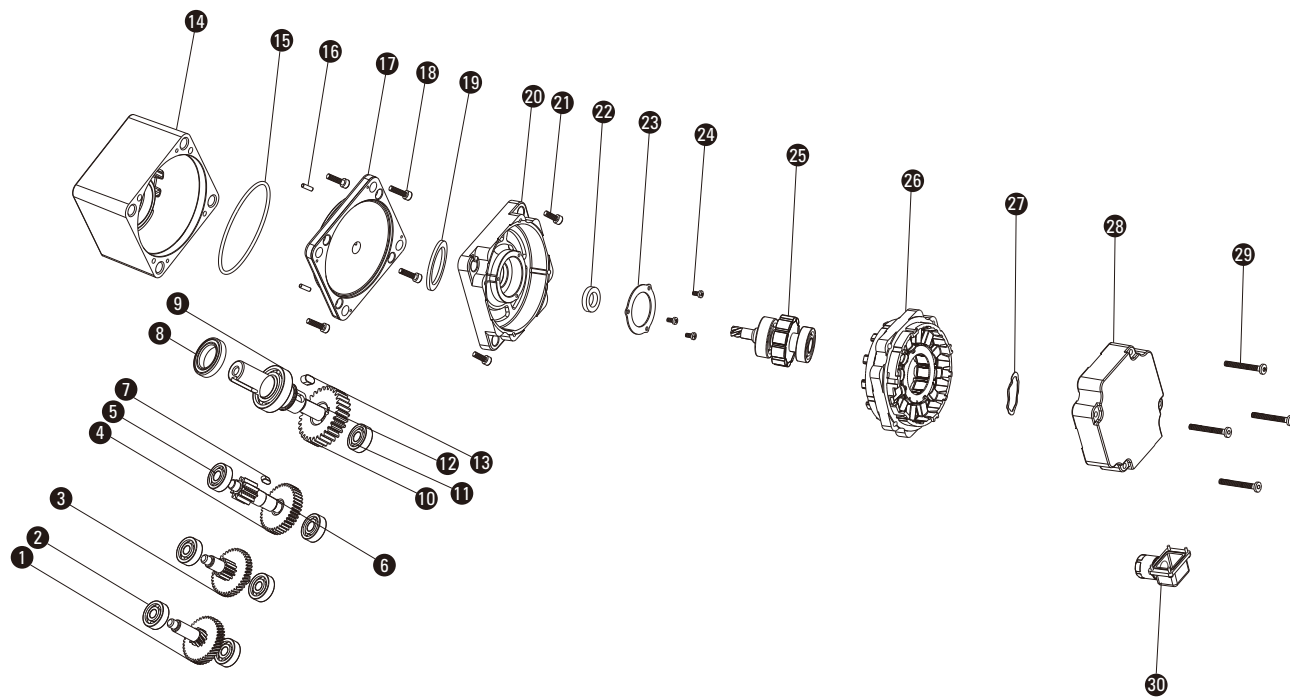
* 也适用于数字设定将减速时间设定成小于0.1秒的情况。
* Also applies when the digital setting sets the deceleration time to less than 0.1 seconds.

型号阅读方法 PRODUCT CODE

■ S系列电动机 S-series motor

Z5	BLD	120	-	220	GV	-	30S	/	5GU	200V
①	②	③	④	⑤	⑥	⑦	⑧			
①	机座号：60×60(Z2-60×60/Z3-70×70/Z4-80×80/Z5-90×90/ Z6-100×100/Z7-120×120)				Seat number: 60×60 (Z2-60×60/Z3-70×70/Z4-80×80/Z5-90×90/ Z6-100×100/Z7-120×120)					
②	电机类型：无刷				Motor type: Brushless					
③	功率：120W				Power: 120W					
④	电压：220VAC				Voltage: 220VAC					
⑤	减速器类型：S系列减速器				Type of reducer: S-Series reducer					
⑥	转速：3,000RPM				Speed: 3,000RPM					
⑦	减速器机座：60 (2GU-60×60/3GU-70×70/4GU-80×80/5GU-90×90/ 6GU-100×100/7GU-120×120)				Reducer base: 60 (2GU-60×60/3GU-70×70/4GU-80×80/5GU-90×90/ 6GU-100×100/7GU-120×120)					
⑧	速比：200				Speed ratio: 200					

■ 解剖展示图 Square Shape Gearbox



■ 明细表 Parts List

1: 一级传动轴 Primary drive shaft	7: 键 Keys	14: 箱体 Box body	21: 内六角圆柱头螺钉 Hexagon socket head screws	26: 嵌线定子 Stator core
2: 轴承 Bearing	8: 油封 Axle sleeve	15: O型圈 O-ring	22: 油封 Oil seal	27: 波形弹性垫圈 Corrugated spring washer
3: 二级传动轴 Secondary drive shaft	9: 轴承 Bearing	16: 定位销 Locating pin	23: 盖板 Cover plate	28: 后端盖 Back cover
4: 三级从齿 Three-stage slave	10: 四级从齿 Four-stage slave	17: 箱盖 Box cover	24: 十字槽盘头螺钉 Crossrecessed PAN head screws	29: 内六角不锈钢螺钉 Hexagon socket stainless steel screws
5: 轴承 Bearing	11: 轴承 Bearing	18: 内六角圆柱头螺钉 Hexagon socket head screws	25: 转子 Rotating shaft	30: 出线固定架 Outgoing retainer
6: 四级主齿 Hird gear	12: 输出光轴 Output shaft	19: 密封垫圈 Sealing washer		
	13: 键 Keys	20: 前端盖 Front end cover		

电动机 ELECTRIC MOTOR

30W

● 平行轴减速机 Parallel shaft speed reducer

型号 Model number	电机型号 Motor type	减速器型号 Type of reducer	减速比 Deceleration ratio	L
Z2BLD30-220GV-30S/2GU□V	Z2BLD30-220GV-30S	2GU□V	5 ~ 20	34
			30 ~ 100	38
			200	43

S系列整机容许力矩 Machine allowable torque

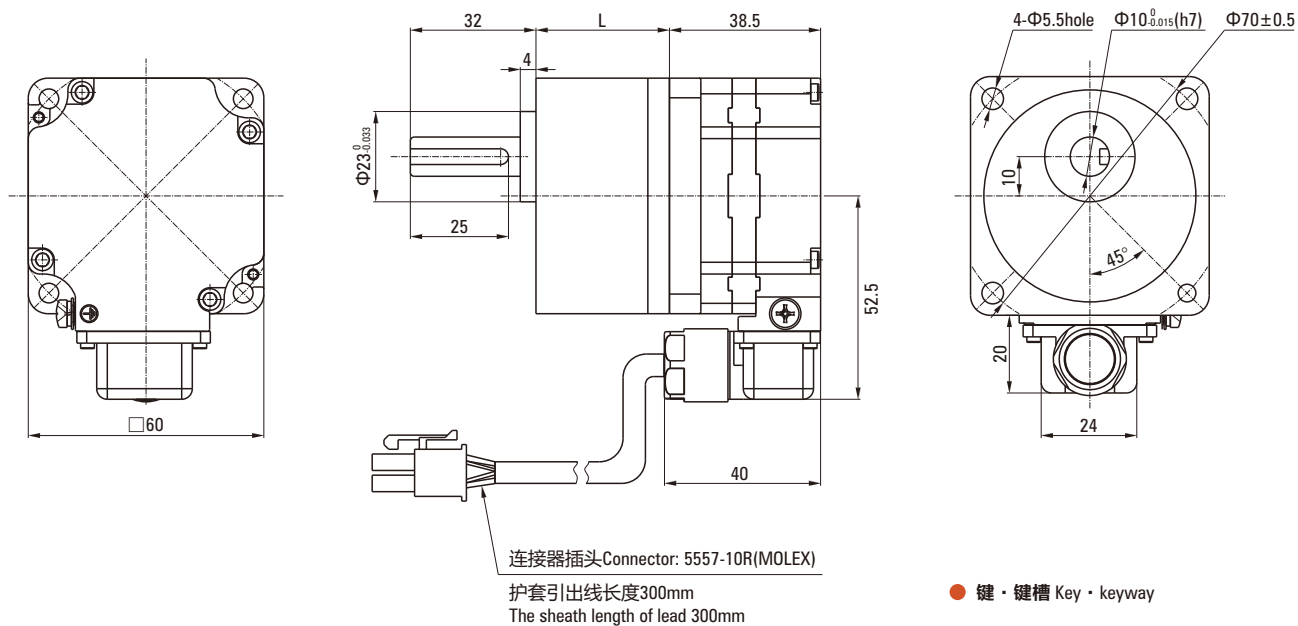
● 平行轴减速机 Parallel shaft speed reducer

单位Unit: N·m

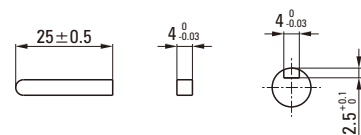
输出功率 Output Power	电机轴转速 Motor speed	减速比 Reduction Ratio	5	10	15	20	30	50	100	200
30W	80 ~ 2000RPM		0.45	0.90	1.4	1.8	2.6	4.3	6.0	6.0
	3000RPM		0.43	0.86	1.3	1.7	2.6	4.1	6.0	6.0
	4000RPM		0.32	0.65	0.97	1.3	1.9	3.1	5.4	5.4

注Note：表格中 （灰底部分）表示旋转方向与电机转向一致。The (gray) in the table indicates that the rotation direction is consistent with the motor.
（不同转速及速比下的力矩为ZD标准驱动器下测试所得。The torque under different speed and speed ratio is obtained under the ZD standard ）

外观尺寸图 Dimensional drawing



● 键 · 键槽 Key · keyway



电动机 ELECTRIC MOTOR

60W

● 平行轴减速机 Parallel shaft speed reducer

型号 Model number	电机型号 Motor type	减速机型号 Type of reducer	减速比 Deceleration ratio	L
Z3BLD60-220GV-30S/3GU□V	Z3BLD60-220GV-30S	3GU□V	5 ~ 20	41
			30 ~ 100	46
			200 ~ 360	51

S系列整机容许力矩 Machine allowable torque

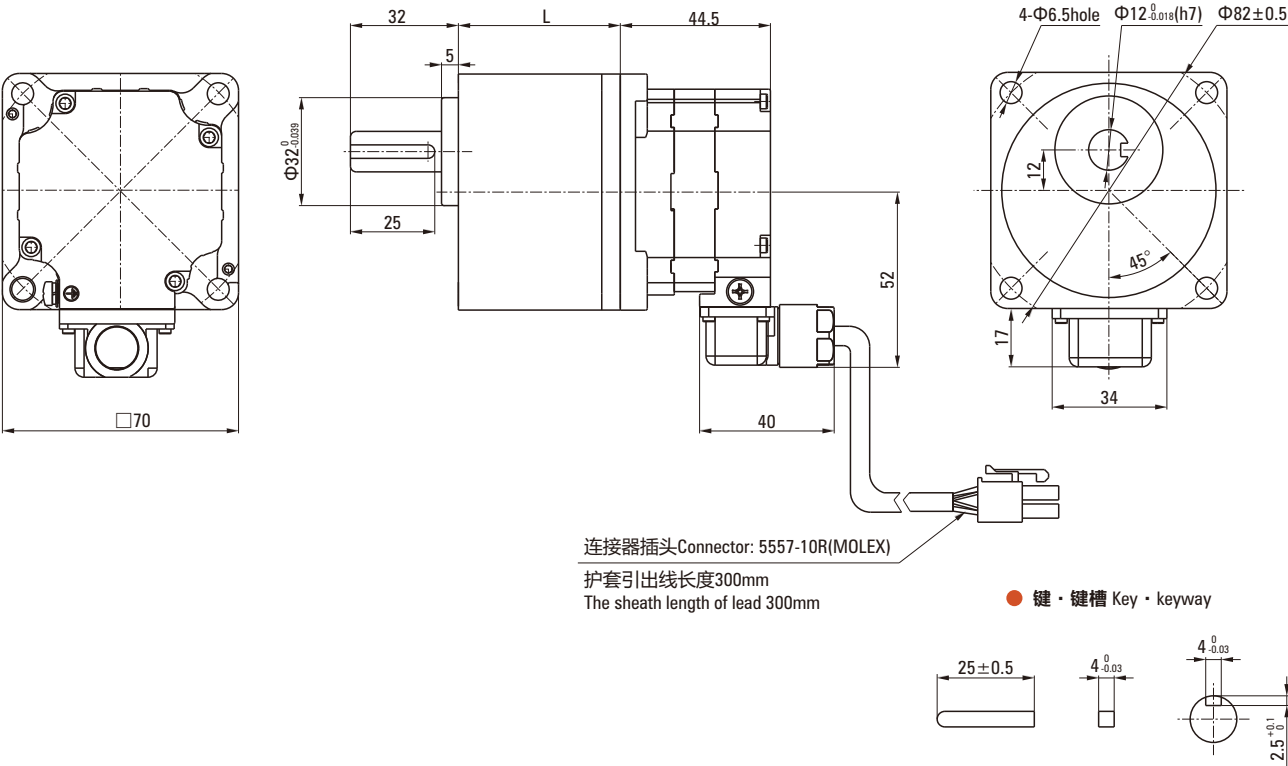
● 平行轴减速机 Parallel shaft speed reducer

单位Unit: N·m

输出功率 Output Power	电机轴转速 Motor speed	减速比 Reduction Ratio	5	10	15	20	30	50	100	200	360
60W	80 ~ 2000RPM		0.90	1.8	2.7	3.6	5.2	8.6	16.0	16.0	16.0
	3000RPM		0.86	1.7	2.6	3.4	4.9	8.2	16.0	16.0	16.0
	4000RPM		0.65	1.3	1.9	2.6	3.7	6.2	12.4	14.0	14.0

注Note：表格中 (灰底部分) 表示旋转方向与电机转向一致。The (gray) in the table indicates that the rotation direction is consistent with the motor.
(不同转速及速比下的力矩为ZD标准驱动器下测试所得。The torque under different speed and speed ratio is obtained under the ZD standard)

外观尺寸图 Dimensional drawing



电动机
ELECTRIC MOTOR

60W、120W

● 平行轴减速机 Parallel shaft speed reducer

型号 Model number	电机型号 Motor type	减速机型号 Type of reducer	减速比 Deceleration ratio	L	L1
Z4BLD60-220GV-30S/4GU□V	Z4BLD60-220GV-30S	4GU□V	5 ~ 20	41	50.5
			30 ~ 100	46	
			200	51	
Z4BLD120-220GV-30S/4GU□V	Z4BLD120-220GV-30S	4GU□V	5 ~ 20	41	54
			30 ~ 100	46	
			200	51	

S系列整机容许力矩 Machine allowable torque

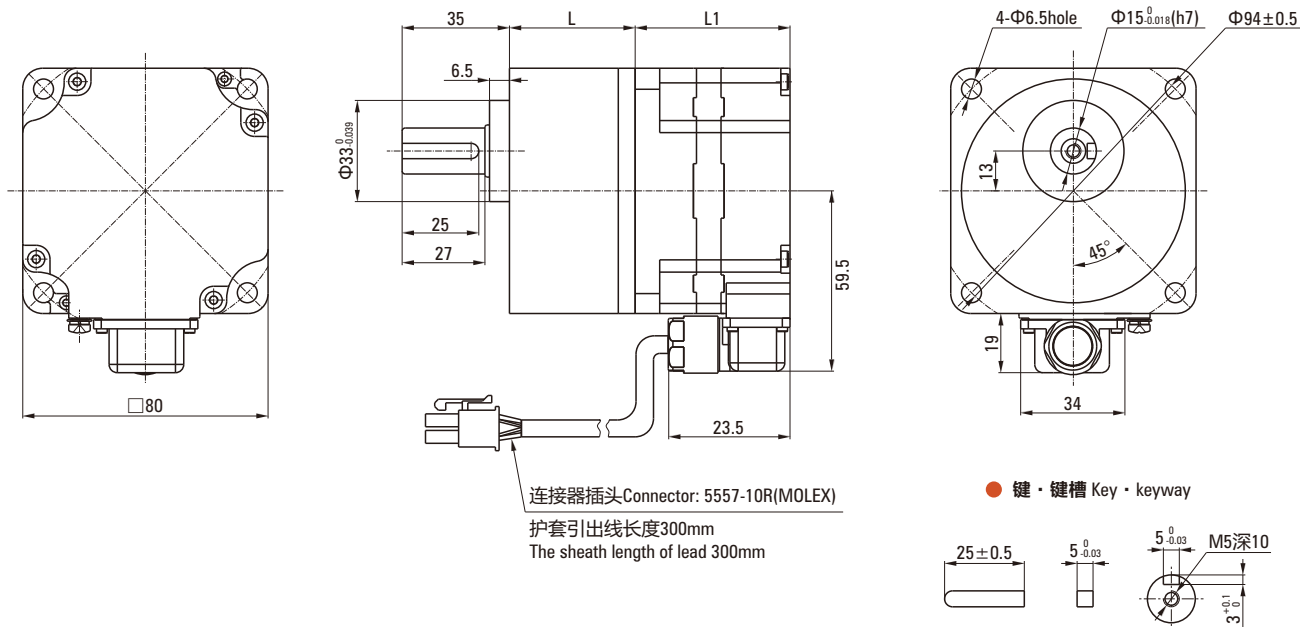
● 平行轴减速机 Parallel shaft speed reducer

单位Unit: N·m

输出功率 Output Power	电机轴转速 Motor speed	减速比 Reduction Ratio	5	10	15	20	30	50	100	200
60W	80 ~ 2000RPM		0.90	1.8	2.7	3.6	5.2	8.6	16.0	16.0
	3000RPM		0.86	1.7	2.6	3.4	4.9	8.2	16.0	16.0
	4000RPM		0.65	1.3	1.9	2.6	3.7	6.2	12.4	14.0
120W	80 ~ 2000RPM		2.0	4.1	6.1	8.1	11.6	19.4	30.0	30.0
	3000RPM		1.7	3.4	5.2	6.9	9.9	16.4	30.0	30.0
	4000RPM		1.3	2.6	3.9	5.2	7.4	12.3	24.7	27.0

注Note：表格中 （灰底部分）表示旋转方向与电机转向一致。The (gray) in the table indicates that the rotation direction is consistent with the motor.
（不同转速及速比下的力矩为ZD标准驱动器下测试所得。The torque under different speed and speed ratio is obtained under the ZD standard ）

外观尺寸图 Dimensional drawing



电动机
ELECTRIC MOTOR

200W、400W

● 平行轴减速机 Parallel shaft speed reducer

型号 Model number	电机型号 Motor type	减速机型号 Type of reducer	减速比 Deceleration ratio	L	L1
Z6BLD200-220GV-30S/6GU□V	Z6BLD200-220GV-30S	6GU□V	5 ~ 20	60	61.5
			30 ~ 100	72	
			200	86	
Z6BLD400-220GV-30S/6GU□V	Z6BLD400-220GV-30S	6GU□V	5 ~ 20	60	61.5
			30 ~ 50	72	

S系列整机容许力矩 Machine allowable torque

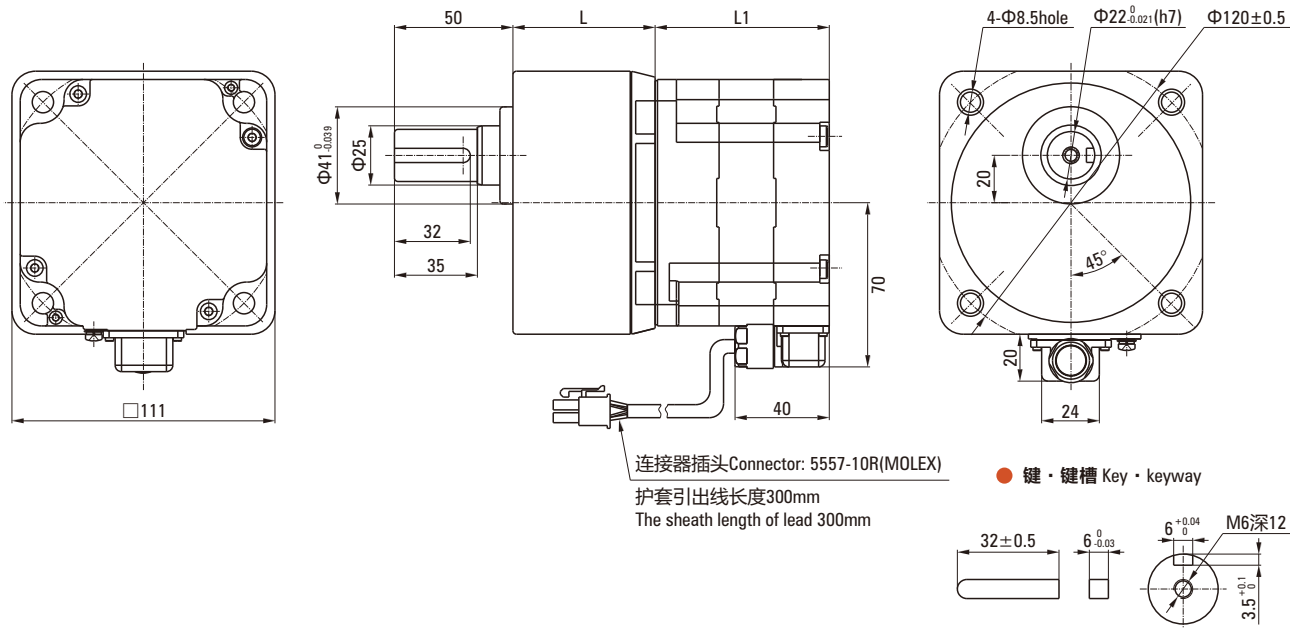
● 平行轴减速机 Parallel shaft speed reducer

单位Unit: N·m

输出功率 Output Power	电机轴转速 Motor speed	减速比 Reduction Ratio							
		5	10	15	20	30	50	100	200
200W	80 ~ 2000RPM	2.9	5.7	8.6	11.5	16.4	27.4	51.6	70.0
	4000RPM	2.2	4.3	6.5	8.60	12.4	20.5	38.9	63.0
400W	80 ~ 3000RPM	5.7	11.4	17.1	22.9	32.8	54.6	-	-
	4000RPM	4.3	8.60	12.9	17.2	24.6	41.1	-	-

注Note：表格中 □ (灰底部分) 表示旋转方向与电机转向一致。The □ (gray) in the table indicates that the rotation direction is consistent with the motor.
(不同转速及速比下的力矩为ZD标准驱动器下测试所得。The torque under different speed and speed ratio is obtained under the ZD standard)

外观尺寸图 Dimensional drawing



电动机 ELECTRIC MOTOR

750W

● 平行轴减速机 Parallel shaft speed reducer

型号 Model number	电机型号 Motor type	减速机型号 Type of reducer	减速比 Deceleration ratio	L
Z7BLD750-220GV-30S/7GU□V	Z7BLD750-220GV-30S	7GU□V	5 ~ 10	84
			15 ~ 50	

S系列整机容许力矩 Machine allowable torque

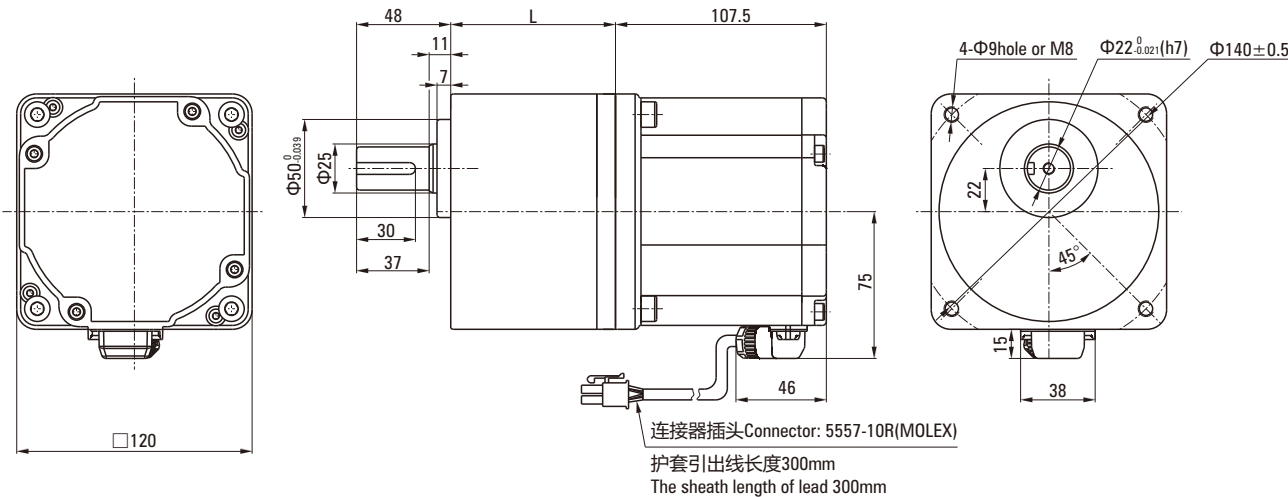
● 平行轴减速机 Parallel shaft speed reducer

单位Unit: N·m

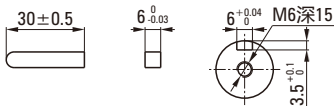
输出功率 Output Power	电机轴转速 Motor speed	减速比 Reduction Ratio	5	10	15	20	30	50
750W	200 ~ 1500RPM		19.34	38.68	52.29	69.72	100.00	100.00
	2000RPM		14.50	29.01	39.21	52.29	78.43	100.00
	2500RPM		11.60	23.21	31.37	41.83	62.74	100.00
	4000RPM		9.67	19.34	26.14	34.86	52.29	87.14

注Note：表格中 （灰底部分）表示旋转方向与电机转向一致。The (gray) in the table indicates that the rotation direction is consistent with the motor.
（不同转速及速比下的力矩为ZD标准驱动器下测试所得。The torque under different speed and speed ratio is obtained under the ZD standard ）

外观尺寸图 Dimensional drawing



● 键 · 键槽 Key · keyway

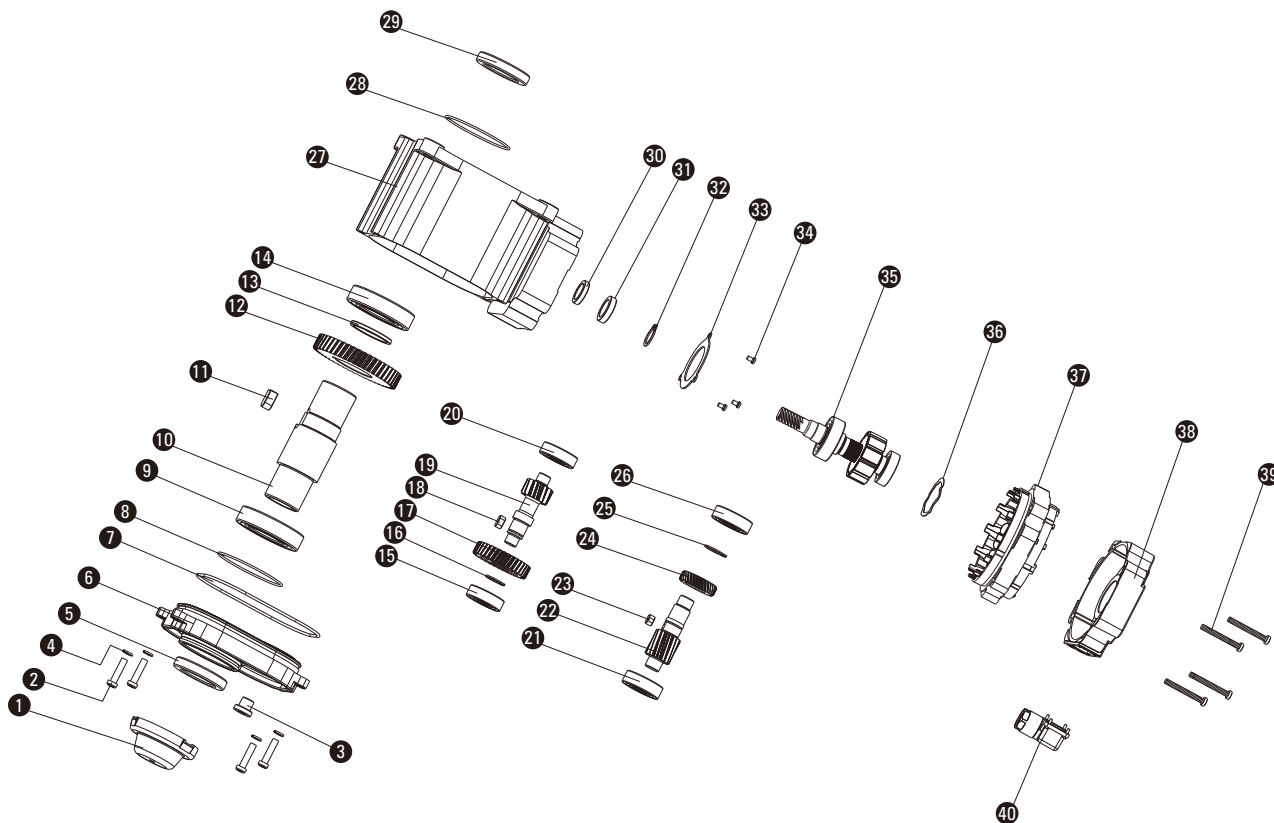


型号阅读方法
PRODUCT CODE

SF系列电动机 SF-series motor

Z5	BLD	200	-	220	GS	-	30S	/	20H	30SF
①	②	③		④	⑤		⑥		⑦	⑧
①	机座号：60×60 (Z2-60×60/Z4-80×80/Z5-90×90/Z6-100×100)				Seat number: 60×60 (Z2-60×60/Z4-80×80/Z5-90×90/Z6-100×100)					
②	电机类型：无刷				Motor type: Brushless					
③	功率：200W				Power: 200W					
④	电压：220VAC				Voltage: 220VAC					
⑤	减速器类型：SF系列减速器				Type of reducer: SF-Series reducer					
⑥	转速：3,000RPM				Speed: 3,000RPM					
⑦	输出轴孔径：Φ20 (12H-12/15H-15/20H-20/25H-25)				Output shaft aperture: Φ20 (12H-12/15H-15/20H-20/25H-25)					
⑧	速比：30				Speed ratio: 30					

解剖展示图 Square Shape Gearbox



明细表 Parts List

1: 轴头套 Axle sleeve	10: 输出轴 Output shaft	19: 三级主齿 Hird gear	28: O型圈 O-ring	36: 波形弹性垫圈 Corrugated spring washer
2: 内六角圆柱头螺钉 Hexagon socket head screws	11: 键 Keys	20: 轴承 Bearing	29: 油封 Oil seal	
3: 注油螺钉 Oil-filling screw	12: 三级从齿 Three-stage slave	21: 轴承 Bearing	30: 油封 Oil seal	37: 嵌线定子 Rotor core
4: 弹簧垫圈 Spring washer	13: 调整垫圈 Adjusting washer	22: 二级主齿 Secondary main tooth	31: 油封 Oil seal	
5: 油封 Axle sleeve	14: 轴承 Bearing	23: 键 Keys	32: 轴用挡圈 Axle collar	38: 后端盖 Back cover
6: 箱盖 Box cover	15: 轴承 Bearing	24: 一级从齿 First gear	33: 盖板 Cover plate	
7: O型圈 O-ring	16: 轴用挡圈 Axle collar	25: 轴用挡圈 Axle collar	34: 十字槽盘头螺钉 Cross recessed PAN head screws	39: 内六角不锈钢螺钉 Hexagon socket stainless steel screws
8: O型圈 O-ring	17: 二级从齿 Shaft secondary slave	26: 轴承 Bearing		
9: 轴承 Bearing	18: 键 Keys	27: 箱体 Box body	35: 转子 Rotating shaft	40: 出线固定架 Outgoing retainer

电动机 ELECTRIC MOTOR

60W

直角减速机 Right angle gearbox

型号 Model number	电机型号 Motor type	减速器型号 Type of reducer	减速比 Deceleration ratio
Z2BLD60-220GS-30S/12H□SF	Z2BLD60-220GS-30S	12H□SF	7.5 ~ 50

SF系列整机容许力矩 Machine allowable torque

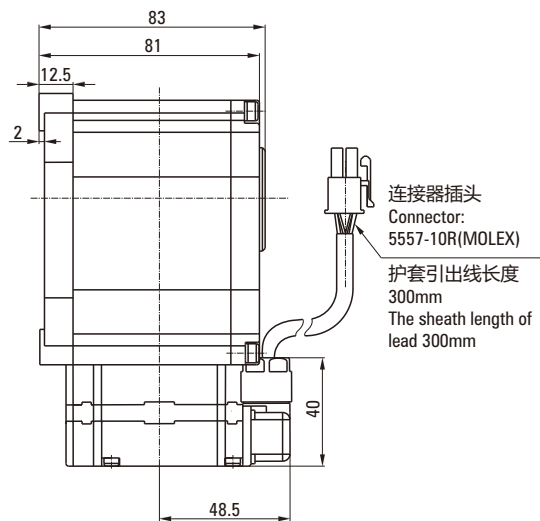
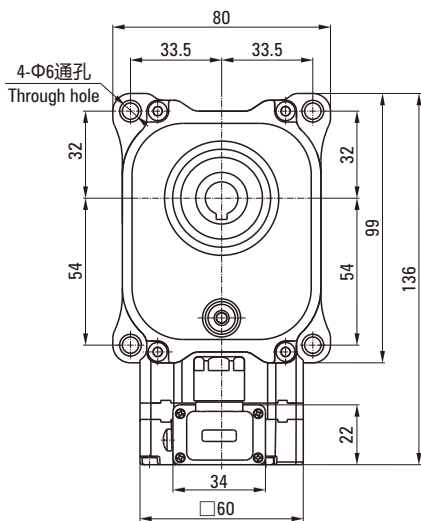
直角减速机 Right angle gearbox

单位Unit: N·m

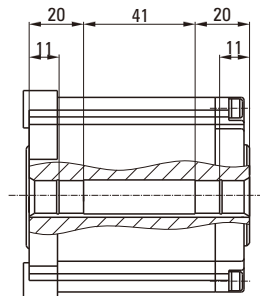
输出功率 Output Power	电机轴转速 Motor speed	7.5	10	20	30	50
	减速比 Reduction Ratio					
60W	80 ~ 2000RPM	0.90	1.8	3.6	5.2	8.6
	3000RPM	0.86	1.7	3.4	4.9	8.2
	4000RPM	0.65	1.3	2.6	3.7	6.2

注Note：表格中 (灰底部分) 表示旋转方向与电机转向一致。The (gray) in the table indicates that the rotation direction is consistent with the motor.
(不同转速及速比下的力矩为ZD标准驱动器下测试所得。The torque under different speed and speed ratio is obtained under the ZD standard)

外观尺寸图 Dimensional drawing



输出轴内孔结构 The output shaft hole structure



电动机
ELECTRIC MOTOR

120W

直角减速机 Right angle gearbox

型号 Model number	电机型号 Motor type	减速器型号 Type of reducer	减速比 Deceleration ratio
Z4BLD120-220GS-30S/15H□SF	Z4BLD120-220GS-30S	15H□SF	7.5 ~ 50

SF系列整机容许力矩 Machine allowable torque

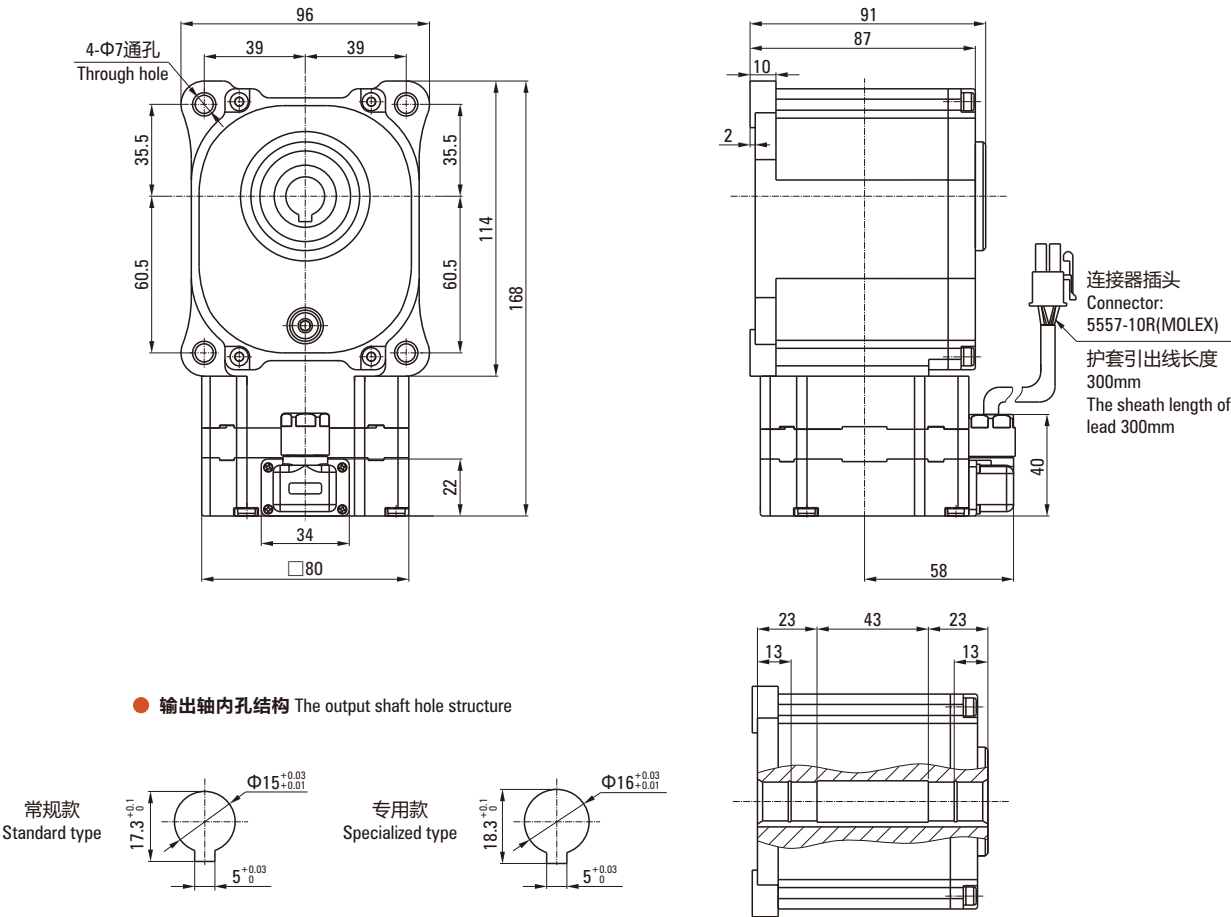
直角减速机 Right angle gearbox

单位Unit: N·m

输出功率 Output Power	减速比 Reduction Ratio	7.5	10	20	30	50
	电机轴转速 Motor speed					
120W	80 ~ 2000RPM	2.7	3.6	7.2	10.3	17.2
	3000RPM	2.3	3.0	6.1	8.80	14.5
	4000RPM	1.7	2.3	4.6	6.60	10.9

注Note：表格中 （灰底部分）表示旋转方向与电机转向一致。The (gray) in the table indicates that the rotation direction is consistent with the motor.
（不同转速及速比下的力矩为ZD标准驱动器下测试所得。The torque under different speed and speed ratio is obtained under the ZD standard)

外观尺寸图 Dimensional drawing



电动机 ELECTRIC MOTOR

200W

● 直角减速机 Right angle gearbox

型号 Model number	电机型号 Motor type	减速器型号 Type of reducer	减速比 Deceleration ratio
Z5BLD200-220GS-30S/20H□SF	Z5BLD200-220GS-30S	20H□SF	7.5 ~ 50

SF系列整机容许力矩 Machine allowable torque

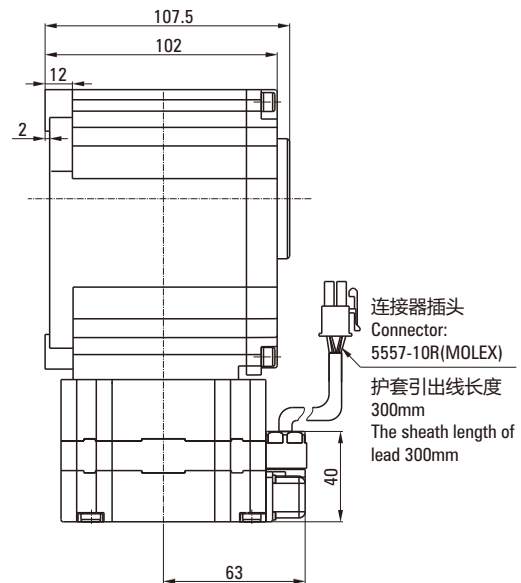
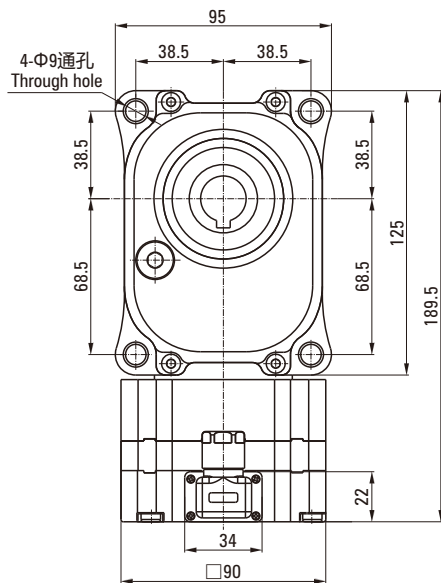
● 直角减速机 Right angle gearbox

单位Unit: N·m

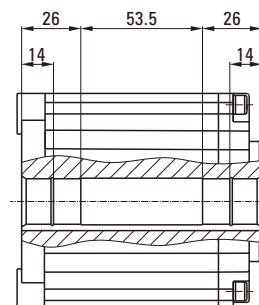
输出功率 Output Power	电机轴转速 Motor speed	7.5	10	20	30	50
	减速比 Reduction Ratio					
200W	80 ~ 2000RPM	3.8	5.0	10.2	14.5	24.3
	3000RPM	2.9	3.8	7.60	11.0	18.3

注Note：表格中 (灰底部分) 表示旋转方向与电机转向一致。The (gray) in the table indicates that the rotation direction is consistent with the motor.
(不同转速及速比下的力矩为ZD标准驱动器下测试所得。The torque under different speed and speed ratio is obtained under the ZD standard)

外观尺寸图 Dimensional drawing



● 输出轴内孔结构 The output shaft hole structure



电动机 ELECTRIC MOTOR

400W

直角减速机 Right angle gearbox

型号 Model number	电机型号 Motor type	减速器型号 Type of reducer	减速比 Deceleration ratio
Z6BLD400-220GS-30S/25H□SF	Z6BLD400-220GS-30S	25H□SF	7.5 ~ 50

SF系列整机容许力矩 Machine allowable torque

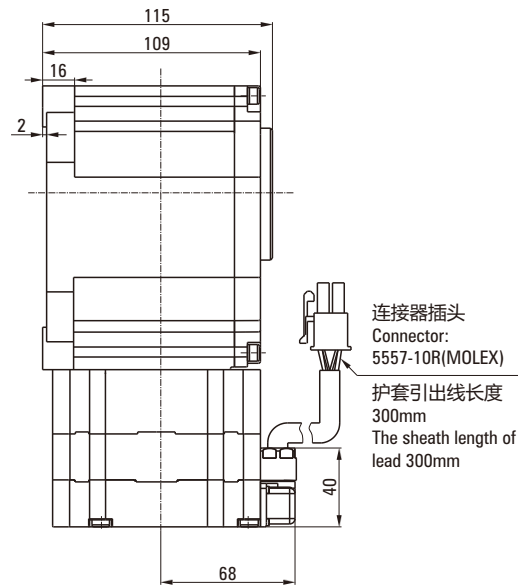
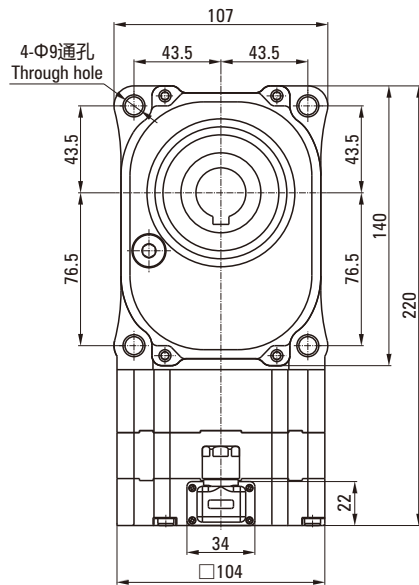
直角减速机 Right angle gearbox

单位Unit: N·m

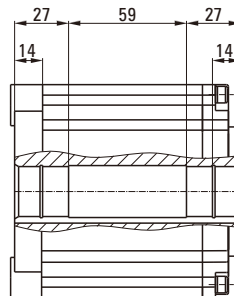
输出功率 Output Power	减速比 Reduction Ratio	7.5	10	20	30	50
	电机轴转速 Motor speed					
400W	80 ~ 2000RPM	7.6	10.1	20.3	29.1	48.5
	3000RPM	5.7	7.60	15.2	21.8	36.5

注Note：表格中 （灰底部分）表示旋转方向与电机转向一致。The (gray) in the table indicates that the rotation direction is consistent with the motor.
（不同转速及速比下的力矩为ZD标准驱动器下测试所得。The torque under different speed and speed ratio is obtained under the ZD standard ）

外观尺寸图 Dimensional drawing



输出轴内孔结构 The output shaft hole structure





PLANETARY GEAR BOX
ZDR/ZDGF(S) 行星减速器

ZD 中大力德



TRANSMISSION PLANETARY
传动行星减速电机

ZD 中大力德



**AC & DC RIGHT
ANGLE GEAR MOTOR**
交、直流直角轴减速电动机

ZD 中大力德



PLANETARY GEAR BOX
ZB/ZE 行星减速器

ZD 中大力德



SMALL AC GEAR MOTOR
小型交流齿轮减速电机

ZD 中大力德



PLANETARY GEAR BOX
ZDE/ZDF/ZDWE/ZDWF/ZDS 行星减速器

ZD 中大力德

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