



PLANETARY ROTARY ACTUATOR



WANSHIN®

WANSHIN SEIKOU(HUNAN)CO.,LTD

ww.wanshin.com.cn



官微二维码



官网二维码

Committed To Building A World-class Intelligent Electromechanical Brand

SPECIALIZED REDUCER / REDUCTION MOTOR / INVERTER MANUFACTURER
INTELLIGENT AUTOMATION SOLUTION PROVIDER



CONTENTS

01 ENTERPRISE INTRODUCTION
About WANSHSIN
Core Competitiveness

03 PRODUCT OVERVIEW

04 FEATURES

05 NAMING

05 SPECIFICATION

08 APPLICATIONS

09 INSTRUCTIONS

ABOUT WANSHSIN



宁乡总部基地

WANSHSIN SEIKOU (HUNAN) CO., LTD.

WANSHSIN was Founded in 2009 in Dongguan, Guangdong province, relocated its headquarters to Changsha, Hunan in 2014. Now WANSHSIN operates two production bases in Ningxiang High-Tech Zone and Changsha High-Tech Zone, driving high-quality development in the industry through innovation.

WANSHSIN is a professional manufacturer of gearboxes, gearmotors, controllers, and intelligent automation solution provider, integrating R&D, production, sales, and service, its products cover light and heavy industry, and has been widely used in industries such as new energy, robotics, automation, construction machinery, smart warehousing, logistics, food processing etc. WANSHSIN has gradually become a long-term partner for major leading enterprises in the industry.

WANSHSIN adheres to the corporate vision of "committed to building a world-class intelligent electromechanical brand", with the goal of "specialization, branding, and internationalization". WANSHSIN provides various transmission products with cutting-edge technology, exceptional quality, advanced manufacturing, and fast service to global customers, and relentlessly advancing the intelligent development of global industry.

CORE COMPETITIVENESS

01

Leading R&D

The company operates three R&D centers with a team of nearly 100 experts and advanced domestic and international equipment. We have also recruited several technical leaders in gear reduction from Japan and collaborate closely with top universities. Supported by multiple national, provincial, and municipal projects and patents, we have built a multi-level R&D innovation system that leads the industry.

02

Quality Assurance

We implement an end-to-end quality management system across "suppliers-R&D-production-customers". Certified by multiple international standards, and equipped with advanced inspection tools throughout incoming materials, production, and shipment stages, we ensure precise quality control and reliable delivery.



03

Full Range of Smart Electromechanical Products

The company offers rapid development and deep customization capabilities covering the entire product lifecycle. Our integration of motor, drive, and control solutions ranks among the world's leading levels.

04

Efficient Service

We operate our own well-stocked warehouse system, enabling short lead times for both standard and custom products. Partnered with top domestic logistics providers, we ensure fast delivery and responsive after-sales support.

HIGH RIGIDITY

COMPACT DESIGN

**HOLLOW
CAVITY**

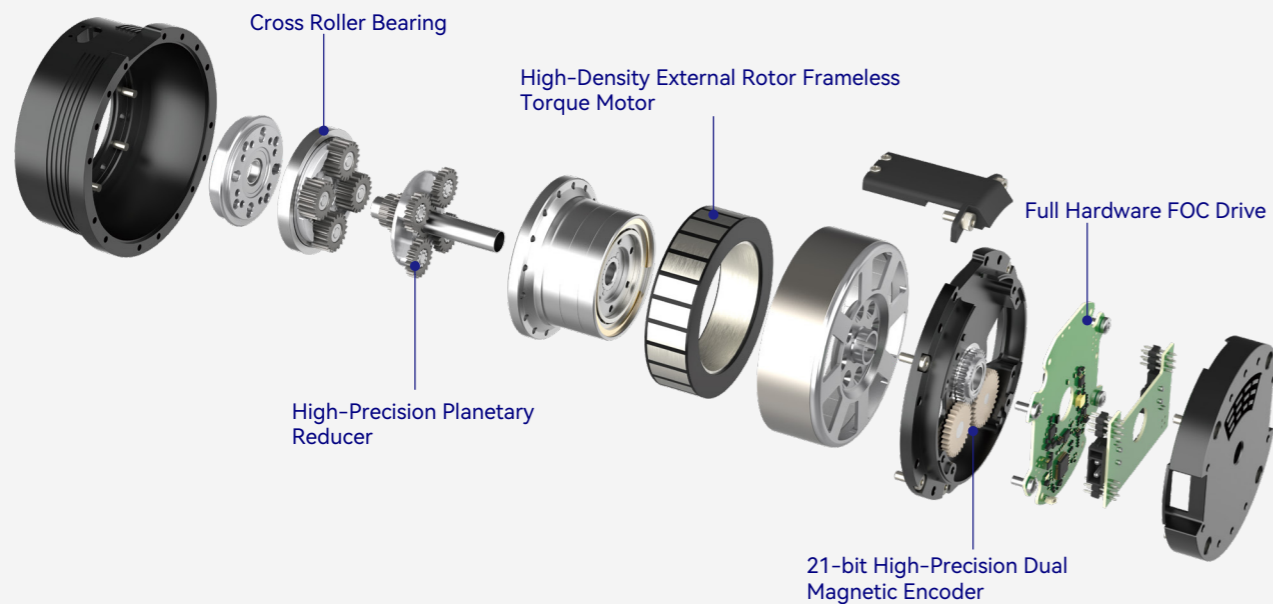
HIGH TORQUE

**LOW
BACKDRIVE**



THE PLANETARY ROTARY ACTUATOR highly integrates three core components – a precision planetary reducer, a frameless torque motor, and a drive into a compact servo module.

With bus control and a hollow-shaft design for internal cabling, it significantly simplifies system architecture. The module incorporates high-precision 21-bit dual magnetic encoders and a planetary reducer equipped with a standard cross roller bearing. The external rotor frameless motor utilizes potting technology. By integrating cutting-edge interdisciplinary technologies such as mechanical design, electromagnetic design, and thermal management, the planetary actuator achieves high efficiency, compact size, lightweight, and high reliability, enabling it to easily meet demanding application requirements.



PRODUCT ADVANTAGES



High Rigidity

The cross roller bearing combined with a high-precision planetary reducer – with rollers arranged in a "cross" pattern and multi-tooth meshing – enables multi-directional load capacity and high impact resistance.



High Precision

Planetary reducer backlash ≤ 12 arc-min, combined with 21-bit dual magnetic encoders, ensures high absolute positioning accuracy.



High Torque

The external rotor design offers a longer force arm, delivering higher torque in a slimmer profile.



High Reliability

Motor potting ensures balanced heat dissipation across all three phases, preventing burnout due to stall-induced heat accumulation.



Low Noise

Integrated design and PEEK self-lubricating encoder gears enable quiet operation.



Low Backdrive

High transmission efficiency and low resistance in the planetary reducer result in minimal backdrive.



Hollow Shaft

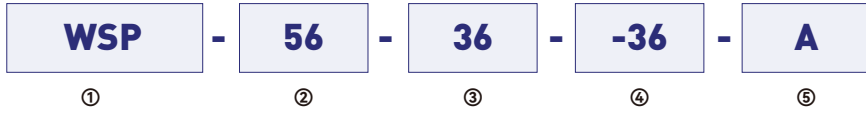
Large central through-hole for easy cable routing and layout.



Maintenance-Free

Reducer grease and self-lubricating gears eliminate the need for periodic maintenance or grease replacement.

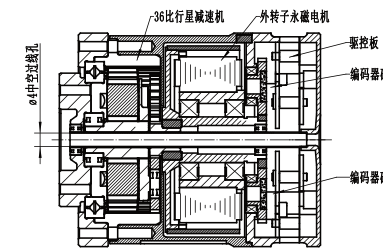
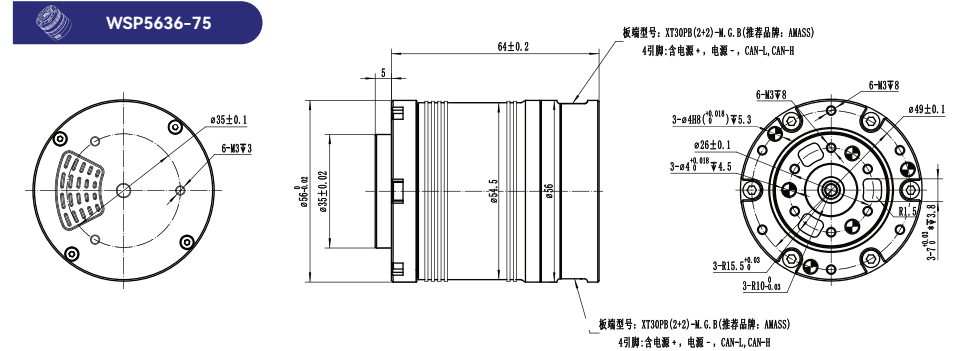
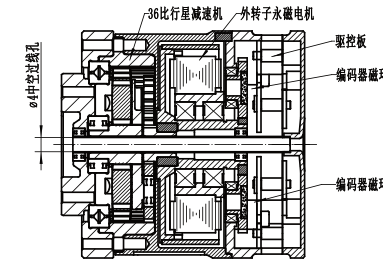
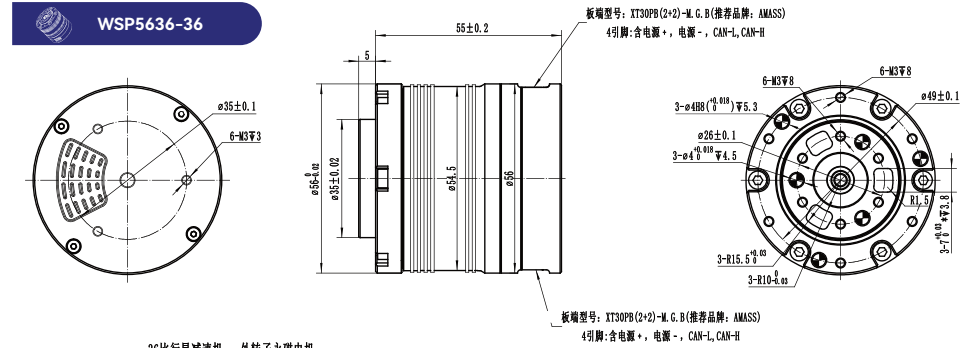
Naming



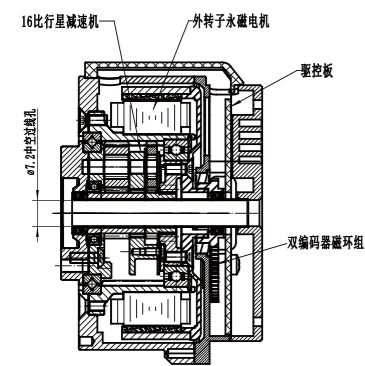
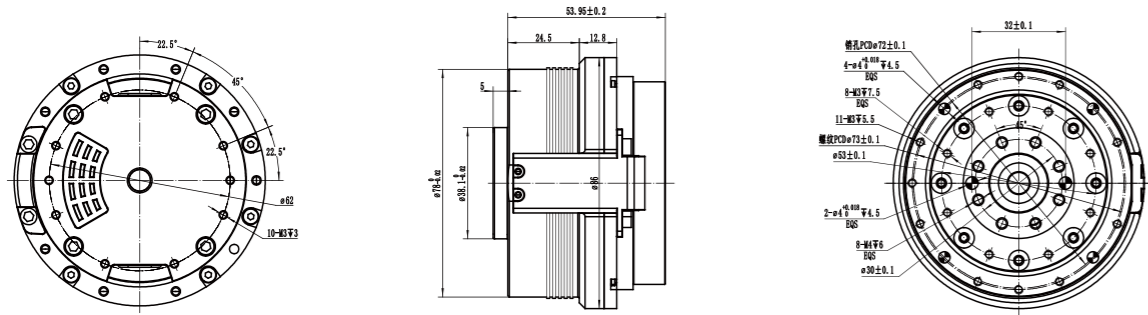
- ① Series: WSP=Planetar Rotar Actuator
- ② Outer Diameter: 56, 86, 106, 124
- ③ Reduction Ratio: 12, 16, 22, 36
- ④ Peak Torque: 36, 75, 80, 120, 150 (N.m)
- ⑤ Product Version: A

Specialization

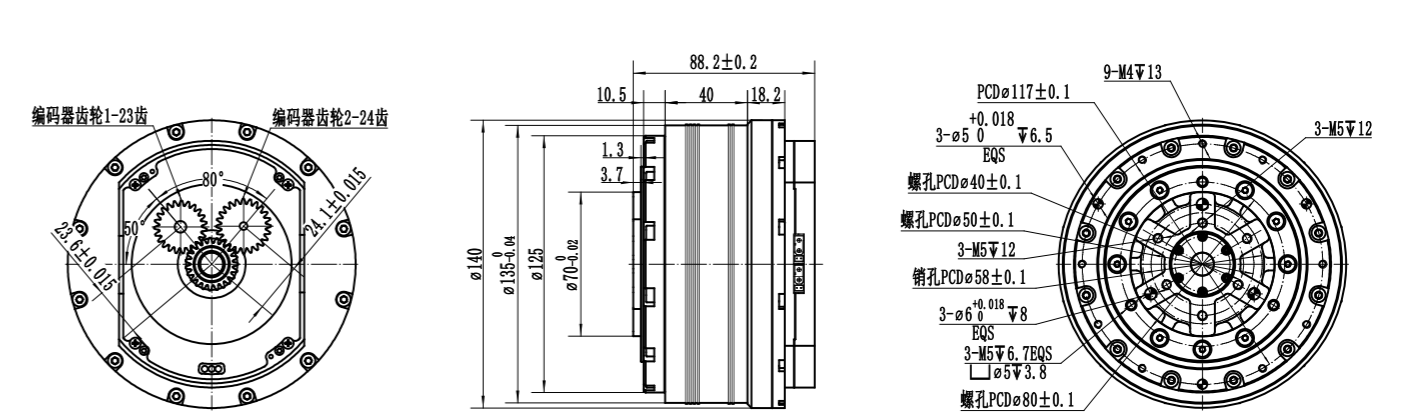
Items	Model	WSP5636-36	WSP5636-75	WSP8616-80	WSP10622-150	WSP14024-360
Voltage (V)		48	48	48	48	72
Reductio n Ratio		36	36	16	22	24
Rated Output Torque (N.m)		12	25	20	40	120
Peak Output Speed (RPM)		36	75	80	150	360
Rated Output Speed (RPM)		77	109	70	130	150
Peak Output Speed (RPM)		87	117	100	165	180
Reducer Backlash(Arcmin)		< 12	< 12	< 12	< 15	< 15
Motor Power (W)		135	400	200	555	1900
Module Diameter (mm)		56	56	86	106	140
Module Length (mm)		60	69	59	63	88
Through-hole Diameter (mm)		φ4.1	φ4.1	φ7.2	φ8.5	φ11.5
Communication Protocol		CAN FD	CAN FD	CAN FD	CAN FD	CAN FD
Communication Baud Rate		500K-5M	500K-5M	500K-5M	500K-5M	500K-5M
Encoder		21-bit Dual Magnetic Encoder				



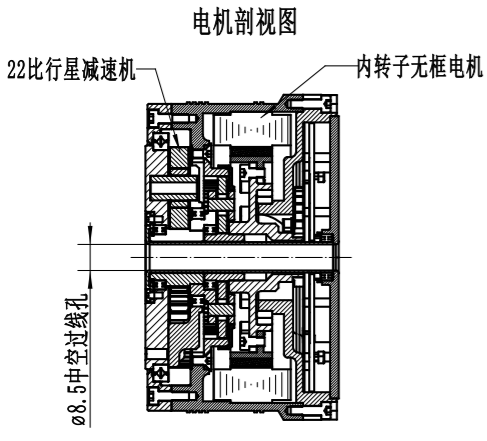
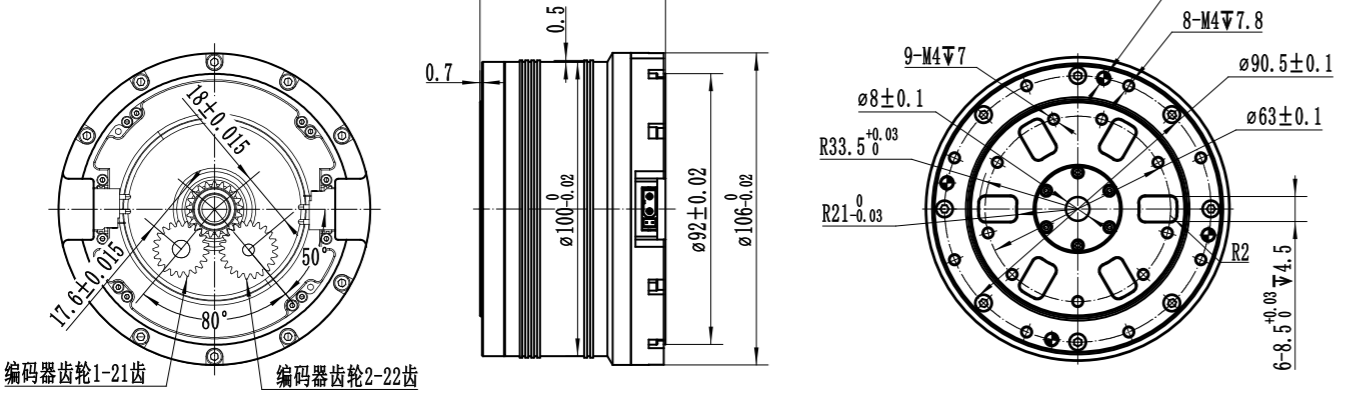
WSP8616-80



WSP14024-360

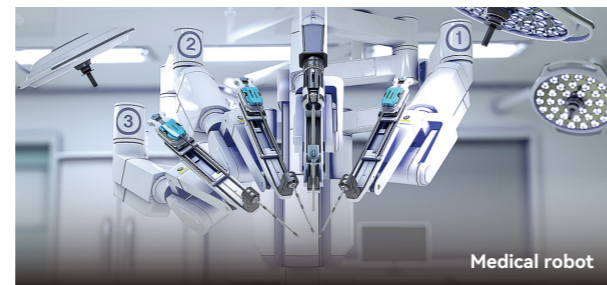


WSP10622-150



APPLICATIONS

Widely applied as core motion units in humanoid robots, comprehensively covering key joints including shoulders, hips, elbows, wrists, and knees. These modules provide fundamental power assurance for humanoid robots' stable performance in high-dynamic scenarios such as industrial collaboration and service reception, serving as critical components advancing robots toward practical implementation.



INSTRUCTIONS

Please be sure to observe the following precautions to avoid damaging the module.

1. Thoroughly clean the installation surface. Before installation, thoroughly clean the surface of the installation housing and ensure the installation environment is free of metal shavings. Note that metal shavings generated during installation and wiring may fall into the CAN interface or power connector, causing communication failures and electrical faults.

2. Ensure proper grounding of the housing. If the joint housing is not properly grounded, it may accumulate electrical charge and become energized. The housing must be properly grounded.

3. Do not exceed the permitted voltage and current values. Observe technical data. Adhere to the technical data and specifications regarding connection conditions (nameplate and documentation). Exceeding the permissible voltage or current values may damage the motor, such as causing overheating.

4. Do not exceed the permissible torque. Do not apply torque exceeding the maximum instantaneous allowable torque. Failure to comply may cause loosening of fasteners in the tightening section, resulting in vibration, damage, or product failure. When robotic arms or similar components are directly attached to the output shaft, collision with the arm may cause damage and loss of output shaft control.

5. Do not disassemble the product. This product is a high-precision device and must be installed and calibrated by qualified personnel. Disassembly or reassembly of the integrated unit is strictly prohibited. Reassembly will permanently compromise its original performance. Any product failure resulting from improper use will void the warranty.

6. Do not alter the component configuration. The entire product is assembled from various components. When used in combination with other kits, specific performance characteristics are not guaranteed. Product malfunctions resulting from improper use will void the warranty. Removing the tamper-evident warranty label will void the warranty.

7. Handle the product and components with care. Do not strike any components or assemblies with force using hammers or similar tools. Additionally, ensure that cracks, dents, or other damage do not occur due to falls or similar incidents. Doing so may cause product damage. Performance cannot be guaranteed if used in a damaged state. It may also lead to malfunctions such as further damage.

8. Use under specified conditions.

- This product has an IP44 protection rating.
- Operating temperature range: -40°C to 70°C (At extremely low temperatures, joint friction increases significantly, leading to higher operating currents. At extremely high temperatures, over-temperature alarm protection and shutdown may be triggered.)
- General operating temperature: $0\sim 40^{\circ}\text{C}$; General storage temperature: $-30\sim 60^{\circ}\text{C}$;
- Using low-temperature grease improves the module's operational resistance at low temperatures;
- Operating/storage humidity: 20%~80% RH (non-condensing);
- Free from dust, metal powders, corrosive gases, flammable gases, oil mist, etc.

9. Transportation. Ensure the original packaging is maintained when transporting joints. Use appropriate shipping equipment and comply with all regional and national shipping guidelines. Our company is not responsible for any damage caused during transportation.

10. Precautions for Use. Do not use for applications where the joint module may fall. Even if no surface damage is visible after a fall, accumulated internal stress may reduce fatigue strength. Therefore, do not use the module.

When using this product, be sure to observe the following precautions to avoid suboptimal performance.

The following actions may result in unexpected outcomes:

- Failing to tighten screws according to torque specifications or neglecting to use the diagonal tightening method,
- Operating while placed on a wooden table,
- Running the joint while mounted on a movable platform (e.g., when footings are not securely fastened),
- Installing plastic or 3D-printed enclosures that impede heat dissipation, leading to excessive surface temperatures on the joint.