



深圳市兆威机电股份有限公司

地址:深圳市宝安区松岗街道燕罗工业区朝阳路兆威工业园
电话:0086-755-2732 2645
传真:0086-755-2732 3949
邮编:518105
网址:www.szzhaowei.net
邮箱:sales@szzhaowei.net

兆威企业(香港)有限公司

地址:中国香港中环德辅道西60-64号荣裕商业大厦1005室
电话:00852-63264597
传真:00852-63264597
电邮:sales@zwgearbox.com

ZW Drive GmbH

ADD: Alte Marktoberdorfer Straße 14, 87616 Marktoberdorf
TEL: +49 89 6600 2375
E-mail: kontakt@zw-drive.com

SHENZHEN ZHAOWEI MACHINERY & ELECTRONICS CO., LTD.

ADD: Zhaowei Industrial Park, Chaoyang Rd., Yanluo Industrial Zone, Songgang Str.,
Bao'an Dist., Shenzhen, 518127, Guangdong, China
TEL: 0086-755-2732 2645
FAX: 0086-755-2732 3949
Website: <http://www.zwgearbox.com>
E-mail:sales@zwgearbox.com

ZHAOWEI ENTERPRISE (H.K.) COMPANY LIMITED

ADD: Room 1005, Wing Yue Building, 60-64 Des Voeux Road
West, Hong Kong, China.
TEL: 00852-63264597
FAX: 00852-63264597
E-mail:sales@zwgearbox.com



微信公众号



兆威官网

www.szzhaowei.net / www.zwgearbox.com

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愿景和使命 | VISION & MISSION

致力微型驱动领域进步，共创智能美好生活

Committed to progress in the field of micro-drives to create a smarter and better life

核心价值观 | CORE VALUE

创造价值，坚持创新，持续奋斗，追求卓越

Create value, Persist in innovation, Continue to strive, Pursue excellence.

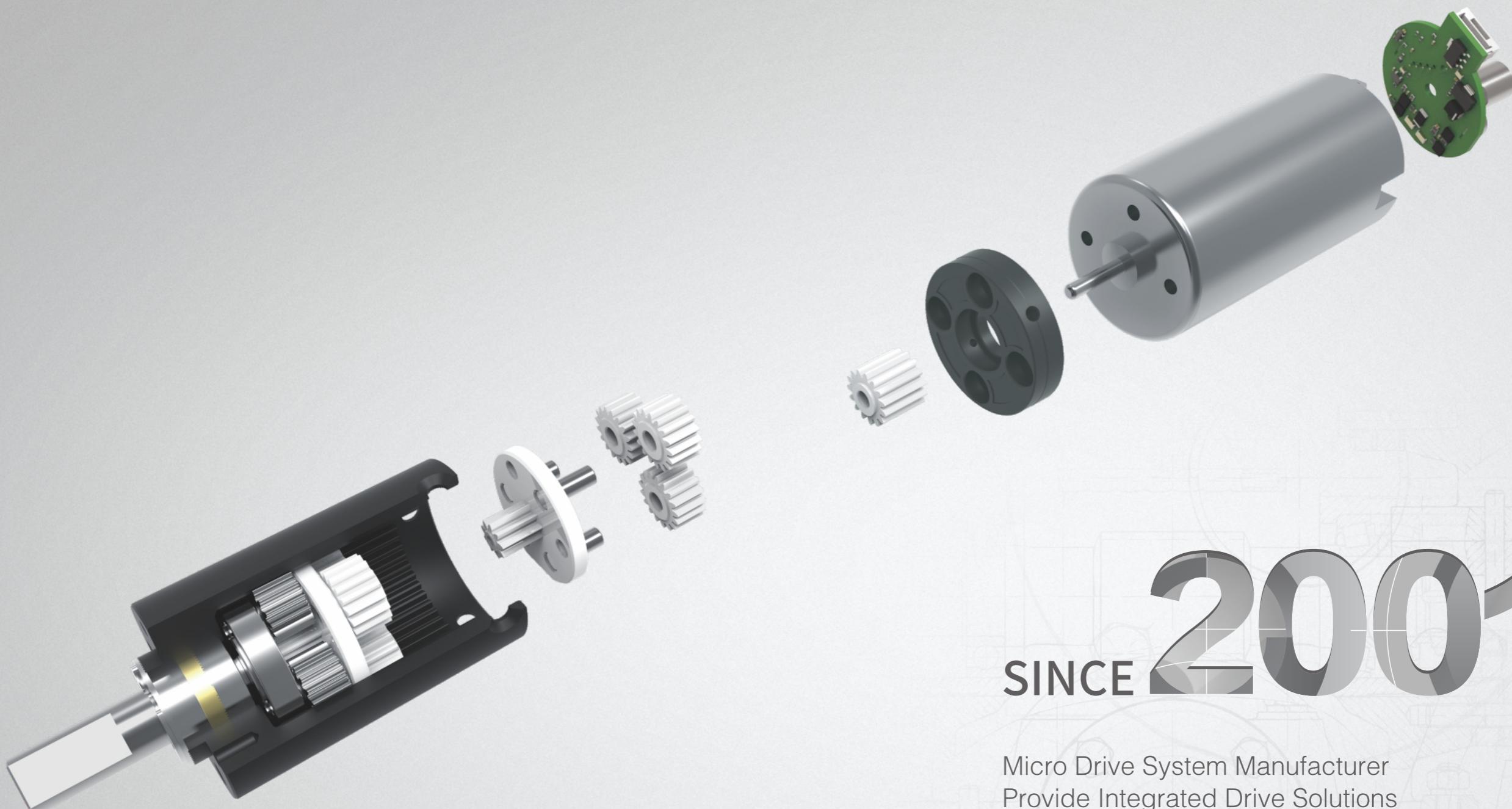
ZHAOWEI 兆威

微型驱动系统制造商

Micro Drive System Manufacturer

股票简称：兆威机电 股票代码：003021

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SINCE **2001**

Micro Drive System Manufacturer
Provide Integrated Drive Solutions

微型驱动系统制造商
为您提供系统化的解决方案

公司简介

Company Profile

深圳市兆威机电股份有限公司创建于2001年,是一家设计、研发、生产精密驱动系统的企业。产品涉及汽车智能驱动、通讯设备、医疗器械、智能家居、机器人、消费电子等领域,为客户的智能化驱动提供定制化服务。

兆威机电先后通过ISO9001、ISO14001、IATF16949、ISO13485体系认证,并在2019年荣获国家高新技术企业、广东(行业类)名牌企业、中国机械工业科学技术特等奖等荣誉;2020年成为广东省机器人骨干企业,同年深交所A股成功上市,并荣获第六届中国工业大奖(面向智能装备的微型传动系统项目)、国家制造业单项冠军(微小传动系统)等荣誉称号。公司重视自主研发和工业智能化,在智能汽车行业、智能医疗及通讯行业与BOSCH、华为等企业建立了长期战略合作伙伴关系。

Established in 2001, Shenzhen ZHAOWEI Machinery & Electronics Co., Ltd. (hereinafter, ZHAOWEI) is a company that designs, researches, develops, and produces precision drive systems. Our products are mainly used in the fields of intelligent automotive drive, communication equipment, medical device, smart home, robot, consumer electronics, etc. We are devoted to providing customized intelligent drive services for customers.

ZHAOWEI has passed ISO9001, ISO14001, TS16949, ISO13485 certification, and won the title of National High-Tech Enterprise, Guangdong Province Famous Brand Enterprise (Industrial), and the Special Prize of China Machinery Industry Science and Technology Award in 2019. In 2020, ZHAOWEI won Guangdong Province Robot Key Enterprise and got listed on A-shares in Shenzhen Stock Exchange; also, we won the 6th China Grand Awards for Industry (for micro drive systems of intelligent equipment) and the State Manufacturing Single Championship (micro drive system) at the same year. ZHAOWEI pays high attention to independent R&D and Industrial Intelligence. And in the fields of automotive, medical technology, and communication equipment, we have established a long-term strategic cooperative partnership with Huawei, BOSCH, etc. among the top 500 companies in the world.



兆威长三角基地
ZHAOWEI Yangtze River Delta Base



兆威珠三角基地
ZHAOWEI Pearl River Delta Base

发展历程

Company Milestones

2011年5月公司制定汽车智能驱动、通讯设备、智能家居、医疗保健、电子产品的策略方向；客户定制开发的微型传动系统的部件。

In May 2011, product strategy was formulated towards intelligent automobile, communication equipment, smart home, medical care, and electronic products--to customize and develop core parts of micro drive system for customers.

2001 年4月	2005 年6月	2008 年8月	2009 年10月	2011 年5月	2017 年2月	2019 年2月	2020 年12月
In Apr. 2001	In Jun. 2005	In Aug. 2008	In Oct. 2009	In May. 2011	In Feb. 2017	In Dec. 2019	In Dec. 2020
							
公司成立 Established	马达、齿轮部件 Motor, Gear Components	汽车部件 Automotive Parts	微型齿轮箱 Micro Gearbox	微型齿轮传动系统 Gearbox for Automotive	驱动系统 Drive System	微型驱动产业园 Micro Drive Industrial Park	兆威IPO上市 ZHAOWEI IPO
核心马达部件 Core Motor Parts - 松下 (Panasonic) - 三洋 (SANYO) - 三协 (SANKYO)	汽车齿轮部件 Automobile Gear Parts - 博世 (Bosch) - 博泽 (Brose) - 电装 (Denso) - 丰田通商 (Toyota Tsusho) - 马勒 (MAHLE) - 比亚迪 (BYD) - 长城 (Great Wall)	微型齿轮箱 Micro Gearbox - 格力 (GREE) - 腾讯 (Tencent) - 杜亚 (DOOYA) - 尚飞 (Somfy) - 奥克斯 (AUX) - 标准 (STANDARD)	通讯齿轮箱 Gearbox for Communication Equipment - 4G天线 (4G Antennas) - 5G天线 (5G Antennas)	马达驱动控制 Motor Drive Control - 智能硬件设计 Smart Hardware Design	微型齿轮传动 Micro Gear Transmission - 驱动一体化 Drive Integration	国家制造业单项冠军 The State Manufacturing Single Championship	中国工业大奖表彰奖 China Grand Awards for Industry of Recognition
精密齿轮部件 Precision Gear Parts - 佳能 (Canon) - 尼康 (Nikon) - 亚洲光学 (Asia Optical)	智能家居 Smart Home - 窗帘 (Electric Curtain) - 扫地机 (Robot Vacuum)	汽车齿轮箱 Gearbox for Automobile - 尾门电机 (Power Tailgate) - EPB	医疗齿轮箱 Gearbox for Medical Electronics - 胰岛素齿轮箱 (Insulin Pump) - 清洗泵 (Pulse Lavage System)	电子类齿轮箱 Gearbox for Electronic Products - 手机旋转齿轮箱 (Phone Rotating Camera)	中国机械工业科技进步特等奖 Special Prize of China Machinery Industry Science and Technology Award	电子类齿轮箱 Gearbox for Electronic Products - 手机旋转齿轮箱 (Phone Rotating Camera)	中国工业大奖表彰奖 China Grand Awards for Industry of Recognition

兆威荣誉 **ZHAOWEI Honor**



2020年国家制造业单项冠军(微小传动系统)
The State Manufacturing Single Championship 2020 (for micro drive system)

2020年第六届中国工业大奖表彰奖(面向智能装备的微型传动系统项目)
The 6th China Grand Awards for Industry of Recognition (for micro drive systems of intelligent equipment)

中国机械工业科学技术特等奖
Special Prize of China Machinery Industry Science and Technology Award

国家科学技术进步奖二等奖
Second Prize of the State Scientific and Technological Progress Award

广东省战略性新兴产业培育企业
Guangdong Province Cultivation Enterprise of Strategic Emerging Industry

广东省机械人培育企业
Robot Cultivation Enterprise of Guangdong Province



广东省知识产权示范企业
Guangdong Province Intellectual Property Demonstration Enterprise

广东省微型齿轮传动工程技术研究中心
Guangdong Province Engineering and Technology Research Center of Micro Gear Transmission

2019年手机升降摄像头荣获“好设计金奖”;
The drive system for pop-up camera won the Gold Prize of Good Design in 2019

参与了塑料齿轮精度国家标准的起草与制订
Participated in the drafting and formulation of national standards for plastic gear precision

数字化设计与制造创新联盟
Innovation Alliance of Digital Design and Manufacturing

广东(行业类)名牌企业
Guangdong Province Famous Brand Enterprise (Industrial)



合作伙伴

Our Clients



品质认证和体系

Quality System & Certification

兆威的管理体系是企业运作的核心部分；兆威全体员工严格遵守ISO管理体系，从产品的设计、研发到生产所有的过程都严格按照体系进行；

我们致力于将产品的风险把控，在恶劣、苛刻的环境条件下，提高产品的可靠性；

我们的使命是为客户提供创新、符合客户所需的产品。

ZHAOWEI management system is the core part of company operation. All employees strictly comply with the ISO system from product design, development to production.

We are committed to controlling risks and improving product reliability under harsh environmental conditions.

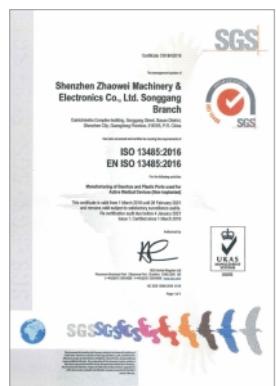
Our mission is to provide innovative products that meet customer needs.



产品认证 | PRODUCT CERTIFICATION



公司认证 | CERTIFICATES



ISO13485 (CN18/42018)



ISO9001:2015 (CN11/30731)



IATF16949 (CN11/30730.01)



ISO14001 (U006616E0153R3M)

项目管理 | PROJECT MANAGEMENT

深圳兆威机电股份有限公司承诺严格按照兆威项目管理系统为客户提供创新的、质量稳定的产品，让产品市场竞争力符合客户所需。

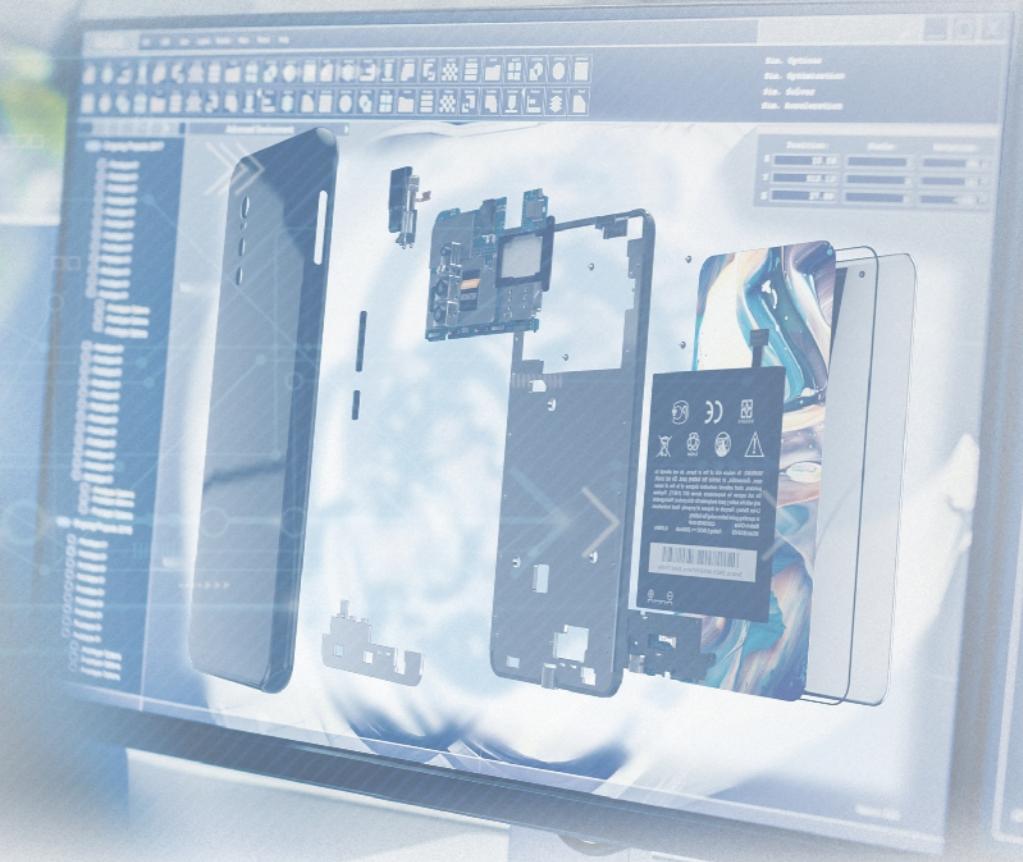
产品实现过程涉及:

- 产品设计确认阶段
- 顾客财产管理过程
- 产品质量先期策划过程
- 工程变更管理过程
- 产品PPAP批准过程
- 订单管理过程
- 生产及交付管理过程
- 顾客信息反馈、满意度管理过程

ZHAOWEI is committed to providing customers innovative and stable quality products in strict accordance with ZHAOWEI project management system, to ensure product market competitiveness meets customers needs.

Product Implementation Process:

- Product Design Confirmation
- Customer Property Management
- Advanced Product Quality Planning
- Engineering Change Management
- Product PPAP
- Order Management
- Production & Delivery Management
- Customer Feedback & Satisfaction Management



研发实力

R&D Capability

深圳市兆威机电股份有限公司专注于微型齿轮驱动系统的设计开发生产,为客户提供驱动解决方案。公司重视自主研发和科技创新,公司的研发团队涵盖微型传动系统、电子驱动的设计开发,产品主要涉及汽车电子、通讯、医疗器械、智能家居、服务机器人等领域。

ZHAOWEI specializes in designing, developing, manufacturing and providing micro gear drive systems for customers. ZHAOWEI attaches great importance to independent R&D and technological innovation, and R&D teams cover design and development of micro drive system and electric drive module. Our products are used in many fields, mainly involves automotive electronics, communication, medical equipment, smart home and service robot.

研发团队

R&D Teams



兆威的研发团队是由教授、博士、硕士及研发工程师等组成。其中研发设计技术人员占比15%，研究生和本科生占比75%，平均年龄32岁，形成了从研发、设计、制造到实验检测的系统性、综合性的开发平台。



团队构成 | Team Members

兆威的研发团队涵盖微型齿轮和齿轮箱设计开发、精密模具设计加工、注塑与组装自动化、齿轮检测和驱动系统测试等领域。

ZHAOWEI R&D teams cover the fields of micro gear and gearbox design and development, precision mold design and processing, injection molding and assembly automation, gear detection and drive system testing, etc.



研发设计团队

R & D Team

- 传动设计 Transmission Design
- 产品设计 Product Design
- 仿真验证 Simulation Verification
- 马达设计 Motor Design
- 软件开发 Software Development



电子驱动团队

Electronic Drive Team

- 马达驱动控制 Motor Drive Control
- 嵌入式软件设计 Embedded Software Design
- 智能硬件设计 Intelligent Hardware Design



齿轮检测实验室

Gear Testing Laboratory

- 蔡司CT Zeiss CT
- 齿轮检测中心 Gear Testing Center
- 齿轮啮合测试 Gear Mesh Test
- 三坐标测量 Three-coordinate Measurement
- 热重分析仪 Thermogravimetric Analyzer



齿轮技术团队

Gear Technical Team

- 齿轮箱的研制 Gearbox Development
- 定制化研制 Customized Design
- 材料研究 Materials Research
- 模具设计 Mold Design
- 成型工艺 Molding Process



自动化团队

Automation Team

- 柔性加工技术 Flexible Machining Technology
- 注塑无人化 Injection Automation
- 组装自动化 Assembly Automation



综合测试实验室

Comprehensive Test Laboratory

- 噪声分析 Noise Analysis
- 马达综合测试 Motor Comprehensive Test
- 环境测试实验 Environmental Test
- 震动测试 Vibration Test
- 寿命测试 Life Test

专利和技术创新

Patents & Innovation

200余项专利其中微型传动关键技术专利86项,54项发明专利、9项软件著作权、7项PCT。

兆威参与并主导了多项省市科技攻关项目,在新能源汽车、4G、5G天线基站及智能机器人领域有丰富的研发和制造经验。

专利名称 Patent Name	专利类型 Patent Type	申请/授权日期 Application / Authorization Date	证书/申请编号 Certificate/ Application No.
低噪音汽车尾箱减速器 Low-noise Automobile Tail Box Reducer	发明专利 Invention Authorization	2018-03-27	CN105041986BXXXX
调频组件及滤波器 FM Components and Filters	发明专利 Invention Announcement	2017-09-08	CN107146928AXXXX
小回程差角度传感器及其行星齿轮 Small Backlash Angle Sensor with and Its Planetary Gears	发明专利 Invention Announcement	2017-09-08	CN107144215AXXXX
《机器人的手臂机构以及具有该手臂机构的机器人》 Robot Arm Mechanism and A Robot with the Arm Mechanism	发明专利 Invention Model	2015-02-04	ZL201110381753.8
充电桩电子锁装置及充电桩电子锁系统 Electronic Lock Device and Lock System for EV Charger	实用新型 Utility Model	2018-05-18	CN207381641UXXXX
柔性自调位机构及机械手 Flexible Self-adjusting Mechanism and Manipulator	国际发明专利 International Invention Patent	2018-06-01	CN108098757AXXXX
天线调节装置 Antenna Tilt Adjustment Device	发明专利 Invention Announcement	2019-05-17	CN109768392A
电机控制方法及系统 Motor Control Methods and Systems	发明专利 Invention Announcement	2019-07-16	CN110022093A
离合结构和控制箱 Clutch Structure and Control Box	发明专利 Invention Announcement	2020-04-17	CN111022523A
多电机同步驱动控制方法、装置以及系统 Synchronous Drive Control Method, Device and System of Multiple Motors	发明专利 Invention Announcement	2020-06-16	CN111293927A
离合组件和控制箱 Clutch Components and Control Box	发明专利 Invention Announcement	2020-08-25	CN111577788A
摄像头推出旋转结构和电子设备 Pop-up, Rotating Camera Structures & Electronic Devices.	发明专利 Invention Announcement	2020-08-25	CN111586265A
步进电机同步驱动方法、装置、终端及存储介质 Synchronous Driving Method, Device, Terminal and Storage Medium of Stepper Motor	发明专利 Invention Announcement	2020-09-04	CN111628682A
交错轴齿轮副的传动性能测试装置 Transmission Performance Testing Device of Cross-shaft Gear Pair	发明专利 Invention Announcement	2020-08-11	CN111521389A



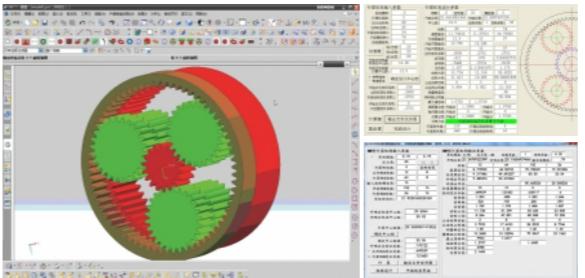
More than 200 patents, including 86 key technology patents for micro transmission, 54 invention patents, 9 software copyrights, 7 Patent Cooperation Treaty.

ZHAOWEI leads and participates in a number of provincial and municipal science and technology research projects, being experienced in manufacturing drive systems for new energy vehicles, 4G and 5G antenna base stations, and intelligent robots.

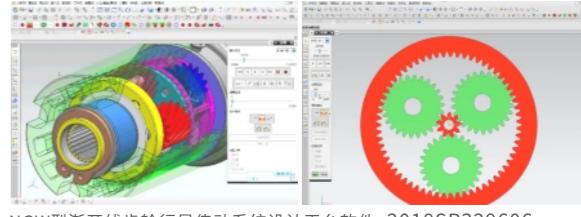
齿轮箱设计综合平台 | COMPREHENSIVE GEARBOX DESIGN PLATFORM

兆威自主知识产权的齿轮箱综合设计平台,可实现渐开线行星齿轮系统、锥齿轮、面齿轮等机构的自动化参数设计、齿形绘制和3D精密建模等。设计平台的特性是具有方案设计、结构设计、齿形设计、模拟分析等特点。

The gearbox design platform of ZHAOWEI's independent intellectual property rights can realize automatic parameter design, tooth shape drawing and 3D precision modeling of involute planetary gear systems, bevel gears, face gears and other mechanisms. The design platform has functions of scheme design, structural design, tooth shape design, simulation analysis, etc.



直齿圆锥齿轮副齿廓修形及精密建模
Straight bevel gear pair profile modification and precision modeling



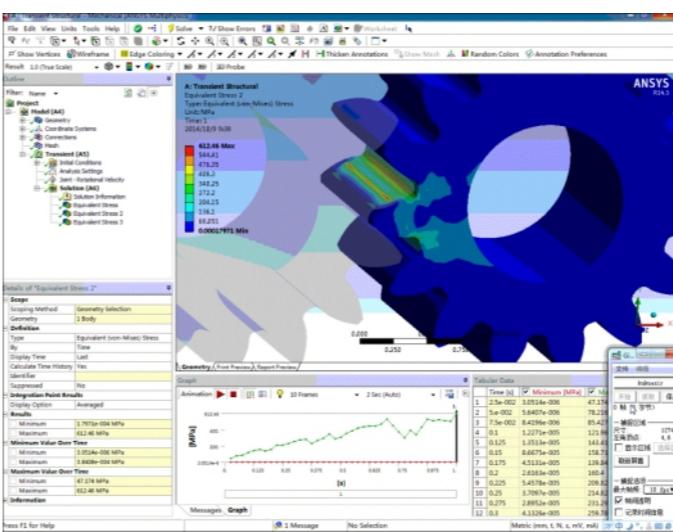
NGW型渐开线齿轮行星传动系统设计平台软件 2018SR329606
Design and Development Software of NGW Type Involute Gear Planetary Transmission System 2018SR329606

齿轮箱设计平台在进行变位系数合理的分配、啮合角优化计算、滑移率和重合度的校核。在前期设计开发阶段,优化变位系数、行星齿轮齿顶干涉校验,预防和改善齿轮箱的效率、噪音、寿命等问题。

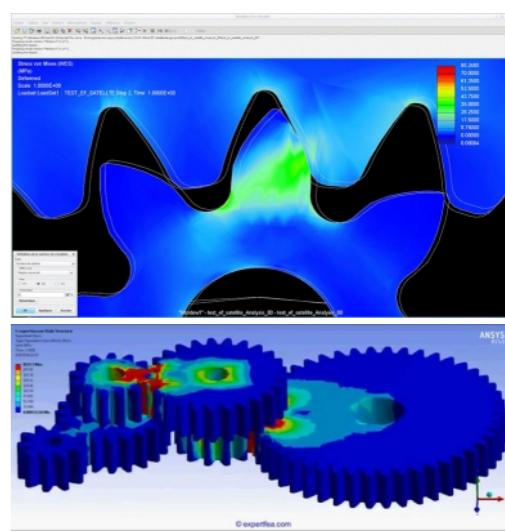
The gearbox design platform performs reasonable allocation of modification coefficients, meshing angle optimization calculation, slip ratio and coincidence degree. In the early stage of design and development, optimize the modification coefficient and planetary gear tooth profile overlap interference to improve gearbox efficiency, noise and life.

动态仿真和有限元分析 | DYNAMIC SIMULATION AND FINITE ELEMENT ANALYSIS

在齿轮和齿轮箱设计阶段,采用运动学仿真对齿轮副运动的平稳性和局部干涉进行验证。同时采用有限元分析技术,对弧齿、锥齿轮的齿面强度进行分析校核产品的可靠性。



平行轴内、外啮合圆柱齿轮副设计平台软件 2018SR330220

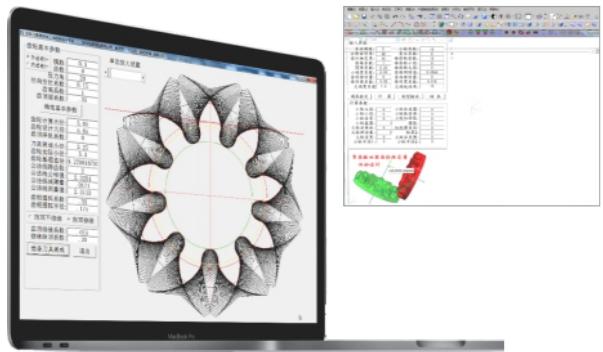


In gear and gearbox design stage, Dynamic simulation is used to verify the smoothness and local interference of gear pair movement. At the same time, finite element analysis technology is used to analyze tooth surface strength of spiral teeth and bevel gears and check product reliability.

模具开发

Mold Development

齿轮模具设计 | GEAR MOLD DESIGN



齿轮模具型腔齿形参数设计软件 2018SR627905
Gear mold cavity profile parameter design software 2018SR627905

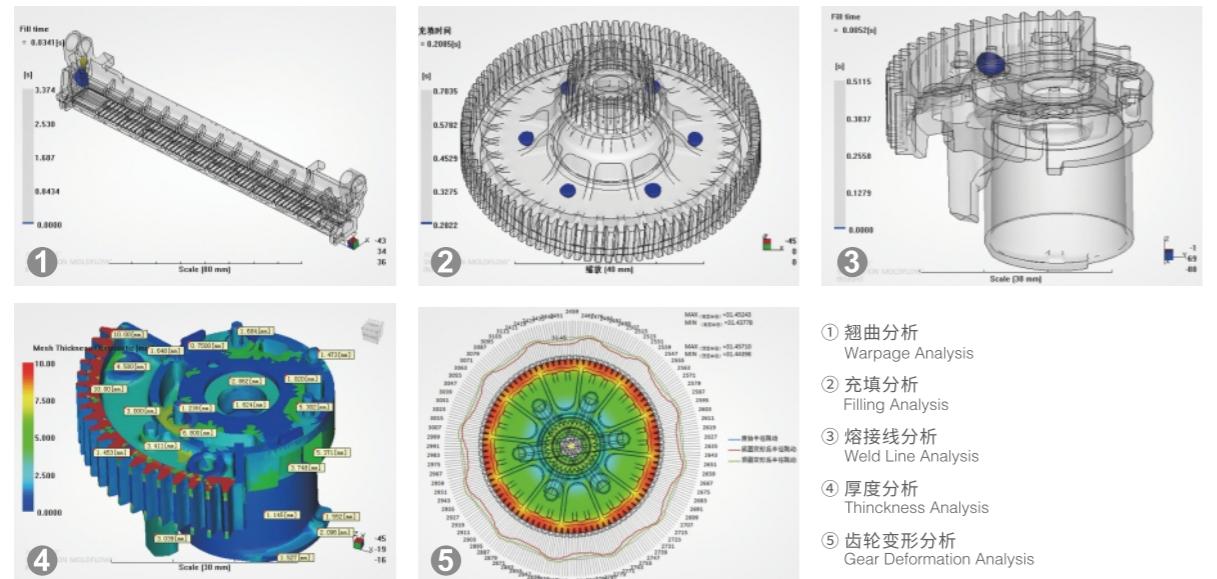
与传统的模具设计不同,齿轮的齿厚、模数、压力角都需要结合经验数据修形,不能按收缩率直接加工,我们的优势是:根据公司设计数据自主开发了齿轮模具的型腔参数计算软件,这个软件可以直接生成齿轮参数及轮廓,用于齿轮修形、提高齿形精度。

Different from traditional mold design, the gear tooth thickness, modulus, and pressure angle need to be modified with empirical data and cannot be processed directly according to material shrinkage rate. Our advantage: the cavity parameters design software of gear molds is independently developed according to our company's design data, and the software can directly generate gear parameters and contours for gear modification and improve tooth profile precision.

模流分析 | MOLD FLOW ANALYSIS

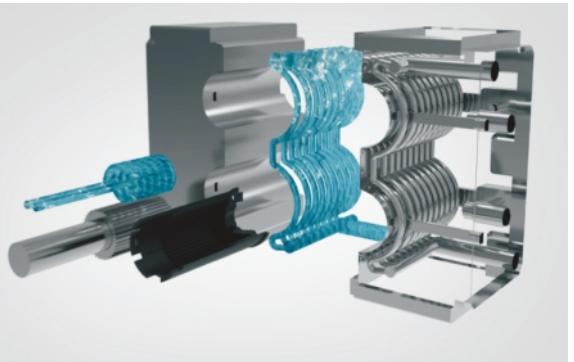
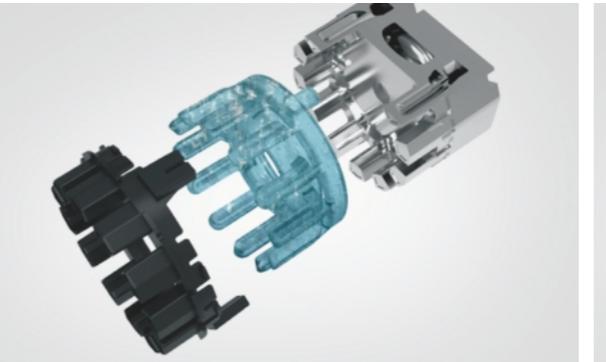
- 模流分析经验的材料研究生从事模流分析工作;
- 可以预测产品的变形、缩水、缺胶、气困等缺陷,给出对应方案;
- 可用于比较不同的设计方案,选择比较好的方案;
- 优化成型工艺参数,提高试模效率。

- Materials postgraduates with mold flow analysis experience are engaged in mold flow analysis.
- Can predict product deformation, shrinkage, lack of glue, air trap, etc. and provide corresponding solutions.
- Can compare different design schemes and choose a right scheme.
- Can optimize mold processing parameters and improve mold tryout efficiency.



3D打印冷却技术 | 3D PRINTING COOLING TECHNOLOGY

传统冷却水路采用直通式,水路的设计受到加工方式的限制,冷却不均匀、冷却效果差。兆威采用3D激光打印技术,根据产品结构,可以加工出复杂的异形冷却水路,提高了产品的冷却效果,使产品的品质更稳定,生产效率更高。



Traditional cooling water circuit adopts straight-through type, but is limited by processing method, with uneven cooling effect and poor result. ZHAOWEI adopts 3D laser printing technology, which can process complex special-shaped cooling water channels according to product structure, to improve cooling effect and achieve better product quality stability and higher production efficiency.

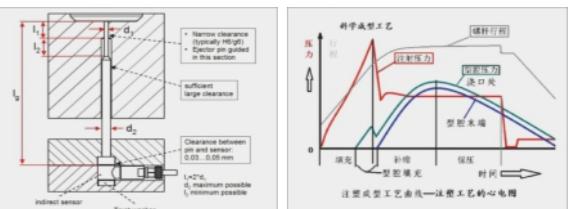
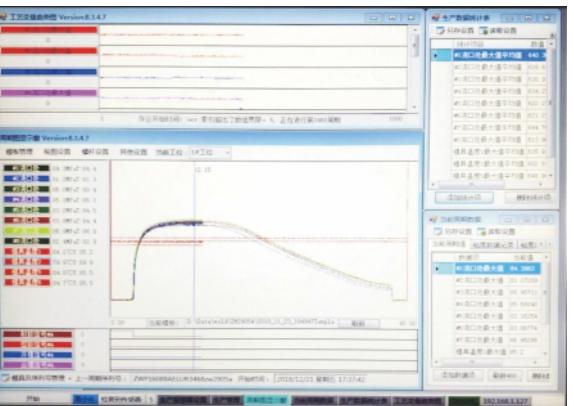
型腔压力技术 | CAVITY PRESSURE TECHNOLOGY

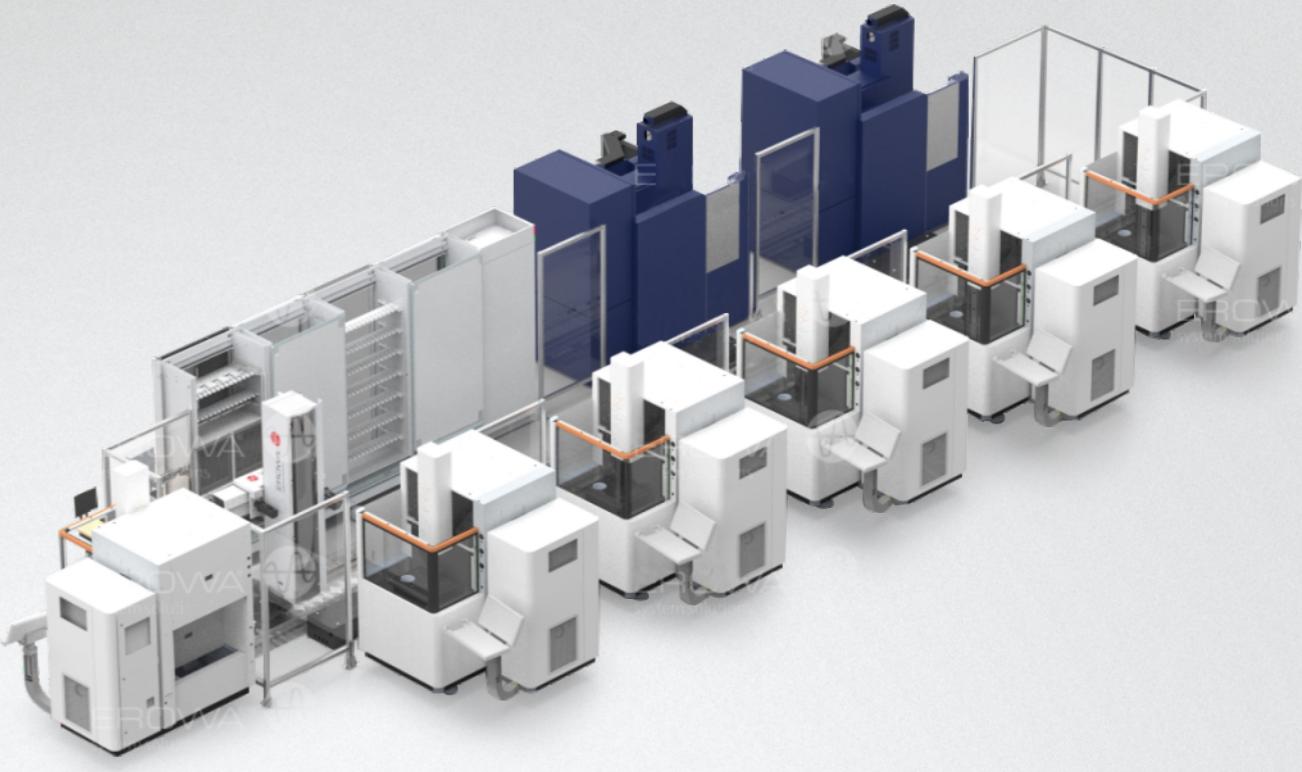
型腔压力技术是在模具型腔内安装压力传感器,通过压力曲线可以检测注塑成型过程中型腔压力的变化,准确地反映出注塑工艺的情况,监控产品品质。

- 型腔压力技术,可快速实现型腔压力曲线与模板的匹配,提高品质一致性;
- 通过对型腔压力峰值和曲线的综合分析进行监控,来判断制品的品质状况,结合伺服机械手实现对成型不良品的自动分隔。

Cavity pressure technology is to install a pressure sensor in mold cavity, pressure curve can reflect cavity pressure change during injection process and monitor product quality.

- Cavity pressure technology can quickly match cavity pressure curve with the template to improve quality consistency.
- By comprehensive analysis of mold cavity peak pressure and pressure curve, can judge product quality, and combine with servo manipulator to automatically separate defective products.





精密加工与品质控制

Fine Machining & Quality Control

深圳市兆威机电股份有限公司拥有瑞士AGIE线切割机、AGIE火花机、MAKINO、HAMAI等众多加工设备和德国蔡司三坐标、DIATEST内齿测量仪、冷热冲击实验箱、雨淋实验箱、步入式恒温恒湿室、可程式恒温恒湿箱、齿轮双面啮合仪等质检设备，ZHAOWEI专注于微型齿轮和齿轮箱精密模具设计加工、齿轮检测和传动系统测试等，为客户提供精度高、质量优的产品。

ZHAOWEI has many processing equipments such as Switzerland AGIE wire cutting machine, AGIE EDM machine, MAKINO, HAMAI, etc. and Germany ZEISS three-coordinate, DIATEST internal tooth measuring instrument, cold and thermal shock testing chamber, rain and spray testing chamber, step in-class constant temperature and humidity chamber, programmable constant temperature and humidity chamber, gear double-sided meshing instrument and other quality inspection equipments. ZHAOWEI specializes in micro gear and gearbox designing and processing, gear detection and transmission system testing, and providing precision and high quality products to customers.

精密加工

Fine Machining

精加工中心 | FINE MACHINING CENTER



兆威精密加工中心拥有多款瑞士阿奇夏米尔加工设备，线切割机 CUT 1000 OilTech、CUT2000、CUT E 600、VP2、VP3；HMS500；安田YASDA 640V等加工设备。自动化精加工，使用EMAN智能管理系统及iMould自动化加工系统，为加工精度提供了保障。

ZHAOWEI finish machining center has a variety of precise machining devices, including Switzerland Agie Charmilles wire cutting machines CUT 1000 OilTech, CUT2000, CUT E600, VP2, VP3, HMS500. Automated finishing combined with EMAN intelligent management system and iMould automated processing system provides a guarantee for machining accuracy.



日本安田超高速加工中心

YASDA Super High Speed Machining Center (Japan)



- 全行程实现 $0.5\mu\text{m}$ 定位精度
- 最佳表面粗糙度 $\text{Ra}0.05\mu\text{m}$
- 加工精度 $1\mu\text{m}$
- Positioning Accuracy: $0.5\mu\text{m}$
- Best Surface Roughness: $\text{Ra}0.05\mu\text{m}$
- Machining Accuracy: $1\mu\text{m}$

加工设备 | MACHINING EQUIPMENT



瑞士阿奇线切机
AGIE Wire Cutting Machine (Switzerland)



日本HAMAI滚齿机
HAMAI Gear Hobbing Machine (Japan)



德国罗德施加工中心
Roders CNC (German)



瑞士阿奇夏米尔线切割 CUT 6000S
AGIE Wire CUT 6000S (Switzerland)



瑞士阿奇火花机
AGIE EDM (Switzerland)



瑞士阿奇夏米尔线切割 CUT 2000S
AGIE Wire CUT 2000S (Switzerland)



美国哈挺高精密CNC车削中心
Hardinge High-precision CNC (United States)



日本牧野MAKINO火花机
MAKINO EDM (Japan)



瑞士阿奇线切割
AGIE Wire Cutter (Switzerland)



日本牧野 MAKINO V33 加工中心
MAKINO V33 CNC (Japan)



日本沙迪克线切割
Sodick Wire Cutter (Japan)



日本FANUC 加工中心
FANUC CNC (Japan)

精密加工

Fine Machining

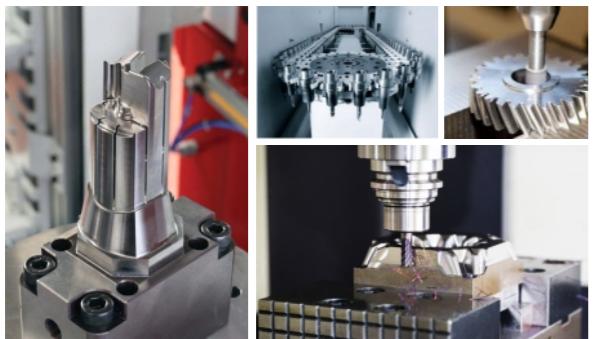
日本HAMAI滚齿机 | JAPAN HAMAI GEAR HOBBING MACHINE

日本HAMAI哈迈为专业小型滚齿机专业制造商,在半导体材料加工,齿轮加工及测量,金属模具制作等领域提供专业化、个性化的加工设备。60SP-ELT采用卧式滚齿的特点,切削粉属垂直排下后直接排除机外,从而大大降低了由于粉屑产生的故障,滚刀轴的转数为5000RPM,缩短加工时间,提高加工效率。可加工:直齿、斜齿、圆柱齿轮、蜗轮、链轮等。



德国罗德斯加工中心 | GERMAN RODERS CNC

德国Roders(罗德斯)拥有200年模具制造经验;罗德斯在高速加工领域的领导地位,罗德斯高速加工中心除了加工速度快外,工件光洁度及精度都达到了世界水平。德国Roders机床一直以“高速加工”著称,其定位于高速,特别适合于深腔加工、清角加工、精加工等高难度工序,RXP系列机床应用了油压导轨,直线电机等技术,各项性能指标在高速铣领域遥遥领先。



瑞士阿奇夏米尔线切割机 | SWITZERLAND AGIECHARMILLES CUT 1000 OILTECH

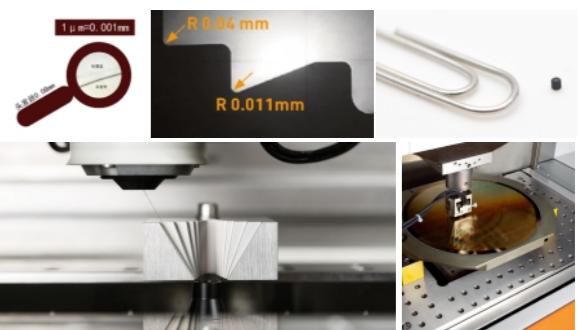
阿奇夏米尔是欧洲精密加工的参考标准,在加工设备领域属于市场的领导者。CUT1000拥有自动换丝(AWC)技术使Schawnog能在慢走丝线切割设备上预安装各种不同直径的电极丝(0.011mm),并将根据切割所需轮廓精度选择电极丝。IVU能够对孔定中、角部探测、两个表面的内外定中以及孔间距、定中和尺寸这类操作获的基准。能够百分之百获得可靠的加工结果。



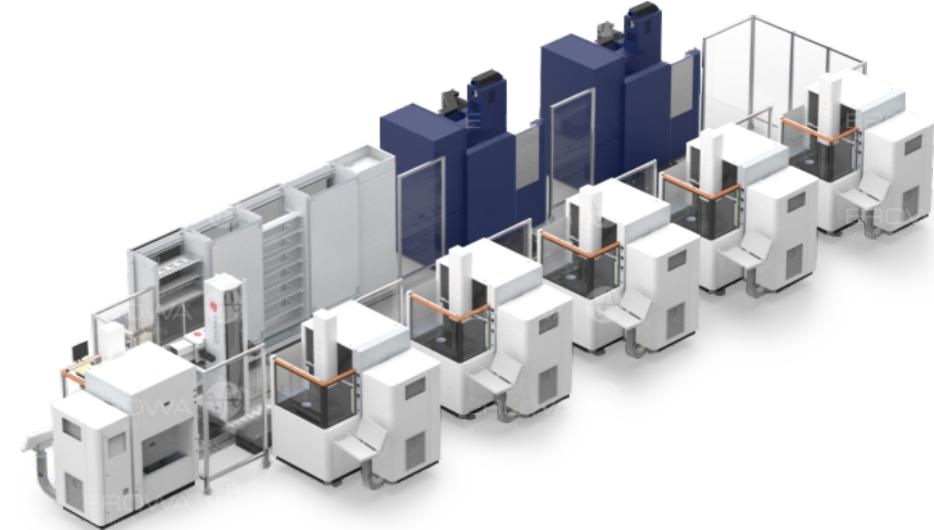
自动化精密加工系统 | AUTOMATED FINE MACHINING SYSTEMS

为实现公司自动化精加工,公司投入EMAN智能管理系统及iMould自动化加工系统。EMAN对模具从建立项目、设计、采购、工艺、计划、加工、品质、试模的全程管理,建立模具标准化。iMould系统实现CNC钢件加工自动线、CNC电极加工自动线、EDM加工自动线等,从而实现大部份模具的全自动化加工。

AgieCharmilles is the reference standard for precision machining in Europe, and market leader in the field of processing equipment. The CUT1000 has automatic wire change (AWC) technology and allows Schawnog to pre-install various electrode wires of different diameters (such as 0.011mm) in it, and will select the electrode wires according to the required contour accuracy for cutting. A IVU system makes it possible to any reference on the workpiece for hole centering, corner detection, internal or external centering between two faces, distance between holes, centering, dimensions, it can obtain reliable processing results.



To realize automatic fine machining, ZHAOWEI adopts EMAN intelligent management system and iMould automated machining system. The EMAN system manages the entire process, including project set-up, mold design, material purchasing, process confirmation, production plan, machining, quality check, mold trial, and formed a standard process. The iMould system realizes automated processing lines for CNC steel parts, CNC electrodes and EDMs, so as to realize fully automated processing of most molds.



品质控制

Quality Control

高精度检测设备 | HIGH PRECISION TESTING EQUIPMENT

兆威拥有德国蔡司CT、德国蔡司三坐标、WERTH三次元、日本大阪齿轮检测中心、日本大阪齿轮啮合仪、OGP平面测试仪、瑞士热重分析仪(TGA)等多台高精度检测设备,为品质提供了保障。



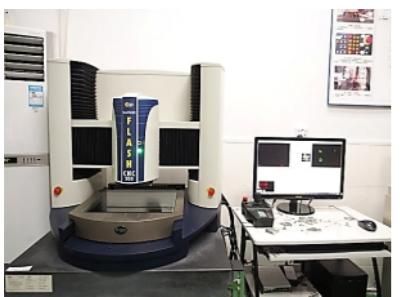
德国蔡司三坐标
Zeiss CMM (German)



日本大阪齿轮检测中心
Osaka Gear Measuring Center (Japan)



日本大阪齿轮啮合仪
Osaka Gear Meshing Device (Japan)



美国OPG影像仪
OPG Projector (United States)



海克斯康影像仪
HEAXGON Projector



德国Mahr圆柱度测量仪
Cylindricity Measuring Machine (German)



德国WEITH三次元
WEITH CMM (German)



瑞士梅特勒-托利多TGA热重分析仪
METTLER TOLEDO TGA (Switzerland)



RoSH分析仪
RoSH Analyzer

德国蔡司CT | GERMAN ZEISS COORDINATE MEASURING MACHINE

蔡司METROTOM是基于CT传感器的坐标测量机,其融合X射线计算机断层扫描(CT)及三坐标测量机(CMM)的功能优势。工业CT定位于无损探伤,主要应用于内部缺陷、气孔、裂纹、杂质及三维装配结构等,更重要用于无损几何尺寸测量、色差数模比对、无损内部缺陷及装配结构分析,其权威的可追溯性计量性能、核心的坐标测量机高精度部件、CAA误差补偿、自校准装置及智能测量平台等技术优势。



ZEISS METROTOM is a coordinate measuring machine based on CT sensors, and combines functional advantages of X-ray, computed tomography (CT), and coordinate measuring machine (CMM). Industrial CT is positioned for non-destructive inspection, mainly used for internal defects, pores, cracks, impurities and 3D assembly structures, etc., and more importantly for non-destructive geometric measurement, color difference digital-analog comparison, non-destructive internal defects and assembly structure analysis. It has technical advantages, including its authoritative traceability measurement performance, core high-precision components of coordinate measuring machine, CAA error compensation, self-calibration device, intelligent measurement platform, etc.

KLINGELNBERG 齿轮检测中心 | KLINGELNBERG GEAR MEASURING CENTER



KLINGELNBERG(克林贝格)全自动精密测量中心,用于检查圆柱齿轮齿形、切割齿和剃齿刀、蜗轮蜗杆、滚刀、锥齿轮,以及轴对称工件的尺寸、形状和位置偏差,以及曲线和凸轮廓轴测量和转子测量。采用四轴联动测量技术,适用于各个形状的测量。全自动技术一次装夹中完成以下所有测量:齿轮测量、坐标点测量、形状和位置测量、粗糙度测量、轮廓测量和光学测量。

KLINGELNBERG is a fully automatic precision measuring center, used to check cylindrical gear, shaved gear and shaving cutter, worm and gear, hob, and bevel gear. Also it can check general dimension, shape, and positional deviation of axially symmetrical workpiece, cam and camshaft measuring and rotor measuring. It adopts four-axis linkage measuring technology, which is suitable for various shape measuring. With fully automatic technology, KLINGELNBERG can complete various measuring tasks, including gear, coordinate point, shape and position, roughness, profile and optical measuring in a single clamping.

品质控制

Quality Control

丹麦B&K PULSE噪音与振动分析系统 | DENMARK B&K PULSE NOISE AND VIBRATION ANALYSIS SYSTEM

PULSE系统是由软件跟硬件两部分组成的噪音及振动的多功能分析仪。可实时、FFT(频谱分析,或者说傅里叶分析)、CPB(三分之一倍频程分析)、Overall(噪音总值)等分析。同时含有数据采集、自动校准、测量、实时多分析、后处理及报告生成。



PULSE Labshop

分析功能:噪音的声压级总值、固有频率、振动加速度等;对噪音进行频谱分析、FFT随时间变化的云图显示、噪音总值对时间变化、CPB合成、信号相关等。

Analysis functions: total sound pressure level of noise, natural frequency, vibration acceleration, etc.; Spectrum analysis of noise, cloud image display with FFT over time, total noise versus time, CPB synthesis, signal correlation, etc.



传声器(采集噪音信号)
Microphone (Collecting noise signals)

加速度计(采集振动信号)
Accelerometer (Collecting vibration signals)

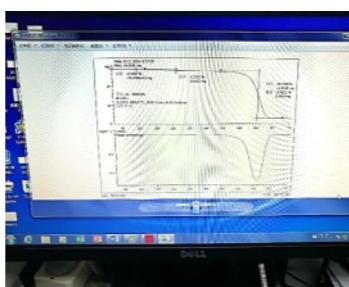
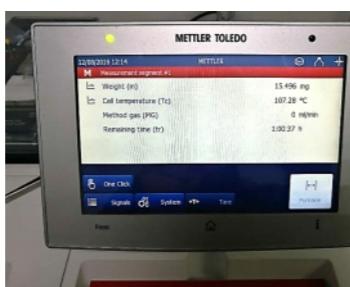
采集三维振动信号
Collecting three-dimensional vibration signals

传声器校准器
Microphone calibrator

瑞士梅特勒-托利多TGA热重分析仪 | SWITZERLAND METTLER TOLEDO TGA THERMO GRAVIMETRIC ANALYZER

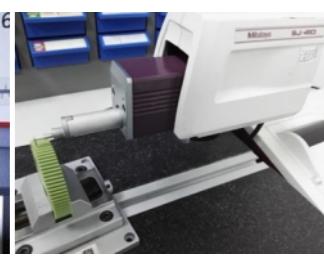
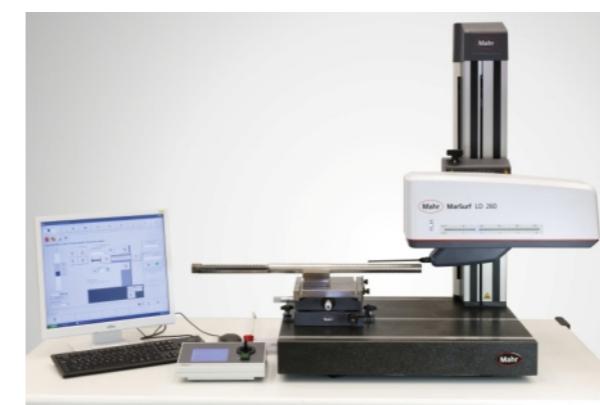
热重分析仪是一种利用热重法检测物质温度与质量变化关系的仪器。在加热过程(塑料800°C、金属粉末1200°C)中有升华、汽化、分解出气体或失去结晶水时,被测的物件质量就会发生变化,这时热重曲线就有所下降。通过分析热重曲线,就可以知道被测物质在多少度时产生变化,并且根据失重量可以计算失去了多少物质,从而得到材料物质的成份。主要用于聚合物(热塑性塑料、热固性树脂、弹性体、粘合剂和复合材料)及金属粉末冶金的材料的测试。

Thermo Gravimetric Analyzer is an equipment uses thermal analysis to measure changes in temperature and mass of substance. In the heating process, there is sublimation, vaporization, decomposition of gas or loss of crystalline water, the mass of the object will change, and the thermogravimetric curve will decrease. By analyzing the thermogravimetric curve, we can know at what temperature when the measured substance changes, and based on the lost weight, and it is possible to calculate how much material is lost and know material composition. The analyzer is mainly used for testing polymers (thermoplastic, thermosetting resin, elastomer, adhesive and composite) and metal powder metallurgy materials.



表面粗糙度测试 | SURFACE ROUGHNESS MEASURING MACHINE

德国MAHR表面粗糙度测量系统来检验齿轮外形表面粗糙度,测试结果JIS (JISB0601-2001,JIS-B0601-1994,JIS B0601-1982),VDA,ISO-199以及ANSI。除计算结果外还可以显示组合计算结果和评估轮廓,负载曲线以及振幅分配曲线。



41	(4)	CIRCULAR PITCH DEVIATION Rundlaufabweichung	R_p	0.054
42	(4)	CONCENTRICITY DEVIATION Rautie in radialer Richtung SURFACE ROUGHNESS IN RADIAL DIRECTION Oberfläche + $df_{a,i}$ / Untergrenze - $df_{a,i}$ UPPER LIMIT + $df_{a,i}$ / LOWER LIMIT - $df_{a,i}$	R_a	0.003
43	(4)	OBEGRENZE + $df_{a,i}$ / UNTERGRENZE - $df_{a,i}$ UPPER LIMIT + $df_{a,i}$ / LOWER LIMIT - $df_{a,i}$	Qual 1505910566 GRADE OF QUALITY	ISO 1328 x9
44	X			

德国Mahr圆柱度测量仪 | GERMAN MAHR CYLINDRICITY MEASURING MACHINE

MMQ 150 是一款可自动测量形状和位置公差的测量仪器,可在生产或测量室使用,测量精确、针对形位公差进行了优化,可以减少不合格零件的数量。

Mahr MMQ150 is an automatic shape and position tolerance measuring machine, can be used in production or measuring room. With its precise measuring ability and optimized geometric tolerance, MMQ150 can reduce defective parts.



可测量参数:

圆度、直线度、平面度(圆形扫描评定)、平行度、锥度、同心度、同轴度、跳动,圆柱度、斜度、垂直度(以圆形扫描面为基准)、角度、扇形区间上的圆度、平面度、径向跳动-区间上的直线度评定。



径向跳动误差:0.0006

径向跳动误差:0.0003

轴向跳动误差:0.0006

圆度误差: 0.0003



Roundness deviation ($\mu m + \mu m/mm$ measuring height): 0.0003
Roundness deviation ($\mu m + \mu m/mm$ measuring height): 0.0006
Axial runout deviation ($\mu m + \mu m/mm$ measuring radius): 0.0001
Axial runout deviation ($\mu m + \mu m/mm$ measuring radius): 0.0006

品质控制

Quality Control

瑞士梅特勒-库仑法卡尔费休水分仪 | SWITZERLAND METTLER TOLEDO KARL FISCHER TITRATOR

采用I2、SO2、吡啶、无水CH3OH(含水量在0.05%以下)配制试剂,测定出试剂的水当量,在试剂与样品中的水进行反应后,通过计算试剂消耗量而计算出样品中水含量,国际标准化组织把这个方法定为测微量水分国际标准,我们国家也把这个方法定为国家标准测微量水分。

卡尔费休水分测定法,已被很多国际标准,如ISO, ASTM, DIN, BS, 和JIS等公认为准确性最高的方法。

1. 应用范围广泛,可适用多种有机和无机物的水分测定。

2. 可测量的样品含水量:1PPM-5%

3. 可选择使用有隔膜或无隔膜的电解电极。



Prepare a reagent with I₂, SO₂, anhydrous CH₃OH (water content below 0.05%), and measure its water equivalent. After reagent reacts with water contained in the sample, measure consumption of reagent then calculate water content in the sample accordingly. The International Organization for Standardization sets this method as the international standard for measuring trace moisture. The Karl Fischer moisture determination method has been recognized as the most accurate method by many international standards, such as ISO, ASTM, DIN, BS, and JIS.

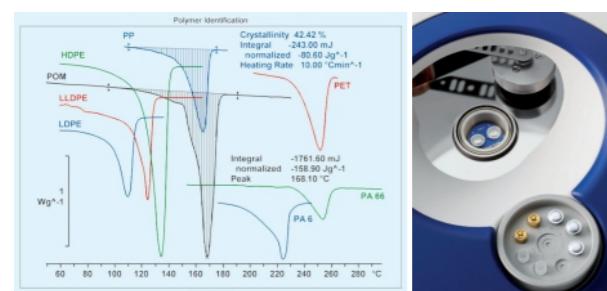
1. Wide range of applications, suitable for moisture determination of various organic and inorganic substances.
2. Measurable sample water content: 1PPM-5%
3. Can choose electrolytic electrodes with or without diaphragm.



瑞士梅特勒-差示扫描量热仪 | SWITZERLAND METTLER TOLEDO DIFFERENTIAL SCANNING CALORIMETER

差示扫描量热法DSC一种热分析法。在程序控制温度下,测量材料和参比物的功率差与温度的关系。差示扫描量热仪记录到的曲线称DSC曲线,它以样品吸热或放热的速率,即热流率dH/dt(单位毫焦/秒)为纵坐标,以温度T或时间t为横坐标,可以测量多种热力学和动力学参数,例如比热容、反应热、转变热、相图、反应速率、结晶速率、高聚物结晶度、样品纯度等。该法使用温度范围宽(-175~725°C)、分辨率高、试样用量少。适用于无机物、有机化合物及药物分析。提供物理、化学变化过程中有关的吸热、放热、热熔变化等定量或者定性的信息。

Differential Scanning Calorimetry (DSC) is a thermal analysis method, it is to measure the change of the difference in the heat flow rate to the sample and to a reference sample while they are subjected to a controlled temperature program. The test result of a DSC experiment is called DSC curve, means heat flux versus temperature or versus time. DSC instrument can be used to measure various thermodynamic and kinetic parameters, such as specific heat capacity, reaction heat, transition heat, phase diagram, reaction rate, crystallization rate, polymer crystallinity, sample purity, etc. The method can be used with wide temperature range (-175~725°C), with high resolution and less sample consumption. It is suitable for analysis of inorganic substances, organic compounds and drugs, can provide quantitative or qualitative information about endothermic, exothermic, and hot melt changes during physical and chemical changes.



不同材料的熔融峰,峰的大小和在温度轴上的位置明显不同。PP和POM的例子表明,鉴定既取决于熔点,又取决于熔化的焓(压力与体积的乘积,单位是焦耳)



德国徕卡(Leica)金相显微镜 | GERMAN LEICA MICROSCOPE

徕卡Leica DM2700M金相显微镜由高质量的徕卡光学元件以及先进的通用白光 LED 照明组成。徕卡 DM2700 M 能够装配先进的配件,例如放大倍数从5x到100x、具有22mm视场、提供平像场和大范围工作距离的 N PLAN 消色差物镜系列。可以对金属材料的金相—金属材料的排布,塑胶材料的洁净度—塑胶材料的颗粒大小及排布进行分析。

Leica DM2700 M microscope combines high-quality Leica optical elements with advanced LED illumination. It is an ideal inspection tool for all kinds of routine inspection tasks in metallography, earth science, forensic investigation, and materials quality control and research. The Leica DM2700 M is equipped, e.g. with an N PLAN achromatic objective series with magnifications from 5x to 100x, a field of view of 22 mm, a flattened image field, and large working distances. It can be used to analyze metallography of metal materials—arrangement of metal materials, cleanliness of plastic materials—particle size and arrangement of plastic materials.



轮廓度测试仪 | PROFILE MEASURING INSTRUMENT

齿轮及其外形测量直接驱动C轴的高精度三维矢量扫描传感器保证了精度及效率。全自动检测项: - 直齿齿轮及斜齿圆柱齿轮- 弧齿锥齿轮及准双曲面锥齿轮- 冠轮- 圆柱蜗杆- 锥形圆柱齿轮- 扇形齿轮- 齿轮滚刀- 剃齿刀- 插齿刀- 斜面体齿轮- 同步齿轮可以测量诸如直径、距离、跳动、同心度、平面度等参数。另外其他像圆度、圆柱度、同心度、角度等。

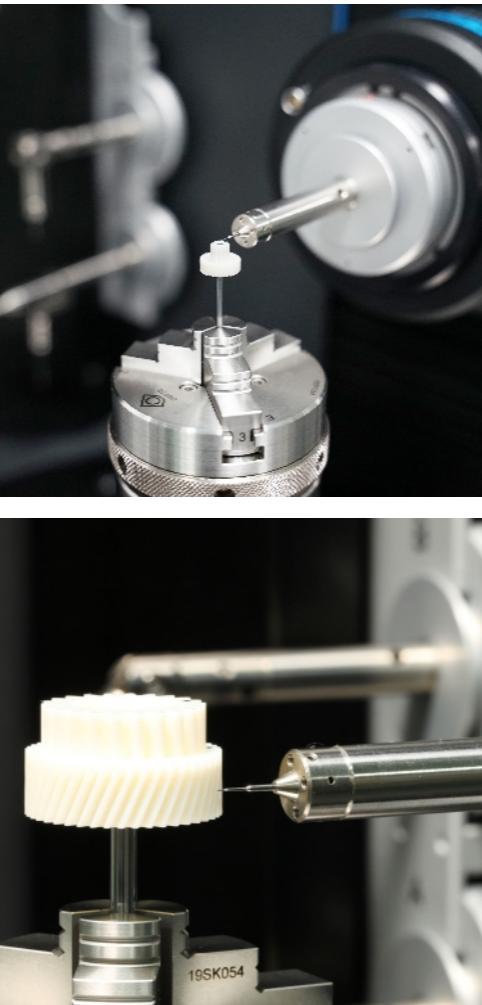
A high precision profile measuring instrument drives a 3D vector scanning sensor on C axis to measure gear and its shape, and ensures product precision and efficiency. This instrument can automatically measure spur gear, helical cylindrical gear, spiral bevel gear and hypoid bevel gear, crown gear, cylindrical worm, conical cylindrical gear, sector gear, gear hob, shaving cutter, gear shaper, beveloid gear and synchronous gear. It can measure parameters including diameter, distance, runout, concentricity and flatness, and also roundness, cylindricity, concentricity and angle.



品质控制

Quality Control

实验室设备 | LABORATORY EQUIPMENT



产品的可靠性及稳定性是评价产品技术水平的综合指标。为了能够分析、评价、验证和提高产品的可靠性，了解总成及零部件在失效情况下而获得可靠数据。兆威建立了驱动模块实验室——拥有多功能震动仪、恒温恒湿箱、冷热冲击试验箱、淋雨实验室、盐雾试验机、噪音室等多功能实验设备。

Product reliability and stability is a comprehensive indicator to evaluate its technical level. In order to analyze, evaluate, verify and improve product reliability, and get reliable data in failure conditions for assemblies and parts, ZHAOWEI established a drive module laboratory, with multifunctional laboratory equipment including 3D Vibration Testing Device, Constant Temperature and Humidity Chamber, Thermal Shock Chamber, Rain Test Chamber, Salt Spray Test Chamber and Noise Test Room.



生产实力

Production Capability

深圳市兆威机电股份有限公司引进自动化生产线，严格实施IATF16949 (CN11/30730.01)、ISO14001 (U006616E0153R3M)、ISO9001:2015 (CN11/30731)、ISO13485 (CN18/4201) 体系标准，采用短线扁平化、注塑与组装自动化的生产模式，缩短生产周期，交货快，实现共赢。

ZHAOWEI has designed and installed automatic production lines and strictly implemented IATF16949 (CN11/30730.01), ISO14001 (U006616E0153R3M), ISO9001:2015 (CN11/30731), ISO13485 (CN18/4201) system standards. By adopting production mode of short-term and flat management, automatic injection molding and assembling, ZHAOWEI shortened production cycle and realized fast delivery, can achieve win-win situation.

MES系统

MES System

为了更好对生产现状及品质进行监管,引进了MES生产系统,MES系统可实现注塑工艺的远程监控、注塑工艺、品质监测的管理功能。

In order to better manage production status and monitor product quality, ZHAOWEI introduced MES system. MES system realized remote monitoring of injection molding process and technology, and product quality as well.



兆威粉末冶金生产线,拥有16台日本月村(YUEH TSUEN)粉末成形机,2条马勒(Mahler)氨氢烧结炉。通过多轴机械臂实现自动分拣、MES生产信息化管理系统逐步的导入打造出一个可靠、全面的制造协同管理生产中心。

ZHAOWEI Powder Metallurgy Production Lines have 16 Japan YUEH TSUEN powder compacting presses and 2 Mahler sintering furnaces. With multi-axis manipulators, we realized automatic product sorting, and with MES system, we can gradually create a reliable and comprehensive collaborative production management center.



注塑零件生产线

Injection Molding Parts Production Lines

兆威零件生产中心拥有住友、FANUC、Sodick等日本进口注塑成型设备200余台。通过模腔压力技术配合机械手实现自动分拣的同时，导入MES生产信息化管理系统，打造出一个可靠、全面的制造协同管理生产中心。

ZHAOWEI Parts Production Center has more than 200 injection molding machines imported from Japan, including Sumitomo, FANUC and Sodick. With cavity pressure technology and manipulators, we realized automatic product sorting, and with MES system, we can gradually create a reliable and comprehensive collaborative production management center.



兆威所有成型注塑机都配备伺服机械手，提高生产效率的同时，也能提高产品品质的一致性。

- 采用伺服机械手可以实现产品的自动分拣；
- 多功能、多方位工序的自动化。

All injection molding machines of ZHAOWEI are equipped with servo manipulators, which improves production efficiency and quality consistency.

- Servo manipulators can achieve automatic product sorting.
- Had achieved multifunctional and multidirectional process automation.



组装生产线

Assembly Lines

兆威通过对装配生产线的研究,将生产、工业工程技术在生产线中加以运用,从场地节约、流水线设计、布局、管理、日常保养维护到员工单位劳动时间的强度降低等方面对现有生产进行了改善。

Through study, ZHAOWEI applied industrial engineering technology to assembly lines, and improved with space saving, assembly line design and layout, daily management and maintenance, and reduced labor intensity.



兆威所有成型注射机设备都配备伺服机械手,提高生产效率及生产及品质的一致性。自动生产线图像识别、机械手和EPSON系统通过图像识别、伺服机器人协作完成整个齿轮箱的组装。

All injection molding machines of ZHAOWEI are equipped with servo manipulators, which improves production efficiency and quality consistency. Automatic assembly lines can complete gearbox assembly process automatically, with cooperation of computer automatic image recognition, servo manipulators and EPSON system.





3.4
mm

产品体系 PRODUCT SERIES

兆威导入传感器与控制器等智能硬件设计、制造。根据客户的需求，我们将微型传动及电子驱动单元整合，可让复杂的机电驱动系统智能化运转。

ZHAOWEI introduced design and production of intelligent hardware like sensors and controllers. According to customer needs, ZHAOWEI integrates micro-drive parts and electronic units and makes complex electromechanical system to operate intelligently.



齿轮零部件

Gear Parts

MIM齿轮 | METAL INJECTION MOLDING GEARS



金属镶嵌件 | METAL INSERTS



塑料齿轮 | PLASTIC GEARS



机加工齿轮 | MACHINED GEARS



粉末冶金齿轮 | POWDER METALLURGY GEARS



精密部件 | PRECISION PARTS



齿轮箱

Gearbox

- 定制化微型传动系统
- 微型丝杆传动系统
- 微型蜗杆传动机构
- 全系列微型行星减速器(直径3.4-38mm; 输出转速5-2000rpm; 减速比5-1500; 输出扭矩1gf.cm-50kg.cm)

- Customized micro transmission system
- Micro screw gear transmission system
- Micro worm gear transmission system
- Wide range of micro planetary gearboxes (diameter: 3.4–38mm; output speed: 5–2000rpm; gear ratio: 5–1500; output torque: 1gf.cm–50kg.cm)



兆威电子驱动模块以稳定、可靠和模块化的设计，适用于大多数行业的应用领域，满足高性能标准和质量要求，为各驱动组件提供按需定制。

马达驱动控制:有刷直流电机、步进电机、BLDC/PMSM驱动

智能硬件设计:单片机、模拟电子、传感器、FPGA、DSP

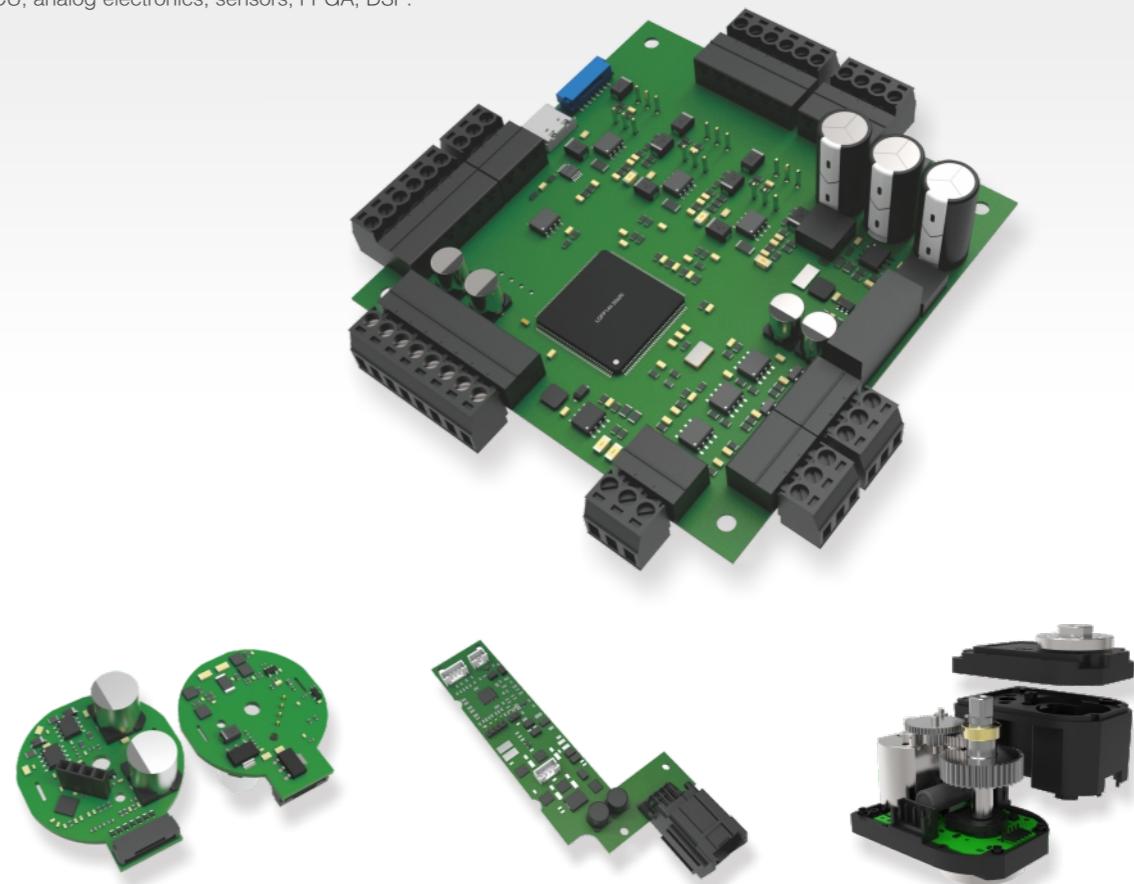
ZHAOWEI electronic drive modules are customizable and suitable for many industries and application, with stable and reliable quality, can meet high performance and quality requirements.

Motor drive control:

Brushed DC motor, stepper motor, BLDC / PMSM drive.

Intelligent hardware design:

MCU, analog electronics, sensors, FPGA, DSP.



智能驱动系统

INTELLIGENT DRIVE SYSTEMS



智能汽车驱动
Automotive Drive



通讯智能驱动
Communication Equipment Drive



智能医疗电子驱动
Intelligent Medical Electronics Drive



智能家居驱动
Smart Home Drive



智能机器人驱动
Intelligent Robot Drive



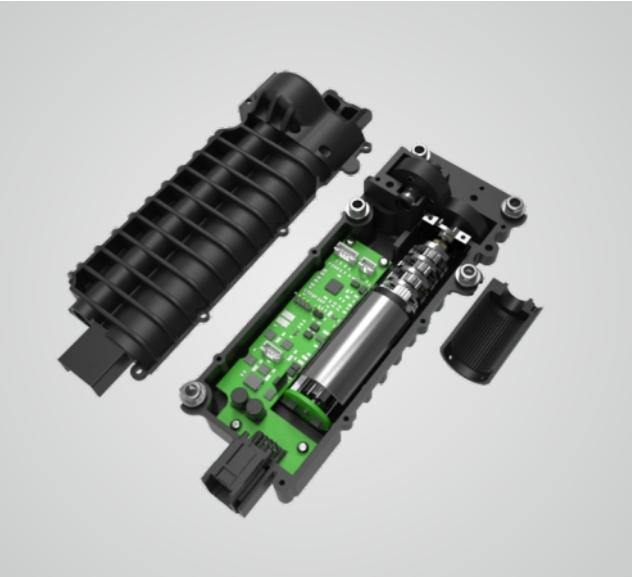
电子产品驱动
Electronic Product Drive

智能汽车驱动

Automotive Drive



汽车尾翼驱动系统 | DRIVE SYSTEMS FOR CAR SPOILER



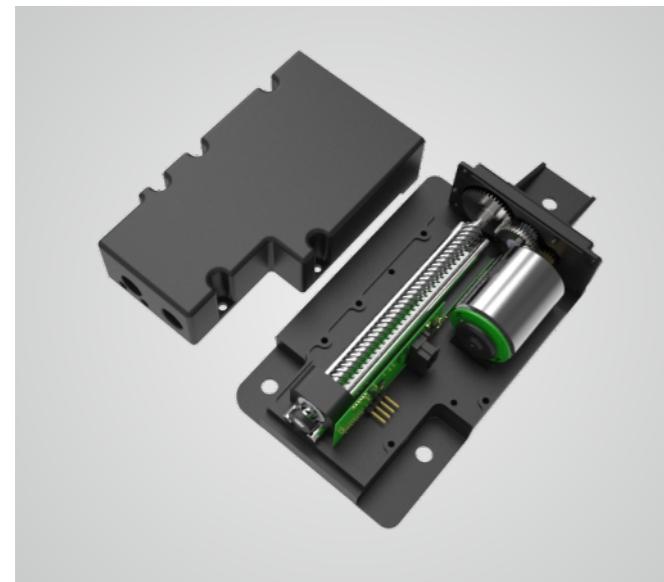
产品说明:

通过电机线性驱动汽车尾翼的升降调节器，能实现尾翼开合角度调节，增加车辆高速行驶稳定性。不工作时，尾翼可以放下并置于后备箱盖上。

Product Description:

The car spoiler lift regulator is driven by the linear motor to adjust the angle of the car spoiler, which increases stability of the car at high driving speed. When not in use, the car spoiler can be retracted and placed on the trunk lid.

车标升降翻转驱动系统 | DRIVE SYSTEMS FOR CAR FLIP LOGO



产品说明:

通过微型双向电机、旋转轴和齿轮与丝杆啮合，齿轮转动时带动丝杆上下移动，与安装凹槽内的滑块移动相互配合，实现上下升降翻转驱动。

Product Description:

The micro bidirectional motor, rotating shaft, and gear meshes with the lead screw. When the gear rotates, the lead screw is driven to move up and down, and it cooperates with the movement of the sliding block in the mounting groove to realize the up-and-down flip drive.

汽车尾门驱动系统 | DRIVE SYSTEMS FOR AUTOMOTIVE TAILGATE



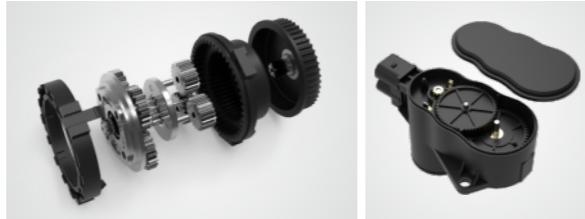
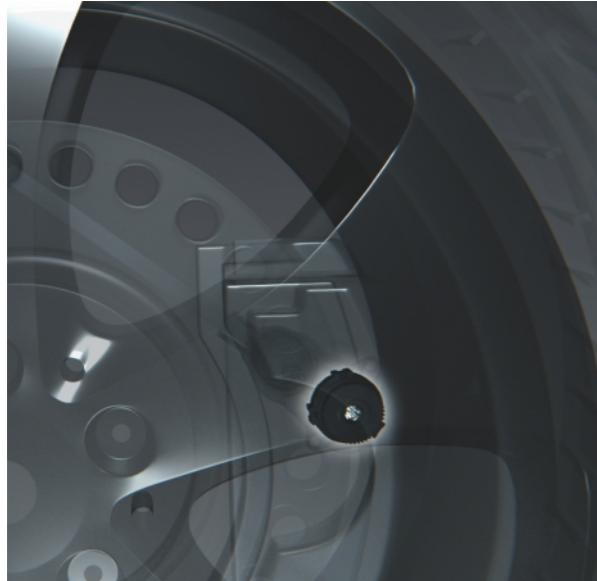
产品说明:

通过主轴驱动器的推杆电机和尾门齿轮箱驱动着一个螺纹主轴进行线性驱动。该螺纹主轴在固定于外管内侧的螺纹螺母上带动撑杆伸缩，从而开关车尾门，解决汽车尾门电动推杆力矩小、噪音大的技术难题。

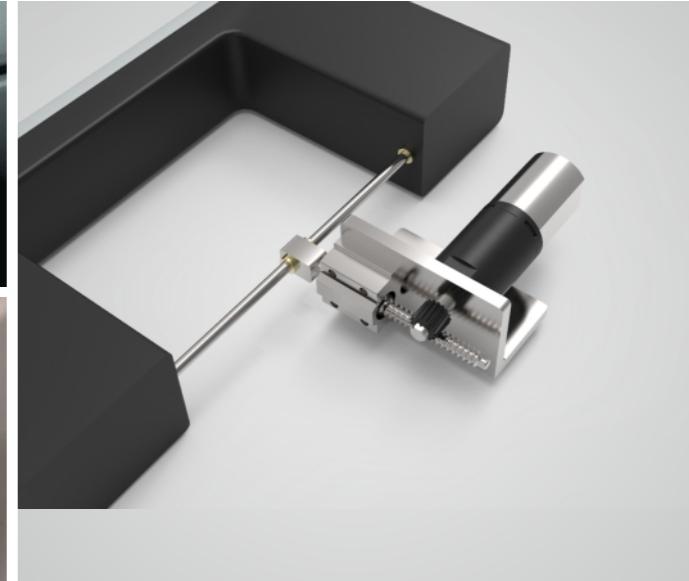
Product Description:

The motor and gearbox for automotive tailgate drives the threaded spindle for linear motion. The threaded spindle moves on the screw nut which is fixed on the inside of the outer tube to drive the support rod to stretch, thus realizing car tailgate's opening or closing. The design helps to solve the technical problems of low torque and loud noise of the tailgate support rod motor.

汽车EPB驱动系统 | DRIVE SYSTEMS FOR AUTOMOTIVE EPB



汽车门把手伸缩系统 | DRIVE SYSTEMS FOR CAR FLUSH DOOR HANDLE



产品说明：

EPB(电子驻车制动系统)通过电子线路控制停车制动，功能同机械拉杆手刹。兆威EPB驱动系统对整个电子驻车系统的齿轮及齿形做修正实现平稳运转，相对于传统机械手刹，能实现更为丰富的控制功能。

Product Description:

EPB (Electronic Parking Brake) controls the parking brake through an electronic circuit, has the same function as mechanical hand-brake. ZHAOWEI EPB drive system modifies the gears and tooth profile of the entire electronic parking system to achieve smooth operation. Compared with traditional mechanical hand brakes, it can achieve more control functions.

产品说明：

由驱动电机、行星齿轮箱、丝杆、螺母组装而成的往复推杆直线电机，具备减速、调节扭矩功能，电机+丝杆+螺母通过控制系统将指令传达至机械结构，使电动机的圆周运动，转换为推杆的直线运动，从而达到伸缩隐藏门把手的效果。

Product Description:

The linear motor assembled by motor, planetary gearbox, lead screw and nut, has the function of reducing speed and increasing torque. The control system transmits instructions to mechanical structure so that motor circular motion is converted into linear motion of the linear actuator, to achieve retracting and hiding the door handle.

充电桩锁止系统 | LOCKING SYSTEM FOR CHARGING PILE



产品说明:

通过齿轮箱配合丝杆，正向运动时，使充电插头稳定保持在插座或固定座内。充电完成后，反向运动使插头与插座或固定座脱离，实现充电安全。

Product Description:

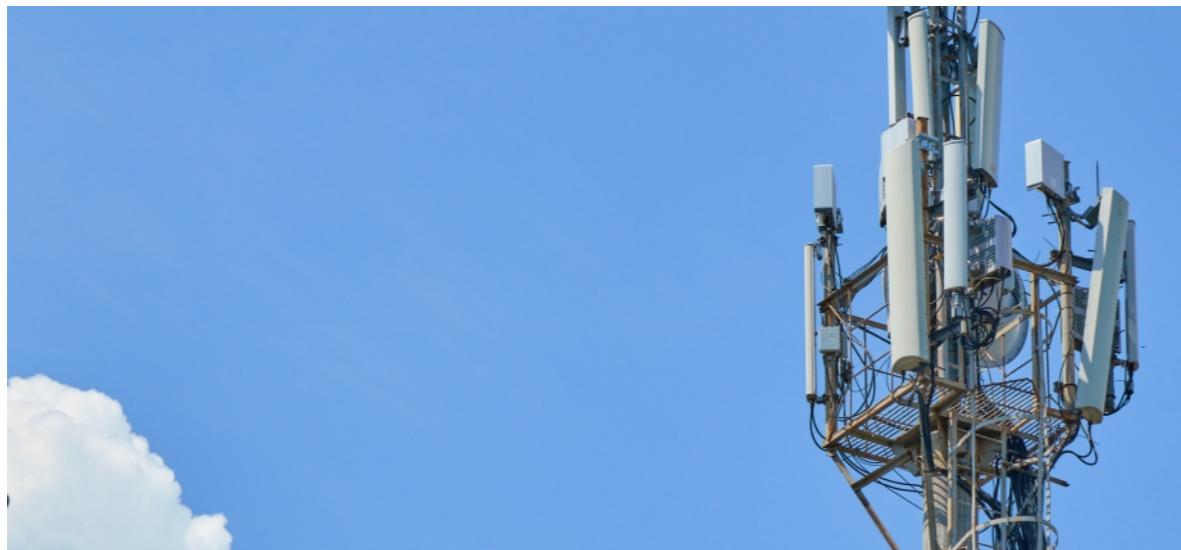
The charging pile locking system adopts reduction gearbox and lead screw, and moves forward to keep the plug buckled in the socket when charging. When charging is completed, the charging plug will be disengaged from the socket (charging pile moves in reverse direction). This design achieves anti-drop function and ensures safe charging.

通讯智能驱动

Communication Equipment Drive



基站天线电动驱动系统 | DRIVE SYSTEMS FOR BASE STATION ANTENNA



产品说明:

为解决驱动系统在各地极端气候下难以长期正常工作、使用寿命短的问题。我们优化了驱动丝杆和螺母之间的间隙，提高产品在高低温差下的运转，性能稳定，寿命长。

Product Description:

To solve the problem that gearbox is difficult to work properly for a long time and with short life time under various extreme climates, ZHAOWEI optimizes the backlash between drive screw and nut to improve transmission efficiency under large temperature and humidity differences, and achieves stable performance and long life time.

视频会议驱动系统 | DRIVE SYSTEMS FOR VIDEO CONFERENCE EQUIPMENT



产品说明:

视频会议系统驱动系统的主要问题是回程差。通过对整个驱动系统的结构及设计进行优化，将驱动系统的回程差控制在小弧度以内，实现产品的低噪音。

Product Description:

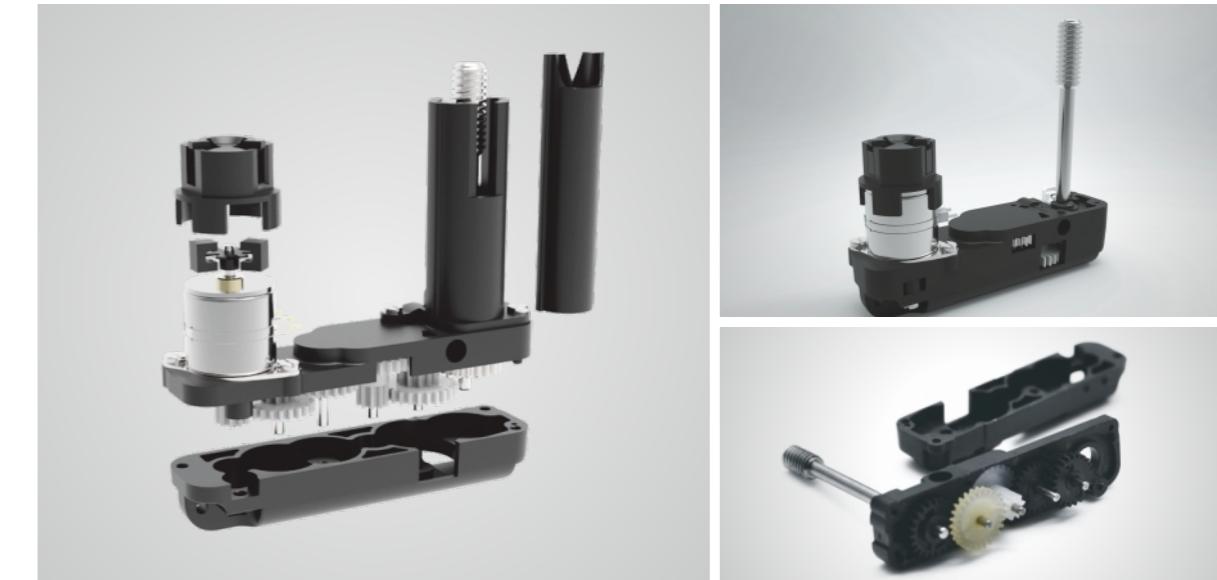
Main problem of drive system for video conference equipment is the backlash. ZHAOWEI optimizes structural design of the entire drive system and controlled backlash within a small arc, and achieves low noise result.

智能医疗电子驱动

Intelligent Medical Electronics Drive



微型胰岛素泵驱动系统 | MICRO DRIVE SYSTEMS FOR INSULIN PUMP



产品说明:

通过步进电机的驱动来控制丝杆的顶出，实现智能控制胰岛素的注射量。该设计使得设计出来的胰岛素泵达到火柴盒般的大小，满足小体积大力矩的需求。

Product Description:

The ejection amount of the lead screw is controlled by stepper motor rotating angle, to realize intelligent control for insulin injection dose. The design enables the insulin pump to be as small as a matchbox, and meets small volume and high torque requirements.

智能输液系统驱动系统 | DRIVE SYSTEMS FOR SMART INFUSION PUMP



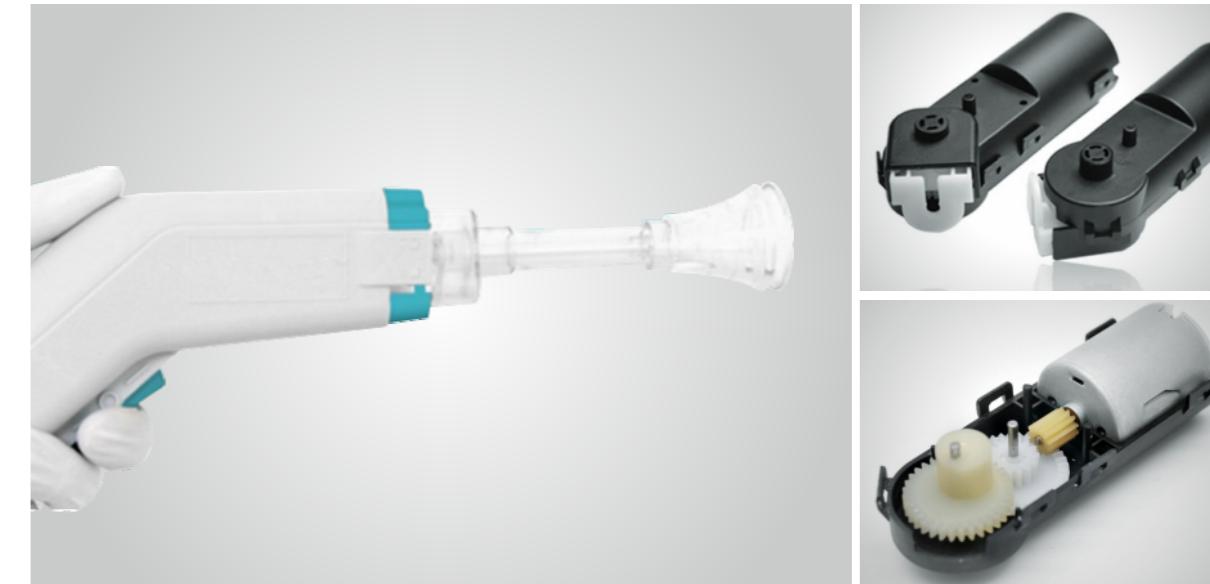
产品说明:

为提高输液系统自动化以及降低输液过程中的隐患,通过斜齿蜗杆和输液器的压力作用,实现输液系统伸缩头的智能开关,达到位置可控、噪音低,驱动稳定的效果。

Product Description:

To realize automation and reduce hidden dangers in the infusion process, we use helical worm structure and infusion pump pressure effect to prompt the telescopic head of the infusion pump to open and close intelligently, and achieves controllable position, low noise and stable efficiency.

骨科手术创面清洗泵系统 | ORTHOPEDIC SURGERY LAVAGE SYSTEM



产品说明:

产品应用于骨科手术冲洗流量的调节。冲洗泵压力可调,具有合适的中低档压力设置,根据不同的创面及手术要求进行合理的临床选择,冲洗流量可大可小。

Product Description:

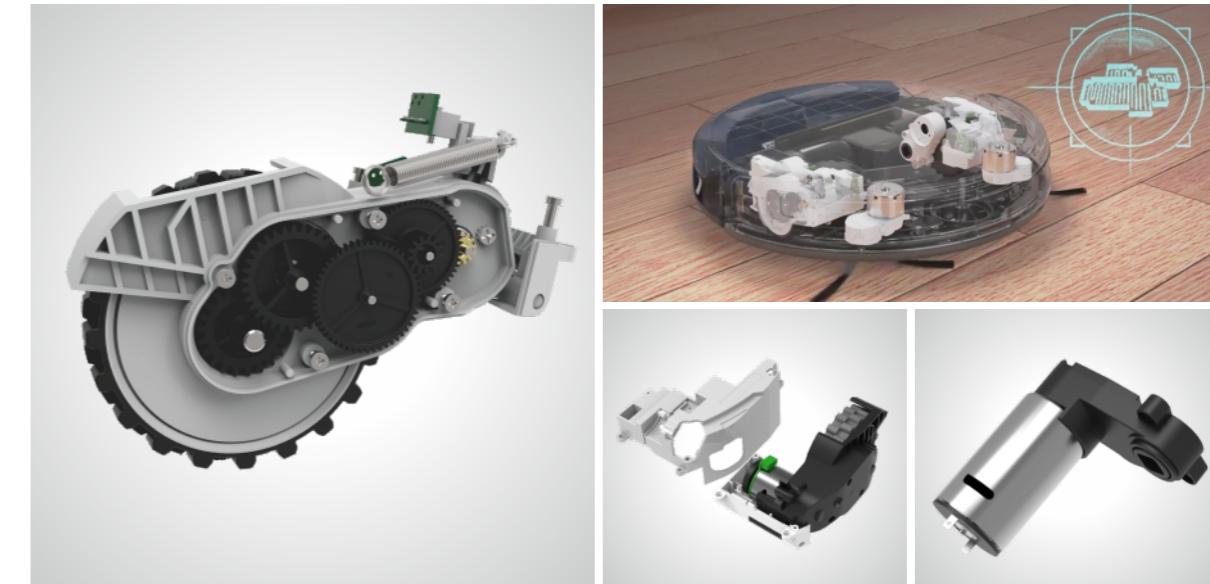
The product is used to adjust lavage flow of orthopedic surgery. The lavage pump pressure is adjustable and can set to be medium and low pressure, and choose suitable lavage flow according to different wounds and surgical requirements.

智能家居驱动

Smart Home Drive



扫地机驱动系统 | DRIVE SYSTEMS FOR ROBOT VACUUM



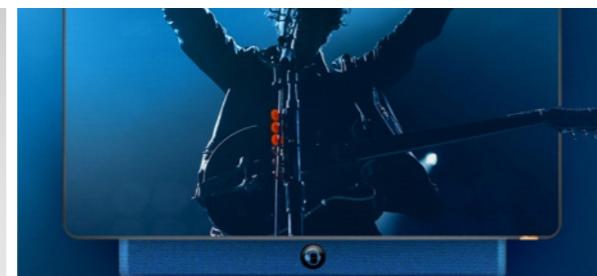
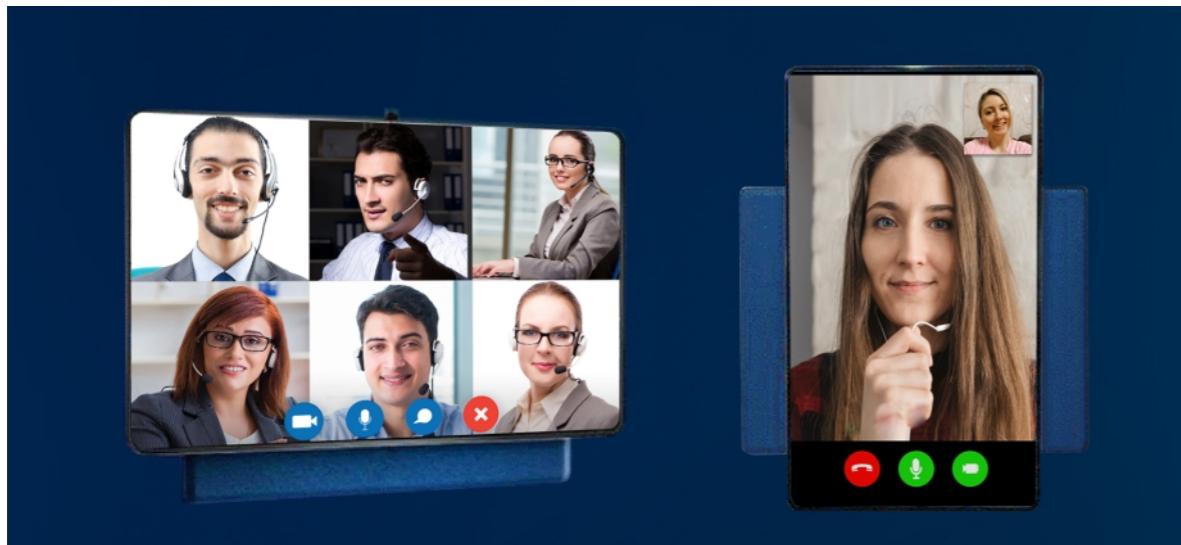
产品说明:

通过对扫地机驱动系统齿轮和齿形进行优化设计,采用平行齿轮实现扫地机驱动系统噪音小,扭矩大。为避免头发缠绕进入驱动装置而导致马达损坏,我们对主刷驱动系统进行了结构优化设计,有效地提高了产品的使用寿命。

Product Description:

ZHAOWEI optimizes the gears and tooth profile of robot vacuum drive system by adopting parallel gears, and makes the system with low noise and high torque. In order to avoid hair go into the driving device, stuck and damage the motor, we optimize main brush drive system and improve product life time.

智慧屏翻转驱动系统 | DRIVE SYSTEMS FOR SMART ROTATION SCREEN



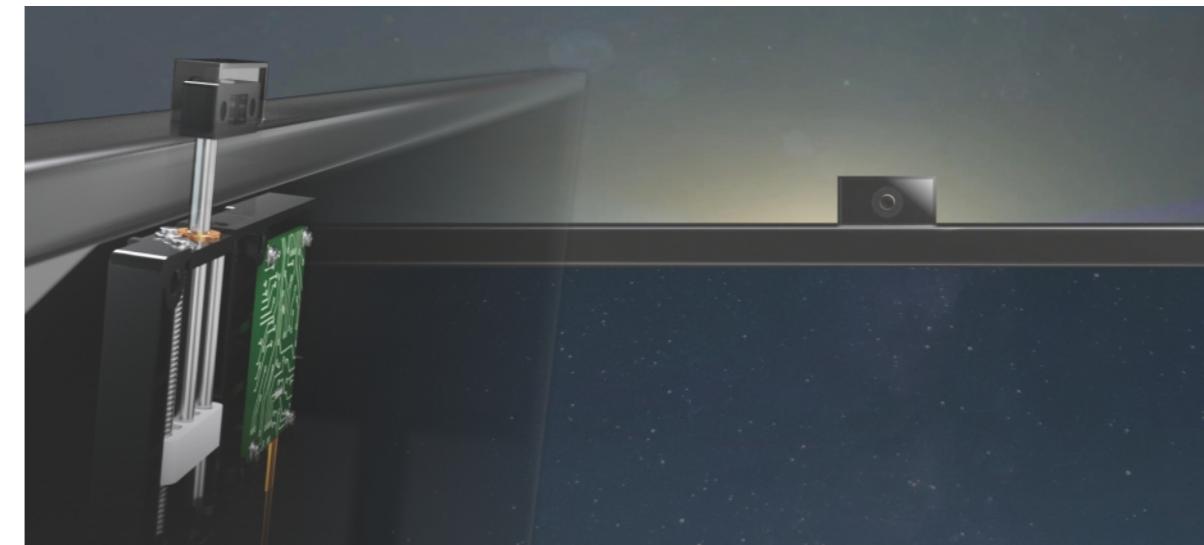
产品说明:

电视机智慧屏翻转驱动系统通过行星齿轮箱和齿轮圆弧圆周运动，实现电视机屏幕的智能翻转，提高了产品运动的稳定性，降低使用过程中的噪音。

Product Description:

With planetary gearbox and gear circular motion, the drive system realizes TV screen intelligent rotation, increases operation stability and reduces operation noise.

电视机摄像头驱动系统 | DRIVE SYSTEMS FOR TV POP-UP CAMERA



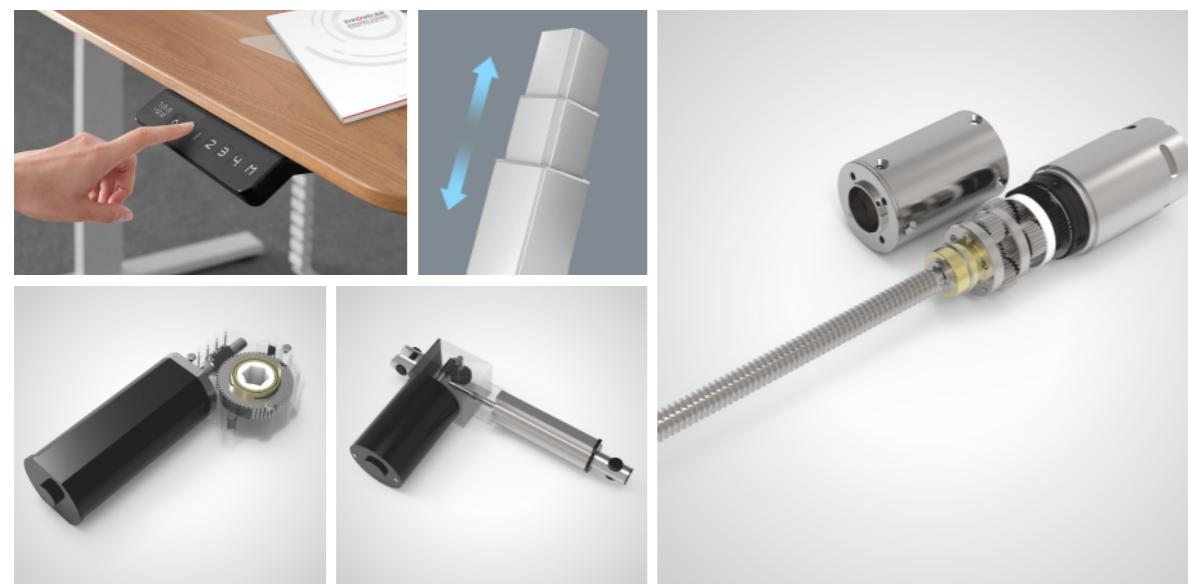
产品说明:

通过蜗杆、行星齿轮箱、滑块组合，用4mm金属行星齿轮箱结合步进电机，来实现电视机摄像头升降机构的智能升、降和稳定性。

Product Description:

The system is a combination of worm, sliding block and 4mm diameter planetary gearbox. Driven by a stepper motor, it realized stable and intelligent lifting and retracting function of TV camera pop-up mechanism.

升降桌线性驱动系统 | LINEAR ACTUATORS FOR HEIGHT ADJUSTABLE DESK



产品说明:

为实现智能升降桌子，我们用推杆电机和齿轮箱设计了线性驱动系统。通过螺杆和齿轮箱的组合智能升降桌子，解决小体积大力矩的难题。该设计使得抬升或下降不卡顿，稳定性好、噪音低。

Product Description:

ZHAOWEI uses a linear motor, gearbox and lead screw to realize desk height intelligent adjusting, and achieves small volume with high torque. This design enables smooth desk lifting and retracting with low noise and good stability.

智能电动窗帘驱动系统 | DRIVE SYSTEMS FOR ELECTRIC CURTAIN



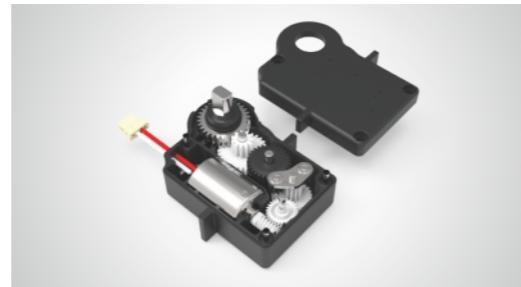
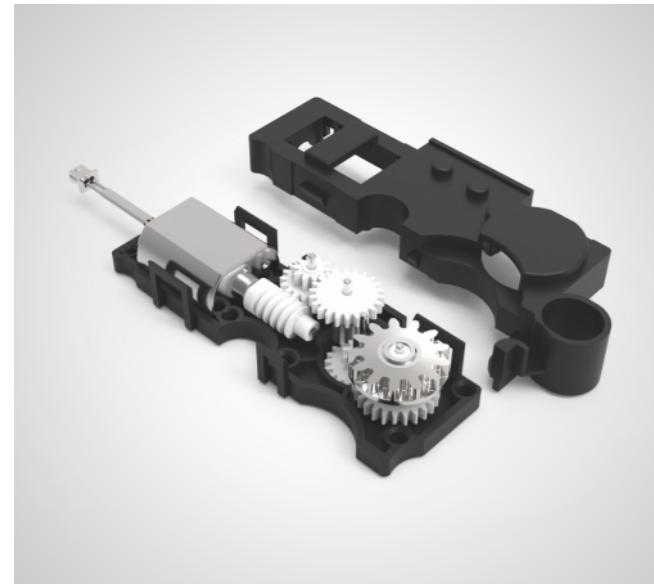
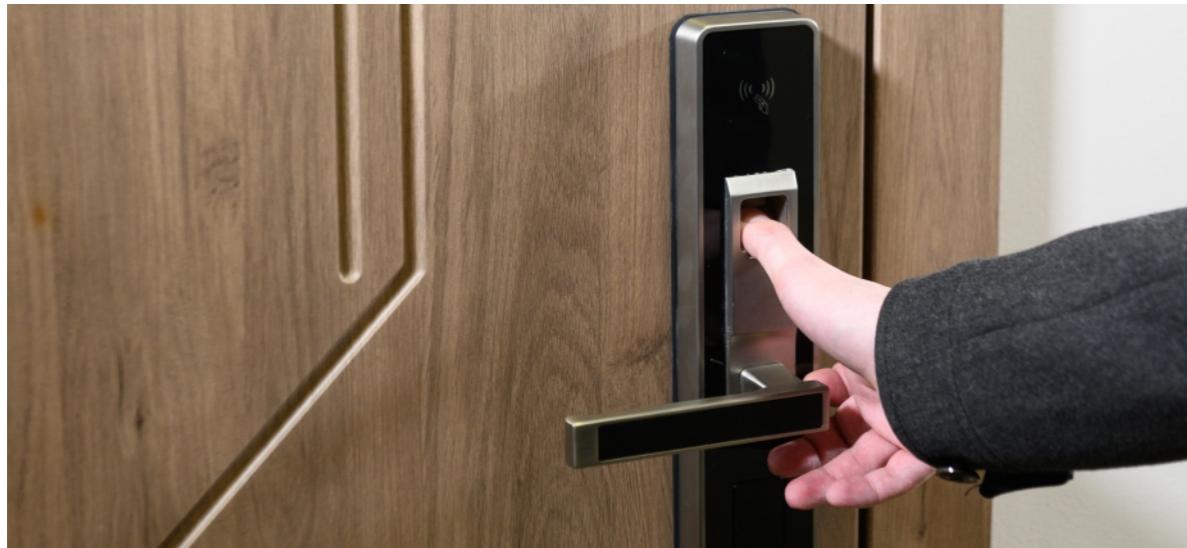
产品说明:

该系统采用人字齿的设计，解决管状行星电机驱动系统在室内噪音大的问题，大大提高了生活品质。

Product Description:

We adopt herringbone gear design to achieve low noise of the tubular planetary gear motor drive system, and greatly improves life quality.

智能家居门锁控制系统 | DRIVE SYSTEMS FOR DOOR LOCK



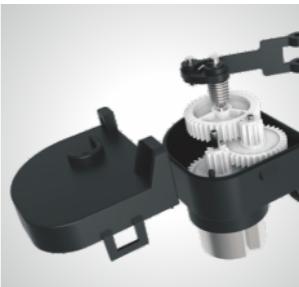
产品说明：

利用蜗杆和齿轮组的传动特性，我们在锁芯系统植入门锁齿轮电机驱动机构，提高门锁的可靠性，实现开锁速度和门锁的安全性，锁芯使用寿命长。

Product Description:

To improve door lock reliability, we embed gear motor drive mechanism into door lock cylinder system. With worm and gear set transmission advantage, the system increases unlocking speed, safety and lifetime.

垃圾桶翻盖驱动系统 | DRIVE SYSTEMS FOR SENSOR TRASH CAN FLIP LID



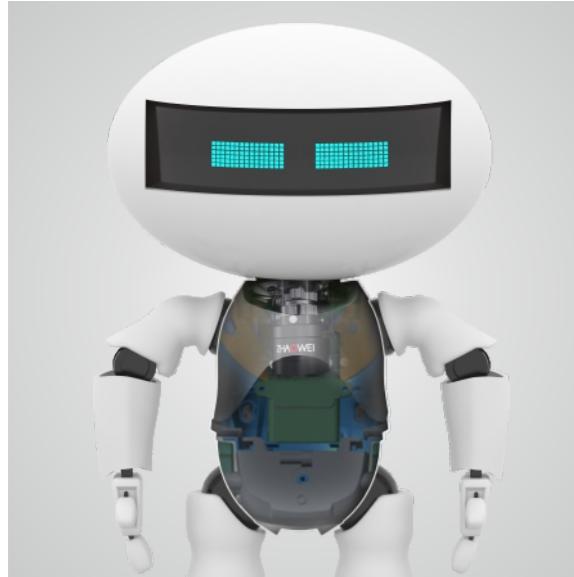
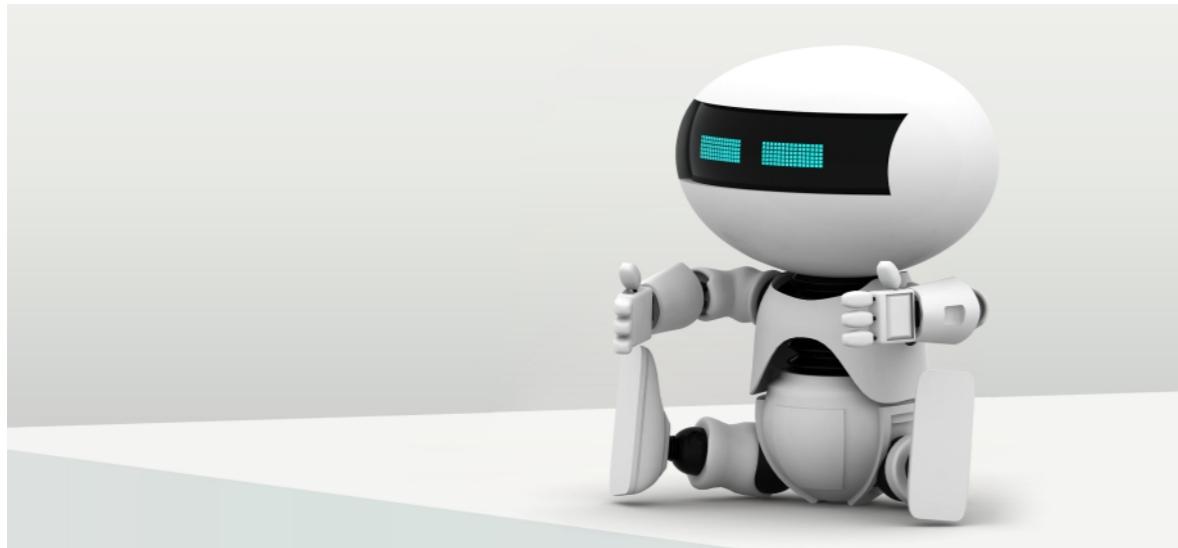
产品说明：

为实现垃圾桶自动翻盖的稳定性，我们设计了带阻尼减速装置的驱动模块，采用斜齿及行星驱动系统双重结构，实现稳定翻起面盖，翻盖时间短。

Product Description:

To realize flipping stability of automatic trash can flip lid, we designed a drive system with damping speed reduction mechanism. The system adopts dual structure of helical gears and planetary drive mechanism, to achieve trash can lid stable flipping-up within short time.

旋转音箱驱动系统 | DRIVE SYSTEMS FOR SMART ROTATING SPEAKER



产品说明:

采用永磁直流电动机作为驱动模式,通过涡轮蜗杆和斜齿轮的传动机构齿轮箱,实现噪音低动作反馈灵敏的需求。

Product Description:

ZHAOWEI uses a permanent magnet DC motor to combine with worm and gear and gearbox with helical gears as the driving mode, and meets low noise and sensitive feedback requirements.

智能马桶翻盖驱动系统 | DRIVE SYSTEMS FOR SMART TOILET LID



产品说明:

为解决双个翻盖面板的困难及翻盖时间长及力矩寿命的问题,我们研发出阻尼减速驱动系统机构,采用斜齿及行星驱动系统双重结构,能轻松翻起马桶的面盖。

Product Description:

To solve the difficulty of flipping double toilet lids and long time flipping process, and increase torque and lifetime, we develop a damping speed reduction drive mechanism. The system adopts dual structure of helical gears and planetary drive mechanism, to achieve toilet lid stable flipping-up function.

智能机器人驱动

Intelligent Robot Drive



机器人关节驱动系统 | DRIVE SYSTEMS FOR ROBOT JOINTS



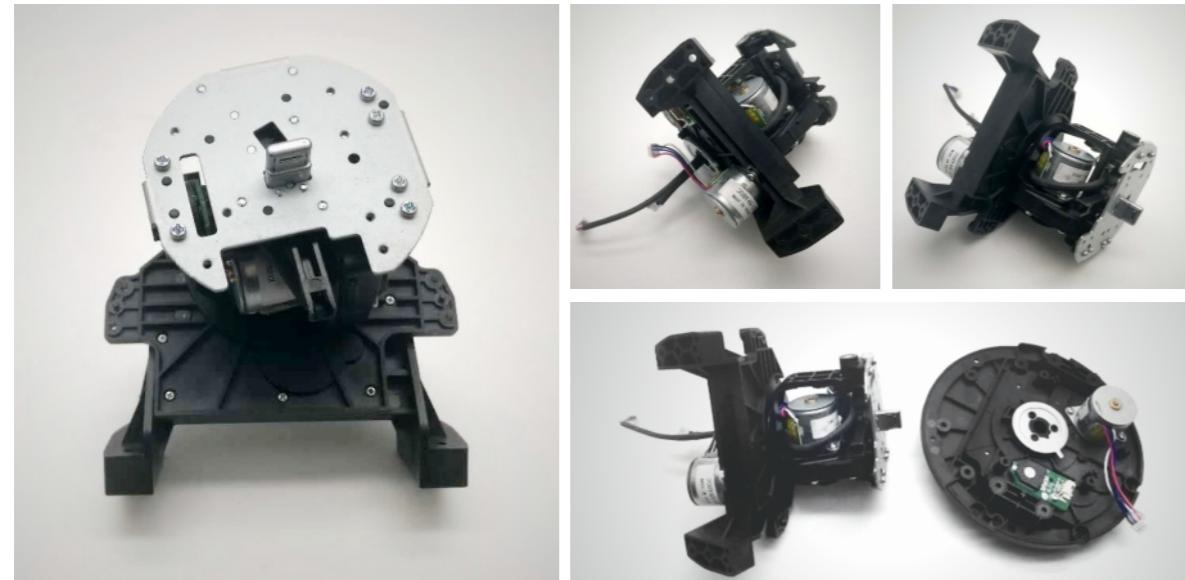
产品说明:

该系统多为动力类舵机，对减速器的寿命要求高对噪音更敏感。其设计重心放在齿轮参数优化，同时在减速器内部增加离合机构，当机器跌倒减速器受到外接冲击时，齿轮能得到保护，实现小空间大传动比的特性，能完成传动轴六自由度的转换。

Product Description:

This system is mostly a servomotor, which has high requirements for life time of the reducer and is more sensitive to noise. The design focuses on gear parameters optimization, and installs a clutch mechanism on the reducer, when the machine falls and the reducer is subjected to external impact, it can protect gears. This system achieves a large reduction ratio in small space, and can complete the conversion of the six degrees of freedom of the transmission shaft.

机器人底座翻转系统 | DRIVE SYSTEMS FOR ROBOT FLIP BASE



产品说明:

我们基于客户对“平板电脑+智能底座”产品要求,利用多级驱动系统设计结构可以根据眼睛距离屏幕的距离,智能调整平板的底座角度,减少电子屏幕对小朋友眼睛的伤害,养成良好的观看习惯。

Product Description:

Based on customer product need of Tablet & Smart Base, we use multi-stage drive system to intelligently adjust the angle of the tablet base according to the distance between the eyes and the screen. This design can reduce the damage of electronic screens to kid's eyes and develop good viewing habits.

小Q机器人头部翻转系统 | DRIVE SYSTEMS FOR QROBOT HEAD ROTATION



产品说明:

我们基于客户对外形尺寸和智能驱动的要求,经过多级驱动系统设计结构,小Q机器人大巧且可以根据人的语言,触碰等行为通过头部和眼部回应和互动。

Product Description:

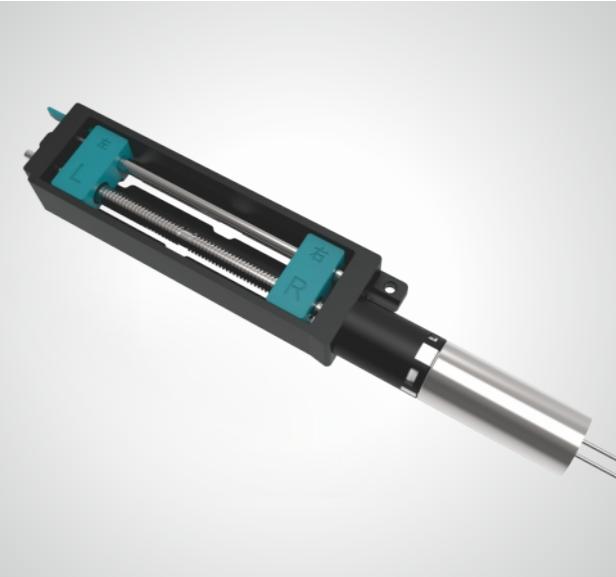
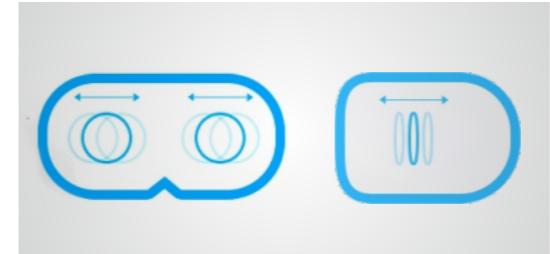
Based on customer needs for shape, size, and intelligent drive system, through multi-stage drive design, the small Qrobot can respond to and interact with each other by head and eyes according to human language, touch, and other behaviors.

电子产品驱动

Electronic Product Drive



VR瞳距调节驱动系统 | DRIVE SYSTEMS FOR VR HEADSET IPD ADJUSTMENT



产品说明:

由驱动步进电机、齿轮箱组装而成的行星齿轮减速机，具备减速、调节扭矩功能，也适用于智能眼镜等。

Product Description:

This drive system consists of a stepper motor and gearbox, it has the function of reducing speed and adjusting torque, and is also suitable for smart glasses.

手机摄像头升降驱动系统 | DRIVE SYSTEMS FOR POP-UP PHONE CAMERA



产品说明:

采用步进电机+行星减速器+丝杆设计成的驱动系统，实现了有限体积(厚度4.6mm)内的摄像头稳定低噪升降，解决了全面屏前置摄像头的安置问题。

Product Description:

This drive system consists of stepper motor, planetary reducer and lead screw, it realizes stable lifting of phone front camera with low noise in a limited space (thickness 4.6mm), and solves placement of full-screen phone front camera.

电动云台驱动系统 | DRIVE SYSTEMS FOR MOTORIZED PAN & TILT HEAD



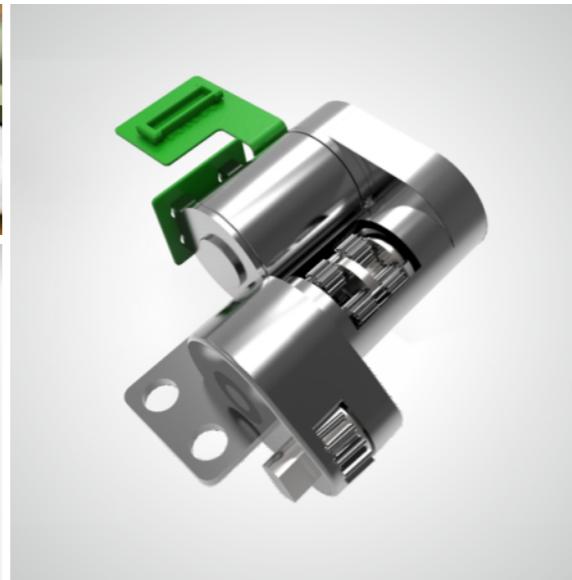
产品说明:

普通云台在使用过程中会出现间隙抖动，采用永磁直流电动机和斜齿轮作为传动模式，解决了电动云台的抖动及噪音的问题，提高了产品的使用寿命及稳定性。

Product Description:

Common pan & tilt heads may experience gap jitter during use. ZHAOWEI adopts permanent magnet DC motor and helical gear as the drive method, which solves jitter and noise problems, and improves life time and stability of motorized pan & tilt heads.

手机电动摄像头翻转系统 | DRIVE SYSTEMS FOR ROTATING PHONE CAMERA



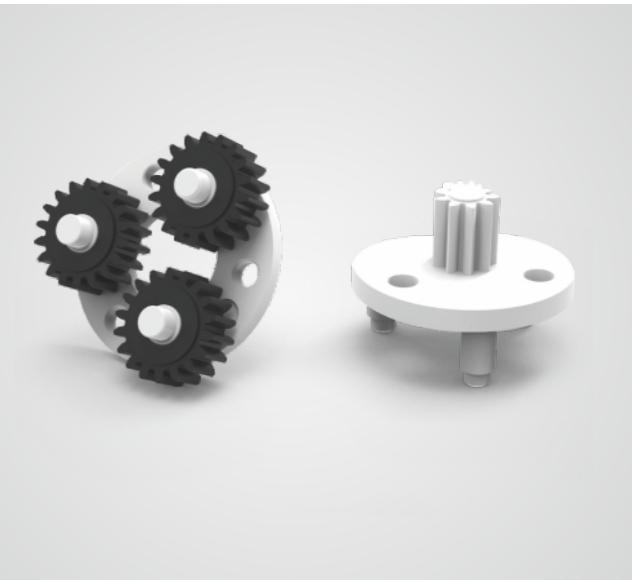
产品说明:

通过6MM行星减速箱和步进马达组合，使摄像头在有限的空间里面灵活地电动旋转，解决了手机摄像头驱动结构小体积大力矩的驱动的需求及使用寿命长的一系列问题。

Product Description:

This system is a combination of a 6mm diameter planetary gearbox and a stepper motor, it enables phone camera to rotate flexibly in a limited space, and meets the needs of small size, high torque, and long life time of the drive system for phone cameras.

按摩器驱动系统 | DRIVE SYSTEMS FOR ELECTRIC MASSAGER

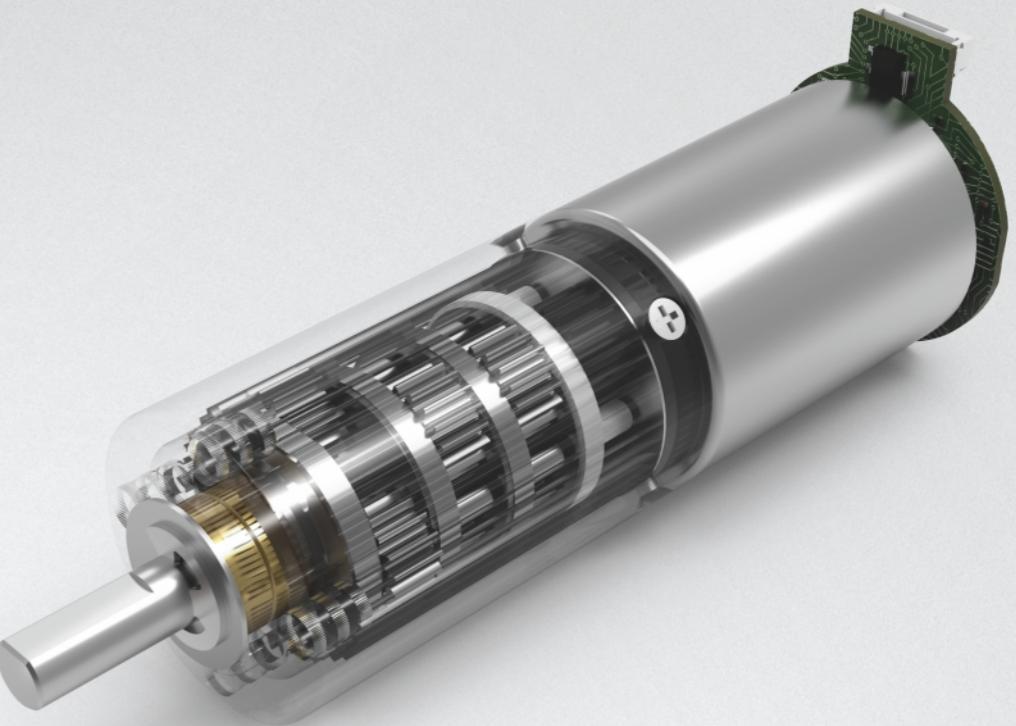


产品说明:

通过对按摩齿轮箱的结构及方案进行修改，使得设计的产品满足大力矩、长寿命和低噪音需求。

Product Description:

By optimizing structure of electric massager drive system, ZHAOWEI designs the product which meets high torque, long life time and low noise requirements.



标准行星齿轮箱系列

STANDARD PLANETARY GEARBOXES

全系列精密减速电机行星齿轮箱, 直径3.4、4、6、8、10、12、16、20、22、24、28、32、38mm, 输出转速5-2000rpm, 减速比5-1500, 输出扭矩1gf.cm到50kgf.cm.

Wide range of precision planetary gearboxes, diameter: 3.4, 4, 6, 8, 10, 12, 16, 20, 22, 24, 28, 32, 38 mm, output speed: 5–2000 rpm, reduction ratio: 5–1500, output torque: 1 gf.cm ~ 50 kgf.cm.

选择您的行星齿轮箱

Choose Your Planetary Gearbox

兆威产品型号说明 | PRODUCT MODEL DEFINITION

Z W B P D 0 1 0 0 1 0 - 1 0 2

- (1) 兆威简称 ZHAOWEI abbreviation
- (2) 第二代产品 Second generation products
- (3) PD 代表塑料齿轮箱 MD 代表五金齿轮箱
- (4) 齿轮箱外径 Gearbox outer diameter
- (5) 马达外径 Motor outer diameter
- (6) 减速比 Reduction ratio

行星齿轮箱模块选择 | PLANETARY GEARBOX MODULE

① 五金轴 Metal Shaft

可选轴型 Optional shaft shape:



② 轴承 Bearing

- 含油轴承 Porous bearing
- 滚动轴承 Rolling bearing

③ 外壳 Housing

- 五金外壳 Metal housing
- 塑料外壳 Plastic housing

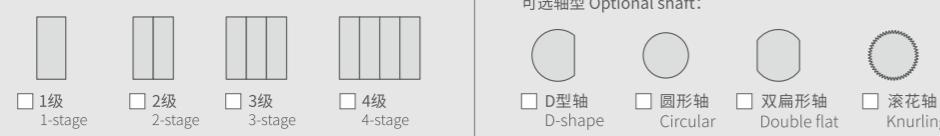
④ 行星齿轮 Planetary Gears

- | | |
|---|--|
| 可选材质:
Optional material | 可选齿型:
Optional gear type |
| <input type="checkbox"/> 塑胶齿轮 Plastic | <input type="checkbox"/> 斜齿 Helical gears |
| <input type="checkbox"/> 粉末冶金 Powder metallurgy | <input type="checkbox"/> 直齿 Spur gears |
| <input type="checkbox"/> 五金加工 Metalworking | <input type="checkbox"/> 五金加工 Metalworking |

⑤ 太阳齿轮 Sun Gears

- | | |
|---|--|
| 可选材质:
Optional material | 可选齿型:
Optional gear type |
| <input type="checkbox"/> 塑胶齿轮 Plastic | <input type="checkbox"/> 斜齿 Helical gears |
| <input type="checkbox"/> 粉末冶金 Powder metallurgy | <input type="checkbox"/> 直齿 Spur gears |
| <input type="checkbox"/> 五金加工 Metalworking | <input type="checkbox"/> 五金加工 Metalworking |

⑥ 齿轮箱级数 Gearbox Stages



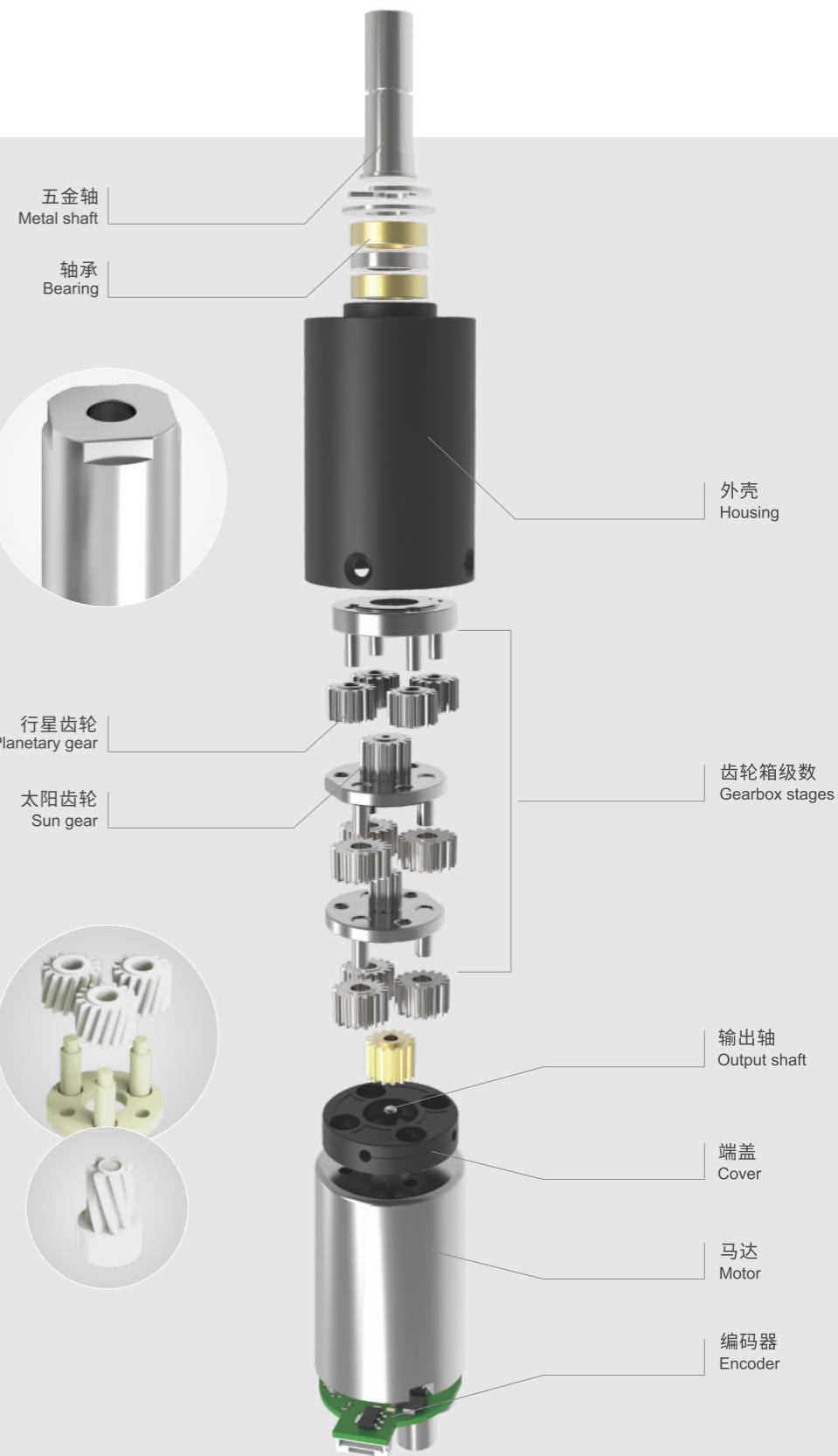
⑦ 输出轴 Output Shaft

可选轴型 Optional shaft:



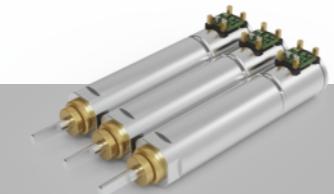
⑧ 马达 Motors

- 直流有刷电机 Brushed DC motor
- 直流无刷电机 Brushless DC motor
- 步进电机 Stepper motor
- 空心杯电机 Coreless motor



3.4
mm
M
五金

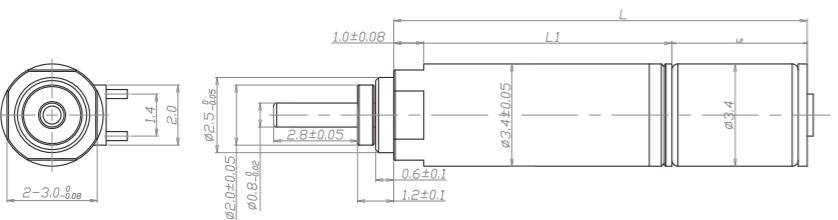
ZWBMD003003



齿轮箱规格 Gearbox Specifications

外径	Outer diameter	3mm	轴承	Bearing	含油轴承 Porous bearing
材质	Material	五金 Metal	轴向窜动	Axial endplay	≤0.3mm
旋转方向	Direction of rotation	cw & ccw	输出轴径向负载	Radial loading on output shaft	≤0.3N
齿轮箱回程差	Gear backlash	≤3°	工作温度	Operating temperature range	-20~+85°C
齿轮级数	Gearbox Stages	1	2	3	4
减速比	Reduction ratio	5	25	125	625
最大容许扭力(gf.cm)	Max rated torque of gearbox (gf.cm)	50	50	50	50
瞬间容许力矩(gf.cm)	Instant torque of gearbox (gf.cm)	150	150	150	150
齿轮箱效率(%)	Gearbox efficiency (%)	85	73	65	58
长度(mm)	Gearbox length L1 (mm)	6	7.5	9	10.5

技术插图 | Technical Drawing



马达规格参数 Motor Specifications

马达(可选择) Motor type (optional)	步进电机 Stepper motor	输入速度 Input speed	≤1000rpm			
电压(可选择) Voltage (optional)	1.5-5V	电流 Current	50mA max			
<hr/>						
型号 Model	Rated Speed 额定转速	Max Rated Torque 额定容许力矩	Max Instant Torque 瞬间容许力矩	Reduction Ratio 减速比	Gearbox Length 减速箱长 L1	Overall Length 总长 L
	rpm	gf.cm	gf.cm		mm	mm
ZWBMD003003-5	300.0	50	150	5	6.0	10.75
ZWBMD003003-25	60.0	50	150	25	7.5	12.25
ZWBMD003003-125	12.0	50	150	125	9.0	13.75
ZWBMD003003-625	2.4	50	150	625	10.5	15.25

注：可根据客户要求定制 Please contact us for customized products

4
mm
M
五金

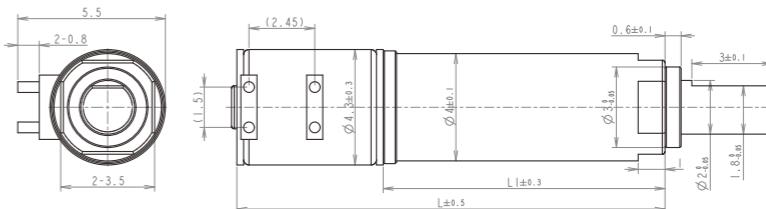
ZWBMD004004



齿轮箱规格 Gearbox Specifications

外径	Outer diameter	4mm	轴承	Bearing	含油轴承 Porous bearing
材质	Material	五金 Metal	轴向窜动	Axial endplay	≤0.3mm
旋转方向	Direction of rotation	cw & ccw	输出轴径向负载	Radial loading on output shaft	≤0.3N
齿轮箱回程差	Gear backlash	≤3°	工作温度	Operating temperature range	-20~+85°C
齿轮级数	Gearbox Stages	1	2	3	4
减速比	Reduction ratio	5	25	125	625
最大容许扭力(gf.cm)	Max rated torque of gearbox (gf.cm)	70	70	70	70
瞬间容许力矩(gf.cm)	Instant torque of gearbox (gf.cm)	200	200	200	200
齿轮箱效率(%)	Gearbox efficiency (%)	85	73	65	58
长度(mm)	Gearbox length L1 (mm)	6.6	8.1	9.6	11.1

技术插图 | Technical Drawing



马达规格参数 Motor Specifications

马达(可选择) Motor type (optional)	步进电机 Stepper motor	输入速度 Input speed	≤1000rpm
电压(可选择) Voltage (optional)	1.5-5V	电流 Current	50mA max
<hr/>			
型号 Model	Rated Speed 额定转速	Max Rated Torque 额定容许力矩	Max Instant Torque 瞬间容许力矩
	rpm	gf.cm	gf.cm
ZWBMD004004-5	300.0	70	200
ZWBMD004004-25	60.0	70	200
ZWBMD004004-125	12.0	70	200
ZWBMD004004-625	2.4	70	200
型号 Model	Rated Speed 额定转速	Max Rated Torque 额定容许力矩	Max Instant Torque 瞬间容许力矩
	rpm	gf.cm	gf.cm
ZWBMD003003-5	300.0	50	150
ZWBMD003003-25	60.0	50	150
ZWBMD003003-125	12.0	50	150
ZWBMD003003-625	2.4	50	150

注：可根据客户要求定制 Please contact us for customized products

22
mm
Plastic
P 塑料

ZWBPD022022

齿轮箱规格 Gearbox Specifications

外径	Outer diameter	22mm	轴承	Bearing	含油轴承 Porous bearing	滚动轴承 Rolling bearing
材质	Material	塑料 Plastic	轴向窜动	Axial endplay	≤0.1mm	≤0.1mm
旋转方向	Direction of rotation	cw & ccw	输出轴径向负载	Radial loading on output shaft	≤50N	≤100N
齿轮箱回程差	Gear backlash	≤3° 可定制 Customizable	工作温度	Operating temperature range	-20 ~ +85°C	

齿轮级数 Gearbox Stages	1	2	3	4
减速比 Reduction ratio	4 / 6	16 / 24 / 36	64 / 96 / 144 / 216	256 / 384 / 576 / 864 / 1296
最大容许扭力(gf.cm)	Max rated torque of gearbox (gf.cm)	8000	8000	8000
瞬间容许力矩(gf.cm)	Instant torque of gearbox (gf.cm)	20000	20000	20000
齿轮箱效率(%)	Gearbox efficiency (%)	85	73	65
长度(mm)	Gearbox length L1 (mm)	19.1	26.4	33.7
				41


 22
mm
Metal
M 五金

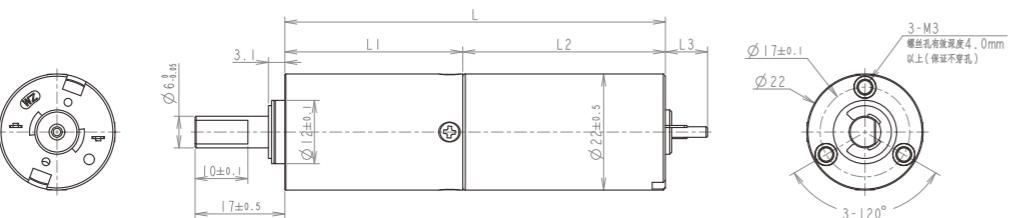
ZWBMD022022

齿轮箱规格 Gearbox Specifications

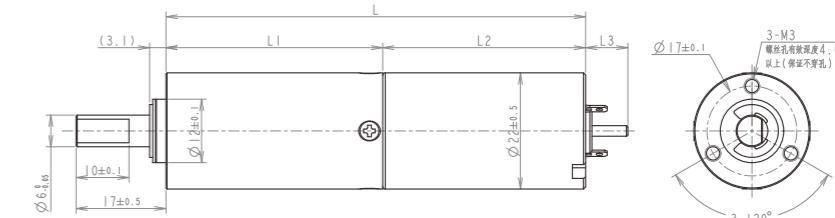
外径	Outer diameter	22mm	轴承	Bearing	含油轴承 Porous bearing	滚动轴承 Rolling bearing
材质	Material	五金 Metal	轴向窜动	Axial endplay	≤0.1mm	≤0.1mm
旋转方向	Direction of rotation	cw & ccw	输出轴径向负载	Radial loading on output shaft	≤120N	≤170N
齿轮箱回程差	Gear backlash	≤2° 可定制 Customizable	工作温度	Operating temperature range	-30 ~ +100°C	

齿轮级数 Gearbox Stages	1	2	3	4
减速比 Reduction ratio	4 / 6	16 / 24 / 36	64 / 96 / 144 / 216	256 / 384 / 576 / 864 / 1296
最大容许扭力(gf.cm)	Max rated torque of gearbox (gf.cm)	15000	15000	15000
瞬间容许力矩(gf.cm)	Instant torque of gearbox (gf.cm)	36000	36000	36000
齿轮箱效率(%)	Gearbox efficiency (%)	90	85	80
长度(mm)	Gearbox length L1 (mm)	19.1	26.4	33.7
				41

技术插图 | Technical Drawing



技术插图 | Technical Drawing



马达规格参数 Motor Specifications

马达(可选择) Motor type (optional)	直流无刷电机、空心杯电机、步进电机 Brushless DC motor, Coreless motor, Stepper motor	输入速度 Input speed	≤15000rpm
电压(可选择) Voltage (optional)	3-24V	电流 Current	300mA max

参考数据(马达定义值): 24v 8300rpm 下表根据马达定义值测试, 数据只作为参考值

型号 Model	Rated Speed 额定转速	Max Speed 最高转速	Max Rated Torque 额定容许力矩	Max Instant Torque 瞬间容许力矩	Reduction Ratio 减速比	Gearbox Length 减速箱长 L1	Overall Length 总长 L
	rpm	rpm	gf.cm	gf.cm			
ZWBPD022022-4	1875	7500	8000	20000	4	19.1	57.5
ZWBPD022022-6	1250	5000	8000	20000	6		
ZWBPD022022-16	469	1875	8000	20000	16		
ZWBPD022022-24	313	1250	8000	20000	24	26.4	64.8
ZWBPD022022-36	208	833	8000	20000	36		
ZWBPD022022-64	117	469	8000	20000	64		
ZWBPD022022-96	78	313	8000	20000	96		
ZWBPD022022-144	52	208	8000	20000	144		
ZWBPD022022-216	35	139	8000	20000	216		
ZWBPD022022-256	29	117	8000	20000	256		
ZWBPD022022-384	20	78	8000	20000	384		
ZWBPD022022-576	13	52	8000	20000	576		
ZWBPD022022-864	9	35	8000	20000	864		
ZWBPD022022-1296	6	23	8000	20000	1296		
						33.7	72.1
						41	79.4

注: 可根据客户要求定制 Please contact us for customized products

28
mm
P
塑料

ZWBPD028028

齿轮箱规格 Gearbox Specifications

外径	Outer diameter	28mm	轴承	Bearing	含油轴承 Porous bearing	滚动轴承 Rolling bearing
材质	Material	塑料 Plastic	轴向窜动	Axial endplay	≤0.1mm	≤0.1mm
旋转方向	Direction of rotation	cw & ccw	输出轴径向负载	Radial loading on output shaft	≤50N	≤100N
齿轮箱回程差	Gear backlash	≤3° 可定制 Customizable	工作温度	Operating temperature range	-20 ~ +85°C	

齿轮级数 Gearbox Stages	1	2	3	4
减速比 Reduction ratio	4 / 6	16 / 24 / 36	64 / 96 / 144 / 216	256 / 384 / 576 / 864 / 1296
最大容许扭力(gf.cm) Max rated torque of gearbox (gf.cm)	15000	15000	15000	15000
瞬间容许力矩(gf.cm) Instant torque of gearbox (gf.cm)	60000	60000	60000	60000
齿轮箱效率(%) Gearbox efficiency (%)	80	64	51	41
长度(mm) Gearbox length L1 (mm)	20.6	29.1	37.6	46.1

28
mm
M
五金

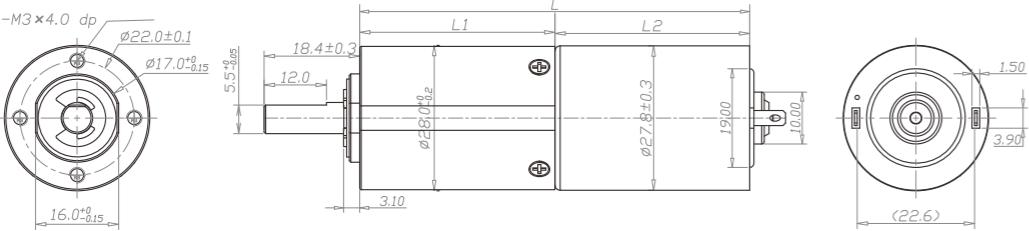
ZWBMD028028

齿轮箱规格 Gearbox Specifications

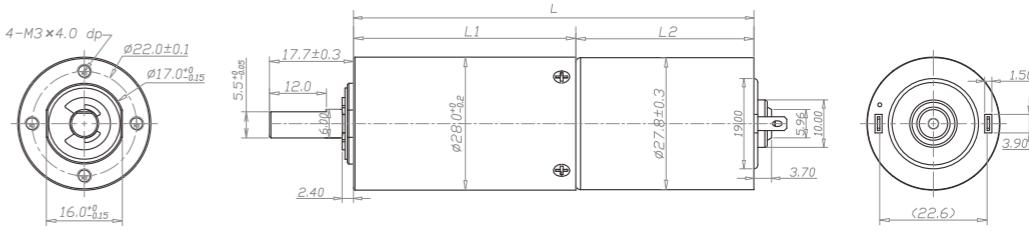
外径	Outer diameter	28mm	轴承	Bearing	含油轴承 Porous bearing	滚动轴承 Rolling bearing
材质	Material	五金 Metal	轴向窜动	Axial endplay	≤0.1mm	≤0.1mm
旋转方向	Direction of rotation	cw & ccw	输出轴径向负载	Radial loading on output shaft	≤120N	≤170N
齿轮箱回程差	Gear backlash	≤2° 可定制 Customizable	工作温度	Operating temperature range	-30 ~ +100°C	

齿轮级数 Gearbox Stages	1	2	3	4
减速比 Reduction ratio	4 / 6	16 / 24 / 36	64 / 96 / 144 / 216	256 / 384 / 576 / 864 / 1296
最大容许扭力(gf.cm) Max rated torque of gearbox (gf.cm)	40000	40000	40000	40000
瞬间容许力矩(gf.cm) Instant torque of gearbox (gf.cm)	120000	120000	120000	120000
齿轮箱效率(%) Gearbox efficiency (%)	80	64	51	41
长度(mm) Gearbox length L1 (mm)	21.3	29.8	38.3	46.8

技术插图 | Technical Drawing



技术插图 | Technical Drawing



马达规格参数 Motor Specifications

马达(可选择) Motor type (optional)	直流有刷电机、直流无刷电机、步进电机 Brushed DC motor, Brushless DC motor, Stepper motor	输入速度 Input speed	≤15000rpm
电压(可选择) Voltage (optional)	3-24V	电流 Current	400mA max

参考数据(马达定义值): 24v 7700rpm 下表根据马达定义值测试, 数据只作为参考值

型号 Model	Rated Speed 额定转速	Max Speed 最高转速	Max Rated Torque 额定容许力矩	Max Instant Torque 瞬间容许力矩	Reduction Ratio 减速比	Gearbox Length 减速箱长 L1	Overall Length 总长 L
	rpm	rpm	gf.cm	gf.cm			
ZWBPD028028-4	1658	3000	15000	60000	4	20.6	58.1
ZWBPD028028-6	1105	2000	15000	60000	6		
ZWBPD028028-16	413	750	15000	60000	16		
ZWBPD028028-24	276	500	15000	60000	24	29.1	66.6
ZWBPD028028-36	181	333	15000	60000	36		
ZWBPD028028-64	104	188	15000	60000	64		
ZWBPD028028-96	69	125	15000	60000	96		
ZWBPD028028-144	46	83	15000	60000	144		
ZWBPD028028-216	31	56	15000	60000	216		
ZWBPD028028-256	26	47	15000	60000	256		
ZWBPD028028-384	17	31	15000	60000	384		
ZWBPD028028-576	12	21	15000	60000	576		
ZWBPD028028-864	8	14	15000	60000	864		
ZWBPD028028-1296	5	9	15000	60000	1296		

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38
mm
Metal
五金

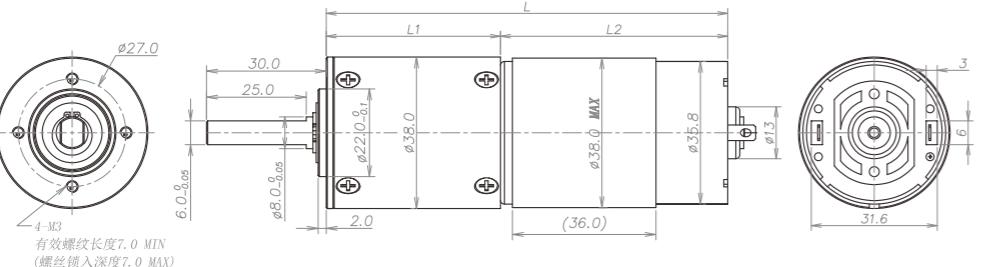
ZWMD038038

齿轮箱规格 Gearbox Specifications

外径	Outer diameter	38mm	轴承	Bearing	滚动轴承 Rolling bearing
材质	Material	五金 Metal	轴向窜动	Axial endplay	≤0.1mm
旋转方向	Direction of rotation	cw & ccw	输出轴径向负载	Radial loading on output shaft	≤300N
齿轮箱回程差	Gear backlash	≤2° 可定制 Customizable	工作温度	Operating temperature range	-20 ~ +100°C

齿轮级数 Gearbox Stages	1	2	3	4
减速比 Reduction ratio	4 / 6	16 / 25 / 39	64 / 100 / 156 / 244	256 / 400 / 625 / 977 / 1526
最大容许扭力(gf.cm) Max rated torque of gearbox (gf.cm)	80000	80000	80000	80000
瞬间容许力矩(gf.cm) Instant torque of gearbox (gf.cm)	240000	240000	240000	240000
齿轮箱效率(%) Gearbox efficiency (%)	90	85	80	75
长度(mm) Gearbox length L1 (mm)	30.7	43.7	56.7	69.7

技术插图 | Technical Drawing



马达规格参数 Motor Specifications

马达(可选择) Motor type (optional)	直流有刷电机、直流无刷电机、步进电机 Brushed DC motor, Brushless DC motor, Stepper motor	输入速度 Input speed	≤15000rpm
电压(可选择) Voltage (optional)	3~24V	电流 Current	300mA max

参考数据(马达定义值): 24v 6100rpm 下表根据马达定义值测试, 数据只作为参考值

型号 Model	Rated Speed 额定转速	Max Speed 最高转速	Max Rated Torque 额定容许力矩	Max Instant Torque 瞬间容许力矩	Reduction Ratio 减速比	Gearbox Length 减速箱长 L1	Overall Length 总长 L
	rpm	rpm	gf.cm	gf.cm			
ZWMD038038-4	1525	7500	80000	240000	4	30.7	87.7
ZWMD038038-6.25	976	4800	80000	240000	6.25		
ZWMD038038-16	381	1875	80000	240000	16	43.7	100.7
ZWMD038038-25	244	1200	80000	240000	25		
ZWMD038038-39	156	769	80000	240000	39		
ZWMD038038-64	95	469	80000	240000	64		
ZWMD038038-100	61	300	80000	240000	100	56.7	113.7
ZWMD038038-156	39	192	80000	240000	156		
ZWMD038038-244	25	123	80000	240000	244		
ZWMD038038-256	24	117	80000	240000	256		
ZWMD038038-400	15	75	80000	240000	400		
ZWMD038038-625	10	48	80000	240000	625		
ZWMD038038-977	6	31	80000	240000	977		
ZWMD038038-1526	4	20	80000	240000	1526		

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兆威,微型驱动系统制造商

ZHAOWEI, Micro Drive System Manufacturer

可靠 | RELIABILITY

小型化和降低成本几乎是每一次现代技术革命的关键主题。得益于兆威微型精密的传动技术,即使使用无刷直流电机或步进电机,力矩、功耗、小体积及噪音都不是问题。兆威智能电子驱动系统解决方案,可以使您的机器更加适应物联网未来发展的数字化需要。

Miniaturization and cost reduction are the key themes of almost every modern technological revolution. The micro-precision drive technology from ZHAOWEI enables high torque, low power consumption, compact size and low noise, even if it's a BLDC motor or a stepper motor. The intelligent electronic drive system from ZHAOWEI can make your machine more adaptable to the digital needs of future IoT development.

效率 | EFFICIENCY

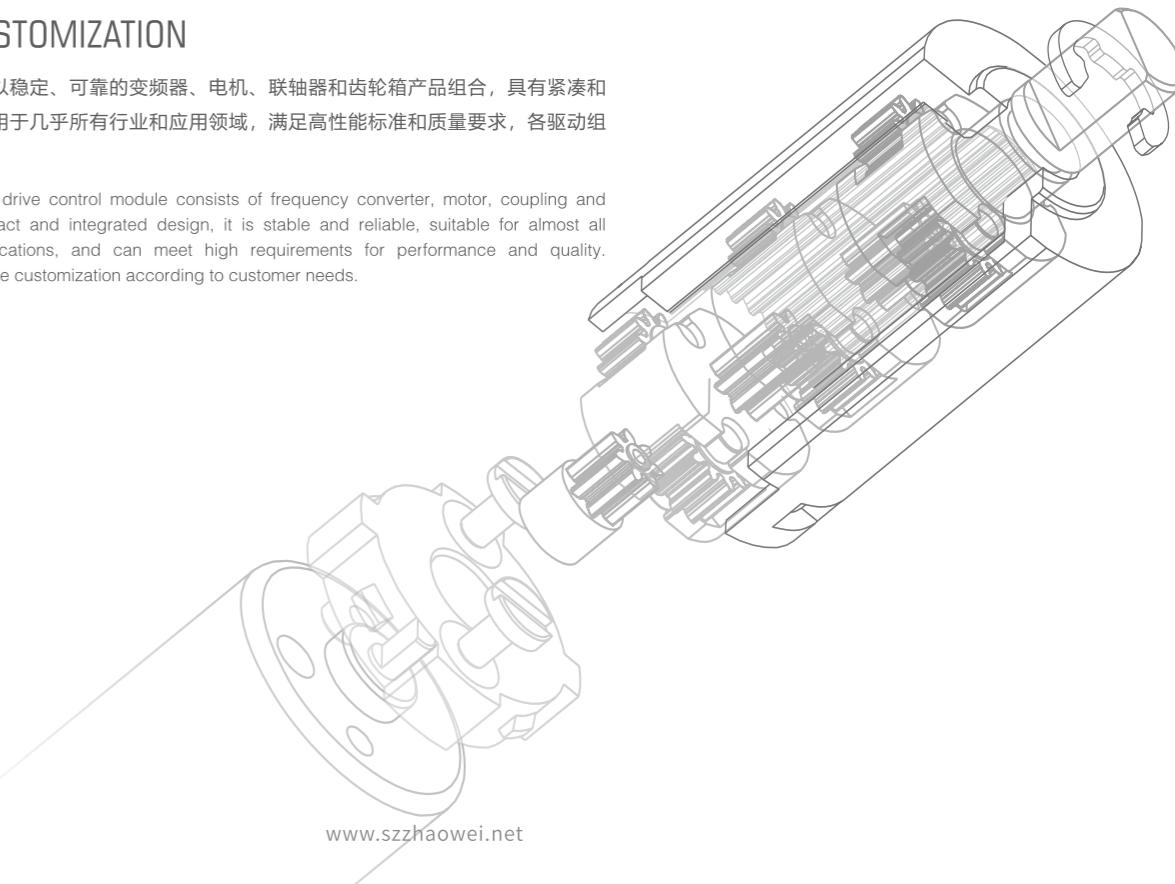
兆威除了开发和生产DC和BLDC电机、齿轮箱之外,还导入传感器与控制器等智能硬件设计、制造。根据客户的需求,我们将这些紧凑型的机电元件整合在一起为电子驱动单元,可让复杂的机电驱动系统智能化运转,高效稳定。

Besides DC motors, BLDC motors and gearboxes, ZHAOWEI also introduces designing and manufacturing of intelligent hardware such as sensors and controllers. According to customer needs, ZHAOWEI integrates these small electromechanical components into an electronic drive unit, which can make complex electromechanical drive systems to operate intelligently, efficiently and stably.

定制 | CUSTOMIZATION

兆威电子驱动模块以稳定、可靠的变频器、电机、联轴器和齿轮箱产品组合,具有紧凑和模块化的设计,适用于几乎所有行业和应用领域,满足高性能标准和质量要求,各驱动组件提供按需定制。

ZHAOWEI electronic drive control module consists of frequency converter, motor, coupling and gearbox. With compact and integrated design, it is stable and reliable, suitable for almost all industries and applications, and can meet high requirements for performance and quality. ZHAOWEI also provide customization according to customer needs.



团队文化

Company Culture



让员工与企业一起成长
Growing together with our employees

ZHAOWEI 兆威

微型驱动系统制造商
Micro Drive System Manufacturer
股票简称:兆威机电 股票代码:003021