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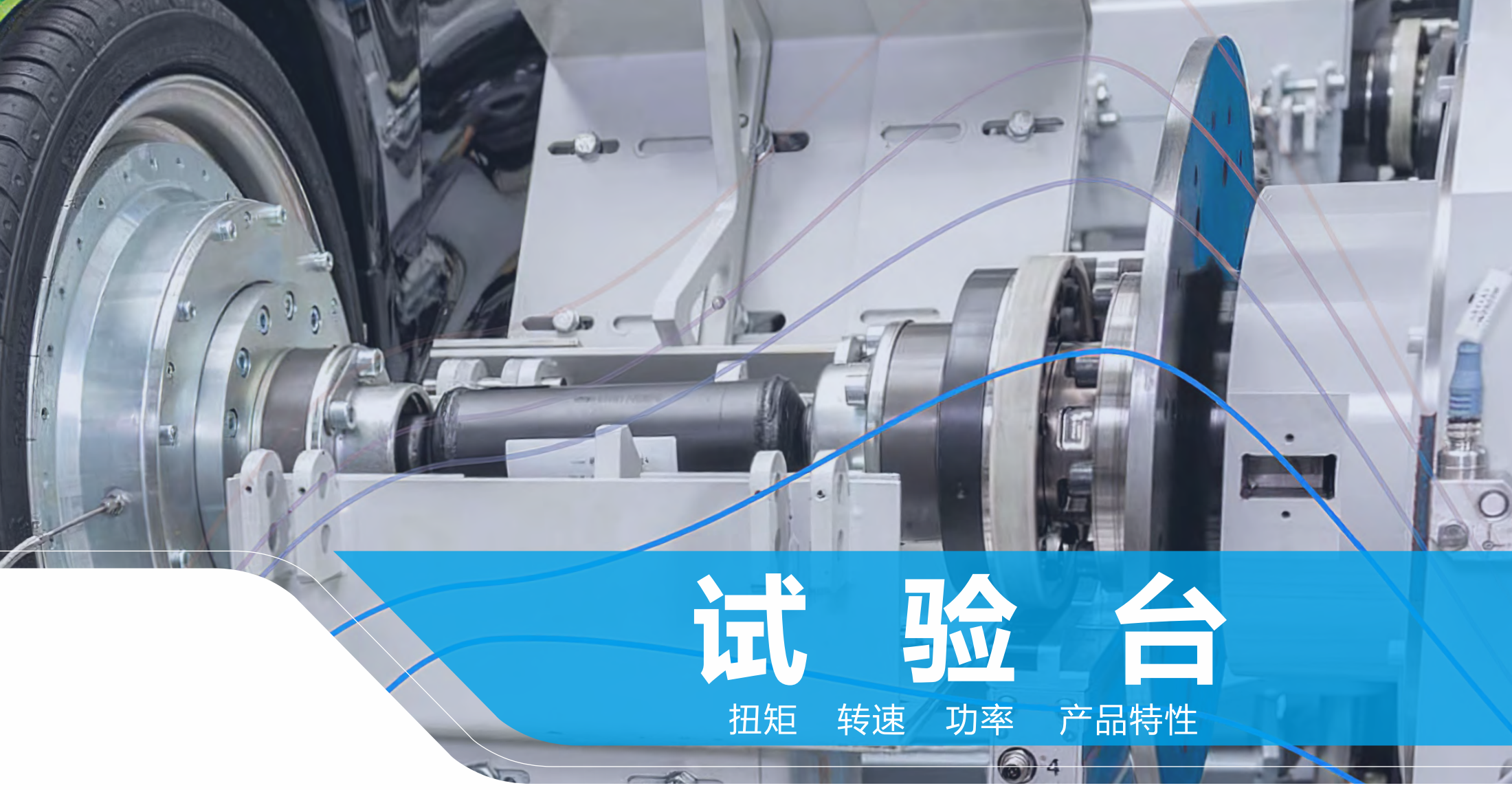

试 验 台

扭矩 转速 功率 产品特性

力测科技
LICE

苏州力测科技有限公司

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力测科技
LICE
测功机行业破局者！

CONTENT 目录

苏州力测科技

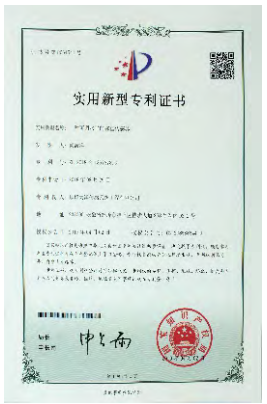
苏州力测科技有限公司位于交通便利环境优美的苏州市工业园区，是一家专注于电机智能测试没备及自动化检测产品的设计研发、生产及销售的高新技术企业，公司致力于向客户提供定制化的一站式电机测试解决方案。公司主要生产的设备有磁滞测功机，磁粉测功机，电涡流测功机及其控制系统，电机综合性能测试系统，电机在线性能测试系统，多工位电机寿命测试系统，电动工具寿命测试系统，轮毂电机性能测试系统，齿槽扭矩测试系统，机器人关节系统等，产品广泛应用于汽车，航空、家用电器、电动工具及园林护理设备等行业。

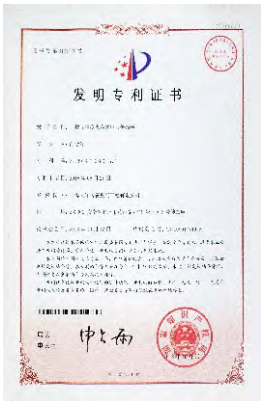
我们是由一群充满活力和怀着梦想的年轻人所组成的团队，拥有着丰富的企业经营管理经验，坚持“技术引领进步，客户满意为先”的经营方针和“以人为先，唯才是贤”的人才管理理念，秉承“学习才是未来的竞争力”的价念，我们的产品得到客户的高度认可，在测试台方向，每个人都拥有积极进取的集体荣誉感，可以深深体会到家庭一般的温暖和亲切。

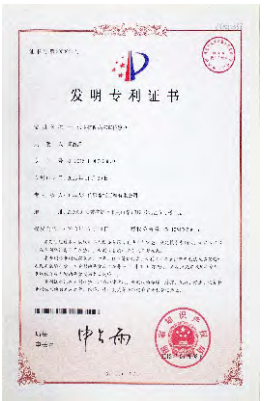
Suzhou Lite Technology Co., Ltd. is located in the Suzhou Industrial Park with convenient transportation and beautiful environment. It is a high-tech enterprise specializing in the design, development, production, and sales of intelligent testing equipment and automated testing products for motors. The company is committed to providing customers with customized one-stop motor testing solutions. The company mainly produces equipment such as hysteresis dynamometers, magnetic particle dynamometers, eddy current dynamometers and their control systems, motor comprehensive performance testing systems, motor online performance testing systems, multi-station motor life testing systems, electric tool life testing systems, wheel drive motor performance testing systems, tooth slot torque testing systems, robot joint systems, etc. The products are widely used in automobiles, aviation, household appliances Industries such as electric tools and garden care equipment.

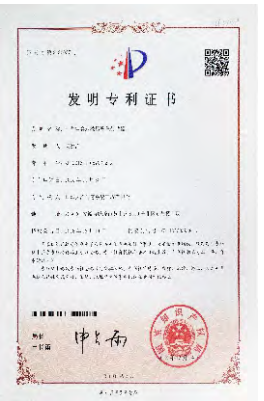
We are a team composed of a group of young people full of vitality and dreams. With rich experience in business management, we adhere to the business policy of "technology leads progress, customer satisfaction first" and the Talent management concept of "people first, talent is the best". Adhering to the price of "learning is the future competitiveness", our products are highly recognized by customers, Everyone has a positive and enterprising sense of collective honor, and can deeply experience the warmth and warmth of a family.

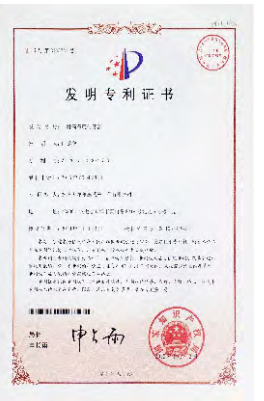
Company Qualifications

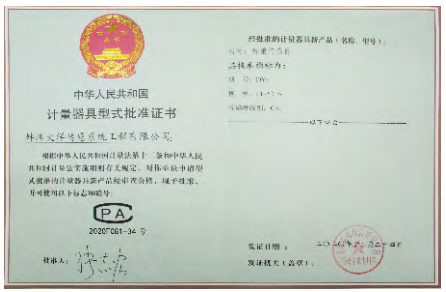


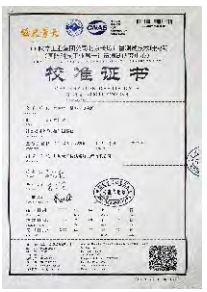


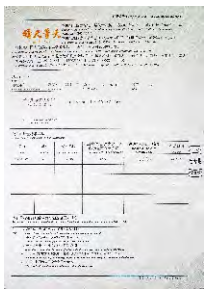
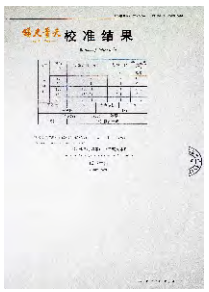






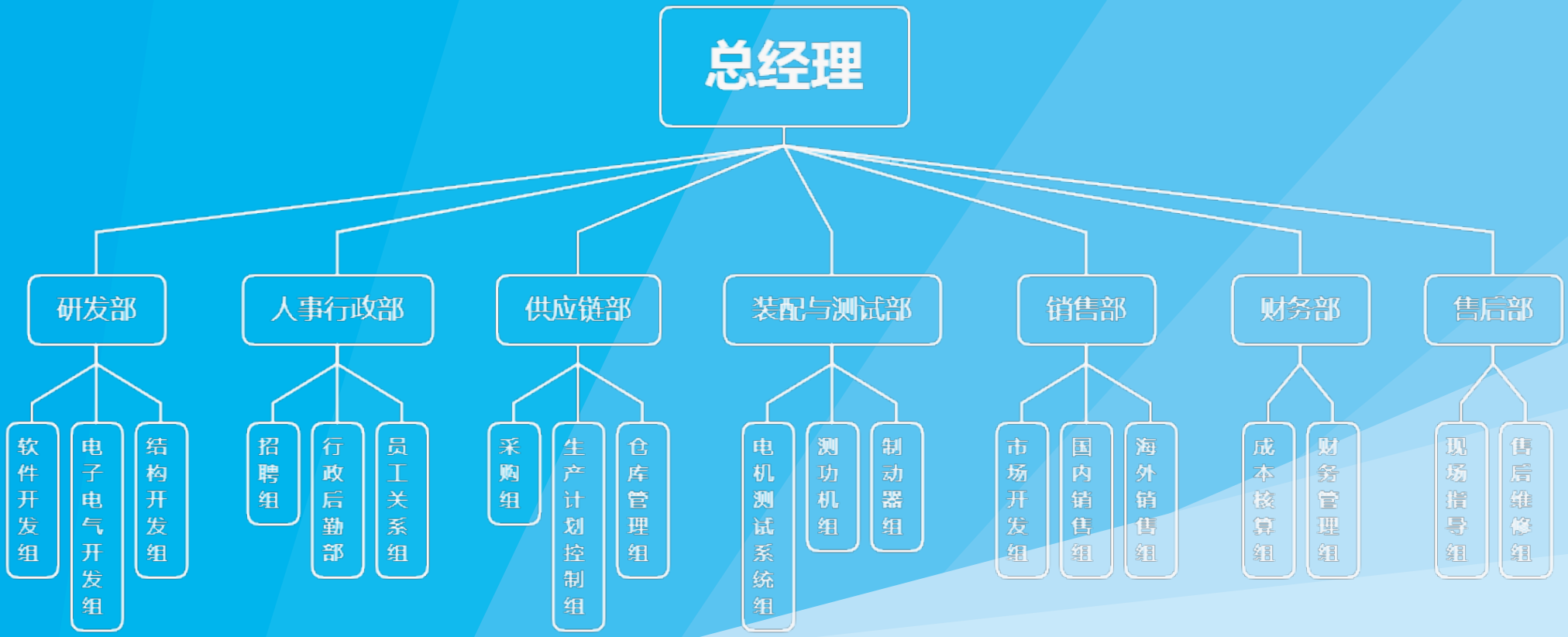





公司架构

Corporate structure



愿景 Vision

成为电机测试与自动化平台解决方案的首选供应商
Becoming the preferred supplier of solutions for motor testing and automation platforms

使命 Mission

造福员工，成就客户，引领行业，回报社会
Benefiting employees, achieving customers, leading the industry, and returning to society

价值观 Core Value

创新，包容，认可，执行，担当，合作共赢
Innovation, inclusiveness, recognition, execution, responsibility, and win-win cooperation

传统电机性能测试台

Traditional motor performance testing bench

磁滞测功机加载测试设备
Hysteresis Dynamometer Loading Test Equipment

产品概述 Products Overview

力测科技

电机加载性能测试设备(磁滞测功机加载)是一套利用磁滞测功机给电机加载，实现对各种电机综合性能的精准测试，适合小功率微特电机的性能测试，温升测试，能效测试以及模拟电机各种工况下的电机特性测试。磁滞测功机不需要依靠速度来产生扭矩，因此可以进行从空载到堵载的全程测试。磁滞测功机的冷却方式可分为自然冷却，压缩空气冷却，鼓风机冷却。测试系统通过仪器仪表来读取电机的扭矩，转速，输出功率，电流，电压，输入功率，效率等参数它可以根据不同的配置来测试不同的电机如直流有刷电机，直流无刷电机，交流串激电机等。一般应用于测试功率在14KW以下，扭矩在56N.m以下，转速在30000rpm以下的电机或电机驱动测试。

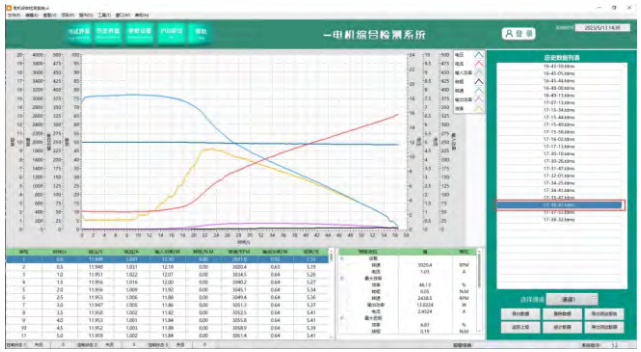
Motor loading performance testing equipment (hysteresis dynamometer loading) is a set of equipment that uses a hysteresis dynamometer to load the motor, achieving precise testing of the comprehensive performance of various motors. It is suitable for performance testing, temperature rise testing, energy efficiency testing, and simulating motor characteristics testing under various working conditions of small power micro special motors. The hysteresis dynamometer does not need to rely on speed to generate torque, so it can conduct a full range of tests from no load to blocked load. The cooling methods of hysteresis dynamometer can be divided into natural cooling, compressed air cooling, and blower cooling. The testing system reads the torque, speed, output power, , current, voltage, input power, efficiency and other parameters of the motor through instruments and meters. It can test different motors such as DC brushless motor, DC brushless motor, AC series motor, etc. according to different configurations. Generally used for testing motors or motor drive tests with power below 14KW, torque below 56N. m, and rotational speed below 30000rpm.

加载特性 Loading characteristics

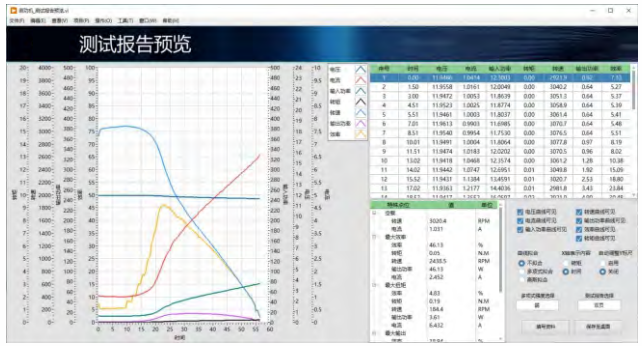
- **加 载 稳 定:** 基本无转矩波动，惯量小
- **使用寿命长:** 靠磁场制动，转子与定子无接触，唯一接触的是轴与轴承，基本无需维护
- **适应范围广:** 适用低到中高转速电机的测试，可以测试被测电机从空载到堵转的全过程测试。
- **精　度　高:** 扭矩测量精度可达0.2-0.5%F.S，转速测量精度可达0.1%F.S。

- **Stable loading:** Basically no torque fluctuations, small inertia
- **Long service life:** Relying on magnetic field braking, the rotor and stator have no contact, and the only contact is between the shaft and bearings, which basically does not require maintenance
- **Wide applicability:** Suitable for testing low to medium to high speed motors, it can test the entire process of the tested motor from no-load to locked rotor.
- **High precision:** The torque measurement accuracy can reach 0.2-0.5% F.S, and the speed measurement accuracy can reach 0.1% F.S.

测试软件界面 Test software interface



全程测试



测试曲线

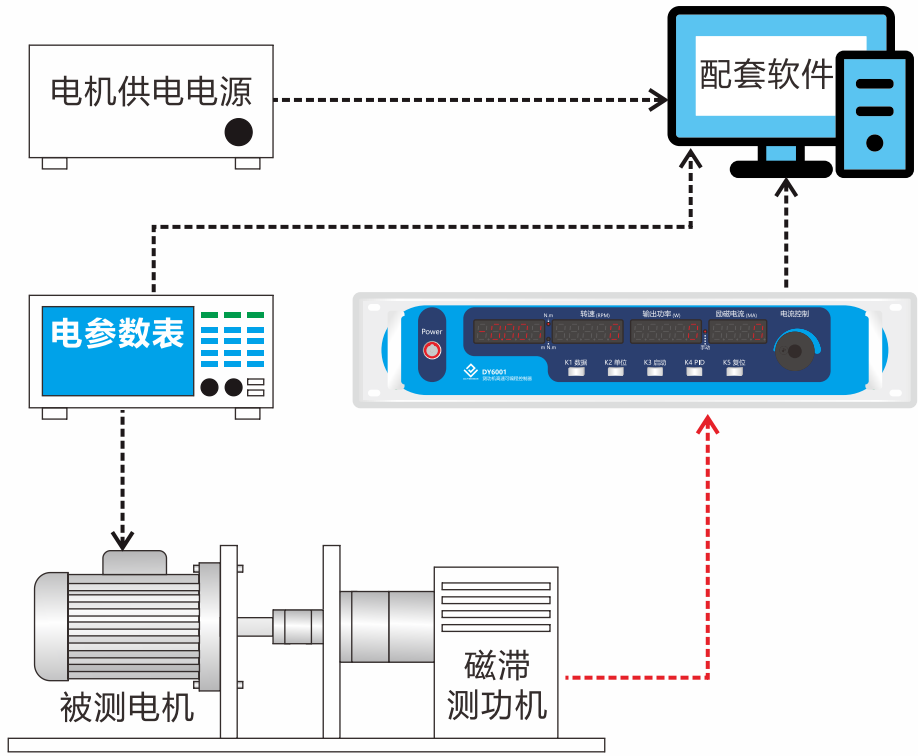
阶段测试--可设置起始值/时间/分段点

测试系统特点 Test system Characteristics

- **拓展性强:** 可以一套系统配置一个或多个测功机，可手动或系统自动切换。
- **兼容性强:** 系统可以兼容国内外主流品牌的电源，功率计/功率分析仪。
- **开放性好:** 客制化设计理念，针对性强。
- **方便性好:** 标准模块化设计，面向对象编程，便于后续升级。
- **操作性好:** 亲和的人机界面，更容易操作。
- **功能性好:** 功能强大的数据库处理能力，方便查找和比对测试数据。
- **安全性好:** 实时在线监控数据，软硬件智能保护，一旦超过设定保护值立即启动保护。

Strong scalability: One or more dynamometers can be configured for a system, and can be manually or automatically switched between systems.
Strong compatibility: The system can be compatible with mainstream domestic and foreign brands of power supplies, power meters/power analyzers.
Good openness: Customized design concept with strong pertinence.
Good convenience: standard modular design, object-oriented programming, easy for subsequent upgrades.
Good operability: A friendly human-machine interface makes it easier to operate.
Good functionality: Powerful database processing capability, TDMS real-time data storage, convenient for searching and comparing test data.
Good security: Real time online monitoring of data, intelligent protection of software and hardware, and immediate activation of protection once the set protection value is exceeded.

系统结构框图 System Principle Diagram



测试参数 Test parameters

•标准测试参数(搭载功率计): 扭矩、转速、输出功率、 电压、电流、输入功率、效率。

•Standard test parameters (equipped with a power meter):
Torque, speed, output power, , voltage, current, input power, efficiency.

特殊测试参数 Special test parameters

•搭载功率分析仪: 扭矩、转速、输出功率、 母线电压、母线电流、母线输入功率、相电压、相电流、相功率、整机效率、驱动器效率、电机效率等。

•搭载温度传感器: 测量温升。

•搭载电阻测试仪: 测量空载损耗。

•Equipped with a power analyzer: Torque, speed, output power, , bus voltage, bus current, bus input power, phase voltage, phase current, phase power, overall efficiency, driver efficiency, motor efficiency, etc.

•Equipped with temperature sensor: Measure

•Equipped with a resistance tester: temperature rise.

应用领域 Application Area

电机加载性能测试系统广泛应用于直流电机(汽车风扇电机、雨刮电机座椅电机、摇窗电机、水泵电机、天窗电机、轮电机、直流无刷电机)、电容电机(洗衣机电机、油烟机电机、空调电机、风扇电机、多速电机等)罩极电机、串激电机、外转子电机、旋转类电动工具(电钻、角磨、切割机.电园锯等)、单三相电机等的综合性能测试。

The motor loading performance testing system is widely used in DC motors (car fan motors, wiper motor seat motors, window swing motors, water pump motors, sunroof motors, wheel motors, DC brushless motors), capacitor motors (washing machine motors, range hood motors, air conditioning motors, fan motors, multi speed motors, etc.), shield pole motors, series excitation motors, outer rotor motors, rotary electric tools (electric drills, angle grinders, cutting machines, electric circular saws, etc.) Comprehensive performance test of single three-phase motor, etc.

涡流测功机加载测试设备
Eddy current dynamometer loading testing equipment

产品概述 Products Overview

力测科技

电机加载性能测试设备(涡流测功机加载)是一套利用涡流测功机给电机加载，实现对各种电机综合性能的精准测试，适用于高转速，中到高功率的电机测试。涡流测功机的扭矩随着转速的提高而加大，并在额定转速时达到扭矩峰值。由于转子的直径较小，涡流测功机具有较低的惯量。其冷却方式是通过定子内的循环水冷却系统带走制动时所产生的热能。测试系统通过仪器仪表来读取电机的扭矩，转速，输出功率，转向，电流，电压，输入功率，效率等参数。它可以根据不同的配置来测试不同的电机如直流有刷电机，直流无刷电机，交流串激电机等高速电机。一般应用于测试功率在30KW以下，扭矩在100N.m以下，转速在1000-50000rpm范围的电机或电机驱动测试

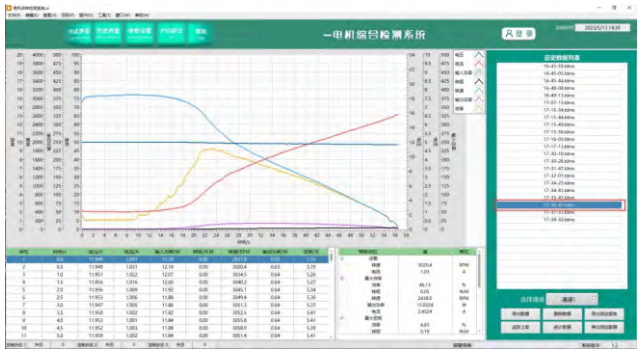
Motor loading performance testing equipment (eddy current dynamometer loading) is a set of equipment that uses eddy current dynamometer to load the motor, achieving precise testing of the comprehensive performance of various motors. It is suitable for testing high speed, medium to high power motors. The torque of the eddy current dynamometer increases with the increase of speed and reaches the peak torque at the rated speed. Due to the small diameter of the rotor, the eddy current dynamometer has a lower inertia. The cooling method is to remove the heat energy generated during braking through the circulating water cooling system inside the stator. The testing system reads the torque, speed, output power, , current, voltage, input power, efficiency and other parameters of the motor through instruments and meters. It can test different motors according to different configurations, such as DC brushless motors, DC brushless motors, AC series excited motors, and other high-speed motors. Generally used for testing motors or motor drive tests with power below 30KW, torque below 100N. m, and speed ranging from 1000-50000rpm

加载特性 Loading characteristics

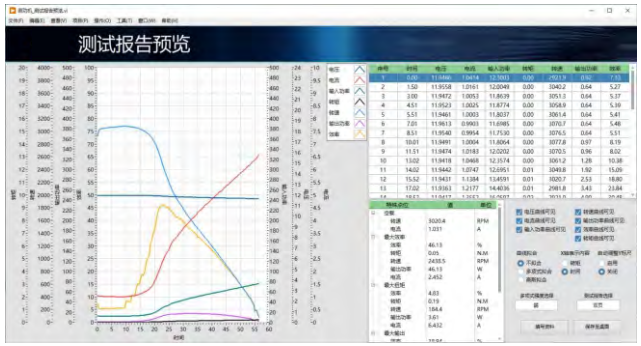
- **加 载 稳 定:** 基本无转矩波动，惯量小
- **使用寿命长:** 靠磁场制动，转子与定子无接触，唯一接触的是轴与轴承，基本无需维护
- **适应范围广:** 适用中高转速电机的测试，可以测试被测电机从空载到额定负载的全过程测试。
- **精　度　高:** 扭矩测量精度可达0.2-0.5%F.S，转速测量精度可达0.1%F.S。

- **Stable loading:** Basically no torque fluctuations, small inertia
- **Long service life:** Relying on magnetic field braking, the rotor and stator have no contact, and the only contact is between the shaft and bearings, which basically does not require maintenance
- **Wide applicability:** Suitable for testing medium to high speed motors, it can test the entire process of the tested motor from no-load to rated load.
- **High precision:** The torque measurement accuracy can reach 0.2-0.5% F.S, and the speed measurement accuracy can reach 0.1% F.S.

测试软件界面 Test software interface



手动测试



测试曲线

阶段测试--可设置起始值/时间/分段点

测试系统特点 Test system Characteristics

- **拓展性强:** 可以一套系统配置一个或多个测功机，可手动或系统自动切换。
- **兼容性强:** 系统可以兼容国内外主流品牌的电源，功率计/功率分析仪。
- **开放性好:** 客制化设计理念，针对性强。
- **方便性好:** 标准模块化设计，面向对象编程，便于后续升级。
- **操作性好:** 亲和的人机界面，更容易操作。
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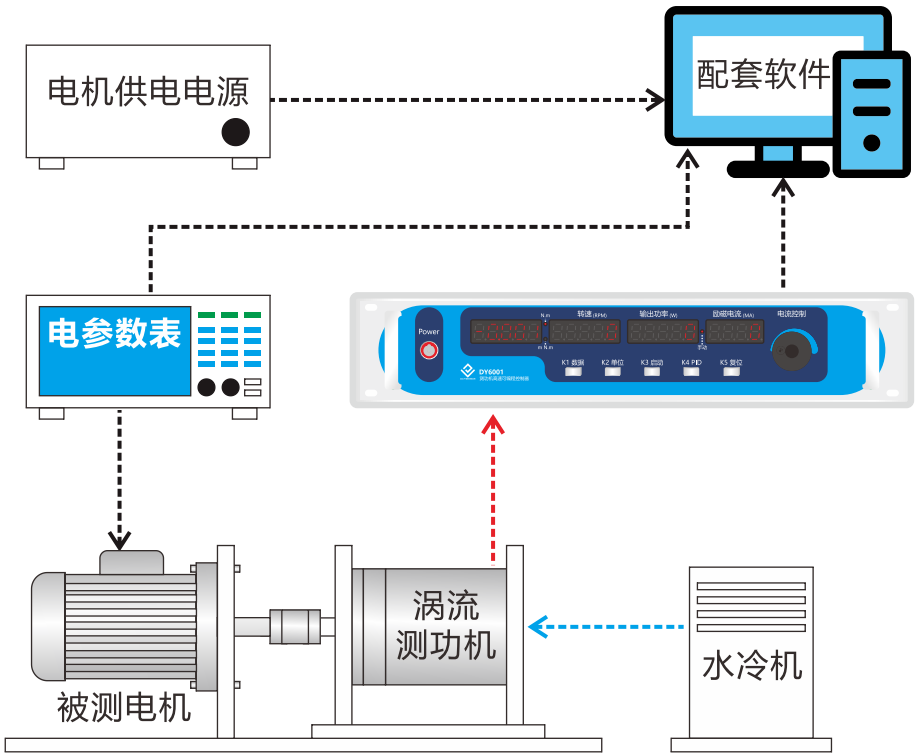
系统结构框图 System Principle Diagram



测试参数 Test parameters

•标准测试参数(搭载功率计): 扭矩、转速、输出功率、 电压、电流、输入功率、效率。

•Standard test parameters (equipped with a power meter):
Torque, speed, output power, , voltage, current, input power, efficiency.

特殊测试参数 Special test parameters

•搭载功率分析仪: 扭矩、转速、输出功率、 母线电压、母线电流、母线输入功率、相电压、相电流、相功率、整机效率、驱动器效率、电机效率等。

•搭载温度传感器: 测量温升。

•搭载电阻测试仪: 测量空载损耗。

•Equipped with a power analyzer: Torque, speed, output power, , bus voltage, bus current, bus input power, phase voltage, phase current, phase power, overall efficiency, driver efficiency, motor efficiency, etc.

•Equipped with temperature sensor: Measure temperature rise.

•Equipped with a resistance tester:

应用领域 Application Area

电机加载性能测试系统广泛应用于直流电机(电动工具电机、鼓风机电机、风扇电机、航天航空军品电机、无人机电机），燃油机（无人发动机、摩托车发动机、园林工具用的小型通机、潜水艇发动机），单三相电机等的综合性能测试。

The motor loading performance test system is widely used in the comprehensive performance test of DC motors (electric tool motors, blower motors, fan motors, aerospace military products motors, UAV motors), fuel engines (unmanned engines, motorcycle engines, garden tools for small aircraft, submarine engines), single three-phase motors, etc.

磁粉测功机加载测试设备
Magnetic particle dynamometer loading testing equipment

产品概述 Products Overview

力测科技

电机加载性能测试设备(磁粉测功机加载)是一套利用磁粉测功机给电机加载，实现对各种电机综合性能的精准测试，适用于中低转速或中到高扭矩范围的电机测试。如同磁滞测功机一般可以在零转速时 提供最大的扭矩。其冷却方式主要分为自然冷却和水冷却。测试系统通过仪器仪表来读取电机的扭矩，转速，输出功率，转向，电流，电压，输入功率，效率等参数。它可以根据不同的配置来测试不同的电机如轮电机，减速机电机等低到中等转速电机。一般应用于测试功率在30KW以下，扭矩在1000N.m以下，转速在2000rpm范围的电机或电机驱动测试。

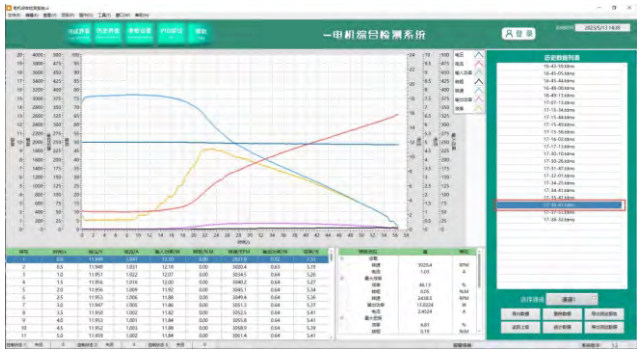
Motor loading performance testing equipment (magnetic particle dynamometer loading) is a set of equipment that uses a magnetic particle dynamometer to load the motor, achieving precise testing of the comprehensive performance of various motors. It is suitable for motor testing in the range of medium to low speed or medium to high torque. Like a hysteresis dynamometer, it can provide maximum torque at zero speed. The cooling methods are mainly divided into natural cooling and water cooling. The testing system reads the torque, speed, output power, , current, voltage, input power, efficiency and other parameters of the motor through instruments and meters. It can test different motors such as wheel motors, gearbox motors, and low to medium speed motors according to different configurations. Generally used for testing motors or motor drives with power below 30KW, torque below 1000N. m, and speed within the range of 2000rpm.

加载特性 Loading characteristics

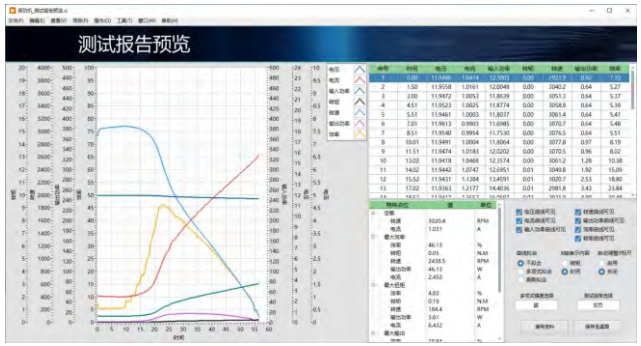
- **加 载 稳 定:** 基本无转矩波动，惯量小。
- **经 济 性 好:** 同样差不多规格，磁粉测功机价格要远远低于其他类型的测功机。
- **适应范围广:** 适用中高转速电机的测试，可以测试被测电机从空载到额定负载的全过程测试。
- **精　度　高:** 扭矩测量精度可达0.2-0.5%F.S，转速测量精度可达0.1%F.S。

- **Stable loading:** Basically no torque fluctuations, small inertia.
- **Long service life:** Similarly, with similar specifications, the price of magnetic particle dynamometers is much lower than other types of dynamometers.
- **Wide applicability:** Suitable for testing medium to high speed motors, it can test the entire process of the tested motor from no-load to rated load.
- **High precision:** The torque measurement accuracy can reach 0.2-0.5% F.S, and the speed measurement accuracy can reach 0.1% F.S.

测试软件界面 Test software interface



定扭矩测试



测试曲线

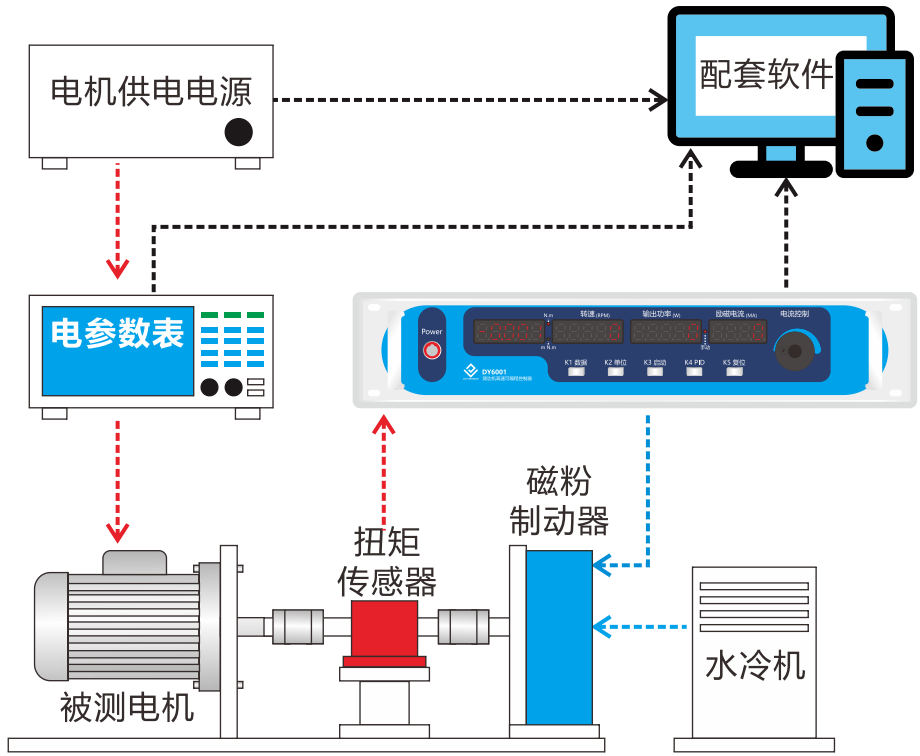
阶段测试--可设置起始值/时间/分段点

测试系统特点 Test system Characteristics

- **拓展性强:** 可以一套系统配置一个或多个测功机，可手动或系统自动切换。
- **兼容性强:** 系统可以兼容国内外主流品牌的电源，功率计/功率分析仪。
- **开放性好:** 客制化设计理念，针对性强。
- **方便性好:** 标准模块化设计，面向对象编程，便于后续升级。
- **操作性好:** 亲和的人机界面，更容易操作。
- **功能性好:** 功能强大的数据库处理能力，方便查找和比对测试数据。
- **安全性好:** 实时在线监控数据，软硬件智能保护，一旦超过设定保护值立即启动保护。

Strong scalability: One or more dynamometers can be configured for a system, and can be manually or automatically switched between systems.
Strong compatibility: The system can be compatible with mainstream domestic and foreign brands of power supplies, power meters/power analyzers.
Good openness: Customized design concept with strong pertinence.
Good convenience: standard modular design, object-oriented programming, easy for subsequent upgrades.
Good operability: A friendly human-machine interface makes it easier to operate.
Good functionality: Powerful database processing capability, TDMS real-time data storage, convenient for searching and comparing test data.
Good security: Real time online monitoring of data, intelligent protection of software and hardware, and immediate activation of protection once the set protection value is exceeded.

系统结构框图 System Principle Diagram



测试参数 Test parameters

•标准测试参数(搭载功率计): 扭矩、转速、输出功率、 电压、电流、输入功率、效率。

•Standard test parameters (equipped with a power meter):
Torque, speed, output power, , voltage, current, input power, efficiency.

特殊测试参数 Special test parameters

•搭载功率分析仪: 扭矩、转速、输出功率、 母线电压、母线电流、母线输入功率、相电压、相电流、相功率、整机效率、驱动器效率、电机效率等。

•搭载温度传感器: 测量温升。

•搭载电阻测试仪: 测量空载损耗。

•Equipped with a power analyzer: Torque, speed, output power, , bus voltage, bus current, bus input power, phase voltage, phase current, phase power, overall efficiency, driver efficiency, motor efficiency, etc.

•Equipped with temperature sensor: Measure temperature rise.

•Equipped with a resistance tester:

应用领域 Application Area

电机加载性能测试系统广泛应用于轮毂电机(电动自行车、滑板车、电动轮椅），减速机电机（行星减速机电机，谐波减速机电机）航天航空军品电机等的综合性能测试。

The motor loading performance test system is widely used in the comprehensive performance test of hub motor (electric bicycle, Kick scooter, electric wheelchair), reducer motor (planetary reducer motor, harmonic reducer motor), aerospace military motor, etc.

对拖类电机性能测试台

Performance test bench for traction motors

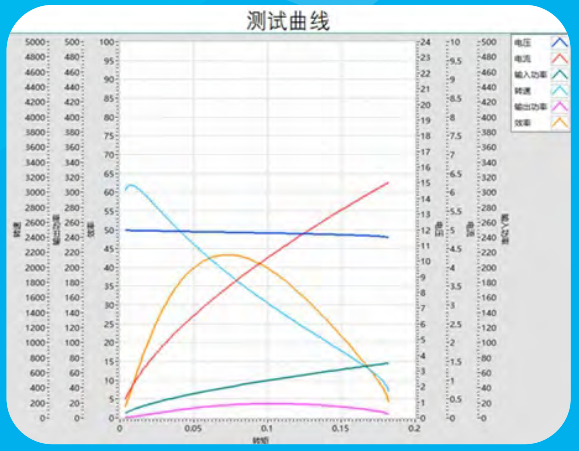
电机检测报告

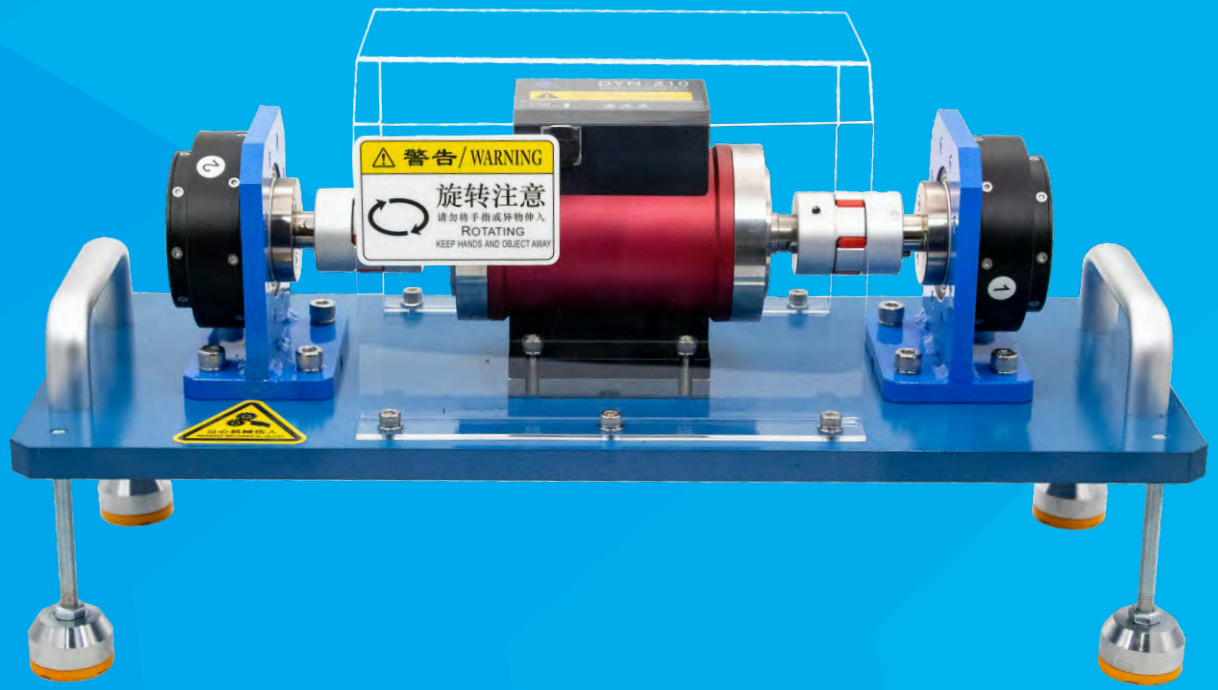
生产厂家	AA厂家	试品名称	AA试品
使用仪器	AA仪器	电源参数	24V直流
其他信息	无	审核人员	张三
测试编码	A123	测试人员	
环境温度	25度	测试日期	2023-06-30
备注	无	测试时间	17:35:47至17:36:46

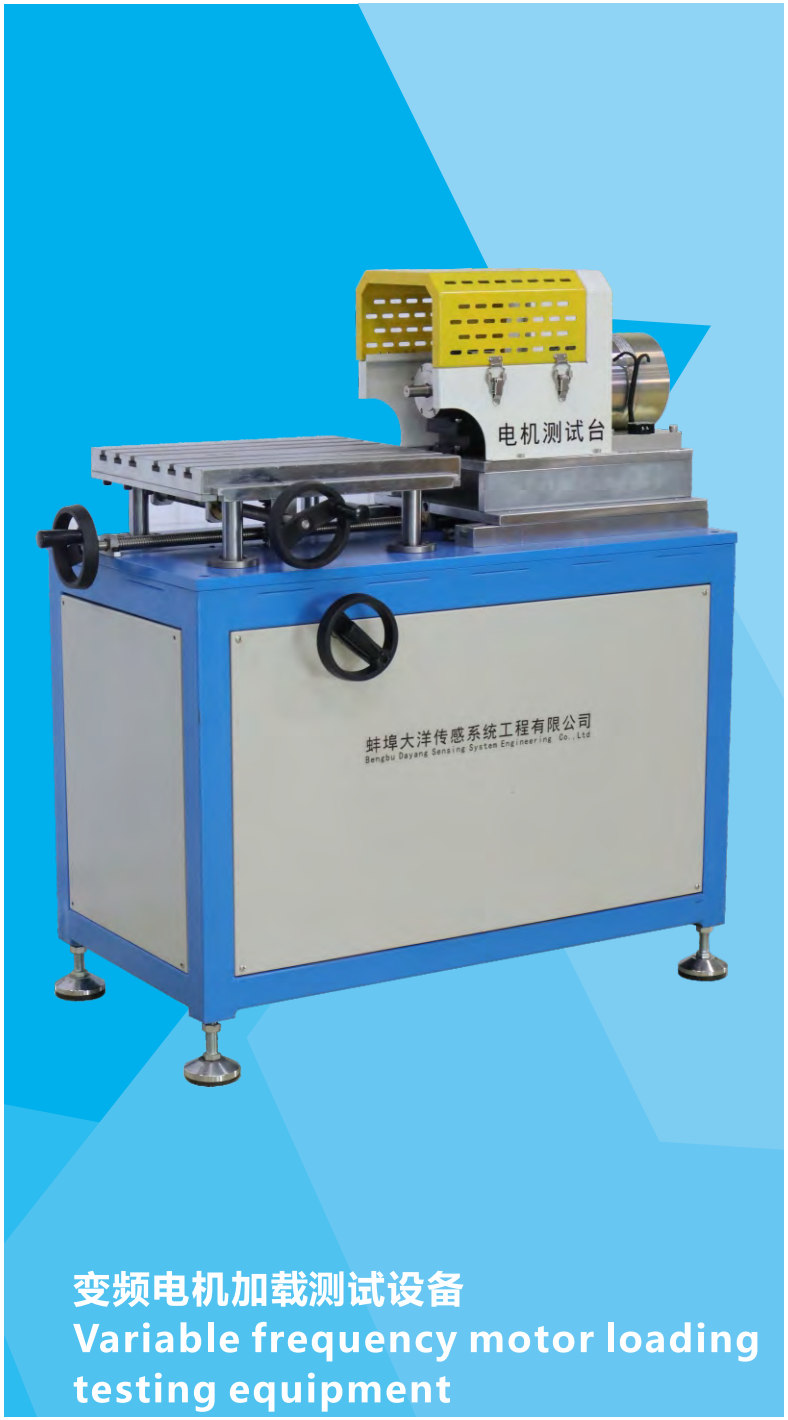
特殊点位

	电压/V	电流/A	输入功率/W	转矩/N.M	转速/RPM	输出功率/W	效率/%
空载点	/	1.000	/	/	3073.8	/	/
最大效率点	/	2.504	/	0.06	2391.4	46.53	46.53
最大扭矩	/	6.636	/	0.20	165.9	3.40	4.44
最大输出	/	3.955	/	0.10	1709.7	17.72	38.45
堵转	/	6.532	/	0.18	/	/	/

测试曲线







变频电机加载测试设备
Variable frequency motor loading testing equipment

产品概述 Products Overview

力测科技

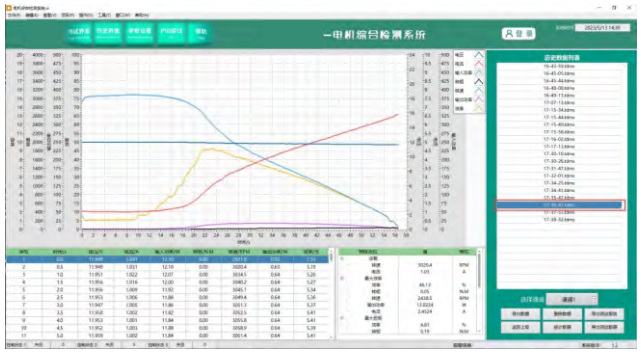
电机加载性能测试设备(变频电机加载)是一套利用变频电机给电机加载，实现对各种电机综合性能的精准测试，适用于中小型及大型电机的性能测试，温升实验，能效测试以及模拟电机各种工况下的特性测试。并且负载电机在发电状态下，可通过回馈单元，把电机发出的电能逆变到电网中供其他单元使用(不像传统通过电阻器以热能的方式浪费掉)形成能源的循环利用，绿色环保节约能源。系统通过仪器仪表来读取电机的扭矩，转速，输出功率，转向，电流，电压，输入功率，效率等参数。它可以根据不同的配置来测试不同的电机如直流有刷电机直流无刷电机，交流串激电机等高速电机。一般应用于测试功率在200KW以下，扭矩在1000N.m以下，转速在15000rpm范围的电机或电机驱动测试。

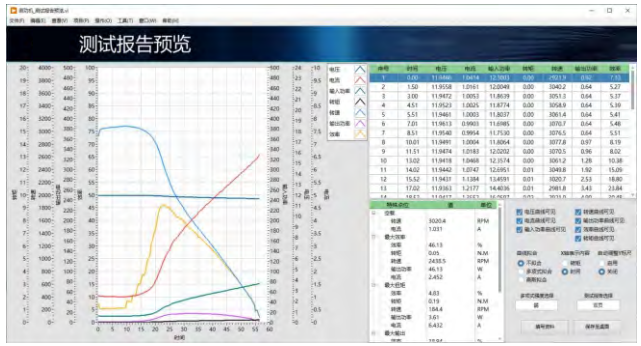
Motor loading performance testing equipment (variable frequency motor loading) is a set of equipment that uses variable frequency motors to load the motor, achieving precise testing of the comprehensive performance of various motors. It is suitable for performance testing, temperature rise experiments, energy efficiency testing, and simulating the characteristics of various working conditions of small and large motors. And when the load motor is in the power generation state, it can use the feedback unit to invert the electrical energy emitted by the motor into the power grid for other units to use (unlike traditional waste of heat through resistors), forming a cycle of energy utilization, green environmental protection, and energy conservation. The system reads the torque, speed, output power, , current, voltage, input power, efficiency and other parameters of the motor through instruments and meters. It can test different motors according to different configurations, such as DC brushless motors, AC series excited motors, and other high-speed motors. Generally used for testing motors or motor drive tests with power below 200KW, torque below 1000N. m, and speed within the range of 15000rpm.

加载特性 Loading characteristics

·系统集成了更可控的PC及PLC单元，控制方便，效率更高。
·网络化控制体系，可以对设备进行CANBus或者TCP/IP通讯，提高通讯品质及响应速度。
·低惯量负载电机，能更好的保障，提供稳定的，高精度的动态扭矩或速度响应。
·扭矩传感器可选双量程自动切换，精确的闭环反馈控制。
·大型电机的能量回馈，绿色环保，节约能源。
·The system integrates more controllable PC and PLC units, making control convenient and efficiency higher.
·The networked control system can communicate with devices through CANBus or TCP/IP to improve communication quality and response speed.
·Low inertia load motors provide better protection and provide stable, high-precision dynamic torque or speed response.
·The torque sensor can be selected with dual range automatic switching and precise closed-loop feedback control.
·Energy feedback for large motors, green and environmentally friendly, and energy saving.

测试软件界面 Test software interface



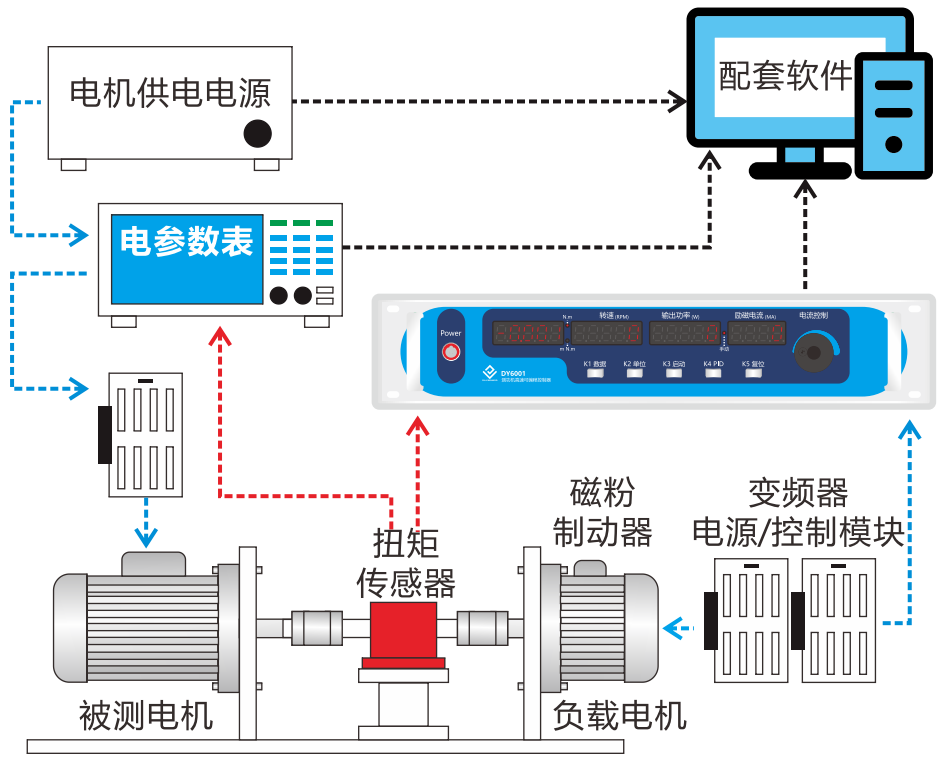


测试系统特点 Test system Characteristics

- **拓展性强:** 可以一套系统配置一个或多个测功机，可手动或系统自动切换。
- **兼容性强:** 系统可以兼容国内外主流品牌的电源，功率计/功率分析仪。
- **开放性好:** 客制化设计理念，针对性强。
- **方便性好:** 标准模块化设计，面向对象编程，便于后续升级。
- **操作性好:** 亲和的人机界面，更容易操作。加载响应能力可以控制0.1s内。
- **功能性好:** 功能强大的数据处理能力，方便查找比对，可主动加载还可以拖动被测电机。
- **安全性好:** 实时在线监控数据，软硬件智能保护，一旦超过设定保护值立即启动保护。

·Strong expandability:One or more dynamometers can be configured for one system, and can be manually or automatically switched by the system.
·Strong compatibility:The system can be compatible with mainstream domestic and foreign brands of power supplies, power meters/power analyzers.
·Good openness:Customized design concept with strong pertinence.
·Good convenience:Standard modular design and object-oriented programming facilitate subsequent upgrades.
·Good operability:Friendly human-machine interface, easier to operate. The loading response capability can be controlled within 0.1 seconds.
·Good functionality:Powerful data processing capability, convenient for searching and comparison, capable of actively loading and dragging the tested motor.
·Good safety:Real time online monitoring of data, intelligent protection of software and hardware, and immediate activation of protection once the set protection value is exceeded.

系统结构框图 System Principle Diagram



测试参数 Test parameters

•标准测试参数(搭载功率计): 扭矩、转速、输出功率、 电压、电流、输入功率、效率。

•Standard test parameters (equipped with a power meter):
Torque, speed, output power, , voltage, current, input power, efficiency.

特殊测试参数 Special test parameters

•搭载功率分析仪: 扭矩、转速、输出功率、 母线电压、母线电流、母线输入功率、相电压、相电流、相功率、整机效率、驱动器效率、电机效率等。

•搭载温度传感器: 测量温升。

•搭载电阻测试仪: 测量空载损耗。

•Equipped with a power analyzer: Torque, speed, output power, , bus voltage, bus current, bus input power, phase voltage, phase current, phase power, overall efficiency, driver efficiency, motor efficiency, etc.

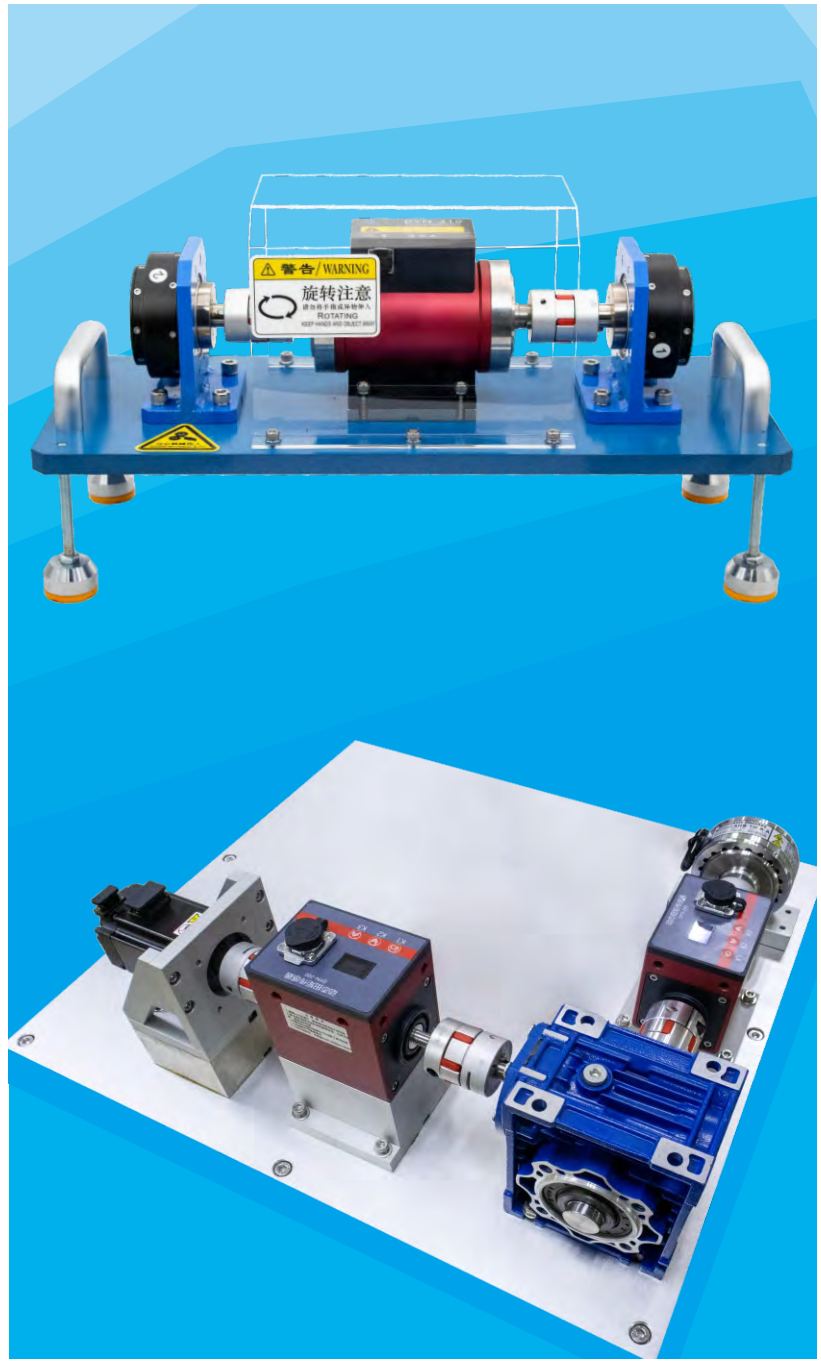
•Equipped with temperature sensor: Measure

•Equipped with a resistance tester: temperature rise.

应用领域 Application Area

电机加载性能测试系统广泛应用于汽车电机(EPS助力电机、天窗电机、尾门电机、水泵电机），燃油机（无人发动机、摩托车发动机、园林工具用的小型通机、潜水艇发动机）航天航空军品电机、无人机电机、工业伺服电机、单三相电机等的综合性能测试。

The motor loading performance test system is widely used in the comprehensive performance test of automotive motors (EPS power assisted motor, sunroof motor, tailgate motor, water pump motor), fuel engines (unmanned engine, motorcycle engine, small general aircraft for garden tools, submarine engine), aerospace military motor, unmanned aerial vehicle motor, industrial servo motor, single three-phase motor, etc.



伺服电机加载测试设备
Servo motor loading testing equipment

产品概述 Products Overview

力测科技

电机加载性能测试设备(伺服电机加载)是一套利用同服电机给电机加载，实现对各种电机结合性能的精准测试，适用于中小型及大型电机的性能测试，温升实验，能效测试以及模拟电机各种工况下的特性测试。并且负载电机在发电状态下，可通过回馈单元，把电机发出的电能逆变到电网中供其他单元使用(不像传统通过电阻器已热能的方式浪费掉)形成能源的循环利用，绿色环保节约能源。系统通过仪器仪表来读取电机的扭矩，转速，输出功率，转向，电流，电压，输入功率效率等参数。它可以根据不同的配置来测试不同的电机如直流有刷电机，直流无刷电机，交流串激电机等高速电机。一般应用于测试功率在200KW以下，扭矩在1000N.m以下，转速在30000rom范围的电机或电机驱动测试

Motor loading performance testing equipment (servo motor loading) is a set of equipment that uses the same server motor to load the motor, achieving precise testing of the combined performance of various motors. It is suitable for performance testing, temperature rise experiments, energy efficiency testing, and simulating the characteristics of various working conditions of small and large motors. And when the load motor is in the power generation state, it can use the feedback unit to invert the electrical energy emitted by the motor into the grid for use by other units (unlike the traditional way of wasting thermal energy through resistors), forming a cycle of energy utilization, green environmental protection, and energy conservation. The system reads the torque, speed, output power, , current, voltage, input power efficiency and other parameters of the motor through instruments and meters. It can test different motors according to different configurations, such as DC brushless motors, DC brushless motors, AC series excited motors, and other high-speed motors. Generally used for testing motors or motor drive tests with power below 200KW, torque below 1000N. m, and speed within the range of 30000rpm

加载特性 Loading characteristics

·系统集成了更可控的PC及PLC单元，控制方便，效率更高。
·网络化控制体系，可以对设备进行CANBus或者TCP/IP通讯，提高通讯品质及响应速度。
·低惯量负载电机，能更好的保障，提供稳定的，高精度的动态扭矩或速度响应。
·扭矩传感器可选双量程自动切换，精确的闭环反馈控制。
·大型电机的能量回馈，绿色环保，节约能源。
·The system integrates more controllable PC and PLC units, making control convenient and efficiency higher.
·The networked control system can communicate with devices through CANBus or TCP/IP to improve communication quality and response speed.
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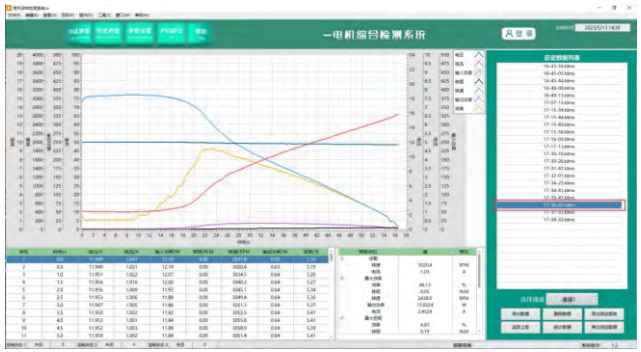
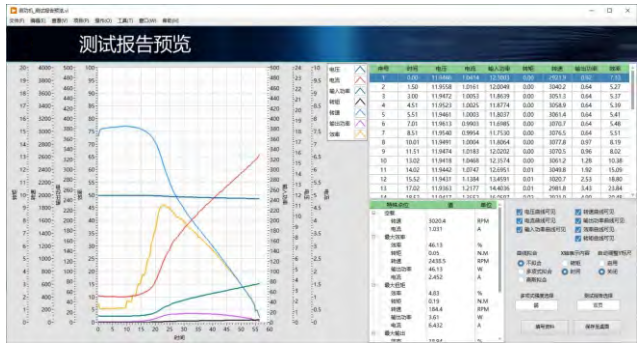
·Energy feedback for large motors, green and environmentally friendly, and energy saving.

测试软件界面 Test software interface





测试系统特点 Test system Characteristics

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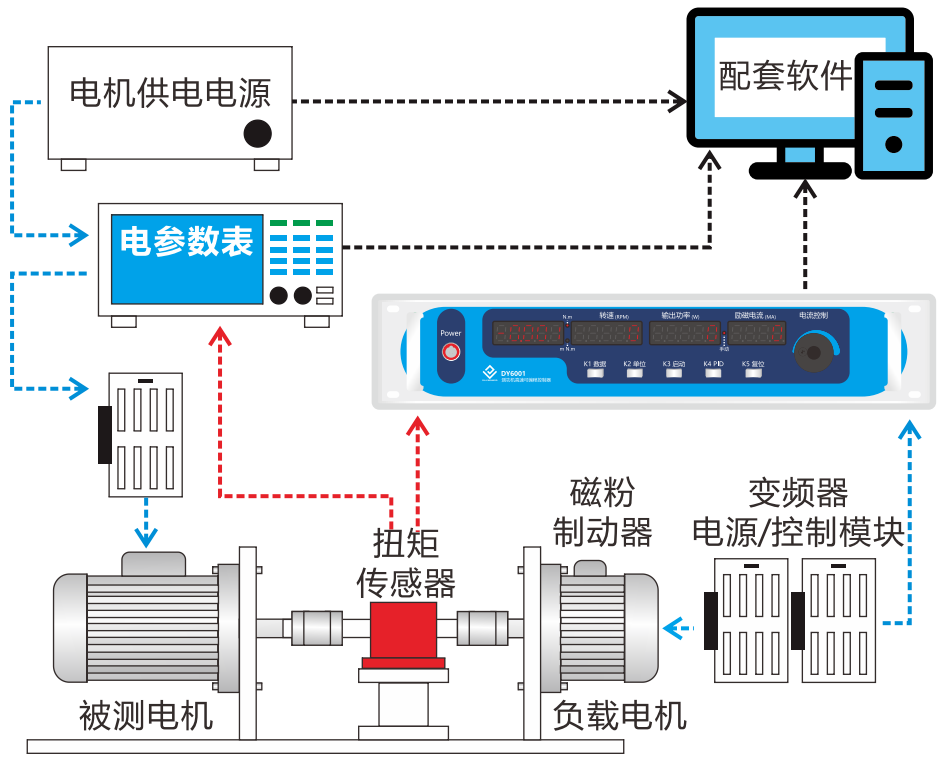
·Good functionality:Powerful data processing capability, convenient for searching and comparison, capable of actively loading and dragging the tested motor.
·Good safety:Real time online monitoring of data, intelligent protection of software and hardware, and immediate activation of protection once the set protection value is exceeded.

系统结构框图 System Principle Diagram



测试参数 Test parameters

•标准测试参数(搭载功率计): 扭矩、转速、输出功率、 电压、电流、输入功率、效率。

•Standard test parameters (equipped with a power meter):
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特殊测试参数 Special test parameters

•搭载功率分析仪: 扭矩、转速、输出功率、 母线电压、母线电流、母线输入功率、相电压、相电流、相功率、整机效率、驱动器效率、电机效率、反向电动势

•搭载温度传感器: 测量温升。

•搭载电阻测试仪: 测量空载损耗，包括铜损、铁损。

•Equipped with a power analyzer: Torque, speed, output power, , bus voltage, bus current, bus input power, phase voltage, phase current, phase power, overall efficiency, driver efficiency, motor efficiency, reverse electromotive force

•Equipped with temperature sensor: Measure temperature rise.

•Equipped with a resistance tester: Measure no-load losses, including copper and iron losses.

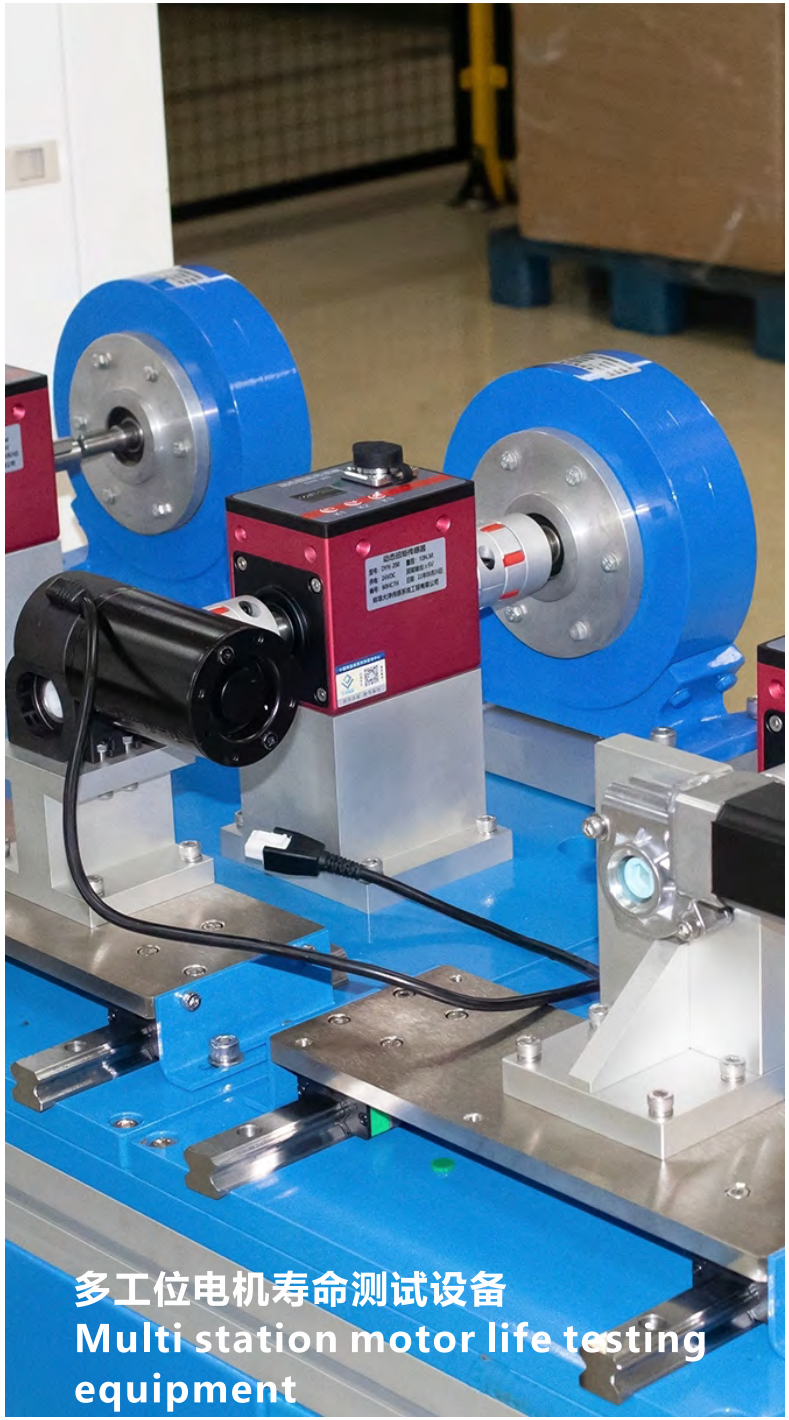
应用领域 Application Area

电机加载性能测试系统广泛应用于汽车电机(EPS助力电机、天窗电机、尾门电机、水泵电机），燃油机（无人发动机、摩托车发动机、园林工具用的小型通机、潜水艇发动机）航天航空军品电机、无人机电机、工业伺服电机、单三相电机等的综合性能测试。

The motor loading performance test system is widely used in the comprehensive performance test of automotive motors (EPS power assisted motor, sunroof motor, tailgate motor, water pump motor), fuel engines (unmanned engine, motorcycle engine, small general aircraft for garden tools, submarine engine), aerospace military motor, unmanned aerial vehicle motor, industrial servo motor, single three-phase motor, etc.

定制化电机专用测试设备

Customized motor specific testing equipment



多工位电机寿命测试设备
Multi station motor life testing equipment

产品概述 Products Overview

力测科技

多工位电机寿命测试设备是利用磁滞制动器并通过上位机程序对电机进行模拟加载寿命测试是一套用于测试电机寿命的专业老化设备，多工位定制化寿命测试系统，每个工位可以独立运行互不干涉，客户可以根据实际要求设定不同测试程序并保存在数据库，整套系统可按设定的程序自动运行，自动判定，发现不良自动停机，测试软件用LABVIEW编写，具有特色的测试与图形绘制功能，可以计算并显示多个参数(电流等)。能测试种类繁多的各式电机的寿命。凭借友好的用户界面，它所产出的测试数据可以储存显示并易于转换为表格。能够进行扭矩开环控制，能过流，过温保护等。

The multi-station motor life testing equipment is a professional aging equipment used to test the motor life using hysteresis brakes and simulated loading through upper computer programs. The multi-station customized life testing system allows each station to run independently without any interference. Customers can set different testing programs according to actual requirements and save them in the database. The entire system can automatically run and judge according to the set program, Detect defects and automatically stop the machine. The testing software is written in LABVIEW and has unique testing and graphic drawing functions, which can calculate and display multiple parameters (such as current). Can test the lifespan of various types of motors. With its user-friendly interface, the test data it produces can be stored, displayed, and easily converted into tables. Capable of torque open-loop control, over current, over temperature protection, etc.

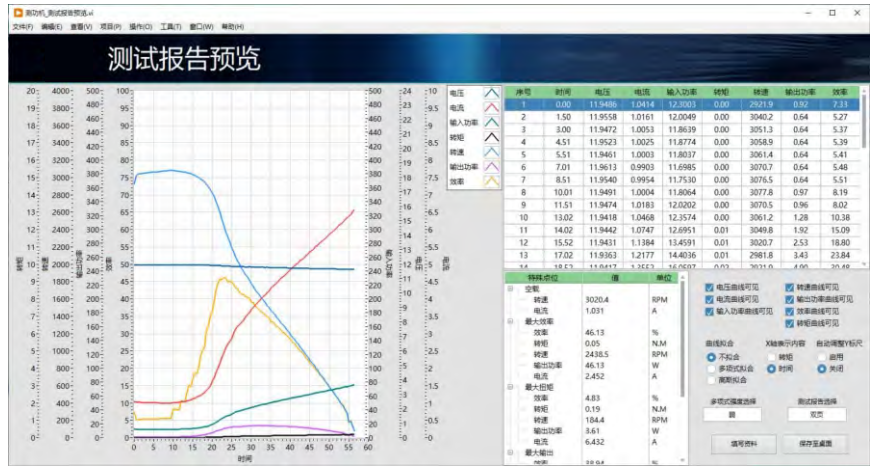
加载特性 Loading characteristics

- **负载可调：** 客户可以根据电机的实际应用要求进行模拟加载设定。
- **工位可选：** 可在1-128工位内任意选择工位数量。
- **参数可选：** 可选择电流，电压，转速，温度，扭矩等任意一个或多个参数。
- **状态可设：** 可按照要求设定多种测试条件，如循环次数，加载时间，通道时间等。
- **数据查询：** 可选择实时存储数据，也可以设定规定时间内保存数据。

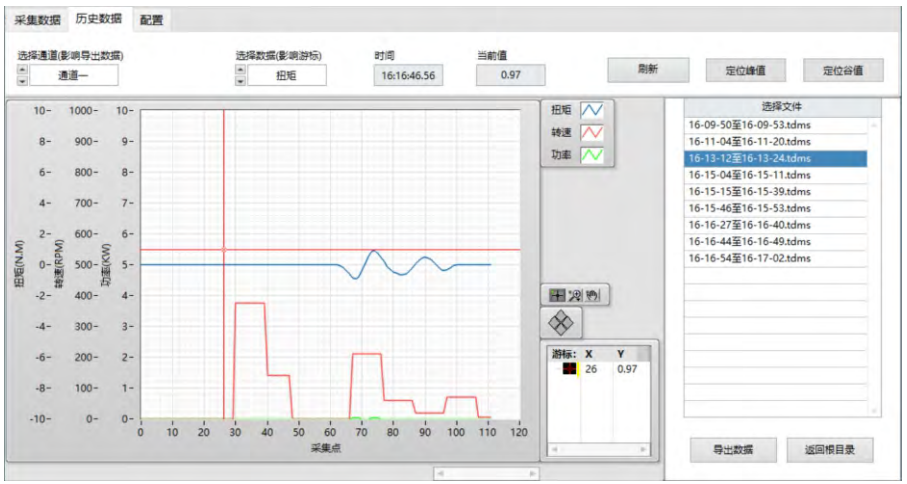
- **Adjustable load:** Customers can simulate loading settings based on the actual application requirements of the motor.
- **Optional workstations:** You can choose any number of workstations from 1 to 128.
- **Optional parameters:** You can choose any one or more parameters such as current, voltage, speed, temperature, torque, etc.
- **The status can be set to:** Multiple testing conditions can be set according to requirements, such as number of cycles, loading time, channel time, etc.
- **Data Query:** You can choose to store data in real-time or set a specified time to save the data.

测试软件界面 Test software interface

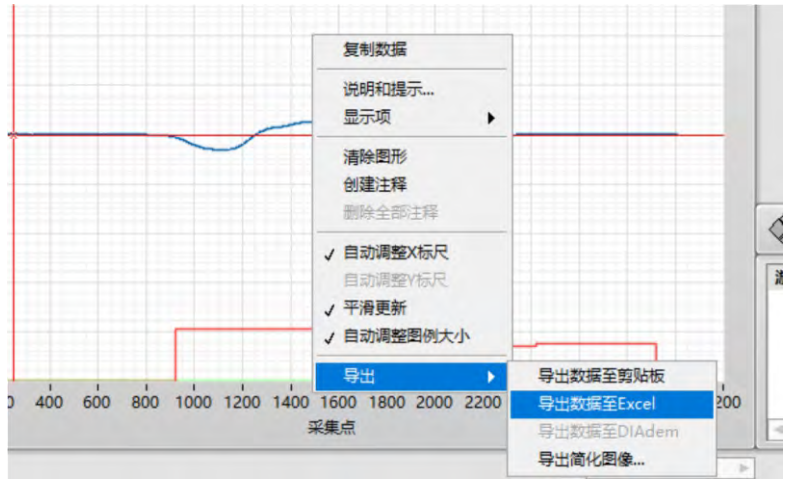
配置界面



测试界面



历史界面

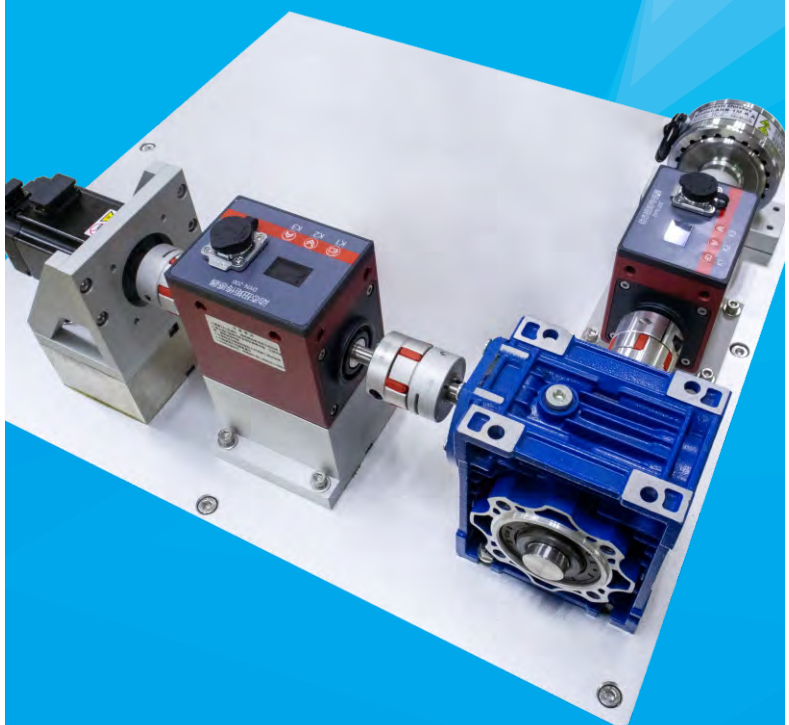


导出数据界面

应用领域 Application Area

应用于齿轮减速电机、电容电机、罩极电机、串激电机、直流电机、外转子电机、电动工具电机等产线可靠性测试。
Applied to reliability testing of production lines such as gear reduction motors, capacitor motors, shaded pole motors, series excited motors, DC motors, external rotor motors, and electric tool motors.

电机&减速机加载性能测试设备
Loading performance testing equipment for motors and reducers



产品概述 Products Overview

苏州力测的电机+减速机测试设备是用来研究电机和各种齿轮传动，带传动及无极变速传动的传动性能，是分析产品质量的重要设备。通过加载性能试验可以检验传动装置设计的合理性，加工，制造，装配和调试的工艺性。对试验结果的深入分析，将有助于评定和改进传动部件和装置的综合机械性能，同时也为工程设计人员提供实践的参考资料和设计依据。

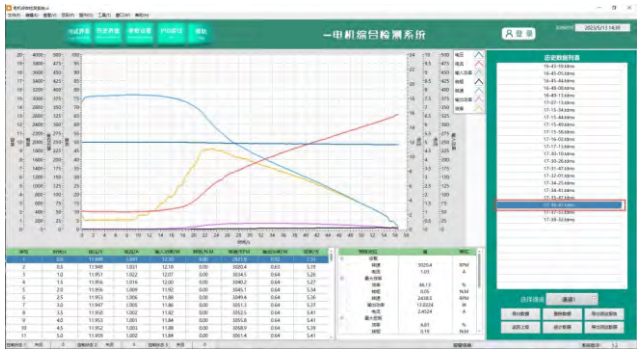
The motor and reducer testing equipment for Suzhou Lisheng is used to study the transmission performance of motors and various gear transmissions, belt transmissions, and continuously variable transmissions. It is an important equipment for analyzing product quality. Loading performance tests can verify the rationality of transmission device design, as well as the processability of processing, manufacturing, assembly, and debugging. The in-depth analysis of the test results will help evaluate and improve the comprehensive mechanical performance of transmission components and devices, and also provide practical reference materials and design basis for engineering designers.

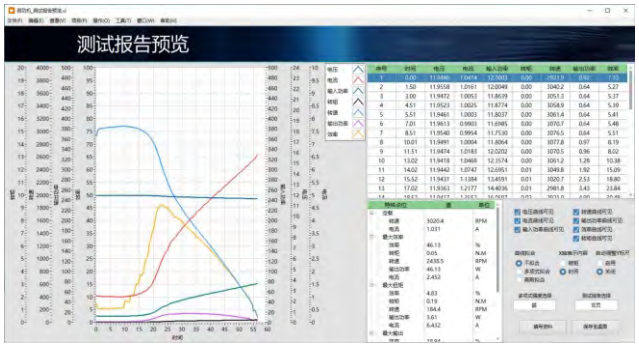
加载特性 Loading characteristics

- **电机 输入端:** 电压，电流，输入功率等。
- **电机 输出端:** 扭矩，转速，输出功率等。
- **减速机输出端:** 扭矩，转速，输出功率等。
- **其 他 参 数:** 电机效率，减速机效率，整机效率，温度等。

- **Motor input:** Voltage, current, input power, etc.
- **Motor output end:** Torque, speed, output power, etc.
- **Reducer output end:** Torque, speed, output power, etc.
- **Other parameters:** Motor efficiency, gearbox efficiency, overall efficiency, temperature, etc.

测试软件界面 Test software interface

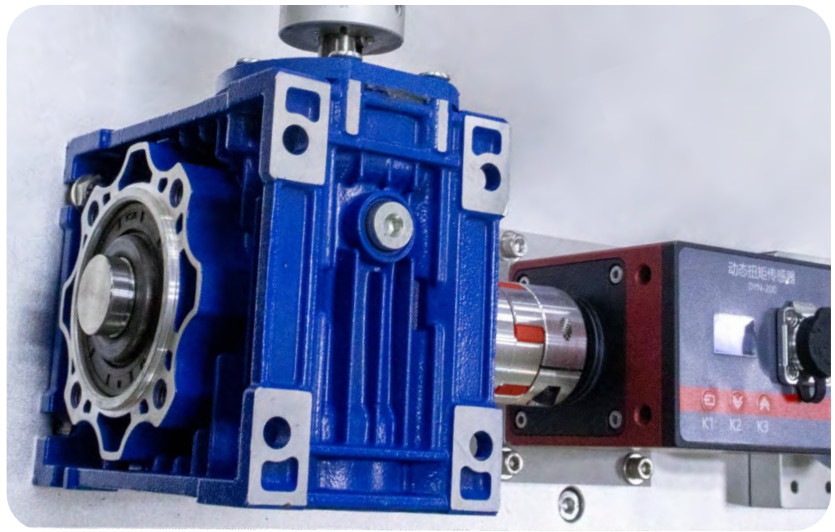




测试系统特点 Test system Characteristics

- **负载可调:** 客户可以根据电机的实际应用要求进行模拟加载设定。
- **可测试多种类型的减速机(直角，拐角等)。**
- **参数可选:** 可选择电流，电压，转速，温度，扭矩等任意一个或多个参数。
- **状态可设:** 可按照要求设定多种测试条件，如循环次数，加载时间，通道时间等。
- **数据查询:** 可选择实时存储数据，也可以设定规定时间内保存数据。

·Adjustable load: Customers can simulate loading settings according to the actual application requirements of the motor.
·Can test various types of reducers (right angles, corners, etc.).
·Optional parameters: You can select any one or more parameters such as current, voltage, speed, temperature, torque, etc.
·Status can be set: Multiple testing conditions can be set according to requirements, such as number of cycles, loading time, channel time, etc.
·Data query: You can choose to store data in real-time or set a specified time to save the data.



产品概述 Products Overview

苏州力测的直线电机加载性能测试设备是用来研究直线电机在空载，负载，堵载状态下的性能。包括直线电机的电压，电流，推力，拉力，速度，行程等参数。是分析各种齿轮齿条传动，涡轮蜗杆传动及纯直线电机的传动性能，是分析产品质量的重要设备。通过加载性能试验可以检验传动装置设计的合理性，加工，制造，装配和调试的工艺性。对试验结果的深入分析将有助于评定和改进传动部件和装置的综合机械性能，同时也为工程设计人员提供实践的参考资料和设计依据。

The Suzhou Lisheng linear motor loading performance testing equipment is used to study the performance of linear motors under no-load, load, and blocked load conditions. This includes parameters such as voltage, current, thrust, tension, speed, and stroke of the linear motor. It is an important equipment to analyze the transmission performance of various rack and pinion drives, turbine Worm drive and pure linear motor, and to analyze product quality. Loading performance tests can verify the rationality of transmission device design, as well as the processability of processing, manufacturing, assembly, and debugging. The in-depth analysis of the test results will help evaluate and improve the comprehensive mechanical performance of transmission components and devices, and also provide practical reference materials and design basis for engineering designers.

测试参数 Test parameters

力测科技

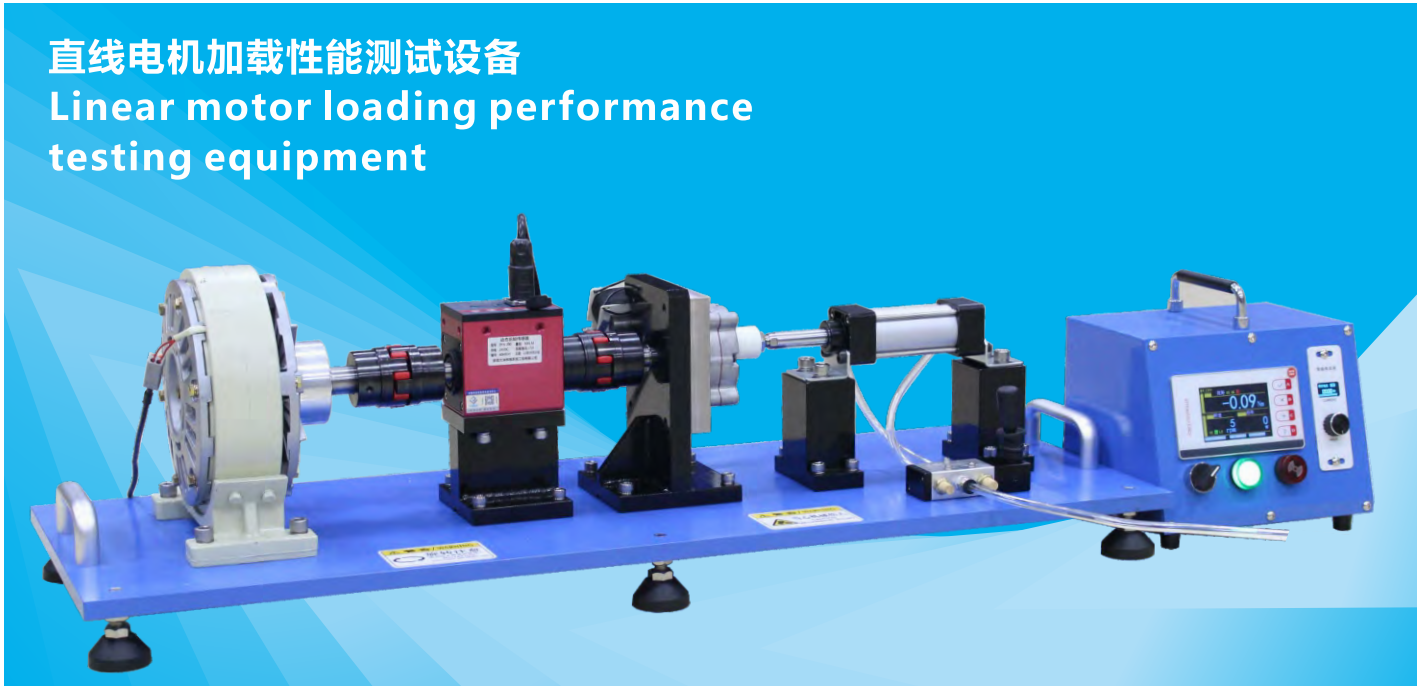
- **空载测试:** 电压，电流，输入功率，速度，行程等。
- **负载测试:** 电压，电流，输入功率，推力，拉力，速度，行程等。
- **堵载测试:** 电压，电流，输入功率，推力，拉力等。
- **其他参数:** 霍尔，电流纹波，温度等。

No load testing: voltage, current, input power, speed, stroke, etc.
Load testing: voltage, current, input power, thrust, tension, speed, stroke, etc.
Load blocking test: voltage, current, input power, thrust, tension, etc.
Other parameters: Hall, current ripple, temperature, etc.

功能特点 Functional Features

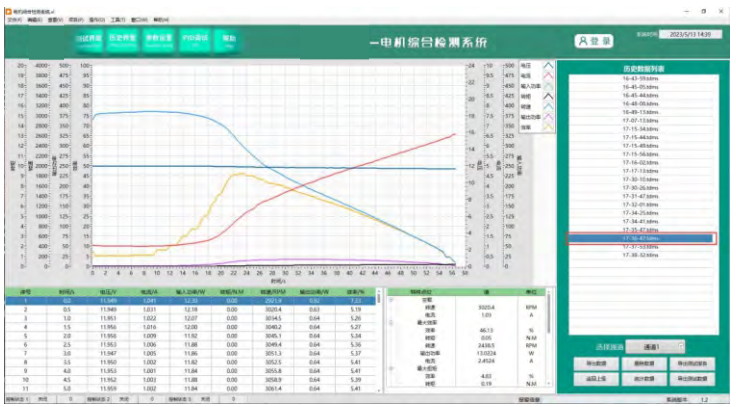
- **负载可调:** 客户可以根据电机的实际应用要求进行模拟加载设定
- **测试流程可调:** 可根据实际应用调节测试方式。
- **参数进行测试与分析:** 能输出与保存特定格式的数据报表与曲线报表。
- **参数可选:** 可选择拉力，推力，电压，电流，温度，速度等任意一个或多个参数。
- **状态可设:** 具有手动加载，自动协载，定距离测试空载、负载、堵立力，如电机行程为50mm用户可以自行设定前0-10mm为空载测试，10-40mm为负载测试，40-50mm为堵转测试等数据查询，可选择实时存储数据，也可以设定规定时间内保存数据。

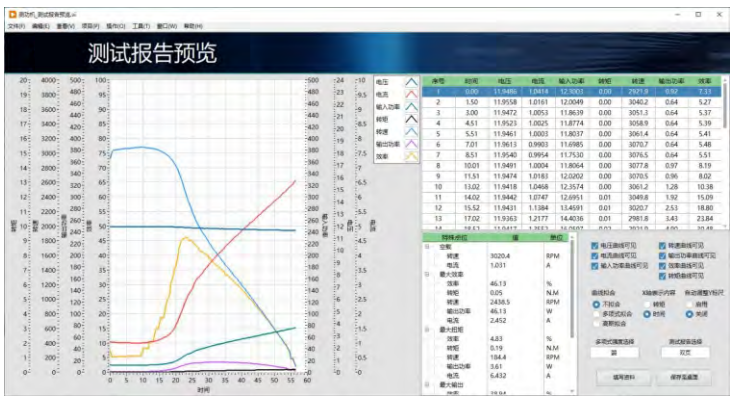
直线电机加载性能测试设备
Linear motor loading performance testing equipment



Adjustable load: Customers can simulate loading settings according to the actual application requirements of the motor.
Adjustable testing process: The testing method can be adjusted according to actual applications.
Parameter testing and analysis: able to output and save data reports and curve reports in specific formats.
Optional parameters: You can choose any one or more parameters such as tension, thrust, voltage, current, temperature, speed, etc.
Status can be set: with manual loading, automatic co loading, fixed distance testing of no-load, load, and blocking force. If the motor stroke is 50mm, the user can set the first 0-10mm for no-load testing, 10-40mm for load testing, and 40-50mm for blocking test and other data queries. The user can choose to store data in real-time or set a specified time to save data.

测试软件界面 Test software interface





机器人关节电机综合性能测试设备
Robot joint motor comprehensive performance testing equipment

产品概述 Products Overview

力测科技

苏州力测的机器人关节电机加载性能测试设备是用来研究关节电机在不同状态下的性能一般用户的被测产品的种类和测试项目居多，我司采用一套系统搭配多个工作站的方式配置该测试设备可以完成多种测试项目包含:空载试验，启动转矩，粘滞阻尼，工作区，传动效率，弯曲、扭转刚度(制动刚度)，回差，位置定位误差，寿命，温升，频带宽度伺服刚度(静态刚度》等。机器人关节电机性能测试设备主要由工控机，功率分析仪，伺服测功机，测试机架，测试工装，电阻测试仪，温度测试仪，测试机柜，扭矩转速传感器，角度传感器变频器控制柜，电源控制柜等组成。该设备可对试验结果的深入分析，将有助于评定和改进传动部件和装置的综合机械性能，同时也为工程设计人员提供实践的参考资料和设计依据。

The robot joint motor loading performance testing equipment for Suzhou Lisheng is used to study the performance of joint motors in different states. The majority of products and testing items for general users are tested. Our company uses a system with multiple workstations to configure this testing equipment, which can complete various testing items including: no-load test, starting torque, viscous damping, working area, transmission efficiency, bending and torsional stiffness (braking stiffness), Return error, position positioning error, lifespan, temperature rise, Bandwidth servo stiffness The performance testing equipment for robot joint motors mainly consists of industrial control computers, power analyzers, servo dynamometers, testing racks, testing fixtures, resistance testers, temperature testers, testing cabinets, torque and speed sensors, angle sensors, frequency converters, power control cabinets, etc. The equipment can conduct in-depth analysis of test results, which will help evaluate and improve the comprehensive mechanical properties of transmission components and devices It can also provide practical reference materials and design basis for engineering designers.

测试参数 Testing Parameters

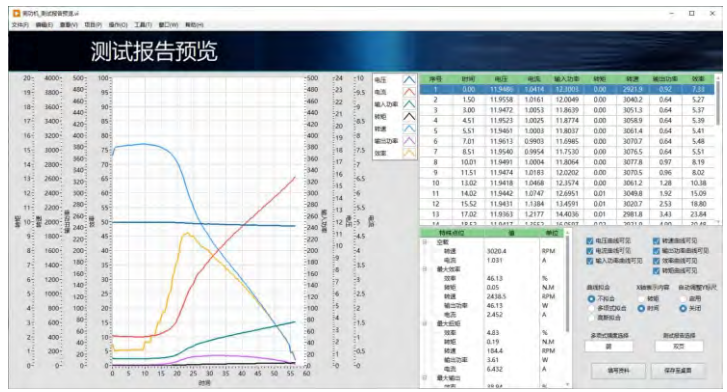
- **空载试验:** 振动，噪音，空载电流等。
- **启动转矩试验:** 电流，转矩。
- **粘滞阻尼:** 转矩，电流。
- **工作区:** 连续工作区，短时工作区，转速，扭矩，输出功率等。
- **传动效率:** 电压(U;V;W)，电流(U;V;W)，输入功率，扭矩，转速，输出功率等。
- **刚度和回差试验:** 扭矩，角度等。
- **静阻转矩:** 扭矩，角度等。
- **传动精度:** 扭矩，角度，转速等。
- **温升测试:** 扭矩，转速，温度，电流等。
- **频带宽度:** 角度，频率，相位，幅值等。
- **伺服刚度:** 扭矩，角度等。
- **弯曲刚度:** 位移，拉/推力等。

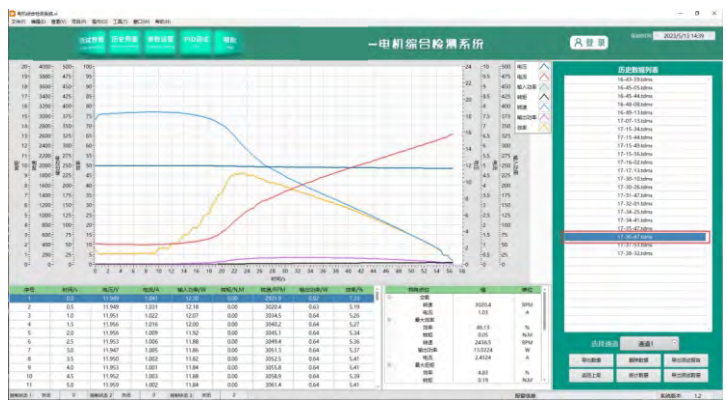
•No load test:	Vibration, noise, no-load current, etc.
•Starting torque test:	Current, torque.
•Viscous damping:	Torque, current.
•Workspace:	Continuous working area, short-term working area, speed, torque, output power, etc.
•Transmission efficiency:	Voltage (U; V; W), current (U; V; W), input power, torque, speed, output power, etc.
•Rigidity and backlash test:	Torque, angle, etc.
•Static resistance torque:	Torque, angle, etc.
•Transmission accuracy:	Torque, angle, speed, etc.
•Temperature rise test:	Torque, speed, temperature, current, etc.
•Bandwidth:	Angle, frequency, phase, amplitude, etc.
•Servo stiffness:	Torque, angle, etc.
•Bending stiffness:	Displacement, pull/thrust, etc.

测试软件界面 Test software interface

•可电动机模式和发电机模式，可以主动和被动运行，实现任何模式负载。
•实时在线监控数据，一旦超过设定保护值，立刻启动保护。
•采用一体式测试方案，整体兼容性，开放性，扩展性好。
•可以针对各种需求提供多种测试功能，全方面检测电机特性。
•优质的硬件加苏州力测先进的控制技术 实现宽范围高精度电机特性测试。
•专业的控制系统，专业的解决了数据不同步问题。
•测试软件功能强大，选件丰富，界面漂亮，能自动生成或人工编辑各类报表曲线，并打印输出。

•It can operate in both motor and generator modes, actively and passively, achieving any mode of load.
•Real time online monitoring of data, once the set protection value is exceeded, protection is immediately activated.
•Adopting an integrated testing scheme, overall compatibility, openness, and good scalability.
•It can provide various testing functions for various needs and comprehensively detect motor characteristics.
•High quality hardware and advanced control technology for Suzhou Lisheng enable wide range and high-precision motor characteristic testing.
•A professional control system has solved the problem of data asynchrony professionally.
•The testing software has powerful functions, rich options, and a beautiful interface. It can automatically generate or manually edit various report curves, and print them out.





轮毂电机综合性能测试设备
Hub motor comprehensive performance testing equipment

产品概述 Products Overview

力测科技

整套电机加载性能测试设备由伺服电机、伺服驱动器、扭矩转速传感器、工控机、测试机架、测试工装、电机供电电源、功率分析仪、电机测试软件等组成，测试被测电机的扭矩、转速、输出功率、 电压、电流、输入功率等各种性能参数。

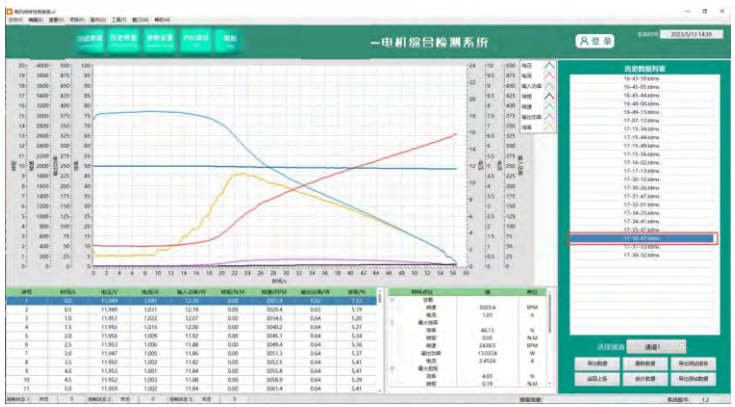
The entire set of motor loading performance testing equipment is composed of servo motors, servo drivers, torque and speed sensors, industrial control computers, testing racks, testing fixtures, motor power supply, power analyzers, motor testing software, etc. It tests various performance parameters of the tested motor, such as torque, speed, output power, , voltage, current, input power, etc.

测试参数 Testing Parameters

- 设备工作环境电压：220VAC，50/60Hz。
- 设备工作环境电流：<20A。
- 安全:安全提醒标示、接地良好等安全措施。
- 测试台输出范围：7-70N.m。
- 测试台测试扭矩精度为满量程的0.2%，测试台测试转速精度为满量程的0.1%。
- 被测电机转速范围满足0-1500rpm。
- 数据采集部分：采样率最快数据更新速度可达100笔每秒。
- 测试数据可导出两种类型TXT/EXCEL，可导出图片可导出PDF文件。
- 测试扭矩、转速、输出功率等各种工况等参数。

- Equipment working environment voltage: 220VAC, 50/60Hz.
- Equipment working environment current:<20A.
- Safety: Safety warning signs, good grounding, and other safety measures.
- Test bench output range: 7-70N. m.
- The torque accuracy of the test bench is 0.2% of the full scale, and the speed accuracy of the test bench is 0.1% of the full scale.
- The speed range of the tested motor meets 0-1500rpm.
- Data collection section: The fastest data update speed with a sampling rate can reach 100 transactions per second.
- Test data can be exported in two types: TXT/EXCEL, images can be exported, and PDF files can be exported.
- Test various working conditions such as torque, speed, output power, and other parameters.

测试软件界面 Test software interface



步进电机综合性能测试设备
Stepper motor comprehensive performance testing equipment

产品概述 Products Overview

力测科技

苏州力测的步进电机综合性能测试设备可以测试步进电机的牵入扭矩，牵出扭矩，频矩响应等参数。一般的测试系统只能一次性测试步进电机某一个频率下的参数，我司为了解决这个问题，采用与步进电机通讯的方式可测试步进电机在不同频率下的参数。工程师只要设定好步骤与流程，电机开始测试即可获得所有数据与曲线。

The stepper motor comprehensive performance testing equipment for Suzhou Lisheng can test the parameters of the stepper motor, such as pull-in torque, pull-out torque, frequency torque response, etc. A general testing system can only test the parameters of a stepper motor at a certain frequency at once. To solve this problem, our company uses communication with the stepper motor to test the parameters of the stepper motor at different frequencies. As long as the engineer sets the steps and processes, and the motor starts testing, all data and curves can be obtained.

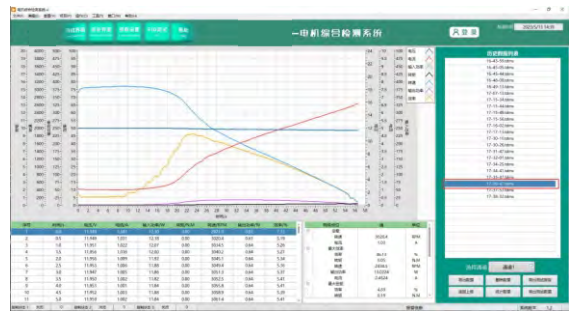
测试参数 Testing Parameters

- 不同频率下的牵入力矩，牵出力矩，频矩响应，步进角精度等参数。
- Parameters such as pull-in torque, pull-out torque, frequency response, and step angle accuracy at different frequencies.

功能特点 Functional characteristics

- 测试不同频率下的牵入扭矩和牵出扭矩。
- 多个牵入或牵出扭矩可以绘制成一张表。
- 步距角测量精度可达0.0016°。
- Test the pull-in torque and pull-out torque at different frequencies.
- Multiple pull-in or pull-out torques can be plotted as a table.
- The measurement accuracy of step angle can reach 0.0016 °.

测试软件界面 Test software interface



产品概述 Products Overview

力测科技

苏州力测的有刷电机空载性能测试设备是用来在产线上来全检有刷电机空载性能的设备。主要参数有空载常规参数，时间常数，安规参数等。有刷电机空载性能测试设备是分析检验产品质量的重要设备。通过空载试验可以检验电机设计的合理性，加工，制造，装配和调试的工艺性。对试验结果的深入分析，将有助于评定和改进电机的综合机械性能，同时也为工程设计人员提供实践的参考资料和设计依据。

The Suzhou Lisheng brushless motor no-load performance testing equipment is used to fully inspect the no-load performance of the brushless motor on the production line. The main parameters include no-load conventional parameters, time constant, safety regulations parameters, etc. Brushless motor no-load performance testing equipment is an important equipment for analyzing and inspecting product quality. The rationality of motor design, processing, manufacturing, assembly, and debugging process can be verified through no-load testing. The in-depth analysis of the test results will help evaluate and improve the comprehensive mechanical performance of the motor, and also provide practical reference materials and design basis for engineering designers.

测试参数 Testing Parameters

- **常规参数:** 电压、转速、电流、输入功率。
- **时间常数:** 机电时间常数、电气时间常数、机械时间常数。
- **安规参数:** 绝缘电阻、漏电流。
- **其他参数:** 接线正确性、 电机启动电压、电枢电阻、电枢电感。

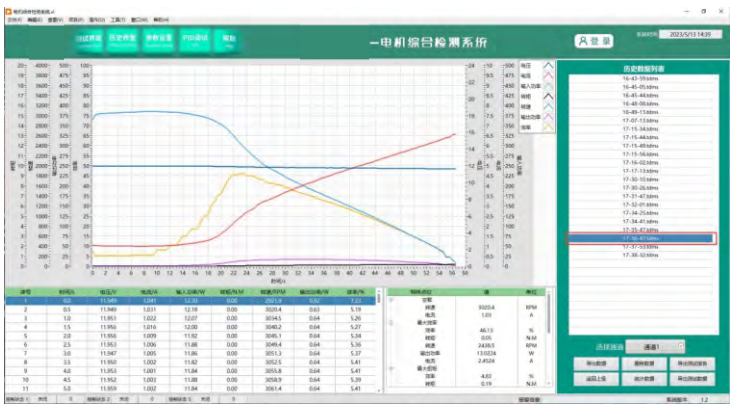
- **General parameters:** voltage, speed, current, input power.
- **Time constant:** electromechanical time constant, electrical time constant, mechanical time constant.
- **Safety parameters:** insulation resistance, leakage current.
- **Other parameters:** wiring correctness, , motor starting voltage, armature resistance, armature inductance.

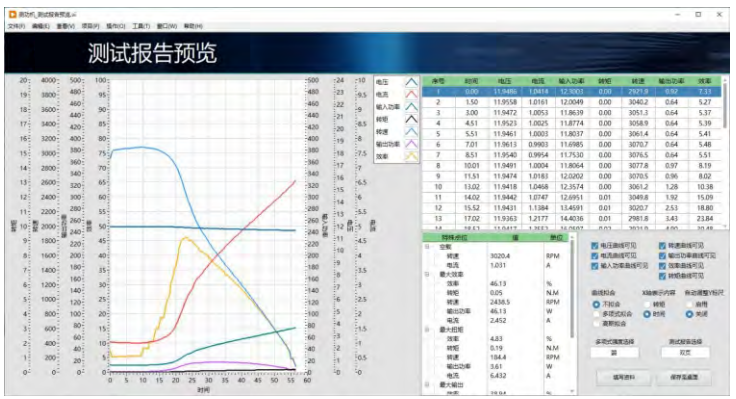
- **电机绝对空载转速测试:** 电机在旋转时通过检测电机电刷与换向器接触时产生的火花及电流波动通过高精度取样电阻和2G采样率的高速采集设备采集电流纹波，通过已知的电机的极对数和碳刷数量通过软件算法(频谱分析)得出其转速。如测试时间为2秒以上其转速误差可以做到20000rpin时土2rpm。
- **启动电压:** 通过高精度电源从初始电压按照0.01V往上加测试电机连续运转时的最低电压为启动电压。
- **时间常数:** 通过读取电机电流启动瞬间的启动电流来得出机电时间常数，电气时间常数，机械时间常数，其中机电时间常数一般为1-3毫秒，电气时间常数为1毫秒左右，机械时间常数为5-12毫秒左右。因为时间非常短，固要求采样时间为微秒级才可以。
- **安规测试:** 考虑到很多电机的外壳都有绝缘层，我司采用打电机输出轴与出线端，确保每个电机都有测量到。

•**转向测试:** 有刷电机一般是改变电机的极性输出的转速即可改变，为了检验其磁缸有没有装反导致其电机输出转向输出错误。所以在测量其转向时不仅需要测试电机输出轴端的方向还要检测其接线的正确性，通过视觉来区分电机输入端接线的颜色判断接线是否有接错然后通过测试来判断被测电机输出轴的方向来判断转向。

•**Motor absolute no-load speed test:** When the motor is rotating, it detects sparks and current fluctuations generated by the contact between the motor brush and the commutator. The current ripple is collected through high-precision sampling resistance and a high-speed collection device with a 2G sampling rate. The known number of pole pairs and carbon brushes of the motor are used to obtain its speed through software algorithms (spectrum analysis). If the testing time is more than 2 seconds, the speed error can reach 2 rpm at 20000 rpm.
•**Starting voltage:** The starting voltage is determined by adding a high-precision power supply from the initial voltage of 0.01V to the lowest voltage during continuous operation of the test motor.
•**Time constant:** The electromechanical time constant, electrical time constant, and mechanical time constant are obtained by reading the starting current at the moment of motor current startup. The electromechanical time constant is generally 1-3 milliseconds, the electrical time constant is about 1 millisecond, and the mechanical time constant is about 5-12 milliseconds. Because the time is very short, a sampling time of microseconds is required.
•**Safety testing:** Considering that many motor casings have insulation layers, our company uses the motor output shaft and output terminal to ensure that each motor is measured.
• **test:** Brushless motors usually change the polarity of the motor's output speed to verify if the magnetic cylinder is installed in the wrong direction, resulting in incorrect output of the motor. So when measuring its , it is not only necessary to test the direction of the motor output shaft end, but also to check the correctness of its wiring. By visually distinguishing the color of the motor input terminal wiring to determine whether there is a wrong connection, and then by testing to determine the direction of the measured motor output shaft to determine the .

测试软件界面 Test software interface

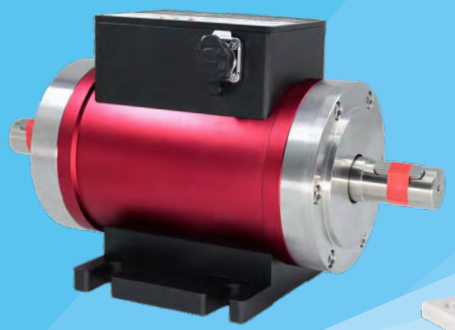




测试柜

制动器

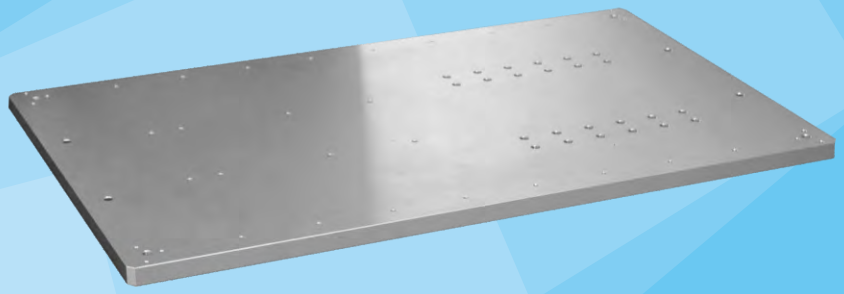
动态扭矩转速传感器

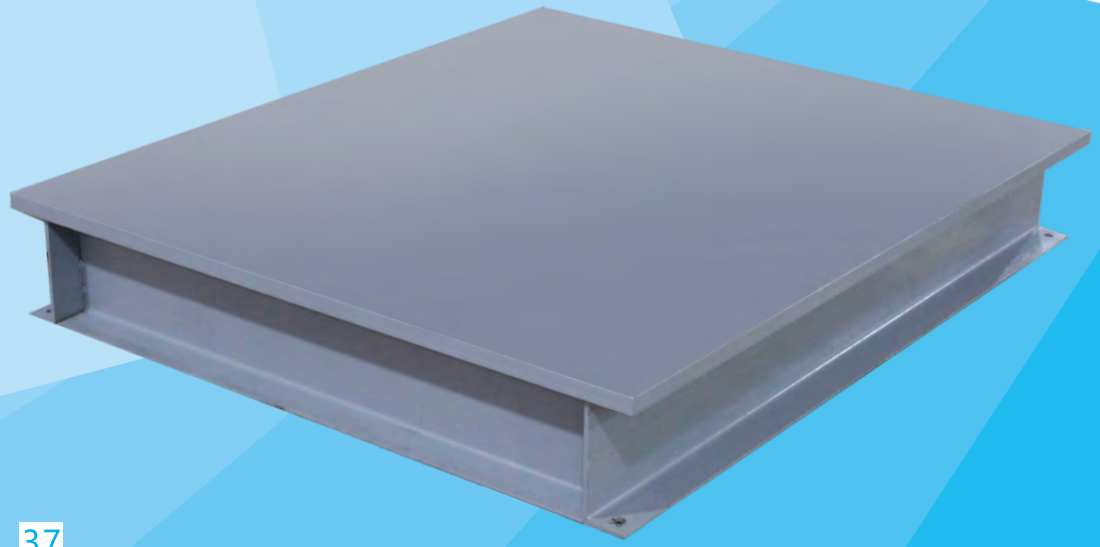


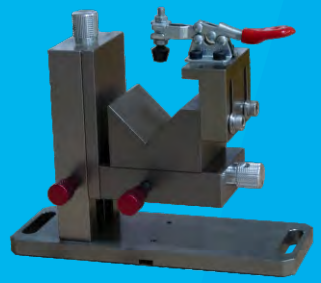
核心生产部件 Core production components

夹　具

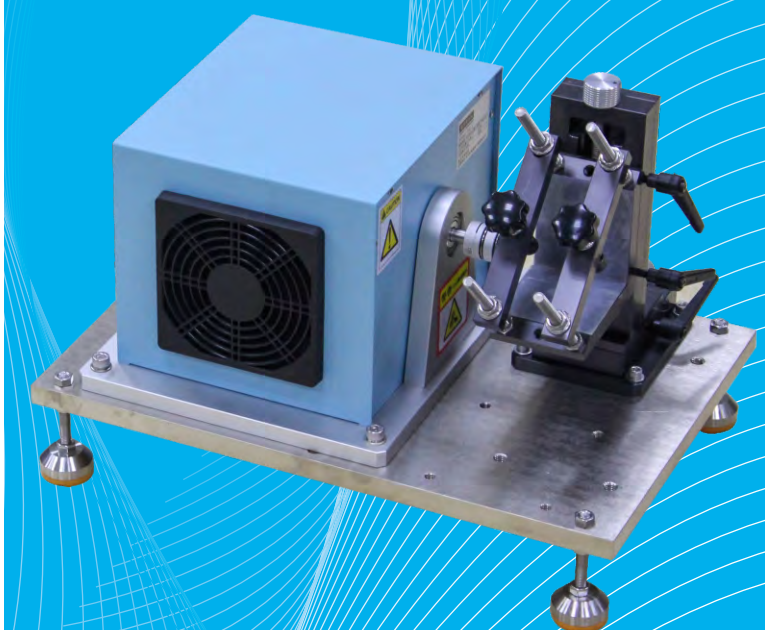
底　板







磁滞式测功机
Hysteresis dynamometer



产品概述 Products Overview

磁滞式测功机(DYCZ/DYACZ/BCZ系列)对于低中等功率的测试是通用和理想的。磁滞式刹车不需依靠速度来产生扭力，因此可以进行从 空载到堵转的全程测试。刹车冷却根据型号是由对流冷却(无风源或空气冷却(压缩空气DYACZ系列或鼓风机DYBCZ系列)提供，磁滞式测功机有连续性的和短时间散发更多热量能力的间歇性功率范围。根据测功机的大小和系统组成，其精确度为满刻度的土0.25%到土0.5%。同时也提供对于高速电机测试的特殊设计。使用于各种交直流电机的性能测试(扭矩，转速，功率等)，被广泛应用于汽车马达，家用电器马达，电动工具马达，压缩机电机及航空电机的检测。

The hysteresis dynamometer (DYCZ/DYACZ/BCZ series) is universal and ideal for testing low to medium power. Hysteresis brakes do not rely on speed to generate torque, so they can be tested throughout the entire process from unloaded to stalled. Brake cooling is provided by convection cooling (no air source or air cooling (compressed air DYACZ series or blower DYBCZ series) according to the model. The hysteresis dynamometer has a continuous and intermittent power range with the ability to dissipate more heat in a short period of time. According to the size and system composition of the dynamometer, its accuracy ranges from 0.25% to 0.5% of full scale soil. It also provides special designs for high-speed motor testing. Used for performance testing of various AC and DC motors (torque, speed, power, etc.), it is widely used for testing automotive motors, household appliance motors, electric tool motors, compressor motors, and aviation motors.

功能特点 Functional characteristics

- 26种标准规格，峰值扭力从0.05N.m~30N.m。
  26 Standard Specifications, Peak Torque from 0.05N.m~30N.m.
- 磁滞刹车系统:提供独立于转速的精确扭力负载。
  Hysteresis Braking System: Provides precise torque loading independent of shaft speed.
- 电机测试从空载到堵转。
  Motor Testing from No Load to Locked Rotor.
- 精度: 0.25% 至0.5%(满量程) 采用高精度的负载与转速传感器
  Accuracy: +0.25% to 0.5% (Full Scale), adopting high precision torque and speed sensor
- 气流检测:防止过热和操作员失误。
  Air Flow Sensor: For protection against overheating and operator error.
- 底座:可选长板型 / 短板型。
  Base Plate: Available in long or short versions
- 订制式测功机:针对特殊扭力，特殊转速的需求。
  Custom Dynamometers: for special torque and speed requirements
- 使用砝码校正，易于校正。
  Esy to calibrate by Using Balance bar with standard block.

规格参数表 Specification parameter table

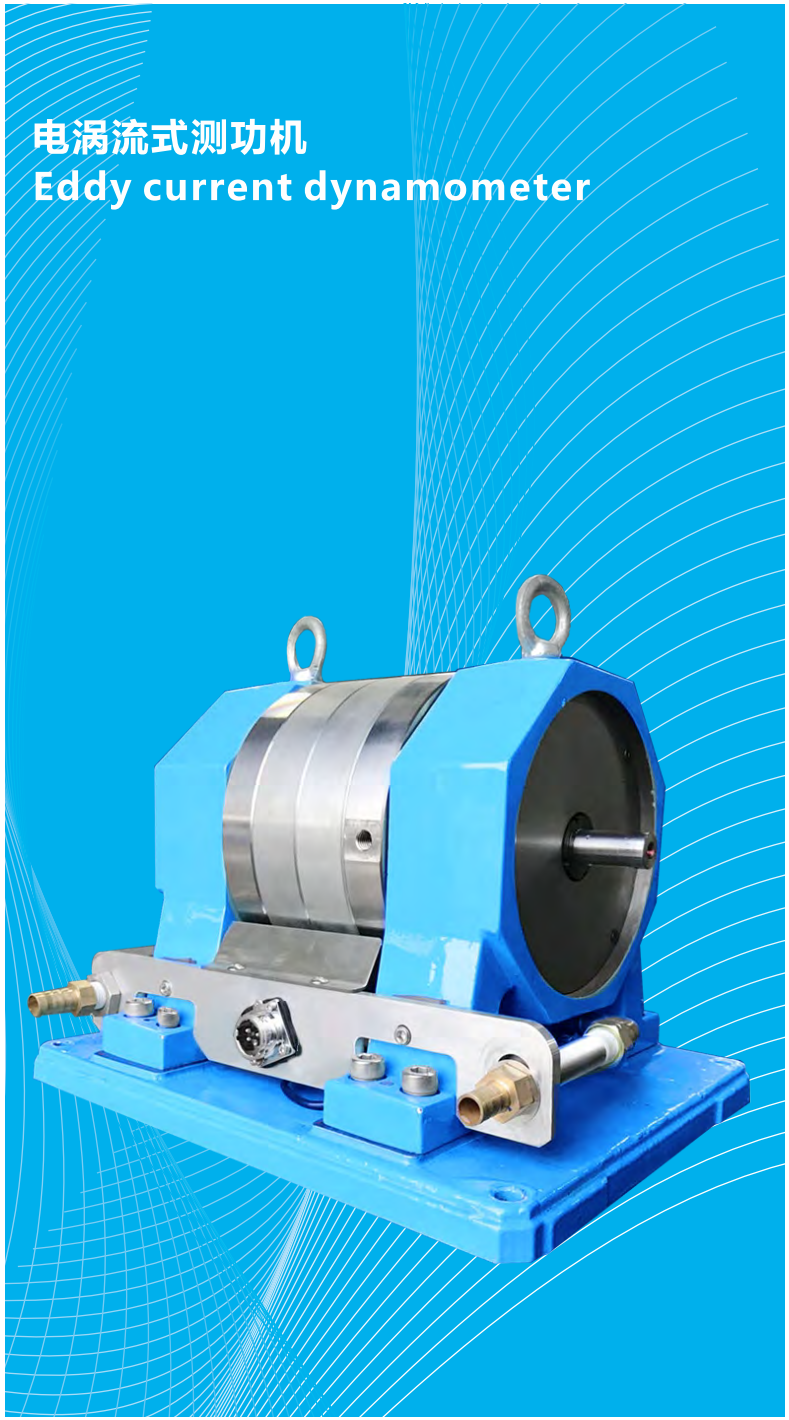
型号Model	额定扭矩 Rating Torque(kg·cm)	5分钟内额定功率(w)Power Rating within 5 minutes	连续额定功率(w)Continuous Rating Power	最高转速 Max Speed(rpm)	散热方式 Cooling Type
LC-TEST-CZ-0.1	0.1	35	8	30,000	Fan
LC-TEST-CZ-0.2	0.2	35	8	30,000	Fan
LC-TEST-CZ-0.3	0.3	50	12	30,000	Fan
LC-TEST-CZ-0.5	0.5	50	12	30,000	Fan
LC-TEST-CZ-1	1	90	25	25,000	Fan
LC-TEST-CZ-2	2	90	25	25,000	Fan
LC-TEST-CZ-3	3	250	65	25,000	Fan
LC-TEST-CZ-5	5	250	65	25,000	Fan
LC-TEST-CZ-10	10	400	80	25,000	Fan
LC-TEST-CZ-20	20	580	120	25,000	Fan
LC-TEST-CZ-30	30	700	150	25,000	Fan
LC-TEST-CZ-50	50	1000	200	20,000	Fan
LC-TEST-CZ-A1	1	200	80	25,000	Compress Air
LC-TEST-CZ-A2	2	200	80	25,000	Compress Air
LC-TEST-CZ-A3	3	400	120	25,000	Compress Air
LC-TEST-CZ-A5	5	400	120	25,000	Compress Air
LC-TEST-CZ-A10	10	800	350	25,000	Compress Air
LC-TEST-CZ-A20	20	1000	500	25,000	Compress Air
LC-TEST-CZ-A30	30	1300	800	25,000	Compress Air
LC-TEST-CZ-A50	50	1500	1200	20,000	Compress Air
LC-TEST-CZ-B30	30	1500	900	25,000	Blower
LC-TEST-CZ-B50	50	2000	1800	25,000	Blower
LC-TEST-CZ-B60	60	3200	2800	25,000	Blower
LC-TEST-CZ-B140	140	3500	3000	12,000	Blower
LC-TEST-CZ-B280	280	7000	5500	10,000	Blower
LC-TEST-CZ-B560	560	14000	14000	11,000	Double blower cooling

应用领域 Application Area

适用于测试各种交直流电机，串激电机，直流永磁电机，罩极式感应电机，单相分相感应电机，电容启动电机，同步感应电机及多相感应电机等电机的扭矩，转速特性，被广泛应用于家用电器，分马力电机，电动工具电机，压缩机电机，汽车，航空，无人机以及智能家居电机的检测。

Suitable for testing the torque and speed characteristics of various AC/DC motors, series excited motors, DC permanent magnet motors, shaded pole induction motors, single-phase split phase induction motors, capacitor starting motors, synchronous induction motors, and multiphase induction motors. It is widely used in the detection of household appliances, split horsepower motors, electric tool motors, compressor motors, automobiles, aviation, drones, and smart home motors.

电涡流式测功机
Eddy current dynamometer



产品概述 Products Overview

力测科技

涡电流式测功机适用于高转速，中到高功率的电机测试。涡电流式测功机的扭力随着转速的提高而加大，并在额定转速时达到扭力峰值。由于转子直径较小，涡电流式测功机具有较低的惯性。其冷却方式可通过定子内的循环水冷却系统来带走制动时所产生的热量。

The Eddy current dynamometer is suitable for testing high speed, medium to high power motors. The torque of the Eddy current dynamometer increases with the increase of the speed, and reaches the peak torque at the rated speed. Due to the small diameter of the rotor, the Eddy current dynamometer has low inertia. The cooling method can be carried away by the circulating water cooling system inside the stator to remove the heat generated during braking.

功能特点 Functional characteristics

- 结构简单，操作维护方便
  Simple structure. convenient operation and maintenance.
- 制动力矩大，测试精度高,工作稳定。
  Large braking torque, high test accuracy and stable operation.
- 转动惯量小，动态响应速度快。
  Small moment of inertia, fast dynamic response.

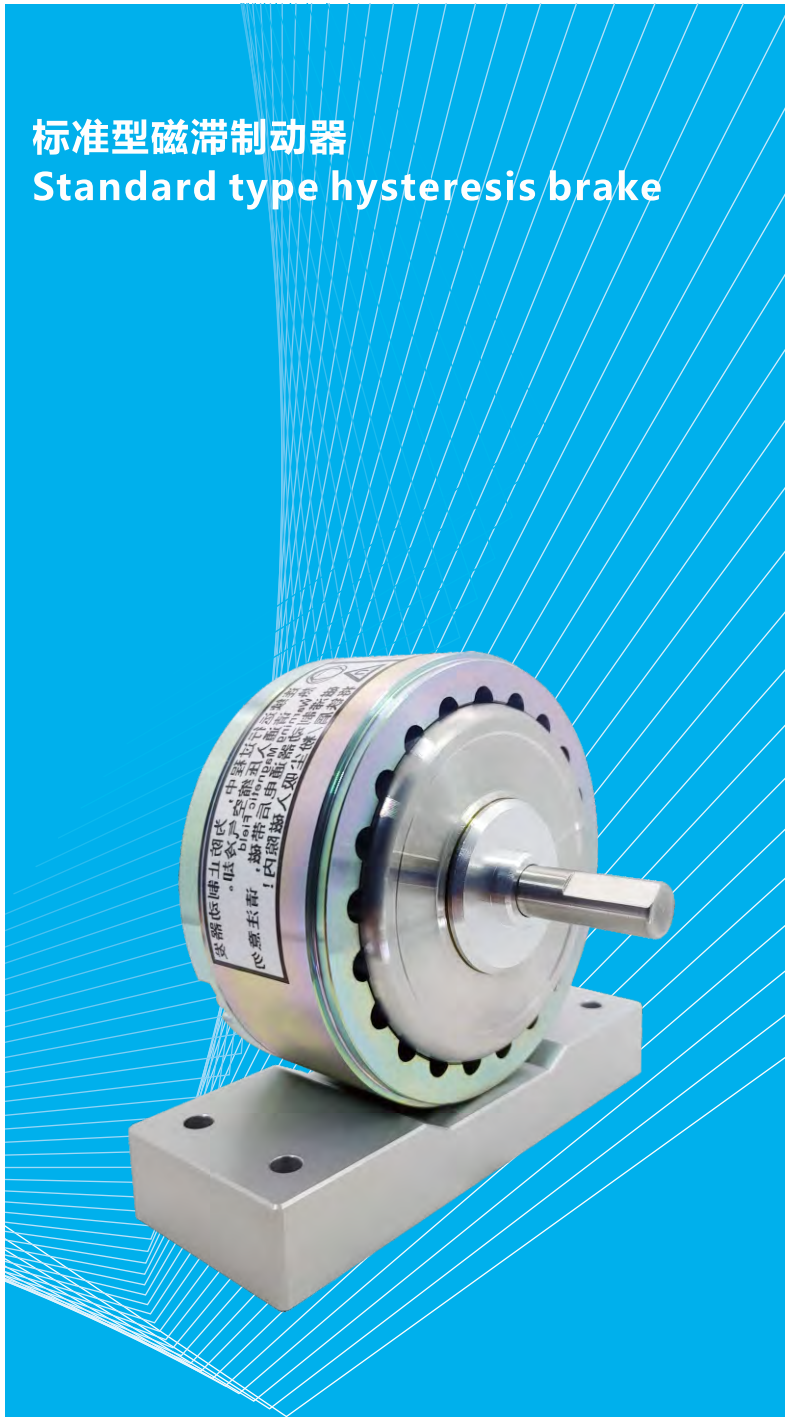
规格参数表 Specification parameter table

型号Model	额定扭矩 Rating Torque(kg·cm)	额定转速 Rated speed	额定功率 Rated power	最高转速 Max Speed(rpm)	散热方式 Cooling Type
	N·m	rpm	kw	rpm	Cooling mode
LCNWL-602	0.6	15000	1	50000	Water-cooling
LCNWL-303	3	10000	3	50,000	Water-cooling
LCNWL-104	10	5500	5.5	30000	Water-cooling
LCNWL-204	20	5500	11	30,000	Water-cooling
LCNWL-504	50	2800	14	18000	Water-cooling

应用领域 Application Area

内燃机(园林工具，摩托车，汽车)、航空航天电机，汽车电机等的加载能测试。
Loading energy testing of internal combustion engines (garden tools, motorcycles, automobiles), aerospace motors, automotive motors, etc.

标准型磁滞制动器
Standard type hysteresis brake



产品概述 Products Overview

力测科技

DYCZ-001系列标准型磁滞制动器分为单出轴与双出轴三种款式，广泛应用于电机、驱动器、小型内燃机、齿轮箱和其它旋转装置的寿命试验和模拟负载，以及为高速自动绕线机提供精确的张力控制，并应用于电线电缆、绳索、纸箔等原料加工过程中提供无摩擦的张力控制，在健身器材中实现精确负载控制和可控重复性，反向转动时亦可保持稳定负载，使其成为各种原材料加工过程中用来作为精确张力控制的首选。

The DYCZ-001 series standard hysteresis brake is divided into three types: single output shaft and double output shaft. It is widely used for life testing and simulated loads of motors, drivers, small internal combustion engines, gearboxes, and other rotating devices, as well as providing precise tension control for high-speed automatic winding machines. It is also used to provide frictionless tension control during the processing of raw materials such as wires and cables, ropes, and paper, Accurate load control and controllable repeatability can be achieved in fitness equipment, and stable load can be maintained during reverse rotation, making it the preferred choice for precise tension control in various raw material processing processes.

规格参数表 Specification parameter table

型号Model	额定扭矩 Rating Torque(kg·cm)	额定电流 Rated current	电压 Voltage	线圈电阻 (25℃±10%) Resistance at 25℃±10%	重量 Weight	额定滑差功率 Kinetic power		惯性矩 Extemal inertia	最高转速 Max speed
						5分钟 5min	持续 Contiuous		
	kg·cm	mA	V DC	Ω	kg	W	W	kg穆m?	rpm
LC-TEST-CZ-0.03	0.03	135	24	180	0.12	8	2	$3.3*10^{-4}$	20000
LC-TEST-CZ-0.2	0.2	192	24	125	0.15	25	6	$1.5*10^{-3}$	20,000
LC-TEST-CZ-0.3	0.3	208	24	115	0.21	30	8	$6.8*10^{-3}$	20000
LC-TEST-CZ-0.5	0.5	208	24	115	0.21	30	8	$6.8*10^{-3}$	20,000
LC-TEST-CZ-0.7	0.7	200	24	112	0.26	40	10	$1.2*10^{-2}$	20000
LC-TEST-CZ-1	1	200	24	120	0.39	55	15	$4.6*10^{-2}$	20,000
LC-TEST-CZ-2	2	203	24	118	0.51	75	20	$6.8*10^{-2}$	15000
LC-TEST-CZ-3	3	390	24	62	0.9	120	35	$1.8*10^{-1}$	15,000
LC-TEST-CZ-5	5	390	24	62	0.9	120	35	$1.8*10^{-1}$	15000
LC-TEST-CZ-10	10	250	24	96	1.8	320	80	$1.1*10^{-1}$	15,000
LC-TEST-CZ-20	20	315	24	76	3.5	460	115	$3.2*10^{0}$	10000
LC-TEST-CZ-30	30	750	24	32	5.2	680	165	$6.8*10^{0}$	10,000
LC-TEST-CZ-50	50	750	24	32	9.6	1000	200	$1.3*10^{1}$	10000
LC-TEST-CZ-60	60	1500	24	16	11	1,400	225	$1.4*10^{1}$	10,000
LC-TEST-CZ-110	110	1200	24	20	20.2	1200	350	$5.60*10^{1}$	10000
LC-TEST-CZ-120	120	1200	24	20	21.8	1,200	350	$6.2*10^{1}$	10,000

应用领域 Application Area

用于精确的扭力，张力以及停止定位等的开环与闭环控制，如电机制造行业绕线机铜线的张力控制，电缆变压器、纺织等行业的张力控制以及机床、智能自动化设备的精准定位控制。

产品概述 Products Overview

力测科技

标准型磁滞制动器分为单出轴与双出轴三种款式，广泛应用于电机、驱动器、小型内燃机、齿轮箱和其它旋转装置的寿命试验和模拟负载，以及为高速自动绕线机提供精确的张力控制，并应用于电线电缆、绳索纸箔等原料加工过程中提供无摩擦的张力控制，在健身器材中实现精确负载控制和可控重复性，反向转动时亦可保持稳定负载，使其成为各种原材料加工过程中用来作为精确张力控制的首选。

The standard hysteresis brake is divided into three types: single output shaft and double output shaft. It is widely used in the life testing and simulation load of motors, drivers, small internal combustion engines, gearboxes, and other rotating devices, as well as providing precise tension control for high-speed automatic winding machines. It is also used in the processing of raw materials such as wires and cables, rope paper, etc. to provide frictionless tension control, achieving precise load control and controllable repeatability in fitness equipment, When rotating in reverse, it can also maintain a stable load, making it the preferred choice for precise tension control in various raw material processing processes.

规格参数表 Specification parameter table

型号Model		额定扭矩 Rating Torque(kg·cm)	额定电流 Rated current	电压 Voltage	线圈电阻 (25℃±10%) Resistance at 25℃±10%	额定滑差功率Kinetic power				惯性矩 Extemal inertia	最高转速 Max speed	重量 Weight
						加压缩空气 With air supply(kpa)		不加压缩空气 Without compressed air				
						5分钟 5min	持续 Contiuous	5分钟 5min	持续 Contiuous			
		kg·cm	mA	V DC	Ω	W	W	W	W	kg缪m?	rpm	kg
无底座 Without base	LC-TEST-CZ-A2	2	200	24	120	200	200	75	20	$6.8*10^{-2}$	25000	0.5
	LC-TEST-CZ-A5	5	393	24	61	400	400	120	35	$1.8*10^{-1}$	25000	1.35
	LC-TEST-CZ-A10	10	400	24	60	800	800	320	80	$1.1*10^{0}$	25000	1.8
	LC-TEST-CZ-A23	23	315	24	76	1000	800	460	115	$3.2*10^{-0}$	25000	3.5
	LC-TEST-CZ-A30	30	750	24	32	1300	1300	680	165	$6.8*10^{0}$	20000	5.2
	LC-TEST-CZ-A50	50	750	24	32	2300	2000	1000	200	$1.3*10^{1}$	15000	9.6
	LC-TEST-CZ-A100	100	1200	24	20	2000	1500	1200	350	$5.6*10^{1}$	10000	17
带底座 With base		kg·cm	mA	V DC	Ω	W	W	W	W	kg缪m?	rpm	kg
	LC-TEST-CZ-A100	10	400	24	60	1200	1200	320	80	$8.7*10^{-1}$	25000	2.1
	LC-TEST-CZ-A20	20	315	24	76	1300	1300	460	115	$2.7*10^{0}$	25000	3.8
	LC-TEST-CZ-A30	30	750	24	32	1800	1800	680	165	$6.8*10^{0}$	20000	5.7
	LC-TEST-CZ-A50	50	750	24	32	2500	2300	1000	200	$1.31*10^{1}$	15000	10
	LC-TEST-CZ-A60	60	1500	24	16	3000	2800	1400	225	$1.38*10^{-1}$	20000	11
	LC-TEST-CZ-A100	100	1500	24	16	3800	3500	1800	280	$2.62*10^{1}$	12000	20.6
	LC-TEST-CZ-A110	110	1200	24	20	2800	2500	1200	350	$5.60*10^{1}$	10000	20.2
	LC-TEST-CZ-A120	120	1200	24	20	2800	2500	1200	350	$5.60*10^{1}$	12000	23
	LC-TEST-CZ-A240	240	2400	24	10	5300	3000	4000	450	$1.12*10^{2}$	10000	46

应用领域 Application Area

内燃机(园林工具，摩托车，汽车)、航空航天电机，汽车电机等的加载能测试。

DYBCZ系列鼓风型磁滞制动器
DYBCZ series blast type hysteresis brake

产品概述 Products Overview

DYBCZ系列磁滞判动器是在最大可能功率下转矩控制/转矩测量的理想选择。这种设计允许连续的额定功率高达6000瓦,(7000瓦间歇)。使用预加载轴承在磁滞制动器，允许运行在高达20000转每分钟的速度。特点是安装基板和接线板接线连接，以便简单地集成到您的应用程序中。

The DYBCZ series hysteresis actuator is an ideal choice for torque control/measurement at maximum possible power. This design allows for continuous rated power up to 6000 watts (7000 watts intermittently). Using preloaded bearings on the hysteresis brake allows operation at speeds up to 20000 revolutions per minute. The feature is to install the base plate and wiring board connections for easy integration into your application.

规格参数表 Specification parameter table

型号Model	额定扭矩 Rating Torque	额定电流 Rated current	电压 Voltage	线圈电阻 (25℃± 10%) Resistance at 25℃± 10%	额定滑差功率Kinetic power				惯性矩 Extemal inertia	最高转速 Max speed
					加压缩空气 With air supply(kpa)		不加压缩空气 Without compressed air			
					5分钟 5min	持续 Contiuous	5分钟 5min	持续 Contiuous		
	N.m	mA	V DC	Ω	W	W	W	W	kg穆m?	rpm
LC-TEST-CZ-B3	3	570	24	32	1500	900	680	165	$6.8*10^{0}$	20000
LC-TEST-CZ-B5	5	750	24	32	2000	1800	1000	200	$1.31*10^{1}$	25000
LC-TEST-CZ-B6	6	1500	24	16	3200	2800	1400	225	$1.38*10^{-1}$	25000
LC-TEST-CZ-B10	10	1500	24	16	4200	4000	1800	280	$2.62*10^{1}$	15000
LC-TEST-CZ-B12	12	1200	24	20	3500	3000	2000	700	$5.6*10^{1}$	12000
LC-TEST-CZ-B24	24	2400	24	10	7000	5500	4000	450	$1.12*10^{2}$	8000

应用领域 Application Area

用于精确的大扭力的开环与闭环控制，如电机的加载性能测试，寿命测试。
Used for precise open-loop and closed-loop control of large torque, such as motor loading performance testing and life testing.

磁粉制动器
Powder brake

产品概述 Products Overview

磁粉制动器是根据电磁原理和利用磁粉传递转矩的。其具有激磁电流和传递转矩基本成线性关系的特点。在通滑差无关情况下能够传递一定的转矩，具有相应速度快，结构简单，无污染，无噪音，无冲击振动节约能源等优点。是一种多用途，性能优越的自动控制元件。现已被广泛应用于造纸，印刷，塑料，橡胶，纺织，印染，电线电缆，冶金，压片机以及其他有关加工行业中的放卷和收卷张力控制。磁粉制动器还经常用于传动机械的测功加载和制动等。

Magnetic powder brakes are based on electromagnetic principles and use magnetic powder to transmit torque. It has the characteristic of a linear relationship between excitation current and transmitted torque. It can transmit a certain amount of torque regardless of the slip difference, and has the advantages of fast speed, simple structure, no pollution, no noise, no impact vibration, and energy conservation. It is a versatile and high-performance automatic control component. It has been widely used in paper making, printing, plastic, rubber, textile, printing and dyeing, wire and cable, metallurgy, Tablet press and other related processing industries for unwinding and winding tension control. Magnetic particle brakes are often used for power testing, loading, and braking of transmission machinery.

功能特点 Functional characteristics

- 高精度的转矩控制，转矩的控制范畴非常广，而且控制精度高，转达转矩和激磁电流成精确的比例，可实现高精度的控制。
- 良好的历久性、寿命长、接纳耐热、耐磨耗、耐氧化 、耐蚀性超强的超合金磁粉，寿命长。
- 稳固性超群的定转矩特性，磁粉的磁气特性佳，而且粉粒相互之间的联合力稳固，滑动转矩非常稳固与相对回转数没有干系能长期连结恒定的转矩。
- 连续滑动运转利用散热结果精良而且接纳热变形均一的冷却布局，加上磁粉的高耐热性，容许连结与制动功率及滑动功率大，可以光滑的滑动运转，不会引起震荡。

- High precision torque control has a wide range of torque control categories and high control accuracy. The transmitted torque and excitation current are accurately proportional, which can achieve high-precision control.
- Excellent durability, long service life, acceptance of super alloy magnetic powder with excellent heat resistance, wear resistance, oxidation resistance, and corrosion resistance, resulting in a long service life.
- The stability of the magnetic powder is excellent, and the magnetic flux characteristics of the magnetic powder are excellent. Moreover, the joint force between the particles is stable, and the sliding torque is very stable. There is no correlation between the sliding torque and the relative rotation number, which can maintain a constant torque for a long time.
- Continuous sliding operation utilizes a cooling layout with excellent heat dissipation and uniform thermal deformation, coupled with the high heat resistance of magnetic powder, allowing for high connection and braking power as well as sliding power, allowing for smooth sliding operation without causing vibration.

基本特性 Basic CHARACTERISTICS

• **励磁电流--力矩特性:** 励磁电流与转矩基本成线性关系，通过调节励磁电流就控制了力矩的大小。

• **转速--力矩特性:** 力矩与转速无关，保持定值。(励磁电流不变时，在允许的滑差转速范围内转矩不受转速高低变化的影响)静力矩和动力矩没有差别。

• **磁粉制动器的允许滑差功率**，在散热条件一定时、是定值。其实际选用选型时，实用滑差功率需在允许的滑差功率以内。使用转速高时，需降低力矩使用。例:磁粉制动器:

额定力矩:M=100N.m

滑差功率:P=3KW

则转速: n=1500rpm连续运行刚允许力矩应为: M=9550P/n=9550x 3/1500=19.1N.m(式中9550为单位换算常数》即如果转速提高为1500rpm时，力矩只能使用到19N.m以下连续运行使用。否则温度连续升高。

• **磁粉制动器、磁粉离合器的选型**一般以所需传递最大转矩为依据来选定散热，并注意保证实际使用的滑差功率，应小于技术参数的允许滑差功率，余量大点更能延长使用寿命。

• Excitation current torque characteristic: The excitation current is basically linearly related to the torque, and the magnitude of the torque is controlled by adjusting the excitation current.

• Speed torque characteristic: The torque is independent of the speed and remains constant. When the excitation current remains constant, the torque is not affected by changes in speed within the allowable slip speed range. There is no difference in static torque and dynamic torque.

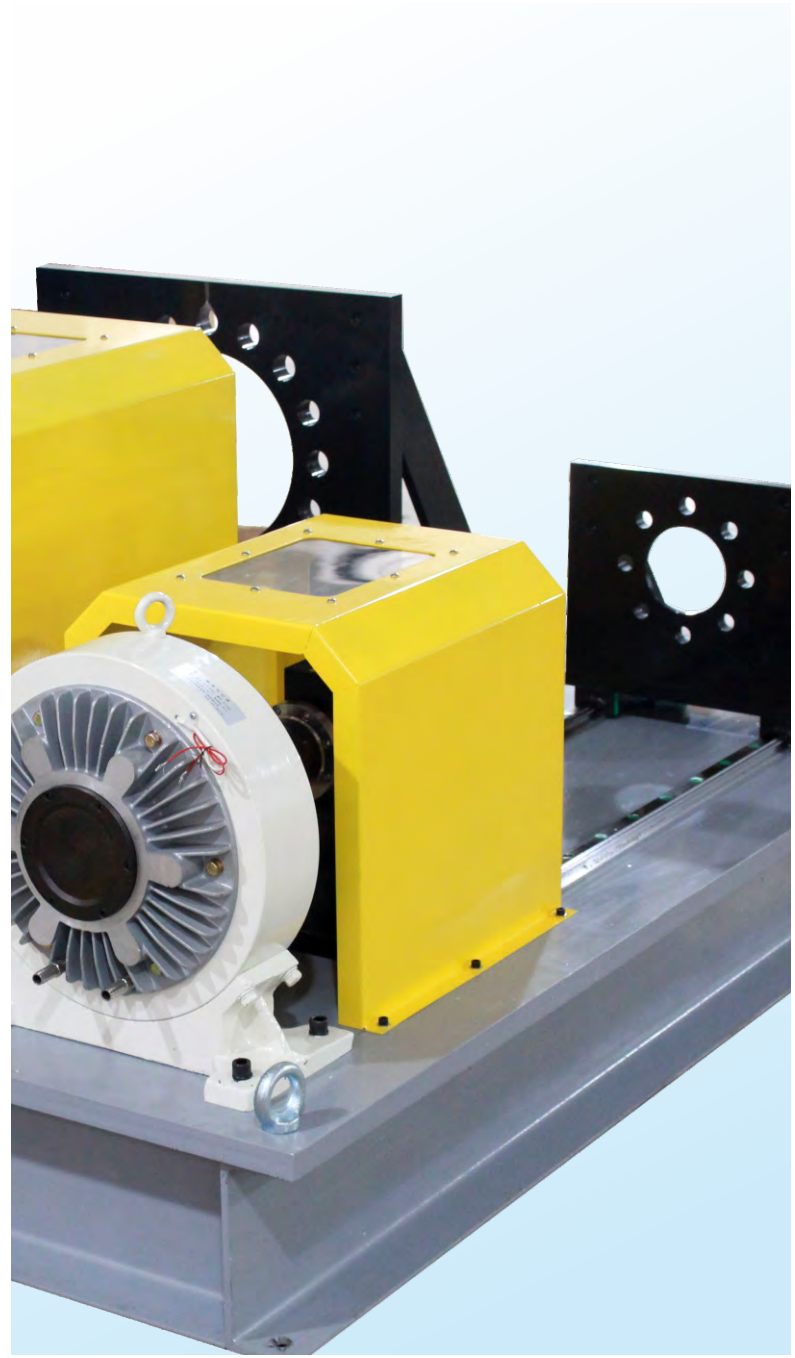
• The allowable slip power of the magnetic particle brake is a fixed value under certain heat dissipation conditions. When selecting and selecting, the practical slip power should be within the allowable slip power. When using at high speeds, it is necessary to reduce the torque for use. Example: Magnetic powder brake:

• Rated torque: M=100N. m

• Slip power: P=3KW

• Then the rotational speed: n=1500rpm The allowable torque for continuous operation should be: M=9550P/n=9550x 3/1500=19.1N. m (where 9550 is the Conversion of units constant), that is, if the rotational speed is increased to 1500rpm, the torque can only be used for continuous operation below 19N. m. Otherwise, the temperature will rise continuously.

• The selection of magnetic particle brakes and magnetic particle clutches is generally based on the maximum torque required to transmit for heat dissipation, and attention should be paid to ensuring that the actual slip power used is less than the allowable slip power of the technical parameters. A larger margin can better extend the service life.



基本特性 Basic CHARACTERISTICS

型号 Model	额定扭矩（N.m）	最高转速（Rpm）	励磁电压 （V DC）	励磁电流（A）	滑差功率自冷（KW）	滑差功率水冷（KW）
LC-TEST-CF-A5	5	1500	24	0.5	0.06	
LC-TEST-CF-A10	10	1500	24	0.6	0.12	0.8
LC-TEST-CF-A25	25	1500	24	0.8	0.2	1.2
LC-TEST-CF-A50	50	1500	24	1.0	0.3	2
型号 Model	额定扭矩（N.m）	最高转速（Rpm）	励磁电压 （V DC）	励磁电流（A）	滑差功率自冷（KW）	滑差功率水冷（KW）
LC-TEST-CF-A100	100	1500	24	1.2	3.0	5.0
LC-TEST-CF-B200	200	1000	24	1.8	4.0	8.0
LC-TEST-CF-B400	400	1000	24	2.5	5.0	12.0
LC-TEST-CF-B1000	1000	750	36	2.5		20
LC-TEST-CF-B2000	2000	750	36	3.0	——	30

使用方法 Application method

磁粉制动器、离合器用直流电作激磁电源，我公司生产恒流源和加载控制器配套使用。

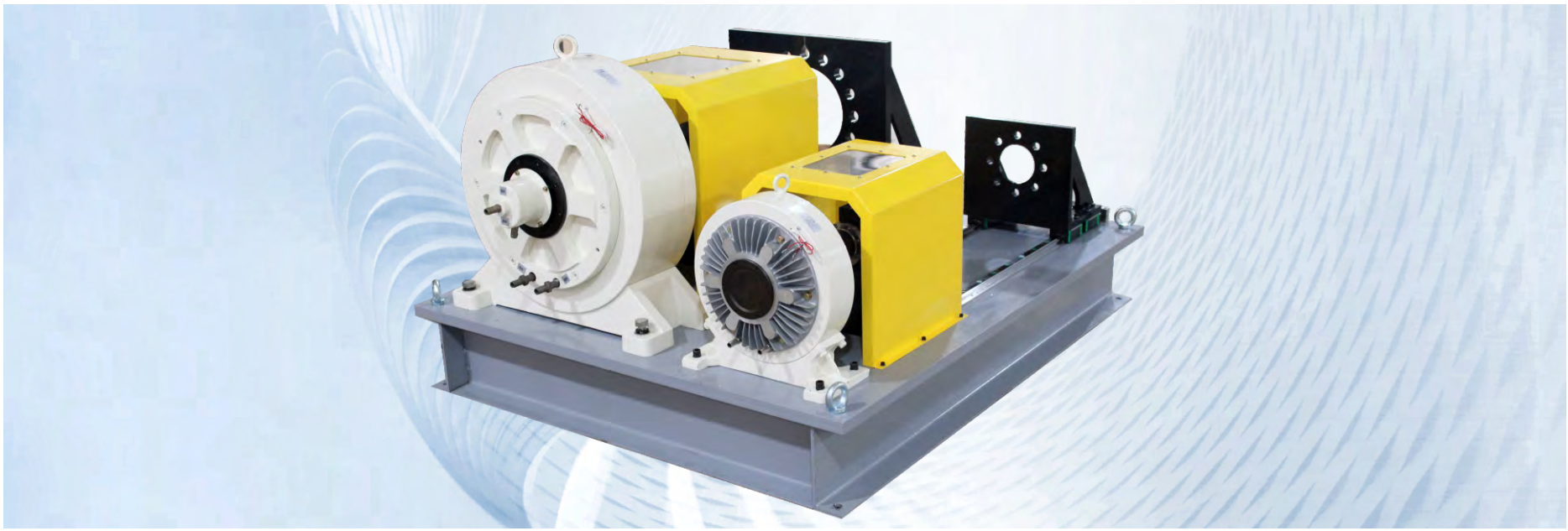
磁粉制动器、磁粉离合器在运输过程中，常使磁粉集结在某处，有时甚至会出现“卡死”现象。此时只要将制动器或离合器的整体翻动180度，用木榔头敲打几下，使磁粉松散开来，或用杠杆将轴左右转动，只要转动后即可。联轴节的连接配合上建议选用间隙配合，严禁轴向敲打。在使用前应进行跑合运转，首先通过20%左右的额定电流运转几秒后断电再通电，反复几次。500N.m以上的制动器，部分粉另装，可在跑合中，将粉从上端磁粉加注口，在不通激磁电流的情况下边转动边逐渐注入。

Magnetic powder brakes and clutches use direct current as the excitation power source, and our company produces constant current sources and load controllers for matching use.

During transportation, magnetic powder brakes and clutches often cause the particles to gather at a certain location, and sometimes even experience "jamming". At this point, simply flip the entire brake or clutch 180 degrees, hit it a few times with a wooden hammer to loosen the magnetic powder, or use a lever to rotate the shaft left and right, as long as it is turned. It is recommended to use clearance fit for the connection and fit of the coupling, and axial tapping is strictly prohibited. Before use, it should be run in and run in. First, run at about 20% of the rated current for a few seconds, then turn off the power and then turn it on, repeating several times. For brakes above 500N. m, some powder can be installed separately. During running in, the powder can be gradually injected from the upper magnetic powder filling port while rotating without excitation current.

- 水冷的磁粉制动器、离合器动转后即通水(水压不大于1.5公斤力每平方厘米出水口不得有压力。转子带水冷的磁粉制动器，在出水管的里端有一小滴水孔，如发现滴水。应及时更换同型号的水封，切勿堵塞。自然冷却或风冷的制动器、离合器、表面温度不得超过70度，可用风扇或鼓风机强迫冷却。如余量大、转速低、表面温度低可不通水。滋粉制动器、离合器、使用时尽量采用联轴节式的联接方式，不支持使用径向承受主传动的联接传动方式。如齿轮皮带轮等，如确需用，齿轮皮带轮传动建议轴向增加支撑。
- 长期不用的磁粉制动器、离合器、应存放在通风干燥处，存放一年以上的产品，使用前建议进行一次全面保养。
- 磁粉制动器离合器性能设计上一般为水平安装形式居多，垂直立轴安装时，性能与样本所述参数会有变化。扭矩约为额定扭矩的50%，容许转速范围也会降低，所以产品设计时一般建议水平安装形式，而且垂直立轴安装会影响其使用寿命。

- Water cooled magnetic powder brake After the clutch rotates, it is immediately filled with water (The water pressure should not exceed 1.5 kilograms per square centimeter, and there should be no pressure at the outlet. The magnetic powder brake with water-cooled rotor has a small drip hole at the inner end of the outlet pipe. If any drip is found, it should be replaced with a water seal of the same model in a timely manner and not blocked. The temperature of naturally cooled or air-cooled brakes, clutches, and surfaces should not exceed 70 degrees Celsius, and can be forced to cool by a fan or blower. If there is a large margin, low speed, or low surface temperature, water may not be allowed. Zifen When using brakes, clutches, and other components, it is recommended to use a coupling type connection method. It is not supported to use a radial bearing main transmission connection transmission method. For example, gear pulleys, if necessary, it is recommended to increase axial support for gear pulley transmission.
- Magnetic powder brakes and clutches that have not been used for a long time should be stored in a ventilated and dry place. Products that have been stored for more than a year are recommended to undergo comprehensive maintenance before use.
- The performance design of magnetic particle brake clutches is generally in the form of horizontal installation, and when installed vertically, the performance may vary from the parameters described in the sample. The torque is approximately 50% of the rated torque, and the allowable speed range will also decrease. Therefore, horizontal installation is generally recommended for product design, and vertical shaft installation will affect its service life.



DYN-200扭矩转速传感器
DYN-200 torque and speed sensor

产品概述 Products Overview

力测科技

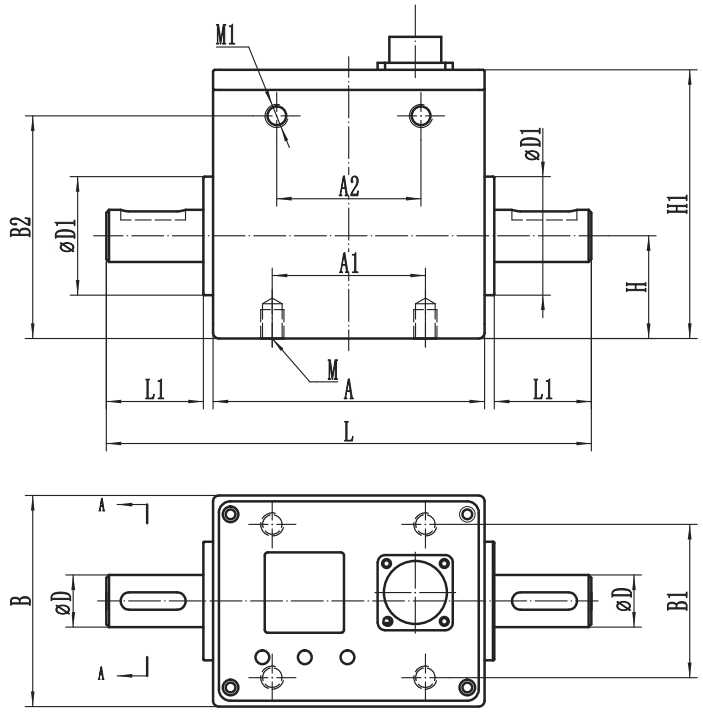
DYN-200扭矩传感器系列将扭矩与转速数据显示在其自带的 OLED 显示屏上，且可以通过按键调整零点、标定等具体参数。可以在用户没有仪表的情况下进行简单的标定与清零操作，能够更加方便的应用于工业生产与扭矩测试工作。此款传感器具有较强的稳定性与适应性，支持变送输出与 RS485 通信，用 ASCII 主动发送通信协议与 Modbus-rtu 协议与扭矩仪表进行通信，转速使用频率信号传输到扭矩仪表，所有数据无需经过频压转换，较大程度的提高了抗干扰性能。也保证传输数据的稳定性与实时性。

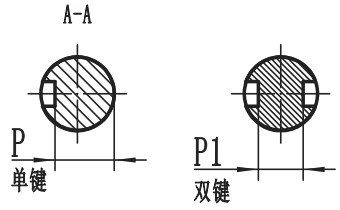
The DYN-200 torque sensor series displays torque and speed data on its built-in OLED display screen, and specific parameters such as zero point and calibration can be adjusted through buttons. Simple calibration and zero clearing operation can be carried out when the user has no instrument, which can be more convenient for industrial production and torque Test effort. This sensor has strong stability and adaptability, supporting transmission output and RS485 communication. It uses ASCII active transmission communication protocol and Modbus rtu protocol to communicate with the torque instrument. The speed is transmitted to the torque instrument using frequency signals, and all data does not need to undergo frequency voltage conversion, greatly improving anti-interference performance. It also ensures the stability and real-time performance of data transmission.

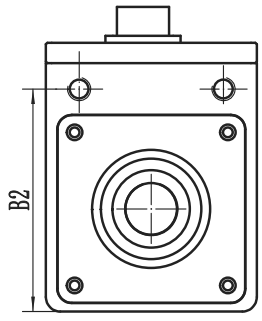
技术参数 Technical Parameters

- 当前测量的扭矩值与转速值与计算出的当前功率值实时显示，显示刷新速度为 15 次每秒
- 支持RS485通信，支持主动上传协议，通信速率最快可达每秒1000次
- 使用 120 线码盘，转速 12.5RPM 以上采集速度为 25 次每秒
- 转速可直接输出频率信号，最大转速量程为15000RPM(转速＞8000RPM 需定制)
- 支持变送电流、电压输出
- 传感器自带 OLED 显示，分辨率为 128*64
- 直接进行简单的标定、清零、滤波等操作
- 允许传感器过载 150%
- 实现了 1/1000 以上的精度，优秀的零点稳定性
- 非接触式，无需维护，无易损器件，无使用寿命限制
- 测量性能：24 位 AD 采集芯片，采集速度 1200 次/秒
- 扭矩值显示范围-99999-99999，转速值显示范围 0-99999
- 通信:485 通讯口可执行 Modbus-RTU 协议 ASCII 主动上传 HEX 主动上传协议
- 变送: 4-20mA、0-20mA、0-5V、0-10V、±5V、14bit 精度，驱动负载≤500 欧
- 电源：直流 24V(±10%) 、0.2A，最大电压 27.5V，最小启动电压 21V
- 转速输出：轴体旋转一圈输出可选 2000 线(未倍频，不包含 28 轴 200-300N.M)编码器或 120、60 个脉冲
- 工作环境: 环境温度: -20-50℃;相对湿度:≤85%RH;避免强腐蚀气体

基本特性 Basic CHARACTERISTICS







规格（N.M）	Φdh7	A	B	L	L1	H	H1	A1	A2	B1	B2	D1	M	M1	键（宽*长度）	P	P1
0.1~5	Φ10	94	73	148	23.6	35.5	93	53	50	53	77	Φ41	4-M8深10	8-M8深6	单键3*10	8.2	/
10~100	Φ18	94	73	168	33.6	35.5	93	53	50	53	77	Φ41	4-M8深10	8-M8深6	单键6*22	14.5	/
200~300	Φ28	94	73	208	53.5	35.5	93	53	50	53	77	Φ51	4-M8深10	8-M8深6	单键10*50	24	/
500~800	Φ38	100	90	238	65.5	44	107.5	60	60	60	91	Φ61	4-M8深12	8-M8深12	双键10*45	/	28
1000~5000	Φ60	100	120	258	75.5	60	138.5	60	70	75	122.5	Φ93	4-M10深15	8-M8深15	双键18*60	/	46
1~2万	Φ98	145	160	356	100.5	80	191.6	80	80	120	157	Φ129	4-M12深25	4-M12深25	双键28*90	/	78

DYN-200Pro扭矩转速传感器
DYN-200Pro Torque Speed Sensor

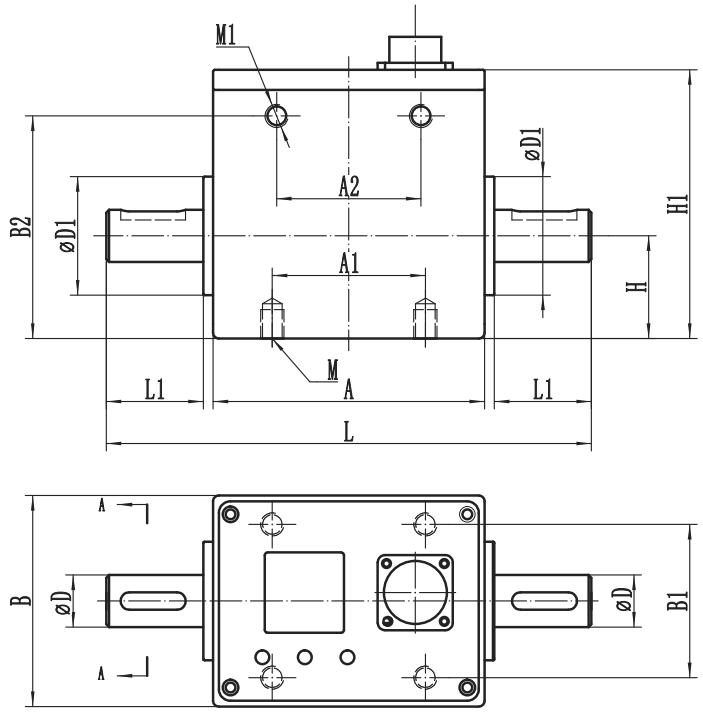
产品概述 Products Overview

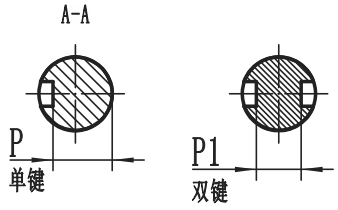
力测科技

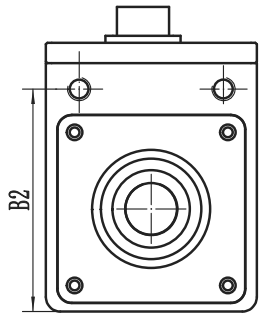
DYN-200PRO 扭矩传感器为 DYN200 扭矩传感器的升级产品。可将扭矩与转速数据显示在其自带的 OLED 智能显示屏上，且可以通过按键调整扭矩零点，系数标定等具体参数。可以在用户没有仪表的情况下进行简单的标定与清零操作，能够更加方便的运用于工业现场与扭矩测试工作。此款传感器具有较强的稳定性与适应性，支持以太网输出与 RS485 通信，同时支持 MODBUS RTU 和 MODBUS TCP，转速可以使用 OC 输出频率信号。转速频率信号可选 60Hz，120Hz, 2000Hz(2000Hz 输出信号为增量式 ABZ 信号，无倍频，客户可 4 倍频，倍频后分辨率可达 0.045 度)，所有数据无需经过频压转换，较大程度的提高了抗干扰性。极大提高了传输数据的稳定性与实时性。

The DYN-200PRO torque sensor is an upgraded product of the DYN200 torque sensor. The torque and speed data can be displayed on its built-in OLED intelligent display screen, and specific parameters such as torque zero point and coefficient calibration can be adjusted through buttons. Simple calibration and zero clearing operation can be carried out when the user has no instrument, and it can be more convenient to use in industrial field and torque Test effort. This sensor has strong stability and adaptability, supporting Ethernet output and RS485 communication, as well as MODBUS RTU and MODBUS TCP. The speed can use OC to output frequency signals. The speed and frequency signals can be selected as 60Hz, 120Hz, or 2000Hz (the 2000Hz output signal is an incremental ABZ signal without frequency doubling, and customers can achieve 4 times the frequency. After frequency doubling, the resolution can reach 0.045 degrees). All data does not need to undergo frequency voltage conversion, greatly improving anti-interference performance. Greatly improves the stability and real-time performance of data transmission.

- 当前测量的扭矩值与转速值与计算出的当前功率值实时显示，显示刷新速率为15次/秒
- 使用24位进口AD采集芯片，扭矩采样速率可达6400次/秒
- 若使用120线码盘，转速12.5RPM以上采集25次每秒
- 转速可直接输出频率信号，最大转速为18000RPM（＞6000RPM需定制）
- 本传感器支持以太网，RS485输出
- 传感器自带OLED显示，分辨率为128*64
- 直接进行简单的标定、清零、数字滤波等操作
- 允许传感器扭矩过载200%
- 扭矩精度实现了1/1000以上的精度，优越的零点稳定性
- 非接触式，无需维护，无易损器件
- 测量性能：24位AD采集芯片，采集速率6400次/秒
- 扭矩值显示范围-99999—99999，转速值显示范围0—99999
- RS485通信：RS485支持ModbusRTU协议或ASCII主动上传 HEX主动上传协议
- 以太网通信：支持ModbusTCP协议，和自定义主动上传协议
- 电源：直流24V(±10%)、0.2A，最大电压27.5V，最小启动电压21V
- 转速输出：轴体旋转一圈输出可选2000.120.60个脉冲
- 工作环境：环境温度：-20～50℃；相对湿度：≤85%RH；避免强腐蚀性气体

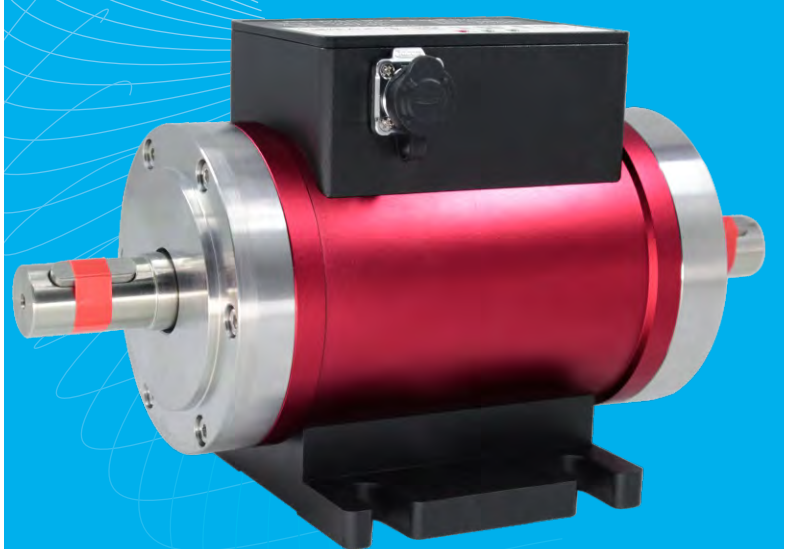






规格（N.M）	Φdh7	A	B	L	L1	H	H1	A1	A2	B1	B2	D1	M	M1	键（宽*长度）	P	P1
0.1~5	Φ10	94	73	148	23.6	35.5	93	53	50	53	77	Φ41	4-M8深10	8-M8深6	单键3*10	8.2	/
10~100	Φ18	94	73	168	33.6	35.5	93	53	50	53	77	Φ41	4-M8深10	8-M8深6	单键6*22	14.5	/
200~300	Φ28	94	73	208	53.5	35.5	93	53	50	53	77	Φ51	4-M8深10	8-M8深6	单键10*50	24	/
500~800	Φ38	100	90	238	65.5	44	107.5	60	60	60	91	Φ61	4-M8深12	8-M8深12	双键10*45	/	28
1000~5000	Φ60	100	120	258	75.5	60	138.5	60	70	75	122.5	Φ93	4-M10深15	8-M8深15	双键18*60	/	46
1~2万	Φ98	145	160	356	100.5	80	191.6	80	80	120	157	Φ129	4-M12深25	4-M12深25	双键28*90	/	78

DYN-210扭矩转速传感器
DYN-210 torque speed sensor



产品概述 Products Overview

力测科技

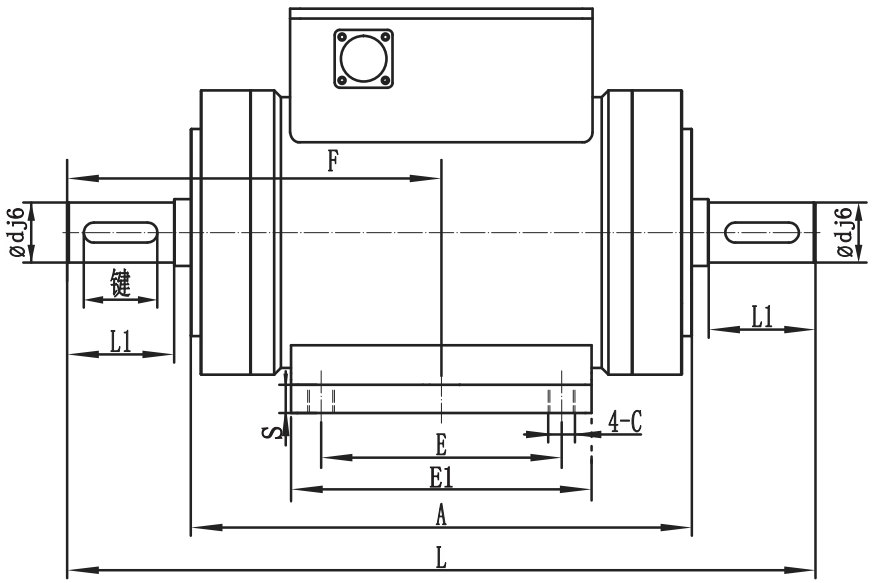
实现了 1/1000 以上的精度，优秀的稳定性。微小扭矩也能实现高精度测量。没有电刷集流环滑环等磨损件，不需要定期维护和更换零件。传递信号时与是否旋转，转速和转向无关。传感器直接输出扭矩信号为频率信号，配套变送器可输出电压或电流信号。

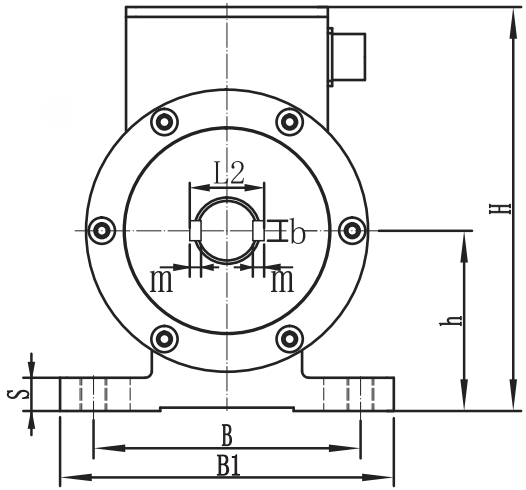
Achieved accuracy of over 1/1000 and excellent stability. Micro torque can also achieve high-precision measurement. There are no worn parts such as brushes, slip rings, etc., and regular maintenance and replacement of parts are not required. The transmission of signals is independent of rotation, speed, and . The sensor directly outputs torque signals as frequency signals, and the accompanying transmitter can output voltage or current signals.

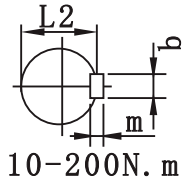
- 产品规格囊括了0.05N.m~50000N.m(可定制更高量程)
- 无线传输无滑环高速反应
- 电源输入 24V 或 ±15V DC
- 综合精度 0.1%F.S.
- 扭矩信号 5-15kHz
- 不锈钢材质弹性体
- 转速可选电流电压或频率信号
- 电源与信号隔离大幅降低干扰

- The product specifications range from 0.05N. m to 50000N. m (customizable for higher ranges)
- Wireless transmission without slip ring high-speed response
- Power input 24V or ± 15V DC
- Comprehensive accuracy 0.1% F.S
- Torque signal 5-15kHz
- Stainless steel material elastomer
- Speed selectable current voltage or frequency signal
- Power and signal isolation significantly reduces interference

测量范围（N.m）	0.05-100	200-300	500-700	1000	2000-3000	5000-7000	10 000-20 000	50 000	100 000	1500 000	200 000	300 000
电源输入	DC 24V/±15V											
消耗电流	< 200mA											
输出范围	5-15KHz											
反应性能	1K Hz											
转速输出	60个脉冲信号											
容许过载	200%											
非线性	0.1%F.S.											
滞后	0.5%F.S.											
重复性	0.2%F.S.											
运行温度范围	-10 - 50℃											
零点温度影响	0.01%F.S.											
输出温度影响	0.01%F.S.											
最高转速rpm	10000											
外形尺寸(框体)mm												
L（轴长）	224	242	272	328	385	396	447	700	820	900	900	900
B1宽	90	90	90	110	110	120	140	190	290	290	290	300
H高	123	133	144	150	172	187	244	331	410	420	446	480
轴直径（mm）	Φ18	Φ28	Φ38	Φ48	Φ65	Φ75	Φ100	Φ165	Φ210	Φ235	Φ255	Φ295
重量（kg）	4.2	5.5	7.2	10					180			







规格(N.m)	Φdj6	ΦD	A	L	L1	H	h	E	E1	B	B1	C	F	S	标准转速	c (b*l1*m*)
10 20 30 40 50 100	Φ18	Φ85	150	224	32	123	58	72	95	62	90	6.5	112	10	6000	6*22*6*1
200 300	Φ28	Φ95	152	242	42	133	63	72	95	62	90	6.5	121	10	5000	8*30*7*1
500 700	Φ38	Φ105	154	272	56	144	69	72	95	62	90	6.5	136	10	4000	10*45*8*2
1000	Φ48	Φ115	156	328	82	150	70	72	95	82	110	8.5	165	12	3000	14*70*9*2
2000	Φ55	Φ125	165	385	105	158	74	72	95	82	110	8.5	198	12	3000	16*95*10*2
3000	Φ65	Φ132	165	385	105	172	80	72	95	82	110	8.5	192.5	12	2500	18*90*11*2
5000 7000	Φ75	Φ146	180	396	105	187	89	72	95	82	120	8.5	210	12	2000	20*90*12*2
10000 20000	Φ100	Φ182	180	447	130	244	122	80	110	112	140	10.5	230	15	2000	28*110*16*2
30000	Φ125	Φ230	216	496	135	295	150	100	150	140	180	12.5	248	15	2000	32*130*18*2
50000	Φ165	Φ250	185	700	240	331	180	120	190	150	190	12.5	350	15	1900	40*210*22*2
100000	Φ210	Φ330	200	820	300	410	210	160	200	250	290	12.5	410	15	1700	50*270*28*2
150000	Φ235	Φ350	250	900	315	420	220	220	260	250	290	17	450	15	1200	56*280*32*2
200000	Φ255	Φ360	210	900	320	446	240	220	260	250	290	17	450	15	1100	56*280*32*2
300000	Φ295	Φ416	224	900	325	480	250	220	270	268	300	17	450	20	1000	70*280*36*2

测功机控制器
Dynamometer controller

6001型测功机控制器
6001 Dynamometer Controller

产品概述 Products Overview

力测科技

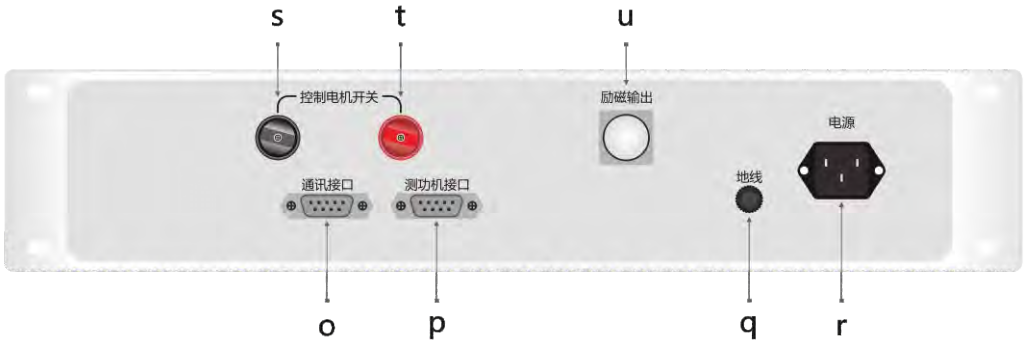
- 6001测功机控制器是一种可以对多种扭矩传感器信号和测功机信号进行采样和处理，同时可控制磁粉磁滞制动器。并将其信号传输至上位机。
- 其工作原理是将测功机传入的扭矩信号经过高精度ADC转换后，进行运算处理得到真实扭矩值。再将转速传感器回传的信号经过处理得出实际转速值。将两组数据进行运算后得出输出功率的大小，并将这三组数据送至显示器显示。同时将当前数据传输至上位机进行曲线与表格绘制。
- The DY-6001 dynamometer controller is a type of controller that can sample and process various torque sensor signals and dynamometer signals, while also controlling the magnetic particle hysteresis brake. And transmit its signal to the upper computer.
- Its working principle is to convert the torque signal transmitted by the dynamometer into high-precision ADC, and then perform arithmetic processing to obtain the true torque value. Then, the signal returned by the speed sensor is processed to obtain the actual speed value. Calculate the output power of two sets of data and send these three sets of data to the display for display. Simultaneously transmit the current data to the upper computer for curve and table drawing.

技术参数 Technical Parameters

- 将当前测量的扭矩值与转速值与计算出的当前功率值实时显示
- 支持多种本公司生产的扭矩传感器
-
- 转速最大采集速度20次每秒
- 扭矩最大采集速度800次每秒
- 标配RS232与上位机通信
- 自带PID
- 可输出0-2000MA电流，最大电压30V，电流精度+-2MA
- 扭矩量程可自由设置，最大值99999
- 扭矩值显示范围-9999-99999，转速值显示范围0-99999
- 可配转速传感器信号：60、120、1250、1500、2000脉冲/转
- 电源：AC 220V±10%，50/60HZ
- 整机功耗：<90VA
- 工作环境: 环境温度: -20-50℃、相对湿度:≤85%RH;避免强腐蚀气体

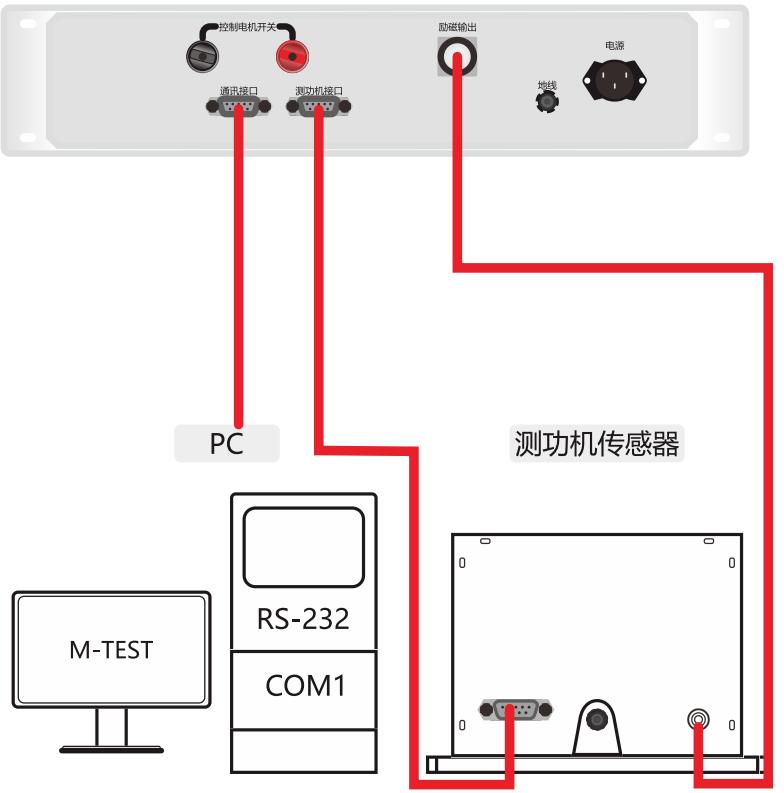
- Real time display of the current measured torque and speed values with the calculated current power value
- Support multiple torque sensors produced by our company
- Maximum collection speed of 20 revolutions per second
- Maximum torque collection speed 800 times per second
- Standard RS232 communication with upper computer
- Equipped with PID
- Can output 0-2000MA current, maximum voltage 30V, current accuracy+-2MA
- The torque range can be freely set, with a maximum value of 99999
- Torque value display range -9999-99999, speed value display range 0-99999
- Can be equipped with speed sensor signals: 60, 120, 1250, 1500, 2000 pulses/revolution
-
- Power supply: AC 220V ± 10%, 50/60HZ
- Overall power consumption:<90VA
- Working environment: Environmental temperature: -20-50 ℃, relative humidity: ≤ 85% RH; Avoid strong corrosive gases

a: 仪表电源开关
b: 扭矩值显示窗口
d: K1菜单按键
e: 转速值显示窗口
f: K2单位按键
h: 输出功率值显示窗口
g: K3启动/结束按键
L: 励磁电流显示窗口
i: K4PID整定按键
cn: 扭矩值单位显示
k: K5整体数据复位按键
j: 手动模式提示
m: 励磁电流调节旋钮



s t:电机控制开关，遇紧急情况，仪表可以断开电机电源。
u :励磁输出最大输出30V2A给予制动器。
o :与上位机通信接口。
p :与扭矩传感器和转速传感器通信接口，支持本公司所有动态扭矩传感器。
q :接地线。
r :接入220VAC电源。

6001可编程控制器



电参数测量仪
Electrical parameter measuring instrument

产品概述 Products Overview

力测科技

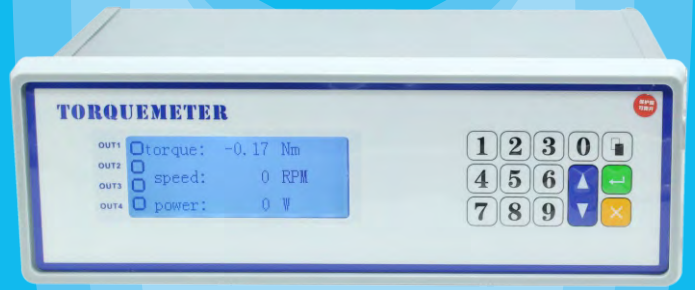
电参数测量仪是本公司最新研制的高性价比的测量仪器，能测量出电压 V、电流 A、功率 W、功率因数 PF、频率Hz。电能量 kWh 等参数。仪器将完善的功能、优越的性能及简单的操作结合在一起，既能实现生产现场的高速测量的需要，也能满足实验室等部门的研发开发的需要，具体高精度、宽范围、小巧灵活等特点，是新一代的电参数测量仪器。

The electrical parameter measuring instrument is the latest cost-effective measurement instrument developed by our company, which can measure voltage V, current A, power W, power factor PF, and frequency Hz. Parameters such as electrical energy kWh. The instrument combines complete functions, superior performance, and simple operation, which can not only meet the needs of high-speed measurement on the production site, but also meet the research and development needs of departments such as laboratories. It is a new generation of electrical parameter measurement instruments with specific characteristics such as high precision, wide range, small size, and flexibility.

技术参数 Technical Parameters

参数	量程范围	误差	最小分辨率	备注
电压	5V～600V	±（0.4%读数 +0.1%量程）	0.1V	长时间过载 1.2 倍
电流	5mA～40A	±（0.4%读数 +0.1%量程）	0.001mA	短时间过载 1.2 倍
功率	U*I*PF	PF>0.5±（0.4%读数+0.1%量程） PF ≤ 0.5±（0.6%读数 +0.1%量程）	0.01W	下限 10mW（0.01W）
功率因数	0.1～1.000	±0.01	0.001	电压值高于 10%量程 电流值高于 1%量程
频率	40～400Hz	±0.1%*读数	0.01Hz	电压值高于 10%量程
电能累计	0～99999MWh	0.5 级	0.01mWh	
电能计时	99999h	±2 秒/小时	1 秒	

三通道扭矩显示仪
Three channel torque display instrument



产品概述 Products Overview

力测科技

仪表采用ARM内核处理器作为主控。与信号输出为频率的动态扭矩传感器相连接，可以快速读取当前扭矩值，默认扭矩频率采集速度为200次每秒，转速频率大于200HZ以上时采集速度也为200次每秒，实时计算功率值。标配24V电源输出，最大输出功率为8W。最多四路继电器输出，可连接RS232接口打印机，支持电流电压模拟量输出。支持RS485输出。RS485与RS232（支持热敏打印机）可独立输出，互不影响。

The instrument adopts an ARM core processor as the main control. Connected with the dynamic torque sensor whose signal output is frequency, the current torque value can be quickly read. The default torque frequency acquisition speed is 200 times per second, and the acquisition speed is 200 times per second when the speed frequency is more than 200HZ. The power value can be calculated in Real-time computing. Standard 24V power output, with a maximum output power of 8W. Up to four relay outputs, can be connected to an RS232 interface printer, and supports current and voltage analog output. Supports RS485 output. RS485 and RS232 (supporting thermal printers) can output independently without affecting each other.

RS485
Modbus-RTU协议

RS232
MODBUS-RTU协议


自动上电清零


自动零位跟踪


上下限报警


连接打印机

技术参数 Technical Parameters

工作环境	温度：-20-55℃	显示	LCD液晶显示屏(192*64)
	湿度：20-90%RH	输出电压	24V±5%，电流<320MA
测量精度	±0.05%F.S	电源电压	100-240V AC 50/60Hz
采集速度	200次每秒	消耗功率	小于等于15VA
防护等级	IP65(前面板防护)	扭矩显示范围	-99999～99999
功率显示范围	0～99999	转速显示范围	0～99999
扭矩输入信号	5000～15000Hz	转速输入信号	0.3—12000Hz

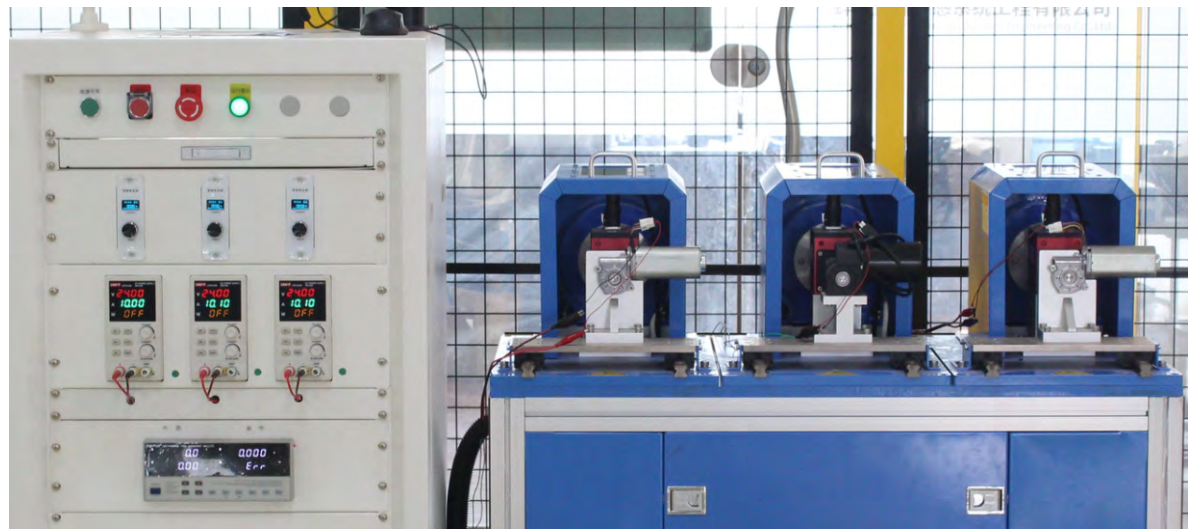
DYCSM恒流源控制器
DYCSM constant current source controller

产品概述 Products Overview

力测科技

该仪表采用ARM内核处理器作为主控，使用高端精密运放作为电流控制。内部采用高速DAC，使电流输出速度较快。电流输出周期为5MS，其便于上位机进行测功机的PID控制。可使用MODBUS RTU并入RS485网络，可以实时读取电流值和其他参数，并支持控制输出电流。本控制器一共有四个电流输出量程范围。0-500MA，0-1000MA,0-1500MA，0-2000MA。

The instrument uses an ARM core processor as the main control and a high-end precision operational amplifier as the current control. Internally, high-speed DAC is used to achieve faster current output speed. The current output cycle is 5MS, which facilitates the PID control of the dynamometer by the upper computer. MODBUS RTU can be integrated into the RS485 network, allowing real-time reading of current values and other parameters, and supporting control of output current. This controller has a total of four current output range ranges. 0-500MA, 0-1000MA, 0-1500MA, 0-2000MA.



技术参数 Technical Parameters

工作环境	温度：-20-65℃	显示	OLED显示屏(128*64)
	湿度：20-90%RH	电源电压	12-30V
输出精度	±0.3%F.S	空载功率	小于等于1.5W
输出速度	20次/秒	电流显示范围	0～9999

三通道扭矩显示仪
Three channel torque display instrument

产品概述 Products Overview

力测科技

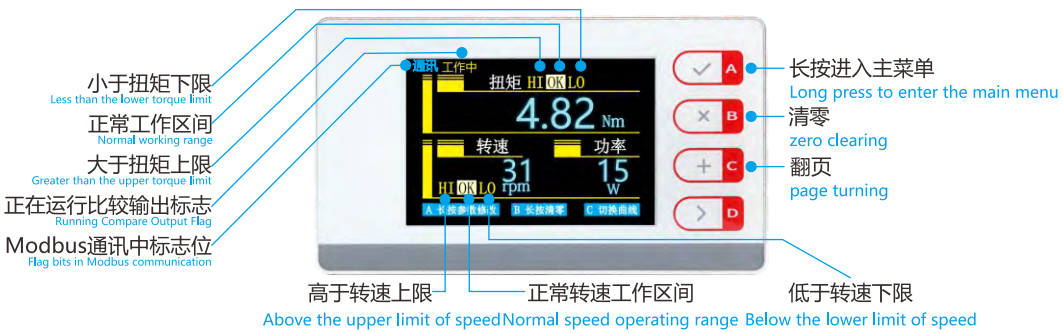
D054N仪表配置2个RS485串口，一个以太网口。 RS485执行MODBUS-RTU协议、ASC主动上传和HEX快速主动上传协议。MODBUS协议支持03读命令和10H写命令。主动上传协议提供最小延迟最快速度的主动上传协议。以太网口支持MODBUS-TCP协议和自定义协议。仪表具备上下限比较、区间比较、显示实时/历史/工作曲线、响应时间<1ms。

The D054N instrument is equipped with two RS485 serial ports and one Ethernet port. RS485 implements MODBUS-RTU protocol, ASC active upload, and HEX fast active upload protocol. The MODBUS protocol supports 03 read commands and 10H write commands. The active upload protocol provides the minimum latency and fastest active upload protocol. The Ethernet port supports MODBUS-TCP protocol and custom protocol.
The instrument has upper and lower limit comparison, interval comparison, real-time/historical/working curve display, and response time<1ms.

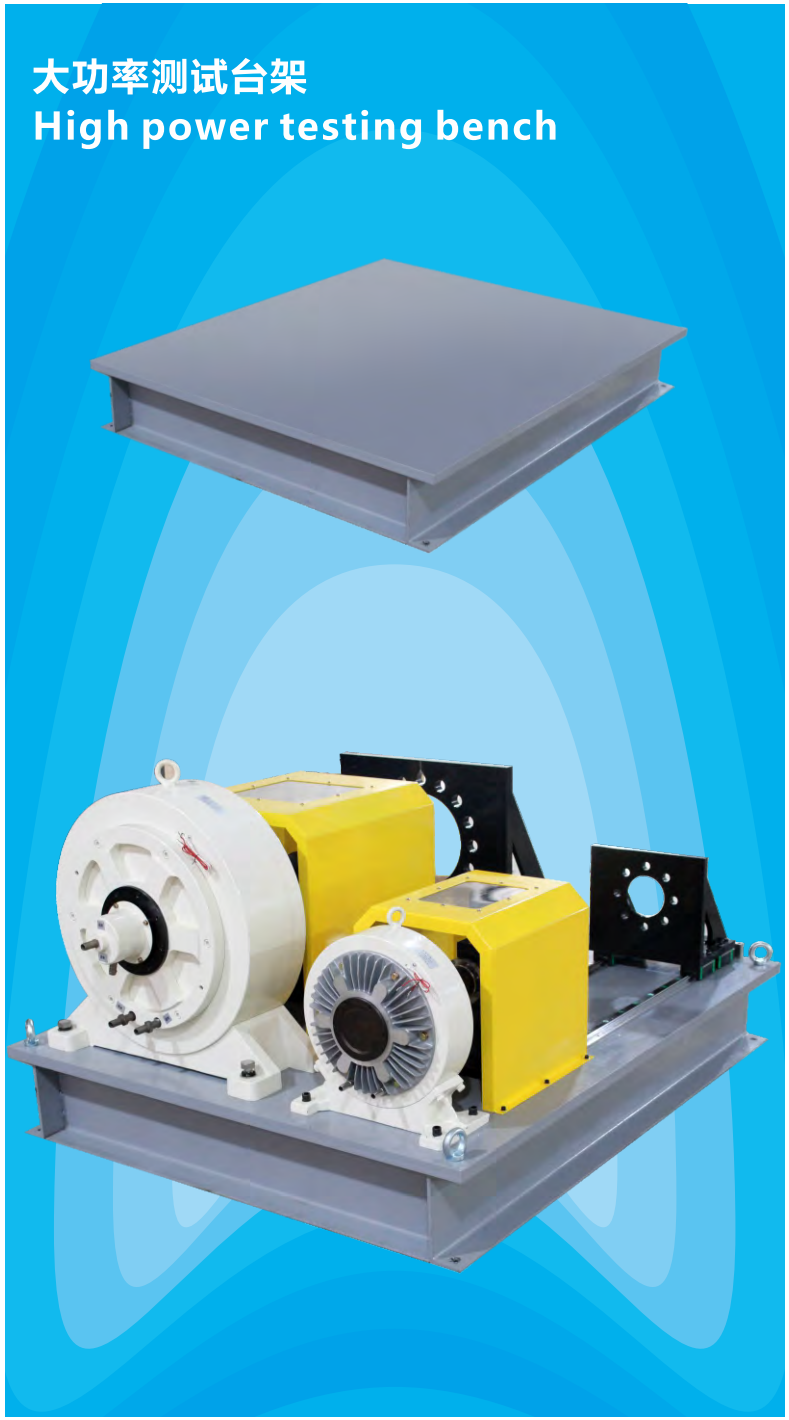
技术参数 Technical Parameters

- 综合精度优于0.1%
- 非线性优于0.01%
- 采集精度优于0.01%
- 数字信号RS485输入
- 高速采集可达到4000次/s
-
- 显示分度9999.99
- -20~70℃相对湿度<90%(无结露)
-
- 供电电压12~30V DC,<5W

- Comprehensive accuracy better than 0.1%
- Nonlinear better than 0.01%
- Acquisition accuracy better than 0.01%
- Digital signal RS485 input
- High speed acquisition can reach 4000 times/s
- Display graduation 9999.99
- -20~70 ℃ relative humidity<90% (no condensation)
- Supply voltage 12-30V DC,<5W



大功率测试台架
High power testing bench



产品概述 Products Overview

伴随着科技的发展，变频器的推广越来越受到人们的重视。为了检验变频器的性能，苏州力测开发了一台针对变频器性能系统。系统采用一个同步电机，一个异步电机对拖的方式，在两个电机之间增加了扭矩转速传感器，两个高精度角度传感器，一个西门子S120系列变频器做标准，用来测试变频器分别控制司步电机和异步电机的性能。当被测变频器控制同步电机时，变频器控制异步电机(一个做转速模式时，另外一个做扭矩模式），反之也一样。

With the development of technology, the promotion of frequency converters is receiving increasing attention from people. In order to test the performance of the frequency converter, a Suzhou Lisheng system has been developed for the performance of the frequency converter. The system adopts a synchronous motor and an asynchronous motor for traction, and torque and speed sensors, two high-precision angle sensors, and a Siemens S120 series frequency converter as the standard are added between the two motors to test the performance of the frequency converter in controlling the stepper motor and the stepper motor respectively. When the tested frequency converter controls the synchronous motor, the frequency converter controls the asynchronous motor (one in speed mode and the other in torque mode), and vice versa.

技术参数 Technical Parameters

- 控制同步电机时:扭矩，转速，电压，电流，功率，效率，振动，扭矩波动，转速波动等
- 控制异步电机时:扭矩，转速，电压，电流，功率，效率，振动，扭矩波动，转速波动等
- When controlling synchronous motors: torque, speed, voltage, current, power, efficiency, vibration, torque fluctuations, speed fluctuations, etc
- When controlling asynchronous motors: torque, speed, voltage, current, power, efficiency, vibration, torque fluctuations, speed fluctuations, etc

功能特点 Functional Features

- 灵活性强: 被测变频器可以控多类型的电机试验。
- 网络化控制体系，可以对设备进行CANBus或者TCP/IP通讯，提高通讯品质及响应速度。
- 低惯量负载电机，能更好的保障，提供稳定的，高精度的动态扭矩或速度响应。
- 扭矩传感器可选双量程自动切换，精确的闭环反馈控制。
- 大型电机的能量回馈，绿色环保，节约能源。
- Strong flexibility: The tested frequency converter can control multiple types of motor tests.
- The networked control system can communicate with devices through CANBus or TCP/IP to improve communication quality and response speed.
- Low inertia load motors provide better protection and provide stable, high-precision dynamic torque or speed response.
- The torque sensor can be selected with dual range automatic switching and precise closed-loop feedback control.
- Energy feedback for large motors, green and environmentally friendly, and energy saving.

小功率测试台架
Small power testing bench

产品概述 Products Overview

过去，测试对象主要局限于诸如发电机、起动机、辅助驱动器和变速器之类的单个电气部件。随着电动化趋势的不断增加，现在的重点越来越多地放在能够测试复杂驱动系统的技术上。苏州力测公司在多年前便已看准这一趋势。因此，今日我们的测量技术专家能够提供高效的自动化系统解决方案，为迎接未来挑战的产品解决方案开辟了道路。苏州力测公司的电机测试台用于开发、质量控制和生产，其目标始终不变：优化测试设备的效率并确保继续创新。我们的系统根据每个客户的需求而量身定制。这些系统的测量链都经过校准，其测量结果是精准和可再现的。苏州力测公司的产品合中包含有电动机、发电机和驱动系统的电机测试台。如果选择苏州力测公司的产品，您就可以从一个单一来源获得所需的一切：从单个组件到完整的解决方案。

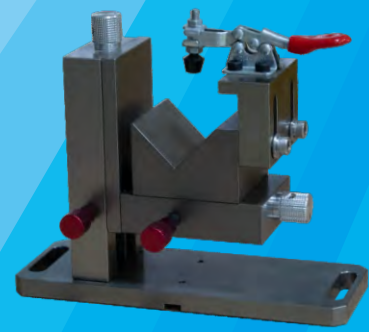
In the past, the test objects were mainly limited to individual electrical components such as generators, starters, auxiliary drives, and transmissions. With the increasing trend of electrification, the focus is now increasingly on technologies that can test complex drive systems. Suzhou Lite Testing Company had already identified this trend many years ago. Therefore, today our measurement technology experts are able to provide efficient automation system solutions, paving the way for product solutions to meet future challenges. The motor testing bench of Suzhou Lite Company is used for development, quality control, and production, and its goal remains unchanged: to optimize the efficiency of testing equipment and ensure continued innovation. Our system is tailored to the needs of each customer. The measurement chains of these systems have been calibrated, and their measurement results are accurate and reproducible. The product portfolio of Suzhou Lite Testing Company includes motor testing benches for motors, generators, and drive systems. If you choose products from Suzhou Lite Testing Company, you can get everything you need from a single source: from a single component to a complete solution.

功能特点 Functional Features

- 模块型设计及工艺，保证了系统高扩展性及易维护性
- 牢固的机械机构提供了稳定的测试基础，减少了共振危害
- 成熟的电气设计，多层保护人员安全及测试执行
- 高精度测量结果，提高测试数据有效价值，推动客户研发进程
- 成熟的工程经验，为客户提供专业基于定制要求的测试解决方案
- Modular design and process ensure high scalability and easy maintenance of the system
- The sturdy mechanical mechanism provides a stable testing foundation and reduces resonance hazards
- Mature electrical design, multi-layer protection for personnel safety and testing execution
- High precision measurement results, improving the effective value of test data, and driving customer research and development progress
- Mature engineering experience, providing customers with professional testing solutions based on customized requirements

夹持电机直径: 120mm
三维可调

夹持电机直径: 100mm
二维可调

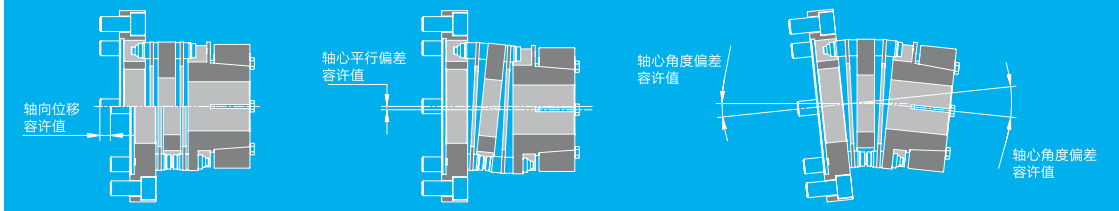


夹持电机直径: 40mm
快夹

联轴器选用计算方法
Calculation method for coupling selection

技术指标	符号		
理论扭矩	T		
计算扭矩	Tc		
参考选用扭矩	Tm		
驱动功率	Pw		
工作转速	n		
公式1	$T(理论扭矩)=9550*\frac{Pw(驱动功率)}{n(工作转速)}$		
公式2	Tc(计算扭矩)=T(理论扭矩)*Kw(动力机系数)*Kt(运转时间)*Kz(起动系数)		
公式3	Tm(参考选用扭矩)≥Tc(计算扭矩)		
动力机系数	Kw	恒负载	1.0
		小变动负载	1.2
		常变动负载	1.7
		大变动负载	2.1
运转时间	Kt	≤2小时	K2=0.70
		≤4小时	K2=0.85
		≤8小时	K2=1.00
		≤16小时	K2=1.18
		≤24小时	K2=1.28
起动系数	Kz	≤10次	K3=1.0
		≤30次	K3=1.1
		≤60次	K3=1.2
		≤120次	K3=1.5
		≤240次	K3=2.0

联轴器元件允许的轴位移Allowable shaft displacement of coupling components



直接测量传动链上驱动和负载之间的旋转轴的扭矩。外部干扰犹如剪切力、轴向力和弯矩可能会影响测量信号。联轴器用来消除这类影响。
Directly measure the torque of the rotating shaft between the drive and load on the transmission chain. External interference, such as shear force, axial force, and bending moment, may affect the measurement signal. Couplings are used to eliminate such effects.

用于轴和传感器之间的联轴器根据其柔性分不同的种类。有些联轴器只能在一个方向上纠正机械不对中（这些被称为单柔性联轴器）；其他在两个方向（双柔性联轴器）或所有方向上补偿不对中。
Couplings used between shafts and sensors are classified into different types based on their flexibility. Some couplings can only correct mechanical misalignment in one direction (these are referred to as single flexible couplings); Compensation for misalignment in both directions (dual flexible coupling) or in all directions.

联轴器的选择Selection of Couplings

联轴器的选择是测量质量的关键因素。对于动态测量，联轴器必须高度抗扭转；这是因为联轴器会由于扭转阻力改变机械结构的响应，从而导致额外的扭振。
The selection of couplings is a key factor in measuring quality. For dynamic measurement, the coupling must be highly resistant to torsion; This is because the coupling will change the response of the mechanical structure due to torsional resistance, resulting in additional torsional vibration.

技术参数 Technical Parameters

名称		梅花联轴器(组合)
适用扭矩 N.m	额定	2.5-260
	最大	5.0-520
纠偏能力 mm	径向	0.002
	轴向	0.8
	角度	1°
最高转速 rpm		4600-14000
拧紧力矩 N.m		1.4-60

名称		弹性膜片联轴器（组合型）
适用扭矩 N.m	额定	1-127.5
	最大	2.0-255
纠偏能力 mm	径向	0.002
	轴向	±0.2
	角度	单膜片1° 双膜片1.5°
最高转速 rpm		10000
拧紧力矩 N.m		1.3-16

名称		平行线联轴器
适用扭矩 N.m	额定	1.7-19
	最大	3.4-38
纠偏能力 mm	径向	0.15
	轴向	±0.15
	角度	2.0°
最高转速 rpm		15000
拧紧力矩 N.m		0.5-7.0

名称		不锈钢平行线联轴器
适用扭矩 N.m	额定	2.7-34.5
	最大	2.4-69
纠偏能力 mm	径向	0.12
	轴向	±0.12
	角度	2.7°
最高转速 rpm		9000-18000
拧紧力矩 N.m		2.2-6.0

名称		波纹管联轴器(组合型)
适用扭矩 N.m	额定	0.8-25
	最大	1.6-50
纠偏能力 mm	径向	0.1
	轴向	0.1
	角度	1.5°-2.0°
最高转速 rpm		5000-18000
拧紧力矩 N.m		0.7-7.0

名称		十字滑块联轴器(组合型)
适用扭矩 N.m	额定	0.7-80
	最大	1.4-160
纠偏能力 mm	径向	0.15
	轴向	1-4.5
	角度	3°
最高转速 rpm		2400-9000
拧紧力矩 N.m		0.7-30.0

名称		微型刚性联轴器
适用扭矩 N.m	额定	4-9
	最大	8-18
纠偏能力 mm	径向	无
	轴向	无
	角度	无
最高转速 rpm		10000-23000
拧紧力矩 N.m		0.7-1.7

名称		法兰式单膜片联轴器
适用扭矩 N.m	额定	35-980
	最大	70-1960
纠偏能力 mm	径向	0.2-0.7
	轴向	0.6-1.8
	角度	1°
最高转速 rpm		7500-20000
拧紧力矩 N.m		4.4-38.5

技术参数 Technical Parameters

名称		法兰式双膜片联轴器
适用扭矩 N.m	额定	35-980
	最大	70-1960
纠偏能力 mm	径向	0.2-0.7
	轴向	1.2-3.6
	角度	1°
最高转速 rpm		5000-13000
拧紧力矩 N.m		4.4-38.5

名称		弹性单节膜片胀紧套联轴器(组合型)
适用扭矩 N.m	额定	38.5-646.8
	最大	77-1293.6
纠偏能力 mm	径向	0.2-0.6
	轴向	0.6-1.6
	角度	1°
最高转速 rpm		6500-13000
拧紧力矩 N.m		7-27.5

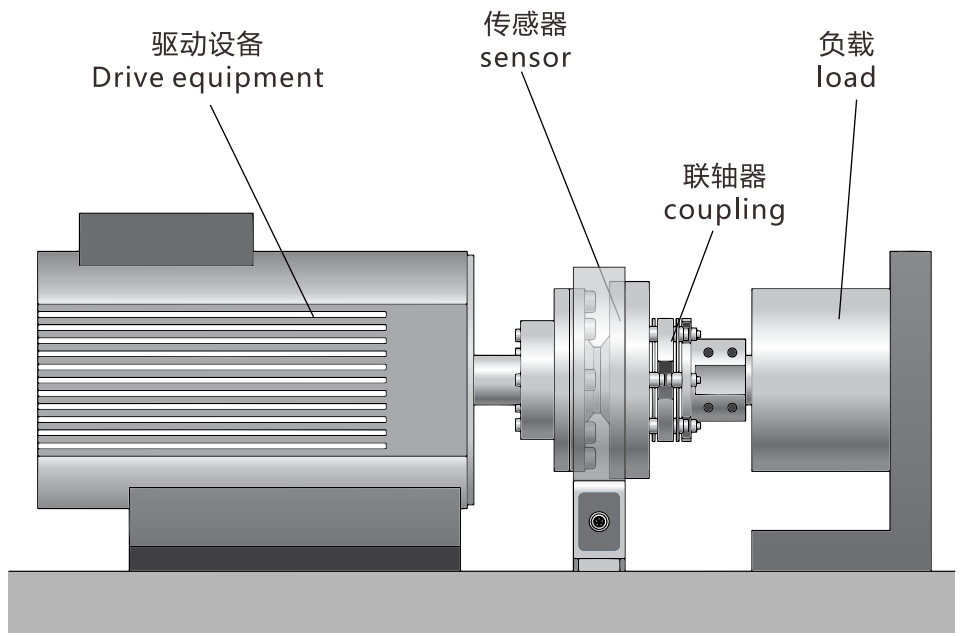
名称		弹性双节膜片胀紧套联轴器(组合型)
适用扭矩 N.m	额定	38.5-646.8
	最大	77-1293.6
纠偏能力 mm	径向	0.2-0.6
	轴向	1.2-3.2
	角度	1.5°
最高转速 rpm		6500-13000
拧紧力矩 N.m		7-27.5

法兰安装的应用案例
Application Cases of Flange Installation

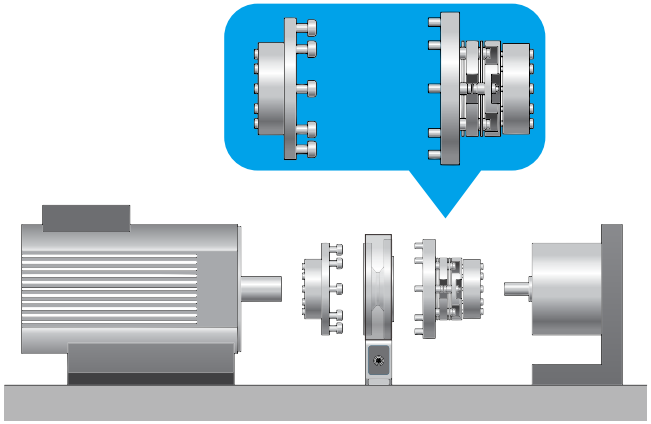
力测科技

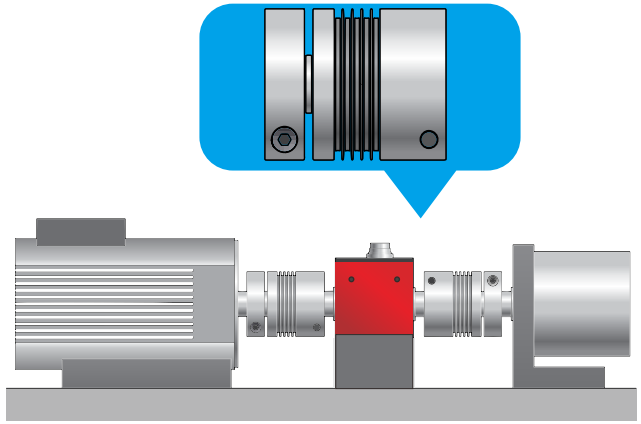
原则上，联轴器的选择是由安装的扭矩传感器型号决定的。对于扭矩测量法兰，扭矩传感器和试验设备之间一般采用双柔性联轴器。在驱动端，使用单一适配法兰连接，不需要联轴器。对于扭矩测量轴，分固定安装和浮地安装两种方式。选两种安装方式使用不同类型的联轴器用于不同的应用。固定安装时需要双柔性联轴器，单柔性联轴器用于浮地安装。

In principle, the selection of the coupling is determined by the installed torque sensor model. For torque measurement flanges, a double flexible coupling is generally used between the torque sensor and the testing equipment. At the drive end, a single adapter flange connection is used without the need for a coupling. For torque measurement shafts, there are two methods: fixed installation and floating installation. Choose two installation methods to use different types of couplings for different applications. Double flexible couplings are required for fixed installation, while single flexible couplings are used for floating installation.



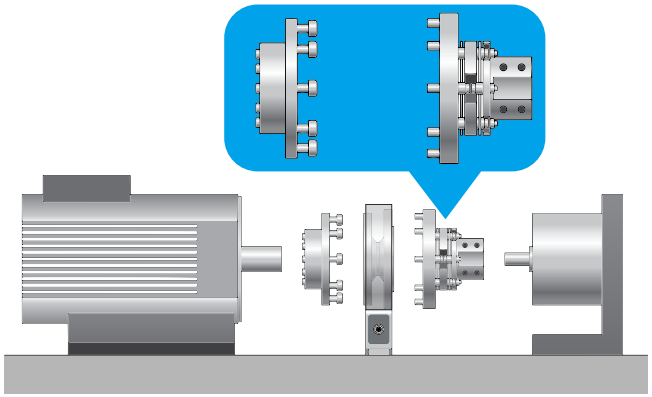
法兰安装的应用案例
Application Cases of Flange Installation

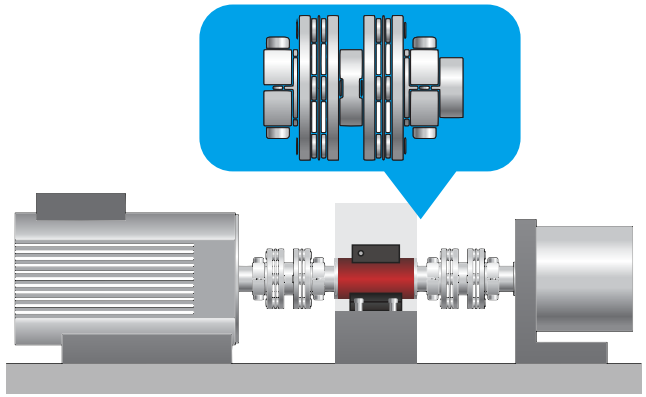




在安装需要固定外壳的扭矩传感器时，需要2个双柔性波纹管联轴器提供横向和轴向补偿，以避免测量误差和传感器损坏。传感器安装配固定外壳或安装支架需要传感器两侧有双柔性联轴器。传感器两端均需选用带夹紧套的双柔性联轴器。摩擦夹紧连接保证了绝对无后座的安装。

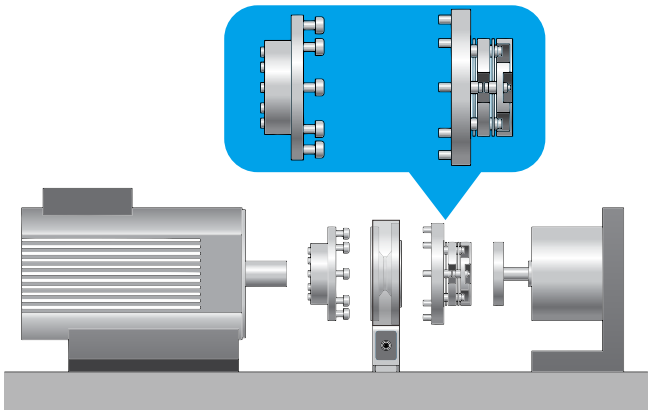
When installing a torque sensor that requires a fixed housing, two double flexible bellows couplings are required to provide lateral and axial compensation to avoid measurement errors and sensor damage. The installation of sensors with fixed housings or mounting brackets requires dual flexible couplings on both sides of the sensor. Both ends of the sensor need to use dual flexible couplings with clamping sleeves. The friction clamping connection ensures absolute installation without a backseat.

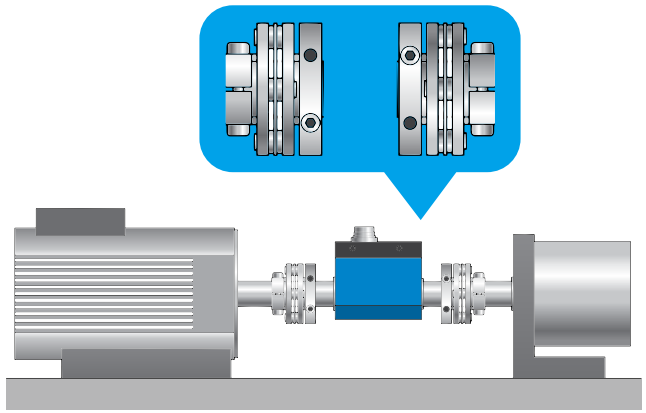




在安装需要固定外壳的扭矩传感器时，需要2个双柔性波纹管联轴器提供补偿。一定要补偿不对中偏差以避免测量误差和传感器损坏。传感器安装配固定外壳或安装支架需要传感器两侧有双柔性联轴器。每个联轴器通过两端夹紧轴套安装。

When installing a torque sensor that requires a fixed housing, two double flexible bellows couplings are required to provide compensation. It is necessary to compensate for misalignment deviation to avoid measurement errors and sensor damage. The installation of sensors with fixed housings or mounting brackets requires dual flexible couplings on both sides of the sensor. Each coupling is installed by clamping the shaft sleeves at both ends.





当扭矩传感器必须自我支撑安装在轴系上时，需要2个单柔性联轴器提供补偿。一定要补偿不对中偏差以避免测量误差和传感器损坏。建议这种安装方式只用于扭矩>50 N·m，转速<500 转/分的扭矩传感器。

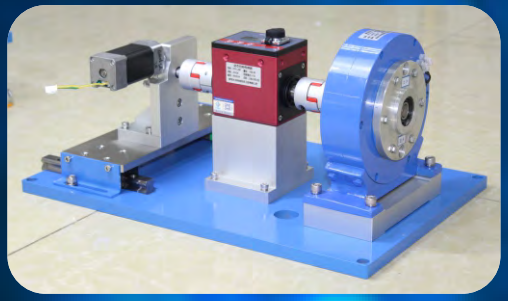
When the torque sensor must be self-supported and installed on the shaft system, two single flexible couplings are required to provide compensation. It is necessary to compensate for misalignment deviation to avoid measurement errors and sensor damage. It is recommended that this installation method is only used for torque sensors with a torque>50 N · m and a speed<500 rpm.





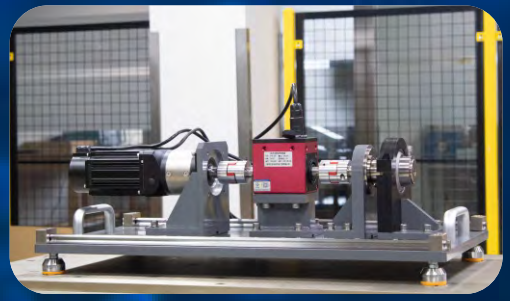














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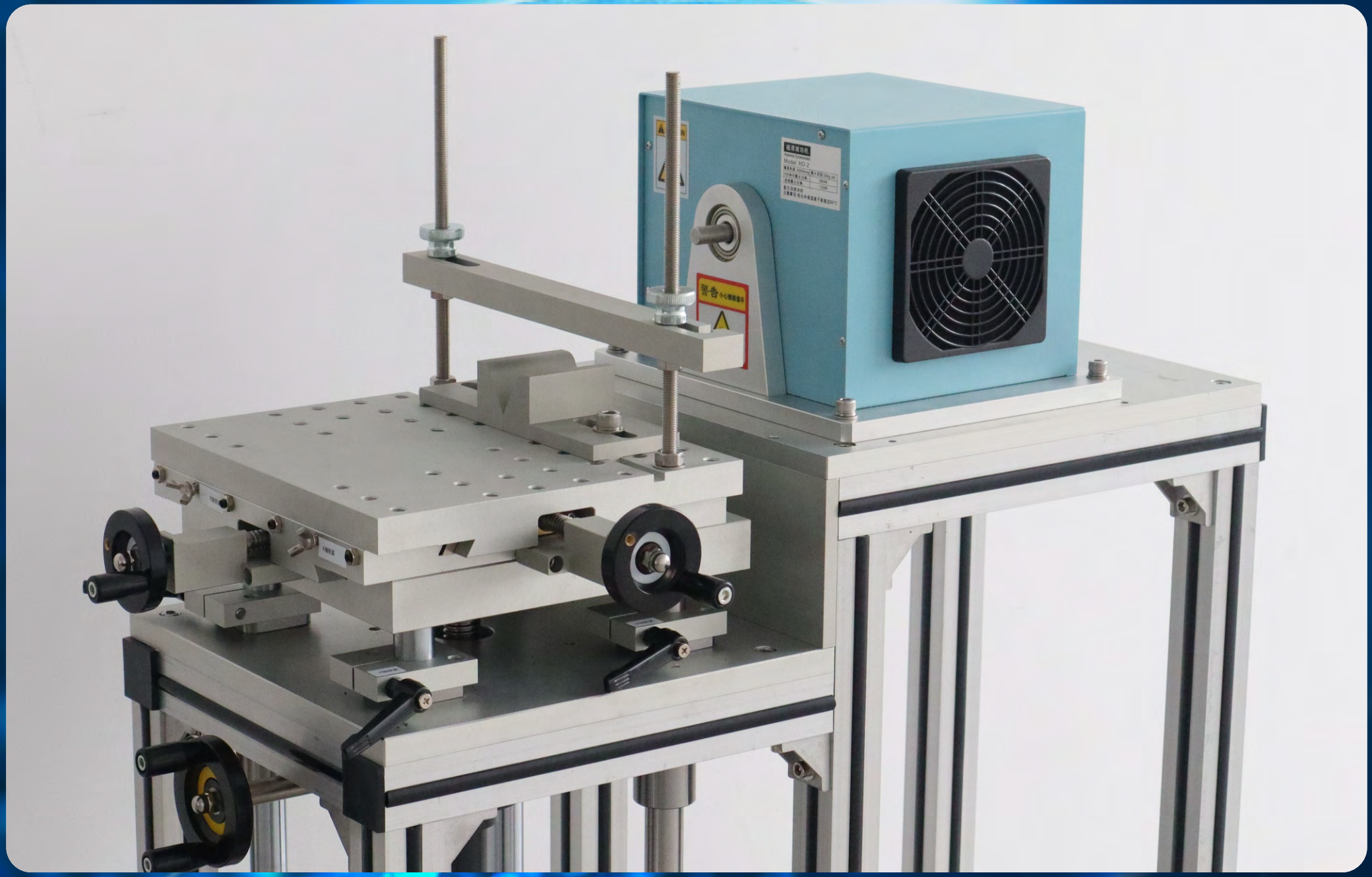
警告

专业团队 现场调试
Professional team on-site debugging

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