



HAN'S ROBOT
大族机器人





COMPANY PROFILE

公司简介

深圳市大族机器人有限公司，由上市公司一大族激光科技产业集团股份有限公司(股票名称：大族激光，股票代码：002008)投资组建，是在大族电机机器人研究院100多人的团队基础上孵化而成的国家级高新技术企业，公司致力于智能机器人在工业、医疗、物流、服务等领域的研发、推广和应用，成为智能机器人时代的全球领导者。

公司成立于2017年9月，总部位于深圳市南山区科技园，生产基地位于宝安区大族激光工业园。2019年4月，公司在德国投资设立大族机器人德国子公司，团队成员均来自世界不同国家的顶尖机器人行业专家，助力公司成为世界领先的机器人行业标杆。

公司与苏黎世联邦理工学院、德国亚琛工业大学、加拿大麦克马斯特大学、德国弗劳恩霍夫研究所、德国比勒费尔德大学、新加坡国立大学、意大利理工学院、德国汉堡工业大学、德国达姆施塔特工业大学、德国乌尔姆大学、香港理工大学、清华大学、北京航空航天大学、中科院深圳先进院、深圳大学、南方科技大学、广东工业大学、华中科技大学等国内外知名大学建立了长期合作的关系。

公司秉承“领先、快速、服务、分享、激情、积极、好奇”的企业价值观，以“用机器人技术为人民服务”为使命，基于十多年的电机、伺服驱动和运动控制经验，掌握了智能机器人的所有核心关键技术，自主开发的六自由度和七自由度协作机器人，技术全球领先，具有世界核心竞争力。公司紧密把握市场需求，积极研讨新技术，开展机器人在各种细分市场的应用开发，深入推进协作机器人事业。

Shenzhen Han's Robotics Co., Ltd., invested and established by Han's Laser Technology Group (stock name: Han's Laser, stock code: 002008), is a National High-Tech Enterprise established on the basis of more than 100 people from Han's Robot Division, Han's Motor. The company is dedicated to the development, promotion and application of intelligent robots in industry, healthcare, logistics, services and so on, and is committed to become a global leader in the era of intelligent robots.

Founded in September 2017, the company is headquartered in High-Tech Park, Nanshan district, Shenzhen, and its production base is located in Han's Laser Industrial Park, Bao'an district. In April 2019, the company invested and set up the subsidiary in Germany. All the team members are the top experts in the robot industry from different countries in the world, helping the company become the world's leading robot industry benchmark.

Han's Robot has established long-term cooperative relationships with famous universities at home and abroad, such as ETH Zürich, RWTH Aachen University, McMaster University, Fraunhofer Institute, Universität Bielefeld, National University of Singapore, Istituto Italiano Di Tecnologia, Hamburg University of Technology, Technische Universität Darmstadt, Universität Ulm, Hong Kong Polytechnic University, Tsinghua University, Beihang University, Shenzhen Institutes of Advanced Technology, Shenzhen University, Southern University of Science and Technology, Guangdong University of Technology, Huazhong University of Science and Technology, etc.

Adhering to the corporate values of "leading, fast, serving, sharing, passionate, active, curious", the company takes "we serve humanity" as our mission. Based on more than 10 years of experience in motor, servo drives and motion control, the company has mastered all the core key technologies of intelligent robots. The self-developed 6-DOF and 7-DOF collaborative robots are world-leading in technology and have the world's core competitiveness. The company closely grasps the market demand, actively discusses the new technology, carries out the robot in each kind of market segmentation application development, deeply promotes the cooperative robot enterprise.

002008
大族激光股票代码

2017
公司成立于2017年9月

100
研究院100多人的团队基础上
孵化而成的高科技企业

Elfin系列协作机器人

ELFIN SERIES
COLLABORATIVE ROBOT

P/03-04

Star机器人

STAR ROBOT

P/05-06

模组/水平多关节机械手

MODULE/SCARA

P/07-08

伺服驱动器

SERVO DRIVE

P/9-10

ELFIN SERIES COLLABORATIVE ROBOT

Elfin系列协作机器人

应用Applications

可用于集成自动化产品线、装配、拾取、焊接、打磨、喷漆等工作场合。

Applied for integrated automatic production line, assembly, pickup, welding, grinding, painting, etc.



产品规格/Specifications

型号 type	E03	E05	E05-L	E10	E10-L
重量 weight	17kg	23kg	24kg	40kg	42.5kg
最大负载 payload	3kg	5kg	3.5kg	10kg	8kg
工作范围 reach	590mm	800mm	950mm	1000mm	1300mm
功耗 power	100W典型应用 100W typical applications	180W典型应用 180W typical applications		350W典型应用 350W typical applications	350W典型应用 350W typical applications
关节范围 joint range	±360°				
关节最大速度 joint speed	J1-J4 180°/S J5-J6 200°/S	J1-J4 180°/S J5-J6 200°/S	J1-J4 180°/S J5-J6 200°/S	J1-J2 120°/S J3-J4 135°/S J5-J6 180°/S	J1-J2 100°/S J3-J4 135°/S J5-J6 180°/S
工具最大速度 tool speed	2m/s				
重复精度 repeatability	±0.03mm				±0.1mm
自由度 degree of freedom	6				
控制柜尺寸 control box size	536*445*319mm				
末端I/O端口 end I/O port	数字输入: 3, 数字输出: 3, 模拟输入2 digital input: 3, digital output: 3, analog input: 2				
电箱I/O端口 control box I/O port	数字输入: 16, 数字输出: 16 模拟输入2, 模拟输出2 digital input: 16, digital output: 16, analog input: 2, analog output: 2				
I/O电源 I/O source	24V 2A				
通讯 communication	TCP/IP and modbus				
编程 programming	图形化编程, 远程调用接口 graphical programming, remote process call				
防护等级 IP classification	IP54/IP66				
协同操作 collaborative operation	10个高级安全配置功能 10 advanced configurations for safety				
主要材料 main material	铝合金 aluminum alloy				
工作环境温度 working temperature	0-50°C				
外部电源输入 power input	200-240V AC, 50-60Hz				
电缆 cable	连接控制柜的电缆: 5m, 连接示教器的电缆: 5m cable to connect the control box: 5m, cable to connect teach pendant: 5m				

轻自重 Light-weight

标准额定负载为 5Kg, 自重仅为 23Kg
5kg in rated load with 23kg in weight

模块化 Modularity

减速机、电机、编码器以及驱动控制
一体化集成
All-in-one module of reducer, motor,
encoder and drive

精度高 High accuracy

重复精度达到 ±0.03mm
Repeatability up to ±0.03mm

STAR ROBOT

Star机器人

应用Applications

Star 机器人主要应用在电子、机加工的无人车间，通过移动机器人代替人员的搬运，机械臂代替人员的抓取，并结合机器视觉系统，替代人工将工装、工件等在车间进行周转、配送，实现工厂无人柔性化制造。

Star robot is mainly used in unmanned workshops of electronics and machining industry. It can automatically grab objects, handle and transport work pieces with mobile robot, robot arm and machine visual system in place of workers, thus achieving unmanned production in workshops.



多种导航方式 Multiple navigation methods

支持磁带 / 激光 SLAM 无轨导航，根据不同的现场环境选择合适的导航方式，提升了设备的灵活性与通用性，以适应复杂的作业环境。

Star supports tape/laser SLAM trackless navigation (User can choose appropriate navigation methods according to different environments), which makes it more flexible and universal to adapt to complicated working environment.

安全可靠 Safe and reliable

机械臂支持力矩反馈功能，在碰到障碍物时，及时安全停车。通过远距离激光防护、近距离防撞触边防护、急停按钮防护，多重防护措施保证了机器人安全可靠运行。

Robot arm support torque feedback, so the robot will stop in time when it touches obstacles. Moreover, multiple protection measures ensure the safe and reliable work, such as remote laser protection, short distance anti-collision protection, E-stop, etc.

自主研发 Independent R&D

移动机器人、机械臂、机器人导航、视觉系统、力控夹具等核心技术均为自主研发，保证了整个系统的一致性、兼容性，并尽可能的降低客户成本。

The key subsystems of Star, such as mobile robot, Elfin robot, AGV, machine vision and force control gripper are all developed by Han's Robot. It ensures the consistency as well as compatibility of the whole system and reduces costs for customer as much as possible.

易于操作 Easy to operate

零力示教，有效降低了调试时间及学习成本。机器人可以与客户机台及便携 PC 进行无线网络通信，通过友好的人机操作界面可以快速实现机器人布置、视觉匹配、机器人示教等。将上位机软件安装在客户监控电脑上可实现实时监控。

Force-free teaching effectively reduces debugging time and learning cost. It can communicate with customer machine and portable PC via wireless net works. Besides, such operations can be finished in very short time as robot arrangement, visual matching, teaching pendant and so on through the friendly man-machine operation interface. Additionally, real-time monitoring will start if host computer software is installed in customer monitoring computer.



产品规格/Specifications

外形尺寸 dimensions	L1100*W650*H745mm(不含臂长) L1100*W650*H745mm (without arm)
导航类型 navigation	激光导航/磁带导航 laser SLAM/magnetic tape navigation
行走方向 walking direction	前进后退行走,原地旋转(遥控模式) forward, backward, spin around (Remote control mode)
驱动方式 driving mode	两轮差速驱动 two-wheel differential driving
行进速度 movement speed	18-36m/min
最大负载 payload	50kg
最大抓取重量 maximum grip weight	15KG(最大工作范围1000mm,正常工作范围700mm) 15KG (maximum working reach1000mm,normal working reach 700mm)
报警形式 alarm way	扬声器,三色指示灯 speaker, 3-color light
驱动单元升降机构 lifting mechanism of driving unit	一键电动升降 one-button electric lifting
AGV重复定位精度 AGV repeated positioning accuracy	最高±10mm maximum ±10mm
机械臂重复定位精度 arm repeated positioning accuracy	±0.05mm
安全防护装置 safety device	激光传感器、保险杠、急停按钮 lidar, bumper, E-STOP
续航能力 endurance	空载:12h,满载:8h no load: 12h, full-load: 8h
可选配置 available options	自动充电;视觉;夹爪 auto charge;visual;gripper

D-MODULE SERIES

D-MODULE模组系列

大族机器人专门为协作机器人设计了一款双关节模组，高度集成了无框直驱力矩电机、低压直流驱动器、谐波减速机、制动器等结构，尺寸小，符合协作机器人紧凑、灵活的设计特点。

高度集成的一体化设计，降低了客户在研发机器人过程中研发人员和时间的投入，简化了供应链管理及质量管理综合成本，从而实现新型机器人产品的快速上市，让协作机器人开发变得更稳定可靠、便捷安全，满足多元化设计。

Han's Robot has designed D-modules for the collaborative robots. It highly integrates frameless direct drive torque motor, low-voltage DC drive, harmonic drive, brake and so on, which conforms to the compact and flexible feature of a collaborative robot.

The high integration design reduces customers' R&D investment in engineers and time, simplifies supplier chain management and comprehensive quality management cost, thus achieving quick marketing of new robots. Therefore, it makes the development of collaborative robot more stable, reliable, convenient, safe as well as meets design diversity.



产品规格/Specifications

型号 type	14系列 14 series	17系列 17 series	20系列 20 series	25系列 25 series	32系列 32 series
额定转矩 rated torque	9.4Nm	30Nm	49Nm	85Nm	156Nm
峰值转矩 peak torque	34Nm	69Nm	104Nm	200Nm	420Nm
最大输出转速 maximum rotation speed	135°/s	135°/s	135°/s	135°/s	85°/s
重量 weight	2.75kg	3.95kg	5.50kg	8.90kg	16.55kg
旋转角度 rotation angle	±360°				
重复精度 repeatability	20arcsec				
通讯方式 communication	EtherCAT				
供电电压 supply voltage	DC 48V				
防护等级 IP classification	IP54				
主要材料 main material	铝合金 aluminum alloy				
工作环境温度 working temperature	0-50°C				
工作环境湿度 working humidity	10-80%				

HM SCARA600

HM水平多关节机械手 SCARA600



应用Applications

多用于水平平面上快速搬运及电子设备装配
 Mostly used on fast transportation on horizontal plane and assembly of electronics

可靠 Reliable

重复定位精度 $\pm 0.01\text{mm}$ ，采用高刚性滚珠花键丝杆及谐波减速机。
 Repeatability positioning accuracy is $\pm 0.01\text{mm}$ due to high rigidity spline ball screw and harmonic reducer.

工作范围大 Wide working range

工作半径 600mm，第一工作臂 $\pm 135^\circ$ ，第二工作臂 $\pm 145^\circ$
 Working radius is 600mm with the first arm $\pm 135^\circ$ and second arm $\pm 145^\circ$.

高负载 High payload

最大负载 6kg
 Maximum payload is 6kg.

产品规格/Specifications

型号 type	SCARA 600
臂长 reach	600mm
最大负载 payload	6KG
额定负载 rated load	3KG
标准循环时间 standard cycle time	0.46S
第一、二、三关节重复定位精度 repeatability of the first, second and third joint	$\pm 0.01\text{mm}$
第四关节重复定位精度 repeatability of the fourth joint	$\pm 0.005^\circ$
本体重量 weight	19KG (不含线缆) 19KG (without cable)
防护等级 IP classification	IP54
电机功耗 motor power	第1关节 400W first joint
	第2关节 200W second joint
	第3关节 100W third joint
	第4关节 100W fourth joint

SERVO DRIVE

伺服驱动器

Han's SERVO-ST5 系列伺服驱动器拥有业内先进的技术和功能，而且结构十分紧凑。其中包括基本的转矩和速度应用、分度、以及采用嵌入式自动化组件的多轴可编程运动应用。可以与直线电机、DDR 电机、伺服电机配合使用。产品具有丰富的功能可以为相关产品提供定制化服务。

Han's SERVO-ST5 系列的设计充分考虑了通用性及定制化功能、通信功能以及功率等，以满足提升机器性能和集成速度的需求。支持多种总线联通方式，其中既有开放协议，也有封闭式协议，它具有在线故障检修和数据检验功能，可以更快地实现无故障编程。

Han's SERVO-ST5 series servo drives use the industry's advanced technology and features, which are extremely compact. Including basic torque and speed applications, indexing, and multi-axis programmable motion applications with embedded automation components. It can be used with linear motors, DDR motors, servo motors.

Han's SERVO-ST5 series are designed with versatility and customization, communication capabilities and power in order to meet the demands of machine performance and integration speed. It Supports a variety of bus connection methods, including both open and closed protocol. With online troubleshooting and data verification, it can achieve for faster, trouble-free programming.

驱动器细节特征/Features

运动控制模式

力矩、速度和位置伺服控制
±10V 速度和力矩控制命令
单轴和多轴协同控制
2M 脉冲指令带宽，脉冲方式灵活
PWM 控制
电流带宽最高可达 5KHz

Motion control mode

Torque, speed and position servo control
±10V speed and torque control commands
Single-axis and multi-axis coordinated control
2M pulse command bandwidth, flexible pulse mode
PWM control
Current bandwidth up to 5KHz

保护

STO 安全扭矩切断功能
电机电源输出短路
过温度
过 / 欠电压
反馈无效
电流限制
跟随误差

Protection

STO safe torque off function
Motor power output short circuit
Over temperature
Over/under voltage
Invalid feedback
Current limit
Following error

反馈类型

数字式
•数字式增量编码器
模拟式
•Sin/Cos
•旋转变压器
绝对式编码器
•Heidenhain EnDat2.2(29bits)
•Biss
•Hiperface

Feedback type

Digital
•Digital incremental encoder
Analog
•Sin/Cos
•Resolver
Absolute encoder
•Heidenhain EnDat2.2(29bits)
•Biss
•Hiperface

内建保护和诊断

软件参数句柄
广泛的系统信息报告

Built-in protection and diagnosis

Software parameter handle
Extensive system information report

机械共振抑制

系统扫频，观测器技术
低通滤波器
多个陷波滤波器用于谐振点抑制

Mechanical resonance suppression

System sweep, observer technology
Low pass filter
Multiple notch filters for resonance point suppression

软件工具

自定义轨迹，用户最多可编程 256 条轨迹
高分辨率监测，6 路 scope 通道
在线监控，直接和远程监控
自动和手动增益调整，分析和除错
内置电子齿轮控制功能
灵活全面的回零方式
增益在线调整
系统辨识

Software tools

Custom trajectory, the user can program up to 256 tracks
High resolution monitoring, 6 scope channels
Online monitoring, direct and remote monitoring
Automatic and manual gain adjustment, analysis and debugging
Built-in electronic gear control function
Flexible and comprehensive zero return method
Gain online adjustment
System identification



产品规格/Specifications

驱动器型号 drive model		ST5-S-2	ST5-S-4	ST5-S-12	ST5-S-18
电源 power supply	主回路输入电压范围 main loop input voltage range	单相220VAC, ±20% single phase voltage			
	控制回路输入电压范围 control loop input voltage rang	DC24V ±15%; 电流:0.8A DC24V ±15%, current: 0.8A			
	连续输出电流 continuous output current	3Arms	4.5Arms	12.5Arms	18.5Arms
冷却方式 cooling method		风扇冷却 Fan cooling			
转矩控制 torque control	模拟量输入信号 analog input signal	±10VDC/额定转矩(可在±1~10VDC范围内设定) ±10VDC/rated torque (set between ±1-10VDC)			
		10 KΩ 2.2us			
速度控制 speed control	模拟量输入信号 analog input signal	±10VDC/额定转矩(可在±1~10VDC范围内设定) ±10VDC/rated torque(set between ±1-10VDC)			
		10 KΩ 2.2us			
位置控制 position control	指令脉冲 command pulse	方向+脉冲; CCW脉冲+CW脉冲; A相+B相 direction+ pulse; CCW pulse+CW pulse; phase A +B			
		差分输入, 集电极开路输入 differential input, open collector input 500K/4MHz(差分输入); 200KHz(集电极开路输入) 500K/4MHz(differential input); 200KHz(open collector input)			
输入输出 信号 input output signal	电子齿轮比 electronic gear ratio	1/65535~65535			
	编码器分频脉冲输出 encoder divided pulse output	A相, B相, C相: 线驱动输出 分频脉冲数: 可任意分频 phase A, B, C; line drive input frequency division pulse number: any			
	顺序输入信号 sequential input signal	6通道(通用型) 6 channels (universal type)		6通道(总线型) 6 channels(bus type)	
内置功能 built-in function	顺序输出信号 Sequential output signal	6通道(通用型) 6 channels (universal type)		6通道(总线型) 6 channels (bus type)	
	保护功能 protection	过流保护, 过/欠压保护, 过载保护, 过热保护, 编码器故障保护, 超速保护, 位置超差保护等 encoder fault protection, overspeed protection, position tolerance protection, etc.			
	再生处理功能 regeneration processing	外置再生电阻 external regenerative resistor			
	辅助功能 Accessibility	系统辨识, 自定义轨迹, 报警记录, JOG运行, 母线电压检测, 急停等 System identification, custom track, alarm record, JOG operation, bus voltage detection, emergency stop, etc.			
环境规格 surroundings	安装地点 installation location	室内(避免阳光直射), 无腐蚀性雾气(避免油烟、易燃性瓦斯及尘埃) Indoor (avoid direct sunlight), no corrosive mist (avoid soot, flammable gas and dust)			
	海拔高度 altitude	1000m以下 below 100m			
	环境温度 ambient temperature	0°C~55°C(若环境温度超过45°C以上时, 请强制周边空气循环) If the ambient temperature exceeds 45°C, please force the surrounding air circulation			
	保存温度 storage temperature	-20°C~65°C			
	湿度 humidity	90%RH以下(不结露) below 90%RH (no condensation)			
	振动 vibration	20Hz以下9.80665m/s ² (1G), 20~50Hz5.88m/s ² (0.6G)			
	IP等级 IP classification	IP20			
电力系统 power systems	TN系统 TN system				



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