

Tech Specs

Model	S20	S30	S40	S50	S60
Weight	64kg	93kg	89kg	156kg	151kg
Payload	20kg	30kg	40kg	50kg	60kg
Reach	1700mm	1800mm	2000mm	2000mm	2000mm
Joint Range	J1、J4、J5、J6：±360° J2：-190°-10° J3：±168°	J1、J4、J5、J6：±360° J2：-190°-10° J3：±168°	J1、J4、J5：±360° J2：-190°-10° J3：±160°	J1、J4、J5、J6：±360° J2：-190°-10° J3：±160°	J1、J4、J5：±360° J2：-190°-10° J3：±160°
Joint Speed	J1、J2: 120°/s J3: 120°/s J4、J5: 180°/s J6: 224°/s	J1、J4、J5: 180°/s J2、J3: 120°/s J6: 224°/s	J1、J4: 180°/s J2、J3: 120°/s J5: 224°/s	J1、J4、J5: 180°/s J2、J3: 120°/s J6: 224°/s	J1、J4: 180°/s J2、J3: 120°/s J5: 224°/s
Tool Speed	3.5m/s	3.7m/s	3.7m/s	6.4m/s	6.4m/s
Repeatability	±0.03mm	±0.05mm	±0.05mm	±0.1mm	±0.1mm
Degree of Freedom	6	6	5	6	5
End I/O port	Digital Input: 3, Digital Output: 3 Analog Input: 2	Digital Input: 3, Digital Output: 3 Analog Input: 2	/	Digital Input: 3, Digital Output: 3 Analog Input: 2	/
Control box I/O port	Digital Input: 16, Digital Output: 16 Analog Input: 2, Analog Output: 2	Digital Input: 16, Digital Output: 16 Analog Input: 2, Analog Output: 2	/	Digital Input: 16, Digital Output: 16 Analog Input: 2, Analog Output: 2	/
I/O Source	24V 2A	24V 2A	/	24V 2A	/
Communication	TCP/IP and Modbus				
Programming	Graphical programming, remote call interface				
IP Classification	IP54				
Main material	Aluminum alloy				
Working Temperature	0-45°C				
Power input	200-240V AC, 50-60Hz				

Configuration Details

Configuration Instructions	Robot	Control Box	Teach Pendant	Cable	Applications
Standard		Standard control box	Standard teach pendant (Resolution 1920×1200, screen size 11 inches)	5m	/
Mini Control Box		Mini Control Box Power Supply(Optional)	Tablet teach pendant (optional)	5m	Applied for automation equipment, AGV, mobile robots, etc.

Electric Control Box	Mini Control Box (optional)	Teach Pendant
Compatible Models	S20(2KW) / S30,S40(3KW) / S50,S60(6KW)	Dimensions (L*W*H) 348×221.5×76.5(mm)
Dimensions (L* W *H)	445.2 × 237 × (330+90)mm (2KW,3KW) 485 × 237 × (330+90)mm (6KW)	Input power supply DC30~60V
Stand Height	90mm	Electrical Control Cabinet I/O Power Supply DC24V
Weight	18KG (2KW) /18.5KG (3KW) / 23KG (6KW)	Electrical Control Cabinet I/O Ports 8 Channels Input 8 Channels Output
Power Output	48V DC	IP Classification IP20
Working Temperature	0~50°C	E-Stop Button 1
Working Humidity	90% Relative Humidity (non-condensing)	
IP Classification	IP20	



Heavy Payload Robots



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Industries

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Applications

Palletizing, Depalletizing, Loading and Unloading, Material Handling

Overview

The S series Heavy Payload robots feature heavy load capacity and long reach, capable of easily handling 60KG overloads with a working radius of 1700mm~2200mm. They can be widely used in applications such as loading and unloading machine tools, palletizing, assembly, and heavy material handling. Building on the technological advantages of the Elfin series, there has been a qualitative leap in product performance, safety protection, response speed, and anti-interference capability, making it a powerful tool for users to comprehensively enhance production efficiency.



Longer arm reach
Maximum arm span **2200mm**



Heavy Load
Maximum rated load **60KG**
Industry-leading level



High Repeatability
Up to **±0.02mm**



High-speed Palletizing
In high-speed mode
Palletizing speed can reach up to **13cycles/minute**
Palletizing time for the same task can be reduced by **38%**



Self-developed high-power frameless torque motor



48V low voltage power supply



Ultra-fast response
End-effector EtherCAT bus communication
Compatible with high power supply and gigabit Ethernet
Achieving **1000Hz** real-time control refresh frequency



High Configuration Optional
1.Electronic Skin
2.Integrated visual integration, capable of transmitting video over a gigabit
3.Integrated end-effector force control, accuracy
**Fx=Fy=1.5N,Fz=2.25N,
Mx=My=Mz=0.12Nm**



Robotics for Humanity

Industry Applications



S30
Logistics Industry **Cage stacking**

Smarter Huayan Robotics uses a dual-camera solution to accurately identify the size, specifications, location and other information of incoming materials, making grasping and stacking more accurate without manual intervention.

More flexible Supports more than 10 different specifications of materials, with a stacking volume rate of over 65% for cage trolleys with a height greater than 2 meters.

More efficient Compared to a 5% cargo loss rate for manual stacking, the cargo loss rate for Huayan robotics is only 1/10000, helping enterprises improve quality and efficiency.

The customer is one of the absolute giants in the domestic logistics field, with a significant demand for stacking and unstacking at their logistics storage points. The domestic logistics industry is developing rapidly, and manual operations are increasingly unsustainable. Therefore, the customer introduced a one-stop stacking workstation created by Huayan Robotics and its partners for cage stacking operations. It is based on a high-load robot with a rated load of 30KG and equipped with a vision system, capable of meeting most logistics package (carton) needs, and has received positive feedback from customers for its flexibility and automation.



S20
Agriculture Industry **Robot Automatic Tray Stacking**

Precise and Efficient Operation Utilizes high-precision motion control to quickly and accurately complete transplanting and stacking, significantly improving operational efficiency.

Stable, Durable, and Reliable Adapts to greenhouse temperature and humidity environments, running continuously without failure for long periods, ensuring production rhythm.

Intelligent Flexible Adaptation Adjusts operation trajectories flexibly through visual recognition and algorithms, easily handling various seedling tray specifications.

The client is located in the three northeastern provinces, one of China's important grain-producing areas, with a high level of agricultural modernization. The client has deployed Huayan S series robots in their greenhouse, which efficiently interact with track carts to automatically complete operations such as seedling tray lifting, stacking, and arranging, further achieving cost reduction and efficiency enhancement.



S30
Food Industry **Stacking applications**

Appropriate rhythm Supports automatic switching between single and double suction modes, with a stacking rhythm of 16-20 boxes per minute.

Special stacking types Based on the stacking process package, can quickly customize different complex stacking types for single and double layers.

Flexible production Meets the stacking needs of the vast majority of customer production lines, basically achieving "no-sense" production change, with high flexibility.

The zero auxiliary food products produced by the customer have a packaged weight of about 10KG per box. To save on hardware costs, during the actual stacking operation, one set of Huayan stacking workstation is used to handle 2 production lines simultaneously, stacking for 2 pallets, achieving a stacking height requirement of 2.2 meters, effectively doubling efficiency.



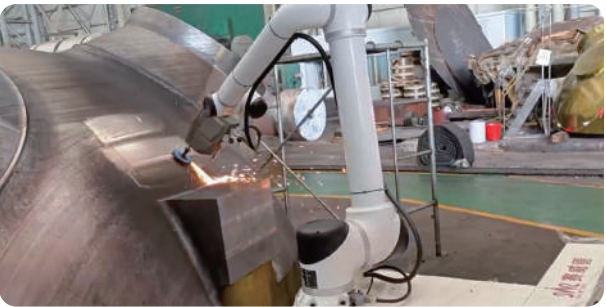
S30
Daily chemical industry **Packaging product offline stacking**

Fast speed The rated load supports 30KG and can stack at a maximum speed of 13 cycles per minute, supporting 24-hour operation.

Compact footprint The deployment area for a single machine only requires 1㎡, safe collaboration without the need for guardrails.

Simple operation Based on the stacking process package, input parameters to complete the custom stacking type.

A certain chemical company's production line has introduced the Huayan S30 collaborative robot, achieving efficient automated stacking operations. This robot features high flexibility, capable of adapting to various bottle and box stacking requirements, with a maximum stacking height of 2.2 meters, effectively improving warehouse space utilization. Its operation is smooth and positioning is precise, significantly reducing manual labor intensity, ensuring production rhythm and stack stability, and providing reliable support for the company's continuous cost reduction and efficiency enhancement.



S20
Metal Processing Industry **Grinding**

Multipurpose In addition to grinding, it can also handle drilling operations for structural component frames and sealing plates, as well as aluminum welding tasks.

Simple structure The overall structure is compact and aesthetically pleasing, with a moderate proportion, small size, moderate weight, and easy and quick mobility.

Cost-saving Simple operation, versatile functions, wide application, and short payback period,

The Huayan S series robots assist partners in creating an intelligent mobile grinding robot workstation, capable of performing grinding, polishing, and deburring tasks in scenarios involving large steel structures, vehicle maintenance and decoration, and offshore vessels. The maximum arm reach of the Huayan S series reaches 1700mm, and when combined with a mobile cart, it offers a larger working range, better adapting to complex production workshop environments.



S20
Food and Beverage Industry **Packaging and Palletizing**

High return, low investment 1 machine replaces 3+ workers, low maintenance cost, no repairs for 2 consecutive years.

Standardized products, mass-producible promoted in over 600 customer factories.

Easy to use supports 24-hour continuous operation, meets the high-load production needs of factories.

The client is a globally renowned food and beverage manufacturing enterprise, with numerous factories worldwide, a large shipment volume, and a complex product range. As labor costs rise, labor-intensive assembly lines are gradually losing their value. On one of the client's production lines, the Huayan S series heavy-load robots equipped with a vision system replace manual labor, efficiently completing tasks such as loading packaging materials and removing straps, resulting in a smooth operation process.