



# ROBOT - COBOT ROBOT AGV







## Han's Robot Product Advantages



### EtherCAT bus communication

- Strong anti-interference ability ✓
- High communication frequency and fast speed ✓
- High safety, accurate motion trajectory ✓
- Accessible data for all joints ✓



### Each joint with a motion range of $\pm 360^\circ$

- High motion efficiency ✓
- More possible positions of high difficulty ✓
- Most flexible collaborative robot ✓
- Low power consumption ✓



### Self-developed dual-joint modules

- Self-developed dual-joint modules ✓
- Unique arm design, optimized singularity points ✓
- Higher integration ✓
- Higher flexibility ✓



### Self-developed of core components

- Completely self-developed core components from Han's Group ✓
- Complete set of motors, servo drive ✓
- Grating encoder, 6-dimensional force/torque sensor ✓
- Electromagnetic brake, high-speed inverter ✓



### Multi-terminal Graphical Control

- Support for handheld teach pendant, tablets, computers and other terminals ✓
- Graphical programming, intuitive and easy to understand ✓
- User-friendly interactive design ✓



## Innovative braking method

The robot will automatically rebound and then stop when encountering any resistance. ✓

Output force and power controlled within the safety range to ensure personnel safety. ✓

Innovative braking design. The robot will be locked immediately in case of a sudden power failure or emergency stop during operation. It will not slide, fall or move at all. ✓



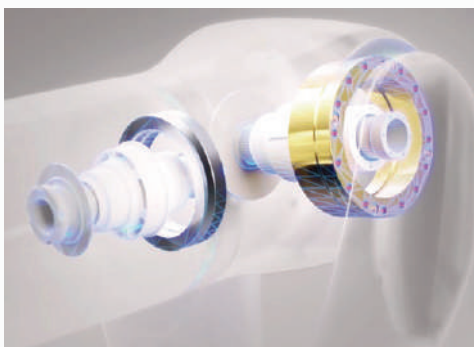
## IP66 protection rating

Higher waterproof and dust-proof protection ✓

Suitable for harsher environments ✓

Protects against external objects and dust ✓

Applicable to more working conditions ✓



## ISO class 5 cleanroom

The surface cleanliness of the whole robot is excellent due to the excellent waterproof and dust-proof performance. ✓

Optimized structure of internal parts, low mutual friction, avoiding damage. ✓

Excellent sealing of the whole robot, without impurities intrusion. ✓

Automotive and aerospace industry standards, ensuring high quality. ✓





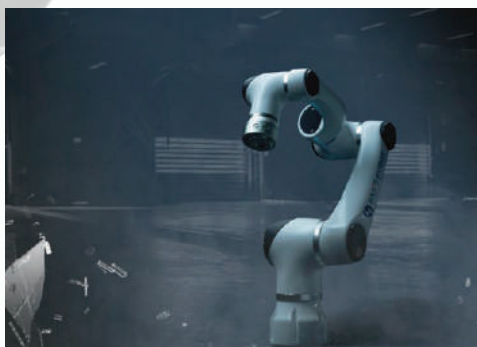
## More than 20 years of industrial experience

- Incubated from the Robotics Research Institute team of Han's Motor ✓
- More than 20 years experience in motors, servo drives and motion control ✓
- Long-term cooperation with famous universities at home and abroad ✓
- Dedicated to collaborative robot technologies and applications ✓



## More open platform

- Open source ROS interface, which allows users to control the robot joints in real time through EtherCAT under the ROS environment ✓
- ROS platform, which greatly improves the robot's scalability. The robot can be controlled without an additional control box ✓
- Used for ROS teaching in colleges and universities ✓



## Explosion-proof Certification












- Certified by the national instrumentation explosion-proof safety inspection station ✓
- Can be used for special operations in explosive and combustible dust environments ✓



# Han's Robot Plug & Play Tools

Adhering to the ecological concept of "all are friends in the world", Han's Robot has created a more complete and open collaborative ecosystem, and designed various IO and communication interfaces. These IO interfaces greatly expand the application scope of the robot and can support "plug and play" with most accessories in the industrial ecosystem, such as grippers, vision, and sensors, which can meet the needs of multiple scenarios such as loading and unloading, assembly, testing, handling, screw driving, grinding, spraying etc.

## Grippers

	Robotiq		SMC		RobustMotion
	Onrobot		Schunk		HIWIN
	dh-robotics		SRT		ChangingTek
	Jodell Robotics		INSPIRE-ROBOTS		

Force Sensor



Link-touch



SRI



Onrobot



ATI



Robotiq



Hypersen

Vision



Micromatch



Basler



Cosmosvision



Mech-Mind



Cognex



Seizet



Keyence



Hikvision



UBSense



SOLOMON



Percipio



Welinkirt



Aimoe



SHINING 3D



## "POSS" Concept

# The most reliable body, the smartest brain:

Han's Robot believes that the characteristics of a good collaborative robot can be summarized as **POSS**. We are dedicated to the research and application expression of cutting-edge robotics technology, and the development of robots with the most reliable body and the smartest brain.



Higher  
Performance



Smarter



More  
Open



Safer

STAR  
Mobile Manipulator



Collaborative Robot

HR  
Multi-sensing Autonomous Vehicle





# Overview →



Elfin  
Collaborative Robot

Elfin-Pro  
Collaborative Robot

Elfin-Ex  
Explosion-proof  
Collaborative Robot

# Elfin Collaborative Robot

## Overview

The Elfin collaborative robot can be used in automated integrated production lines, assembly, picking, welding, grinding, spraying and other applications, and has been exported to more than 100 countries and regions. It adopts a unique double-joint module design, where one motion module contains two joints to form a unique kinematic structure, which not only differs from most collaborative robots on the market, but also provides more flexibility when working.



E03  
590mm  
3KG



E05  
800mm  
5KG



E05-L  
950mm  
3.5KG



E10  
1000mm  
10KG



E10-L  
1300mm  
8KG



E15  
1300mm  
15KG



## Why Elfin

### Optimized singularity

The unique arm design not only avoids the product homogeneity, but also reduces the singularity



### First dual-joint module design in China

The unique kinematic design enables the robot to have high flexibility. The highly integrated modular design minimizes the arm weight



### Highly flexible 6-DOF collaborative robot

The collaborative robot with 4/6-axis coaxial structure has almost reached the flexibility of 7-DOF robots





## Industries

- Electronics
- Automotive
- Semiconductor
- Metal processing
- Education and research

## Applications

- Loading and unloading
- Assembly
- Picking
- Welding
- Palletizing
- Dispensing
- Inspecting

### Joint Motions:



## Modularity

All-in-one module of fully self-developed reducer, motor, encoder, drive and software





## Technical Specifications



Model	E03	E05	E05-L	E10	E10-L	E15
Weight	18kg	25kg	26kg	43kg	45kg	60kg
Payload	3kg	5kg	3.5kg	10kg	8kg	15kg
Reach	590mm	800mm	950mm	1000mm	1300mm	1300mm
Power Consumption	100W typical application	180W typical application	180W typical application	350W typical application	350W typical application	600W typical application
Joint Range	±360°					
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 100°/s J3-J4 150°/s J5-J6 180°/s	J1-J2 100°/s J3-J4 150°/s J5-J6 180°/s	J1-J2 80°/s J3-J4 120°/s J5-J6 150°/s
Tool Speed	2m/s					
Repeatability	±0.02mm	±0.02mm	±0.02mm	±0.03mm	±0.03mm	±0.05mm
Degree Of Freedom	6					
End I/O Port	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					
I/O Source	24V 2A					
Communication	TCP/IP , ModbusTCP , Profinet (Optional) , Ethernet/IP (Optional)					
Programming	Graphical programming, remote call interface					
IP Classification	IP54					
Collaborative Operation	10 advanced security configuration functions					
Main Material	Aluminum alloy					
Working Temperature	0-50°C					
Power input	200-240V AC, 50-60Hz					
Cable	Cable to the control box: 5m; cable to the teach pendant: 5m					



Control Box

Dimensions	445.2mm x 318.8mm x (360+176)mm
Stand Height	176mm
Weight	18.5kg
Power Output	48V DC
Working Temperature	0~50°C
Working Humidity	90% Relative Humidity (non-condensing)
IP Classification	IP20



Mini Control Box (Optional)

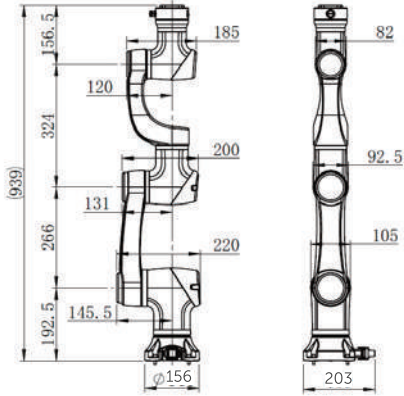
Dimensions	323x221x80(mm)
Power Input	DC30~60V
I/O Source	DC24V
I/O Port	Inputs 8 , Outputs 8
IP Classification	IP20
Communication	TCP/IP Modbus



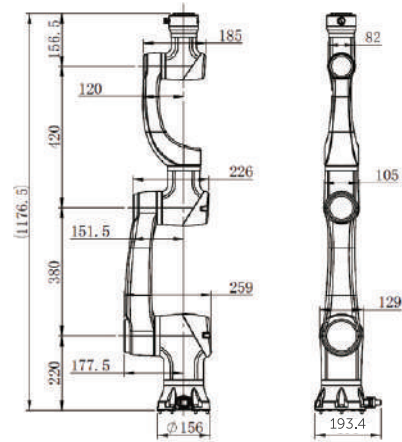
Teach Pendant

Dimensions	327 mm x 230 mm x (45+22) mm
Weight	2.7kg (Include Cable)
Display	10.4"
Resolution	1024 x 800
E-stop Button	1
IP Classification	IP54

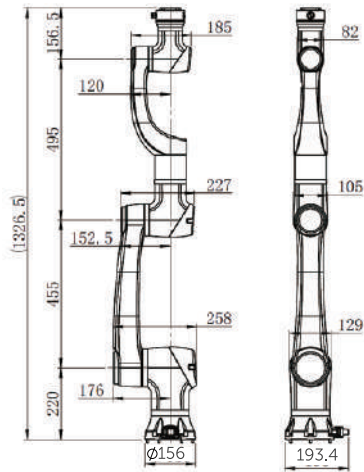
E03



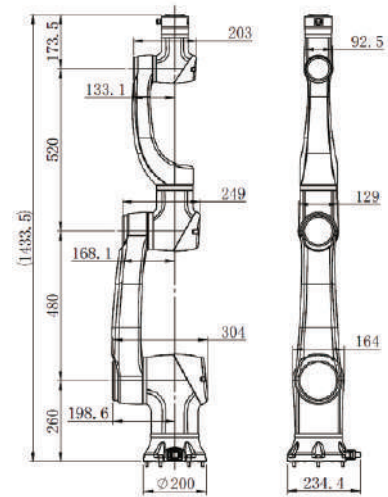
E05



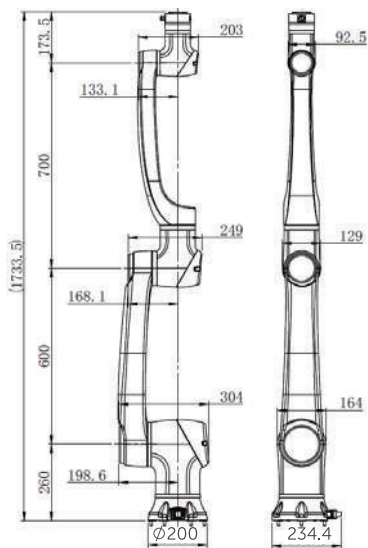
E05-L



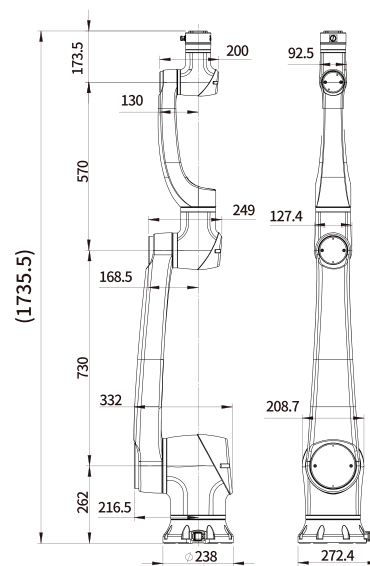
E10



E10-L



E15



# Elfin-Pro Collaborative Robot

## Overview

Elfin-PRO collaborative robot is developed on the basis of elfin collaborative robot. It not only has all the advantages of the elfin collaborative robot such as a variety models, easy deployment, high precision, high flexibility, double-joint module design and modular design, but also has upgraded the product capability through the integration of cutting-edge AI technology, end force control integration, end vision integration. In addition, it adopts a new elegant and practical surface treatment process which is more stable and reliable. With all these advantages, Elfin PRO offers a better human-robot collaboration experience and could support wider application scenarios.



E03-Pro  
590mm  
3KG



E05-Pro  
800mm  
5KG



E05L-Pro  
950mm  
3.5KG



E10-Pro  
1000mm  
10KG



E10L-Pro  
1300mm  
8KG



## Why Elfin-Pro

### Force Control Integration

- a. Internal wiring with better anti-interference ability
- b. Constant force control for perfect trajectory
- c. Fast programming
- d. Soft control with smooth free-drive teaching
- e. Force exploration suitable to intelligent assembly which makes the small batches and flexible production of multiple varieties to be possible.



### Camera System

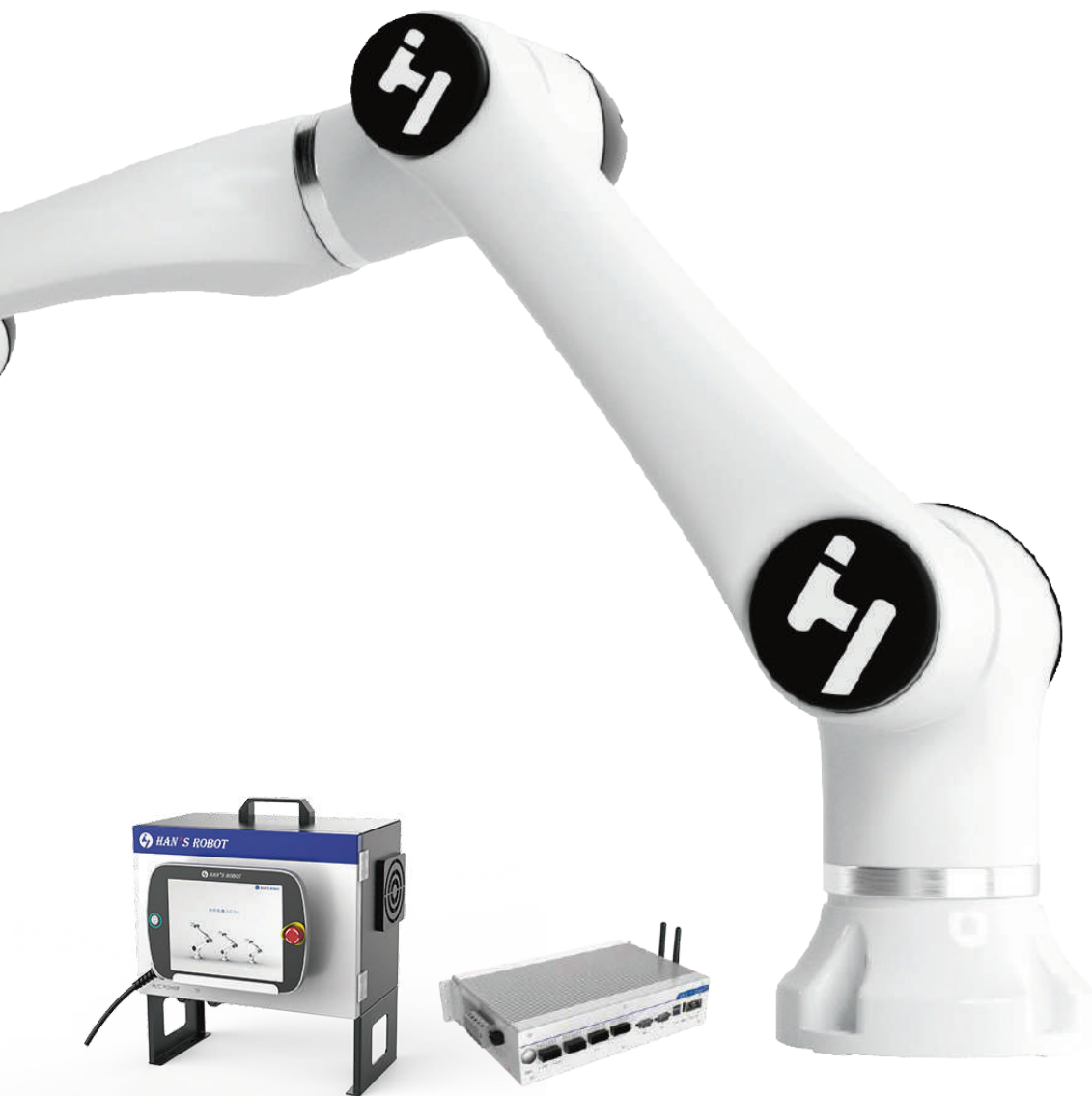
- a. Internal wiring enables the robot to have better anti-interference ability and supports fast deployment
- b. AI application capabilities such as visual positioning, visual classification recognition, object detection and QR Code recognition
- c. Han's Robot's self-developed hardware and software which is easy to operate and pretty interactive and scalable.



### Higher Protection, more applications

With IP66 protection, E PRO robot can be adapted to different production environments which further extending the range of applications.





- Industry
- Automotive
- Consumer
- Semiconductor
- Medical experiment
- Physiotherapy
- Precision machining

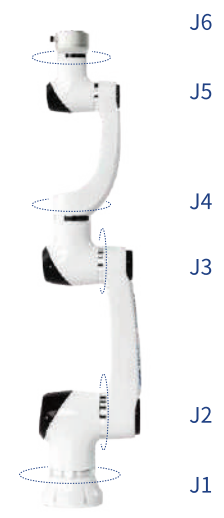
- Application
- Welding
- Massage
- Polishing
- Grinding
- Assembly
- Screen inspection

## High Sensitivity, much safer

E PRO robot realizes 1000Hz real-time control refresh frequency, which can achieve the industry-leading trajectory precision control, stable and reliable performance, faster response and safer human-machine collaboration.



joint motions:





Model	E03-Pro	E05-Pro	E05L-Pro	E10-Pro	E10L-Pro
Weight	18kg	25kg	26kg	43kg	45kg
Payload	3kg	5kg	3.5kg	10kg	8kg
Reach	590mm	800mm	950mm	1000mm	1300mm
Control Box Dimension	536*445*319mm				
Joint Range	±360°				
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 100°/S J3-J4 150°/S J5-J6 180°/S	J1-J2 100°/S J3-J4 150°/S J5-J6 180°/S
Tool Speed	2m/s				
Repeatability	±0.02mm	±0.02mm	±0.02mm	±0.03mm	±0.03mm
Degree of freedom	6				
End I/O port	Digital input: 3, digital output: 3, analog input: 2				
Control box I/O port	Digital input: 16, digital output: 16, analogue input: 2, analogue output: 2				
I/O Source	24V 2A				
Communication	TCP/IP, ModbusTCP, Profinet(external conversion), Ethernet/IP (external conversion)				
Programming	Graphical programming, remote calling interface				
IP Classification	IP54				
Collaborative Operation	10 advanced security configuration functions				
Main Material	Aluminium alloy				
Working Temperature	0-50°C				
Power input	200-240V AC, 50-60Hz				
Cable	Cable to control box: 5m, cable to teach pendant: 5m				
Communication frequency	1kHz				

Force control parameters (optional)		Vision parameters (optional)		Protection (optional)	
Force control, tool flange	Force x-y-z, Torque x-y-z	AI functions	Image classification, object detection	Class	IP66
Range	200N, 10Nm	Application	Positioning		
Precision	2N, 0.1Nm	Positioning accuracy	2D, 0.2mm		
Accuracy	4N, 0.2Nm	Camera	5 megapixels, working distance 100mm~∞		
		External vision (optional)	Laser sensor or a depth RGBD camera		



Control Box	
Dimensions	445.2mm x 318.8mm x (360+176)mm
Stand Height	176mm
Weight	18.5kg
Power Output	48V DC
Working Temperature	0~50°C
Working Humidity	90% Relative Humidity (non-condensing)
IP Classification	IP20

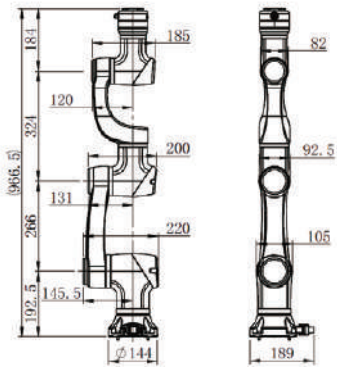


Mini Control Box (Optional)	
Dimensions	323x221x80(mm)
Power Input	DC30~60V
I/O Source	DC24V
I/O Port	Inputs 8 , Outputs 8
IP Classification	IP20
Communication	TCP/IP Modbus

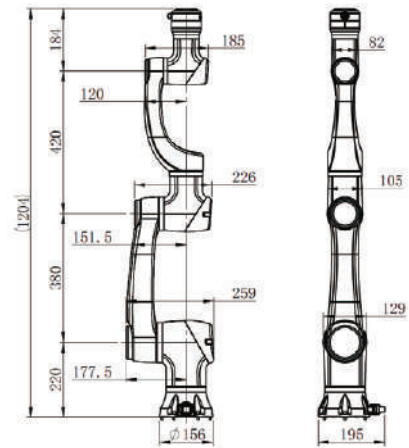


Teach Pendant	
Dimensions	327 mm x 230 mm x (45+22) mm
Weight	2.7kg (Include Cable)
Display	10.4"
Resolution	1024 x 800
E-stop Button	1
IP Classification	IP54

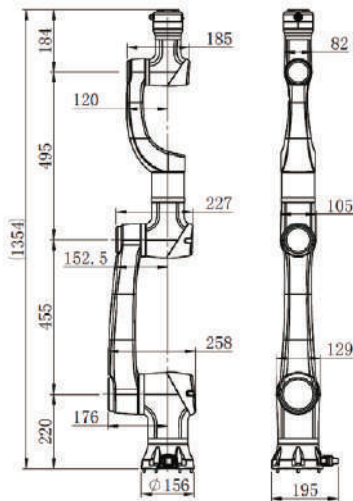
E03-Pro



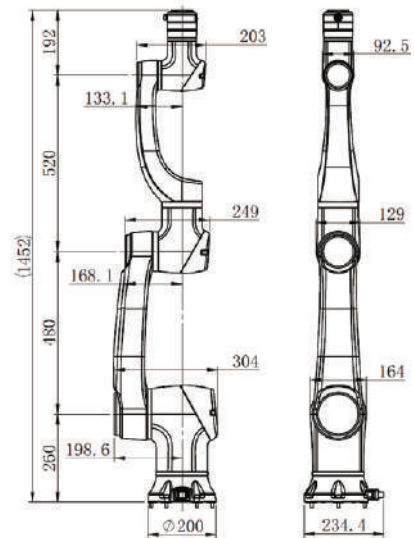
E05-Pro



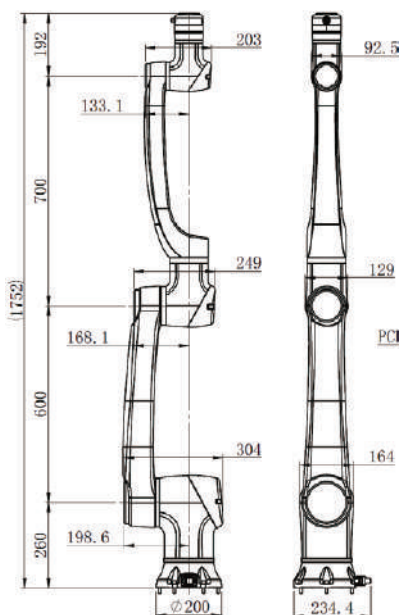
E05L-Pro



E10-Pro



E10L-Pro



# S Collaborative Robot

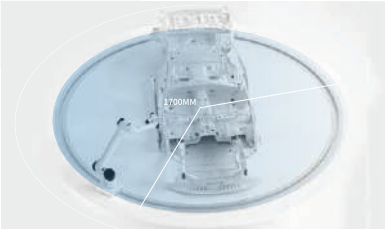
## Overview

Han's Robot S series collaborative robot with high payloads and long arm reach, which can easily handle a super heavy 20KG payload and 1300mm~1700mm working radius. It can be widely used in machine loading and unloading, palletizing, assembly and heavy load handling applications. Han's Robot S series collaborative robot is a great tool for users to improve their productivity comprehensively, with a qualitative leap in product performance, safety protection, response time and anti-interference capability.

## Why S

### Suitable for heavy load scenarios

With a rated load of 15kg~20kg and a maximum working radius of 1700mm, it can cover a wide range of complex and large load applications



### Security collaboration

Based on core independent research and development capabilities, it has 10 advanced safety configuration functions such as collision detection, making human-machine collaboration more secure and reliable



### Extremely fast response

End-to-end EtherCAT bus communication, compatible with high power supply and Gigabit Ethernet, real time control refresh frequency of 1000/5000 Hz and industry leading control accuracy



### Very low barrier to entry

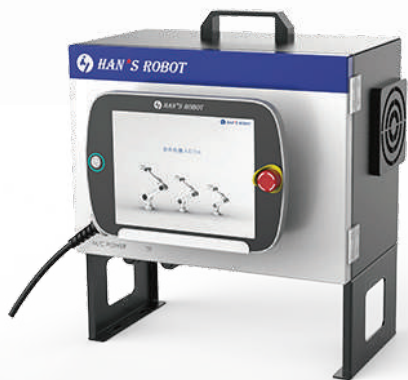
Support pad, computer, instructor and other multi-terminal graphical control, 30 minutes to learn to change the programming methods, 1 hour to start operation



### Simple customisation and easy deployment

The modular design of the whole machine, from the module to the boom, can meet the individual needs of customers, easy to install and dismantle, to achieve flexible deployment and easy maintenance





## Industry

- Electronics
- Automotive
- Semiconductors
- New Energy
- Metalworking
- Logistics

## Application

- Flexible and customised production
- Loading and unloading of machine tools
- Production line material handling
- Palletizing and depalletizing
- 3C Manufacturing
- Assembly



Model	S15	S20
Weight	64kg	63kg
Payload	15kg	20kg
Reach	1700mm	1300mm
Power consumption	800W typical application	800W typical application
Joint Range	±360°	±360°
Joint Speed	J1-J2 90°/s J3-120°/s J4-J6 180°/s	J1-J2 90°/s J3-J4 120°/s J5-J6 180°/s
Tool Speed	1.8m/s	1.6m/s
Repeatability	±0.1mm	±0.1mm
Degree of freedom	6	
Control box dimension	536*445*319mm	
End I/O port	Digital input: 3, digital output: 3, analogue input: 2	
Control box I/O port	Digital input: 16, digital output: 16, analogue input: 2, analogue output: 2	
I/O Source	24V 2A	
Communication	TCP/IP and Modbus	
Programming	Graphical programming, remote call interface	
IP Classification	IP54	
Collaborative operation	10 advanced security configuration functions	
Main material	Aluminium alloy	
Working Temperature	0-50°C	
Power input	200-240V AC, 50-60Hz	
Cable	Cable to control box: 5m, cable to teach pendant: 5m	



Control Box

Dimensions	445.2mm x 318.8mm x (360+176)mm
Stand Height	176mm
Weight	18.5kg
Power Output	48V DC
Working Temperature	0~50°C
Working Humidity	90% Relative Humidity (non-condensing)
IP Classification	IP20



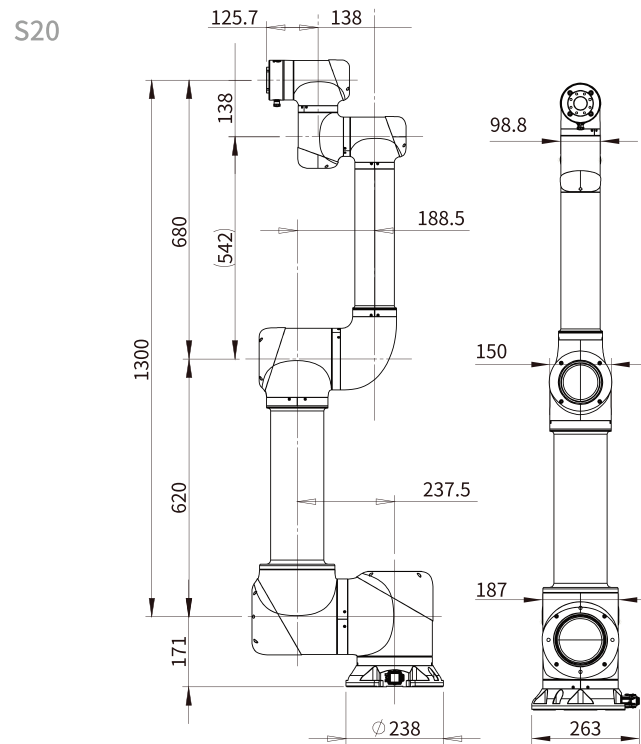
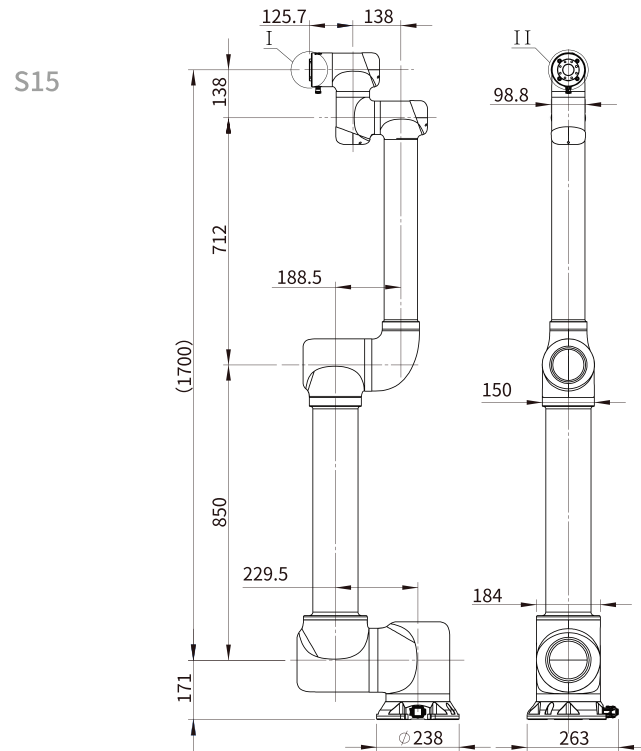
Mini Control Box (Optional)

Dimensions	323x221x80(mm)
Power Input	DC30~60V
I/O Source	DC24V
I/O Port	Inputs 8 , Outputs 8
IP Classification	IP20
Communication	TCP/IP Modbus



Teach Pendant

Dimensions	327 mm x 230 mm x (45+22) mm
Weight	2.7kg (Include Cable)
Display	10.4"
Resolution	1024 x 800
E-stop Button	1
IP Classification	IP54



# Elfin-Ex Explosion-proof Collaborative Robot

## Overview

Han's Robot introduces the explosion-proof collaborative robots, which have received national certification for explosion protection. It can replace workers and work in explosive hazardous environments to significantly reduce operational risks.

The series adopts a leak-compensated positive pressure explosion-proof system with medium isolation of the ignition source, and the shell is designed with multiple sealing structures, thus realizing a compound explosion-proof structure of intrinsic safety and positive pressure; equipped with a positive pressure monitoring system, the positive pressure protection gas pressure of the robot can be monitored in real time and provides power failure protection, blocking explosive combustible gases and dust from entering the robot to avoid the risk of explosion.



E05F  
800mm  
5KG



E10F  
1000mm  
10KG



E10F-L  
1300mm  
8KG



E15F  
1300mm  
15KG



## Basic Configuration



**Positive pressure explosion-proof robots -proof demonstrator**

Built-in pressure sensor, positive pressure explosion -proof construction



**Intrinsically safe and explosion Positive pressure explosion-proof**

Intrinsically safe and explosion-proof



**Electric Control Cabinet**

Robotic arm control module, explosion-proof cabinet with pressure monitoring system to ensure normal operation of the arm in real time and protection against power failure in case of pressure abnormalities



## Industry

- Coal mining
- Petrochemicals
- Civil explosives
- Military industry
- Automotive
- Flour mill



## Application

- Military production
- Surface coating
- Vehicle refuelling and filling
- Civil explosives - transfer of flammable and explosive substances
- Complete vehicle painting
- Powder and paint spraying



## 1 Say "no" to explosions with multiple blast protection

A leak-compensated positive-pressure explosion-proof system with medium isolation of the ignition source is used for reliable sealing performance; the shell is sealed with multiple seals, thus realising an intrinsically safe, positive-pressure and other composite explosion-proof structure; equipped with an air pressure monitoring system for full process detection, reducing the risk of explosion to zero.

## 2 Reliable sealing against water and dust ingress

The robot is designed with a reliable and highly hermetic structure to achieve IP66 level of protection against water and dust.

## 3 Easy to use, flexible and convenient

No professional knowledge of explosion-proofing and programming is required, even if you have no basic knowledge you can easily get started; fast drag-and-drop operation, automatic programming, high intelligence



4

## Full range of models and loads to choose from

The E05F, E10F-L, E10F and E15F models are available in four payload options of 5KG, 8KG, 10KG and 15KG to meet the needs of more scenarios and industries.

5

## Wide range of applications, easy to expand

**Petrochemical industry:**  
Petroleum refining, hazardous gas transfer, environmental inspections

**Painting industry:**  
Painting and powder coating of metal and plastic surfaces

**Service industry:**  
e.g. automatic refuelling and filling of cars

Also suitable for scenarios with a lot of dust and significant liquid splashing

6

## Low investment, high return

Cost-effective product; virtually maintenance-free; low consumables; high yield, high return

7

## Compact size and light weight

Easy handling and small space

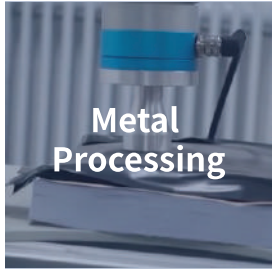
Model	STAR-S	STAR-L	STAR-M	STAR-H	
Main body	Vehicles	HR150	HR300	HR600	HR1200
	Robot	E03/E05	E03/E05/E05-L/E10	E05-L/E10/E10-L/E15	E05-L/E10/E10-L/E15
Basic performance	Dimensions (Elfin Not Included)	700*500*630(mm)	950*650*900(mm)	1200*700*900(mm)	1530*965*1300(mm)
	Actuation	Differential Drive	Differential Drive	Steering Wheel	Differential Drive
	Tray Lifting Unit	Customizable			
Running performance	MAX Velocity	1.5m/s	1.5m/s	1.1m/s	1.5m/s
	Navigation Mode	Laser SLAM, Hybrid Navigation (Fusion Vision) (Optional)			
Vision performance	Vision (Standard Mode)	Camera (Customizable)			
	Positioning Accuracy	±0.5mm			
Software	Operating Software	Han's Robot application software / Dispatching software (optional)			
	Development Platform	Windows/Linux			
Endurance performance	Battery Voltage	DC 48V			
	Running Time (with load)	>6h	>10h	>12h	>12h
	Charging Time	≤2 hours	≤2 hours	≤2 hours	Manual Charging ≤2.5 hours
External Interface	Standard Communication Interface	TCP/IP, HTTP, SDK			
	Outbound Interface	12 Months			



# Han's Robot Applications



Electronics



Metal Processing



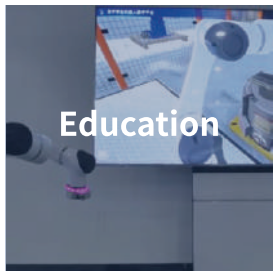
Semiconductor



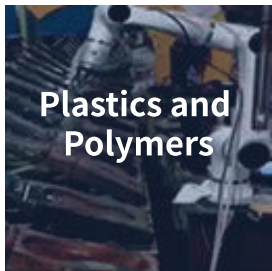
Renewable Energy



New Retail



Education



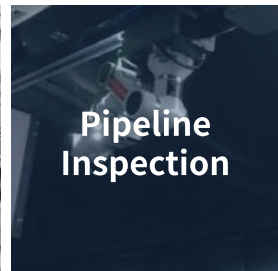
Plastics and Polymers



Healthcare



Automotive



Pipeline Inspection

## ↑ Industry applications:

Han's Robot collaborative robots have been widely used in electronics, automotives, semiconductors, metal processing, new energy, pipeline inspection and other fields. Han's Robot uses robot technologies for collaboration in global intelligent manufacturing, which promotes productivity in all walks of life.

## ↓ Process applications:

Loading and unloading, welding, marking, assembling, polishing, handling, inspecting, gluing, picking, screwing, etc.



Loading and unloading



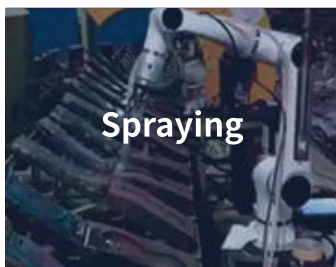
Gluing



Inspecting



Palletizing



Spraying



Welding









Machine tool









Laser marking



## Mini electrical box customised explosion-proof robot

<p>Configuration 1</p>	<p><b>Explosion-proof robot arm body</b></p> <p>Built-in pressure sensor, positive pressure explosion-proof construction</p> 	<p><b>Mini electric control box</b></p> <p>Wireless router and audible and visual alarms, with wireless ipad operation, body pressure monitoring and power failure protection in abnormal conditions</p> 	<p><b>Explosion-proof iPad</b></p> <p>Intrinsically safe explosion-proof</p> 
<p>Configuration 2</p>	<p><b>Explosion-proof robot arm body</b></p> <p>Built-in pressure sensor, positive pressure explosion-proof construction</p> 	<p><b>Mini electric control box</b></p> <p>Wireless router and audible and visual alarms, with wireless ipad operation, body pressure monitoring and power failure protection in abnormal conditions</p> 	<p><b>Non-explosion-proof iPad /laptop</b></p> <p>Wireless connection, no explosion protection, to be used in non-explosive environments (optional on request)</p> 

## Customised explosion-proof robot with standard electric control box

<p>Configuration 1</p>	<p><b>Explosion-proof robot arm body</b></p> <p>Built-in pressure sensor, positive pressure explosion-proof construction</p> 	<p><b>Standard electric control box</b></p> <p>Wireless router and audible and visual alarms, with wireless ipad operation, body pressure monitoring and power failure protection in abnormal conditions</p> 	<p><b>Explosion-proof iPad</b></p> <p>Intrinsically safe explosion-proof</p> 
<p>Configuration 2</p>	<p><b>Explosion-proof robot arm body</b></p> <p>Built-in pressure sensor, positive pressure explosion-proof construction</p> 	<p><b>Standard electric control box</b></p> <p>Wireless router and audible and visual alarms, with wireless ipad operation, body pressure monitoring and power failure protection in abnormal conditions</p> 	<p><b>Non-explosion-proof teach pendant</b></p> <p>Wired connection, not explosion-proof, to be used in non-explosive environments</p> 

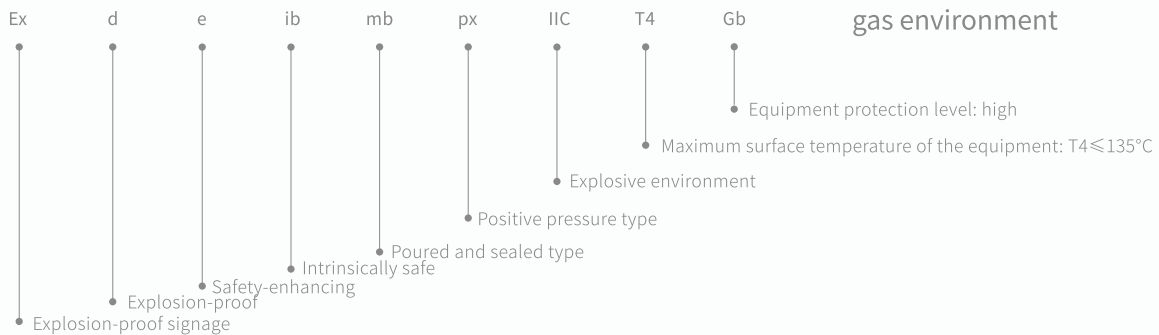
## Explosion-proof control cabinet version of the explosion-proof robot

<p>Configuration 1</p>	<p><b>Explosion-proof robot arm body</b></p> <p>Built-in pressure sensor, positive pressure explosion-proof construction</p> 	<p><b>Explosion-proof control cabinet</b></p> <p>Robotic arm control module, explosion-proof cabinet with pressure monitoring system to ensure normal operation of the arm in real time and protection against power failure in case of pressure abnormalities</p> 	<p><b>Explosion-proof iPad</b></p> <p>Intrinsically safe explosion-proof</p> 
<p>Configuration 2</p>	<p><b>Explosion-proof robot arm body</b></p> <p>Built-in pressure sensor, positive pressure explosion-proof construction</p> 	<p><b>Explosion-proof control cabinet</b></p> <p>Robotic arm control module, explosion-proof cabinet with pressure monitoring system to ensure normal operation of the arm in real time and protection against power failure in case of pressure abnormalities</p> 	<p><b>Non-explosion-proof iPad /laptop</b></p> <p>Wireless connection, no explosion protection, to be used in non-explosive environments (optional on request)</p> 

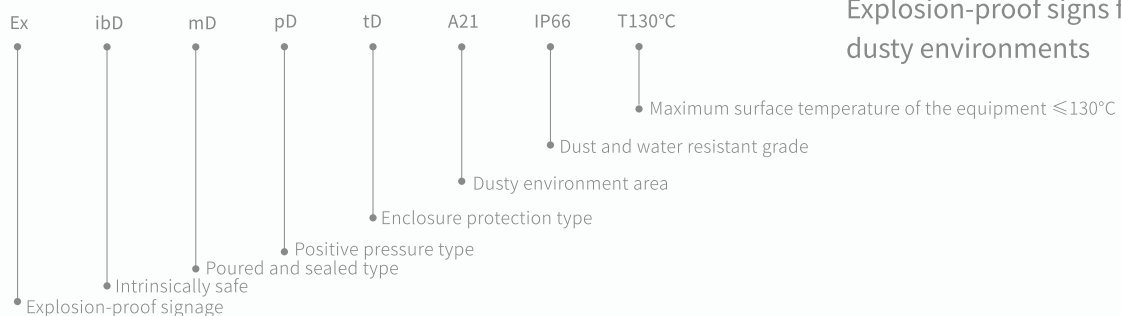
- 1 Certified by the national instrumentation explosion-proof safety inspection station
- 2 Complies with GB3836/GB12476 national standards
- 3 Meets the requirements for normal operation in Zone 1 and Zone 2 explosive gas environments and Zone 21 and Zone 22 explosive dust environments
- 4 Can be used for special operations in explosive and combustible dust environments



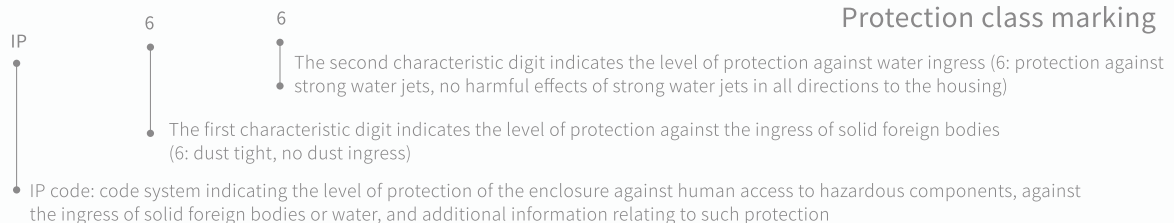
### Explosion-proof marking for gas environment



### Explosion-proof signs for dusty environments

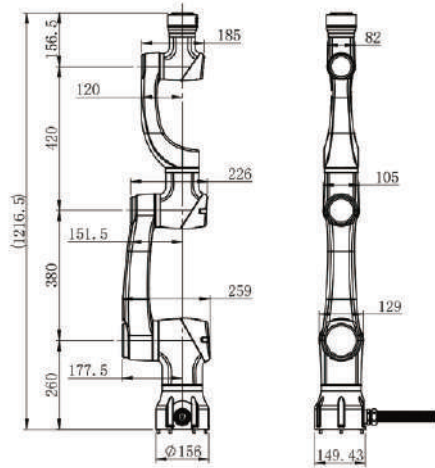


### Protection class marking

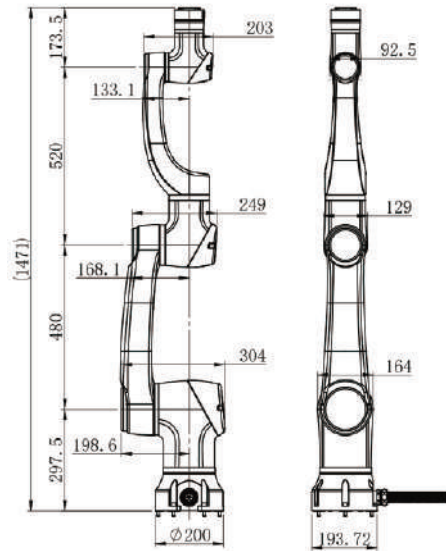


Model	E05F	E10F	E10F-L	E15F
Weight	25kg	43kg	45kg	60kg
Payload	5kg	10kg	8kg	15kg
Reach	800mm	1000mm	1300mm	1300mm
Joint Range	J1-J6 $\pm 360^\circ$			
Joint Speed	J1-J4: 180°/s J5-J6: 200°/s	J1-J2: 100°/s J3-J4: 150°/s J5-J6: 180°/s	J1-J2: 100°/s J3-J4: 150°/s J5-J6: 180°/s	J1-J2: 80°/s J3-J4: 120°/s J5-J6: 150°/s
Maximum tool speed	2m/s			
Repeatability	$\pm 0.02\text{mm}$	$\pm 0.03\text{mm}$	$\pm 0.03\text{mm}$	$\pm 0.05\text{mm}$
Explosion-proof IP Classification	Ex d e i b m b p x I I C T 4 G b Ex i b D m D p D t D A 2 1 I P 6 6 T 1 3 0 ° C			
Degree of freedom	6			
Control box I/O port	Digital input: 16, digital output: 16, analogue input: 2, analogue output: 2			
Communication	TCP/IP, ModbusTCP, Profine (t O p t i o n a l), Ethernet/IP (Optional)			
Programming	Graphical programming, remote call interface			
IP Classification	IP66			
Collaborative operation	10 advanced s e c u r i t y configuration functions			
Main material	Aluminium alloy			
Working Temperature	-20—40°C			
Power input	200-240V AC, 50-60Hz			
Cable	Maximum length customizable 15-20m			

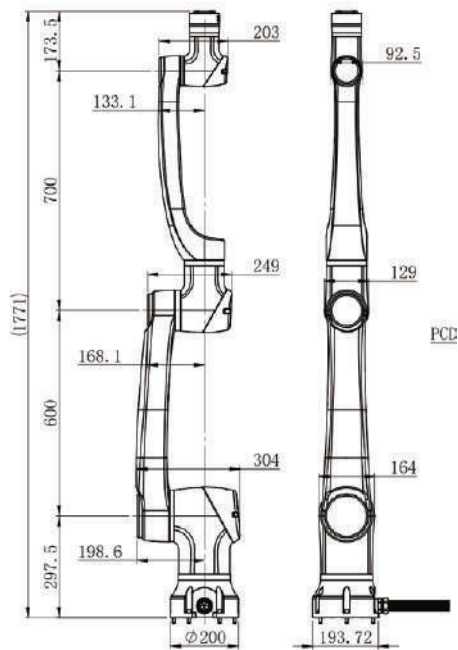
E05F



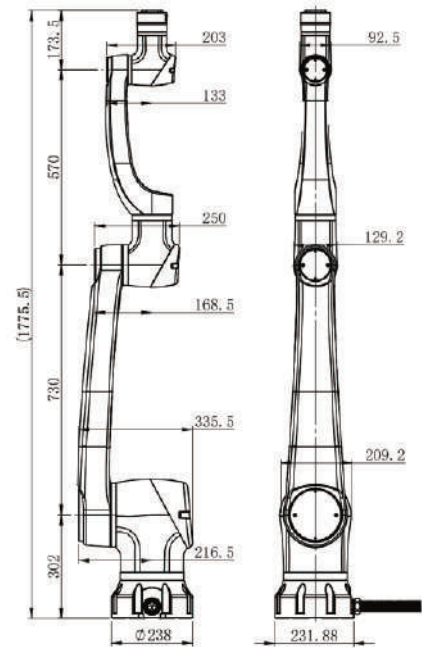
E10F



E10F-L



E15F





# HR Multi-sensing Autonomous Vehicle

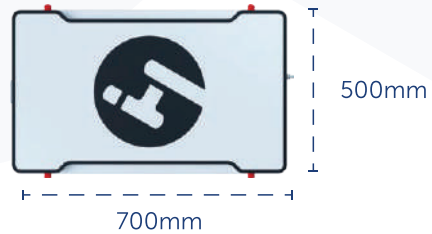
## Overview

HR is a new generation of multi-sensing autonomous vehicles from Han's Robot, used for indoor intralogistics tasks. It can autonomously transport items and navigate freely in its environment. As a mobile robot, it makes the labor of the workers easier and improves business efficiency. This robot is also equipped with obstacle avoidance radar, which can work continuously and safely without interruption. Moreover, it has built-in autonomous navigation system and dispatching software, which enable multiple HR to serve simultaneously, keep the production running and maintain the flexibility of its manipulation.

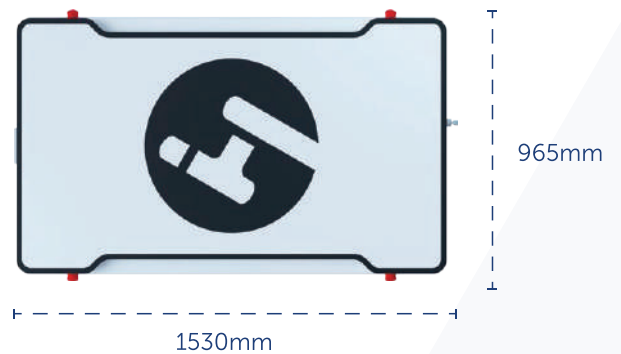


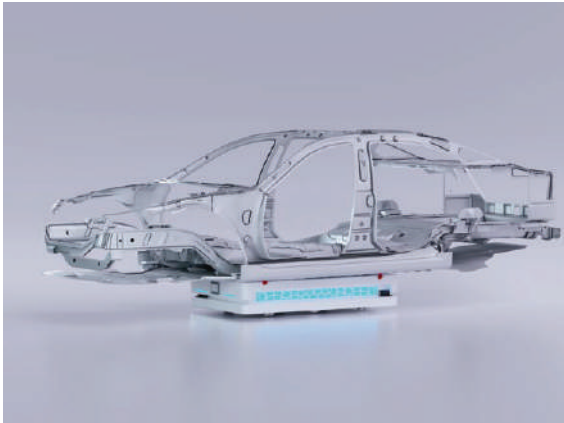
## Dimensions

HR-150  
150kg  
30AH



HR-1200  
1200kg  
125AH





Payload 150kg / 1200 kg



High speed charging and long endurance



HR Speed 1.5 m/s



3D Visual Sensor (optional)



**Artificial Intelligence**

Path Optimization, Smart Interaction



**Safe Human Detection**

Touchless Sensor Technology



**Status Visualization**

LED lights can show the robot's working status

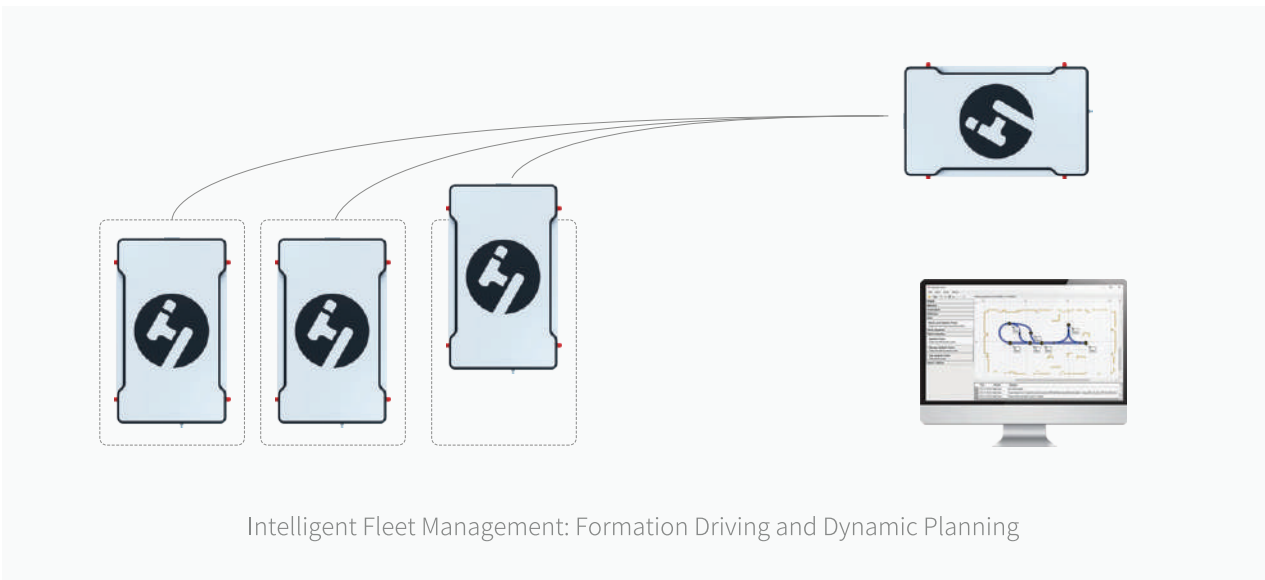
Expand application



HR+Elfin



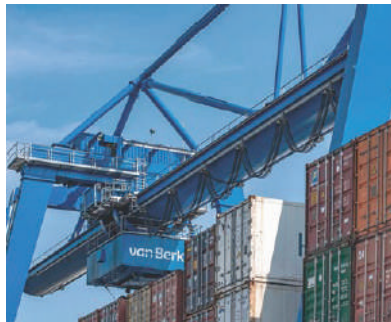
HR for Logistics



Recommended Industries



Healthcare



Logistics



3C

Model	HR-150	HR-300	HR-600	HR-1200	
Basic parameters	Payload	150 kg	300kg	600kg	1200kg
	Dimensions	700*500*255(mm)	950*650*350(mm)	1200*700*280(mm)	1530*965*295(mm)
	Navigation Mode	Laser SLAM, Hybrid Navigation (Fusion Vision) (Optional)			
	Actuation	Differential Drive	Differential Drive	Steering Wheel	Differential Drive
	MAX Velocity	1.5m/s	1.5m/s	1.1m/s	1.5m/s
	Positioning Accuracy	±10mm			
	Communication Interface	TCP/IP, Modbus TCP			
	Outbound Interface	WiFi, 1XRJ45, 5G Internet			
	Lifting Units (Optional)	Customizable	1X200Kg,1X0-60mm(included)	Customizable	4X400Kg,4X0-50mm (included)
Battery parameters	Battery Voltage	DC 48V			
	Battery Capacity	30AH	67AH	72AH	125AH
	Charging Time	≤2 hours	≤2 hours	≤2 hours	Manual Charging≤2.5 hours
	Charging Mode	Automated / Manual	Automated / Manual	Automated / Manual	Manual / Wireless
	Running Time (no load)	>6h	10h	12h	12h
Software	Operating Software	Han' s Robot application software / Dispatching software (optional)			
Others	Warranty	12 Months			

# STAR Mobile Manipulator

## Overview

The STAR mobile manipulator is an intelligent mobile robot, which combines the self-developed mechanical arm and mobile robot, vision system, gripper and other components to perform mobile operations to achieve functional applications such as grasping, handling, assembly, and detection of materials. According to the customer's on-site use environment, it can match the corresponding scheduling system for flexible scheduling and rapid deployment. The core units of the STAR are independently developed, with high cost performance and strong system scalability, which can connect to the customer's MES (or other systems) and provide rich solutions according to different needs of customers. It can serve the future intelligent manufacturing industry 4.0.

It is mainly used in industries (such as electronics, metal products, auto parts, electricity, new energy, ships, aerospace), healthcare, family services, file management and other applications.



## Features



### Rapid Deployment

Based on the SLAM navigation technology, without the scene transformation, the environment map is automatically generated, the scheduling planning service is realized, and the deployment is fast.



### Self-check

It can obtain the robot hardware and operating status in real time, which realizes self-check and fast fault diagnosis.



### Automatic charging

The STAR can automatically go back to charging pile for recharging, which ensures the robot to achieve 7\*24 all-day operation and high-frequency fast response between tasks.





### Intelligent scheduling

Based on the self-developed architecture and intelligent planning algorithm, the large-scale scheduling of robots is realized to ensure the efficient operation of the system.



### Strong Scalability

It efficiently connects to the enterprise's MES/WMS information system and can quickly install application function modules according to requirements.



### Intelligent obstacle avoidance

Equipped with sensors such as lidar and visual camera (optional), it can intelligently identify obstacles, actively park and avoid obstacles.



### Stable performance

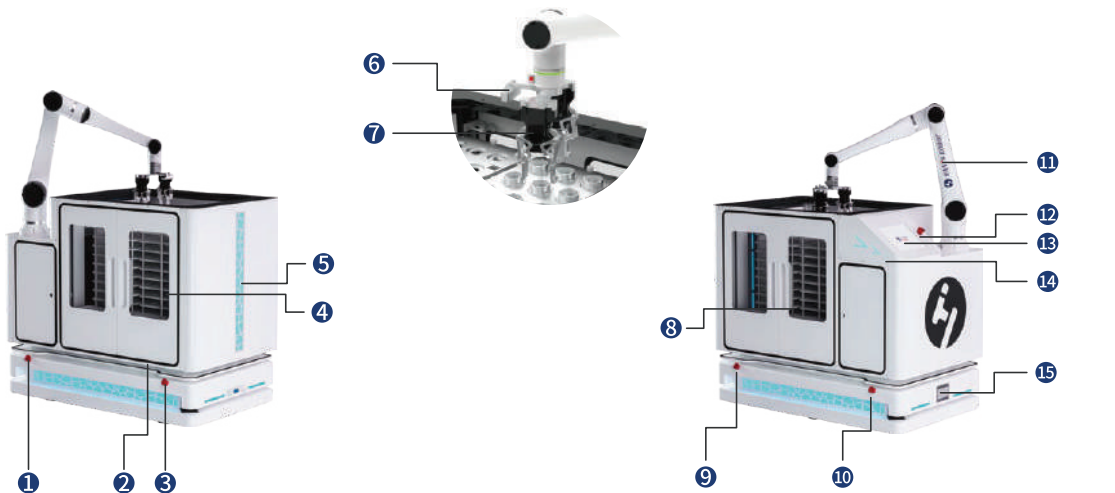
With independent development of core components, it shows the perfect combination of body and arm, and the performance is more stable.



### Automatic lifting

The internal materials are automatically lifting, which can maximize the use of body space, store more materials in a limited space, and reduce material transfer.

#### Parts name



- E-STOP **1 3 9 10 12**
- Drainage Outlet **2**
- Lifting Unit 1 (To Be Processed) **4**

- Singal Lights **5 14**
- 3D Camera **6**
- Electric Gripper **7**

- Lifting Unit 2 (Finished Product) **8**
- E10-L (Optional) **11**
- 12" Touchscreen **13**
- FR **15**

## Electronics manufacturing industry

### Laser cutting

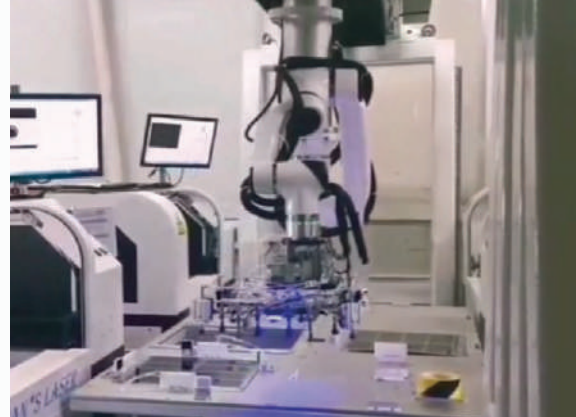
One robot is used for loading and unloading for four laser cutting machines at the same time. The four cutting machines are placed in pairs, and a 7-axis guide rail is used in the middle to realize the motion of the collaborative robot between the machines. A vision camera is integrated to the robot to realize the positioning for loading and unloading as the required unloading precision of the laser cutting machine is about 0.1 mm.

#### Space-Saving

The overall layout is compact which occupies a small area, and there is no need to do great changes to the original plant. Moreover, the equipment deployment is easy.

#### Easy to operate

It is easy to operate the collaborative robots. Customers can switch products or debug new products by themselves after simple training, which greatly reduces the cost of product replacement.



**More scenarios:** loading and unloading, inspecting, grinding, spraying, assembling, marking, etc.

## Automotive manufacturing industry

### Gluing for car lights

By adopting one-to-two structure integration, one cold glue device supplies can glue for two collaborative robots. The double-station free gluing improves the gluing efficiency and quality and avoids the impact on the personnel health, which greatly reduces labor and equipment costs.

#### Safe and flexible

High-precision linear gluing, harmless operation, improved yield rate.

#### Energy saving and low consumption

The cold glue does not require heating, which greatly reduces energy consumption.



**More scenarios:** loading and unloading, spraying, assembling, inspecting, picking, marking, etc.

## Healthcare industry

### Medical Surgical Robot

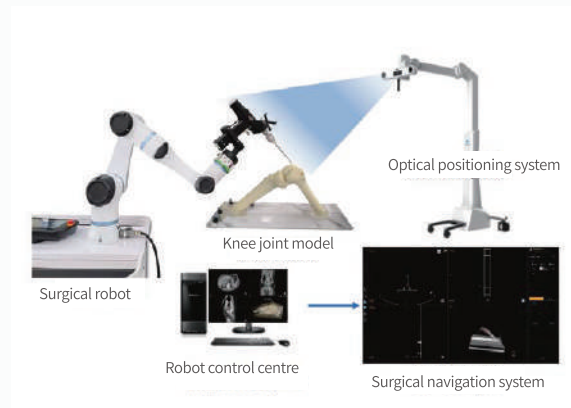
The orthopaedic drilling and stapling robot, in conjunction with the optical positioning system and other equipment, achieves a more intelligent and reliable surgical plan, a more precise and humane surgical execution, and an improved level of service in orthopaedic drilling and stapling surgery.

**Accuracy:** The robot can be positioned with an accuracy of up to 0.02mm, enabling precise reproduction of the position and force of the billion dollar operation, ensuring precise and accurate surgery.

**Safety:** The safety of human-machine collaboration is ensured through advanced safety functions such as collision protection, motion area restriction and check pressure protection; at the same time, surgical safety is guaranteed based on the advantages of high precision and high sensitivity.

**Humanisation:** Soft movement control and real-time pressure tracking control for expert-like results and reduced patient stress.

**Efficiency:** The robot is stable, safe and easy to use and can perform continuous surgery.



#### More scenarios:

**puncture, dental implant, neurosurgery, abdominal puncture, hip replacement surgery, etc.**

## Hybrid robot

### CNC loading and unloading

In this case, the mobile manipulator moves intelligently in the same workshop to support multiple production links:

CNC production workshop material transfer project  
Automatic loading and unloading items of materials.

#### Case features

Han's robot 6-axis collaborative robot + intelligent mobile robot, with its large capacity and automatic lifting mechanism, can load more materials at one time, freely shuttle in the workshop, ensure the normal operation of multiple equipment in the workshop, and help customers to automate production needs.

**More scenarios:** **warehousing, packaging, assembling, testing, pickup, etc.**



## Metal processing industry

### Laser Marking

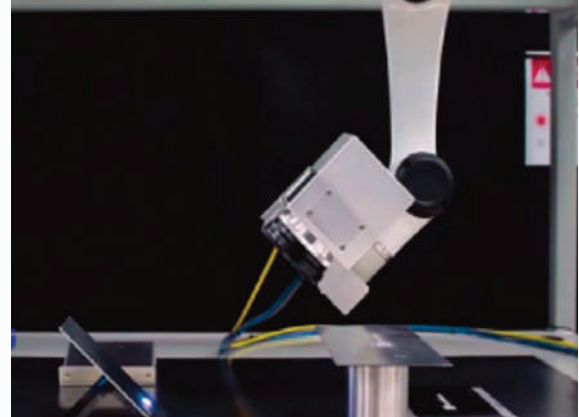
Han's marking robots can realize multi-directional automatic marking, from loading and unloading to marking, which meets the unmanned, automated, and flexible use requirements, improves the delivery efficiency, and reduces production costs.

#### Flexible and efficient

Realize flexible, efficient, multi-angle, multi-material free marking.

#### Easy to operate

Graphical programming and robot program editing are simple and easy.



**More scenarios:** marking, rust removal, grinding, screwing, welding, etc.

## Semiconductor Industry

### Wafer handling

Han's hybrid robots interwork with wafer processing equipment to provide MES whole-factory automated wafer handling solutions, and fully independent IPR upper-computer scheduling system and planning.

#### Fast and robust

One robot is connected to five wafer processing devices for loading and unloading, and the efficiency is 68% higher than manual operation. The fully automated black light factory works automatically in a controllable manner. Multiple devices can be independently scheduled in 24-hour operation.



**More scenarios:** lithography, cleaning, etching, precipitation, equipment care, grinding, etc.

## Sanitary industry

## Spin welding

Solve the pain points of ultrasonic welding with high noise and inconsistent manual feeding pace.  
Less labor and higher efficiency, easy to operate, stable robot production.



**More scenarios:** visual grasping, gate polishing, assembling, picking and placing, hot plate welding, loading and unloading, etc.

## Pipeline inspection industry

## Pipeline equipment inspection

In this application, Han's Robot is integrated with various sensors to realize 24-hour visual automatic inspection in the pipeline. The 6-DOF joint design allows the robot to be better planned for complex motion paths, increases the monitoring scope and precision, and achieves no-blind-angle monitoring.

## Diverse applications

Used in power, energy, petroleum, transportation, smart buildings, etc.

## Less risks

Less safety risks and labor costs compared with traditional manual inspections



**More scenarios:** electricity, energy, construction, transportation, minerals, marine.



## Education industry

### VR training

1. VR industrial robot task training system based on virtual reality. It realizes multi-brand, multi-robot, multi-scene robot task operation training, including robot welding training, robot spraying training, robot casting training, robot palletizing training, robot loading and unloading training, and robot mobile phone assembly training.
2. Learn and master the operations of industrial robots through the VR robot system, and practical training of physical collaborative robots, which further deepens and consolidates the basic knowledge and skill training results of industrial robots, and greatly improves the teaching and training effects.



**More scenarios:** teaching platform, cyclic assembly line, mobile robot application, SCARA application, laser marking robot loading and unloading workstation, disassembly and installation of collaborative robot, robot integrated standard workstation.

## New retail industry

### Milk tea robot

In this application, a new tea flagship store uses Han's robots in the beverage production area to collaborate in tea making, blending, and delivery, which adds value (such as freshness, attractiveness, and customer experience) to its service and image and greatly speeds up beverage production.

#### Fresh experience

One-click self-service, widely used in airports, hotels, restaurants, stations, shopping malls, and other places

#### Save kitchen labor

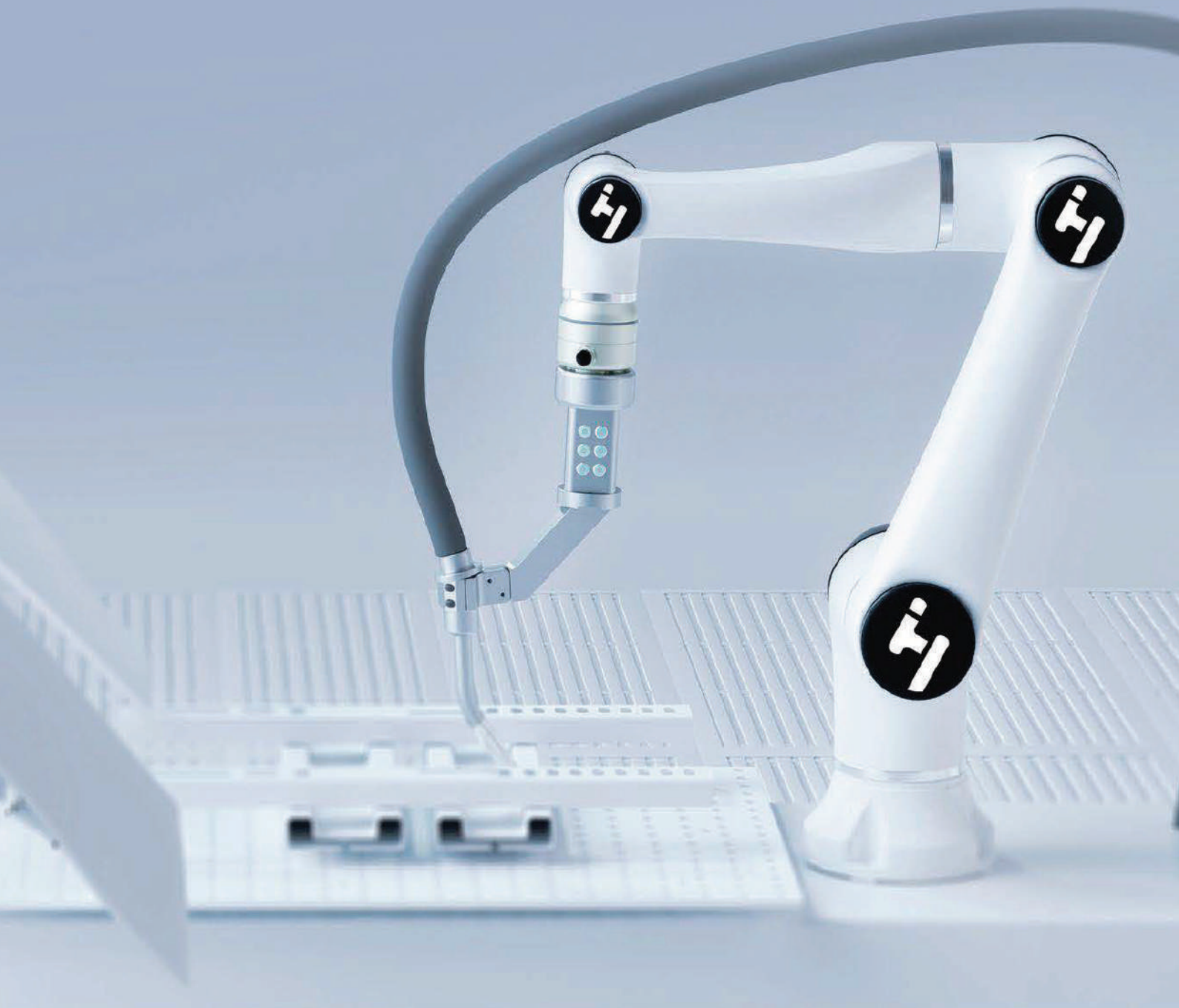
Less labor and higher efficiency, easy operation, convenient maintenance, short time period of cost recovery



**More scenarios:** massage, coffee latte, unmanned sales, etc.



# Automated Welding Workstation (Gas Shielded Arc Welding) Application Solution







*HAN'S ROBOT*





# Traditional Welding Pain Point



## Difficult Programming, High Requirements

Programming for traditional welding robots is difficult to get right in one step and requires continuous debugging and program modification, demanding high programming skills from operators.



## Difficult to Hire, Low Efficiency

It is challenging to train and hire skilled welders. Coupled with the highly repetitive rhythm of operations, the efficiency of manual welding is not high.



## Unstable Welding Quality

During manual welding, factors such as welding speed and wire feed length vary from person to person, making it difficult to guarantee product quality stability and consistency.



## Heavy Workload and Poor Working Conditions for Welders

The welding operation site has high temperatures, and manual welding has safety risks such as burns and arc burns, posing challenges to corporate safety production.



# More Efficient Automated Welding Solution

Collaborative robots advocate for harmonious human-machine integration and mutual support. Hans Robot empowers welding applications. With advantages such as light guidance, flexible deployment, and high safety, it effectively solves the challenges of the shortage of skilled welders and high labor costs in traditional welding. By automating welding, it reduces costs and increases efficiency for customers.





## Overview

Hans Robot's automated welding workstation (gas shielded arc welding) is composed of the Elfin-Pro series collaborative robot, welding torch, welding system, etc. The Elfin-Pro series collaborative robot has advantages such as integrated end force control, integrated AI vision, and high repeat positioning accuracy. In conjunction with the laser vision seam tracking system, it realizes flexible dragging, automatic tracking, automatic correction, and supports long-time, uninterrupted, high-quality, and highly stable welding work. It primarily enhances cost-effectiveness in automated production fields such as auto parts, engineering machinery, and metal processing.

## Equipment Composition



### Han's Robot

With integrated end force control and AI vision, the system offers simple and efficient control, saving time and effort, thereby improving production efficiency.



### Welding System

Compatible with mainstream welder, it supports free switching between pulse and DC welding, ensuring good stability.



### Welding Software Package

Independently developed by Hans Robot, our software uses a graphical interface that is clear and easy to use.



# Featured Applications

Drag-and-Drop Teaching,  
Laser Vision Seam Tracking, Arc Tracking, Welding Plugin

# 1 Drag-and-Drop Teaching:

## Simple operations can achieve linear or circular welding

Elfin-Pro supports integrated end force control, allowing users to drag the welding torch easily and quickly to the designated target welding point. With the end button, they can quickly establish a welding task, complete circular/linear path selection, and set up arc starting/stopping. One drag and drop can be reused.







## 2 Laser Vision Seam Tracking:

### Real-time correction of welding deviation to achieve automatic seam tracking

With the laser vision seam tracking system, welding deviations are corrected in real time, ensuring that the welding gun always stays at the center of the seam during movement. This allows for automatic seam tracking, thus improving welding quality.

## 3 Arc Tracking:

An arc tracker can collaborate with the robot to obtain the relative position of the welding gun and the groove by collecting and processing arc signals, correcting any deviations in the robot's planned path.

## 4 Easy-to-Use Welding Plugin:

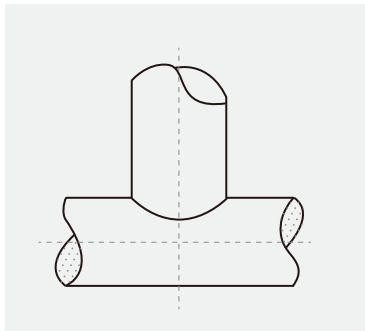
Hans Robot provides an easy-to-install, easy-to-use welding plugin. The user-friendly interface meets visual and graphical operation needs, enables benign human-machine interaction, and improves production efficiency.



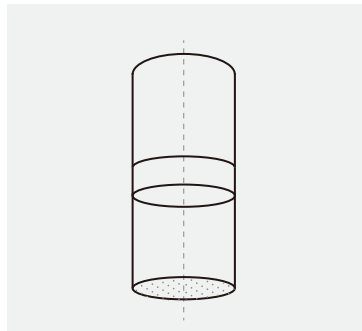


# Line shape Meet various welding scenarios

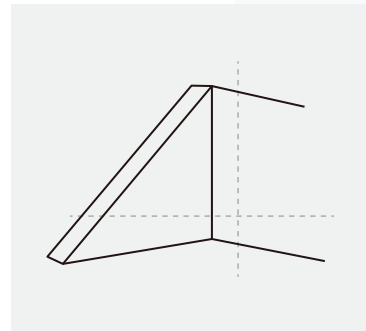
The workstation supports arbitrary welding trajectories, splice trajectories, and caters to saddle shape, round shape, corner shape, V-shape, and various other welding modes, covering a vast majority of welding application scenarios.



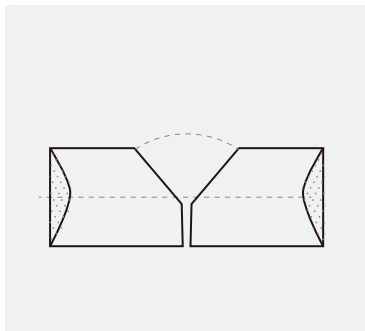
**Saddle shape**



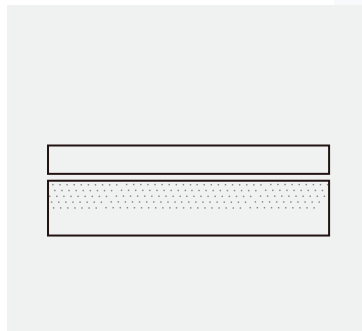
**Circular shape**



**Corner shape**



**V-shape**



**Line shape**

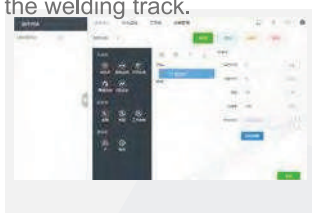


# Simpler operation procedures

The Han's Robot automated welding workstation (gas shielded arc welding) can rapidly operate through point setting, drag teaching, and intelligent remote sensing. The welding technique package can flexibly configure current, voltage, welding speed, welding posture, etc., meeting users' needs for quickly setting up various welding applications.

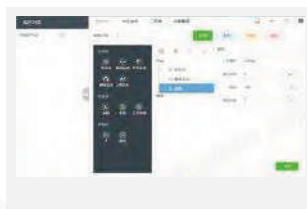
## Step 1 •

1. New creation of welding tasks.
2. Setting of the start point of the welding track.



## Step 2 •

Setting of the starting arc welding parameters: welding time and welding current.



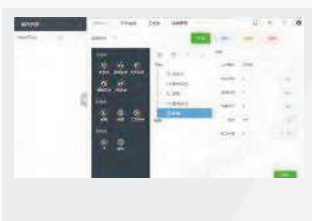
## Step 3 •

Setting of the end point of the welding track.



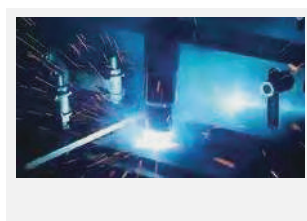
## Step 4 •

Setting of the end-arc welding parameters: Arc crater time, burn back time, dwell gas feed time and current.



## Step 5 •

Operation of welding task.



## Main Configuration

	Configuration One (★ Recommended)	Configuration Two	Brand
Robotic System	<ul style="list-style-type: none"> <li>① Elfin Pro Welding Robot Body (E10-Pro, E10L-Pro)</li> <li>② Controller and Control Cable</li> <li>③ Teaching Device and Flexible Cable</li> </ul>	<ul style="list-style-type: none"> <li>① Elfin Welding Robot Body (E10, E10-L, E15)</li> <li>② Controller and Control Cable</li> <li>③ Teaching Device and Flexible Cable</li> </ul>	Han's Robot
Force Control System	/	Robot Force Control + Control Handle	Force Control
Welding System	<ul style="list-style-type: none"> <li>① Full Digital Industrial Welding Power Supply</li> <li>② Welding Cable, Control Cable and Other Accessories</li> <li>③ Wire Feeder</li> <li>④ Protective Gas Detection Switch, Flowmeter, Air Pipe, Protective Gas Cylinder, etc.</li> </ul>		MegMeet, Aotai, Miller, Lincoln, Binzel, Fronius, EWM, Lorch, Esab, Kemppi, Panasonic, OTC DAIHEN
Welding torch system	① Robot Welding Torch ② Welding Torch Holder		Kunshan Rihao, Binzel, Other Brands
System Software	Arc Welding Software Package		Han's Robot
Mobile Workstation	Pillar + Base		Han's Robot
Optional Accessories	Intelligent Remote Sensing		Han's Robot
Unit	Set		
Quantity	1		

## Performance Indicators

Performance Indicators of Automated Welding Workstation	
Floor Space	2m×1.5m
Work Cycle	7×24h
Welding Power Supply	MegMeet, Binzel, Aotai
Operator Requirements	Ordinary Staff

# Advantages



## Multiple control techniques for high-quality welding

Short-circuit transition control process with special energy control, "pulse energy regulation" of the melt-drop transition control process, and the synergistic process based on variable wire feed speed pulsed energy control process, which is extremely suitable for the consistent high quality welding of carbon steel, stainless steel, aluminum alloys, etc. uniformly high quality welding.



## Graphical programming, quick mastery within 10 minutes

The welding process package integrates a wealth of parameters to meet the needs of the welding process. Straight or circular welding can be carried out with simple commands: select and define linear, circular, zigzag paths by moving the robot arm to the points of your choice and locking them with buttons on the flange to make welding as easy as using a mobile phone.



## Flexible drag teaching, improved work efficiency

The Elfin-Pro series collaborative robot integrates end force control, possesses excellent precision and accuracy, realizes smoother, more efficient drag teaching abilities. A one-time teaching for repeated use can automate and continually perform welding tasks, significantly improving work efficiency.



## Multiple safety protections ensure safe production

Han's Robot uses an electromagnetic brake mode in the event of a sudden power failure or emergency stop during operation, it can be held directly without falling, which effectively increases operational safety.



## User-friendly UI interface, for stress-free work

Han's Robot optimizes and upgrades the system UI interface based on actual user application scenarios, allowing the robot to serve users better.



## Industry Applications

### Metal Working

Metal forming is often associated with high levels of labor, noise pollution and metal dust. Sometimes in hot, humid and even polluted environments, the work is simple and boring, making it difficult for companies to recruit staff. The application of collaborative robots can not only solve the problem of employing people in enterprises, but also improve processing efficiency and safety in order to enhance processing accuracy. This solution has great scope for application.



### Automobile Components

In recent years, the automotive industry has diversified in order to meet the needs of the general public. Traditional welding cannot meet the segmented and multiscene welding needs of automotive component manufacturing. Han's Robot's welding equipment allows for flexible layout and production. It collaborates with people in modern automotive parts production plants in order to increase production efficiency.

### Shipbuilding

There are nearly a thousand welded components in the ship's structure and nearly ten thousand parts involved. Many of the important load-bearing components of the ship are welded components, and the ship's hull is subjected to significant pressure during operation. This is the reason the welding requirements are so stringent. Han's Robot has a repeatable positioning accuracy of down to +0.02 mm, which enables precise welding of the ship's components in automated welding processes.

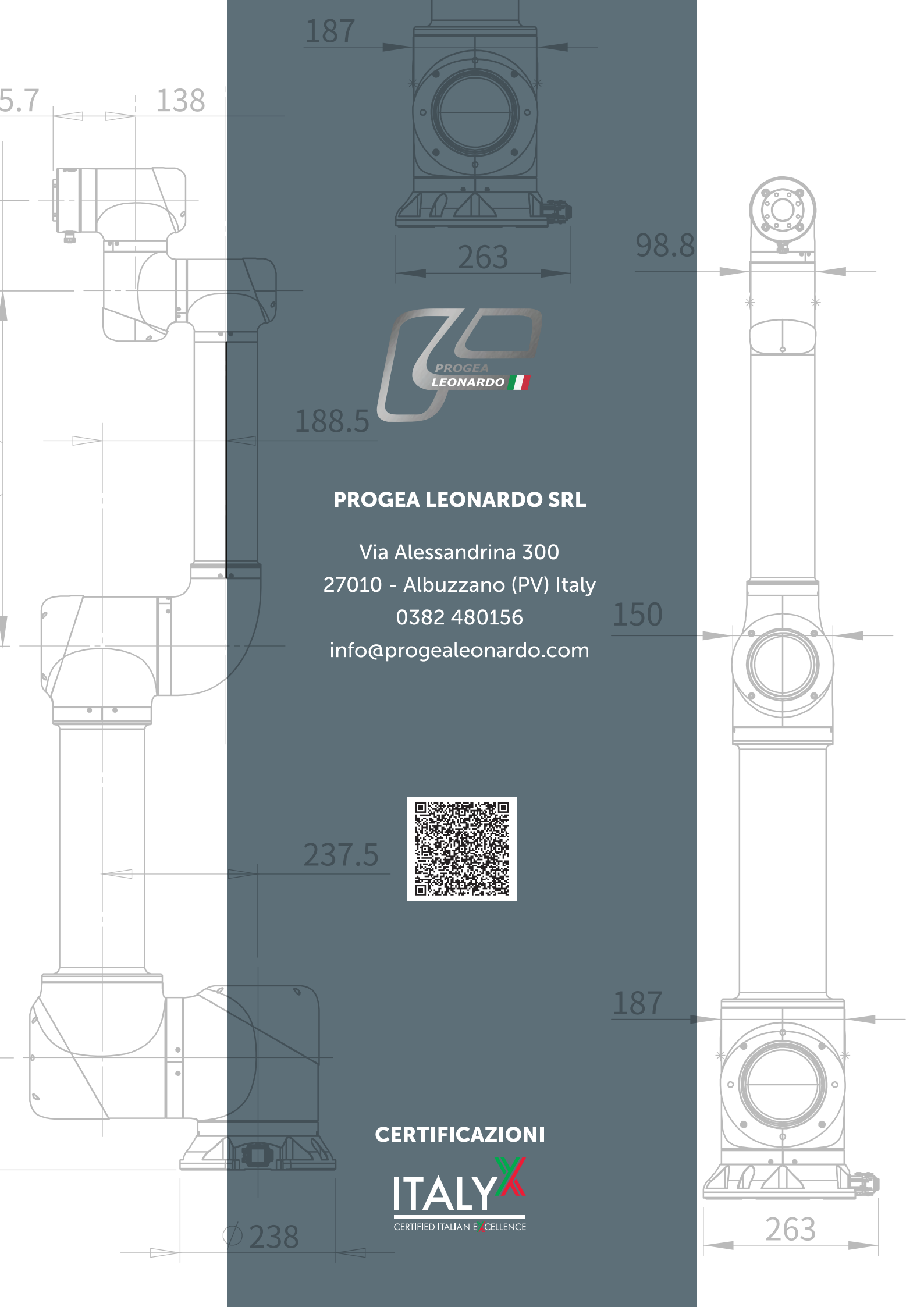


### Kitchen and Bathroom Industry

The kitchen and bathroom industry as a more labor-intensive industry, the automation of the production process is necessary. Welding with Han's Robot can be deployed flexibly and easily, and it can solve the problem of recruitment difficulties for manual labor, thus reducing costs and increasing efficiency.



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**CERTIFICAZIONI**



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