

SENFENG



NO: SF-202500-000L



SF-CW Series

Collaborative Robot Laser Welding
Machine



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Equipment Introduction

Core Components and Systems

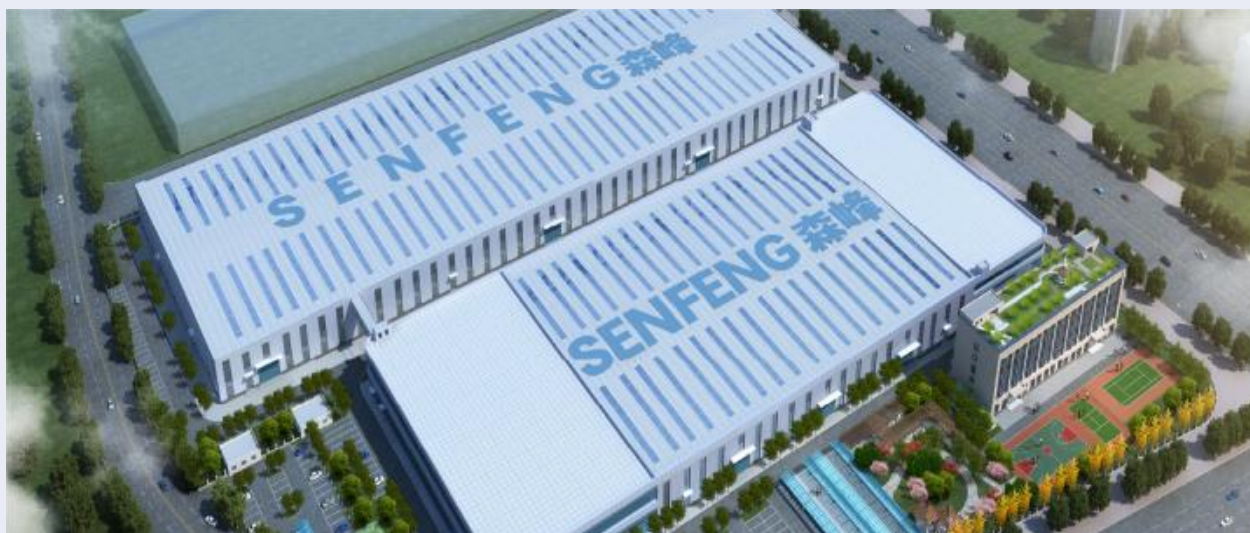
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Craftsmanship and Intelligence for a Bright Future

Jinan Senfeng Laser Technology Co.,Ltd.



SENFENG is an international manufacturer committed to providing automated metal fabrication solutions to users worldwide. The company has independently developed several core technologies, including cutting, bending, welding, cladding, and automation, positioning itself as a technology-driven enterprise featured by the full laser industry chain.

SENFENG independently develops core components such as laser sources, laser heads, and control systems, producing a variety of laser automation equipment. This includes fiber laser cutting machines, laser welding machines, laser cladding systems, laser cleaning machines, coil-fed laser cutting machines, material warehouses, automatic loading and unloading systems, panel benders, and flexible production lines for laser processing. Our products are widely used in industries such as automotive, rail transit, construction machinery, aerospace, steel structure construction, elevator manufacturing, and sheet metal processing.

Smart Laser Welding for Quality

SF-CW 1500-3000W

Collaborative Robot Laser Welding Machine

Automated welding

Applicable to various
workpieces

High-precision
welding

Drag-and-Drop
Programming

Good human-
machine interaction

One-stop solution



※ This picture is for reference only. Product appearance and size are subject to actual factory delivery.



EQUIPMENT INTRODUCTION

EQUIPMENT INTRODUCTION

CW Series

3D Welding Technology



➤ Meet precision welding requirements

The robot features high repeatability and can perform precise tasks for extended periods.

➤ Capable of welding multiple workpieces

The welding platform has reserved mounting holes, allowing for the installation of various fixtures, making it suitable for clamping a wide range of complex workpieces.

➤ Flexible and reliable welding

The robot can be operated through various methods, including drag-and-drop teaching, coordinate positioning, route planning, and offline programming. The visual interface is simple and easy to learn. A wire feeder mechanism can also be configured.

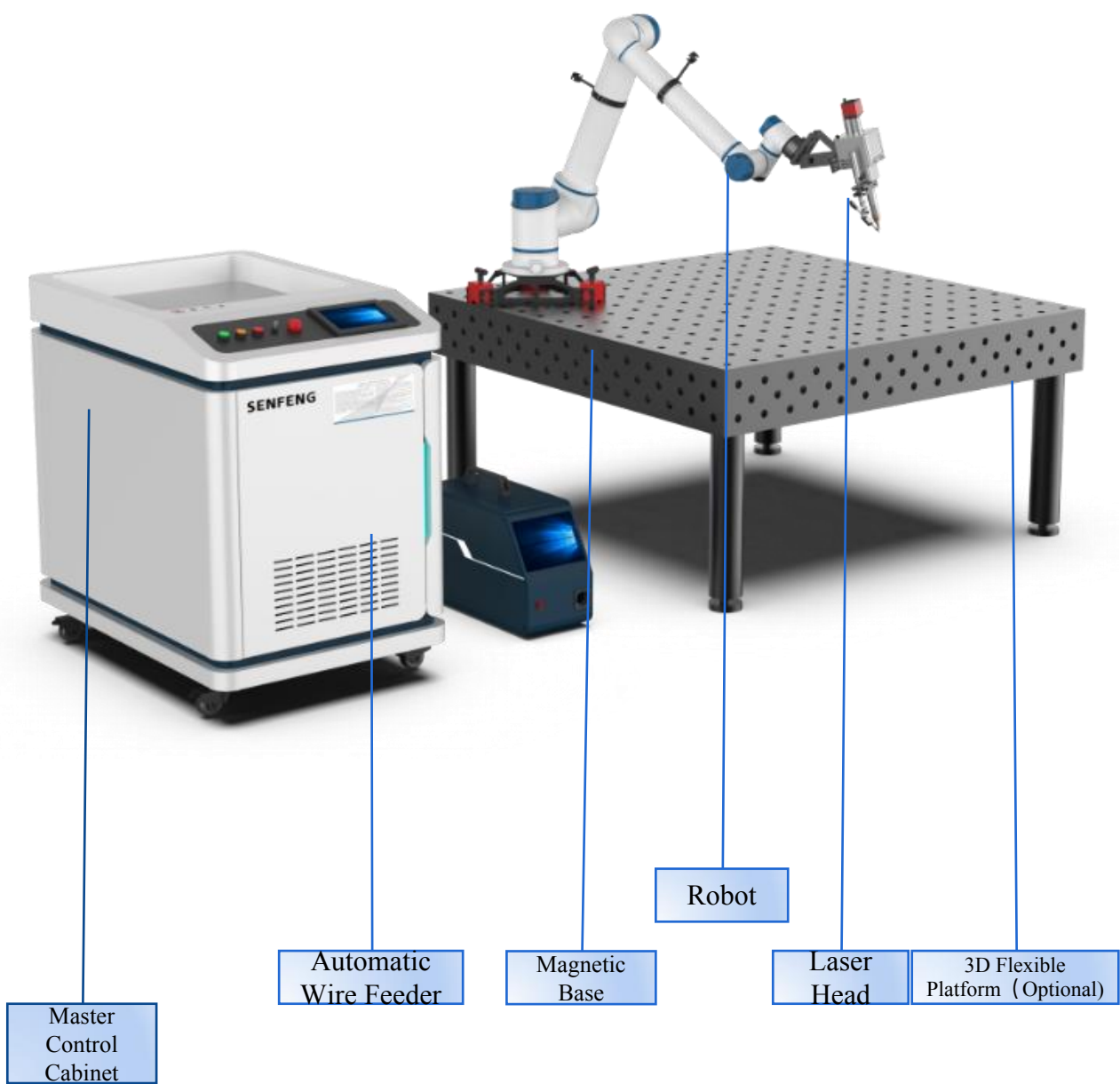
➤ 3D flexible platform

The 3D flexible platform offers multiple models to choose from, allowing you to select the appropriate welding platform based on the welding requirements of the workpiece.



EQUIPMENT INTRODUCTION

EQUIPMENT INTRODUCTION

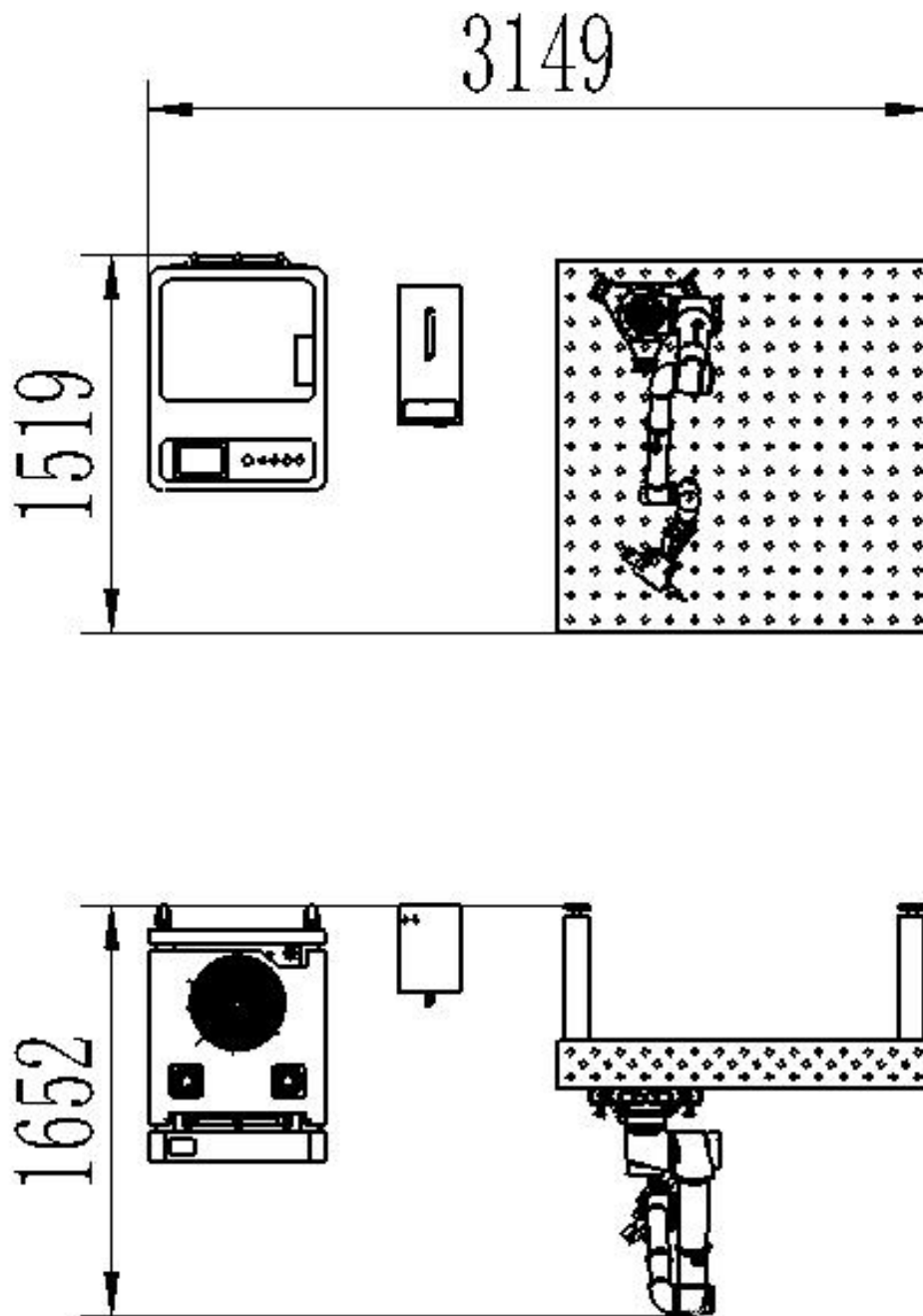




EQUIPMENT INTRODUCTION

EQUIPMENT INTRODUCTION

Footprint Diagram



Note: The three-dimensional flexible platform shown in the footprint dimensions is an optional component.



TECHNICAL PARAMETERS

TECHNICAL PARAMETERS

Model	SF-1500CW	SF-2000CW	SF-3000CW
Robot Arm Reach	1350mm		
End-Effector Axis Load of Robot	10 kg		
Repeated Positioning Accuracy	$\pm 0.03\text{mm}(1077\text{mm})/\pm 0.03\text{mm}(1460\text{mm})$		
Maximum Laser Power	1500W	2000W	3000W
Laser Welding Head	3 kW		
Cooling Method	Water-cooled		
3D Flexible Platform	1500*1500*650 mm		
Power Supply	380V $\pm 10\%$, 50Hz ± 1		
Total Power (Approx.)	9KVA	11KVA	15KVA

Note:

1. This introduction is for reference only; please refer to the actual specifications.
2. Air cooling configuration is available based on laser source selection.
3. The standard power supply is "50Hz"; please specify if "60Hz" is required.



ROBOT DEVICE

Robot Device



Features:

- ◆ Rated payload of 6 kg, working radius of 1460 mm, and tool-end speed up to 3000 mm/s
- ◆ High repeatability, enabling long-term continuous operation for high-precision tasks and significantly improving production yield
- ◆ Supports multiple robot operation methods, including drag-and-drop teaching, coordinate positioning, path planning, and offline programming, with a simple and intuitive visual interface

Collaborative Robot Selection

Model	SFXC0907-A	SFXC1406-A
End Payload	7kg	6kg
Max Reach	1077mm	1460mm
Repeatability	$\pm 0.02\text{mm}$	$\pm 0.05\text{mm}$
Robot Weight (Approx.)	21kg	22kg
Applicable Environment	Arc Welding Applications	

Features:

- User-friendly operation with frequently used buttons positioned at the front
- Supports drag-and-drop teaching, point teaching, path planning, linear and circular motion settings, arc start, and arc stop functions
- Lightweight design, suitable for handling and deployment



LASER HEAD

LASER HEAD



Basic Functions:

- OBH Locking Structure
- Water-Cooling Structure
- Supports welding power up to 3000 W
- Six selectable welding process patterns

Advanced Functions:

- Open communication protocol, enabling programmable adjustment of process parameters during continuous welding
- Supports multiple modes of wire breakage status monitoring
- Supports fast calling of welding processes via I/O ports

Main Technical Specifications of Laser Welding Head					
Power	Fiber Connector	Protection Method	Monitoring Method	Cooling Method	Auxiliary Air Pressure
3 kW and below	QBH	Coaxial/Side Axial	Coaxial CCD	Water Cooling	< 1.0Mpa



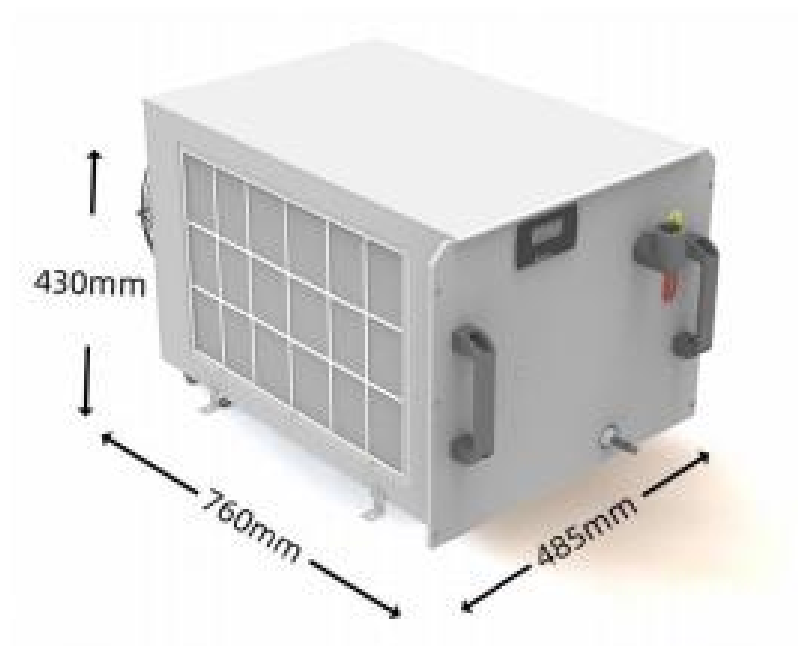
LASER SOURCE

LASER SOURCE



Model	MFSC-1500C	MFSC-2000C	MFSC-3000C
Center Wavelength (nm)	1080 ± 5		
Operation Mode	Continuous/Pulse		
Modulation Frequency (kHz)	≤20		
Power Instability	± 2	± 3	
Output Connector	QBH		
Core Diameter (um)	20	30	50
Fiber Cable length (m)	10		20
Input Power (V AC)	Single phase 220 ± 10%V AC		Three-phase 380 ± 10%V AC
Power Adjustment Range (%)	10-100		
Beam Quality BPP	M²≤0.6	M²≤0.7	M²≤1.8
Cooling Method	Water cooling		

WATER CHILLER **WATER CHILLER**



SCH-2000

- The dual-temperature dual-control water chiller uses segmented control to ensure stable welding/cutting beam output, thereby ensuring the life of the laser source and welding gun.
- The one-button intelligent control system is easy to operate, including the ISO9001 quality management system and fault code query system.
- The integrated design makes maintenance and repair convenient.

Model	Power supply	Power (kW)	Cooling capacity (kW)	Refrigerant	Lift (m)	Flow rate (m ³ /h)	Weight (kg)	Dimensions (mm)	Water volume (l)
SCH-1500	Single phase 220V	1.6	4.5	R32	30	0.9	27	760×485×430	13
SCH-2000	Single phase 220V	2.5	5.6	R32	40	1.2	29	760×485×430	13
SCH-3000	Single phase 220V	3.9	7.3	R32	45	3	48	860×485×430	21



WIRE FEEDER WIRE FEEDER



Images are for reference only.
The actual product shall prevail.

- The standard configuration includes a high-power four-wheel stepper wire feeder, with an adjustable wire feeding speed of 0-1.2 m/min, ensuring more stable and smoother wire feeding.
- The wire feeder supports wire feeding tubes of 0.8-1.6mm, with customization options available.
- It is equipped with flexible wire feeding tubes for both feeding and returning, quick-connect fittings for easy installation, ensuring smooth and stable wire feeding.
- The system is perfectly matched, allowing adjustments to the wire feeding speed, returning speed, and supplementary wire speed, as well as modifications to the return and supplementary wire times, optimizing the match for on-site workpieces.

Main Technical Specifications of Step Feeder

No.	Item	Parameter Value	Unit
1	Wire Feeding Drive	Stepper Motor	
2	Maximum Wire Feeding Speed	1280	mm/min
3	Suitable Wire Diameter	08~1.6	mm
4	Power Supply	DC24V/10A	
5	Approximate Wire Weight	20	kg



MOBILE CART

Mobile Cart



Features:

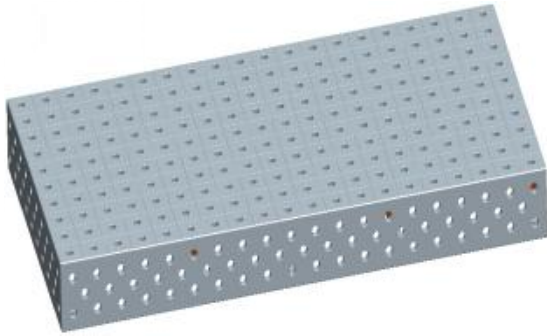
- ◆ The mobile cart is manually pushed and equipped with a braking system.
- ◆ Easy to move and operate; compatible only with SF-XC1406 and SF-XC0907.
- ◆ Integrates the welding power source, water tank, wire feeder, gas cylinder, control cabinet, and robot into one unit, enabling convenient on-site mobility.
- ◆ Overall dimensions: 950 × 700 × 1000 mm; maximum load capacity: 200 kg.

Note: This introduction is for reference only; please refer to the actual product for details.



3D FLEXIBLE PLATFORM (OPTIONAL)

3D FLEXIBLE PLATFORM (Optional)



Features:

- ◆ 28-diameter platform: D10 hole tolerance, h7 locking pin. The center distance between adjacent holes is $100\pm0.03\text{mm}$.
- ◆ The 3D flexible platform is widely used in equipment manufacturing and welding, including steel structures, vehicle bodies, rail transportation, bicycles, construction machinery, pressure vessels, robot welding, sheet metal, metal furniture, equipment assembly, and industrial pipelines (flange).
- ◆ The table sizes of the flexible platform are listed below, with leg height of 450mm and a total platform height of 650mm.

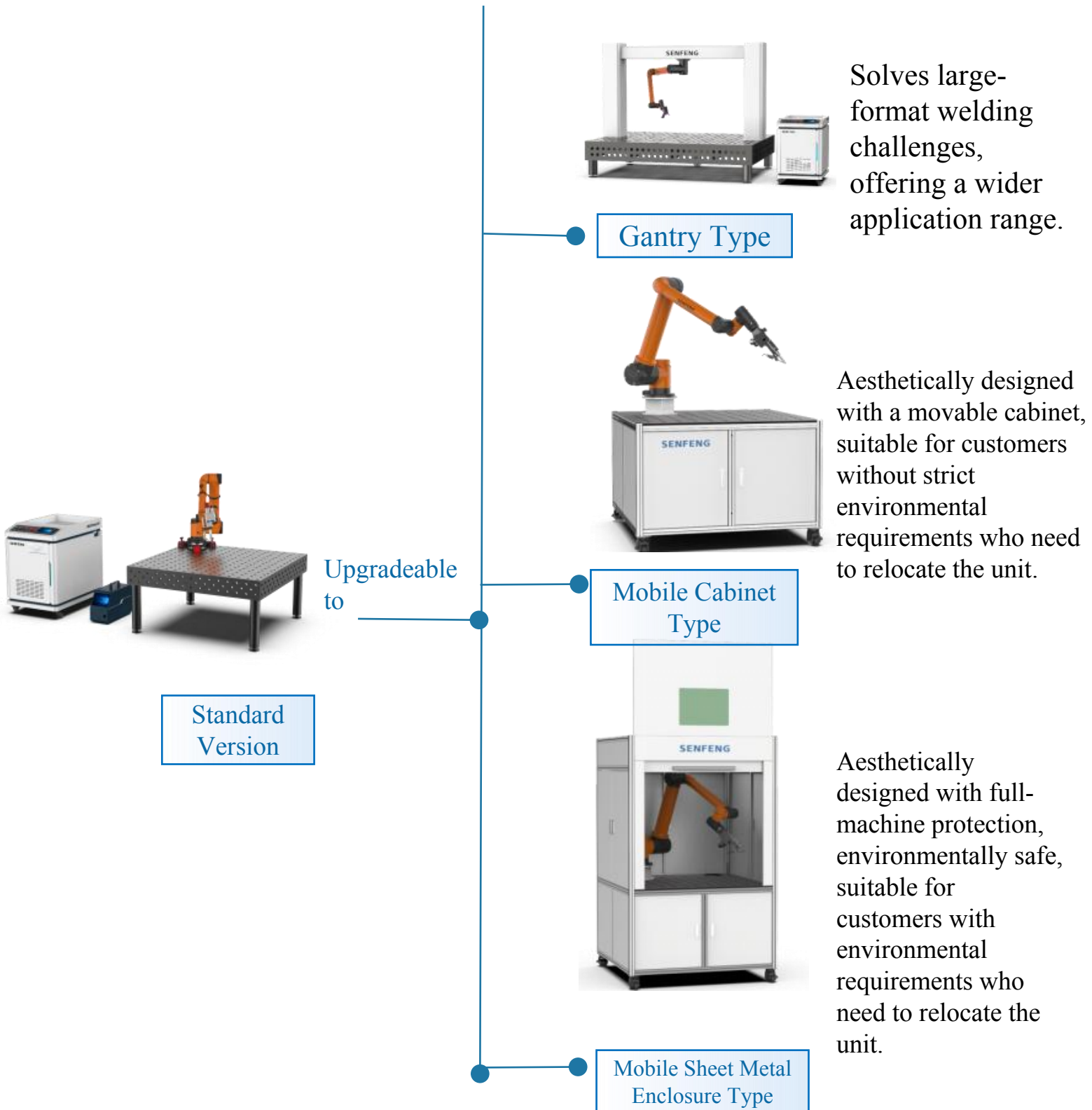
Main Technical Specifications of 3D Flexible Platform		
Model	Specifications (mm)	Net weight (kg)
TTK2810004	1500x1500x200	676.00

Note: This introduction is for reference only; please refer to the actual product for details.



PRODUCT INTRODUCTION

Product Introduction



Note: This introduction is for reference only; please refer to the actual product for details.



PROCESSING RANGE AND WELDING CAPABILITIES

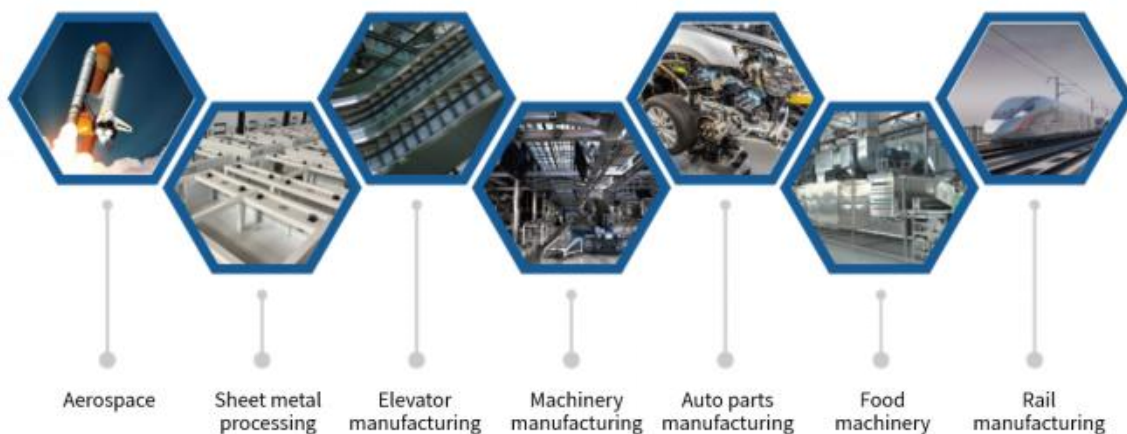
PROCESSING RANGE AND WELDING CAPABILITIES

- **Welding Materials**

Carbon steel, stainless steel, galvanized sheet, etc.

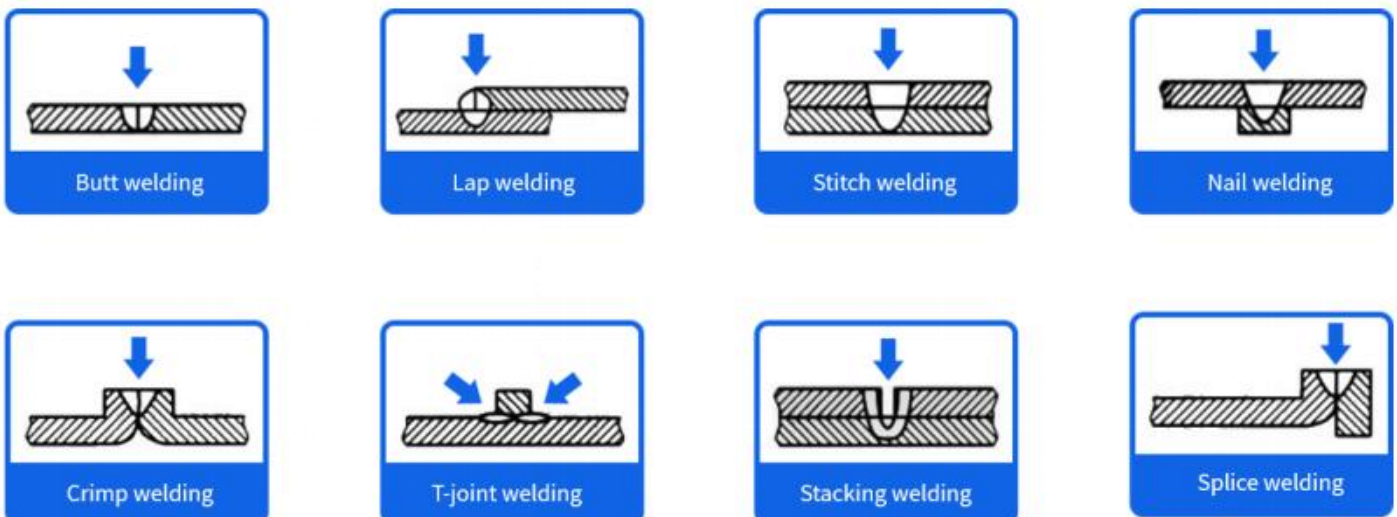
- **Applications**

Steel structures, machinery, automotive, pressure vessels, wind power, oil machinery, food machinery, decoration and advertising, etc.



- **Welding Method**

Note: Different methods may cause slight variations in parameters.



Note: This introduction is for reference only; please refer to the actual product for details.



WELDING PARAMETERS

WELDING PARAMETERS

Model	Material	Thickness (mm)	Welding speed (mm/s)	Air pressure (Mpa)
SF-1500CW	Stainless steel	4	10-50	0.1-2
SF-2000CW		5		
SF-3000CW		7		
SF-1500CW	Carbon steel	4	10-40	
SF-2000CW		5		
SF-3000CW		7		
SF-1500CW	Aluminum	4	10-30	
SF-2000CW		5		
SF-3000CW		6		



CONFIGURATION LIST

CONFIGURATION LIST

No.	Item	Specifications	Qty	Brand	No.
	CONFIGURATION LIST				
—	Standard Configuration				
1	Robot	SFXC0907-A SFXC1406-A	1	SENFENG	
2	Fiber laser source	1500W-3000W (select as needed)	1	MAX	
3	Laser welding head	3kW	1	SENFENG	
4	Water cooler	Choose based on laser source	1	HANLI	
5	Automatic wire feeder	Single wire feeder as standard	1	SENFENG	
6	Magnetic base	\	1	SENFENG	
7	Mobile cart	\	1	SENFENG	
8	Electrical and pneumatic systems	\	1	SENFENG	
9	Other accessories	\	1	SENFENG	
10	Maintenance tools (including laser safety glasses)	\	1	SENFENG	
11	Documents	Warranty card, certificate, instruction manual and daily maintenance checklist, etc.	1	SENFENG	
—	Optional Items				Please tick “√” for selection
1	3D Flexible Platform	1500x1500x650 mm	1	SENFENG	
2	Mobile Cabinet Type	\	1	SENFENG	
3	Gantry Type	\	1	SENFENG	
4	Mobile Sheet Metal Enclosure Type	\	1	SENFENG	

Note:

1. This is the optimized configuration verified by SENFENG. Changes in brand or configuration may lead to irreversible effects. Please be aware.
2. The warranty period for the entire equipment (excluding consumables, easily damaged parts, non-force majeure natural disasters, war, violations of operation, human damage, etc.) is one year.



CUSTOMER ONSITE REQUIREMENTS

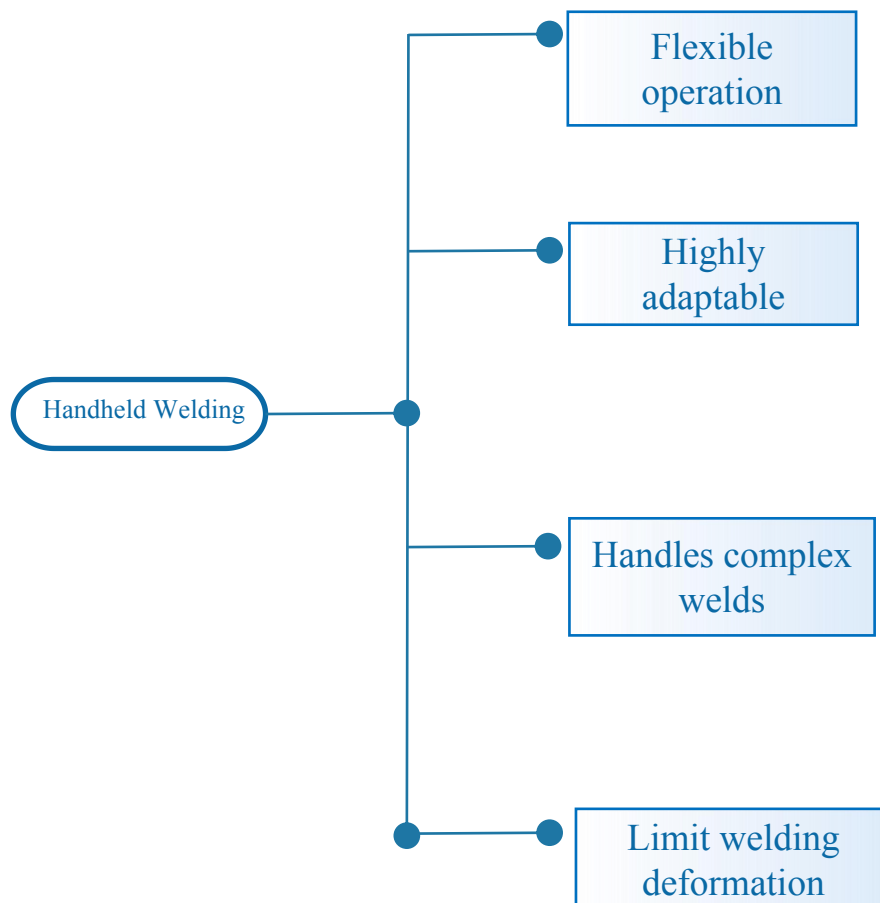
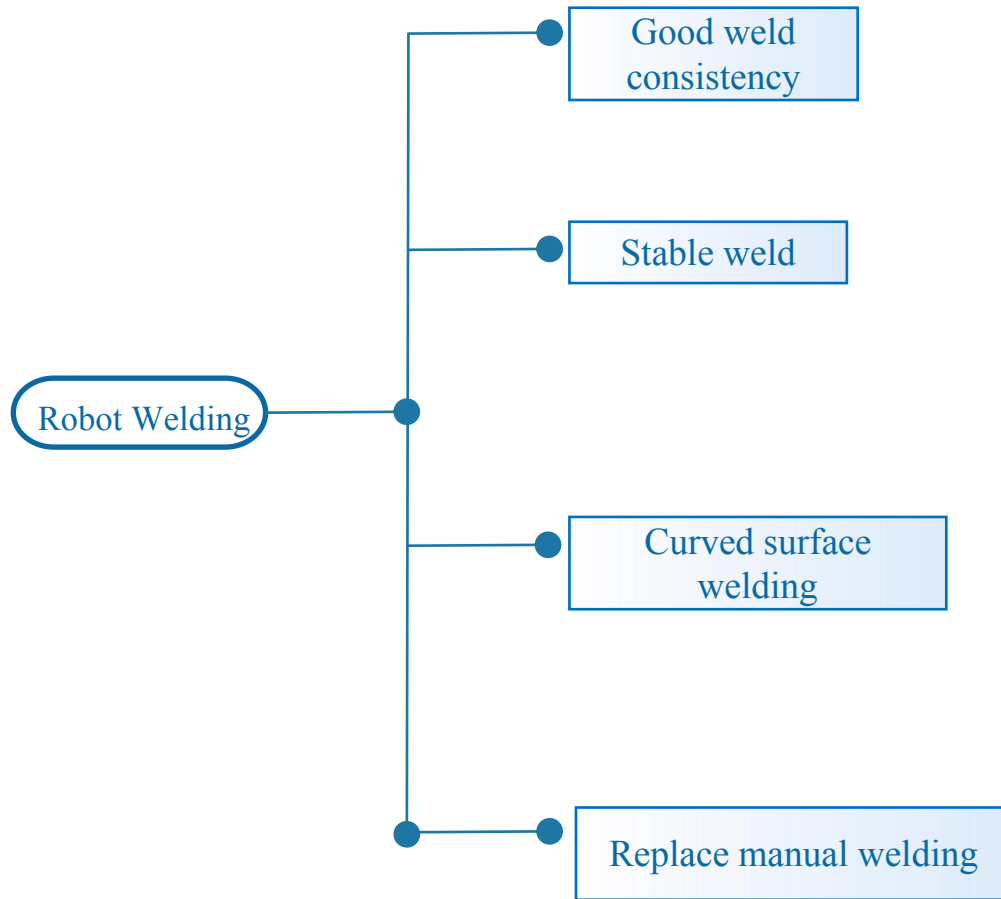
CUSTOMER ONSITE REQUIREMENTS

No.	Item	Detail	Requirement	Note
1	Power supply	Three-phase five-wire voltage	380V $\pm$ 5%/50Hz/60A Ground resistance $\leq 4\Omega$	Select a stabilizer based on power
2	Water	Used for water chiller	Distilled water/purified water Antifreeze for winter	20L-50L conductivity 30-50, pH neutral
3	Gas	Nitrogen or Argon	Air pressure output 0.2MPa Purity above 99.9%	Customer to provide argon regulator and 3-5 gas cylinders
4	Working environment	Temperature	-10-40°C	Antifreeze is needed in winter when the temperature is below freezing
		Humidity	Less than 70%	Pay attention to protection when replacing protective lenses
		Foundation	The ground is flat, without strong vibration and large amount of dust	
5	Plate	The surface is clean and rust-free to meet the national standard		Or in accordance with the Baosteel's factory standards
6	Welding wire	Stainless steel, carbon steel, aluminum welding wire	Welding wire weight $\leq 20\text{KG}$ Welding wire diameter $\leq 2\text{mm}$	



ADVANTAGES OF LASER WELDING

ADVANTAGES OF HANDHELD/ROBOT LASER WELDING



ADVANTAGES OF LASER WELDING

ADVANTAGES OF LASER WELDING

Welds prone to deformation



Heavy smoke



MIG/MAG

Big splash



High radiation



Smooth welds with minimal deformation



Low spatter, smoke, and radiation



LASER

Deep penetration



High strength





WELDING SAMPLES

WELDING SAMPLES



Construction industry



Sewage treatment industry



Hardware
industry



Electrical
industry



Household appliances
industry



Automotive industry

Providing Global Users with Automated Metal Fabrication Solutions

SENFENG provides automated metal fabrication solutions globally, integrating cutting, bending, welding, cladding, automation, and new energy. With core technologies in laser cutting, welding, and cladding, the company also offers intelligent manufacturing systems like flexible laser processing lines and panel benders. These solutions serve industries including automotive, construction, energy, and petrochemicals, and are used in over 100 countries.



03

International PCT Patents

577

Chinese technology patents

SENFENG has developed key components like laser generators, processing heads, Feng Cloud systems, and CNC systems, used in cutting, welding, cladding, and automation. The company offers a complete industry chain, including laser cutting, welding, cladding, cleaning machines, bending centers, and flexible production lines. These solutions are used in sectors like power towers, construction machinery, shipbuilding, bridges, and aerospace, helping businesses accelerate production and reduce costs for greater economic benefits.

After-sales Service

Technical Training to enhance customer production efficiency

1 Before equipment delivery

The buyer can arrange for 1-2 operators to attend a one-week training at the SENFENG factory. The specific dates should be confirmed with our customer service department.

3 Training

The training includes laser principles, equipment structure, process explanation, equipment maintenance, laser safety protection, operating procedures, and basic troubleshooting.

2 During the warranty period

The buyer can apply for one more session of free training for 1-2 operators at SENFENG.

4 Requirement

Trainees must be mechanical, electrical, or optical engineers and pass assessments on equipment operation, laser principles, safety, and maintenance before starting work.

Packaging & Transportation to ensure equipment quality

1 Packaging

Standard packaging, suitable for long-distance transportation, moisture-proof, rust-proof, and shock-resistant. Designed for full lifting with marked lifting points and center of gravity.

2 Transportation

Domestic transportation within China is fully handled by our company, including freight and insurance.

3 Packing List & Certificate

Each package includes a packing list and certificate of conformity. The user manual and other documents are inside the box, while the packing list is on the outside.



Installation professional and high-quality

1 Installation

SENFENG engineers will install the equipment at the client's site.

3 Door-to-door training

On-site training will be provided on equipment maintenance, safety, operation procedures, and basic troubleshooting, with 7 days of guaranteed usage.

2 Equipment Debugging

After installation, the equipment will be debugged for client use.

4 On-site acceptance

After completing the above steps, the engineer may leave the site only after the customer's acceptance (the customer can veto).

After-sales Service

Premium Customization

In the digital era, intelligent transformation in metal processing is essential. Building unmanned factories is key to upgrading, with customized automation solutions being a top priority.

1

SENFENG understands the client's industry status and specific production processes, identifies issues, and assesses their needs.



2

Through in-depth on-site communication, customize metal fabrication automation solutions based on the client's pain points and needs.



3

A tailored solution, different from competitors' standardized models.



4

Provide a one-stop R&D and production service from design to final machine, with thorough quality checks until customer satisfaction and acceptance.



SENFENG

5-star Fast Service

Efficient

- Our repair hotline is available 24/7.
- A professional engineer will respond to customer inquiries within 10 minutes and provide a repair plan within 1 hour.



Professional

- **Custom Service:** Tailored service plans based on the specific needs of the customer.
- **Service Engineer Certification System:** Each service engineer undergoes rigorous training and assessment before being certified to work.
- **Common Issues Training:** Create a manual for common issues based on equipment models, with certified engineers providing customer training.
- **Online Guidance:** Experienced senior engineers offer support through phone or video calls to help customers resolve issues.
- **Professional Technical Support:** The equipment is properly calibrated during the first installation, and similar issues are resolved in one go.



Comprehensive

- **Pre-service:** Theoretical and hands-on operation training, common fault self-diagnosis training, quick repair guidance for troubleshooting, usage reminders.
- **Regular Service:** Regular maintenance reminders, on-site services, periodic promotional activities.
- **Value-added Service:** Equipment software and hardware upgrades, financing lease services, extended warranty services.





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