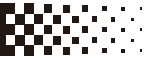


**MOKA**



**MOKA LASER ROBOT CATALOG**

# MOKA Laser welding robot package



## System configurations

- ① MOKA robot MB15-1550 or MB35-1870
- ② MOKA robot cabinet
- ③ MOKA robot teach pendant
- ④ Laser welding head
- ⑤ Laser source with water chiller

## Laser Welding Robot Parameters

Parameters	MB15-1550	MB35-1870
Flexibility	6-axis	6-axis
Maximum Working Radius	1550 mm	1870 mm
Maximum Load	15kg	35kg
Repeatability	±0.03 mm	±0.03 mm
Robot Weight	147 kg	260 kg
Control Cabinet Weight	100 kg	100 kg
Power	8.0KVA	8.0KVA
Temperature	0~45°C	0~45°C



Number of axis	6-axis		Maximum speed	Moving range
Motion radius	1550mm	J1 axis S	290°/s	$\pm 180^\circ$
Power capacity	8.0KVA	J2 axis L	237°/s	+90°~-170°
Max Payload	15KG	J3 axis U	270°/s	+155°~-90°
Protection class	IP65/IP67	J4 axis R	360°/s	$\pm 190^\circ$
Repeatability	$\pm 0.03\text{mm}$	J5 axis B	360°/s	$\pm 135^\circ$
Robot mass	147KG	J6 axis T	700°/s	$\pm 360^\circ$
Built-in air tube	$\Phi 8$	J4 axis R(N.m)		23
Input/Output signals	Standard 16 in/16 out 24 VDC	J5 axis B(N.m)		23
Mounting position	Floor	J6 axis T(N.m)		10



### Installation Environment

Temperature	0-45°C	Humidity	20-80%RH(no condensing)	No corrosive or combustible gas, no water, no splashing	No excessive oil or dust
Vibrations	Below 4.9M/S2 (0.5G)	Altitude	Below 1000M	Away from electromagnetic source	Away from magnetic field

### Control cabinet specifications

Overall dimension	700(width)*530(depth)*740(height)mm (with no protrusions)
Approximate mass	100KG
Cooling method	Natural cooling
Power specifications	3PH AC380V 50/60HZ (with built-in 380V~220V isolated transformer)
Grounding	Industrial grounding (dedicated grounding, resistance below100Ω)
Input/Output signal	General signal:16 input,16 output
Position control method	Serial communication EtherCAT.TCP/IP
Memory capacity	JOB: 200000 steps,10000 robot commands (total 200M)
LAN(Host link)	Ethercat(1pc) TCP/IP(1pc)
Control mode	Servo position control
Ambient temperature	In use:0~ + 45°C,In storage: - 20~ + 60°C
Driver unit	AC servo system (6-axis)
Relative humidity	10%~90%(no condensing)
Vibrate	Below 0.5G

#### Serial port I/F

RS485(1pc) RS422(1pc) RS232(1pc) CAN(1pc) USB(1pc)

#### Altitude

Below 1000m. Derate 1% for every additional 100m if over 1000m. Maximum 2000m.

#### Others

No dust, cutting fluid (including coolant), organic solvent, oil smoke, water, salt, medicine, anti-rust oil, strong microwave, ultraviolet light, X-ray, radiation exposure

### Teach pendant specifications

External dimensions	280(width)*220(depth)*120(height)mm (with protrusions)
Gross weight	0.6KG
Material	Reinforced plastics
Display	8 inch color LED,640*480 pixels
Protection class	IP54
Cable Length	Standard:5m Optional:15m

#### Manipulator

Selector, axis operation, value, mode selection with key (teach mode/auto mode/remote mode), emergency stop, enable, USB port etc



**ATTENTION**

Please read the user manual and relevant documentations before use.

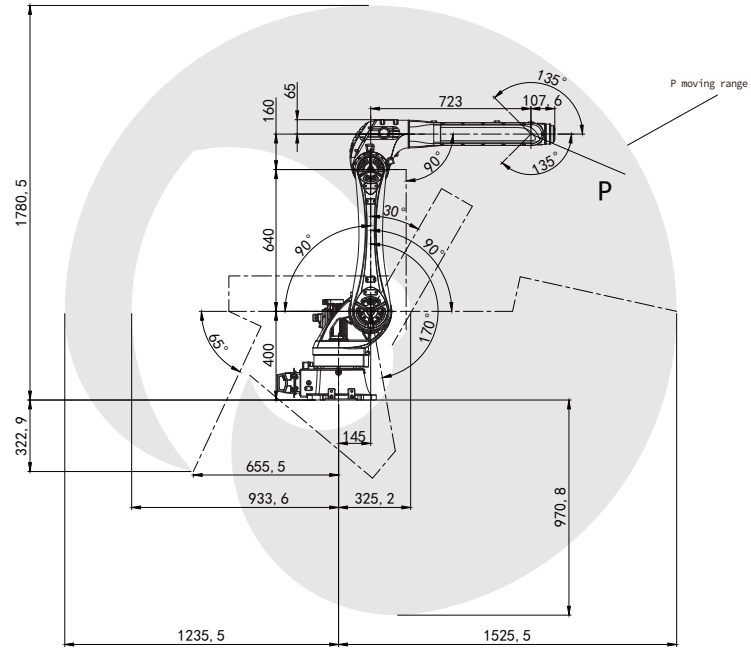
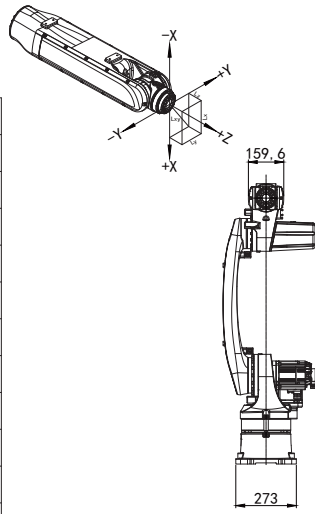
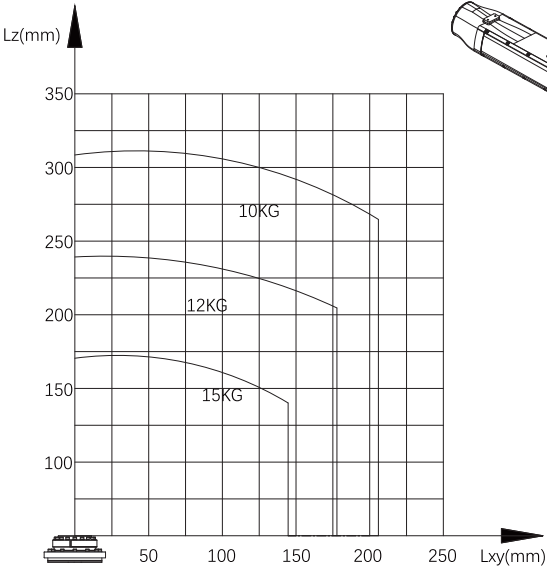
Contact official staff or distributor of MOKA if there are any errors, faults or if the robot is a harm to human safety.

All data, drawings and specifications provided in this catalog are purely for information purposes and do not constitute a guarantee of these characteristics. The extent of goods delivered and services performed is determined by the subject matter of the specific contract. No liability accepted for errors or omissions.

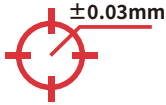
### Robot payload diagram

### External dimensions and moving range

P moving range



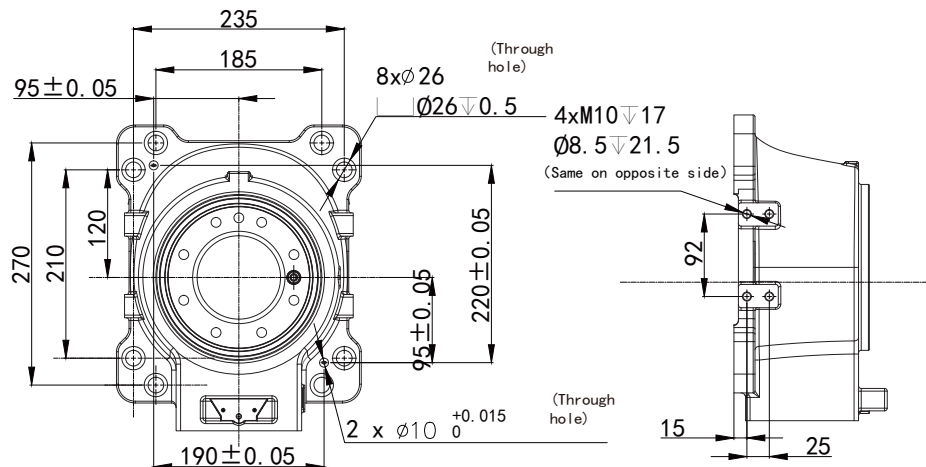
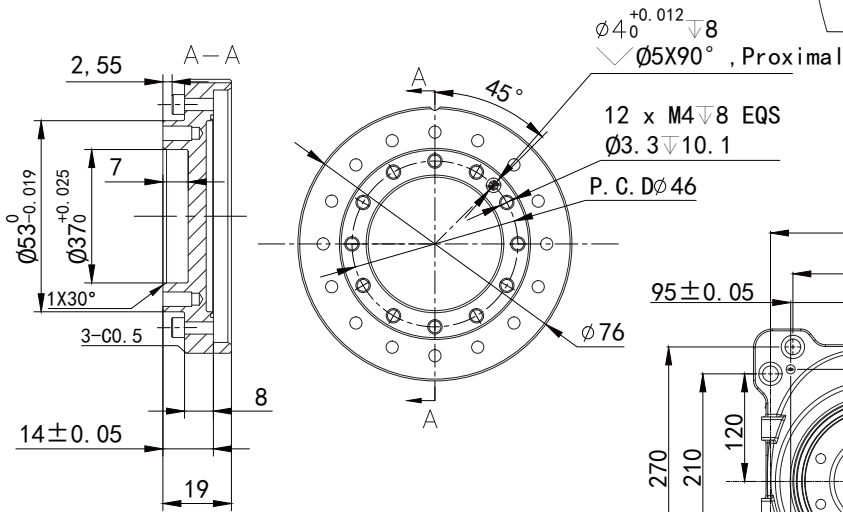
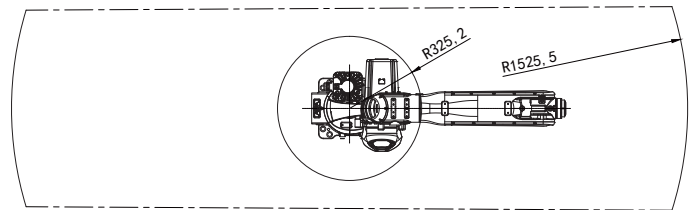
Max payload



Repeatability

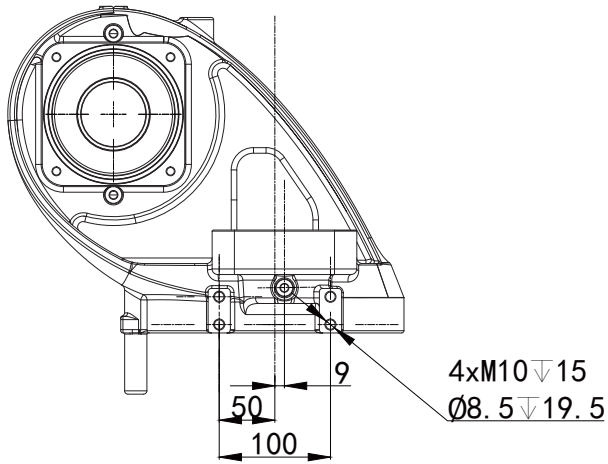
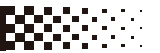


Moving range

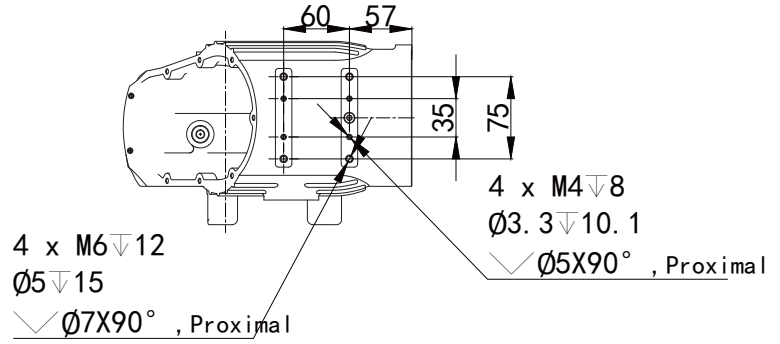


### End flange installation dimensions

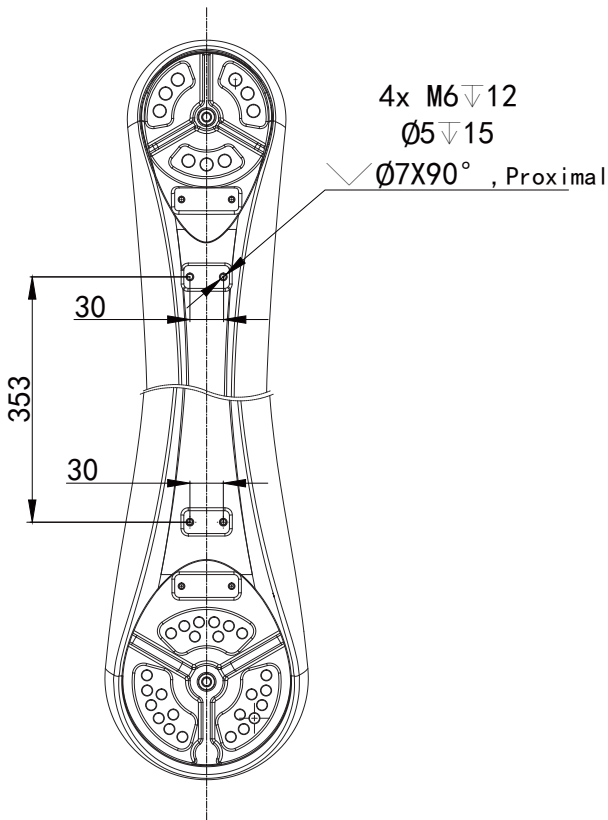
### Base installation dimensions



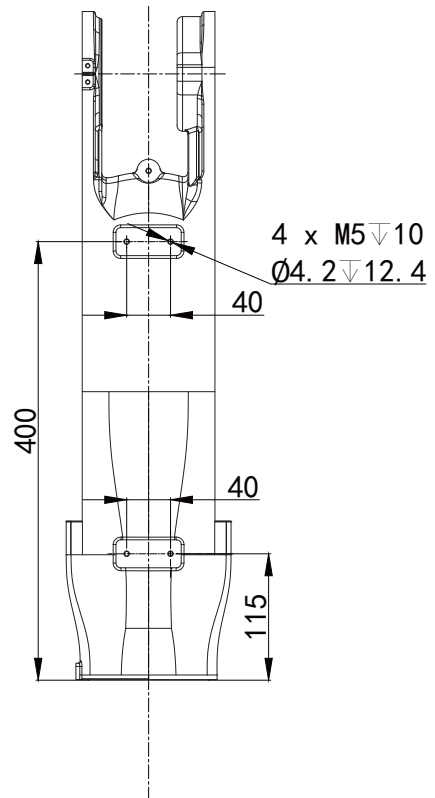
**J2 transposition installation dimensions**



**J4 motor seat installation dimensions**



**J3 arm installation dimensions**



**J5 wrist installation dimensions**



Number of axis	6-axis		Maximum speed	Moving range
Motion radius	1870mm	J1 axis S	202°/s	$\pm 180^\circ$
Power capacity	8.0KVA	J2 axis L	211°/s	+98°~-160°
Max Payload	35KG	J3 axis U	234°/s	+200°~-80°
Repeatability	$\pm 0.03\text{mm}$	J4 axis R	470°/s	$\pm 200^\circ$
Robot mass	260KG	J5 axis B	405°/s	+40°~-220°
Built-in air tube	$\Phi 8$	J6 axis T	535°/s	$\pm 360^\circ$
Protection class	IP54/IP67	J4 axis R(N.m)	Axis 4 R (N.m)	80
Input/Output signals	Standard 16 in/16 out 24 VDC	J5 axis B(N.m)	Axis 5 B (N.m)	80
Mounting position	Floor/frame/ceiling	J6 axis T(N.m)	Axis 6 T (N.m)	50



### Installation Environment

Temperature	0-45°C	Humidity	20-80%RH(no condensing)	No corrosive or combustible gas, no water, no splashing	No excessive oil or dust
Vibrations	Below 4.9M/S2 (0.5G)	Altitude	Below 1000M	Away from electromagnetic source	Away from magnetic field

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Driver unit	AC servo system (6-axis)
Relative humidity	10%~90%(no condensing)
Vibrate	Below 0.5G

#### Serial port I/F

RS485(1pc) RS422(1pc) RS232(1pc) CAN(1pc) USB(1pc)

#### Altitude

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### Teach pendant specifications

External dimensions	280(width)*220(depth)*120(height)mm (with protrusions)
Gross weight	0.6KG
Material	Reinforced plastics
Display	8 inch color LED,640*480 pixels
Protection class	IP54
Cable Length	Standard:5m Optional:15m

#### Manipulator

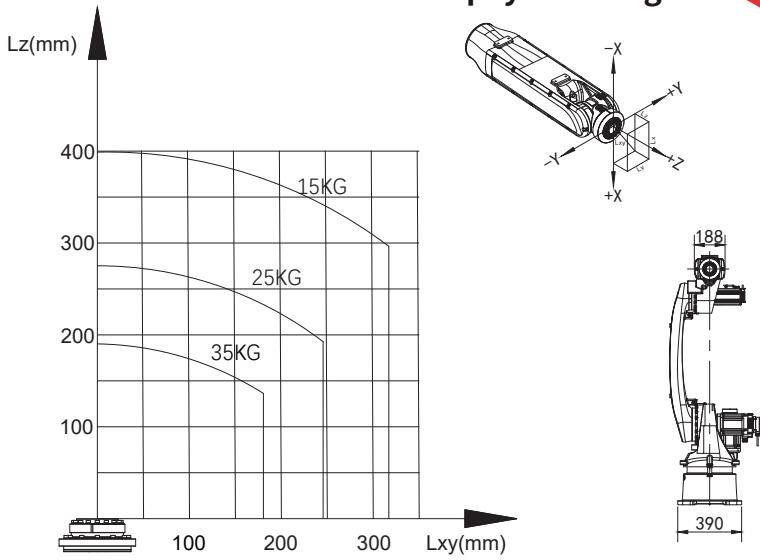
Selector, axis operation, value, mode selection with key (teach mode/auto mode/remote mode), emergency stop, enable, USB port etc



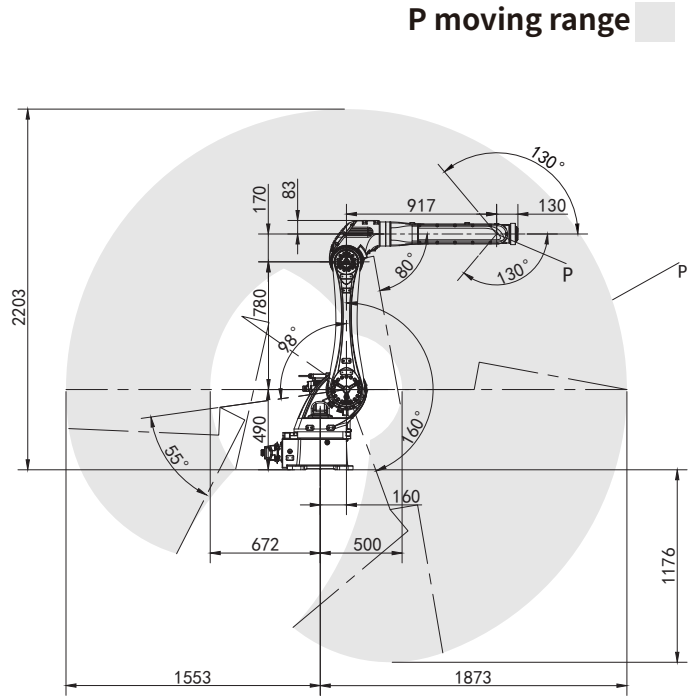
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### Robot payload diagram



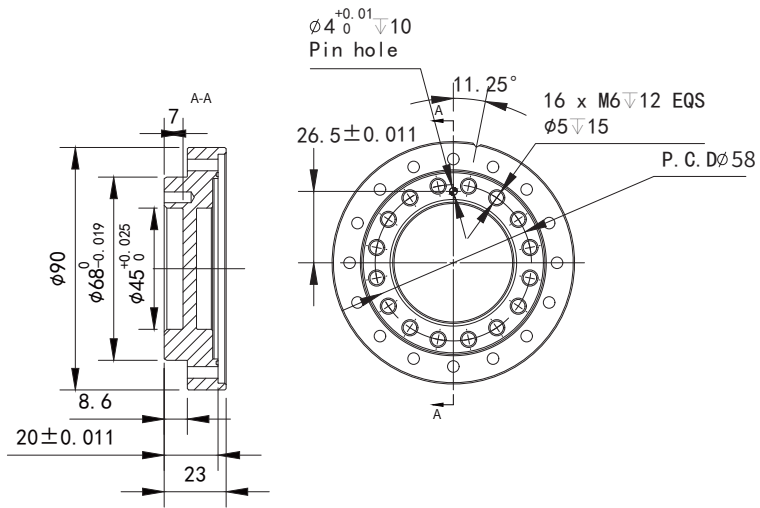
### External dimensions and moving range



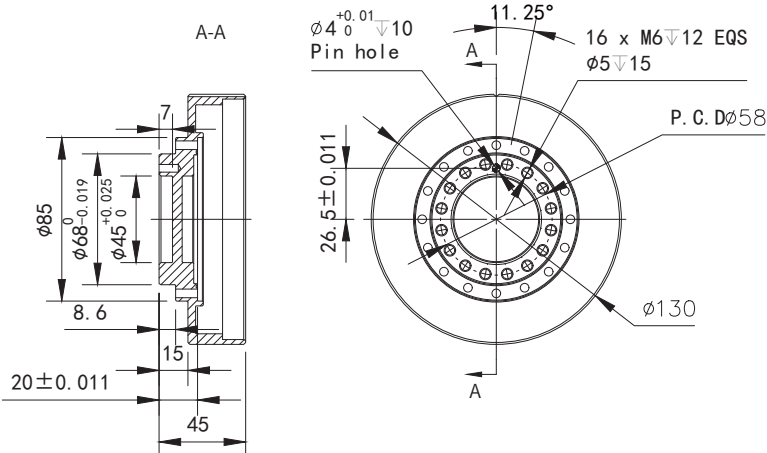
**35KG**  
Max payload

$\pm 0.03\text{mm}$   
Repeatability

**1870mm**  
Moving range

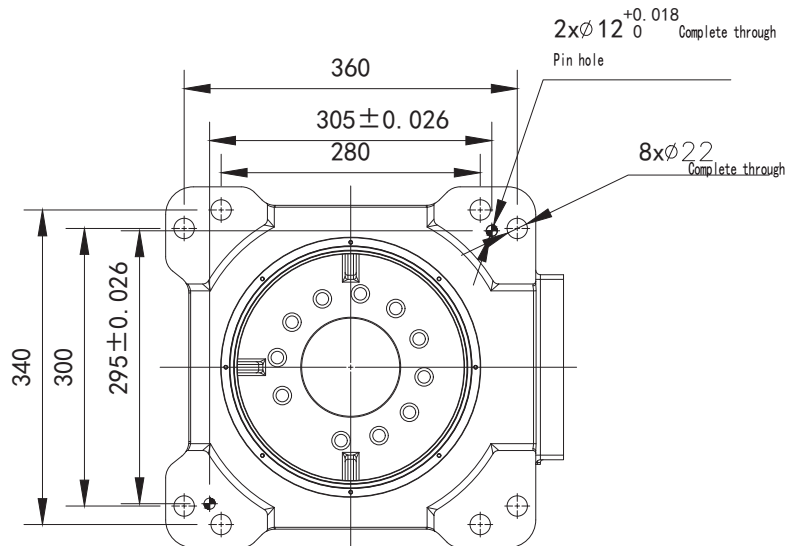
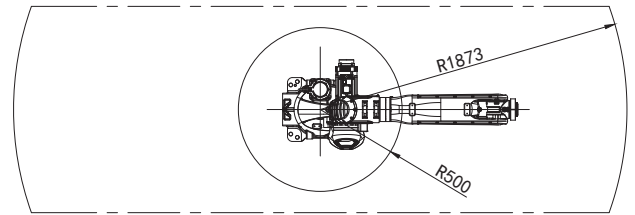


### End flange installation dimensions

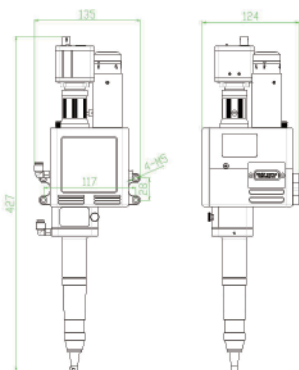


### End flange installation dimensions

(waterproof, only for polishing & die-casting applications)



### Base installation dimensions



Laser welding head ◀

Dimension Drawing ◀

Welding gun interface-monitoring ◀

## Products Function

### ● Basic functions

OBH locking structure

Support CCD system

Water cooling structure

Support up to 3000 W power welding

6 kinds of craft patters are available

### ● Advanced functions

Support the adjustment parameters of gun body screen

Support parameter synchronization of gun body screen, control box screen and wire feeder screen

The open communication protocol can be programmed to realize the adjustment of process parameters in continuous welding

The provides the detection signal of the broken wire state

## Operating environment & Basic parameters

Supply voltage (V)

220V ± 10% AC 50/60Hz

Place the environment

No vibration and impact

Operating ambient temperature (°C)

-10~50°C

Humidity of working environment (%)

< 70

Cooling method

Water cooling

Applicable wavelength

1080nm (± 10nm)

Applicable power

≤ 3000W

Collimating mirror

D30\*4.5 F75

Focusing Lens

D30\*4 F200

Protective glasses

D30\*3

Maximum support air pressure

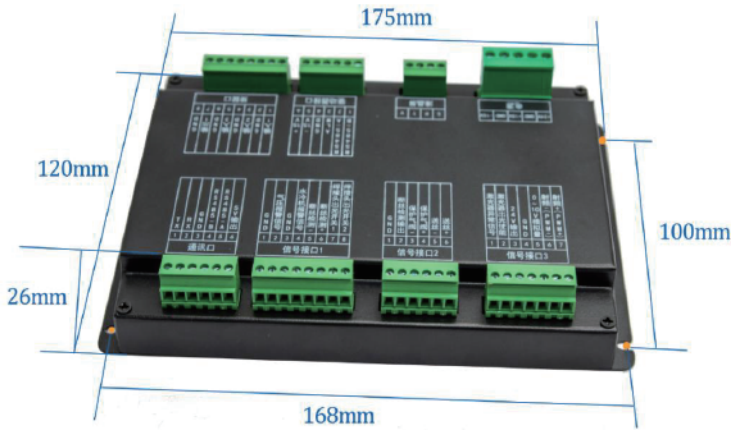
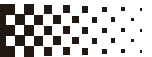
15Bar

Focus vertical adjustment range

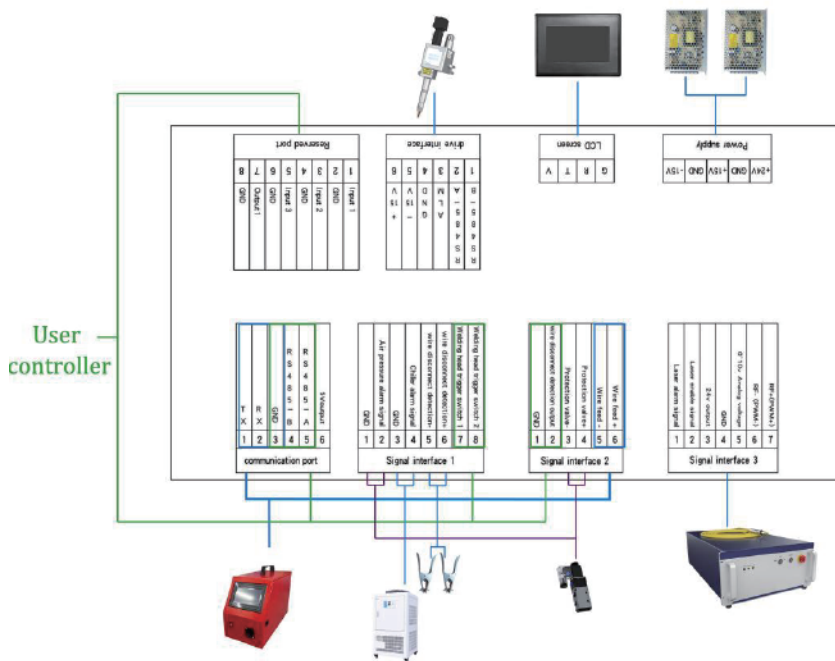
± 15mm

Weight

2.2kg

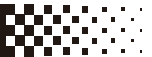


Dimensional drawing of control box ◀



Wiring Diagram ◀

- ① [Wire breakage detection-] and [Wire breakage detection +] shall be separately connected with two metal clamps. The first one is clamped on the gun head, and the second
- ② When wiring the upper computer, keep the connection between [welding head light switch 1] [welding head light switch 2] and [RS485-A] [RS485-B] [GND] to control the equipment welding. [Reserved port] and [Broken wire detection output] are extended functions, and whether they are connected or not will not affect the welding function of the equipment.
- ③ In order to avoid abnormal power consumption of the equipment, the ground wire of the switching power supply must be effectively grounded! The switch power supply housing
- ④ The icon used in ‘Dimensional drawing of control box’ only refers to a certain type of equipment, and does not specifically refer to the corresponding product.



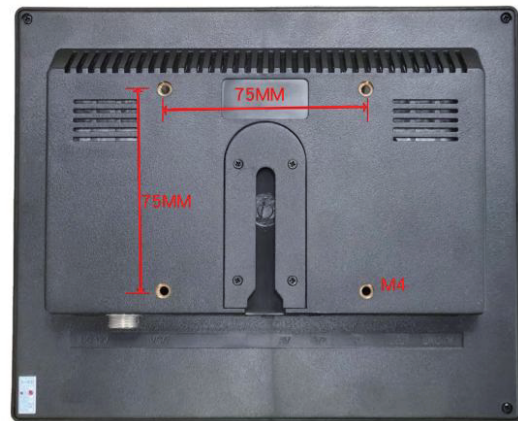
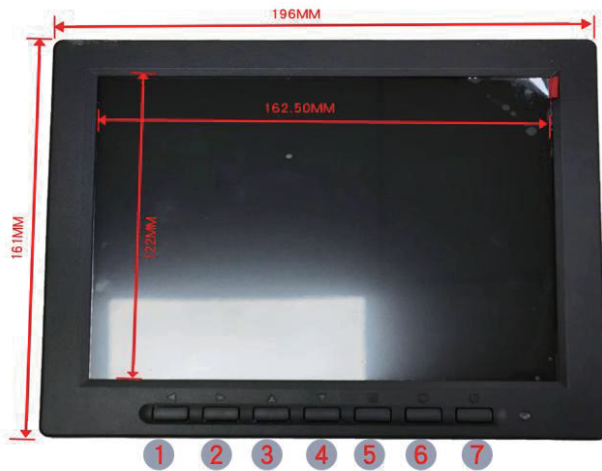
## CCD Assembly



The main components are as follows:

Serial number	Name	Remark
1	Screen	8 inch, 800x600 resolution
2	Bracket base	
3	Multi-directional chuck	
4	Camera lens	Installed on the bond head

## CCD Screen Size and Keys



The screen size is 161mm × 196mm, the M4x4 screw hole at the back is more than 75mm × 75mm, and there is a slot in the middle to fix the [multi-purpose Chuck].

Screen keys	Function
1	Move Vertical Line Left
2	Move Vertical Line Right
3	Vertical line moving up
4	The vertical line moves down
5	Large cross switch
6	Small cross switch
7	Power switch



## CCD Wiring and Connection

**1** Compound line



**2** Power cord

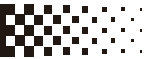


**3** CCD lens camera



Part serial number	Name	Interface serial number	Wiring	Remark
1	Compound line	①	Connected to camera ① BNC interface	Video signal input
		②	Connected to camera ③ power interface	12V output
		③	Reserved	12V output
		④	Connected to CCD display screen	Video signal output
		⑤	Connect the interface of power line ⑤	12V input
		⑥	Reserved	12V output
2	Power cord	⑤	Connect the interface of composite line ⑤	220V to 12V
3	CCD lens camera	①	Connect composite line ① interface	Video signal output
		③	Connect to interface of composite line ②	12V input

- The unmarked or reserved port does not affect the use, and wiring is not required.



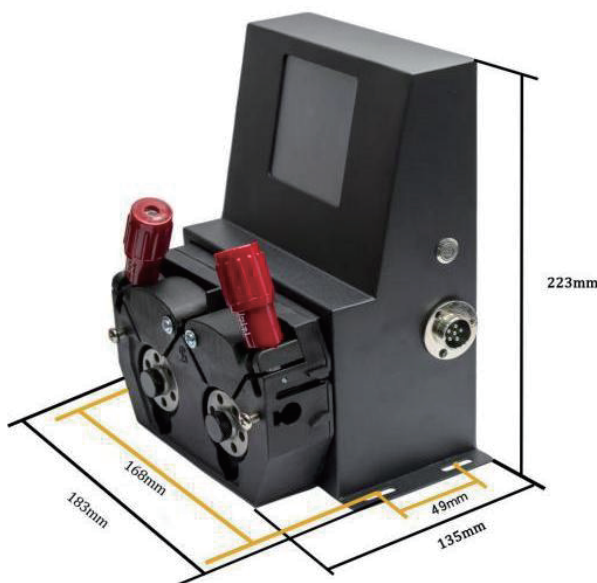
This series of products is an auxiliary wire feeding device for laser platform welding and can also be used in robot welding wire feeding and related fields. Compatible with carbon steel, stainless steel and aluminium welding wires. SUP-AMF-P1 is the first version, and SUP-AMF-P2 is the upgraded version.

## Wire Feeder Features

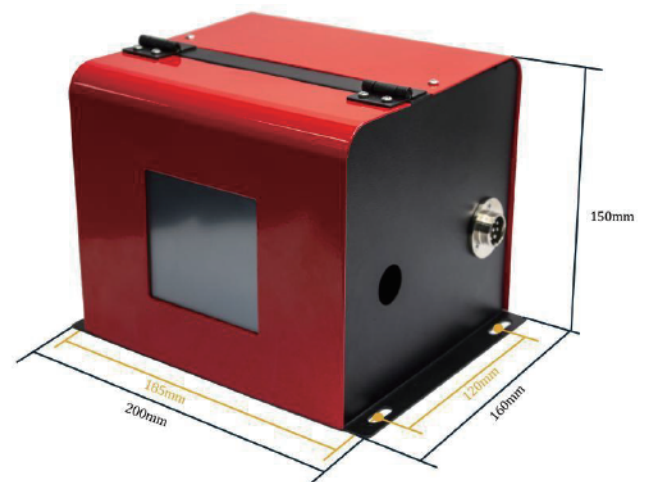
Speed range	15 to 600cm/min
Maximum load	20kg
Operation mode	Touchscreen
Welding wire materials	carbon steel, stainless steel, aluminum
Control system	Selfdeveloped,supporting various custom expansion functions
	Modify the wire feeding direction of the wire feeder
	Switch the rotation direction of the motor through the toggle button on the home screen

## Wire Feeder Appearance

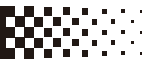
The P1 mounting hole is 168mmx49mm, and the P2 mounting hole is 185mmx120mm. The actual product is as follows.



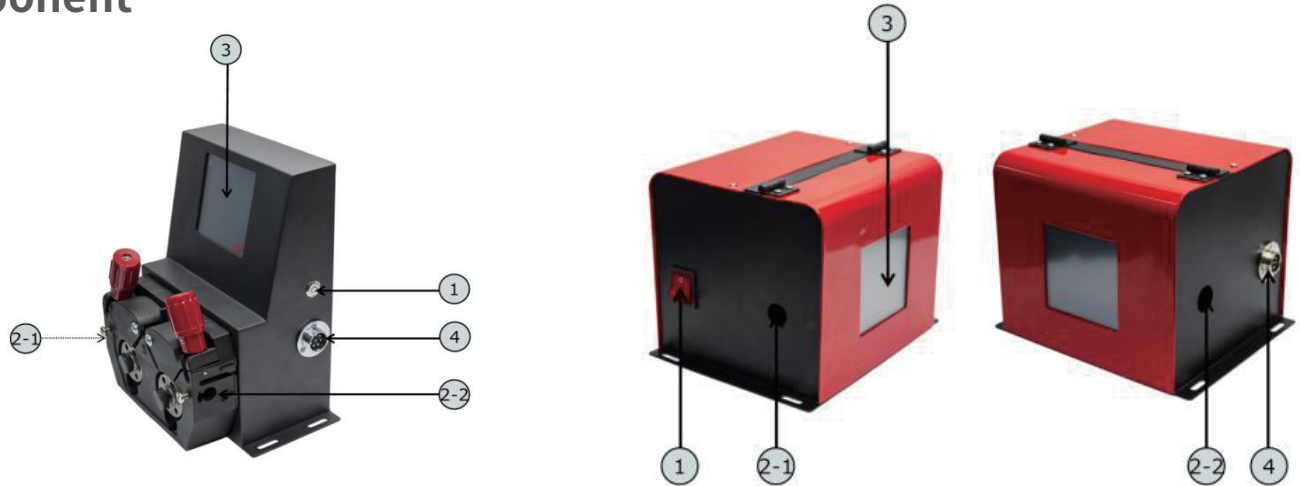
Appearance of P1 ◀



Appearance of P2 ◀



### Wire Feeder Component



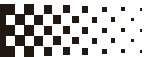
**Components of P1** ◀

**Components of P2** ◀

Number	Name	Notes
1	Switch	24V switch
2-1	Wire exit port	
2-2	Wire entry Port	
3	Screen	4 inches
4	Eightcore aviation socket	Power & Signal

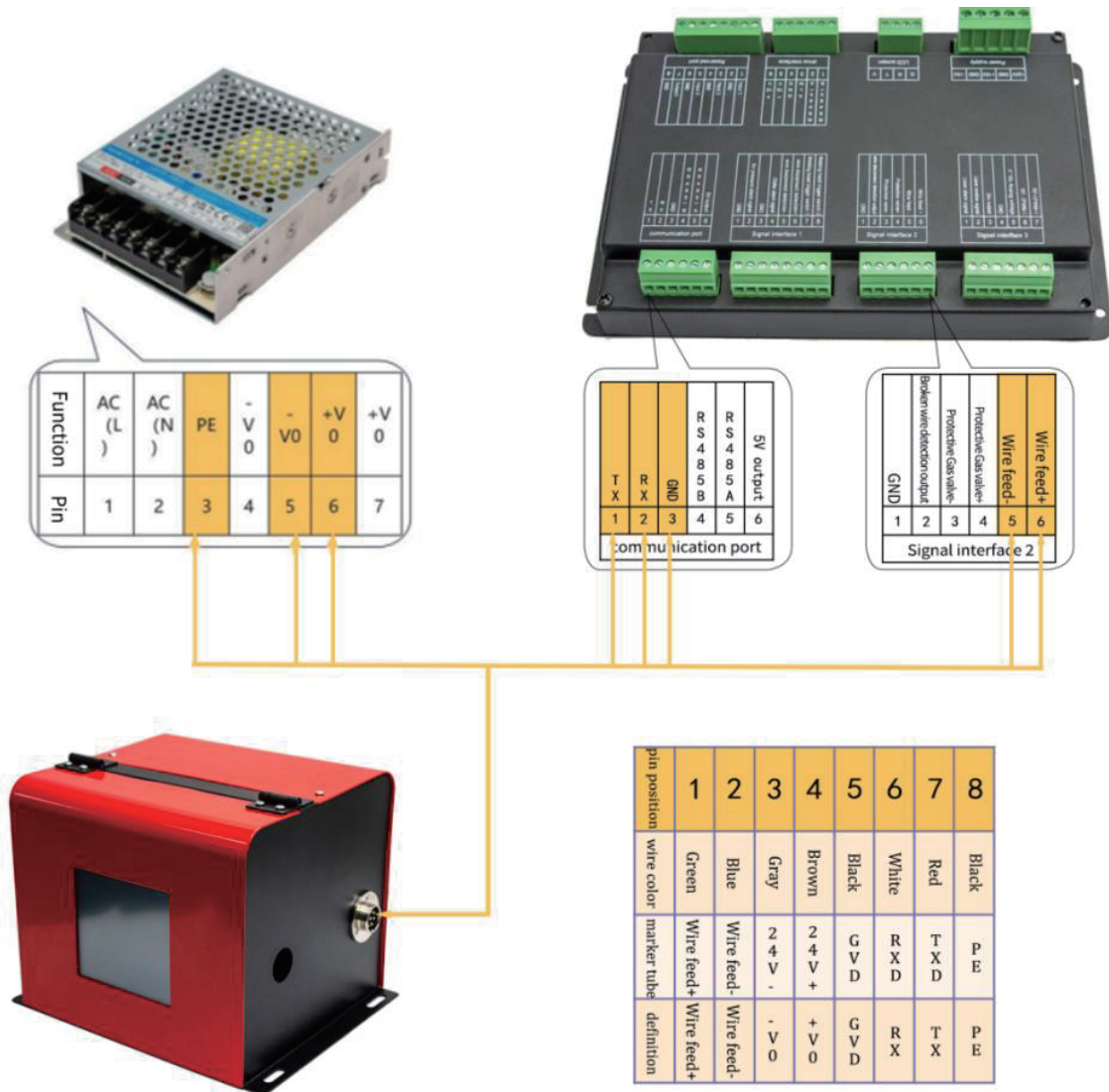
### Wire Feeder Parameters

Supply voltage	24V DC
Operating ambient temperature	-10 to 50°C
Maximum power	60W
Feeding speed	15 to 600 cm/min
Wire feeding mode	Continuous mode, pulse mode
Applicable to welding wire	Carbon steel solid core wire, stainless steel solid core wire, aluminium solid core wire
P2 weight	3.7 kg
Damping shaft maximum load	20 kg



## Equipment Wiring

P1 and P2 are connected in the same way. The following diagram takes P2 as an example. The wire feeder wiring uses an eight-core air plug. The specific wiring is as follows.





## Product Features

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### High Power Density with Flat-top Distribution

Cladding layer dilution rate less than **3%**



### High Beam Spot Concentricity

Suitable for laser welding and cladding stereolithography  
Reduce process commissioning time



### Fiber Core Diameter Optional

**800um, 1000um** customized options  
Wider fiber core diameter range makes our laser applicable to more applications such as cladding and hardening



### QBH or LOE Output

Stronger anti-reflective ability with LOE output



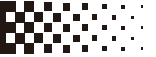
### High Level Vertical Integration

All key components are designed and produced in house  
Strict quality control, high consistency and reliability

# MFSC 1000W~6000W CW Welding / Cladding Fiber Laser Series



Models	MFSC-1000W	MFSC-1500W	MFSC-2000W	MFSC-3000W	MFSC-4000W	MFSC-5000W	MFSC-6000W
<b>OPTICAL SPECIFICATIONS</b>							
Nominal Power	1000W	1500W	2000W	3000W	4000W	5000W	6000W
Mode of Operation	CW/Modulated						
Polarization	Random						
Power Tunability	10 to 100 %						
Wavelength	1080 ± 10 nm						
Power Stability	±1 %						
Laser Beam Quality, BPP	3.1 to 3.5 mm x mrad (100µmQBH)						
	6.4 to 7 mm x mrad (200µmQBH)						
	10 to 12 mm x mrad (300µmQBH)						
	15 to 17 mm x mrad (400µmQBH)						
	25 to 28 mm x mrad (600µmQBH)						
Modulation Frequency	≤ 5 kHz						
Preview Red Light Power	200 µW						
<b>FIBER DELIVERY SYSTEM</b>							
Interface	QBH(LOC)						
Length	15/20m standard, other lengths optional						
Diameter	100/200/300/400/600 µm						
Bending Radius	200 mm						
<b>ELECTRICAL RATINGS</b>							
Supply Voltage	220VAC (-15% to +10%) Single-phase		400VAC (-15% to +10%) 3-phase				
<b>OTHER SPECIFICATIONS</b>							
Operating Temperature	+10 to +40 °C						
Storage Temperature	-10 to +60 °C						
Humidity	10 to 85 %						
Cooling Method	Water Cooling						
Cooling Medium	Distilled water/ Glycol Antifreeze						
Dimension	800×482.6×193.2 mm		483×950×193 mm		640×1173×1102 mm		
Weight	50(±3) kg	55(±3) kg	72(±3) kg	80(±3) kg	200(±20) kg	240(±20) kg	



## Argon Arc Welding & MIG Welding Machines



## Laser Welding Robot

Comparison	Argon Arc Welding & MIG	Laser Welding
Efficiency	Slow	2-5 times faster, time-saving
Result	Rough surface requires grinding	Smooth surface, minimal or no grinding required
Material Deformation	Prone to deformation	Minimal deformation
Safety	Intense light, high radiation, significant eye hazards	Low radiation, minimal eye hazards

Note: Suitable for high-volume production of stainless steel, carbon steel, galvanized steel, and aluminum alloy materials with consistent welding requirements.

## Handheld Laser Welding Machine



## Laser Welding Robot

Comparison	Handheld Laser Welding	Laser Welding Robot
Operation	Manual	Automation, Labor-Saving
Result	Smooth surface, minimal or no grinding required	Smooth surface with minimal or no need for polishing, ensuring more stable quality
Material Deformation	Minimal deformation with contact welding	Minimal deformation, can be non-contact welding
Wire	Filler wire is needed	For small weld seams on workpieces, no need for wire feeding, saving wire costs.
Application	Small batch production, products with varying welding requirements	Large batch production, products with consistent welding requirements

## Automatic Fiber Laser Welding



## Laser Welding Robot

Comparison	Automatic Fiber Laser Welding	Laser Welding Robot
Axis	Standard 3-axis + 2-axis	Standard 6-axis + 3-axis (expanded axis)
Flexibility	High cost and limited flexibility in coordinated motion	Can achieve welding at various angles, broader applications
Application	Expensive	Higher efficiency, more options, can weld multiple products on a single worktable



## Applications

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Suitable for welding in industries related to sheet metal, metal cabinets, control cabinets, electrical enclosures, hardware lighting, hardware furniture, new energy vehicles, solar energy, energy storage, and more.



U-shaped Gaskets



Stainless Steel  
Machine Enclosures



Home Piping



Aluminum  
Alloy Square Boxes



Round Corner Welding



Square Welding



Round Welding



Outer Corner Welding

## ▶ Laser welding material thickness and speed process reference table

	Used gas	Thickness (mm)	Laser power (IN)	Wire diameter (mm)	Wire feeding speed (mm/s)	Scanning speed (mm/s)	Scanning width (mm)	Welding frequency (Hz)	Duty cycle (%)	Air pressure (Bar)	Welding method
Stainless steel	Argon Ar	1	1000	1.0	90	300	2.5	1000Hz	100	10	flat welding
		1.5	1000	1.0	90	300	2.5	1000Hz	100	10	flat welding
		2	1500	1.2	75	300	3.0	1000Hz	100	10	flat welding
		2.5	2000	1.2	75	300	3.0	1000Hz	100	10	flat welding
		3	2000	1.6	60	300	3.5	1000Hz	100	10	flat welding
		4	3000	1.6	60	300	3.5	1000Hz	100	10	flat welding
		5	4000	1.6	60	300	3.5	1000Hz	100	15	flat welding
Carbon steel	Argon Ar	8	6000	1.6	60	300	3.5	1000Hz	100	15	flat welding
		1	1000	1.0	90	300	2.5	1000Hz	100	10	flat welding
		1.5	1000	1.0	90	300	2.5	1000Hz	100	10	flat welding
		2	1500	1.2	75	300	3.0	1000Hz	100	10	flat welding
		2.5	2000	1.2	75	300	3.0	1000Hz	100	10	flat welding
		3	2000	1.6	60	300	3.5	1000Hz	100	10	flat welding
		4	3000	1.6	60	300	3.5	1000Hz	100	10	flat welding
5	4000	1.6	60	300	3.5	1000Hz	100	15	flat welding		
8	6000	1.6	60	300	3.5	1000Hz	100	15	flat welding		

	Used gas	Thickness (mm)	Laser power (IN)	Wire diameter (mm)	Wire feeding speed (mm/s)	Scanning speed (mm/s)	Scanning width (mm)	Welding frequency (Hz)	Duty cycle (%)	Air pressure (Bar)	Welding method
Galvanized sheet	Argon Ar	1	1000	1.0	90	300	2.5	1000Hz	100	10	flat welding
		1.5	1500	1.0	90	300	2.5	1000Hz	100	10	flat welding
		2	2000	1.2	75	300	2.5	1000Hz	100	10	flat welding
		2.5	2000	1.6	60	300	3.0	1000Hz	100	10	flat welding
		3	3000	1.6	60	300	3.0	1000Hz	100	10	flat welding
		4	4000	1.6	60	300	3.5	1000Hz	100	15	flat welding
		6	6000	1.6	60	300	3.5	1000Hz	100	15	flat welding
Aluminum <small>(need to be equipped with professional graphite wire feeding tube and U-shaped wire feeding wheel, please note when placing an order for aluminum wire)</small>	Argon Ar	1	100	1.0	90	300	2.5	1000Hz	100	10	flat welding
		1.5	1500	1.0	90	300	2.5	1000Hz	100	10	flat welding
		2	2000	1.2	75	300	2.5	1000Hz	100	10	flat welding
		2.5	2000	1.6	60	300	3.0	1000Hz	100	10	flat welding
		3	3000	1.6	60	300	3.0	1000Hz	100	10	flat welding
		4	4000	1.6	60	300	3.5	1000Hz	100	15	flat welding
6	6000	1.6	60	300	3.5	1000Hz	100	15	flat welding		

- The above process parameters are for reference only. The specific parameters will be determined based on customer requirements and evaluated by our technical team.