

User Manual



LUX-800/1200 Hand-held Air-cooled Laser Welding Machine

MEGMEET

LUX-800/LUX-1200 Hand-held Air-cooled Laser Welding Machine

User Manual

Version: V1.0

Code: R33011226

Shenzhen Megmeet Welding Technology Co., Ltd. provide customers with a comprehensive technical support. Users can contact with local distributors or Megmeet headquarters.

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Preface

Thank you for buying LUX-800/LUX-1200 hand-held air-cooled laser welding machine (hereinafter referred to as laser welding machine) made in our company.

This manual provides the users with the instruction of installation and debugging, function setting, operation specifications, error diagnosis, and device maintenance. Please read this user manual carefully before installing, so as to ensure correct installation and operation for laser welding machine, and give full play to its superior performance. Please keep properly and send the manual to user.

Our company conducts product development and innovation continuously. If the contents, parameters and pictures in this user manual are inconsistent with the real object, the actual product shall prevail. We may make any change without prior notice. The company has the right of final interpretation of the user manual.

Safety Precautions

Safety Definition

In order to use this hand-held laser welding machine safely and correctly, and prevent harm to you or others and property damage, this manual adopts various warning signs for instructions. Please follow strictly after full understanding.



CAUTION

Please operate as requirement, otherwise it may result in death or serious injury.



DANGER

Please operate as requirement, otherwise it may result in moderate or minor injury or damage to property.



WARNING LASER

This sign represents laser radiation. Please do a good job in laser protection.

Laser Precautions



WARNING LASER

- This series of laser welding machines output $1080\pm 10\text{nm}$ wave band of laser;
- The output laser power density is large, resulting in the local high temperature to the irradiation site. Improper use may cause fire or personal injury;
- During laser welding, part of the laser energy is reflected, resulting in the damage to the reflection area and human eyes;
- Laser light on skin can cause burning, erythema, blister, pigmentation, and even completely destroy the subcutaneous tissue;
- When operating laser welding machine, select laser safety glasses according to laser wavelength output of laser machine, and ensure that the operator always wears them;
- The higher the optical density value, the stronger the protective capability of laser protective glasses;
- It is forbidden to look straight at the welding head or align at others with the tip of welding torch. Wear qualified and safe laser protective glasses before laser operations;
- The visible light transmittance of laser protective glasses is less than 20%, so they must be used in the environment with good lighting;
- To ensure the safety use of torch. Laser is only output when torch is in contact with plate; When the torch leaves the welding surface, laser emission is automatically stopped;
- Set up a laser operation room, light barrier screen and curtain in the safety working area;
- Relevant operators shall be trained and assessed, familiar with and grasp conventional safety specifications of laser operation;
- Strictly control the areas involving laser radiation, and formulate the guidelines for laser safe operation.

Installation Precautions

**DANGER**

- During the installation, repair and maintenance of laser welding machine, it is necessary to turn off the main power. Installation, repair and maintenance when the welding machine is powered on can have fatal consequences. For example, high-voltage electric shock can result in cardiac arrest, burn, or other serious injuries;
- Please install it on an incombustible object otherwise it may result in fire disaster;
- Do not place near combustible materials, otherwise it may result in fire disaster;
- Ensure that the area around the machine is clean, orderly and free of oil, and pile up workpieces, tools and wastes according to regulations;
- It is forbidden to install in an environment with explosive gases, otherwise it may result in explosion;
- Wiring must be done by professionals, otherwise it may result in electric shock;
- This equipment is powered by single-phase 230Vac. When using it, please ensure the input power supply is connected to an effective protective ground, otherwise it may cause equipment damage and personal injury;
- LUX-1200: L, N, PE cable specifications must be greater than or equal to 4mm²;
- LUX-800: L, N, PE cable specifications must be greater than or equal to 2.5mm²;
- Ensure that input power is completely disconnected before wiring. Otherwise it may result in electric shock;
- Install the shell before powering on the device. Do not touch the terminal with hands, otherwise it may result in electric shock;
- Parts should be replaced by a professional. Do not leave thread ends or metal objects in the machine. Otherwise it may result in fire disaster;
- After replacing the control panel, it is necessary to set the parameters correctly before running. Otherwise it may result in the damage of property;
- Cables must be wrapped with insulating tapes and aren't allowed to expose. Otherwise it may result in electric shock;
- Keep the lighting in the operating room in good condition, and ensure no strong vibration, strong electromagnetic field equipment interference within 20m around the equipment.

**CAUTION**

- When handling, moving and maintaining this series of laser welding machines, to be careful with safety protection. For some parts with large weight and sharp edges and corners, pay attention to the risk of smashing or cutting caused by falling heavy objects;
- To ensure the security of laser welding, it is necessary to use proper external warnings, including but not limited to laser safety signs and interlocking devices;
- Do not install near to places where water droplets may splash. Otherwise it may result in property damage;
- Do not drop foreign matters such as screws, gaskets and metal rods into the welding machine. Otherwise it may result in fire disaster and property damage;
- Keep the working environment bright, turn on the light to prevent pupil dilation and avoid from increasing the risk of eye damage;
- The ambient temperature shall be between -10 and 40°C to ensure that welding machine is in the best working condition. Keep the room temperature stable, install air conditioning. The relative humidity should be below 70%, dry;

- To ensure the clean air of welding machine operating room, customer shall install the ventilation and smoke exhaust system according to the site conditions after installation and debugging of equipment.

Precautions for Use



DANGER

- Operators must get pre-job training, grasp the structure and performance of this laser welding machine, be familiar with the operation procedures and obtain the license qualification, and understand the knowledge of safe operation and welding skills before welding;
- Wear labor protection articles according to regulations. Wear labor protective glasses when operating. Laser emission on non-processed products and human body isn't allowed. When the laser welding machine is turned on, the operator shall not leave the post without authorization or entrust someone with custody. If necessary, stop the machine;
- It is prohibited to place paper, cloth or other flammable materials near unprotected laser beams. Please put fire extinguishers near the workbench;
- When any abnormality is found during the operation of the equipment, it is necessary to stop the equipment from emitting laser light and running at the first time to minimize the abnormal damage, and it is strictly prohibited to dismantle the laser, etc. without communicating with the manufacturer;
- If the equipment is not used for more than 30 minutes, please turn off the power supply of the laser equipment according to requirements;
- Do not touch the electrically charged parts, otherwise there is a risk of electric shock, and it is prohibited to use cables with insufficient cross-sectional area, exposed conductors, or damaged cables;
- Do not remove the machine casing or cover plate during use to prevent electric shock or equipment abnormalities;
- Please use undamaged gloves with good insulation and use the sound insulation equipment to avoid noise;
- Pay attention to safety protection in high-place operation;
- When welding in a narrow or confined space, the welding personnel must accept the supervision of the inspectors and fully ventilate or use respiratory protection appliance, otherwise it may result in asphyxia due to lack of oxygen;
- Do not weld pressure vessels such as gas pipes with gas, sealed tanks with gas. Do not weld near or in the vicinity of combustible materials;
- The emergency stop button takes precedence over any other control operation and allows the entire machine to be powered down;
- In case of operational error, release button of the hand-held welding torch immediately and press the emergency stop button immediately.



CAUTION

- The requirements of operational environment are as follows:
 Installation environment: smooth, no vibration and impact;
 Working environment temperature: -10 ~ 40°C;
 Transport and storage temperature: -20 ~ 55°C;
 Working humidity: <70%RH;
 The dust, metallic dust and corrosive gases in ambient air can't exceed normal content;
 Keep the working environment bright, turn on the light to prevent pupil dilation from increasing the risk of eye damage.

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Chapter 1 Product Overview

1.1 Product Introduction

Megmeet LUX-800/LUX-1200 hand-held air-cooled laser welding machine has integrated air-cooling system, laser welding torch and control system, with stable output of $1080\pm 10\text{nm}$ band laser. It is able to weld various metal materials, including carbon steel, stainless steel, galvanized plate, aluminum alloy, etc. It is applied to hardware, construction materials, kitchenware, automotive, aerospace and other fields.

1.2 Features of Laser Welding Machine

1.2.1 Unique Advantages

- Stable and reliable
 1. Select industrial-grade lasers with adequate power and not over-stated;
 2. Utilize industrial-grade electrical and optical control solutions for stable laser power output and minimal power fluctuations;
 3. Optimize pump source design to minimize laser power attenuation.
- Efficient and Portable
 1. Light is ready to emit immediately after powering on, reducing pre-use waiting time;
 2. No need for a chiller, making maintenance easier and lowering equipment failure rates;
 3. Compact size and lightweight design facilitate easy movement and transport.

1.2.2 Product Performance

- Superior performance
 1. With two modes of continuous and pulse, it is capable of a maximum welding depth of 3mm;
 2. With beautiful, deformation-free welds that reduce grinding time, it is highly efficient and saves both time and labor, and the efficiency of one laser welding machine is equivalent to the efficiency of four units of TIG welding machines;
 3. With a gas pressure detection function, it prevents welding quality issues or equipment damage caused by abnormal gas pressure;

4. With an abnormal power supply voltage alarm, it avoids damage caused by incorrect power connections.
- Simple operation
1. Industrial-grade display screen, simple operation of touch screen, simple and efficient human-computer interaction;
 2. Support user-defined, suitable for hand-held welding.

1.3 Diagram of Laser Welding Machine

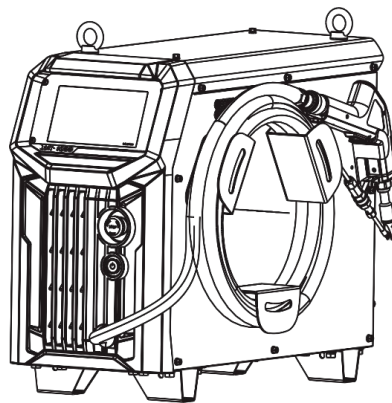


Figure 1-1 Diagram of laser welding machine

1.4 System Composition

Welding machine system consists of laser main machine, wire feeder, gas supply system, safety ground lock signal cable, wire feeding signal control cable, wire feeding hose, welding torch and combined control cable.

As shown in Figure 1-2.

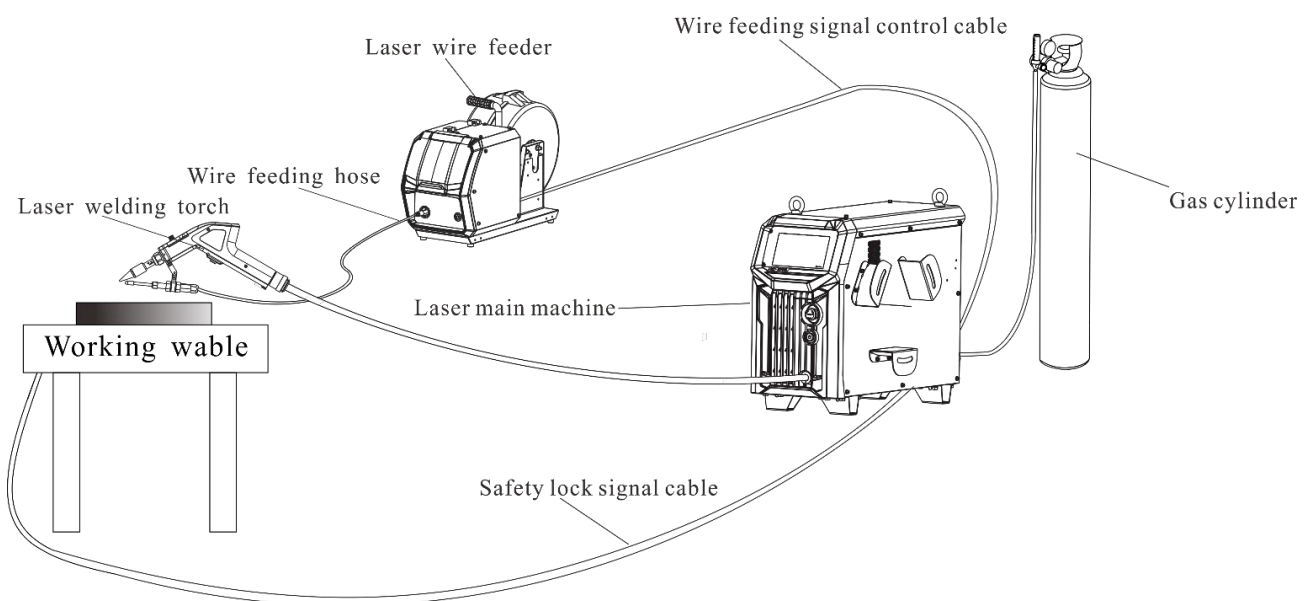


Figure 1-2 Connection diagram of LUX-800/LUX-1200 hand-held fiber laser welding system

1.5 Model Explanation

The models of welding power source are shown in Figure 1-3.

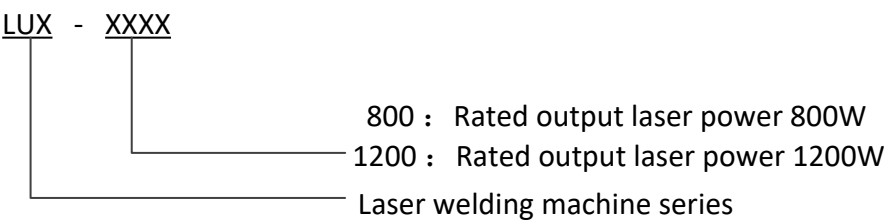


Figure 1-3 Diagram of welding machine models

* Note: The symbol in "()" is optional, indicating different types of laser welding machine.

1.6 Configuration Description

Refer to Appendix I System Configuration Table.

1.7 Specification and Dimensions

Dimensions of welding machine are shown in Table 1-1:

Table 1-1 Welding machine models and dimensions

Name	Model	Dimension (Length*width*height) mm	Net weight (kg)
Hand-held fiber laser welding machine	LUX-800 LUX-1200	622*265*550	≤50

The dimensions of main machine are shown in Figure 1-4.

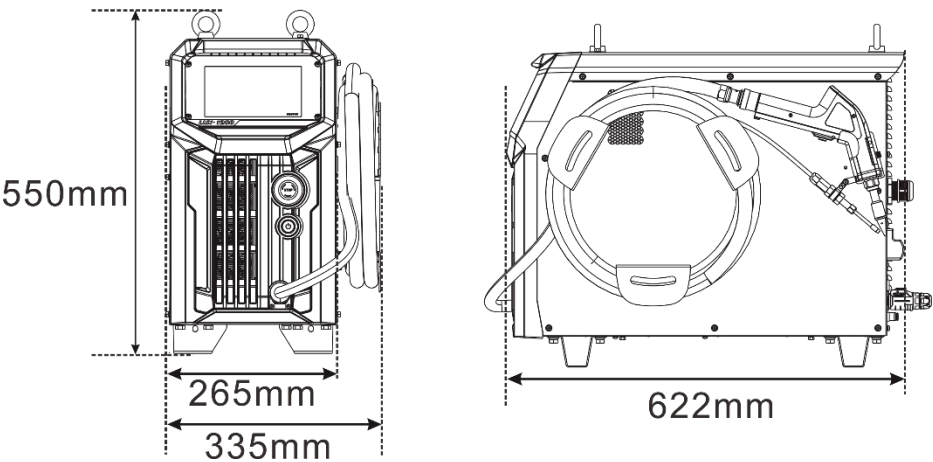


Figure 1-4 Dimensions of welding main machine

Chapter 2 Installation and Wiring

The requirements, operation procedures, and precautions for laser welding machine installation are described in this chapter.

2.1 Unpacking Inspection

1. Before unpacking, please confirm whether the outer packing is intact;
2. After unpacking, please confirm whether all components of welding machine are complete and their models are consistent with the order;
3. In case of missing or wrong parts, please contact with distributor in time;
4. Do not use front and rear handles of machine for lifting.

2.2 Installation Requirements

- Site requirements

Laser welding machine must be installed in an independent space of no less than 10m² (according to the actual configuration). The ground is horizontal, hard, anti-vibration, and laser protection signs are pasted on the door.

- Environmental requirements

1. Keep the lighting in the operating room in good condition, and ensure no strong vibration, strong electromagnetic field equipment interference within 20m around the welding machine;
2. The ambient temperature shall be between - 10 and 40℃ to ensure that the welding machine is in the best working condition. Keep the room temperature stable, install air conditioning;
3. Relative humidity should be below 70%, dry;
4. To ensure the clean air of the equipment operating room, the customer shall install the ventilation and smoke exhaust system according to the site conditions after installation and debugging of equipment.

- Power demand:

1. The power supply is single-phase 230Vac. When using the equipment, please ensure that it is connected to an effective protective ground;
2. The capacity of distribution cabinet must be at least 1.5 times of the rated input of laser welding power supply;

3. The PE grounding must be reliable;
4. LUX-1200: L, N, PE cable specifications must be greater than or equal to 4mm²;
5. LUX-800: L, N, PE cable specifications must be greater than or equal to 2.5mm².

2.3 Electrical Connection Step

Steps

1. Welding torch installation (Refer to 2.3.1 Welding Torch Installation);
2. The control cable connection of wire feeder (Refer to 2.3.2 Connection of wire feeding signal control cable);
3. Safety ground lock cable connection (Refer to 2.3.3 Safety ground lock cable connection)
4. Protective gas hose connection (Refer to 2.3.4 Protective gas connection);
5. Connection of power input cable (Refer to 2.3.5 Connection of power input cable).

2.3.1 Installation of welding torch

Steps

1. Pull out the black rubber plug of welding torch head, loosen the round nut, insert the calibration tube and tighten the round nut;
2. Align the copper welding tip with the calibration tube and tighten it;
3. Align the wire feeding bracket with the screw hole under the torch head, and use the hex screws to tighten;
4. Take out a nut and a patch at the outlet of wire feeding hose, and place the end of the wire outlet into the wire feeding bracket, and fasten with the newly removed patch and nut;
5. Tighten the wire nozzle and the straight tube of guide wire, string the lock nut and the straight tube of wire guide into the end of wire outlet, tighten the nut with a wrench until the straight pipe of the guide wire does not shake. As shown in Figure 2-1.

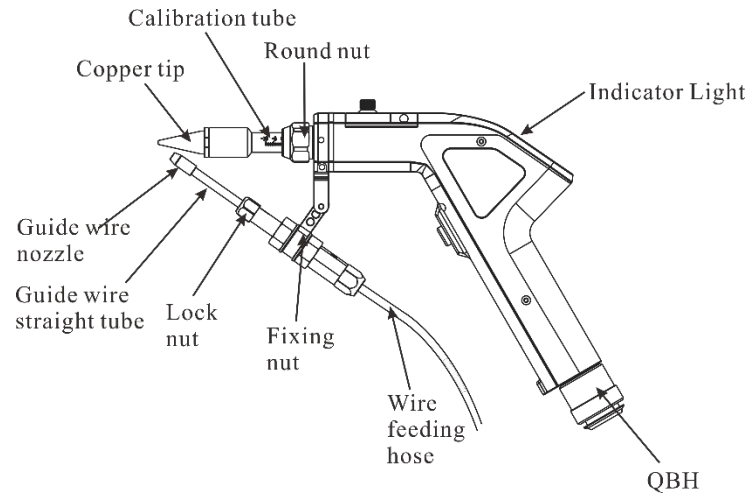


Figure 2-1 Installation diagram of welding torch

Note

1. When using or storing welding torch, handle it with care to avoid impacts or falls that could damage fragile components like the motor and lens;
2. Since the combination control cable of welding torch has optical fiber, it is necessary to avoid tying, bending, twisting, improperly pulling, or stepping on the cable. Otherwise, it will cause the damage of optical fiber;
3. If welding torch is off-operation for more than 4 hours, the copper tip should be sealed with tape;
4. The welding torch is equipped with status indicator lights: 'green' indicates laser emission, 'orange-yellow' indicates standby, and 'red' indicates a fault.

2.3.2 Connection of Wire Feeding Signal Cable

Steps

1. Connect the wire feeder signal control cable to the control cable connector and tighten it, as shown in Figure 2-2;

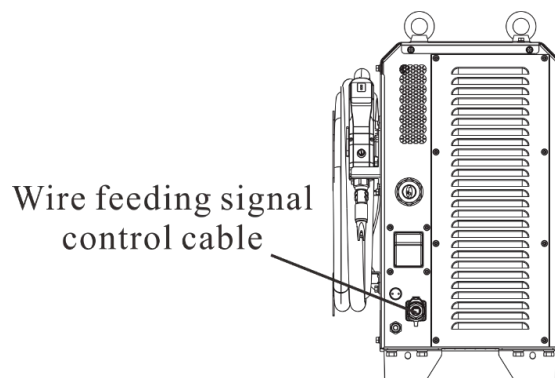


Figure 2-2 Connector for wire feeding signal control cable diagram

2. Insert the other end into the socket on the back side of wire feeder and tighten it. The wire feeder control cable connection is finished, as shown in Figure 2-3;

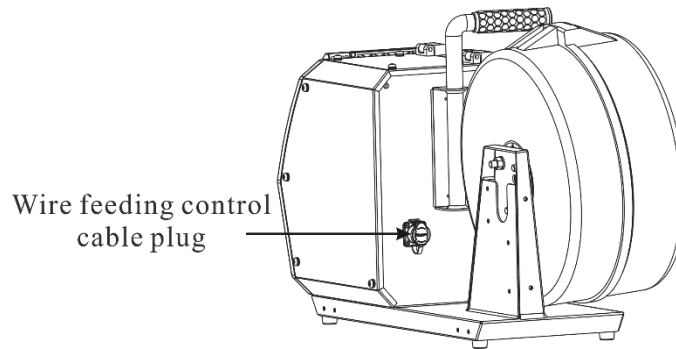


Figure 2-3 Diagram of back-side connector of wire feeder

2.3.3 Connection of Safety Ground Locking Cable

Steps

Fix one end of the safety ground lock cable to the safety ground lock cable connector of the welding machine, and connect the other end to the work-piece to complete the connection of the safety ground lock cable. As shown in Figure 2-4.

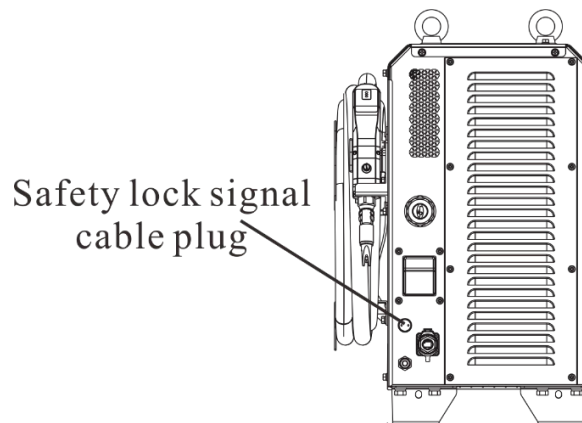


Figure 2-4 Diagram of safety ground lock cable connector

2.3.4 Protective Gas Connection

Steps

Connect one end of the gas hose to the gas hose connector on the fixed plate of welding machine, connect the other end to the gas hose interface of the gas meter end, and tighten the hose clamp of gas hose to complete the connection of gas hose. As shown in Figure 2-5.

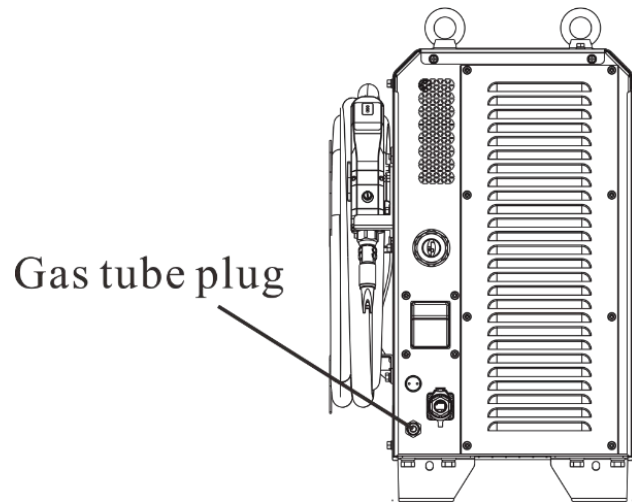


Figure 2-5 Diagram of gas hose connector

Note

1. For welding carbon steel and stainless steel, nitrogen provides better protection, while argon is more effective for welding aluminum alloys;
2. The gas hose at the end of welding machine and the gas meter must be tightened to avoid air leakage.

2.3.5 Connection of Power Input Cable (single phase 220 Vac)

Steps

1. This equipment operates on single-phase 220Vac power. Please ensure that the input power is connected to an effective protective ground; otherwise, it may lead to equipment damage and personal injury. The power connection is shown in Figure 2-6.

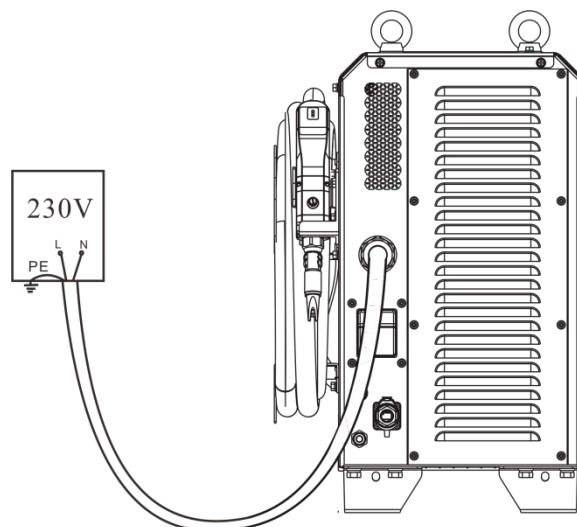


Figure 2-6 Power input connection diagram

 Note

1. LUX-1200: L, N, and PE cable specifications must be greater than or equal to 4mm^2 ; LUX-800: L, N, and PE cable specifications must be greater than or equal to 2.5mm^2 ; otherwise, they will not meet safety standards and may pose certain safety risks.
 2. Do not connect the power supply directly to a household power strip.
 3. If the input cables are connected incorrectly (e.g., connected to 2 phases of 380Vac), the machine will trigger its protection mechanism: the machine will not power on, and the built-in buzzer will alarm.
-

Chapter 3 Function Description and Operation

3.1 Laser Welding System

3.1.1 Home Page Interface

Home page functions of welding system control panel are shown in Figure 3-1 and Table 3-1.

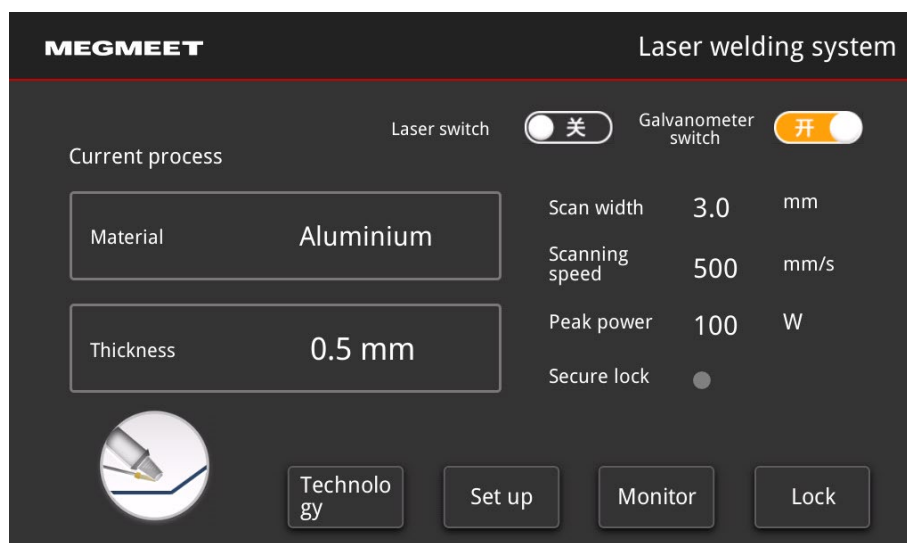


Figure 3-1 Home page on control panel

Table 3-1 Description on home page of control panel

Name	Parameter description	Notes	Default value
Current process	Current welding materials and plate thickness	Welding materials: carbon steel/stainless steel, aluminum, other metals; Plate thickness: the thickness of the processed material	/
Scan width	The width covered by laser beam in the welding process	Range: 0-6mm	1.5mm
Scanning speed	The scanning width of the laser beam per second	Range: 5-2400mm/s	200mm/s
Peak power	The continuous output laser power during welding	It must be less than or equal to the power of the current model	/
Secure lock	Safety protection circuit during welding	Orange-yellow: The welding circuit is connected and welding can be performed Gray: The welding circuit is disconnected and welding cannot be performed	/
Laser switch	On: Allows laser output; Off: Disables laser output.	The switch can be manually turned on or off. The laser switch should be turned on before welding, and it should be turned off if welding stops for an extended period.	Off

Galvanometer switch	On: The galvanometer swings, and the laser outputs a line Off: The galvanometer does not swing, and the laser outputs a point	Can be opened or closed manually, the galvanometer will automatically shut down if there is no action for 5 minutes	Off
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Note

This interface allows user to see the current process parameters (the process cannot be adjusted on this interface) and real-time alarm information.

3.1.2 Welding Process Interface

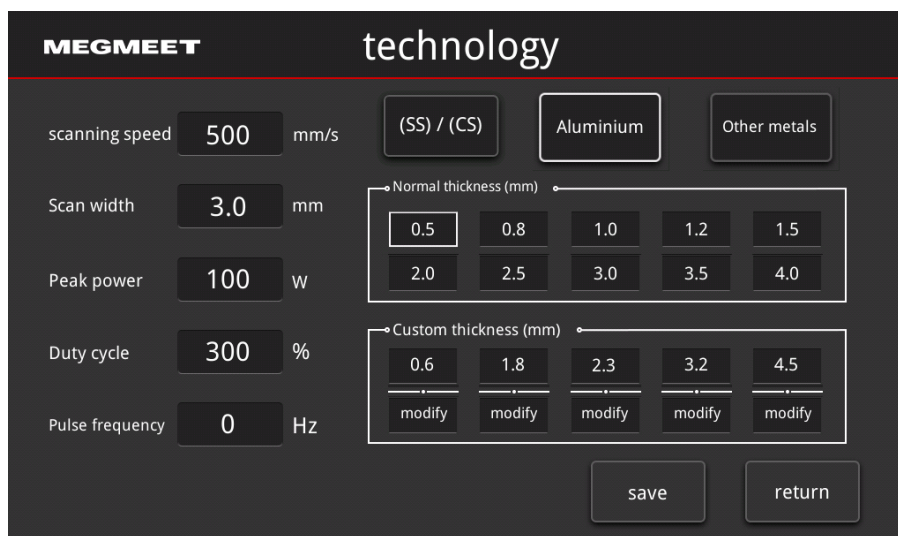


Figure 3-2 Process interface on the control panel

Table 3-2 Function description of welding process interface

Name	Parameter description	Notes	Default value
Scanning speed	The scanning width of the laser beam per second	Range: 5-2400mm/s	200mm/s
Scan width	The width covered by laser beam in the welding process	Range: 0-6mm	1.5mm
Peak power	The continuous output laser power during welding	It must be less than or equal to the power of the current model	/
Duty cycle	The proportion of time that the laser is on per unit time	Range: 0-100%	100%
Pulse frequency	The number of laser pulse swings per second	Range: 0-10000Hz	2000Hz
Regular thicknesses	Selection of material thickness	Ten regular thicknesses are preset with built-in welding processes. Users can select based on the actual material thickness being processed	/
Customized thickness	Freely adjustable processing material thickness	Five custom thicknesses have been added. Users can modify these based on the actual material thickness being processed, with a maximum value of 6.0mm	/
Save	Save the current changes	If user return to the previous page without clicking "Save," the changed data will be lost	/

Table 3-3 Welding process reference

Welding materials	Material thickness(mm)	Wire diameter(mm)	Peak power(W)	Scanning speed(mm/s)	Scanning width(mm)	Wire feed speed(cm/min)
Carbon steel / Stainless steel	0.5	0.8	200-300	300-500	1.2-1.5	60-100
Carbon steel / Stainless steel	1	0.8-1.2	400-600	300-500	2.0-2.5	60-100
Carbon steel / Stainless steel	1.5	1.0-1.2	400-800	300-500	2.0-3.0	60-90
Carbon steel / Stainless steel	2	1.0-1.2	500-900	300-500	2.0-3.0	60-80
Carbon steel / Stainless steel	2.5	1.0-1.2	600-1200	300-500	2.2-3.2	60-80
Carbon steel / Stainless steel	3	1.2	700-1200	300-500	2.5-3.5	40-80
Aluminum alloy	1	1.0-1.2	500-800	300-500	1.8-2.5	40-80
Aluminum alloy	2	1.0-1.2	700-900	300-500	2.0-3.0	40-80
Aluminum alloy	3	1.0-1.2	1000-1200	300-500	2.0-3.0	40-80

Caution

To meet actual welding requirements, peak power should be set to at least 200W.

3.1.3 Setting Interface

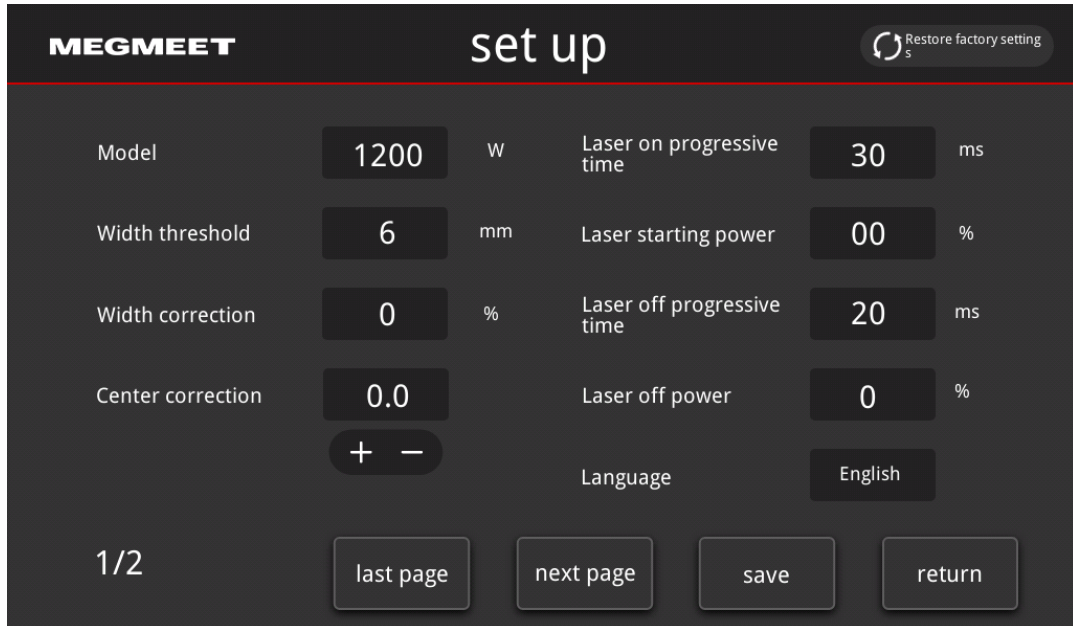


Figure 3-3 Setting interface 1/2

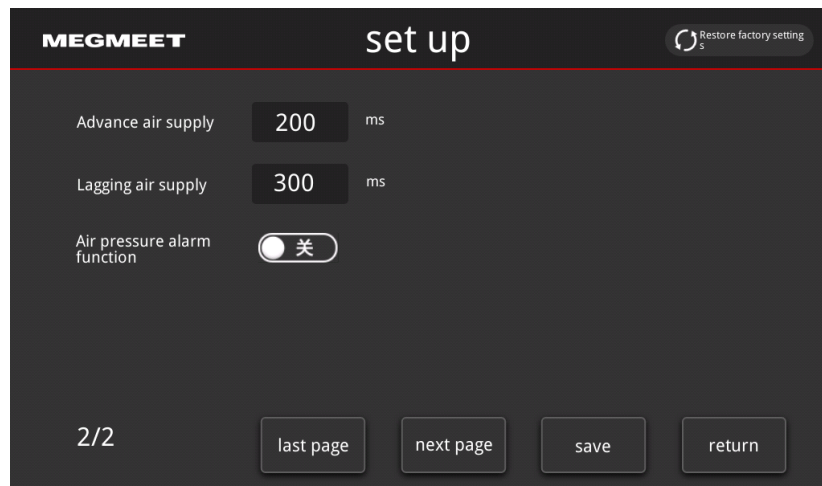


Figure 3-4 Setting interface 2/2

Table 3-4 Setting interface function description

Name	Parameter description	Notes	Default value
Model	Display the rated power of the current laser welding machine	800W or 1200W, need to be set correctly	/
Width threshold	Maximum value of scanning width	Range: 0.0 to 6.0, unit: mm	6.0mm
Width correction	Correction of scanning width	Range: -100% to 100%. Positive values indicate a percentage increase in the current oscillation width, while negative values indicate a percentage decrease	0
Center correction	Adjust the red laser light center of the axis	Range: -10.0 to 10.0. Decreasing values move left, while increasing values move right.	0
Laser starting progressive time	Time required from on-light power to welding power	Range: 100 to 2000, unit: ms	300ms
Laser starting power	Light starting power, set as a percentage of peak power	Range: 0 to 99, unit: %	30%
Laser off progressive time	Time required from welding power to off-light power	Range: 100 to 2000, unit: ms	200ms
Laser off power	Light ending power, set as a percentage of peak power	Range: 0 to 99, unit: %	20%
Language	Show the language of the current system	Supports multiple languages, with a total of 19 options	/
Pre-gas	Gas pre-supply time	Range: 200 to 2000 ms	300ms
Post-gas	Gas post supply time	Range: 200 to 2000 ms	200ms
Gas pressure alarm function	Turn on/off pressure alarm	When turned on, the gas pressure alarm function takes effect and is detected when powered on. When restoring factory settings, the function will be turned off by default and needs to be turned on again.	/
Restore factory settings	A pop-up window will appear, asking for confirmation to restore factory settings	Select "OK", the system will be restored to the factory default process, the system will restart, and you need to re-select the model; Select "Return" will return to the settings page	/

Note

When the light starts to output, the power gradually increases from the light output power to welding power. When the light is turned off, the power gradually reduces from the welding power to the light off power, as shown in Figure 3-5.

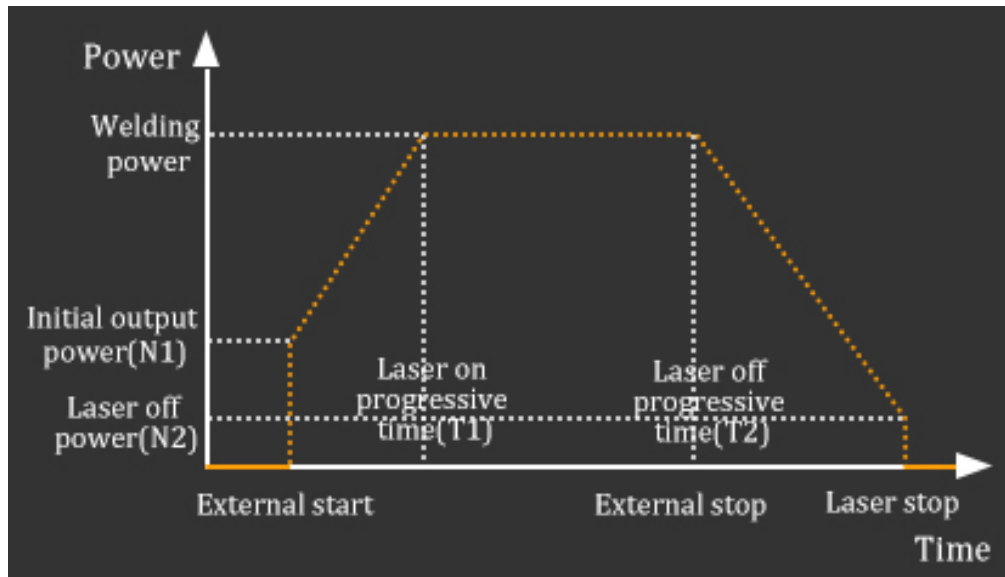


Figure 3-5 Sequence diagram of light output control

3.1.4 Monitoring Interface

Status and device information of each signal are displayed on this interface, as shown in Figure 3-6.

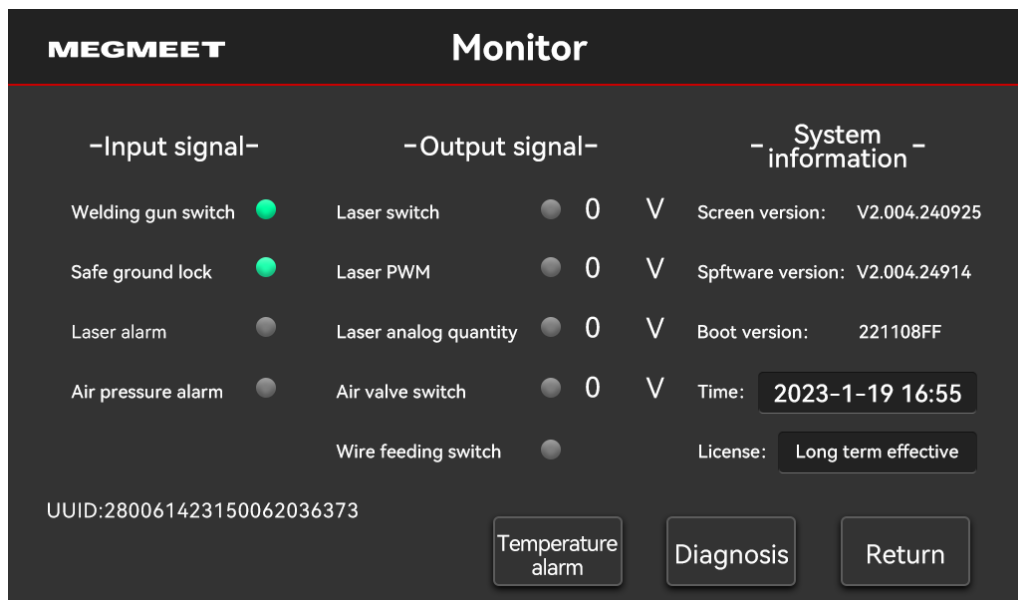


Figure 3-6 Monitoring interface on control panel

Table 3-5 Status function description

Name	Parameter description	Notes
Welding torch switch	Welding torch switch indicator status	Gray: Switch is open; Green: Switch is closed
Safety ground lock	Ground lock indicator status	Gray: Welding circuit is disconnected; Green: Welding circuit is connected
Laser alarm	The machine automatically triggers an alarm in case of abnormal conditions during operation	Gray: Device is normal; Red: Device is abnormal
Gas pressure alarm	The gas supply equipment will automatically trigger an alarm in case of abnormal conditions during use	Gray: Pressure is normal; Red: Pressure is abnormal
Laser switch	Welding machine light output switch; during welding, the laser switch should be turned on	Welding status: Gray: Light output abnormal; Green: Light output normal Output $24 \pm 1V$ during light emission
Laser PWM	Pulse width modulation	Welding status: Gray: Load abnormal; Green: Load normal Output is $24 \pm 1V$ during operation
Laser analog quantity	A variable that changes continuously within a certain range	Welding status: Gray: Output power abnormal; Green: Output power normal Range: 0-10V, full power output is 10V
Gas valve switch	Gas delivery signal	Gray: Air valve closed; Green: Air valve open When the air valve is open, output is $24 \pm 1V$
Wire feeding switch	Wire feeding delivery signal	Gray: Wire feeding abnormal; Green: Wire feeding normal
License	Laser welding machine authorization status	The factory default is long-term validity. For encryption and decryption, please contact our company for inquiries
Time	Display the current time.	Enter the time settings interface to set the time
UUID	Product unique identification code	The unique credential for product authorization

● Temperature Alarm

In the monitoring interface, click on [Temperature alarm] to enter the welding torch temperature monitoring interface.

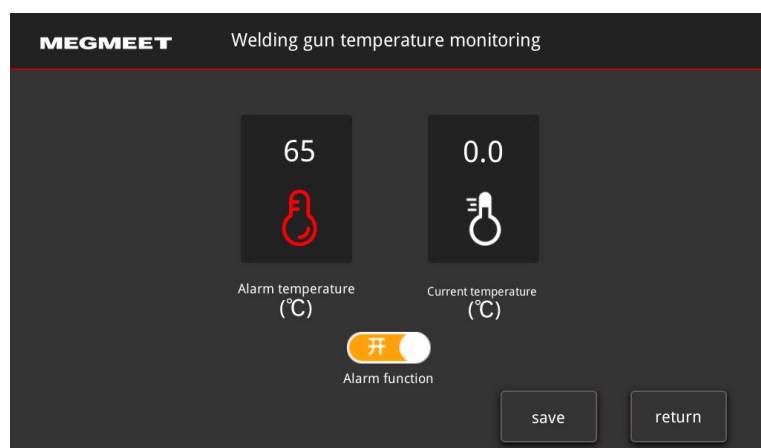


Figure 3-7 Welding torch temperature monitoring interface

Table 3-6 Welding torch temperature monitoring interface-Parameter description

Name	Parameter description	Notes
Alarm function	On: Turn on the temperature alarm function of welding torch; Off: Turn off the temperature alarm function of welding torch;	Welding torch protection lens temperature detection; Click: Turn on/off the welding torch temperature detection
Alarm temperature	Set protection point temperature for the welding torch protection lens	Click the number to change the alarm temperature setting Range: 0℃ to 80℃ It is recommended to set it to 45℃
Current temperature	Real-time temperature of protection lens while the welding torch is in operation	When the current temperature is higher than the alarm temperature, the alarm is triggered

- Diagnosis

Click on [Self inspection] on the monitoring interface to enter the self inspection interface. Use the [Switch control] button for diagnostics. Compare the detected values with the theoretical values to determine if the function is normal, as shown in Figure 3-8, 3-9.

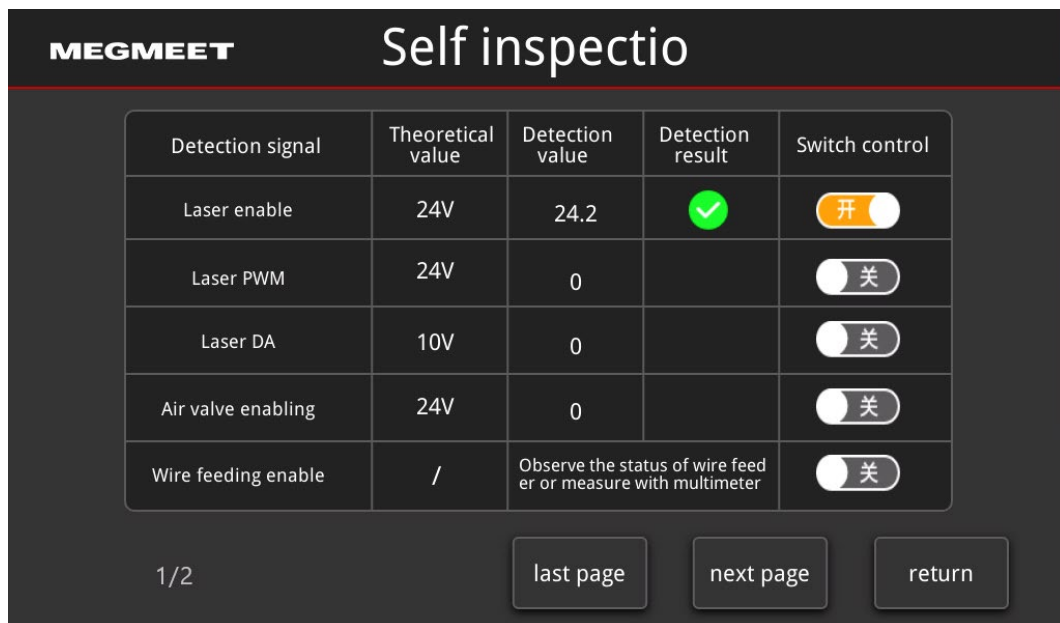


Figure 3-8 Self inspection Interface 1/2

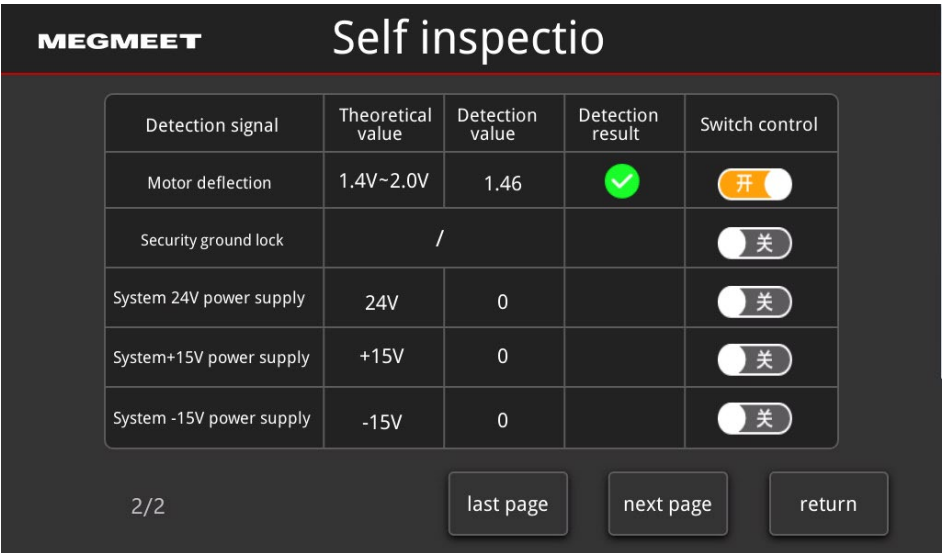


Figure 3-9 Self inspection Interface 2/2

Table 3-7 Self inspection Interface Description

Name	Parameter description	Notes
Laser PWM	Theoretical value: $24 \pm 1V$	/
Laser switch	Theoretical value: $24 \pm 1V$	/
Laser DA	Theoretical value: $10 \pm 0.5V$	/
Gas valve switch	Theoretical value: $24 \pm 1V$	/
Wire feeding switch	Wire feed switch signal	/
Motor deflection	Motor status signal	This function is currently inactive and will be added in future update
Security ground lock	Safety ground lock signal	After activating the detection switch, directly view the test results
System 24V power supply	Theoretical value: $24 \pm 1V$	/
System +15V power supply	Theoretical value: $+15 \pm 1.5V$	/
System -15V power supply	Theoretical value: $-15 \pm 1.5V$	/

 Note

Only one switch can be opened at a time. Opening one switch will automatically close the others (self-test safety mechanism).

3.2 Operation Process

3.2.1 On/OFF Process

- Startup process

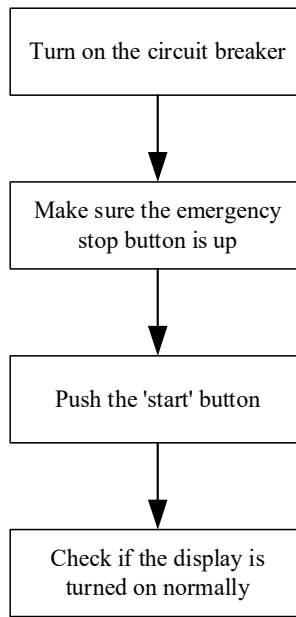


Figure 3-10 Startup flow chart

- Shutdown process

Just turn off the air switch. In case of emergency, press the emergency stop button immediately to power off.

 Note

Before powering on, ensure that all electrical connections are completed. For detailed connection steps, refer to the previous section "2.3 Electrical Connection Steps."

3.2.2 Process Operation Regulations

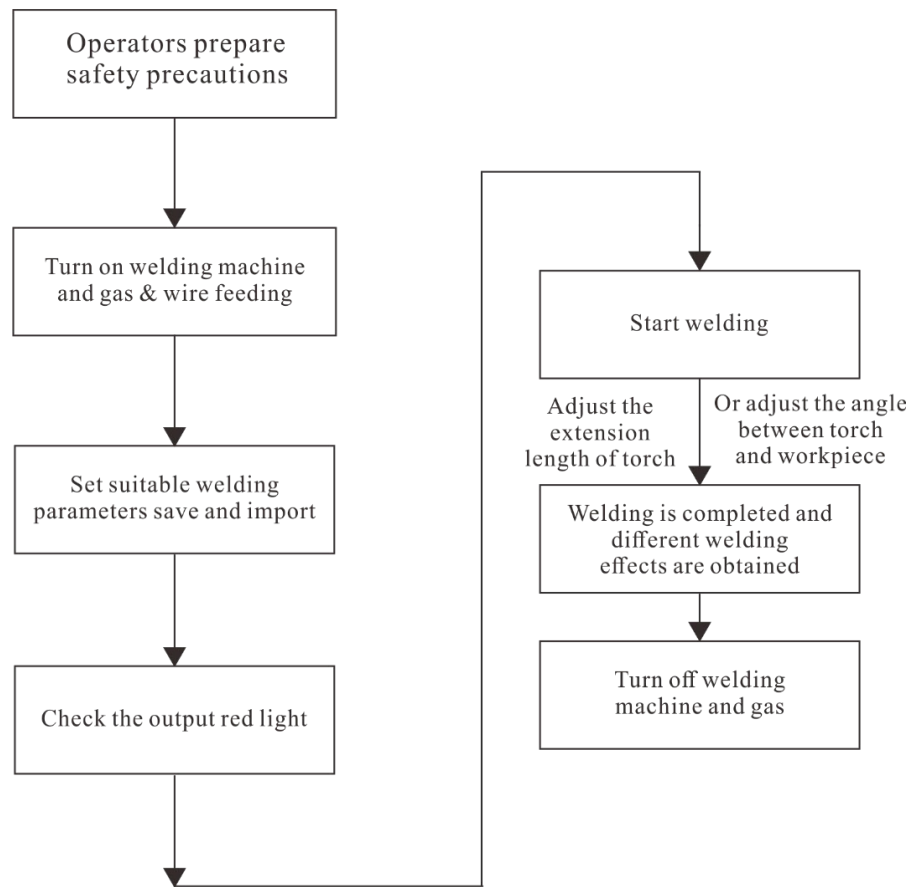


Figure 3-11 Process operation flow chart

Note

1. Pressing the welding torch switch button activates the light output, and releasing it stops the laser (do not aim at people or flammable materials);
2. It is recommended to position the welding torch at an angle of 45° to 60° relative to the surface of the plate during flat welding;
3. For right-angle weld joint, welding torch shall be 45° with the vertical plate. The angle between two plates is used as support to push forward or pull back at a constant speed;
4. When the work-piece is inserted into torch nozzle, the focal length has a few millimeters of deviation. It is necessary to adjust the extension length of nozzle accordingly.

Chapter 4 Error Diagnosis

4.1 Common Abnormality And Error Analysis on Display Screen

Table4-1 Common anomaly analysis on display screen

Abnormal information	Description	Troubleshooting Methods
Screen not light	Screen not displaying	1. Check if the display screen is correctly wired and if the terminals are properly connected 2. Measure the control box +24V voltage to see if it is 24V; if so, replace the display screen 3. If the measured +24V voltage is abnormal, check if the power board M3 is powered on successfully (all LED lights should be on). If it is powered on but the +24V output is still abnormal, please replace the M3 board
Screen touch not responsive	Screen touch not responsive	1. Check if the display screen is correctly wired and if the terminals are properly connected 2. Inspect the communication signal lines TXD and RXD in the terminals between the control box and the screen for disconnections or wear 3. Restart the machine; if it still cannot be used, please contact customer support
Authorization terminated	Product usage has expired	Please activate before continuing use
Laser Alarm	Laser input alarm	Please connect to the mobile Bluetooth app to check the alarm reasons. High laser power settings, excessive laser temperature, and abnormal fiber connections can all trigger the laser alarm
Gas Pressure Alarm	Gas pressure input alarm	1. Check if the gas is normal: gas connection is proper and there are no leaks 2. Verify that the pressure switch is correctly connected to the control box
Welding torch temperature detection	Welding torch protection lens over-temperature alarm	Enter the monitoring - welding torch temperature monitoring interface to check if the "alarm temperature" setting is correct.
15V Power Supply abnormality	15V power supply abnormality	1. Check if the 15V power supply is correctly wired and if the terminals are properly connected 2. Measure the control box's 15V power supply voltage; if it is 15V, the control box is faulty 3. If the measured 15V voltage is abnormal, check if the power board M3 is powered on successfully (all LED lights should be on). If it is powered on but the 15V output is still abnormal, please replace the M3 board
24V Power Supply abnormality	24V power supply abnormality	1. Check if the 24V power supply is correctly wired and if the terminals are properly connected 2. Measure the control box's 24V power supply voltage; if it is 24V, the control box is faulty 3. If the measured 24V voltage is abnormal, check if the power board M3 is powered on successfully (all LED lights should be on). If it is powered on but the 24V output is still abnormal, please replace the M3 board

Chapter 5 Maintenance

5.1 Daily Inspection and Cleaning

Safety warning

Daily inspection must be conducted after turning off the power supply of the user's distribution box and the power supply of laser welding machine to avoid personal injuries such as electric shock and burn. (For the appearance that doesn't contact with a conductor, daily inspection isn't required.)

- Notice for use
 1. Daily inspection is very important to keep the high performance and safe operation of laser welding machine;
 2. Check the machine housing and cables daily, and clean or replace if necessary;
 3. To ensure the high performance of the welding machine, please select the parts provided or recommended by the original manufacturer(Megmeet).

5.2 Regular Inspection and Cleaning

Safety Warning

1. Regular inspection must be performed by professionals to ensure safety;
 2. Regular inspection must be conducted after turning off the power supply of the user's distribution box and the power supply of the device to avoid personal injuries such as electric shock and burn.
-

- Operating instruction

In order to prevent semiconductor components and circuit boards from being damaged by static electricity, please wear anti-static devices or touch the metal parts of enclosure to remove static electricity before touching the conductors and circuit boards in the machine;

- Regular inspection plan

1. Regular inspection must be performed to ensure the long-term normal use of the welding machine;
2. Pay attention to regular inspection, including internal inspection and cleaning of the welding machine;
3. In general, regular inspection is performed once every six months. If there is a lot of dust or oily smoke at the welding site, regular inspection must be performed once every three months;
4. Recommended regular inspection plan is shown in Table 5-2.

Table5-1 Regular inspection schedule(the year of XXXX)

No.	Scheduled inspection date	Actual inspection date	Inspector
1	XXXX-XX-XX		
2	XXXX-XX-XX		
3	XXXX-XX-XX		
...	...		

- Content of regular inspection

Table5-2 Regular inspection and cleaning content

Item	Regular inspection and cleaning
Fan/Heat sink	Remove dust and sundries regularly
Copper tip	Regularly clean the slag of the copper nozzle and replace the copper nozzle
Guide wire nozzle	Check and replace the guide wire nozzle regularly
Protective lens	Regularly check the protective lens of laser are dirty or damaged. If they are dirty, please clean them in time. If they are damaged, please replace them in time

5.3 Cleaning and Replacement of Laser lens

- Cleaning of laser lens

In installation and cleaning process of lens, sticky matters, finger marks or oil droplets will affect the light transmittance of lens, reducing the service life and affecting the quality of laser processing, so following measures must be taken:

1. Do not install lens with bare fingers. Wear powder-free finger stalls or rubber/latex gloves;
2. Do not use suction apparatus to avoid scratching the surface of lens;
3. Do not touch the film and mirror surface when picking up the lens. You should hold the edge of lens and put the lens on the lens paper;
4. Avoid talking over the lens, and keep all contaminants away from the work environment as much as possible;
5. The lens shall be cleaned in a dust-free environment as much as possible.

- Main maintenance tools

Main maintenance tools: Blowing balloons, anhydrous alcohol, lint-free cloth, lint-free cotton swabs.

- Replacement of protective lens

According to the laser welding process characteristics, it is necessary to regularly maintain lenses. If the welding effect is poor, replace the protective lens as shown in Table 5-3.

Table5-3 Protective lens replacement steps

Operating requirements and steps	Operating instructions
Preparation before operation	Prepare a dust-proof non-stick tape or textured paper, anhydrous absorbent cotton (fine cotton), anhydrous alcohol, finger stalls or rubber gloves, and lens wiping paper
	Wash your hands with clean water and dry with an alcohol cotton, and wear gloves
Environmental requirements	Relatively dusty places
Lower protective lens operation	Loosen the screws of the protective lens drawer and remove the protective lens drawer assembly. Seal the lens chamber with masking tape to prevent dust from entering, then rotate and remove the lens retaining ring to replace the lower protective lens
Upper protective lens operation	Remove the upper protective lens drawer assembly. Seal the lens chamber with masking tape to prevent dust from entering, then rotate and remove the lens retaining ring to replace the upper protective lens
Lens installation	Install the protective lens pressing ring, tear off the textured paper, wipe the inside of the hatch and cover with a cotton ball with alcohol, rapidly insert the protective lens support into the protective lens compartment, tighten the screw to complete the replacement of protective lens

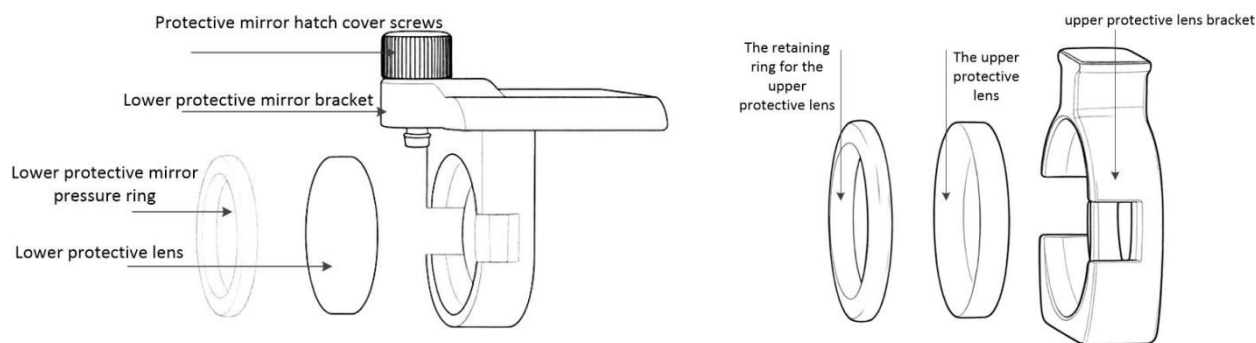


Figure 5-1 Protective lens diagram of welding torch

Note

1. If the protective lens are polluted, they must be wiped with the lens wiping paper dampened with anhydrous alcohol; if there are obvious burning points on surface of protective lens, they must be replaced directly;
2. If there is any scratch or deformation of pressing seal, it must be replaced immediately.

● Replacement of focus lens

If the welding performance is poor, check whether the protective lens are dirty, and replace the focus lens in time, as shown in Table 5-4.

Table5-4 Replacement steps of focus lens

Operating requirements and steps	Operating instructions
Preparation before operation	Prepare a dust-proof non-stick tape or textured paper, anhydrous absorbent cotton (fine cotton), anhydrous alcohol, finger stalls or rubber gloves, and lens wiping paper
	Wash your hands with clean water and dry with an alcohol cotton, and wear gloves

Environmental requirements	Relatively dusty places
Operation of lens removal	Loosen the fixing screws and pull out the focus lens drawer assembly. Cover it with masking tape to prevent dust from entering. Rotate and remove the focus lens retaining ring for lens replacement. When installing, ensure the convex side of the lens is facing the copper nozzle
Lens installation	Lock the pressing ring of focus lens, tear off the textured paper, put the focus lens drawer back into the lens compartment, lock the fixing screws to complete the replacement of focus lens

Note

1. If focus lens are polluted, they must be wiped with the lens wiping paper dampened with anhydrous alcohol; if there are obvious burning points on the surface of focus lens, they must be replaced directly;
2. The focusing lens has a specific orientation. The convex side of the lens (the side with the smaller diameter) should face towards the copper nozzle.

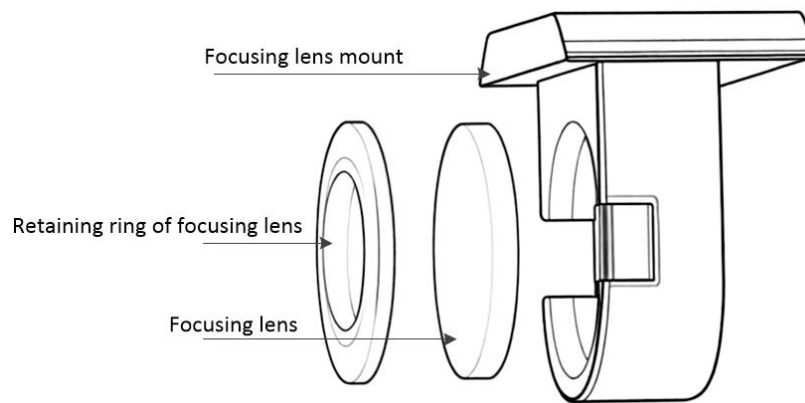


Figure 5-2 Diagram of focus lens of welding torch

5.4 Red Light Correction

When the red light cannot emit from copper nozzle, do not output light to prevent burning out the copper nozzle, and adjust as follows:

1. Software fine tuning (left and right fine tuning)

Click to enter setting interface, change the laser center offset value, negative value to the right, positive value to the left. For the latest version, the maximum adjustable value is +3/-3. If the laser center offset value cannot be adjusted by this method, you shall use the mechanical adjustment.

2. Mechanical adjustment (up and down, left and right)

Remove the cover from the handle and take out the indicator light cover plate. You will see the adjustment screws. Adjust them as shown in the following diagram:

Twisting these two screws loose allows you to adjust the left-right position of the red light

Twisting these two screws loose allows you to adjust the up-down position of the red light

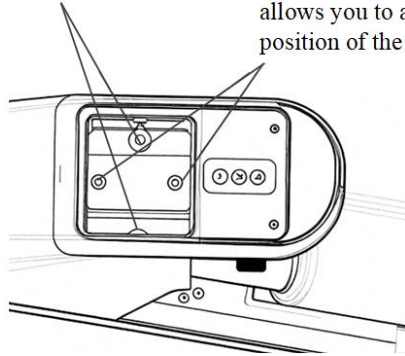


Figure 5-3 Red Light Mechanical Adjustment Diagram

Chapter 6 Warranty

6.1 Comprehensive Terms

Megmeet provide warranty services for products with defects caused by materials or production processes in the contract warranty period, and ensuring that the product meets the relevant quality and specification requirements specified in the document in normal use.

Megmeet provide maintenance and replacement services for products with defects caused by materials or production processes in the contract warranty period. The repair or replacement of product within the scope of warranty shall still be performed according to the remaining warranty period of the original product.

Megmeet has the right to selectively repair or replace any product with material or technical problems during the warranty period.

6.2 Warranty limitation

Machines and parts (including fiber optic connectors) are not covered by warranty in the following circumstances:

1. Damage to the machine and its parts (including optical fiber) which is caused by tampering, opening, disassembly, misassembly and modification by professionals not specified by Megmeet;
2. Laser generator damage which is indirectly caused by the failure of software or interface of user;
3. Damage caused by misuse, negligence or incident;
4. Use beyond the specification range, wrong installation and maintenance;
5. The damage that is caused by misuse or failure to follow the information and warnings in the *User Manual*;
6. The damage that is caused by improper installation, maintenance, or other abnormal operating conditions not covered by this manual.

Within the scope of warranty, buyer must raise a claim in writing within 31 days from the date of discovery of problem. This warranty does not cover third parties (including specified buyer, final user or customer, and excluding the parts or other products not produced by Megmeet).

Note

Users shall understand and comply with the operating instructions in user manual and operating specifications. The damage caused by wrong operation is not covered by warranty term. Accessories and optical fiber and other parts are not covered by the warranty scope.

6.3 Technical Support

This product has no built-in accessories for user maintenance, so all maintenance shall be conducted by technical personnel specified by Megmeet.

If there is any fault in the use of this product, immediately notify Megmeet's technical personnel in time to deal with the problem.

All repaired or replaced products must be put in the original packaging box provided by Megmeet, otherwise, Megmeet has the right to refuse to repair any product damage arisen from this.

When receiving the products, user shall check whether the products are complete and intact in time. In case of any abnormal situation, please contact the carrier or Megmeet in time.

Megmeet will constantly develop new products. The product information listed in the manual may be changed without notice. For all technical parameters, the terms of the contract shall prevail.

The above warranty and service terms of our products are used for user reference only. For the formal service and warranty contents, the agreement in the contract shall prevail.

The copyright of this operating manual belongs to Megmeet . It is subject to change without notice.

6.4 After-sales Service

- Warranty card

Each device has a warranty card. Please fill in the relevant content on the warranty card.

Please read the warranty card carefully and keep it properly.

- Maintenance

Please contact your local dealer in case of component repair or replacement. Please use parts and components provided by Megmeet Welding Technology Co., Ltd.

The warranty period of this product is **12 months**, starting from the warranty card or purchase invoice.

Abnormal use and artificial damage isn't included in the free warranty coverage.

Appendix I Technical Specifications

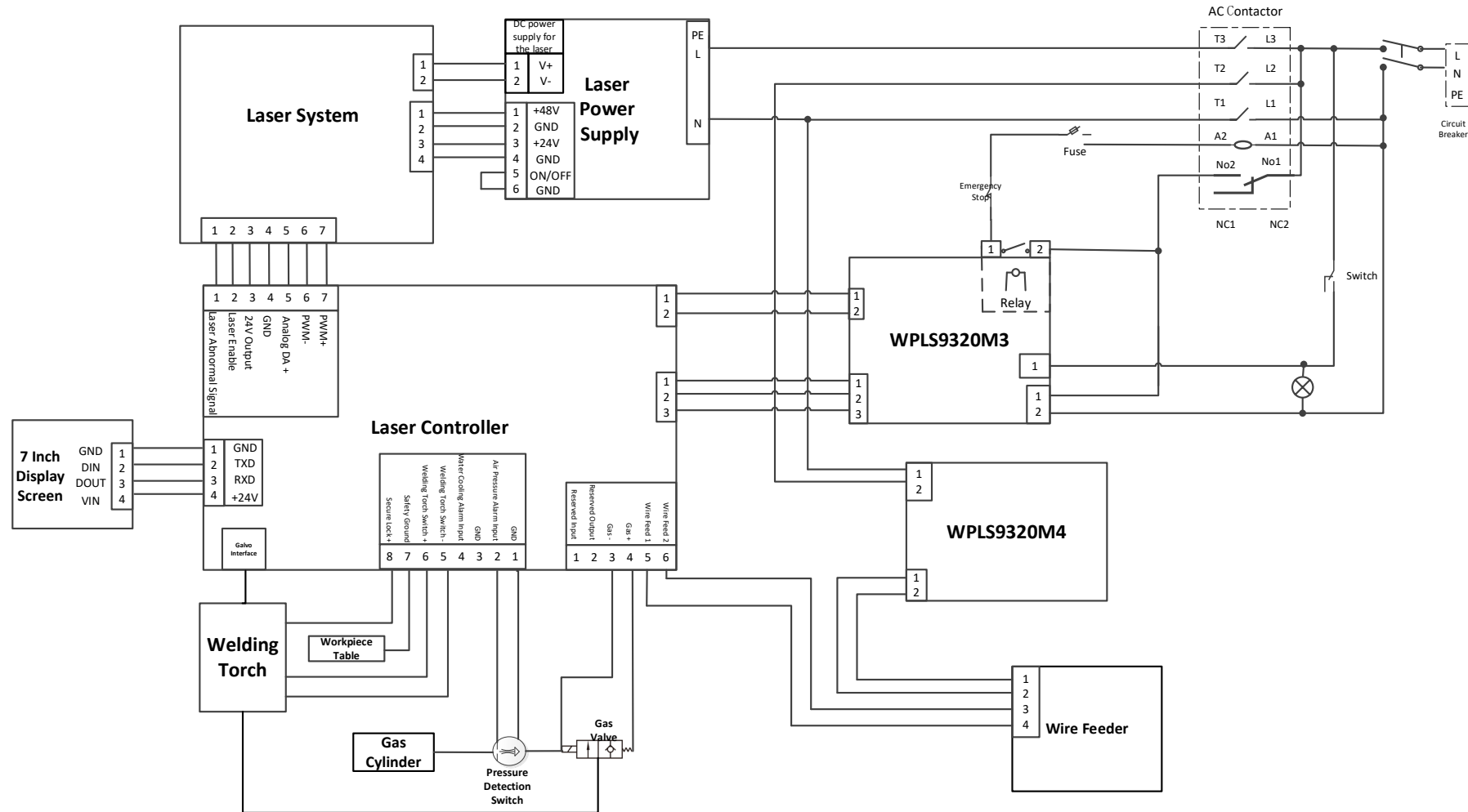
Model	LUX-1200	LUX-800
Optical characteristics		
Output laser wavelength (nm)	1080±10nm	1080±10nm
Power stability (%)	±5%	±5%
Minimum light output power	200W	200W
Output fiber cable parameters		
Armored fiber length (m)	5m	5m
Output connector	QBH	QBH
Fiber bend radius (mm)	>200	>200
Electrical characteristics		
Rated input voltage/phase number	Single phase 230Vac (±15%)	Single phase 230Vac (±15%)
Input power frequency	50/60Hz	50/60Hz
Rated input power	4 kW	2.8 kW
Rated input current	18A	13A
Rated output laser power	1200W	800W
Cooling specifications		
Cooling method	Forced air cooling	Forced air cooling
Protective gas	Nitrogen or argon	Nitrogen or argon
Gas flow rate	10-20 L/min	10-20 L/min
Others		
Operating ambient temperature	-10~40°C	-10~40°C
Operating ambient humidity	<70% non-condensing	<70% non-condensing
Storage temperature	-20~55°C	-20~55°C

Appendix II System Standard Configuration Table

Name	Model	Code	Qty	Standard/ Optional configuration	Configuration	Notes
Laser welding machine	LUX-1200	R06080039	1	Standard	●	Two models available, including the welding torch and combined control cable
	LUX-800	R06080042				
Wire feeder	WF5-ET-MD	R06030112	1	Standard	●	/
Control cable of wire feeding signal	/	R13403136	1	Standard	●	3m
	/	R13402590	1	Optional	○	5m
Wire feeding spring tube	/	R29131751	1	Standard	●	3m
Wire feeding guide tube	/	R29131768	1	Standard	●	/
Gas hose	/	R29131286	1	Standard	●	3m
Safety ground lock cable	/	R13402287	1	Standard	●	5m
Protective lens	D20X3	R37060129	5	Standard	●	Spare 5 PCS
Copper tip accessory box	MLT01-PJH-001	37060178	1	Standard	●	Includes 6 copper tips, 1 taper adapter, 1 hose clamp, 1 graduated tube, and 1 wire feeding hook
Protective glasses	LP-ADY-3 900-1100nm	R37060095	1	Standard	●	/
Wire feeding spring tube (Aluminum wire feeding accessories)	/	R29131757	1	Optional	○	3m, choose for aluminum welding
Wire feeding guide nozzle (Aluminum wire feeding accessories)	ZK-76ZY01-Z-03A	R29130220	1	Optional	○	Choose for aluminum welding
Wire feeding rollers (Aluminum wire feeding accessories)	U-type: 0.8/1.0	R37020036	2	Optional	○	Choose for aluminum welding
	U-type: 1.2/1.6	R37020037	2	Optional	○	Choose for aluminum welding

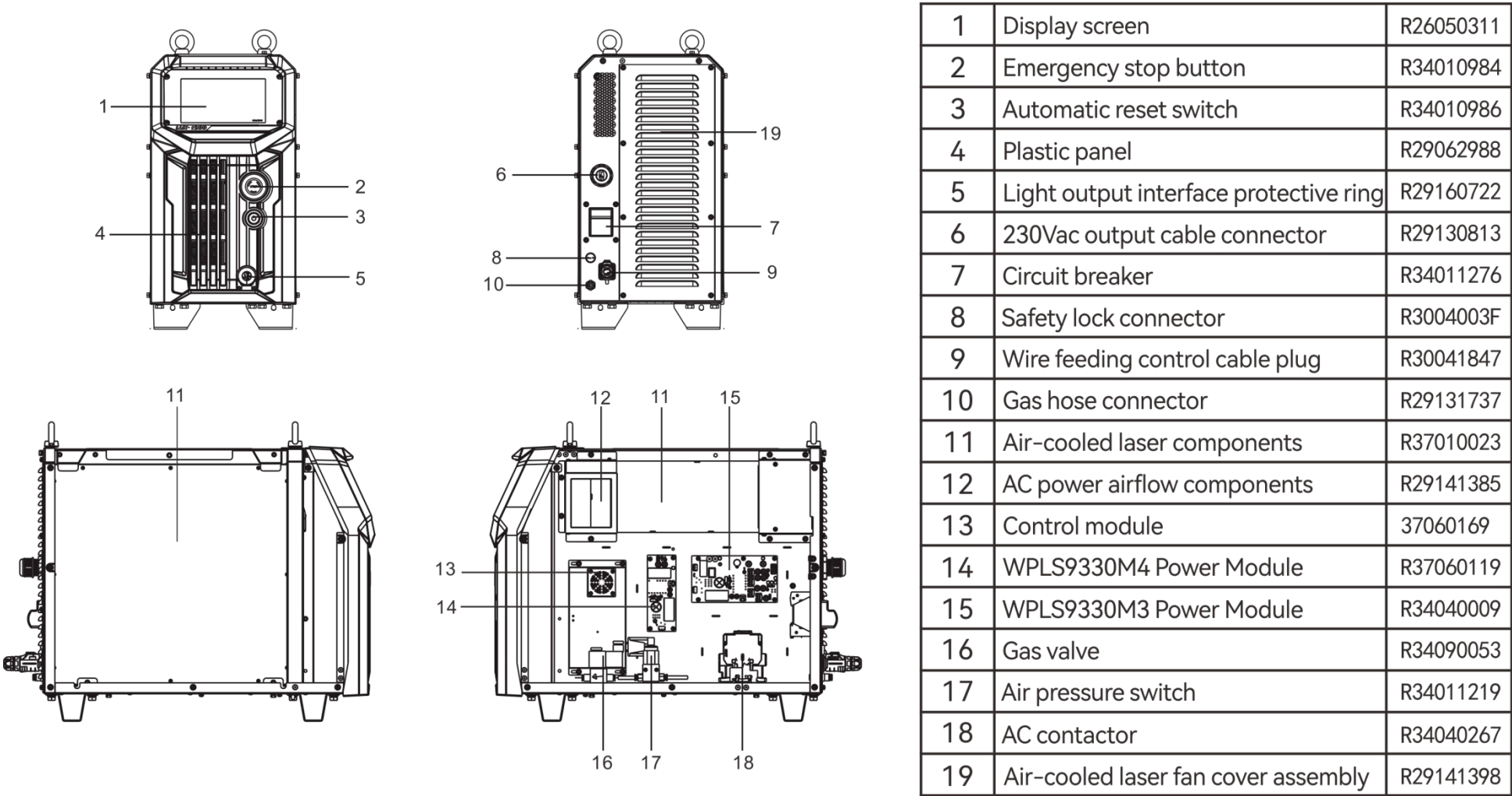
Notes: ●Standard configuration ,○Optional configuration

Appendix III Electrical Connection Diagram



Attached figure 3-1 Electrical connection diagram

Appendix IV Laser Welding Machine Structure Drawing



Attached figure 4-1 Laser welding machine structure drawing

MEGMEET Shenzhen Megmeet Welding Technology Co., Ltd.

Laser Welding Machine Warranty card

User company name:	
Detailed address:	
Zip code:	Contact person:
Tel.:	Fax:
Machine model:	
Power:	Machine No.:
Contract No.:	Date of purchase:
Service unit:	
Contact person:	Tel.:
Maintenance personnel:	Tel.:
Date of maintenance:	
User evaluation of service quality: ☐ Good ☐ Better ☐ So-so ☐ Poor Other opinions: User's signature: DD/MM/YYYY	
Return visit record of Customer Service Center: ☐ Telephone follow-up ☐ Letter follow-up Other: Signature of technical support engineer: DD/MM/YYYY	

Notes: This order is invalid when the user cannot be interviewed.

MEGMEET Shenzhen Megmeet Welding Technology Co., Ltd.

Laser Welding Machine Warranty card

User company name:	
Detailed address:	
Zip code:	Contact person:
Tel.:	Fax:
Machine model:	
Power:	Machine No.:
Contract No.:	Date of purchase:
Service unit:	
Contact person:	Tel.:
Maintenance personnel:	Tel.:
Date of maintenance:	
User evaluation of service quality: ☐ Good ☐ Better ☐ So-so ☐ Poor Other opinions: User's signature: DD/MM/YYYY	
Return visit record of Customer Service Center: ☐ Telephone follow-up ☐ Letter follow-up Other: Signature of technical support engineer: DD/MM/YYYY	

Notes: This order is invalid when the user cannot be interviewed.

Notice to users

1. Warranty scope refers to the laser welding machine.
2. **The warranty period for the whole machine is 12 months and for the laser generator is 24 months.** Under the normal use of the warranty period, the laser welding machine is faulty or damaged. We repair it free of charge.
3. The start time is the manufacture date of this machine. The code number of machine is the only basis to judge the warranty period. The equipment without the code of welding machine is treated out of warranty.
4. If any of the following conditions occur even during the warranty period, a certain maintenance fee will be charged:
 - The fault of machine is caused by failure to operate according to user manual;
 - The damage of machine is caused by fire, flood, voltage abnormality, etc.;
 - The damage of machine is caused by the use of abnormal function.
5. The service fee is calculated according to actual costs. If there is another contract, it must follow the principle of contract priority.
6. Please keep this card and show it to the maintenance unit during the warranty period.
7. In case of any question, please contact the agent or contact with our company directly.

Shenzhen Megmeet Welding Technology Co., Ltd.
Customer service center

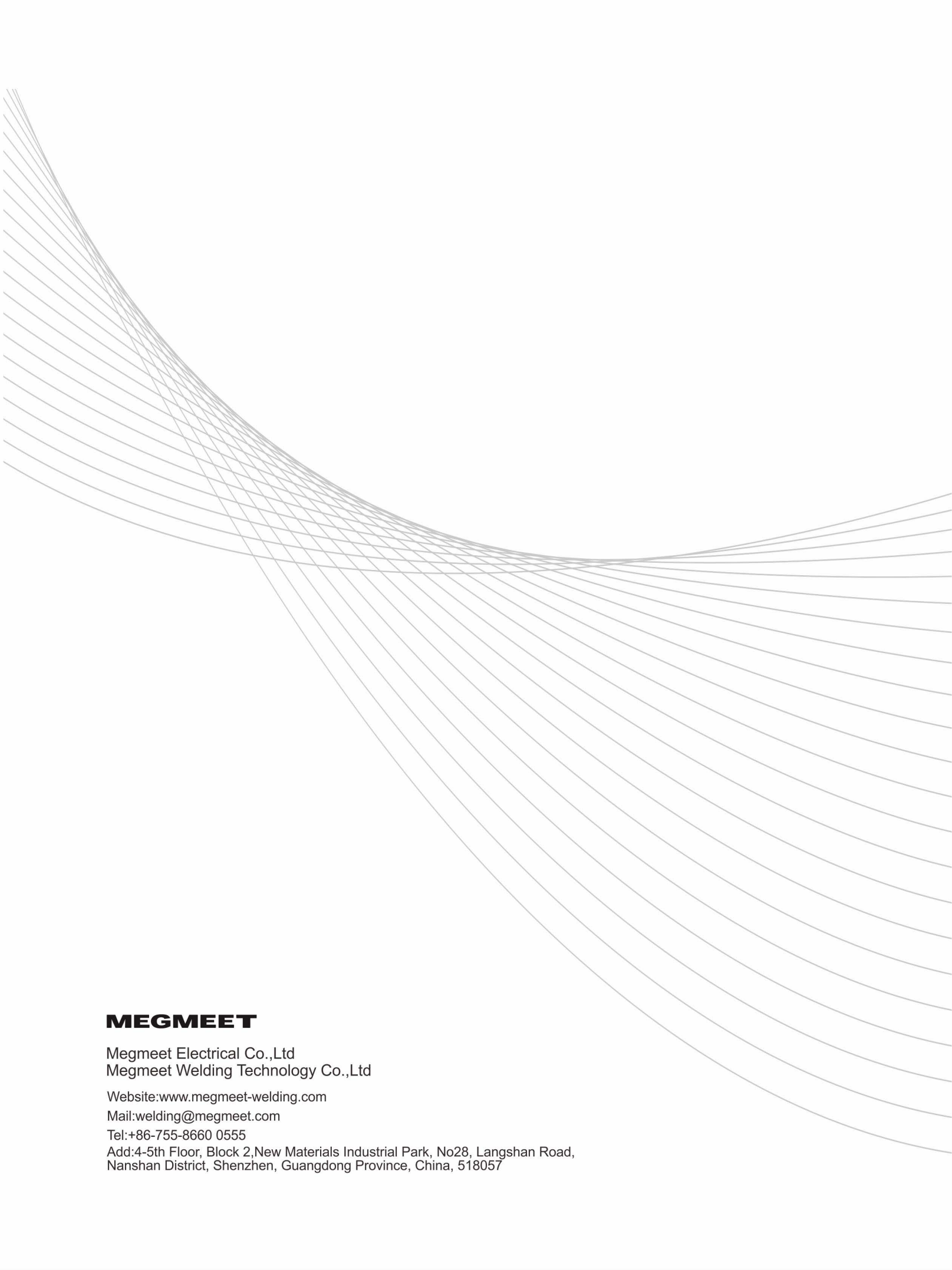
Address: 4-5th Floor, Block 2, New Materials Industrial Park, No28, Langshan Road, Nanshan District, Shenzhen, Guangdong Province, China
Postal code: 518057
Customer service hotline: 4006662163

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Shenzhen Megmeet Welding Technology Co., Ltd.
Customer service center

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Postal code: 518057
Customer service hotline: 4006662163



MEGMEET

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