

# **OWNER'S MANUAL**

## **WSM-200S**



**Welding is dangerous, and may cause damage to you and others, so take good protection when welding. For details, please refer to the operator safety guidelines in conformity with the accident prevention requirements of the manufacturer.**

**Professional training is needed before operating the machine.**

- Use labor protection welding supplies authorized by national security supervision department.
- The operator must be qualified personnel with a valid "metal welding (OFC) operations" operation certificate.
- Cut off power before maintenance or repair.



**Electric shock—may lead to serious injury or even death.**

- Install earth device according to the application criteria.
- Never touch the live parts when skin bared or wearing wet gloves/clothes.
- Make sure that you are insulated from the ground and workpiece.
- Make sure that your working position is safe.



**Smoke& gas—may be harmful to health.**

- Keep the head away from smoke and gas to avoid inhalation of exhaust gas from welding.
- Keep the working environment in good ventilation with exhaust or ventilation equipment when welding.

**Arc radiation—may damage eyes or burn skin.**

- Wear suitable welding masks and protective clothing to protect your eyes and body
- Use suitable masks or screens to protect spectators from harm.

**Improper operation may cause fire or explosion.**

Welding sparks may result in a fire, so please make sure no flammable materials nearby and pay attention to fire hazard.

Excessive noise is harmful to your hearing

Wearing ear protectors for your ear protection

Warning visitor that the noisy cause the potention harmful for their ears



**Please seek professional help when encountering machine failure.**

Consult the relevant contents of this manual If you encounter any difficulties in installation and operation. Contact the service center of your supplier to seek professional help if you still can not fully understand after reading the manual or still can not solve the problem 。

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## Products Description

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Digital TIG welder use the MCU control, it has great improvement at welding performance. It can choose the suitable welding parameter at different welding occasions for best welding, due to the digital function after using digital technology

The function of digital TIG welder is performed by software, increasing the welding function with only software changing, each function is independent for each other, which increase the new function without influencing the original function and performance, so the digital welder function can be rich made. This welder has rutil MMA, DC TIG, Pulse TIG, 2T/4T etc welding ways. Each function has much adjustable parameters, user can easily fix the welder with system default parameters, or it can precisely adjust the welder with different welding requests

Digital TIG greatly reduce the components quantities, increasing the electrical reliable due to using the digital control technology. Especially for the advanced pulse welding ways, it has much strict on the arcing power control, and it must precisely control each pulse time

The arcing system of digital TIG welder use high frequency oscillation principle, it has easy arcing and arc concentration, and it has continuously adjustment at pre-gas time, gas delay time, rising time and fall time. It also has pulse choice, adjustable pulse frequency, adjustable packing current and basic current function. It is much suitable for special welding case requests. It can weld for stainless steel, alloy steel, carbon steel, copper and other mostly metals.



### Notice

This welder is for industrial working, At the indoor environment, it may cause radio interference, user have to take full precautions

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## Technical Parameter

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model	WSM-200S
parameter	
voltage(V)	AC1, 220V
frequency (HZ)	50
Rated input current (A)	TIG 29/MMA 41
No-load voltage (V)	60
Output Current (A)	10-200(TIG)/10-170A(MMA)
Rated output voltage (V)	TIG 18/MMA 28
Duty cycle (%)	60
Arc strick	HF
Fall time (S)	0-10
Pulse frequency (HZ)	1-250
Pre gas time(s)	0-2
Gas delay time (S)	2-10
Rising time	0-10
Pulse rate(%)	10-90
efficiency (%)	85
factors	0.73
insultation	F
Protection class	IP21
measurement (mm)	390x159x240

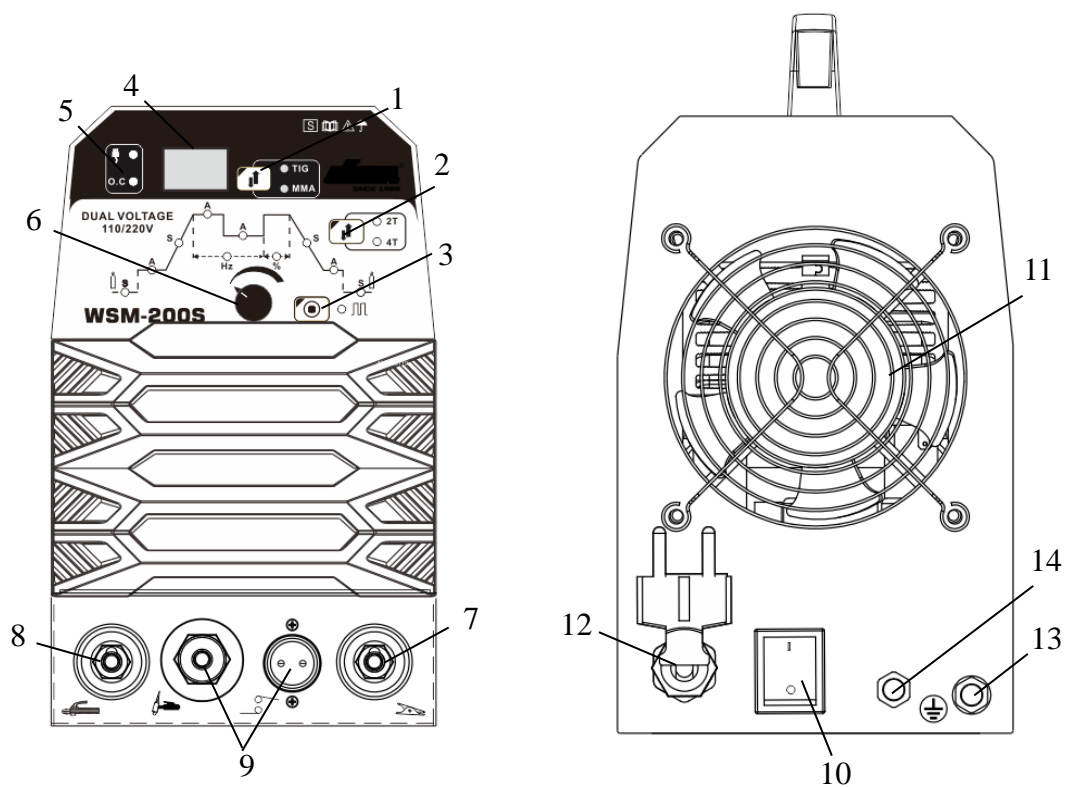
## Panle function operation

### Front panel:

- 1 button: Welding ways MMA and DC TIG choosing
- 2 button: 2T and 4T choosing.
- 3 button: Pulse function choosing.
- 4 digital: current value
- 5 The power light is on after turning on the switch; Protection/abnormal light: the on light is for the higher temperature of inside machine, the machine is under protection or abnormal situation
- 6 Parameter adjustment knobs: user set the value according to knobs choice
- 7 Earth clamp cable connection
- 8 Electrode holder cable connection
- 9 TIG torch and two-pole air socket cable connection

### Back panel:

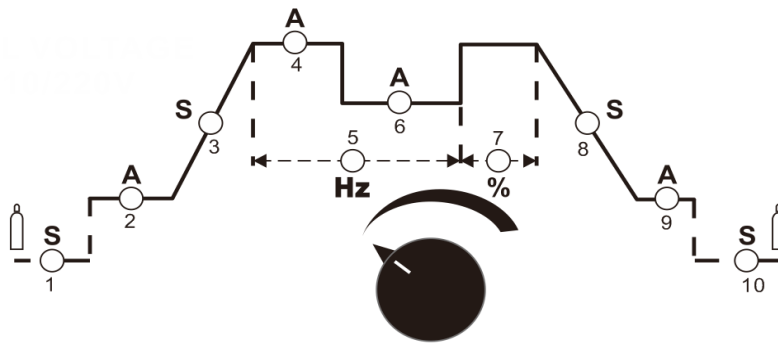
- 10 Power switch: power control switch
- 11 Fan: machine cooling
- 12 Power input: power input cable
- 13 Earth screw: strictly earth connection according to electrical grounding standards before operation
- 14 Gas inlet: argon gas inlet



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## Front panel operation

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- 1、 Pre-gas:** In order to ensure the good welding performance, it requests the argon gas comes out earlier than the current, this knob adjust the time between argon gas coming out and arcing out (0-2s adjustable)
- 2、 Arc strike:** The machine can set the arc strike current only under the 4T choosed (10-200A adjustable)
- 3、 rising time:** The rising time from arc strike to welding current when machine is in 4T (0-10S adjustable)
- 4、 welding current:** Working current for its welding (it is for peak current when it is pulse welding)
- 5、 frequency:** The frequency change from welding current (peak current) to basic current when it is for pulse welding (1-250hz adjustable)
- 6、 basic current:** basic current for pulse TIG welding (10-200A adjustable)
- 7、 Pulse rate:** Setting the peak current time rate when it is pulse welding (10-90% adjustable)
- 8、 Fall time :** The falling time from welding current to carter current (0-10s adjustable)
- 9、 Crater current:** Setting the crater current only the machine is in 4T (10-200A adjustable)
- 10、 gas delay:** The time of continuous argon gas come out from the torch after welding finished (2-10s adjustable)

### parameter adjustment operation:

- Turning the knob and choosing the welding parameter before welding, the related light will be on. When the parameter need to be adjusted, the parameter light will be flashing after pressing the knob, then adjust parameter and the digital value will be different. Pressing the knob again after the parameter fixed, the parameter light is off and its adjustment is successful. When it is MMA, the welding current light is on, only turning the knob for welding current adjustment.
- After the parameter adjustment finished, it can start welding after pressing the torch. The arc strike current, welding current and crater current can be adjusted by tuning knob when it is in the welding process, other parameter choose and adjustment as well as the welding artwork all can not be operated. All the choice and adjustment can be operated after loose torch switch

Notice: For the unfinished parameter adjustment, the parameter light is under flashing situation, it can not weld after torch switch pressing. It can only after pressing the knob to finish the parameter adjustment (the parameter light is always on not flashing anymore), it then can weld after torch switch pressing

## Parameter setting

- 1、 choosing the MMA: pressing the 1 knob
- 2、 welding current: unit A(from min to max to be adjusted)
- 3、 2T TIG welding: there are 4 choice can be set
  - (1) pre-gas: unit S(0-10s can be adjusted)
  - (2) welding current:unit A(from min to max to be adjusted)
  - (3) fall time: unit S(0-10s can be adjusted)
  - (4) gas delay time:unit S(2-10s can be adjusted)
- 4、 4T TIG welding: there are 7 choice can be set
  - (1) pre-gas: unit S(0-10s can be adjusted)
  - (2) arc strike current: unit A(from min to max to be adjusted)
  - (3) rising time: unit S(0-10s can be adjusted)
  - (4) welding current:unit A(from min to max to be adjusted)
  - (5) fall time: unit S(0-10s can be adjusted)
  - (6) crater current: unit A(from min to max to be adjusted)
  - (7) gas delay time:unit S(2-10s can be adjusted)
- 5、 2T and pulse TIG welding, there are 8 choice can be set
  - (1) pre-gas: unit S(0-10s can be adjusted)
  - (2) welding current:unit A(from min to max to be adjusted)
  - (3) pulse frequency: unit Hz(1-250Hz can be adjusted)
  - (4) basic value: unit A(from min to max to be adjusted)
  - (5) pulse rate: unit %( 10-90 can be adjusted)
  - (6) fall time: unit S(0-10s can be adjusted)
  - (7) gas delay time:unit S(2-10s can be adjusted)
- 6、 4T and pulse TIG welding: there are 10 choice can be set
  - (1) pre-gas: unit S(0-10s can be adjusted)
  - (2) arc strike current: unit A(from min to max to be adjusted)
  - (3) rising time: unit S(0-10s can be adjusted)
  - (4) welding current:unit A(from min to max to be adjusted)
  - (5) pulse frequency: unit Hz(1-250Hz can be adjusted)
  - (6) basic value: unit A(from min to max to be adjusted)
  - (7) pulse rate: unit %( 10-90 can be adjusted)
  - (8) fall time: unit S(0-10s can be adjusted)
  - (9) crater current: unit A(from min to max to be adjusted)
  - (10) gas delay time:unit S(2-10s can be adjusted)

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## Installation

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Our welder is equipped with a power supply voltage compensation device, when the power supply voltage in the range of 15% rated voltage changes, can continue to work

When use longer cable , please choose cable of bigger section in order to protect voltage from stepping down .If torch cable is too long ,it maybe effect to function of arc-striking and other function of system, if the high frequency performance is weakened or the system does not work properly,So we suggest that user must use coordinated length which is recommended by manufacturer . Please install with below steps

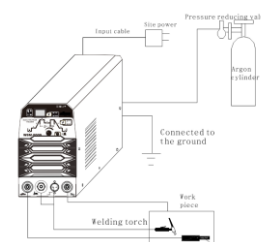
- 1、 Ensure the ventilator vent is not covered and blocked to prevent the cooling system from failing.
- 2、 Connect to gas source: Make sure that argon tube is connected to copper tip tightly. Supply gas circuit must include gas cylinder, argon flow meter and gas tubes. Tubes must be tied firmly by laryngeal hoop or something else in order that gas is leaked and air come into.
- 3、 The chassis with conductive section area is not less than 6mm<sup>2</sup> wire reliable grounding, the method is the welding machine on the back of the screws connected to the grounding device, or to ensure the grounding of the power outlet has been a reliable separate ground. To ensure security, you can also use both methods
- 4、 Connect torch or welding pincer according diagram, for MMA welding, ensure cable firmly connected with electrode holder and quick connectors. Electrode holder connector to connect to negative pole “—”. and then tighten them clockwise way. For TIG welding, gas-electrical connectors of torch is installed to the connectors with clockwise fasten, the air socket of the torch to fasten connect to the front panel

5Connecting the earth clamp cable to positive “+” pole of front panel, then fasten it in clockwise, and the other end to clamp the workpiece

6、 According to the input voltage level of the welding machine, the power line is connected to the distribution box with the corresponding voltage level, not the wrong voltage. At the same time to ensure that the error of supply voltage within the allowable rang.

7、 The welder will finish the installation and then can start to welding after finishing the above work

### Installation diagram:



All connection operations should be made with the confirmation that the power supply has been cut off. The correct order is to first connect the holder wire and ground wire to the welding machine, check the connection is reliable, no loose, and finally plug the power into the power supply



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## Operation

### TIG welding:

1. Open the Argon cylinder valve and adjust the gas flow to the rated standard (see flow meter).
2. switch on the TIG mode, according to the thickness of the workpiece, select the appropriate mode, set the corresponding parameters. You can choose the following welding methods

#### 2.1 DC argon 2T or 4T pulse welding

- (1) It starts from pre-gas and welding current after pressing the torch switch
- (2) It starts from arc ending by falling time, and then gas delay time to welding finish after losing the torch switch


#### 2.2 DC argon 4T or 4T pulse welding

- (1) It starts from pre-gas to arc strike current, keeping it at the arc strike current after arc starting successful when firstly pressing the torch switch
- (2) It starts from arc strike current rising to welding current after first losing the torch switch
- (3) It starts from welding current falling to crater current after second pressing the torch switch
- (4) It starts from gas delay time to welding finish when gas finished after second losing torch switch.

3. Keeping the space at 2-4mm between tungsten and workpiece

### MMA welding

1. Switching at the MMA mode, it can start weld with the fixed parameter according to the electrode size and the depth of workpiece, and it can also adjust welding current

 warning: It is prohibited to plug any cables or connectors in use during the welding process, which will endanger personal safety and cause serious damage to the equipment.

## **NOTES OR PREVENTIVE MEASURES**

### **1.Environment**

1. The machine operation should be in environments where conditions are dry with a dampness level of max 90%.
2. Ambient temperature is between –10 and 40 degrees centigrade.
3. Do not place the machine in positions where the airflow through the cooling air slots is obstructed or limited.
4. Avoid welding in sunshine or raining, Do not let water or rainwater seep into the welder
5. Do not use the machine in environment where condition is polluted with conductive dust on the air or corrosiveness gas on the air.

### **2.Safety norms**

Our welding machine has installed protection circuit of over voltage and current and heat. When voltage and output current and temperature of machine is exceed the rate standard, welding machine will stop working automatically. Because that will be damage to welding machine, user must pay attention as following:

1. The working area is adequately ventilated!

there is a larger working current through in its operation. the natural ventilation can not meet the requirements of the welding machine cooling, it is installed a fan to effectively cool the welder to make its work smoothly. Users should confirm that the ventilation is not covered or blocked, welding machine and surrounding objects should be not less than 0.3 meters, the user should pay attention to keep good ventilation, which for the welder better work and ensure a longer service life is very important.

2. Do not over-load!

The user should remember to observe the maximum allowable load current (relative to the selected duty cycle) and keep the welding current to no more than the maximum allowable load current. Current overload will obviously shorten the service life of the welder, and may even burn the welder.

3. No over-voltage!

The power supply voltage is listed in the "Main performance Parameters" table, in general, the automatic voltage compensation circuit in the welder will ensure that the welding current is kept in the allowable range. If the power supply voltage exceeds the allowable value, it will damage the welder, the user should be fully aware of this situation, and take corresponding preventive measures

1)The back of each welder is attached with a grounding screw and marked with a grounding mark. Before using, select a section of cable that is larger than 6mm<sup>2</sup>, and reliably ground the welding machine shell to release static electricity or prevent possible accidents due to leakage

2)If the welder is working more than the standard duty cycle, the welder may suddenly enter the protection state and suspend work, which means that the welder exceeds the standard duty cycle, the excessive thermal energy triggers the temperature switch, the welder stops working, and the yellow

light on the front panel. In this case, you do not have to unplug the power plug to allow the cooling fan to work continuously to cool the welder. When the yellow light is off, the temperature drops to the standard range and the weld can be started again.

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## **Problem analysis**

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### **A. Welding joints turn black**

Such conditions indicate that solder joints are not effectively protected and are oxidized, and you can perform the following checks:

1. Check the valve of the argon cylinder has been opened, and have enough pressure, the general bottle pressure if too low, it is necessary to refill the cylinder.
2. Check whether the Argon flow meter is open and has enough flow. To conserve gas, we recommend that you adjust the the gas flow according to different materials and different positions. But too small flow may result in not covering the weld, resulting in weld gas holes
3. The simplest way to check the gas is sent out by hand to feel the nozzle of the torch whether there is gas outflow, check the gas path of the torch is blocked.
4. If the gas has a bad sealing problem, or gas purity is not high, can also cause welding quality problems
5. If the environment has strong air flow, it may also cause welding quality to decline.

### **B. It is hard to arc strike and easily arcing brake**

1. Check the tungsten you are using is of good quality. The poor quality tungsten electrode discharge may not be able to reach the requirements
2. Tungsten which does not have a sharpened handle, is also difficult to produce arcs and causes arcing instability
3. In the use of longer welding torch (more than 10 meters), because the welding torch to high frequency attenuation the serious falling down of high frequency to the torch , can lead to the performance of the arc to become worse.

### **C The output current can not be up to rated value**

The fluctuation of power supply voltage will result in the output current value do not match the fix value ; The maximum output current of the welder may be lower than the rated value when the supply voltage is below the rating.

### **D The unstable current in the operation**

It is probably related to below factors

1. The voltage in electricity net is changed
2. Serious interference from electricity net or other electrical equipment

### **E. Too much spatter in the MMA operation**

1. It is probably the bigger current adjusted and too small size of electrode
2. The polarity of the output end is reverse connected,, in the normal process should be the use of positive welding, that is, the electrode should be connected to the positive “+” connection and the workpiece should be connected to the negative “-” connection.

The above mentioned phenomena may also be related to the accessories, gas, environmental factors, power supply situation, please try to improve the environment to avoid such a situation

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## **Maintance**



- 1 Remove dust by dry and clean compressed air regularly ,if welding machine is operating in environment where is polluted with smokes and pollution air ,the machine need remove dust everyday
- 2 when the machine is switched on, do not let the hands, hair, and tools near the machine, such as electric devices, such as: fan, so as to avoid injury or damage to the machine.
- 3 Check inter circuit of welding machine regularly and make sure the cable circuit is connected correctly and connectors are connected tightly (specially insert connector and components ). If scale and loose are found ,please give a good polish to them ,then connect them again tightly .
3. To avoid water or moisture into the welder inside, if this situation occurs, should drying the internal welding machine Then, using a megameter to measure the insulation of the welder (including between the connecting nodes and between the connection point and the casing). The welding work can only be continued if there is no abnormal condition confirmed.
- 4 Usually inspect all cables of the welder for damage, and replace the cable
- 6 If the welding machine is not used for a long time, the welder should be put back in the original box and stored in the dry environment



### **Warning**

**Blind experimentation and careless maintance may result in an expansion of the area of failure, which can be difficult for formal maintance. This equipment in the power of the bare part of the machine with can lead to dangerous voltage, any direct or indirect contact can lead to the occurrence of electric shock, serious electric shock will lead to death!!!**

## Check fault



Faults	Resolvable Methods
<p>1.Power indicator is not lit ,fan does not work and no welding output</p>	<ol style="list-style-type: none"> <li>1. Power switch is out of work .</li> <li>2. Check if electrify wire net (which is connected to input cable )is in work. .</li> <li>3.Check if input cable is out of circuit .</li> </ol>
<p>Power indicator is on ,fan does not work or stop after few rotation ,no welding output</p>	<ol style="list-style-type: none"> <li>1. Maybe connect wrong to 330v power cause machine is in protection circuit ,connect to 220v power and operate machine again .</li> <li>2. 220v power is not stable,(input cable is too slender)or input cable is connected to electrify wire net cause machine is in protection circuit .Add the section of cable and tighten input connector firmly .Close machine 2-3 minutes then open it again.</li> <li>3. Cable is loosed from switch to power panel ,tighten them again .</li> <li>4. Open and close power switch constantly in short time cause machine is in protection circuit Close machine 2-3 minutes then open it again .</li> <li>5. Main circuit 24v relay of power panel is not close or has damaged .Check 24v power source and relay .If relay has damaged replace it with same model.</li> </ol>
<p>Fan is working , indicator is not on and sound of HF arc-striking can not be heard ,wiping welding can not strike arc.</p>	<ol style="list-style-type: none"> <li>1、 check all different inside cables are well connected</li> <li>2、Control circuit problem, please find the problem, contact with distribute</li> <li>3、 The control cable from the torch is damaged</li> </ol>
<p>Abnormal indicator is not on ,sound of HF arc-striking can be heard ,but there is no welding output .</p>	<ol style="list-style-type: none"> <li>1. Check if torch cable is broken .</li> <li>2. Check if grounding cable is broken or not connected to work piece .</li> <li>3. Output terminal of positive electrode or torch electrify is loosed from inter-machine .</li> </ol>
<p>Abnormal indicator is not lit ,sound of HF arc-striking can not be heard ,wiping welding can strike arc .</p>	<ol style="list-style-type: none"> <li>1、 discharge nozzle oxidation or remote, treatment of discharge nozzle surface oxide film or adjust discharge nozzle distance to 1mm</li> <li>2、 Some components on high frequency arcing board are damaged, and please find</li> </ol>
<p>Abnormal indicator is on but there is no welding output.</p>	<ol style="list-style-type: none"> <li>1、 Probably it is due to the over current protection.Please turn off the machine, waiting the abnormal light off and then turn on the machine to work</li> <li>2、 Probably it is due to over heat protection,waiting 2-3M to ready work without turn off the machine</li> </ol>

Output current is not stable or out of potentiometer control	1、 Potentiometer is damaged and replaced 2、 All connections are not well connected, especially for the connectors, it needs to be checked
Too much spatter in MMA, difficult to weld basic electrode	Reverse polarity connection, make the earth clamp cable and electrode holder cable reverse connection