



说明书材质要求： 105g 有光铜版纸	说明书成品尺寸： 105*143mm
第一：专色用 6级防晒油墨 +CMYK油墨要求： 1.PANTONE137C专色油墨（ 专色用6级防晒油墨 ）： 如果自己配色，油墨配比为：酒联中黄（ 防晒 ）2000g 酒联金红（ 防晒 ）225g 2.C色油墨：酒联天蓝墨 3.M色油墨：酒联金红墨 4.Y色油墨：pantone123C专色油墨 5.K色油墨：酒联黑墨	第二：特别注意： 1.印刷时看样请参考我司提供的实物样品颜色。不得偏色 2.137C的专色 不得 参考C=0,M=35,Y=90,K=0对应的四色 色谱颜色来看样印刷 Pantone 137C Black（两色印刷）
折叠方式： 风琴折 （ 20P以下用风琴折 ）/ 骑马钉 （ 20P以上用骑马钉 ） 特殊情况：16P/20P：风琴折 + 对折	备注：

特别注意：此页内容不印刷

风琴折 + 对折 页面顺序

16P 页面顺序

9	10	11	封面
12	13	14	封底

1	2	3	4
5	6	7	8

20P 页面顺序

11	12	13	14	封面
15	16	17	18	封底

1	2	3	4	5
6	7	8	9	10

更改记录	1. 新产品 2. 参考ING-MMA13028			1. 新增-9货号			1. 新增ING-MMA18059-4		
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**PRODUCT
MANUAL**

INVERTER MMA WELDING MACHINE



**ING-MMA13059 ING-MMA16059 ING-MMA18059
ING-MMA13059N ING-MMA16059N ING-MMA18059N
ING-UMMA13059 ING-UMMA16059 ING-UMMA13059-9
ING-UMMA16059-9 ING-MMA18059-4**



GENERAL SAFETY WARNINGS**Safety Precautions**** WARNING!**

Read this manual before using this machine. Failure to do so may result in serious injury.

- a) *Keep your workplace clean and tidy. Disorganized and poorly lit work areas can lead to accidents. Be prudent, before beginning work carefully consider all the steps you need to take in order to perform your work. Do not operate the device when you are tired or under the influence of medication, alcohol or drugs.*
- b) *Be sure to observe the special regulations when working in spaces presenting a danger of fire and explosion.*
- c) *Never weld bicycle frames and forks, vehicle steering elements, trailer tow bars etc.*
- d) *Ensure that device is adequately ventilated. Do not place the device too close to walls, maintain a minimum clearance of 10 cm. Do not lay the device on the ventilation slots. Do not lay the device in a horizontal position. The device is not intended for mounting in a shelf or equipment trolley. The placement of welding machine on bevel more than 10° may result in toppling over!*
- e) *Electronic devices near the arc welding inverter, e.g. in a neighboring room, can be affected by the high currents occurring during welding. Switch off any nearby computers as a precautionary measure. If the electrical interference occurs beyond the neighboring rooms, then get a qualified electrician to check the protective earth of your power socket.*
- f) *Additional safety precautions are required when any of the following hazardous conditions are present: In damp locations; on metal structures such as floors, gratings, or scaffolds; when in cramped positions such as sitting, kneeling, or lying; when there is a high risk of unavoidable or accidental contact with the workpiece; when the working area have unavoidable flammable surroundings or materials; when weld at elevated working positions.*

Protection against electric shock

- a) *Only connect the device to a power socket providing 230V/50 Hz AC power. The power plug of the device must properly fit the power socket. The power plug may not be modified in any way. Do not use an adapter plug with the device. Using an unmodified power plug and a suitable power socket minimizes the risk of an electric shock. Avoid the device being accidentally switched on.*
- b) *Switch off the device when you are finished. Remove the power plug from the power socket. Do not leave the device switched on and unattended.*
- c) *Only place the electrode holder on an insulated surface, regardless of whether a welding electrode is inserted. Avoid short circuits with the earth clamp. Remove the electrode from the electrode holder when welding is interrupted or finished.*
- d) *Switch off the device - set the on/off switch on the back of the device to off and remove the power plug from the mains socket – when you make any changes to your workplace, when removing the welding cable(s), and when cleaning or transporting the device.*
- e) *Pay special attention to the condition of the power cable. If the power cable is damaged then have it immediately repaired by a qualified electrician. You can also allow our service department to repair the device.*
- f) *Avoid tensile loads on the electrical cable. Do not carry the device by the electrical cables. Remove the power plug before moving the device to another location. Do not use the power cable for any other purpose, for carrying the device, for hanging the device or for pulling the power plug out of the power socket. Keep the power cable away from heat, oil, sharp edges or moving parts. A damaged power cable increases the risk of an electric shock.*
- g) *Pay attention to the condition of the welding cable(s) especially when you receive light electric shocks when welding, or if the welding results are inadequate. Immediately repair a damaged or torn electrode cable, a damaged plug or electrode holder, a torn earth cable or a damaged earth clamp. Repairs may only be done by a qualified electrician.*
- h) *Avoid contact with the welding circuit. A light electric shock can definitely be felt and this significantly negatively affects your work.*
- i) *The low DC voltage used for welding makes the device suitable for use in restricted, damp spaces. However, whenever possible avoid soaking or*

excessive sweating in your work clothes. Make sure that you have an insulated surface that you can stand on or use for support.

- j) Pay attention to the protective earth system when working on electrically operated machines or systems. Incorrect connection to your welding device can present the danger of welding current flowing through the protective earth system and damaging the protective earth. Always reliably connect/fasten the earth clamp as close as possible to the welding point. Be absolutely sure to avoid the earth clamp of the device being placed "somewhere".*
- k) In case of accident, immediately remove the power cable from the power socket.*
- l) Only allow your device to be repaired by a qualified electrician using original spare parts. This ensures that the device remains safe to use.*
- m) Keep the device out of the rain and do not use the device in a wet environment.*

Protection against eye and skin burns

- a) Always use a face shield. Note: The product is not delivered with a face shield. Obtain a face shield carrying a quality control symbol and having protective glass that also carries a quality control symbol. The protection level of the mask should be 9-10. (You should also obtain a slag hammer (chipping hammer) and wire brush).*

CAUTION!

In addition to visible light and heat radiation, the arc also emits invisible UV radiation. In unprotected eyes, especially this UV radiation can cause very painful retinal detachment that is only noticeable after a number of hours. The UV radiation also causes sunburn on unprotected skin. Make sure that the welder's face shield is large enough and that it covers your face above, below and at the sides, to provide adequate protection from UV radiation.

- b) Warn persons in the area of the danger to eyesight by hanging a sign in the workplace stating "Warning! Do not look at the welding arc". Use a barrier to keep children, other persons and animals at least 15 m away from the workplace.*
- c) Walls in the immediate vicinity of fixed workplaces should not be light colored or glossy. Windows should be protected against irradiation by painting or covering them up to at least head height.*

- d) *Wear welding gloves, with turned-up cuffs, on both hands that also cover your arms when welding.*
- e) *Wear solid, insulated boots (not shoes) that provide protection from falling sparks and molten metal.*
- f) *Do not wear synthetic clothing or underwear.*
- g) *Note that your work piece and the remaining welding electrode are very hot after welding. Wait until the welding point has cooled before removing the slag with the slag hammer or doing any other work. Wait until the welding electrode has cooled before placing it aside or discarding it.*
- h) *As a welder, always wear the appropriate protective clothing to protect your entire body. Leather gloves with turned-up cuffs for hands and arms, a leather apron and leather work boots. When welding above your head, wear a protective suit and head protection.*

Protection against fire and explosion

- a) *Do not use the device in environments presenting a danger of explosion, or where inflammable liquids, gases or dust are present. Welding devices generate sparks and molten metal that can ignite dust or fumes.*
- b) *Remove all inflammable substances and materials from the workplace. Welding devices generate sparks and molten metal that can ignite these materials. Note that, through the welding shield, you can not recognize a fire that may occur during welding.*
- c) *Do not weld empty containers, vessels or pipes that previously contained inflammable liquids such as fuels, mineral oil or gas. Even when these were emptied a long time ago. Even the smallest residue can present a danger of explosion.*
- d) *Do not use the welding power source for pipe thawing! Do not weld on sealed container!*

Protection against harmful fumes and gases

- a) *Ensure adequate ventilation. Use a suitable air extraction system. Welding with coated electrodes produces unhealthy smoke. When welding with high-alloy electrodes, e.g. for stainless high-alloy Chrome-Nickel steel, be sure to use an air extraction system. The smoke and gases produced are particularly unhealthy and must not be inhaled.*
- b) *Ensure that adequate fresh air is available, especially in very small spaces.*

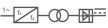
Protection against noise and electromagnetic field

Welding procedure may cause loud noise, don't weld for too long time. Use noise protective device if necessary.

- a) *Workers with heart pacemaker imbedded should do some consultation with the doctor, since the electromagnetic field may disturb the normal work of it.*

THE SYMBOLS IN INSTRUCTION MANUAL

	Read the instruction manual before using.
	Wear safety glasses, hearing protection and dust mask.
	Safety alert. Please only use the accessories supported by the manufacturer
	Waste electrical products should not be disposed of with household waste. Please recycle where facilities exist. Check with your Local Authority or retailer for recycling advice.
	Direct current (DC)
	Alternating current (AC)
	Direct and alternating current
	MMA welding
	TIG welding
	MIG/MAG welding
	Transformer
	Inverter

	DC/AC-converter
 1~50/60Hz	Line connection
	Single phase static frequency converter- transformer-rectifier

ADDITIONAL SAFETY WARNING

1. ALWAYS ensure that there is full free air circulating around the outer casing of the machine, and that the louvres are unobstructed.
2. ALWAYS use a proper welding face shield or helmet, with suitable filter lenses. Proper gloves and working clothes should be worn at all times.
3. ALWAYS remove all flammable materials from the welding area.
4. NEVER remove any of the panels unless the machine is disconnected from the supply, and never use the machine with any of the panels removed.
5. NEVER attempt any electrical or mechanical repair apart from qualified technician.
6. NEVER use or store in a wet or damp environment. DO NOT EXPOSE TO RAIN.
7. NEVER continue to weld, if, at any time, you feel even the smallest electric shock. Stop welding IMMEDIATELY, and DO NOT attempt to use the machine until the fault is diagnosed and corrected.
8. NEVER use the welder with input connections greater than 10M in length.
9. NEVER allow the cables to become wrapped around the operator or any person

INTENDED USE

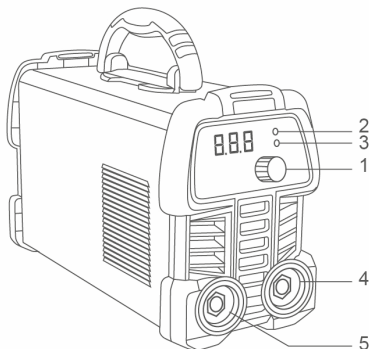
Inverter MMA welder is much more efficient, energy-saving and environment-friendly compared to traditional welders in transformer style. Varieties of metal part like FE, stainless steel, and copper etc. can be welded by this machine.

Main features

- a) IGBT inverter technology, portable and light weight, high-efficiency.
- b) Strong and powerful arc, high stiffness, long arc, strong resistance to network voltage fluctuation.
- c) Arc force, hot start can meet various requirements from end users.

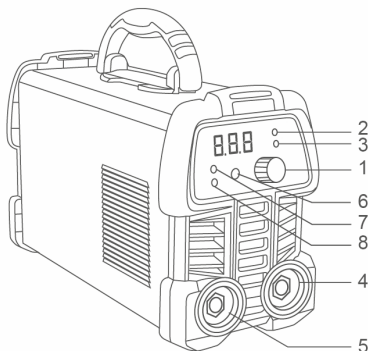
SPECIFICATIONS

Front panel control (ING-MMA13059, ING-MMA16059, ING-MMA18059, ING-MMA18059-4, ING-MMA13059N, ING-MMA16059N, ING-MMA18059N)



1. Current and electrode diameter selection knob
2. Green LED: Showing that the unit is ready for operation
3. Yellow LED: Indicating an overload/overheat/over-current
4. Negative (-) socket for connection of earth clamp
5. Positive (+) socket for connection of electrode holder

Front panel control (ING-UMMA13059, ING-UMMA16059, ING-UMMA13059-9, ING-UMMA16059-9)



- 1 Current and electrode diameter selection knob
- 2 Green LED: Showing that the unit is ready for operation
- 3 Yellow LED: Indicating an overload/overheat/over-current
- 4 Negative (-) socket for connection of earth clamp
- 5 Positive (+) socket for connection of electrode holder
- 6 Welding modes switch: MMA/ LIFT TIG
- 7 LIFT TIG indicator
- 8 MMA indicator

Panel control for welder with LED display

Sticking electrode/ Short circuit

If the electrode does not ignite, or the arc breaks while welding, the electrode can stick to the welding point. This situation is recognized by the device electronics and the welding current is automatically reduced. This allows you to easily and quickly free the stuck electrode from the welding point by moving it backwards and forwards. At the same time, you will hear a clicking sound coming from the device

and the LED display will blink. A short circuit between the electrode cable and the earth cable is also indicated by the device in this manner.

Overload/ Overheat/ Over-current protection

the arc is extinguished, the device no longer ignites the electrode and the yellow LED illuminates. Do not switch off the device, just wait for 4 to 5 minutes until the internal fan has sufficiently cooled the semiconductor heatsink within the device and the green LED illuminates again. Only then can you continue welding or completely switch off the device.

Model No.	ING-MMA13059 ING-MMA13059N	ING-UMMA13059	ING-MMA16059 ING-MMA16059N
Power Supply	220-240V~50/60Hz 1PH	110-120V~50/60Hz 1PH	220-240V~50/60Hz 1PH
Open Voltage	75V	73.7V	78V
Protection Class	IP21S	IP21S	IP21S
Welding Current	15-130A	15-130A	15-160A
Duty Cycle	45%	45%	45%
Electrode Diameter	1.6-3.2mm (1/16 " -1/8 ")	1.6-3.2mm (1/16 " -1/8 ")	1.6-4.0mm (1/16 " -5/32 ")

Model No.	ING-UMMA16059	ING-MMA18059 ING-MMA18059-4 ING-MMA18059N
Power Supply	110-120/220-240V~50/60Hz 1PH	220-240V~50/60Hz 1PH
Open Voltage	85V	77V
Protection Class	IP21S	IP21S
Welding Current	15-160A	15-180A
Duty Cycle	45%	45%
Electrode Diameter	1.6-4.0mm (1/16 " -5/32 ")	1.6-4.0mm (1/16 " -5/32 ")

Model No.	ING-UMMA13059-9	ING-UMMA16059-9
Power Supply	127V~50/60Hz 1PH	127/220V~50/60Hz 1PH
Open Voltage	73.7V	85V
Protection Class	IP21S	IP21S
Welding Current	15-130A	15-160A
Duty Cycle	45%	45%
Electrode Diameter	1.6-3.2mm (1/16 " -1/8 ")	1.6-4.0mm (1/16 " -5/32 ")

Accessories

1. Electrode holder with cable 1pcs
2. Earth clamp with cable 1pcs
3. Wire brush 1pcs
4. Helmet 1pcs

OPERATION

First, connect the earth clamp to the workpiece. Ensure a good electrical connection when connecting the earth clamp. Remove any rust, scale, paint or other contamination using a wire brush or angle grinder before connecting the earth clamp.

If you are using a steel welding table, then regularly check the earth connection and the earth clamp for signs of loosening, corrosion or other contamination. A good earth connection is essential to a good welding result.

Igniting the electrode

Insert the electrode into the electrode holder by pressing the lever on the electrode holder. Hold the welder's shield in front of your eyes/face before igniting the electrode.

NOTE

The proportion of eye-damaging UV radiation is especially high during ignition.

To ignite the electrode, move the electrode over the welding point in a similar manner to striking a match. The unloaded DC voltage of about 85 V ignites the electrode very quickly (so-called hot start) and the DC voltage causes the electrode to melt very evenly. If you are new to welding, do not expect a good result at the first attempt. Use waste plates for practice. If necessary, take part in a welding course.

Sticking electrode

If the electrode does not ignite, or the arc breaks while welding, the electrode can stick to the welding point. This situation is recognized by the device electronics and the welding current is automatically reduced. This allows you to easily and quickly free the stuck electrode from the welding point by moving it backwards and forwards. At the same time, you will hear a clicking sound coming from the device and the LED display will blink. A short circuit between the electrode cable and the earth cable is also indicated by the device in this manner. In the rare situations where the electrode cannot be easily and quickly removed from the welding point, open the lever on the electrode holder and remove the electrode holder from the stuck electrode. Remove the stuck electrode from the welding point using a pair of pliers. Be careful when touching partially welded electrodes, since they can be very hot.

Overload protection and switch-on duration

The overload protection: the arc is extinguished, the device no longer ignites the electrode and the yellow LED illuminates. Do not switch off the device, just wait for 4 to 5 minutes until the internal fan has sufficiently cooled the semiconductor heatsink within the device and the green LED illuminates again. Only then can you continue welding or completely switch off the device.

⚠ NOTE

To preserve the semiconductors within the device (from heat accumulation), do not immediately switch off the device after an overload but rather wait a few minutes before switching off, as described above.

Automatic welding current regulation

The device electronics provide an even welding current, which recognizably improves your welding results. This allows even beginners to very quickly produce satisfactory welds.

MAINTENANCE&MALFUNCTIONS

Possible malfunctions and methods of their eliminations

Fault	Remedy
Trip when boosting up	There is short-circuit inside the welder, bridge rectifier, IGBT and output rectifier diodes may be damaged; Please contact the supplier to repair.
Fan doesn't work; No welding output	• Ensure the air switch is closed; • Ensure the power supply to which input cable connected is with power and within the range of normal working voltage of the welder; • Fan power cord is in bad contact. Make sure it is connected effectively; • Please contact the supplier or manufacturer if the above happens.
No welding output while power indicator and fan works	• Check whether the plug wires are in bad contact; • Output connection is open or in bad contact; • Control panel is damaged; Please contact the supplier or manufacturer to change.
Unstable welding arc	Check if this is caused by magnetic blow; Try to change the connecting position of the ground clamp which may improve this or adopt other methods to prevent magnetic blow.
Low output current	• Ground clamp is in bad contact; • Output quick connector isn't tightened; • Control panel is damaged; Please contact the supplier or manufacturer to change; • The output voltage isn't within the range of rated voltage
Gas holes in welding bead	• The wind is too strong when welding; • There's grease and rusty on the surface of the workpiece; • Magnetic blow happens; • Electrode has quality problem or gets damp

If it's not the reasons listed above, send the welding machine to our service center or responsible vender for help.

WARNING!

Never try to fix the welding machine yourself, never open the enclosure. We are not responsible for any accident resulting from your improper dealing with the machine.



MADE IN CHINA 1125.V03

INGCO Global www.ingco.com

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