PROGRAM UNIT

MA-660A®

OPERATION MANUAL



MA-660A

Thank you for purchasing our Program Unit **MA-660A**. Before using, read this operation manual carefully; after reading, save it in a proper place where you can easily access.

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EU Declaration of Conformity

1. Special Precautions

(1) Safety Precautions

Before using, read "Safety Precautions" carefully to understand the correct method of use.

- These precautions are shown for safe use of our products and for prevention of damage or injury to operators or others. Be sure to read each of them, since all of them are important for safety.
- The meaning of the words and symbols is as follows.



Denotes operations and practices that may imminently result in serious injury or loss of life if not correctly followed.



Denotes operations and practices that may result in serious injury or loss of life if not correctly followed.



Denotes operations and practices that may result in personal injury or damage to the equipment if not correctly followed.



These symbols denote "prohibition". They are warnings about actions out of the scope of the warranty of the product.





These symbols denote actions which operators must take.





Each symbol with a triangle denotes that the content gives DANGER, WARNING or CAUTION to the operator.

A DANGER



Do not touch the inside of the Equipment unnecessarily

Since very high voltages are applied to the interior of this Equipment, it is dangerous to touch it unnecessarily. Do not open the cover for the purposes other than replacing the battery. When trouble occurs and inspection or repair is needed, consult us.



Never disassemble, repair or modify the Equipment

These actions can cause electric shock and fire. Do not do anything other than the maintenance described in the operation manual.



Never burn, destroy, cut, crush or chemically decompose the Equipment This product incorporates parts containing gallium arsenide (GaAs).

1. Special Precautions

MARNING



Do not put your hands between the electrodes

When welding, keep your fingers and hands away from the electrodes.



Do not touch any welded part or electrodes during welding and just after welding finished

The welded part of a workpiece, electrodes and arm are very hot.

Do not touch them; otherwise you may be burnt.



Do not splash water on the Equipment

Water splashed over the electric parts can cause electric shock and short circuits.



Connect the specified cables securely

Cables of insufficient current capacities and loose connections can cause fire and electric shock.



Do not damage the connecting cables

Do not tread on, twist or tense any cable. The connecting cables may be broken, and that can cause electric shock and fire. When repair or replacement is needed, consult us.



Stop the operation if any trouble occurs

Continuous operation after occurrence of a trouble such as burning smell, abnormal sound, abnormal heat, smoke, etc. can cause electric shock and fire. If such a trouble occurs, immediately consult us or your distributor.



Persons with pacemakers must stay clear of the welding machine

A person who uses a pacemaker must not approach the welding machine or walk around the welding shop while the welding machine is in operation, without being permitted by his/her doctor. The welding machine generates a magnetic field and has effects on the operation of the pacemaker while it is turned on.



Protective gear must be worn

Put on protective gear such as protective gloves, long-sleeve jacket, leather apron, etc. Surface flash and expulsion can burn the skin if they touch the skin.



Wear protective glasses

If you look at the flash and expulsion directly during welding, your eyes may be damaged. If any surface flash and expulsion gets in your eye, you may lose your eyesight.

ACAUTION



Do not place a water container on the Equipment

If water spills, insulation will deteriorate, and this may cause electric leak and fire.



Keep combustible matter away from the Equipment

Surface flash and expulsion can ignite combustible matter. If it is impossible to remove all combustible matter, cover them with non-combustible material.



Do not cover the Equipment with a blanket, cloth, etc.

If such a cover is used, it may be overheated and burn.



Do not use this Equipment for purposes other than welding

Use of this Equipment in a manner other than specified can cause electric shock and fire.



Use ear protectors

Loud noises can damage hearing.



Keep a fire extinguisher nearby

Keep a fire extinguisher in the welding shop in case of fire.



Maintain and inspect the Equipment periodically

Maintain and inspect the Equipment periodically, and repair any damage nearby before starting operation.

(2) Precautions for Handling

- Handle the Transformer with care so as not to make an impact such as drop on it.
- Do not use this Equipment in the following places:
 - damp places (where humidity is higher than 90%),
 - hot or cold places (where temperatures is above 40°C or below 5°C),
 - places near a high noise source,
 - places where chemicals are handled,
 - places where water will be condensed,
 - dusty places, and
 - places at an altitude above 1000 meters.
- Clean the outside of the Equipment with a soft, dry cloth or one wet with a little water. If it is very dirty, use diluted neutral detergent or alcohol. Do not use paint thinner, benzine, etc., since they can discolor or deform the Equipment.
- Do not put a screw, a coin, etc., in the Equipment, since they can cause a malfunction.
- Operate the Equipment according to the method described in this operation manual.
- Operate the switches and buttons carefully by hand. If they are operated roughly or with the tip of a screwdriver, a pen, etc., this will cause malfunction or damage.
- Operate the switches and buttons one by one. If two or more are operated at a time, the Equipment may malfunction or be damaged.

(3) On Disposal

This product incorporates parts containing gallium arsenide (GaAs). At the time of disposal, separate it from general industrial waste or domestic waste and carry out the disposal in accordance with applicable laws and regulations.

2. Features

The **MA-660A** is a program unit which is connected to our welding power supplies and used to set the operating condition, etc. of those products.

The **MA-660A** can be connected to applicable products; it can be used by rewriting the contents of the memory.

CAUTION

Normally, the equipment can be used as a program unit just after the power is turned on. However, it takes several minutes to rewrite the contents of the memory in the following cases.

- When there is no program in the memory.
- When the model number of equipment differs from that of the equipment previously connected.
- When the program version of equipment differs from that of the equipment previously connected.

3. Packaging

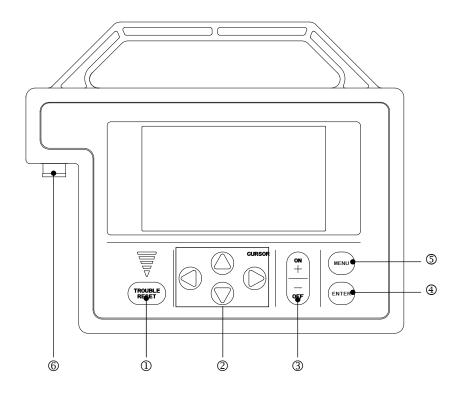
(1) Accessories

| Item | Model No. | Item No. | Q'ty |
|------------------|--------------------------------|----------|------|
| Operation manual | AS1175809(OM1175806,OM1175807) | 1175809 | 1 |

(2) Options

| Item | | Model No. | Item No. |
|---------------|------|------------|----------|
| | 2 m | SK-1176504 | 1176504 |
| | 5 m | SK-1176505 | 1176505 |
| Circuit cable | 10 m | SK-1176506 | 1176506 |
| | 15 m | SK-1176507 | 1176507 |
| | 20 m | SK-1176508 | 1176508 |

4. Name and Functions of Each Section



① TROUBLE RESET key

Pressing this key after the cause of trouble is eliminated while an error message is indicated turns off the error massage.

② CURSOR keys

Used to move the cursor () to select an item.

3 +ON/-OFF keys

Used to change the value of a selected item or turn it on and off.

4 ENTER key

Used to write the set or changed value and [ON/OFF] data in the Power Supply connected to the **MA-660A**. After any data is set or changed, be sure to press this **ENTER** key to write that data before moving the cursor.

If this ${\tt ENTER}$ key is not pressed, the Power Supply connected to the ${\tt MA-660A}$ does not recognize the set data.

S MENU key

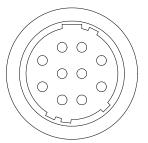
Used to display the MENU screen. Press this key to return to the MENU screen from any other screens.

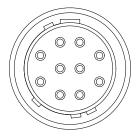
6 Connector

Used to connect the circuit cable. Connect the other end of the cable to the PROGRAM UNIT connector of the Power Supply.

CAUTION

When connecting the circuit cable, insert it with aligned with the key groove of the connector. The connector may be broken if inserted with force.





MA-660A side (male)

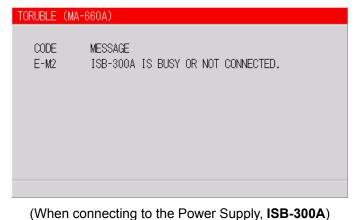
Circuit cable side (female)

CAUTION

No settings or changes may be made to any item from the receipt of the start signal through the end of the weld sequence and turning off the start signal.

If setting is performed during the weld sequence, the following screen appears. Press the **TROUBLE RESET** key $\ \).$

Also, when changing a screen to call up another setting schedule during the weld sequence, the **TROUBLE RESET** key ① does not work even if the following screen appears. In this case, you need to turn on the power again.



5. Explanation of Operation

Normally, the **MA-660A** can be used as a program unit of the connected product just after the power is turned on.

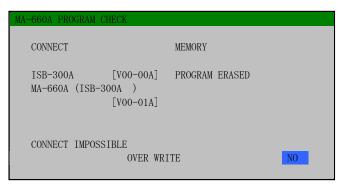
For how to operate, see the Operation Manual attached to the connected welding power supply.

In the following cases, however, the **MA-660A** works as a program unit several minutes after being turned on because of rewriting the contents of the memory.

■ When there is no program in the memory.

Download the program in the memory.

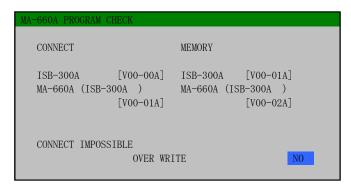
Select YES for OVER WRITE and press the **ENTER** key to rewrite the contents of the memory.



■ When the model number and the program version of the welding power supply stored in the MA-660A differ from those of the connected welding power supply.

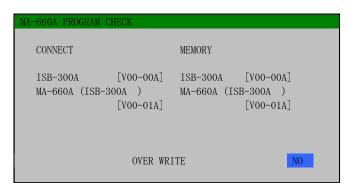
Download the program in the memory.

Select YES for OVER WRITE and press the **ENTER** key to rewrite the contents of the memory.

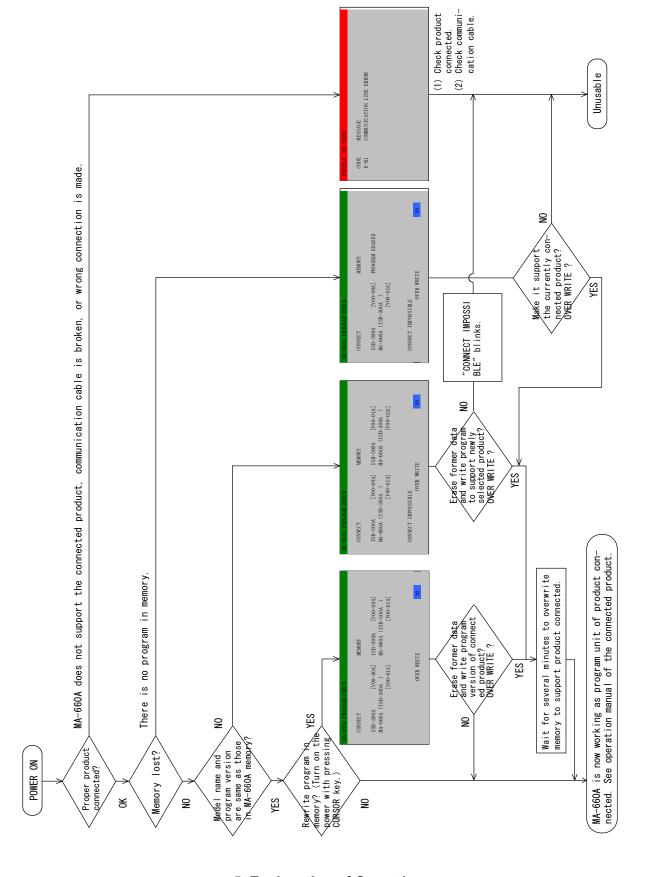


■ When you want to rewrite the program in the memory with pressing the upper portion of the CURSOR key at power-on.

Select YES for OVER WRITE and press the **ENTER** key to rewrite the contents of the memory.



Flowchart of Operation after Power is Turned on



5. Explanation of Operation

6. Fault Code List

In the event of a problem with the Power Supply, the **MA-660A** displays the fault code and message.

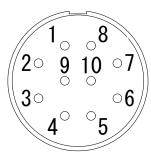
In such cases, read this section carefully, then inspect the equipment and take the necessary countermeasures. If you have any questions, consult us or your distributor.

| Fault code | Error message | Cause | Measures |
|------------|--|--|--|
| E-M1 | COMMUNICATION LINE ERROR | ·Cannot be connected to the welding power supply. | Check if the circuit cable for broken wire and for wrong connection. Check if the MA-660A supports the connected welding power supply. Check the connected welding power supply for fault. |
| E-M2 | *** IS BUSY OR NOT CONNECTED Note) *** indicates the model number of welding power supply connecting to the MA-660A. | The welding power supply is performing the welding sequence. Process of schedule setting is being executed. Cannot be connected to the welding power supply. | Wait until the welding sequence of welding power supply is complete. Set the next schedule after the process of schedule setting is complete. Check if the circuit cable for broken wire and for wrong connection. Check the connected product for fault. |

7. Specifications

| Power supply voltage | 24 V DC (supplied from the welding power supply) |
|-----------------------|---|
| Display | TFT liquid crystal panel |
| Operation environment | Ambient temperature: +5° – +40°C Maximum humidity: 90% max. (Dew condensation not allowed) Maximum altitude: 1000 meters max. |
| Storage environment | Temperature range: -10°- +55°C Maximum humidity: 90% max. (Dew condensation not allowed) |
| Case protection | IP40 |
| Outline dimensions | 165 mm (H) × 200 mm (W) × 40 mm (D) (Not including projections) |
| Mass | 470 g |

8. Connector Specifications



- 1: RD + / SD +
- 2: RD / SD -
- 3: NC
- 4: NC
- 5: NC
- 6: +24 V DC IN supplied from the connected welding power supply
- 7:0V
- 8: Shield
- 9: NC
- 10: NC

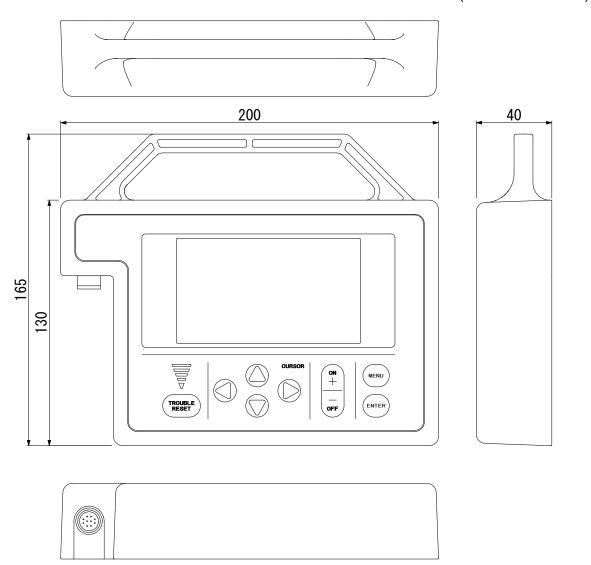




Use the cable purchased from us.

9. Outline Drawing

(Dimensions in mm)





EU Declaration of Conformity

The company/manufacturer:

AMADA WELD TECH CO., LTD.

95-3, Futatsuka, Noda-City, 278-0016 JAPAN

Herewith declares in his own sole responsibility conformity of the product

Designation:

PROGRAM UNIT

Types/Serial Number, etc.:

MA-660A-00-00

With applicable regulations below

EC Directive:

EMC Directive 2014/30/EU

RoHS Directive 2011/65/EU, (EU)2015 / 863

Harmonized European/International Standards applied:

ISO 12100: 2010, ISO 13849-1: 2015

IEC 60204-1: 2016

IEC 62135-1: 2015 / COR1: 2016, IEC 62135-2: 2020

Importer Distributor in EU:

AMADA WELD TECH GmbH

(please place distributor/importer stamp here)

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Division:

Place and Date

AMADA WELD TECH CO., LTD.

2021. 5.18

Noda-City/Japan 2021-05-18

J. Jingu

Toshiaki Jingu / General Manager Quality Guarantee Department Name/Signature/Position