

SAIKY

MR3 · MR4

LA type soldering iron controller

Instruction manual

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The 1st edition

JAPAN BONKOTE CO., LTD.



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1. Preface

Thank you very much for purchasing MR3 · MR4 CONTROLLER.

Please read this Notes for safety before use, and use this machine properly.

After reading this manual, please keep it.

2. Notes for safety

CAUTION

Be sure to read this manual before using this machine to prevent potential shock hazards, fire or malfunctions.

- Never touch the power cord and the soldering iron with wet hands.
- Never dampen the iron tip with water or other liquid.
- Take great care to handle the soldering iron while it is in use.
- Unplug the iron unit and cool it down when replacement or maintenance.
- Do not overhaul the machine when the machine has trouble. Contact us for maintenance.
- Be sure to use a fuse with appropriate capacity.

3. Auto Tuning before use

We would recommend Auto Tuning before use, although each parameter is set in the standard value at the shipment. By doing so, soldering irons will ensure optimum performance according to iron tip temperature, shape of iron tip, working environments and so on.

※ This function will be set automatically by keypad. (Please refer to P.8)

4. Notes for installation and use

- This machine is designed with earth specification. Make sure to use an earth equipped receptacle. If you do not have such receptacle, install an earth separately.
- Use this machine on a neat bench covered with a conducive mat.
- Keep away from too much moisture, direct sunshine, dust, vibration and flammable objects.
- In order to prevent static electricity, use a static electricity removal device, wrist strap and so on.
- Odor is generated due to the use of solder and flux. Be sure to ventilate work places.
- Be sure to pull out the power plug when the machine is not used.
- Be sure to grab the power plug instead of the cord when plugging and unplugging.
- When change power voltage from 100V to 220V for example, make sure to confirm the specifications of the controller parts before use.
- Do not use this machine for purpose other than the original purpose.

5. Preparation before use

5-(A) : Contents of soldering station set



- ① 3P Power cord ※
- ② MR3 · MR4 Controller
- ③ BON-14 Iron stand
- ④ JS-175 Soldering iron unit

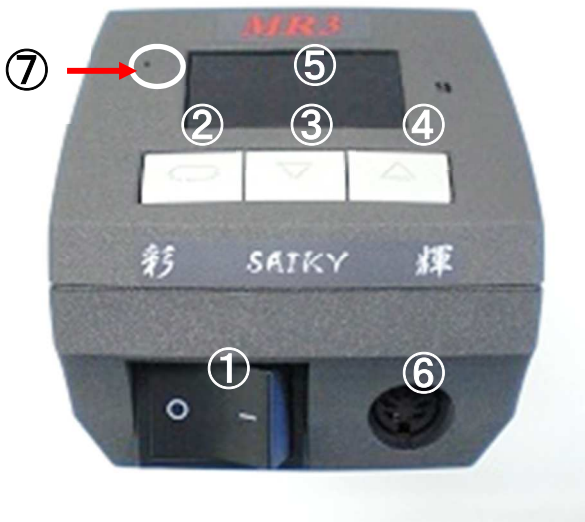
※ 3PCHI plug cord for 100V, or 3EPV plug cord for 220V comes with a controller.

※BON-12 Iron stand comes with JS-90 station set.

5-(B) : Name of the parts

《 FRONT 》

《 REAR 》



- ① Power switch
- ② 「◎」 Enter / Select” Key
- ③ 「▽」 DOWN Key
- ④ 「△」 UP Key
- ⑤ Display
- ⑥ Soldering iron connector socket
- ⑦ Reset switch hole

- ⑧ Power inlet
- ⑨ Fuse holder (100V-2A / 220V-1A)






5-(C) : How to assemble



- ① Make sure that the power voltage of the unit and the power source is the same.
- ② Make sure that the power switch is OFF.
- ③ Connect the power cord into the power inlet at the rear face.
- ④ Connect the soldering iron cord into the connector socket at the front face.
- ⑤ Assemble the iron stand (BON-14), and rest the soldering iron in its holder.

6. How to use

6-(A): OPERATION mode

- ① Turn on the power switch.
- ② 「  」 is instantly indicated at the display. When the iron tip temperature is under 45°C, 「 」 is indicated. When it exceeds 45°C, the iron tip temperature is indicated
- ③ When the iron tip temperature approaches around under 5°C from the SET IRON TIP TEMPERATURE and it becomes stable, the buzzer beeps 3 times.

※ ATTENTION:

Make sure to start soldering after confirming the iron tip temperature stability and the beep sounds to prevent the soldering defects.

6-(B): AUTO POWER DOWN mode

The iron tip temperature falls down to the stand-by temperature automatically after passing a certain period of time with no using the soldering iron. In AUTO POWER DOWN mode, the temperature value at the display blinks.

How to exit AUTO POWER DOWN mode:

- Lower the iron tip temperature drastically by touching a wet sponge.
- Turn the power switch off once, then on again.

6-(C): AUTO POWER OFF mode

When AUTO POWER DOWN mode lasts a certain period of time, the display shows 「OFF」. After passing one more minute, the power switch is shut down mechanically.

How to exit AUTO POWER OFF mode:

- Turn on the power switch again.

7. Several functions (Setting.)

7-(A): Tip temperature setting

Default: 350°C Setting range: 50 ~ 450°C

- ① Press 「◎」, and the display shows 「5」 for 1 second.

The iron tip temperature setting mode is started.

- ② The hundreds place blinks to enter a suitable digit by using 「△」 or 「▽」 key.

The enterable digit is 「0~4」. Press 「◎」 key to complete the setting.

- ③ The tens place blinks to enter a suitable digit by using 「△」 or 「▽」 key.

Press 「◎」 key to complete the setting.

- ④ The units place blinks to enter a suitable digit by using 「△」 or 「▽」 key.

Press 「◎」 key to complete the setting.

⑤ 「 $\text{E} \curvearrowright$ 」 blinks at the display. Press 「 \odot 」 key again, and the buzzer starts to beep 5 times to return to the operation mode.

※ If you happen to enter unsuitable temperature, which is out of the setting range, the controller does not recognize it, and the previous set temperature is indicated with buzzer sounds. Start above procedure again from the beginning.

※ **ATTENTION**

When you change the SET IRON TIP TEMPERATURE, be sure to confirm 「 $\text{E} \curvearrowright$ 」 at the display, then press 「 \odot 」 key to complete the setting.

7-(B): Confirmation of the SET IRON TIP TEMPERATURE

① Keep pressing 「 Δ 」 key for more than 3 seconds, and the display shows the SET IRON TIP TEMPERATURE.

In order to distinguish from the iron tip temperature, the SET IRON TIP TEMPERATURE is indicated together with “.” (e.g. 3.5.0.)

② When you release 「 Δ 」 key, the display shows the iron tip temperature again.

7-(C): Soldering tip temperature compensation

Default: 0°C Setting range: - 99 ~ 99°C

Whenever change soldering iron tips, we need to compensate for them.

Example 1)

Indicated temperature (by a controller) : 350°C

Measured temperature (by a thermometer) : 336°C

「350°C」 - 「336°C」 = 「14°C」 \Rightarrow Compensate value: 「 $_ 1 4$ 」

Example 2)

Indicated temperature (by a controller) : 350°C

Measured temperature (by a thermometer) : 358°C

「350°C」 - 「358°C」 = 「-8°C」 ⇒ Compensate value: 「-08」

- ① Press 「▽」 key more than 3 seconds to compensate the temperature.
- ② 「50」 and 「the previous set value」 is alternately indicated at the display, then the compensation mode is started.
- ③ The hundreds place shows the plus or minus sign. Press 「▽」 or 「△」 key to choose them. However plus sign is in blank at the place.

Example 1: 「_」

Example 2: 「-」

- ④ Press 「◎」 key to complete the setting.
- ⑤ The tens place blinks to enter a suitable digit by using 「▽」 or 「△」 key.

Example 1: 「1」

Example 2: 「0」

- ⑥ Press 「◎」 key to complete the setting.
- ⑦ The units place blinks to enter a suitable digit by using 「▽」 key or 「△」 key.

Example 1: 「4」

Example 2: 「8」

- ⑧ Press 「◎」 key to complete the setting.
- ⑨ 「E n d」 blinks at the display. Press 「◎」 key again, and the buzzer starts to beep 5 times to return to the operation mode.

7-(D): Alarm setting of upper and lower temperature limit

Default: 99°C

Setting range: 0 ~ 99°C

When the iron tip temperature is out of the limits, the alarm starts to beep.

The alarm stops when the temperature returns into the setting range.

- ① When the power is ON, turn it OFF once.
- ② Turn on the power switch while pressing 「◎」 key.

- ③ Release 「◎」 key within 2 seconds after 「 . . . 」 is indicated at the display.
- ④ 「 A_L 」 and 「the previous set value」 is alternately indicated at the display, then the alarm setting mode is started.
- ⑤ The tens place blinks to enter a suitable digit by using 「▽」 or 「△」 key.
- ⑥ Press 「◎」 key to complete the setting.
- ⑦ The units place blinks to enter a suitable digit by using 「▽」 or 「△」 key.
- ⑧ Press 「◎」 key to complete the setting.
- ⑨ 「 E n d 」 blinks at the display. Press 「◎」 key again, and the buzzer starts to beep once to return to the operation mode.

7-(E): Auto tuning setting

Default: The value at the set temperature 350°C with JS-175-BK7-2C iron.

- What the Auto tuning is.

The temperature control method of LA type soldering irons is “PID method”.

The Auto tuning function calculates the optimum PID value automatically when we change iron tips or the SET IRON TIP TEMPERATURE.

Be sure to perform this function in order for irons to ensure optimum performances

- When to perform the Auto tuning.
 - When use a soldering iron first time.
 - When replace soldering iron types. (JS-90↔JS-175)
 - When replace soldering iron tips. (BK7 series↔BK11 series)
 - When change the SET IRON TIP TEMPERATURE by more than 50°C.
 - When replace heaters.
- Setting procedure
 - ① When the power is ON, turn it OFF once.

- ② Rest the soldering iron on an iron stand until the Auto tuning is completed.
- ③ Turn on the power switch while pressing both of 「▽」 「△」 keys.
- ④ The display shows 「 A_t 」 first.
- ⑤ Next, the display shows 「 A_t 」 and 「tip temperature」 alternately.
- ⑥ After 30 seconds, 「 A_t 」 disappears and the buzzer starts to beep 5 times to return to the operation mode.

7-(F): Parameter setting mode

Setting the following items.

Item No.	Display message	Description	Setting range	Default
1-1	E_d	Setting a PW(password)	on, oFF	oFF
1-2	E_d^n	Entering a PW(password)	000~999	000
2-1	SLP	Setting Auto power down function	on, oFF	on
2-2	P_d_t	Entering Auto power down time	01~99 minutes	30 minutes
2-3	P_d_S	Entering Auto power down temperature	0~300°C	150°C
2-4	P_o_t	Entering Auto power off time	00~99 minutes	30 minutes
3-1	bu_1	Setting Buzzer 1 (operation sound)	on, oFF	on
3-2	bu_2	Setting Buzzer 2 (alarm sound)	on, oFF	on
4	E_n_d	End of setting		

➤ Setting procedure

- ① When the power is ON, turn it OFF once.
- ② Turn on the power switch while pressing 「◎」 key.
- ③ Release 「◎」 key when the display shows 「 E_d 」 or 「 E_d^n 」.
- ④ Please follow below descriptions of each item No.

No.1-1 Choose 「 on 」 ⇔ 「 oFF 」 by using 「▽」 or 「△」 key. Press 「◎」 key to complete the setting.

※ If you choose 「 on 」, it is always necessary to enter the password when you perform 7-(A) ~ (F). ※ except 7-(B)

※ If you choose 「 oFF 」, No.1-2 is not displayed.

No.1-2 Enter the PW. The display shows 「 - - - 」 or 「current PW」 .
Enter 3-digit PW by using 「▽」 or 「△」 key.

Press 「◎」 key to complete the setting.

※ When the display shows 「 E r r 」 , it means the PW is wrong. Turn off the power switch and try again.

※ When you forget the PW, proceed 7-(G) Memory clear. The PW after Memory clear is 「000」 . Be sure to remember your PW.

No.2-1 Choose 「 0 0 」 ⇔ 「 0 F F 」 by using 「▽」 or 「△」 key. Press 「◎」 key to complete the setting

※ If you choose 「 0 F F 」 , No.2-2~No.2-4 are not displayed.

No.2-2 Enter a suitable time by using 「▽」 or 「△」 key. Press 「◎」 key to complete the setting

No.2-3 Enter a suitable temperature by using 「▽」 or 「△」 key. Press 「◎」 key to complete the setting

※ The enterable value must be less than the SET IRON TIP TEMPERATURE.

※ If the entered value is NOT less than the SET IRON TIP TEMPERATURE, Auto power down mode will not work.

No.2-4 Enter a suitable time by using 「▽」 or 「△」 key. Press 「◎」 key to complete the setting

No.3-1 Choose 「 0 0 」 ⇔ 「 0 F F 」 by using 「▽」 or 「△」 key. Press 「◎」 key to complete the setting. (For all of alarm sound and operation sound.)

※ If you choose 「 0 F F 」 , No.3-2 is not displayed and proceed to No.4

No.3-2 Choose 「 0 0 」 ⇔ 「 0 F F 」 by using 「▽」 or 「△」 key. Press 「◎」 key to complete the setting. (For ready warning sound until THE SET IRON TIP TEMPERATURE)

No.4 「 E r d 」 blinks at the display. Press 「◎」 key again, and the buzzer starts to beep once to return to the operation mode.

※ **ATTENTION**

When you change the parameters , be sure to confirm 「E n d」 at the display, then press 「◎」 key to complete the setting.

7-(G): Memory clear mode

Memory clear function resets the memory contents stored in the controller to the default. (All of soldering iron tip temperature and parameters are rewritten to the default.) Setting procedures are as follows.

- ① Insert a thin bar into the reset switch hole at the front face and keep pushing the internal switch slightly.
- ② Stop pushing the switch when the display shows 「E L r」 in blinking.
- ③ Press 「▽」 key to start the memory clear function.
- ④ The display shows 「- - -」 while the memory clear function is working.
- ⑤ 「E n d」 blinks at the display. Press 「◎」 key again, and the buzzer starts to beep 3 times to return to the operation mode.

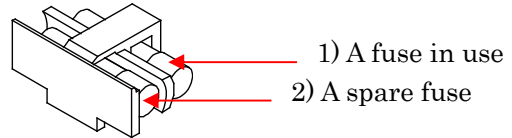
※ **ATTENTION**

Be sure to confirm 「E n d」 at the display, then press 「◎」 key to complete the setting.

8. How to replace a fuse



Remove a fuse holder with a suitable tool like a flathead screwdriver.
Check out the fuse 1) in use.
If it blows out, replace it to the spare one 2).



== A spare fuse ==

* For 100 V: 250 VAC 2A PSE certificated

* For 220 V: 250 VAC 1A VDE or SEMKO certificated

Inside of fuse holder

9. Standard specification

➤ Controller part








Model	MR-3	MR-4
Input voltage	100 VAC	220 VAC
	$\pm 10\%$ 50/60 Hz	
Power consumption	10 W (controller part only)	
Temperature setting range	50 ~ 450 °C	
Temperature control method	PID control (Auto tuning setting)	
Temperature accuracy	Unloaded ripper temp. $\pm 3^{\circ}\text{C}$	
Power cord	3 Pin plug cord	
Operating ambient temperature	5 ~ 40 °C	
Heater voltage	24 VAC	
External dimensions	87(W) x 165(D) x 94(H) mm	
Weight	1.9 kg	

➤ Applicable soldering iron

Model	JS-175	JS-90
Heater voltage	24 VAC	24 VAC
Heater output	175 W	90 W
Ground line resistance	$\leq 2\Omega$	$\leq 2\Omega$
Leak voltage	$\leq 2\text{ mV}$	$\leq 2\text{ mV}$
Cord	1.2 m	1.2 m
Length (w/o cord)	228 mm (w/ BK7 tip) 233 mm (w/ BK11 tip)	206 mm
Weight	31 g (w/ BK7 tip) 44 g (w/ BK11 tip)	25 g

10. Guarantee and after sales service

10-(A): Trouble shooting

Symptom	Probable cause	Measures
「  」 is blinking at the display.	A soldering iron unit and a controller are NOT connected firmly.	Check the soldering iron connector socket at a front face of a controller. Insert the soldering iron cord into the connector socket firmly.
	A soldering iron tip likely comes off an iron unit.	Check the iron tip and connect it to the iron unit firmly.
	An iron tip sensor is disconnected.	Replace the iron tip if necessary.
The display does NOT light.	A power plug is NOT connected with a receptacle. A power switch is NOT ON.	Check the power plug or switch.
	A fuse blows out.	Replace the fuse.
The display shows 「   」 and an iron unit does not heat up. Next, 「  」 starts blinking and the power turns off.	A soldering iron unit and a controller is NOT connected firmly.	Check the soldering iron connector socket at a front face of a controller. Insert the soldering iron cord into the connector socket firmly.
	A heater is consumed.	Check the heater conduction and replace it if necessary.
Unstable temperature	Auto tuning is NOT implemented.	Implement Auto tuning.
Upper / lower alarm keeps on beeping. 「  」 starts blinking and the power turns off.	Auto tuning is NOT implemented.	Implement Auto tuning.
	The setting range is narrow.	Review the setting range.
The display shows 「   」 when entering PW.	The wrong PW (password) is entered.	Enter the correct PW.
Forgot PW		Proceed 7-(G) Memory Clear. 「000」 is default.

10-(B): Guarantee

Our products are shipped after sever factory tests or inspections.

However, if you find malfunctions or defects due to problems in workmanship or transportation, please contact your dealers or us.

The guarantee period of your products is in one year after your purchase, except for replacement parts.

10-(C): After sales service

When you think the system does not operate properly, read this manual again to check. If still troubles are unsolved, please contact your dealers or us.

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