APOLLO SEIKO

Soldering Controller

OMEGA

Instruction Manual -1

Thank you for purchasing the OMEGA.
Read these instructions thoroughly for proper use of this machine.
Make sure to read "Safety Notes" before you use machine.
This information protects you from possible dangers during use.

Apollo Seiko Ltd.

Ver.202202

Safety Notes

- This manual includes the important information to use this machine safely. This also includes useful information to prevent injury or damage to property. Please read this manual carefully prior to connecting or operating the OMEGA.
- Keep this manual near the machine at all times.

Supply only specified voltage

- Do not connect to a power supply greater than the specified voltage. If voltage is exceeded, electrical shock and /or damage to the unit may occur.
- Make sure that the electrical outlet is properly grounded. If the outlet is not properly grounded, electrical shock and/or damage to the unit may occur.

Working ambient temperature and relative humidity

- This machine has been designed for use between 10～40 degrees C,10%～85%.
- Do not use this machine exceeding these conditions.

Setting temperature of the heater controller

- Do not set the temperature of the heater controller over 500 degrees C. It may cause a malfunction.

Handle with care

- This machine is designed to use a solder feeder and hot iron for soldering. Touching a heated soldering iron will cause severe burns. Make sure the iron has cooled down before you are touching it for replacing the iron cartridge.
- Please handle this machine with care. If the machine is dropped or sustains great impact / vibration, it may cause malfunction.

If you do not use the machine for a long time

- Please turn off the power, remove the power cable and keep it in a dry and cool place.

If you note malfunction on machine

- If the machine malfunctions, turn off the power immediately and contact the dealer you purchased the machine from.

The warranty period

- The warranty period is one year after the product is delivered.
- If an unexpected malfunction which our company bears responsibility occurs within the warranty period, we repair it in free of charge.

Immunity from responsibility

- We do not take any responsibility for damage caused by misuse, mistakes, accidents, use in abnormal conditions or natural disasters, such as in an earthquake, a fire etc.
- We do not take any responsibility on contingency loss, (Business loss, Business stop, Overtime, Scrap or Reduced Output) caused by a machine stoppage or any issues with Apollo Seiko spare & consumable parts.
- We do not take any responsibility for losses or damages caused by operating with other means not mentioned in this manual.
- We do not take any responsibility for losses or damages caused by a wrong connection with other equipment.
- If for any reason the internal circuitry is tampered with altered or repaired without written consent of Apollo Seiko, the warranty is null and void. The customer is allowed to make necessary tooling adjustments, replace solder iron tips and make any necessary adjustments to the temperature controller.

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1. Summary

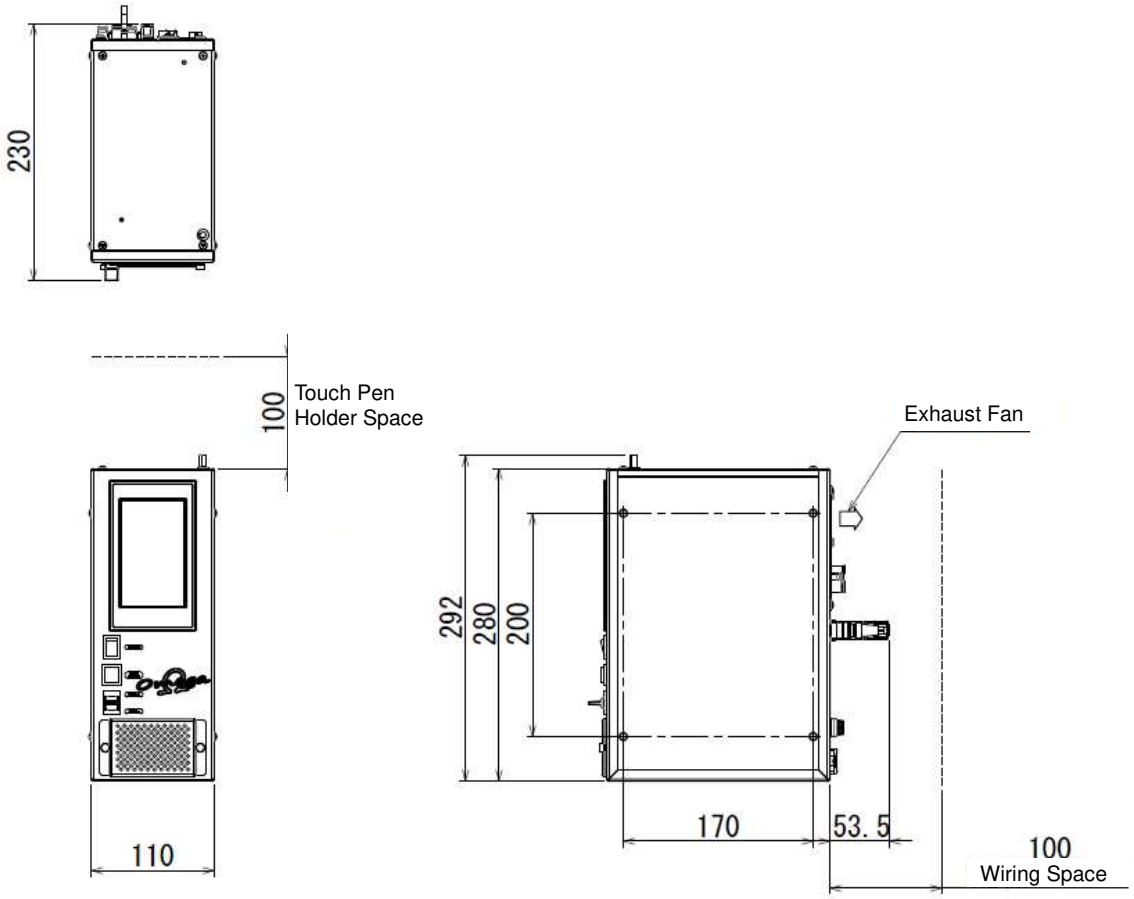
The soldering unit OMEGA consists of the soldering controller, solder wire feeder and iron unit.
OMEGA can be widely adapted for use in semi & fully automated systems, Desk-top robots, linear actuators and special purpose machines.
It is compatible with MODBUS TCP/IP and Industry 4.0.
The improved temperature controller has an auto tuning function, and the new touch panel attains an intuitive operation.

2. Specification

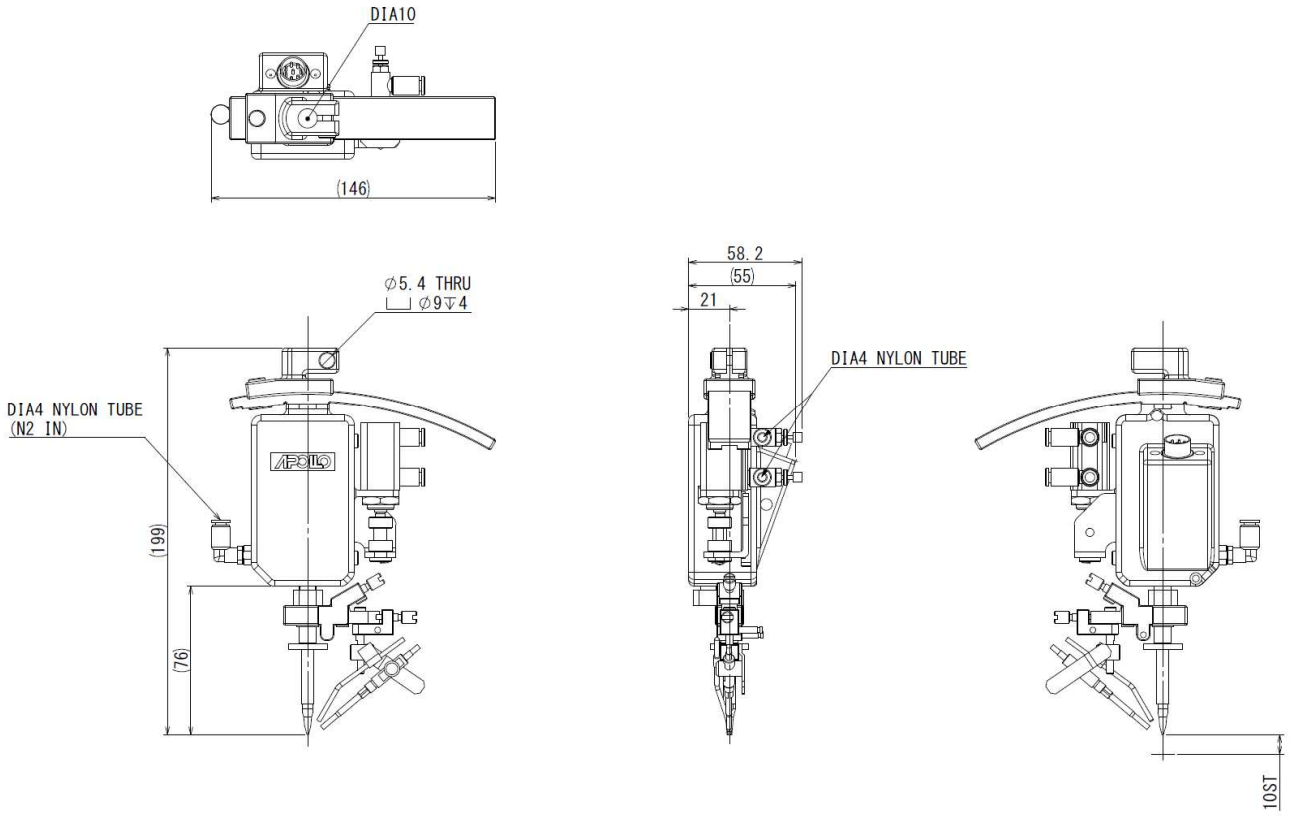
Power Source		AC85～264V
Power Consumption		375W
Air Supply		0.4～0.5MPa（Dry & Clean Air）
Solder Wire Diameter		φ0.4～2.0mm （Option：φ0.3）
Solder Condition		297 conditions Point soldering : 99 Slide soldering : 99 Special soldering : 99
Setting Temperature		1～500℃
Heater Capacity		200W（Max.）
Solder Step		9 Steps (Max.)
Wait Temperature		100℃（Adjustable）
External Start Box		Optional
Dimensions(W×D×H)		110×200×280mm
Weight	Controller	3.8kg
	Feeder	1.3kg
	Iron Unit	0.8kg

3. Dimensions

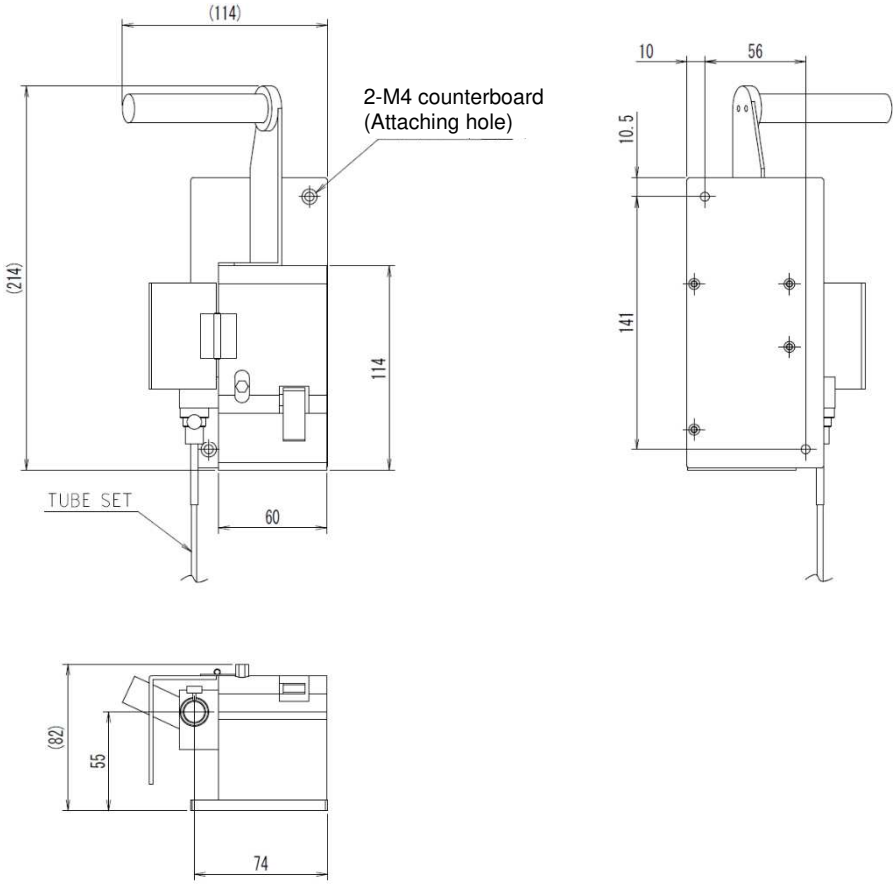
OMEGA Controller



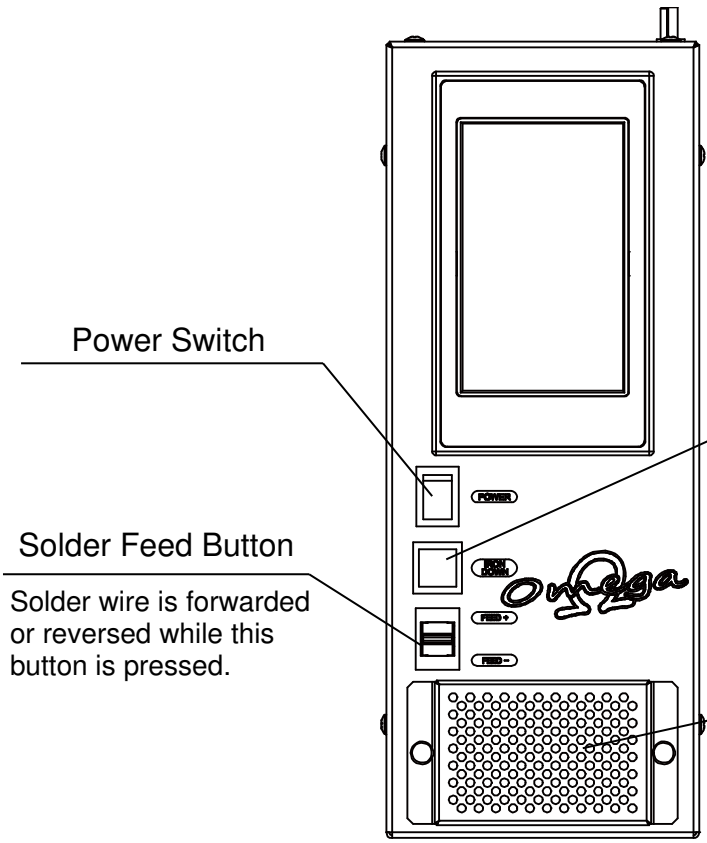
RSP Iron Unit

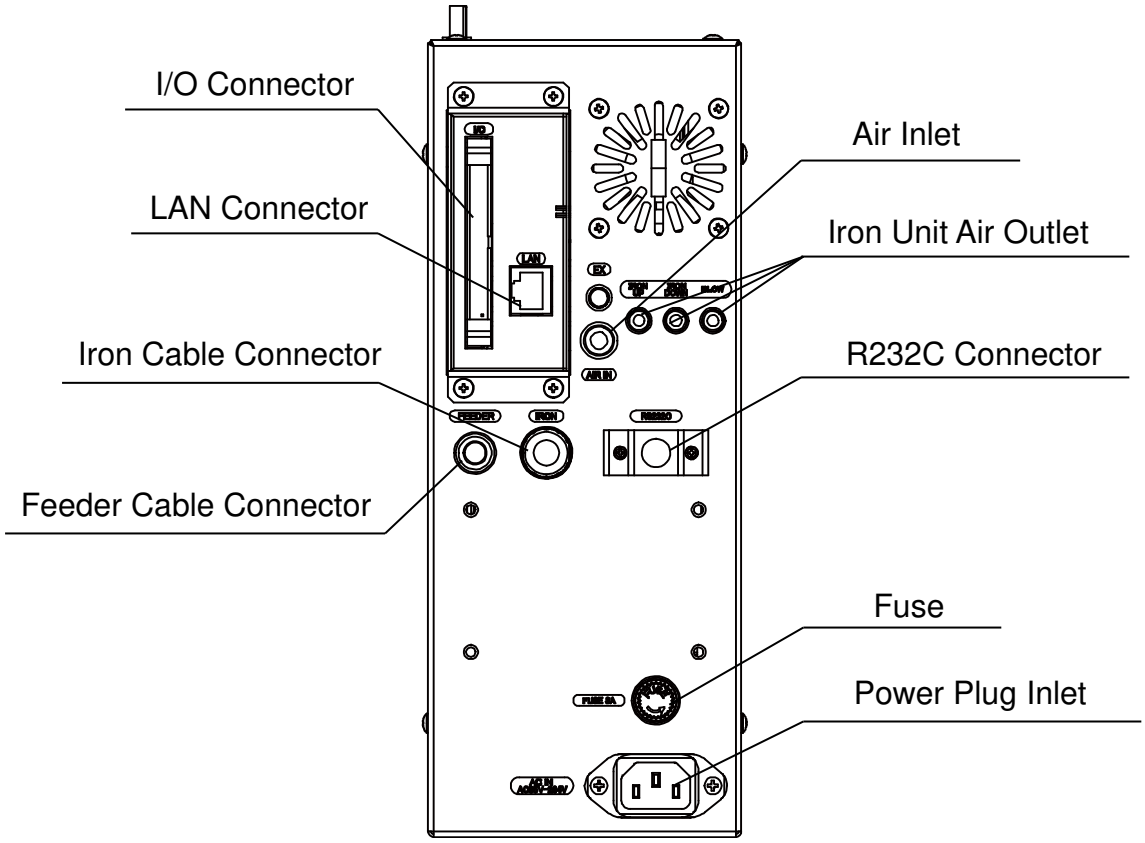


LFD Feeder


(114)
2-M4 counterboard
(Attaching hole)
(214)
114
TUBE SET
60
10
56
10.5
141
(82)
55
74

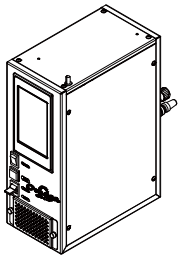
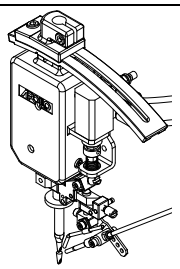
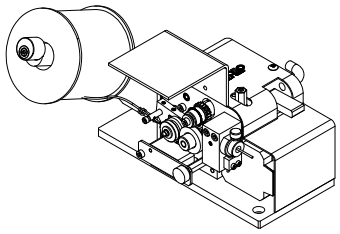
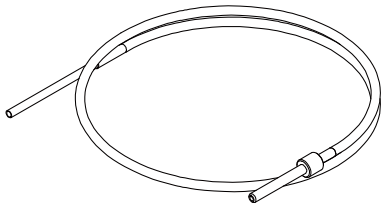
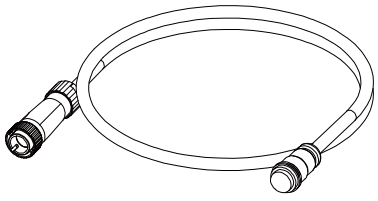
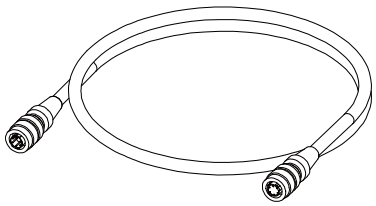
4. Description

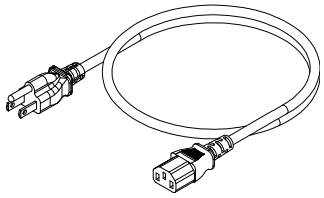
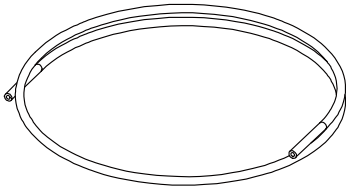
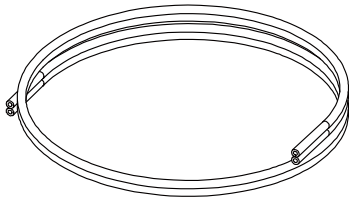
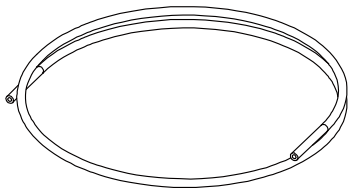
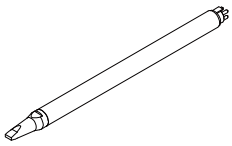
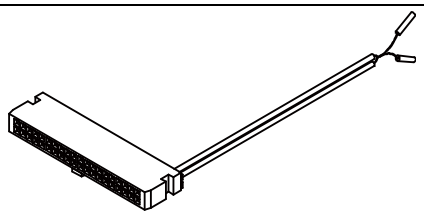
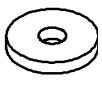
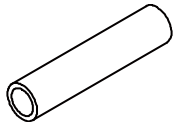


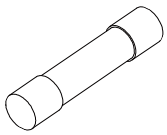
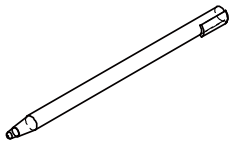


5. Accessories List

The following parts may differ depending on its specification.

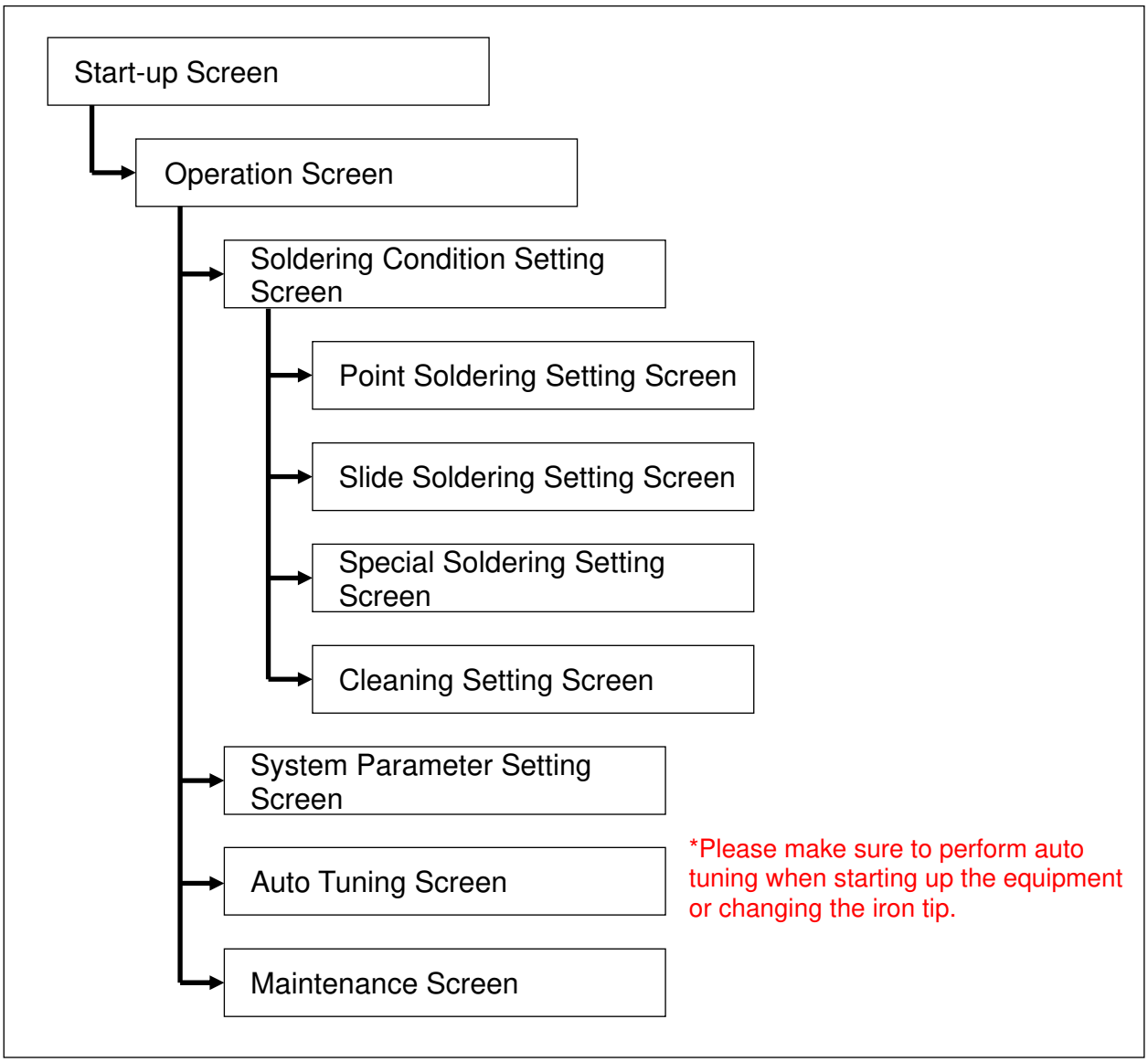
Name	Part number	Image	Quantity
OMEGA main unit	OMEGA-CT		1
Iron Unit	・RSP ・N2RSP ・RSL-R ・N2RSL-R ・RSL-FPR ・N2RSL-FPR	 ※This image is the RSP type	1
Solder wire feeder	LFD		1
Solder wire feeding tube	TAL*.*-****S60/90		1
Iron Unit Cable（Standard Length：1700mm）	CC9F-1700		1
Feeder Cable（Standard Length：1700mm）	MC-1-1700		1

Name	Part number	Image	Quantity
Power supply cable			1
Air tube (blue) for air blow of iron unit (Standard length: 1700mm)	U-9504-BU		1
Air tube (white & black) for air cylinder (Standard length : 1700mm)	UF402-W/B		1
Air tube (transparent) for nitrogen gas supply (Standard length: 1700mm) *This is attached only when using nitrogen gas	U-9504-N		1
Iron cartridge			1
I/O connector * This is for temporary use checking connector	Connecting harness should be provided by end user.		1
Smokeproof silicone ring	RING		3
Silicone tube for iron cartridge replacement			2

Name	Part number	Image	Quantity
Fuse 3A			1
Touch pen			1

6. Operation Flows

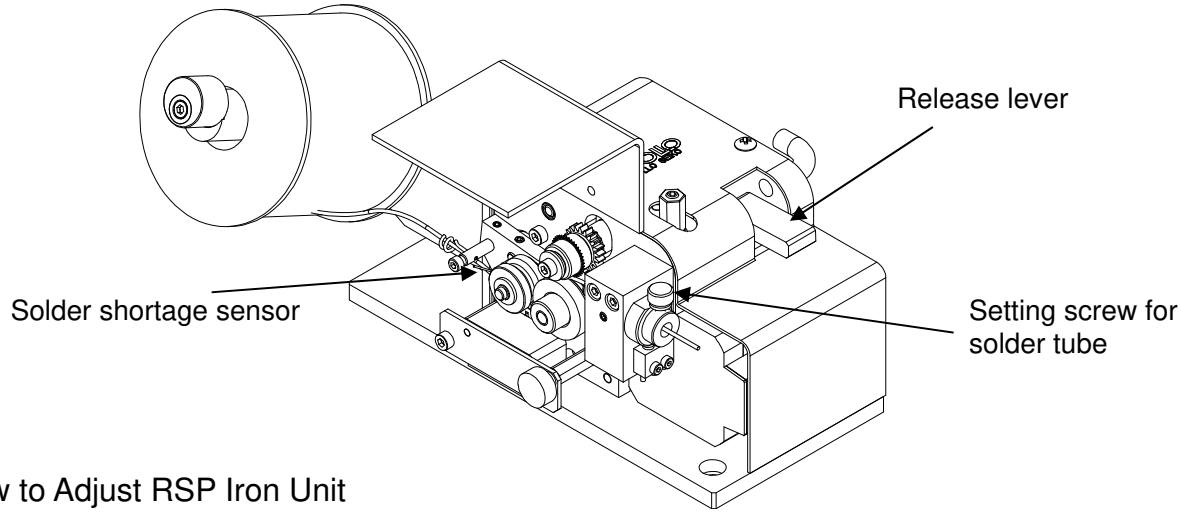
6.1 Screen Constitution



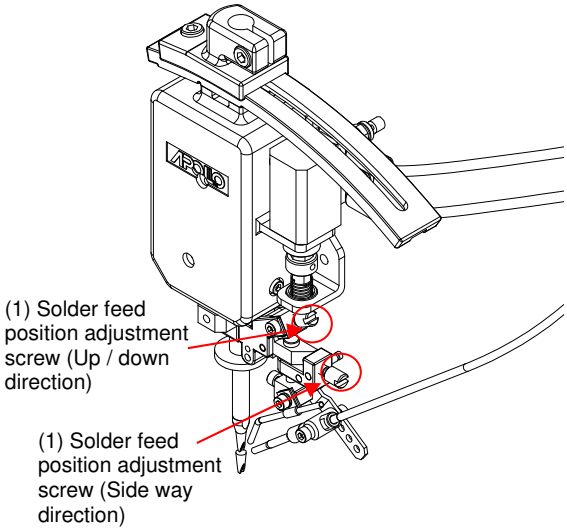
7. Preparation

7.1 How to Set the Solder Wire

1. Loosen the setting screw for the solder tube, and pull out the tube.
2. Lift the lever and pinch roller for solder feeding or lift the cutting blade.
3. Put through the solder wire like below the illustration. Push down the shortage sensor wire, make sure the shortage sensor wire is set under the solder wire.
4. After that push down the release lever, set the solder tube.



7.2 How to Adjust RSP Iron Unit

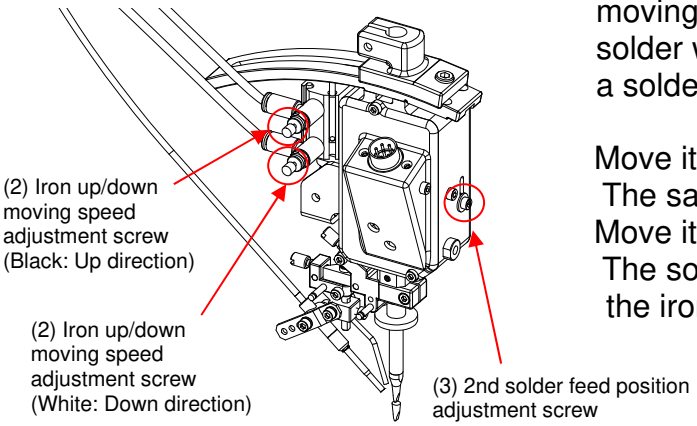


1. Solder wire feeding position can be adjusted by the screws.

   Upper adjusting screw : Up/down direction
   Lower adjusting screw : Side way direction

2. Iron up down speed can be adjusted by turning the screws after loosening the locking nut.

   Upper black screw : Raising Speed
   Lower white screw : Go Down Speed



3. Second solder feeding position can be altered by moving this screw. Adjusting the screw position, first solder wire can be put between the iron tip and a solder pattern.

   Move it to lower:
   The same feeding position.
   Move it to upper:
   The solder feeding position doesn't change and the iron tip goes down.

8. Screen Explanation

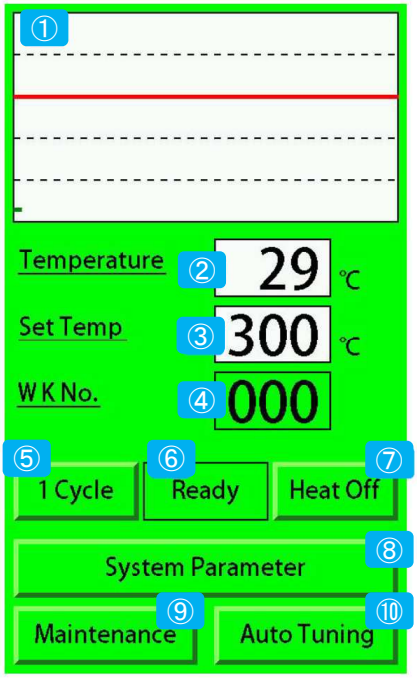
8.1 Start-up Screen

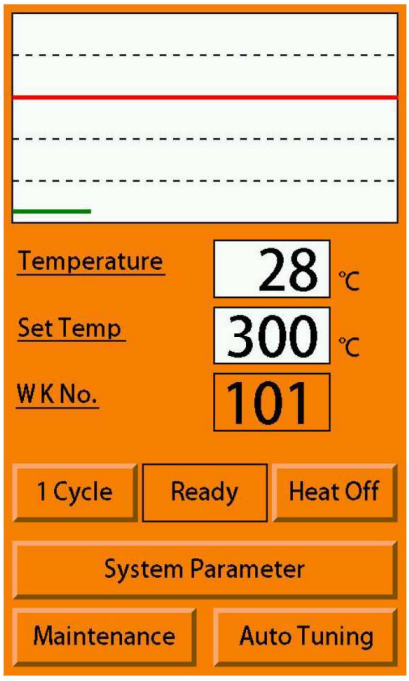
This screen is displayed after it turned on and while start-up processing of the solder controller.
If the display board and control board cannot communicate properly due to breakdown etc., the version display becomes blank space.

No.	Description
①	It displays the software version of the touch panel.
②	It displays the software version of the control board.

8.2 Operation Screen

When the initialization of the solder controller is completed, this screen is displayed.
When the back color of the screen is green, it can be automatically operated.
When the back color is orange, it cannot be automatically operated.
Please refer to the next page for the automatic operable conditions.





No.	Description
①	It displays a line graph by intervals of a second as the vertical axis is the temperature of 0~500℃ and the horizontal axis is time.
②	It displays the current temperature. The temperature is displayed within the range of -50 ~ 600℃. When it is out of the range, it displays an over bar or under bar.
③	It displays “Set Temp (setting temperature)” of the system parameter.
④	It displays the set solder condition number. It transits to the soldering condition set screen by touching.
⑤	When it is touched, it performs the soldering operation once according to the set number to the WK No. When the “Run” mode and in automatic operation, it does not accept to input.
⑥	It shows the current condition, running or stopping. When it is in automatic operation, “RUN” is displayed. When it is stopping the automatic operation, “Ready” is displayed.
⑦	This button switches between Heater ON (temperature control start) and Heater Off (temperature control stop). “Heat On” is displayed while performing temperature control, and it stops temperature control by touching it. “Heat Off” is displayed while stopping temperature control, it starts the temperature control by touching it. ※1
⑧	It transits to the system parameter setting screen by touching. ※2
⑨	It transits to the maintenance screen by touching. ※2
⑩	It transits to the auto tuning screen by touching. ※2

※1. “1 Cycle” button is pressed, “START” signal turns on or it receives “H” command during temperature control is stopped, it becomes in temperature control.
※2. It cannot input when it is in automatic operation or temperature control.

When solder condition number is set, it judges the selected operation. It can execute automatic operation according to each operation and the condition of IRON UP/DOWN.

Automatic operation execution possible state of IRON UP/DOWN

No.	Motion	IRON UP/DOWN
1	Point soldering	UP
2	Slide soldering	UP
3	Special soldering Point soldering	UP
4	Special soldering Slide soldering	UP
5	Special soldering Point soldering (without iron up motion)	UP / DOWN
6	Special soldering Easy slide soldering	UP
7	Special soldering Pre-soldering	UP
8	Cleaning	UP / DOWN
9	Set Temp	UP / DOWN

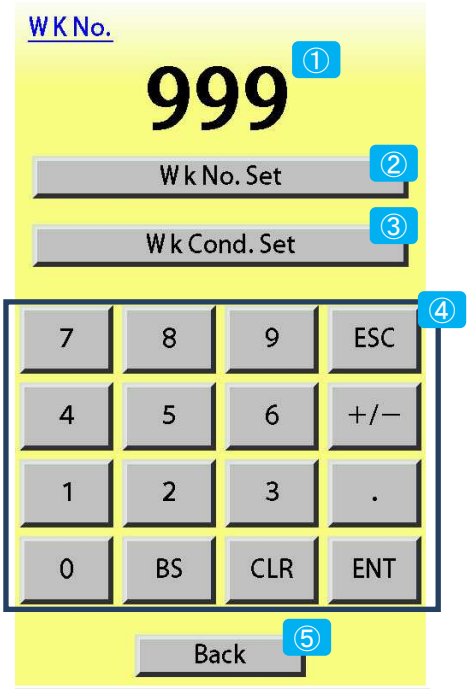
UP(Contact ON) : When an iron unit position is UP position, it can perform automatic operation.

DOWN(Contact OFF) : When an iron unit position is DOWN position, it can perform automatic operation.

UP/DOWN : Whether an iron unit position is UP position or DOWN position, it can perform automatic operation.

8.3 Soldering Condition (WK) Setting Screen

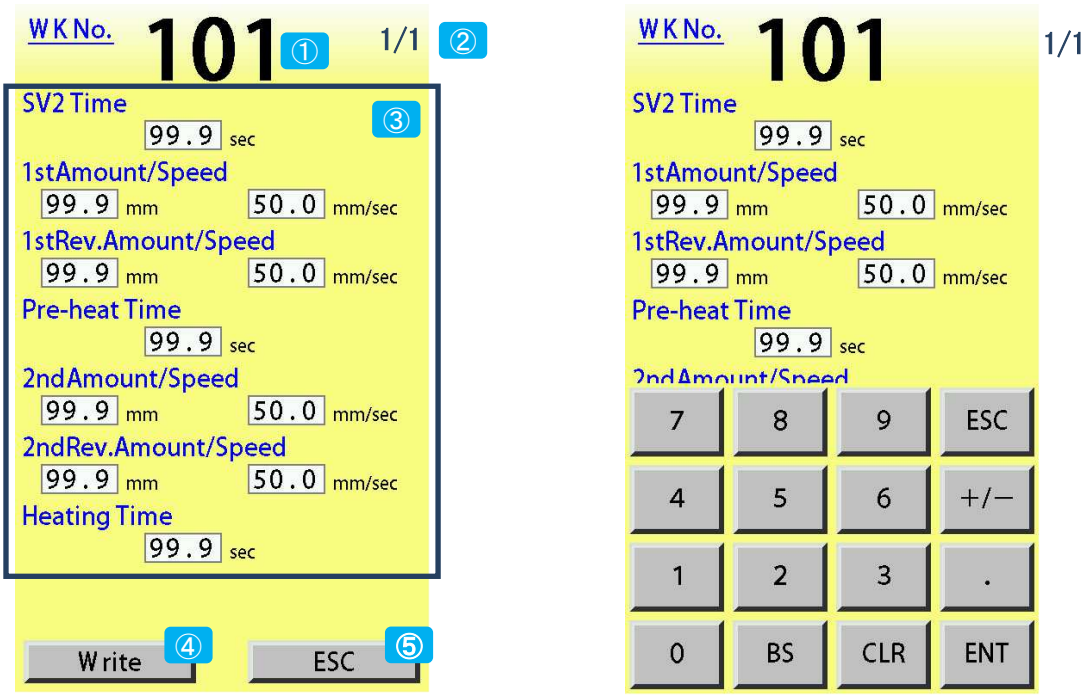
It is the screen to set a soldering condition.



No.	Description
①	It displays a present soldering condition number (WK No.) or a number is trying to change.
②	It sets a soldering condition number is displaying by touching. It operates based on the soldering condition number is set here except for soldering operation by I/O port.
③	When touching here, it transits to a setting screen of each soldering mode according to the inputted soldering condition number. 101～199: It transits to Point soldering setting screen. 201～299: It transits to Slide soldering setting screen. 301～399: It transits to Special soldering setting screen. 000 : It transits to Cleaning screen. If it inputs a soldering condition number does not corresponding to the above, it does not perform screen transition. It also does not perform screen transition when it is in automatic operation or temperature control.
④	These are soldering condition number input ten-key. 0 key ～ 9 key : These are used to input a numerical value. BS key : It deletes an inputted condition number by a single character. CLR key : It deletes all the inputted condition number. ESC key : It displays the current set condition number. The following keys are not used. If it is touched, it does not respond. +/- key / . key / ENT key
⑤	It transits to the operation screen when it touched.

8.4 Point Soldering Setting Screen

It is the screen to set a condition of Point soldering motion.



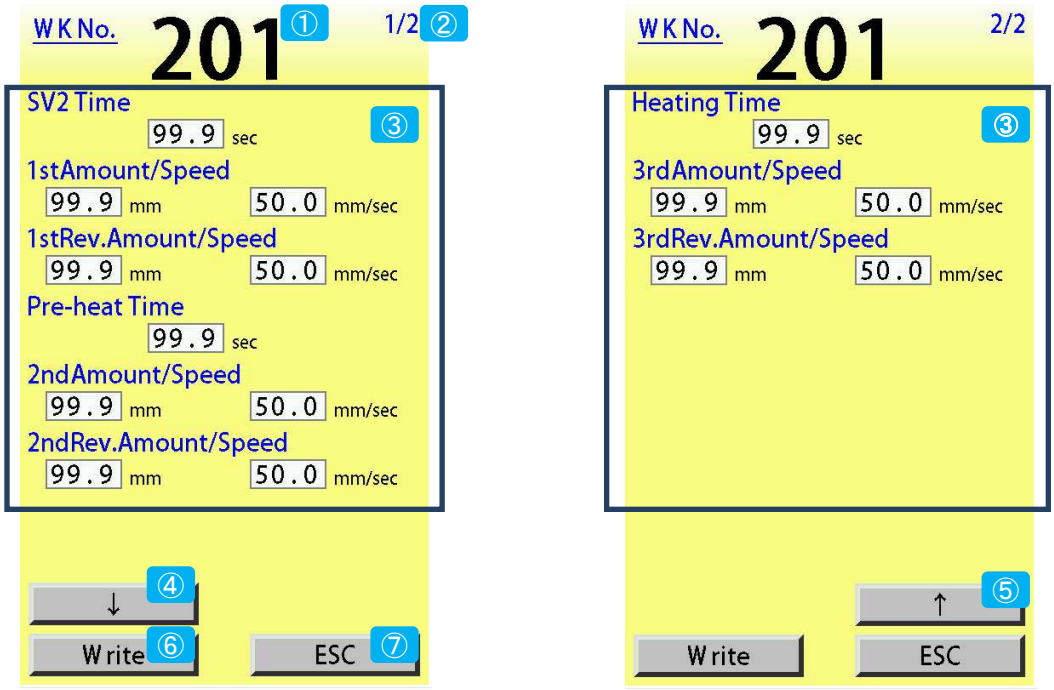
No.	Description
①	It displays the selected soldering condition number.
②	It displays the page number of the setting screen.
③	When the setting value is touched, it displays ten-key. Refer to OMEGA instruction manual-1 “9.3 Point Soldering Setting (WK101-199)” for details.
④	When it is touched, it confirms and saves the inputted soldering condition. Then, it transits to the soldering condition setting screen.
⑤	When it is touched, it cancels the inputted contents and transits to the soldering condition setting screen.

＊ When Heater is ON, it does not move to the setting screen.

Please refer to “8.8 OMEGA Soldering Condition (WK) Commands and “9.3 Point Soldering Setting (WK101-199)” of this instruction manual for details of the setting items.

8.5 Slide Soldering Setting Screen

It is the screen to set a condition of Slide soldering motion.



No.	Description
①	It displays the selected soldering condition number.
②	It displays the page number of the setting screen.
③	When the setting value is touched, it displays ten-key. Refer to OMEGA instruction manual-1 “9.4 Slide Soldering Setting(WK201-299)” for details.
④	When it is touched, it displays the next page.
⑤	When it is touched, it displays the preceding page.
⑥	When it is touched, it confirms and saves the inputted soldering condition. Then, it transits to the soldering condition setting screen.
⑦	When it is touched, it cancels the inputted contents and transits to the soldering condition setting screen.

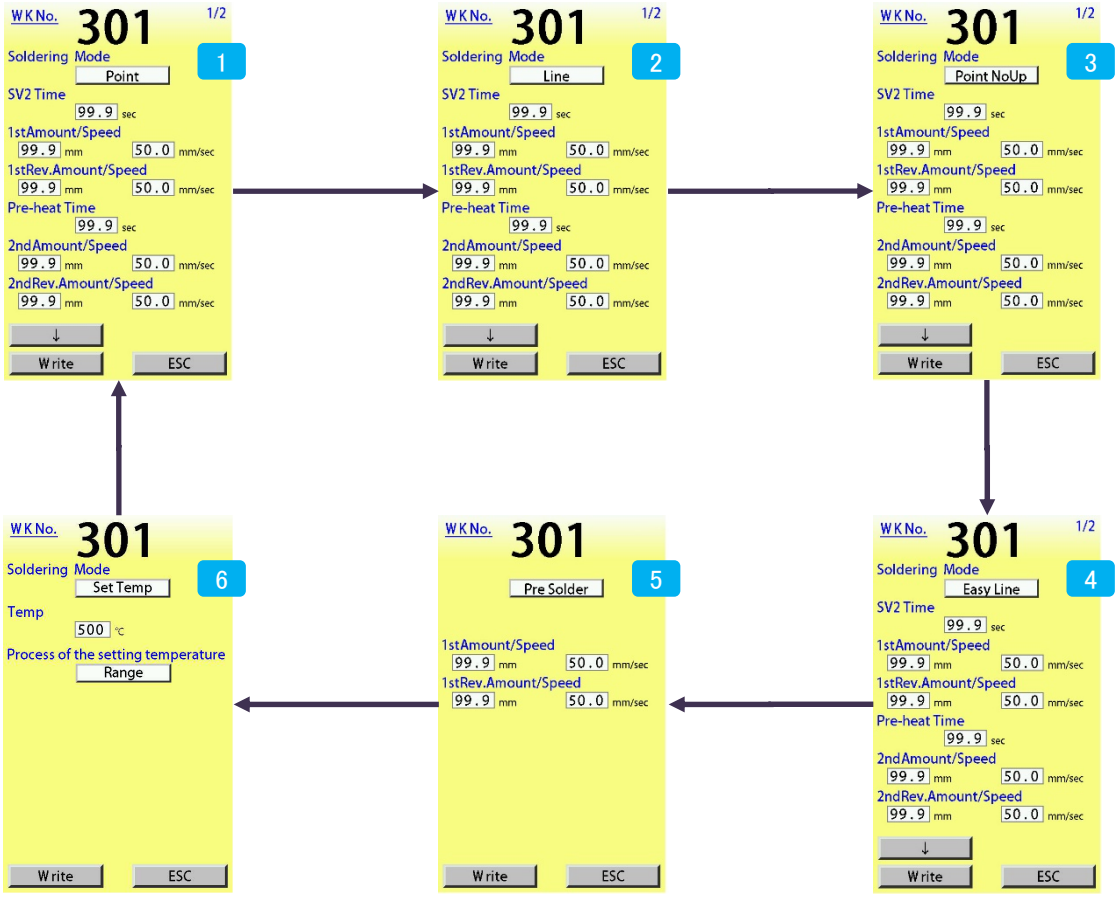
＊ When Heater is ON, it does not move to the setting screen.

Please refer to “8.8 OMEGA Soldering Condition (WK) Commands and “9.4 Slide Soldering Setting (WK201-299)” of this instruction manual for details of the setting items.

8.6 Special Soldering Setting Screen

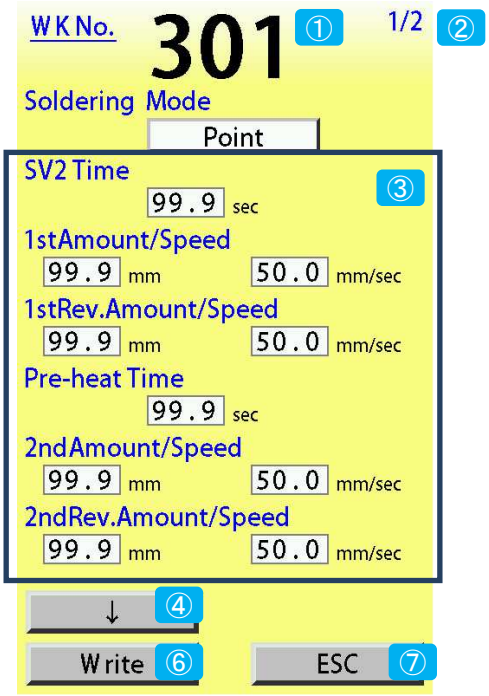
There are six types of Special soldering setting as following.
When it touches “Soldering Mode” on the Special soldering setting screen, it switches the setting screen.

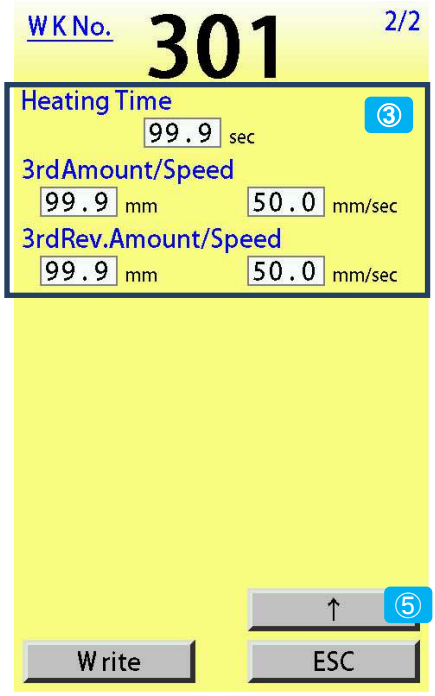
	Soldering Mode	Special soldering setting
1	Point	Special soldering setting point soldering
2	Line	Special soldering setting slide soldering
3	Point No Up	Special soldering setting point soldering (without iron up motion)
4	Easy Line	Special soldering setting easy slide soldering
5	Pre Solder	Special soldering setting pre-soldering
6	Set Temp	Special soldering setting Set Temp



8.6.1 Special Soldering Setting　Point Soldering

It is the screen to set a condition of Special soldering setting point soldering motion.





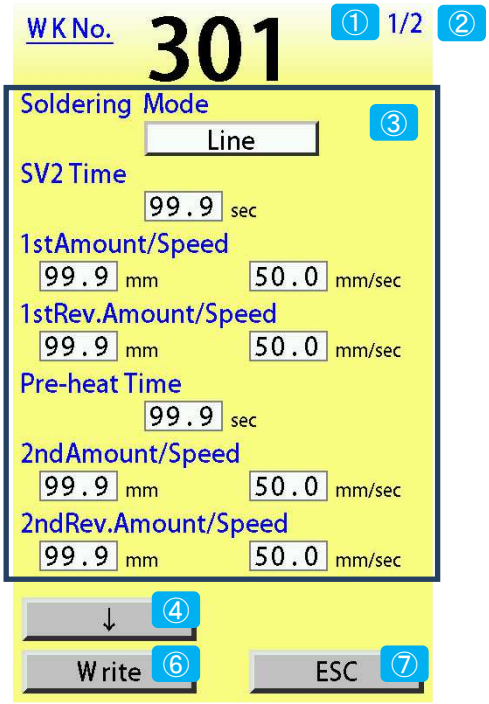
No.	Description
①	It displays the selected soldering condition number.
②	It displays the page number of the setting screen.
③	When the setting value is touched, it displays ten-key. Refer to OMEGA instruction manual-1 “9.5 Special Soldering Setting Point Soldering (WK301-399)” for details.
④	When it is touched, it displays the next page.
⑤	When it is touched, it displays the preceding page.
⑥	When it is touched, it confirms and saves the inputted soldering condition. Then, it transits to the soldering condition setting screen.
⑦	When it is touched, it cancels the inputted contents and transits to the soldering condition setting screen.

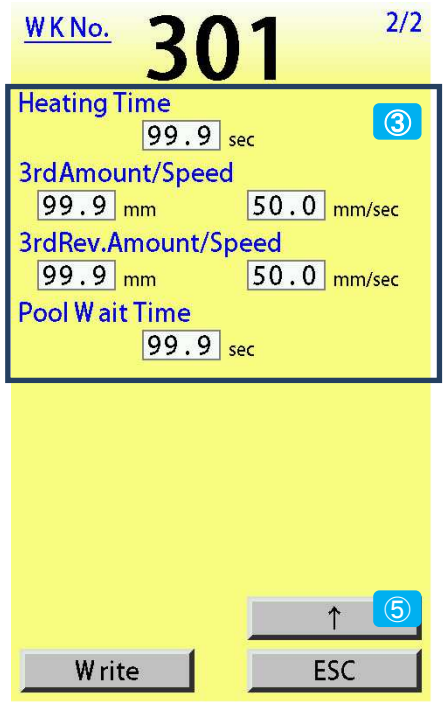
＊ When Heater is ON, it does not move to the setting screen.

Please refer to “8.8 OMEGA Soldering Condition (WK) Commands and “9.5 Special Soldering Setting: Point Soldering (WK301-399)” of this instruction manual for details of the setting items.

8.6.2 Special Soldering Setting　Slide Soldering

It is the screen to set a condition of Special soldering setting slide soldering motion.





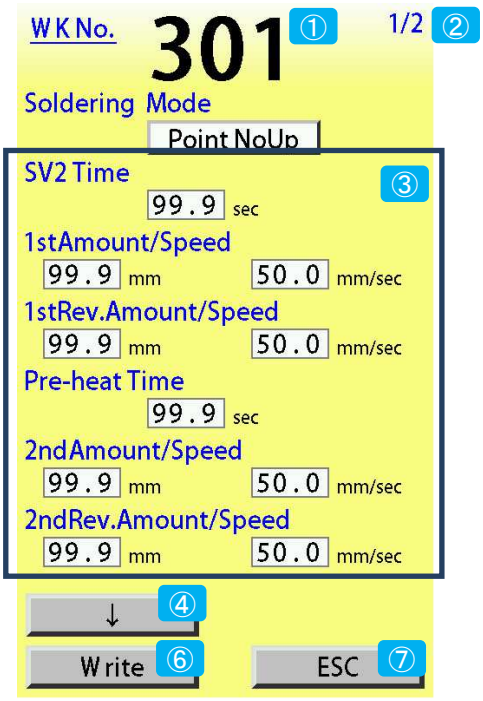
No.	Description
①	It displays the selected soldering condition number.
②	It displays the page number of the setting screen.
③	When the setting value is touched, it displays ten-key. Refer to OMEGA instruction manual-1 “9.6 Special Soldering Setting Slide Soldering (WK301-399)” for details.
④	When it is touched, it displays the next page.
⑤	When it is touched, it displays the preceding page.
⑥	When it is touched, it confirms and saves the inputted soldering condition. Then, it transits to the soldering condition setting screen.
⑦	When it is touched, it cancels the inputted contents and transits to the soldering condition setting screen.

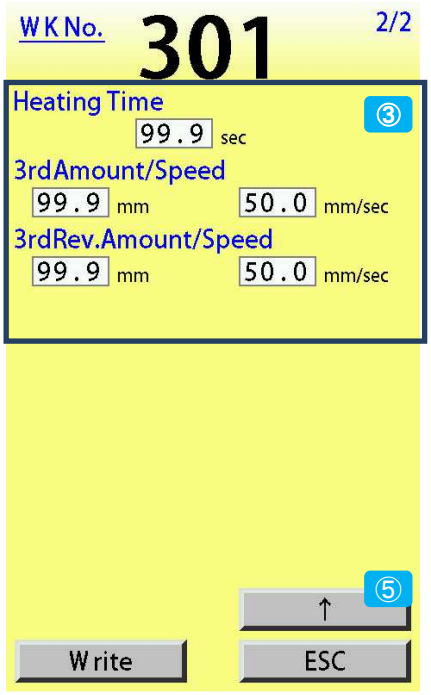
＊ When Heater is ON, it does not move to the setting screen.

Please refer to “8.8 OMEGA Soldering Condition (WK) Commands and “9.6 Special Soldering Setting: Slide Soldering (WK301-399)” of this instruction manual for details of the setting items.

8.6.3 Special Soldering Setting　Point Soldering (without Iron Up Motion)

It is the screen to set a condition of Special soldering setting point soldering (without iron up motion).





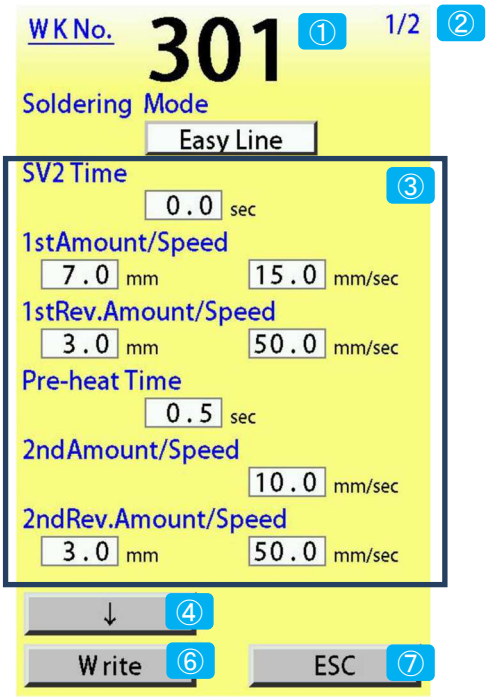
No.	Description
①	It displays the selected soldering condition number.
②	It displays the page number of the setting screen.
③	When the setting value is touched, it displays ten-key. Refer to OMEGA instruction manual-1 “9.7 Special Soldering Setting Point Soldering (without Iron Up Motion) (WK301-399)” for details.
④	When it is touched, it displays the next page.
⑤	When it is touched, it displays the preceding page.
⑥	When it is touched, it confirms and saves the inputted soldering condition. Then, it transits to the soldering condition setting screen.
⑦	When it is touched, it cancels the inputted contents and transits to the soldering condition setting screen.

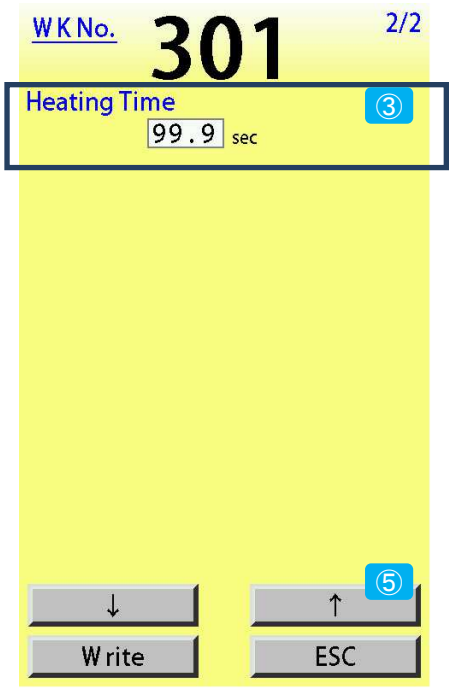
＊ When Heater is ON, it does not move to the setting screen.

Please refer to “8.8 OMEGA Soldering Condition (WK) Commands and “9.7 Special Soldering Setting: Point Soldering (No iron up) (WK301-399)” of this instruction manual for details of the setting items.

8.6.4 Special Soldering Setting　Easy Slide Soldering

It is the screen to set a condition of Special soldering setting easy slide soldering motion.





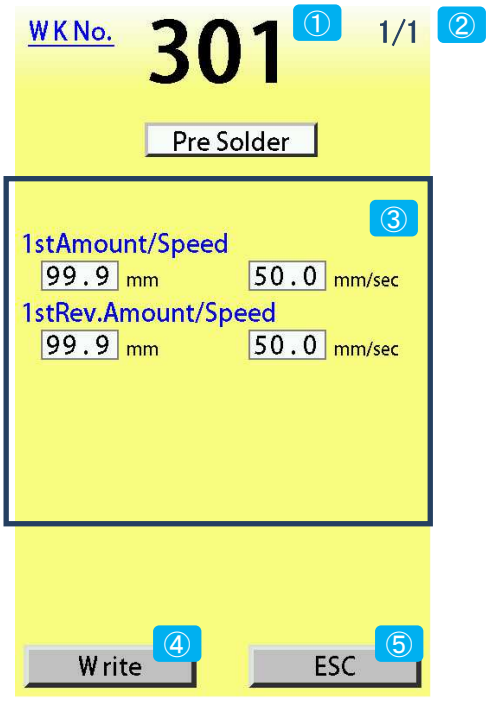
No.	Description
①	It displays the selected soldering condition number.
②	It displays the page number of the setting screen.
③	When the setting value is touched, it displays ten-key. Refer to OMEGA instruction manual-1 “9.8 Special Soldering Setting Easy Slide Soldering (WK301-399)” for details.
④	When it is touched, it displays the next page.
⑤	When it is touched, it displays the preceding page.
⑥	When it is touched, it confirms and saves the inputted soldering condition. Then, it transits to the soldering condition setting screen.
⑦	When it is touched, it cancels the inputted contents and transits to the soldering condition setting screen.

＊ When Heater is ON, it does not move to the setting screen.

Please refer to “8.8 OMEGA Soldering Condition (WK) Commands and “9.8 Special Soldering Setting: Easy Slide Soldering (WK301-399)” of this instruction manual for details of the setting items.

8.6.5 Special Soldering Setting　Pre-Solder

It is the screen to set a condition of Special soldering setting pre-soldering motion.



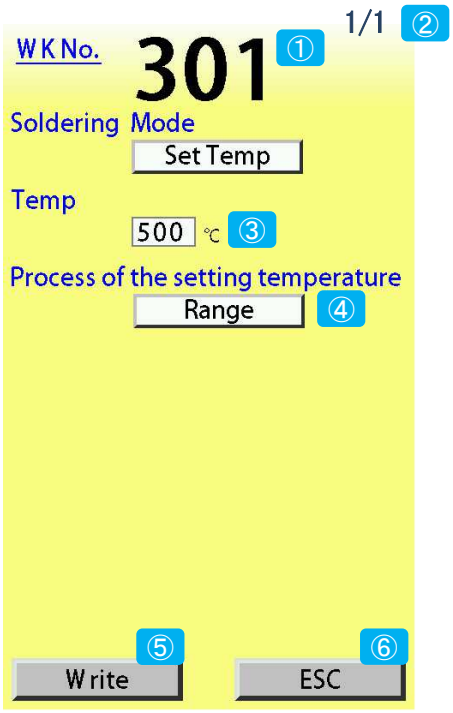
No.	Description
①	It displays the selected soldering condition number.
②	It displays the page number of the setting screen.
③	When the setting value is touched, it displays ten-key. Refer to OMEGA instruction manual-1 “9.9 Special Soldering Setting Pre-Solder (WK301-399)” for details.
④	When it is touched, it confirms and saves the inputted soldering condition. Then, it transits to the soldering condition setting screen.
⑤	When it is touched, it cancels the inputted contents and transits to the soldering condition setting screen.

＊ When Heater is ON, it does not move to the setting screen.

Please refer to “8.8 OMEGA Soldering Condition (WK) Commands and “9.9 Special Soldering Setting: Pre-soldering (WK301-399)” of this instruction manual for details of the setting items.

8.6.6 Special Soldering Setting　Set Temp

It is the screen to set a condition of Special soldering setting Set Temp motion.



No.	Description
①	It displays the selected soldering condition number.
②	It displays the page number of the setting screen.
③	It is the setting temperature when Set Temp operation. When the setting value is touched, it displays ten-key. Refer to OMEGA instruction manual-1 “9.10 Special Soldering Setting set Temp (WK301-399)” for details.
④	It is Set Temp operation. When it is touched, it switches in order of “Range”,→“Setting Value”→ “No Check”→ “Range”→. Refer to OMEGA instruction manual-2 “13.8 Special Soldering Set Temp Operation” for details.
⑤	When it is touched, it confirms and saves the inputted soldering condition. Then, it transits to the soldering condition setting screen.
⑥	When it is touched, it cancels the inputted contents and transits to the soldering condition setting screen.

＊ When Heater is ON, it does not move to the setting screen.

8.7 Cleaning Setting Screen

It is the screen to set a condition of Cleaning motion.
When it performs cleaning with the iron unit is lowered, the iron unit moves upwards after cleaning is completed.
When it performs cleaning with the iron unit is raised, the iron unit does not move after cleaning is completed.

No.	Description
①	It displays the selected soldering condition number.
②	It displays the page number of the setting screen.
③	It selects up / down of the cleaning execution position. When it is touched, it switches UP / DOWN. When “UP” is displayed, the iron tip does not go down and cleaning is performed. When “Down” is displayed, the iron tip goes down and cleaning is performed.
④	It sets the air blow time.
⑤	It sets the wait time after air blow.
⑥	When it is touched, it confirms and saves the inputted soldering condition. Then, it transits to the cleaning condition setting screen.
⑦	When it is touched, it cancels the inputted contents and transits to the soldering condition setting screen.

＊ When Heater is ON, it does not move to the setting screen.

Please refer to “9.11 Cleaning Setting (WK000)” of this instruction manual for details of the setting items.

8.8 OMEGA Soldering Condition (WK) Commands :

SV2 time / SV2 Temp SV2 Temperature Transition Time(sec):

The time to control the temperature to 2nd setting temperature.

1st Amount / Feed Speed:

Set 1st Amount and Feed Speed.
With the iron tip being up, the solder wire feeds to the iron tip.
By feeding a few solder wire to the iron tip, the heat can quickly transfer to the joint area.

1st Reverse Amount / Reverse Speed:

Set the amount and speed to retract the solder wire after 1st solder feeding.
The purpose of the 1st solder Reverse is to prevent the solder wire from melting by the heat of iron tip. Also the next solder amount can accurately feed by retracting the solder wire.

Pre-heat time:

Set the time that the iron tip goes down and heats the joint/ substrate.
Pre-heat time depends on the size of joint/ substrate.

2nd Amount / Feed Speed:

Set 2nd Amount and Feed Speed that the joint requires.
Although 2nd Amount depends on the joint, 1st Reverse Amount also needs to be considered.

2nd Reverse Amount / Reverse Speed:

Set the amount and speed to retract the solder wire after 2nd solder.
In the same way as 1st solder Rev. the next solder amount can accurately feed by retracting the solder wire.

Heating Time:

It is the heating time after slide finishing.
It depends on the size of joint / substrate.

3rd Amount / Feed Speed:

Set the third soldering to prevent icicle if it is needed.

3rd Reverse Amount / Reverse Speed:

Set the amount and speed to retract the solder wire after 3rd solder in the same way as 2nd solder Rev.

Pool Wait Time:

It is the solder pooling time before sliding start. The sliding starts after the set pool time.

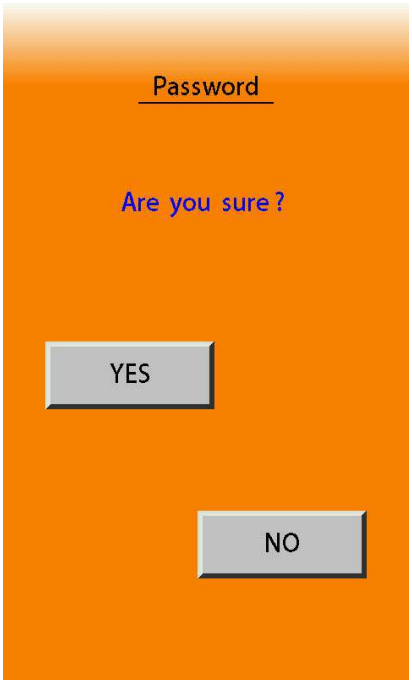
8.9 System Parameter Setting Screen

Set the system parameter.

No.	Description
①	It displays the page number of the setting screen.
②	When a setting value is touched, a ten key appears. Refer to the “9.1 System parameter” and “9.2 Ethernet connection parameter” for details. The following items can be switched by touching. • ON / OFF display • I/O / COM / LAN display
③	The next page is displayed by touching.
④	The previous page is displayed by touching.
⑤	When this button is touched, the inputted setting contents are confirmed and the input condition is saved. After that, it transits to the operation screen.
⑥	When this button is touched, the inputted content is discarded and it transits to the operation screen.

Please refer to “9.1 System Parameter” for details.

8.10 Screen Lock Password Setting Screen



When it sets the “Password Function” to “ON” at the system parameter and touch “Write”, the left screen is displayed.
When “Yes” is touched at this screen, the right screen is displayed.
When “NO” is touched, it transits to the system parameter setting screen without screen locked.
If a four-digit password is inputted at the right screen, the screen lock becomes valid.
The password is requested in the following cases while the screen lock is valid.

- When it transits from the operation screen to the soldering condition setting screen
- When it transits from the operation screen to the system parameter setting screen
- When it transits from the operation screen to the auto tuning screen
- When it transits from the operation screen to the maintenance screen

When a correct password is entered, it transits from the operation screen to a target screen.

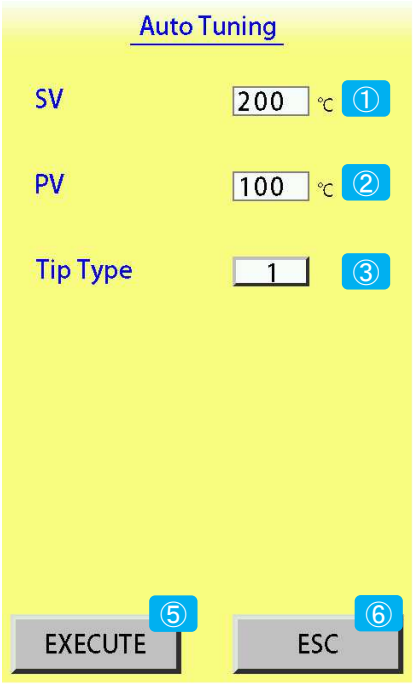
8.11 Screen Lock Password Request Screen

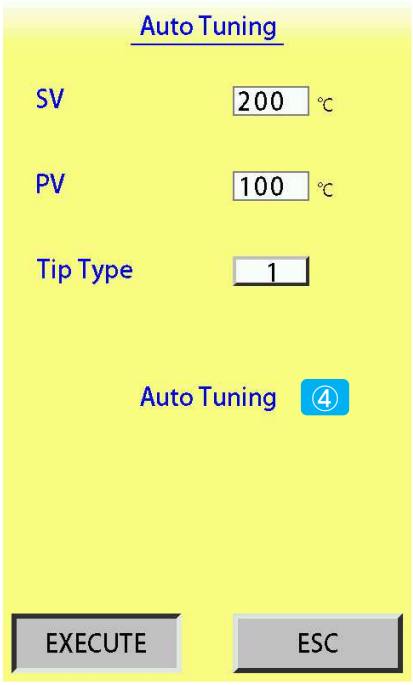
When a correct password is inputted, it transits from the operation screen to the target screen.
When it turns on the power again, the screen lock becomes enable.
When you want to release the screen lock even after turning on the power again, confirm if “Password Function” is off on the system parameter setting screen and execute “Write”.

If you forget the password, contact us or our agency.

8.12 Auto Tuning Screen

The screen for performing auto tuning is displayed by pressing “Auto Tuning” button in the lower right part of the operation screen.
Auto tuning is the function to calculate the PID parameter to the set SV automatically and set it.
Please make sure to perform auto tuning when starting up the equipment or changing the iron tip.



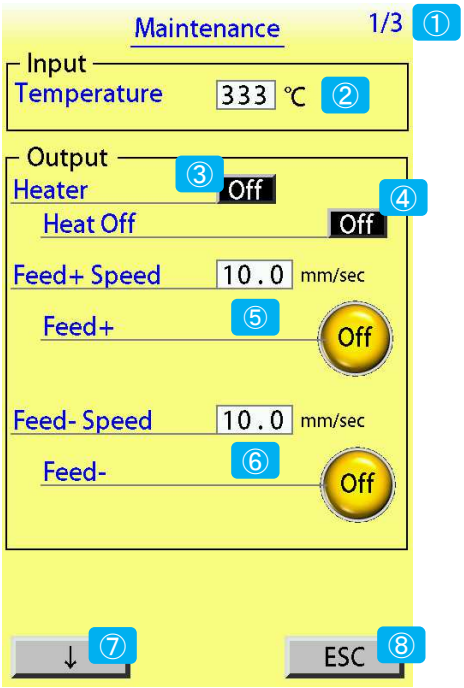


No.	Description
①	This is the set temperature when auto tuning. Input the temperature when soldering. The set temperature range is the same as the set temperature (Set Temp) of the system parameter. Immediately after screen transition, it displays the set temperature of the system parameter.
②	It displays the current temperature input value.
③	Select the iron tip type being performed auto tuning. When it is touched, it switches from 1 to 2, or from 2 to 1.
④	It blinks during auto tuning. When it is completed, the blinking display is disappeared and the temperature of the iron tip is lowered.
⑤	It starts auto tuning. It cancels auto tuning if it is touched during auto tuning.
⑥	It transits to the operation screen by touching. It cannot operate during auto tuning. When it performs screen transition, perform it during auto tuning is stopping.

8.13 Maintenance Screen

8.13.1 Heater and Motor Confirmation

The operation confirmation screen of the heater and motor control part is displayed by pressing “Maintenance” button in the lower left part of the operation screen.



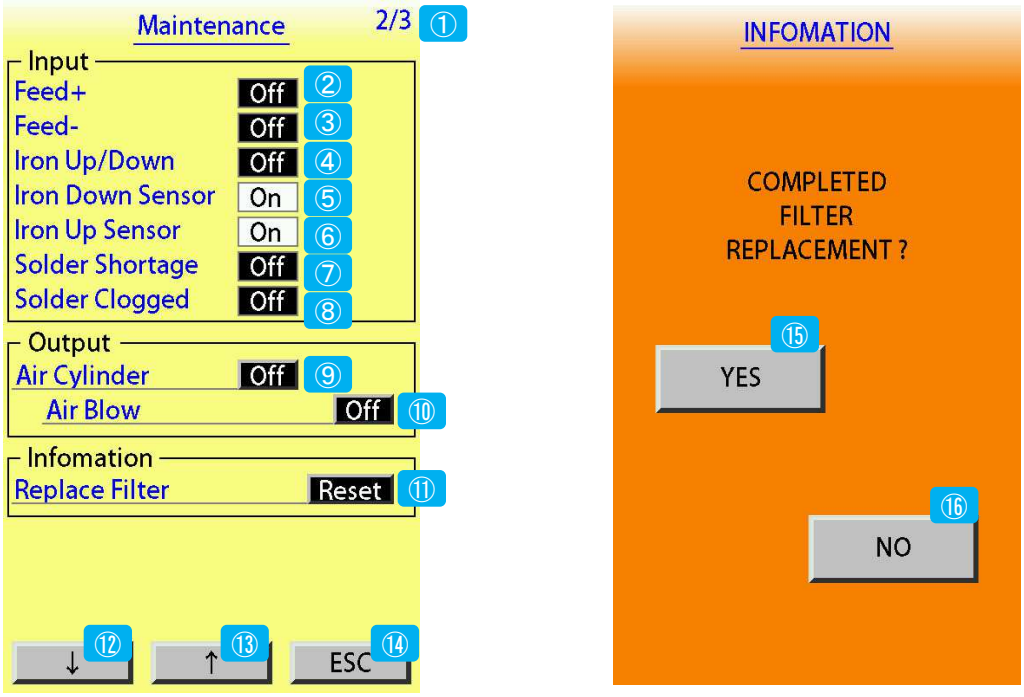
No.	Description
①	It displays the page number of the maintenance screen.
②	It displays the current temperature.
③	While the button is touched, it controls at a setting temperature and it makes the heater output ON. When the button is not touched, it stops temperature control and it makes the heater OFF.
④	It is switched ON / OFF of the overheat prevention output by touching.
⑤	When this is touched, a ten-key is displayed and the solder feed speed can be set. And the motor rotates in the solder feed direction while the button is touched.
⑥	When this is touched, a ten-key is displayed and the solder reverse speed can be set. And the motor rotates in the solder reverse direction while the button is touched.
⑦	The next page is displayed by touching.
⑧	It transits to the operation screen by touching.

※ When it changes the page or transits to the maintenance screen, the heater output and the overheat prevention output are turned off.

※ The solder reverse (feed) operation is ignored while solder feeding (solder reversing).

8.13.2 Confirmation of Digital Input 1

The left screen is the operation confirmation screen of the digital input 1, and the right screen is the clear confirmation screen.

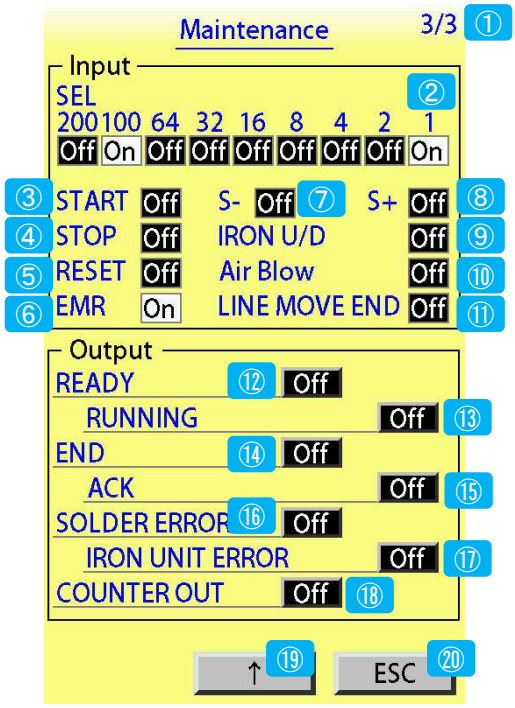


No.	Description
①	It displays the page number of the maintenance screen.
②	It displays the solder feed input state.
③	It displays the solder reverse input state.
④	It displays the input state of the iron tip up / down request.
⑤	It displays the input state of the iron tip down position.
⑥	It displays the input state of the iron tip up position.
⑦	It displays the input state of the solder shortage.
⑧	It displays the input state of the solder clogged.
⑨	The air cylinder turns ON / Off by touching.
⑩	The air blow turns ON / OFF by touching.
⑪	It displays the reset confirmation screen of the operation time.
⑫	The next page is displayed by touching.
⑬	The previous page is displayed by touching.
⑭	It transits to the operation screen by touching.
⑮	When this button is touched, it resets the counted operation time and returns to the operation confirmation screen.
⑯	It returns to the operation confirmation screen by touching.

※ When it changes the page or transits to the maintenance screen, the air cylinder turns off and the air blow turns off.

8.13.3 Confirmation Digital Input 2

This is the operation confirmation screen of the digital input 2.

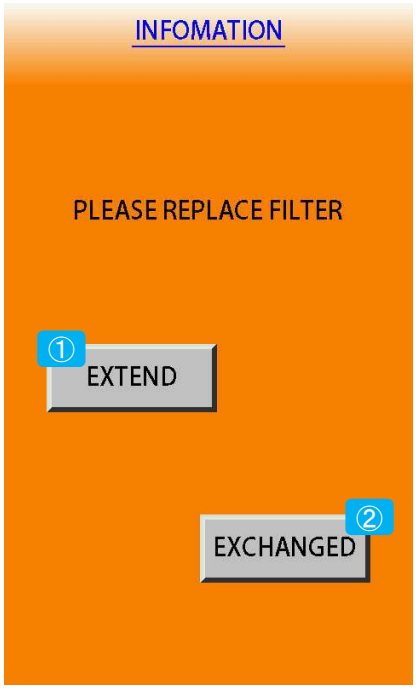


No.	Description
①	It displays the page number of the maintenance screen.
②	It displays the input state of the program selection 1,2,4,8,16,32,100,200.
③	It displays the input state of the start signal.
④	It displays the input state of the stop signal.
⑤	It displays the input state of the reset signal.
⑥	It displays the input state of the emergency stop.
⑦	It displays the input state of the solder reversing.
⑧	It displays the input state of the solder feeding.
⑨	It displays the input state of the iron tip up / down request.
⑩	It displays the input state of the air blow.
⑪	It displays the input state of the slide soldering end.
⑫	It switches ON / OFF output of the ready signal by touching.
⑬	It switches ON / OFF output of the running signal by touching.
⑭	It switches ON / OFF output of the operation end signal by touching.
⑮	It switches ON / OFF output of the ACK output by touching.
⑯	It switches ON / OFF output of the solder abnormal signal by touching.
⑰	It switches ON / OFF output of the iron unit abnormal signal by touching.
⑱	It switches ON / OFF output of the external output 1 by touching.
⑲	It transits to the digital input 1 of the previous page by touching.
⑳	It transits to the operation screen by touching.

※ When it changes the page or transits to the operation screen, all output signal is turned off.
(After transited to the operation screen, it performs various output signal depending on the status.)

8.14 Filter Replacement Information Screen

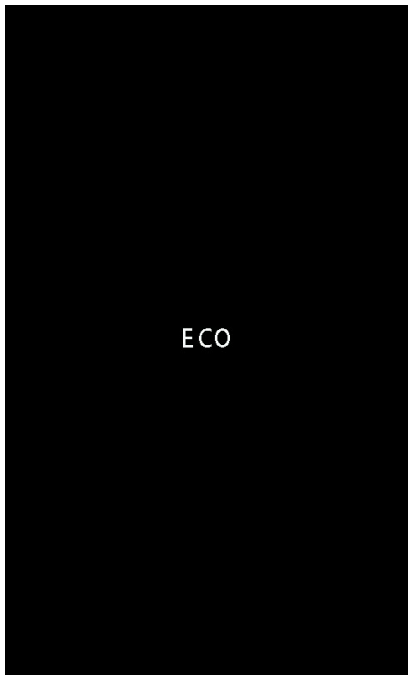
By inputting time to the “Filter Time” of the system parameter, when the operation time passed the set time, the below window is displayed.
(When it displays any screen except for the operation screen, it does not be displayed.)
The filter replacement information function becomes invalid when “Filter Time” is set to 0.



No.	Description
①	It returns to the usual screen when it is touched. It is displayed again 60 minutes later.
②	It resets the counted operation time by touching. After it passed the set time, it is displayed again.

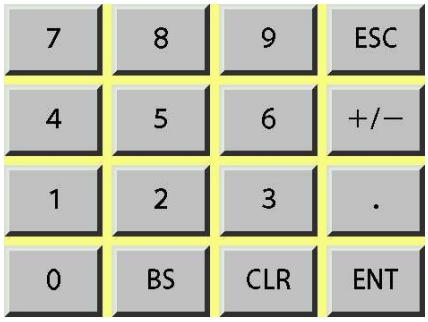
8.15 Screen Saver Function

By inputting time to “Screen Saver” of the system parameter, the screen displays as below screen to protect the screen after a period of inactivity.
The screen returns to the usual state when the screen is touched or an error occurs.
If “Screen Saver” is set to 0, the screen protection function becomes invalid.



8.16 Common Screen

8.16.1 Ten-key



When a value is set by using a ten-key and the ENT key is touched, if a value is set outside the range, it is corrected to a value within the range. (Refer to example 1)
And if it inputs a value under the digit which is set by the parameter, it will be rounded down.(Refer to example 2)

【Example 1】
When it enters 100 to “SV2 Time” and pushing the ENT key:
“99.9” is displayed instead of “100”. (The inputted value is not confirmed at this moment.)
The input value is confirmed as “99.9” by pushing the ENT key again.
【Example 2】
When “1.22” is entered to “SV2 Temp” and pushes the ENT key:
It treats as “1.2”. (Both of display / inner data)

8.16.2 Error Display

This is an error display.
An error is displayed while the operation screen is displayed.
If an error occurs at any setting screen, it is not displayed.
If the error is not solved when the operation screen is displayed, it displays an error screen again.
When it detects the solder shortage while soldering operation, it does not display an error until operation is completed.
When an error occurs, the back color turns in orange and the character blinks.
When an emergency stop is detected, the back color turns in red.
Refer to the OMEGA instruction manual-2 “15.2 Error List” of the OMEGA instruction manual-2 for details.

No.	Description
①	It displays an error message.
②	When this button is touched, the error is released.

9. Parameter List

9.1 System Parameter

No.	Name	Setting Details	Initial Value	Setting Range
1	Alarm Hi	Alarm temperature range High	50	0 – 200℃
2	Alarm Lo	Alarm temperature range Low	50	0 - 200℃
3	Set Temp	Setting temperature	300	1 - 500℃
4	SV2 Temp Function	Second set temperature use / non-use setting		
5	SV2 Temp	Second set temperature	300	1 - 500℃
6	Wait Temp	Wait temperature setting	100	1 - 300℃
7	Wait Time	Wait time (When 0 is set, it does not wait.)	30	0 – 60min
8	Feeder	Solder feeding： Valid / Invalid	ON	ON/OFF
9	Feed Cal	Automatic solder feeding amount correction value	100	1 – 200%
10	Password Function	Screen lock use / non-use	OFF	ON/OFF
11	Heater	Heater： Valid / Invalid	ON	ON/OFF
12	Iron U / D	Iron unit up / down sensor: Valid / Invalid	ON	ON/OFF
13	U / D Time	Iron unit up / down sensor error limit	3	0 – 99sec
14	Heat Auto	Heater automatic start when power on	ON	ON/OFF
15	Temp Limit	Maximum temperature setting	500	100 - 500℃
16	Ms-Speed	Manual solder feeding speed setting	20.0	0.1 – 50.0mm/sec
17	Type	Type I/O setting: emergency stop signal B contact COM setting: emergency stop signal A contact LAN setting: emergency stop signal B contact	I/O	I/O / COM / LAN
18	TIP Select	Iron tip type selection setting	1	1/2
19	PVF1	PV correction function setting	0	0/1
20	T1P *1	Proportional band setting for tip type1	30.0	0.1 - 200.0%
21	T1I *1	Integration time setting for tip type 1	99	0 – 3600sec
22	T1D *1	Differential time setting for tip type 1	1	0 – 3600sec
23	T1 Zero	PV correction zero setting for tip type 1	-30	-100 - +100℃
24	T1 Gain	PV gain correction setting for tip type 1	1.000	0.500 - 2.000 倍
25	T1 PX1	Lower limit setting before PV correction for tip type 1	0	0 – (T1PX2 -1)℃
26	T1 PX2	Upper limit setting before PV correction for tip type 1	500	(T1PX1 + 1) - 500℃
27	T1 PY1	Lower limit setting after PV correction for tip type 1	0	0 – (T1PY2 -1) ℃
28	T1 PY2	Upper limit setting after PV correction for tip type 1	500	(T1PY1 + 1) - 500℃
29	T2P *1	Proportional band setting for tip type 2	30.0	0.1 - 200.0%
30	T2I *1	Integration time setting for tip type 2	99	0 – 3600sec
31	T2D *1	Differential time setting for tip type 2	1	0 – 3600 sec
32	T2 Zero	PV correction zero setting for tip type 2	-30	-100 - +100℃
33	T2 Gain	PV gain correction setting for tip type 2	1.000	0.500 - 2.000
34	T2 PX1	Lower limit setting before PV correction for tip type 2	0	0 – (T2PX2 -1)℃
35	T2 PX2	Upper limit setting before PV correction for tip type 2	500	(T2PX1 + 1) - 500℃

No.	Name	Setting Details	Initial Value	Setting Range
36	T2 PY1	Lower limit setting after PV correction for tip type 2	0	0 – (T2PY2 -1)℃
37	T2 PY2	Upper limit setting after PV correction for tip type 2	500	(T2PY1 + 1) - 500℃
38	Filter Time	Filter replacement informing interval	300	0 – 999hour
39	Screen Saver	Screen protection transition wait time	0	0 – 300min
40	Temp Upper Limit	Overheat limit temperature setting	550	100 – 550℃
41	Temp Upper Sens	Overheat limit sensitivity setting	0	0 – 100℃
42	Temp Good Deviation Hi	Optimal temperature upper limit deviation setting	5	0 – 100℃
43	Temp Good Deviation Lo	Optimal temperature lower limit deviation setting	5	0 – 100℃
44	Temp Good Sens	Optimal temperature limit sensitivity setting	0	0 – 100℃
45	PID Type	PID control type setting	1	0 – 2
46	Type B Mode	TYPE B mode setting	1	0 – 2
47	Ctrl P Cycle	Control proportional cycle setting	1.0	0.1 - 120.0sec
48	ARW	Anti-Reset windup setting	110.0	0.0 - 110.0%
49	Loop Err PV	Loop error PV thresholds setting	0	0 – 500
50	Loop Err PV Change	Loop error PV change amount setting	0	0 – 500℃
51	Loop Err Ctrl	Loop error control amount thresholds setting	100	0 – 100%
52	Loop Err Time	Loop error time setting	0	0 – 9999sec

■ ☐ are the functions that we don't recommend to change the value. If it needs to change them, perform by a person is familiar with the functions.

■*1 When Auto tuning is executed, the value is input automatically.

■ When it corrects by the setting value of "Feed Cal" and the solder feeding (reversing) amount is less than 0.1mm, it does not perform solder feeding (reversing).

【e.g.】
When solder feeding amount is 0.1mm and it sets 1%: it becomes 0.001mm, so it does not feed the solder wire.
When solder feeding amount is 0.1mm and it sets 10%: it becomes 0.01mm, so it does not feed the solder wire.
When solder feeding amount is 0.1mm and it sets 100%: it becomes 0.1mm, so it feeds the solder wire.
When solder feeding amount is 0.1mm and it sets 199%: it becomes 0.199mm, but it feeds the solder wire by 0.1mm.

■ T1/T2 (Tip type 1 and 2)
It can be set auto tuning or temperature parameter to each Tip type 1 and 2.
Input calibration value to "T1 Zero" or "T2 Zero", when measured value differs from display value.
Input value can be calculated by the below formula.

Input value = (Measured value – Display value) + Existing value

e.g) Display value 300℃, Measured value of iron tip 280℃
(280℃ - 300℃) + 0 = -20℃ Input -20℃

Wait temperature (Wait Temp) interlocks with Wait time (Wait Time), so input the proper value to both of them when it sets to "ON". When "0" is inputted, waiting becomes invalid.

9.2 Ethernet Connection Parameter

No.	Name	Setting Details	Initial Value	Setting Range
1	MAC Address	Vender ID (24-bit) Product ID (8-bit) Serial number ID (16-bit)	14:44:4A 02 **:**	00:00:00 - FF:FF:FF 00 – FF 00:00 - FF:FF The description of MAC address is listed in order of Vender / Product / Serial number. (It cannot be changed.)
2	IP Address	IP Address (32-bit)	192.168.0.0	0.0.0.0 - 255.255.255.255
3	Subnet Mask	Subnet mask (32-bit)	255.255.255.0	0.0.0.0 - 255.255.255.255
4	Default Gateway	Default gateway (32-bit)	0.0.0.0	0.0.0.0 - 255.255.255.255
5	Port Number	Port number	502	0 – 65535

※“＊＊:＊＊”is an individual identification number.

9.3 Point Soldering Setting (WK101-199)

No.	Name	Setting Details	Initial Value	Setting Range
1	SV2 Time	Wait time after reached SV2 setting temperature	0.0	0-99.9sec
2	1st Amount	1st solder feeding amount	7.0	0-99.9mm
3	1st Speed	1st solder feeding speed	15.0	0.1-50.0mm/sec
4	1st Rev Amount	1st solder reversing amount	3.0	0-99.9mm
5	1st Rev Speed	1st solder reversing speed	50.0	0.1-50.0mm/sec
6	Pre-heat Time	Pre-heat waiting time	0.5	0-99.9sec
7	2nd Amount	2nd solder feeding amount	7.0	0-99.9mm
8	2nd Speed	2nd solder feeding speed	10.0	0.1-50.0mm/sec
9	2nd Rev Amount	2nd solder reversing amount	3.0	0-99.9mm
10	2nd Rev Speed	2nd solder reversing speed	50.0	0.1-50.0mm/sec
11	Heating Time	Heating waiting time	1.0	0-99.9sec

9.4 Slide Soldering Setting (WK201-299)

No.	Name	Setting Details	Initial Value	Setting Range
1	SV2 Time	Wait time after reached SV2 setting temperature	0.0	0-99.9sec
2	1st Amount	1st solder feeding amount	7.0	0-99.9mm
3	1st Speed	1st solder feeding speed	15.0	0.1-50.0mm/sec
4	1st Rev Amount	1st solder reversing amount	3.0	0-99.9mm
5	1st Rev Speed	1st solder reversing speed	50.0	0.1-50.0mm/sec
6	Pre-heat Time	Pre-heat waiting time	0.5	0-99.9sec
7	2nd Amount	2nd solder feeding amount	10.0	0-99.9mm
8	2nd Speed	2nd solder feeding speed	15.0	0.1-50.0mm/sec
9	2nd Rev Amount	2nd solder reversing amount	0.0	0-99.9mm
10	2nd Rev Speed	2nd solder reversing speed	15.0	0.1-50.0mm/sec
11	Heating Time	Heating waiting time	1.0	0-99.9sec
12	3rd Amount	3rd solder feeding amount	0.0	0-99.9mm
13	3rd Speed	3rd solder feeding speed	50.0	0.1-50.0mm/sec
14	3rd Rev Amount	3rd solder reversing amount	3.0	0-99.9mm
15	3rd Rev Speed	3rd solder reversing speed	50.0	0.1-50.0mm/sec

9.5 Special Soldering Setting: Point Soldering (WK301-399)

No.	Name	Setting Details	Initial Value	Setting Range
1	SV2 Time	Wait time after reached SV2 setting temperature	0.0	0-99.9sec
2	1st Amount	1st solder feeding amount	7.0	0-99.9mm
3	1st Speed	1st solder feeding speed	15.0	0.1-50.0mm/sec
4	1st Rev Amount	1st solder reversing amount	3.0	0-99.9mm
5	1st Rev Speed	1st solder reversing speed	50.0	0.1-50.0mm/sec
6	Pre-heat Time	Pre-heat waiting time	0.5	0-99.9sec
7	2nd Amount	2nd solder feeding amount	7.0	0-99.9mm
8	2nd Speed	2nd solder feeding speed	10.0	0.1-50.0mm/sec
9	2nd Rev Amount	2nd solder reversing amount	3.0	0-99.9mm
10	2nd Rev Speed	2nd solder reversing speed	50.0	0.1-50.0mm/sec
11	Heating Time	Heating waiting time	1.0	0-99.9sec
12	3rd Amount	3rd solder feeding amount	0.0	0-99.9mm
13	3rd Speed	3rd solder feeding speed	10.0	0.1-50.0mm/sec
14	3rd Rev Amount	3rd solder reversing amount	0.0	0-99.9mm
15	3rd Rev Speed	3rd solder reversing speed	50.0	0.1-50.0mm/sec

9.6 Special Soldering Setting: Slide Soldering (WK301-399)

No.	Name	Setting Details	Initial Value	Setting Range
1	SV2 Time	Wait time after reached SV2 setting temperature	0.0	0-99.9sec
2	1st Amount	1st solder feeding amount	7.0	0-99.9mm
3	1st Speed	1st solder feeding speed	15.0	0.1-50.0mm/sec
4	1st Rev Amount	1st solder reversing amount	3.0	0-99.9mm
5	1st Rev Speed	1st solder reversing speed	50.0	0.1-50.0mm/sec
6	Pre-heat Time	Pre-heat waiting time	0.5	0-99.9sec
7	2nd Amount	2nd solder feeding amount	7.0	0-99.9mm
8	2nd Speed	2nd solder feeding speed	10.0	0.1-50.0mm/sec
9	2nd Rev Amount	2nd solder reversing amount	3.0	0-99.9mm
10	2nd Rev Speed	2nd solder reversing speed	50.0	0.1-50.0mm/sec
11	Heating Time	Heating waiting time	1.0	0-99.9sec
12	3rd Amount	3rd solder feeding amount	0.0	0-99.9mm
13	3rd Speed	3rd solder feeding speed	10.0	0.1-50.0mm/sec
14	3rd Rev Amount	3rd solder reversing amount	0.0	0-99.9mm
15	3rd Rev Speed	3rd solder reversing speed	50.0	0.1-50.0mm/sec
16	Pool Wait Time	Waiting time until slide soldering starts	0.0	0-99.9sec

9.7 Special Soldering Setting: Point Soldering (No iron up) (WK301-399)

No.	Name	Setting Details	Initial Value	Setting Range
1	SV2 Time	Wait time after reached SV2 setting temperature	0.0	0-99.9sec
2	1st Amount	1st solder feeding amount	7.0	0-99.9mm
3	1st Speed	1st solder feeding speed	15.0	0.1-50.0mm/sec
4	1st Rev Amount	1st solder reversing amount	3.0	0-99.9mm
5	1st Rev Speed	1st solder reversing speed	50.0	0.1-50.0mm/sec
6	Pre-heat Time	Pre-heat waiting time	0.5	0-99.9sec

No.	Name	Setting Details	Initial Value	Setting Range
7	2nd Amount	2nd solder feeding amount	7.0	0-99.9mm
8	2nd Speed	2nd solder feeding speed	10.0	0.1-50.0mm/sec
9	2nd Rev Amount	2nd solder reversing amount	3.0	0-99.9mm
10	2nd Rev Speed	2nd solder reversing speed	50.0	0.1-50.0mm/sec
11	Heating Time	Heating waiting time	1.0	0-99.9sec
12	3rd Amount	3rd solder feeding amount	0.0	0-99.9mm
13	3rd Speed	3rd solder feeding speed	10.0	0.1-50.0mm/sec
14	3rd Rev Amount	3rd solder reversing amount	0.0	0-99.9mm
15	3rd Rev Speed	3rd solder reversing speed	50.0	0.1-50.0mm/sec

9.8 Special Soldering Setting: Easy Slide Soldering (WK301-399)

No.	Name	Setting Details	Initial Value	Setting Range
1	SV2 Time	Wait time after reached SV2 setting temperature	0.0	0-99.9sec
2	1st Amount	1st solder feeding amount	7.0	0-99.9mm
3	1st Speed	1st solder feeding speed	15.0	0.1-50.0mm/sec
4	1st Rev Amount	1st solder reversing amount	3.0	0-99.9mm
5	1st Rev Speed	1st solder reversing speed	50.0	0.1-50.0mm/sec
6	Pre-heat Time	Pre-heat waiting time	0.5	0-99.9sec
7	2nd Amount	2nd solder feeding amount		
8	2nd Speed	2nd solder feeding speed	10.0	0.1-50.0mm/sec
9	2nd Rev Amount	2nd solder reversing amount	3.0	0-99.9mm
10	2nd Rev Speed	2nd solder reversing speed	50.0	0.1-50.0mm/sec
11	Heating Time	Heating waiting time	1.0	0-99.9sec

9.9 Special Soldering Setting: Pre-soldering (WK301-399)

No.	Name	Setting Details	Initial Value	Setting Range
1	1st Amount	1st solder feeding amount	7.0	0-99.9mm
2	1st Speed	1st solder feeding speed	15.0	0.1-50.0mm/sec
3	1st Rev Amount	1st solder reversing amount	3.0	0-99.9mm
4	1st Rev Speed	1st solder reversing speed	50.0	0.1-50.0mm/sec

9.10 Special Soldering Setting: Set Temp (WK301-399)

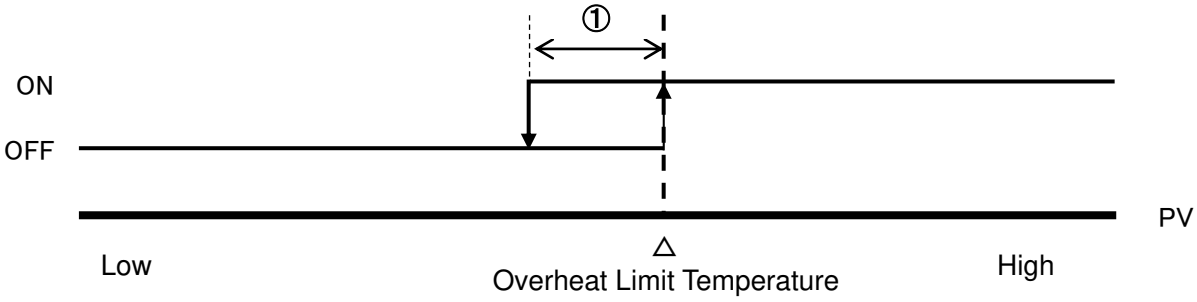
No.	Name	Setting Details	Initial Value	Setting Range
1	Temp	Setting temperature	100	100-500℃
2	Process of the setting temperature	Process of the setting temperature	0	0-2 0:Range 1:Setting Value 2:No Check

9.11 Cleaning Setting (WK000)

No.	Name	Setting Details	Initial Value	Setting Range
1	Iron Up/Down	Iron unit up / down position	UP	UP／DOWN
2	Air Blow	Time turning air blow on.	0.2	0-99.9sec
3	Wait Time	Waiting time after air blow is turned off.	0.0	0-99.9sec

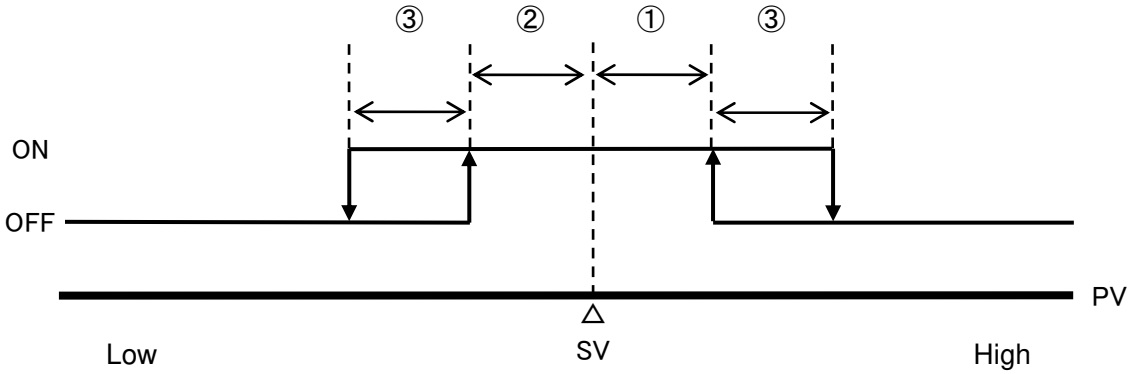
9.12 Sensitivity Setting

9.12.1 Overheat Limit



① Overheat Limit Sensitivity Setting

9.12.2 Optimal Temperature Limit



①: Optimal temperature upper limit deviation setting
②: Optimal temperature lower limit deviation setting
③: Optimal temperature limit sensitivity setting

10. Operation

10.1 Automatic Operation

10.1.1 Automatic Operation Stopping

The state of automatic operation stopping is as following; (except for operation by Maintenance)

	Name	Stop State
1	Heater Output	LOW
2	Overheat Output	Depending on the state of overheat judgement
3	AIR CYLINDER	Depending on the input state of IRON U/D
4	AIR BLOW	Depending on AIR BLOW input
5	READY	LOW
6	RUNNING	LOW
7	END	LOW
8	ACK	LOW
9	SOLDER ERROR	Depending on the solder shortage / solder clogged state
10	IRON UNIT ERROR	Depending on the state of IRON UNIT
11	COUNTER OUT	LOW
12	Motor Drive Output	No pulse output (LOW output)

The state monitoring of the automatic operation is as following;

	Automatic operation state
1	State monitoring by READY output/RUNNING output Automatic operation movement: READY output= HIGH / RUNNING= LOW(No soldering operation) READY output= LOW / RUNNING= HIGH(during soldering operation) Automatic operation stopping:READY output= LOW / RUNNING= LOW

10.1.2 Automatic Operation Start

The start condition of the automatic operation is as following;

	Condition
1	When start input of external I/O is occurred during displaying automatic operation stop “Ready” on the operation screen
2	When start input of external communication is occurred during displaying automatic operation stop “Ready” on the operation screen
3	When “1 Cycle” button on the touch panel is pressed during displaying automatic operation stop “Ready” on the operation screen

Refer to the OMEGA instruction manual-2 “13. Soldering Operation” about the operation during automatic operation.

10.1.3 Automatic Operation Stopping

The stop condition of the automatic operation is as following;

	Condition	Remarks
1	Press RUN key during automatic operation	After soldering operation is completed, it transits to automatic operation stopping.
2	An alarm generates during automatic operation	

10.1.4 Modbus TCP Operational Motion

When “Type” of System Parameter is set to “LAN”, the operation control is done by using the data of input / output control 1/2 which is set by a communication (Modbus TCP) from an external.
It does not receive information of digital input 2(except for EMR: emergency) or a command by RS232C communication.

<Digital Input 2 Signal when Type is set to “LAN”>

No.	Name	Description	Reference
1	EMR	Emergency Stop	Digital input 2 information
2	SEL1	Program Select 1	Data information of input / output control 1/2 which received by Modbus TCP communication
3	SEL2	Program Select 2	
4	SEL4	Program Select 4	
5	SEL8	Program Select 8	
6	SEL16	Program Select 16	
7	SEL32	Program Select 32	
8	SEL64	Program Select 64	
9	START	Start Signal *	
10	STOP	Stop Signal *	
11	RESET	Reset Signal *	
12	S+	Solder Feeding Forward	
13	S-	Solder Feeding Reverse	
14	IRON U/D	Iron Unit Up / Down	
15	AIR BLOW	Air Blow	
16	SEL100	Program Select 100	
17	SEL200	Program Select 200	
18	LINE MOVE END	End of Slide Soldering	

*It detects edge of OFF→ON and operates. (When “LAN” setting, it cannot perform continuous operation by continuing START signal ON)

<Effective Function according to TYPE>

Type	I/O(DIO)	COM(RS-232C)	LAN(Modbus TCP)
I/O Input (Digital input)	○	×	×
I/O Input (Digital input)	○	○	○
COM (RS-232C)	×	○	×
Modbus TCP (Input / Output control function)	×	×	○
Modbus TCP (Function except for input / output control)	○	○	○
EMR Signal	B Contact	A Contact	B Contact

10.2 Heater Automatically Start When Power On

If “Heater automatic start when power on (Heat Auto)” is on when it turns power on, the temperature is adjusted to “Setting temperature (Temp)”. After that, when “Wait Time (system parameter)” setting is set 1 or more, the temperature is adjusted to “Wait temperature setting (Wait Temp)” after “Wait Time” is passed.
If “Heater automatic start when power on (Heat Auto)” is off, it does not adjust the temperature. (Heater output is off)

Heater Automatic Start When Power On

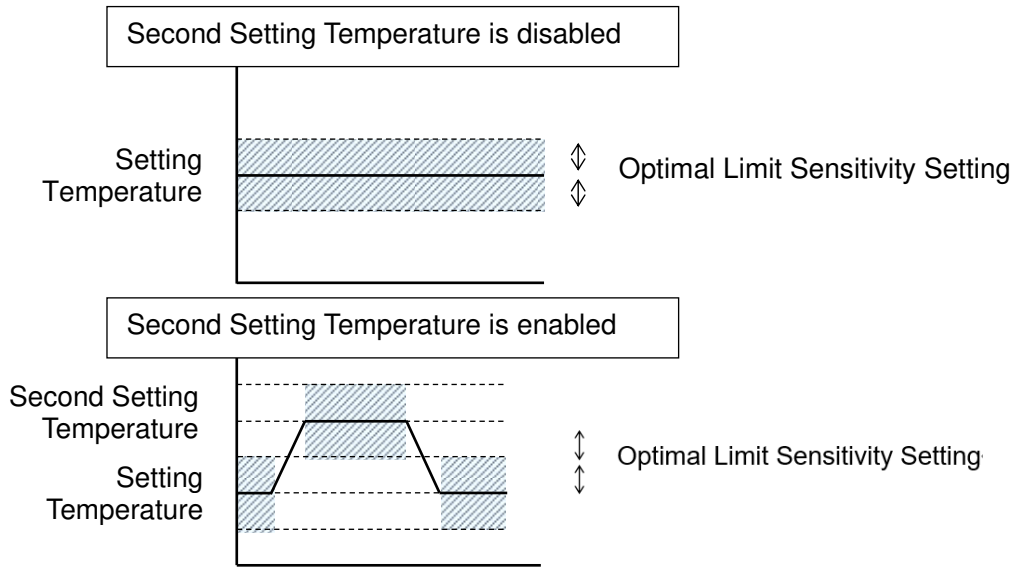
		ON	OFF
Wait Time	More than 1	It starts to adjust the temperature to the setting temperature and after the wait time is passed, it adjusts to the wait temperature setting.	No temperature control
	0	It adjusts to the setting temperature	No temperature control

10.3 Temperature Control

It PID controls the heater output and it adjusts the temperature so that it becomes “Setting temperature”, “Second setting temperature” and “Wait temperature setting”.
It also has overheat prevention output, it performs overheat judgement by “Overheat judgement temperature setting”, and it turns off the relay control output to stop the heater output when it exceeds the overheat judgement temperature.
When it is an operation that 2nd temperature control is enable and “SV2 setting temperature rising time” is not 0, if it reaches an optimal temperature range to “setting temperature” when soldering operation START request, it starts to control temperature by “2nd temperature control setting”. And it starts to count “SV2 setting temperature rising time”.
When “SV2 setting temperature rising time” is up or it stops operation, it switches a target temperature to “Setting temperature”.
Please refer to “10.6. Sleep Function” about the condition that operates by “Wait temperature setting”.
When it does not meet the start condition of “2nd temperature control setting” “Wait temperature setting”, it controls temperature by “Setting temperature”.

10.4 Optimal Temperature Limit

Soldering operation judges the temperature within “optimal temperature limit sensitivity setting (Temp Good Sens)” as optimal temperature to “Setting temperature”.
When it is an operation that 2nd temperature control is enable and “SV2 setting temperature rising time” is not 0, it is an operation that 2nd temperature control is disable or “SV2 setting temperature rising time” is 0, it performs the optimal temperature judgement by the sensitivity from “Setting temperature”.
When “Second setting temperature use / non-use setting (SV2 Temp Function)” is on, it performs the optimal temperature judgement by the sensitivity from “Setting temperature (Temp)” “Second setting temperature (SV2 Temp)”.
The shaded parts in the following drawing is within the optimal temperature limit. Refer to the “9.12.2 Optimal Temperature Limit” about the range limit.

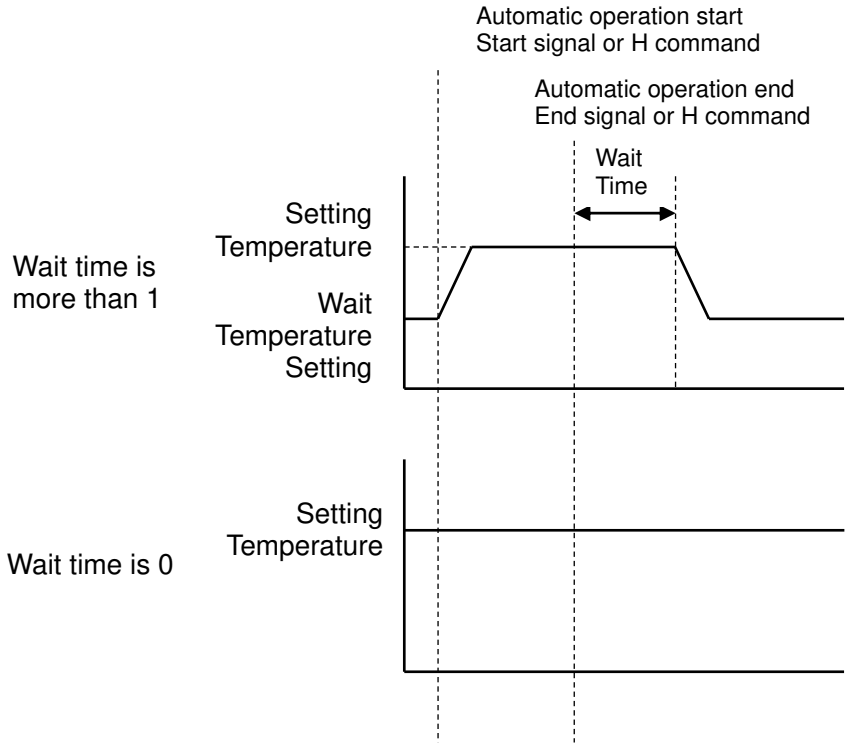


10.5 Stepping Motor Control

It outputs the clock signal (pulse output) and controls the motor to feed the solder wire. It can also reverse the solder wire by the oppositely rotation. Solder feeding (Solder reversing) can set the solder feeding speed (reversing speed) and the solder feeding amount (reversing amount).

10.6 Sleep Function

When “Wait Time (System parameter)” is set more than 1, the sleep function becomes valid.
It controls the temperature by “Wait Temp (Wait temperature setting)” during sleep state.
If it detects “START” signal or receives “H” command from the robot, it controls the temperature to “Temp (Setting temperature)” or “SV2 Temp (Second temperature controller setting)”.
If “Wait time” is set to 0, it switches to “Setting Temperature” when the automatic operation is completed and it control the temperature.
If “Wait time” is set to more than 1, when the temperature input value becomes within the range of the optimal temperature limit and it passes “Wait time”, it switches to “Wait temperature setting” and controls the temperature.
When it detects “START” signal again or it receives “H” command from the robot again during counting the wait time, it resets the wait time and counts the wait time from the next automatic operation is completed.



10.7 Overheat Limit Temperature Setting

It detects the temperature error and sets the temperature to stop the heater.
When the temperature becomes over the setting value, it does overheat-output and turns off the relay that is connected to the heater.

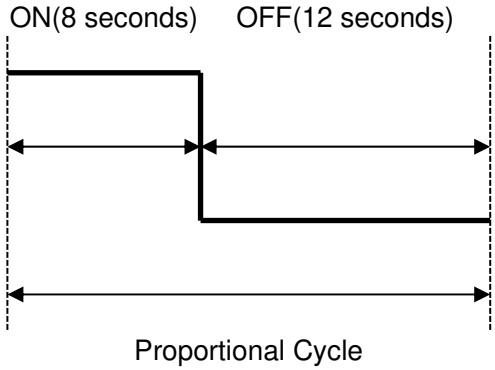
10.8 PID Control Type Setting / TYPE B Mode Setting

No.	Name	Details	
1	PID TYPE	PID Control Setting	0: TYPE A (Normal PID Control) 1: TYPE B (Overshoot Suppressing Function) 2: TYPE C (Disturbance Suppressing Function)
2	TYPE B MODE	TYPE B Mode Setting	0: Overshoot Suppressing : Weak 1: Overshoot Suppressing : Medium 2: Overshoot Suppressing : Strong

Set PID control type.
It can set from three kinds of control types (0 [TYPE A]~ 2[TYPE C]) according to usage purpose.
When 1(TYPE B) is set to PID control type, the setting of TYPE B mode becomes enable.
It multiplies the coefficient to the integration (I) / differential (d) calculation result of auto tuning in TYPE B mode.

10.9 Control Proportional Cycle Setting

According to the set proportional cycle (Time cycle), it turns on for a certain time.
After that, it turns off for the remaining time.
If the proportional cycle is 20 seconds and the control amount (MV) is 40%, it becomes as following.
Note: This machine is PID control only. It cannot set the control amount (MV) to any value.



10.10 Anti-Reset Windup Setting

It sets the maximum value of calculated integral operation value.
If Anti-reset windup setting is 50%, the control amount of the integral operation becomes less than 50%.
Anti-reset windup is the operation to suppress excessive integration of the integral operation.
It is used to limit the range that the integral operation is valid and prevent the overshoot beforehand.
Please note that the integral operation becomes invalid when Anti-reset windup is set to 0%.
When it sets PID operation type to 2:TYPE C (Disturbance Suppressing Function) and perform auto tuning, the value of Anti-reset windup is set automatically.

10.11 Loop Error PV Thresholds Setting / Loop Error Control Amount Thresholds Setting / Loop Error PV Change Amount Setting / Loop Error Time Setting

It is the function to detect an error of the control loop.
When the PV is in the range from SV setting value to the setting value, it works to judge the loop disconnection.
The actual judgement is performed in “Loop error PV change amount setting” and “Loop error time setting”.
* Refer to the OMEGA instruction manual-2 “14.5 Loop Error Function” for details.

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