

On-line Selective Wave Soldering Machine



Solution:

<p>On-line Compact Type</p>				
<p>On-line Modular</p>				
<p>On-line Modular</p>				
<p>On-line Modular</p>				

The combinations of the arrangement of different modules show only some of the possibilities of the extremely flexible I.C.T modular system concept.

Depending on a customer's request, with the addition of the optional dual pot feature and/or the dual track feature, throughput could be substantially enhanced without increasing floor space requirements.

Introduce:

Selective wave soldering is a special form of wave soldering invented to meet the development requirements of through-hole components soldering. It is mainly suitable for the soldering of through-hole components in high-end electronic products. For example: military electronic products, automotive electronics, switching power supply products and other industries which require higher soldering reliability.

I.C.T online selective wave soldering is a high performance equipment developed and assembled in China. For higher flexibility or multiwave soldering for high-volume processes. Parallel process due to the separation of fluxing, preheating and soldering, operation of up to two spray heads, up to five lower preheating with upper convection heating, perfect for the connection to assembly stands and periphery, connection to traceability systems for process control.

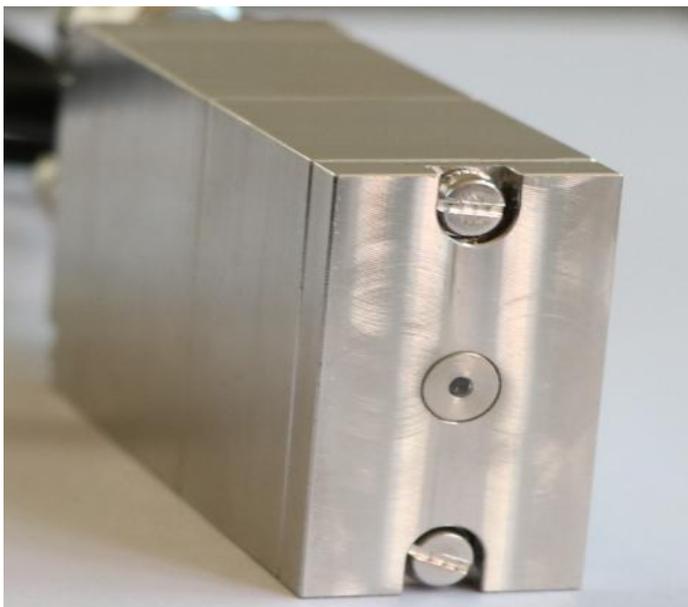
Features:

1. PCB plate fixed, spray and soldering platform moving;
2. High soldering quality, greatly improve the pass rate of soldering;
3. Modular design of SMEMA online transportation, support customers for flexible line formation;
4. Full PC control. All parameters can set in PC and saved to PCB menu, like moving path, solder temperature, flux type, solder type, N₂ temperature etc, best trace-ability and easy to get repeat soldering quality;
5. Auto wave height calibration function, to check & calibrate wave's height after every certain PCB, so to keep a very good stability of wave;
6. CCD Mark positioning function, to check PCB's mark point after every certain PCB;
7. Self design motion table with cast aluminum, lighter weight with quick motion speed;
8. Panasonic servo motor & driver provide stable, with ball screw & linear guide rail, less noise, stable movement;
9. With dust proof plate above motion table, so to avoid flux or solder drop to damage ball screw;
10. The jet valve originated in Germany is selected with small flux dot, please note flux solid content should be less than 10%;
11. Flux is stocked by pressure tank, make sure pressure stable without influenced of amount of flux;
12. Electromagnetic pump coil adopts German imported brand to ensure the stability and reliability of the peak;
13. Solder pot is made of stainless steel with anti-corrosion coating, not leakage, also titanium alloy can be used according to customer requirements;
14. With cast iron heater outside, robust & quick heat up;
15. N₂ online heating system, to wet the soldering perfectly and reduce the solder dross;
16. With stainless steel roller for conveyor, not wearable with long term usage.

Features 1 Flux system:



Flux Overview



1. German high-frequency pulse injection valve to get precious fluxing result with small flux dot, flux solid content should be less than 10%. The flux nozzle jam detection function is optional.
2. It is configuration with tray under the jet valve to catch the flux residue for easy maintenance.
3. The nozzle is mounted on the XY platform, the accuracy of repetition and positioning can reach 0.02mm.



4. Flux is stocked by pressure tank, make sure pressure stable without influenced of amount of flux.
5. High precision pressure flow meter is used for flow control and corrosion resistant material is used.
6. All pneumatic components are made of Japanese SMC brand.

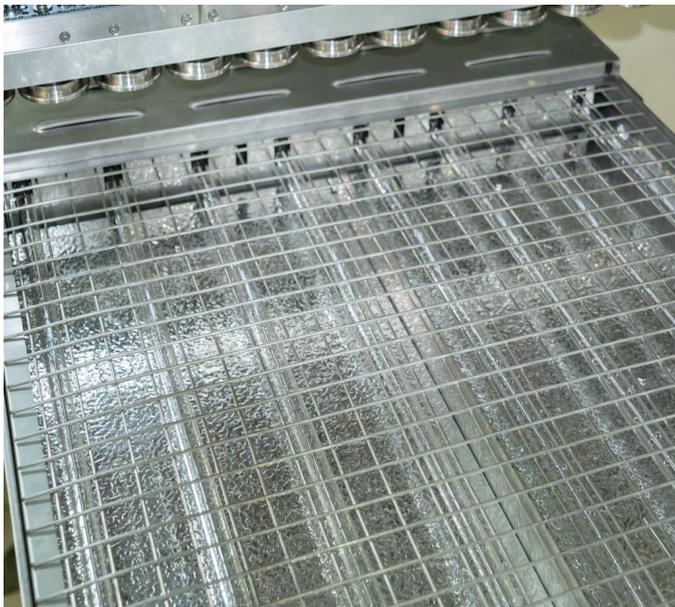


7. Flux pressure flow meter and nitrogen flow are placed on the surface of the machine for visual operation.
8. The external humanized design is convenient for operation and adjustment.
9. SMC brand automatic extraction pump is adopted to ensure stable flux supply.

Features 2 Preheat system:



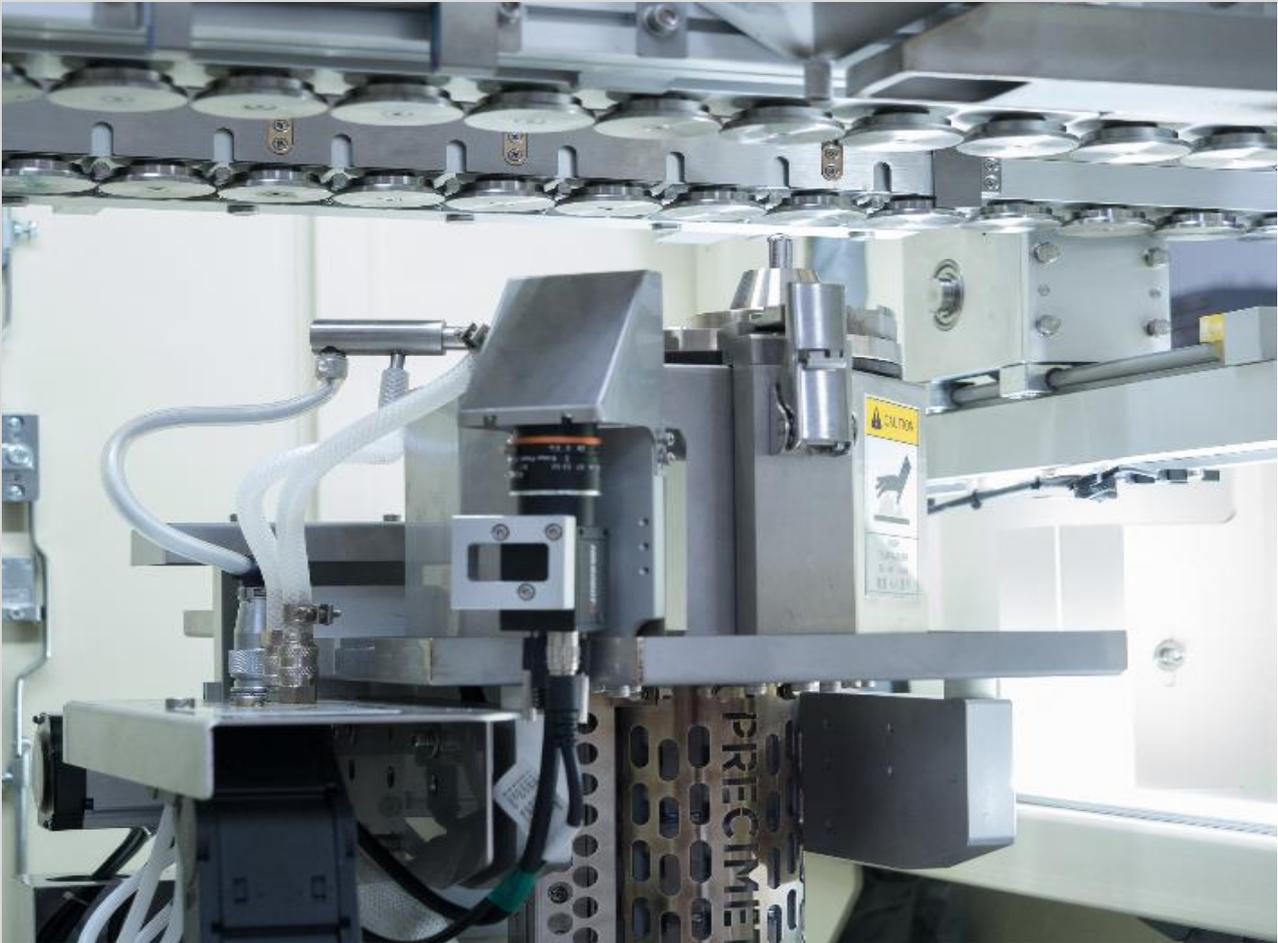
Preheat Overview



1. The machine is equipped with bottom IR preheating as standard, and the preheating area can be set; top hot air preheating, infrared heating Conduction is efficient and stable.
2. Design structure for maximizing preheating area.

3. All round high temperature cotton design to ensure temperature stability.
4. Heat-generating and heat-conducting parts and motors adopt top brands.
5. Maintenance plug-in design, tool-free maintenance mode.

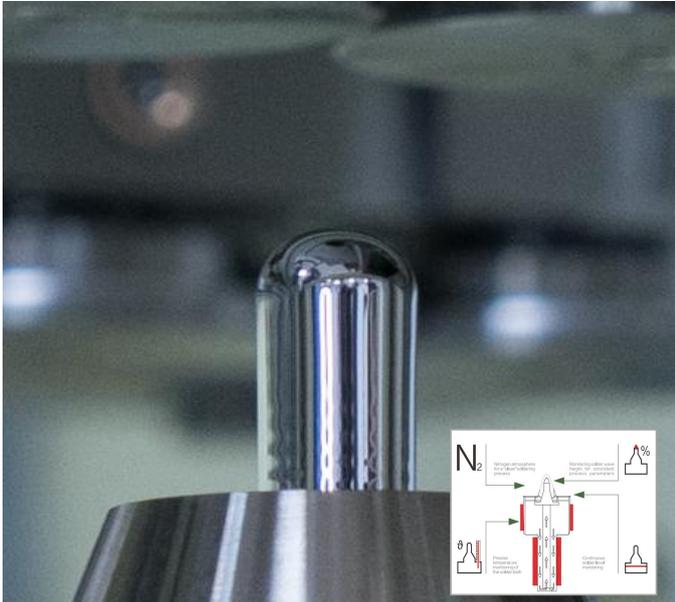
Features 3 Soldering system:



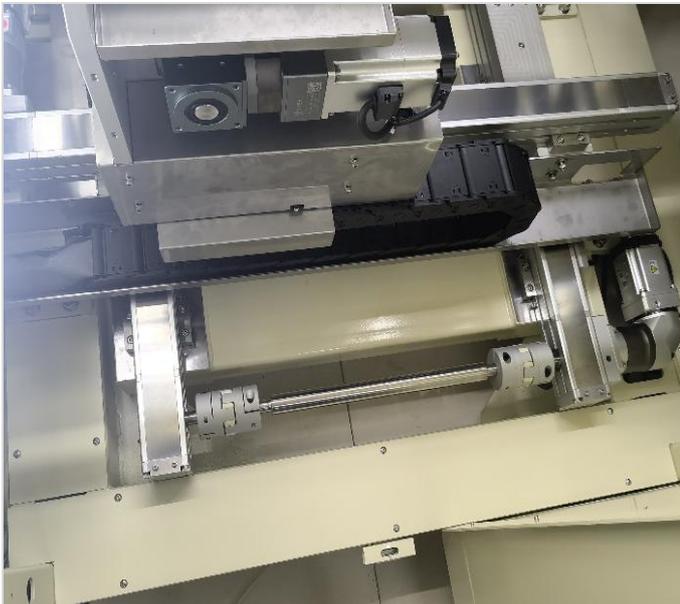
Soldering Overview



1. Electromagnetic pump coil adopts Sweden "PRECIMETER" brand to ensure the stability and reliability of the peak.
2. Solder temperature, N₂ temperature, wave height, wave calibration etc all able to set in software.
3. Solder pot is made of stainless steel with anti-corrosion coating, not leakage. With cast iron heater outside, robust & quick heat up.
4. N₂ online heating system, to wet the soldering perfectly and reduce the solder dross.



5. Best tin spraying stability in the industry.
6. Real time visual monitoring and video can be saved and traced for 900 hours.
7. Visual fast programming to improve programming reliability and efficiency.



8. XYZ platform is composed of high precision lightweight sports module and high-speed servo motor.
9. All servo motor are equipped with reducer to ensure stability.
10. Sealed and protected, anti pollution treatment.
11. Omron Magnetic sensor, Ensure more accurate movement.



12. Standard with the nozzle automatic cleaning function. Strong cleaning of nozzles with cleaning powder.

13. Cleaning frequency can be adjusted flexibly.



14. Laser detection system for soldering wave height.

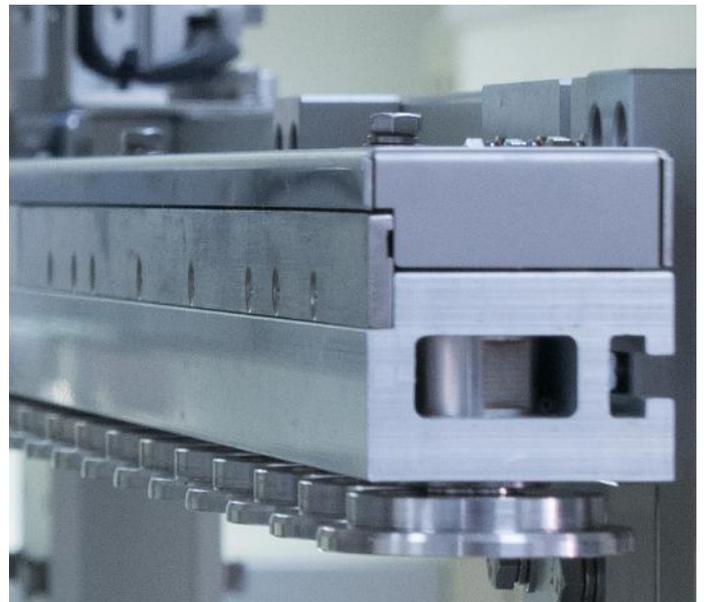
15. German "SICK" non-contact laser sensor is used to ensure measurement accuracy, no pollution and no error measurement.

16. Rational Design of Nozzle Cleaning and Measuring Mechanism.

Features 4 Transmission system:

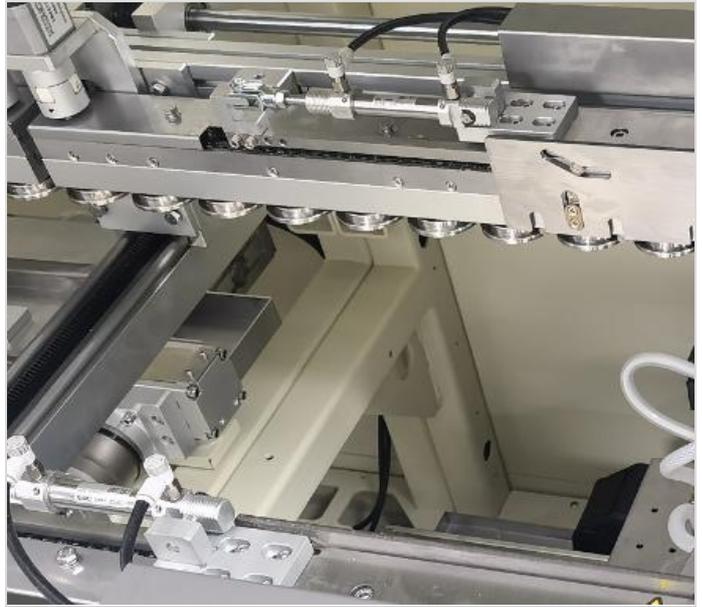


Transmission Overview



1. Special material profiles ensure stability, and rational design ensures convenience.
2. The transmission module is composed of the roller.
3. PCBA side clamp and top clamp system can ensure the stability of the board.

4. Thickened customized rail, 20KG load.



5. Independent work control of each area of the transportation system.

6. The motor and pneumatic components are all Japanese brands.

7. More simple and convenient rational design.

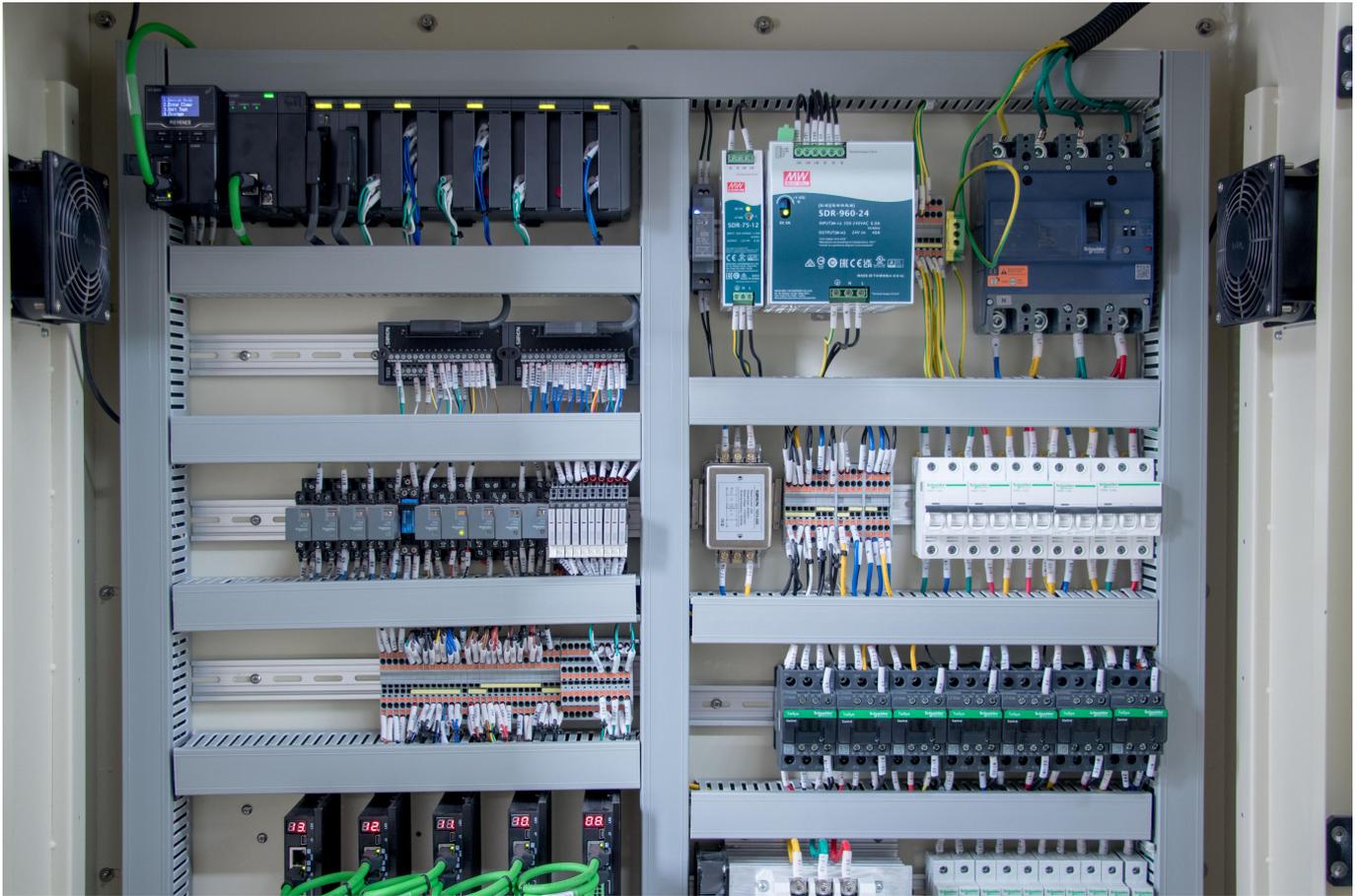


8. The transportation buffer zone is set to ensure the smooth operation of PCBA without collision.

9. The detailed design of different PCBA design processes shall be carried out to ensure zero error measurement of PCBA.

10. Solder parts PCBA clamping mechanism for different PCBA and different fixtures.

Features 5 Control system:



Controlbox Overview



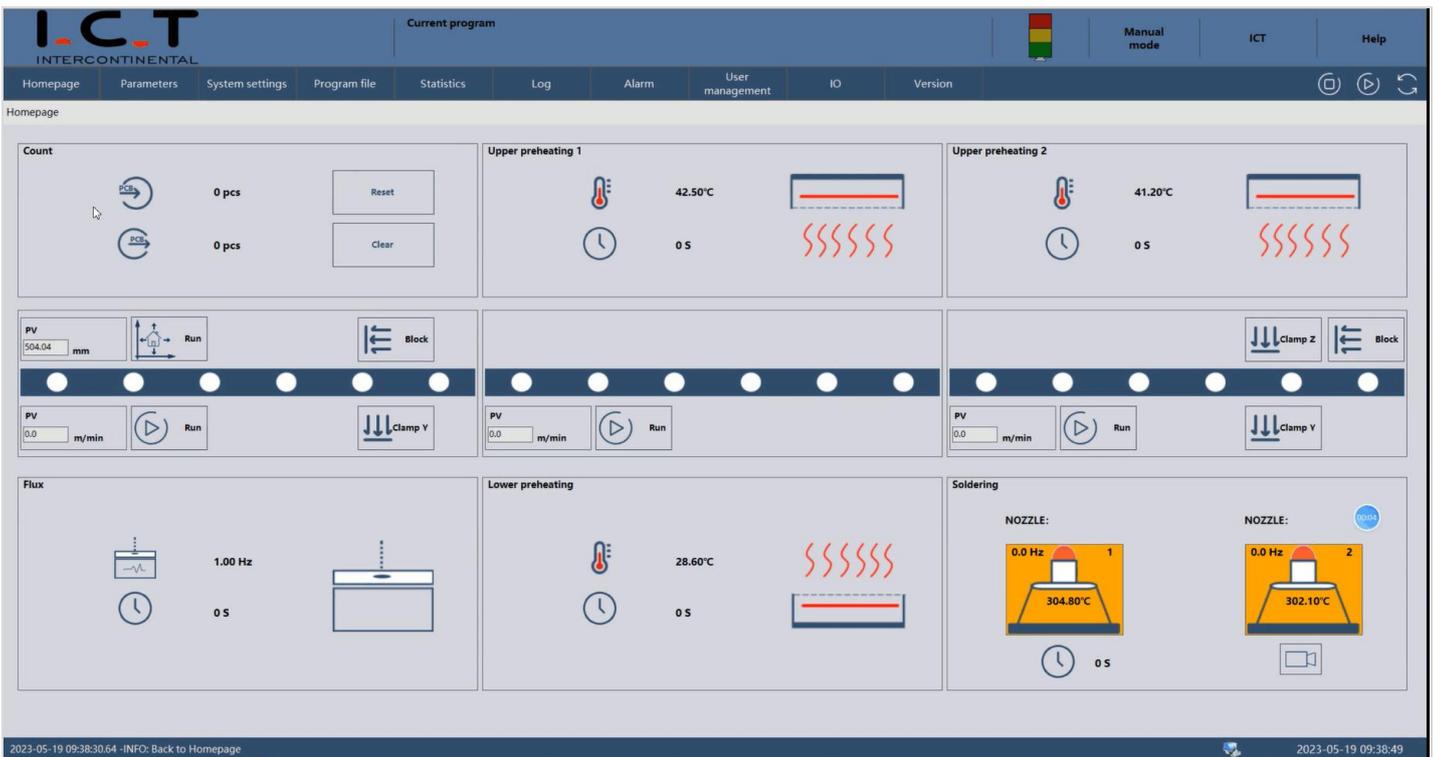
1. Keyence KV7500 PLC+Keyence module high-end bus control system, ensure the stability and extensibility of the system.
2. Conform to CE and other standards.
3. Underfloor design of Industry 4.0.
4. Ensure the capacity improvement, add the underlying control of the soldering machine module, and ensure the stability.



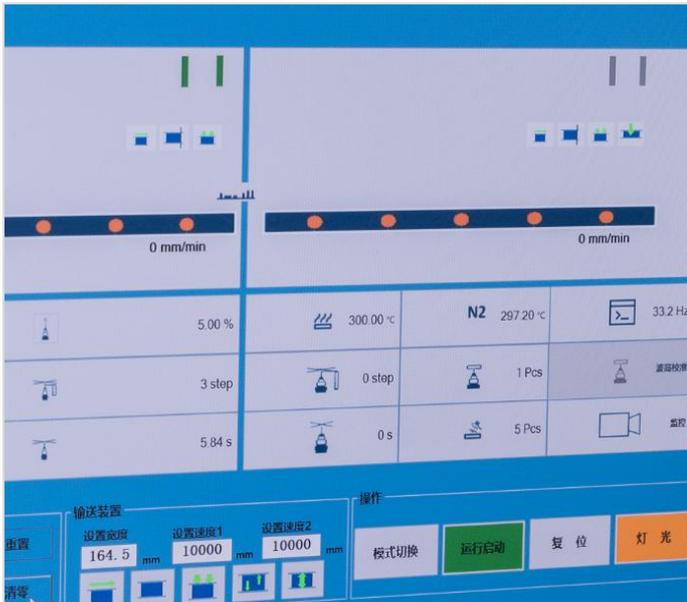
5. Application of global high-quality stability electrical parts.

6. Cat-6 network cable, faster communication speed and sensitive response.

Features 6 Operating system:

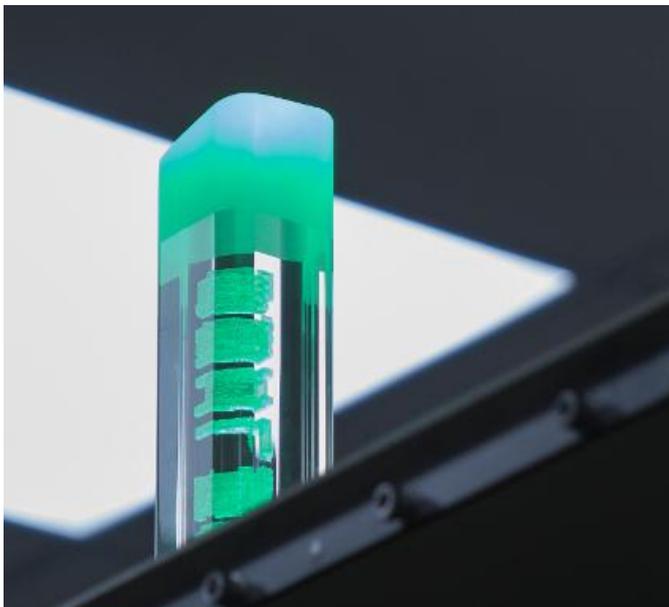


Operating Overview



1. Guided programming mode.
2. CCD fast programming function.
3. Picture programming, make coordinate correction, coordinate intelligent verification.
4. Real time data visualization of interface. One button switching of CCD soldering real-time monitoring interface.
5. Chinese, English, can be switched.

Features 7 Intelligence system:

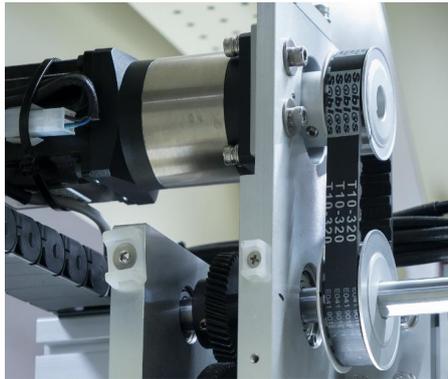


1. Standards and adaptability of MES, WIFI connection, online software upgrade, remote control, intelligent.
2. Soldering data can be traced to confirm the process of each soldering point.

Other Features:



Fan outlet diversion and prevention



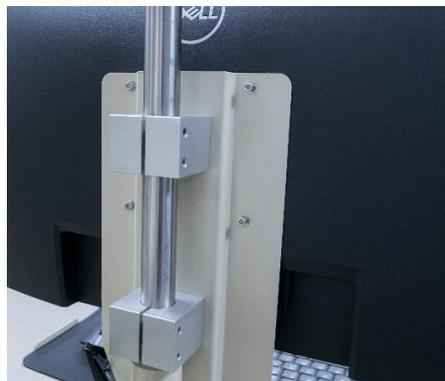
Motor with a reducer for more stable



Computer cooling type holder



Protection for all connecting wire



Adjustable operating height



Additional protection of all access lines

Pump Comparison:

Comparison	
Electromagnetic pump	Mechanical pump
Made in Sweden	Made in China
Wave stability	Wave stability
Maintenance free	Regular maintenance
Influence of ambient temperature	Mechanical drive, mature technology
Repair free, overall replacement, high cost	Widely used and low maintenance cost

Standard Conditions:

No.	Item	SS540	SS550
1	Control system	PC and PLC. Real time monitoring camera. Controller and control card.	PC and PLC. Real time monitoring camera. Controller and control card.
2	Drive system	Spary and soldering in same platform. XYZ axis: high speed motion module for spary and soldering. The platform is all aluminum cast.	2 axis platform for spray. XY 2 axis: high speed motion module for spray. XYZ 3 axis: high speed motion module for soldering. The platform is all aluminum cast.

3	Spray system	Imported fluiding jetting valve. Flux pressure tank. Spray pneumatic control. Nozzle automatic cleaning system.	1set	Imported fluiding jetting valve. Flux pressure tank. Spray pneumatic control. Nozzle automatic cleaning system.	1set
4	Heating system	Hot air top and bottom IR heater	1set	Hot air top and bottom IR heater	1set
5	Soldering system	11kg tin pot, electromagnetic pump drive. Pot over temperature and liquid level alarm device. Pot temperature control system. N ₂ independent temperature control system. Five soldering nozzles (inner diameter 3mm, 4mm, 6mm, 8mm, 10mm)as standard. 3 axis platform for soldering. 3 axis: high speed motion module for soldering. 3 axis:servo motor+retarder & Driver for soldering. The platform is all aluminum cast.	1set	11kg tin pot, electromagnetic pump drive. Pot over temperature and liquid level alarm device. Pot temperature control system. N ₂ independent temperature control system. Five soldering nozzles (inner diameter 3mm, 4mm, 6mm, 8mm, 10mm)as standard. 3 axis platform for soldering. 3 axis: high speed motion module for soldering. 3 axis:servo motor+retarder & Driver for soldering. The platform is all aluminum cast.	1set
6	Handling system	Roller transport guide for soldering. PCB blocking device for spray and soldering. PCB side clamping system.	1set	Independent step transport system for spray preheating. PCB blocking device for spray preheating. Independent step transport system for soldering. Roller transport guide for soldering. PCB blocking device for soldering. PCB side clamping system.	1set
7	MES system	Support	1set	Support	1set

Leading advantage:

No.	Item	I.C.T	Other Brand	Comparison
1	Double solder pot drive	Double Y axis	Single Y axis	Advantages of dual Y-axis independent : each tin pot can soldering any position within the PCB, and it can also be configured with different nozzles sizes for PCB soldering, or it can soldering the panel PCB at the same time.
2	Soldering wave height detection	Non-contact laser sensor	Contact-type sensor	I.C.T's non-contact laser detection has higher precision and more accurate results. The probes of other companies' Contact-type detection methods are easy to be polluted, affecting the detection accuracy.
3	Solder nozzle type identify	Option	N/A	Some companies do not have this function.

4	Soldering nozzle Jet-flow status real time monitoring	Option	N/A	Some companies do not have this function.
5	Solder wave height monitoring	Option	N/A	Some companies do not have this function.
6	Solder wave cutoff monitoring	Option	N/A	Some companies do not have this function.
7	Tin pot liquid level monitoring	High precision sensor	Differential pressure gauge	Traditional differential pressure sensor has large error, false alarm and inaccuracy.
8	Wave soldering stability	±0.2mm	±1.0mm	The real data ±0.2mm measured by KEYENCE 's laser sensor, the wave soldering stability of I.C.T is leading in the industry.
I.C.T selective wave soldering has a number of leading and mature technology applications.				

Materials List:

No.	Item	Brand	Original
1	PLC	Keyence	Japan
2	Solder pot	PRECIMETER	Sweden
3	Spray Nozzle	Jet Valve	Germany
4	Servo motor	Panasonic	Japan
5	Servo driver	Panasonic	Japan
6	Camera	Toshiba/Hikvision	Japan
7	Solder Nozzle	Customized	Japan
8	Ball Screw	THK/Hiwin	Japan/Taiwan
9	Sensor	OMRON, KEYENCE	Japan
10	Stepper motor	Panasonic	Japan
11	Pneumatic Component	SMC	Japan
12	SSR	Carlo	Switzerland
13	Box relay	ABB/Schneider	Switzerland
14	Contactora	ABB/Schneider	Switzerland
15	AC contactora	ABB/Schneider	Switzerland
16	Sensor	Keyence/Sick	Japan/ Germany
17	Fiber sensor	Keyence/Sick	Japan/ Germany
18	Magnetic components	SMC	Japan
19	Switch	MW	Taiwan
20	Bearing	NSK	Japan
21	Other Electrical Component	IDEC, Mitsubishi,Fuji	Japan
22	Heating Tube	SAKAGUCHI	Japan

Specification:

Model	SS540 Compact Online	SS550 General Online	SS550D Dual Pot Online	SS550DD Dual Pot Online
Photo				
Flux System				
Flux Storage Tank	1L	1L	2L	2L
Flux Support	Flux Alarm, Automatic			
Spray Nozzle	Germany Jet Valve (Spot and line spraying) 1 set			
Spray Nozzle Size	130um (180um, 210um Option)			
Spray Range	3~8mm			
Spray Speed	0~20mm/s			
Spray Nozzle Move Speed	0~400mm/s			
Spray Precision	0.1mm			
Spray Pressure	0.05~0.1MPa			
Spray Flow Control	Electronic Flow Meter 1 set			
Flux Tank	Pressure tank			
Alcohol Tank	Pressure tank			
Preheating System				
Preheating Mode	Hot air and IR	Hot air and IR	Hot air and IR	Hot air and IR
Preheating Area	L500*W500mm	L500*W500mm	L500*W500mm	L500*W500mm
Preheating Zone	Top hot air: 2, Bottom IR: 1	Top hot air: 2, Bottom IR: 1	Top hot air: 2, Bottom IR: 1	Top hot air: 2, Bottom IR: 1
Bottom Preheating Power	Max.12kw			
Top Preheating Power	Max.6kw	Max.6kw	Max.6kw	Max.6kw
Preheating Temp.	Room Temperature~250℃			
Warm-up Time	Approx.15min (setting 150℃)			
Control Mode	PC+PLC			
Soldering System				
Nozzle Inner Diameter	Φ3-30mm (Customization Special dimensions)			
Nozzle Quantity	1	1	2	4
Wave Height	3~5mm			
Soldering Precision	±0.25mm			
Solder Pot Drive	Single Pot: XYZ independent drive Dual Pot: Dual Y axis, dual Z axis independent drive, synchronous or asynchronous action. (Option)			
Dual Pot Clearance	Min: 110mm~300mm (Only for dual soldering pot)			

Solder Pot Liquid Level Detection	High precision sensor			
Soldering Wave Height Detection	Laser sensor			
Solder Pot Z Axis Move Speed	50~100mm/s			
Soldering Monitoring	CCD			
Wave Control	Electromagnetic pump (Sweden)			
Solder Pot Quantity	1 set	1 set	2 set	2 set
Solder Pot Power	2.35kw	2.35kw	4.70kw	4.70kw
Solder Pot	Titanium alloy			
Solder Capacity	11Kg	11Kg	11Kg*2	11 Kg*2
Solder Pot Temperature	Room Temperature~300℃			
Heating Control	PID + SSR			
Temperature Accuracy	±1℃			
Warm-up Time	<60min (setting 300℃)			
Transport System				
PCB Size (with fixture)	120*60~500*500mm			
PCB Replacement	Online			
Components Lead Pin Pitch	≥0.5mm			
Components and Pad Clearance	≥1.5mm			
PCB Top Clearance	120mm			
PCB Bottom Clearance	60mm			
PCB Weight	<15KG			
PCB Thickness	0.5-6.0mm			
Clearance from PCB Edge	4mm			
Transport Height	900±20mm			
Transport Direction	L to R (R to L)			
Transport Width	60~500mm			
Width Adjustment	Auto			
Transport Mode	Roller, segmented transportation	Roller, segmented transportation	Roller, segmented transportation	Roller, segmented transportation
Software System				
Operating System	Windows10			
Language	Chinese, English can be switched.			
Programming Mode	CCD fast online program. Offline program, Picture program.			

Program Import	CCD shooting, Picture import			
Facility				
N ₂ Purity	Purity of N ₂ : 99.999%, 25 L/min, Outer diameter Φ6mm			
N ₂ Pressure	0.5~1.0MPa			
N ₂ Pressure Monitoring	Low pressure automatic alarm			
N ₂ Consumption	(1.5m ³ /h~2m ³ /h)/Pot			
Air Pressure	4~6Kg/cm ²			
Air Pressure Monitoring	Low pressure automatic alarm			
Air Source Flow	8~12L/min			
Compressed Air Consumption	≤0.014m ³ /h			
Power Supply	3P5W, 380V AC±10%, 50/60HZ	3P5W, 380V AC±10%, 50/60HZ	3P5W, 380V AC±10%, 50/60HZ	3P5W, 380V AC±10%, 50/60HZ
Power	52A, 21Kw	52A, 21Kw	52A, 43Kw	52A, 43Kw
Operate Power	5-8Kw	7-10Kw	10-12Kw	10-12Kw
Exhaust Volume	700m ³ /h			
Exhaust Pipe Diameter	Φ190mm*2			
Dimension	L1850*W1850*H1480mm	L2560*W1750*H1480mm	L2560*W1950*H1480mm	L2600*W1950*H1480mm
Weight	Approx: 800kg	Approx: 1200kg	Approx: 1300kg	Approx: 1500kg

* The data is obtained under ambient temperature of 25℃ and humidity of 60%.

Option:

No.	Item	Spec.
1	Flux spray clogging monitoring	Real-time monitoring of spraying clogging
2	Tin furnace liquid level detection	High-precision sensor liquid level detection
3	Automatic tinning device	Tin Φ2mm, Max. 4kg
4	Wave height detection	KEYENCE laser imaging wave height sensor, digital monitoring of wave height.
5	Real-time monitoring of nozzle jet flow status.	Nozzle spray height monitoring, flow monitoring.
6	Barcode scanner	/
7	Wave control	Mechanical pump
8	Nozzle model identification	Soldering nozzle type auto identify

Standard Accessories:

No.	Item	Quantity
1	Soldering nozzle 3/6	1 pcs
2	Soldering nozzle 4/8	1 pcs
3	Soldering nozzle 6/10	1 pcs
4	Soldering nozzle 8/12	1 pcs
5	Soldering nozzle 10/14	1 pcs

6	Nozzle cleaning fluid, NC02H-011	1 pcs
7	Nozzle cleaning powder, NC02H-021	1 pcs
8	Manual	1 book
9	Tool Case	1 set

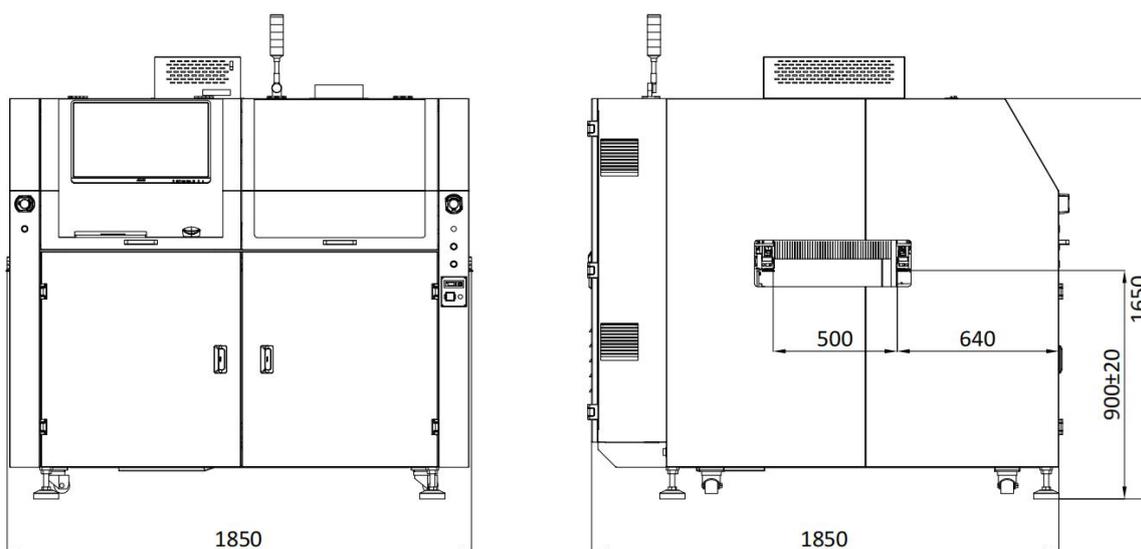
* Attachments may change with product upgrade. If different, please follow the new list.

Recommend Spare Parts:

No.	Item	Brand	Quantity	Usually replacement cycle
1	Nitrogen seal top	I.C.T	1 pcs	6 months
2	Nitrogen seal bottom	I.C.T	1 pcs	6 months
3	Drainage tube	I.C.T	1 pcs	1 year
4	Flux filter	I.C.T	1 pcs	6 months
5	Flux nozzle	I.C.T	1 pcs	N/A
6	Soldering nozzle	I.C.T	1 pcs	1 month

Dimension:

SS540



Customers:

No.	Name	Country	Product
1		Japan	Toyota&Honda, etc Automotive Electronics
2		Japan	Toyota, etc Japanese Automotive Electronics
3		Italy& Japan	Automotive Electronics

4		Japan	Automotive Electronics
5		Japan	Medical Equipment
6		Japan	Camera Equipment

* I.C.T keeps working on quality and performance, specifications and appearance may be updated without particular notice.

YouTube Video Link:

<https://youtu.be/eQKYI6P4r60>

<https://youtu.be/VgzNyreLSE4>

Thanks for choosing I.C.T.
I.C.T looks forward to win-win cooperation.
Thank you.