ZSW®
Zenith Selective Wave

PRO SERIES

SELECTIVE SOLDERING

Specialized in Soldering Machines and Solutions Since 2006

FLEXIBLE MODULAR SOLUTION

PRO SERIES

Adaptive Modules - Faster Cycles - Higher Productivity

Modules can be configured based on cycle time demand and overall production requirements. With parallel processing capability, the system eliminates idle waiting time between operations — significantly increasing productivity and maximizing line efficiency.

Configuration Examples F S | F S S | F M S

PRO-F	PRO-M		PRO-S	
Flux module	Pre-heating module	Multi-point soldering module	Pre-heating module	Single-point soldering module

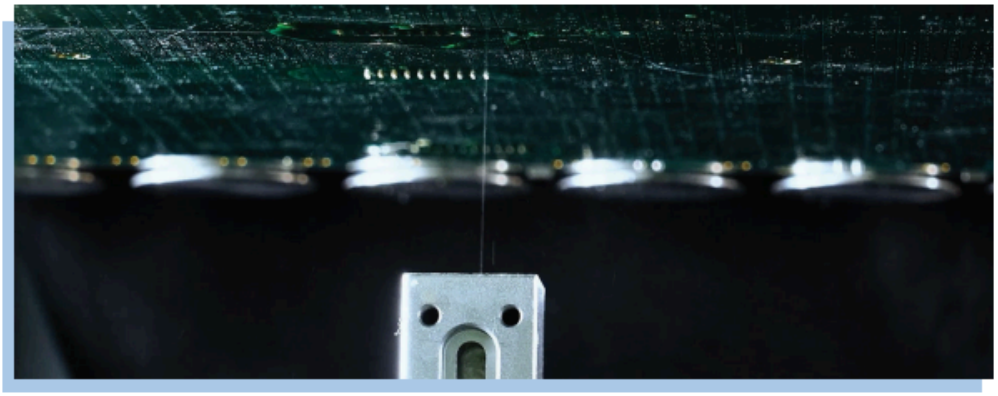
FLUXING MODULE

- Germany Precision Jet Fluxer
- Micro-Nozzle Diameter 130 µm
- 90% Flux Saving than Traditional Full Spray
- Minimum Ionic Contamination
- Automatic Fluxer Check to Detect Clogging
- Precise Fluxing
  High positioning accuracy: ± 0.15 mm
- Selective & Programmable
  Spray width: 2 - 8 mm
  Spray pattern: Points/tracks/areas

Optional Features

- Productive
  Large area spray nozzle
  Dual flux head (Jet fluxer + Jet fluxer)
  - With adjustable pitch of 90-260 mm
  Dual flux head (Jet fluxer + Z-Select-S)
- Flexible
  Extra flux tank
- Ultrasonic Fluxing
  Upgrade to Z-Select-S

Fluxing is where perfect soldering begins. The essential step removes the surface oxides and contaminants, allowing solder to flow smoothly and bond securely to component leads for strong, flawless solder joints.



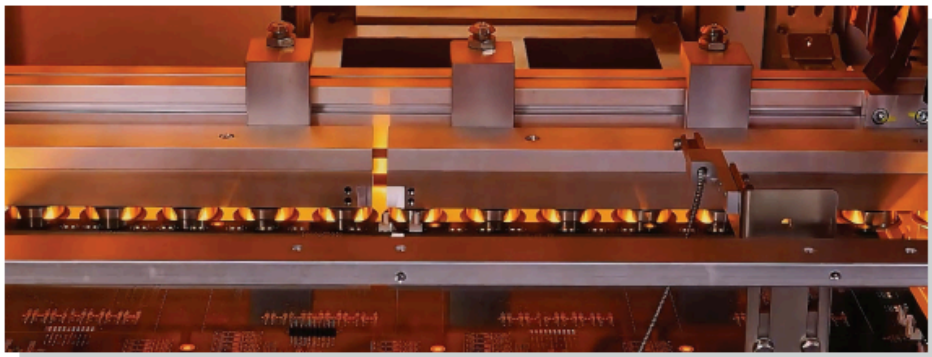
Precise Fluxing - Zero Waste

Selective fluxing with jet fluxer applies flux only to the targeted soldering areas, minimizing overspray and significantly improving board cleanliness. The precise control enhances solder wetting performance for high-quality solder joints while maintaining the lowest flux consumption.

Z-Select-S Ultrasonic Fluxing Nozzle (Optional)

Ready to integrate with Z-Select-S ultrasonic fluxing nozzle (OEM by Sono-Tek USA) to produce a focused air shaping for superior edge-to-edge flux coverage and through-hole penetration. Their renowned ultrasonic technology even allows fine atomization of high-solids sticky flux without clogging.

PREHEATING MODULE



Uniform Preheat - Reliable Barrel Fill

Preheating is not only critical for proper flux activation, but a well-balanced thermal gradient across the PCB also ensures effective solder wetting and complete barrel fill, resulting in stronger and more reliable solder joints —especially on thick or high-thermal-mass assemblies.

- Effective & Uniform Heating Across Products
- Top Preheater: Hot Air Convection (Compressed Air)
- Bottom Preheater: IR Emitters
- Energy Saving
  Segmented IR emitters switchable in groups
- Improved Solder Wetting
  Gradual temperature rise on both PCB sides

Optional Features

- Temperature Monitoring
  Pyrometer

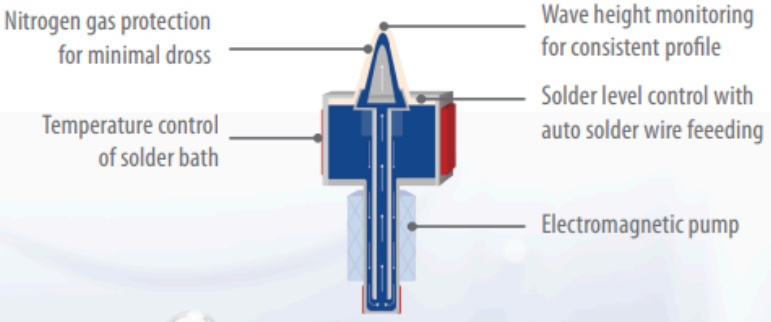
SOLDERING MODULE

Electromagnetic Solder Pump

- Upgraded High-Power Pump
  Enhanced process consistency & longer lifespan
- Vortex-Free Stable Flow
  Smooth solder flow ideal for precise soldering
- Less Mechanical Wear
  Magnetic-driven eliminates gears, shafts, etc.
- Minimal Solder Dross
  Reduced exposure & low-turbulence flow
- Closed-Loop Monitoring
  Optimal adjustments for superior joint quality
- Precise Control
  Ensures consistent wave height & temperature

Wave Height Monitoring

Continuously monitor wave height and automatically adjust to maintain the set solder profile, ensuring consistent solder joints quality across every board during mass production.



SINGLE-POINT SOLDERING

Superior Soldering Quality
The top preheater prevents thermal loss, enhances capillary action and solder wetting, delivering an ideal solder joint formation.

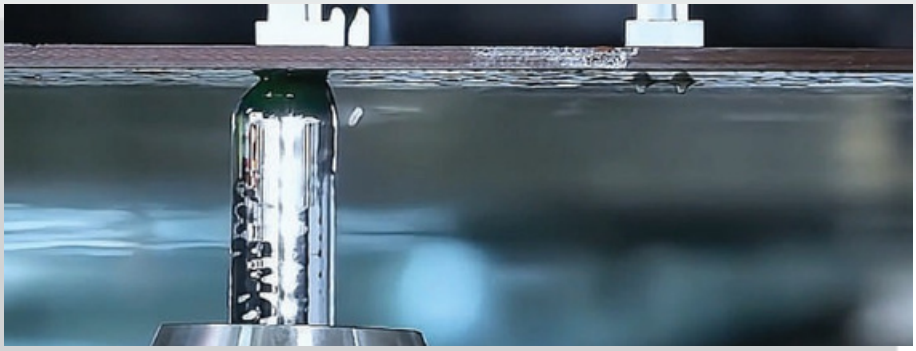
High-Throughput Performance
With automatic 2.5mm solder wire top-up function to minimize potential downtime and keep production running without interruption.

Cost-E cient Solution
The compact 11kg solder pot gives a faster heat-up, less energy consumption, and minimal solder waste for cost-conscious production.

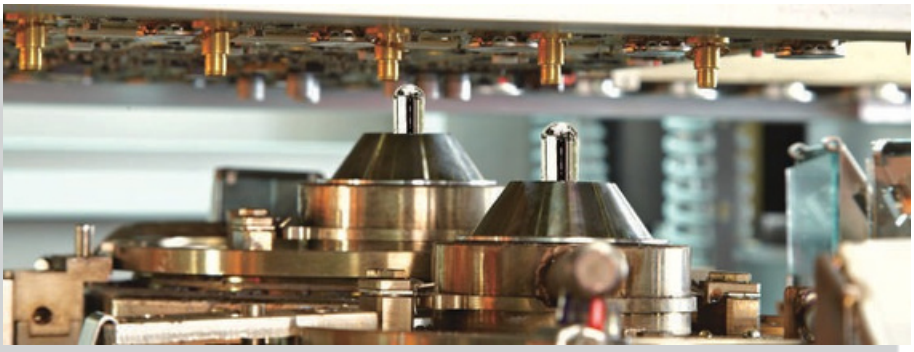
Top Choice: PRO-F and PRO-S
Perfect con guration to start production e ortlessly, while exible to scale up when production volume grows.

Optional Features

- Higher Productivity
  - *Dual solder potwith independent Z-axis control*
  - *- With adjustable pitch of 90-260 mm*
  - *Twin solder nozzle*
  - *Upgrade 25kg solder pot for wide nozzles*
- Non-Stop Production
  - *Auto nozzle cleaning function*
- Accurate Positioning
  - *Fiducial markrecognition system*
  - *Warpage detection*
- Traceability
  - *Barcodescanning*
  - *MES customization*

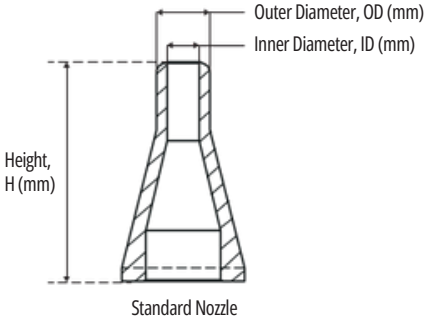


Targeted Soldering - Optimal Performance
Precisely ne-tuning soldering parameters such as dwell time or lift-o duration to achieve the perfect solder joint pattern and consistent quality.



Dual Solder Pot (Optional)
Dual solder pot with an automatically adjustable pitch range from 90-260mm for maximum exibility to adapt a wide range of product sizes.

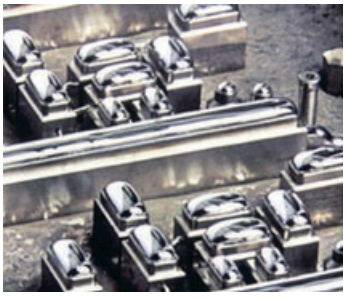
Soldering Nozzles



Standard	ID/OD (mm) Height available 47 / 57 mm 3/4.5 3/6 4/8 6/10 8/12 10/14 12/16 2/3 H47.0 mm (Ultra- ne tip nozzle)
Customized (Optional)	Other nozzle height H62.0 / 75.0 mm Wide nozzles (e.g. L50.0 / 75.0 / 100.0 mm) Customizable based on requirements

- Productivity
  Maximize throughput by soldering multiple points in one cycle
- Selectivity
  Precise selective soldering with wave-level output performance
- Low solder dross formation
  Nitrogen protection for a cleaner and reliable soldering result

MULTI-POINT SOLDERING



TECHNICAL SPECIFICATION

Module	Flux Module	Multi-point Soldering Module	Single-point Soldering Module	One-zone Preheating Module	Two-zone Preheating Module
Model	PRO-F51/61	PRO-M51	PRO-S51/61	PRO-H51/61	PRO-2H51/61
GENERAL					
Dimensions: L x W x H	1,000 x 1,915 x 1,571 mm / 1,100 x 2,015 x 1,571 mm	2,000 x 1,915 x 1,571 mm	1,800 x 1,915 x 1,571 mm / 2,000 x 2,015 x 1,571 mm	1,100 x 1,915 x 1,571 mm / 1,100 x 2,015 x 1,571 mm	2,000 x 1,915 x 1,571 mm / 2,000 x 2,015 x 1,571 mm
Weight	Approx. 500/600 kg	Approx. 1,200 kg	Approx. 900/1,000 kg	TBC	TBC
Nitrogen source requirement	N/A	0.5 - 0.8 MPa, ≤10ppm	0.5 - 0.8 MPa, ≤10ppm	N/A	N/A
Nitrogen consumption	N/A	15 m³/hr	1.5 - 2 m³/hr/nozzle	N/A	N/A
Exhaust requirement (Ducting diameter: 200 mm)	10 m³/min x 1	10 m³/min x 2	10 m³/min x 1	10 m³/min x 1	10 m³/min x 1
Power consumption	1.5/1.5 kW	32 kW	27/36 kW	15/21 kW	30/42 kW
Operating system	Windows 11 Pro				
Power supply	3 phase, 5 wires, 380 V AC, 50/60 Hz				
CONVEYOR SYSTEM					
Conveyor adjustable width	50 - 510/610 mm	100 - 510 mm	50 - 510/610 mm	50 - 510/610 mm	50 - 510/610 mm
Conveyor adjusting method	Automatic (Software controlled)				
Conveyor height	900 ± 20 mm				
Conveyor direction	Left to right *(Option: Right to left)*				
PCB clearance	Top: 120 mm; Bottom: 30 mm				
PCB edge clearance	5 mm				
Max. load	10 kg				
SYSTEM FEATURES					
Offline programming (1 license)	Standard				
Uninterrupted power supply (UPS)	Standard				
Barcode scanning function	*Optional*				
MES software (i4.0)	*Optional*				
STANDARD FEATURES					
	1 precision jet nozzle	1 multi-nozzle fixture	Real-time visualization (Camera)		
	Automatic fluxer check	Auto solder wire feeding	Top hot air (Compressed air) preheater		
	Online visual programming		Auto solder wire feeding		
			Nitrogen gas heating system*[1]		
			10 pieces of nozzle per pot		
OPTIONAL FEATURES					
	Dual flux head	Extra multi-nozzle fixture	Dual solder pot		
	Extra flux tank	Pyrometer	Twin solder nozzle		
	Large area spray nozzle		Auto nozzle cleaning function		
	Upgrade to Sono-Tek selective ultrasonic spray fluxer (Z-Select-S)		Upgrade 25kg solder pot for wide nozzles		
			Fiducial mark recognition system		
			Warpage detection		
			Pyrometer		

*[1] *Nitrogen gas heating system is not applicable when "twin solder nozzle" option is selected.*

FLUXING MODULE

Model	PRO-F51	PRO-F61
Effective fluxing area	510 x 510 mm	610 x 610 mm
Fluxer type	Germany precision jet fluxer	
Flux type	RO, RE, OR with effective level of L0, L1, M0	
Flux tank capacity	3L	
Nozzle diameter	130 µm	
Nozzle moving speed	Max. 115 mm/s	
Spray pressure	0.5 - 1.0 bar	
Spray width	2 - 8 mm (With nozzle size of 130 µm)	
Spray speed	20 mm/s	
Positioning speed	400 mm/s	
Positioning accuracy	± 0.15 mm	
Control system	2-axis servo drive	

PREHEATING MODULE

Model	PRO-S51 / PRO-M51 / PRO-H51	PRO-S61 / PRO-H61
Top heater power	2* 2.0 kW = 4.0 kW	3* 2.0 kW = 6.0 kW
Top heater voltage	220 V	
Bottom heater power	8*1.3 kW = 10.4 kW	9*1.8 kW = 16.2 kW
Bottom heater voltage	220 V	
CDA pressure	0.5 - 0.7 MPa	
Warm-up time	Approx. 15 minutes	

SINGLE-POINT SOLDERING MODULE

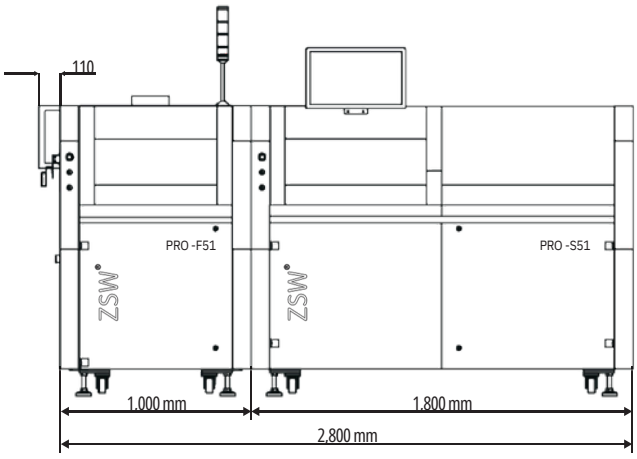
Model	PRO-S51	PRO-S61
Effective soldering area (x, y)	510 x 510 mm	610 x 610 mm
Solder pump type	Electromagnetic pump	
Solder pump power	1,500 kW	
Solder pot capacity	11 kg (Lead-free)	
Solder pot warm-up time	Approx. 60 minutes	
Max. soldering temperature	330°C	
Min. solder nozzle diameter	Internal: 2 mm; External: 3 mm	
Max. solder wave height	5 mm	
Max. z-axis movement	125 mm	
Soldering speed (x-, y-axis)	2 - 15 mm/s	
Positioning speed (x-, y-axis)	200 mm/s	
Positioning speed (z-axis)	100 mm/s	
Positioning accuracy	± 0.15 mm	
Control system	3-axis servo drive	

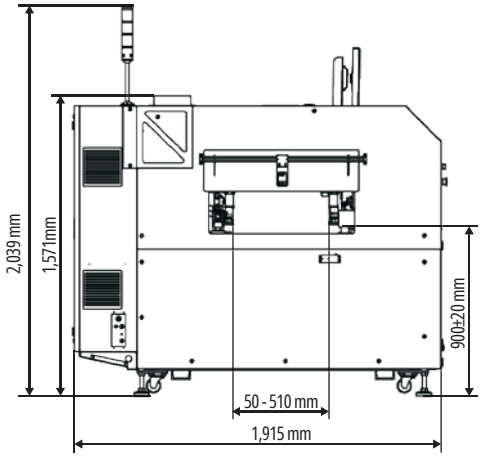
MULTI-POINT SOLDERING MODULE

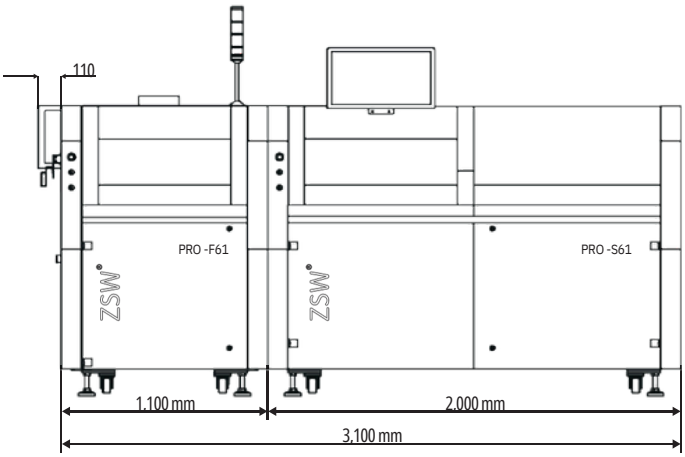
Model	PRO-M51
Solder pot capacity	450 ± 30kg (Customizable)
Max. soldering temperature	320°C
Max. solder wave height	5 mm
Effective soldering area (x, y)	400 x 400 mm

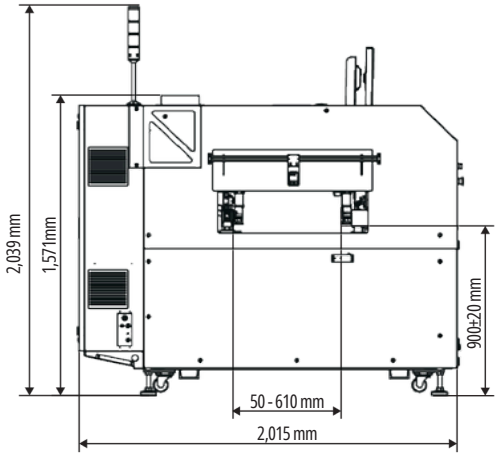
Specialized in Soldering Machines and Solutions Since 2006

DIMENSIONAL DRAWINGS









ZSW®
Zenith Selective Wave

PRO SERIES

STANDALONE SELECTIVE SOLDERING

Specialized in Soldering Machines and Solutions Since 2006

Established since

2006

National high-tech enterprise with dedicated R&D, manufacturing and engineering teams, committed to deliver the highest quality soldering solution to customers worldwide.

COMPANY PROFILE

PRO SERIES COMPACT SELECTIVE SOLDERING

Standalone Selective Soldering Solution
Fluxing | Preheating | Soldering

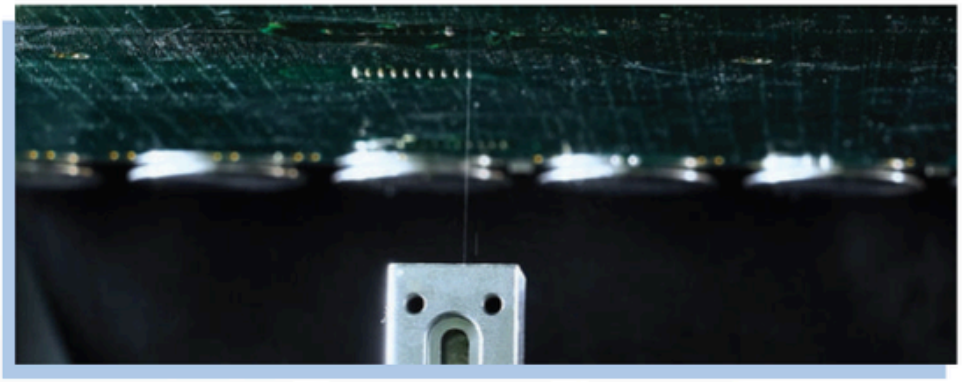
FLUXING MODULE

- Germany Precision Jet Fluxer
- Micro-Nozzle Diameter 130 µm
- 90% Flux Saving than Traditional Full Spray
- Minimum Ionic Contamination
- Automatic Fluxer Check to Detect Clogging
- Precise Fluxing
  High positioning accuracy: ± 0.15 mm
- Selective & Programmable
  Spray width: 2 - 8 mm
  Spray pattern: Points/tracks

Optional Features

- Ultrasonic Fluxing
  Upgrade to Z-Select-S for a better through-hole penetration to enhance solder wetting

Fluxing is where perfect soldering begins. The essential step removes the surface oxides and contaminants, allowing solder to flow smoothly and bond securely to component leads for strong, flawless solder joints.



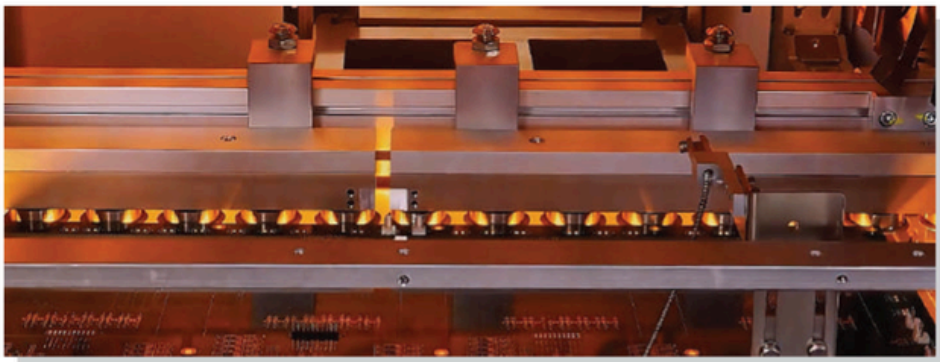
Precise Fluxing - Zero Waste

Selective fluxing with jet fluxer applies flux only to the targeted soldering areas, minimizing overspray and significantly improving board cleanliness. The precise control enhances solder wetting performance for high-quality solder joints while maintaining the lowest flux consumption.

Z-Select-S Ultrasonic Fluxing Nozzle (Optional)

Ready to integrate with Z-Select-S ultrasonic fluxing nozzle (OEM by Sono-Tek USA) to produce a focused air shaping for superior edge-to-edge flux coverage and through-hole penetration. Their renowned ultrasonic technology even allows fine atomization of high-solids sticky flux without clogging.

PREHEATING MODULE



- Built-in Preheater
- Top Preheater
  Hot Air Convection (Compressed Air)
  Ensures uniform heating across products
- Bottom Preheater
  IR Emitters
  Activates flux in very short duration
- Improved Solder Wetting
  Gradual temperature rise on both PCB sides
  Delivering superior soldering results

Uniform Preheat - Reliable Barrel Fill

Preheating is not only critical for proper flux activation, but a well-balanced thermal gradient across the PCB also ensures effective solder wetting and complete barrel fill, resulting in stronger and more reliable solder joints —especially on thick or high-thermal-mass assemblies.

SOLDERING MODULE

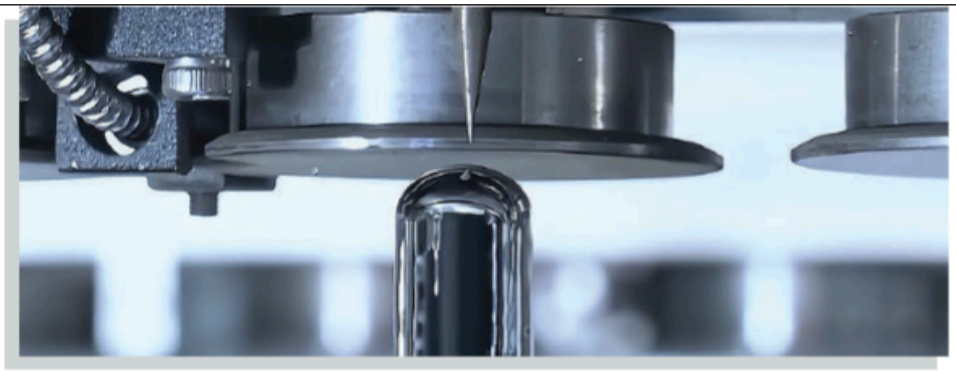
- Electromagnetic Solder Pump
- Vortex-Free Stable Flow
  Smooth solder flow ideal for precise soldering
- Less Mechanical Wear
  Magnetic-driven eliminates gears, shafts, etc.
- Minimal Solder Dross
  Reduced exposure & low-turbulence flow
- Closed-Loop Monitoring
  Optimal adjustments for superior joint quality
- Precise Control
  Ensures consistent wave height & temperature

Standard Features

- Auto Solder Wire Feeding
- Nitrogen Gas Heating System
- Safety Light Curtains

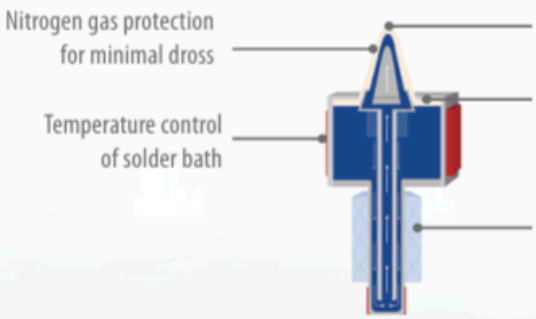
Optional Features

- *Auto Nozzle Cleaning Function*
- *Online Visual Programming*
- *Warpage Detection*
- Traceability
  Barcode scanning



Wave Height Monitoring

Continuously monitor wave height and automatically adjust to maintain the set solder profile, ensuring consistent solder joints quality across every board during mass production.



Compact Standalone Selective Soldering Solution PRO-FS35

Designed for smaller board size 250 x 330 mm, integrates the essential processes of fluxing, preheating, and soldering into a single unit, with a minimal footprint at 1.6 m^2 only.

TECHNICAL SPECIFICATION

MODEL	PRO-FS35	PRO-FS61
GENERAL		
Dimensions: L x W x H	1,200 x 1,315 x 1,936 mm	1,600 x 2,300 x 1,936 mm
PCB size (x, y)	250 x 330 mm	610 x 610 mm
Con guration	Fluxing - Preheating - Soldering	
Power supply	3 phase, 5 wires, 380 V AC, 50/60 Hz	
Conveyor height	900 ± 20 mm	
PCB clearance	Top 110 mm; Bottom: 55 mm	
Compressed air requirement	5 m3/hr	
Nitrogen source requirement	0.5 - 0.8 MPa, ≤10ppm	
Nitrogen consumption	1.5 - 2.0 m3/hr/nozzle	
Exhaust owrate	10 m3/h	
Operating system	Windows 11 Pro	
SYSTEM FEATURES		
O ine programming (1 license)	Standard	
Uninterrupted power supply (UPS)	Standard	
Online visual programming	*Optional*	
Barcode scanning function	*Optional*	
STANDARD FEATURES		
1 precision jet nozzle		
Automatic uxer check		
Real-time visualization (Camera)		
Auto solder wire feeding		
Nitrogen gas heating system		
Safety light curtain sensor		
10 pieces of nozzle per pot		
1 set universal jig		
OPTIONAL FEATURES		
Upgrade to Sono-Tek selective ultrasonic spray uxer (Z-Select-S)		
Auto nozzle cleaning function		
Twin solder nozzle		
Warpage detection		
WarpPaygroem deterction		

FLUXING MODULE

Model	PRO-FS35	PRO-FS61
E ective uxing area (x, y)	250 x 330 mm	610 x 610 mm
Fluxer type	Germany precision jet uxer	
Flux type	RO, RE, OR with e ective level of L0, L1, M0	
Flux tank capacity	3L	
Nozzle diameter	130 µm	
Spray pressure	0.5 - 1.0 bar	
Spray width	2 - 8 mm (With nozzle size of 130 µm)	
Spray speed	20 mm/s	
Positioning accuracy	± 0.15 mm	
Control system	2-axis servo drive	

PREHEATING MODULE

Model

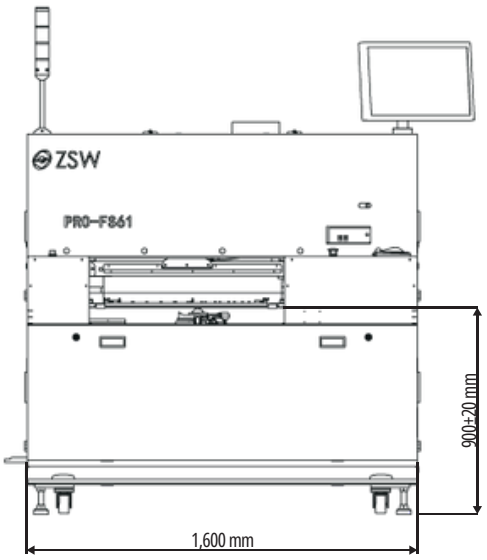
	PRO-FS35	PRO-FS61
Top preheater	Hot air convection (Compressed air)	
Bottom preheater	IR emitters	
Top preheater power	1.5	6.0 kW
Bottom preheater power	kW	16.2 kW
Preheater voltage	7.8	220 V
CDA pressure	kW	0.5 - 0.7 MPa

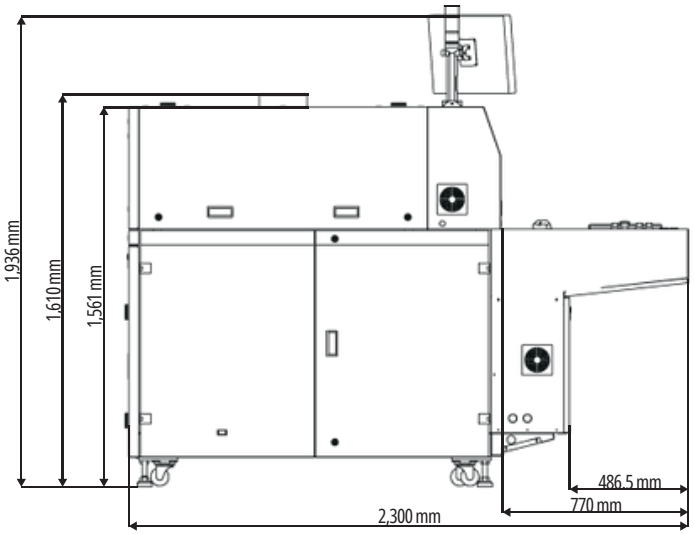
SOLDERING MODULE

Model

E ective soldering area (x, y)	PRO-FS35	PRO-FS61
Solder pot capacity	250 x 330 mm	610 x 610 mm
Max. soldering temperature	13 kg (Lead-free)	
Max. solder wave height	330°C	
Soldering speed (x-, y-axis)	5 mm	
Positioning speed (x-, y-axis)	10 mm/s	
Positioning speed (z-axis)	200 mm/s	
Positioning accuracy	100 mm/s	
Control system	± 0.15 mm	
	3-axis servo drive	

DIMENSIONAL DRAWINGS (PRO-FS61)





ZSW®

Zenith Selective Wave

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