Scorpion Rework Systems

Advanced Package Scorpion Rework System Specification

The **Scorpion Advanced Package Rework System** ensures both accurate component placement and custom tailored reflow profiles in one user friendly, single platform rework system. The Scorpion System redefines precision and addresses the technical demands presented by component manufacturers today.

The challenges of array package rework, and the inability to easily inspect placement accuracy, call for a solution that allows for simultaneous viewing of Printed Circuit Board pads and component balls for accurate placement.

The Scorpion Rework System fills this need with quick, accurate placement through the use of an all new vision system employing dual image overlay technology. This new vision system features LED lighting both top and bottom for shadow-free component visualization and component alignment. The HD camera is ready to go out of the box.

The two-head modular design allows the **Scorpion Rework System** to be tailored to the users specific rework needs and allows precision alignment of the smallest BGAs, QFNs and Micro SMDs with the highest accuracy. The open-ended board holder fits a wide variety of large, small and odd-shaped boards while allowing precise positioning over the patented dual subzone preheater.

The standard auto-profile mode ensures fast and easy profile creation with a minimum of setup time. By selecting your temperature targets any operator can quickly and accurately create reflow profiles for a wide variety of boards, and then save them in memory for future use.

Source temperatures and time intervals can be modified and added “On-the-Fly" eliminating the need to wait for the current profile to terminate before modifications can be made. The profiles can range from a simple four zones to a complex reflow oven style profile. Precise solder joint temperatures are measured and displayed on a real time graphical display, thus providing the necessary data to accurately and easily establish the optimum reflow profile for each particular application within minutes.

The modular design of the Scorpion Rework System allows it to be configured to the users’ specific needs. The two-head systems, APR-1200-SRS, **APR-1200A-SRS**, & **APR-1200A-SRS-MOB**, feature placement accuracy to 0.0015" (.038mm). The standard single-head system, APR-1100-SRS, provides placement accuracy to 0.004" (.1mm).

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The Scorpion system accepts the full range of APR and QX series reflow nozzles. Flux transfer plates and solder paste plates are available to ensure repeatable process control during the replacement operation.

SYSTEM CONFIGURATIONS AND PACKAGE OPTIONS

Systems	
APR-1100-SRS*	Scorpion Rework System with SmartPlace Technology
APR-1200-SRS*	Scorpion Rework System, SmartPlace Technology & Precision Placement Package
APR-1200A-SRS*	**Scorpion Rework System with Reflow heater, Preheater, SmartPlace Technology Camera, and Precision Automatic Placement Package**
APR-1200A-SRS-MOB**	**Scorpion Rework System with Reflow heater, Preheater, SmartPlace Technology Camera (Mobile), and Precision Automatic Placement Package**
Add-on Packages	
APR-SRS-UK2	Contactless IR sensor, a device that enables repeatable rework operation
APR-SRS-UK3	Side View Camera, a camera used to view components during the reflow process.

(*) *Standard 19" 5:4 monitor included* (**) *Wide screen 16:9 monitor included*

HARDWARE FEATURES

- Desktop sized
- 2800W dual zone preheater with 550W top heater
- 208-240VAC, 50/60Hz, 15A-13A, Single Phase
- Modular design allowing the customer to customize the unit to meet their needs
- A 343mm (13.5") x open-ended PCB holder with micrometer adjustment
- Mechanical X and Z axis movement on linear bearings for long-life and minimal maintenance
- Component is retracted automatically at the end of reflow when removing parts
- Linux-based integral computer
- External USB for file transfer
- SmartPlace Vision System is a high definition vision system which uses dual CMOS sensors to assist in the placement of components and requires no calibration.

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Available only with the APR-1200A-SRS & APR-1200A-SRS-MOB

- **Motorized Final Placement:** Final placement module capable of 50mm of motorized travel in the Z-axis and a full 360° in Θ (Theta).
- **Force Feedback Control:** Enables the unit to accurately pick and place components without disturbing the component or solder.
- **Component Alignment**: Fine motor control of .005”/.127mm in the Z-axis & 0.25° Θ during alignment of the component to the pad.
- **Redesigned Remote Control**: The new remote control incorporates the controls for the placement module and adds new digital controls for the top & bottom LED lighting of the camera module.

SMARTPLACE TECHNOLOGY VISION SYSTEM FEATURES

- Dual, full color HD camera
- Selectable camera view
- Diffused LED lighting for shadow-free component alignment

Available only with the APR-1200A-SRS-MOB

- SmartPlace Technology Vision System for Mobile Products: a 1080p, high definition, camera system that enables the operator to align and position components accurately before placement. Ideal for use with the smaller packages commonly used in mobile devices up to 25mm x 25mm

SOFTWARE FEATURES

- Auto-Profiling allows operators the ability to create successful reflow profiles the first time
- On the fly profile management of target set points, adding and subtracting time zones, and profile measurement points
- Real time graphical display of solder joint temperatures
- Internal storage of profile data with expansion and transfer via a USB flash drive
- Graphics-based user interface for simple operation
- Password protection with multi privilege levels

OPERATION FEATURES

Scorpion Rework Systems

- Uses existing APR-5000 Series reflow and vacuum nozzles
- Precision Placement head uses pick and place machine nozzles
- Compact footprint for easy bench top use
- Self-contained machine, no air supply needed. Plug it in and it is ready to operate.

SPECIFICATIONS

Input Voltage	208-240VAC, 50/60Hz, 15 Amp Single Phase
Power Consumption	
System Total	2800W (average power)
Inner Zone	900W (heater rating)
Outer Zone	1800W (heater rating)
Reflow Heater	550W (heater rating)
Operating Temperature	41°F (5°C) to 104°F (40°C)
Maximum Relative humidity	80% at 88°F (31°C) decreasing linearly to 50% at 104°F (40°C)
Maximum Altitude	6500 ft. (2km)
Pollution Degree	2 per IEC 644
Insulation category	II
Temperature Control Type	Closed-Loop Control (Thermocouple)
Maximum Source Temperature	
Reflow Head	400°C (752°F)
Pre-Heater (Inner/Outer)	350°C (662°F)
Airflow	
Control	Low, Medium, & High
Supply	24V DC Blower
Component Handling	
Maximum Field of View	1.77" x 1.77" (45mm x 45mm)
Minimum Size	0.020" x 0.010" (0.51mm x 0.25mm)
Maximum Weight	1.94 oz. (55 g)
PCB Handling Capability	13.5" x open (342.9 mm x open)
Maximum Size	12" x open (304.8 mm x open) for APR-1200A-SRS-MOB only
Maximum Thickness	0.25" (6mm)
System Dimensions W x D x H	18" x 22" x 26" (457mm x 559mm x 660mm)
Weight	140lbs (63.5kg)
System Warranty	One-year parts & labor 90 days heaters & lamps