

# Scorpion

## Rework System



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# MEET THE SCORPION REWORK SYSTEM

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 "On-the-Fly", eliminating the need to wait for the current profile to terminate before modifications can be made. 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 system with precision placement package features placement accuracy to 0.0015" (.038mm). The standard single-head system provides placement accuracy to 0.004" (.1mm).

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.



## 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.
- Optional Precision Placement Head (APR-SRS-UK1) for ultra fine pitch components with placement accuracy of .038mm (.0015")
- Optional Contactless IR Sensor for auto start at pre-determined temperatures

## Systems

APR-1100-SRS	Scorpion Rework System with SmartPlace Technology
APR-1200-SRS	Scorpion Rework System, SmartPlace Technology & Precision Placement Package

## Options

APR-SRS-UK1	Precision Placement Package Upgrade Kit
APR-SRS-UK2	Contactless IR Sensor Upgrade Kit



APR-1100-SRS



APR-1200-SRS

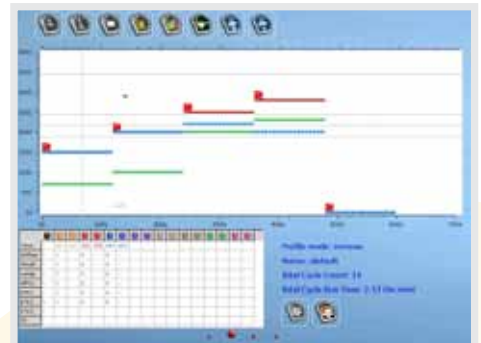


## SMARTPLACE TECHNOLOGY VISION SYSTEM FEATURES

- Dual, full color HD camera
- 25x Digital Zoom
- 45mm x 45mm (1.77" x 1.77") viewing area
- Selectable camera view
- Diffused LED lighting for shadow-free component alignment

## 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 for operators and engineers



## OPERATION FEATURES

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

# TECHNICAL SPECIFICATIONS

<b>Input Voltage</b>	208-240VAC, 50/60Hz, 15A-13A, Single Phase
<b>Power Consumption</b>	
System Total	2800W
<b>Pre-Heater</b>	
Inner Zone	900W
Outer Zone	1800W
Reflow Head	550W
<b>Temperature Control Type</b>	Closed-Loop Control (Thermocouple)
<b>Maximum Source Temperature</b>	
Reflow Head	400°C (752°F)
Pre-Heater	350°C (662°F)
<b>Top Nozzle Airflow</b>	
Top Airflow Control	Preset to Low, Medium, & High Flow Rates
Supply	Self-Contained DC Pump (No Air Supply Required)
<b>Component Handling</b>	
Maximum Field of View	45mm x 45mm (1.77" x 1.77")
Minimum Size	0.51mm x 0.25mm (0.020" x 0.10")
Maximum Weight	55g (1.94 oz.)
<b>PCB Handling Capability</b>	
Maximum Size	343mm (13.5") in Y axis, open-ended in X axis
Maximum Thickness	6mm (0.25")
<b>System Dimensions (W x D x H)</b>	457mm x 559mm x 660mm (18" x 22" x 26")
<b>Weight</b>	63.5kg (140 lbs.)
<b>System Warranty</b>	One Year Parts & Labor, 90 Days for Heaters & Lamps
<b>Agency Approvals</b>	TUV German Standards, CE

# APR-1100/1200-SRS Accessories

Part Number	Description
<b>Accessories included with APR-1100/1200-SRS</b>	
FSL-SRS-3	Spring PCB Finger Long (Pack 3)
FSS-SRS-3	Spring PCB Finger Short (Pack 3)
APR-TC3	Thermocouple Multi-Colored Set, 36 Gauge (Pack 3)
VNZ-ORINGK	O-Ring Kit (assortment, qty 5 for each of the 4 sizes)
VNZ-12	Vacuum Pick-Up Nozzle, 12mm, Reflow Head
VNZ-08	Vacuum Pick-Up Nozzle, 8mm, Reflow Head
VNZ-05	Vacuum Pick-Up Nozzle, 5mm, Reflow Head
VNZ-01	Vacuum Pick-Up Nozzle, 1 mm, Reflow Head
AC-RP	Nozzle Removal Pad
APR-VRT	Vacuum Nozzle Removal Tool
SRS-PVT	Placement Verification Kit
20987	CSP Adjustable V Block
19782	BGA Adjustable V Block
KAP-100	Pre-cut Kapton Tape (qty 100)
SRS-OPTICAL-KIT	Optical Calibration Kit
<b>Accessories included with APR-1200-SRS Only</b>	
UBS-SRS	Under Board Support
PNZ-07	Vacuum Pick-Up Nozzle, 0.7mm O/D, Fine Placer
PNZ-24	Vacuum Pick-Up Nozzle, 2.4mm O/D, Fine Placer
PNZ-80	Vacuum Pick-Up Nozzle, 8.0mm O/D, Fine Placer
PNZ-AD	Nozzle Adaptor for Fine Placer Head
<b>Optional Accessories not included</b>	
APR-MRS-DEMOKIT	Demo PCB with BGA & CSP component
APR-MRS-DEMOPCB	Demo PCB (lead-free). No components
AC-TCK-40-36	Thermocouple Kit, 40 Gauge (Qty 2)
DTBK-FC	Flip Chip Flux Transfer Block Kit, set of 2 blocks, depth 0.025mm (0.001") and 0.051mm (0.002")
DTBK-USMD	µSMD Flux Transfer Block Kit, set of 2 blocks, depth 0.08mm (0.003") and 0.10mm (0.004"), used for solder balls 6-8 Mil (.15-2mm dia.)
DTP-BGA	BGA Dip Transfer Plate Kit, set of 3 plates, apertures 28mm, 35mm, & 45mm, depth 0.30mm (0.012") used for 1.27mm pitch, 30 Mil BGA balls (.76mm)
DTP-CSP	CSP Dip Transfer Plate Kit, set of 3 plates, apertures 10mm, 16mm, and 21mm, wdepth 0.15mm (0.006") BGA/CSP used for BGAs with 12 Mil balls (.3mm dia.)
DTP-40-8	8 Mil dip plate standard for 1mm pitch BGA with 20 Mil balls, 0.051mm (0.02")
VAC-P100	Vacuum assist plate kit (qty 100)
VNZ12-ORING	12mm O-Rings (qty 50)
VNZ08-ORING	8mm O-Rings (qty 50)
VNZ05-ORING	5mm O-Rings (qty 50)
VNZ-005	Vacuum pick up nozzle 0.5 mm OD 10mil hole
TF-1T	Tape Feeder, uSMD
TF-2T	Tape Feeder, 0603 and 0402
TF-3T	Tape Feeder, 0201

# Reflow Nozzles

Part Number	Description
APR-NK	Nozzle Kit (*Includes one of each)
APR-NK-CSP	CSP & Micro SMD Nozzle Kit (**Includes one of each)
Custom nozzle	Any custom size
NZA-555-555-CGA	Reflow Nozzle, 55.5mm x 55.5mm (column grid array nozzle)
NZA-470-470-CGA	Reflow Nozzle, 47mm x 47mm (column grid array nozzle)
NZA-355-455-CGA	Reflow Nozzle, 35.5mm x 45.5mm (column grid array nozzle)
NZA-350-350-CGA	Reflow Nozzle, 35mm x 35mm (column grid array nozzle)
NZA-490-490*	Reflow Nozzle, 49mm x 49mm
NZA-450-450	Reflow Nozzle, 45mm x 45mm
NZA-400-400*	Reflow Nozzle, 40mm x 40mm
NZA-350-350*	Reflow Nozzle, 35mm x 35mm
NZA-300-300	Reflow Nozzle, 30mm x 30mm
NZA-270-270*	Reflow Nozzle, 27mm x 27mm
NZA-250-290	Reflow Nozzle, 25mm x 29mm
NZA-230-230*	Reflow Nozzle, 23mm x 23mm
NZA-200-200**	Reflow Nozzle, 20mm x 20mm
NZA-180-180***	Reflow Nozzle, 18mm x 18mm
NZA-150-150**	Reflow Nozzle, 15mm x 15mm
NZA-130-130***	Reflow Nozzle, 13mm x 13mm
NZA-100-100***	Reflow Nozzle, 10mm x 10mm
NZA-080-095***	Reflow Nozzle, 8mm x 9.5mm
NZA-080-080**	Reflow Nozzle, 8mm x 8mm
NZA-060-060***	Reflow Nozzle, 6mm x 6mm
NZA-030-ROUND	Reflow Nozzle, 3mm ID round
NZA-TW-180-180	Tweezer Nozzle, 18mm x 18mm
NZA-TW-150-150	Tweezer Nozzle, 15mm x 15mm
NZA-TW-130-130	Tweezer Nozzle, 13mm x 13mm
NZA-TW-100-100	Tweezer Nozzle, 10mm x 10mm
NZA-TW-080-080	Tweezer Nozzle, 8mm x 8mm
NZA-TW-060-060	Tweezer Nozzle, 6mm x 6mm

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**okinternational**

OK International  
12151 Monarch Street  
Garden Grove, CA 92841  
Tel: 1-714-799-9910  
Fax: 1-714-799-9533  
[northamerica@okinternational.com](mailto:northamerica@okinternational.com)

Europe / UK Tel: +44 (0)2380 489100 - [europe@okinternational.com](mailto:europe@okinternational.com)

Germany Tel: +49(0)6101 522 7470 - [d-info@okinternational.com](mailto:d-info@okinternational.com)

France Tel: +33 (0)1 76 71 04 03 - [fr-info@okinternational.com](mailto:fr-info@okinternational.com)

China +86-138-2318-7408 - [china@okinternational.com](mailto:china@okinternational.com) • [www.okinternational.com/location/asia](http://www.okinternational.com/location/asia)