PDR IR-E3 Evolution Series SMD/BGA Rework Stations

PDR Focused IR Rework Stations for Ultimate Performance in SMD/BGA/uBGA Rework

NOW... Three versions of our best selling product

| E3S Standard | E3G Gold | E3M Micro |
Multi-purpose flexible rework focused on precision and simplicity

PDR’s IR-E3 series of SMD/BGA IR rework systems are engineered to cope with the challenges of repairing today’s PCB assemblies. The systems use PDR’s patented Focused IR technology, the world’s only technology that uses Dual-band Visible IR Heating. The light that heats.

The stations are nozzle free, gas free, clean, simple and easy to use. Each model is designed for precise control to produce 100% yield of your SMD/BGA rework without complications. The keys are accurate closed-loop thermal feedback and intuitive easy to use software. The IR-E3 series provides extremely high levels of profiling and process control necessary for the effective rework of the most advanced packages, including SMDs, BGAs, CSPs, QFNs, LEDs, Flip-chips, 0201-01005s and all lead-free applications.

The PDR IR-E3 systems are available in 3 models - IR-E3S, IR-E3G and IR-E3M - each configured perfectly for their respective roles.

PDR IR-E3S

Developed from PDR’s pioneering IR rework stations from the 1990-2000s, the IR-E3S, is the standard of the E3 Series. Featuring: Focused IR Component heating, 2000w 2-zone IR PCB preheating, precision mechanics, precision optical alignment and advanced thermal control. The E3S system is flexible, upgradeable and ideal for general purpose SMD/BGA rework on small-medium sized PCBs.

PDR IR-E3G

Enhanced, the IR-E3G adds superior thermal control and twin cameras for precision alignment and process observation. Non-contact pyrometers focus on the component and the PCB, for thermal feedback to auto-profiling ThermoActive V7 software. With camera input, the software also permits still and video capture. Mechanical advancements feature precision soft touch component pick up and placement. This system also features large IR 2800W 3-zone IR PCB preheating.

PDR IR-E3M

Introduced in 2017, in response to our customer demands, we took the E3G and further enhanced it for Micro-rework applications. In addition to general purpose applications, the IR-E3Ms thermal, mechanical and optical features are all precisely focused to easily deal with micro components and micro PCBs. In addition to the 3050w micro-PCB preheater, a 750w electronic Thermo Boost is included along with non-contact thermal control. High-magnification vision assisted component alignment, pick-up and ultra-fine placement complete the micro-process handling. This system is absolutely ideal for micro component-PCB rework without complications.

SMD/BGA rework without the complications

Put simply, without any complications, our systems can pick and place micro components or large BGAs and reflow small or large boards with precision and control. The PDR IR process is simple, safe and gentle. Precise control prevents burning or damage to materials. We can visually show the process, record it and repeat it precisely every time. Anyone can learn to use these systems and they are affordable.

Each of the E3 Series rework systems use the same principals of PDR’s Focused IR technology, first introduced in 1987. Over 4,500 systems are now in use world-wide. Each PDR customer made a clear well informed decision to buy PDR IR technology. Please contact us to learn why they chose PDR.
Advanced features:

- **Advanced Focused IR component heating**
  - Dual-band Visible IR Heating system
  - 150W, lens based Focused IR heating with adjustable image system Ø4-70mm

- **Quartz IR PCB preheating**
  - E3S - 2000W, two zone (240mm x 240mm heating area)
  - E3G - 2800W, three zone (360mm x 240mm heating area)
  - E3M - 3050W, three zone (240mm x 240mm heating area) with 750W Micro-PCB Thermo Boost

- **Precision Component Pick and Placement**
  - Advanced Professional vacuum placement system
  - Soft-touch component landing

- **Component Nest/Flux Application Facility**
  - Integrated nest with flux dip tray or component print frame and optional Optical assist

- **Precision PCB Handling**
  - Advanced Professional PCB table with macro-micro X/Y

- **Component Temperature Sensing**
  - Standard non-contact IR temperature sensor

- **PCB Temperature Sensing**
  - K-type wire thermocouple
  - Optional non-contact IR temperature sensor

- **Advanced Thermal Process Control**
  - Software based auto profile thermal control

- **Camera/Prism Based BGA/CSP/QFN Alignment System**
  - Split beam prism system for simultaneous PCB/component viewing
  - High mag camera-lens optics

- **Auxiliary Process Camera (Optional)**
  - Auxiliary process observation camera
  - Ultra-high mag camera-lens optics

- **Forced Air PCB Cooling (Optional)**
  - Highly effective, integral PCB cooling with air knife system
### PDR System Features

#### Advanced Focused IR Component Heating
- Focused IR Lens System - Dual-band Visible IR
  - F150 - Ø 6-18mm - Lens Attachment
  - F200 - Ø10-28mm - Lens Attachment
  - F400 - Ø12-35mm - Lens Attachment
  - F700 - Ø20-70mm - Lens Attachment

#### Quartz IR PCB Preheating
- 2000W, two zone (240mm x 240mm heating area)
- 2800W, 3 zone (240mm x 360mm heating area)
- 3050W, 3 zone (240mm x 240mm heating area) with 750W Micro-PCB Electronic Thermo Booster

#### Component Pick and Placement
- Advanced Professional vacuum placement system (Y/Z-axis, Rotation and Soft Landing)
- Advanced Venturi vacuum placement system (Y/Z-axis, Rotation and Ultra-fine Landing)

#### Component Nest/Flux Application Facility
- Hi-Mag Vision nest for small part handling with flux/paste dip tray/component printing
- Component nest with flux/paste dip tray or component print frame feature

#### PCB Handling (PCB Capacity)
- Advanced Professional PCB table with macro-micro X/Y (18” x 12”/450mm x 300mm)
- Optional Universal Micro-PCB Pallet to emulate larger PCB Surface area

#### Component Temperature Sensing
- Standard non-contact IR temperature sensor (Pyrometer) - Ø7mm+ Spot
- K-type wire thermocouple
- Standard non-contact IR temperature sensor (Pyrometer) - Ø7mm+ Spot

#### Advanced Thermal Process Control
- Software based auto profile thermal control with multi-profile library

#### Camera Based Vision Systems
- Camera/Prism Based BGA/uBGA/CSP/QFN Alignment System
- Auxiliary Process Observation Camera - Ultra-high Mag/Zoom Imaging System

#### Forced Air PCB Cooling
- Simple USB/free standing cooling fan
- Highly effective, software activated, integral PCB cooling with air knife system

### IR-E3S, IR-E3G, IR-E3M Specifications

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<thead>
<tr>
<th></th>
<th>IR-E3S</th>
<th>IR-E3G</th>
<th>IR-E3M</th>
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<tbody>
<tr>
<td><strong>Top heat power</strong></td>
<td>150W IR</td>
<td></td>
<td></td>
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<tr>
<td><strong>Back heater power</strong></td>
<td>2000-3050W IR</td>
<td></td>
<td></td>
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<tr>
<td><strong>Voltage/frequency</strong></td>
<td>200-240 volts 50/60Hz, up to 3.2KW</td>
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<td><strong>Typical components</strong></td>
<td>CSP, Flip Chip, QFN, uBGA, BGA, SMDs, PLCCs, 500Ks, 01005s, 0603s, small SMDs</td>
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<tr>
<td><strong>Bench area</strong></td>
<td>1400mm (w) x 600mm (d)</td>
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<tr>
<td><strong>Weight</strong></td>
<td>65 Kg</td>
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The above features are mostly optional and also, PDR reserves the right to improve/change specifications without giving notice.

### Details and specifications of advanced features available

- **Advanced Focused IR component heating**
  - Dual-band Visible IR heating system
  - 150W, lens based Focused heating with adjustable image system
  - PDR lens attachments with IR image from 4 to 70mm diameter
  - Reworks 01005 - 0605s, CSP, Flip Chip, QFN, uBGA, BGA and SMDs

- **PDR Lens Attachments**
  - FF150 (Ø4 - 18mm spot size)
  - F200 (Ø10 - 28mm spot size)
  - F400 (Ø12 - 35mm spot size)
  - F700 (Ø20 - 70mm spot size)

- **Quartz IR PCB preheating**
  - Flexi-array Dark IR PCB preheater system
  - High power, medium wave quartz IR
  - E3S - 2000W, 2 zones (240mm x 240mm heating area)
  - E3G - 2800W, 3 zones (360mm x 240mm heating area)
  - E3M - 3050W, 3 zones (240mm x 240mm heating area) with 750W, Electronic Thermo-Boost for small PCBs

- **Advanced Professional Vacuum Placement System**
  - With precise 'pick and place' action, Y/Z axis movement and rotation via, Magna-Track Precision Pick-Up Assembly with Micro-Touch soft landing/ component lift
  - Fine approach, Z-axis stop, with LED indicators for paste placement
  - Comprehensive range of micro pick-up tips for different devices
  - E3M - Venturi Powered Vacuum Assist for EZ Ground Plane Detach (70-140PSI Shop Air)

- **Component Nest for Precision Pick-up and Flux Application**
  - Solid Paste/Dipping Tray facility with process Camera Verification
  - Micro Part Pick-Up nest with Optical Assist

- **Advanced Professional Macro-Micro X/Y PCB Table**
  - Precision micrometer (micro) X/Y and micro rotation control
  - +/- 5 microns (.0004") movement in X/Y directions
  - Macro movement in X/Y directions
  - From 0.25”x0.25” up to 12” x 18” (300mm x 450mm) PCB capacity with lockable X/Y axis
  - E3M - Optional Universal PCB Pallet to emulate larger PCB Surface area

- **Component Temperature Sensing - Non-contact, IR Sensor**
  - Manually adjustable, K-type non-contact IR sensor, 07-10mm spot size
  - Real time monitoring of component temperature throughout process

- **Auto Profile Process Control Software**
  - Advanced PDR ThermoActive software suite, Windows 7+
  - Digital controller with multi-functional features
  - Two channel, real time, closed loop component and PCB temperature control
  - ‘Auto-profile’ temperature profiling, data logging and reporting
  - Optional PC System with 17-23-27” Monitor Selection

- **Camera/Prism Based BGA/uBGA/CSP/QFN Alignment System**
  - Split beam prism system for simultaneous PCB/component viewing
  - Hi-Resolution USB Cube Camera(s) S5FPS
  - 150° rotation, 60X Magnification Lens + Digital Magnification up to 8X Video Capture, Annotate, and Camera Lighting Control functions
  - Integral LED lighting system with illumination level control

- **Auxiliary Process Camera**
  - Auxiliary process observation camera
  - Full colour compact USB Cube camera with rotation movement
  - High quality zoom lens with up to x5 magnification
  - Integral LED lighting system with illumination level control

- **Forced Air PCB Cooling**
  - Highly effective, Software controlled, integral PCB cooling with air knife system
  - Switched compressed air flow, directed under the PCB

### Bench Top Requirements

- **Top heat power**
  - 150W IR
- **Back heater power**
  - 2000-3050W IR
- **Voltage/frequency**
  - 200-240 volts 50/60Hz, up to 3.2KW
- **Typical components**
  - CSP, Flip Chip, QFN, uBGA, BGA, SMDs, PLCCs, 500Ks, 01005s, 0603s, small SMDs
- **Bench area**
  - 1400mm (w) x 600mm (d)
- **Weight**
  - 65 Kg

The above features are mostly optional and also, PDR reserves the right to improve/change specifications without giving notice.
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PDR’s products are available worldwide via our international distributors, all offering professional sales and support.

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