Solder Paste Inspection Machine

VP9000 Series

Future of Flexible Inspection
What is a Solder Paste Inspection Machine?

Smart SMT Style

Solder paste inspection machines (SPI) can analyze and optimize printing conditions.
About 70% of all defects in Surface Mount Technology (SMT) lines are said to occur in the printing process. The VP9000 prevents printing defects by detecting faults and optimizing printing conditions.
**Ring Light**

An outline of solder paste is extracted through the use of a 360° ring light source that projects against inspection objects (solder paste). This method of inspection isolates solder paste on a Printed Circuit Board (PCB) and performs three-dimensional measurements to achieve more reliable inspections.

**3D Projectors**

A camera captures an image of solder paste illuminated with a stripe pattern from 3D projectors. Depending on the height of the solder paste, the projected line pitch and pattern will change. Through a method of triangulation, the software can calculate solder height information from these lines.

**Z axis Auto-Focus Function**

The machine automatically compensates for PCB warpage in each field of view. This effectively makes each PCB appear perfectly flat.
User-Friendly GUI Fast and Simple Operation Screen

- **Setting Dashboard**
  Critical inspections can be verified on the main screen
  1D & 2D code reading, PCB warp compensation

- **Visualization of Results**
  Measurements from inspection can be viewed in a scatter chart

- **Display Status and Quality**
  Current machine status and production results are easily accessible from the main screen

Multiple Inspection Resolutions
CKD’s improved software enhances images allowing for multiple resolutions to be used for components of various size

- **Standard Resolution**
  High speed inspection of large pads (ex. electrolytic capacitor)

- **High Resolution**
  Small pads can be resolved (ex. ceramic capacitor)

- **Super High Resolution**
  Fine pitch pads are inspectable (ex. BGA)

Adjustable Touch Screen

- **Adjustment Feature**
  The angle of the touch screen is adjustable up to 10° upwards and 25° downwards

- **Improved Operability**
  Operators can use the touch screen at their desired position without keyboard
Inspection Principles of the VP Series

Swift Creation of Inspection Program
Inspection program can be created from Gerber data in a minimum of 3 minutes. Part information is easily registered by using mount data and optional software.

Foreign Material Inspection
Foreign materials can be effortlessly detected while inspecting solder paste.

Glue Inspection (Optional)
Precise amounts of dispensed glue can be measured in 3D for judgment.

PCB Warp Distribution Display
Warpage amounts can be measured, visualized and saved for future reference.

Upgraded Manual Verification Function
Operators have the option to reconsider the reasons for defective judgments.
Standard Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>VP9000 (Standard Machine)</th>
<th>VP9000 High-speed Machine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspection Method</td>
<td>Phase Shift Method</td>
<td></td>
</tr>
<tr>
<td>PCB Size</td>
<td>(M) 50 x 50mm ~ 330 x 250mm</td>
<td>(L) 50 x 50mm ~ 510 x 460mm</td>
</tr>
<tr>
<td>PCB Thickness</td>
<td>.03 ~ 5.0 mm</td>
<td></td>
</tr>
<tr>
<td>Projection</td>
<td>Dual Projectors</td>
<td>Single Projector</td>
</tr>
<tr>
<td>Inspection Resolution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25/12.5/8.5 μm</td>
<td>8900</td>
<td>20/10/7μm</td>
</tr>
<tr>
<td>15/7.5/5μm</td>
<td>5700</td>
<td>6000</td>
</tr>
<tr>
<td>15/7.5/5μm</td>
<td>3200</td>
<td>3000</td>
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<tr>
<td>15/7.5/5μm</td>
<td>9400</td>
<td></td>
</tr>
<tr>
<td>20/10/7μm</td>
<td>6000</td>
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</tr>
<tr>
<td>15/7.5/5μm</td>
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</tr>
<tr>
<td>25/12.5/8.5 μm</td>
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<tr>
<td>15/7.5/5μm</td>
<td>1300</td>
<td></td>
</tr>
<tr>
<td>15/7.5/5μm</td>
<td>700</td>
<td></td>
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<tr>
<td>Inspection Speed (mm²/sec)</td>
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<td></td>
</tr>
<tr>
<td>Standard Resolution</td>
<td>8900</td>
<td>20/10/7μm</td>
</tr>
<tr>
<td>High Resolution</td>
<td>5600</td>
<td>6000</td>
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<tr>
<td>Super High Resolution</td>
<td>1900</td>
<td>3000</td>
</tr>
<tr>
<td>Accuracy (volume 3σ) *1</td>
<td>Within 2%</td>
<td>Within 3%</td>
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<tr>
<td>PCB Warping Compensation</td>
<td>± 5 mm</td>
<td></td>
</tr>
<tr>
<td>Outline Dimensions</td>
<td>(M) 724 x 970 x 1500 mm</td>
<td>(L) 904 x 1180 x 1600 mm</td>
</tr>
<tr>
<td>Power Supply</td>
<td>Single Phase AC 200 ~ 230V 50 ~ 60Hz MAX 1 KVA</td>
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<tr>
<td>Pneumatic Supply</td>
<td>Not Required</td>
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<tr>
<td>Weight</td>
<td>(M) 460 kg</td>
<td>(L) 550 kg</td>
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<tr>
<td>UPS</td>
<td>Standard Equipment (only PC)</td>
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<tr>
<td>Environmental Standard</td>
<td>RoHS</td>
<td></td>
</tr>
</tbody>
</table>

Optional

- Data Station (connection up to 6 sets of machines)
- Loading Conveyor
- Unloading Conveyor

Outline View

※When height of pass line is 900mm
Authorized Distributor:

Controllers & I/O
- Machine Automation Controllers (MAC) • Motion Controllers
- Programmable Logic Controllers (PLC) • Temperature Controllers • Remote I/O

Robotics
- Industrial Robots • Mobile Robots

Operator Interfaces
- Human Machine Interface (HMI)

Motion & Drives
- Machine Automation Controllers (MAC) • Motion Controllers • Servo Systems
- Frequency Inverters

Vision, Measurement & Identification
- Vision Sensors & Systems • Measurement Sensors • Auto Identification Systems

Sensing
- Photoelectric Sensors • Fiber-Optic Sensors • Proximity Sensors
- Rotary Encoders • Ultrasonic Sensors

Safety
- Safety Light Curtains • Safety Laser Scanners • Programmable Safety Systems
- Safety Mats and Edges • Safety Door Switches • Emergency Stop Devices
- Safety Switches & Operator Controls • Safety Monitoring/Force-guided Relays

Control Components
- Power Supplies • Timers • Counters • Programmable Relays
- Digital Panel Meters • Monitoring Products

Switches & Relays
- Limit Switches • Pushbutton Switches • Electromechanical Relays
- Solid State Relays

Software
- Programming & Configuration • Runtime