Automated Optical Inspection System

VT-WIN II Ver.6.00

The Latest VT-WIN II for High-precision Inspections

realizing
The Automated Optical Inspection System that enables even higher inspection performance

The widely used VT-WIN II is now even better!

The precision of lead lift inspections for mini-mold components, difficult with previous inspection technology, has been dramatically improved.

Improved Precision for Lead Lift Inspection of Mini-mold Components

1. Lead Extraction Logic Using Direct View Inspection  NEW

Lead lifting of mini-mold components can be precisely inspected for using a combination of color highlight illumination and newly developed lead extraction logic (patent pending).

2. Lead Extraction Logic Using Angled View Inspection  NEW

The new logic using the angled view function can accurately detect minute lifting defects in mini-mold components.

Supreme Inspection Performance

OK Product Image  NG Product Image

Faster Inspections

Inspection speed has been increased from approximately 280ms/imageto approximately 240ms/imagewith a high-resolution 3-CCD camera and improved software.

Enhanced OCR

Inspect characters to detect mismounted ICs or other components. Separate or register characters easily using automatic character separation. And, use the totally improved GUI for easier operation. Load the new OCR engine to enable inspecting characters much faster and more precisely.

High Resolution of 10 µm Enables Inspection of 0402 Chips

Mobile phones exemplify the drive for increasingly smaller and lighter digital appliances, which is accompanied by a non-stop drive for downsizing of components. The VT-WIN II provides a high resolution of 10 µm, enabling adequately obtaining the information required for inspection, even for extremely small components, such as 0402 chips, for highly precise inspection and measurement.

35 µm 10 µm 10 µm

• Handles all kinds of components: ICs, molds, chips, etc.
• Faster processing time: 10 times faster than previous system
• Easy teaching: Characters separation and automatic binary conversion

The following types of characters can now be recognized (not possible with previous version).

Example of Character Separation Function

Faint characters  Patchy characters

VT-WIN II Ver.5 or higher  Ver.5 or higher

Note: Modification to the WIN II Unit will be required if using WIN II Version 4 or lower.

Contact your OMRON sales representative for details.
Faster Inspections  Ver. 5 or higher

Inspection speed has been increased from approximately 280 ms/image to approximately 240 ms/image with a high-resolution 3-CCD camera and improved software. (See note.) (Inspection speed may differ depending on the PCB.)

Enhanced OCR  Ver. 5 or higher

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Highly Efficient System Operation

Automatic Tuning of Inspection Programs
VTnx (Vt TuNeup eXpert) Q-upNavi Series

NEW
Software Options

Inspection programs can be automatically tuned and standard work has been made more efficient.
- Components and variations with many false calls can be selected to achieve more efficient tuning.
- Uniform tuning no longer relies on operator skill.

1. Select the component to be tuned.
2. Get the sample image.
3. Enter the OK/NG data for each sample image.
4. Execute autotuning.
5. Check the tuning results.

Note 1. The VTnx software runs on an RTS computer.
2. The displays are under development and may be changed without notice.
The VT-WIN II easily and quickly improves quality for SMT lines. Three-point checking can be conducted on the status of defective PCBs during printing, mounting, or reflow soldering using images and data. This makes it possible to discover new process realities not visible with conventional inspection technologies, providing efficient cause analysis.

Unique Quality Improvement Solutions

To improve the accuracy of teaching for the VT-WIN II post-reflow inspection machine, information on actual defects and false calls can be viewed and teaching points can be easily grasped while checking images.

Image Output from VT-WIN II

Three-point checking can be conducted on the status of defective PCBs during printing, mounting, or reflow soldering using images and data. This makes it possible to discover new process realities not visible with conventional inspection technologies, simplifying cause analysis.

Global Operation of VT-WIN II

Once teaching and process qualities become manageable, it becomes easy to strengthen and support global operations. The VT-WIN II provides a system that enables intermittent support of the autonomous operations at global and satellite plants.

Improved cases can be stored -Q-upCases-

Teaching histories and process improvement processes can be automatically stored as know-how. Know-how, such as improvements analyzed using Q-upNavi and teaching using RTS, can be easily reused and log data easily managed.

Note 1.
The VTnx software runs on an RTS computer.

Note 2.
The displays are under development and may be changed without notice.
Shortened Invalidation Setting Time

The VT-WIN II eliminates manual work required for invalidation settings by creating inspection programs for validating PCBs directly from CAD files.

- CAD file 1: Automatic conversion
- CAD file 2: Inspection program
- CAD file n: Automatic addition

No manual work required for invalidation settings.

Invalidation settings can be added automatically if CAD files are increased.

Color Enhancing Function

With lead-free solder, there are inconsistencies in the reflective luminosity of the surface of the solder. With the VT-WIN II, LEDs emit colored light and information is extracted in the form of chromaticity, so no inconsistencies are caused in the reflective luminosity. Accordingly, stable inspection can be performed even for lead-free solder. Also, the ease of visual recognition afforded by the color enhancing function with the unique OMRON image processing technology enables precise color extraction settings.

Angled View Inspection Function

Images are taken along two different optical axes, a direct view and an angled view, using only one camera by changing the axis with special mirrors located between the camera and PCB. Combining these images enables difficult inspections, such as inspecting solder directly under leads. This feature is also effective for inspecting PLCC, SOJ, and similar chips.
System Configuration

**RTS (Remote Teaching System)**
Operating rates can be increased because the VT-WIN II can inspect PCBs even during teaching operations with the RTS. Inspection programs, library data, and image data can be easily transferred through a network connection between the VT-WIN II and RTS. Moreover, the VT-WIN II and RTS can execute teaching using the same library data at the same time. The RTS also easily reduces adjustment time for inspection programs by teaching immediately after a defect image occurs during the same inspection run by combining the RTS with the sample image function.

**Repair Station**
The Repair Station displays and enables re-input of defective components and the status determined by the VT-WIN II. It displays defective components in order, enabling repairs without oversight. Furthermore, it greatly helps the repair job of the operator by simultaneously displaying clear images of defects taken by the color highlight system.

**Q-upNavi Series**
The Q-upNavi Series easily and quickly improves quality for SMT lines. The status of defect components can be compared with images and inspection results at three stages - during printing, mounting, and reflow. This makes it possible to discover new process realities not visible with conventional inspection technologies, providing efficient cause analysis. For details, visit the OMRON Q-upNavi website (http://www.e.jisso.com). (This site is available in Japanese only.)
### Hardware Configuration

<table>
<thead>
<tr>
<th>Image</th>
<th>Signal Input Unit</th>
<th>Camera</th>
<th>3-CCD camera</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Illumination</td>
<td>Ring-shaped LEDs (R, G, B) with automatic brightness control</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Image resolution</td>
<td>10,13,15, 20, 25, 30, 35, or 50 µm</td>
</tr>
<tr>
<td>Main Unit</td>
<td>PCB handling</td>
<td>Edge belt conveyor</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Conveyor height</td>
<td>900 ±15 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rail convertible with adjustment</td>
<td>Automatic</td>
<td></td>
</tr>
<tr>
<td>PCB fitting method</td>
<td>Outer frame</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td>200 VAC ±10%, 5.5 KVA, UPS with 5-minute backup</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air</td>
<td>0.4 to 0.6 Nps (60 to 80 PSIG)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient operating temperature</td>
<td>10 to 35°C (50 to 90°F)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient operating humidity</td>
<td>35% to 80% (with no condensation)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>M: 1,400 kg max. (3,086 lb max.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>L: 1,400 kg max. (3,086 lb max.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td>M: 1,503 × 1,203 × 310 mm (W × D × H)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>L: 1,690 × 1,465 × 510 mm (W × D × H)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Options
- Angle view: inspection for J-lead components, such as PLCCs, SOJJs, etc.
- PCB backup: PCB bending can be compensated with a backup pin.

### Function Specifications

<table>
<thead>
<tr>
<th>Inspectable PCBs</th>
<th>Type</th>
<th>Wave and reflow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>M: 50 × 80 to 255 × 333 mm (19.7 × 31.5 to 10.1 × 13.1 inches)</td>
<td></td>
</tr>
<tr>
<td>L: 50 × 80 to 460 × 515 mm (19.7 × 31.5 to 18.1 × 20.1 inches)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thickness</td>
<td>0.3 to 4.0 mm (0.01 to 0.16 inch)</td>
<td></td>
</tr>
<tr>
<td>Camera clearance</td>
<td>50 mm (1.96 inches) both above and below the PCB</td>
<td></td>
</tr>
<tr>
<td>Inspectable components</td>
<td>Square chips (0402-mm (0020-inch) packages and larger), 1.50 (0.06-inch) pitch and larger, special shaped components, and though-hole components</td>
<td></td>
</tr>
<tr>
<td>Inspection categories</td>
<td>Solder defects</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Presence/absence of solder, excessive solder, insufficient solder, blow holes, wettability, bridge, solder balls, lead lift</td>
<td></td>
</tr>
<tr>
<td>Component defects</td>
<td>Missing components, non-mounted components, front/back reversed components, polarity, shifting, wrong components</td>
<td></td>
</tr>
<tr>
<td>Number of inspection points</td>
<td>Up to 10,000 components/PCB</td>
<td></td>
</tr>
<tr>
<td>Data storage</td>
<td>Built-in 160-GB hard disk, 4.7-GB DVD/ROM</td>
<td></td>
</tr>
<tr>
<td>Component data library</td>
<td>Up to 999 variations/component types</td>
<td></td>
</tr>
<tr>
<td>Inspection result output</td>
<td>Faulty component name, faulty pin number, type of fault, PCB graphic (printer, monitor)</td>
<td></td>
</tr>
<tr>
<td>Standard inspection rate</td>
<td>240 ms/image (Inspection speed may differ depending on the PCB)</td>
<td></td>
</tr>
<tr>
<td>Communications</td>
<td>Ethernet, RS-232C</td>
<td></td>
</tr>
<tr>
<td>Process changegens</td>
<td>Automatic rail pitch adjustment</td>
<td></td>
</tr>
<tr>
<td>Process flow direction</td>
<td>Through or turn-back</td>
<td></td>
</tr>
<tr>
<td>Position reference</td>
<td>Right, left, front, or back (selectable before shipping)</td>
<td></td>
</tr>
</tbody>
</table>

### Dimensions

**Unit: mm (inch)**

- M: 1,503 (59.2) × 1,203 (47.4) × 310 (12.2) inches
- L: 1,690 (66.5) × 1,465 (57.7) × 510 (20.1) inches
- M: 1,507 (59.3) × 1,207 (47.4) × 333 (13.1) inches
- L: 1,690 (66.5) × 1,465 (57.7) × 510 (20.1) inches

### Note
Specifications subject to change without notice.

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This document provides information mainly for selecting suitable models. Please read the Instruction Sheet carefully for information that the user must understand and accept before purchase, including information on warranty, limitations of liability, and precautions.

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**Trademarks**

“Color highlight” is a registered trademark of OMRON in Japan and other countries.