OMRON

Automated Optical Inspection System
VT-WIN II Ver.6.00

The Latest VT-WIN II for High-precision Inspections

VT-WIN II Ver.6.00

realizing

VT-WIN II

Supreme Inspection Performance

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 float inspections for mini-mold components,
difficult with previous inspection technology, has been dramatically improved.

Improved Precision for Lead Float Inspection of Mini-mold Components

1. Lead Extraction Logic Using Direct View Inspection NEW

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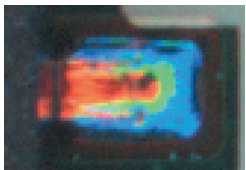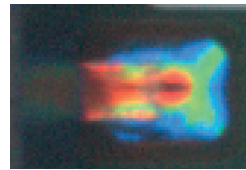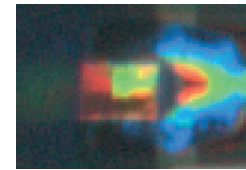

OK Product Image

NG Product Image

2. Lead Extraction Logic Using Angled View Inspection NEW

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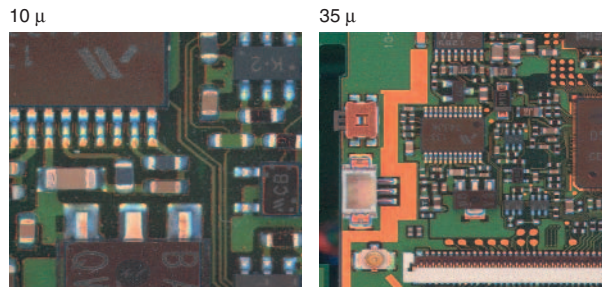

OK Product Image

NG Product Image

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.)

10 µ

35 µ

Note: Modifications to the WIN II Unit will be required if using WIN II Version 4 or lower. Contact your OMRON sales representative for details.

Enhanced OCR `Ver. 5 or higher`

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.

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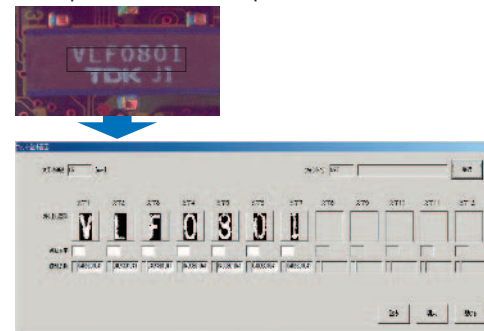
The following types of characters can now be recognized (not possible with previous version).

Faint characters   Patchy characters

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

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.
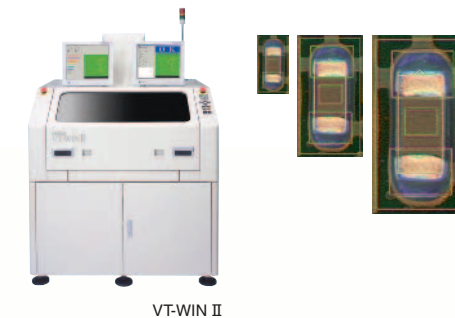
VT-WIN II

VT-WIN II

Highly Efficient System Operation

Automatic Tuning of Inspection Programs NEW
VTnx (Vt TuNeup eXpert) Q-upNavi Series 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.
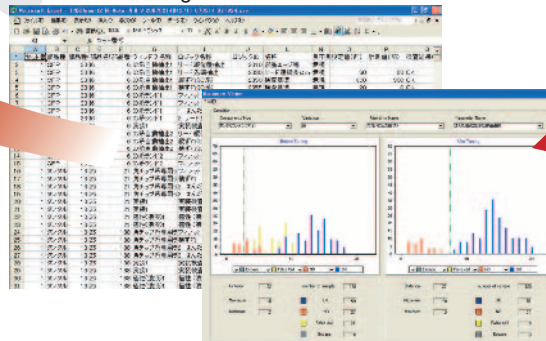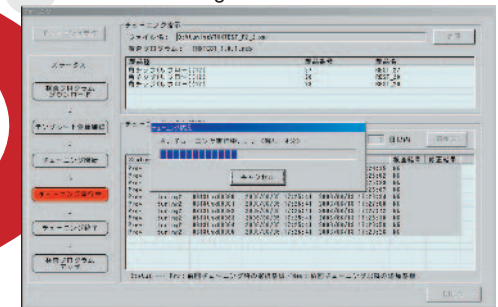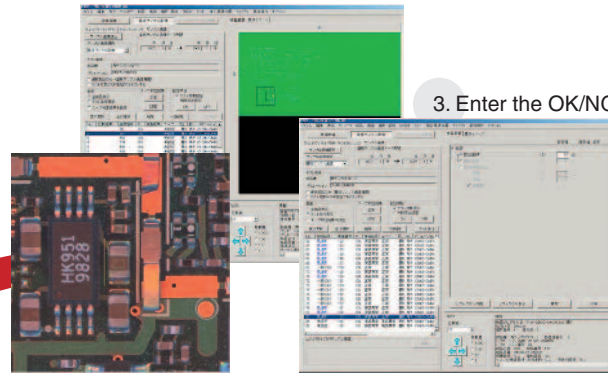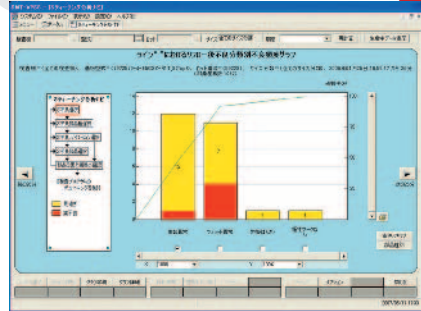- Uniform tuning no longer relies on operator skill.

2. Get the sample image.

3. Enter the OK/NG data for each sample image.

4. Execute autotuning.

1. Select the component to be tuned.

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.

Unique Quality Improvement Solutions

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.

Inspection Results Data Output from the VT-WIN Ⅱ
Q-upNavi series for S-teaching

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
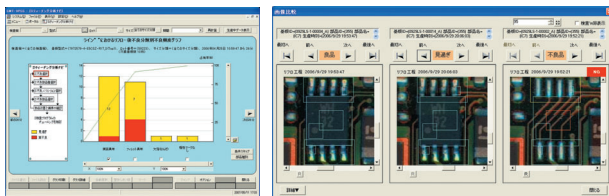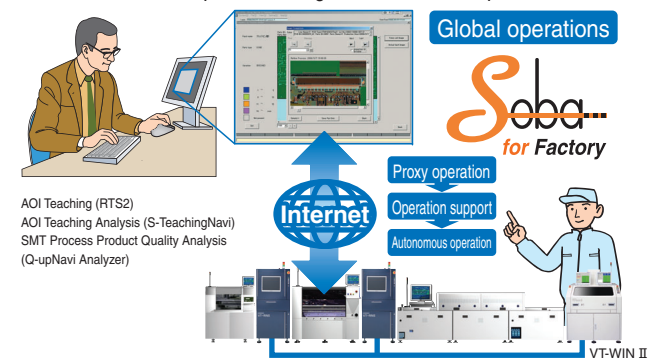### Q-upNavi series for Analysis

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.

VT-WIN Ⅱ

Possible to compare and analyze real images with CAD
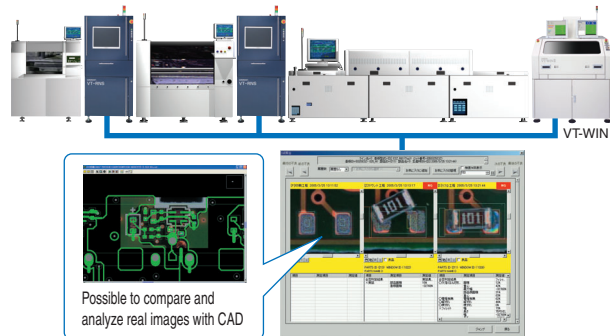
Global Operation of VT-WIN Ⅱ
NEW
SOBA for Factory

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.

AOI Teaching (RTS2)
AOI Teaching Analysis (S-TeachingNavi)
SMT Process Product Quality Analysis
(Q-upNavi Analyzer)

Global operations

Soba for Factory

Internet

Proxy operation
Operation support
Autonomous operation

VT-WIN Ⅱ

Improved cases can be stored -Q-upCases-

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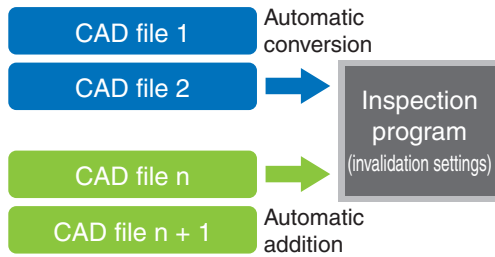
Know-how, such as improvements analyzed using Q-upNavi and teaching using RTS, can be easily reused and log data easily managed.

VT-WIN II

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.
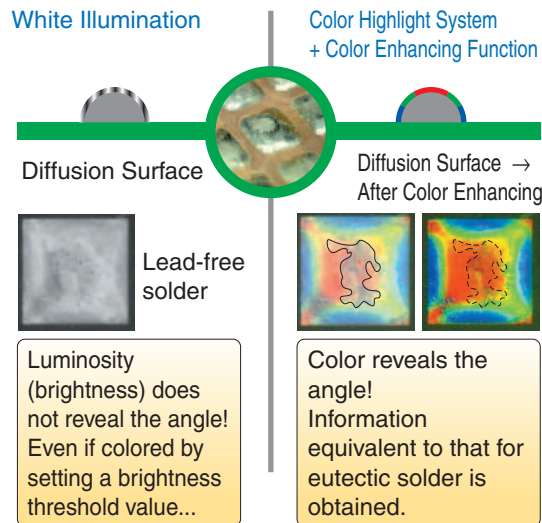
CAD file 1 — Automatic conversion
CAD file 2 →
Inspection program (invalidation settings)
CAD file n →
CAD file n + 1 — Automatic addition

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.

White Illumination

Color Highlight System + Color Enhancing Function

Diffusion Surface

Diffusion Surface → After Color Enhancing

Lead-free solder

Luminosity (brightness) does not reveal the angle! Even if colored by setting a brightness threshold value...

Color reveals the angle! Information equivalent to that for eutectic solder is obtained.

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.

Direct View

Angled View
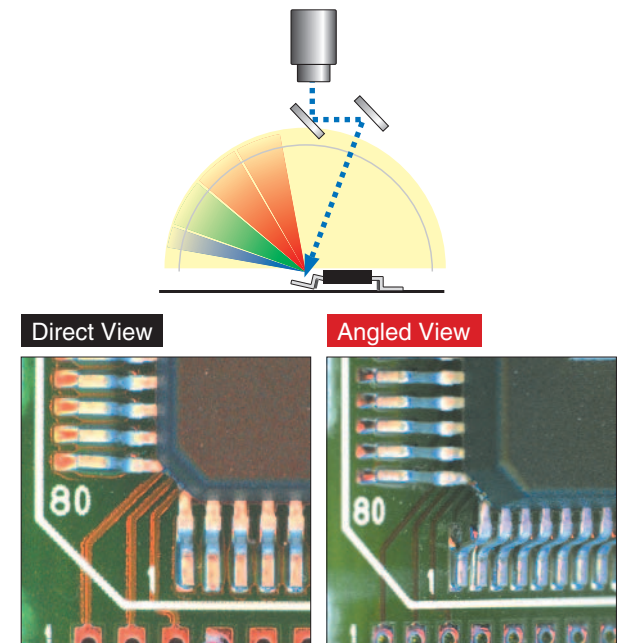
System Configuration

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. And, 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.
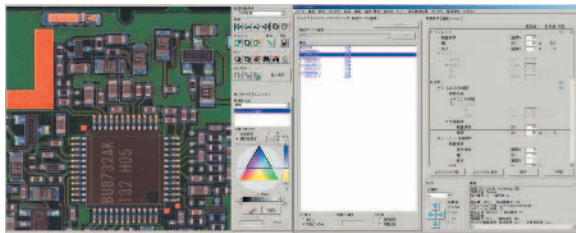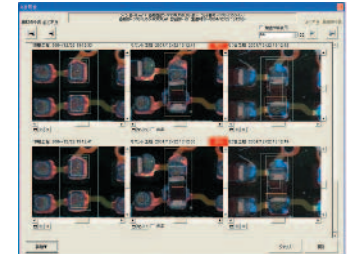
Repair Station

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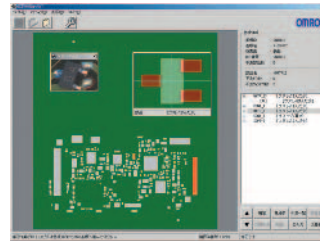
Q-upNavi Series

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.)

Q-upNavi

Printer   VT-RNS-P   Mounter   VT-RNS-Z   Reflow oven   VT-WIN II   Server

■ Hardware Configuration

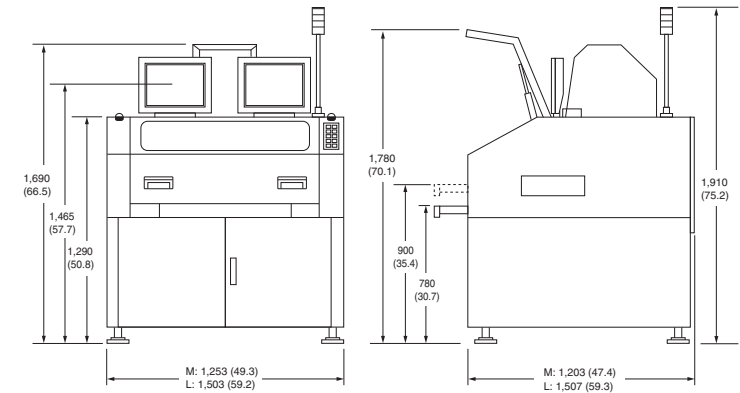|		
Image Signal Input Unit	Camera	3-CCD camera
	Illumination	Ring-shaped LEDs (R, G, B) with automatic brightness control
	Image resolution	10,13,15, 20, 25, 30, 35, or 50 μm
Main Unit	PCB handling	Edge belt conveyor
	Conveyor height	900 ±15 mm
	Rail conveyor width adjustment	Automatic
PCB fixturing method		Outer frame
Power supply		200 VAC ±10%, 5.5 KVA, UPS with 5-minute backup
Air		0.4 to 0.6 Mpa (60 to 90 PSI)
Ambient operating temperature		10 to 35°C (50 to 90°F)
Ambient operating humidity		35% to 80% (with no condensation)
Weight		M: 1,400 kg max. (3,086 lb max.) L: 1,400 kg max. (3,086 lb max.)
Dimensions		M: 1,253 × 1,203 × 1,910 mm (W × D × H) 49.3 × 47.4 × 75.2 inches (W × D × H) L: 1,503 × 1507 × 1,910 mm (W × D × H) 59.2 × 59.3 × 75.2 inches (W × D × H)

■ Options

J/Angle view	Inspection for J-lead components, such as PLCCs, SOJs, etc.
OCR	Components can be inspected by checking characters on the component.
PCB backup	PCB bending can be compensated with a backup pin.

■ Function Specifications

Inspectable PCBs	Type	Wave and reflow
	Dimensions	M: 50 × 80 to 255 × 333 mm (19.7 × 31.5 to 10.1 × 13.1 inches) L: 50 × 80 to 460 × 510 mm (19.7 × 31.5 to 18.1 × 20.1 inches)
	Thickness	0.3 to 4.0 mm (0.01 to 0.16 inch)
Camera clearance		50 mm (1.96 inches) both above and below the PCB
Inspectable components		Square chips (0402-mm (0201-inch) packages and larger), LSIs (0.3-mm (0.01-inch) pitch and larger), special shaped components, and though-hole components
Inspection categories	Wettability inspections	Presence/absence of wetness (suitable, excessive, or insufficient solder)
	Solder defects	Presence/absence of solder, excessive solder, insufficient solder, blow holes, wettability, bridge, solder balls
	Component defects	Missing components, non-mounted components, front/back reversed components, polarity, shifting, wrong components
Number of inspection points		Up to 10,000 components/PCB
Data storage		Built-in 160-GB hard disk, 4.7-GB DVD/RAM
Component data library		Up to 999 variations/component types
Inspection result output		Faulty component name, faulty pin number, type of fault, PCB graphic (printer, monitor)
Standard inspection rate		240 ms/image (Inspection speed may differ depending on the PCB.)
Communications		Ethernet, RS-232C
Process changeovers		Automatic rail pitch adjustment
Process flow direction		Through or turn-back
Position reference		Right, left, front, or back (selectable before shipping)

■ Dimensions Unit: mm (inch)

1,690 (66.5)
1,465 (57.7)
1,290 (50.8)
1,780 (70.1)
1,910 (75.2)
900 (35.4)
780 (30.7)
M: 1,253 (49.3) L: 1,503 (59.2)
M: 1,203 (47.4) L: 1,507 (59.3)

OMRON has received ISO 14001 certification.
The Vision Systems Business Division of OMRON Corporation has received ISO 9001 certification.

OMRON Corporation
Industrial Automation Company

Sales & Marketing Division HQ
IT Solution Division
SMT-Solution Department
Sales Section No.1/No.2/No.3
Engineering Group

1-11-1, Ohsaki, Shinagawa-ku, Tokyo, 141-0032 Japan
Tel: Sales Section No.1: (81)-3-3779-9046
No.2: (81)-52-561-0156
No.3: (81)-6-6347-5830
Engineering Group: (81)-3-3779-9046

OMRON TRADING (SHANGHAI) CO., LTD.
RM2204, Bank Of China Tower
No.200 Yin Cheng Road (M)
Shanghai China 200120
Tel: (86)-21-50372522/Fax: (86)-21-50372244

OMRON ASIA PACIFIC PTE. LTD.
55 Ubi Avenue 1, #05-01
Singapore 408935
Tel: (65)-6547-6789/Fax: (65)-6547-6766

OMRON ELECTRONICS LTD.
Opal Drive, Fox Milne, Milton Keynes
MK15 0DG, UK
Tel: (44)-1908-258258/Fax: (44)-1908-258158

OMRON ELECTRONICS LLC
1 East Commerce Drive, Schaumburg,
IL 60173-5302, U.S.A.
Tel: (1)847-843-7900/Fax: (1)847-843-7787

OMRON ELECTRONICS KOREA CO., LTD.
2F,Young Poong Bldg., 142, Nonhyeon-Dong,
Gangnam-Gu, Seoul, 135-749, Korea
Tel: (82)2519-3977/Fax: (82)2519-3976

Authorized Distributor:

Cat. No. Q309-E1-03

Note: Specifications subject to change without notice.

Printed in Japan
0707-2M (0206) (H)