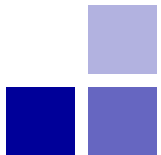


Machine Vision System application notes (Electronic component applications)

Panasonic Industrial Devices SUNX Co., Ltd.



Determination of the orientation of camera lens for mobile phones

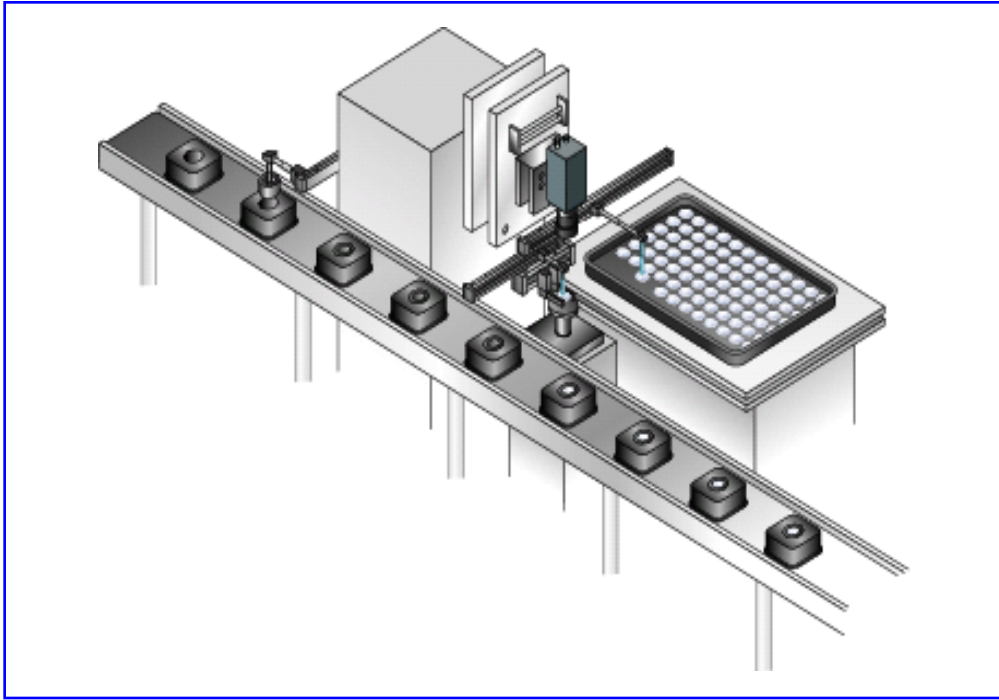
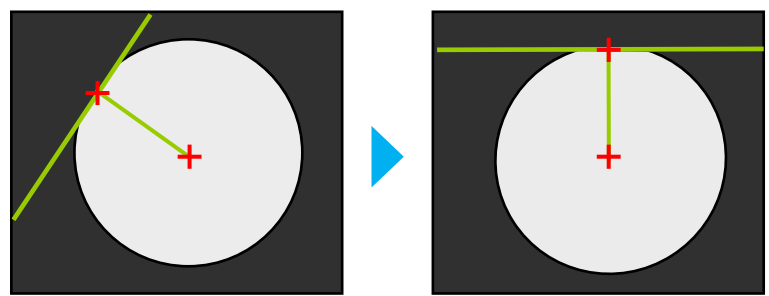


Image illustration



Detect the orientation of the cut section

Rotate in the specified direction

Description

- Determine the orientation of camera lenses by detecting the D-shaped cut section of the lens and output the rotational-angle and center data to PLCs

Merits in purchasing our product

- High-precision detection using smart edge (circle)
- Detect angles using the combination of smart edge (line) and geometry calculation without creating expressions

Examples of used functions

- Smart edge (circle)
- Geometry calculation

Recommended model

PV200	4 megapixel camera
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Detection of the coordinates of the corners in CCD and CMOS images

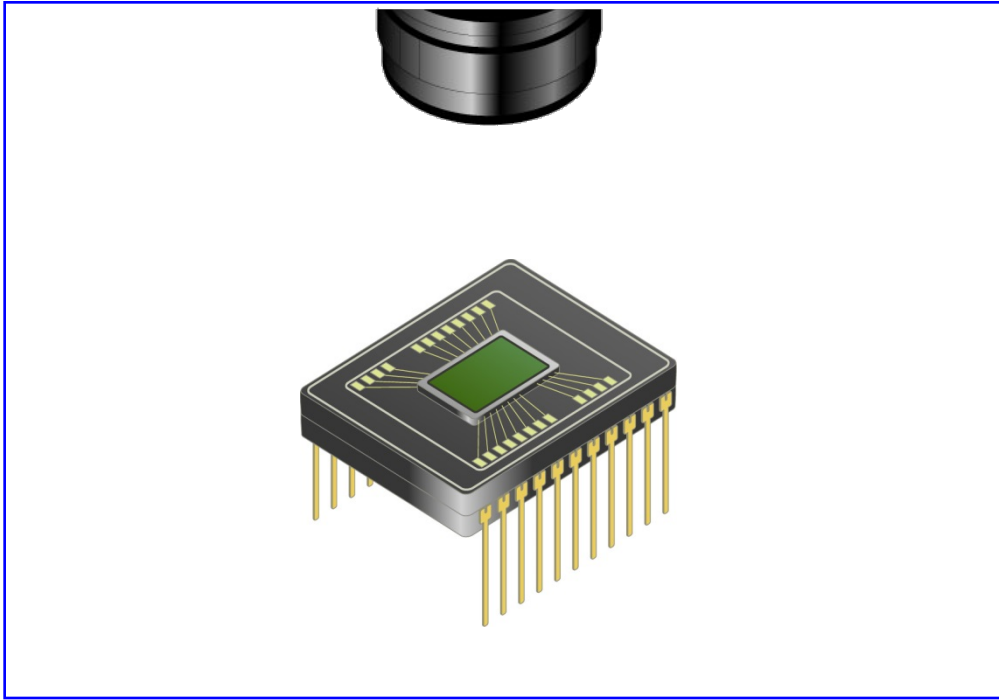
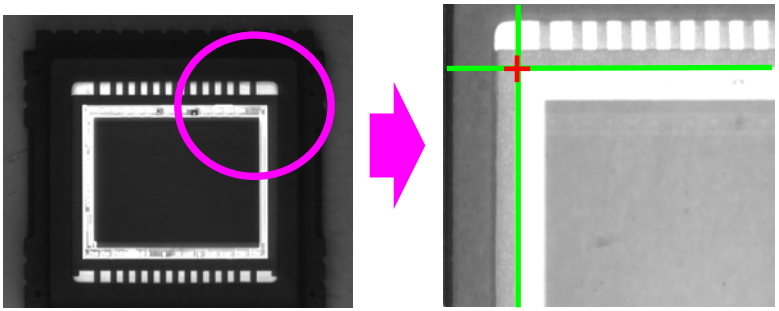


Image illustration



Description

- Detect the positions of the corners in CCD and CMOS images
Output the coordinates to a PLC or the like and perform positioning for mounting

*In some situations, the amount of corner misalignment is displayed on the screen of a semiautomatic machine, and the operator makes adjustments using a micrometer or the like.

Merits in purchasing our product

- Detect corner positions with high precision using the combination of smart edge (line) and geometry calculation without creating expressions

Examples of used functions

- Smart edge (line)
- Geometry calculation

Recommended model

PV200	
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Detection of broken component lead pins

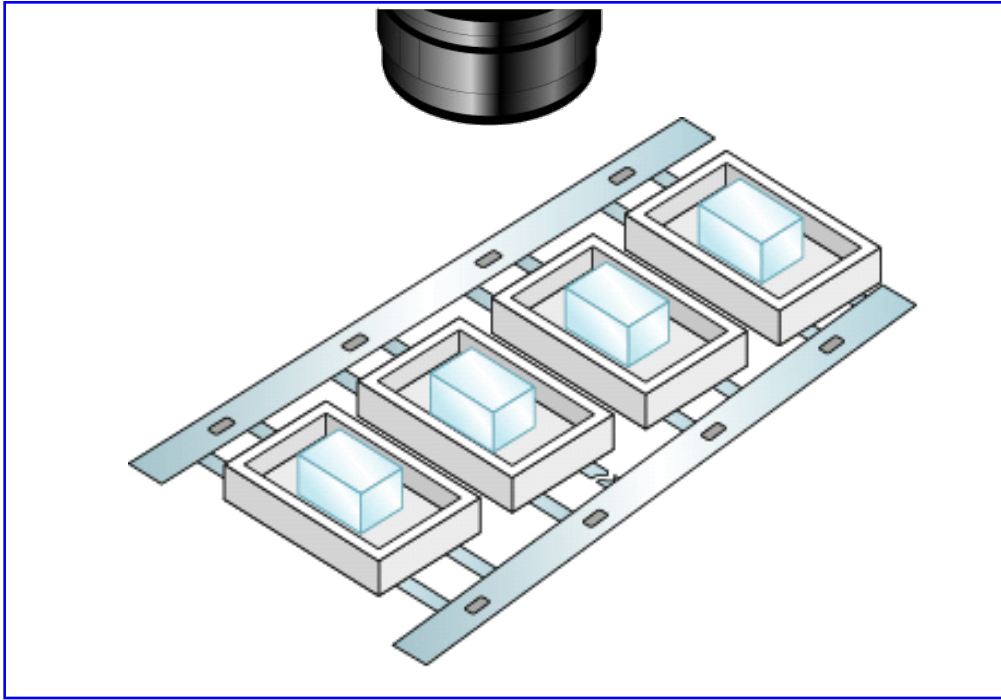
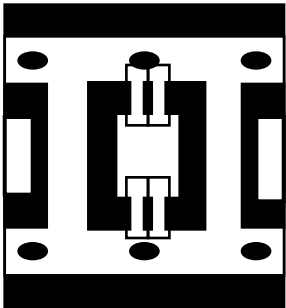
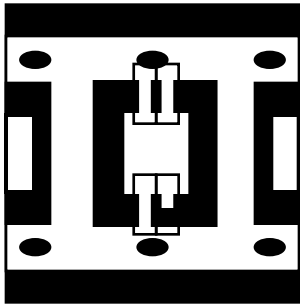


Image illustration



OK (pins present)



NG (pin missing)
The white area does not meet the criterion

Description

- Inspect semiconductor devices for broken lead pins and inspect the dimensions of devices before each device is separated

Merits in purchasing our product

- Detect minute components with high precision using a 4 megapixel camera
- High-speed processing through parallel operation

Examples of used functions

- Binarization window
- Feature extraction
- Grayscale edge

Recommended model

PV200	4 megapixel camera compatible
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Relay orientation inspection (taping package)

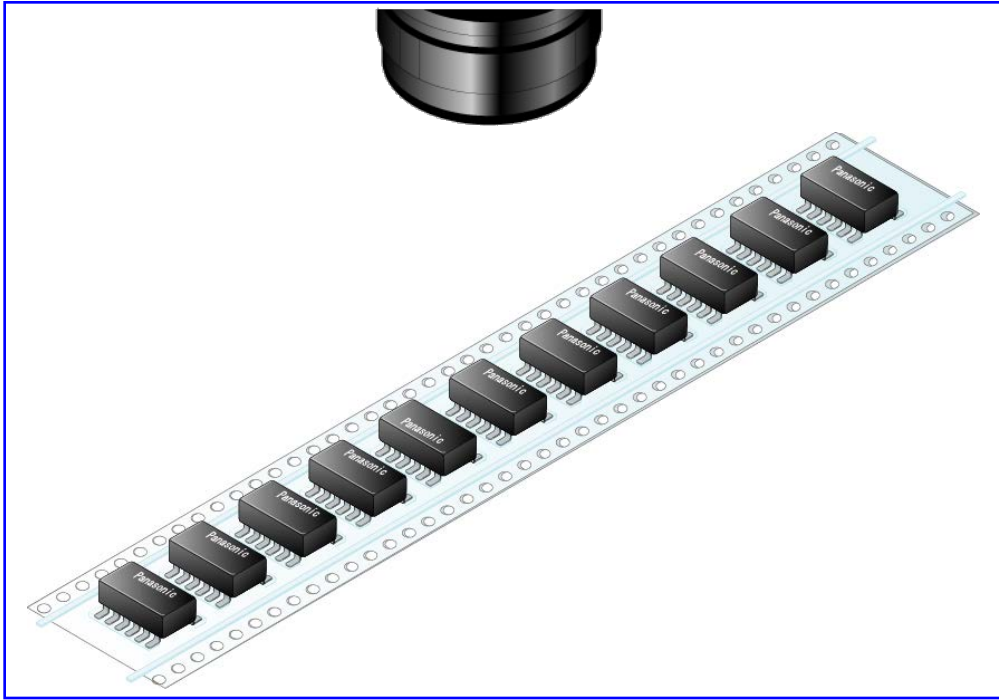
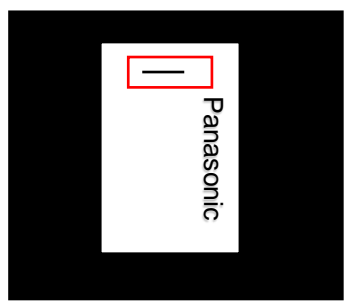
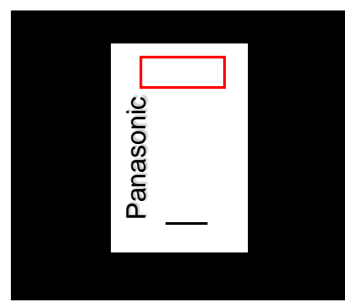


Image illustration



OK



NG
No orientation mark

Description

- Inspect the orientation of relays to be packaged in tapes

Merits in purchasing our product

- High-speed processing through parallel operation
- Supports multiproduct and multi-item inspections
- Stable inspection using 21 types of abundant preprocessing filters

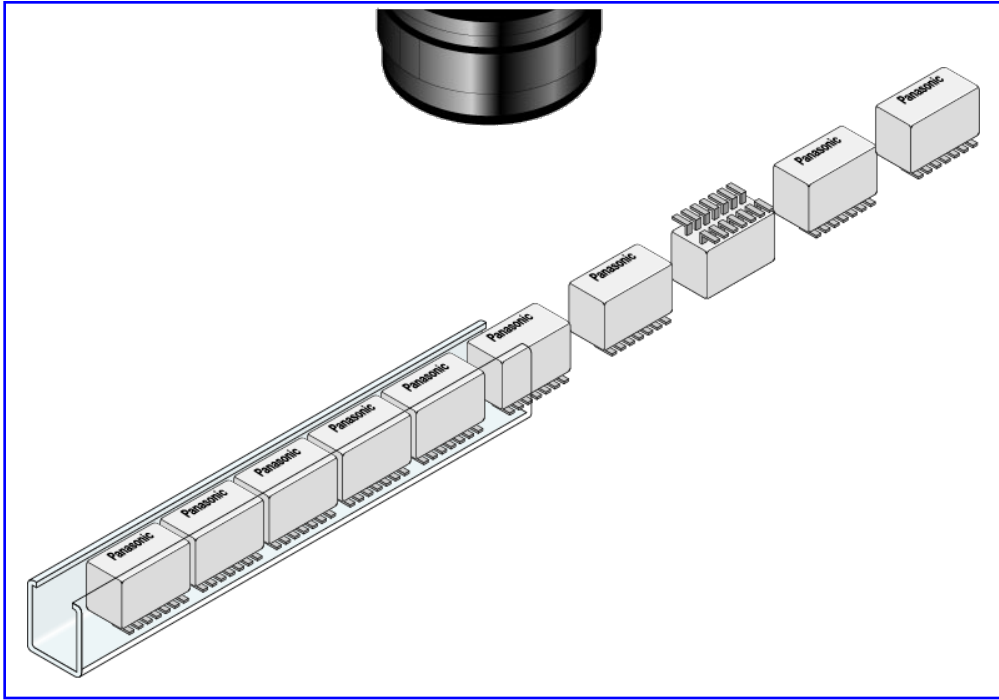
Examples of used functions

- Grayscale window
- Feature extraction
- Smart matching
- Image preprocessing, image conversion

Recommended model

PV200	
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Relay orientation inspection (stick package)



Description

- Inspect the orientation of relays to be packaged in sticks

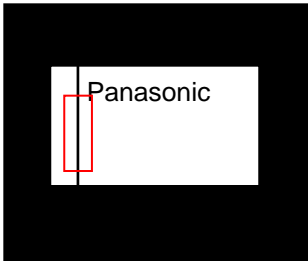
Merits in purchasing our product

- High-speed processing through parallel operation
- Supports multiproduct and multi-item inspections
- Stable inspection using 21 types of abundant preprocessing filters

Examples of used functions

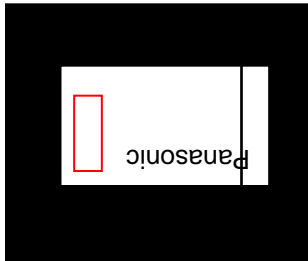
- Grayscale window
- Feature extraction
- Smart matching
- Image preprocessing, image conversion

Image illustration



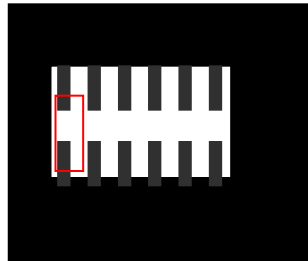
OK

Orientation mark present



NG

No orientation mark



NG

Front-back reversal

Recommended model

PV200	
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Component marking inspection

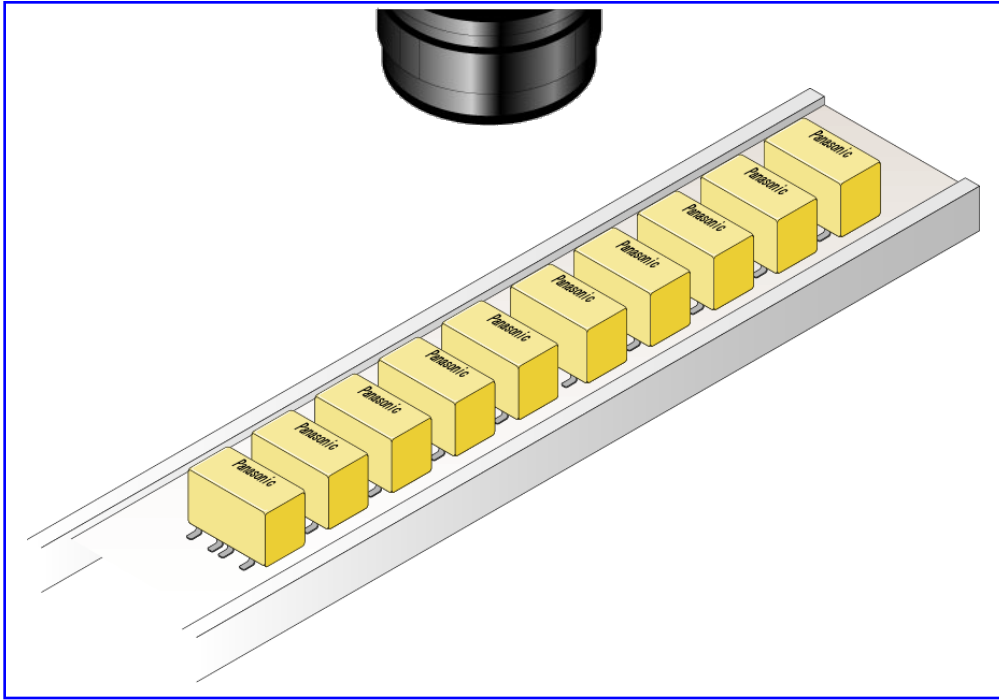
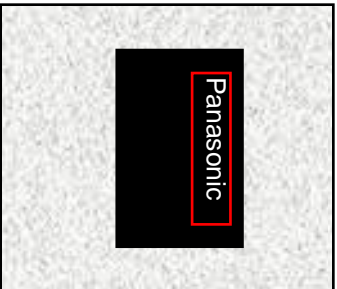
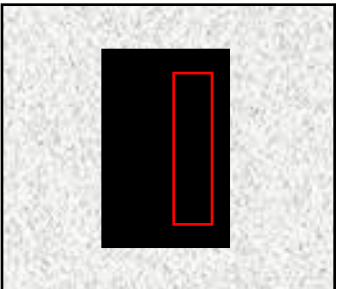


Image illustration



OK



NG
No marking

Description

- Inspect the marking in components

Merits in purchasing our product

- Supports multiproduct and multi-item inspections
- Detection is possible even if a portion of the marking is missing, such as due to a misaligned marking stamp.
- Stable inspection using 21 types of abundant preprocessing filters

Examples of used functions

- Grayscale window
- Feature extraction
- Smart matching
- Image preprocessing, image conversion

Recommended model

PV200	
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Relay contact gaps

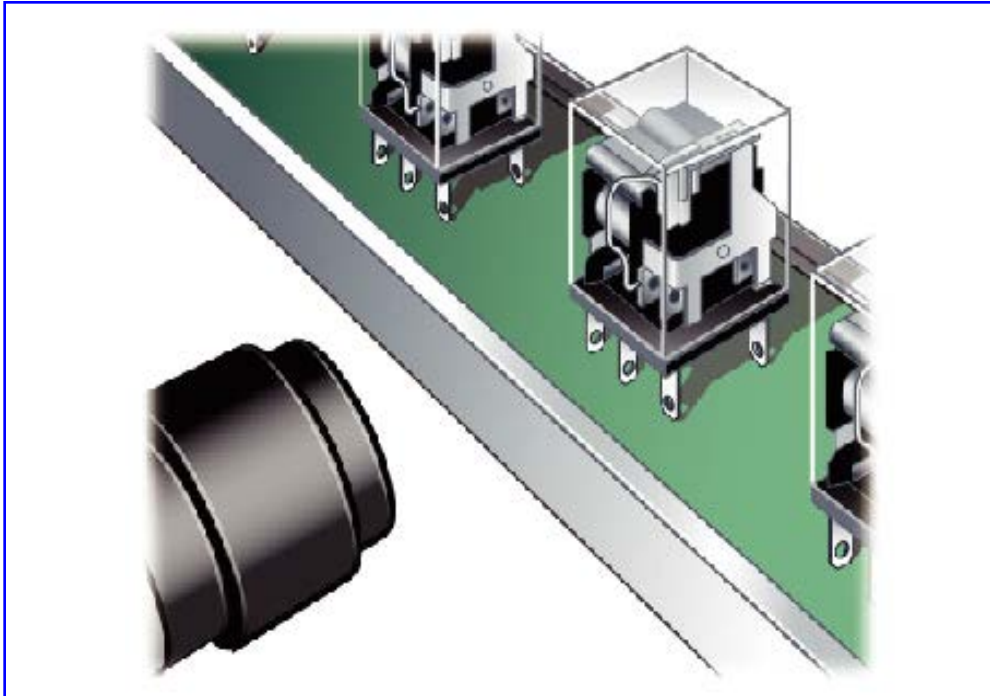
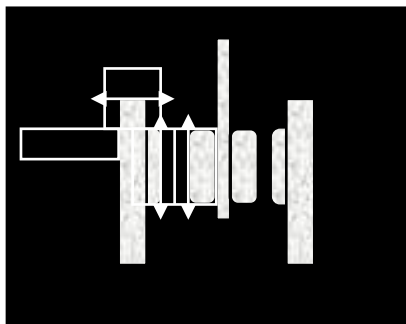


Image illustration



Description

- Measure the relay contact gaps

Merits in purchasing our product

- High-precision inspection using a 4 megapixel camera
- Detect coordinates, distances, and dimensions using the combination of smart edge (line) and geometry calculation without creating expressions
- Simply set the register address of the PLC or device used in the apparatus to obtain inspection results or perform command operations.

Examples of used functions

- Smart edge (line)
- Geometry calculation

Recommended model

PV200

Detection of the positions of lead pitches and holes

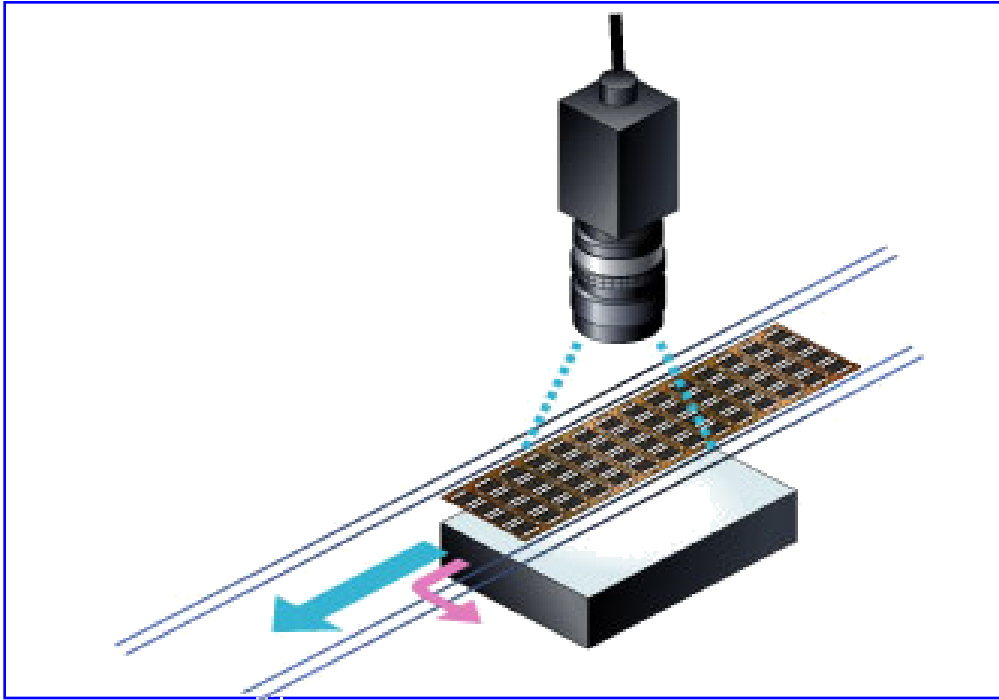
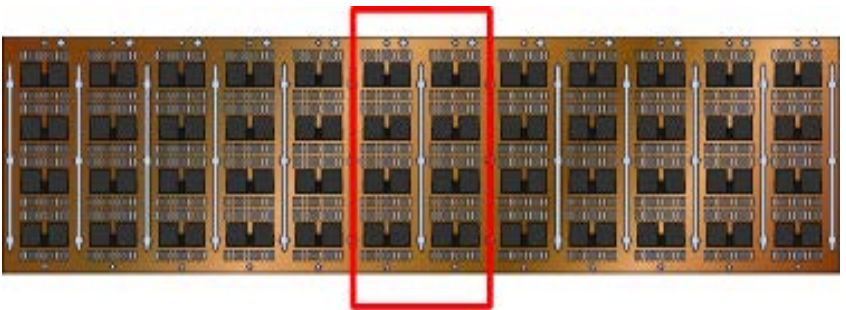


Image illustration



Description

- Accurately detect lead frame lead pitches and component positions

Merits in purchasing our product

- The dedicated connector checker function enables easy configuration of lead pitch and hole position inspections, which helps to reduce man-hours.
- Detect the positions of plated areas through color extraction

Examples of used functions

- Connector binarization window, grayscale window
- Connector grayscale edge
- Color extraction
- Color window

Recommended model

PV200	
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Harness appearance detection

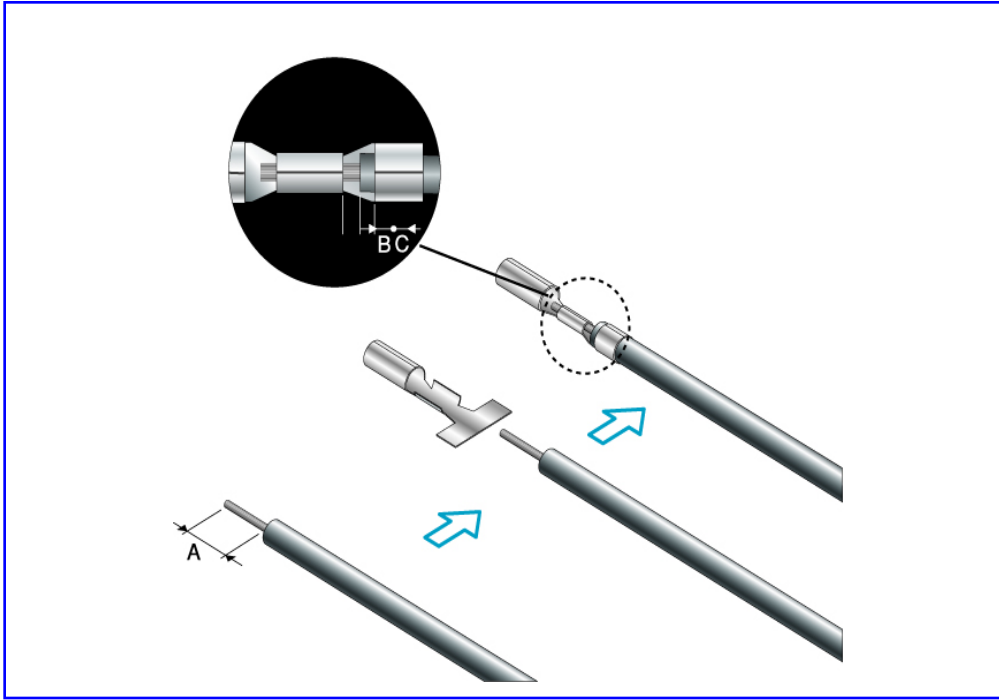
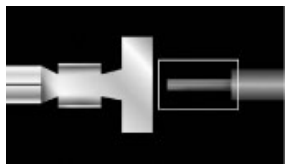
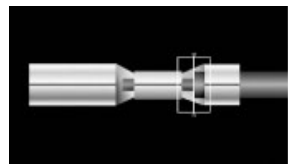


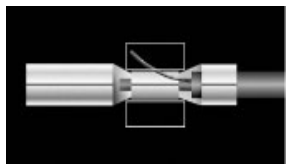
Image illustration



Measure the length of wire before crimping



Inspect the length of each part



Inspect for protruded core wires

Description

- Inspection of harnesses inserted into connectors for protruded lead wires and inspection of crimping condition

Merits in purchasing our product

- The dedicated connector checker function makes limiting the width measurement easy, which greatly reduces man-hours.
- Inspection of improper inclusion of lead wires through color extraction of the lead end
- Measure the depth and width to detect the positions of the lead wire end and insulation and detect the color of the connector insulation

Examples of used functions

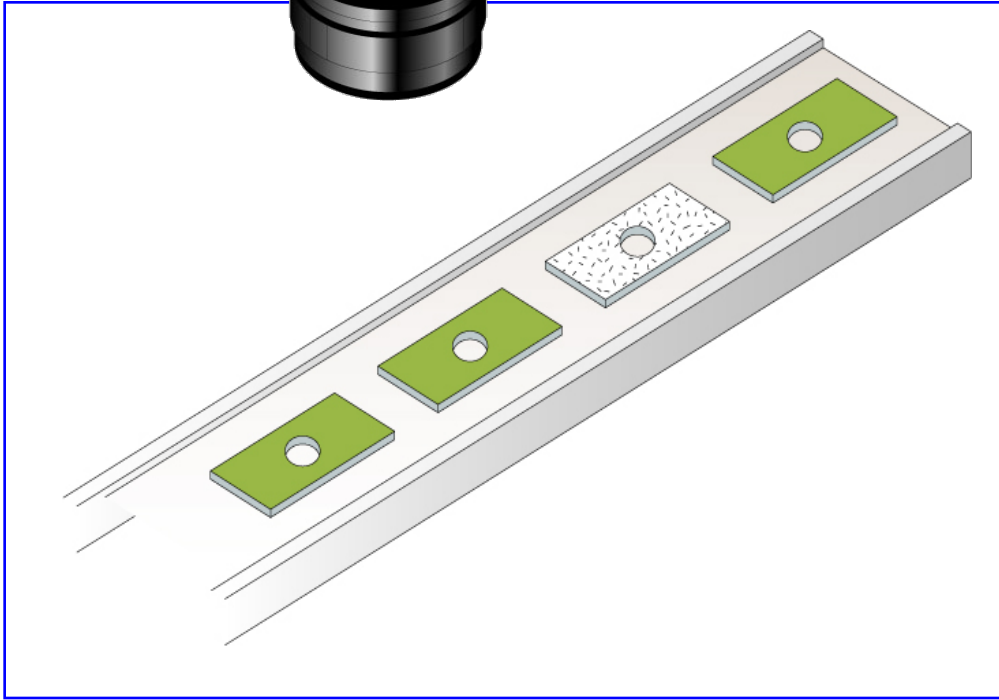
- Color extraction
- Grayscale edge
- Smart edge (line)
- Depth and width function

Depth and width function
 A function that performs line scanning in the inspection window from a given direction and detects positions where at least the specified number dots are lined up.

Recommended model

PV200	
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Front/back determination of components



Description

- Determine the front and back of components

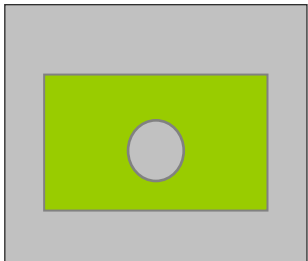
Merits in purchasing our product

- Determine the front and back of components by the subtle color difference using the color extraction function

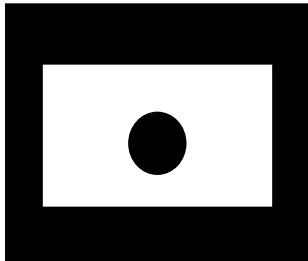
Examples of used functions

- Color extraction
- Color window

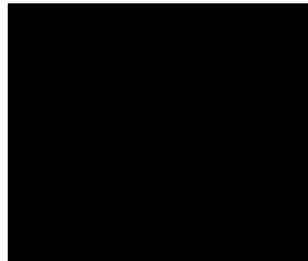
Image illustration



Color image



OK



NG

Recommended model

PV200	
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