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**Matsushita**

**New!**

**Micro-Imagechecker AX30**

*Colour Image Processing Device*



# Colour Image Processing with the AX30

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# Colour Image Processing with the AX30

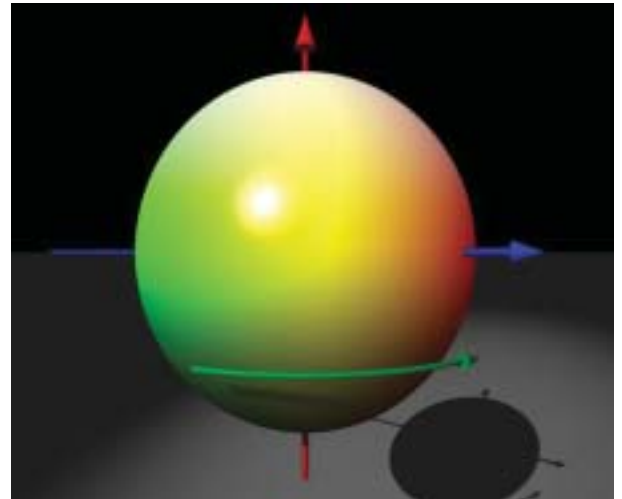
Easy to use, reliable and universal

## Colour processing similar to the human eye

The Micro-Imagechecker AX30 processes colours with the sensitivity approaching that of the human eye. Similar to the human eye it uses the following parameters to evaluate the colours of an object:

- Luminance
- Saturation
- Hue

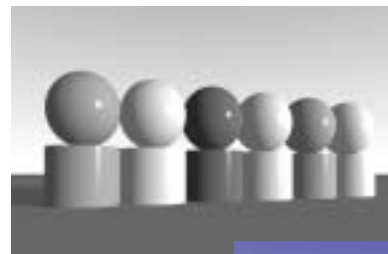
This makes it possible to detect even slight colour differences.



According to the sphere colour model 'LSH' (green arrow) the different colours are arranged on the perimeter. The colours' saturation increases from inside to outside (blue arrow). The Z-axis (red arrow) determines the luminance of the colour.

## Numerous advantages

- Independent evaluation of luminance, saturation and hue
- Low influence by variation in luminance
- Higher recognition certainty
- Reliable detection of objects barely distinguishable in grey colour pictures.



Colours like green, cyan or yellow can hardly be distinguished in grey colour pictures. Only a colour system makes reliable control possible.



# Colour Image Processing with the AX30

Easy to use, reliable and universal

## Simple operation

The user interface was designed for ease of operation. Various functions and quick configuration by a key pad make installation easy – even for unexperienced users.

## In only three steps to the result

### 1. Image capture



### 2. Processing



### 3. Result output



## Operation at a touch of the button

All basic colour parameters, e.g. colour definition, etc., can be set by the keypad's buttons.



Simply select the colour you wish to detect on the screen.



You can now clearly see the selected colour area on the screen.

# Colour Image Processing with the AX30

Easy to use, reliable and universal

## User-friendly

From installation to documentation the AX30 supports the user in many various ways.

## Quick setup

Structured menus and the clear status display of each object checked allow you to set all necessary parameters quickly.



- Operating system resemble the 'look and feel' of Windows applications for familiar usability
- Excellent readability (also with LCD monitors) due to 18-dot fonts
- Clear colour display for exact judgement of the camera image
- Easy-to-see overall pass/fail result display
- Detailed status display for specific process analysis

- Semitransparent menus allow control of the camera image at any time.



## Clear documentation

The documentation of settings and measurements is very important in the field of quality assurance. AX30 offers direct measurement output on PC or PLCs as well as the storage of images and projects on normal CompactFlash™ cards\*.



With a single touch screenshots can be made.

CompactFlash™ card\* stores images, projects and system settings. The 512MB card can store more than 500 images or thousands of projects.



\* CompactFlash™ is a registered trademark of Sun Disk Inc., US.



# Colour Image Processing with the AX30

Easy to use, reliable and universal

## Simple Support

Regarding the detection of production errors the Imagechecker AX30 supports the user in various ways, e.g. images can be saved in real-time and errors can be documented without stopping production. Numerous status reports allow for a detailed overview of the current checking.



### Large image memory

The keypad allows all stored images to be displayed easily. Due to the real-time clock the images can be easily traced to production.



### Bilingual software

Easily switch between German and English. Further languages are in preparation.



### Access by password

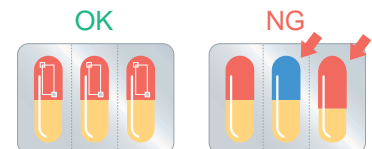
You can define a password to control access rights.

## Universal checking possibilities

Due to its various functions, the AX30 is suitable for almost all visual inspection applications:

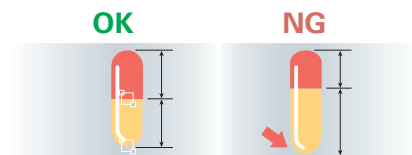
### Area Measurement

Measures the area of the specified region to detect foreign objects, do presence checking, or test whether the LED lights up, and more.



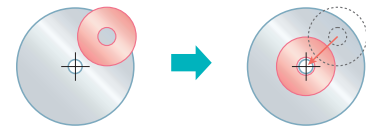
### Size Measurement

Measures the dimensions of the specified width, hole diameter, etc.



### Position Detection

Measures position relative to a specified feature-extraction reference center, detects angles and finds misalignments.



### Count

Counts specified points (feature extraction), and checks for missing elements.



### 360° Contour Matching

Detects contours in the current camera image. Compared to simple matching methods, the contour matching works much more stably. As a result it shows the rotational angle and the correlation of the found object with the given contour.



# Colour Image Processing with the AX30

Easy to use, reliable and universal

## Application examples

Check for erroneous insertion of condiments in food packaging



Check for wrong colours in cosmetics, etc.



Check for wrong colours/erroneous insertion of application plugs



Sort products by colour



Check for erroneous closure of plastic bottle caps



Positioning control of labels



Assembly control of coloured parts



Packaging control, e.g. tissues



## Complete lineup of peripherals



Standard internal Ethernet interface. High-speed interface with AXTOOL makes backing up images and product type data a snap.



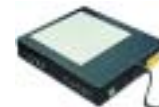
Supports max. 512MB CompactFlash™ card\* Save all that configuration data, image data and display-screen data.



Easy configuration with a handy keypad.



RS232C port makes communicating with PLCs and other external devices a snap. Program-less connection via our PLC protocol as well as PLCs of other companies.



Supports flashlight. Large range of lights and objectives available.



Supports dedicated 6.5-inch colour LCD VGA monitor.



Connects up to two colour cameras.

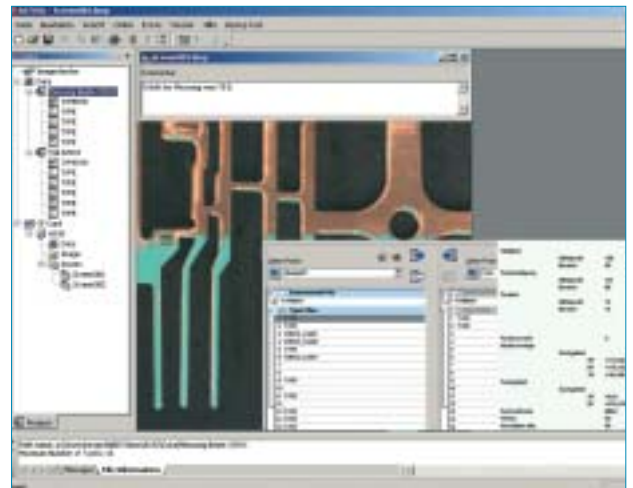
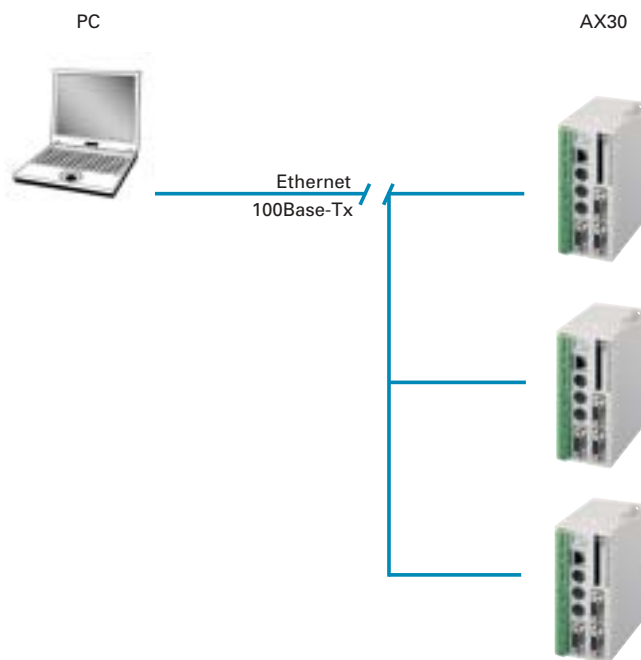
\* CompactFlash™ is a registered trademark of Sun Disk Inc., US.

# Colour Image Processing with the AX30

Easy to use, reliable and universal

## Project management software AXTOOL

The new program AXTOOL administrates projects and image data of all imagecheckers, whether they are connected via Ethernet interface or saved on memory cards or hard disk.



**By using AXTOOL you can:**

- Copy/move/delete images and set data
- Save and print images on a PC
- Check the configuration of all projects and save as Excel-compatible files
- Backup and restore all AX30 data

## Space-saving installation and easy maintenance

Main unit and LCD-monitor can be compactly mounted. The ability to make individual replacements in the event of problems saves time and minimizes cost.





# Colour Image Processing with the AX30

## Technical data

### Main unit

<b>Resolution:</b>	512x480 pixels (horizontal)
<b>Colour processing:</b>	2x8 colours
<b>Interfaces:</b>	
<b>Serial:</b>	COM port: RS232C (max. speed 115.200 bps)
<b>Parallel input:</b>	13-point input, 12 to 24VDC bi-directional input (NPN/PNP) photo-coupler
<b>Parallel output:</b>	14-point output, 12 to 24VDC photo-coupler output (NPN/PNP)
<b>Ethernet:</b>	100Base-Tx, 10Base-T for project management software AXTOOL
<b>CompactFlash™*:</b>	Memory card; type I; max. 512MB saves project data, images, screen shots, system configurations, etc.
<b>No. of cameras connectable:</b>	Max. 2
<b>Visualisation:</b>	1 colour-VGA connection
<b>Rated voltage:</b>	24VDC
<b>Rated current consumption:</b>	< 0.9A
<b>Operating temperature range:</b>	0 to 50°C (no frosting or condensation)
<b>Weight:</b>	Approx. 450g

### Camera

<b>CCD sensor:</b>	1/3" CCD sensor, 659x494 square pixels
<b>Lens mount:</b>	C mount
<b>Scanning times:</b>	1/30s, 1/100s, 1/250s, 1/500s, 1/1.000s, 1/2.000s, 1/4.000s, 1/10.000s
<b>Rated voltage/Current consump.:</b>	12VDC / 0.13A supplied from controller
<b>Operating temperature:</b>	Guaranteed performance range 0 to 40°C Allowed operating temperature range: 0 to 50°C (no frosting, no condensation)
<b>Vibration resistance:</b>	10 to 55Hz; 1 sweep/min; vibration width 1.2mm; 30min each in X,Y,Z directions
<b>Shock resistance:</b>	700m/s <sup>2</sup> ; 3 times each in X,Y,Z directions
<b>Weight:</b>	Approx. 70g (excluding camera cable, lens and camera mounting brackets)

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# Colour Image Processing with the AX30

## Technical Data

### Software

<b>No. of projects:</b>	16
<b>Inspection functions:</b>	
<b>Position adjustment:</b>	2x1 rotational position adjustment function center/contour matching (360°), center/edge detection
<b>Area measurement:</b>	2x15 checkers for area measurement Shapes: rectangle, polygon, ellipse, mask shape
<b>Size measurement:</b>	2x15 checkers for edge-to-edge distance measurement Shapes: rectangle/line
<b>Count:</b>	2x15 checkers for count the number of objects Shapes: rectangle, polygon, ellipse, mask shape
<b>Position detection (center):</b>	2x15 checkers to determine the center Shapes: rectangle, polygon, ellipse, mask shape
<b>Position detection (contour)</b>	2x1 checker to determine center and angle of partly hidden objects Shape: rectangle
<b>Judgement output:</b>	16 registers 8 free definable outputs
<b>Image storage:</b>	2x16 images Possible to store results of each judgement and formula-based NG images, display of real-time saved
<b>Password:</b>	Password function for going to setup mode
<b>Real-time clock:</b>	powered by battery (when power is off)

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