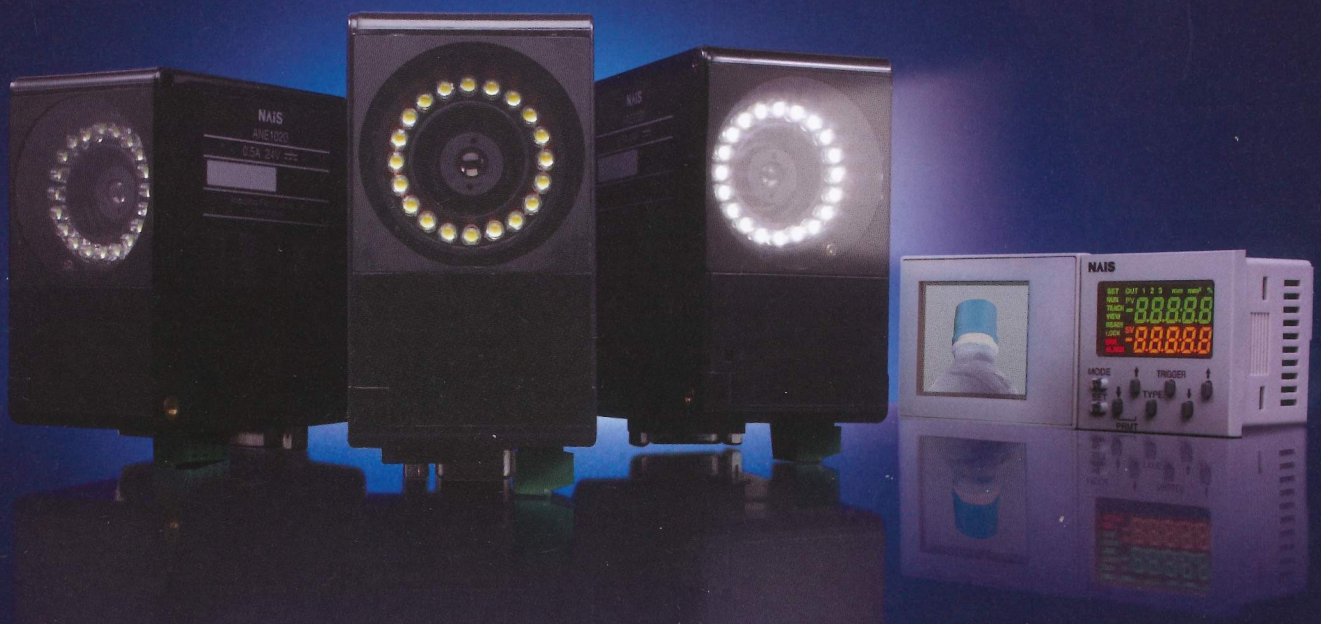
NAiS

LightPix
AE10

A simple and easy-to-use vision system!



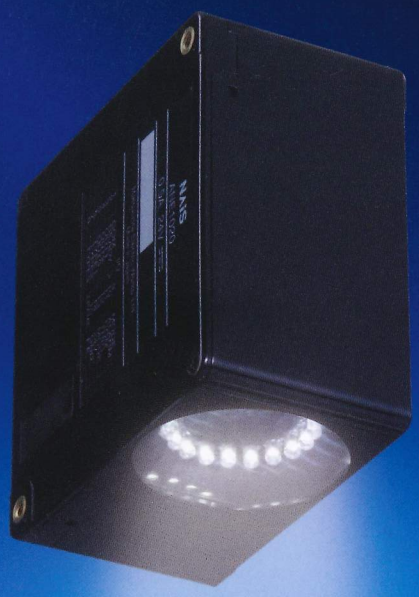
LightPix
ARCT1B225E-1 '04.5

New

http://www.nais-e.com/vision/

Focused on market needs.

Cultivated to the highest standards, Matsushita Electric Works' image sensing process technology is at work in systems, covering every aspect. Built in to this single unit are all the functions of illumination, image capturing (camera), and processing (CPU). It is nothing less than a totally new category of product that is easily incorporated into existing systems to fulfill long-awaited user needs. Perfect for simple inspection, LightPix establishes a new standard in the inspection process.



Easy installation

Since it measures area, it is easier to install than photo-sensor-based devices that measure points. Installation is also easier because LightPix is a single unit and because distance-to-target and visual field are fixed for each different LightPix model.

Easy settings

LightPix functions have been designed to be simple so settings are simple, too. Use the switch on the operation unit to easily make settings, according to application, while viewing the screen on the finder unit.

Stable detection

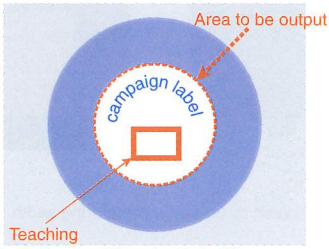
As opposed to point measurement, LightPix ultilizes a 2-dimensional image capturing element. Since surface is measured, inspection targets over a broader area can be measured, which ensures stable detection.

Functions

Color Extraction Type

Area measurement

Registers the color of the object, and detects its area value.

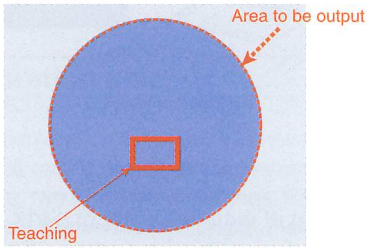


Object: A cap of the plastic bottle
Inspection: Presence/absence of the campain label

1. Capture the object.
2. Register the color of the campain labe. (Teaching)
3. Set the upper/lower limits (mm^2) for the registered color area.
4. The detected area value of the registeed color is output (via RS-485).

Color discrimination

Discriminates which color is closest to the registered color (up to 7 colors.)



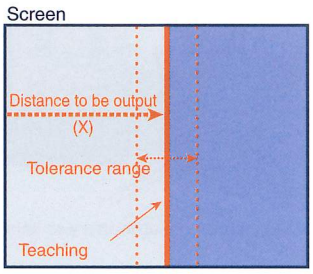
Object: A cap of the plastic bottle
Inspection: Color discrimination of the cap

1. Capture the object.
2. Register the color of the cap in No1 to 7. (Teaching)
3. Set the upper/lower limits (mm^2) for the registered color area.
4. The detected area value of the registeed color is output (via RS-485).
   * Registered color (No.1 to 7) is output with the 3-bit parallel output.

Edge Detection Type

Edge detection

Detects the edge position of the object.

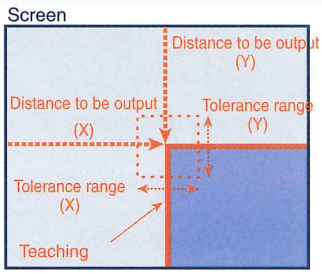


Object: A printed board
Inspection: Position detection of the printed boad in X direction

1. Capture the object.
2. Register the position of the printed boad. (Teaching)
3. Set the tolerance range (mm) for the registered position.
4. The detected edge position is output (via RS-485).

Apex detection

Detects the apex position of the object.



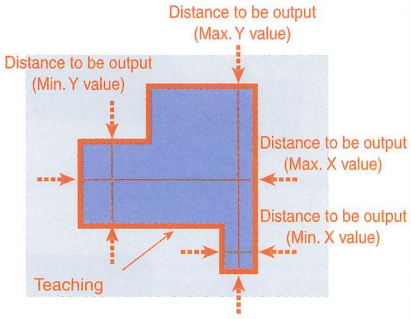
Object: A printed board
Inspection: Apex position detection of the printed boad

1. Capture the object.
2. Register the apex position of the printed boad. (Teaching)
3. Set the tolerance range (mm) for the registered apex position.
4. The detected apex position is output (via RS-485).

Size Measuring Type

Size measurement

Detects the size (max. and min.) of the object.



Object: A part
Inspection: Max. and min. size measurement of the part

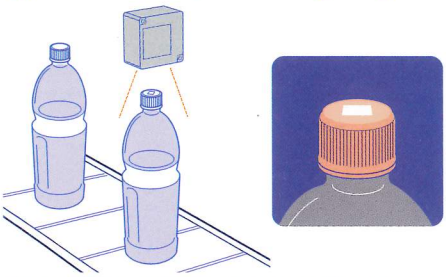
1. Capture the object.
2. Set the measuring direction.
3. Set the minimum size to be detected of the object.
4. Register the base size of the part. (Teaching)
5. Set the tolerance range (mm) for the registered size.
6. The detected size is output (via RS-485).

Applications

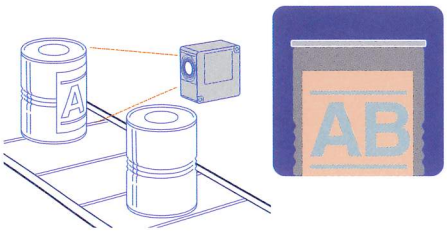
Light Pix AE10

Color Extraction Type

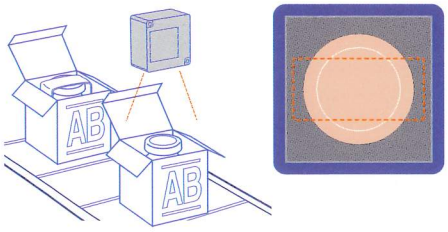
Detection of presence/absence, type difference, and foreign objects



Presence/absence inspection of promotional stickers



Label positional deviation and label presence/absence check

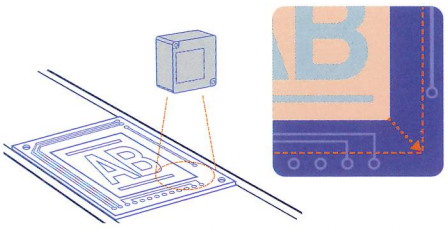


Presence/absence inspection of users manuals

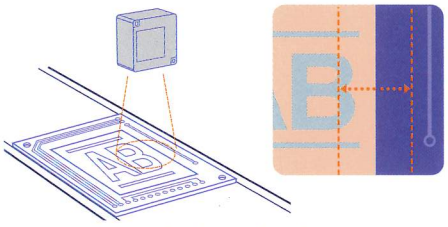
- Distinguishing color of LED parts
- Distinguishing color and detecting presence/absence of medicines
- Presence/absence inspection of promotional stickers
- Distinguishing color of cosmetics
- Detection of label presence/absence check
- Distinguishing color of wrapping paper
- Distinguishing color of foods
- Distinguishing polarity of electronic parts
- Presence/absence inspection of users manuals

Edge Detection Type

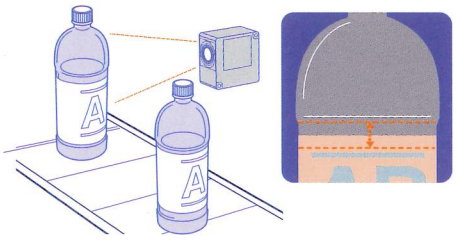
Positioning



Alignment inspection of substrates and labels



Stop position inspection of parts, substrates and labels

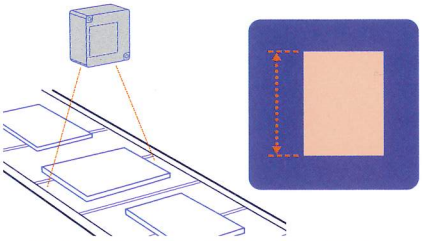


Detection of label position

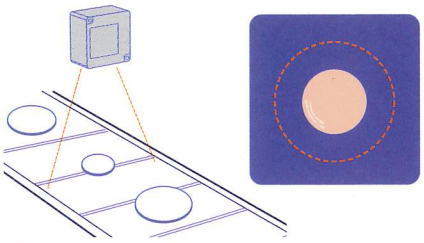
- Detection of substrate position
- Detection of part position
- Detection of sheet position
- Position detection for printing
- Detection of label position

Size Measuring Type

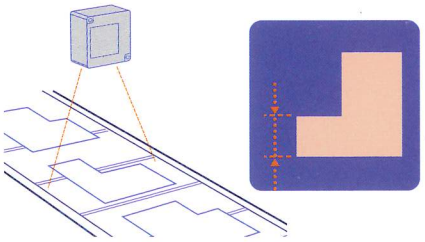
Product type discrimination and direction detection



Distinguish direction by measuring width



Detect presence of wrong type among parts

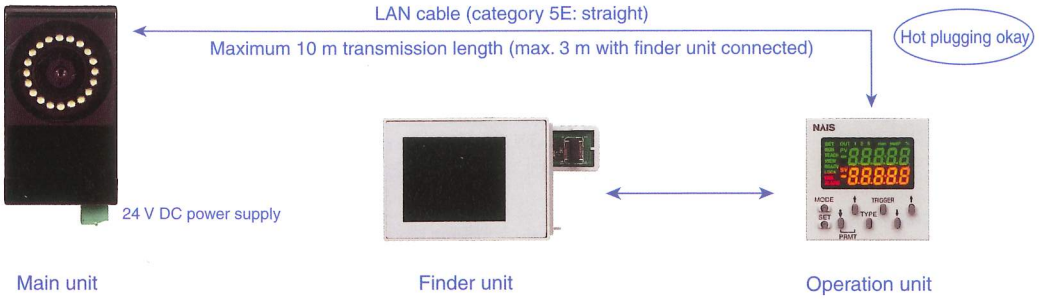


Detection of shape

- Inspection of outer diameter of parts
- Distinguishing of direction using width measurement
- Distinguishing of direction of parts
- Detection of part thickness
- Detection for wrong type among parts
- Detection of blade width
- Detection of shape

System Configuration

System Configuration Diagram



Main unit

First in its class

A high-performance, 2-dimensional image capturing element makes both in a color image and binary image inspection possible with this single unit.

Finder unit

First in its class

Easy viewing and low cost are both realized by using a 2-inch color LCD. Accurate and reassuring, settings can be made while viewing the captured images.

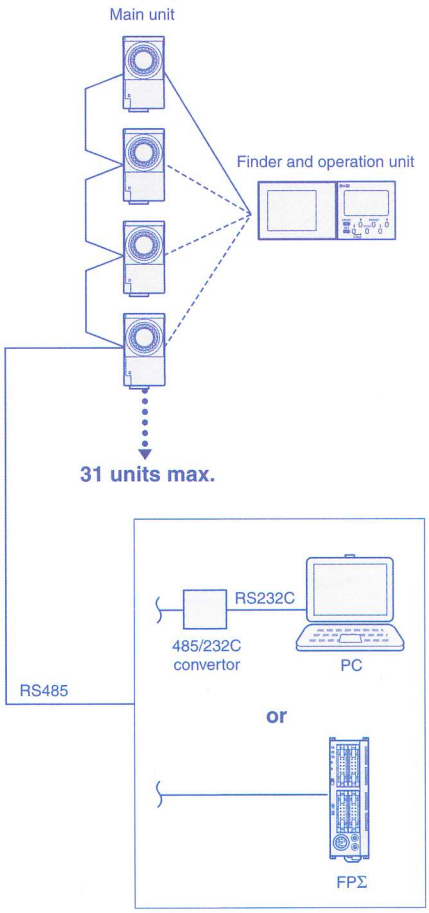
Operation unit

First in its class

Measurement results can be viewed at a glance on the display which features three colors, two levels, and five lines. Easy viewing is attained with bright, 7-segment LEDs. The unit is compact, being equivalent in size to our 48-size FP-e. It fits nicely into control panels.

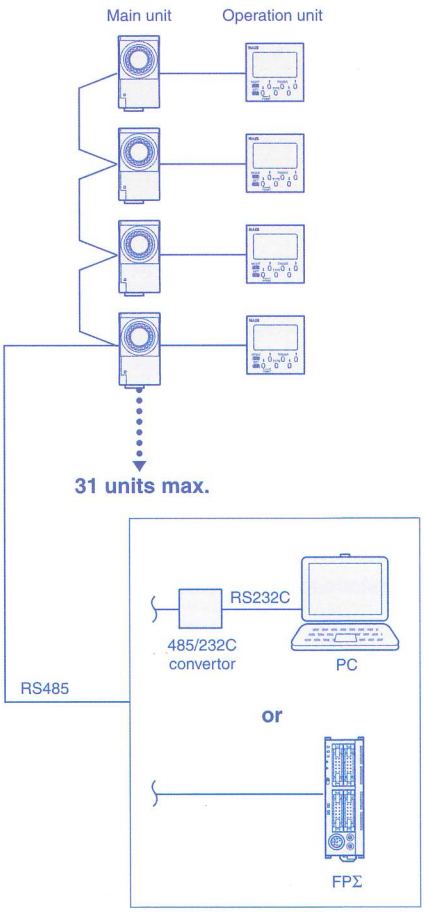
System configuration example 1

(When connected only for making settings)



System configuration example 2

(When continually monitoring the measurement results)



Operation, Settings, and Dimensions

Light Pix AE10

Operation and Settings

① MODE:
Normal press: switches operation modes
3-second press: Teaching Mode

② SET:
Normal press: Upper/Lower Limit Value Input Mode
3-second press: Device Setting Mode

③ PRMT: Parameter button

④ TYPE: Object type switching button

⑤ TRIGGER: Trigger button

⑥ UP/DOWN: Setting value increase/decrease button

Easy 4 step setting

Teaching method

1. Press MODE button at least three seconds to enter Teaching Mode.
2. Capture image of object that will be the basic target.
3. Adjust the exposure time and press the TRIGGER button. (complete teaching)
4. Press the MODE button to return to the Run or Run-view Mode. (leave Teaching Mode)

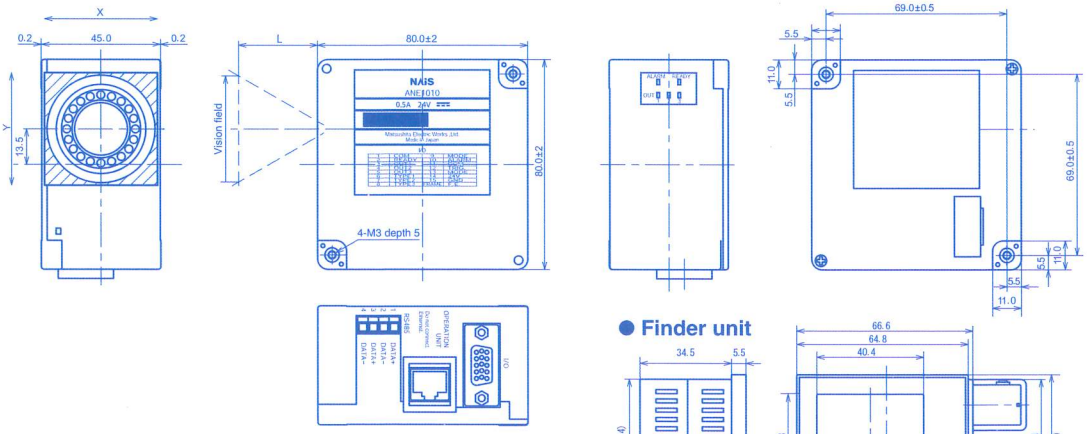
Setting method for output conditions

1. Press SET button to enter the Upper/Lower Limit Value Input Mode.
2. Press the PRMT (parameter) button to select the upper limit or lower limit value.
3. ↑↓ Set the value by pressing the up and down arrow keys.
4. Press the SET button to leave the Upper Limit Value Input Mode.

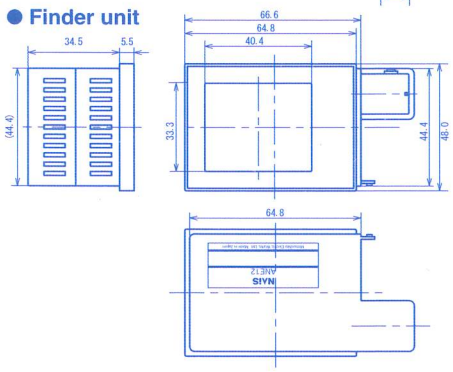
Dimensions

● Main unit

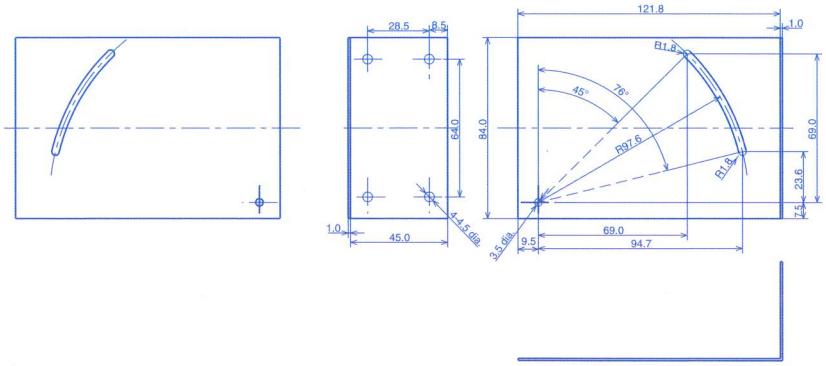
Part No.	L (mm)	Vision field (Xmm × Ymm)
ANE1010	45	10 × 8
ANE1011		
ANE1012		
ANE1020	105	25 × 20
ANE1021		
ANE1022		
ANE1030	50	50 × 40
ANE1031		
ANE1032		
ANE1040	120	100 × 80
ANE1041		
ANE1042		



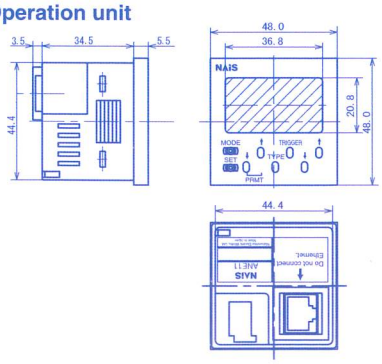
● Finder unit



● Installation fitting packed with main unit



● Operation unit



Part Numbers and Specifications

Product Types

● System products

Name	Part No.	Content
Main unit	ANE1010 ANE1011 ANE1012	Measurement range: 10 × 8 mm Installation distance: 45 mm (Accessories: installation fitting, mini D-sub connector)
	ANE1020 ANE1021 ANE1022	Measurement range: 25 × 20 mm Installation distance: 105 mm (Accessories: installation fitting, mini D-sub connector)
	ANE1030 ANE1031 ANE1032	Measurement range: 50 × 40 mm Installation distance: 50 mm (Accessories: installation fitting, mini D-sub connector)
	ANE1040 ANE1041 ANE1042	Measurement range: 100 × 80 mm Installation distance: 120 mm (Accessories: installation fitting, mini D-sub connector)
Operation unit	ANE11	Setting device for input/numerical value monitor (Accessory: installation frame)
Finder unit	ANE12	2-inch color LCD display (Accessory: installation frame)

Note: The number at the end of the main unit part number is the application number.

General Specifications

● General Specifications

Item	Specification
Rated operating voltage	24 V DC
Operating voltage range	21.6 to 26.4 V DC (including ripples)
Rated current consumption	0.5 A max.
Ambient temperature in use	0 to 40°C
Storage ambient temperature	–20 to +60°C (no freezing or condensation)
Ambient humidity (in use and storage)	35 to 75% RH (no freezing or condensation)
Insulation resistance	100 MΩ max., 500 V DC**
Breakdown voltage	500 V AC/1 min. (600 V AC/1 min.)**
Noise immunity	1000 V (p-p), pulse width 50 ns/1 μs (using noise simulator method)
Weight	Main unit: approx. 300 g
	Operation unit: approx 200 g
	Finder unit: approx. 200 g
Vibration resistance	10 to 55 Hz, 1 cycle/1 min. Double amplitude of 1.5 mm, 30 min. each in X, Y and Z directions
Shock resistance	196 m/s^2, 5 times each in X, Y and Z directions

** Evaluation was carried out with the primary side power supply varistor and capacitor removed from the internal circuit of the device.

Function Specifications

● Main unit

Item			Specifications			
Model			ANE101*	ANE102*	ANE103*	ANE104*
Installation distance (mm)			45±2.5	105±5.5	50±5.0	120±12.0
Measurement range (mm)			10×8	25×20	50×40	100×80
Resolution (mm)			0.1		0.2	0.5
Photo acceptance unit			Color, C-MOS			
Valid pixels			352 horizontal x 288 vertical pixels (100,000 pixels)			
Image capture light source			White LED			
Exposure time			Shutter timing and interlock			
Input and output	Serial		RS-485 port			
		Transmission speed	9,600/14,400/19,200/38,400/57,600 bps			
		Transmission direction	Half duplex			
		Synchronization system	Asynchronous			
		Transmission code	ASCII			
		Data length	8 bits			
		Parity check	None			
		Stop bit length	1 bit			
		BCC	Available			
		Delimiter	CR (0DH)			
		Flow control	No			
	Parallel		Mini D-sub, 15 pins (shared power supply)			
		Input	Photo coupler input, 6 points Trigger: 1 bit; mode switch: 2 bits; type switch: 3 bits			
		Output	PhotoMOS output, 5 points Ready: 1 bit; Alarm: 1 bit; decision output: 3 bits			
Dedicated device port			Connection port for operation unit			

● Operation unit

Item	Specification
Display	7 segment, 3 colors
No. of switches	8
Dedicated device port	Connection port for main unit
Content of input	• Type switching (types 1 to 7) • Mode switching (Teaching/Run/Run-view) • Trigger input • Permissible zone • Device setting (Transmission speed/device No./output delay/load delay/trigger switching/start-up type/function switching/backlight off time/auto saving/initialization/lamp on/off switching)
Display content	• Judgement result • Calculation result • READY • Alarm

● Finder unit

Item	Specification
Display	2-inch color LCD
Backlight	White LED
Backlight life	40,000 h (at 25°C)
Operation	Available only with the operation unit

● Application

Item			Specification
Part number			ANE***0
	Function name		Color extraction
	Color resolution		12 colors (Use the Gretag Macbeth Color Rendition Chart for confirmation.)
	Function		① Colored area (Detects area of registered color on object.) ② Color discrimination (Distinguishes which color is closest to registered color.) [These two modes switched in device setting mode. Simultaneous use is not possible.]
	No. of registered items		7 types
	Color registration method		Teaching
	Input value		Upper and lower limit values for area judgment
	Serial	Input	• Trigger input • Type switching (types 1 to 7) • Function switching • Upper/lower limit values • Save
		Output	• Judgement result • Computation result (numerical) • Error output
	Parallel	Input	• Trigger input • Type switching (types 1 to 7) • Mode switching (Teaching/Run/Run-view)
		Output	• Judgement result (OK/NG) • READY • Alarm

Part number			ANE***1
	Function name		Edge detection
	Function		① Edge detection ② Apex detection [These two modes switched in device setting mode. Simultaneous use is not possible.]
	No. of registered items		7 types
	Object registration method		Teaching
	Input value		Permissible zone to determine edge position or apex coordinates.
	Serial	Input	• Trigger input • Type switching (types 1 to 7) • Function switching • Permissible values • Save
		Output	• Decision result • Computation result (numerical) • Error output
	Parallel	Input	• Trigger input • Type switching (types 1 to 7) • Mode switching (Teaching/Run/Run-view)
		Output	• Decision result (OK/NG) • READY • Alarm

Part number			ANE***2
	Function name		Width measurement
	Function		① Discriminates and judges max. and min. vertical width, and max. and min. horizontal width.
	No. of registered items		7 types
	Object registration method		Teaching
	Input value		Permissible zone to determine max. and min. width.
	Serial	Input	• Trigger input • Type switching (types 1 to 7) • Function switching • Permissible values • Save
		Output	• Decision result • Computation result (numerical) • Error output
	Parallel	Input	• Trigger input • Type switching (types 1 to 7) • Mode switching (Teaching/Run/Run-view)
		Output	• Decision result (OK/NG) • READY • Alarm

Related products

Micro-Imagechecker
A210/A110

Micro-Imagechecker
A230

Micro-Imagechecker
AX30

Micro-Imagechecker
AX40

These materials are printed on ECF pulp.
These materials are printed with earth-friendly vegetable-based (soybean oil) ink.

PRINTED WITH SOY INK

Please contact .....

Matsushita Electric Works, Ltd.

Automation Controls Company

- Head Office: 1048, Kadoma, Kadoma-shi, Osaka 571-8686, Japan
- Telephone: +81-6-6908-1050
- Facsimile: +81-6-6908-5781

ARCT1B225E-1 200405-5YT

Specifications are subject to change without notice.

Printed in Japan.