Panasonic

ideas for life

2D Code Reading Sensor

PD50

High Accuracy, Easy Operation for 2D Code Reading

IMAGE CHECKER 20th

NEW

07/2005

2D Code Reading Sensor

PD50

Combination light/camera/CPU unit with automatic 2D code recognition function

High-speed 360 Rotation and Reverse Rotation Inspections
High accuracy

Red LED guide light enables
Easy installation

Special software enables
Simple setting

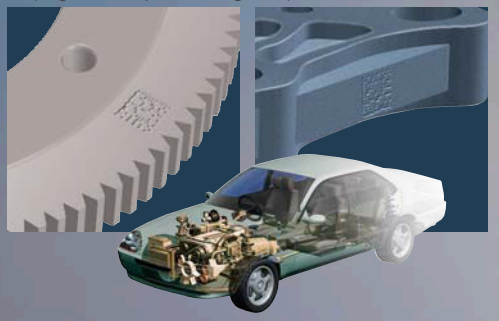
Supported codes


QR code (Model 1 and 2)


Data matrix (ECC200)

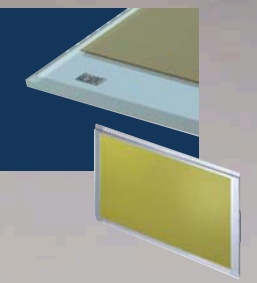
Supports 2D codes indicated on a great variety of applications

- Automotive components (e.g. metal parts, engines)

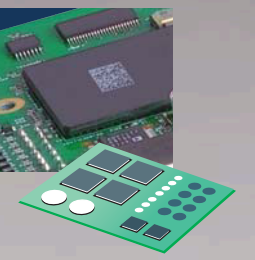


- Automotive components

- ALCD glass



- Printed circuit board assemblies



- Wafers

- Food packages

Printing type (Direct printing)

Laser marking	Glass boards, wafers, printed circuit boards, etc.
Stamping	Metal parts, engines, etc.
Ink jet printing	Automotive components, packages, paper, cardboards, printed circuit boards, etc.

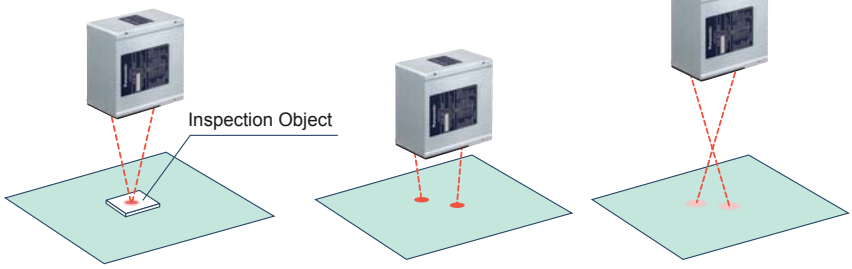
Guide light red LED enables easy fitting and installation

Easy installation

Two red-LED guide lights allow quick installation of the unit in the optimum position.

- When the two lights meet at the object, the unit installation position is correct.
  The light points also meet at the center of the visual field, so the orientation of the camera can also be easily confirmed.

Since the guide light turns on only in the teaching mode, it does not affect actual inspections. It automatically turns off when an actual image is captured even in teaching mode, so it does not affect the captured image.



Suitable Distance and Position

Too Close

Too Far (Blurred)

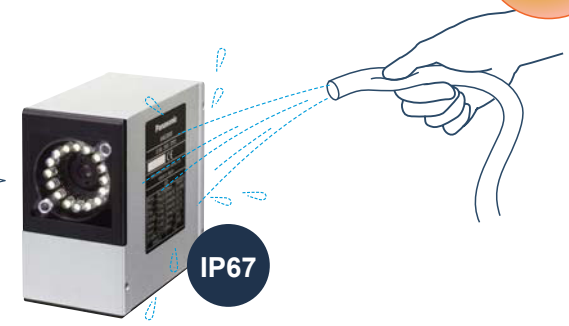
Supports IP67 with its water- and dust-resistant aluminum body

IP67

Supports IP67, so it can be used in environments such as with foodstuff machinery where the entire machinery is washed down.

IP67-rated tough aluminum body

Can be used in food industry equipment, where water may be poured over the unit.
The connectors are also waterproof.
(Except when a USB cable is connected)



IP67 is not intended for use under water or with oil.

High speed reading (approx. 30 ms)

High-speed reading

Reads 2D codes from a full 360° direction regardless of the object's orientation, even if the target code is stained, chipped, tilted, or flipped.

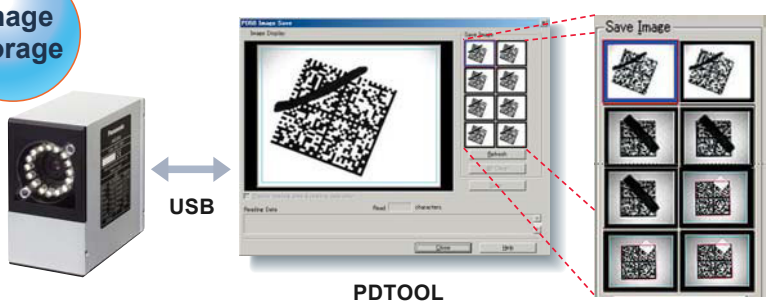
*The total processing time varies with the exposure time and matrix size.

Real-time image storage

Image storage

Can store up to eight color images of rejected (or all) objects. The images can be uploaded to PDTOOL and checked on a PC.

The images can be stored on a disk as bitmaps, which help you make effective quality control documents.



Interface

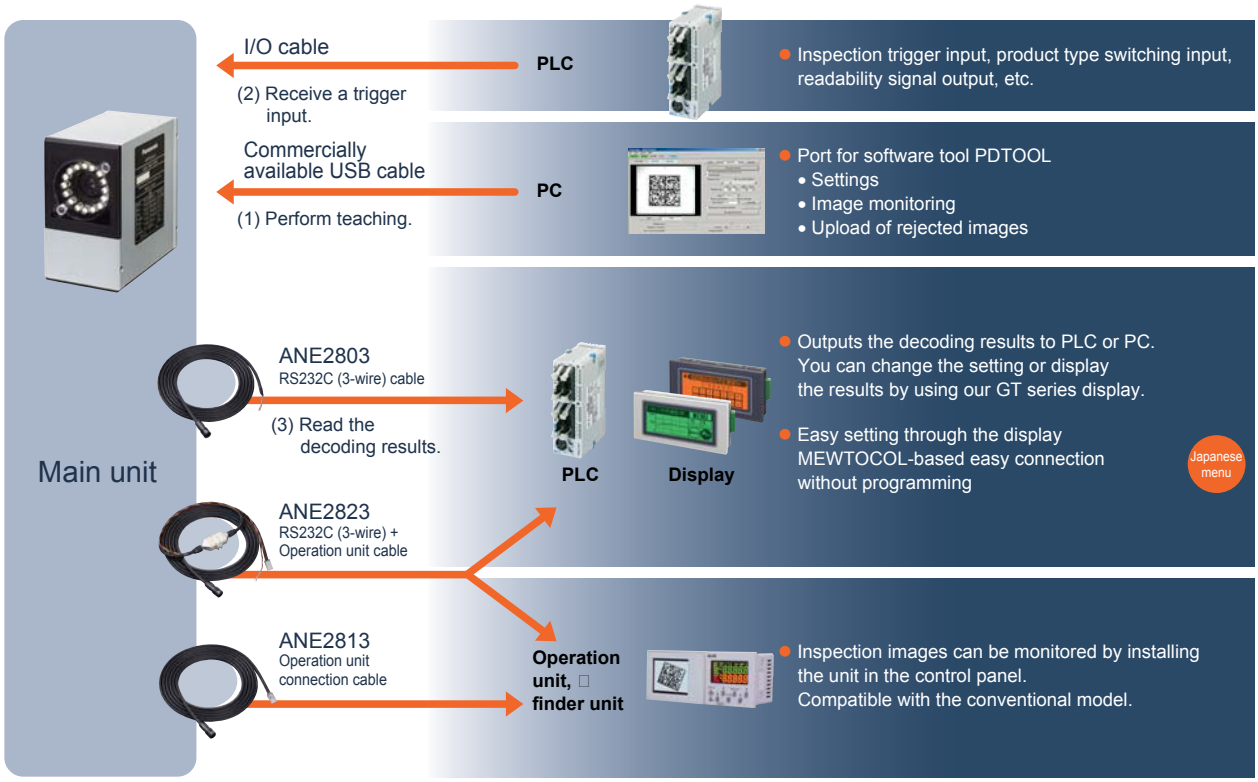


Table of Order Numbers

Name	Part No.	Content
2D code reading sensor PD50	ANPD050-02	Measuring range: 2 × 1.6 mm Installation distance: 15 ± 0.5 mm
	ANPD050-05	Measuring range: 5 × 4 mm Installation distance: 25 ± 1.5 mm
	ANPD050-10	Measuring range: 10 × 8 mm Installation distance: 45 ± 2.5 mm
	ANPD050-15	Measuring range: 15 × 12 mm Installation distance: 60 ± 3.0 mm
	ANPD050-20	Measuring range: 20 × 16 mm Installation distance: 80 ± 4.0 mm
	ANPD050-25	Measuring range: 25 × 20 mm Installation distance: 105 ± 5.5 mm
	ANPD050-30	Measuring range: 30 × 25 mm Installation distance: 55 ± 5.0 mm
Cables	ANE2803	AE20 RS-232C cable, 3 m
	ANE2813	AE20 operation unit connection cable, 3 m
	ANE2823	AE20 RS-232C/Operation unit cable, 3 m

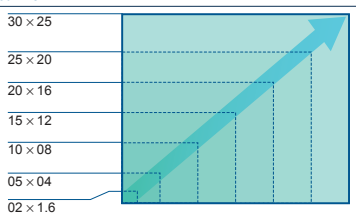
General Specifications

● 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	35 to 85%RH (at 25°C no freezing or condensation)
Storage ambient humidity	35 to 85%RH (at 25°C no freezing or condensation)
Insulation resistance	100 MΩ max. (500 V DC) *1
Breakdown voltage	500 V AC/1 min (600 V AC/1 sec) *1
Noise immunity	1000 V pulse width 50 ns/1 µs (using noise simulator method)
Protective structure	IP67 *2
Weight	Approx: 400 g (Main unit)
Vibration resistance	10 to 55 Hz, 1 sweep/min. Double amplitude of 1.5 mm. 30 min. each in X, Y and Z directions
Shock resistance	196 m/s², 5 times each in X, Y and Z directions

Note *1: Evaluation was carried out with the primary side power supply varistor and capacitor removed from the internal circuit of the device.
Cutoff Current: 10 mA
Note *2 Evaluation was carried out with the USB cable not connected and the waterproof cap in place.
This product conforms to EU EMC standards (EN61000-6-4 and EN61000-6-2) in accordance with EMC Directive 89/336/EEC.

● Visual Field Size (Actual size)



* The size of target 2D codes should be approx. 50% or more of the visual field, including the quiet zone.

Function Specifications

● Main Unit

Item	Specification
Photo acceptance unit	Color C-MOS 330,000 pixels
Valid pixels	352 horizontal x 288 vertical pixels (100,000 pixels)
Image capture light source	White LED
Expected life	Light amount half-life: 30,000 h min. (at 25°C)
	(Conditions) SPEED Internal trigger (during continuous measurement)
Exposure time	Shutter timing and interlock (alteration possible from operation unit: 0.03 to 50 ms)
Visual field marker light source	Red LED
Parallel	Photo coupler input: 5 channels, photoMOS relay output: 5 channels
USB	USB1.1 WindowsXP, 2000, ME, 98 (SE)
Serial	Usage possible with optional RS-232C cable Settings possible up to 57600 bit/s

● Application Software

Item		Specification	
Detection Capability		5 or more pixels per cell	
Total processing time		30 ms to 200 ms	
No. of Registered Items		7 types	
Type Registration Method		Teaching [settings related to codes to be decoded]	
Serial			
	Input	I/O Command	Trigger input, type switching (types 1 to 7)
		Teaching Command	Exposure time setting, and code setting (QR codes, data matrix)
	Output	Readability, readouts, error correction rate, and error output	
Parallel			
	Input	Trigger input, type switching (types 1 to 7) mode switching (teaching/run)	
	Output	Evaluation result (OK/NG), READY, Alarm	

* The total processing time from receiving the trigger input to output varies with the exposure time and matrix size.

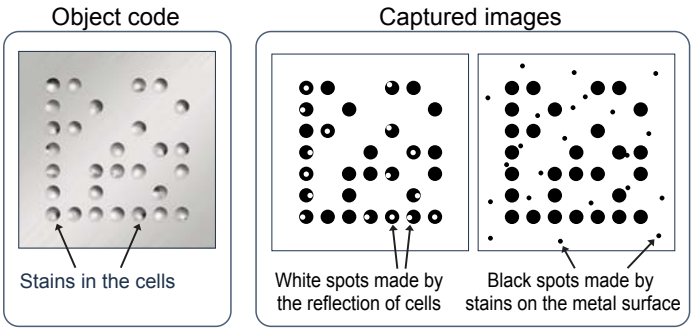
● 2D Code Reading

Item			Specification	
Readable code type	QR code	Model	Model 1 and Model 2	The model, matrix size, and the error correction level are automatically identified.
		Matrix size	Model 1: 21 × 21 cells to 49 × 49 cells (Ver. 1 to 8)	
			Model 2: 21 × 21 cells to 49 × 49 cells (Ver. 1 to 8)	
		Error correction level	L (7%), M (15%), Q (25%), H (30%)	
		Supports black/white reversed codes, horizontally-flipped codes, and dots.		
	Data matrix (ECC200)	Matrix size	Square symbol: 10 × 10 cells to 44 × 44 cells matrix	The matrix size is automatically identified.
			Rectangular symbol: 8 × 18 cells, 8 × 32 cells, 12 × 26 cells, 12 × 36 cells, 16 × 36 cells, 16 × 48 cells	
		Supports black/white reversed codes, horizontally-flipped codes, and dots.		

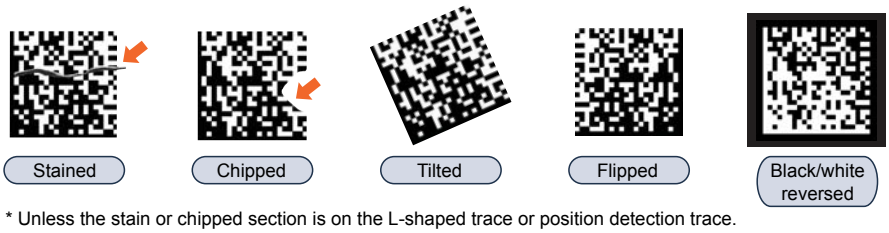
The pretreatment function improves the accuracy of decoding stamped 2D codes

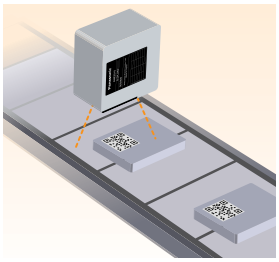
Supports 2D codes stamped on metal surfaces
(even if they are stained, chipped, tilted, flipped, or black/white reversed).

High accuracy



- Minimizes the influence of unevenness of the cells on metal dent measuring (white spots in the black cells captured due to machine oil stains or reflection of the dent's bottom).
- Reliably reads codes without being affected by stains on the metal surface, discoloration caused by oxidization, or uneven color caused by faulty printing.
- Supports reading from an angle.





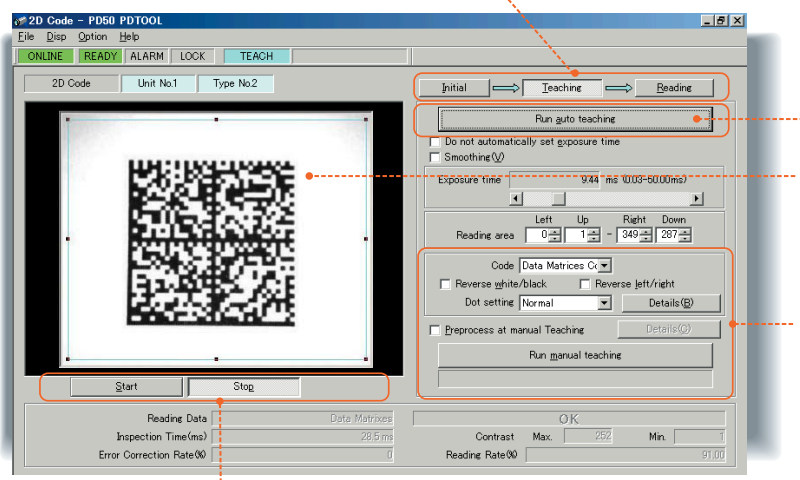
* Unless the stain or chipped section is on the L-shaped trace or position detection trace.

Special software "PDTOOL" enables simple setting

Automatic teaching and other useful functions even allow individuals unaccustomed to 2D codes to perform easy setting operations.

Easy settings

- No problems even if the operator is new to 2D codes and has no knowledge about the code type, model, size, error correction, or optimum exposure time for image capture.
- After setting the inspection area, you can perform teaching with one click using a non-defective workpiece.
  The exposure time and the 2D code type are automatically recognized, eliminating complicated setting process.
- The setting flow indicator shows you what to do next at a glance.



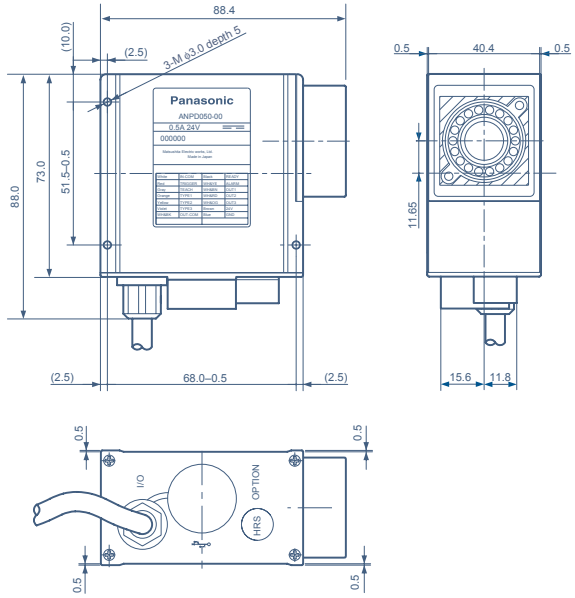
- Just use the mouse to move the inspection area position or change the size.
- The detail setting mode allows code setting, setting for black/white reversed code and horizontally flipped code, etc.
- The code type to be read is indicated.

Download PDTOOL for free from: **www.nais-e.com/vision/**

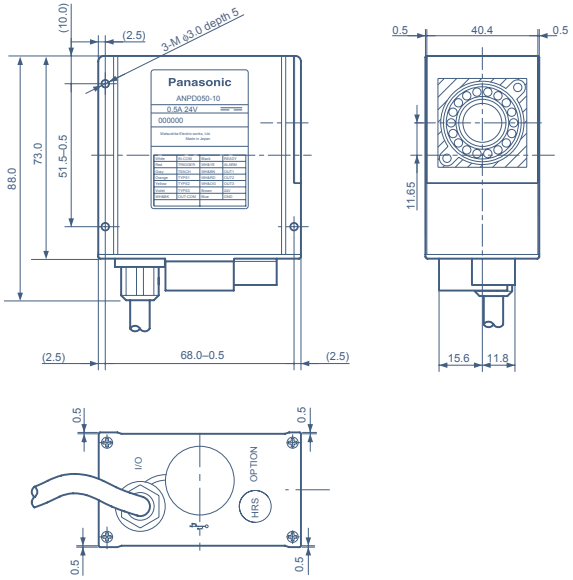
Dimensions (Unit: mm)

- Main Unit

ANPD050-02

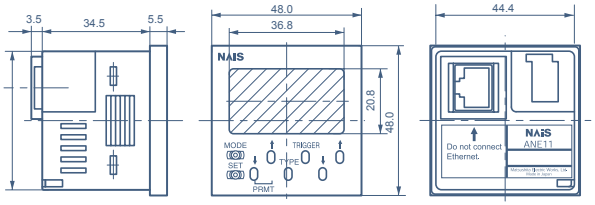


ANPD050-05・10・15・20・25・30



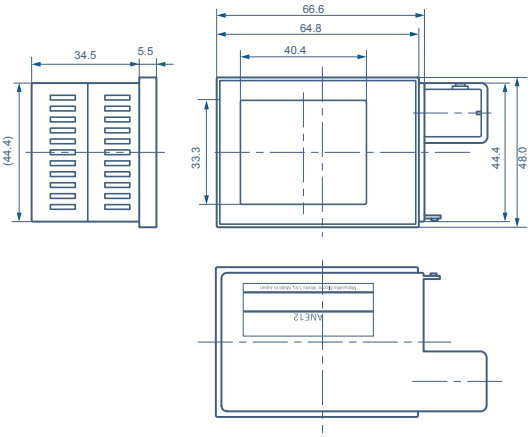
- Operation Unit

ANE11



- Finder Unit

ANE12



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