

Panasonic

2D CODE READER
LP-ABR10 SERIES





1

Lighting

High-brightness LED & lighting variations

2

High resolution

1.2 megapixel image sensor

3

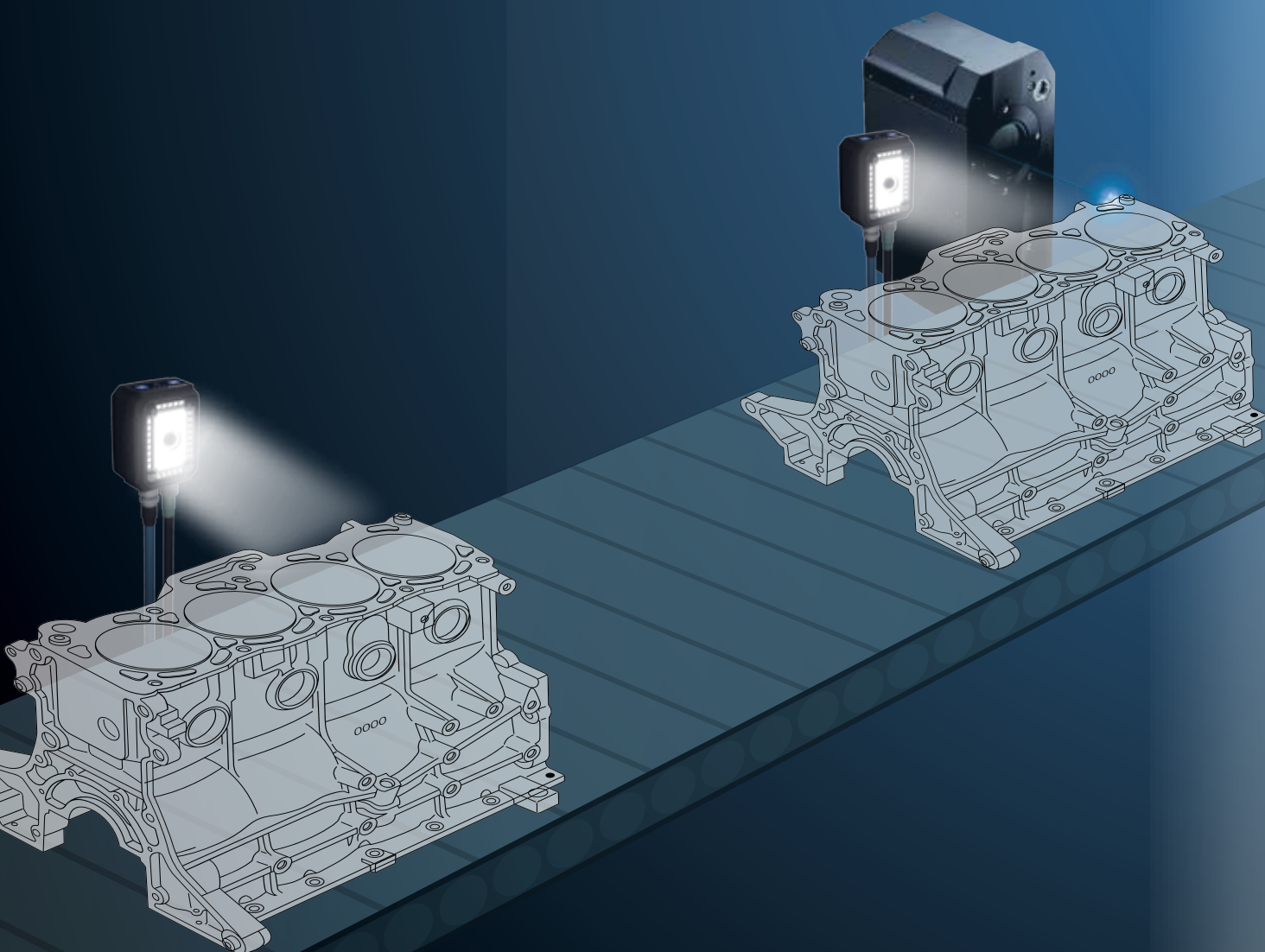
Image processing

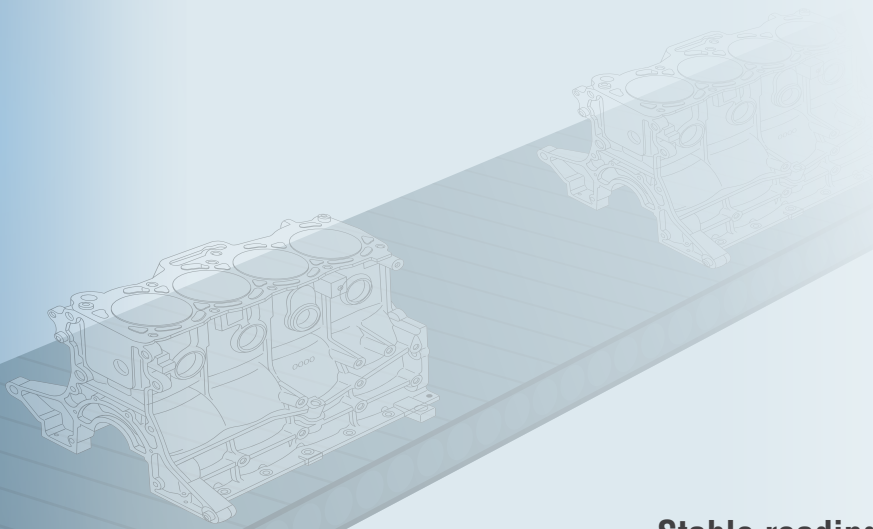
Proprietary algorithm for DPM

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DPM 2D Code Reader

LP-ABR10 SERIES





Stable reading performance backed by advanced features

Code readers used in production lines are required to stably read 2D codes marked on parts of diverse shapes and with various surface conditions.

The 2D Code Reader LP-ABR10 is equipped with three advanced features that essentially improve the reading accuracy and ensure stable reading of 2D codes.

Direct part marking (DPM)

Direct part marking (DPM) is widely used to enhance production management, traceability and quality control. Thus, code readers used for reading 2D codes marked directly on products are gaining importance.

The 2D Code Reader LP-ABR10 offers high performance and accurately reads 2D codes marked by laser markers.

■ Examples of DPM codes



Cylinder block



Camshaft



Connecting rod



Piston ring

1 | Lighting

Lighting variations allow selection of optimal lighting condition.

DPM is a process used to directly mark parts with product information.

The DPM process adds codes directly on parts made of metals, resins or other materials. Unlike codes printed on paper or labels, DPM codes can be affected by the part shape and surface condition. Therefore, the ordinary lighting system of a code reader may not be able to read DPM codes properly in some cases.

The 2D Code Reader **LP-ABR10** is built in with a diffused lighting block (center) and four direct lighting blocks (top, bottom, left and right). Each of these lighting blocks can be independently turned on/off, and the brightness can be adjusted in 100 steps. If the optimal lighting conditions are set, the 2D Code Reader

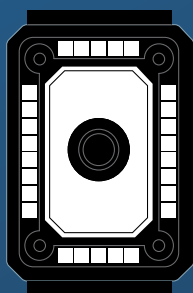
LP-ABR10 reads DPM codes accurately.



High-brightness
white color LED

All blocks ON

(Direct lighting + diffuse lighting)

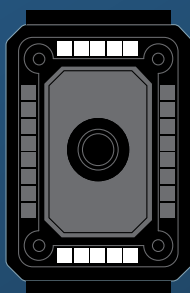


Suitable for
reading from a
distance



Two blocks ON

(Direct lighting)

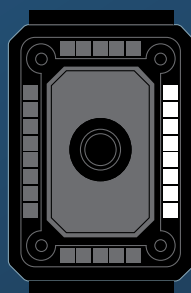


Suitable for
cylindrical
workpieces



One block ON

(Direct lighting)

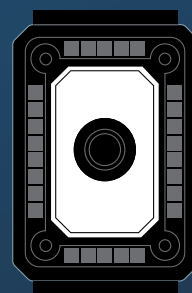


Suitable for
workpieces with
a step



One block ON

(Diffuse lighting)

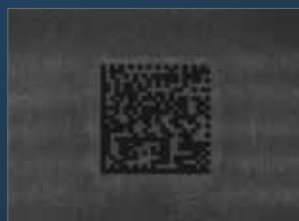


Suitable for
transparent
workpieces



Accurately reads DPM codes on workpieces of various types

■ Problems with ordinary lighting



Insufficient light intensity
(too dark)



Glare due to reflection



Shadow of workpiece



Reflection of light sources

2 | High resolution

1.2 megapixel image sensor captures clear image.

The 2D Code Reader **LP-ABR10** is equipped with a high-resolution, 1.2 megapixel CMOS image sensor. It is capable of reading a small cell-size code that is difficult to read with an ordinary 0.3 megapixel image sensor and a 2D code on a workpiece even when the reading conditions are less than ideal due to different surrounding factors.

The large number of pixels ensures a sharp and detailed image!



3 | Image processing

Proprietary algorithm ensures stable reading.

When 2D codes are directly marked on products, extraneous light, surface irregularities or insufficient contrast against the background can cause reading problems. Codes can also become scratched or covered with oil, and they may be exposed to harsh conditions such as washing and chemical treatment. The 2D Code Reader LP-ABR10 uses a proprietary code-reading algorithm which meets all these challenges: It offers stable reading and contributes to the improvement of the product traceability.



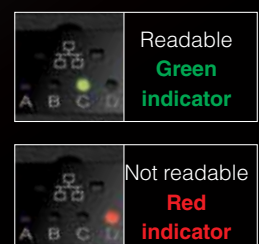
Whether the code is readable or not is indicated by the color for easy, at-a-glance confirmation.

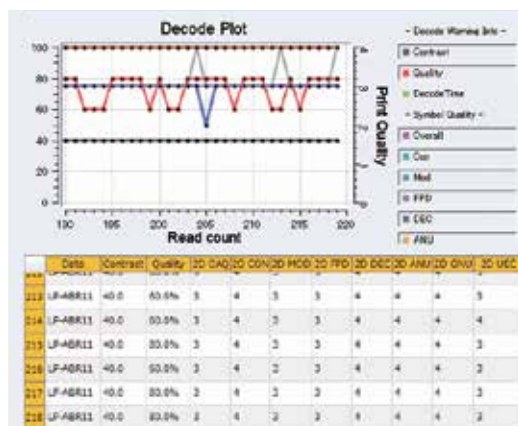


Proprietary image processing algorithm



Stable reading





Verification results include a graph and numerical data for easy understanding.

2D code marking quality verification

The 2D Code Reader LP-ABR10 supports 2D code marking quality verification in compliance with ISO/IEC 15415 and AIM DPM-1-2006.

A smart change management of the 2D code marking quality streamlines the maintenance of the production lines.

Overall score: 4.0

■ Verification items

- 4: CON (Contrast)
- 4: MOD (Modulation)
- 4: FPD (Fixed Pattern Damage)
- 4: DEC (Decode)
- 4: ANU (Axial Non-Uniformity)
- 4: GNU (Grid Non-Uniformity)
- 4: UEC (Unused Error Correction)

* The overall score can be added to the reading result data. It is also possible to select only necessary items from seven verification items and output the overall score.



Using the main unit

Auto teaching function

The auto teaching function automatically selects the 2D code reading settings most suitable for your parts and production environment.



Using the PC software

Auto teaching function for easy setting of reading condition for various types of parts



Aluminum



Copper



Cast metal



Substrate



Resin



Glass



Ceramic

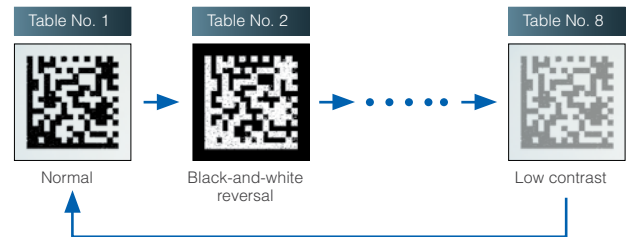


Rubber

Table function

You can register up to eight sets of settings in the code reader. If 2D codes with different marking quality levels have to be read, the setting automatically changes to an appropriate registered setting. This streamlines the production process and anticipates possible reading errors which would normally stop the assembly line. This is done by automatically changing the table No. in use.

When the code cannot be read, the code reader automatically changes the table No. in use.



Data check function (preset mode)

With the data check function, the code reader compares the 2D code with pre-registered data and reads the code only when the 2D code matches the predefined settings. This function provides two setting types: "Perfect match" and "Partial match." In this way you can prevent defect products from mixing up with perfect products.

When set to "Perfect match"	ABC123 Match	ABCD No match	BBC189 No match
	Comparison	Comparison	Comparison
Registered data	2D code data		
ABC123	ABC123	ABCD	BBC189
	Comparison	Comparison	Comparison
When set to "Partial match" (comparison of 2 to 4 characters)	ABC123 Match	ABCD No match	BBC189 Match

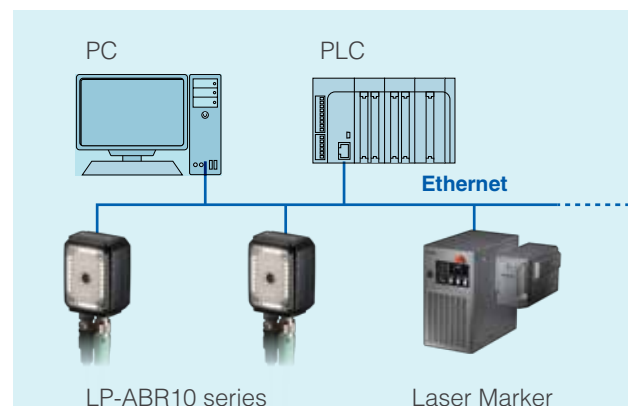
IP65 rating

The code reader boasts an IP65 rating (IEC). The robust design prevents the entry of dust particles and resists the effect of water droplets.



Ethernet compatibility

The Ethernet compatibility enables the transmission of not only the read data but also of images and quality verification data. The 2D Code Reader LP-ABR10 is also equipped with a PLC link function for easy configuration of a network.



Specifications of 2D Code Reader

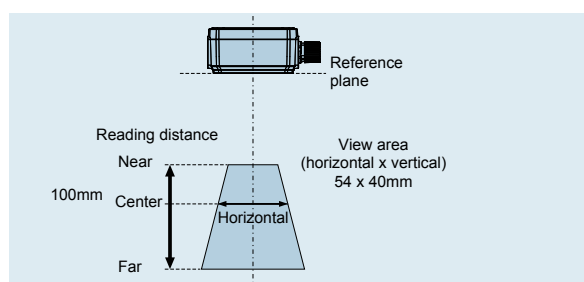
Item	Type	Standard type	Long-distance type
	Model No.	LP-ABR11	LP-ABR12
Image sensor		1/3" (inches) CMOS monochrome	
Pixels		1280 × 960 pixels (1.2 million approx.)	
Internal illumination source		White LED	
Reading angle		Pitch angle: ±35°, skew angle: ±35°, tilt angle: 360°	
Supply voltage		24V DC ±10%	
Power consumption		Command (SYNC) standby: 140mA approx., during reading operation: 400mA approx.	
Interface	Ethernet	10Base-T, 100Base-T, 1000Base-T	
	RS232C	1200bit/s to 115.2kbit/s	
Digital input		Photo-coupler insulation × 1 (input impedance: 1kΩ, OFF voltage: 0 to 0.8V, ON voltage: 6 to 28V)	
Digital output		Photo-coupler isolation × 4 (maximum rating: 30V DC, 50mA)	
Environmental resistance	Degree of protection	IP65 (IEC)	
	Ambient temperature	0 to +40°C, storage temperature: -20 to +65°C	
	Ambient humidity	35 to 85% RH (no dew condensation allowed), storage: 35 to 85% RH (no dew condensation allowed)	
	Vibration resistance	10 to 55Hz amplitude 1.5mm (total width) in x-, y-, z-direction for two hours each	
Weight		Net weight: 200g approx.	
Supported codes (2D)		Data Matrix (ECC200), QR Code	
Minimum resolution		0.167mm	
Reading center distance		100mm	200mm
View area (horizontal × vertical)		54 × 40mm (at reading center distance)	44 × 33mm (at reading center distance)
Reading distance (typical)		Data Matrix (ECC200), QR Code ▶ For cell size of 0.167mm: 85 to 125mm ▶ For cell size of 0.25mm: 70 to 150mm	Data Matrix (ECC200) ▶ For cell size of 0.167mm: 185 to 220mm ▶ For cell size of 0.25mm: 175 to 230mm QR Code ▶ For cell size of 0.167mm: 190 to 215mm ▶ For cell size of 0.25mm: 180 to 225mm

* Cell size of 0.25mm or larger is recommended (horizontal direction) when the 2D code print quality verification function is used.

Reading distance – View area (typical)

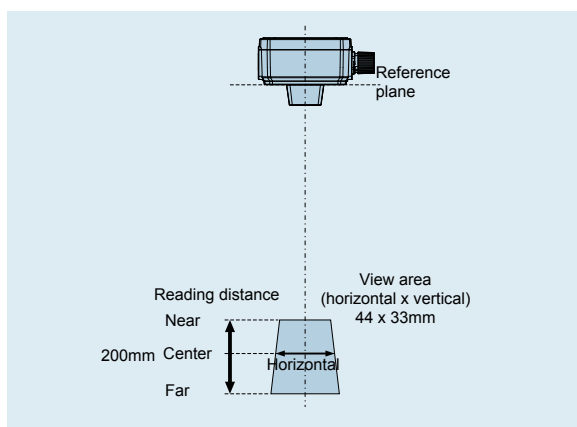
Unit: mm

■ Standard type LP-ABR11



Supported codes (2D)		Data Matrix (ECC200), QR Code	
Cell size		0.167	0.25
Near	Reading distance	85	70
	View area (horizontal × vertical)	46 × 34	38 × 29
Center	Reading distance	100	
	View area (horizontal × vertical)	54 × 40	
Far	Reading distance	125	150
	View area (horizontal × vertical)	66 × 50	79 × 60

Long-distance type LP-ABR12



Unit: mm

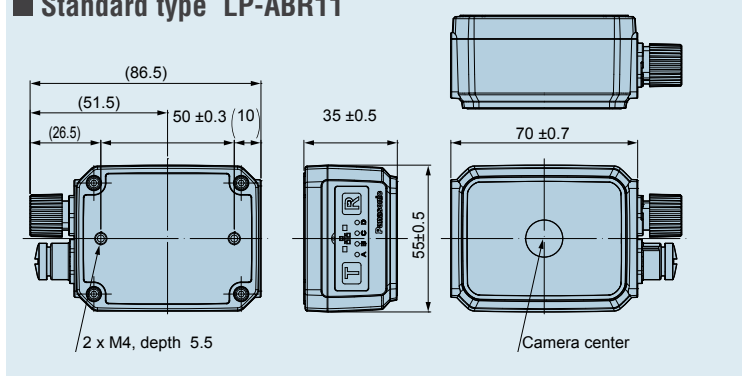
Supported codes (2D)		Data Matrix (ECC200)		QR Code	
Cell size		0.167	0.25	0.167	0.25
Near	Reading distance	185	175	190	180
	View area (horizontal x vertical)	40 x 30	38 x 28	42 x 31	39 x 29
Center	Reading distance	200		200	
	View area (horizontal x vertical)	44 x 33		44 x 33	
Far	Reading distance	220	230	215	225
	View area (horizontal x vertical)	49 x 37	51 x 38	48 x 36	50 x 37

2D Code reader

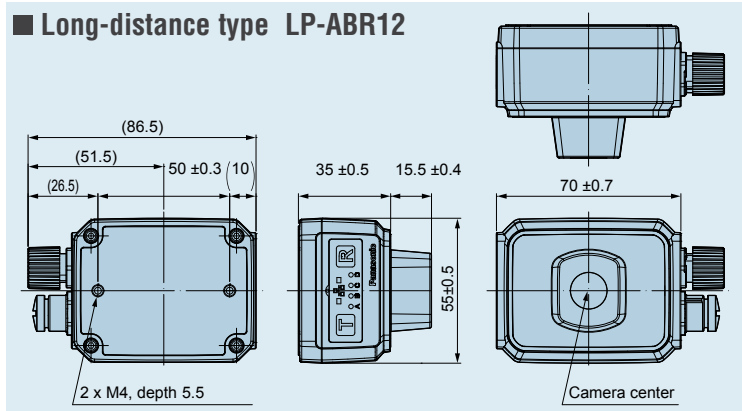
The CAD data can be downloaded from our website.

Unit: mm

Standard type LP-ABR11

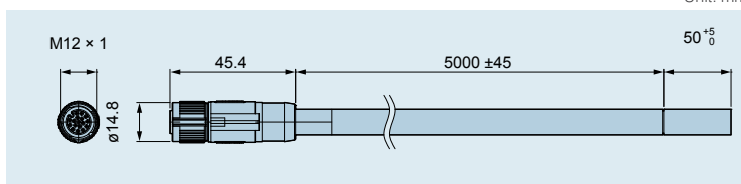


Long-distance type LP-ABR12



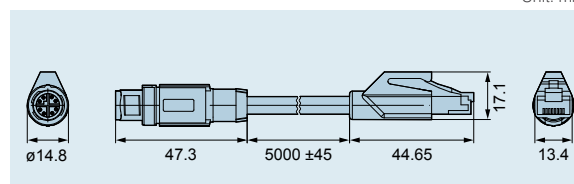
Control cable LP-ABR10-C5 (sold separately)

Unit: mm



LAN cable LP-ABR10-L5 (sold separately)

Unit: mm





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