

OMRON

Conforms to
SEMI Standards

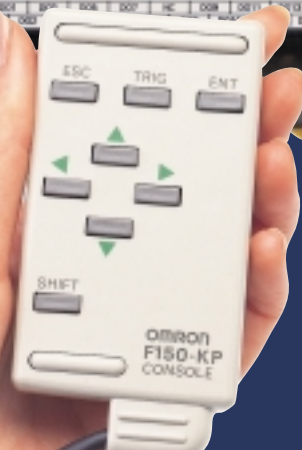
Upgraded with New Functions
Suitable for Reading Dot Cell Codes

A Revolution in Information Management



Actual size

Industry's smallest head
(without lens)



CE c UL US

V530-R150E-2, V530-R150EP-2
2-Dimensional Code Reader
(Fixed Type)

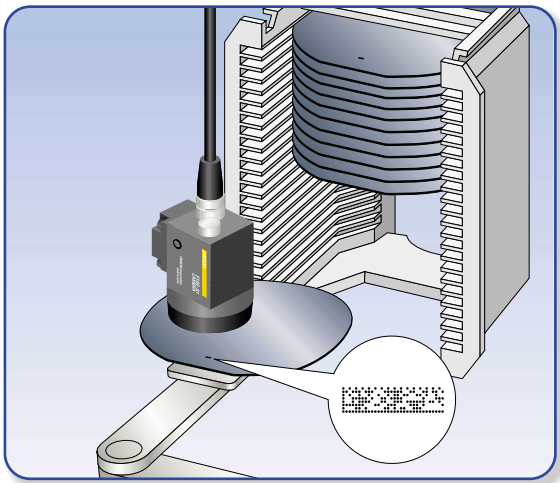
Fixed 2-Dimensional Code Reader: C

Total Information

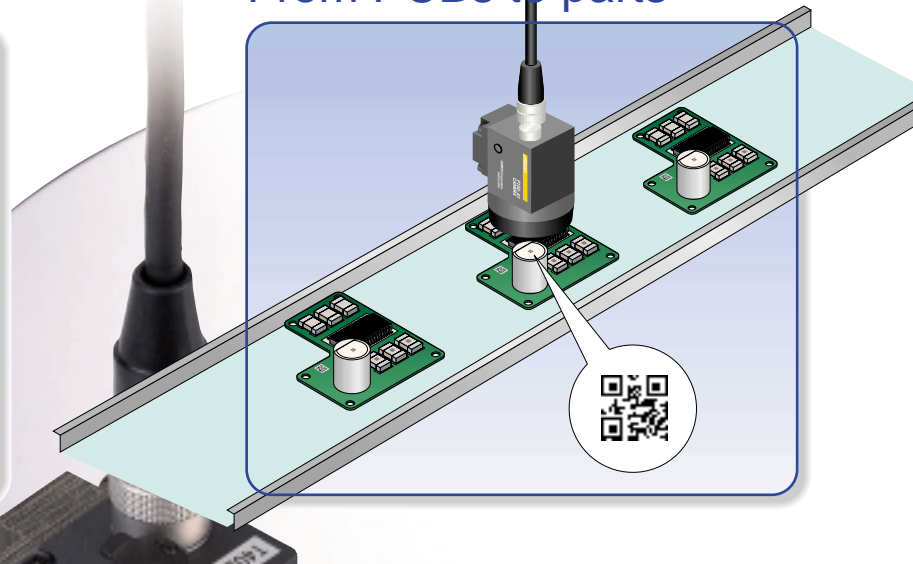
Changing Information Management

OMRON's 2-Dimensional Code Reader can read information attached to ultra-fine parts, glass PCBs, and wafers, parts which were impossible to control before. The 2-Dimensional Code Reader can read QR Code (Model 1, Model 2) and Data Matrix (ECC200). At last, semiconductors, electronic parts, and information will be unified.

From batch processing to wafers

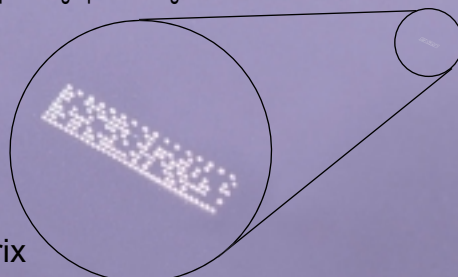


From PCBs to parts



Conforms to SEMI standard T7.

The 2-Dimensional Code Reader conforms to SEMI standard T7 using OMRON's unique image processing technique.



Data Matrix

Changing Information Management

Advanced Performance

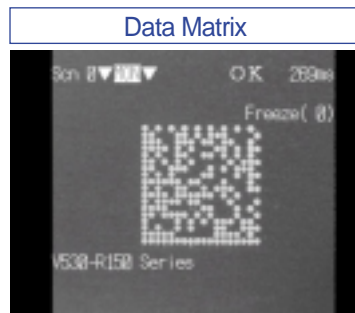
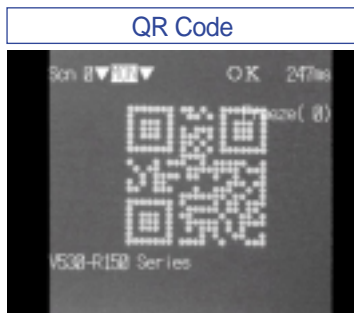
Reads Dot Cell Codes

The Fixed 2-Dimensional Code Reader can also read dot cell codes.

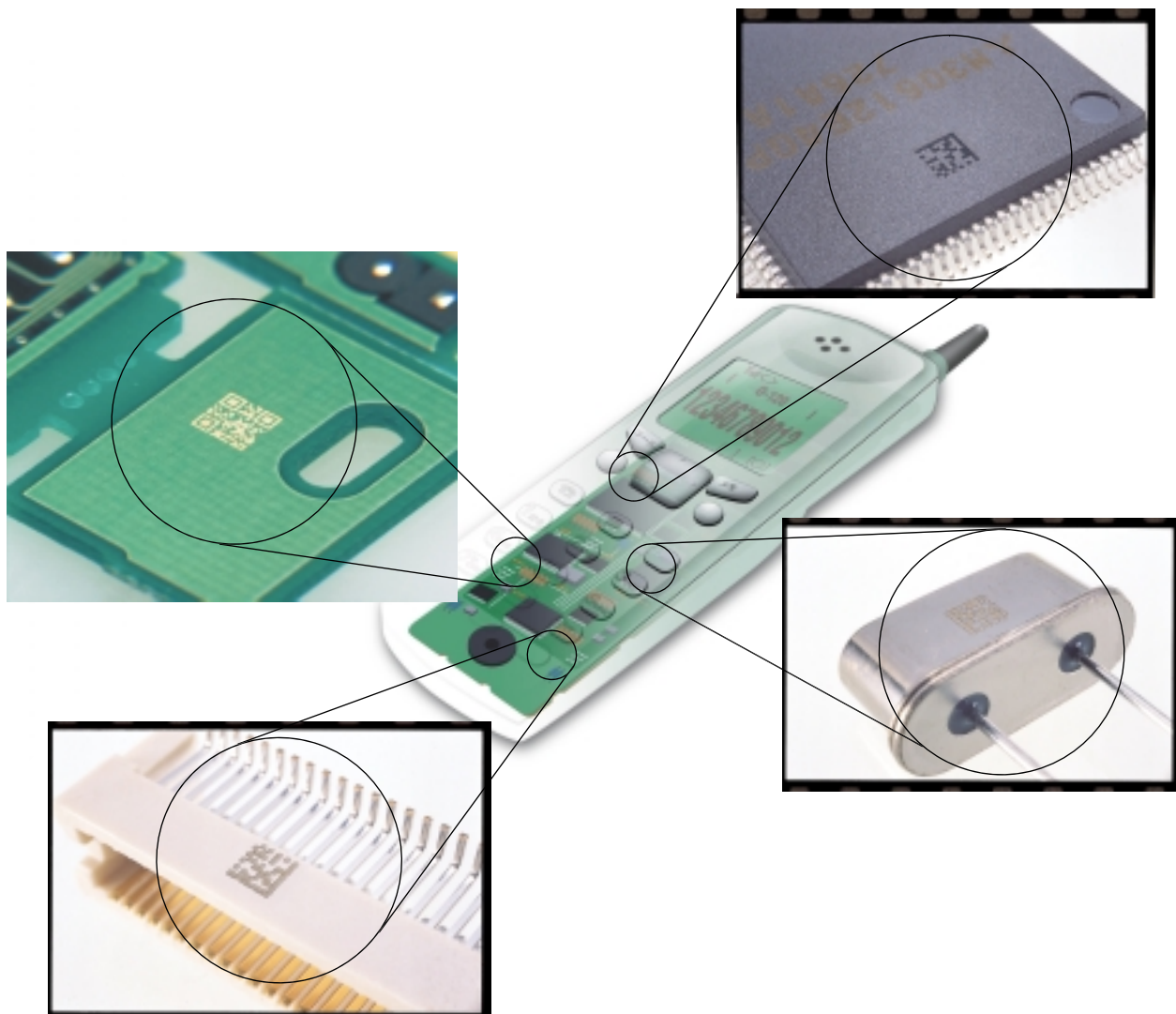
Compatible Codes

QR Code (Model 1, Model 2) Versions 1 to 6

Data Matrix (ECC200) 10 x 10 to 26 x 26, 8 x 32 (T7)



Typical Applications



Easy Operation and Easy Analy

Total Control

Easy Operation with Teaching

Initial Setting Procedures Reduced to 1/4 of Those Required with Conventional Models

STEP1

Easy Adjustment

Display the camera image on the monitor in real time to adjust.

- Shutter speed
- Filtering
- BGS Levels

QR Code



Data Matrix



STEP2

Easy Selection

Use Teaching to easily select

- QR Code: Symbol color
- Data Matrix: Matrix size



STEP3

Easy Setting

Perform Reading to automatically register the optimum setting data.

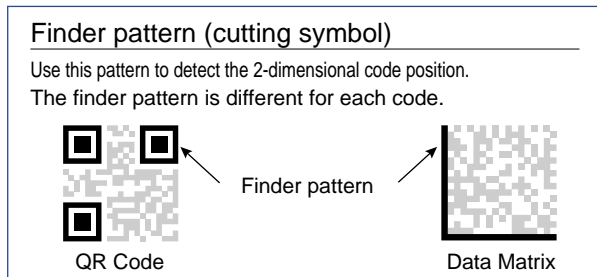


Analysis Even for Beginners

The Analysis Data Is Displayed in Easy-to-Read Format

See at a Glance the Reading Status Using Reading Information Monitor Display

Display the following on the monitor: Finder pattern, cell recognition, reading data, etc.



Easy Detection of Nonconforming Items

Easy Image Analysis

The image analysis mode helps to detect the cause of marking troubles.



Store up to 24 NG Images

Confirm the kind of defects with the stored images.



*Stored images are kept until the V530-R150 is turned OFF.

Conforms to International Standards

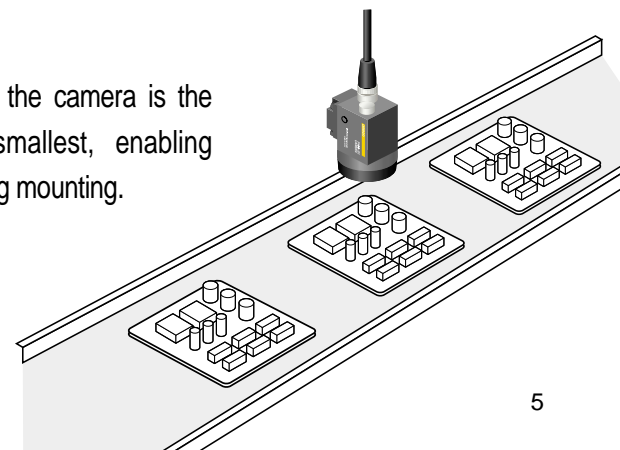


The basic configuration items for the 2-Dimensional Code Reader conform to these standards. For details, refer to the system configuration diagram on page-6.

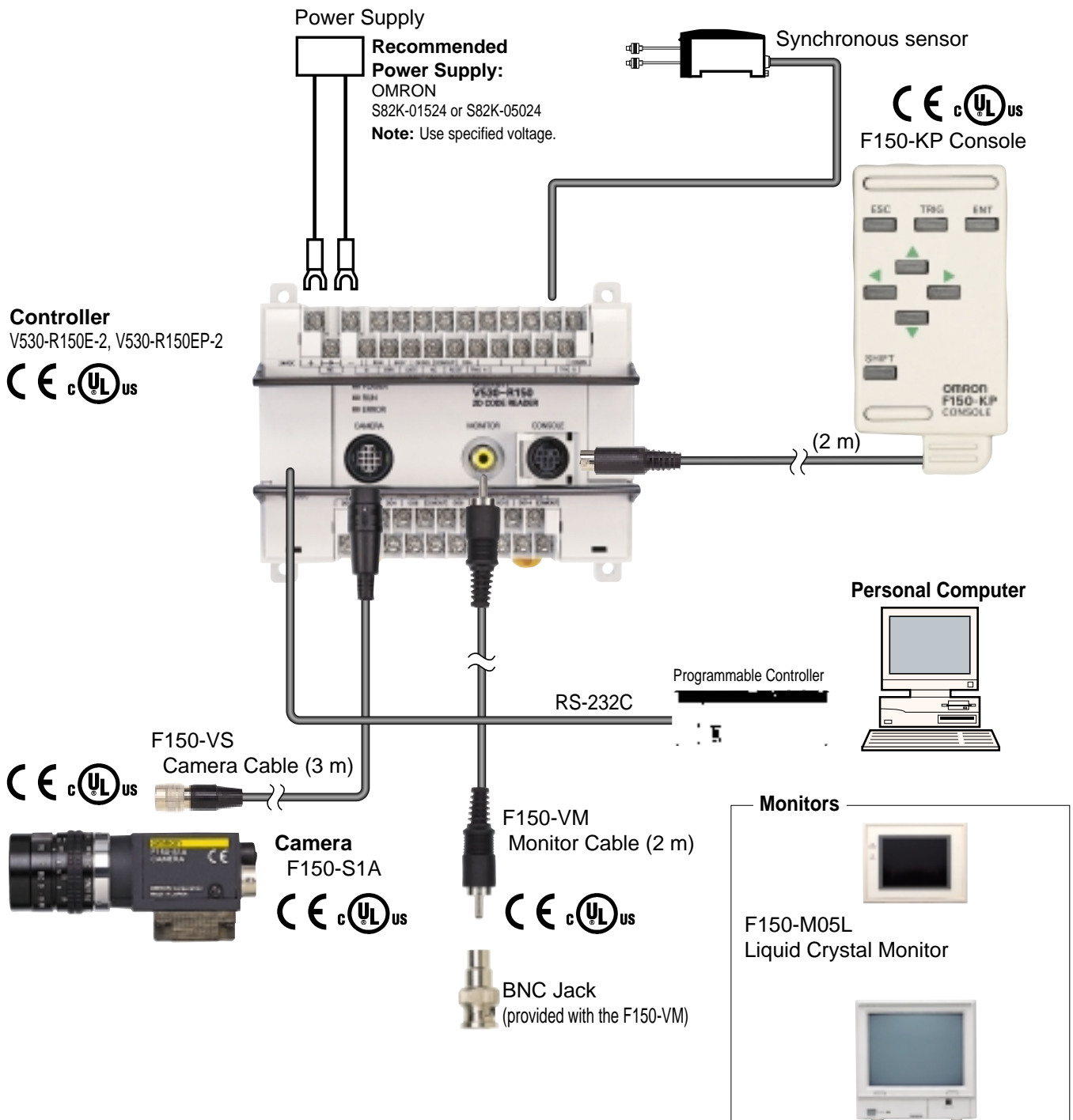
Highly Efficient Space Saving

Contributes to Space-saving

The size of the camera is the industry's smallest, enabling space-saving mounting.



System Configuration



Models

Item	Model
Controller	V530-R150E-2, V530-R150EP-2
Console	F150-KP
Camera	F150-S1A
Camera Cable	F150-VS
Monitor Cable	F150-VM
Liquid Crystal Monitor	F150-M05L
Video Monitor	F300-M09

Note: The F150-M05L and F300-M09 do not conform to the EMC Directive and Low-Voltage Directive.

Specifications

- V530-R150 2-Dimensional Code Reader (V530-R150E-2/V530-R150EP-2)

Item	Specifications	
Model	V530-R150E-2	V530-R150EP-2
Input/Output type	NPN	PNP
Number of connectable cameras	1	
Number of pixels (resolution)	512(H) x 484(V)	
Number of scenes	10	
Image memory function	Maximum of 24 images stored.	
Operation method	Menu selectable	
Processing method	Gray	
Readable codes	QR Code (Model 1 and Model 2) Data Matrix (ECC200)	
Readable size (cell)	QR Code: 21x21 to 41x41 (Version 1 to 6) Data Matrix: 10x10 to 26x26, 8x32	
Readable direction	360° (all directions)	
Monitor interface	1 channel (over scan monitor)	
RS-232C I/F	1 channel	
Parallel I/O	3 inputs and 9 outputs including control I/O points	
Power supply voltage	24VDC	
Current consumption	Approx. 0.5A	
Ambient operating temperature and humidity	0°C to 50°C /35% to 85% (with no condensation)	
Weight	Approx. 390g	

- F150-S1A Camera

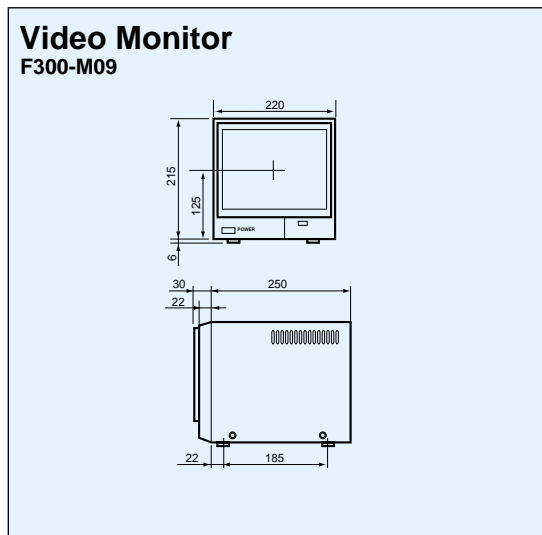
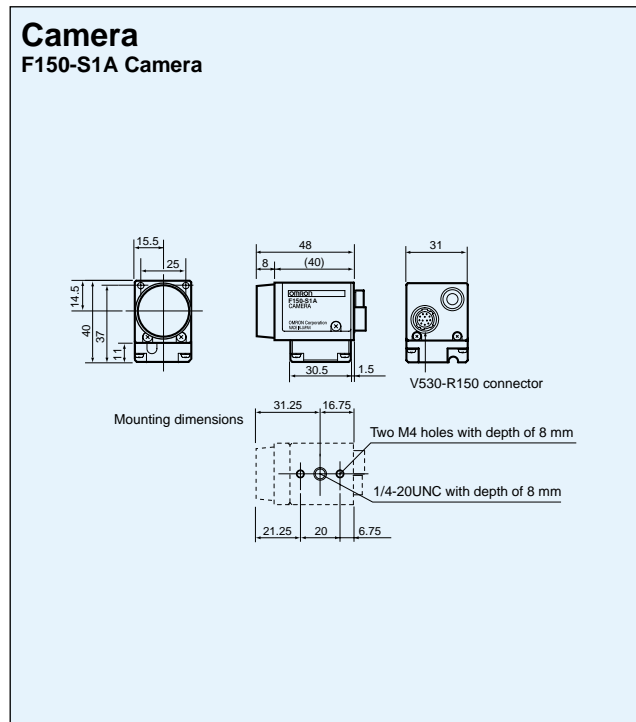
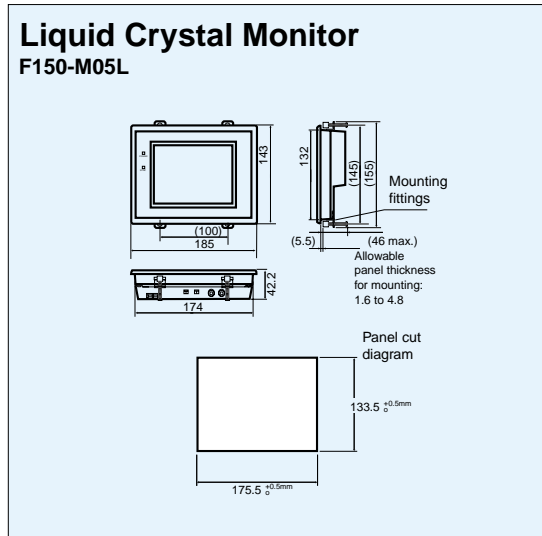
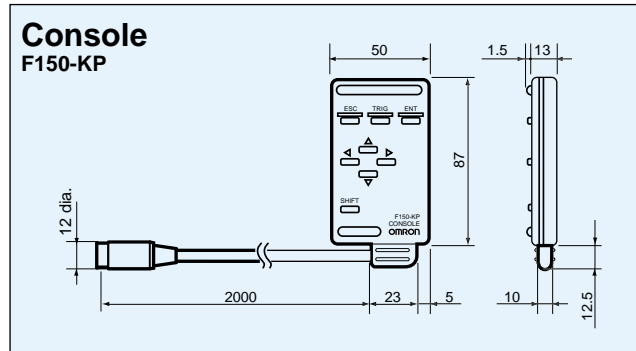
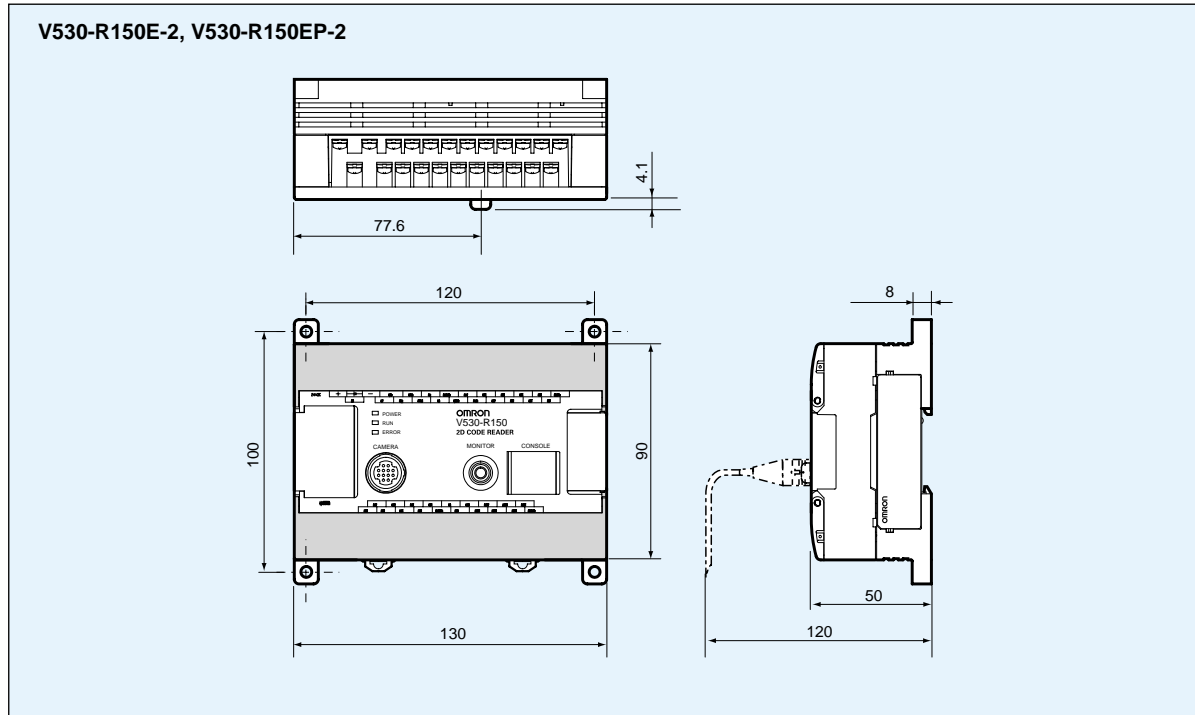
Item	Specifications	
Camera	Picture element	1/3" Interline CCD
	Effective pixels	659(H) x 494(V)
	Shutter function	Electronic shutter: 1/100, 1/500, 1/2000, or 1/10000sec (menu selectable)
Ambient operating temperature and humidity	0°C to 50°C /35% to 85% (with no condensation)	
Weight	Approx. 80g	

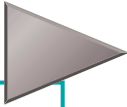
- Monitors

Item	Model	F150-M05L Liquid Crystal Monitor	F300-M09 Video Monitor
Size		5.5 inches	9 inches
Type		Liquid crystal color TFT	CRT monochrome (long persistence)
Resolution		320 x 240 dots	700 TV lines min.
Power supply voltage		24 VDC	100 VAC
Current consumption		Approx. 700 mA	Approx. 300 mA
Ambient operating temperature and humidity		Operating: 0 C to 50 C/ 35 % to 85 % (with no condensation)	Operating: 0 C to 40 C/ 10 % to 90 % (with no condensation)
Weight (Monitor only)		Approx. 1 kg	Approx. 5.8 kg

Dimensions

2-Dimensional Code Reader (Unit: mm)





CCTV Lens

Refer to the following optical graph and select the field of vision, Camera distance, and Extension Tube.

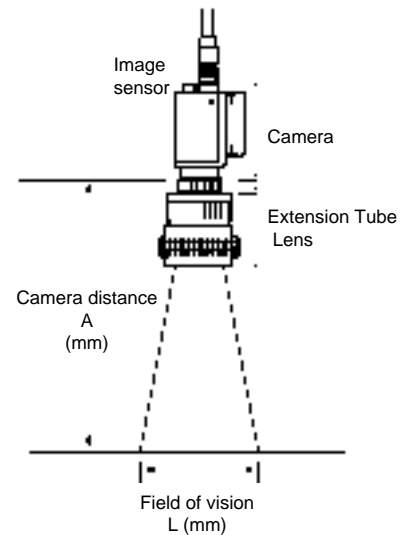
Model	3Z4S-LE C815B	3Z4S-LE B1214D-2	3Z4S-LE C1614A	3Z4S-LE B2514D	3Z4S-LE B5014A	3Z4S-LE B7514C
Dimensions	42 dia. 	42 dia. 	30 dia. 	30 dia. 	48 dia. 	62 dia.
Locking mechanism	Focus locking mechanism					None

Extension Tubes

Model	Length
3Z4S-LE EX-C6	A set of six Extension Tubes that are 40, 20, 10, 5, 1, and 0.5 mm in length respectively

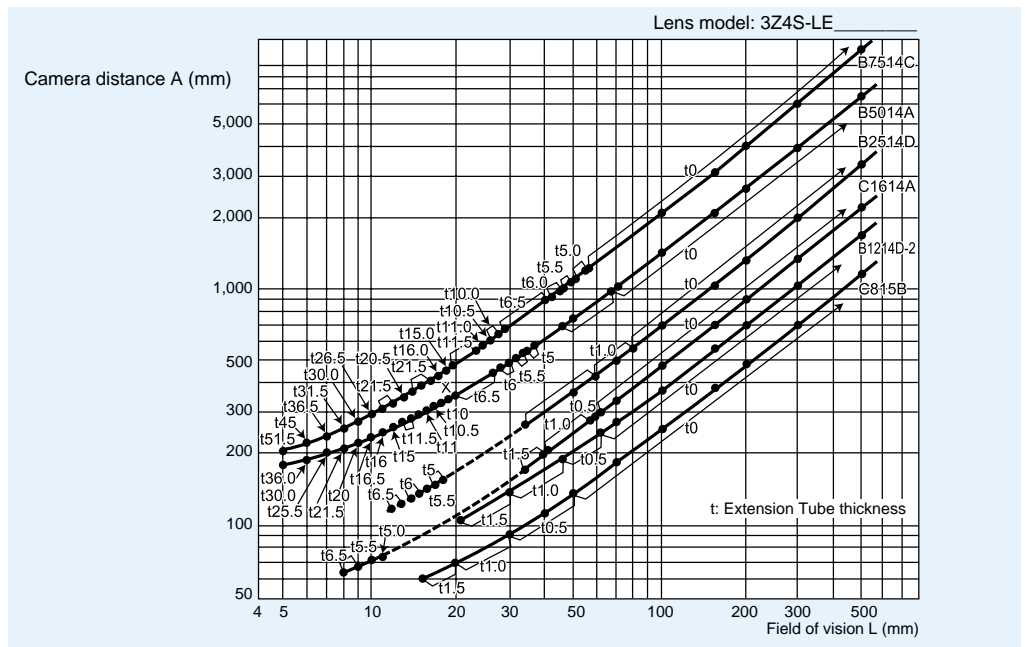
Meaning of Optical Graph

The X axis of the graph shows field of vision L (mm), and the Y axis shows the camera distance A (mm). The curves on the graph indicate different lenses, and the "t" values indicate the lengths of the Extension Tubes.



Optical Graph

All values are approximate values. It is recommended that the camera distance be adjusted by sliding the Camera forward or backward in actual operation.



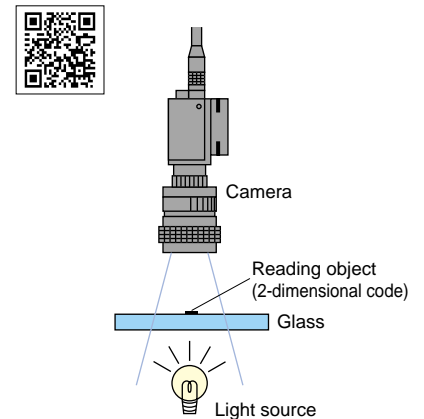
Lighting Methods

Use the appropriate lighting for the application and the reading object.

Back Lighting

A stable, high-contrast image can be obtained using back lighting.

Applications: Transparent objects such as LCD glass

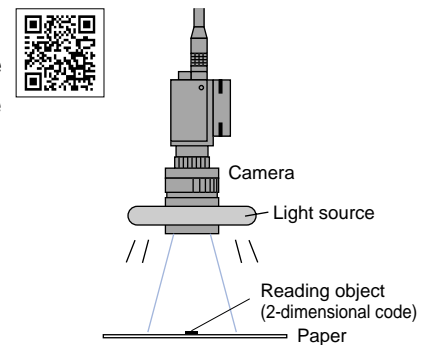


Reflected Lighting

Ring Lights

Light is shone uniformly on the reading object. The difference in reflection factors of the background and the marking enable stable detection.

Applications: Paper labels and corrugated cardboard

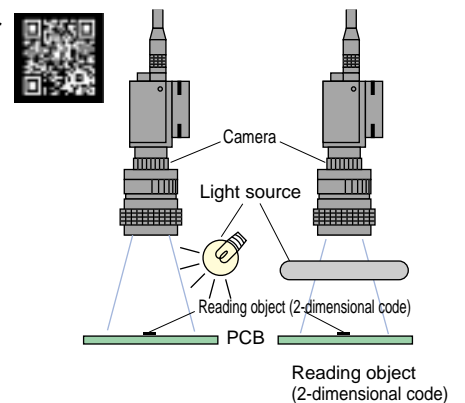


Oblique Lighting

Ring lighting close to reading object

Detection is made by distinguishing regular and diffuse reflected light.

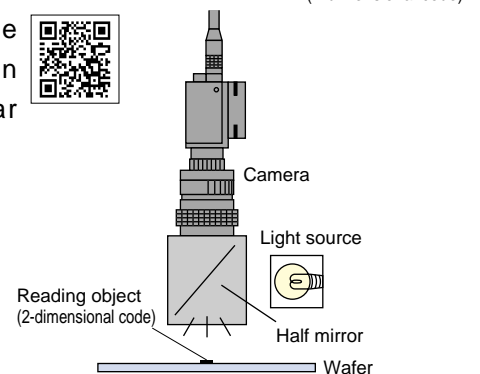
Applications: PCBs and electronic parts



Coaxial Lighting

A stable image with few shadows can be obtained of a reading object with an uneven surface by detecting only regular reflected light.

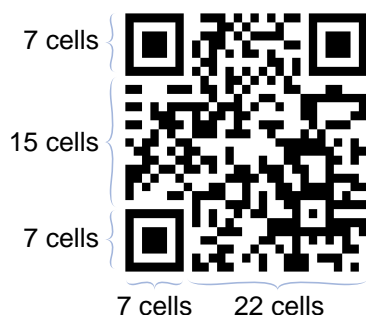
Applications: Mirror-like objects such as wafers



Data Capacity Table

QR Code

QR Code (Model 2)

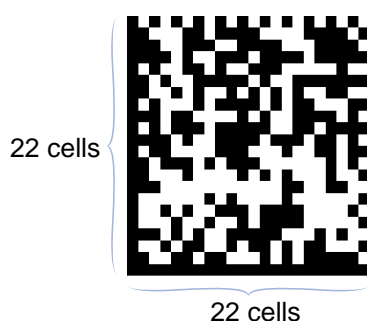


The relation between matrix size (number of cells) and data capacity is shown in the table below. In this example, the matrix size is 29 x 29 cells.

Matrix size (Version)	Error correction level	Data capacity		Matrix size (Version)	Error correction level	Data capacity	
		Num. Cap.	AlphaNum. Cap.			Num. Cap.	AlphaNum. Cap.
21x21 (Version 1)	L (7%)	41	25	33x33 (Version 4)	L (7%)	187	114
	M (15%)	34	20		M (15%)	149	90
	Q (25%)	27	16		Q (25%)	111	67
	H (30%)	17	10		H (30%)	82	50
25x25 (Version 2)	L (7%)	77	47	37x37 (Version 5)	L (7%)	255	154
	M (15%)	63	38		M (15%)	202	122
	Q (25%)	48	29		Q (25%)	144	87
	H (30%)	34	20		H (30%)	106	64
29x29 (Version 3)	L (7%)	127	77	41x41 (Version 6)	L (7%)	322	195
	M (15%)	101	61		M (15%)	255	154
	Q (25%)	77	47		Q (25%)	178	108
	H (30%)	58	35		H (30%)	139	84

Data Matrix

Data Matrix (ECC200)



The relation between matrix size (number of cells) and data capacity is shown in the table below. In this example, the matrix size is 22 x 22 cells.

Matrix size	Maximum data capacity	
	Num. Cap.	AlphaNum. Cap.
10x10	6	3
12x12	10	6
14x14	16	10
16x16	24	16
18x18	36	25
20x20	44	31
22x22	60	43
24x24	72	52
26x26	88	64
8x32	20	13

General Precautions

The user must operate the product according to the performance specifications described in the brochure.

Before using the product under conditions which are not described in the brochure or applying the product to nuclear control systems, railroad systems, aviation systems, vehicles, combustion systems, medical equipment, amusement machines, safety equipment, and other systems, machines, and equipment that may have a serious influence on lives and property if used improperly, consult your OMRON representative.

Make sure that the ratings and performance characteristics of the product are sufficient for the systems, machines, and equipment, and be sure to provide the systems, machines, and equipment with double safety mechanisms.

The product has been produced at OMRON Ayabe which obtained ISO9001-approval for its quality system and ISO14001-approval for its environmental management system from international certification bodies.

OMRON

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