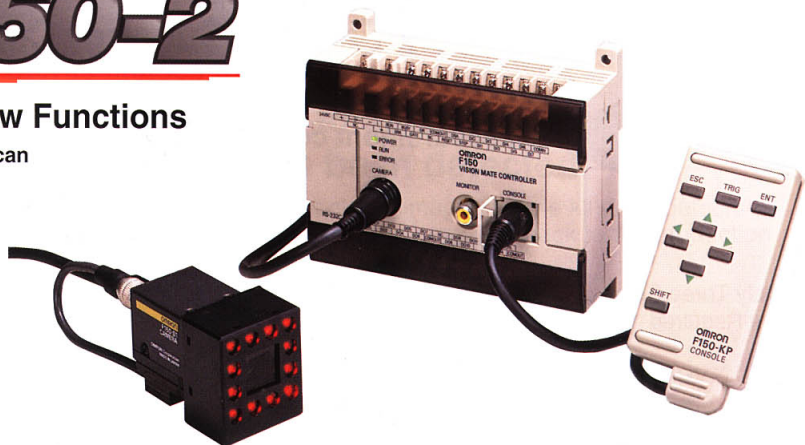


# Vision Sensor F150-2

OMRON

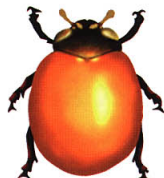
Upgraded with New Functions

Full-fledged Vision Sensor can  
be used by beginners.



— OK — — NG —

Detection  
of Objects



Inspection  
of  
Direction



Inspection  
of Label  
Positions



Discrimination  
of Objects



**Making automatic visual inspection more user-friendly than ever.**

## F150-2 Ensures Superior Cost Performance

Measurement conditions are set automatically.

Only Three Steps  
are Required

### Featuring the Fully Automatic Menu (Auto Menu) Function

#### 1. Image Registration

Register the sample images as references for automatically setting the measurement conditions.

The accuracy of inspection increases according to the number of sample images registered. A maximum of 23 images can be registered.



#### 2. OK and NG Image Input

Input "OK" or "NG" for each sample image registered so that measurement conditions will be set automatically.



#### 3. Inspection

The F150-2 starts inspection under the automatically set measurement conditions and displays the overall judgment results and measurement time.



### Also, the Expert Menu is Available for Multiple Inspections

Measurement values, in addition to results, are obtainable as output.

Arithmetic operation of measurement values is possible.

Results per region are obtainable as output.

Ideal for Positioning  
Applications

Ideal for Dimension  
Measurement Applications

All Improper Regions are  
Known Immediately



Surface inspection and edge  
measurement functions have  
been added.

Ideal for the inspection of  
plastic parts and the lead  
of electronic parts.

# F150-2



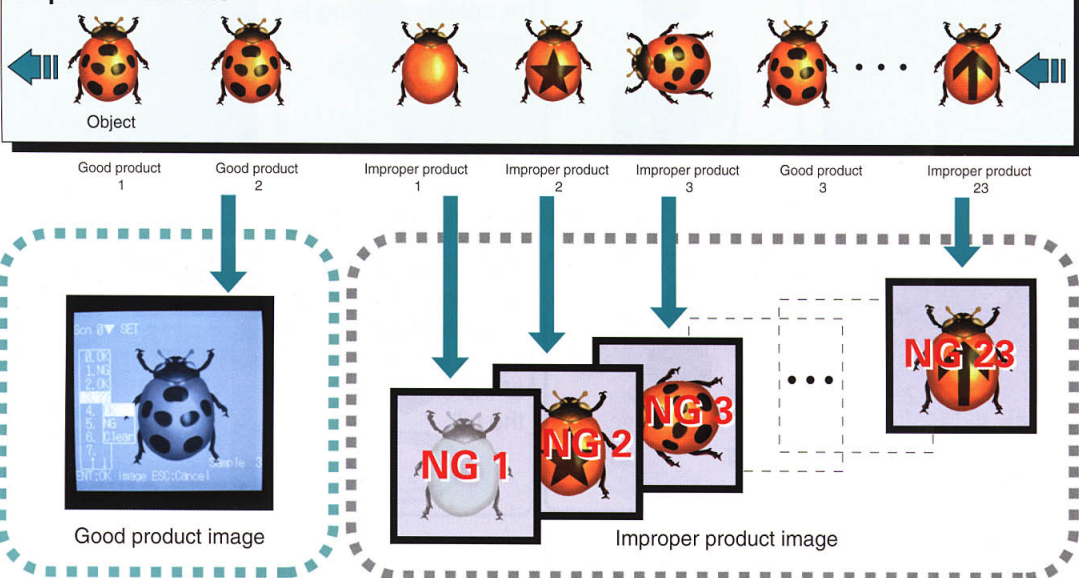
**Stores images of improper objects.**

**F150-2 stores up to 23 images of improper objects that have been detected.**

This makes it possible to check the images for the kinds of defects that have been found, thus ensuring easy feedback to the production stages.

Images are stored until the F150-2 is turned OFF.

**To production line**

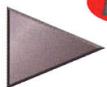


**Ensures easy mounting.**

**Compact, Mono-block Construction with a Built-in Camera, Light Source, and Lens.**

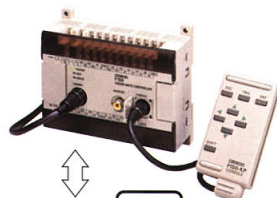
F150-2 incorporates a built-in camera, light source, and lens, thus ensuring easy mounting.

OMRON's unique optical construction allows the F150-2 to detect glossy objects with no irregular reflection, thus offering a wide range of applications.



**New**

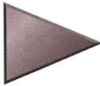
**DeviceNet (CompoBus/D) Model has been added.**



DeviceNet







"Auto Menu" Applications

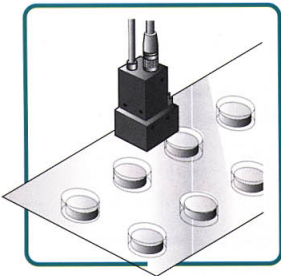
Detection of Relay Markings



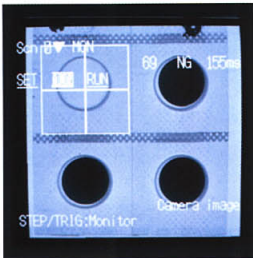
The presence or absence of each stamp, laser marking, or polarity marking is inspected.



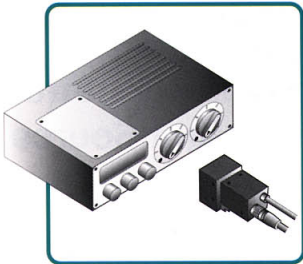
Inspection of Pills



The presence, absence, or chipping of each pill is inspected regardless of the shape or tilt of the pill.



Inspection of Switch Positions



The presence, absence, or position of the switches, buttons, or volume knobs on each product is inspected before shipping.



**New** Designation of Inspection Region  
The specified region can be inspected

The shape of legs

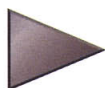


The design of back



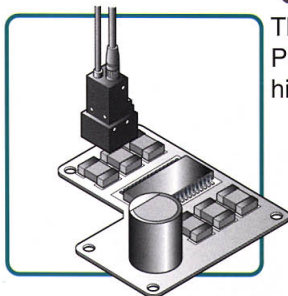
**New** Compensation ON/OFF  
The inspection time is reduced!

When the sensing object is located on the same position, the inspection time is reduced by turning OFF the function.



## "Expert Menu" Applications

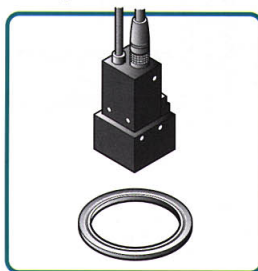
### **New** PCB Positioning



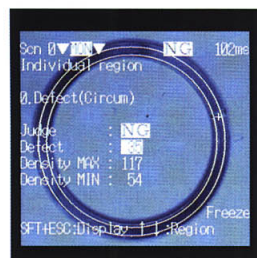
The edge position of PCB is inspected with high accuracy.



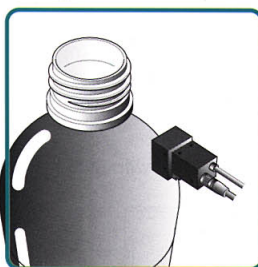
### **New** Inspection of Plastic Parts



Plastic parts are inspected for extra parts, breakage, or dirt.



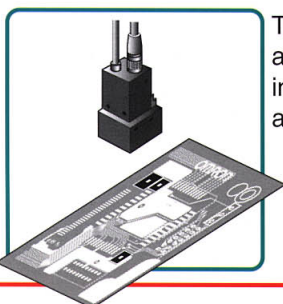
### Inspection of Necks of Bottles



The pitch of the thread of each plastic bottle neck is inspected.



### Position of Alignment Marks



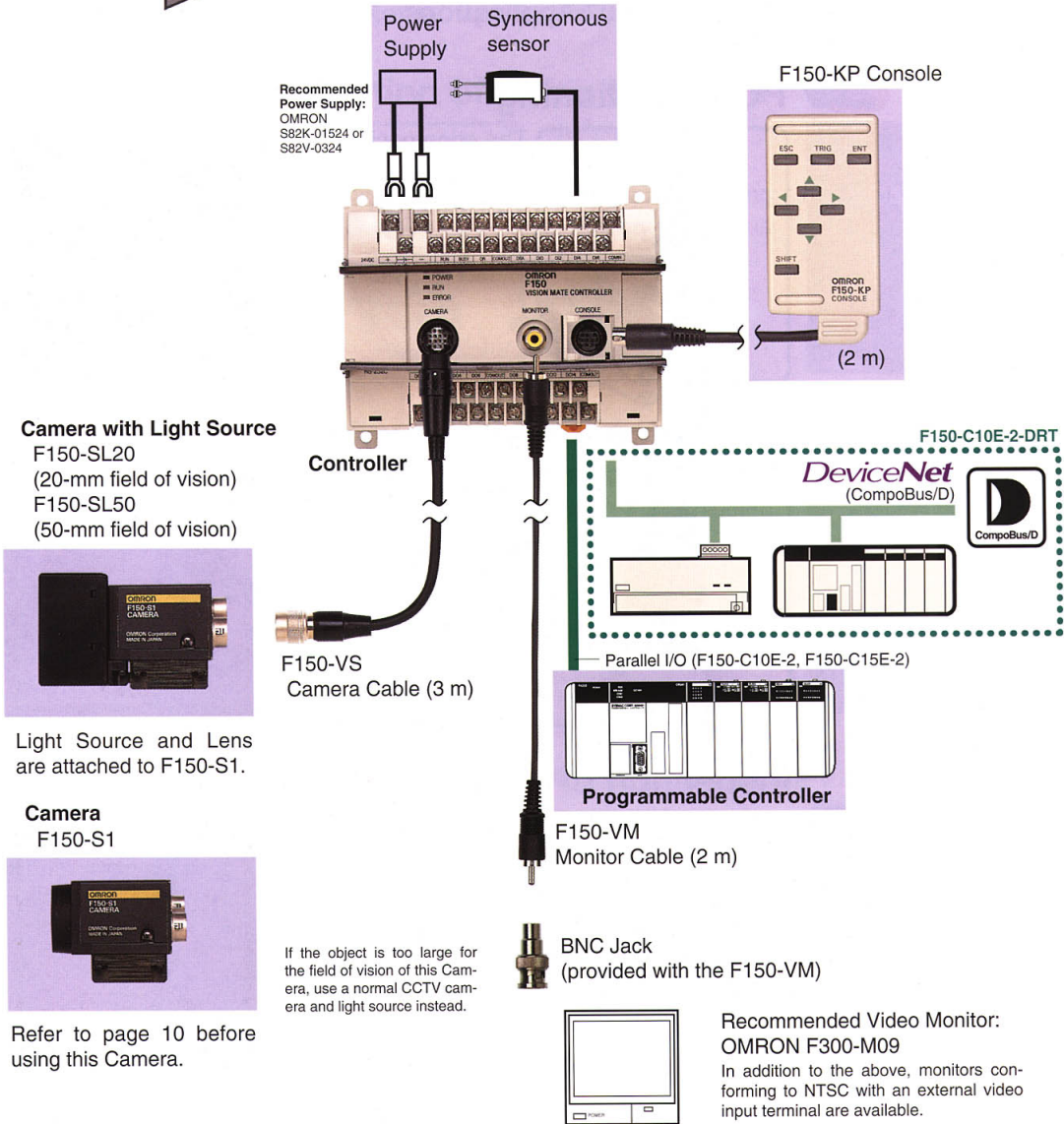
The position of each alignment mark is inspected with high accuracy.



# System Configuration



Easy to connect and use by anyone.



## F150-2 Models

Item	Model
Controller	F150-C10E-2, F150-C15E-2, F150-C10E-2-DRT
Console	F150-KP
Camera with Light Source	F150-SL20 F150-SL50
Camera	F150-S1
Camera Cable	F150-VS
Monitor Cable	F150-VM



A lens with a field of vision of 20 or 50 mm is available according to the object size.

Two models available for objects different to each other.

In addition to the ease of use ensured by the mono-block construction with built-in dedicated lens, light source, and camera, ideal inspection is ensured by selecting the appropriate field of vision from the following two lenses.

### Models

Field of vision	Model
20 mm	F150-SL20
50 mm	F150-SL50

The F150-2 Camera will be shipped with the lens and light source attached.



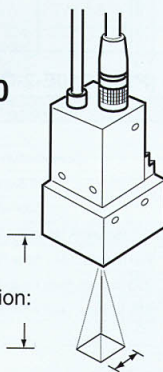
### Sensing Distance and Field of Vision

Mount the Camera within the fixed sensing distance, then fix the Camera at the position where a clear image is obtained.

#### F150-SL20

Fixed sensing distance

Lens with 20-mm field of vision:  
61 to 71 mm



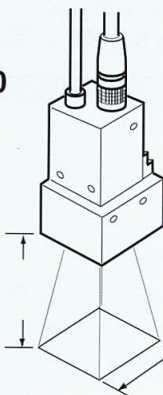
Fixed field of vision

Lens with 20-mm field of vision:  
20 x 20 mm

#### F150-SL50

Fixed sensing distance

Lens with 50-mm field of vision:  
66 to 76 mm



Fixed field of vision

Lens with 50-mm field of vision:  
50 x 50 mm

# Specifications

## Vision Mate Controller

Note: New functions appear in red characters.

Item	Specifications	
	Auto Menu	Expert Menu
Number of connectable cameras	1	
Number of pixels	512 (H) x 484 (V)	
Number of scenes	16	
Image memory function	Maximum of 23 images stored	
Processing method	Gray/Binary	
Filtering	Automatic or smoothing, edge enhancement, all edges, and background cut	Smoothing, edge enhancement, all edges, and background cut
Number of binary levels	Automatic	256 levels per region
Position displacement compensation	Automatic or ON/OFF	Compensating directions: X, Y, and $\theta$ directions Detection mode: Binary gravity/Axis angle, center, gradation search (1 model or 2 models), and edge position
Number of inspection regions	Automatic or 16 regions/scene	16 regions/scene
Measurement data	Automatic	Binary area, center of gravity, and axis angle Gradation correlation, gradation search position, degree of defect, edge position, and edge pitch
Operating function	_____	Arithmetic operation, distance, angle, and maximum and minimum values
Criteria result output	General	Overall judgment Judgment of operation results per region Measurement and operation data
Monitor interface	1 channel (pin jack)	
RS-232C I/F	1 channel (D-sub, 9-pin, female)	
Parallel I/O	11 inputs and 21 outputs including control I/O points	
	Output type	1 input and 5 outputs including control I/O points
	NPN	F150-C10E-2
	PNP	F150-C15E-2
Power supply voltage	24 VDC+10%/-15%	
Current consumption	Approx. 0.5 A	
Ambient temperature and humidity	Operating: 0°C to 50°C Operating: 35% to 85% (with no condensation)	
Weight	Approx. 390 g	

## CompoBus/D for Communications (F150-C10E-2-DRT)

Item	Specifications		
	DeviceNet		
Communications protocol	DeviceNet		
Connection forms (see note 1)	Combination of multi-drop and T-branch connections (for trunk or drop lines)		
Baud rate	125 Kbps, 250 Kbps, or 500 Kbps (selectable using the DIP switch)		
Communications media	Special 5-wire cables (2 signal lines, 2 power lines, 1 shield line)		
Communications distances	Network length	Drop line length	Total drop line length
	500 Kbps	100 m max. (see note 2)	6 m max. 39 m max.
	250 Kbps	250 m max. (see note 2)	6 m max. 78 m max.
	125 Kbps	500 m max. (see note 2)	6 m max. 156 m max.
Communications power supply	11 VDC to 25 VDC		
Node number	0 to 63 (selectable using the DIP switch)		
Error control checks	CRC error check		

Note: 1. Terminating resistors are required on both ends of a trunk line.  
2. Indicates the length when thick cables are used. Reduce the network length to 100 m max. when using thin cables.

## F150-SL20/SL50 Camera with Light Source F150-S1 Camera

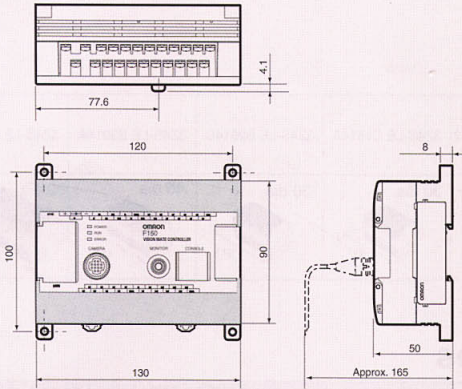
	Item	Specifications
Camera	Picture element	1/3" Interline CCD (reading all pixels)
	Effective pixels	659 x 494 (H x V)
	Shutter function	Electronic shutter: 1/100, 1/500, 1/2,000 or 1/10,000 (menu-selectable)
Lens	Camera distance	F150-SL20: 61 to 71 mm F150-SL50: 66 to 76 mm
	Field of vision	F150-SL20: 20 mm F150-SL50: 50 mm
Lighting	Light source	Red LED (20% deterioration after 1,500 hours in operation)
	Flash method	Pulse flash (synchronized with camera shutter)
Ambient temperature and humidity		Operating: 0°C to 50°C Operating: 35% to 85% (with no condensation)
Weight	Camera with Light Source	Approx. 135 g
	Camera	Approx. 70 g



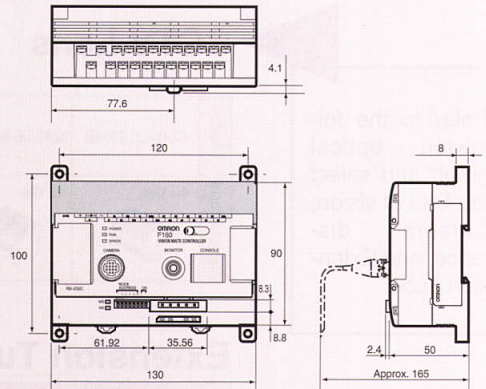
# F150-2

## Controller

F150-C10E-2 F150-C15E-2



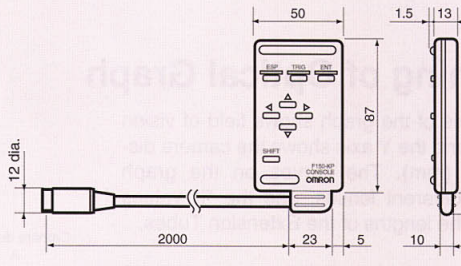
F150-C10E-2-DRT



Unit: mm

## Console

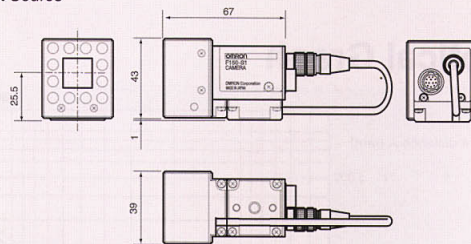
F150-KP



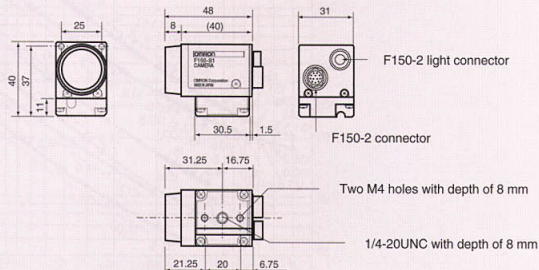
Unit: mm

## Cameras

F150-SL20/SL50 Camera with Light Source



F150-S1 Camera



Unit: mm

# Lens

## CCTV Lens

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

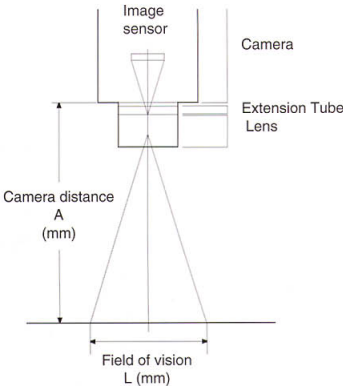
Model	3Z4S-LE C815B	3Z4S-LE B1214D-2	3Z4S-LE C1614A	3Z4S-LE B2514D	3Z4S-LE B5014A	3Z4S-LE B7514C
Dimensions	42 dia. 	42 dia. 	30 dia. 	30 dia. 	48 dia. 	62 dia. 

## 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

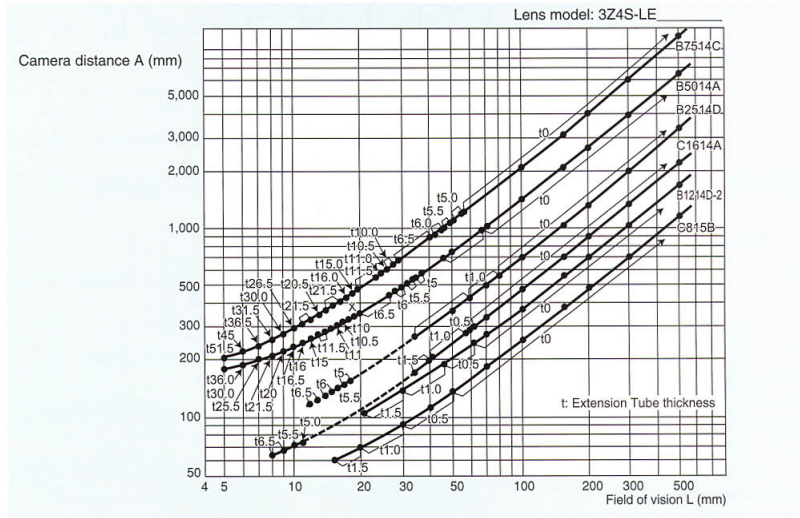
## Meaning of Optical Graph

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.



## 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.

# OMRON

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