

OMRON

F400 Color Vision Sensor



Detects All Specified Colors



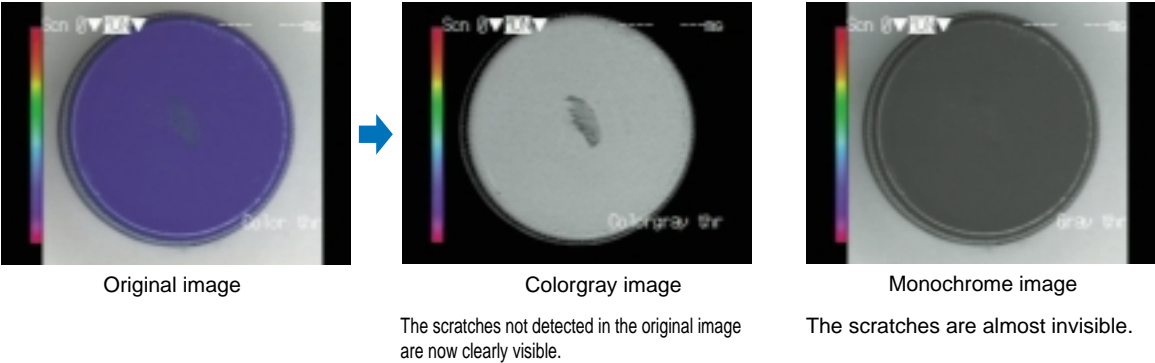
A Color Vision Sensor able to distinguish taking the field of inspection to new heights

The F400 Color Vision Sensor features not only the conventional color processing. A completely new type of vision sensor, the F400 Color Vision Sensor provides a color image that cannot be distinguished with monochrome processing or conventional color processing.

Colorgray Filter

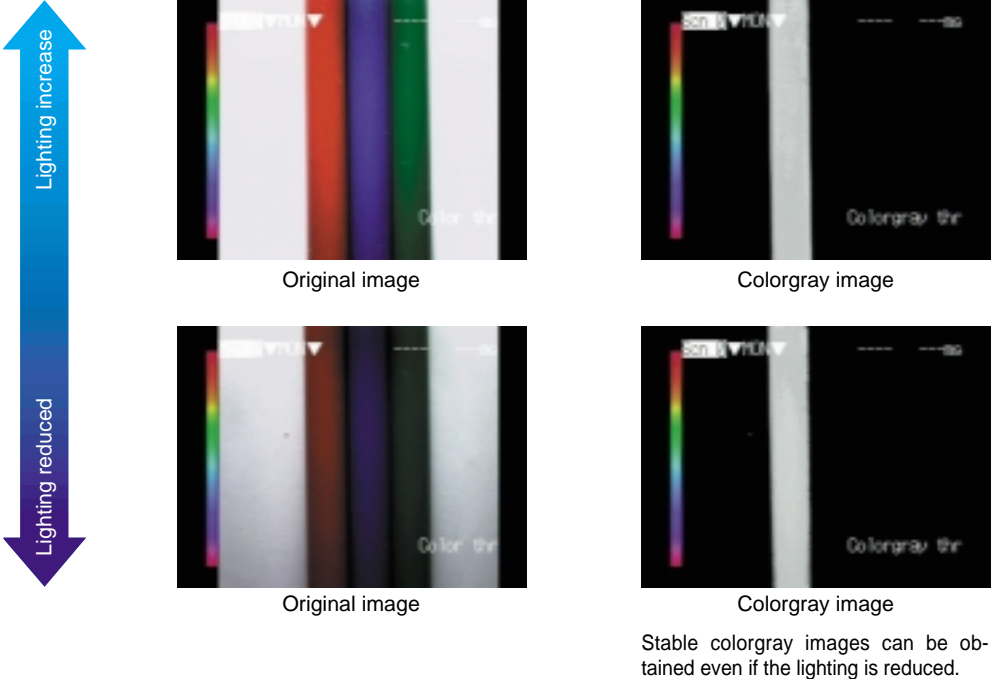
Ideal for Detecting Fine Differences in Color

Example: Inspection of Surface Defects on Bottle Caps



Ideal for Handling Light Fluctuations

Example: Inspection of Arrangement of Color Pencils (color set to red)

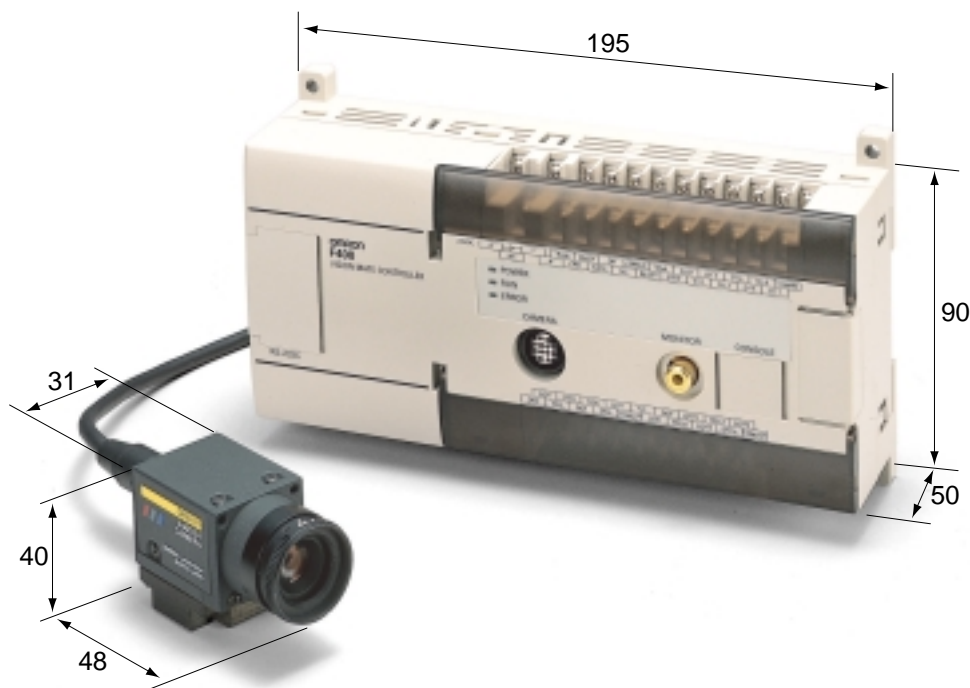


...sh even finer differences in color, ...ights.

...pickup function but also colorgray filtering - a first in the industry.
...provides easy and stable detection of fine color differences
...onal color pickup methods.

The compact F400 Color Vision Sensor incorporates additional features for improved inspection.

- RGB filters
- Color pickup function
- A variety of measurement modes



A variety of different inspections are possible

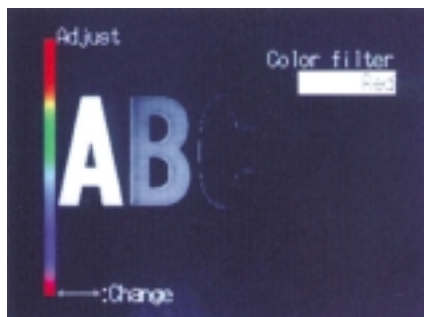
RGB Filters

In addition to the colorgray filter, RGB (red, green, and blue) filters are available.

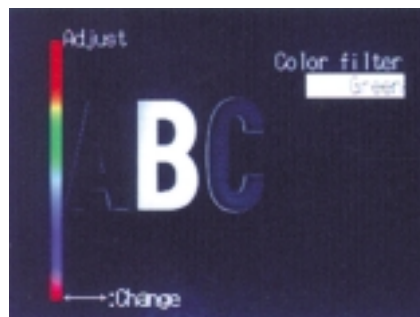
- Select a filter in accordance with the color of the inspected object and the purpose of inspection.



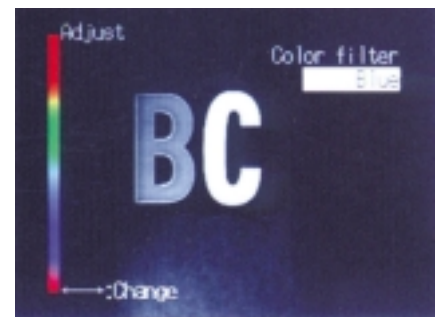
Color image (original image)



Red filter image



Green filter image

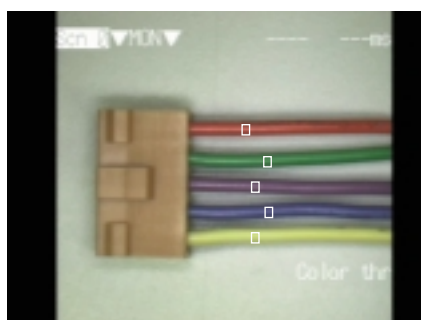


Blue filter image

Color Pickup

Detects up to eight colors simultaneously and measures area, center of gravity, and position displacement with high speed and precision.

- Ideal for distinguishing colors, checking different objects, and checking color arrangement.



Original image



Color pickup image

A Variety of Measurement Modes

Incorporates the same variety of measurement algorithms available with the F150-2.

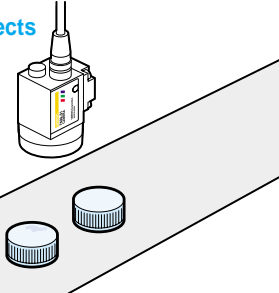
- Binary measurement/gray measurement algorithms
- Surface defect measurement/edge position measurement algorithms
- Storing of NG (unacceptable) images (monochrome images after filtering)


possible with one F400 Color Vision Sensor.

Application Examples

● Colorgray Processing

Inspection of Surface Defects on Bottle Caps





Original image
The contrast between the cap color and dirt is emphasized.


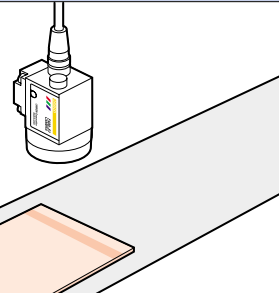
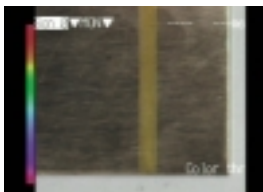


Image after filtering

Inspection of Amount of Adhesive





Original image

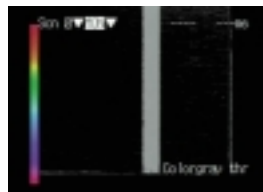


Image after filtering

The edge enhancement function is used for the detection of the glue on copper plates. Fine color differences are distinguished, which is not possible from monochrome images. This function is ideal for the classification or distinguishing of colors and the inspection of color arrangements.

Color Pickup Processing

Color Discrimination of Paper Cups



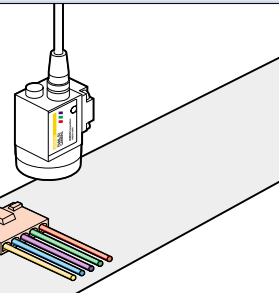



Original image



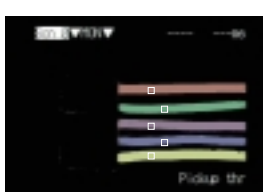
Color pickup image

Miswiring Check of Wire Harnesses



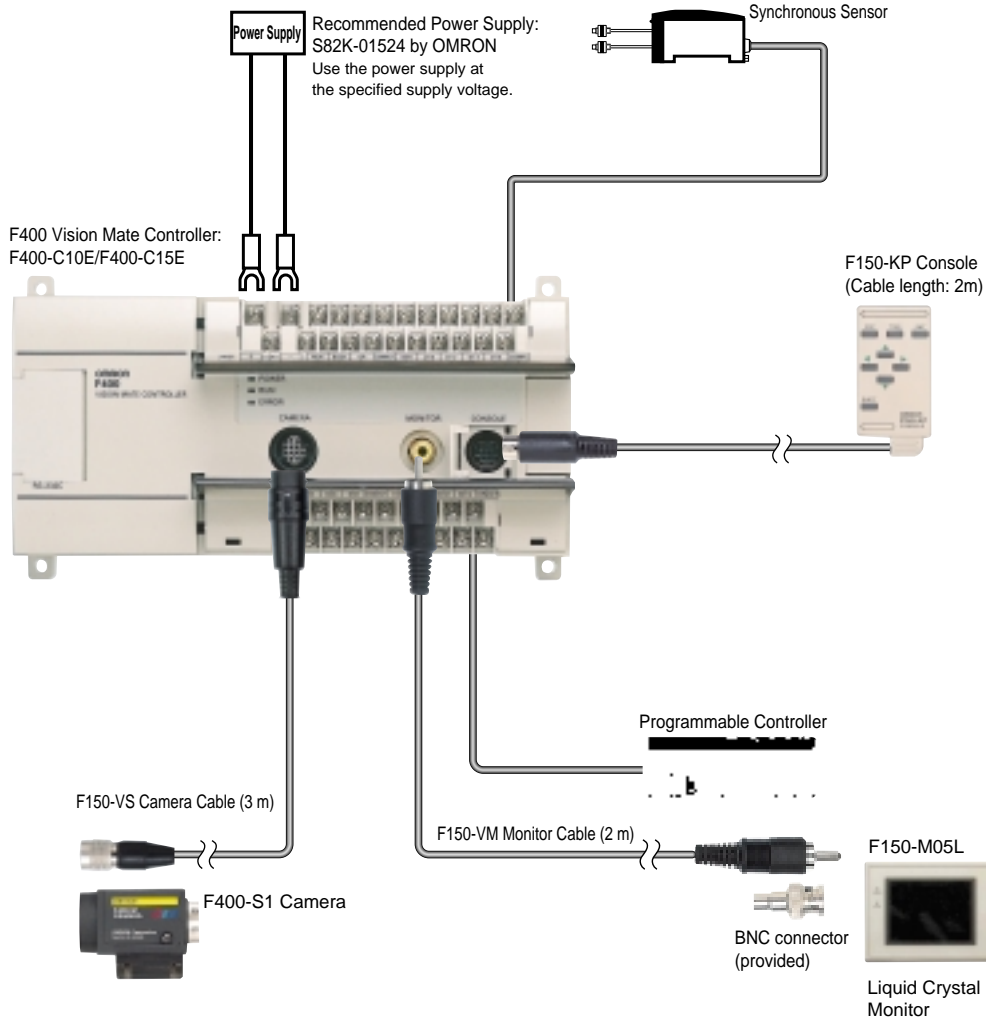


Original image



Color pickup image

System Configuration

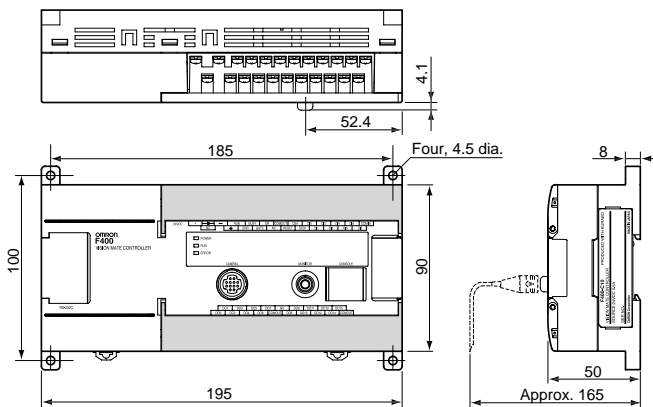


For information on lenses, refer to the relevant page in the F150-2 pamphlet (Q117).

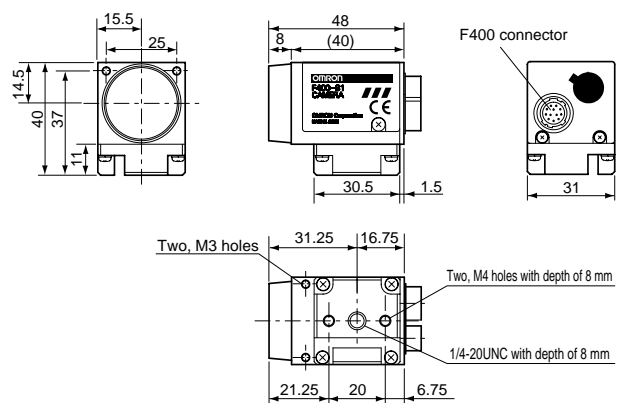
Dimensions

Unit: mm

● F400 Vision Mate Controller: F400-C10E/F400-C15E



● Camera: F400-S1



Specifications

● F400 Vision Mate Controller: F400-C10E/F400-C15E

Item	Specification	
	Color pickup	Colorgray/RGB filters
Number of connectable cameras	1	
Number of pixels	512 x 484 (H x V)	
Number of scenes	16	
Image memory function	Maximum of 16 images (filtered monochrome images) stored	
Operation method	Color pickup or color filtering (selectable)	
Processing method	Extraction of 8 colors max.	Images at 256 gradations
Filtering	—	Gray, red, green, blue, colorgray filters (selectable)
Number of binary levels	—	Smoother, enhance edges, all edges, and background suppression.
Position compensation	Compensating directions: X, Y, and θ directions Detection mode: Binary gravity/Axis angle, search (1 model, 2 models), and edge position (1 region, 2 regions)	
Number of regions	16 per scene	
Measurement data	Binary area, center of gravity, axis angle, correlation, search position, and edge position	Binary area, center of gravity, axis angle, gradation correlation, search position, edge position, scratch or dirt (degree of defect)
Operation function	Arithmetic operation, distance, angle, square root, maximum value, and minimum value	
Criteria result output	Overall judgment, judgment of operation results per region, and measurement and operation data	
Monitor interface	1 channel (pin-jack over-scan monitoring compatible)	
RS-232C interface	1 channel (D-sub 9-pin female)	
Parallel I/O	11 inputs and 21 outputs including control I/O points	
Input/Output Type	F400-C10E: NPN, F400-C15E: PNP	
Power supply voltage	24 VDC +10%/-15%	
Current consumption	0.6 A max.	
Ambient operating temperature and humidity	0°C to 50°C (with no condensation) 35% to 85% (with no condensation)	
Weight	Approx. 600 g	

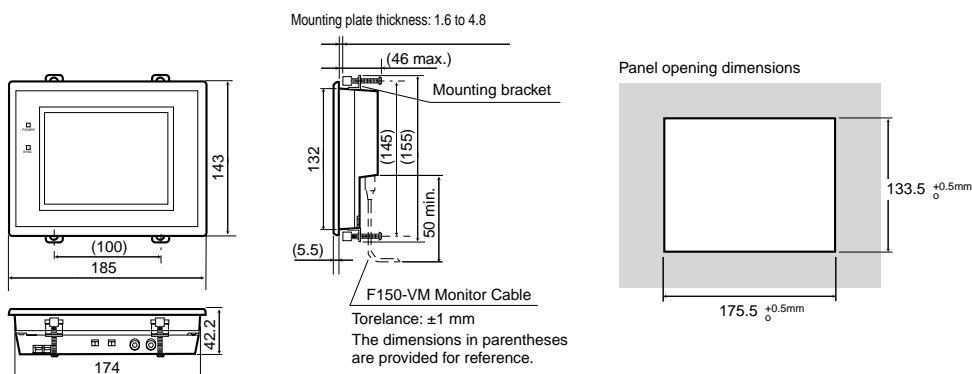
● Camera: F400-S1

Item	Specification
Picture element	1/3" color CCD
Effective pixels	659 x 494 (H x V)
Shutter speed	Electronic shutter, 1/100, 1/500, 1/2000, or 1/10000 s (menu-selectable)
Lens mounting	C mount
Ambient operating temperature and humidity	0°C to 50°C (with no condensation) 35% to 85% (with no condensation)
Weight	Approx. 70 g (without mounting base)

● Monitor: F150-M05L

Item	Specification
Size	5.5 inches; 111.36 x 83.52 mm (H x V)
Type	Liquid crystal color TFT
Resolution	320 x 240 dots
Input signals	NTSC composite video (1.0 V/75 termination)
Power supply voltage	20.4 to 26.4 VDC (including ripple)
Current/Power consumption	Approx. 700 mA max.
Ambient temperature	Operating: 0 to 50 °C; storage: -25 to +65 °C (with no icing or condensation)
Ambient humidity	Operating or storage: 35% to 85% (with no condensation)
Weight (Monitor only)	Approx. 1 kg
Accessories	Instructions manual (one), mounting brackets (four)

● Monitor: F150-M05L



Export Precautions

These products are Controlled Products subject to Japanese Law.

They should not be sold, transferred, re-exported or otherwise used, disposed, and other than original usage declared to the exporter without prior notification and approval to the exporter.

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.

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