Establish settings with a conversational feel. The dialog menu artist "talks" with you.

Features

The dialog menu lets you accomplish tasks with certitude.

Is this a "presence inspection"?
Is this "direction front-back"?
If "direction front-back", is this "shape of work"?
Settings can be accomplished with certitude by simply entering the information that the F150 requests, and setup man-hours can be reduced.

Select from seven types of applications
The type of inspection can be set for up to 16 areas, enabling support of multiple-type inspections.

Displays an image of the application.
You can verify whether the desired inspection has been selected without error.

*The screen may differ from actual screens.*
The dialog menu guides you through operations with ease.

1. Storing the reference image
   Place the work to be inspected so that it appears in the screen, and save the image as the reference image. When saving the image, lighting and shutter speed settings can be selected from the menu while viewing the image.

2. Inspection item/area settings
   Seven types of applications are displayed in the screen. While viewing the application diagram, select the most suitable inspection items.

   Next, set the inspection area. A variety of shapes can be selected for the area, including round and rectangular. Up to 16 areas can be set, and inspection items selected for each.

3. Select yes or no for position change
   If the work does not remain in a fixed position during inspection, position changes must be performed. The area that serves as the reference for the position change and the method of change are set automatically. These settings can be changed or adjusted later as needed.

4. Verification and measurement
   Verifies whether inspection will be carried out correctly according to the set conditions.
Enhanced adjustment functions make fine adjustment possible after settings have been completed.

Fine adjustments can be made as necessary from the dialog menu after settings have been completed.

1 Selection of adjustment item  2 Selection of detection area  3 Fine adjustment
**Intelligent lighting**

Various types of lighting control make it possible to obtain a clear, stable image that suits the inspection. The dome shape minimizes the effects of external light, making damage inspection possible. Red and green light is mixed to allow inspection of a wide range of work.

Variety of lighting methods

The direction of lighting and the brightness can be changed. Coaxial lighting is also possible with the F150-SLC20. The optimum lighting method for the work can be selected.

<table>
<thead>
<tr>
<th>F150-SLC20</th>
<th>F150-SLC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Field of vision: 20 mm)</td>
<td>(Field of vision: 50 mm)</td>
</tr>
</tbody>
</table>

Light intensity can be set separately to one of 8 levels for 5 illuminated areas.

Light intensity can be set separately to one of 8 levels for 8 illuminated areas.

Control lighting from the menu

- The illumination area and light intensity are controlled from the controller menu. Settings can be easily changed without handling the lighting.
- The lighting is also treated as scene data, and thus can be changed along with other conditions when the model is changed.
- The controller manages the lighting setting as a digital value. This increases the reproducibility of the setting.

**Integrated camera and lens**

Camera setup is easy because the object-imaging camera is integrated into a single unit with the lighting apparatus and lens.

**2-camera unit**

We have made bi-directional, 2-line inspection easy and inexpensive.
A variety of image read-in methods
Images from two cameras can be read in at the same timing. Read-in methods include successive changeover between the two cameras, and combination of the image from each camera into a single image.

Two-camera Switching

Vertical Composition

Horizontal Composition 1

Horizontal Composition 2

Features

Example of application using two cameras

Inspecting Boxes From Both Side
Simultaneously inspect both sides of a box using two cameras.

PCB Positioning
Determine the coordinates of position marks using two fields of vision.
**Image memory function**

Up to 23 images of defective works can be stored*. You can check the image to see what kind of defect occurred. This serves as an aid to maintaining and improving the production line.

With respect to a stored image, measurement can be repeated and measurement conditions changed. This enables a dramatic reduction in setup time during initial installation.

*Can be stored before power is turned off. Storage of all images, including “good” images, is also possible.
Features

Small frame shutter camera
- Compact with high resolution.
- An all-pixel reading method and square lattice CCD make it possible to obtain a clear and detailed image that is suitable for image processing.
- Equipped with an electronic shutter to handle high-speed lines.
- The shutter speed can be adjusted for each scene from the menu. Select the optimum shutter speed for the line speed and work.

Image pre-processing
- Preprocessing such as smoothing, edge enhancement, edge extraction, and background cut-off allow you to obtain the optimum image for the inspection.
- Preprocessing can be performed in real time (simultaneously with image read-in).

High-precision dark-light search
- Position measurement at sub-pixel precision is possible using 256-level dark-light search processing. This feature is ideal for high-precision positioning applications.

Damage/dirt inspection
- Omron's proprietary algorithm enables fast and detailed inspection for visual defects such as chips, nicks, burrs, and dirt.
- Linear, circular and rectangular areas can be set, enabling inspection for a variety of defect shapes.
Dark-light edge measurement
- High-precision (sub-pixel) measurement of work edge position is possible. Ideal for width and dimension inspection.
- Includes edge number and pitch measurement functions for support of IC and connector lead inspection.

Output computation functions
- Measurement data computations such as the four arithmetical operations, minimum, maximum, distance between two points, and angle can be set from the menu.
- Up to 24 computations can be set, and decision and data output can be performed based on the computation results.
System configuration

★ Camera with Intelligent Light Source:
F150-SLC20
(Field of vision: 20 mm)

★ Camera with Intelligent Light Source:
F150-SLC50
(Field of vision: 50 mm)

★ Camera with Light Source:
F150-SL20
(Field of vision: 20 mm)
F150-SL50
(Field of vision: 50 mm)

★ F150-VS
Camera cable (3 m)

★ F150-VS Camera cable (3 m)

★ Camera Unit Cable (15 cm)
(Provided with the F150-A20)

★ F150-A20
Two-camera unit
Note: Use a 24-VDC power supply.

★ F150-KP
Console

★ F150-VS
Camera cable (3 m)

★ Controller
F150-C10E-3
F150-C15E-3
F150-C10E-3-DRT

★ Power supply
Synchronous sensor

★ RCA/BNC Video Cable
monitor cable (2 m)

★ BNC Jack
(Provided with the monitor cable)

★ Color LCD Monitor
F150-M05L

★ Monochrome CRT
Video Monitor
F150-M09

★ F150-S1A
Camera

When using this camera, please look at "Cameras, lens, and lighting".

* When the size and view of a measurement item do not suit, please use a general CCTV lens and general lighting.

★ Recommended Power Supply:
OMRON S82K-01524 or S82K-05024

The star mark (★) is a specific product. It cannot be used except these
**Camera with lighting**

**Camera with intelligent lighting**

*A lens and intelligent lighting are installed on the special camera (F150-S1A) for the F150.

**Model**

<table>
<thead>
<tr>
<th>View: 20 mm</th>
<th>F150-SLC20</th>
</tr>
</thead>
<tbody>
<tr>
<td>View: 50 mm</td>
<td>F150-SLC50</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>View: 20 mm</th>
<th>F150-SL20A</th>
</tr>
</thead>
<tbody>
<tr>
<td>View: 50 mm</td>
<td>F150-SL50A</td>
</tr>
</tbody>
</table>

**Distance to inspection object and field of vision**

The camera distance is fixed. Fix the camera at a distance that allows correct imaging of the inspection object.

- **F150-SLC20**
  - Object
  - Camera distance: 15mm to 25mm
  - Field of vision (20 x 20 mm)

- **F150-SLC50**
  - Object
  - Camera distance: 16.5mm to 26.5mm
  - Field of vision (50 x 50 mm)

- **F150-SL20A**
  - Object
  - Camera distance: 61mm to 71mm
  - Field of vision (20 x 20 mm)

- **F150-SL50A**
  - Object
  - Camera distance: 66mm to 76mm
  - Field of vision (50 x 50 mm)
Ordering Information

<table>
<thead>
<tr>
<th>Name</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camera with intelligent lighting</td>
<td>F150-SLC20</td>
</tr>
<tr>
<td>Camera with lighting</td>
<td>F150-SL20A</td>
</tr>
<tr>
<td>Camera only</td>
<td>F150-S1A</td>
</tr>
<tr>
<td>2-camera unit</td>
<td>F150-A20</td>
</tr>
<tr>
<td>Console</td>
<td>F150-KP</td>
</tr>
<tr>
<td>LCD monitor</td>
<td>F150-M05L</td>
</tr>
<tr>
<td>Video monitor</td>
<td>F150-M09</td>
</tr>
<tr>
<td>Camera cable 3m</td>
<td>F150-VS</td>
</tr>
<tr>
<td>Monitor cable 2 m</td>
<td>F150-VM</td>
</tr>
</tbody>
</table>

*The F150-PCB3 ROM module is available as an upgrade to the older F150-C10/C10V2

Rating/performance

### Controller: F150-C10V3/C10V3-DRT

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of connected cameras</td>
<td>1 unit / 2 units (using the F150-A20)</td>
</tr>
<tr>
<td>Processing resolution</td>
<td>512(H) × 484(V)</td>
</tr>
<tr>
<td>Number of scenes</td>
<td>16 scenes (can be saved to a computer through the RS-232C)</td>
</tr>
<tr>
<td>Image memory function</td>
<td>Up to 23 screens can be saved</td>
</tr>
<tr>
<td>Processing method</td>
<td>Dark-light/2-value method</td>
</tr>
<tr>
<td>Image pre-processing</td>
<td>---</td>
</tr>
<tr>
<td>2-value level</td>
<td>Automatic setting, 256 levels (per measurement area)</td>
</tr>
<tr>
<td>Position correction function</td>
<td>Auto/manual setting, Correction directions: X, Y, θ, Detection modes: 2-value center of gravity / main axis angle, 2-area middle point, dark-light search (1/2 models), edge position</td>
</tr>
<tr>
<td>Number of measurement areas</td>
<td>16 areas/scene</td>
</tr>
<tr>
<td>Applications</td>
<td>Select from seven types, Presence inspection, direction front-back, dimension inspection, damage/dirt, foreign object, position inspection, chip/burr</td>
</tr>
<tr>
<td>Measured data</td>
<td>Automatic selection depending on the application, Area center of gravity, main axis angle, dark-light correlation value, dark-light search position, defect degree, edge position, edge number, darkness average, relative position</td>
</tr>
<tr>
<td>Calculation functions</td>
<td>---</td>
</tr>
<tr>
<td>Result output</td>
<td>Overall decision, decision for each measurement area, Overall decision, computation result (decision) per measurement area, measurement/computation data (RS-232C and parallel output possible)</td>
</tr>
<tr>
<td>Monitor I/F</td>
<td>1 ch (supports pin jack and over-scan monitor)</td>
</tr>
<tr>
<td>RS-232C I/F</td>
<td>1 ch (Dsub 9-pin, female)</td>
</tr>
<tr>
<td>CompoBus/D I/F</td>
<td>F150-C10V3: None, F150-C10V3-DRT: 1 ch</td>
</tr>
<tr>
<td>Parallel input/output</td>
<td>F150-C10V3: Inputs: 11 points, outputs: 21 points, F150-C10V3-DRT: Inputs: 1 point, outputs: 5 points (including control</td>
</tr>
<tr>
<td>Item</td>
<td>Specifications</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Power supply voltage</td>
<td>20.4 to 26.4 VDC</td>
</tr>
<tr>
<td>Current consumption</td>
<td>Approximately 0.5 A</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>Operating: 0 to +50°C, storage: -25 to +65°C (no ice formation or condensation)</td>
</tr>
<tr>
<td>Ambient humidity</td>
<td>Operating/storage: 35 to 85% RH (with no condensation)</td>
</tr>
<tr>
<td>Weight (Packed state)</td>
<td>Approximately 940 g (controller: 390 g)</td>
</tr>
<tr>
<td>Accessories</td>
<td>Three manuals, CompoBus/D connector (DRT type only)</td>
</tr>
</tbody>
</table>
## Camera

**Camera with intelligent lighting:** F150-SLC20/50  
**Camera with lighting:** F150-SLC20A/50A  
**Camera:** F150-SL20A/50A

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Image pick-up</strong></td>
<td>1/3 inch CCD</td>
</tr>
<tr>
<td><strong>Effective pixels</strong></td>
<td>659(H) × 494(V)</td>
</tr>
</tbody>
</table>
| **Shutter function**      | Electronic frame shutter  
                          | Shutter speed: 1/100, 1/500, 1/2000, 1/10000 sec (can be changed from the menu) |
| **Installation distance** | F150-SLC20: 15 to 25 mm  
                          | F150-SLC20A: 61 to 71 mm  
                          | F150-SLC50: 16.5 to 26.5 mm  
                          | F150-SLC50A: 66 to 76 mm  
                          | F150-SL20A: 61 to 71 mm  
                          | F150-SL50A: 66 to 76 mm |
| **Field of view**         | F150-SLC20/SL20A: 20 mm  
                          | F150-SLC50/SL50A: 50 mm |
| **Light source**          | F150-SLC20/50: Red LED - green LED mixed  
                          | F150-SL20A/50A: Red LED |
| **Light emission method** | Pulse emission (synchronized with camera shutter)   |
| **Ambient temperature**   | Operating: 0 to +50°C, storage: -25 to +60°C (no ice formation or condensation) |
| **Ambient humidity**      | Operating: 35 to 85% RH (with no condensation)      |
| **Weight * Unit only**    | F150-SLC20: Approximately 280 g  
                          | F150-SLC50: Approximately 370 g  
                          | F150-SL20A/50A: Approximately 135 g  
                          | F150-S1A: Approximately 80 g |
| **Accessories**           | Instruction manual                                   |

### Two-camera unit: F150-A20

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of connected cameras</strong></td>
<td>2 units</td>
</tr>
<tr>
<td><strong>Camera mode</strong></td>
<td>Two-camera switching, vertical division composite, horizontal division composite 1/2, one camera standalone (camera 0/1)</td>
</tr>
<tr>
<td><strong>Power supply voltage</strong></td>
<td>20.4 to 26.4 VDC</td>
</tr>
<tr>
<td><strong>Current consumption</strong></td>
<td>Approximately 0.3 A</td>
</tr>
<tr>
<td><strong>Ambient temperature</strong></td>
<td>Operating: 0 to +50°C, storage: -25 to +65°C (no ice formation or condensation)</td>
</tr>
<tr>
<td><strong>Ambient humidity</strong></td>
<td>Operating: 35 to 85% RH (with no condensation)</td>
</tr>
<tr>
<td><strong>Weight * Unit only</strong></td>
<td>Approx. 220 g</td>
</tr>
<tr>
<td><strong>Accessories</strong></td>
<td>Operation manual, camera unit cable (1)</td>
</tr>
</tbody>
</table>

Note: Can be connected to an F150-C10V3 controller. Cannot be connected to an F150-C10 or F150-C10V2.

## Monitor

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
</table>
| **Product name Model**    | LCD monitor F150-M05L  
                          | Video monitor F150-M09                                     |
| **Size**                  | 5.5 type                                            |
| **Type**                  | TFT color LCD                                      |
| **Resolution**            | 320 × 240 dots                                     |
| **Input signal**          | NTSC composite video (1.0 V / 75 Ω)                 |
| **Power supply voltage**  | 20.4 to 26.4 VDC                                    |
| **Current consumption**   | Approx. 700 mA                                      |
| **Ambient temperature**   | Operating: 0 to +50°C, storage: -25 to +65°C (no ice formation or condensation) |
| **Ambient humidity**      | Operating: 35 to 85% RH (no ice formation or condensation) |
| **Weight * Unit only**    | Approx. 1 kg                                        |
| **Accessories**           | Operation manual, clamps (4)                       |

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
</table>
| **Product name Model**    | LCD monitor F150-M05L  
                          | Video monitor F150-M09                                     |
| **Size**                  | 9 inches                                            |
| **Type**                  | CRT monochrome                                      |
| **Resolution**            | 800TV or higher (center)                            |
| **Input signal**          | NTSC composite video (1.0 V / 75 Ω)                 |
| **Power supply voltage**  | 100 to 240 VAC (-15%, +10%)                         |
| **Current consumption**   | Approx. 200 mA                                      |
| **Ambient temperature**   | Operating: -10 to +50°C, storage: -20 to +65°C (no ice formation or condensation) |
| **Ambient humidity**      | Operating: 35 to 85% RH (no ice formation or condensation) |
| **Weight * Unit only**    | Approx. 4.5 kg                                      |
| **Accessories**           | Instruction manual                                   |

Note: Can be connected to an F150-C10V3 controller. Cannot be connected to an F150-C10 or F150-C10V2.
Part Names/Functions

F150-C10V3

POWER indicator

RUN indicator

ERROR indicator

RS-232C connector

Camera connector

Output terminals

Input terminals

GROUND terminal

POWER supply terminals

Monitor connector

Console connector

* Please do not open here.

1. Lit while power is ON.
2. Lit while the F150 is in Run Mode.
3. Lit when an error has occurred.
4. Connects the F150 to external devices such as personal computers or programmable controllers.
5. Connects the F150 to camera or two-camera unit.
6. Connects to the power supply.
7. Connects to the ground wire.
8. Connects to the F150 to external devices such as synchronous sensors or programmable controllers.
9. Connects to the monitor.
10. Connects to the console.

F150-C10V3-DRT (CompoBus/D (DeviceNet) type)

Power indicator

RUN indicator

ERROR indicator

RS-232C connector

Camera connector

Output terminals

Input terminals

GROUND terminal

POWER supply terminals

Monitor connector

Console connector

MS indicator

NS indicator

DIP switch

CompoBus/D connector

* Please do not open here.

1. Lit while power is ON.
2. Lit while the F150 is in Run Mode.
3. Lit when an error has occurred.
4. Connects the F150 to external devices such as personal computers or programmable controllers.
5. Connects the F150 to camera or two-camera unit.
6. Connects to the power supply.
7. Connects to the ground wire.
8. Connects to the F150 to external devices such as synchronous sensors or programmable controllers.
9. Connects to the monitor.
10. Connects to the console.
11. Indicates the state of F150 in CompoBus/D communication.
12. Indicates the state of F150 in CompoBus/D communication.
13. Set up the node address and communication speed of CompoBus/D communication.
**Function menu**

**Menu structure diagram**

**Dialog menu**

- **Set mode**
  - Region
  - Orient’n
  - Dimen’s
  - Surface
  - Conform
  - Position
  - Chip/Bur
  - Region
  - Position

- **Monitor mode**
  - System
  - Communication
  - Device settings
  - Display
  - Output
  - Monitor
  - Device settings
  - Error method
  - Version

- **Run mode**
  - System
  - Tool
  - Save

**Expert menu**

- **Set mode**
  - Region
  - Orient’n
  - Dimen’s
  - Surface
  - Conform
  - Position
  - Chip/Bur
  - Region
  - Position

- **Monitor mode**
  - System
  - Tool
  - Save

- **Run mode**
  - System
  - Tool
  - Save

- **Switch menu**
  - Output RS-232C

**Notes:**
- Up to 16 regions can be set.
- F150-C10E-3-DRT only
- * Do not use it with a dialog menu.
- Depending on the mode, items may not be displayed.

* The menu configuration for Set mode, if the Two-Camera Unit is used, will require additional camera settings.

*When the Two-camera Unit is used, the measurement regions will be as follows:
  - Camera 0: 0 to 7
  - Camera 1: 8 to 15

*When the Two-camera Unit is used, the measurement regions will be as follows:
  - Camera 1: 10 to 11
  - Camera 0: 0 to 1

*The menu configuration for Set mode, if the Two-Camera Unit is used, will require additional camera settings.
## Dimensions (Unit: mm)

### Controller

<table>
<thead>
<tr>
<th>Model</th>
<th>CAD File</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>F150-C10V3</td>
<td>F150_01</td>
<td><a href="image">Diagram</a></td>
</tr>
<tr>
<td>F150-SLC20 (camera with F150-LTC20 intelligent lighting)</td>
<td>F150_07</td>
<td><a href="image">Diagram</a></td>
</tr>
<tr>
<td>F150-SLC50 (camera with F150-LTC50 intelligent lighting)</td>
<td>F150_08</td>
<td><a href="image">Diagram</a></td>
</tr>
</tbody>
</table>

### Console

<table>
<thead>
<tr>
<th>Model</th>
<th>CAD File</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>F150-KP</td>
<td>F150_02</td>
<td><a href="image">Diagram</a></td>
</tr>
<tr>
<td>F150-SL20A/SL50A (camera with lighting)</td>
<td>F150_03</td>
<td><a href="image">Diagram</a></td>
</tr>
<tr>
<td>F150-S1A (camera only)</td>
<td>F150_04</td>
<td><a href="image">Diagram</a></td>
</tr>
</tbody>
</table>

### Camera

- **F150-SLC20**
  - Mounting dimensions: [Diagram](image)
- **F150-SLC50**
  - Mounting dimensions: [Diagram](image)
- **F150-SL20A/SL50A**
  - Mounting dimensions: [Diagram](image)
- **F150-S1A**
  - Mounting hole dimensions: [Diagram](image)
2-camera unit

F150-A20

LCD monitor

F150-M05L

F150-M09

Panel opening dimensions

Mounting hole dimensions

RCA/BNC Monitor Cable

Tolerance: ±1 mm

CAD file F150_06

Mounting plate thickness: 1.6 to 4.8

185 (5.5)

174

133.5

175.5

10.5

2335

222

190

160

50

220