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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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Vision Sensor F210



F210

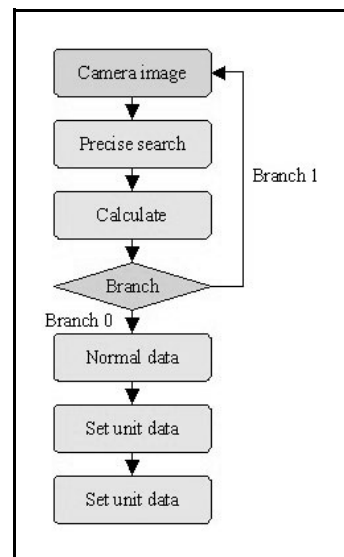
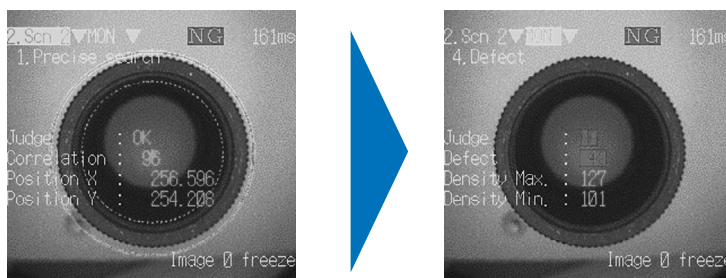
Features

Flow Menus

Flow Menus select the required processing items from the library, combining and linking them for you

Ideal for the following

- Stabilize measurement images by filtering the required number of times.
- Perform measurements according to workpiece tolerance by changing the measurement area based on measurement results
- Periodically check for data variations by outputting the maximum and minimum values for each 10 measurements,



Features

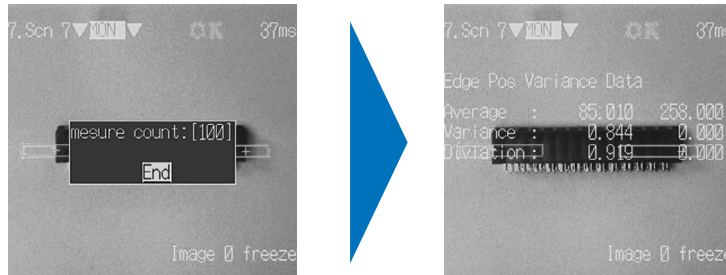
Macros

Augment Flow Menus using a PC text editor. The Software package can be edited using text commands to customize I/O controls, displays, and GUI

Programs can be created using only a text editor, with no need for any special development environment.

Ideal for the following

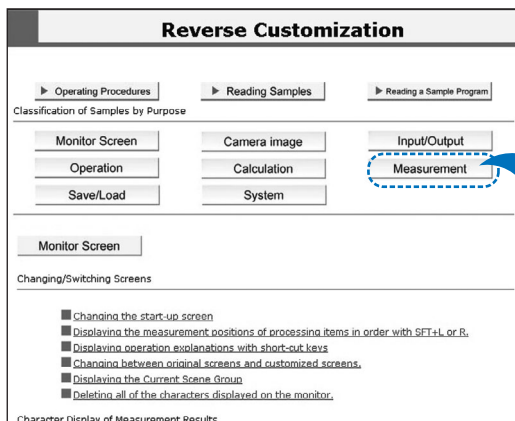
- Creating special menus.
- Displaying and outputting the date and time of NG measurements.
- Automatically saving NG images to a Memory Card.
- Changing the number of registered product types.



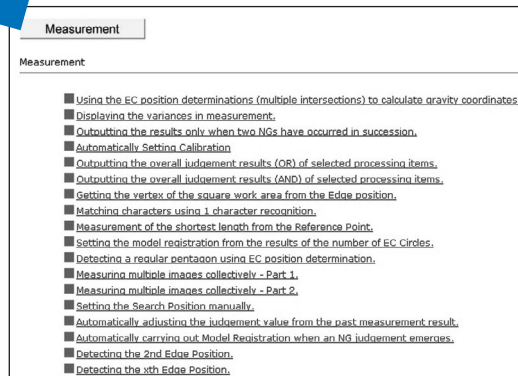
Special menus using macros

Customization Manual

The know-how from the past is incorporated in a manual so that Reverse Customization can be used to determine the best method to execute the desired process.



- Building Flow Menus and Using Macros
When an item is selected for operation, a sample program and explanation are displayed. Multiple samples can be easily combined.



Ordering information

| Name | | Model | Remarks |
|------------------------------|----------------------------------|--------------|---|
| Controller | | F210-C10 | NPN Input/Output |
| | | F210-C15 | PNP Input/Output |
| Double-speed camera | Camera with intelligent lighting | F160-SLC20 | |
| | | F160-SLC50 | |
| | Camera only | F160-S1 | |
| | | F160-S2 | With partial scan function. |
| Compatible F150 cameras | Camera with intelligent lighting | F150-SLC20 | |
| | | F150-SLC50 | |
| | Camera with light | F150-SL20A | |
| | | F150-SL50A | |
| Camera only | | F150-S1A | |
| Console | | F160-KP | |
| | | F150-KP | |
| Color LCD monitor | | F150-M05L | |
| Monochrome CRT Video monitor | | F150-M09 | |
| Memory card | | F160-N64S(S) | Memory capacity 64 MB |
| Camera cable | | F150-VS | For Double-speed Camera and compatible F150 Cameras. Cable length: 3 m ^{*1} |
| Monitor cable | | F150-VM | Cable length: 2 m ^{*1} |
| Parallel cable | | F160-VP | Loose-wire cable for parallel I/O connectors. Cable length: 2 m |

*1. Other length on request.



Processing Item Support

The F250-UM3FE (UM3ME) Application Software supports approximately 70 different processing items. These can be freely combined for inspections as needed. Image input, measurement support, branch control, results output, and results display can be used in common for all of the models (F210 and F250).









Image Input Functions

- Inputting Camera Images
- Switching Cameras
- Changing Filtering
- Filtering Again








Position Compensation Functions

| Compensation | Processing item | Controller | | Remarks |
|--|------------------------------|------------|------|--|
| | | F210 | F250 | |
| Position compensation in X, Y, and θ directions   | Binary Position Compensation | YES | YES | --- |
| | Circle Position Compensation | NO | YES | --- |
| | EC Position Compensation | YES | YES | --- |
| | Edge Position Compensation | YES | YES | --- |
| | Model Position Compensation | NO | YES | Enables high-speed processing compared to the model position compensation #. |
| Model Position Compensation # | YES | YES | --- | |

General Measurement Functions

| Application (measurement) | Processing item | Controller | | Remarks |
|--|----------------------------|------------|------|---|
| | | F210 | F250 | |
| Size (area)  | Binary Defect | YES | YES | Up to eight regions can be set per Unit, with results displayed in a list. |
| | Binary Gravity and Area | YES | YES | Only one region can be set per Unit. Menu levels are simple and easy to understand. |
| | Binary Area (Variable Box) | YES | YES | Used for inspecting measurement items with varying positions and sizes. |
| Position Center-of-gravity detection (Processing time: Low)  Coordinate detection (Processing time: High)  Coordinate detection (Rotation in measurement item)  Dimensions measurement  Position deviation detection  | Binary Defect | YES | YES | Up to eight regions can be set per Unit, with results displayed in a list. |
| | Binary Gravity and Area | YES | YES | Only one region can be set per Unit. Menu levels are simple and easy to understand. |
| | Binary Area (Variable Box) | YES | YES | Used for inspecting measurement items with varying positions and sizes. |
| | Gray Search | YES | YES | Uses gray models to detect positions in pixel units. |
| | Precise Search | YES | YES | Uses gray models to detect positions in sub-pixel units. |
| | Flexible Search | YES | YES | Multiple models are registered to enable searching even when there is variation. |
| | Pattern | NO | YES | Up to 64 regions can be registered per Unit, and high-speed processing is possible. (See note.) |
| | ECM Search | YES | YES | Uses edge code models so that processing is not affected by deformation or dirt. |
| | EC Positioning | YES | YES | No model registration is required. Searches using shape information such as "round" or "angular." |
| | Rotation Positioning | NO | YES | High-speed processing is possible. (See note.) |
| Dimensions measurement  | Rotation Search | YES | YES | --- |
| | Gray Edge Position_8 | YES | YES | Up to eight regions can be set per Unit, with results displayed in a list. |
| | Gray Edge Position_1 | YES | YES | Only one region can be set per Unit. Menu levels are simple and easy to understand. |
| Dimensions measurement  | Gray Edge Width | YES | YES | --- |
| | Relative Position | YES | YES | --- |

Note: These processing items are most effective when set immediately after image input processing item (Camera image input or Camera switching). Depending on conditions, however, high-speed processing may not be possible.

| Application (measurement) | Processing item | Controller | | Remarks |
|---|-------------------------------|------------|------|---|
| | | F210 | F250 | |
|  | Surface Defect | YES | YES | Only one region can be set per Unit. Menu levels are simple and easy to understand. |
| | Density Defect | NO | YES | Up to eight regions can be set per Unit, with results displayed in a list. The number of Units can be reduced. |
| | Surface Defect (Variable Box) | YES | YES | Used for inspecting measurement items with varying positions and sizes. |
| | EC Defect | YES | YES | Uses edge codes for defect inspection so that processing is not affected by deformation or dirt. |
| | Fine Matching | YES | YES | Accurately detects differences with models. |
|  | QUEST Character Verification | YES | YES | Used to verify multiple characters. |
| | Lot Number OCR 1 | YES | YES | Handles lot numbers that are changed daily, weekly, monthly, or annually. |
| | OCR for 1 Character | YES | YES | --- |
|  | Binary Defect | YES | YES | Up to eight regions can be set per Unit, with results displayed in a list. The number of Units can be reduced. |
| | Binary Gravity and Angle | YES | YES | Only one region can be set per Unit. Menu levels are simple and easy to understand. |
| | Rotation Positioning | NO | YES | High-speed processing is possible. (See note.) |
| | Rotation Search | YES | YES | Used when the measurement item rotates. |
| | Circular Angle | YES | YES | Used only for circular measurement items. Enables higher-speed processing compared to Rotation Search. (See note.) |
|  | Labeling | YES | YES | Counts up to 2,500. |
| | Label Data | YES | YES | Gets label measurement values from other Units. |
| | Edge Pitch | YES | YES | Gets the number, pitch, and width. |
| | EC Circle Count | YES | YES | Finds circles using "round" shape information so that processing is not affected even if the circles are deformed or dirty. |
|  | Pattern | NO | YES | Up to 64 regions can be registered per Unit, enabling high-speed processing. (See note.) |
| | Flexible Search | YES | YES | Searching can be performed even if there is variation in model images. |
| | Fine Matching | YES | YES | Accurately detects differences with models. |
|  | Classification | NO | YES | Enables higher-speed processing compared to Classification #. (See note.) |
| | Classification # | YES | YES | --- |
|  | Density Data | YES | YES | --- |

Note: These processing items are most effective when set immediately after image input processing item (Camera image input or Camera switching). Depending on conditions, however, high-speed processing may not be possible.

Measurement Support Functions

- Calculation
- Get unit data
- Set unit data
- Wait
- Elapsed time
- Trend monitor

Results Output Functions

- Memory card data output
- DO data output
- Host link data output
- Normal data output
- DO judgement output

Branch Control Functions

- Conditional branch
- DI branch
- End

Results Display Functions

- String display
- Measurement display
- Judgement display
- Item display
- Time display
- Figure display
- Line results display
- Box display
- Circle display
- Cursor display
- Newest NG image display

System Configuration

Camera with Lighting

Cameras with Intelligent Lighting
 F160-SLC20
 F160-SLC50



Cameras with Intelligent Lighting
 F150-SLC20
 F150-SLC50



Cameras with Light Source
 F150-SL20A
 F150-SL50A



Camera

F150-S1A



F160-S1/S2
 (Double-speed Camera)



Lense
 (See note 2.)

3Z4S-LE C1614A



3Z4S-LE B2514D



3Z4S-LE B5014A



F150-LT20A
 F150-LT50A



Software Package

F250-UM3FE (Flow Menu Format)
 F250-UM3ME (Flow Menu and Macro Format)



Console

F160-KP

F150-KP



Monitor

Color LCD Monitor
 F150-M05L



Monochrome CRT Video
 Monitor
 F150-M09



Memory Card

F160-N64S (S) (64 MB)



F210-C10/C15

F250-C50/C55



RS-232C/422
 (Common use)
 Ethernet (F250)

Personal computer



Parallel Cable

Synchronous Sensor
 Programmable Controller



Note 1: Separate robot cable specifications (F150-VSB) are available.
 Note 2: In addition, lenses and lighting are available.

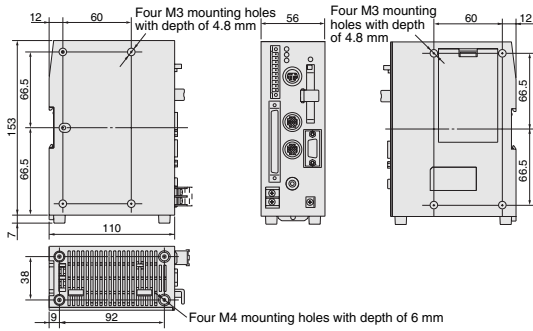
Rating/Performance

Controller

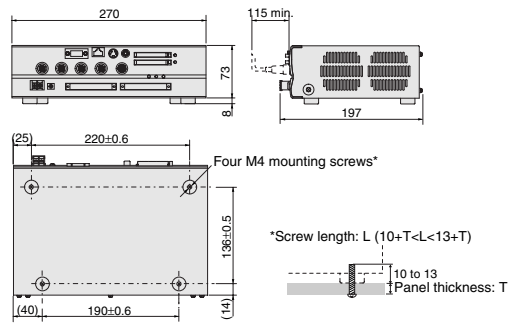
| Item | Specifications | F210-C10/C15 | F250-C50/C55 |
|-------------------------------|----------------|---|--|
| Connectable Cameras | | F150-S1A/-SL20A/-SL50A/-SLC20/-SLC50, F160-S1/-S2/-SLC20/-SLC50, F300-S2R/-S3DR, etc. | |
| Number of Cameras connectable | | 2 | 4 |
| Number of pixels | | 512 × 484 (H × V) | |
| Number of scenes | | 32 (Expansion possible using Memory Cards.) | |
| Image storage function | | Maximum of 35 images stored | |
| Filtering | | Smoothing (strong, weak), edge enhancement, edge extraction (horizontal, vertical, both), dilation, erosion, median, background suppression | |
| Operation and settings | | Installing measurement items using application software, and combining and setting measurement items by menu operations | |
| Menu language | | Japanese or English (Can be switched.) | |
| Trend monitor function | | Supported | |
| Memory card slots | | 1 | 2 |
| Monitor interface | | 1 channel | Composite video output: 1 channel, S-VIDEO output: 1 channel |
| Ethernet | | Not supported. | 10Base-T: 1 channel |
| Serial communications | | RS-232C/422A: 1 channel | |
| Parallel I/O | | 13 inputs and 22 outputs | 21 inputs and 46 outputs |
| Strobe interface | | 2 channels (included in parallel outputs) | 4 channels (included in parallel outputs) |
| Power supply voltage | | 20.4 to 26.4 VDC | |
| Current consumption | | Approx. 1.6 A (when two F160-SLC50 Cameras are connected) | Approx. 3.7 A (when four F160-SLC50 Cameras are connected) |
| Ambient temperature | | Operating: 0 to 50°C Storage: -25 to 65°C (with no icing or condensation) | |
| Ambient humidity | | Operating and storage: 35% to 85% (with no condensation) | |
| External dimensions | | 56 × 160 × 110 (W × H × D) mm (not including connectors and other protruding parts) | 270 × 81 × 197 (W × H × D) mm |
| Weight | | Approx. 570 g (Controller only) | Approx. 2.7 kg (Controller only) |

Dimensions

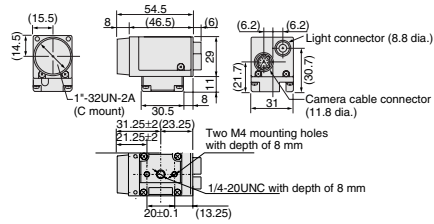
Controller
F210-C10/C15



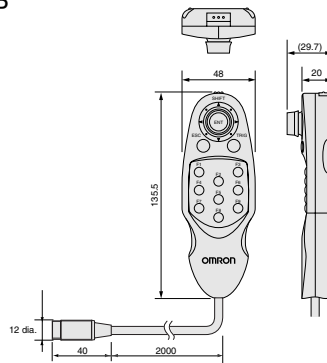
F250-C50/C55



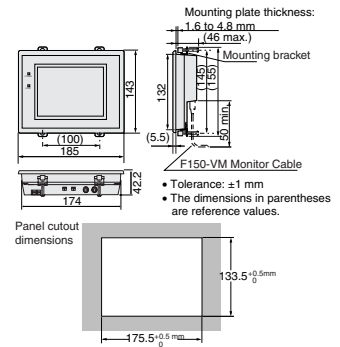
Camera
F160-S1/S2



Console
F160-KP



Liquid Crystal Monitor
F150-M05L



ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.