Finder Option
for the MX-Z2000H Series
Fiber Laser Markers

Give your Laser Marker the **Eyes** to Confirm Marking Quality

The same product enables position-compensated marking and data marked, including 2D codes inspection.
The Finder Option makes the MX-Z2000H series laser markers even easier to use!

Find the part, Mark it and Inspect it in the same position.

Position-compensated Marking, Inspection & Reading 2-D Codes, Display & Monitoring
Position-compensated Marking
No mechanical position-compensation is needed.

Before
There were many defects, producing low yields.
Now
Position-compensation increases yields.

The camera confirming and compensating for the workpiece position makes position-compensation mechanisms unnecessary. Jigs are not required even for multiple product types. The finder option contributes to both cost reductions and system simplification.

Great Benefits

System Configuration for Position-compensation and inspection

Finder Option

Note: Refer to pages 6 and 7 for device configuration details.
Inspection/Reading 2D Codes

Consolidate to a single process.

**Before**
Various devices and processes were required.

**Now**
All processes are consolidated in one single step.

Cost and labor for the design, implementation and execution were high.

Design, implementation, and execution are greatly simplified.

<table>
<thead>
<tr>
<th>Before</th>
<th>Now</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camera(s)</td>
<td>1</td>
</tr>
<tr>
<td>Rotary positioning mechanism</td>
<td>None</td>
</tr>
<tr>
<td>Product indexing</td>
<td>1 position</td>
</tr>
<tr>
<td>Hardware design</td>
<td>Simple</td>
</tr>
<tr>
<td>Software design</td>
<td>Simple</td>
</tr>
<tr>
<td>Rotation time</td>
<td>None</td>
</tr>
</tbody>
</table>

**The Benefits**

Simplifies device configuration, reduces processes, reduces the cycle time and reduces costs.
Compatible with the FH series vision system and FQ2 series smart camera, it’s a must for multiple products inspections.

Furthermore, the MX-Z2000H series, ...

**Direct Finder Link Eliminates the need of a PLC**

Using the MX-Z2000H series direct finder link, the laser marker and the vision system can be connected directly, without going through a PLC. This reduces the design effort even more.

*There is no longer any need for the PLC control programming for each device.*
Choose the Right Lens for the Required Field of View

When Example using the FZ-S2M camera and FH vision controller

Using the MX-9151 camera attachment and different camera lenses, they will give the following perspective when viewing 15mm integrated chips:

- 50mm lens
- 35mm lens
- 25mm lens
- 16mm lens
- 12mm lens
- 8mm lens

Choose the Most Suitable Lighting for Your Application

Choose the mounting position. Adjust the angle with the mounting brackets.

Using a high brightness bar light and a wide area model. (Diffusion plates are also available.)
Finder Option Device Configuration

1. Position Compensation/Reading 2D Codes/All Inspections

- **MX-Z2000H**
  - Vision System: MX-L5S0
  - Camera Mount: FZ-SC/FZ-5
  - CMOS Camera: 300K pixels, color/black & white

- **MX-Z2050H, MX-Z2055H**
  - Vision System: Standard
  - Camera Models: FH-1050 series
  - CMOS Camera: 400K pixels, color/black & white

- **MX-Z2050H, MX-Z2055H**
  - Vision System: High Speed
  - Camera Models: FH-2050 series
  - CMOS Camera: 400K pixels, color/black & white

- **MX-9150, MX-9151**
  - Camera Attachments: FH-L5S0, FH-SX5
  - CMOS Camera: 1M pixels, color/black & white

- **FH-SX5/FH-SM5R**
  - CMOS Camera: 1M pixels, color/black & white

- **FH-SX12/FH-SM12**
  - CMOS Camera: 12M pixels, color/black & white

- **FH-SCX12/FH-SM12**
  - CMOS Camera: 12M pixels, color/black & white

- **FH-3050 series**
  - Vision System: FH-3050 series
  - CMOS Camera: 300K pixels, color/black & white

- **FH-5050 series**
  - Vision System: FH-5050 series
  - CMOS Camera: 500K pixels, color/black & white

- **FH-2050 series**
  - Vision System: FH-2050 series
  - CMOS Camera: 2M pixels, color/black & white

- **FH-SCX/FH-SCX05R**
  - CMOS Camera: 3M pixels, color/black & white

- **FH-SCX12/FH-SCX12R**
  - CMOS Camera: 12M pixels, color/black & white

- **FZ-SC/FZ-S**
  - CCD Camera: 300K pixels, color/black & white

- **FZ-SC05F/FZ-SC05R**
  - CMOS Camera: 5M pixels, color/black & white

- **FZ-SC2M/FZ-S2M**
  - CMOS Camera: 5M pixels, color/black & white

- **FZ-SC5M3/FZ-SC5M3**
  - CMOS Camera: 5M pixels, color/black & white

- **FZ-SCX05/FH-SMX05**
  - CMOS Camera: 5M pixels, color/black & white

- **FZ-SCX12/FH-SMX12**
  - CMOS Camera: 12M pixels, color/black & white

- **FZ-SCX21/FH-SMX21**
  - CMOS Camera: 21M pixels, color/black & white

- **FZ-SCX21R/FH-SMX21R**
  - CMOS Camera: 21M pixels, color/black & white

- **FZ-SCX5M/FH-SMX5M**
  - CMOS Camera: 5M pixels, color/black & white

- **FZ-SC21/FH-SMX21**
  - CMOS Camera: 21M pixels, color/black & white

- **FZ-SCX05/FH-SMX05**
  - CMOS Camera: 5M pixels, color/black & white

- **FZ-SCX05/FH-SMX05**
  - CMOS Camera: 5M pixels, color/black & white

- **FZ-SCX12/FH-SMX12**
  - CMOS Camera: 12M pixels, color/black & white

- **FZ-SCX21/FH-SMX21**
  - CMOS Camera: 21M pixels, color/black & white

- **FZ-SCX21R/FH-SMX21R**
  - CMOS Camera: 21M pixels, color/black & white

2. Reading 2D Codes/Simple Inspections

- **Smart Camera**
  - FQ2-SC13
    - Inspection Only Model
    - Color/black & white
  - FQ2-5413
    - Code Reading and Inspection Model
    - Color/black & white

- **MX-915A-F2**
  - Camera Mount
  - CMOS Camera: 2M pixels, color/black & white

- **MX-915A-55M2**
  - Camera Mount: 5M pixels

- **FB-1050 series**
  - Vision System: FH-1050 series
  - CMOS Camera: 400K pixels, color/black & white

- **FB-2050 series**
  - Vision System: FH-2050 series
  - CMOS Camera: 2M pixels, color/black & white

- **FB-3050 series**
  - Vision System: FH-3050 series
  - CMOS Camera: 3M pixels, color/black & white

- **FB-5050 series**
  - Vision System: FH-5050 series
  - CMOS Camera: 5M pixels, color/black & white

- **FB-2050 series**
  - Vision System: FH-2050 series
  - CMOS Camera: 2M pixels, color/black & white

- **FB-3050 series**
  - Vision System: FH-3050 series
  - CMOS Camera: 3M pixels, color/black & white

- **FB-5050 series**
  - Vision System: FH-5050 series
  - CMOS Camera: 5M pixels, color/black & white

- **FB-2050 series**
  - Vision System: FH-2050 series
  - CMOS Camera: 2M pixels, color/black & white

- **FB-3050 series**
  - Vision System: FH-3050 series
  - CMOS Camera: 3M pixels, color/black & white

- **FB-5050 series**
  - Vision System: FH-5050 series
  - CMOS Camera: 5M pixels, color/black & white

Camera Attachment Dimensions

**MX-9150, MX-9151**

- **3Z4S-LE SV-0813V**
  - Lens: f=8mm

- **3Z4S-LE SV-1214V**
  - Lens: f=12mm

- **3Z4S-LE SV-1614V**
  - Lens: f=16mm, high resolution

- **3Z4S-LE SV-2014V**
  - Lens: f=20mm, high resolution

- **3Z4S-LE SV-2514V**
  - Lens: f=25mm

- **3Z4S-LE SV-3518V**
  - Lens: f=35mm, high resolution

- **3Z4S-LE SV-5018V**
  - Lens: f=50mm, high resolution

- **3Z4S-LE SV-EXR**
  - Extension Tubes: 7-tube set
The image output from the camera is a mirror image. The marked image you see on the screen may therefore look distorted or off-center, depending on the location of the camera controller. You may also need the FL-XBK1 mounting bracket to mount the lighting bar to the camera attachment.

The FL-XBK1 mounting bracket is required to mount the lighting bar to the camera attachment. Also compatible with the MX-Z2000 series and MX-Z2000G series laser markers. Consult with your sales representative for details.

Refer to the appropriate product catalogs for details.

## Lens Selection

When selecting a lens, follow the Lens Selection Criterion table below and the camera optical charts. Select the best camera and lens for your application, based on the optical table and your vision area needs. The extension tubes may also be needed. The optical charts, are included in the catalog for the camera being used.

### Lens Selection Criterion

(Distance between the Camera and the Workpiece)

<table>
<thead>
<tr>
<th>Model</th>
<th>Camera Installation Distance*</th>
</tr>
</thead>
<tbody>
<tr>
<td>MX-9150</td>
<td>Abt. 220mm</td>
</tr>
<tr>
<td>MX-9151</td>
<td>Abt. 270mm</td>
</tr>
</tbody>
</table>

*Remember to consider both the camera installation position and the length of the lens when calculating the distance between the camera and the workpiece.

### Camera Attachment Specifications

**Camera attachment**

<table>
<thead>
<tr>
<th>MX-9150 (MX-Z2000H)</th>
<th>MX-9151 (MX-Z2050H/MX-Z2055H)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MX-915A-AR</td>
<td>MX-915A-FQ2</td>
</tr>
<tr>
<td>MX-915A-FZ</td>
<td>MX-915A-SSM2</td>
</tr>
<tr>
<td>MX-915A-AR</td>
<td>MX-915A-FQ2</td>
</tr>
<tr>
<td>MX-915A-FZ</td>
<td>MX-915A-SSM2</td>
</tr>
</tbody>
</table>

**Compatible laser markers**

- FL-BR5020W diffusion plate
- FL-BR9120W diffusion plate
- FL-BR9120DF diffusion plate

**Compatible cameras (C-mount)**

- MX-9140
- MX-915A-FQ2
- MX-915A-FZ
- MX-915A-SSM2
- MX-915A-AR
- MX-915A-FQ2
- MX-915A-FZ
- MX-915A-SSM2

**Compatible lighting**

- FL-BR-STC1 single-channel lighting controller
- FL-BR-STC2 two-channel lighting controller
- FL-STC1 single-channel lighting controller
- FL-STC2 two-channel lighting controller

**Ambient operating temperature**

- 0-40°C

**Ambient operating humidity**

- 35-85%RH (no condensation)

**Ambient storage temperature**

- -10-60°C (no freezing)

**Ambient storage humidity**

- 35-85%RH (no condensation)

**Dimensions**

- W218mm x H60mm x D449 mm (except protrusions)

**Weight**

- Abt. 2.5kg (camera attachment only)

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2. The image output from the camera is a mirror image. Mirror image processing must be performed by the camera controller. The FQ2 cannot correct the mirror image, meaning that the mirror image will remain as is. The FL-BR can correct the mirror image with the trapezoidal distortion correction and the reverse conversion correction.
3. Check before you use the camera.

The camera image varies depending on the workpiece.
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