# OMRON

# Vision Accessory Catalog

# Best Solutions for Quality Inspection and Control

With a complete line-up of Lights and Lenses, advanced Vision Sensors, and 30 years of vision solutions knowhow, OMRON provides solutions to maintain your quality, increase the precision of your machines, and reduce your implementation costs.

## LED Lights  Constant voltage type  FLV Series

OMRON's unique Camera-mount Lighting Controller helps reduce your implementation costs by reducing wiring work, saving space in the control panel, and easily setting luminance control without programming.

# LED Lights  Constant current type  FL Series

## Lenses

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses

# Bar Light
# FLV-BR Series

**Many color and size variations are available to uniformly illuminate wide surfaces.**
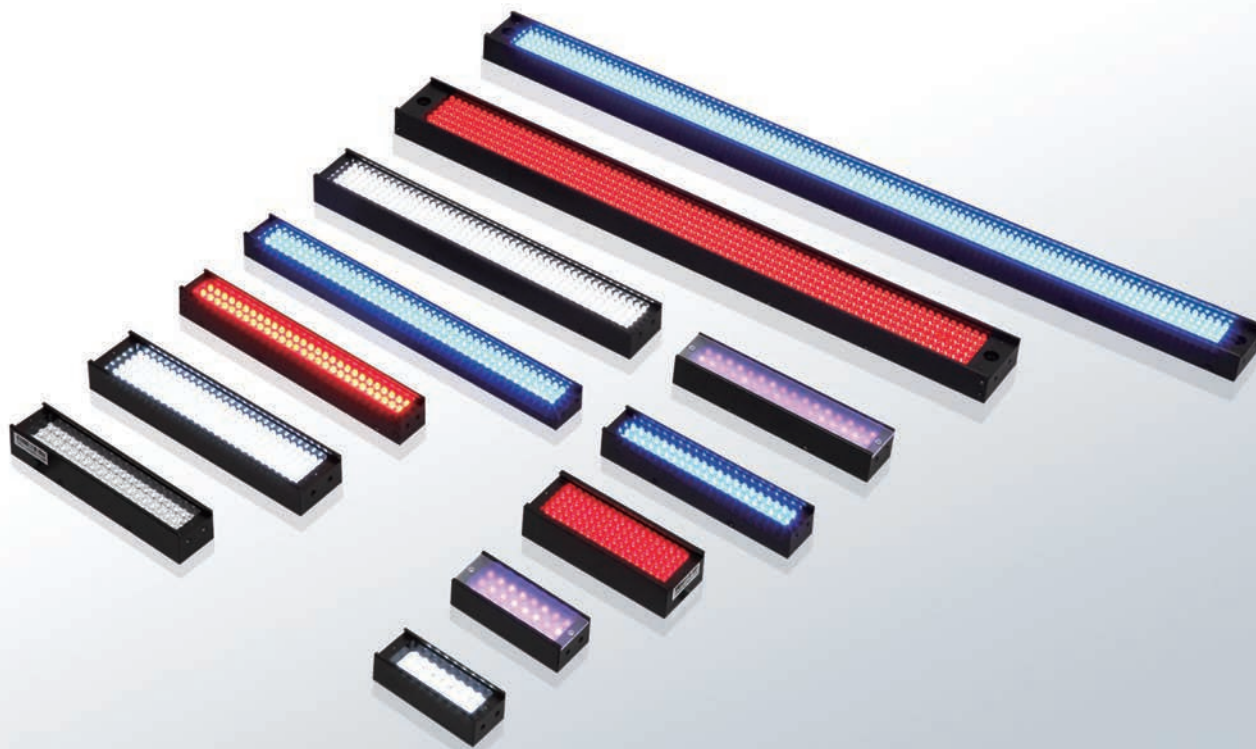
## Product Features

- Ideal for illumination of wide, rectangular surfaces.
- Many color and size variations.

**Cross-sectional Diagram**

Thermal conductor
PCB
LED
Aluminum alloy case
Diffusion Plate (optional)

\* This figure is a conceptual illustration and may vary from the actual structure.

**Illustration of Illumination**
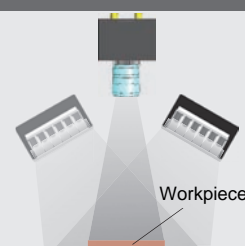
Workpiece

## Applications

Detection of metal surfaces

Detection of cracks on surfaces

Detection of LCD panels

**Positioning of LED Packages**

**Detection of Faulty LGA Electrodes**

**Detection of Printed Logo Marks and Characters on Long Workpieces**

1.5V×1  LR03  7号电池  USB充电5V
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## Ordering Information

| Model | Color | Power consumption (W) | Dimensions | | | | Controller * | | Weight (g) | Options | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lighting Area Dimension (mm) | Outside Dimension (mm) | Height (mm) | Drawing | FLV-TCC□ | FLV-ATC□ | | Diffusion Plate | Polarization Plate |
| FLV-BR6022W | WHITE | 1.4 | 48×18 | 60×22 | 17 | A | ○ | ○ | 60 | ○ | ○ |
| FLV-BR6022R | RED | 1.3 | | | | | ○ | ○ | | | |
| FLV-BR6022B | BLUE | 1.4 | | | | | ○ | ○ | | | |
| FLV-BR6022IR | IR | 0.9 | | | | | ○ | ○ | | | |
| FLV-BR6424UV | UV | 1.8 | 53×20 | 64×24 | 17 | J | ○ | ○ | 70 | ○ | × |
| FLV-BR8532W | WHITE | 3.5 | 73×25 | 85×32 | 20 | B | ○ | ○ | 130 | ○ | ○ |
| FLV-BR8532R | RED | 3.1 | | | | | ○ | ○ | | | |
| FLV-BR8532B | BLUE | 3.5 | | | | | ○ | ○ | | | |
| FLV-BR11222W | WHITE | 4.2 | 100×18 | 112×22 | 19 | C | ○ | ○ | 100 | ○ | ○ |
| FLV-BR11222R | RED | 2.6 | | | | | ○ | ○ | | | |
| FLV-BR11222B | BLUE | 4.2 | | | | | ○ | ○ | | | |
| FLV-BR11222IR | IR | 1.8 | | | | | ○ | ○ | | | |
| FLV-BR11624UV | UV | 3.6 | 105×20 | 116×24 | 19 | K | ○ | ○ | 120 | ○ | --- |
| FLV-BR14030W | WHITE | 6.1 | 126×25 | 140×30 | 19 | D | ○ | ○ | 140 | ○ | ○ |
| FLV-BR14030R | RED | 4.8 | | | | | ○ | ○ | | | |
| FLV-BR14030B | BLUE | 6.1 | | | | | ○ | ○ | | | |
| FLV-BR15020W | WHITE | 5.5 | 138×16 | 150×20 | 19 | E | ○ | ○ | 120 | ○ | ○ |
| FLV-BR15020R | RED | 3.1 | | | | | ○ | ○ | | | |
| FLV-BR15020B | BLUE | 5.5 | | | | | ○ | ○ | | | |
| FLV-BR21222W | WHITE | 8.7 | 199×18 | 212×22 | 16 | F | ○ | ○ | 140 | ○ | ○ |
| FLV-BR21222R | RED | 5.0 | | | | | ○ | ○ | | | |
| FLV-BR21222B | BLUE | 8.7 | | | | | ○ | ○ | | | |
| FLV-BR21230W | WHITE | 8.8 | 200×25 | 212×30 | 19 | G | ○ | ○ | 220 | ○ | ○ |
| FLV-BR21230R | RED | 7.0 | | | | | ○ | ○ | | | |
| FLV-BR21230B | BLUE | 8.8 | | | | | ○ | ○ | | | |
| FLV-BR21230IR | IR | 6.1 | | | | | ○ | ○ | | | |
| FLV-BR21230UV | UV | 7.8 | 200×25 | 212×30 | 19 | L | ○ | ○ | 230 | ○ | × |
| FLV-BR38037W | WHITE | 15.9 | 350×33.2 | 380×37.2 | 19 | H | × | ○ | 430 | ○ | ○ |
| FLV-BR38037R | RED | 11.3 | | | | | ○ | ○ | | | |
| FLV-BR38037B | BLUE | 15.9 | | | | | × | ○ | | | |
| FLV-BR48031W | WHITE | 21.9 | 450×25 | 480×31 | 18 | I | × | ○ | 460 | ○ | ○ |
| FLV-BR48031R | RED | 18.0 | | | | | × | ○ | | | |
| FLV-BR48031B | BLUE | 21.9 | | | | | × | ○ | | | |

\* For the connectable Lighting Controller models and conditions, refer to the Specifications pages of each Lighting Controller.
FLV-TCC□: page 32
FLV-ATC□: page 38
Note: Refer to page 66 for LED Characteristics.
○: Applicable  ×: Not applicable

# Dimensions

(Unit: mm)

**A** FLV-BR6022□

(AN OPTIONAL EXTRA MOUNTING SCREW HOLES)
2-M1.4
(MOUNTING SCREW HOLES)
2-M3 Insert Limit 2.5
EMITTING SURFACE
LENGTH0.8M
54
48
18
22
17
60
10±0.2
8±0.2
10±0.2
54±0.2
8±0.2
(MOUNTING SCREW HOLES)
2-3.5Dia. DEPTH 3
2-M3 Insert Limit 5
(MOUNTING SCREW HOLES)
2-M3 DEPTH2.5
Tightening torque: 0.54N · m

**B** FLV-BR8532□

80
73
EMITTING SURFACE
LENGTH0.8M
(AN OPTIONAL EXTRA MOUNTING SCREW HOLES)
2-M1.4
25
32
20
85
50±0.2
(MOUNTING SCREW HOLES)
2-M3 Insert Limit 3
Tightening torque: 0.54N · m

**C** FLV-BR11222□

(AN OPTIONAL EXTRA MOUNTING SCREW HOLES)
2-M1.4
EMITTING SURFACE
(MOUNTING SCREW HOLES)
2-M3 Insert Limit 4
(MOUNTING SCREW HOLES)
2-M3 DEPTH3
106
100
18
22
LENGTH0.8M
112
19
11±0.2
11±0.2
10±0.2
10±0.2
106±0.2
(MOUNTING SCREW HOLES)
2-3.5Dia. DEPTH4
2-M3 Insert Limit 7
Tightening torque: 0.54N · m

**D** FLV-BR14030□

(AN OPTIONAL EXTRA MOUNTING SCREW HOLES)
2-M1.4
EMITTING SURFACE
(MOUNTING SCREW HOLES)
2-M3 Insert Limit 3
133
126
25
30
LENGTH0.8M
140
19
12±0.2
9.5±0.2
12±0.2
9.5±0.2
(MOUNTING SCREW HOLES)
2-M3 Insert Limit 3
Tightening torque: 0.54N · m

**E** FLV-BR15020□

EMITTING SURFACE
(MOUNTING SCREW HOLES)
2-M3 Insert Limit 3
144
138
16
20
(AN OPTIONAL EXTRA MOUNTING SCREW HOLES)
2-M1.4
LENGTH0.8M
150
19
8±0.2
9.5±0.2
8±0.2
9.5±0.2
(MOUNTING SCREW HOLES)
2-M3 DEPTH3
Tightening torque: 0.54N · m

**F** FLV-BR21222□

(AN OPTIONAL EXTRA MOUNTING SCREW HOLES)
2-M1.4
(MOUNTING SCREW HOLES)
2-M3 Insert Limit 3
EMITTING SURFACE
206
199
18
22
LENGTH0.8M
212
16
12±0.2
8.5±0.2
8.5±0.2
(MOUNTING SCREW HOLES)
2-M3 DEPTH3
Tightening torque: 0.54N · m

**G** FLV-BR21230□

206
200
25
30
EMITTING SURFACE
(MOUNTING SCREW HOLES)
2-M3 Insert Limit 3
LENGTH0.8M
212
19
12±0.2
11.5±0.2
11.5±0.2
(MOUNTING SCREW HOLES)
2-M3 Insert Limit 3
Tightening torque: 0.54N · m

**H** FLV-BR38037□

(MOUNTING HOLES)
2-4.3Dia. PENETRATION
2-8Dia. DEPTH4
(AN OPTIONAL EXTRA MOUNTING SCREW HOLES)
4-M1.4
(MOUNTING HOLES)
2-M3 Insert Limit 4
EMITTING SURFACE
365
350
24
33.2
37.2
LENGTH0.8M
380
19
10±0.2
16±0.2
10±0.2
16±0.2
(MOUNTING SCREW HOLES)
2-M3 Insert Limit 4
Tightening torque: 0.54N · m

**I** FLV-BR48031□

(MOUNTING HOLES)
2-4.5Dia. PENETRATION
2-8Dia. DEPTH4
(MOUNTING SCREW HOLES)
2-M3 Insert Limit 4
EMITTING SURFACE
(AN OPTIONAL EXTRA MOUNTING SCREW HOLES)
4-M1.4
465
450
20
25
31
LENGTH0.8M
480
18
9±0.2
16±0.2
16±0.2
(MOUNTING SCREW HOLES)
2-M3 Insert Limit 4
Tightening torque: 0.54N · m

**J** FLV-BR6424UV

53
20
24
EMITTING SURFACE
LENGTH0.8M
Diffusion Plate
64
10±0.2
8±0.2
10±0.2
17
(MOUNTING SCREW HOLES)
2-M3 Insert Limit 2.5
(MOUNTING SCREW HOLES)
2-3.5Dia. DEPTH2
2-M3 Insert Limit 5 (2+3)
(MOUNTING SCREW HOLES)
2-M3 Insert Limit 2.5
8±0.2
59±0.2
Tightening torque: 0.54N · m

**K** FLV-BR11624UV

105
20
24
EMITTING SURFACE
LENGTH0.8M
Diffusion Plate
116
10±0.2
19
11±0.2
10±0.2
(MOUNTING SCREW HOLES)
2-M3 Insert Limit 2.5
(MOUNTING SCREW HOLES)
2-M3 Insert Limit 2.5
11±0.2
111±0.2
(MOUNTING SCREW HOLES)
2-3.5dia. DEPTH4
2-M3 Insert Limit 7 (4+3)
Tightening torque: 0.54N · m

**L** FLV-BR21230UV

200
25
30
EMITTING SURFACE
(MOUNTING SCREW HOLES)
2-M3 Insert Limit 3
LENGTH0.8M
212
19
12±0.2
11.5±0.2
12±0.2
11.5±0.2
(MOUNTING SCREW HOLES)
2-M3 Insert Limit 3
Tightening torque: 0.54N · m

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# Direct Ring Light
# FLV-DR Series

**Many shape and size variations are available to detect appearance of various workpieces.**

## Product Features

- Bright illumination with high-density LED arrays.
- Compact designs that save installation space.
- Optional Diffusion Plates for uniform illumination.

### Cross-sectional Diagram

Aluminum alloy case
Thermal conductor
PCB
LED
Diffusion Plate (optional)

### Illustration of Illumination

Workpiece
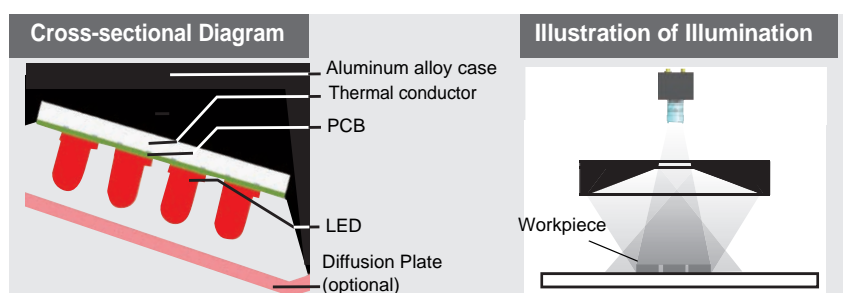
\* This figure is a conceptual illustration and may vary from the actual structure.

## Applications

| Detection of parts on PCBs |
| Detection of parts and printing on automotive components |
| Inspection of defects on mouth tops of PET bottles |
| Standard character recognition and code reading |

### Detection of parts on PCBs
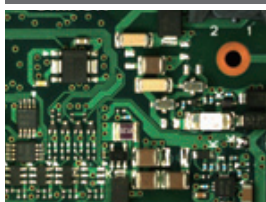
### Detection of printing

0187RAE
D2F-L-D

# Direct Ring Light FLV-DR Series

## Ordering Information

| Model | Color | Power consumption (W) | Dimensions External Ring Diameter (mm) | Dimensions Internal Ring Diameter (mm) | Dimensions Lighting Angle (Deg) | Dimensions Drawing | Controller * FLV-TCC□ | Controller * FLV-ATC□ | Weight (g) | Options Diffusion Plate | Options Polarization Plate |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FLV-DR3220W | WHITE | 1.4 | 32 dia. | 10 dia. | 20 deg. | A | ○ | ○ | 60 | ○ | ○ |
| FLV-DR3220R | RED | 1.3 | | | | | ○ | ○ | | | |
| FLV-DR3220B | BLUE | 1.4 | | | | | ○ | ○ | | | |
| FLV-DR4415W | WHITE | 2.7 | 44 dia. | 17 dia. | 15 deg. | B | ○ | ○ | 70 | ○ | ○ |
| FLV-DR4415R | RED | 1.7 | | | | | ○ | ○ | | | |
| FLV-DR4415B | BLUE | 2.7 | | | | | ○ | ○ | | | |
| FLV-DR5030W | WHITE | 3.1 | 50 dia. | 26.5 dia. | 30 deg. | C | ○ | ○ | 60 | ○ | ○ |
| FLV-DR5030R | RED | 1.8 | | | | | ○ | ○ | | | |
| FLV-DR5030B | BLUE | 3.1 | | | | | ○ | ○ | | | |
| FLV-DR5030IR | IR | 1.3 | | | | | ○ | ○ | | | |
| FLV-DR6030UV | UV | 3.2 | 64 dia. | 26.5 dia. | 30 deg. | O | ○ | ○ | 90 | ○ | ✕ |
| FLV-DR6615W | WHITE | 5.0 | 66 dia. | 31 dia. | 15 deg. | D | ○ | ○ | 120 | ○ | ○ |
| FLV-DR6615R | RED | 3.9 | | | | | ○ | ○ | | | |
| FLV-DR6615B | BLUE | 5.0 | | | | | ○ | ○ | | | |
| FLV-DR7000W | WHITE | 5.0 | 70 dia. | 33 dia. | 0 deg. | E | ○ | ○ | 110 | ○ | ○ |
| FLV-DR7000R | RED | 3.7 | | | | | ○ | ○ | | | |
| FLV-DR7000B | BLUE | 5.0 | | | | | ○ | ○ | | | |
| FLV-DR7030W | WHITE | 5.0 | 70 dia. | 30 dia. | 30 deg. | F | ○ | ○ | 120 | ○ | ○ |
| FLV-DR7030R | RED | 3.7 | | | | | ○ | ○ | | | |
| FLV-DR7030B | BLUE | 5.0 | | | | | ○ | ○ | | | |
| FLV-DR7030IR | IR | 2.6 | | | | | ○ | ○ | | | |
| FLV-DR7530UV | UV | 5.4 | 79 dia. | 30 dia. | 30 deg. | P | ○ | ○ | 150 | ○ | ✕ |
| FLV-DR9000W | WHITE | 8.8 | 90 dia. | 30 dia. | 0 deg. | G | ○ | ○ | 230 | ○ | ○ |
| FLV-DR9000R | RED | 7.0 | | | | | ○ | ○ | | | |
| FLV-DR9000B | BLUE | 8.8 | | | | | ○ | ○ | | | |
| FLV-DR9030W | WHITE | 8.1 | 90 dia. | 40 dia. | 30 deg. | H | ○ | ○ | 200 | ○ | ○ |
| FLV-DR9030R | RED | 6.6 | | | | | ○ | ○ | | | |
| FLV-DR9030B | BLUE | 8.1 | | | | | ○ | ○ | | | |
| FLV-DR9030IR | IR | 4.3 | | | | | ○ | ○ | | | |
| FLV-DR9030UV | UV | 6.8 | 94 dia. | 40 dia. | 30 deg. | Q | ○ | ○ | 220 | ○ | ✕ |
| FLV-DR9215W | WHITE | 7.4 | 92 dia. | 47 dia. | 15 deg. | I | ○ | ○ | 200 | ○ | ○ |
| FLV-DR9215R | RED | 5.4 | | | | | ○ | ○ | | | |
| FLV-DR9215B | BLUE | 7.4 | | | | | ○ | ○ | | | |
| FLV-DR12030W | WHITE | 11.9 | 120 dia. | 60 dia. | 30 deg. | J | ○ | ○ | 360 | ○ | ○ |
| FLV-DR12030R | RED | 9.8 | | | | | ○ | ○ | | | |
| FLV-DR12030B | BLUE | 11.9 | | | | | ○ | ○ | | | |

* For the connectable Lighting Controller models and conditions, refer to the Specifications pages of each Lighting Controller.
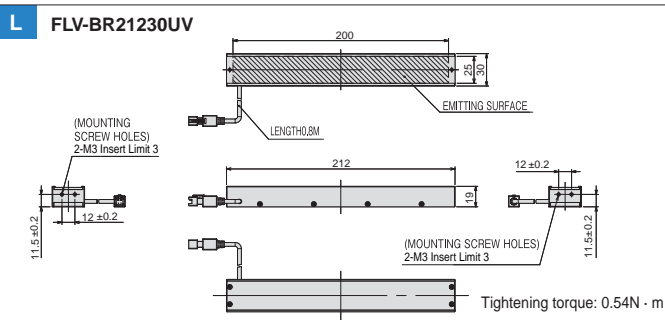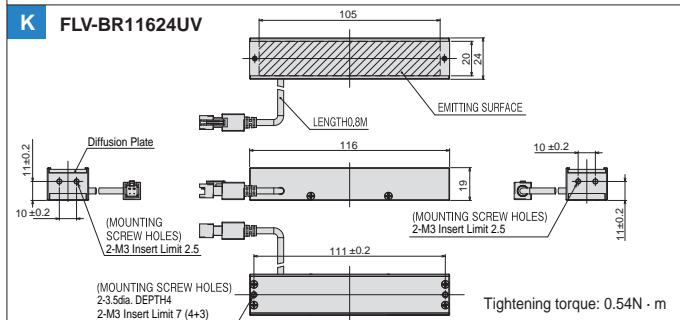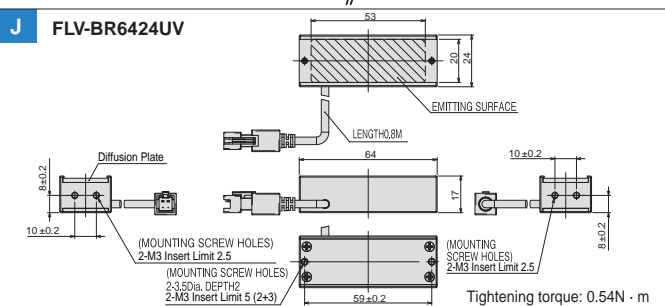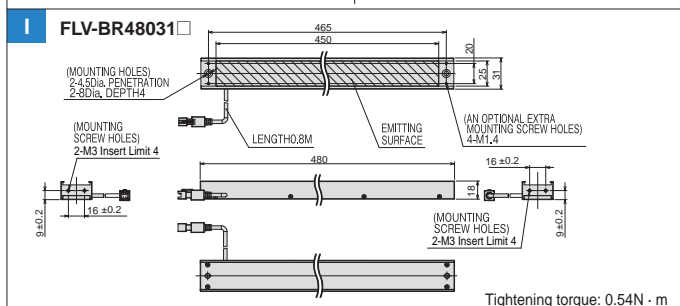FLV-TCC□: page 32  FLV-ATC□: page 38
Note: Refer to page 66 for LED Characteristics.
○: Applicable  ✕: Not applicable

## Dimensions

(Unit: mm)

**A** FLV-DR3220□



Tightening torque: 0.54N · m

**B** FLV-DR4415□



Tightening torque: 0.54N · m

# Direct Ring Light FLV-DR Series

## Dimensions

**C** FLV-DR5030□



LENGTH0.8M
50Dia.
P.C.D.38 ±0.2
26.5Dia.
(MOUNTING SCREW HOLES) 4-M3 Insert Limit 2
3.5
(AN OPTIONAL EXTRA MOUNTING PART) M50
30Deg. 13
27.1Dia.
46Dia.
EMITTING SURFACE
Tightening torque: 0.54N · m

**D** FLV-DR6615□



LENGTH0.8M
66Dia.
P.C.D.50±0.2
31Dia.
(MOUNTING SCREW HOLES) 4-M3 Insert Limit 2.5
3.5
(AN OPTIONAL EXTRA MOUNTING PART) M66
15Deg.
17
33Dia.
61Dia.
EMITTING SURFACE
Tightening torque: 0.54N · m

**E** FLV-DR7000□



LENGTH0.8M
?70Dia.
P.C.D.54 ±0.2
33Dia.
(MOUNTING SCREW HOLES) 4-M3 Insert Limit 3
3.5
(AN OPTIONAL EXTRA MOUNTING PART) M70
17
62Dia.
34.5Dia.
EMITTING SURFACE
Tightening torque: 0.54N · m

**F** FLV-DR7030□



LENGTH0.8M
?70Dia.
P.C.D.54 ±0.2
30Dia.
(MOUNTING SCREW HOLES) 4-M3 Insert Limit 3
3.5
(AN OPTIONAL EXTRA MOUNTING PART) M70
20
30Deg.
31.8Dia.
64Dia.
EMITTING SURFACE
Tightening torque: 0.54N · m

**G** FLV-DR9000□



LENGTH0.8M
90Dia.
P.C.D.70 ±0.2
30Dia.
(MOUNTING SCREW HOLES) 4-M3 Insert Limit 3
3.5
18
(AN OPTIONAL EXTRA MOUNTING PART) M90
EMITTING SURFACE
84Dia.
31.6Dia.
Tightening torque: 0.54N · m

**H** FLV-DR9030□



LENGTH0.8M
90Dia.
P.C.D.74 ±0.2
40Dia.
(MOUNTING SCREW HOLES) 4-M3 Insert Limit 3 EQUAL LAYOUT
3.5
(AN OPTIONAL EXTRA MOUNTING PART) M90
20
30Deg.
41.7Dia.
84Dia.
EMITTING SURFACE
Tightening torque: 0.54N · m

**I** FLV-DR9215□



LENGTH0.8M
92Dia.
P.C.D.70 ±0.2
47Dia.
(MOUNTING SCREW HOLES) 4-M3 Insert Limit 3
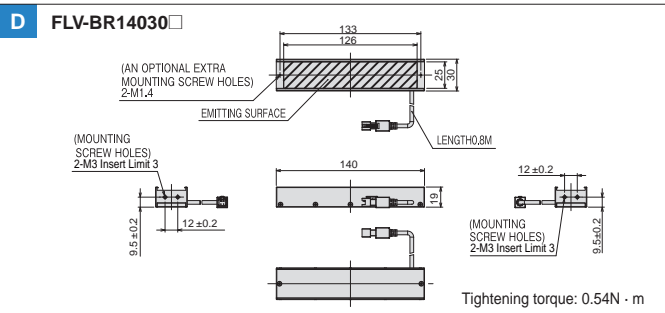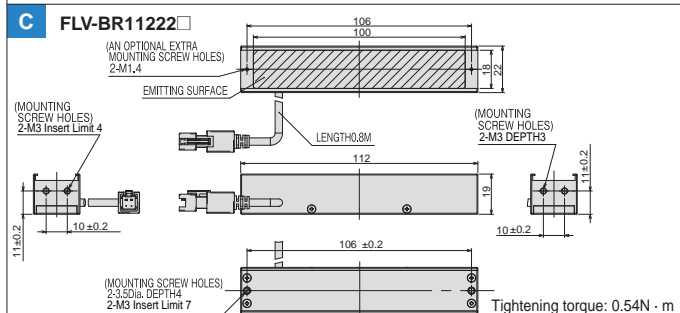3.5
(AN OPTIONAL EXTRA MOUNTING PART) M82
21
15Deg.
48.8Dia.
86Dia.
EMITTING SURFACE
Tightening torque: 0.54N · m

**J** FLV-DR12030□



LENGTH0.8M
120Dia.
P.C.D.100 ±0.2
60Dia.
(MOUNTING SCREW HOLES) 4-M3 Insert Limit 3
30Deg.
25
(AN OPTIONAL EXTRA MOUNTING SCREW HOLES) 4-M1.4
EMITTING SURFACE
112Dia.
61.86Dia.
P.C.D.115
Tightening torque: 0.54N · m

**O** FLV-DR6030UV



LENGTH0.8M
P.C.D.50 ±0.2
26.5Dia.
(MOUNTING SCREW HOLES) 4-M3 Insert Limit 3
DIFFUSION BOARD MOUNTING FRAME
60Dia.
64Dia.
19
30Deg.
56Dia.
EMITTING SURFACE
Tightening torque: 0.54N · m

**P** FLV-DR7530UV



LENGTH0.8M
(MOUNTING SCREW HOLES) 4-M3 Insert Limit 3
P.C.D.54 ±0.2
30Dia.
DIFFUSION BOARD MOUNTING FRAME
75Dia.
79Dia.
23
30Deg.
69Dia.
EMITTING SURFACE
Tightening torque: 0.54N · m

**Q** FLV-DR9030UV



LENGTH0.8M
P.C.D.74±0.2
40Dia.
(MOUNTING SCREW HOLES) 4-M3 Insert Limit 3
DIFFUSION BOARD MOUNTING FRAME
90Dia.
94Dia.
23
30Deg.
84Dia.
EMITTING SURFACE
Tightening torque: 0.54N · m

Standard Models FLV Series

High-brightness Models FL Series

LED Characteristics

Lenses

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**9**

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses

# Low Angle Ring Light
# FLV-DL Series

**Angled or horizontal illumination emphasizes defects and profiles of workpieces.**

## Product Features

- Bright illumination with high-density LED arrays.
- Compact designs that save installation space.
- Optional Diffusion Plates for uniform illumination.

**Cross-sectional Diagram**

Aluminum alloy case
Thermal conductor
PCB
LED
Diffusion Plate (optional)

**Illustration of Illumination**

Workpiece

\* This figure is a conceptual illustration and may vary from the actual structure.

## Applications

Detection of marking and defects on surfaces of metal workpieces

Detection of foreign matter in medicines

Detection of chips on circumference of O rings

**Surface and profile inspection of metal workpieces**

Ring Light          Low Angle Ring Light

**OMRON**

## Ordering Information

| Model | Color | Power consumption (W) | Dimensions | | | | Controller * | | Weight (g) | Options | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | External Ring Diameter (mm) | Internal Ring Diameter (mm) | Lighting Angle (Deg) | Drawing | FLV-TCC☐ | FLV-ATC☐ | | Diffusion Plate | Polarization Plate |
| **FLV-DL5890W** | WHITE | 1.9 | 58 dia. | 27 dia. | 90 deg. | J | ◯ | ◯ | 90 | ◯ | ✕ |
| **FLV-DL5890R** | RED | 1.3 | | | | | ◯ | ◯ | | | |
| **FLV-DL5890B** | BLUE | 1.9 | | | | | ◯ | ◯ | | | |
| **FLV-DL7260W** | WHITE | 5.7 | 72 dia. | 44 dia. | 60 deg. | K | ◯ | ◯ | 120 | ◯ | ◯ |
| **FLV-DL7260R** | RED | 3.9 | | | | | ◯ | ◯ | | | |
| **FLV-DL7260B** | BLUE | 5.7 | | | | | ◯ | ◯ | | | |
| **FLV-DL9090W** | WHITE | 2.8 | 90 dia. | 50 dia. | 90 deg. | L | ◯ | ◯ | 100 | ✕ | ✕ |
| **FLV-DL9090R** | RED | 1.8 | | | | | ◯ | ◯ | | | |
| **FLV-DL9090B** | BLUE | 2.8 | | | | | ◯ | ◯ | | | |
| **FLV-DL12060W** | WHITE | 12.7 | 120 dia. | 67 dia. | 60 deg. | M | ◯ | ◯ | 310 | ◯ | ◯ |
| **FLV-DL12060R** | RED | 10.5 | | | | | ◯ | ◯ | | | |
| **FLV-DL12060B** | BLUE | 12.7 | | | | | ◯ | ◯ | | | |
| **FLV-DL15060W** | WHITE | 13.6 | 150 dia. | 108 dia. | 60 deg. | N | ◯ | ◯ | 260 | ◯ | ◯ |
| **FLV-DL15060R** | RED | 11.2 | | | | | ◯ | ◯ | | | |
| **FLV-DL15060B** | BLUE | 13.6 | | | | | ◯ | ◯ | | | |

\* For the connectable Lighting Controller models and conditions, refer to the Specifications pages of each Lighting Controller.
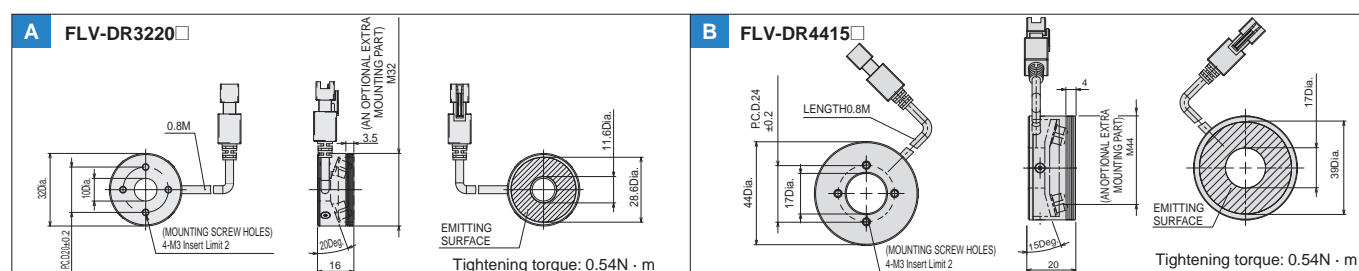FLV-TCC☐:page 32  FLV-ATC☐: page38
Note: Refer to page 66 for LED Characteristics.
◯: Applicable  ✕: Not applicable

## Dimensions

**(Unit: mm)**



J **FLV-DL5890☐**
Tightening torque: 0.54N · m

K **FLV-DL7260☐**
Tightening torque: 0.54N · m

L **FLV-DL9090☐**
Tightening torque: 0.54N · m

M **FLV-DL12060☐**
Tightening torque: 0.54N · m

N **FLV-DL15060☐**
Tightening torque: 0.54N · m

# Coaxial Light
# FLV-CL Series

**Coaxial illumination with the Lens helps prevent interference from reflected light. This series is ideal for surface damage and character inspections on highly reflective workpieces with mirror-like surfaces.**

## Product Features

- Long life and stability result from a structure with optimum heat dissipation.
- Uniform illumination for clear images.

**Cross-sectional Diagram**

Heat-dissipating structure

LED

Diffusion plate

Absorption plate

Half-mirror

PCB  Thermal conductor  Aluminum alloy case

**Illustration of Illumination**

Workpiece

* This figure is a conceptual illustration and may vary from the actual structure.

## Applications

Inspection for scratches on highly reflective surfaces

Inspection for damages on chips and silicon wafers

Detection of positioning marks

Recognition of bar codes on packages

Recognition of laser-marked characters and 2D DMP codes

General exterior detection

**BGA Inspection**

P=1.5 BGA169P

**Recognition of 2D DPM Code**

**Positioning for Metal Welding**

OMRON
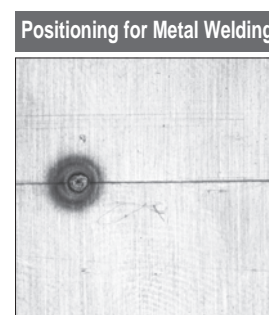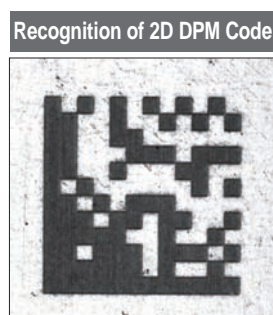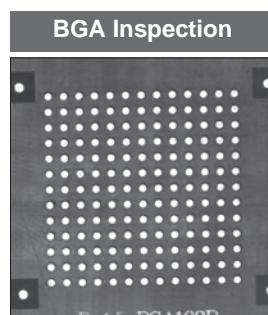
## Ordering Information

| Model | Color | Power consumption (W) | Dimension | | | | Controller * | | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| | | | Lighting Area Dimension (mm) | Outside Dimension (mm) | Height (mm) | Drawing | FLV-TCC□ | FLV-ATC□ | |
| **FLV-CL30W** | WHITE | 2.4 | 24×25 | 32×59.5 | 31 | A | ◯ | ◯ | 110 |
| **FLV-CL30R** | RED | 1.4 | | | | | ◯ | ◯ | |
| **FLV-CL30B** | BLUE | 2.4 | | | | | ◯ | ◯ | |
| **FLV-CL40W** | WHITE | 3.9 | 34×34 | 40×74 | 40 | B | ◯ | ◯ | 170 |
| **FLV-CL40R** | RED | 2.3 | | | | | ◯ | ◯ | |
| **FLV-CL40B** | BLUE | 3.9 | | | | | ◯ | ◯ | |
| **FLV-CL60W** | WHITE | 10.4 | 51×52 | 58×104 | 60.5 | C | ◯ | ◯ | 380 |
| **FLV-CL60R** | RED | 5.7 | | | | | ◯ | ◯ | |
| **FLV-CL60B** | BLUE | 10.4 | | | | | ◯ | ◯ | |
| **FLV-CL60IR** | IR | 3.9 | | | | | ◯ | ◯ | |
| **FLV-CL60UV** | UV | 3.0 | | | | | ◯ | ◯ | |
| **FLV-CL80W** | WHITE | 10.8 | 72×72 | 78×124 | 77.5 | D | ◯ | ◯ | 580 |
| **FLV-CL80R** | RED | 7.2 | | | | | ◯ | ◯ | |
| **FLV-CL80B** | BLUE | 10.8 | | | | | ◯ | ◯ | |
| **FLV-CL100W** | WHITE | 22.7 | 92×92 | 98×141 | 99.5 | E | ✕ | ◯ | 820 |
| **FLV-CL100R** | RED | 15.2 | | | | | ✕ | ◯ | |
| **FLV-CL100B** | BLUE | 22.7 | | | | | ✕ | ◯ | |

\* For the connectable Lighting Controller models and conditions, refer to the Specifications pages of each Lighting Controller.
  FLV-TCC□: page 32  FLV-ATC□: page 38
Note: Refer to page 66 for LED Characteristics.
  ◯: Connectable  ✕: Not connectable

## Dimensions

**(Unit: mm)**

**A** FLV-CL30□



Tightening torque: 1.2 N · m

**B** FLV-CL40□



Tightening torque: 1.2 N · m

**C** FLV-CL60□



Tightening torque: 2.3 N · m

**D** FLV-CL80□



Tightening torque: 2.3 N · m

**E** FLV-CL100□



Tightening torque: 2.3 N · m

Standard Models FLV Series

High-brightness Models FL Series

LED Characteristics

Lenses

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses

# Shadowless Ring Light
# FLV-FR Series

**This series effectively eliminates the influences of localized reflections for the surfaces of small workpieces.**
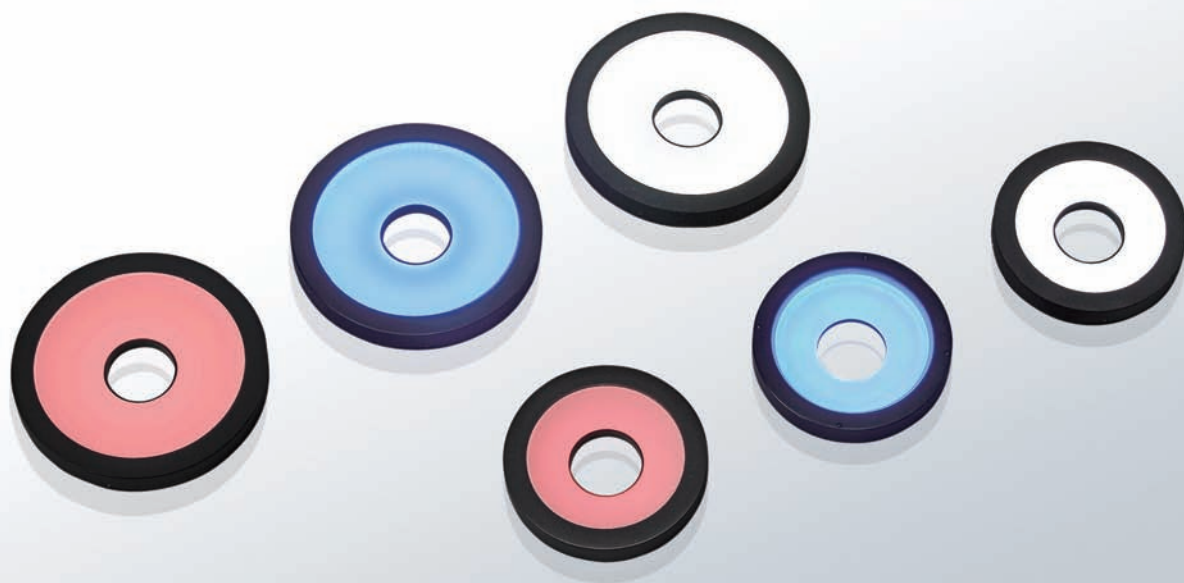


## Product Features

• Special diffusion plates create greater uniformity in lighting than normal ring lighting.
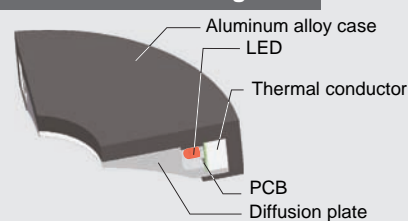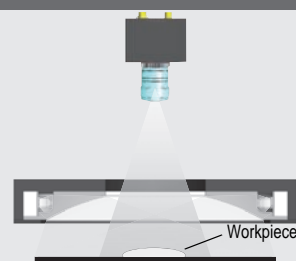
**Cross-sectional Diagram**



Aluminum alloy case
LED
Thermal conductor
PCB
Diffusion plate

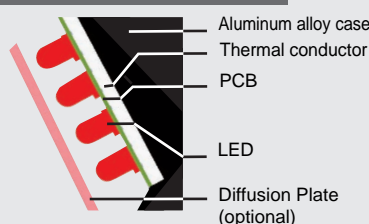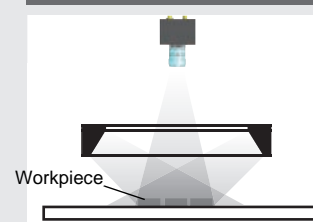**Illustration of Illumination**



Workpiece

* This figure is a conceptual illustration and may vary from the actual structure.

## Applications

Character inspections on electronic components or formed plastic parts

**Character Detection on Capacitor Surface**



Image with Normal Ring Lighting      Image with the FLV-FR114R

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## Ordering Information

| Model | Color | Power consumption (W) | Dimensions | | | | Controller * | | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| | | | External Ring Diameter (mm) | Internal Ring Diameter (mm) | Lighting Area Diameter (mm) | Drawing | FLV-TCC□ | FLV-ATC□ | |
| FLV-FR114W | WHITE | 3.9 | 114 dia. | 40 dia. | 92 dia. | A | ○ | ○ | 270 |
| FLV-FR114R | RED | 3.1 | | | | | ○ | ○ | |
| FLV-FR114B | BLUE | 3.9 | | | | | ○ | ○ | |
| FLV-FR150W | WHITE | 6.1 | 150 dia. | 40 dia. | 123 dia. | B | ○ | ○ | 500 |
| FLV-FR150R | RED | 3.5 | | | | | ○ | ○ | |
| FLV-FR150B | BLUE | 6.1 | | | | | ○ | ○ | |

* For the connectable Lighting Controller models and conditions, refer to the Specifications pages of each Lighting Controller.
  FLV-TCC□: page 32
  FLV-ATC□: page 38
Note: Refer to page 66 for LED Characteristics.
  ○: Connectable

## Dimensions

**(Unit: mm)**

A  FLV-FR114□

B  FLV-FR150□

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses

# Shadowless Low Angle Ring Light
# FLV-FP Series

**This series achieves highly uniform illumination across a wide field of view. Excellent symmetry eliminates diagonal shadows.**

## Product Features

- Shadowless Ring Lighting
- Achieve highly uniform illumination and obtain different images at different installation distances for a much wider range of application compared to normal ring lighting.

### Cross-sectional Diagram

Aluminum alloy case
Thermal conductor
PCB
LED
Diffusion plate

### Illustration of Illumination

Workpiece

\* This figure is a conceptual illustration and may vary from the actual structure.

## Ordering Information

| Model | Light Color | Power consumption (W) | Dimensions | | | | Controller * | | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| | | | External Ring Diameter (mm) | Internal Ring Diameter (mm) | Lighting Area Diameter (mm) | Drawing | FLV-TCC□ | FLV-ATC□ | |
| **FLV-FP130W** | WHITE | 8.1 | 130 dia. | 100 dia. | 120 dia. | A | ○ | ○ | 320 |
| **FLV-FP130R** | RED | 5.8 | | | | | ○ | ○ | |
| **FLV-FP130B** | BLUE | 8.1 | | | | | ○ | ○ | |

\* For the connectable Lighting Controller models and conditions, refer to the Specifications pages of each Lighting Controller.
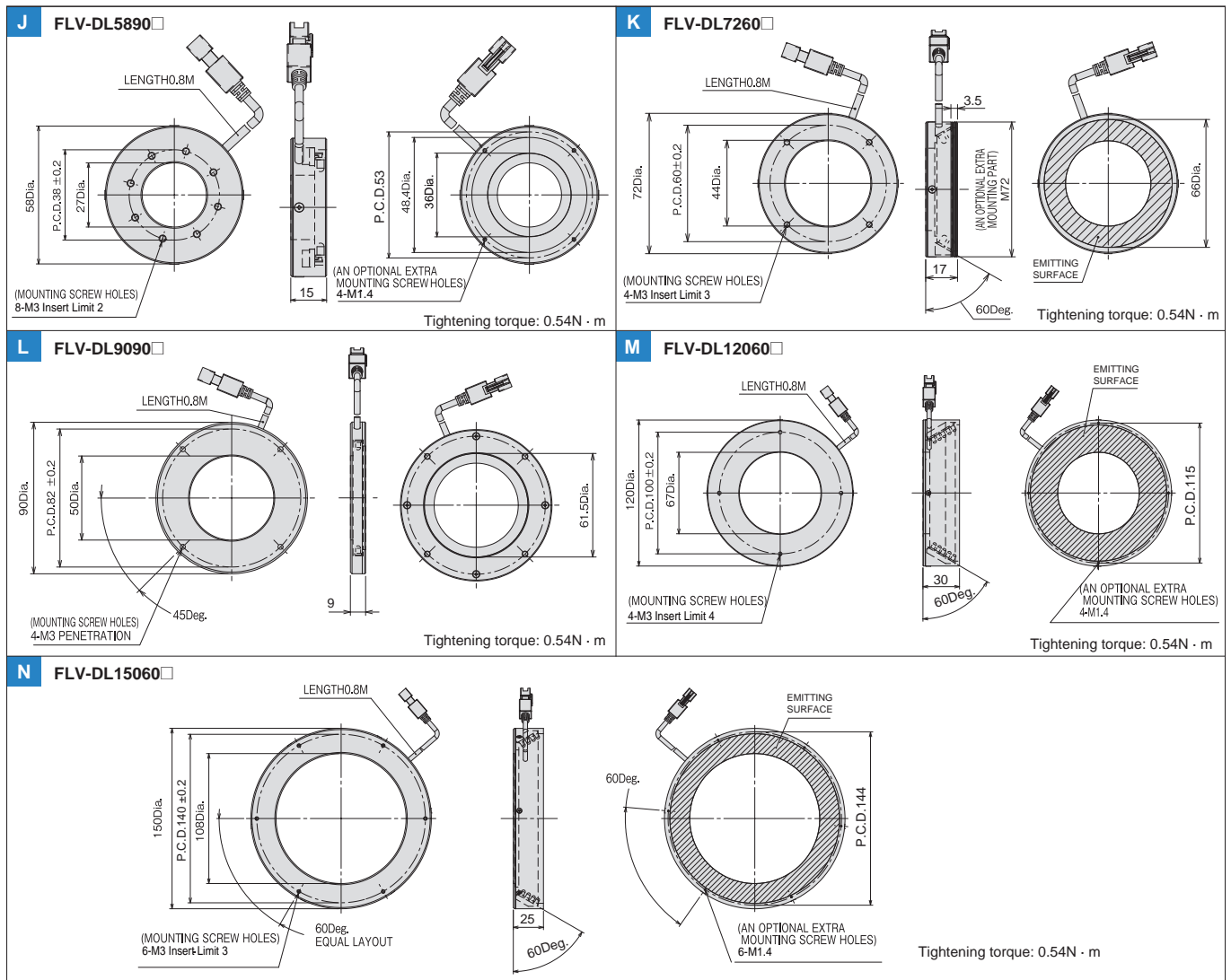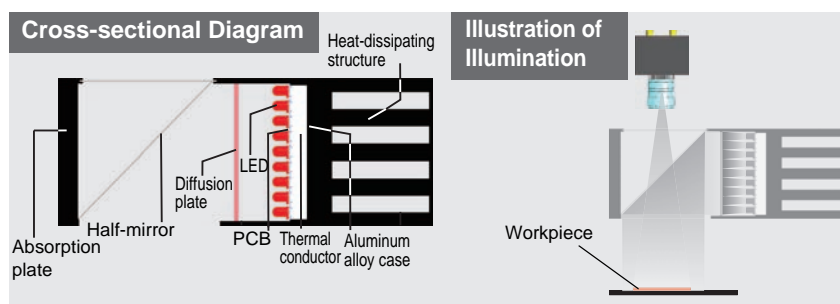Note: Refer to page 66 for LED Characteristics.
　　○: Connectable

## Applications

Detection of bumps, scratches, and other defects on surfaces

Recognition of marks

Recognition of printed characters

Recognition of barcodes

**Recognition of Marked Characters**

## Dimensions

**(Unit: mm)**

**A**　FLV-FP130□

LENGTH0.8M
130Dia.
P.C.D.110 ±0.2
100Dia.
(MOUNTING SCREW HOLES)
4-M3 Insert Limit 3
37
EMITTING SURFACE
103Dia.
120Dia.
Tightening torque: 0.54 N · m

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# Shadowless Dome Ring Light
# FLV-FS Series
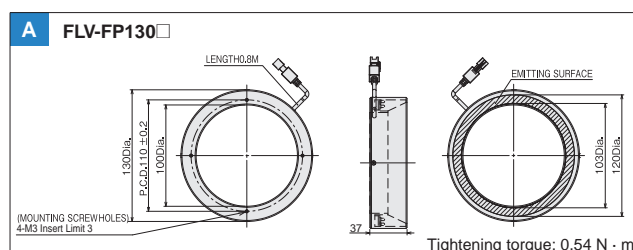
**Highly uniform illumination eliminates the influences of small surface irregularities to highlight features through changes in inclination.**

## Product Features

- Uniquely designed diffusion plate achieve highly uniform illumination through reflection and diffusion.
- Eliminates the influences of small surface irregularities to highlight features through large differences in inclination.
- Saves space for small workpieces while achieving the benefits of dome lighting.

**Cross-sectional Diagram**

- Aluminum alloy case
- LED
- PCB
- Diffusion plate
- Thermal conductor

**Illustration of Illumination**

- Workpiece

\* This figure is a conceptual illustration and may vary from the actual structure.

## Ordering Information

| Model | Color | Power consumption (W) | Dimensions | | | | Controller * | | Weight (g) |
| | | | External Ring Diameter (mm) | Internal Ring Diameter (mm) | Lighting Area Diameter (mm) | Drawing | FLV-TCC□ | FLV-ATC□ | |
|---|---|---|---|---|---|---|---|---|---|
| **FLV-FS74W** | WHITE | 5.2 | 74 dia. | 20 dia. | 64 dia. | A | ○ | ○ | 140 |
| **FLV-FS74R** | RED | 3.5 | | | | | ○ | ○ | |
| **FLV-FS74B** | BLUE | 5.2 | | | | | ○ | ○ | |

\* For the connectable Lighting Controller models and conditions, refer to the Specifications pages of each Lighting Controller.
  FLV-TCC□: page 32  FLV-ATC□: page 38
Note: Refer to page 66 for LED Characteristics.
    ○: Connectable

## Applications

Edge positioning and size measurement for metal parts

Detection of bumps in metal parts

**Gap Position Detection on Multilayered Shafts**

## Dimensions

**(Unit: mm)**

**A**  **FLV-FS74□**

LENGTH0.8M

EMITTING SURFACE

74Dia.
36±0.2
20Dia.

(MOUNTING SCREW HOLES)
4-M3 Insert Limit 3

36±0.2

18

64Dia.

Tightening torque: 0.54 N · m
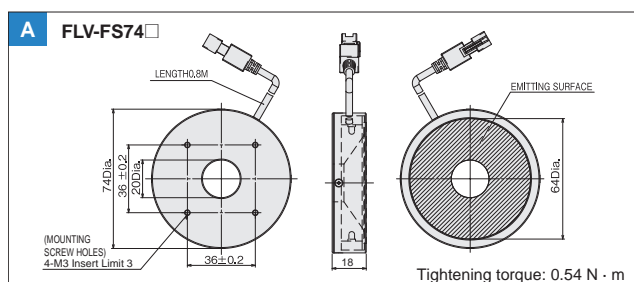
# Shadowless Square Light
# FLV-FQ Series

**This series achieves wide highly uniform illumination across a square field of view.**

## Product Features

- Shadowless Square Lighting
- Achieves highly uniform illumination and obtains different images at different installation distances for a much wider range of applications compared to normal ring lighting.
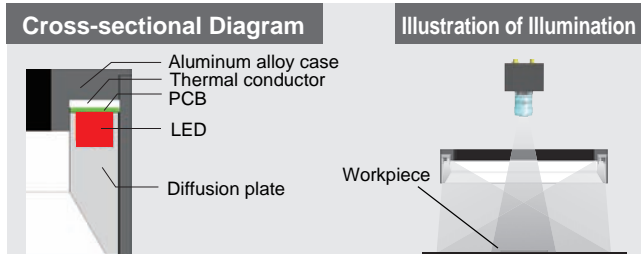
**Cross-sectional Diagram**

- Aluminum alloy case
- Thermal conductor
- PCB
- LED
- Diffusion plate

**Illustration of Illumination**

- Workpiece

* This figure is a conceptual illustration and may vary from the actual structure.

## Ordering Information

| Model | Color | Power consumption (W) | Dimensions | | | | Controller * | | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| | | | Lighting Area Dimension (mm) | Outside Dimension (mm) | Height (mm) | Drawing | FLV-TCC□ | FLV-ATC□ | |
| **FLV-FQ48W** | WHITE | 2.0 | 41×41 | 48 × 48 | 30 | A | ○ | ○ | 100 |
| **FLV-FQ48R** | RED | 1.2 | | | | | ○ | ○ | |
| **FLV-FQ48B** | BLUE | 2.0 | | | | | ○ | ○ | |

* For the connectable Lighting Controller models and conditions, refer to the Specifications pages of each Lighting Controller.
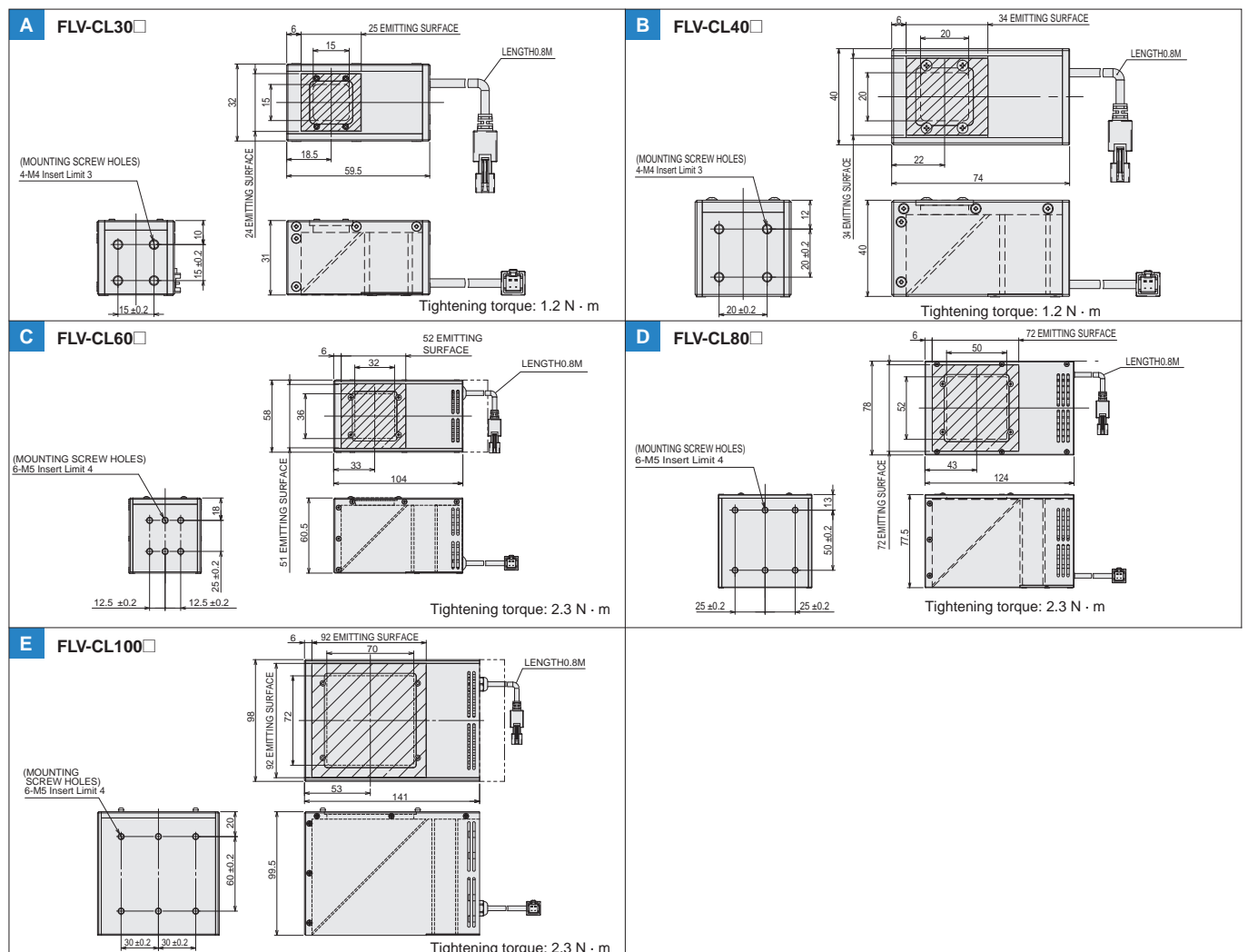  FLV-TCC□: page 32  FLV-ATC□: page 38
Note: Refer to page 66 for LED Characteristics.
  ○: Connectable

## Applications

Detection of defects on workpiece surfaces

Recognition of printed characters and bar codes

**Appearance Inspections of Chip Components**

## Dimensions

**(Unit: mm)**

**A** FLV-FQ48□

LENGTH 0.8M

23

48

35±0.2

(MOUNTING SCREW HOLES)
4-M3 Insert Limit 3

35±0.2
48

EMITTING SURFACE

23

30

25
41
45

25
41
45

Tightening torque: 0.54 N · m

OMRON

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses
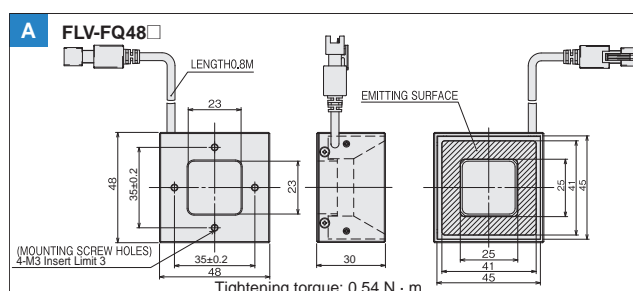
# Spot Light
# FLV-EP50 Series

**Long-distance Spot Lighting**
**This series achieves uniform, parallel light.**

## Product Features

• Superior directional characteristic, essentially parallel light, and long-distance illumination.

### Cross-sectional Diagram
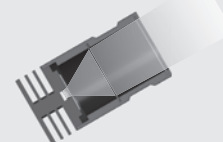
Anti-reflective lens
Condenser lens
Diffusion plate
LED
Heat-dissipating structure

*This figure is a conceptual illustration and may vary from the actual structure.

### Illustration of Illumination

## Ordering Information

| Model | Color | Power consumption (W) | Dimensions | | | | Controller * | | Weight (g) |
| | | | Lighting Area Dimension (mm) | Outside Dimension (mm) | Height (mm) | Drawing | FLV-TCC☐ | FLV-ATC☐ | |
|---|---|---|---|---|---|---|---|---|---|
| **FLV-EP50W** | WHITE | 1.6 | 40 dia. | 50 dia. | 94.5 | A | ◯ | ◯ | 200 |
| **FLV-EP50R** | RED | 1.1 | | | | | ◯ | ◯ | |

\* For the connectable Lighting Controller models and conditions, refer to the Specifications pages of each Lighting Controller.
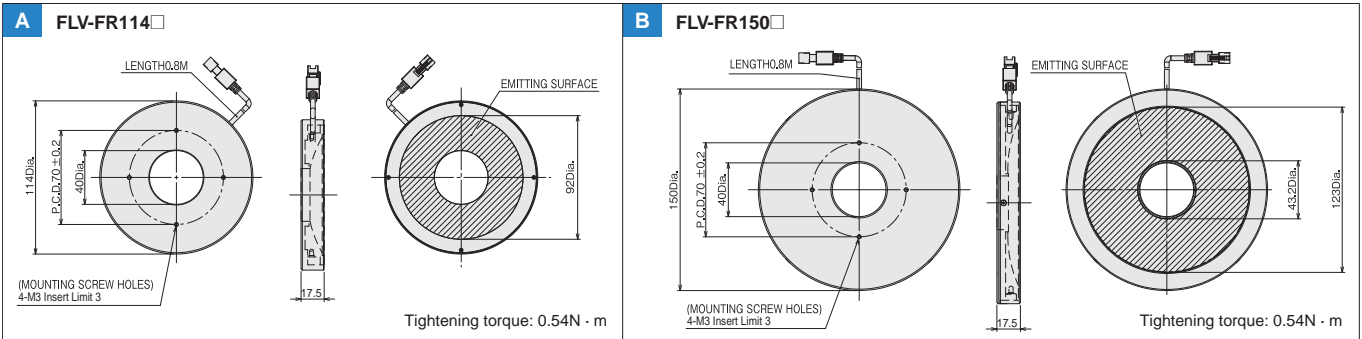  FLV-TCC☐: page 32  FLV-ATC☐: page 38
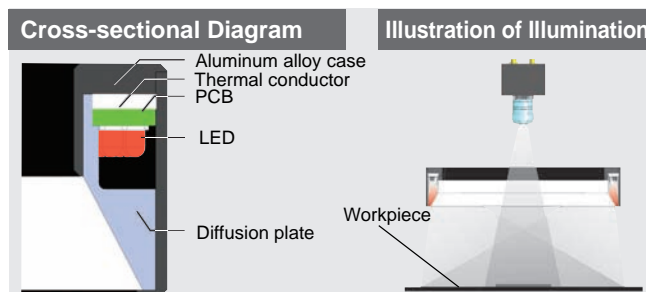Note: Refer to page 66 for LED Characteristics.
  ◯: Connectable

## Applications

Size measurements of small workpieces

Detection of defects on surfaces

**Detection of Gaps in Small Parts**

**Detection of Scratches on Card Surfaces**

## Dimensions

**(Unit: mm)**

**A**  FLV-EP50☐

(MOUNTING SCREW HOLES)
4-M2 Insert Limit 6
45D96
P.C.D 28 ±0.2
94.5
EMITTING SURFACE
50Dia.
40Dia.
LENGTH0.8M

Tightening torque: 0.15 N · m

OMRON  **19**

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses
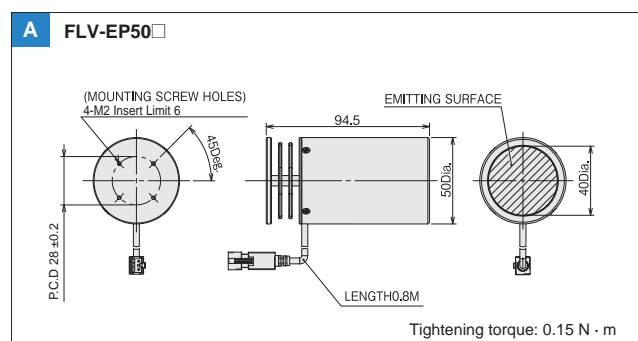
# High-power Spot Light
# FLV-EP08 Series

**High-power, Compact Spot Light Sources.**

## Product Features

- High-power LEDs generate strong light with a compact design.
- Ideal for applications in combination with a Coaxial Lens.
- Highly efficient heat-dissipating structure ensures a long life.

**Cross-sectional Diagram**
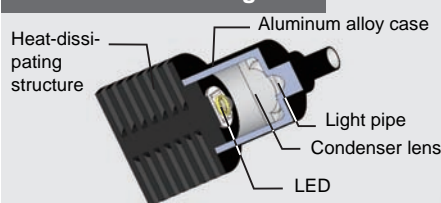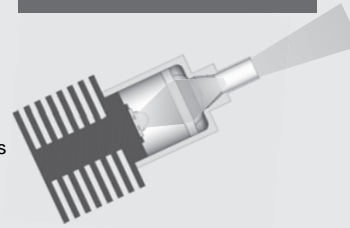
Heat-dissi-pating structure

Aluminum alloy case

Light pipe

Condenser lens

LED

**Illustration of Illumination**

* This figure is a conceptual illustration and may vary from the actual structure.

## Applications

Detection of alignment marks

Detection of chips

Detection of defects on workpiece surfaces

**Illustration of Illumination in Combination with a Coaxial Lens**

Lighting Controller

Camera

Spot Light

Coaxial Lens

Workpiece
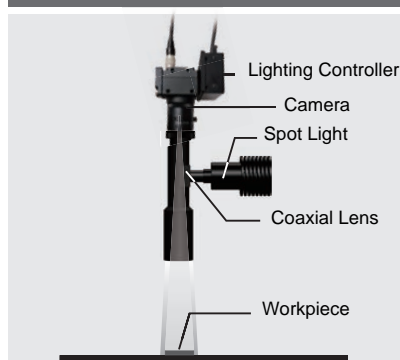
**Simplified Illustration of Detection of Bubbles in Transparent Material**
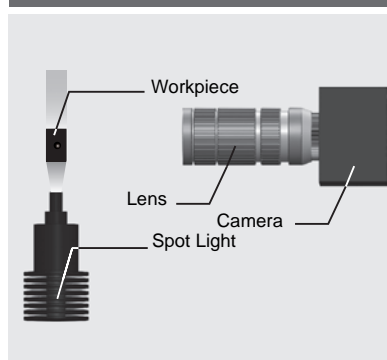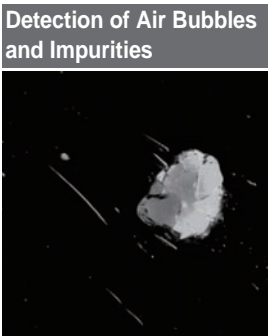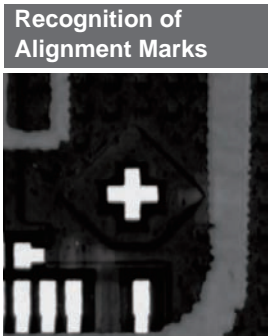
Workpiece

Lens

Camera

Spot Light

**OMRON**

| Recognition of Alignment Marks | Inspection for Defects | Detection of Air Bubbles and Impurities |
|---|---|---|

## Ordering Information

| Model | Color | Power consumption (W) | Dimensions | | | | Controller * | | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| | | | Lighting Area Dimension (mm) | Outside Dimension (mm) | Height (mm) | Drawing | FLV-TCC□ | FLV-ATC□ | |
| **FLV-EP0803W** | WHITE | 1.6 | 6.8 dia. | 28 dia. | 60 | A | ○ | ○ | 80 |
| **FLV-EP0803R** | RED | 1.1 | | | | | ○ | ○ | |
| **FLV-EP0803B** | BLUE | 1.6 | | | | | ○ | ○ | |

\* For the connectable Lighting Controller models and conditions, refer to the Specifications pages of each Lighting Controller.
FLV-TCC□: page 32
FLV-ATC□: page 38
Note: Refer to page 66 for LED Characteristics.
○: Connectable

## Dimensions

**(Unit: mm)**

| A | FLV-EP0803□ |
|---|---|



(MOUNTING SCREW HOLES)
2-M2 Insert Limit 6

18±0.2

60

8    12

EMITTING SURFACE

28Dia.

8Dia.

14Dia.

6.8Dia.

LENGTH 0.8M

Tightening torque: 0.15 N · m

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses

# Direct Back Light
# FLV-DB Series

**Uniform Illumination from a Flat Emitting Surface**
**Illumination from the back of the workpiece produces**
**a high-contrast silhouette.**
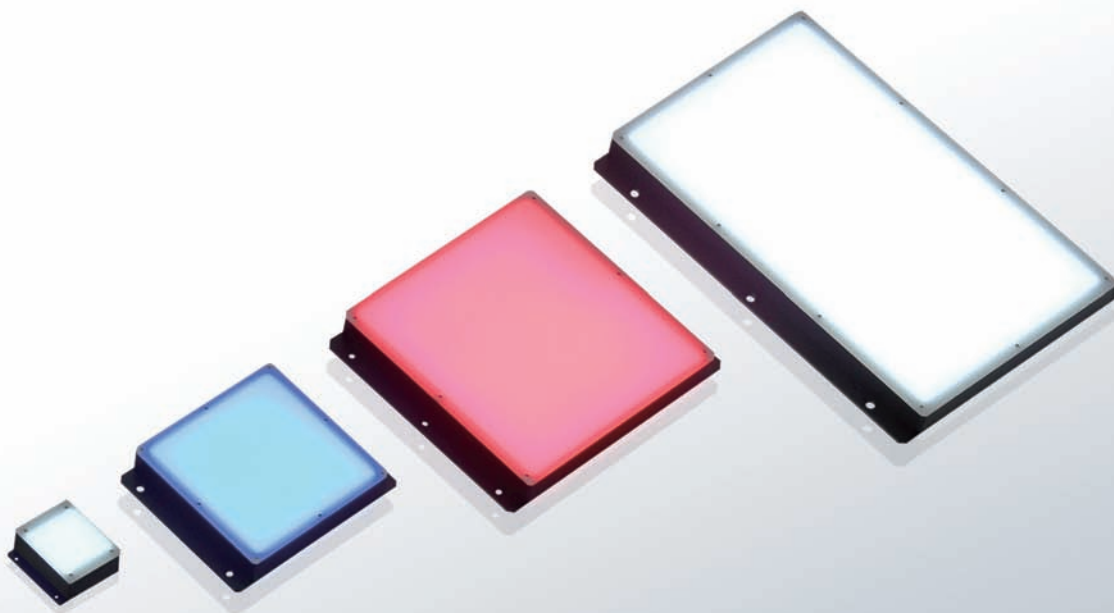
## Product Features

- Highly uniform backlighting with high-density LED arrays. Emphasizes the outline features of workpieces.

**Cross-sectional Diagram**

LED
PCB

High-dispersion diffusion plate
Aluminum alloy case

**Cross-sectional Diagram**

Workpiece

Thermal conductor

* This figure is a conceptual illustration and may vary from the actual structure.

## Applications

Size measurements of machine parts

Shape detections for electronic components and ICs

Dirt detection on films

**Detection of Connector Circuits**
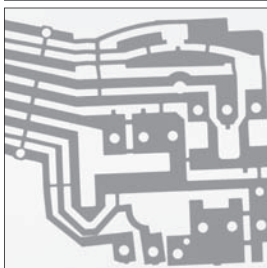
**Detection of Abrasion Wear on Gears**
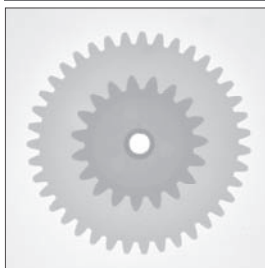
**Inspection of Bottles**

## Ordering Information

| Model | Color | Power consumption (W) | Dimensions | | | | Controller * | | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| | | | Lighting Area Dimension (mm) | Outside Dimension (mm) | Height (mm) | Drawing | FLV-TCC□ | FLV-ATC□ | |
| FLV-DB3729W | WHITE | 0.9 | 27×27 | 37×37 | 15 | A | ○ | ○ | 50 |
| FLV-DB3729R | RED | 0.9 | | | | | ○ | ○ | |
| FLV-DB3729B | BLUE | 0.9 | | | | | ○ | ○ | |
| FLV-DB10181W | WHITE | 8.1 | 73×73 | 101 ×81 | 17 | B | ○ | ○ | 160 |
| FLV-DB10181R | RED | 4.7 | | | | | ○ | ○ | |
| FLV-DB10181B | BLUE | 8.1 | | | | | ○ | ○ | |
| FLV-DB130130W | WHITE | 13.0 | 114 ×120 | 144×126 | 17 | C | ○ | ○ | 270 |
| FLV-DB130130R | RED | 11.5 | | | | | ○ | ○ | |
| FLV-DB130130B | BLUE | 13.0 | | | | | ○ | ○ | |
| FLV-DB212152W | WHITE | 29.4 | 200×120 | 212×152 | 17 | D | × | ○ | 510 |
| FLV-DB212152R | RED | 20.2 | | | | | × | ○ | |
| FLV-DB212152B | BLUE | 29.4 | | | | | × | ○ | |

\* For the connectable Lighting Controller models and conditions, refer to the Specifications pages of each Lighting Controller
   FLV-TCC□: page 32
   FLV-ATC□: page 38
Note: Refer to page 66 for LED Characteristics.
   ○: Connectable  ×: Not connectable

## Dimensions

**(Unit: mm)**

**A**   **FLV-DB3729□**



**B**   **FLV-DB10181□**



**C**   **FLV-DB130130□**



**D**   **FLV-DB212152□**

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses

**Edge Type Light**
# FLV-FB Series

**Ultrathin, Highly Uniform Backlights**
**Thin enough to conveniently fit into narrow spaces.**
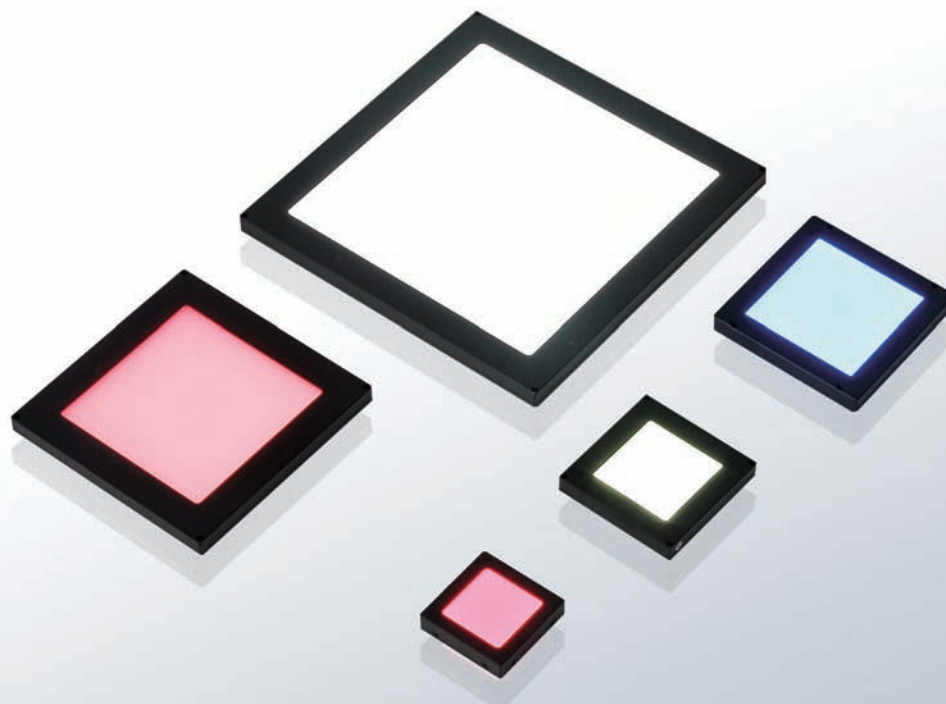
## Product Features

- Five size variations with emitting surfaces from 35 mm square to 164 mm square.
- As thin as 8 mm (FLV-FB7070).

| Cross-sectional Diagram | Illustration of Illumination |
|---|---|

Light guide
Aluminum alloy case
PCB
Diffusion plate
LED
Dispersion coating

Workpiece
Diffusion plate
Light guide

* This figure is a conceptual illustration and may vary from the actual structure.

## Applications

Detection and size measurements of electronic devices

Detection of LCD dead pixels

**Detection of Silkscreen Patterns on Cell Phone PCBs**
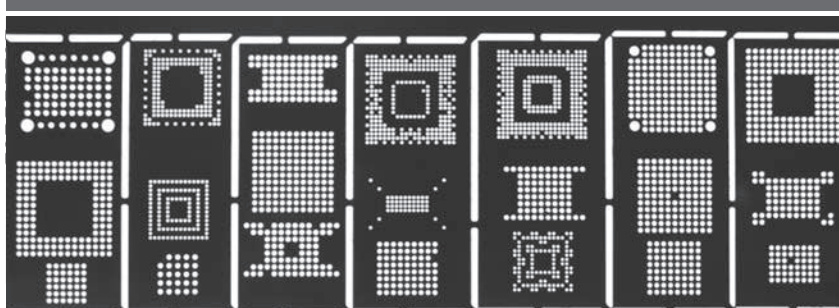
## Ordering Information

| Model | Color | Power consumption (W) | Dimensions | | | | Controller * | | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| | | | Lighting Area Dimension (mm) | Outside Dimension (mm) | Height (mm) | Drawing | FLV-TCC☐ | FLV-ATC☐ | |
| FLV-FB5050W | WHITE | 1.9 | 35×35 | 50×50 | 11 | A | ◯ | ◯ | 75 |
| FLV-FB5050R | RED | 0.9 | | | | | ◯ | ◯ | |
| FLV-FB5050B | BLUE | 1.9 | | | | | ◯ | ◯ | |
| FLV-FB7070W | WHITE | 1.9 | 46×46 | 70×70 | 8 | B | ◯ | ◯ | 85 |
| FLV-FB7070R | RED | 1.4 | | | | | ◯ | ◯ | |
| FLV-FB7070B | BLUE | 1.9 | | | | | ◯ | ◯ | |
| FLV-FB9090W | WHITE | 3.7 | 66×66 | 90×90 | 10 | C | ◯ | ◯ | 155 |
| FLV-FB9090R | RED | 1.9 | | | | | ◯ | ◯ | |
| FLV-FB9090B | BLUE | 3.7 | | | | | ◯ | ◯ | |
| FLV-FB130130W | WHITE | 5.5 | 94×94 | 130×130 | 10 | D | ◯ | ◯ | 230 |
| FLV-FB130130R | RED | 3.7 | | | | | ◯ | ◯ | |
| FLV-FB130130B | BLUE | 5.5 | | | | | ◯ | ◯ | |
| FLV-FB200200W | WHITE | 7.3 | 164×164 | 200×200 | 11 | E | ◯ | ◯ | 710 |
| FLV-FB200200R | RED | 5.5 | | | | | ◯ | ◯ | |
| FLV-FB200200B | BLUE | 7.3 | | | | | ◯ | ◯ | |

\* For the connectable Lighting Controller models and conditions, refer to the Specifications pages of each Lighting Controller.
FLV-TCC☐: page 32  FLV-ATC☐: page 38
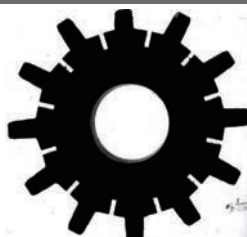Note: Refer to page 66 for LED Characteristics.
◯: Connectable

## Dimensions

**(Unit: mm)**

**A**  FLV-FB5050☐

36±0.2
36±0.2
(MOUNTING SCREW HOLES)
4-M3 Insert Limit 3
11
50
35
35
50
LENGTH0.8M
EMITTING SURFACE
Tightening torque: 0.54 N · m

**B**  FLV-FB7070☐

(MOUNTING HOLES)
4-3Dia. PENETRATION
70
66±0.2
46
46
66±0.2
70
8
LENGTH0.8M
EMITTING SURFACE

**C**  FLV-FB9090☐

(MOUNTING HOLES)
4-3Dia. PENETRATION
90
66±0.2
66
86±0.2
90
10
LENGTH0.8M
EMITTING SURFACE

**D**  FLV-FB130130☐

130
125±0.2
94
94
125±0.2
130
LENGTH0.8M
(MOUNTING HOLES)
4-3.3Dia. PENETRATION
10
EMITTING SURFACE

**E**  FLV-FB200200☐

200
195±0.3
164
164
195±0.3
200
LENGTH0.8M
11
(MOUNTING HOLES)
4-3Dia. PENETRATION
EMITTING SURFACE

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses

## Edge Type Coaxial Light
# FLV-FX Series

**This series features a wide range of applications with many effects, such as backlighting and coaxial lighting.**

## Product Features

- High uniformity with diffused illumination.
- Achieves both shadowless and coaxial illumination.
- Lightweight and compact to conveniently fit into narrow spaces

**Cross-sectional Diagram**

Aluminum alloy case
Light guide
LED
PCB
Shading coating
Dispersion coating

**Illustration of Illumination**

Workpiece
Light guide

\* This figure is a conceptual illustration and may vary from the actual structure.

## Applications

Package inspections for foodstuffs, cigarettes, and household chemicals

Appearance inspections of home appliance cases and components

Detection, measurement, and recognition of characters and figures on highly reflective, uneven surfaces

**Detection of Mounting Hole Positions**

**Inspections for Defects on Metal Parts**

**Inspections for Defects on Plated Parts**
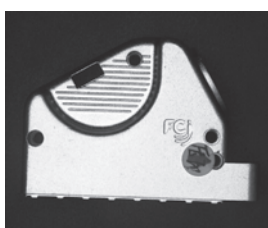
**Recognition of Metal Characters and Patterns on Plastic Surfaces**

OMRON

## Ordering Information

| Model | Color | Power consumption (W) | Dimensions | | | | Controller * | | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| | | | Lighting Area Dimension (mm) | Outside Dimension (mm) | Height (mm) | Drawing | FLV-TCC☐ | FLV-ATC☐ | |
| **FLV-FX100W** | WHITE | 3.7 | 60×60 | 100×100 | 11 | A | ○ | ○ | 180 |
| **FLV-FX100R** | RED | 1.9 | | | | | ○ | ○ | |
| **FLV-FX100B** | BLUE | 3.7 | | | | | ○ | ○ | |
| **FLV-FX143W** | WHITE | 5.5 | 100×100 | 143×143 | 11 | B | ○ | ○ | 240 |
| **FLV-FX143R** | RED | 3.7 | | | | | ○ | ○ | |
| **FLV-FX143B** | BLUE | 5.5 | | | | | ○ | ○ | |

*  For the connectable Lighting Controller models and conditions, refer to the Specifications pages of each Lighting Controller.
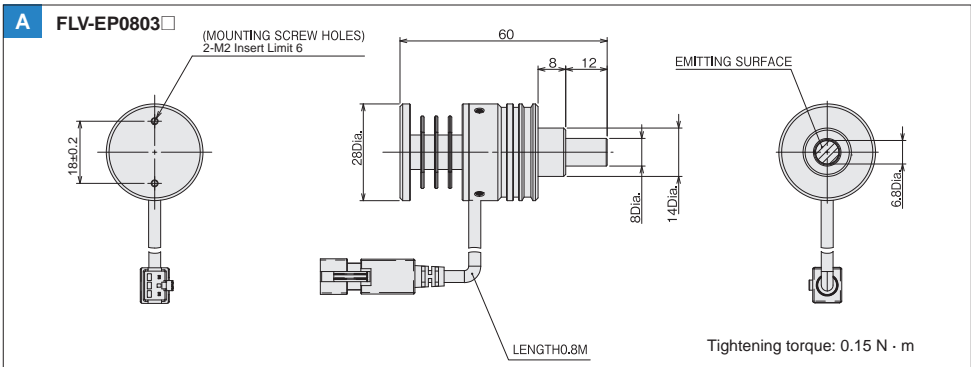FLV-TCC☐: page 32
FLV-ATC☐: page 38
Note: Refer to page 66 for LED Characteristics.
○: Connectable
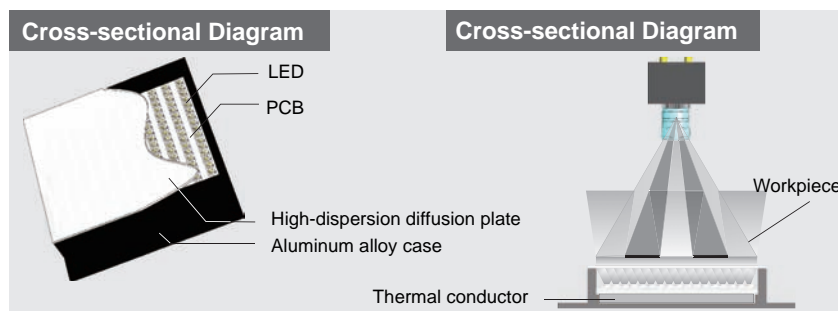
## Dimensions

**(Unit: mm)**

A  FLV-FX100☐

B  FLV-FX143☐

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses
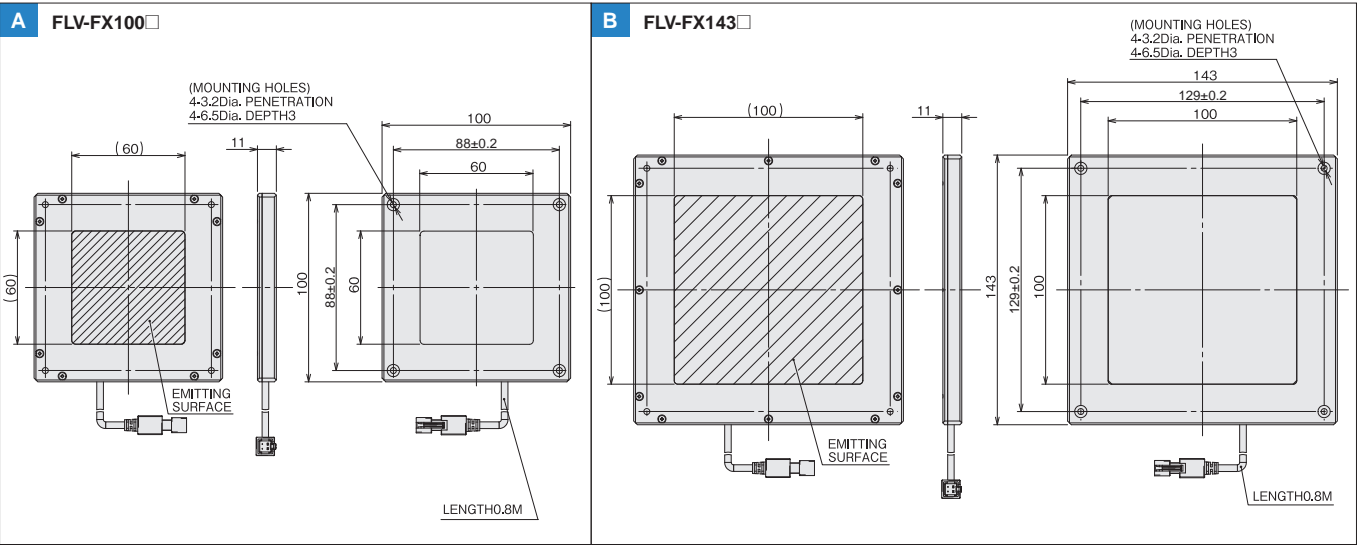
# Dome Light
# FLV-DD Series

**Uniform Illumination from All Directions**
**This series produces shadowless images of the entire workpiece.**

## Product Features

• Achieves uniform illumination by reflecting light from a ring-shaped light source through a highly reflective, diffusion dome.

**Cross-sectional Diagram**
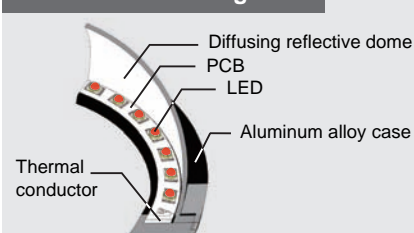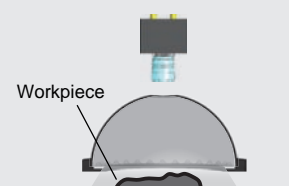
Diffusing reflective dome
PCB
LED
Aluminum alloy case
Thermal conductor

**Illustration of Illumination**

Workpiece

\* This figure is a conceptual illustration and may vary from the actual structure.

## Applications

Detection of characters and marks on curved or uneven surfaces

Detection of highly reflective surfaces, such as metal or glass

Shape measurements of curved or uneven workpieces

**Inspection of Date Characters on Drink Cans**

**Detection of Characters on Cell Phones**
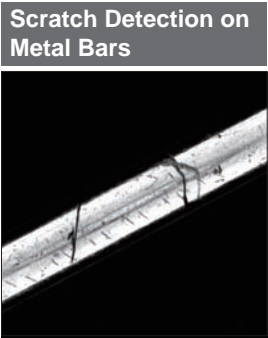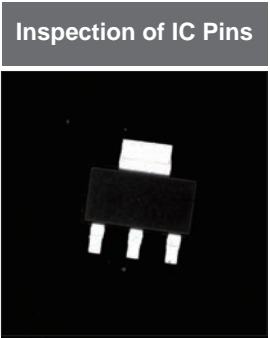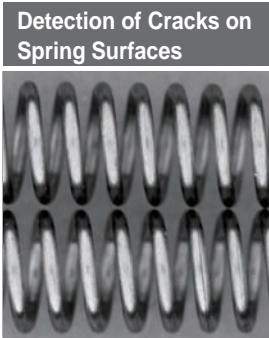
OMRON

Detection of Cracks on Spring Surfaces

Inspection of IC Pins

Scratch Detection on Metal Bars

## Ordering Information

| Model | Color | Power consumption (W) | Dimensions | | | | Controller * | | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| | | | Lighting Area Dimension (mm) | Outside Dimension (mm) | Height (mm) | Drawing | FLV-TCC□ | FLV-ATC□ | |
| **FLV-DD70W** | WHITE | 2.3 | 45 dia. | 70 dia. | 31.74 | A | ○ | ○ | 130 |
| **FLV-DD70R** | RED | 1.4 | | | | | ○ | ○ | |
| **FLV-DD70B** | BLUE | 2.3 | | | | | ○ | ○ | |
| **FLV-DD100W** | WHITE | 17.9 | 65.6 dia. | 114 dia. | 56.28 | B | × | ○ | 210 |
| **FLV-DD100R** | RED | 11.9 | | | | | ○ | ○ | |
| **FLV-DD100B** | BLUE | 17.9 | | | | | × | ○ | |
| **FLV-DD150W** | WHITE | 17.9 | 116 dia. | 175 dia. | 83.21 | C | × | ○ | 490 |
| **FLV-DD150R** | RED | 11.9 | | | | | ○ | ○ | |
| **FLV-DD150B** | BLUE | 17.9 | | | | | × | ○ | |

\* For the connectable Lighting Controller models and conditions, refer to the Specifications pages of each Lighting Controller.
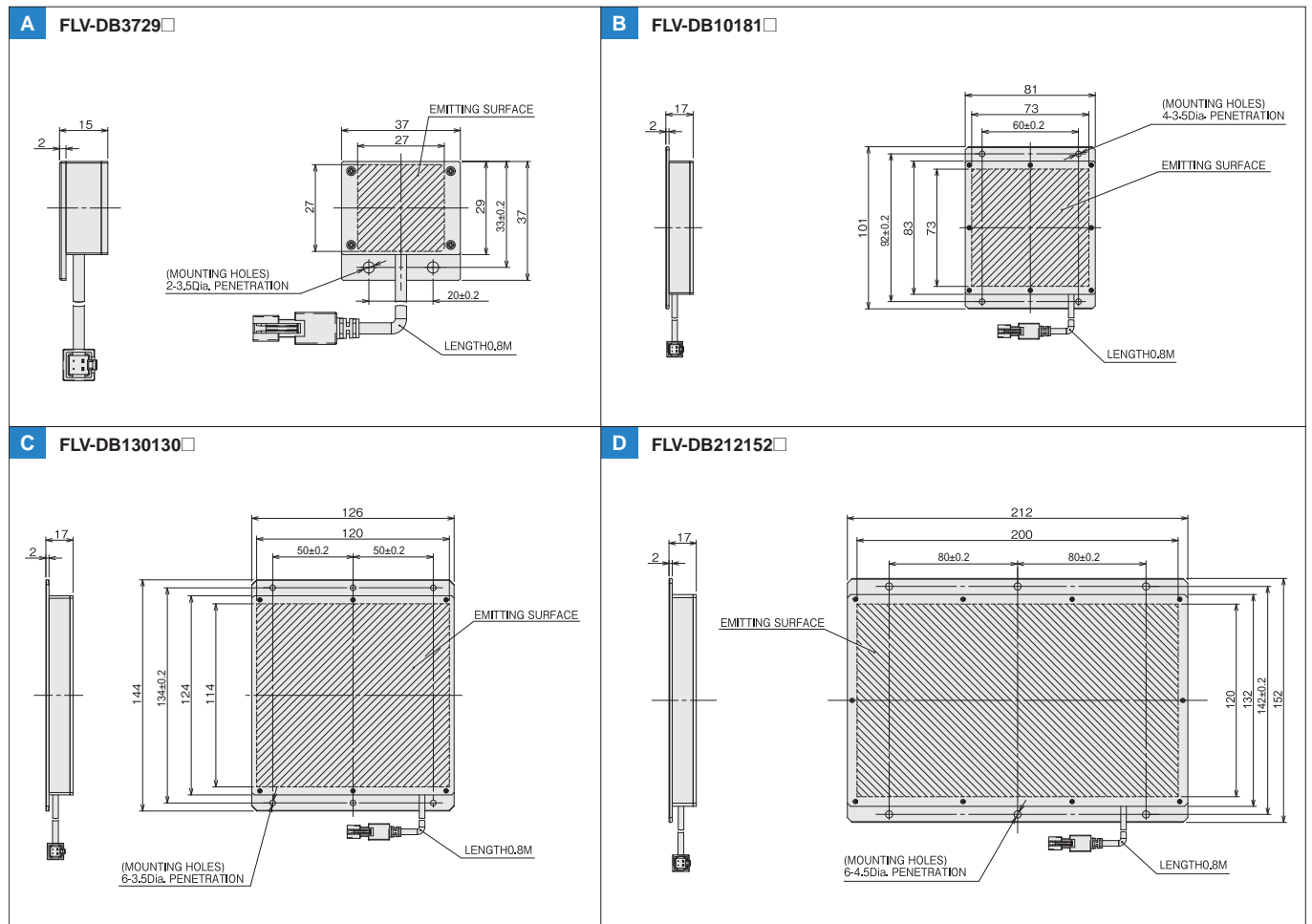FLV-TCC□: page 32  FLV-ATC□: page 38
Note: Refer to page 66 for LED Characteristics.
○: Connectable  ×: Not connectable

## Dimensions

**(Unit: mm)**

**A**  **FLV-DD70□**

LENGTH0.8M
12
70Dia.
42Dia.
P.C.D.32±0.2
12
45Dia. EMITTING SURFACE
(MOUNTING SCREW HOLES) 4-M4 Insert Limit 3
31.74  10.74
Tightening torque: 1.2 N·m

**B**  **FLV-DD100□**

LENGTH0.8M
114Dia.
99.8Dia.
P.C.D.105±0.2
20
4-R2
20
5
16
65.6Dia. EMITTING SURFACE
(MOUNTING HOLES) 4-3.5Dia. PENETRATION
4POINT SAME SIZE WAY EQUAL LAYOUT
56.28
13

**C**  **FLV-DD150□**

LENGTH0.8M
6
6POINT SAME SIZE WAY EQUAL LAYOUT
175Dia.
150Dia.
P.C.D.160±0.3
30
4-R2
30
20.9
116Dia. EMITTING SURFACE
(MOUNTING HOLES) 6-3.5Dia. PENETRATION
83.21
16

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses
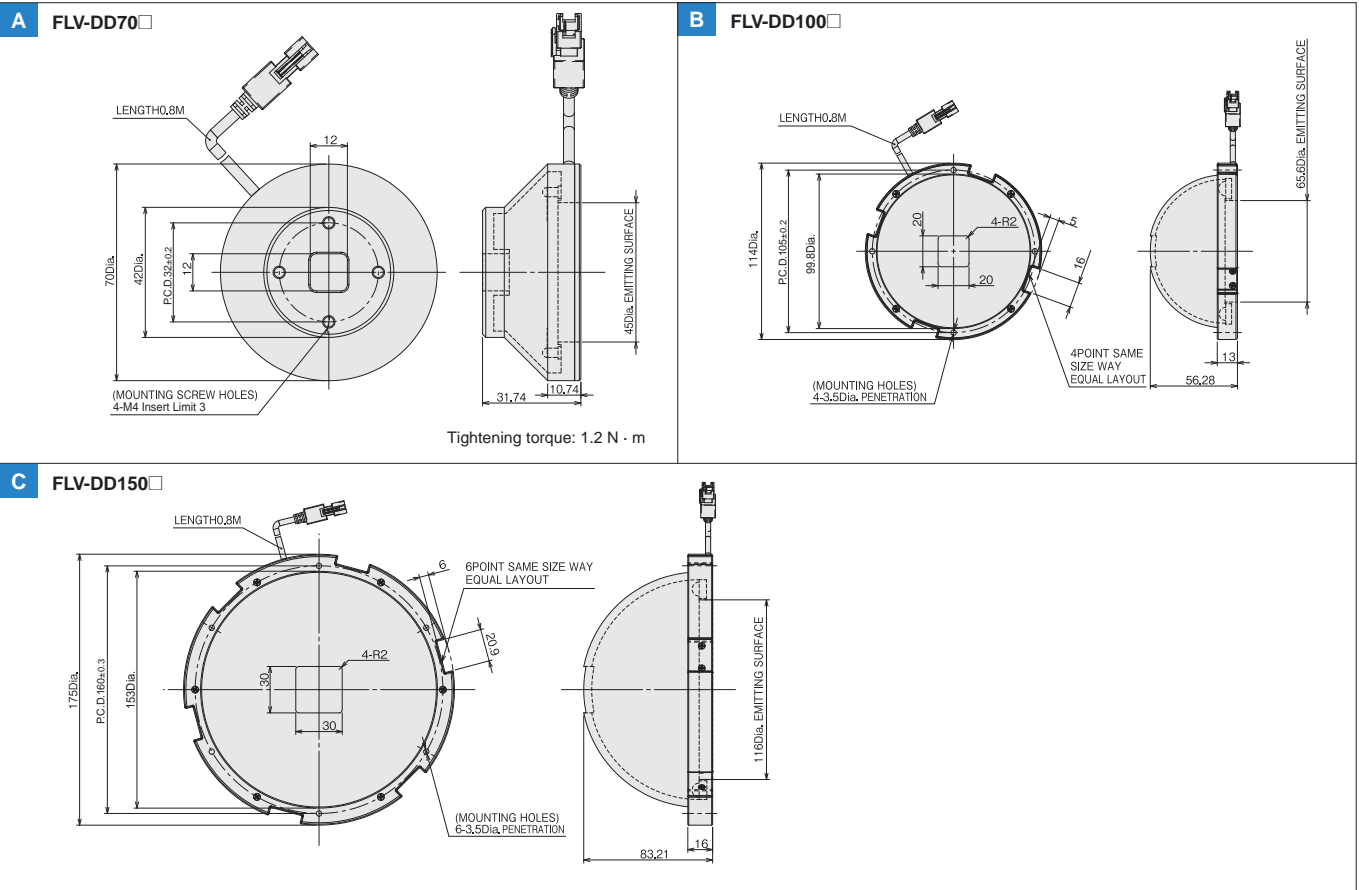
# Line Light
# FLV-LN Series

**Exceptionally Bright, Highly Uniform Line Lighting**
**This series is ideal for high-speed processing with line cameras.**

## Product Features

- Extremely high brightness
- Achieves highly effective line illumination with a condenser lens.
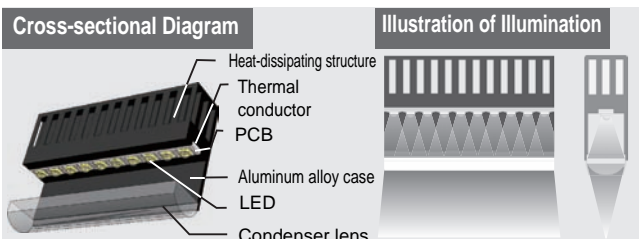
### Cross-sectional Diagram



Heat-dissipating structure
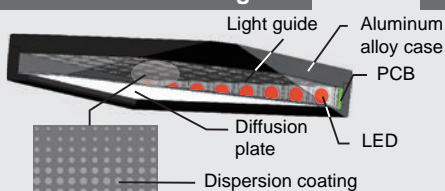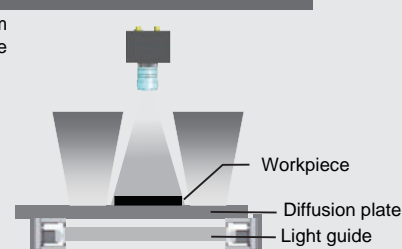Thermal conductor
PCB
Aluminum alloy case
LED
Condenser lens

### Illustration of Illumination



* This figure is a conceptual illustration and may vary from the actual structure.

## Applications

Printing inspections

Sheet inspections

Detection of film and glass surface damage and internal impurities

## Ordering Information

| Model | Color | Power consumption (W) | Dimensions | | | | Controller * | | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| | | | Lighting Area Dimension (mm) | Outside Dimension (mm) | Height (mm) | Drawing | FLV-TCC☐ | FLV-ATC☐ | |
| **FLV-LN82W** | WHITE | 9.2 | 62×16 | 82×83.5 | 50 | A | ✕ | ◯ | 640 |
| **FLV-LN82B** | BLUE | 9.2 | | | | | ✕ | ◯ | |
| **FLV-LN122R** | RED | 10.4 | 102×16 | 122× 83.5 | 50 | E | ✕ | ◯ | 800 |
| **FLV-LN142W** | WHITE | 18.4 | 122×16 | 142×83.5 | 50 | B | ✕ | ◯ | 890 |
| **FLV-LN142B** | BLUE | 18.4 | | | | | ✕ | ◯ | |
| **FLV-LN222R** | RED | 20.7 | 202×16 | 222×83.5 | 50 | F | ✕ | ◯ | 1320 |
| **FLV-LN322W** | WHITE | 45.9 | 302×16 | 322×83.5 | 50 | C | ✕ | ◯ | 1950 |
| **FLV-LN322** | BLUE | 45.9 | | | | | ✕ | ◯ | |
| **FLV-LN322R** | RED | 31.1 | 302×16 | 322×83.5 | 50 | G | ✕ | ◯ | |
| **FLV-LN442W** | WHITE | 64.3 | 442×16 | 442×83.5 | 50 | D | ✕ | ◯ | 2450 |
| **FLV-LN442B** | BLUE | 64.3 | | | | | ✕ | ◯ | |
| **FLV-LN422R** | RED | 41.4 | 402×16 | 422×83.5 | 50 | H | ✕ | ◯ | 2400 |

* For the connectable Lighting Controller models and conditions, refer to the Specifications pages of each Lighting Controller.
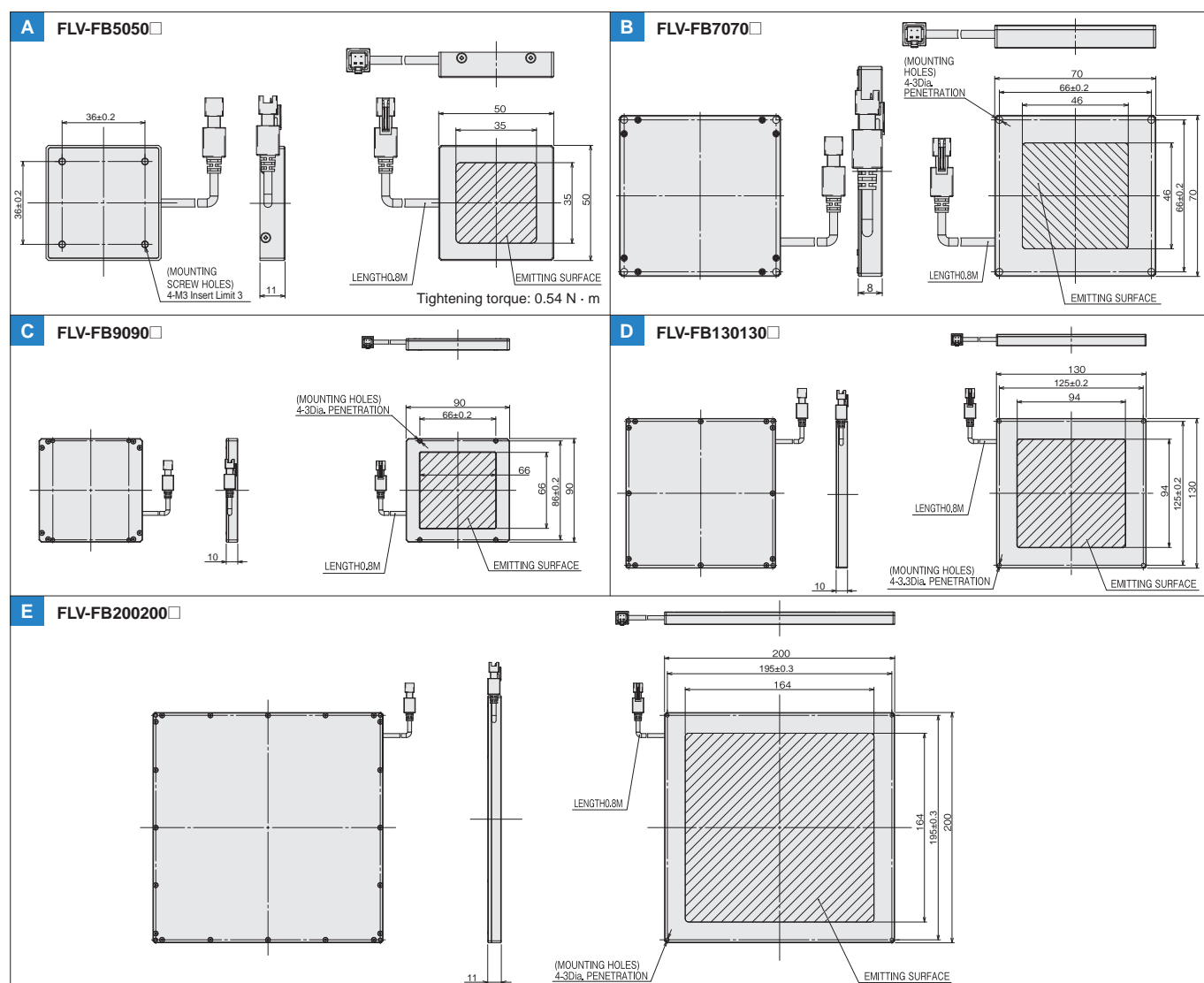  FLV-TCC☐: page 32  FLV-ATC☐: page 38
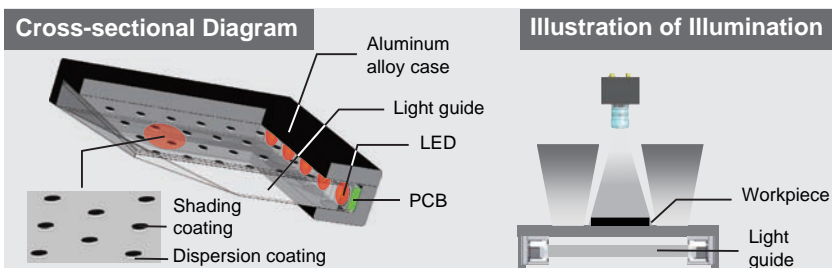Note: Refer to page 66 for LED Characteristics.
◯: Connectable  ✕: Not connectable

## Dimensions

**(Unit: mm)**

**A** FLV-LN82W/B



Tightening torque: 4.30 N · m

**B** FLV-LN142W/B



Tightening torque: 4.30 N · m

**C** FLV-LN322W/B



Tightening torque: 4.30 N · m

**D** FLV-LN442W/B



Tightening torque: 4.30 N · m

**E** FLV-LN122R



Tightening torque: 4.30 N · m

**F** FLV-LN222R



Tightening torque: 4.30 N · m

**G** FLV-LN322R



Tightening torque: 4.30 N · m

**H** FLV-LN422R



Tightening torque: 4.30 N · m
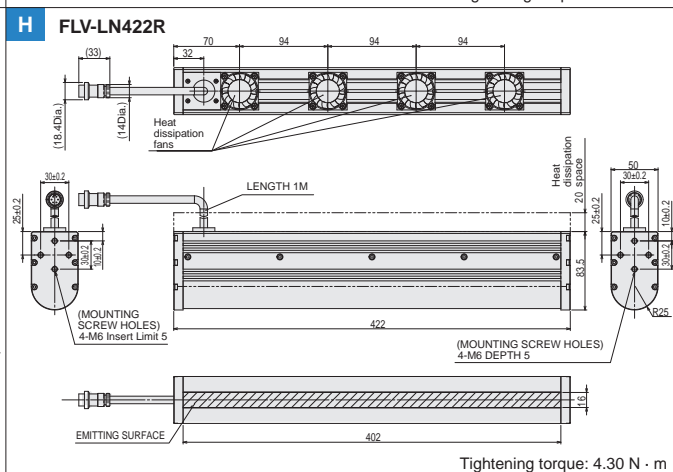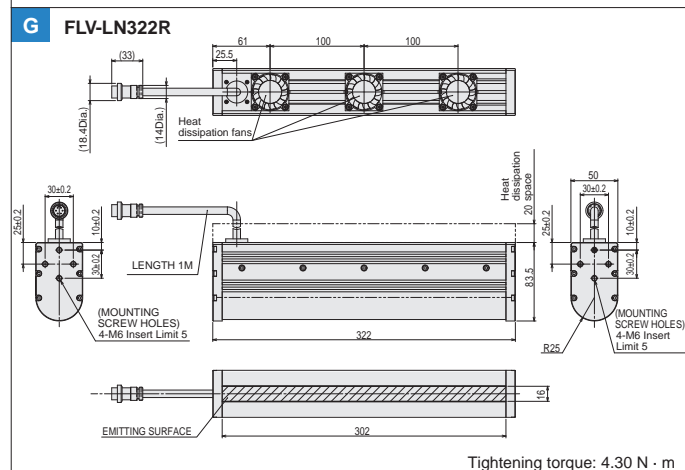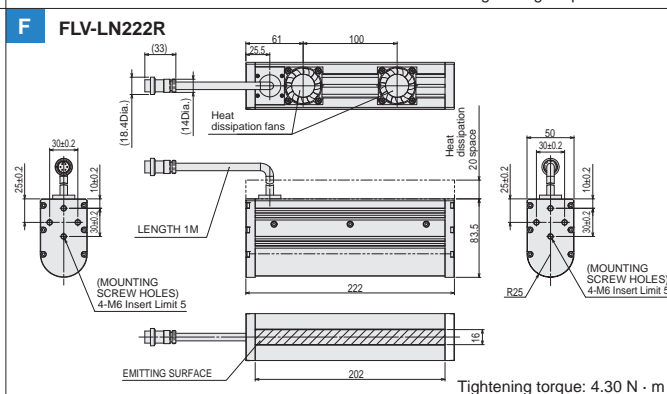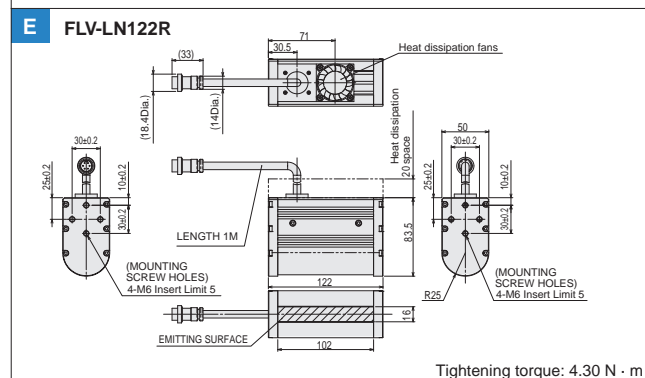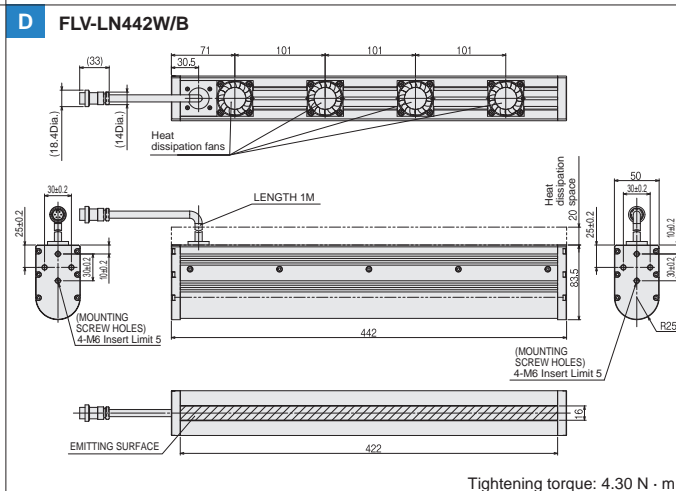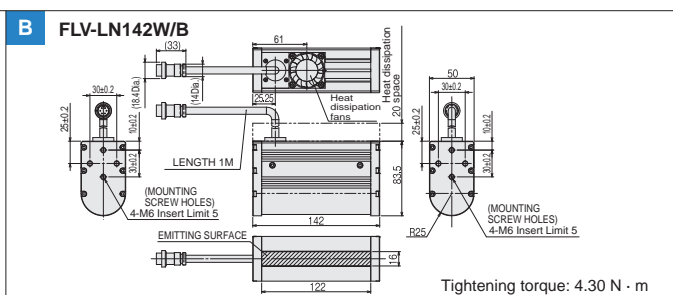
# Camera-mount Lighting Controller for FLV Series
# FLV-TCC Series

**Compact Lighting Controller**
**Mounts directly onto the FH/FZ**
**OMRON Cameras**
**Multistage Control of Lighting on**
**Up to Four Lights can be connected.**

## Product Features

- Saves space with its compact design.
- No need for space in control panels for expansion.
- Maintains Lighting intensity even when located at long distances.
- Light intensity and luminance control are set through the Vision System.

**Simple wiring and space saving**

Wiring from the control panel to remote Cameras and Lights is simplified.
The more Cameras and Lights are connected to the Vision System Controller, the more effective in simplifying wiring and saving space.

| Standard Lighting System | FLV-TCC Series |
|---|---|
| · Complicated wiring from the control panel to the Lights and Camera is required. <br> · Space to install the Power Supply for Lights in the control panel is required. | · Power supplied from the Camera eliminates the need for complicated wiring from the control panel to the Lights. <br> · The compact design that enables mounting onto the Camera saves space in the control panel. |

Camera cable

Camera

Light 1

Light 3

Light 2

Vision System

Power Supply for Lights
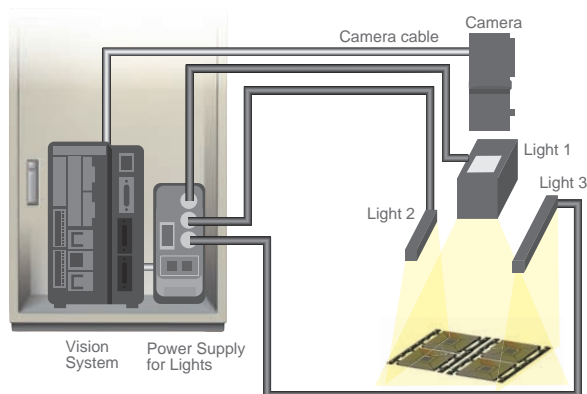
**Camera cable**
**+**
**lighting cables are wired from control panel**

Camera cable

Camera

FLV-TCC

Lighting cable

Light 1

Light 3

Light 2

Vision System

**Only the camera cable is connected from control panel**

OMRON

# Camera-mount Lighting Controller for FLV Series FLV-TCC Series

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses
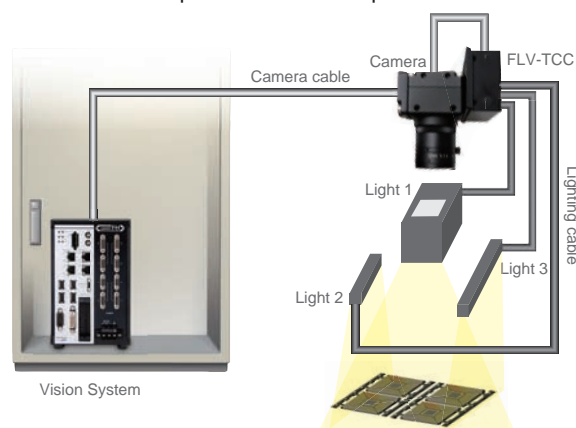
## Easy control setting

Light intensity and luminance control can be set from the flow menu of the Vision System Controller. No need of ladder programming to create light sequence or communications settings.

**Standard Lighting System**

Setting through ladder programming

**FLV-TCC Series**

Setting from Vision System
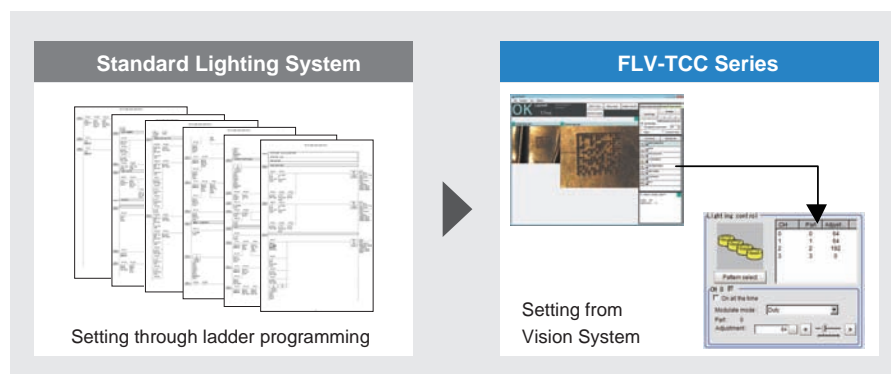
## Maintaining light intensity even with long wiring distances

Even if the Vision System Controller and Light are separated by a long distance, the light intensity is maintained due to power being supplied through the Camera. This means that it is not required to increase light intensity and power consumption for high-speed production lines.

**Standard Lighting System**

10 m

Camera

Power Supply for Light

Light

10-m long, distances result in voltage drops and lower light intensity.

**FLV-TCC Series**

10 m

Camera

FLV-TCC

**Twice** Brighter

Light

Power is supplied through the Camera, so light intensity does not decrease even if there's a long distance between the Vision System Controller and Light.

* When the extension cable length is 10 m.

## Connecting Spot Light

The new FLV-TCC☐EP can be connected with a Spot Light, and the hybrid type FLV-TCC☐HB can be connected with up to two Standard Lights and a Spot Light. Applications such as alignment and cosmetic inspection of small electronic parts, e.g. connectors and IC's, require these kind of Lighting Controllers using Spot Lights.

Camera

FLV-TCC

Spot Light

Coaxial Lens

Low Angle Ring Light

Workpiece
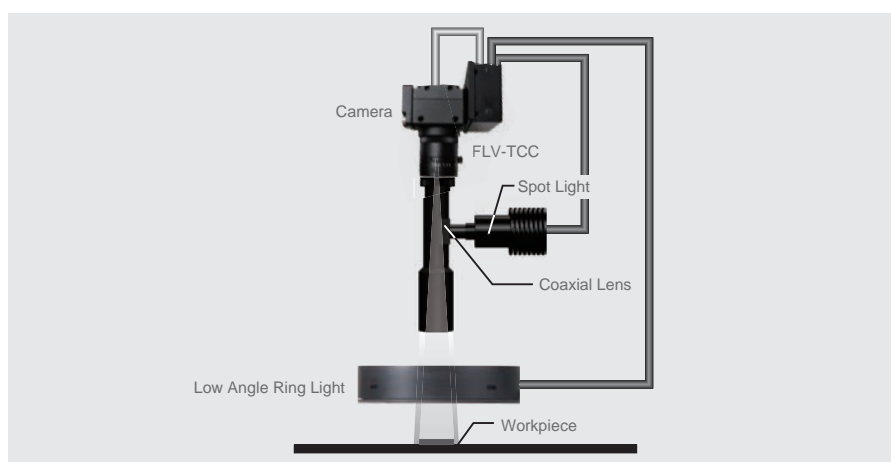
## Ordering Information

| Model | Number of Channels | Applicable Light *5 | | | Power Supply Voltage | Power of Connected Light | Luminance Control Method |
|---|---|---|---|---|---|---|---|
| | | Standard Light FLV Series*1 | Spot Light FLV-EP Series | Line Light FLV-LN Series | | | |
| FLV-TCC4 | 4 standard lights | ○ | ✕ | ✕ | 24 VDC *2 | 15 W max.*3 | Digital *4 |
| FLV-TCC1 | 1 standard light | ○ | ✕ | ✕ | | | |
| FLV-TCC3HB | 1 Spot Light and 2 standard lights | ○ | ○ | ✕ | | | |
| FLV-TCC1EP | 1 Spot Light | ✕ | ○ | ✕ | — | Any FLV-EP-series Spot Light can be connected | |

*1. Standard light means all FLV-series Lights excluding the FLV-EP-series Spot Lights and the FLV-LN-series Line Lights.
*2. If the total power consumption of Lights is 7.5 W or less, an external power supply is not required because the power is supplied from the Camera.
*3. Refer to the Specifications on page 34 for the details of "power for connectable lighting".
*4. Intensity is controlled through the settings of the Vision System Controller.
*5. ○: Connectable  ✕: Not connectable

# Camera-mount Lighting Controller for FLV Series FLV-TCC Series

## Specifications

| Item | | | Model | FLV-TCC4 | FLV-TCC1 | FLV-TCC3HB | FLV-TCC1EP |
|---|---|---|---|---|---|---|---|
| Number of channels | | | | 4 standard lights | 1 standard light | 1 Spot Light, 2 standard lights | 1 Spot Light |
| Applicable light *1 | | | | FLV series (excluding FLV-EP series and FLV-LN series) | | FLV series (excluding FLV-LN series) | FLV-EP series |
| Applicable camera *2 | | | | FH-S series, FZ-S series | | | |
| Applicable vision system controller | | | | FH series | | | |
| Input voltage | | | | Supplied from applicable camera (12 V) or external power supply (24 V) *3 | | | Supplied from applicable camera (12 V) |
| External power supply voltage | | | | 24 VDC 10% (including ripple) | | | — |
| Current consumption | | | | 1.5A max. | | | 1.0A max. |
| | | Recommended power supply | | S8VS-06024 (manufactured by OMRON, 24 VDC, 2.5 A, 60 W) | | | — |
| Power of connected light | 12 VDC for camera supply | Continuous lighting | | 4ch total 7.5 W max. | 7.5 W max. | 0ch connection: 1,2ch total 5.5 W max. 0ch non-connection: 1,2ch total 7.5 W max. | All FLV-EP series can be connected. |
| | | Trigger lighting | Simultaneous lighting | 4ch total 7.5 W max. | 7.5 W max. | 0ch connection: 1,2ch total 5.5 W max. 0ch non-connection: 1,2ch total 7.5 W max. | |
| | | | Individual lighting | 7.5 W max. for 1ch | | 7.5 W max. for 1ch | |
| | 24 VDC for external supply | Continuous lighting | | 4ch total 7.5 W max. | 7.5 W max. | 0ch connection: 1,2ch total 5.5 W max. 0ch non-connection: 1,2ch total 7.5 W max. | — |
| | | Trigger lighting | Simultaneous lighting | 4ch total 15 W max. | 15 W max. | 0ch connection: 1,2ch total 14 W max. 0ch non-connection: 1,2ch total 15 W max. | |
| | | | Individual lighting | 15 W max. for 1ch | | 15 W max. for 1ch | |
| Drive method | | | | Constant voltage method | | 0ch Constant current method 1ch/2ch: Constant voltage method | Constant current method |
| Lighting method | | | | Trigger lighting, Continuous lighting | | | |
| Luminance control method | | | | Duty light adjustment or voltage light adjustment Duty light adjustment: PWM frequency of 100 kHz, light adjustment of 255 levels Voltage light adjustment: Light adjustment of 255 levels (all are configured with vision system controller) | | 0ch Duty light adjustment or current light adjustment 1ch/2ch Duty light adjustment or voltage light adjustment Duty light adjustment: PWM frequency of 100 kHz, light adjustment of 255 levels current light adjustment/ Voltage light adjustment: Light adjustment of 255 levels (all are configured with vision system controller) | Duty light adjustment or current light adjustment Duty light adjustment: PWM frequency of 100 kHz, light adjustment of 255 levels current light adjustment: Light adjustment of 255 levels (all are configured with vision system controller) |
| Trigger lighting | | | | Lighting in synchronization with trigger input timing from the controller. | | | |
| Trigger lighting delay time | | | | Ton: 30µs max. | | | |
| Lighting duration setting | | | | Auto setting in accordance with shutter speed. | | | |
| External interface | | | | Camera connection cable (directly connected with the main unit) | | | |
| Insulation resistance | | | | 0.5 MΩ (100VDC) | | | |
| Ambient temperature | | | | Operating: 0 to +50°C, Storage: -15 to +60°C (with no icing or condensation) | | | |
| Ambient humidity | | | | Operating and storage: 35% to 85% (with no condensation) | | | |
| Degree of protection | | | | IP20 (IEC60529) | | | |
| Vibration resistance (destructive) | | | | 10 to 150 Hz, (0.7mm double amplitude) 80 min each in X, Y, and Z directions | | | |
| Shock resistance (destructive) | | | | 150 m/s² 3 times each in 6 directions(up/down, left/right, forward/backward) | | | |
| Materials | | | | Case,Camera mount plate: Aluminum, Cable: FPVC | | | |
| Weight | | | | Approx. 130g (including the camera mount plate) | Approx. 120g (including the camera mount plate) | Approx. 130g (including the camera mount plate) | Approx. 120g (including the camera mount plate) |
| Accessories | | | | Instruction sheet, Lighting connection table, Camera Mount plate, Mounting screws (M2 set screw x 4, M2 flat head screw x 4, M4 flat head screw x 4) | | | |
| Applicable standards | | | | EN61326-1 *4, KC | | | |

*1. Check the lighting connection table of accessory.
*2. When mounting on the FH-S□12, use the FH-SM12-XLC (sold separately).
*3. When supplying the power to this product from an external input power supply (24V), make sure to turn ON the power to this product first or at the same time with the vision system controller. If you reverse this order, this product will not recognize the 24V external input, so lighting greater than 7.5W will not be possible.
*4. Electromagnetic environment: Industrial electromagnetic environment (EN/IEC 61326-1 Table 2)
Also, the following condition is applied to the immunity test of this product.
There are case that Lighting brightness fluctuate Max 10%.

## FLV Light Connection Table

Lighting controllers that can be connected to each light are shown below.

◎: Connectable, continuous lighting possible  ○: Connectable, only trigger lighting possible  ×: Not connectable
The following table shows if you can connect one light to each lighting controller.
When connecting lights to multiple channels, make sure that the total power consumption of the connected lights is within the specification of the lighting controller.

### Direct Ring Light

| Model | Power consumption | FLV-TCC4□ FLV-TCC1□ | FLV-TCC3HB□ *1 | |
|---|---|---|---|---|
| | | | 0ch non-connection | 0ch connection |
| FLV-DR3220W | 1.4W | ◎ | ◎ | ◎ |
| FLV-DR3220R | 1.3W | ◎ | ◎ | ◎ |
| FLV-DR3220B | 1.4W | ◎ | ◎ | ◎ |
| FLV-DR4415W | 2.7W | ◎ | ◎ | ◎ |
| FLV-DR4415R | 1.7W | ◎ | ◎ | ◎ |
| FLV-DR4415B | 2.7W | ◎ | ◎ | ◎ |
| FLV-DR5030W | 3.1W | ◎ | ◎ | ◎ |
| FLV-DR5030R | 1.8W | ◎ | ◎ | ◎ |
| FLV-DR5030B | 3.1W | ◎ | ◎ | ◎ |
| FLV-DR5030IR | 1.3W | ◎ | ◎ | ◎ |
| FLV-DR6030UV | 3.2W | ◎ | ◎ | ◎ |
| FLV-DR6615W | 5.0W | ◎ | ◎ | ◎ |
| FLV-DR6615R | 3.9W | ◎ | ◎ | ◎ |
| FLV-DR6615B | 5.0W | ◎ | ◎ | ◎ |
| FLV-DR7000W | 5.0W | ◎ | ◎ | ◎ |
| FLV-DR7000R | 3.7W | ◎ | ◎ | ◎ |
| FLV-DR7000B | 5.0W | ◎ | ◎ | ◎ |
| FLV-DR7030W | 5.0W | ◎ | ◎ | ◎ |
| FLV-DR7030R | 3.7W | ◎ | ◎ | ◎ |
| FLV-DR7030B | 5.0W | ◎ | ◎ | ◎ |
| FLV-DR7030IR | 2.6W | ◎ | ◎ | ◎ |
| FLV-DR7530UV | 5.4W | ◎ | ◎ | ◎ |
| FLV-DR9000W | 8.8W | ○ | ○ | ○ |
| FLV-DR9000R | 7.0W | ◎ | ◎ | ◎ |
| FLV-DR9000B | 8.8W | ○ | ○ | ○ |
| FLV-DR9030W | 8.1W | ○ | ◎ | ○ |
| FLV-DR9030R | 6.6W | ◎ | ◎ | ◎ |
| FLV-DR9030B | 8.1W | ○ | ◎ | ○ |
| FLV-DR9030IR | 4.3W | ◎ | ◎ | ◎ |
| FLV-DR9030UV | 6.8W | ◎ | ◎ | ○ |
| FLV-DR9215W | 7.4W | ◎ | ◎ | ○ |
| FLV-DR9215R | 5.4W | ◎ | ◎ | ◎ |
| FLV-DR9215B | 7.4W | ◎ | ◎ | ○ |
| FLV-DR12030W | 11.9W | ○ | ○ | ○ |
| FLV-DR12030R | 9.8W | ○ | ○ | ○ |
| FLV-DR12030B | 11.9W | ○ | ○ | ○ |

*1.0ch is only for Spot Light.

### Low Angle Ring Light

| Model | Power consumption | FLV-TCC4□ FLV-TCC1□ | FLV-TCC3HB□ | |
|---|---|---|---|---|
| | | | 0ch non-connection | 0ch connection |
| FLV-DL5890W | 1.9W | ◎ | ◎ | ◎ |
| FLV-DL5890R | 1.3W | ◎ | ◎ | ◎ |
| FLV-DL5890B | 1.9W | ◎ | ◎ | ◎ |
| FLV-DL7260W | 5.7W | ◎ | ◎ | ○ |
| FLV-DL7260R | 3.9W | ◎ | ◎ | ◎ |
| FLV-DL7260B | 5.7W | ◎ | ◎ | ○ |
| FLV-DL9090W | 2.8W | ◎ | ◎ | ◎ |
| FLV-DL9090R | 1.8W | ◎ | ◎ | ◎ |
| FLV-DL9090B | 2.8W | ◎ | ◎ | ◎ |
| FLV-DL12060W | 12.7W | ○ | ○ | ○ |
| FLV-DL12060R | 10.5W | ○ | ○ | ○ |
| FLV-DL12060B | 12.7W | ○ | ○ | ○ |
| FLV-DL15060W | 13.6W | ○ | ○ | ○ |
| FLV-DL15060R | 11.2W | ○ | ○ | ○ |
| FLV-DL15060B | 13.6W | ○ | ○ | ○ |

### Bar Light

| Model | Power consumption | FLV-TCC4□ FLV-TCC1□ | FLV-TCC3HB□ | |
|---|---|---|---|---|
| | | | 0ch non-connection | 0ch connection |
| FLV-BR6022W | 1.4W | ◎ | ◎ | ◎ |
| FLV-BR6022R | 1.3W | ◎ | ◎ | ◎ |
| FLV-BR6022B | 1.4W | ◎ | ◎ | ◎ |
| FLV-BR6022IR | 0.9W | ◎ | ◎ | ◎ |
| FLV-BR6424UV | 1.8W | ◎ | ◎ | ◎ |
| FLV-BR8532W | 3.5W | ◎ | ◎ | ◎ |
| FLV-BR8532R | 3.1W | ◎ | ◎ | ◎ |
| FLV-BR8532B | 3.5W | ◎ | ◎ | ◎ |
| FLV-BR11222W | 4.2W | ◎ | ◎ | ◎ |
| FLV-BR11222R | 2.6W | ◎ | ◎ | ◎ |
| FLV-BR11222B | 4.2W | ◎ | ◎ | ◎ |
| FLV-BR11222IR | 1.8W | ◎ | ◎ | ◎ |
| FLV-BR11624UV | 3.6W | ◎ | ◎ | ◎ |
| FLV-BR14030W | 6.1W | ◎ | ◎ | ○ |
| FLV-BR14030R | 4.8W | ◎ | ◎ | ◎ |
| FLV-BR14030B | 6.1W | ◎ | ◎ | ○ |
| FLV-BR15020W | 5.5W | ◎ | ◎ | ◎ |
| FLV-BR15020R | 3.1W | ◎ | ◎ | ◎ |
| FLV-BR15020B | 5.5W | ◎ | ◎ | ◎ |
| FLV-BR21222W | 8.7W | ○ | ○ | ○ |
| FLV-BR21222R | 5.0W | ◎ | ◎ | ◎ |
| FLV-BR21222B | 8.7W | ○ | ○ | ○ |
| FLV-BR21230W | 8.8W | ○ | ○ | ○ |
| FLV-BR21230R | 7.0W | ◎ | ◎ | ◎ |
| FLV-BR21230B | 8.8W | ○ | ○ | ○ |
| FLV-BR21230IR | 6.1W | ◎ | ◎ | ○ |
| FLV-BR21230UV | 7.8W | ○ | ○ | ○ |
| FLV-BR38037W | 15.9W | × | × | × |
| FLV-BR38037R | 11.3W | ○ | ○ | ○ |
| FLV-BR38037B | 15.9W | × | × | × |
| FLV-BR48031W | 21.9W | × | × | × |
| FLV-BR48031R | 18.0W | × | × | × |
| FLV-BR48031B | 21.9W | × | × | × |

### Coaxial Light

| Model | Power consumption | FLV-TCC4□ FLV-TCC1□ | FLV-TCC3HB□ | |
|---|---|---|---|---|
| | | | 0ch non-connection | 0ch connection |
| FLV-CL30W | 2.4W | ◎ | ◎ | ◎ |
| FLV-CL30R | 1.4W | ◎ | ◎ | ◎ |
| FLV-CL30B | 2.4W | ◎ | ◎ | ◎ |
| FLV-CL40W | 3.9W | ◎ | ◎ | ◎ |
| FLV-CL40R | 2.3W | ◎ | ◎ | ◎ |
| FLV-CL40B | 3.9W | ◎ | ◎ | ◎ |
| FLV-CL60W | 10.4W | ○ | ○ | ○ |
| FLV-CL60R | 5.7W | ◎ | ◎ | ○ |
| FLV-CL60B | 10.4W | ○ | ○ | ○ |
| FLV-CL60IR | 3.9W | ◎ | ◎ | ◎ |
| FLV-CL60UV | 3.0W | ◎ | ◎ | ◎ |
| FLV-CL80W | 10.8W | ○ | ○ | ○ |
| FLV-CL80R | 7.2W | ◎ | ◎ | ○ |
| FLV-CL80B | 10.8W | ○ | ○ | ○ |
| FLV-CL100W | 22.7W | × | × | × |
| FLV-CL100R | 15.2W | × | × | × |
| FLV-CL100B | 22.7W | × | × | × |

# Camera-mount Lighting Controller for FLV Series FLV-TCC Series

## Shadowless Light

| Model | Power consumption | FLV-TCC4□ FLV-TCC1□ | FLV-TCC3HB□ | |
|---|---|---|---|---|
| | | | 0ch non-connection | 0ch connection |
| FLV-FR114W | 3.9W | ◎ | ◎ | ◎ |
| FLV-FR114R | 3.1W | ◎ | ◎ | ◎ |
| FLV-FR114B | 3.9W | ◎ | ◎ | ◎ |
| FLV-FR150W | 6.1W | ◎ | ◎ | ○ |
| FLV-FR150R | 3.5W | ◎ | ◎ | ◎ |
| FLV-FR150B | 6.1W | ◎ | ◎ | ○ |
| FLV-FP130W | 8.1W | ○ | ○ | ○ |
| FLV-FP130R | 5.8W | ◎ | ◎ | ○ |
| FLV-FP130B | 8.1W | ○ | ○ | ○ |
| FLV-FS74W | 5.2W | ◎ | ◎ | ◎ |
| FLV-FS74R | 3.5W | ◎ | ◎ | ◎ |
| FLV-FS74B | 5.2W | ◎ | ◎ | ◎ |
| FLV-FQ48W | 2.0W | ◎ | ◎ | ◎ |
| FLV-FQ48R | 1.2W | ◎ | ◎ | ◎ |
| FLV-FQ48B | 2.0W | ◎ | ◎ | ◎ |

## Direct Back Light

| Model | Power consumption | FLV-TCC4□ FLV-TCC1□ | FLV-TCC3HB□ | |
|---|---|---|---|---|
| | | | 0ch non-connection | 0ch connection |
| FLV-DB3729W | 0.9W | ◎ | ◎ | ◎ |
| FLV-DB3729R | 0.9W | ◎ | ◎ | ◎ |
| FLV-DB3729B | 0.9W | ◎ | ◎ | ◎ |
| FLV-DB10181W | 8.1W | ○ | ○ | ○ |
| FLV-DB10181R | 4.7W | ◎ | ◎ | ◎ |
| FLV-DB10181B | 8.1W | ○ | ○ | ○ |
| FLV-DB130130W | 13.0W | ○ | ○ | ○ |
| FLV-DB130130R | 11.5W | ○ | ○ | ○ |
| FLV-DB130130B | 13.0W | ○ | ○ | ○ |
| FLV-DB212152W | 29.4W | × | × | × |
| FLV-DB212152R | 20.2W | × | × | × |
| FLV-DB212152B | 29.4W | × | × | × |

## Edge Type Light

| Model | Power consumption | FLV-TCC4□ FLV-TCC1□ | FLV-TCC3HB□ | |
|---|---|---|---|---|
| | | | 0ch non-connection | 0ch connection |
| FLV-FB5050W | 1.9W | ◎ | ◎ | ◎ |
| FLV-FB5050R | 1.0W | ◎ | ◎ | ◎ |
| FLV-FB5050B | 1.9W | ◎ | ◎ | ◎ |
| FLV-FB7070W | 1.9W | ◎ | ◎ | ◎ |
| FLV-FB7070R | 1.4W | ◎ | ◎ | ◎ |
| FLV-FB7070B | 1.9W | ◎ | ◎ | ◎ |
| FLV-FB9090W | 3.7W | ◎ | ◎ | ◎ |
| FLV-FB9090R | 1.9W | ◎ | ◎ | ◎ |
| FLV-FB9090B | 3.7W | ◎ | ◎ | ◎ |
| FLV-FB130130W | 5.5W | ◎ | ◎ | ◎ |
| FLV-FB130130R | 3.7W | ◎ | ◎ | ◎ |
| FLV-FB130130B | 5.5W | ◎ | ◎ | ◎ |
| FLV-FB200200W | 7.3W | ◎ | ◎ | ○ |
| FLV-FB200200R | 5.5W | ◎ | ◎ | ◎ |
| FLV-FB200200B | 7.3W | ◎ | ◎ | ○ |

## Edge Type Coaxial Light

| Model | Power consumption | FLV-TCC4□ FLV-TCC1□ | FLV-TCC3HB□ | |
|---|---|---|---|---|
| | | | 0ch non-connection | 0ch connection |
| FLV-FX100W | 3.7W | ◎ | ◎ | ◎ |
| FLV-FX100R | 1.9W | ◎ | ◎ | ◎ |
| FLV-FX100B | 3.7W | ◎ | ◎ | ◎ |
| FLV-FX143W | 5.5W | ◎ | ◎ | ◎ |
| FLV-FX143R | 3.7W | ◎ | ◎ | ◎ |
| FLV-FX143B | 5.5W | ◎ | ◎ | ◎ |

## Dome Light

| Model | Power consumption | FLV-TCC4□ FLV-TCC1□ | FLV-TCC3HB□ | |
|---|---|---|---|---|
| | | | 0ch non-connection | 0ch connection |
| FLV-DD70W | 2.3W | ◎ | ◎ | ◎ |
| FLV-DD70R | 1.4W | ◎ | ◎ | ◎ |
| FLV-DD70B | 2.3W | ◎ | ◎ | ◎ |
| FLV-DD100W | 17.9W | × | × | × |
| FLV-DD100R | 11.9W | ○ | ○ | ○ |
| FLV-DD100B | 17.9W | × | × | × |
| FLV-DD150W | 17.9W | × | × | × |
| FLV-DD150R | 11.9W | ○ | ○ | ○ |
| FLV-DD150B | 17.9W | × | × | × |

## Spot Light

| Model | Power consumption | FLV-TCC3HB□ FLV-TCC1EP□ |
|---|---|---|
| FLV-EP0803W | 1.6W | ◎ |
| FLV-EP0803R | 1.1W | ◎ |
| FLV-EP0803B | 1.6W | ◎ |
| FLV-EP50W | 1.6W | ◎ |
| FLV-EP50R | 1.1W | ◎ |

## Line Light

| Model | Power consumption |
|---|---|
| FLV-LN82W | 9.2W |
| FLV-LN142W | 18.4W |
| FLV-LN322W | 45.9W |
| FLV-LN442W | 64.3W |
| FLV-LN122R | 10.4W |
| FLV-LN222R | 20.7W |
| FLV-LN322R | 31.1W |
| FLV-LN422R | 41.4W |
| FLV-LN82B | 9.2W |
| FLV-LN142B | 18.4W |
| FLV-LN322B | 45.9W |
| FLV-LN442B | 64.3W |

## Part Names and Functions
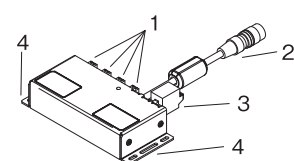
| No. | Name | Description |
|---|---|---|
| 1 | Lighting connecting connector | Connects to the LED lighting. |
| 2 | Camera connecting cable | Connects to the extension connector of the camera. |
| 3 | 24 V external power supply input terminal block * | Connect a 24-VDC power supply if the total power consumption of the Lightings exceeds 7.5 W. |
| 4 | Mounting hole for fixing screw | Holes to mount the screws to secure the Lighting Controller to a mounting plate or device. |

* To wire the terminal block, connect a applicable cord (AWG12-26 with a 10 mm margin for work).

## Mounting the Controller to the Camera

The Lighting Controller can be mounted to the Camera using the provided camera mount plate. Mounting directions are: (1) Top/Bottom mount, (2) Right side mount, (3) Left side mount.

(1) Top/Bottom mount  (2) Right side mount  (3) Left side mount

## Dimensions

## Lighting Controller

**FLV-TCC4**

Lighting connecting connector (2CH)
Lighting connecting connector (1CH)
Lighting connecting connector (0CH)
Lighting connecting connector (3CH)

R1.3   R1.3

DIA.4,6 CORES (CONDUCTOR CROSS SECTIONAL AREA: 0.05mm² / INSULATION OUTSIDE DIAMETER: DIA.0.38)

10.5 dia.

Camera connection cable

(34)
(25)   (13)
200

12.5  2.4           2.4  4  12.5
40  28           4  28
14  2.4       2.4  14
6.5  4       4  6.5
4-C1  2.4       2.4
82
89.6
96
20

6 oval mounting holes

Tightening torque: M2: 0.15 N·m

**FLV-TCC1**

Lighting connecting connector (0CH)

R1.3   R1.3

10.5 dia.   Camera connection cable

DIA.4,6 CORES (CONDUCTOR CROSS SECTIONAL AREA: 0.05mm² / INSULATION OUTSIDE DIAMETER: DIA.0.38)

(34)
(25)   (13)
200

12.5  2.4           2.4  12.5
40  28           4  28
14  2.4       2.4  14
6.5  4       4  6.5
4-C1  2.4       2.4
82
89.6
96
20

6 oval mounting holes

Tightening torque: M2: 0.15 N·m

**FLV-TCC3HB**

Lighting connecting connector (2CH)
Lighting connecting connector (1CH)
Lighting connecting connector for Spot Light (0CH)

R1.3   R1.3

Camera connection cable   10.5 dia.

DIA.4,6 CORES (CONDUCTOR CROSS SECTIONAL AREA: 0.05mm² / INSULATION OUTSIDE DIAMETER: DIA.0.38)

(34)
(25)   (13)
200

External power supply input terminal block

12.5  2.4           2.4  12.5
40  28           4  28
14  2.4       2.4  14
6.5  4       4  6.5
4-C1  2.4       2.4
82
89.6
96
20

6 oval mounting holes

Tightening torque: M2: 0.15 N·m

**FLV-TCC1EP**

Lighting connecting connector for Spot Light (0CH)

R1.3   R1.3

Camera connection cable   10.5 dia.

DIA.4,6 CORES (CONDUCTOR CROSS SECTIONAL AREA: 0.05mm² / INSULATION OUTSIDE DIAMETER: DIA.0.38)

(34)
(25)   (13)
200

12.5  2.4           2.4  12.5
40  28           4  28
14  2.4       2.4  14
6.5  4       4  6.5
4-C1  2.4       2.4
82
89.6
96
20

6 oval mounting holes

Tightening torque: M2: 0.15 N·m

## Camera mount plate (provided)

3

4-M2 x0.4 (MOUNTING SCREW HOLES)

89.6±0.1   3.2
40           28±0.1
96   6.5

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses

# Analog Lighting Controller for FLV Series
# FLV-ATC Series

**Stationary Lighting Controller.**

## Product Features

• Stationary type suitable for separate installation when no space near the Camera.

• Light emission trigger can be input directly even without Vision Sensor.

## Ordering Information

| Applicable light | Model | Number of channels | Power supply voltage | Power of connected light | Luminance control method |
|---|---|---|---|---|---|
| For standard light *1 | FLV-ATC21024 *2 | 2 | 100 to 240 VAC, 50/60 Hz | 40 W max. | Analog |
| | FLV-ATC41024 *2 | 4 | | | |
| For spot light | FLV-ATC10405 *2 | 1 | | 3 W max. | |
| | FLV-ATC40405 *2 | 4 | | 12 W max. | |
| For line light | FLV-ATC26024-100V *2 | 2 | 100 to 120 VAC, 50/60 Hz | 240 W max. | |
| | FLV-ATC26024-200V | 2 | 200 to 240 VAC, 50/60 Hz | | |

*1.   Standard Light means all FLV-series Lights excluding the FLV-EP-series Spot Lights and the FLV-LN-series Line Lights.
*2.   For AC power cords: An A-type plug is standard. C-type and O-type plugs are also available. (Add "-C" or "-O" to the end of the model number.)

| Plug type | A | C | O |
|---|---|---|---|
| Rated voltage | 125 V | 240 V | 240 V |
| Standard | PSE | CEE | CCC |

## AC Power Cords with A-type Plugs

### ⚠ WARNING

| The cable included in this package can be applied only to 100 VAC commercial power in Japan. You can not use it in the country outside Japan. Please never use it on the voltage beyond 100 VAC. It becomes a cause of ignition, generation of heat, and failure. | 🚫 |
|---|---|

## Lighting Controller for Standard Light FLV-ATC21024/-ATC41024

### Part Names and Functions



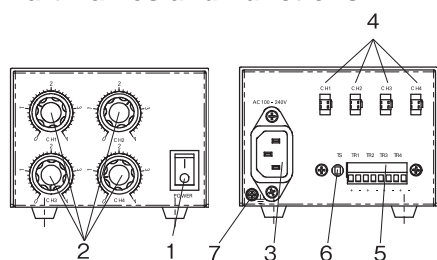| No. | Name | Description |
|---|---|---|
| 1 | Main power supply | Starts up the Controller when it is turned ON. |
| 2 | Lighting adjustment volume | Rotating the volume clockwise increases the emission intensity or counterclockwise decreases it. |
| 3 | AC power supply input connector | A terminal to supply AC power. Connect the provided AC input cable. |
| 4 | Lighting connector | Connects an LED light. |
| 5 | Trigger input terminal block | A terminal block for lighting illumination trigger input from outside to each lighting. |
| 6 | Lighting mode switching button | Lighting mode switch button is ON (The button is pushed.): Short-circuiting (+) and (-) of TR1 to TR4 respectively makes the trigger input status ON, turning the light ON. Releasing (+) and (-) makes the status OFF, turning the light OFF. |
| | | Lighting mode switch button is OFF (The button is not pushed.): Short-circuit (+) and (-) of TR1 to TR4 respectively makes the trigger input status OFF, turning the light OFF. Releasing (+) and (-) makes the status ON, turning the light ON. |
| 7 | Frame ground terminal | A terminal for frame ground. Connect the ground line. |

### Specifications

| Item                Model | FLV-ATC21024-□ *1 | FLV-ATC41024-□ *1 |
|---|---|---|
| Number of channels | 2 | 4 |
| Applicable light | FLV series (FLV-EP series and FLV-LN series are excluded.) | |
| Power supply voltage *2 | 100 to 240 VAC, 50/60 Hz | |
| Current consumption | 1 A max. | |
| Power of connected light | 2ch total 40 W max. 30 W max. for 1ch | 4ch total 40 W max. 30 W max. for 1ch |
| Drive method | Constant voltage method | |
| Lighting method | Trigger lighting, Continuous lighting | |
| Luminance control method | Voltage light adjustment: 14.0 to 24.0 V | |
| Trigger lighting | Lighting in synchronization with input from the trigger input terminal | |
| Trigger lighting delay time | T_on: 100 μs max. | |
| External interface | Trigger input terminal block | |
| Dielectric strength | 1500 VAC        50/60 Hz        1 min | |
| Insulation resistance | 20 MΩ (500 VDC) | |
| Ambient temperature | Operating: 0 to 50°C, Storage: -15 to 60°C (with no icing or condensation) | |
| Ambient humidity | Operating/storage: 35% to 85% (with no condensation) | |
| Degree of protection | IP20 (IEC60529) | |
| Vibration resistance (destructive) | 10 to 150 Hz, (0.2 mm double amplitude) 80 min each in X, Y, and Z directions | |
| Shock resistance (destructive) | 150 m/s$^2$ 3 times each in 6 directions (up/down, left/right, forward/backward) | |
| Materials | Case: Aluminum | |
| Weight | Approx. 800 g | |
| Accessories | Instruction sheet, AC input cable *1 | |
| Applicable standards | EN61326-1 *3 | |

*1. The suffixed symbol of the model name means the plug type of the accessory cable. A model name with no suffix means type A.
*2. This product is the exclusive use for apparatus inclusion in the industrial machine field.
   This product cannot be used for the connection to electric power equipment, such as a common residence, store, and small establishment, because of nonconformity with to Electrical Appliance and Material Safety Law (PSE).
*3. Electromagnetic environment: Industrial electromagnetic environment (EN/IEC 61326-1 Table 2)
   Also, the following condition is applied to the immunity test of this product.
   There are case that Lighting brightness fluctuate  Max 10%.

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses

# Analog Lighting Controller for FLV Series FLV-ATC Series

## Connecting to External Trigger Input Terminal Block

• Connection of this terminal block is not required if lighting illumination trigger input from outside is not used.

**<Connection of trigger input terminal block>**



\* Current flowing through the short circuit is less than 2 mA.

Trigger input terminal block

**FLV-ATC21024-□**



Lighting mode switch button

Trigger input terminal block CH1 to CH2

**FLV-ATC41024-□**
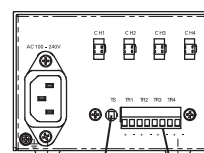


Lighting mode switch button

Trigger input terminal block CH1 to CH4

Lighting mode switch button is ON (The button is pushed.)

Short-circuiting (+) and (-) of TR1 to TR4 respectively makes the trigger input status ON, turning the light ON.
Releasing (+) and (-) makes the status OFF, turning the light OFF.

Lighting mode switch button is OFF (The button is not pushed.)

Short-circuit (+) and (-) of TR1 to TR4 respectively makes the trigger input status OFF, turning the light OFF.
Releasing (+) and (-) makes the status ON, turning the light ON.

**[Important]**

Make sure that excessive force is not imposed on the wire and terminal block.
Do not install the product in which loads are constantly applied to the terminal block such as the wire being under tension.
When wiring the terminal block, use an applicable cable (AWG 14 to 24, tip processing length: 7 mm).

## Dimensions

**(Unit: mm)**

● FLV-ATC21024-□



● FLV-ATC41024-□
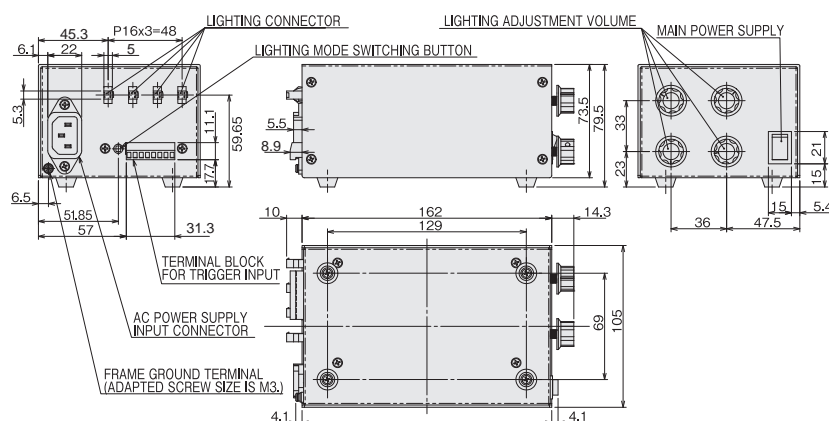
## Lighting Controller for Spot Light FLV-ATC10405/-ATC40405

### Part Names and Functions



| No. | Name | Description |
|-----|------|-------------|
| 1 | Main power supply | Starts up the Controller when it is turned ON. |
| 2 | Lighting adjustment volume | Rotating the volume clockwise increases the emission intensity or counterclockwise decreases it. |
| 3 | AC power supply input connector | A terminal to supply AC power. Connect the provided AC input cable. |
| 4 | Lighting connector | Connects an LED lights. |
| 5 | Terminal block for trigger input | A terminal block for lighting illumination trigger input from outside to each lighting. |
| 6 | Frame ground terminal | A terminal for frame ground. Connect the ground line. |

### Specifications

| Item                          Model | FLV-ATC10405-☐ *1 | FLV-ATC40405-☐ *1 |
|---|---|---|
| **Number of channels** | 1 | 4 |
| **Applicable light** | FLV-EP series | |
| **Power supply voltage** *2 | 100 to 240 VAC, 50/60 Hz | |
| **Current consumption** | 0.6 A max. | |
| **Power of connected light** | 3 W max. | 4ch total 12 W max.<br>3 W max. for 1ch |
| **Drive method** | Constant current method | |
| **Lighting method** | Trigger lighting, Continuous lighting | |
| **Luminance control method** | Current light adjustment : 0.4 A max. | |
| **Trigger lighting** | Turning the light off in synchronization with input from the trigger input terminal | |
| **Trigger lighting delay time** | $T\_on$: 1000 μs max. | |
| **External interface** | Trigger input terminal block | |
| **Dielectric strength** | 1500 VAC        50/60 Hz        1 min | |
| **Insulation resistance** | 20 MΩ (500 VDC) | |
| **Ambient temperature** | Operating: 0 to 50°C, Storage: -15 to 60°C (with no icing or condensation) | |
| **Ambient humidity** | Operating/storage: 35% to 85% (with no condensation) | |
| **Degree of protection** | IP20 (IEC60529) | |
| **Vibration resistance (destructive)** | 10 to 150 Hz, (0.2 mm double amplitude) 80 min each in X, Y, and Z directions | |
| **Shock resistance (destructive)** | 150 m/s² 3 times each in 6 directions (up/down, left/right, forward/backward) | |
| **Materials** | Case: Aluminum | |
| **Weight** | Approx. 800 g | |
| **Accessories** | Instruction sheet, AC input cable *1 | |
| **Applicable standards** | EN61326-1 *3 | |

*1. The suffixed symbol of the model name means the plug type of the accessory cable. A model name with no suffix means type A.
*2. This product is the exclusive use for apparatus inclusion in the industrial machine field.
    This product cannot be used for the connection to electric power equipment, such as a common residence, store, and small establishment,
    because of nonconformity with to Electrical Appliance and Material Safety Law (PSE).
*3. Electromagnetic environment: Industrial electromagnetic environment (EN/IEC 61326-1 Table 2)
    Also, the following condition is applied to the immunity test of this product.
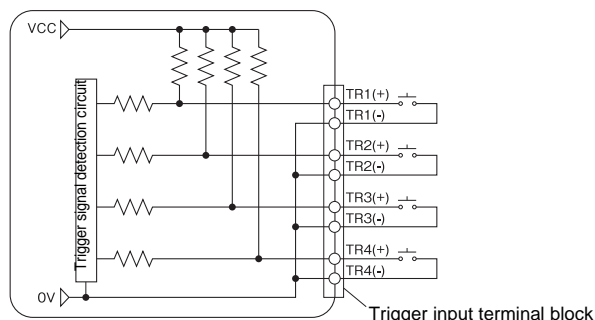    There are case that Lighting brightness fluctuate  Max 10%.

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses

# Analog Lighting Controller for FLV Series FLV-ATC Series
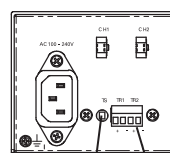
## Connecting to External Trigger Input Terminal Block

• Connection of this terminal block is not required if lighting illumination trigger input from outside is not used.
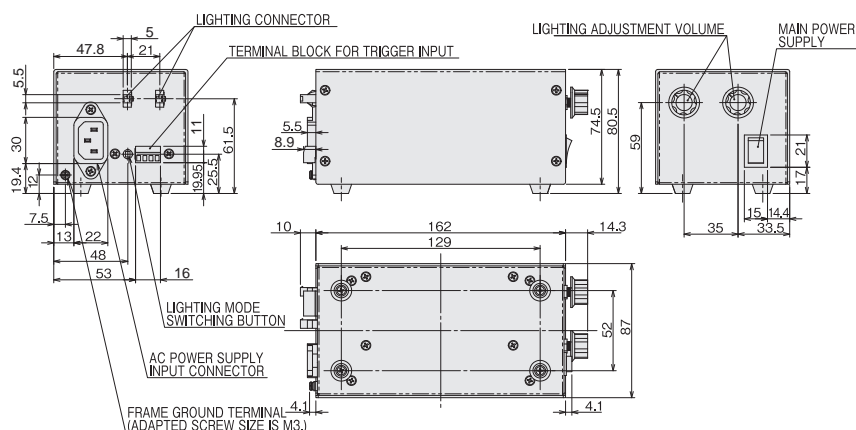
**<Connection of trigger input terminal block>**

**FLV-ATC10405-□**    **FLV-ATC40405-□**

Trigger input terminal block CH1    Trigger input terminal block CH1 to CH4

* Current flowing through the short circuit is less than 1 mA.

Short-circuiting (+) and (-) of TR1 to TR4 respectively makes the trigger input status OFF, turning the light OFF.
Releasing (+) and (-) makes the status ON, turning the light ON.

**[Important]**
• Make sure that excessive force is not imposed on the wire and terminal block.
• Do not install the product in which loads are constantly applied to the terminal block such as the wire being under tension.
When wiring the terminal block, use an applicable cable (AWG 14 to 24, tip processing length: 7 mm).

## Dimensions
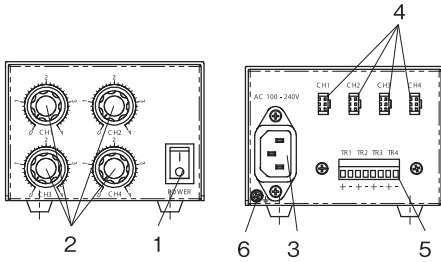
**(Unit: mm)**

●FLV-ATC10405-□
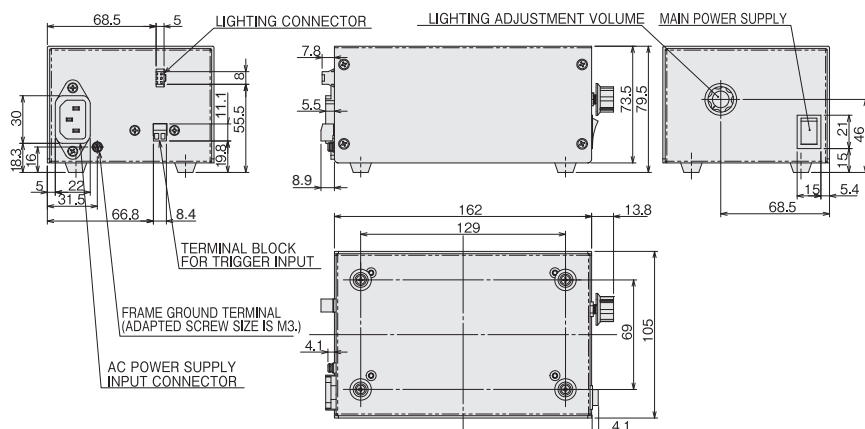


●FLV-ATC40405-□
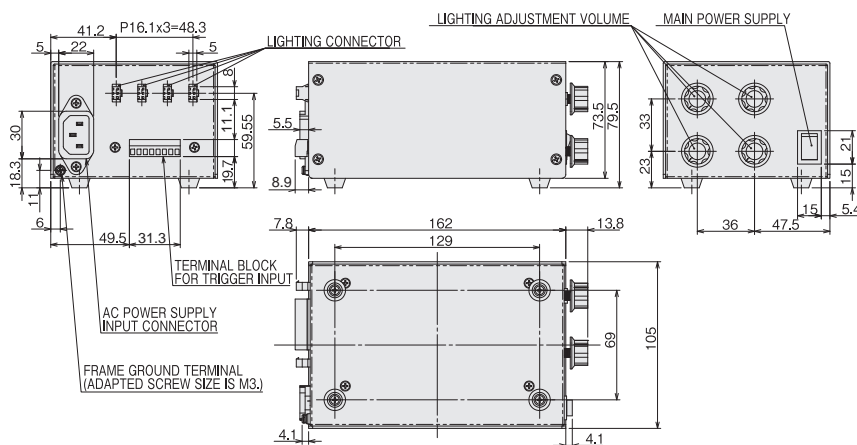
## Lighting Controller for Line Light: FLV-ATC26024-100V/-200V

## Part Names and Functions



| No. | Name | Description |
|-----|------|-------------|
| 1 | Main power supply | Starts up the Controller when it is turned ON. |
| 2 | Lighting adjustment volume | Rotating the volume clockwise increases the emission intensity or counterclockwise decreases it. |
| 3 | AC power supply input connector | A terminal to supply AC power. Connect the provided AC input cable. |
| 4 | Lighting connector | Connects an LED lights. |
| 5 | Trigger input terminal block | A terminal block for lighting illumination trigger input from outside to each lighting. |
| 6 | Frame ground terminal | A terminal for frame ground. Connect the ground line. |

## Specifications

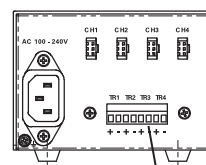| Item                    Model | FLV-ATC26024-100V□ *1 | FLV-ATC26024-200V□ *1 |
|-------------------------------|-----------------------|-----------------------|
| Number of channels | 2 | |
| Applicable light | FLV-LN series | |
| Power supply voltage *2 | 100 to 120 VAC, 50/60 Hz | 200 to 240 VAC, 50/60 Hz |
| Current consumption | 7 A max. | 4 A max. |
| Power of connected light | 2ch total 240 W max.<br>120 W max. for 1ch | |
| Drive method | Constant voltage method | |
| Lighting method | Trigger lighting, Continuous lighting | |
| Intensity control method | Current light adjustment : 5 A max. | |
| Luminance control method | Turning the light off in synchronization with input from the trigger input terminal | |
| Trigger lighting delay time | T_on: 500 μs max. | |
| External interface | Trigger input terminal block | |
| Dielectric strength | 1500 VAC          50/60 Hz          1 min | |
| Insulation resistance | 20 MΩ (500 VDC) | |
| Ambient temperature | Operating: 0 to 40°C, Storage: -15 to 60°C (with no icing or condensation) | |
| Ambient humidity | Operating/storage: 35% to 85% (with no condensation) | |
| Degree of protection | IP20 (IEC60529) | |
| Vibration resistance (destructive) | 10 to 150 Hz, (0.2 mm double amplitude) 80 min each in X, Y, and Z directions | |
| Shock resistance (destructive) | 150 m/s$^2$ 3 times each in 6 directions (up/down, left/right, forward/backward) | |
| Materials | Case: Aluminum | |
| Weight | Approx. 2.1 kg | |
| Accessories | Instruction sheet, AC input cable *1 | |
| Applicable standards | EN61326-1 *3 | |

*1. The suffixed symbol of the model name means the plug type of the accessory cable. A model name with no suffix means type A.
*2. This product is the exclusive use for apparatus inclusion in the industrial machine field.
This product cannot be used for the connection to electric power equipment, such as a common residence, store, and small establishment, because of nonconformity with to Electrical Appliance and Material Safety Law (PSE).
*3. Electromagnetic environment: Industrial electromagnetic environment (EN/IEC 61326-1 Table 2)
Also, the following condition is applied to the immunity test of this product.
There are case that Lighting brightness fluctuate  Max 10%.

# Analog Lighting Controller for FLV Series FLV-ATC Series

## Connecting to External Trigger Input Terminal Block

• Connection of this terminal block is not required if lighting illumination trigger input from outside is not used.

**<Connection of trigger input terminal block>**
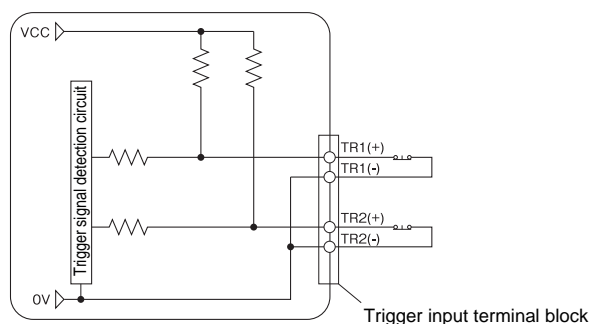
**FLV-ATC26024-□**

Trigger input terminal block CH1 to CH2

VCC

Trigger signal detection circuit

TR1(+)
TR1(-)
TR2(+)
TR2(-)

0V

Trigger input terminal block

* Current flowing through the short circuit is less than 2 mA.
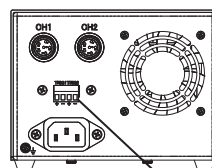
Short-circuiting (+) and (-) of TR1 to TR2 respectively makes the trigger input status OFF, turning the light OFF.
Releasing (+) and (-) makes the status ON, turning the light ON.

**[Important]**
• Make sure that excessive force is not imposed on the wire and terminal block.
• Do not install the product in which loads are constantly applied to the terminal block such as the wire being under tension.
• When wiring the terminal block, use an applicable cable (AWG 14 to 24, tip processing length: 7 mm).
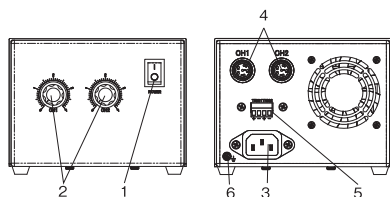
## Dimensions

**(Unit: mm)**

●FLV-ATC26024-□

LIGHTING CONNECTOR
TERMINAL BLOCK FOR TRIGGER INPUT
MAIN POWER SUPPLY
LIGHTING ADJUSTMENT VOLUME

28.1 16.2
21.5   30
6

11.1
44.3
4
9.5
21.5   30

8.9
5.5
11.8
22

AC POWER SUPPLY INPUT CONNECTOR
FRAME GROUND TERMINAL (ADAPTED SCREW SIZE IS M3)

98.5
104.5
61
67.3
21
15 16.8
40   62
136

286
240
13.8
118   136
4.1
4.1
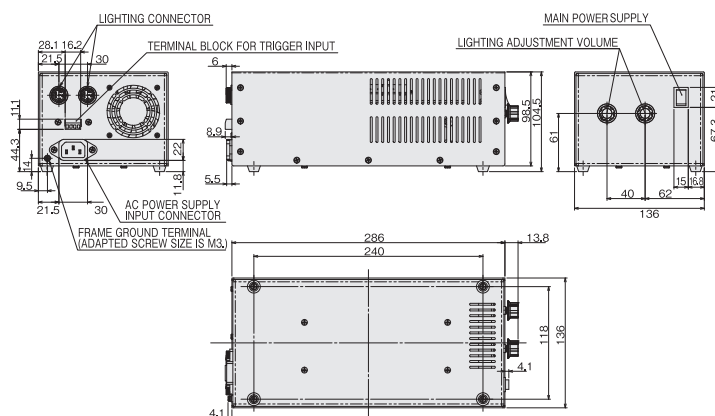
# Options for FLV Series
# Cable/Diffusion Plate

## Cable

### Ordering Information

| Series | Type | Model | Cable Length | Weight | Dimensions |
|---|---|---|---|---|---|
| Extension Cable for Standard Light *1 | Standard Cable | FLV-XC1 | 1 m | Approx. 30g | A |
| | | FLV-XC2 | 2 m | Approx. 50g | |
| | | FLV-XC3 | 3 m | Approx. 70g | |
| | | FLV-XC5 | 5 m | Approx. 110g | |
| | | FLV-XC10 | 10 m | Approx. 210g | |
| | Bend resistant Cable | FLV-XC1R | 1 m | Approx. 40g | B |
| | | FLV-XC2R | 2 m | Approx. 60g | |
| | | FLV-XC3R | 3 m | Approx. 80g | |
| | | FLV-XC5R | 5 m | Approx. 130g | |
| | | FLV-XC10R | 10 m | Approx. 250g | |
| Extension Cable for Spot Light | Standard Cable | FLV-XC1EP | 1 m | Approx. 30g | C |
| | | FLV-XC2EP | 2 m | Approx. 50g | |
| | | FLV-XC3EP | 3 m | Approx. 70g | |
| | | FLV-XC5EP | 5 m | Approx. 110g | |
| | Bend resistant Cable | FLV-XC1EPR | 1 m | Approx. 40g | D |
| | | FLV-XC2EPR | 2 m | Approx. 60g | |
| | | FLV-XC3EPR | 3 m | Approx. 80g | |
| | | FLV-XC5EPR | 5 m | Approx. 130g | |
| Extension Cable for Line Light | Standard Cable | FLV-XC1LN | 1 m | Approx. 200g | E |
| | | FLV-XC2LN | 2 m | Approx. 270g | |
| | | FLV-XC3LN | 3 m | Approx. 320g | |
| | | FLV-XC5LN | 5 m | Approx. 440g | |
| Branch Cable for Standard Light *1 | Standard Cable | FLV-XC1S2 | 1 m | Approx. 30g | F |
| | | FLV-XC2S2 | 2 m | Approx. 50g | |
| | | FLV-XC3S2 | 3 m | Approx. 80g | |
| | | FLV-XC5S2 | 5 m | Approx. 120g | |

*1. Standard light means all FLV-series Lights excluding the FLV-EP-series Spot Lights and the FLV-LN-series Line Lights.

### Dimensions

(Unit: mm)

**A** FLV-XC□



| Model | L |
|---|---|
| FLV-XC1 | 1,000 |
| FLV-XC2 | 2,000 |
| FLV-XC3 | 3,000 |
| FLV-XC5 | 5,000 |
| FLV-XC10 | 10,000 |

**B** FLV-XC□R



| Model | L |
|---|---|
| FLV-XC1R | 1,000 |
| FLV-XC2R | 2,000 |
| FLV-XC3R | 3,000 |
| FLV-XC5R | 5,000 |
| FLV-XC10R | 10,000 |

**OMRON**

45

# Options for FLV Series Cable/Diffusion Plate

## C FLV-XC□EP



3PIN PLUG CONNECTOR

3PIN SOCKET CONNECTOR

3.5Dia. MINIMUM BEND RADIUS20

| Model | L |
|---|---|
| FLV-XC1EP | 1,000 |
| FLV-XC2EP | 2,000 |
| FLV-XC3EP | 3,000 |
| FLV-XC5EP | 5,000 |

## D FLV-XC□EPR



3PIN PLUG CONNECTOR

3PIN SOCKET CONNECTOR

4Dia. MINIMUM BEND RADIUS20

| Model | L |
|---|---|
| FLV-XC1EPR | 1,000 |
| FLV-XC2EPR | 2,000 |
| FLV-XC3EPR | 3,000 |
| FLV-XC5EPR | 5,000 |

## E FLV-XC□LN



6PIN PLUG CONNECTOR

6PIN SOCKET CONNECTOR

8Dia. MINIMUM BEND RADIUS40

| Model | L |
|---|---|
| FLV-XC1LN | 1,000 |
| FLV-XC2LN | 2,000 |
| FLV-XC3LN | 3,000 |
| FLV-XC5LN | 5,000 |

## F FLV-XC□S2



2PIN SOCKET CONNECTOR

BRANCH COUPLER

2PIN PLUG CONNECTOR

3.5Dia. MINIMUM BEND RADIUS20

| Model | L1 | L2 |
|---|---|---|
| FLV-XC1S2 | 500 | 500 |
| FLV-XC2S2 | 1,000 | 1,000 |
| FLV-XC3S2 | 1,000 | 2,000 |
| FLV-XC5S2 | 2,000 | 3,000 |

## Diffusion Plate/Polarization Plate

### Ordering Information

#### Diffusion Plate

| Type | Model | | | Applicable light |
|---|---|---|---|---|
| Transparency rate | High | Middle | Low | |
| Diffusivity | Low | Middle | High | |
| For FLV-DR-series Direct ring light | FLV-DR3220DF | FLV-DR3220DF50 | FLV-DR3220DF30 | FLV-DR3220☐ |
| | FLV-DR4415DF | FLV-DR4415DF50 | FLV-DR4415DF30 | FLV-DR4415☐ |
| | FLV-DR5030DF | FLV-DR5030DF50 | FLV-DR5030DF30 | FLV-DR5030☐ |
| | FLV-DR6030DF | --- | --- | FLV-DR6030UV |
| | FLV-DR6615DF | FLV-DR6615DF50 | FLV-DR6615DF30 | FLV-DR6615☐ |
| | FLV-DR7000DF | FLV-DR7000DF50 | FLV-DR7000DF30 | FLV-DR7000☐ |
| | FLV-DR7030DF | FLV-DR7030DF50 | FLV-DR7030DF30 | FLV-DR7030☐ |
| | FLV-DR7530DF | --- | --- | FLV-DR7530UV |
| | FLV-DR9000DF | FLV-DR9000DF50 | FLV-DR9000DF30 | FLV-DR9000☐ |
| | FLV-DR9030DF | FLV-DR9030DF50 | FLV-DR9030DF30 | FLV-DR9030☐ |
| | FLV-DR9215DF | FLV-DR9215DF50 | FLV-DR9215DF30 | FLV-DR9215☐ |
| | FLV-DR12030DF | FLV-DR12030DF50 | FLV-DR12030DF30 | FLV-DR12030☐ |
| For FLV-DL-series Low angle ring light | FLV-DL5890DF | FLV-DL5890DF50 | FLV-DL5890DF30 | FLV-DL5890☐ |
| | FLV-DL7260DF | FLV-DL7260DF50 | FLV-DL7260DF30 | FLV-DL7260☐ |
| | FLV-DL12060DF | FLV-DL12060DF50 | FLV-DL12060DF30 | FLV-DL12060☐ |
| | FLV-DL15060DF | FLV-DL15060DF50 | FLV-DL15060DF30 | FLV-DL15060☐ |
| For FLV-BR-series Bar light | FLV-BR6022DF | FLV-BR6022DF50 | FLV-BR6022DF30 | FLV-BR6022☐ |
| | FLV-BR6424DF | --- | --- | FLV-BR6424UV |
| | FLV-BR8532DF | FLV-BR8532DF50 | FLV-BR8532DF30 | FLV-BR8532☐ |
| | FLV-BR11222DF | FLV-BR11222DF50 | FLV-BR11222DF30 | FLV-BR11222☐ |
| | FLV-BR11624DF | --- | --- | FLV-BR11624UV |
| | FLV-BR14030DF | FLV-BR14030DF50 | FLV-BR14030DF30 | FLV-BR14030☐ |
| | FLV-BR15020DF | FLV-BR15020DF50 | FLV-BR15020DF30 | FLV-BR15020☐ |
| | FLV-BR21222DF | FLV-BR21222DF50 | FLV-BR21222DF30 | FLV-BR21222☐ |
| | FLV-BR21230DF | FLV-BR21230DF50 | FLV-BR21230DF30 | FLV-BR21230☐ |
| | FLV-BR38037DF | FLV-BR38037DF50 | FLV-BR38037DF30 | FLV-BR38037☐ |
| | FLV-BR48031DF | FLV-BR48031DF50 | FLV-BR48031DF30 | FLV-BR48031☐ |

#### Polarization Plate

| Type | | Model | Applicable light |
|---|---|---|---|
| For FLV-DR-series Direct ring light | | FLV-DR3220PL | FLV-DR3220☐ |
| | | FLV-DR4415PL | FLV-DR4415☐ |
| | | FLV-DR5030PL | FLV-DR5030☐ |
| | | FLV-DR6615PL | FLV-DR6615☐ |
| | | FLV-DR7000PL | FLV-DR7000☐ |
| | | FLV-DR7030PL | FLV-DR7030☐ |
| | | FLV-DR9000PL | FLV-DR9000☐ |
| | | FLV-DR9030PL | FLV-DR9030☐ |
| | | FLV-DR9215PL | FLV-DR9215☐ |
| | | FLV-DR12030PL | FLV-DR12030☐ |
| For FLV-DL-series Low angle ring light | | FLV-DL7260PL | FLV-DL7260☐ |
| | | FLV-DL12060PL | FLV-DL12060☐ |
| | | FLV-DL15060PL | FLV-DL15060☐ |
| For FLV-BR-series Bar light | Polarization direction: Long side | FLV-BR6022PL | FLV-BR6022☐ |
| | | FLV-BR8532PL | FLV-BR8532☐ |
| | | FLV-BR11222PL | FLV-BR11222☐ |
| | | FLV-BR14030PL | FLV-BR14030☐ |
| | | FLV-BR15020PL | FLV-BR15020☐ |
| | | FLV-BR21222PL | FLV-BR21222☐ |
| | | FLV-BR21230PL | FLV-BR21230☐ |
| | | FLV-BR38037PL | FLV-BR38037☐ |
| | | FLV-BR48031PL | FLV-BR48031☐ |
| | Polarization direction: Short side | FLV-BR6022PL-V | FLV-BR6022☐ |
| | | FLV-BR8532PL-V | FLV-BR8532☐ |
| | | FLV-BR11222PL-V | FLV-BR1122☐ |
| | | FLV-BR14030PL-V | FLV-BR14030☐ |
| | | FLV-BR15020PL-V | FLV-BR15020☐ |
| | | FLV-BR21222PL-V | FLV-BR21222☐ |
| | | FLV-BR21230PL-V | FLV-BR21230☐ |
| | | FLV-BR38037PL-V | FLV-BR38037☐ |
| | | FLV-BR48031PL-V | FLV-BR48031☐ |

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses

MDMC Light
# FL-MD Series

**RGB full color light flexibly changes illumination directions, colors, and light intensities.**

## Product Features

- Combination of illumination directions, colors, and light intensities.
- Flexible illumination patterns for additional objects or inspection items.

### Illumination Structure

Choose the best pattern by combining illumination directions x full color RGB x 128 brightness levels of 13 blocks

Full color coaxial light

Full color 3-tier x 4-block dome light
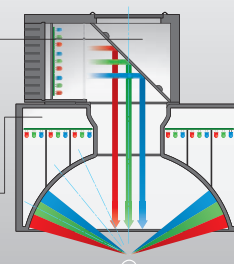
## Applications

| Standard Lighting System | FL-MD Series |
|---|---|
| Different lights are required for different defects | One light clearly shows both broken wires and dirt on elements |
| **Glass surface inspection** / **Wire inspection** | **Inspection for broken wires and dirt on elements** |
| Coaxial light / Low angle light | |
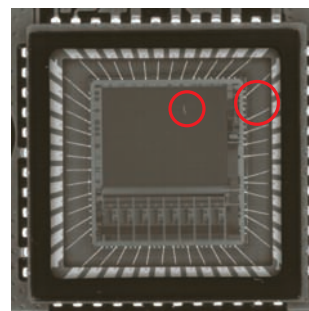
## Ordering Information

| Model | Color | Dimensions | | | Weight (g) |
|---|---|---|---|---|---|
| | | Outside dimensions (mm) | Height (mm) | Drawing | |
| **FL-MD90MC** | RGB full color | 125 × 90 | 82 | A | 800 |
| **FL-MD180MC** | RGB full color | 215 × 180 | 154 | B | 3000 |

Note: Refer to page 66 for LED Characteristics.

## Specifications

| Item                          Model | FL-MD90MC | FL-MD180MC |
|---|---|---|
| Applicable controller | FH series | |
| Applicable camera | FH-S series, FZ-S series | |
| Lighting color (peak wavelength) | R: Red (Typ.635nm), G: Green (Typ.525nm), B: Blue (Typ.465nm) | |
| Light source | LED | |
| LED safety | W,B: Risk Group 2, R,G: Risk Group 1 | W,G,B: Risk Group 2, R: Risk Group 1 |
| Power supply voltage | 24 VDC±10% (including ripple) | |
| Recommended power supply | S8VK-G12024 (manufactured by OMRON, 24 VDC, 5 A, 120 W) | |
| Current consumption | 1.5 A max. | 3.0 A max. |
| Drive method | Constant voltage method | |
| Lighting method | Trigger lighting | |
| Luminance control method | Duty light adjustment: PWM frequency of 200 kHz, light adjustment of 128 levels (configured with vision system controller) | |
| Trigger lighting | Lighting in synchronization with trigger input timing from the controller (configured with vision system controller). | |
| Lighting duration setting | Auto setting in accordance with shutter speed. | |
| Lighting time control | Set with vision system controller or set in accordance with shutter speed. | |
| External interface | Camera connection cable (directly connected with the main unit) Cable length: 500 mm | |
| Ambient temperature | Operating: 0 to 40°C, Storage: -15 to 60°C (with no icing or condensation) | |
| Ambient humidity | Operating and storage: 35% to 85% (with no condensation) | |
| Degree of protection | IP20 (IEC60529) | |
| Vibration resistance | 10 to 150 Hz, (0.35mm half-amplitude) 80 min each in X, Y, and Z directions | |
| Shock resistance | 150 m/s² 3 times each in 6 directions (up/down, left/right, forward/backward) | |
| Material | Case: Aluminum, PC, PMMA Cable: PVC | |
| Weight | Approx. 0.8 kg | Approx. 3.0 kg |
| Accessories | Instruction Sheet, Compliance Sheet, 24 V power supply terminal block (male) | |

Note: 1. Turn ON the power of this product and vision system controller at the same time or this product first.
2. This light complies with the EN standard (EN61326-1)
(Electromagnetic environment: Industrial electromagnetic environment (EN/IEC 61326-1 Table 2))
Also, the following condition is applied to the immunity test of this product.
There may be cases that light brightness fluctuates within 10%.
3. This light complies with the KC standard.

## Dimensions

**(Unit:mm)**



A FL-MD90MC

Tightening torque (M3 screw): 0.54 N•m



B FL-MD180MC

Tightening torque (M4 screw): 1.2 N•m

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses
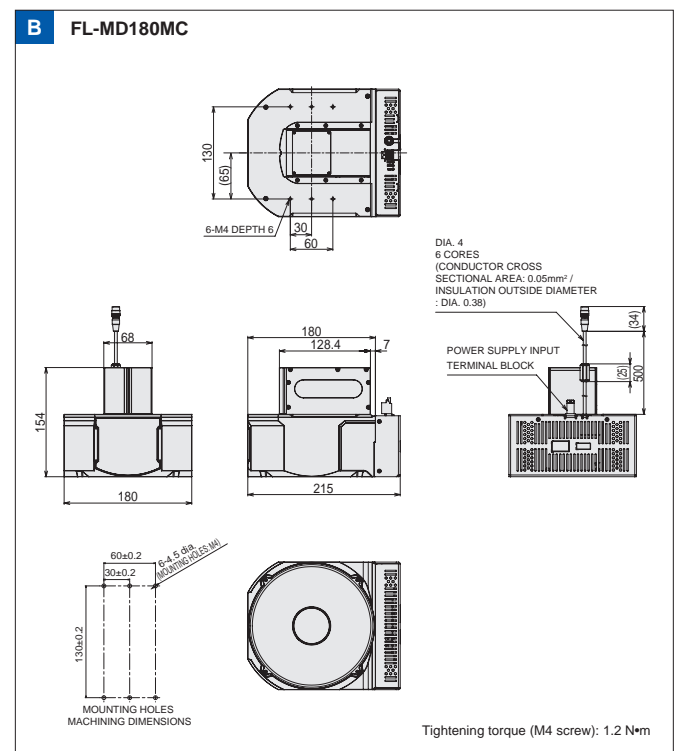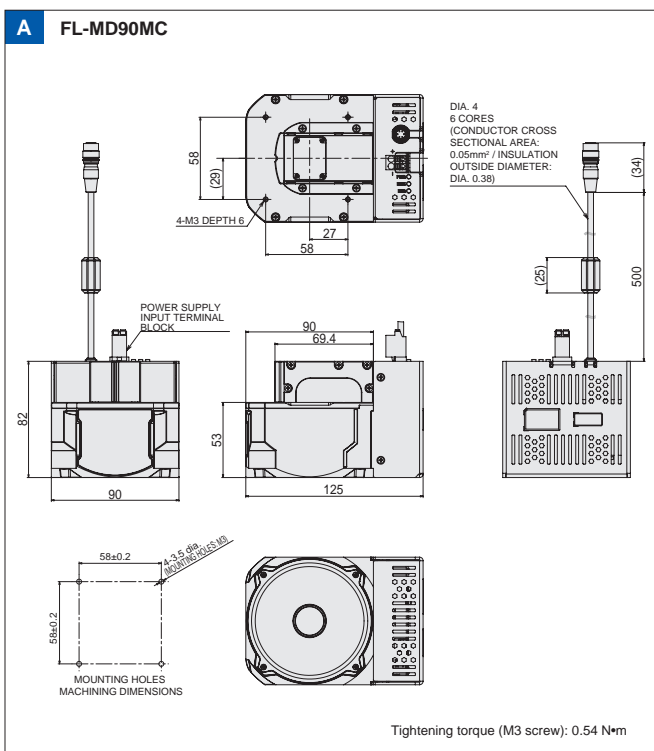
Photometric Stereo Light
# FL-PS Series

**Shows defects accurately.**

## Product Features

• Captures images under different illumination directions to extract "characters" and "scratches and dents".

### Illumination Structure

Four lights are lit in turn, and variations in brightness are analyzed. Printed characters with little variation in brightness even under different illumination directions are extracted as texture, and a dent with huge variation in brightness is extracted as a shape.
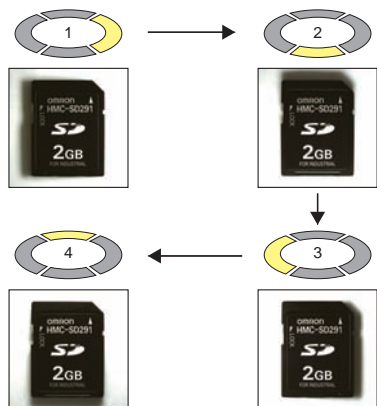
## Applications

**Inspection of dents on characters**

| Standard light | Extracts scratches only | Extracts characters only |
|---|---|---|
| | (Shape) | (Texture) |

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## Ordering Information

| Model | Color | Dimensions | | | | Lighting controller | | | Weight (g) |
| | | External ring diameter (mm) | Internal ring diameter (mm) | Height (mm) | Drawing | FL-STC□ | FL-TCC□ | FL-TCC1PS | |
|---|---|---|---|---|---|---|---|---|---|
| **FL-PS90W** | White | 90 dia. | 50 dia. | 35 | A | ✕ | ✕ | ◯ | 200 |
| **FL-PS140W** | White | 140 dia. | 100 dia. | 35 | B | ✕ | ✕ | ◯ | 350 |
| **FL-PS260W** | White | 260 dia. | 200 dia. | 35 | C | ✕ | ✕ | ◯ | 800 |

Note: Refer to page 66 for LED Characteristics.
◯: Connectable ✕: Not connectable

## Specifications

| Item                                Model | FL-PS90W | FL-PS140W | FL-PS260W |
|---|---|---|---|
| **Applicable controller** | FL-TCC1PS | | |
| **Lighting color** | W: White | | |
| **Light source** | LED | | |
| **LED safety** | Risk group 2 | | |
| **Power consumption** | 32W | 47W | 61W |
| **Ambient temperature** | Operating: 0 to 40°C Storage: -15 to 60°C (with no icing nor no condensation) | | |
| **Ambient humidity** | Operating and storage: 35% to 85% (no condensation) | | |
| **Degree of protection** | IP20(IEC60529) | | |
| **Vibration resistance (destructive)** | 10 to 150 Hz, (0.35mm half-amplitude) 80 min. each in X, Y, and Z directions | | |
| **Shock resistance (destructive)** | 150 m/s$^2$ 3 times each in 6 directions (up/down, left/right, forward/backward) | | |
| **Materials** | Case: Aluminum, PMMA | | |
| **Weight** | Approx. 200g | Approx. 350g | Approx. 800g |
| **Accessories** | INSTRUCTION SHEET (THIS SHEET), Compliance Sheet | | |

## Dimensions

**(Unit:mm)**

**A** **FL-PS90W**

MOUNTING HOLES MACHINING DIMENSIONS

Tightening torque (M3 screw): 0.54 N•m

**B** **FL-PS140W**

MOUNTING HOLES MACHINING DIMENSIONS

Tightening torque (M3 screw): 0.54 N•m

**C** **FL-PS260W**

MOUNTING HOLES MACHINING DIMENSIONS

Tightening torque (M4 screw): 1.2 N•m
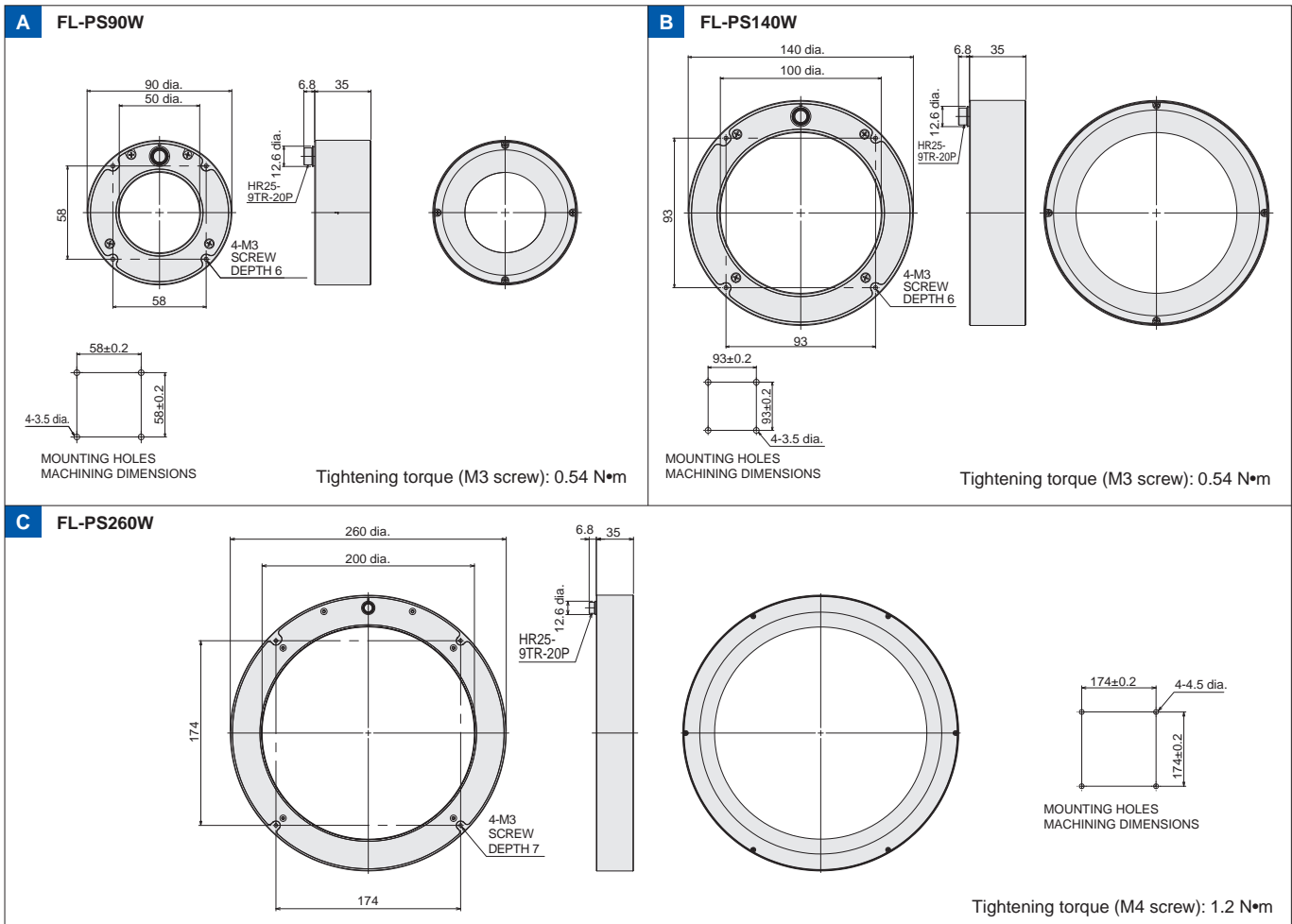
## Bar Light
# FL-BR Series

**The highest level\* of brightness in the industry.**
**This series is structured for adaptable wiring and mounting.**

* Based on OMRON testing in November 2010.

## Product Features

- High-brightness ODR lighting beyond the limitations of LEDs.
- Stable inspection even for high-speed applications.
- Bright even through a polarizing filter.
- Easy wiring, mounting, and adjustment.

Same level of brightness (100,000 lx) as daytime sunlight.

Up to 4 times the brightness

Unit: lx

Shell-shape LED lighting | High-brightness LED lighting | ODR Lighting
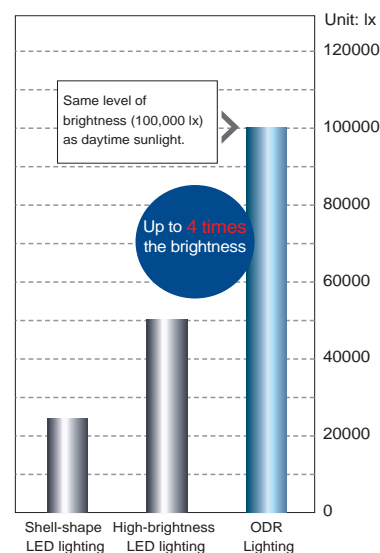
## Wiring

The cable can extend from either direction, allowing for horizontal or vertical wiring layouts on the mounting surface.

## Mounting and Adjustment

The light is structured for mounting with nuts to an arm on the back or side surfaces.
Minute changes in the position can be achieved by sliding the light.

Specialized mounting brackets enable mounting at a flexible angle.

## Illumination Structure
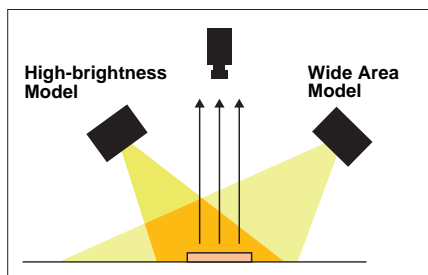


## Lighting Intensity Distribution Characteristics

High-brightness Model (FL-BR9120W-H)

X axis (long axis)
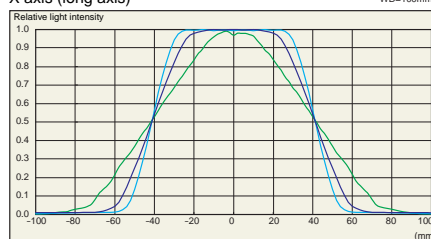


Y axis (short axis)
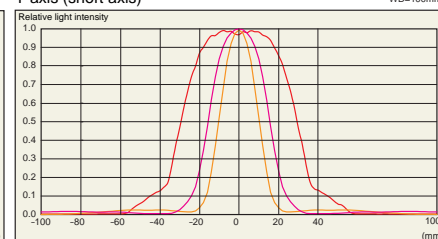


Wide Area Model (FL-BR9120W)

X axis (long axis)
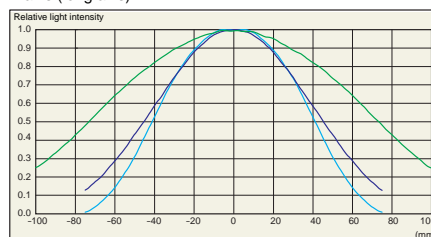


Y axis (short axis)
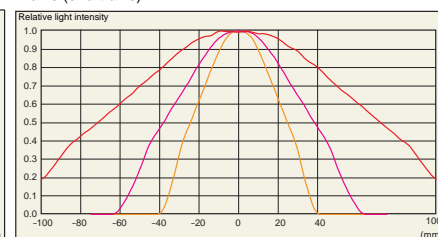


## Applications

**Standard light**



It is difficult to read characters with low contrast.

**FL Series**



Sharp images are created of both two-dimensional codes and characters.

**Standard light**



Inspection is not possible because of workpiece blurring or a lack of brightness.

**FL Series**
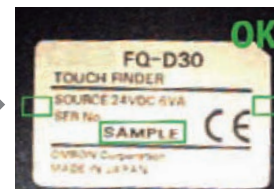


Complete extraction of edges and characters.

## Ordering Information

| Model | Color | Type | Lighting Area Dimension (mm) | Outside Dimension (mm) | Height (mm) | Drawing | FL-STC□ | FL-TCC□ | FL-TCC1PS | Weight (g) | Diffusion Plate | Polarization Plate |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **FL-BR5020W** | WHITE | Wide Area Model | 40.8x9 | 49.8x20 | 20 | A | O | O | ✕ | 40 | O | ✕ |
| **FL-BR5020W-H** | WHITE | High-brightness Model | | | | | | | | | | |
| **FL-BR9120W** | WHITE | Wide Area Model | 81.6x9 | 90.6x20 | 20 | B | O | O | ✕ | 70 | O | ✕ |
| **FL-BR9120W-H** | WHITE | High-brightness Model | | | | | | | | | | |
| **FL-BR13120W** | WHITE | Wide Area Model | 122.4x9 | 131.4x20 | 20 | C | O | O | ✕ | 100 | O | ✕ |
| **FL-BR13120W-H** | WHITE | High-brightness Model | | | | | | | | | | |

Note: Refer to page 66 for LED Characteristics.
The color of white LEDs can vary due to intrinsic characteristics. Confirm suitability for the application in advance.
O: Applicable  ✕: Not applicable

# Bar Light FL-BR Series

## Specifications

| Model | Wide Area Model | High-brightness Model | Wide Area Model | High-brightness Model | Wide Area Model | High-brightness Model |
|---|---|---|---|---|---|---|
| | FL-BR5020W | FL-BR5020W-H | FL-BR9120W | FL-BR9120W-H | FL-BR13120W | FL-BR13120W-H |
| Light source | White LEDs | | | | | |
| Vibration resistance | 10 to 150 Hz (Double amplitude: 0.7 mm), 80 min each in X, Y, and Z directions | | | | | |
| Shock resistance | 150 m/s² 3 times each in 6 directions | | | | | |
| Ambient temperature | Operating: 0 to 40°C, Storage: -15 to 60°C (with no icing or condensation) | | | | | |
| Ambient humidity | Operating/storage: 35% to 85% (with no condensation) | | | | | |
| Ambient atmosphere | No corrosive gases. | | | | | |
| Degree of protection | IEC60259 IP20 | | | | | |
| Weight | Approx. 40 g | | Approx. 70 g | | Approx. 100 g | |
| Materials | Case: Aluminum; Cover, side parts, and lens: PC; Cable: Heat resistant polyvinyl chloride; Connector: Thermoplastic resin with glass | | | | | |
| LED safety | Risk Group 2 (IEC 62471) | | | | | |
| Accessories | Instruction sheet | | | | | |

The color of white LEDs can vary due to intrinsic characteristics.
Confirm suitability for the application in advance.

## Dimensions

**(Unit:mm)**

**A**   FL-BR5020W(-H)



**B**   FL-BR9120W(-H)



**C**   FL-BR13120W(-H)

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses

# Direct Ring Light
# FL-DR Series

**Clear Images with Industry's Best Level\* of Brightness and Illumination over a Wide Field of View**

**ODR**
Optical Double Reflection

\* Based on OMRON testing in November 2010.

## Product Features

- High brightness in a small package.
- Wide range of working distance.
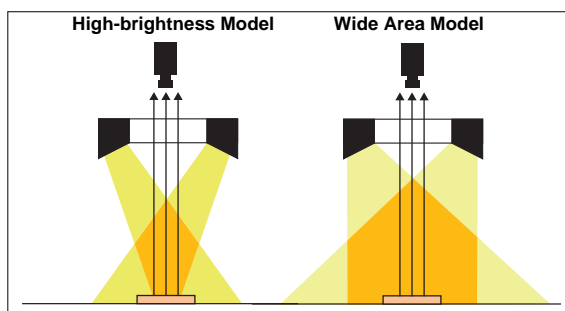
**Previous Lighting**

90 dia.

**FL Series**

50 dia.

**Twice** the brightness at half the size

FL Series
50 dia.

200

Previous Lighting
50 dia.

150

100

50

Approx. 30 to 100 mm

**Approx. twice** the working distance

Approx. 10 to 200 mm

## Illumination Structure

**High-brightness Model**

**Wide Area Model**

## Lighting Intensity Distribution Characteristics

High-brightness Model (FL-DR50W-H)

Relative light intensity

| | |
|---|---|
| WD=30mm | |
| WD=50mm | |
| WD=100mm | |

1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0

−150   −100   −50   0   50   100   150   (mm)

Wide Area Model (FL-DR50W)

Relative light intensity

| | |
|---|---|
| WD=30mm | |
| WD=50mm | |
| WD=100mm | |

1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0

−150   −100   −50   0   50   100   150   (mm)
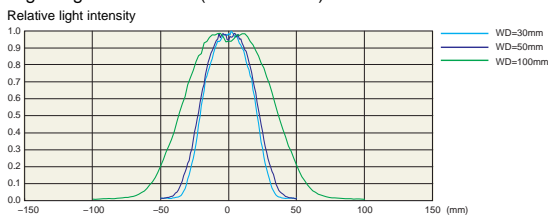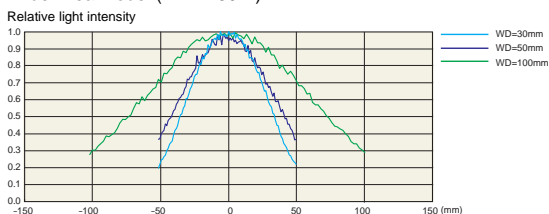
# Direct Ring Light FL-DR Series

## Applications

**Previous Lighting** | **FL-series** | **Previous Lighting** | **FL-series**
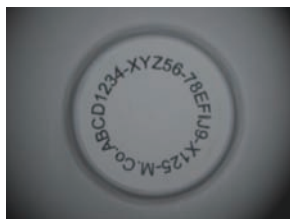


Faster lines make it necessary to increase shutter speeds, but then the clarity of workpiece images decreases.

More than sufficient brightness is provided for high-speed lines.

It was necessary to create different inspection standards for each section.

With uniform lighting from corner to corner, it is possible to inspect.

## Ordering Information

| Model | Color | Type | Dimensions | | | | Controller | | | Weight (g) | Options | |
| | | | External Ring Diameter (mm) | Internal Ring Diameter (mm) | Lighting Angle (Deg) | Drawing | FL-STC□ | FL-TCC□ | FL-TCC1PS | | Diffusion Plate | Polarization Plate |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FL-DR32W | WHITE | Wide Area Model | 32 dia. | 10 dia. | 20 deg. | A | ○ | ○ | ✕ | 25 | ○ | ○ |
| FL-DR32W-H | WHITE | High-brightness Model | | | | | | | | | | |
| FL-DR50W | WHITE | Wide Area Model | 50 dia. | 28 dia. | 10 deg. | B | ○ | ○ | ✕ | 30 | ○ | ○ |
| FL-DR50W-H | WHITE | High-brightness Model | | | | | | | | | | |
| FL-DR90W | WHITE | Wide Area Model | 90 dia. | 50 dia. | 20 deg. | C | ○ | ○ | ✕ | 70 | ○ | ○ |
| FL-DR90W-H | WHITE | High-brightness Model | | | | | | | | | 80 | | |

Note: Refer to page 66 for LED Characteristics.
The color of white LEDs can vary due to intrinsic characteristics. Confirm suitability for the application in advance.
○: Applicable  ✕: Not applicable

## Specifications

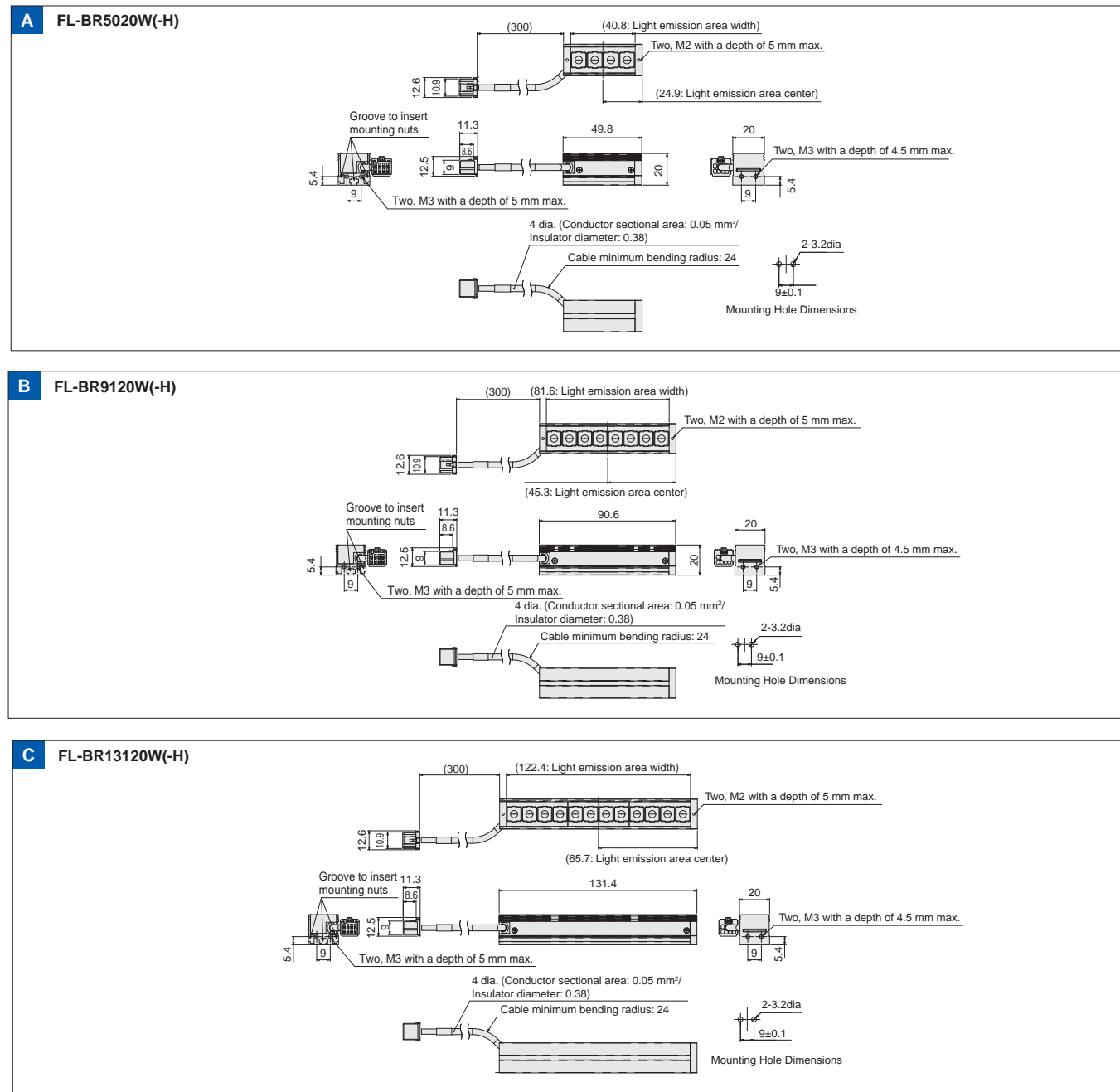| Model | Wide Area Model | High-brightness Model | Wide Area Model | High-brightness Model | Wide Area Model | High-brightness Model |
| | FL-DR32W | FL-DR32W-H | FL-DR50W | FL-DR50W-H | FL-DR90W | FL-DR90W-H |
|---|---|---|---|---|---|---|
| Light source | White LEDs | | | | | |
| Vibration resistance | 10 to 150 Hz (Double amplitude: 0.7 mm), 80 min each in X, Y, and Z directions | | | | | |
| Shock resistance | 150 m/s² 3 times each in 6 directions | | | | | |
| Ambient temperature | Operating: 0 to 40°C, Storage: -15 to 60°C (with no icing or condensation) | | | | | |
| Ambient humidity | Operating/storage: 35% to 85% (with no condensation) | | | | | |
| Ambient atmosphere | No corrosive gases. | | | | | |
| Degree of protection | IEC60259 IP20 | | | | | |
| Weight | Approx. 25 g | | Approx. 30 g | | Approx. 70 g | Approx. 80 g |
| Materials | Case and Lens: PC, Cable: Heat resistant polyvinyl chloride, Connector: Thermoplastic resin with glass | | | | | |
| LED safety | Risk Group 2 (IEC 62471) | | | | | |
| Accessories | Instruction sheet | | | | | |

The color of white LEDs can vary due to intrinsic characteristics. Confirm suitability for the application in advance.
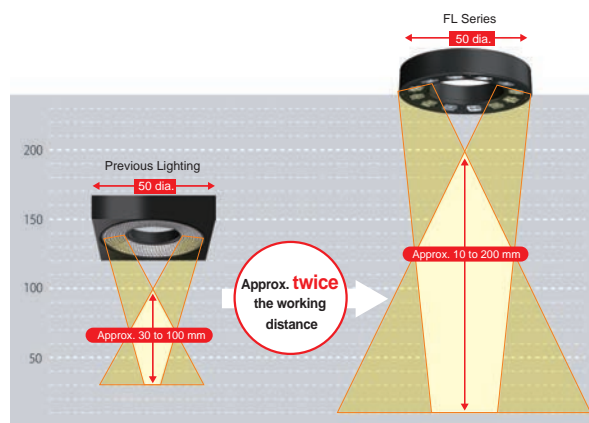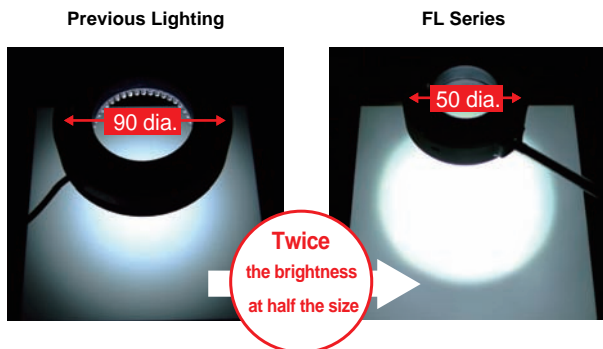
OMRON

## Dimensions

**(Unit:mm)**

**A**  **FL-DR32W(-H)**



Four, M2 with a depth of 4 mm max.

10.9

10 dia
32 dia

11.3  (300)

8.6

12.5
9

16

4 dia. (Conductor sectional area: 0.05 mm²/
Insulator diameter: 0.38)

45°

Cable minimum bending radius: 24

Four, M3 Depth 4 max.
P.C.D. 20 dia.

20±0.1

20±0.1

4-3.4 dia. ± 0.1

Mounting Hole Dimensions (bottom surface)

**B**  **FL-DR50W(-H)**



Four, M2 with a depth of 4 mm max.

10.9

28 dia
50 dia

11.3  (300)

8.6

12.5
9

16

4 dia. (Conductor sectional area: 0.05 mm²/
Insulator diameter: 0.38)

45°

Cable minimum bending radius: 24

Four, M3 Depth 4 max.
P.C.D. 40 dia.

40±0.1

40±0.1

4-3.4 dia. ± 0.1

Mounting Hole Dimensions (bottom surface)

**C**  **FL-DR90W(-H)**



Four, M2 with a depth of 4 mm max.

10.9

50 dia
90 dia

11.3  (300)

8.6

12.5
9

20

4 dia. (Conductor sectional area: 0.05 mm²/
Insulator diameter: 0.38)

45°

Cable minimum bending radius: 24

Four, M3 Depth 4 max.
P.C.D. 70 dia.

70±0.1

70±0.1

4-3.4 dia. ± 0.1

Mounting Hole Dimensions (bottom surface)

Standard Models FLV Series

High-brightness Models FL Series

LED Characteristics

Lenses

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses

# Camera-mount Lighting Controller for FL Series
# FL-TCC Series

**Camera-mount Compact
Lighting Controller Which Requires
No Power Supply Nor Lighting Control**

## Product Features

- No separate power supply is required because the power is supplied from the Camera.
- Light is emitted when a trigger signal is received from the Camera.
- Simple connection between the Camera and the Lighting with a single cable.

Camera

LED Light

Lighting Controller

## Ordering Information

| Item | Model | Weight |
|---|---|---|
| Lighting Controller | **FL-TCC1** | Approx. 110 g |
| Camera Mounting Spacer | **FL-TCC1-XSP** | Approx. 10 g |
| Camera Mounting Attachment | **FL-TCC1-XAT** | Approx. 20 g |

OMRON

# Camera-mount Lighting Controller for FL Series FL-TCC Series

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses

## Specifications

### Lighting Controller

| Product type | | Lighting Controller |
|---|---|---|
| Model | | FL-TCC1 |
| Input voltage | | Supplied from applicable camera. |
| Applicable camera | | FH-S/SC/S02/SC02/S04/SC04, FZ-S/SC/S2M/SC2M/S5M2/SC5M2/SH/SHC/SF/SFC/SP/SPC, FQ-MS series and others. |
| Applicable controller | | FH series |
| Power consumption | | 10 W, 0.9 A max. (including the lighting section) |
| Number of output channels | | 1 |
| Applicable light | | FL-□ series |
| Luminance control method | Functions | PWM frequency: 100 kHz, Light adjustment: 255 levels (set with the Controller) |
| | Trigger lighting | Lighting ON synchronized with trigger input timing from the Controller. (Auto setting in accordance with the shutter speed.) |
| | Trigger lighting delay time | Ton: 30 μs max. (Trigger ready μs) Toff: 10 μs max. |
| External interface | | Dedicated communication connector |
| Ambient temperature | | Operating: 0 to 50°C, Storage: -15 to 60°C (with no icing or condensation) |
| Ambient humidity | | Operating/storage: 35% to 85% (with no condensation) |
| Vibration resistance | | 10 to 55 Hz, (0.7 mm double amplitude) 80 min each in X, Y, and Z directions |
| Shock resistance | | 150 m/s$^2$ 3 times each in 6 directions (up/down, left/right, forward/backward) |
| Materials | | Case: SECC, Cable: PVC |
| Degree of protection | | IP20 (IEC60529) |
| Weight | | Approx. 110 g |
| Accessories | | Instruction sheet, Insulation sheet, Mounting screw (M2 x 6 mm) x 4 |
| Applicable standards | | EN61326-1 *, KC |

\* Electromagnetic environment: Industrial electromagnetic environment (EN/IEC 61326-1 Table 2)
Also, the following condition is applied to the immunity test of this product.
There are case that Lighting brightness fluctuate Max 10%.

## Dimensions

**(Unit:mm)**

### Lighting Controller FL-TCC1
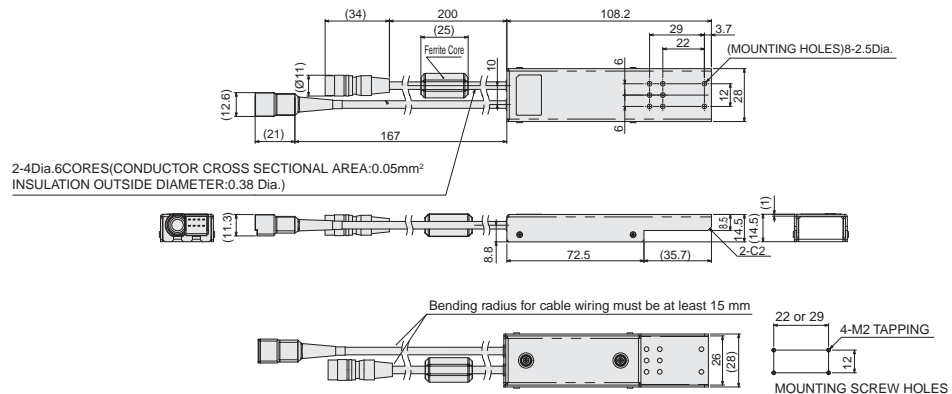


### Options

**Camera Mounting Spacer**
**FL-TCC1-XSP (sold separately)**



**Camera Mounting Attachment**
**FL-TCC1-XAT (sold separately)**
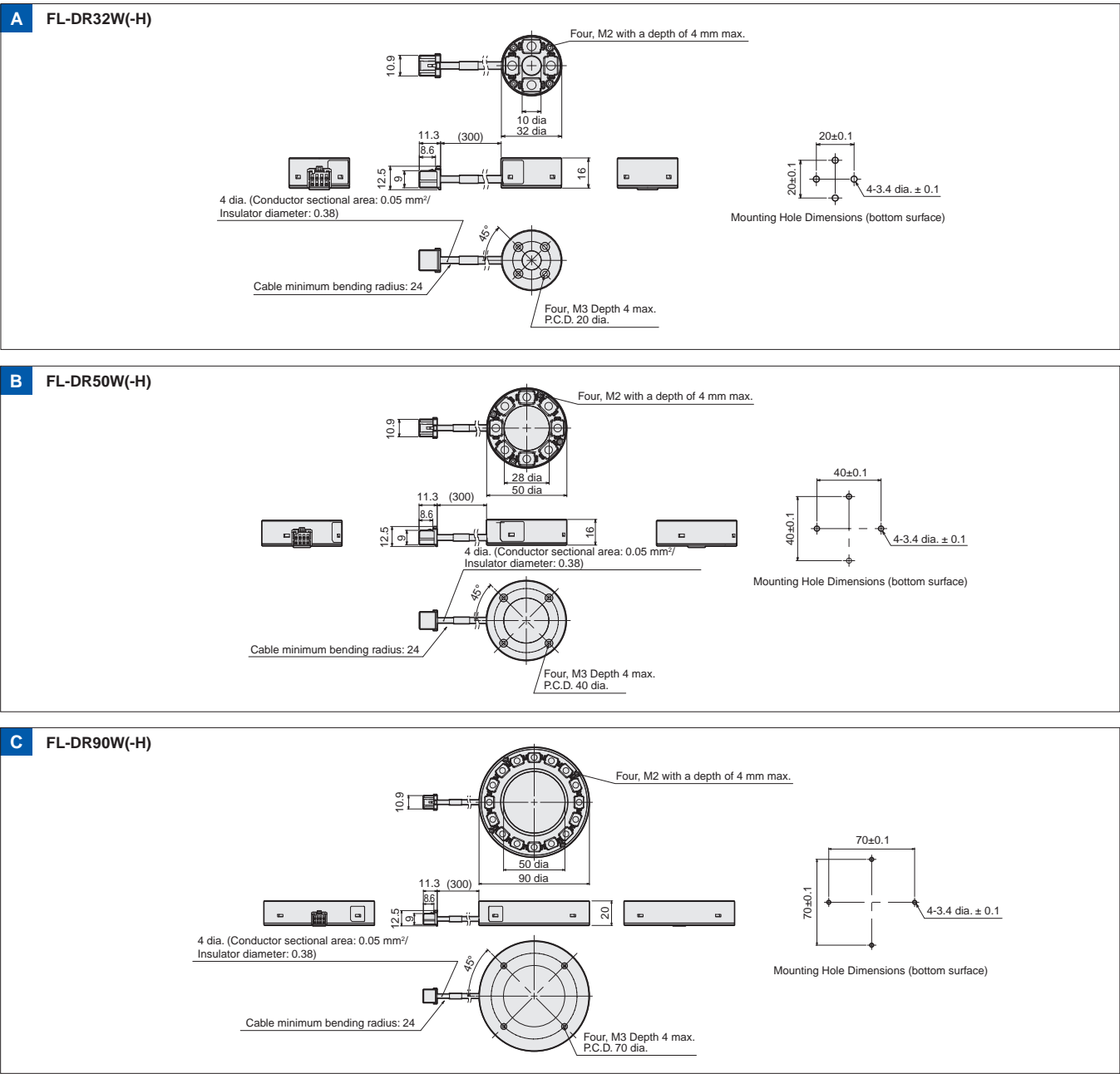
Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses
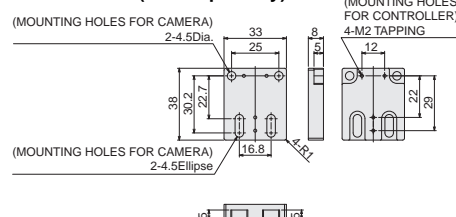
# Digital Lighting Controller for FL Series
# FL-STC Series

**Small body is combined
with the long cable at 25 m.
Install in essentially any location.**

**Two-channel models**

**One-channel models**

## Product Features

### Easy Control and Adjustment of the Lighting

With a compact design small enough to fit in the palm of your hand, the Controller can be built into the control panel or in the gap between production lines.

By using the longest lighting cable in the industry (25 m), the Controller can be installed along with the image processing monitor in a variety of locations. It is possible to adjust the lighting while looking at the screen.

**Connect to a Remote
Control Panel**

**Mount to a DIN Rail underneath
the Line or in the Gap between Tables**

### Lighting Control without Programming

This enables light emission synchronized with the camera using essentially any trigger, such as a photoelectric sensor.

The Controller can be connected to an image processing device to control lighting without any programming on a PLC.

[ Control Output ]
• PNP/NPN models
• Power source: 24 V

[ Lighting Emission Controls ]
• Lighting triggers can be used individually for each channel.
• Lighting delay and lighting time can be controlled.

### Intuitive Digital Light Controls

Digital adjustment of light emission makes it easy to reproduce the lighting environment after line switchovers.

The quantity of light is displayed digitally in 400 levels. Adjust the light in fine detail.

▲ Increases brightness

▼ Decreases brightness

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## Ordering Information

| Type | Model | I/O specification | Input voltage |
|---|---|---|---|
| One-channel models | FL-STC10 | NPN | 24 VDC |
| | FL-STC15 | PNP | |
| Two-channel models | FL-STC20 | NPN | |
| | FL-STC25 | PNP | |

## Specifications

| Product type | | One-channel models | | Two-channel models | |
|---|---|---|---|---|---|
| I/O type | | NPN | PNP | NPN | PNP |
| Model | | FL-STC10 | FL-STC15 | FL-STC20 | FL-STC25 |
| Power supply voltage | | 24 VDC±10% (including ripple) | | | |
| Power consumption | | 36 W, 1.5 A max. (including the lighting section) | | 72 W, 3 A max. (including the lighting section) | |
| Number of output channels | | 1 | | 2 | |
| Applicable light | | FL-□ Series | | | |
| Luminance control method | CONTINUOUS mode | While the Strobe Controller power source is ON, light is continuously emitted. PWM frequency: 100 kHz, Light adjustment: 400 levels | | | |
| | EXTERNAL TRIGGER mode | Lighting in synchronization with an external trigger input. Lighting duration: Continuous while the trigger is input, or 0.1 to 99.9 ms (set in 0.1-ms increments) PWM frequency: 100 kHz, Light adjustment: 400 levels | | | |
| | STOROBE mode | Lighting in synchronization with the external trigger input, but twice brighter than EXTERNAL TRIGGER mode. Lighting pulse width: 0.01 to 5 ms (light adjustment: 500 levels equivalent) | | | |
| Luminance adjustment | Key | Luminance control method and adjustment value: Slide switch and cross key setting | | | |
| | I/O | Luminance adjustment value: 9-bit binary input control | | | |
| External interface | | Parallel I/O connector (D-sub 15-pin), Terminal block (external trigger input with 2 terminals, power source voltage input with 2 terminals) | | | |
| Ambient temperature | | Operating: 0 to 40°C, Storage: -15 to 60°C (with no icing or condensation) | | | |
| Ambient humidity | | Operating/storage: 35% to 85% (with no condensation) | | | |
| Vibration resistance | | 10 to 150 Hz (0.7 mm double amplitude), 80 min each in X, Y, and Z directions | | | |
| Shock resistance | | 150 m/s$^2$ 3 times each in 6 direction (up/down, left/right, forward/backward) | | | |
| Materials | | Case: PC | | | |
| Degree of protection | | IEC60529 IP20 | | | |
| Weight | | Approx. 100 g | | | |
| Accessories | | Instruction sheet,Terminal block connector | | | |
| Applicable standards | | EN61326-1 *, KC | | | |

* Electromagnetic environment: Industrial electromagnetic environment (EN/IEC 61326-1 Table 2)
  Also, the following condition is applied to the immunity test of this product.
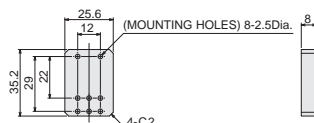  There are case that Lighting brightness fluctuate  Max 10%.

## Dimensions

**(Unit:mm)**



FL-STC10/15



FL-STC20/25

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses

# Digital Lighting Controller for FL Series FL-STC Series

## I/O Circuit Diagrams



- NPN type (FL-STC20/10)
- PNP type (FL-STC25/15)

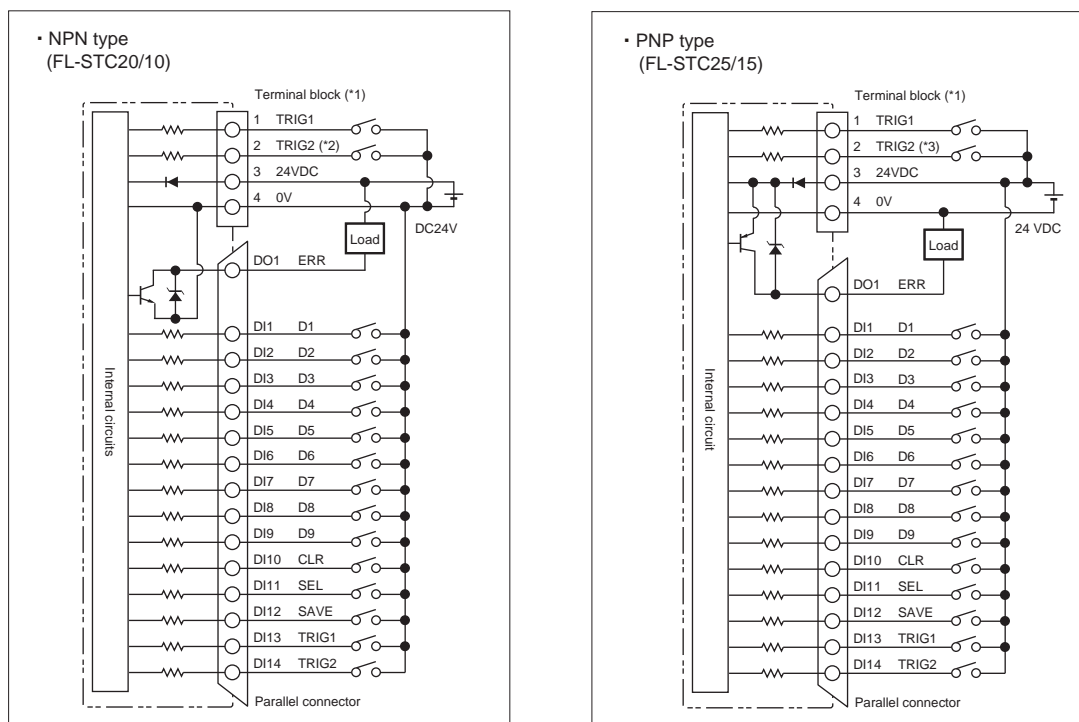*1. To wire the terminal block, connect a applicable cord (AWG16-22 with a 5 mm margin for work).
*2. No use for FL-STC10
*3. No use for FL-STC15

## Electrical Specifications

| Output circuit | Input circuit |
|---|---|
| NPN Open-collector 30 VDC 50 mA max. ON: Residual voltage 1.2 V max. OFF: Leakage current 0.1 mA max. | ON: Short-circuited with 0 V or 1.5 V or less OFF: Open (Leakage current: 0.1 mA max.) |

## Electrical Specifications

| Output circuit | Input circuit |
|---|---|
| PNP Open-collector 50 mA max. ON: Residual voltage 1.2 V max. OFF: Leakage current 0.1 mA max. | ON: Supply voltage short-circuited or supply voltage within 1.5 v OFF: Open (Leakage current: 0.1 mA max.) |

## Wiring Diagram

PIN Location

PARALLEL

DI11 DI12 DI13 DI14 DO1
DI6 DI7 DI8 DI9 DI10
DI1 DI2 DI3 DI4 DI5
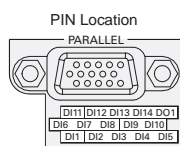
| PIN No. | Signal | I/O | Function | |
|---|---|---|---|---|
| DI1 | D1 | Input | Data 1bit (low) | 1) CONT/TRIG mode<br>Set Luminance value by D9 . D1, 9bit binary data.<br>Range 1 . 400 (binary 000000001 . 110010000)<br>2) STB mode<br>Set Strobe Lighting time by D9 . D1, 9bit binary data.<br>Range 0.01 . 5.00ms<br>(1 . 500 binary 000000001 . 111110100)<br>Each bit 1=ON, 0=OFF |
| DI2 | D2 | Input | Data 2bit | |
| DI3 | D3 | Input | Data 3bit | |
| DI4 | D4 | Input | Data 4bit | |
| DI5 | D5 | Input | Data 5bit | |
| DI6 | D6 | Input | Data 6bit | |
| DI7 | D7 | Input | Data 7bit | |
| DI8 | D8 | Input | Data 8bit | |
| DI9 | D9 | Input | Data 9bit (High) | |
| DI10 | CLR | Input | Error clear. (OFF→ON timing) | |
| DI11 | SEL | Input | Select setting CH. OFF=1CH, ON=2CH | |
| DI12 | SAVE | Input | Save data D9 - D1 to memory at the timing of "save" OFF→ON *3) | |
| DI13 | TRIG1 | Input | CH1 Trigger Input (*1)(*2) | |
| DI14 | TRIG2 | Input | CH2 Trigger Input (*1)(*2) | |
| DO1 | ERR | Output | ON at the Error happens | |

*1. Pin 1 and 2 of terminal block have lighting trigger. Make sure isolate another trigger terminal when you use one trigger terminal.
*2. Prevent from chattering, otherwise the lighting timing would be missed.
*3. Memory function "ON": The data stored in FLASH memory.
　 Memory function "OFF" : The data stored in RAM memory.

# Lighting Controller for Photometric Stereo Lights
# FL-TCC1PS Series

**Lighting controller for photometric stereo lights.**

## Product Features

- No need to control light emission timing.
- Simple wiring from a vision system controller.
- Light intensity and luminance control are set through the vision system controller.

## Specifications

| Model | FL-TCC1PS |
|---|---|
| Applicable vision system controller | FH series (Ver.6.00 or higher) |
| Applicable camera | FH-S series, FZ-S series |
| Applicable light | FL-PS series |
| Number of channels | 1 |
| Power supply voltage * | 24 VDC±10% (including ripple) |
| Recommended power supply | S8VK-G12024 (manufactured by OMRON, 24 VDC, 5 A 120 W) |
| Current consumption | 3.0 A max. |
| Drive method | Constant voltage method |
| Luminance control method | Duty light adjustment: light adjustment of 255 levels (configured with vision system controller) |
| Trigger lighting | Lighting in synchronization with trigger input timing from the controller (configured with vision system controller). |
| Lighting duration setting | Auto setting in accordance with shutter speed. |
| Lighting time control | Set with vision system controller or set in accordance with shutter speed. |
| External interface | Camera connection cable (directly connected with the main unit) 400 mm Lighting connection cable (directly connected with the main unit) 400 mm |
| Ambient temperature | Operating: 0 to 40°C Storage: -15 to +60°C (with no icing nor no condensation) |
| Ambient humidity | Operating and storage: 35% to 85% (with no condensation) |
| Degree of protection | IP20 (IEC60529) |
| Vibration resistance | 10 to 150 Hz, (0.35mm half-amplitude) 80 min. each in X, Y, and Z directions |
| Shock resistance | 150 m/s² 3 times each in 6 directions (up/down, left/right, forward/backward) |
| Material | Case: Alminum, Cable: PVC, Camera Mount Plate: POM |
| Weight | Approx. 200 g |
| Accessories | Instruction Sheet (this Sheet), 24 V power supply terminal block (male), camera mount plate, Compliance Sheet, mounting screws (M2 set screw x 4, M2 flat head screw x 4, M4 flat head screw x 4) |

Note: 1. When supplying the power to this lighting controller, make sure to turn ON the power to this lighting controller first or at the same time with the vision system controller.
2. When FL-PS260W is used in the length of the power supply line at least 15m, adjust the power voltage to become 24-26.4 V.
3. This lighting complied with the EN standard (EN61326-1) (Electromagnetic environment : Industrial electromagnetic environment (EN/IEC 61326-1 Table 2)) Also, the following condition is applied to the immunity test of this product. There are case that Lighting brightness fluctuate Max 10%.
4. This light complies with the KC standard.

## Ordering Information

| Model |
|---|
| **FL-TCC1PS** |

## Dimensions

**(Unit:mm)**



Camera connection connector

Lighting connector

POWER SUPPLY INPUT TERMINAL BLOCK

LED indicator lamp
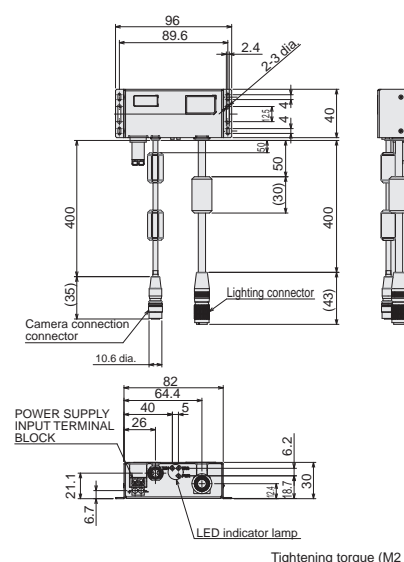
Tightening torque (M2 screw): 0.15 N•m

**Camera mount plate (provided)**

4-M2.6 (through hole)

4-M2 (through hole)
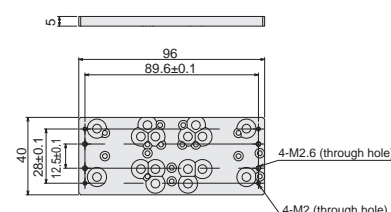
# Options for FL Series
# Cable/Diffusion Plate/Mounting Bracket

## Cable

### Ordering Information

| Type | Cable Type | Model | Cable Length | Weight (g) | Drawing |
|---|---|---|---|---|---|
| For high-brightness LED lights | Extension Cable, Standard Cable | FL-XC1 | 1 | Approx. 50 | A |
| | | FL-XC2 | 2 | Approx. 80 | |
| | | FL-XC3 | 3 | Approx. 120 | |
| | | FL-XC5 | 5 | Approx. 190 | |
| | | FL-XC10 | 10 | Approx. 400 | |
| | | FL-XC25 | 25 | Approx. 1000 | |
| | Extension Cable, Bend resistant Cable | FL-XC1R | 1 | Approx. 60 | A |
| | | FL-XC2R | 2 | Approx. 100 | |
| | | FL-XC3R | 3 | Approx. 150 | |
| | | FL-XC5R | 5 | Approx. 240 | |
| | | FL-XC10R | 10 | Approx. 500 | |
| | | FL-XC25R | 25 | Approx. 1200 | |
| | Parallel Cable | FL-XCP2 | 2 | Approx. 180 | B |
| For photometric stereo lights | Extension Cable between Light and Lighting Controller | FL-XC05PS | 0.5 | Approx. 100 | C |
| | | FL-XC1PS | 1 | Approx. 150 | |

### Dimensions

**(Unit:mm)**

**A**  Extension Cable for High-brightness LED Lights

Vinyl-insulated round cable, 5 dia. (See note 2.)
L (See note 1.)
Nameplate
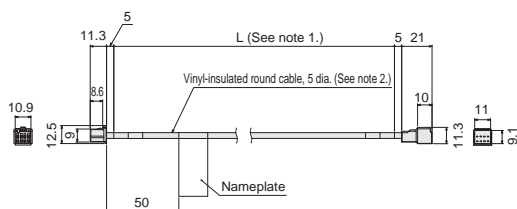
Note 1. Depends on the cable length.
Note 2. The cable diameter is 6.2 for bend resistant cable.

**B**  Parallel Cable for High-brightness LED Lights

Vinyl-insulated round cable, 6 dia., 15 conductors
L (See note 1.)
Nameplate
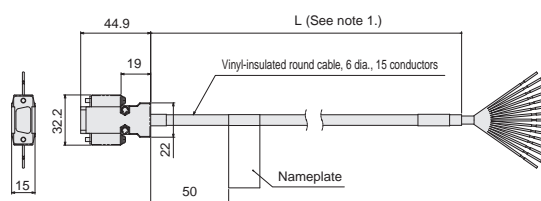
Note 1. Depends on the cable length.

**C**  Extension Cable for Photometric Stereo Lights

L (See note 1.)

Note 1. Depends on the cable length.

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses
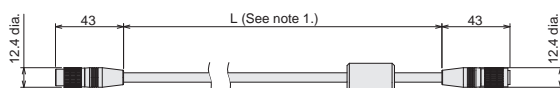
## Diffusion Plate

### Ordering Information

#### Diffusion Plate

| Type | Model | Dimensions (mm) |
|---|---|---|
| Bar Lighting | FL-BR5020DF | 49.8×18×4 |
| | FL-BR9120DF | 90.6×18×4 |
| | FL-BR13120DF | 131.4×18×4 |

| Type | Model | Outer diameter/Inner diameter/Thickness (mm) |
|---|---|---|
| Direct Ring Lighting | FL-DR32DF | 32 dia./10 dia./4 |
| | FL-DR50DF | 50 dia./28 dia./4 |
| | FL-DR90DF | 90 dia./50 dia./4 |

#### Polarization Plate

| Type | Model | Outer diameter/Inner diameter/Thickness (mm) |
|---|---|---|
| Direct Ring Lighting | FL-DR32PL | 32 dia./10 dia./2 |
| | FL-DR50PL | 50 dia./28 dia./2 |
| | FL-DR90PL | 90 dia./50 dia./2 |

## Mounting Bracket

### Ordering Information

| Type | Model |
|---|---|
| Bar Lighting * | FL-XBK1 |

*  One set includes two pieces.
   Four mounting screws (M3 × 6 mm) are also included.

### Dimensions

(Unit:mm)



Two, 3.4 dia. throughholes

12.9±0.1 dia. (groove center)

3.2 + 0.20 (groove width)

Rolling direction

90°±1°
Burr side
Radius: 1.5 max.

Bracket material: SUS

Burrs must extend less than 0.1 mm.

# LED Characteristics

## LED Safety

The LEDs that are used in the Light are classified as follows according to IEC 62471.

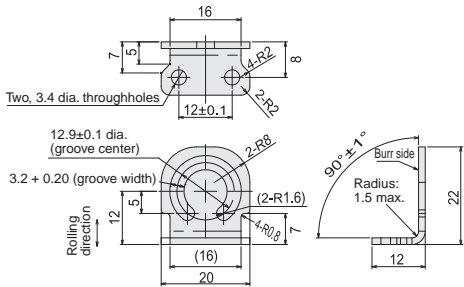| Series | Shape | Model | Color | LED Safety | Indication |
|---|---|---|---|---|---|
| FLV Series | Direct Ring Light | **FLV-DR□** | White, Blue | Risk Group 2 | B |
| | Direct Ring Light | **FLV-DR□** | Red, Ultraviolet | Risk Group 1 | D |
| | Direct Ring Light | **FLV-DR□IR** | Infrared | Risk Group 1 | C |
| | Low Angle Ring Light | **FLV-DL□** | White, Red, Blue | Risk Group 1 | D |
| | Bar Light | **FLV-BR□** | White, Blue | Risk Group 2 | B |
| | Bar Light | **FLV-BR□** | Red, Ultraviolet | Risk Group 1 | D |
| | Bar Light | **FLV-BR□IR** | Infrared | Risk Group 1 | C |
| | Coaxial Light | **FLV-CL□** | White, Red, Blue, Ultraviolet | Risk Group 1 | D |
| | Coaxial Light | **FLV-CL□IR** | Infrared | Risk Group 1 | C |
| | Shadowless Light | **FLV-FS□** | White, Red, Blue | Risk Group 1 | D |
| | Shadowless Light | **FLV-FR□** | White, Red, Blue | Risk Group 1 | D |
| | Shadowless Light | **FLV-FP□** | White, Red, Blue | Risk Group 1 | D |
| | Shadowless Light | **FLV-FQ□** | White, Red, Blue | Risk Group 1 | D |
| | Direct Back Light | **FLV-DB□** | White, Red, Blue | Risk Group 1 | D |
| | Edge Type Light | **FLV-FB□** | White, Red, Blue | Risk Group 1 | D |
| | Edge Type Coaxial Light | **FLV-FX□** | White, Red, Blue | Risk Group 1 | D |
| | Dome Light | **FLV-DD□** | White, Red, Blue | Risk Group 1 | D |
| | High-power Spot Light | **FLV-EP50□** | White, Red | Risk Group 1 | D |
| | Spot Light | **FLV-EP08□** | White, Red, Blue | Risk Group 1 | D |
| | Line Light | **FLV-LN□W** | White | Risk Group 3 | A |
| | Line Light | **FLV-LN□R** | Red | Risk Group 1 | D |
| | Line Light | **FLV-LN□B** | Blue | Risk Group 2 | B |
| FL Series | MDMC Light | **FL-MD180MC** | White, Blue, Green | Risk Group 2 | B |
| | MDMC Light | **FL-MD180MC** | Red | Risk Group 1 | D |
| | MDMC Light | **FL-MD90MC** | White, Blue | Risk Group 2 | B |
| | MDMC Light | **FL-MD90MC** | Red, Green | Risk Group 1 | D |
| | Photometric Stereo Light | **FL-PS□W** | White | Risk Group 2 | B |
| | Direct Ring Light | **FL-DR□** | White | Risk Group 2 | B |
| | Bar Light | **FL-BR□** | White | Risk Group 2 | B |

**A**

WARNING

Possibly hazardous optical radiation emitted from this product

Risk Group 3
IEC 62471

**B**

CAUTION

Possibly hazardous optical radiation emitted from this product

Risk Group 2
IEC 62471
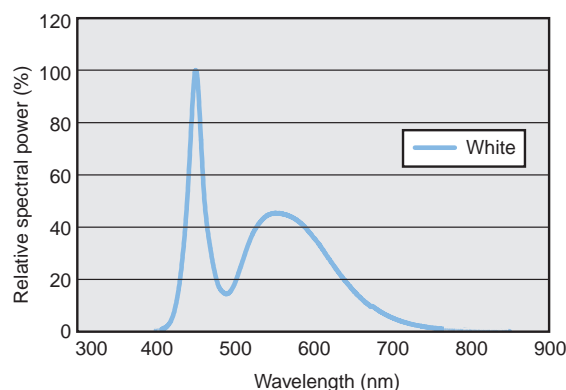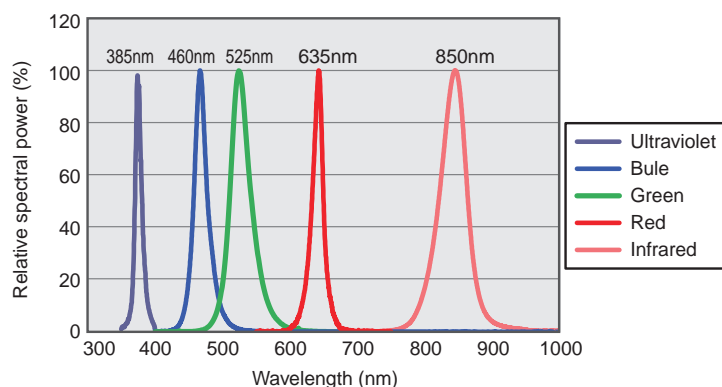
**C**

NOTICE

IR emitted from this product

Risk Group 1
IEC 62471

**D**

Risk Group 1
IEC 62471

## Typical LED Spectral Distributions

Typical spectral distributions and peak wavelengths of each LED color are shown in the diagrams below.

# Lens Selection

## FH/FZ-series Vision System

| Camera | | Recommended lens | | |
|---|---|---|---|---|
| | | Standard Lens | Telecentric Lens | Vibrations and Shocks Resistant Lens |
| Resolution | Model | Lens for general inspection. Ideal for when a wide field of view, a long working distance, or cost-effectiveness is required. | Lens ideal for high-precision inspection and alignment. Images can be captured at high magnification, and distortion at edges of images is low. | Robust lens with improved resistance to vibrations and shocks is ideal for industrial use. Design without lock screws enables installation in narrow positions. |
| 0.3 million pixels | FZ-SP/SPC/SF/SFC | FZ-LES Series Product details: **Page 73** Optical chart: **Page 92** | VS-TCH Series Product details: **Page 74** | VS-MCA Series Product details: **Page 78** Optical chart: **Page 92, 93** VS-MC Series Product details: **Page 83** |
| | FZ-S☐ FZ-SH☐ FH-S☐ | SV-V Series Product details: **Page 68** Optical chart: **Page 88** | | |
| 0.4 million pixels | FH-S☐X | SV-V Series Product details: **Page 68** Optical chart: **Page 88** | | |
| 1.6 million-pixel | FH-S☐X01 | SV-H Series Product details: **Page 69** Optical chart: **Page 89** | | |
| 2 million pixels | FZ-S☐2M | | | |
| | FH-S☐02 | VS-H1 Series Product details: **Page 69** Optical chart: **Page 90** | VS-TEV Series Product details: **Page 77** | VS-MCH1 Series Product details: **Page 81** Optical chart: **Page 94** |
| 3.2 million-pixel | FH-S☐X03 | SV-H Series Product details: **Page 69** Optical chart: **Page 90** | VS-TCH Series Product details: **Page 74** | VS-MCA Series Product details: **Page 78** Optical chart: **Page 93** VS-MC Series Product details: **Page 83** |
| 4 million pixels | FH-S☐04 | VS-H1 Series Product details: **Page 69** Optical chart: **Page 90** | VS-TEV Series Product details: **Page 77** | VS-MCH1 Series Product details: **Page 81** Optical chart: **Page 94** |
| 5 million pixels | FH-S☐05R | SV-H Series Product details: **Page 69** Optical chart: **Page 89** | VS-TCH Series Product details: **Page 74** | VS-MCA Series Product details: **Page 78** Optical chart: **Page 93** VS-MC Series Product details: **Page 83** |
| | FZ-S☐5M3 | | | |
| | FH-S☐X05 | | | |
| 12 million pixels | FH-S☐X12 | VS-HVA Series Product details: **Page 71** Optical chart: **Page 91** VS-LDD Series Product details: **Page 72** Optical chart: **Page 91** | VS-TEV Series Product details: **Page 77** | – |
| | FH-S☐12 | VS-L/M42-10 Series Product details: **Page 70** Optical chart: **Page 90** | – | – |
| 20.4 million pixels | FH-S☐21R | VS-HVA Series Product details: **Page 71** Optical chart: **Page 91** VS-LDD Series Product details: **Page 72** Optical chart: **Page 91** | VS-TEV Series Product details: **Page 77** | VS-MCH1 Series Product details: **Page 81** Optical chart: **Page 94** |

## FHV7-series Smart Camera

| Camera | | Recommended lens | | |
|---|---|---|---|---|
| | | Standard Lens | Telecentric Lens | Vibrations and Shocks Resistant Lens |
| Resolution | Model | Lens for general inspection. Ideal for when a wide field of view, a long working distance, or cost-effectiveness is required. | Lens ideal for high-precision inspection and alignment. Images can be captured at high magnification, and distortion at edges of images is low. | Robust lens with improved resistance to vibrations and shocks is ideal for industrial use. Design without lock screws enables installation in narrow positions. |
| 0.4 million pixels | FHV7X-☐004-C | SV-V Series Product details: **Page 68** Optical chart: **Page 95** | VS-TCH Series Product details: **Page 74** | VS-MCA Series Product details: **Page78** Optical chart: **Page 96, 97** VS-MC Series Product details: **Page 83** |
| 1.6 million pixels | FHV7X-☐016-C | SV-H Series Product details: **Page69** Optical chart: **Page 95** | | |
| 3.2 million pixels | FHV7X-☐032-C | SV-H Series Product details: **Page69** Optical chart: **Page 95, 96** | | |
| 5 million pixels | FHV7X-☐050-C | | | |
| 6.3 million pixels | FHV7X-☐063R-C | | | |
| 12 million pixels | FHV7X-☐120R-C | | | |

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses

# Lens for C-mount Cameras
# SV-V Series

- Standard CCTV lens.
- Lineup of 11 models with focal lengths ranging from 3.5 to 100 mm.
- Lock screws for focus and iris.
- More robust structure designed for machine vision.
- Lower distortion and higher resolution than previous CCTV lenses.
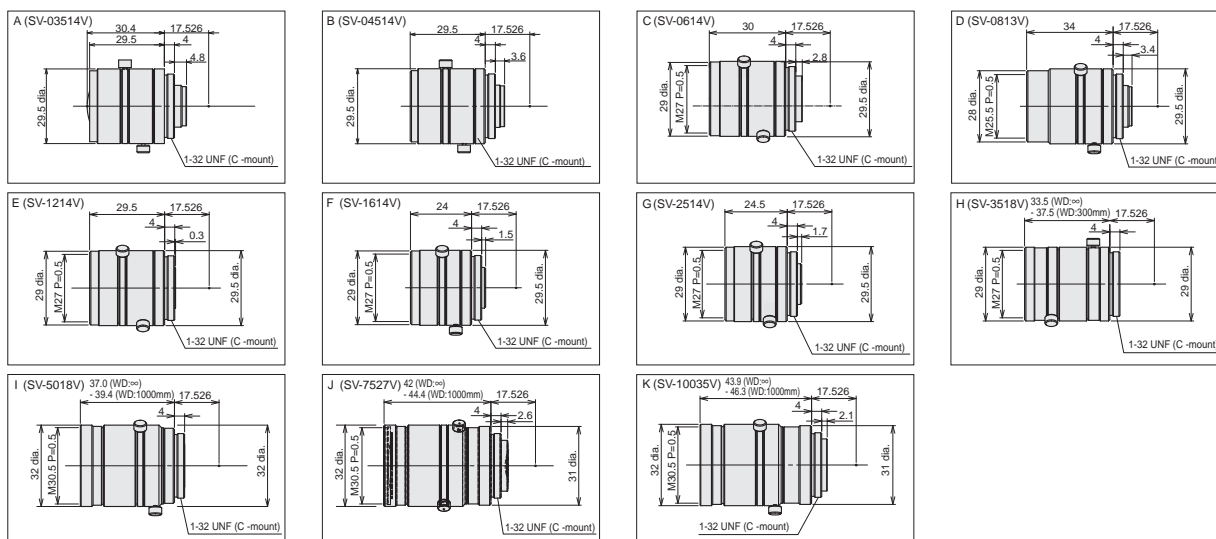
## Ordering Information

| Recommended camera | Model | Dimensions | Focal distance (mm) | Aperture (F No) | Field of view (V × H) | Closest distance (mm) | Filter size | Weight (g) | Total length (mm) | Maximum compatible CCD |
|---|---|---|---|---|---|---|---|---|---|---|
| FZ-S☐<br>FZ-SH☐<br>FH-S☐<br>FH-S☐X<br>FHV7X-☐ * | 3Z4S-LE SV-03514V | A | 3.5 | 1.4 to Close | 77.8°×105.9° | 200 | - | 53 | 30.4 | 1/3 inch |
| | 3Z4S-LE SV-04514V | B | 4.5 | 1.4 to Close | 59.7°×79.9° | 200 | - | 53 | 29.5 | 1/3 inch |
| | 3Z4S-LE SV-0614V | C | 6 | 1.4 to Close | 42.3°×54.6° | 200 | M27.0 P0.5 | 49 | 30 | 1/3 inch |
| | 3Z4S-LE SV-0813V | D | 8 | 1.3 to Close | 44.6°×57.3° | 200 | M25.5 P0.5 | 55 | 34 | 1/3 inch |
| | 3Z4S-LE SV-1214V | E | 12 | 1.4 to Close | 21.9°×38.9° | 300 | M27.0 P0.5 | 44 | 29.5 | 1/3 inch |
| | 3Z4S-LE SV-1614V | F | 16 | 1.4 to Close | 22.8°×30.1° | 400 | M27.0 P0.5 | 34 | 24 | 1/3 inch |
| | 3Z4S-LE SV-2514V | G | 25 | 1.4 to Close | 14.9°×19.8° | 500 | M27.0 P0.5 | 36 | 24.5 | 1/3 inch |
| | 3Z4S-LE SV-3518V | H | 35 | 1.8 to Close | 10.8°×14.4° | 300 | M27.0 P0.5 | 47 | 33.5 to 37.5 | 1/3 inch |
| | 3Z4S-LE SV-5018V | I | 50 | 1.8 to Close | 7.9°×10.5° | 1000 | M30.5 P0.5 | 67 | 37.0 to 39.4 | 1/3 inch |
| | 3Z4S-LE SV-7527V | J | 75 | 2.7 to Close | 3.6°×4.8° | 1000 | M30.5 P0.5 | 76 | 42.0 to 44.4 | 1/3 inch |
| | 3Z4S-LE SV-10035V | K | 100 | 3.5 to Close | 2.9°×3.8° | 1000 | M30.5 P0.5 | 79 | 43.9 to 6.3 | 1/3 inch |

*The SV-V Series can be used with the FHV7 Smart Camera with 0.4 or 1.6 million pixels.
Note: 1. The lock screws for the focus and iris adjustment may become loose or come off due to shock or vibration during transportation, so please be caution when unpacking.

## Dimensions

**(Unit:mm)**



A (SV-03514V)
B (SV-04514V)
C (SV-0614V)
D (SV-0813V)
E (SV-1214V)
F (SV-1614V)
G (SV-2514V)
H (SV-3518V)
I (SV-5018V)
J (SV-7527V)
K (SV-10035V)

## Specifications

| Mounting | C mount |
|---|---|
| Ambient temperature | Operating: 0 to 50°C,<br>Storage: -10 to 60°C (with no icing or condensation) |
| Ambient humidity | Operating: 35% to 80%,<br>Storage: 35% to 90% (with no condensation) |

## Optical Chart

Refer to page **88** and **95**.

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses

# High-resolution Lens for C-mount Cameras
# SV-H/VS-H1 Series

- High-resolution lens for megapixel camera.
- Lineup of 7 models for 2/3-inch cameras, with focal lengths ranging from 6 to 100 mm, and 9 models for 1-inch cameras.
- Lock screws for focus and iris.
- Short expose time with bright F number of 1.4 for high-speed CMOS cameras.
- Compact design but minimized decrease in distortion and brightness.

SV-H Series for 2/3-inch image sensor

VS-H1 Series for 1-inch image sensor

## Ordering Information

| Recommended camera | Model | Dimensions | Focal distance (mm) | Aperture (F No) | Field of view (V × H) | Closest distance (mm) | Filter size | Weight (g) | Total length (mm) | Maximum compatible CCD |
|---|---|---|---|---|---|---|---|---|---|---|
| FZ-S□2M FZ-S□5M3 FH-S□05R FH-S□X01 FH-S□X03 FH-S□X05 FHV7X-□ | 3Z4S-LE SV-0614H | A | 6 | 1.4 to 16 | 56.8°×71.5° | 100 | M40.5 P0.5 | 145 | 57.5 | 2/3 inch |
| | 3Z4S-LE SV-0814H | B | 8 | 1.4 to 16 | 44.9°×57.6° | 100 | M35.5 P0.5 | 125 | 52.5 | 2/3 inch |
| | 3Z4S-LE SV-1214H | C | 12 | 1.4 to 16 | 30.2°×39.6° | 100 | M27 P0.5 | 85 | 51 | 2/3 inch |
| | 3Z4S-LE SV-1614H | D | 16 | 1.4 to 16 | 23.1°×30.6° | 100 | M27 P0.5 | 85 | 47.5 | 2/3 inch |
| | 3Z4S-LE SV-2514H | E | 25 | 1.4 to 16 | 15.0°×20.0° | 150 | M27 P0.5 | 65 | 36 | 2/3 inch |
| | 3Z4S-LE SV-3514H | F | 35 | 1.4 to 16 | 10.8°×14.3° | 200 | M35.5 P0.5 | 150 | 45.5 | 2/3 inch |
| | 3Z4S-LE SV-5014H | G | 50 | 1.4 to 16 | 7.5°×10.0° | 300 | M40.5 P0.5 | 170 | 57.5 | 2/3 inch |
| | 3Z4S-LE SV-7525H | H | 75 | 2.5 to Close | 8.6°×8.6° * | 1200 | M34.0 P0.5 | 85 | 49.5 to 54.6 | 1 inch |
| | 3Z4S-LE SV-10028H | I | 100 | 2.8 to Close | 6.6°×6.6° * | 2000 | M37.5 P0.5 | 105 | 66.5 to 71.6 | 1 inch |
| FH-S□02 FH-S□04 | 3Z4S-LE VS-0618H1 | J | 6 | 1.8 to 16 | 87.3°×87.3° | 100 | NA | 200 | 57.2 | 1 inch |
| | 3Z4S-LE VS-0814H1 | K | 8 | 1.4 to 16 | 71.8°×71.8° | 100 | M55.0 P0.75 | 170 | 59 | 1 inch |
| | 3Z4S-LE VS-1214H1 | L | 12 | 1.4 to 16 | 50.8°×50.8° | 300 | M35.5 P0.5 | 140 | 48 to 48.5 | 1 inch |
| | 3Z4S-LE VS-1614H1N | M | 16 | 1.4 to 16 | 38.6°×38.6° | 300 | M30.5 P0.5 | 120 | 45.0 to 45.9 | 1 inch |
| | 3Z4S-LE VS-2514H1 | N | 25 | 1.4 to 16 | 25.1°×25.1° | 300 | M30.5 P0.5 | 90 | 33.5 to 35.6 | 1 inch |
| | 3Z4S-LE VS-3514H1 | O | 35 | 1.4 to 16 | 18.3°×18.3° | 300 | M30.5 P0.5 | 100 | 35.0 to 39.1 | 1 inch |
| | 3Z4S-LE VS-5018H1 | P | 50 | 1.8 to 16 | 12.8°×12.8° | 500 | M40.5 P0.5 | 135 | 44.5 to 49.5 | 1 inch |

*A field of view captured by a 1-inch CCD.
Note: 1. The FH-S□02/FH-S□04 with a focal length of 75 mm or 100 mm can be used with the 3Z4S-LE SV-7525H or 3Z4S-LE SV-10028H, respectively.
Note: 2. The lock screws for the focus and iris adjustment may become loose or come off due to shock or vibration during transportation, so please be caution when unpacking.

## Dimensions

**(Unit:mm)**
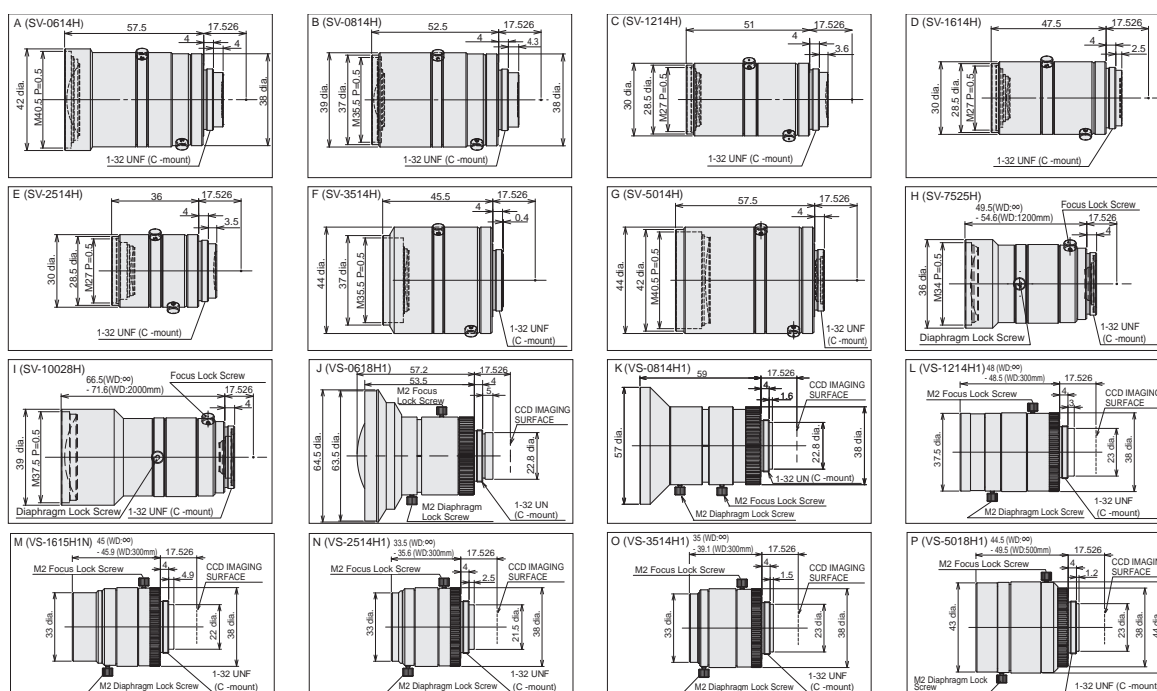


## Specifications

| Mounting | C mount |
|---|---|
| Ambient temperature | Operating: 0 to 50°C, Storage: -10 to 60°C (with no icing or condensation) |
| Ambient humidity | Operating: 35% to 80%, Storage: 35% to 90% (with no condensation) |

## Optical Chart

Refer to page **89**, **90**, **95** and **96**.

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses

# Lens for M42-mount Cameras
# VS-L/M42-10 Series

- Wide variety of lenses with focal lengths ranging from 18 to 100 mm.
- Hexagon socket head cap screws for focus and aperture lock screws can be tightened more than finger tight. This ensures vibration resistance even when large diameter lenses are used.
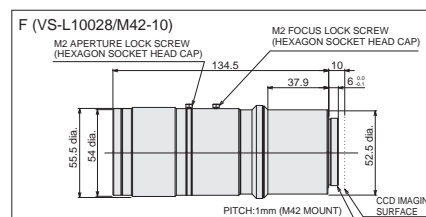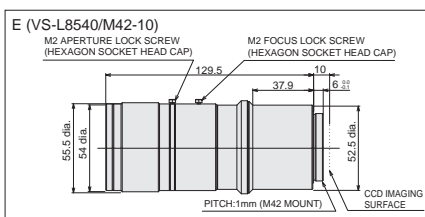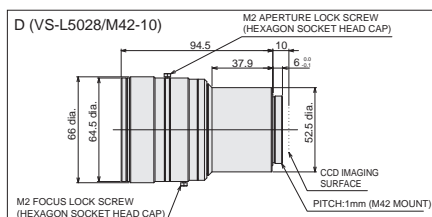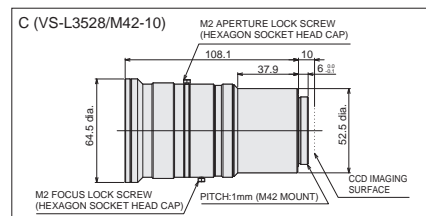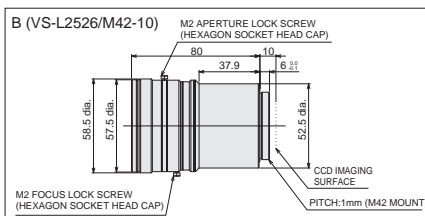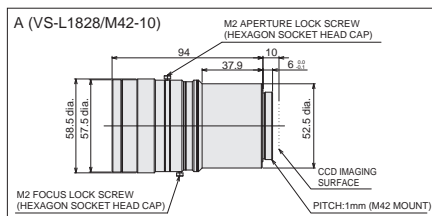
## Ordering Information

| Recommended camera | Model | Dimensions | Focal distance (mm) | Aperture (F No) | Optical magnification | Closest distance (mm) | Filter size | Weight (g) | Total length (mm) | Maximum compatible CCD |
|---|---|---|---|---|---|---|---|---|---|---|
| FH-S□12 | 3Z4S-LE VS-L1828/M42-10 | A | 18 | 2.8 to 16 | 0.025x to 0.12x | 137.9 | M55.0 P0.75 | 330 | 94 | 1.8 inches |
| | 3Z4S-LE VS-L2526/M42-10 | B | 25 | 2.6 to 16 | 0.025x to 0.12x | 198.1 | M55.0 P0.75 | 240 | 80 | 1.8 inches |
| | 3Z4S-LE VS-L3528/M42-10 | C | 35 | 2.8 to 16 | 0.05x to 0.3x | 112.8 | M62.0 P0.75 | 345 | 108 | 1.8 inches |
| | 3Z4S-LE VS-L5028/M42-10 | D | 50 | 2.8 to 16 | 0.05x to 0.3x | 181.4 | M62.0 P0.75 | 285 | 94.5 | 1.8 inches |
| | 3Z4S-LE VS-L8540/M42-10 | E | 85 | 4.0 to 16 | 0.1x to 0.35x | 285.0 | M52.0 P0.75 | 340 | 129.5 | 1.8 inches |
| | 3Z4S-LE VS-L10028/M42-10 | F | 100 | 2.8 to 16 | 0.05x to 0.3x | 409.0 | M52.0 P0.75 | 350 | 134.5 | 1.8 inches |

## Dimensions

**(Unit:mm)**



A (VS-L1828/M42-10), B (VS-L2526/M42-10), C (VS-L3528/M42-10), D (VS-L5028/M42-10), E (VS-L8540/M42-10), F (VS-L10028/M42-10)

## Specifications

| Mounting | M42 mount |
|---|---|
| Ambient temperature | Operating: 0 to 50°C, Storage: -10 to 60°C (with no icing or condensation) |
| Ambient humidity | Operating: 35% to 80%, Storage: 35% to 90% (with no condensation) |

## Optical Chart

Refer to page **90**.

# Ultra-high-resolution Lens for C-mount Cameras
# VS-HVA Series

- Ultra-high-resolution lens for 1.1-inch cameras.
- Lineup of 5 models with focal lengths ranging from 12 to 50 mm.
- Low-distortion design to obtain images with high resolution to the edge.
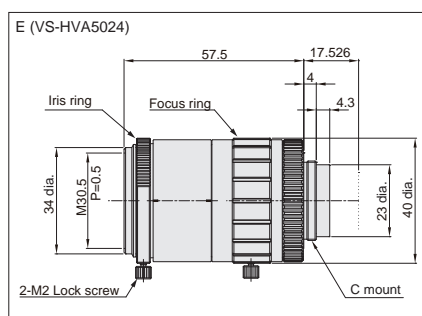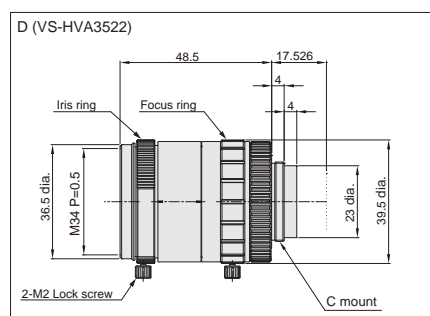- Compact and lightweight design.

## Ordering Information

| Recommended camera | Model | Dimensions | Focal distance (mm) | Aperture (F No.) | Field of view (1.1", V × H) | Closest distance (mm) | Filter size | Weight (g) | Total length (mm) | Compatible CCD |
|---|---|---|---|---|---|---|---|---|---|---|
| FH-S□X12 FH-S□21R | 3Z4S-LE VS-HVA1226 | A | 12 | 2.6 to Close | 45.6°×60.0° | 100 | M34 P=0.5 | 126 | 51.2 | 1.1 inches |
| | 3Z4S-LE VS-HVA1626 | B | 16 | 2.6 to Close | 35.1°×46.8° | 100 | M30 P=0.5 | 128 | 50 | |
| | 3Z4S-LE VS-HVA2524 | C | 25 | 2.4 to Close | 23.1°×31.3° | 100 | M35.5 P=0.5 | 116 | 45 | |
| | 3Z4S-LE VS-HVA3522 | D | 35 | 2.2 to Close | 16.7°×22.7° | 200 | M34 P=0.5 | 122 | 48.5 | |
| | 3Z4S-LE VS-HVA5024 | E | 50 | 2.4 to Close | 12.0°×16.4° | 200 | M30.5 P=0.5 | 142 | 57.5 | |

Note: 1. The lock screws for the focus and iris adjustment may become loose or come off due to shock or vibration during transportation, so please be caution when unpacking.

## Dimensions

(Unit:mm)

A (VS-HVA1226)

B (VS-HVA1626)

C (VS-HVA2524)

D (VS-HVA3522)

E (VS-HVA5024)

## Specifications

| Mounting | C mount |
|---|---|
| Ambient temperature | Operating:-5 to 50°C, Storage: -10 to 60°C (with no icing or condensation) |
| Ambient humidity | Operating: 0% to 80%, Storage: 0% to 90% (with no condensation) |

## Optical Chart

Refer to page **91**.

OMRON

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Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses

# Ultra-high-resolution Lens for C-mount Cameras
# VS-LLD Series

- Ultra-high-resolution lens for 4/3-inch cameras.
- Lineup of 5 models with focal lengths ranging from 12.5 to 50 mm.
- Leverages the floating mechanism to enable image capture at all ranges.
- Lock screws for focus and iris.
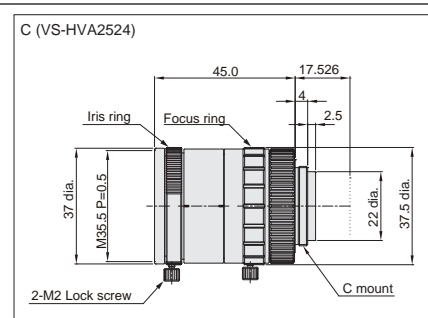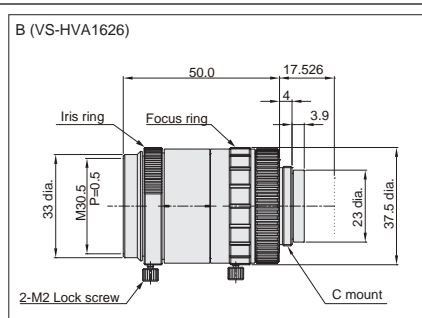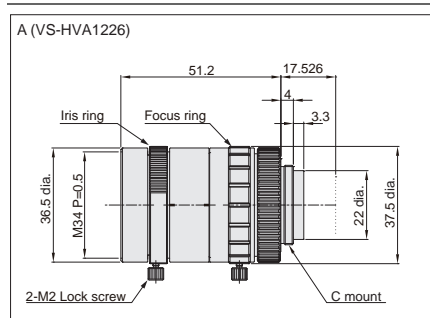- Low-distortion design to obtain images with high resolution to the edge.

## Ordering Information

| Recommended camera | Model | Dimensions | Focal distance (mm) | Aperture (F No) | Field of view (V × H) | | Closest distance (mm) | Filter size | Weight (g) | Total length (mm) | Maximum compatible CCD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | FH-S□X12 | FH-S□21R | | | | | |
| FH-S□X12 FH-S□21R | 3Z4S-LE VS-LLD12.5 | A | 12.5 | 2.5 to 16 | 45.1°×58.8° | 39.0°×56.0° | 40.9 | M62 P0.75 | 380 | 84.3 to 86.1 | 4/3 inches |
| | 3Z4S-LE VS-LLD18 | B | 18 | 2.1 to 16 | 32.2°×42.8° | 27.6°×40.6° | 53.8 | M43 P0.75 | 320 | 82.3 to 83.8 | |
| | 3Z4S-LE VS-LLD25 | C | 25 | 2.1 to 16 | 23.4°×31.5° | 20.1°×29.8° | 66.0 | M43 P0.75 | 285 | 82.8 to 84.9 | |
| | 3Z4S-LE VS-LLD35 | D | 35 | 2.2 to 16 | 16.9°×22.8° | 14.4°×21.5° | 129.5 | M46 P0.75 | 295 | 82.5 | |
| | 3Z4S-LE VS-LLD50 | E | 50 | 2.2 to 16 | 11.8°×16.1° | 10.1°×15.2° | 205.4 | M46 P0.75 | 250 | 73.0 | |

Note: 1. The lock screws for the focus and iris adjustment may become loose or come off due to shock or vibration during transportation, so please be caution when unpacking.

## Dimensions

**(Unit:mm)**

A (VS-LLD12.5)

232.0 [0.05x]
-40.9 [0.2x] (WD)
86.1 [0.05x]
-84.3 [0.2x]
17.526
4
65 dia.
M62 P=0.75
50.5 dia.
2-M2 Lock screw
C mount
335.6 [0.05x] -142.7 [0.2x] (O/I)

B (VS-LLD18)

347.0 [0.05x]
-53.8 [0.25x] (WD)
83.8 [0.05x]
-82.3 [0.25x]
17.526
4
50.5 dia.
46 dia.
M43 P=0.75
50.5 dia.
2-M2 Lock screw
C mount
448.3 [0.05x]-153.6[0.25x] (O/I)

C (VS-LLD25)

493.0 [0.05x]
-66.0 [0.3x] (WD)
82.8 [0.05x]
-84.9 [0.3x]
17.526
4
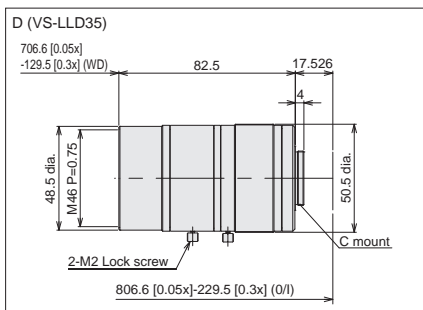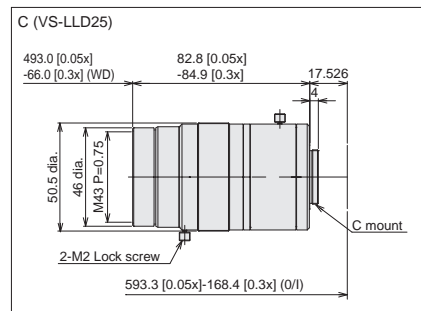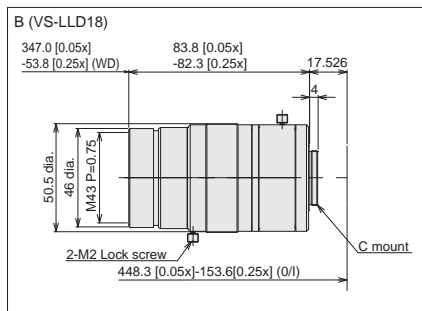50.5 dia.
46 dia.
M43 P=0.75
C mount
593.3 [0.05x]-168.4 [0.3x] (O/I)

D (VS-LLD35)

706.6 [0.05x]
-129.5 [0.3x] (WD)
82.5
17.526
4
48.5 dia.
M46 P=0.75
50.5 dia.
2-M2 Lock screw
C mount
806.6 [0.05x]-229.5 [0.3x] (O/I)

E (VS-LLD50)

1012.4 [0.05x]
-205.4 [0.3x] (WD)
73
17.526
4
48.5 dia.
M46 P=0.75
50.5 dia.
2-M2 Lock screw
C mount
1102.9 [0.05x]-295.9 [0.3x] (O/I)

## Specifications

| Mounting | C mount |
|---|---|
| Ambient temperature | Operating:-5 to 50°C, Storage: -10 to 60°C (with no icing or condensation) |
| Ambient humidity | Operating: 0% to 80%, Storage: 0% to 90% (with no condensation) |

## Optical Chart

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses
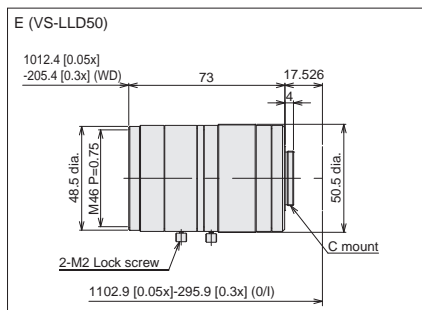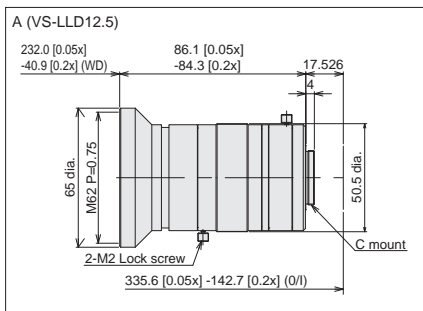
# Lens for FZ-series Small Cameras
# FZ-LES Series

- Product lineup includes two types of small camera lenses, a pen type with a 12-mm diameter and a flat type with a 17-mm thickness.

## Ordering Information

| Recommended cameras | Model | Focal length (mm) | Aperture (F No.) |
|---|---|---|---|
| FZ-SF☐<br>FZ-SP☐ | **FZ-LES3** | 3 | 2.0 to 16 |
| | **FZ-LES6** | 6 | 2.0 to 16 |
| | **FZ-LES16** | 16 | 3.4 to 16 |
| | **FZ-LES30** | 30 | 3.4 to 16 |

## Dimensions

**(Unit:mm)**

FZ-LES3

16.4
DIAPHRAGM ADJUSTMENT KNOB
ø12
4
DIAPHRAGM LOCK SCREW (M1.4)

FZ-LES6

19.7
DIAPHRAGM ADJUSTMENT KNOB
ø12
4
DIAPHRAGM LOCK SCREW (M1.4)

FZ-LES16

23.1
DIAPHRAGM ADJUSTMENT KNOB
ø12
4
DIAPHRAGM LOCK SCREW (M1.4)

FZ-LES30

25.5
DIAPHRAGM ADJUSTMENT KNOB
ø12
4
DIAPHRAGM LOCK SCREW (M1.4)
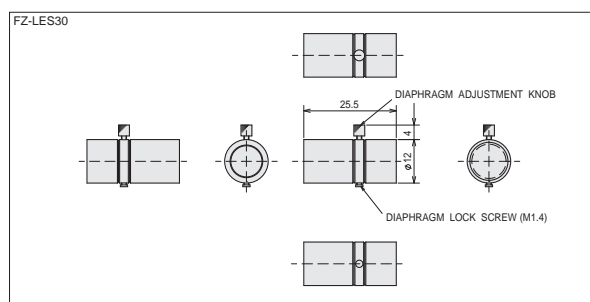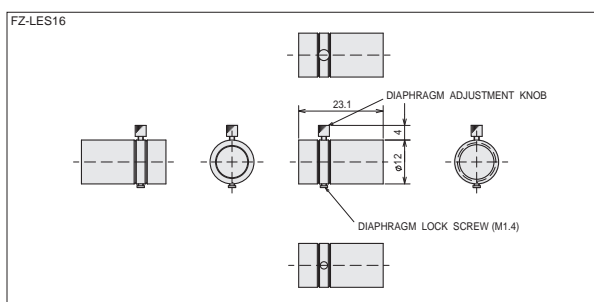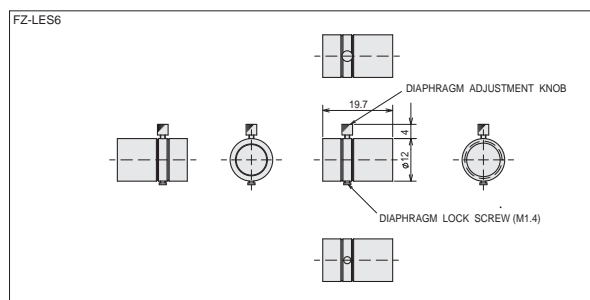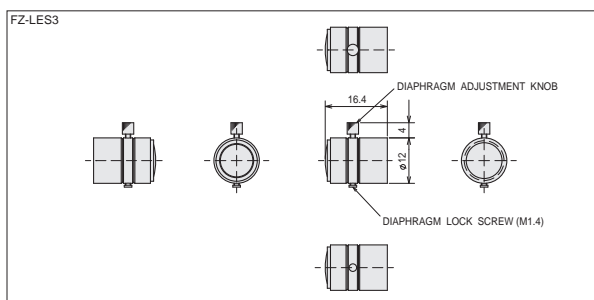
## Specifications

| Ambient temperature | Operating: -10 to 50°C, Storage: -20 to 70°C (with no icing or condensation) |
|---|---|
| Ambient humidity | Operating: 0% to 90%, Storage: 0% to 70% (with no condensation) |

## Optical Chart

Refer to page **92**.

OMRON

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# High-resolution Telecentric Lens for C-mount Cameras
# VS-TCH Series

- **High-resolution telecentric lens for megapixel camera.**
- **Broad product selection.**

  Available in two different working distances, 65 or 110 mm, to fit installation spaces.
  Comes in two shapes: straight and coaxial for coaxial lights.
  Five optical magnifications, 0.5x, 1.0x, 1.5x, 2.0x, and 4.0x, are available to cover a wide range of applications.

- **Low-distortion design.**

  High quality images can be obtained from any part of the area.
  Ideal for high-precision alignment.

## Ordering Information

| Recommended camera | Model | Dimensions | Optical magnification (±5%) | WD *1 (mm) | Effective FNO | Depth of field *2 (mm) | Resolution *3 (μm) | TV distortion | Shape | Weight (g) | Maximum compatible CCD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FZ-S□ FZ-SH□ FH-S□ FH-S□X FZ-S□2M FZ-S□5M3 FH-S□05R FH-S□X05 FHV7X-□ | 3Z4S-LE VS-TCH05-65-O | A | 0.5x | 75.3 | 9.42 | 3 | 12.43 | 0.02% | Straight | 70 | 2/3 inch |
| | 3Z4S-LE VS-TCH05-65CO-O | B | | | | | | | Coaxial | 80 | |
| | 3Z4S-LE VS-TCH05-110-O | C | | 110.8 | 9.49 | 3.04 | 12.9 | 0.02% | Straight | 100 | |
| | 3Z4S-LE VS-TCH05-110CO-O | D | | | | | | | Coaxial | 110 | |
| | 3Z4S-LE VS-TCH1-65-O | E | 1.0x | 68.8 | 9.94 | 0.8 | 6.71 | 0.01% | Straight | 70 | |
| | 3Z4S-LE VS-TCH1-65CO-O | F | | | | | | | Coaxial | 80 | |
| | 3Z4S-LE VS-TCH1-110-O | G | | 110.3 | 10.49 | 0.84 | 6.99 | 0.02% | Straight | 100 | |
| | 3Z4S-LE VS-TCH1-110CO-O | H | | | | | | | Coaxial | 110 | |
| | 3Z4S-LE VS-TCH1.5-65-O | I | 1.5x | 65 | 11.8 | 0.4 | 5.24 | 0.01% | Straight | 70 | |
| | 3Z4S-LE VS-TCH1.5-65CO-O | J | | | | | | | Coaxial | 80 | |
| | 3Z4S-LE VS-TCH1.5-110-O | K | | 110.8 | 11.97 | 0.43 | 5.33 | 0.02% | Straight | 90 | |
| | 3Z4S-LE VS-TCH1.5-110CO-O | L | | | | | | | Coaxial | 105 | |
| | 3Z4S-LE VS-TCH2-65-O | M | 2.0x | 65 | 13.6 | 0.3 | 4.53 | 0.03% | Straight | 70 | |
| | 3Z4S-LE VS-TCH2-65CO-O | N | | | | | | | Coaxial | 80 | |
| | 3Z4S-LE VS-TCH2-110-O | O | | 110.8 | 13.5 | 0.27 | 4.53 | 0.03% | Straight | 95 | |
| | 3Z4S-LE VS-TCH2-110CO-O | P | | | | | | | Coaxial | 110 | |
| | 3Z4S-LE VS-TCH4-65-O | Q | 4.0x | 65 | 17.91 | 0.09 | 3 | 0.02% | Straight | 90 | |
| | 3Z4S-LE VS-TCH4-65CO-O | R | | | | | | | Coaxial | 100 | |
| | 3Z4S-LE VS-TCH4-110-O | S | | 110.8 | 22.2 | 0.11 | 3.73 | 0.03% | Straight | 100 | |
| | 3Z4S-LE VS-TCH4-110CO-O | T | | | | | | | Coaxial | 110 | |

*1. The working distance is the distance from the end of the lens to the workpiece.
*2. The depth of field is calculated using a permissible circle of confusion diameter of 0.04 mm.
*3. The resolution is calculated using a wavelength of 550 nm.
Note: 1. Fixing the lens or other reinforcement may be required depending on the installation angle or operating environment (vibration/shock).
　　　　 When fixing the lens, insulate the lens from the fixture.
Note: 2. The above specifications are values calculated from the optical design and can vary depending on installation conditions.

## Camera and Field of View Table

| Camera | Size of image element (inch) | Imaging area H × V (mm) | Field of view H × V (mm) | | | | |
|---|---|---|---|---|---|---|---|
| | | | 0.5 × (VS-TCH05) | 1.0 × (VS-TCH1) | 1.5 × (VS-TCH1.5) | 2.0 × (VS-TCH2) | 4.0 × (VS-TCH4) |
| FH-S□/FZ-S□/FZ-SH□ | 1/3" equivalent | 4.8 × 3.6 | 9.6 × 7.2 | 4.8 × 3.6 | 3.2 × 2.4 | 2.4 × 1.8 | 1.2 × 0.9 |
| FH-S□X | 1/2.9" equivalent | 5.0 × 3.8 | 10.0 × 7.6 | 5.0 × 3.8 | 3.3 × 2.5 | 2.5 × 1.9 | 1.3 × 1.0 |
| FH-S□05R | 1/2.5" equivalent | 5.7 × 4.3 | 11.4 × 8.6 | 5.7 × 4.3 | 3.8 × 2.9 | 2.9 × 2.2 | 1.4 × 1.1 |
| FZ-S□2M | 1/1.8" equivalent | 7.0 × 5.3 | 14.0 × 10.6 | 7.0 × 5.3 | 4.7 × 3.5 | 3.5 × 2.7 | 1.8 × 1.3 |
| FH-S□X05/FZ-S□5M3 | 2/3" equivalent | 8.4 × 7.1 | 16.8 × 14.2 | 8.4 × 7.1 | 5.6 × 4.7 | 4.2 × 3.6 | 2.1 × 1.8 |
| FHV7X-□004-C | 1/2.9" equivalent | 5.0×3.8 | 10.0×7.6 | 5.0×3.8 | 3.3×2.5 | 2.5×1.9 | 1.3×1.0 |
| FHV7X-□016-C | 1/2.9" equivalent | 5.0×3.8 | 10.0×7.6 | 5.0×3.8 | 3.3×2.5 | 2.5×1.9 | 1.3×1.0 |
| FHV7X-□032-C | 1/1.8" equivalent | 7.1×5.3 | 14.2×10.6 | 7.1×5.3 | 4.7×3.5 | 3.6×2.7 | 1.8×1.3 |
| FHV7X-□050-C | 2/3" equivalent | 8.5×7.1 | 17.0×14.2 | 8.5×7.1 | 5.7×4.7 | 4.3×3.6 | 2.1×1.8 |
| FHV7X-□063R-C | 1/1.8" equivalent | 7.4×5.0 | 14.8×10.0 | 7.4×5.0 | 4.9×3.3 | 3.7×2.5 | 1.9×1.3 |
| FHV7X-□120R-C | 1/1.7" equivalent | 7.4×5.6 | 14.8×11.2 | 7.4×5.6 | 4.9×3.3 | 3.7×2.8 | 1.9×1.4 |

Note: 1. The field of view is a calculated value and not a guaranteed value.

# High-resolution Telecentric Lens for C-mount Cameras   VS-TCH Series

## Applications

### Detection of alignment marks
Combining the FLV-EP08-series Spot Light and Camera-mount Lighting Controller saves space and simplifies wiring.

**Illustration of Combination of Spot Light and Controller**

Camera
Camera cable
FLV-TCC
Spot Light
Telecentric Lens
Low Angle Ring Light
Workpiece
Vision System
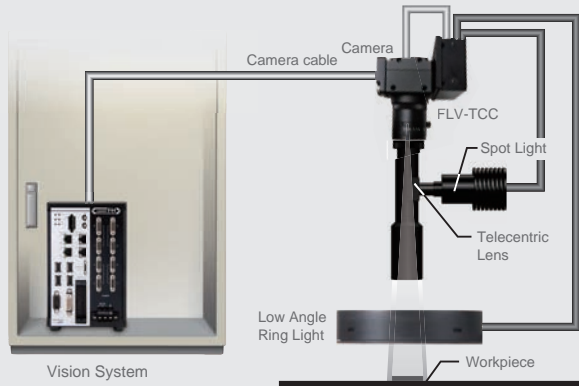
**Only the camera cable is connected from control panel**

**Illustration of Alignment Mark Detection**

## Dimensions

**(Unit: mm)**

A(3Z4S-LE VS-TCH05-65-O)

B(3Z4S-LE VS-TCH05-65CO-O)

C(3Z4S-LE VS-TCH05-110-O)

D(3Z4S-LE VS-TCH05-110CO-O)

E(3Z4S-LE VS-TCH1-65-O)

F(3Z4S-LE VS-TCH1-65CO-O)

G(3Z4S-LE VS-TCH1-110-O)

H(3Z4S-LE VS-TCH1-110CO-O)

I(3Z4S-LE VS-TCH1.5-65-O)
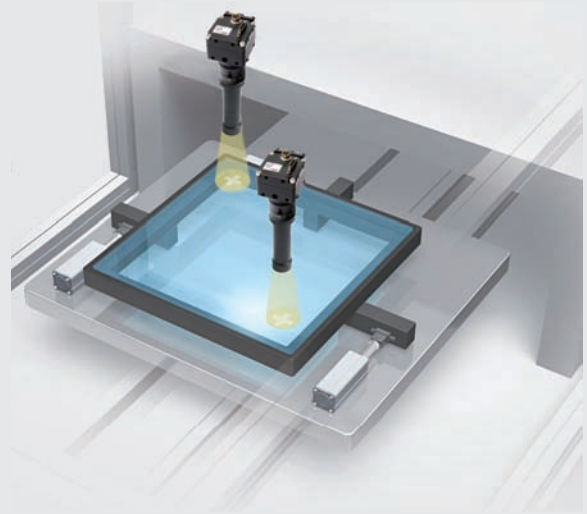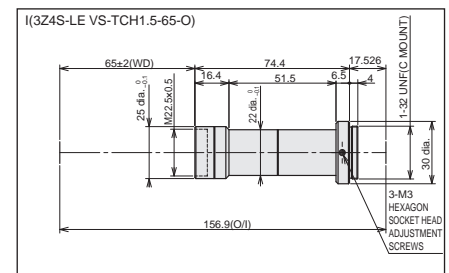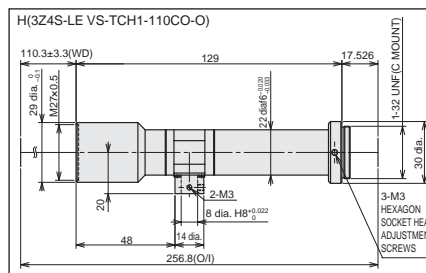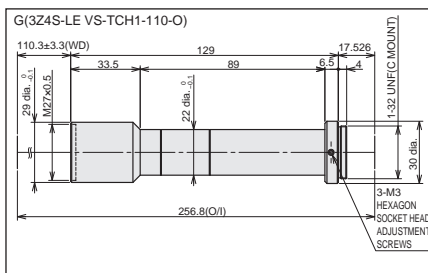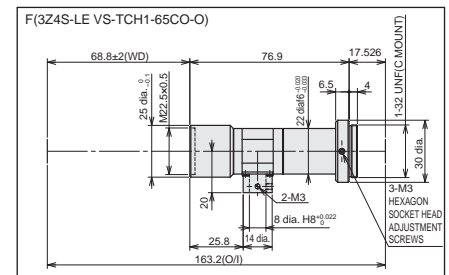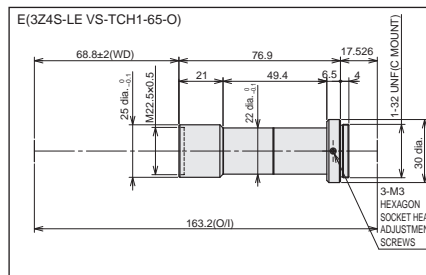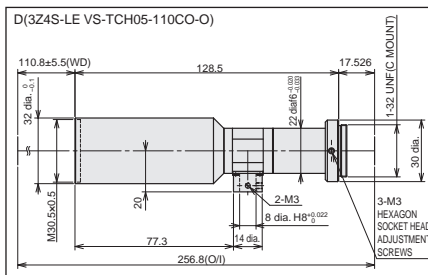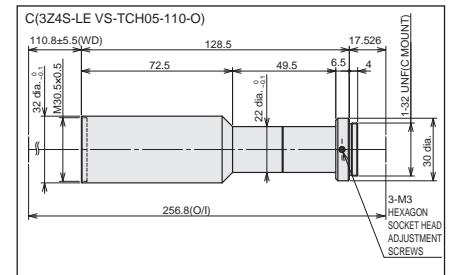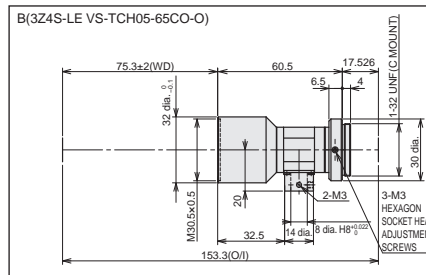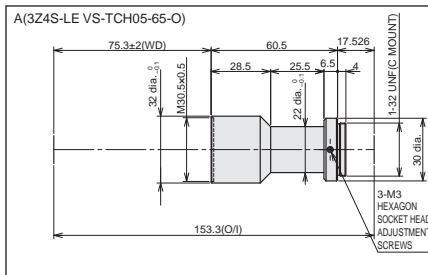
# High-resolution Telecentric Lens for C-mount Cameras   VS-TCH Series

## Dimensions

**(Unit: mm)**
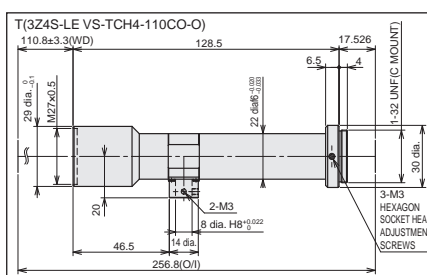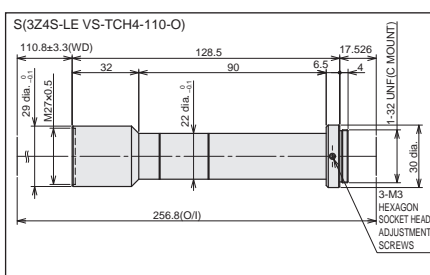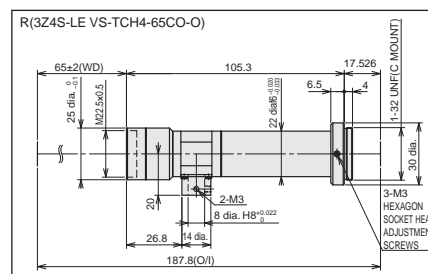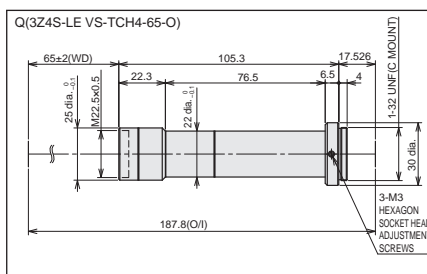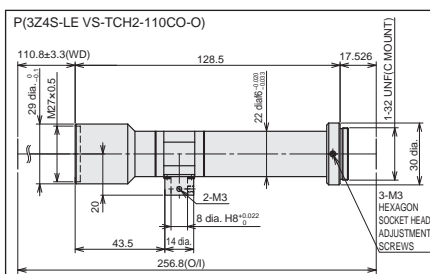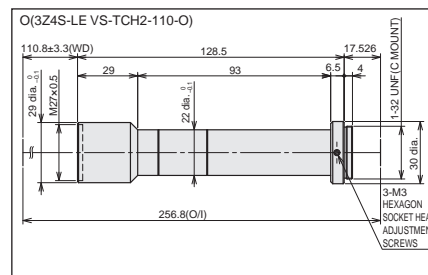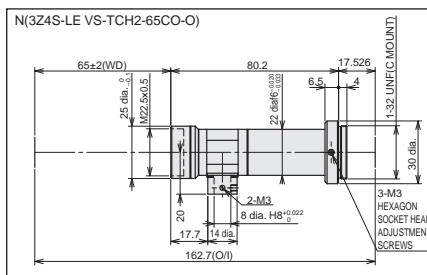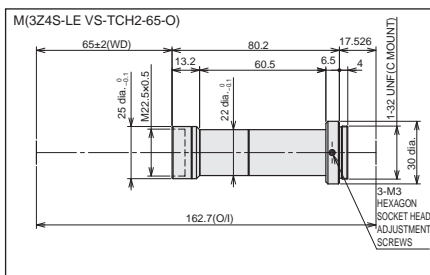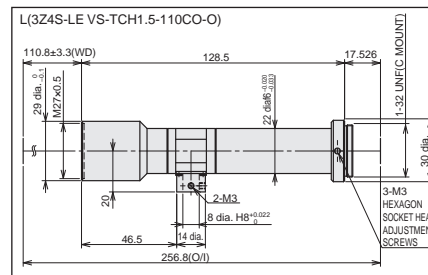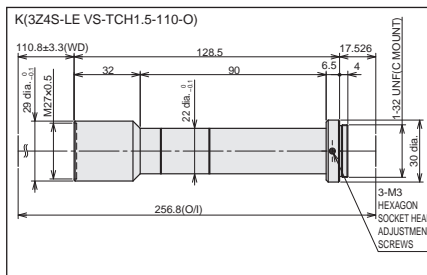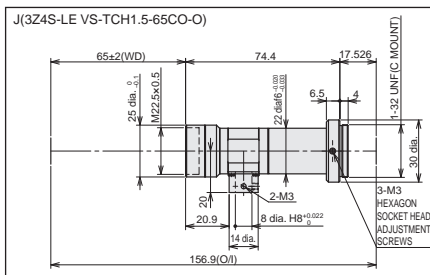
### J(3Z4S-LE VS-TCH1.5-65CO-O)



### K(3Z4S-LE VS-TCH1.5-110-O)



### L(3Z4S-LE VS-TCH1.5-110CO-O)



### M(3Z4S-LE VS-TCH2-65-O)



### N(3Z4S-LE VS-TCH2-65CO-O)



### O(3Z4S-LE VS-TCH2-110-O)



### P(3Z4S-LE VS-TCH2-110CO-O)



### Q(3Z4S-LE VS-TCH4-65-O)



### R(3Z4S-LE VS-TCH4-65CO-O)



### S(3Z4S-LE VS-TCH4-110-O)



### T(3Z4S-LE VS-TCH4-110CO-O)



## Specifications

| Ambient temperature | Operating: 0 to 50°C, Storage: -10 to 60°C (with no icing or condensation) |
|---|---|
| Ambient humidity | Operating: 35% to 80%, Storage: 35% to 90% (with no condensation) |

# Ultra-high-resolution Telecentric Lens for C-mount Cameras
# VS-TEV Series

- Ultra-high-resolution telecentric lens for 1.1-inch cameras.
- Lineup of 3 models to meet various optical magnification requirements.
- Variable magnification for use at a wide range of working distances. Balance between depth of field and contrast can be adjusted.
- Low-distortion design.
- High-quality images can be obtained from any part of the area.
- Ideal for high-accuracy alignment.

## Ordering Information

| Recommended camera | Model | Dimensions | Optical magnification | WD *1 (mm) | Effective FNO * Maximum aperture | Depth of field *2 (mm) | Resolution *3 (mm) | TV distortion | Weight (g) | Maximum compatible CCD |
|---|---|---|---|---|---|---|---|---|---|---|
| FH-S□02 FH-S□04 FH-S□X12 FH-S□21R | 3Z4S-LE VS-TEV0305 | A | 0.3 × | 221.5 | 4.3 | 3.8 | 9.59 | 0.03% | 390 | 1.1 inches |
| | | | 0.4 × | 162.0 | 5.3 | 2.6 | 8.83 | −0.04% | | |
| | | | 0.5 × | 125.8 | 6.2 | 2.0 | 8.39 | −0.04% | | |
| | 3Z4S-LE VS-TEV05075 | B | 0.5 × | 173.2 | 5.0 | 1.6 | 6.71 | 0.06% | 350 | |
| | | | 0.75 × | 133.9 | 6.8 | 1.0 | 6.10 | 0.04% | | |
| | 3Z4S-LE VS-TEV07510 | C | 0.75 × | 133.9 | 6.8 | 1.0 | 6.10 | 0.04% | 370 | |
| | | | 1.0 × | 114.0 | 8.5 | 0.7 | 5.69 | 0.02% | | |

*1. The working distance is the distance from the end of the lens to the workpiece.
*2. The depth of field is calculated using a permissible circle of confusion diameter of 0.04 mm.
*3. The resolution is calculated using a wavelength of 550 nm.

## Camera and Field of View Table

| Camera | Size of image element (inch) | Imaging area H × V (mm) | Field of view H × V (mm) | | | |
|---|---|---|---|---|---|---|
| | | | 0.3 × (VS-TEV0305) | 0.5 × (VS-TEV0305/ VS-TEV05075) | 0.75 × (VS-TEV05075/ VS-TEV-07510) | 1.0 × (VS-TEV07510) |
| FH-S□02 | 2/3" equivalent | 11.3 × 6.0 | 37.5 × 19.9 | 22.5 × 12.0 | 15.0 × 8.0 | 11.3 × 6.0 |
| FH-S□04 | 1" equivalent | 11.3 × 11.3 | 37.5 × 37.5 | 22.5 × 22.5 | 15.0 × 15.0 | 11.3 × 11.3 |
| FH-S□X12 | 1.1" equivalent | 14.1 × 10.4 | 47.1 × 34.5 | 28.2 × 20.7 | 18.8 × 13.8 | 14.1 × 10.4 |
| FZ-S□21R | 1" equivalent | 13.3 × 8.9 | 44.4 × 29.6 | 26.6 × 17.7 | 17.7 × 11.8 | 13.3 × 8.9 |

Note: 1. The field of view is a calculated value and not a guaranteed value.
Note: 2. The lock screws for the focus and iris adjustment may become loose or come off due to shock or vibration during transportation, so please be caution when unpacking.

## Dimensions

(Unit: mm)



A (VS-TEV0305)
221.5 [0.3x] -125.8 [0.5x] (WD)
108.0 [0.3x] -126.3 [0.5x]
17.526
4
3-M2.6 Set screw
55 dia.
M52 P=0.75
C mount
2-M2 Lock screw
347.0 [0.3x]-269.6 [0.5x] (0/I)

B (VS-TEV05075)
173.2 [0.5x] -133.9 [0.75x] (WD)
101.0 [0.5x] -119.4 [0.75x]
17.526
4
3-M2.6 Set screw
47 dia.
M40.5 P=0.5
C mount
2-M2 Lock screw
50.5 dia.
291.7 [0.5x]-270.8 [0.75x] (0/I)

C (VS-TEV07510)
133.9 [0.75x] -114.0 [1.0x] (WD)
119.4 [0.75x] -136.2 [1.0x]
17.526
4
3-M2.6 Set screw
43 dia.
M40.5 P=0.5
C mount
2-M2 Lock screw
50.5 dia.
270.8 [0.75x]-267.7 [1.0x] (0/I)

## Specifications

| Mounting | C mount |
|---|---|
| Ambient temperature | Operating: -5 to 50°C, Storage: -10 to 60°C (with no icing or condensation) |
| Ambient humidity | Operating: 0% to 80%, Storage: 0% to 90% (with no condensation) |

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses
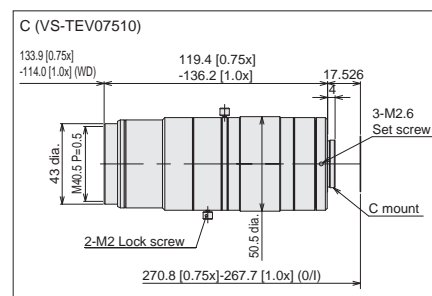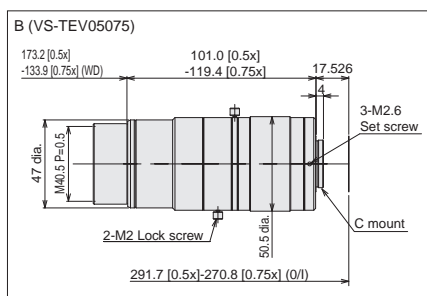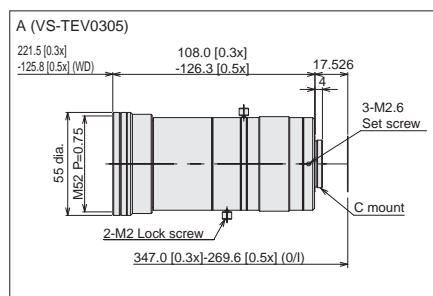
# Vibrations and Shocks Resistant Lens for C-mount Cameras
# VS-MCA Series

- Vibrations and shocks resistant lens
  for megapixel C-mount cameras.
- Lineup of 10 models with focal lengths ranging from 4 to 75 mm.
- The increased resistance to vibration enables application
  in environments where the lens is moved and where
  ambient vibrations occur.
- Install in narrow space without a lock screw.
- The hexagonal lock ring makes tightening easier.

## Ordering Information

| Recommended camera | Model | Dimensions | Focal distance (mm) | Aperture (fixed F No.) | Maximum outer diameter (mm) | Total length (mm) | Filter size | WD (mm) | Depth of field * (mm) | Maximum compatible CCD |
|---|---|---|---|---|---|---|---|---|---|---|
| FZ-S☐ FZ-SH☐ FH-S☐ FH-S☐X FH-S☐X01 FH-S☐X03 FH-S☐05R FHV7X-☐ | 3Z4S-LE VS-MCA4 | A | 4 | 2 | 31 dia. | 29.0 to 29.2 | M27.0 P0.5 | 403.2 | 1680.0 | 1/2 inch |
| | | | | | | | | 196.2 | 420.0 | |
| | | | | | | | | 92.7 | 105.0 | |
| | 3Z4S-LE VS-MCA4-F5.6 | | | 5.6 | 31 dia. | 29.0 to 29.2 | M27.0 P0.5 | 403.2 | 4560.0 | |
| | | | | | | | | 196.2 | 1140.0 | |
| | | | | | | | | 92.7 | 290.0 | |
| | 3Z4S-LE VS-MCA4-F8 | | | 8 | 31 dia. | 29.0 to 29.2 | M27.0 P0.5 | 403.2 | 6480.0 | |
| | | | | | | | | 196.2 | 1640.0 | |
| | | | | | | | | 92.7 | 415.0 | |
| | 3Z4S-LE VS-MCA6.5 | B | 6.5 | 2 | 31 dia. | 23.1 to 23.4 | M27.0 P0.5 | 656.0 | 1840.0 | 1/2 inch |
| | | | | | | | | 209.6 | 204.4 | |
| | | | | | | | | 98.0 | 51.1 | |
| | 3Z4S-LE VS-MCA6.5-F5.6 | | | 5.6 | 31 dia. | 23.1 to 23.4 | M27.0 P0.5 | 656.0 | 4560.0 | |
| | | | | | | | | 209.6 | 515.6 | |
| | | | | | | | | 98.0 | 131.1 | |
| | 3Z4S-LE VS-MCA6.5-F8 | | | 8 | 31 dia. | 23.1 to 23.4 | M27.0 P0.5 | 656.0 | 6480.0 | |
| | | | | | | | | 209.6 | 728.9 | |
| | | | | | | | | 98.0 | 188.9 | |
| | 3Z4S-LE VS-MCA10 | C | 10 | 2 | 31 dia. | 24.2 to 25.5 | M27.0 P0.5 | 504.1 | 460.0 | 1/2 inch |
| | | | | | | | | 94.0 | 19.2 | |
| | | | | | | | | 59.9 | 9.2 | |
| | 3Z4S-LE VS-MCA10-F5.6 | | | 5.6 | 31 dia. | 24.2 to 25.5 | M27.0 P0.5 | 504.1 | 1140.0 | |
| | | | | | | | | 94.0 | 49.6 | |
| | | | | | | | | 59.9 | 22.8 | |
| | 3Z4S-LE VS-MCA10-F8 | | | 8 | 31 dia. | 24.2 to 25.5 | M27.0 P0.5 | 504.1 | 1640.0 | |
| | | | | | | | | 94.0 | 70.4 | |
| | | | | | | | | 59.9 | 32.7 | |
| FZ-S☐ FZ-SH☐ FH-S☐ FH-S☐X FZ-S☐2M FZ-S☐5M3 FH-S☐05R FH-S☐X05 | 3Z4S-LE VS-MCA15 | D | 15 | 2 | 31 dia. | 27.9 to 32.0 | M27.0 P0.5 | 490.7 | 186.7 | 2/3 inch |
| | | | | | | | | 65.4 | 4.8 | |
| | | | | | | | | 40.3 | 2.3 | |
| | 3Z4S-LE VS-MCA15-F5.6 | | | 5.6 | 31 dia. | 27.9 to 32.0 | M27.0 P0.5 | 490.7 | 515.6 | |
| | | | | | | | | 65.4 | 13.4 | |
| | | | | | | | | 40.3 | 6.5 | |
| | 3Z4S-LE VS-MCA15-F8 | | | 8 | 31 dia. | 27.9 to 32.0 | M27.0 P0.5 | 490.7 | 728.9 | |
| | | | | | | | | 65.4 | 19.2 | |
| | | | | | | | | 40.3 | 9.2 | |

# Vibrations and Shocks Resistant Lens for C-mount Cameras   VS-MCA Series

| Recommended camera | Model | Dimensions | Focal distance (mm) | Aperture (fixed F No.) | Maximum outer diameter (mm) | Total length (mm) | Filter size | WD (mm) | Depth of field * (mm) | Maximum compatible CCD |
|---|---|---|---|---|---|---|---|---|---|---|
| FZ-S☐ FZ-SH☐ FH-S☐ FH-S☐X FZ-S☐2M FZ-S☐5M3 FH-S☐05R FH-S☐X05 FHV7X-☐ | 3Z4S-LE VS-MCA20 | E | 20 | 2 | 31 dia. | 24.5 to 32.0 | M27.0 P0.5 | 516.8 | 105.0 | 2/3 inch |
| | | | | | | | | 81.8 | 3.2 | |
| | | | | | | | | 50.7 | 1.5 | |
| | 3Z4S-LE VS-MCA20-F5.6 | | | 5.6 | 31 dia. | 24.5 to 32.0 | M27.0 P0.5 | 516.8 | 290.0 | |
| | | | | | | | | 81.8 | 9.0 | |
| | | | | | | | | 50.7 | 3.9 | |
| | 3Z4S-LE VS-MCA20-F8 | | | 8 | 31 dia. | 24.5 to 32.0 | M27.0 P0.5 | 516.8 | 415.0 | |
| | | | | | | | | 81.8 | 12.8 | |
| | | | | | | | | 50.7 | 5.6 | |
| | 3Z4S-LE VS-MCA25 | F | 25 | 2 | 31 dia. | 27.0 to 38.5 | M27.0 P0.5 | 514.6 | 67.2 | 2/3 inch |
| | | | | | | | | 106.6 | 3.2 | |
| | | | | | | | | 55.6 | 1.0 | |
| | 3Z4S-LE VS-MCA25-F5.6 | | | 5.6 | 31 dia. | 27.0 to 38.5 | M27.0 P0.5 | 514.6 | 188.8 | |
| | | | | | | | | 106.6 | 9.0 | |
| | | | | | | | | 55.6 | 2.7 | |
| | 3Z4S-LE VS-MCA25-F8 | | | 8 | 31 dia. | 27.0 to 38.5 | M27.0 P0.5 | 514.6 | 268.8 | |
| | | | | | | | | 106.6 | 12.8 | |
| | | | | | | | | 55.6 | 3.8 | |
| | 3Z4S-LE VS-MCA30 | G | 30 | 2 | 31 dia. | 24.5 to 36.2 | M27.0 P0.5 | 513.5 | 53.3 | 2/3 inch |
| | | | | | | | | 213.5 | 8.2 | |
| | | | | | | | | 80.1 | 1.3 | |
| | 3Z4S-LE VS-MCA30-F5.6 | | | 5.6 | 31 dia. | 24.5 to 36.2 | M27.0 P0.5 | 513.5 | 131.1 | |
| | | | | | | | | 213.5 | 22.8 | |
| | | | | | | | | 80.1 | 3.2 | |
| | 3Z4S-LE VS-MCA30-F8 | | | 8 | 31 dia. | 24.5 to 36.2 | M27.0 P0.5 | 513.5 | 188.9 | |
| | | | | | | | | 213.5 | 32.7 | |
| | | | | | | | | 80.1 | 4.6 | |
| | 3Z4S-LE VS-MCA35 | H | 35 | 2 | 31 dia. | 32.0 to 45.7 | M27.0 P0.5 | 163.9 | 3.0 | 2/3 inch |
| | | | | | | | | 145.9 | 2.2 | |
| | | | | | | | | 83.1 | 0.7 | |
| | 3Z4S-LE VS-MCA35-F5.6 | | | 5.6 | 31 dia. | 32.0 to 45.7 | M27.0 P0.5 | 163.9 | 8.4 | |
| | | | | | | | | 145.9 | 6.5 | |
| | | | | | | | | 83.1 | 1.7 | |
| | 3Z4S-LE VS-MCA35-F8 | | | 8 | 31 dia. | 32.0 to 45.7 | M27.0 P0.5 | 163.9 | 12.0 | |
| | | | | | | | | 145.9 | 9.2 | |
| | | | | | | | | 83.1 | 2.5 | |
| | 3Z4S-LE VS-MCA50 | I | 50 | 2 | 31 dia. | 44.0 to 63.4 | M27.0 P0.5 | 633.6 | 32.5 | 2/3 inch |
| | | | | | | | | 270.1 | 6.0 | |
| | | | | | | | | 128.7 | 1.3 | |
| | 3Z4S-LE VS-MCA50-F5.6 | | | 5.6 | 31 dia. | 44.0 to 63.4 | M27.0 P0.5 | 633.6 | 75.0 | |
| | | | | | | | | 270.1 | 13.4 | |
| | | | | | | | | 128.7 | 2.9 | |
| | 3Z4S-LE VS-MCA50-F8 | | | 8 | 31 dia. | 44.0 to 63.4 | M27.0 P0.5 | 633.6 | 107.5 | |
| | | | | | | | | 270.1 | 19.2 | |
| | | | | | | | | 128.7 | 4.1 | |
| | 3Z4S-LE VS-MCA75 | J | 75 | 2 | 31 dia. | 70.0 to 105.5 | M27.0 P0.5 | 562.9 | 16.7 | 2/3 inch |
| | | | | | | | | 404.4 | 9.2 | |
| | | | | | | | | 153.8 | 1.3 | |
| | 3Z4S-LE VS-MCA75-F5.6 | | | 5.6 | 31 dia. | 70.0 to 105.5 | M27.0 P0.5 | 562.9 | 28.6 | |
| | | | | | | | | 404.4 | 13.4 | |
| | | | | | | | | 153.8 | 2.5 | |
| | 3Z4S-LE VS-MCA75-F8 | | | 8 | 31 dia. | 70.0 to 105.5 | M27.0 P0.5 | 562.9 | 41.2 | |
| | | | | | | | | 404.4 | 19.2 | |
| | | | | | | | | 153.8 | 3.6 | |

Note: 1.   Vibrations and Shocks Resistant Lenses for 1-inch image sensors are also available. Ask your OMRON representative for details.
*  Calculated using a permissible circle of confusion diameter of 0.04 mm.

# Vibrations and Shocks Resistant Lens for C-mount Cameras   VS-MCA Series

## Dimensions

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses

**(Unit:mm)**

### A (VS-MCA4)

403.2 [0.01x] - 92.7 [0.04x] (W.D.)
29.0 [0.01x] - 29.2 [0.04x]
17.526
4  10  4
7.3
29 dia.
M27 P0.5
slot 1x1
15.5 dia.
31 dia.
IMAGING SURFACE
449.7 [0.01x] - 139.4 [0.04x] (O/I)
1-32UNF (C MOUNT)

### B (VS-MCA6.5)

656.0 [0.01x] - 98.0 [0.06x] (W.D.)
23.1 [0.01x] - 23.4 [0.06x]
17.526
4  10  4
7.4
29 dia.
M27 P0.5
slot 1x1
15 dia.
31 dia.
IMAGING SURFACE
696.6 [0.01x] - 138.9 [0.06x] (O/I)
1-32UNF (C MOUNT)

### C (VS-MCA10)

504.1 [0.02x] - 59.9 [0.15x] (W.D.)
24.2 [0.01x] - 25.5 [0.15x]
17.526
4  10  4
6.8
29 dia.
M27 P0.5
slot 1x1
16 dia.
31 dia.
IMAGING SURFACE
545.8 [0.02x] - 102.9 [0.15x] (O/I)
1-32UNF (C MOUNT)

### D (VS-MCA15)

490.7 [0.03x] - 40.3 [0.3x] (W.D.)
27.9 [0.03x] - 32.0 [0.3x]
17.526
4  10  4
1.6
29 dia.
M27 P0.5
slot 1x1
18.5 dia.
31 dia.
IMAGING SURFACE
536.1 [0.03x] - 89.8 [0.3x] (O/I)
1-32UNF (C MOUNT)

### E (VS-MCA20)

516.8 [0.04x] - 50.7 [0.4x] (W.D.)
24.5 [0.04x] - 32.0 [0.4x]
17.526
4  10  4
29 dia.
M27 P0.5
slot 1x1
31 dia.
IMAGING SURFACE
558.8 [0.04x] - 100.2 [0.4x] (O/I)
1-32UNF (C MOUNT)

### F (VS-MCA25)

514.6 [0.05x] - 55.6 [0.5x] (W.D.)
27.0 [0.05x] - 38.5 [0.5x]
17.526
4  10  4
29 dia.
M27 P0.5
slot 1x1
31 dia.
IMAGING SURFACE
559.1 [0.05x] - 111.6 [0.5x] (O/I)
1-32UNF (C MOUNT)

### G (VS-MCA30)

513.5 [0.06x] - 80.1 [0.45x] (W.D.)
24.5 [0.06x] - 36.2 [0.45x]
17.526
4  10  4
29 dia.
M27 P0.5
slot 1x1
31 dia.
IMAGING SURFACE
555.5 [0.06x] - 133.8 [0.45x] (O/I)
1-32UNF (C MOUNT)

### H (VS-MCA35)

163.9 [0.26x] - 83.1 [0.65x] (W.D.)
32.0 [0.26x] - 45.7 [0.65x]
17.526
4  15  4
29 dia.
M27 P0.5
slot 1x1
31 dia.
IMAGING SURFACE
213.4 [0.26x] - 146.3 [0.65x] (O/I)
1-32UNF (C MOUNT)

### I (VS-MCA50)

633.6 [0.08x] - 128.7 [0.48x] (W.D.)
44.0 [0.08x] - 63.4 [0.48x]
17.526
4  17  4
2.5
29 dia.
M27 P0.5
slot 1x1
23 dia.
31 dia.
IMAGING SURFACE
695.1 [0.08x] - 209.6 [0.48x] (O/I)
1-32UNF (C MOUNT)

### J (VS-MCA75)

562.9 [0.14x] - 153.8 [0.62x] (W.D.)
70.0 [0.14x] - 105.5 [0.62x]
17.526
4  35.5  4
29 dia.
M27 P0.5
slot 1x1
31 dia.
IMAGING SURFACE
650.4 [0.14x] - 276.8 [0.62x] (O/I)
1-32UNF (C MOUNT)

## Specifications

| Mounting | C mount |
|---|---|
| Ambient temperature | Operating: -5 to 50°C, Storage: -10 to 60°C (with no icing or condensation) |
| Ambient humidity | Operating: 35% to 80%, Storage: 35% to 90% (with no condensation) |

## Optical Chart

Refer to page **92**, **93**, **96** and **97**.

# High-resolution, Vibrations and Shocks Resistant Lens for C-mount Cameras
# VS-MCH1 Series

- Vibrations resistant lens with iris plate system for megapixel C-mount cameras
- Lineup of 6 models with focal lengths ranging from 8 to 50 mm
- Iris plate system to change F number
- Threaded iris plate system to lock the iris in place
- Hexagonal/octagonal lens mount, lock ring, and lens end make tightening easier
- Ideal for use in environments where the point-locked lens is moved under the effects of ambient vibration
- Install in narrow space without a lock screw

## Ordering Information

| Recommended camera | Model | Dimensions | Focal distance (mm) | Aperture (F No) | Maximum outer diameter (mm) | Total length (mm) | Filter size | WD (mm) | Depth of field * (mm) | Maximum compatible CCD |
|---|---|---|---|---|---|---|---|---|---|---|
| FH-S□02 FH-S□04 FH-S□21R | 3Z4S-LE VS-MC08H1 | A | 8 | 1.4 | 59 dia. | 59.0 to 60.2 | M55.0 P0.75 | 302.6 | 179.0 | 1 inch |
| | | | | | | | | 55.4 | 12.0 | |
| | | | | | | | | 27.9 | 5.7 | |
| | | | | 5.6 | | | | 302.6 | 735.0 | |
| | | | | | | | | 55.4 | 49.3 | |
| | | | | | | | | 27.9 | 22.9 | |
| | | | | 8 | | | | 302.6 | 1050.0 | |
| | | | | | | | | 55.4 | 70.4 | |
| | | | | | | | | 27.9 | 32.7 | |
| | 3Z4S-LE VS-MC12H1 | B | 12 | 1.4 | 38 dia. | 48.0 to 49.8 | M35.5 P0.5 | 465.4 | 179.0 | 1 inch |
| | | | | | | | | 103.8 | 12.0 | |
| | | | | | | | | 63.6 | 5.7 | |
| | | | | 5.6 | | | | 465.4 | 735.0 | |
| | | | | | | | | 103.8 | 49.3 | |
| | | | | | | | | 63.6 | 22.9 | |
| | | | | 8 | | | | 465.4 | 1050.0 | |
| | | | | | | | | 103.8 | 70.4 | |
| | | | | | | | | 63.6 | 32.7 | |
| | 3Z4S-LE VS-MC16H1 | C | 16 | 1.4 | 36.5 dia. | 45.0 to 49.1 | M30.5 P0.5 | 648.1 | 179.0 | 1 inch |
| | | | | | | | | 176.6 | 12.0 | |
| | | | | | | | | 58.1 | 2.3 | |
| | | | | 5.6 | | | | 648.1 | 735.0 | |
| | | | | | | | | 176.6 | 49.3 | |
| | | | | | | | | 58.1 | 9.0 | |
| | | | | 8 | | | | 648.1 | 1050.0 | |
| | | | | | | | | 176.6 | 70.4 | |
| | | | | | | | | 58.1 | 12.8 | |
| | 3Z4S-LE VS-MC25H1 | D | 25 | 1.4 | 36.5 dia. | 33.5 to 42.4 | M30.5 P0.5 | 1007.9 | 179.0 | 1 inch |
| | | | | | | | | 245.3 | 12.0 | |
| | | | | | | | | 63.7 | 1.2 | |
| | | | | 5.6 | | | | 1007.9 | 735.0 | |
| | | | | | | | | 245.3 | 49.3 | |
| | | | | | | | | 63.7 | 4.9 | |
| | | | | 8 | | | | 1007.9 | 1050.0 | |
| | | | | | | | | 245.3 | 70.4 | |
| | | | | | | | | 63.7 | 7.1 | |
| | 3Z4S-LE VS-MC35H1 | E | 35 | 1.4 | 36.5 dia. | 35.0 to 43.8 | M30.5 P0.5 | 1405.7 | 179.0 | 1 inch |
| | | | | | | | | 352.9 | 12.0 | |
| | | | | | | | | 142.3 | 2.3 | |
| | | | | 5.6 | | | | 1405.7 | 735.0 | |
| | | | | | | | | 352.9 | 49.3 | |
| | | | | | | | | 142.3 | 9.0 | |
| | | | | 8 | | | | 1405.7 | 1050.0 | |
| | | | | | | | | 352.9 | 70.4 | |
| | | | | | | | | 142.3 | 12.8 | |

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses

# High-resolution, Vibrations and Shocks Resistant Lens for C-mount Cameras    VS-MCH1 Series

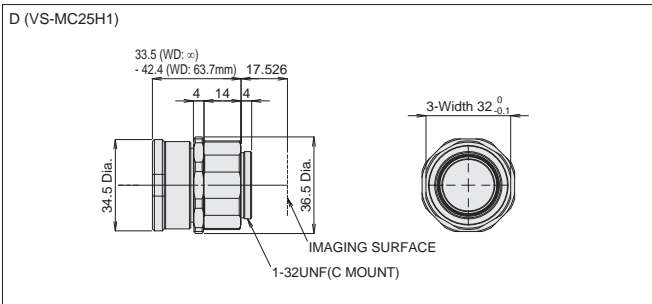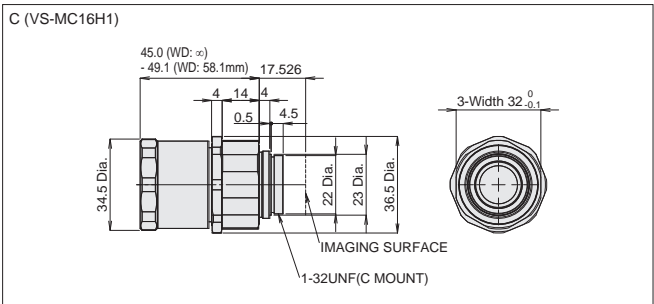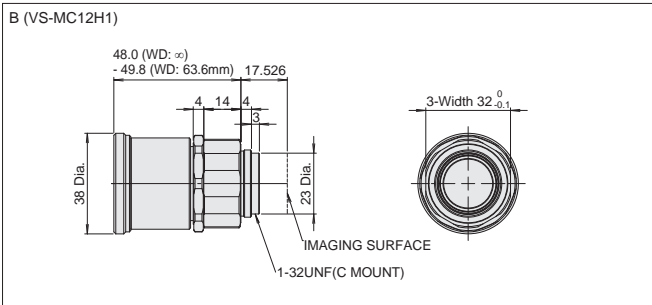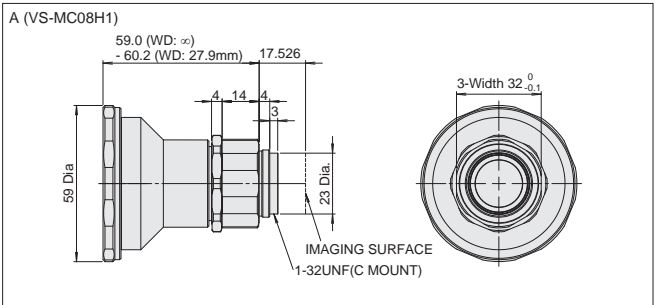| Recommended camera | Model | Dimensions | Focal distance (mm) | Aperture (F No) | Maximum outer diameter (mm) | Total length (mm) | Filter size | WD (mm) | Depth of field * (mm) | Maximum compatible CCD |
|---|---|---|---|---|---|---|---|---|---|---|
| FH-S☐02 FH-S☐04 FH-S☐21R | **3Z4S-LE VS-MC50H1** | F | 50 | 1.4 | 44 dia. | 44.5 to 52.0 | M40.5 P0.5 | 2001.9 | 179.0 | 1 inch |
| | | | | | | | | 504.1 | 12.0 | |
| | | | | | | | | 337.7 | 5.7 | |
| | | | | 5.6 | | | | 2001.9 | 735.0 | |
| | | | | | | | | 504.1 | 49.3 | |
| | | | | | | | | 337.7 | 22.9 | |
| | | | | 8 | | | | 2001.9 | 1050.0 | |
| | | | | | | | | 504.1 | 70.4 | |
| | | | | | | | | 337.7 | 32.7 | |

\* Calculated using a permissible circle of confusion diameter of 0.04 mm.

## Dimensions

(Unit:mm)

A (VS-MC08H1)

59.0 (WD: ∞)
- 60.2 (WD: 27.9mm)   17.526
4  14  4
3
59 Dia.
23 Dia.
3-Width 32 $^{0}_{-0.1}$
IMAGING SURFACE
1-32UNF(C MOUNT)

B (VS-MC12H1)

48.0 (WD: ∞)
- 49.8 (WD: 63.6mm)   17.526
4  14  4
3
38 Dia.
23 Dia.
3-Width 32 $^{0}_{-0.1}$
IMAGING SURFACE
1-32UNF(C MOUNT)

C (VS-MC16H1)

45.0 (WD: ∞)
- 49.1 (WD: 58.1mm)   17.526
4  14  4
0.5  4.5
34.5 Dia.
22 Dia.
23 Dia.
36.5 Dia.
3-Width 32 $^{0}_{-0.1}$
IMAGING SURFACE
1-32UNF(C MOUNT)

D (VS-MC25H1)

33.5 (WD: ∞)
- 42.4 (WD: 63.7mm)   17.526
4  14  4
34.5 Dia.
36.5 Dia.
3-Width 32 $^{0}_{-0.1}$
IMAGING SURFACE
1-32UNF(C MOUNT)

E (VS-MC35H1)

35.0 (WD: ∞)
- 43.8 (WD: 142.3mm)   17.526
4  14  4
1.6
34.5 Dia.
23 Dia.
36.5 Dia.
3-Width 32 $^{0}_{-0.1}$
IMAGING SURFACE
1-32UNF(C MOUNT)

F (VS-MC50H1)

44.5 (WD: ∞)
- 52.0 (WD: 337.7mm)   17.526
4  14  4
1.2
44 Dia.
23 Dia.
3-Width 32 $^{0}_{-0.1}$
IMAGING SURFACE
1-32UNF(C MOUNT)

## Specifications

| Mounting | C mount |
|---|---|
| Ambient temperature | Operating: -5 to 50°C, Storage: -10 to 60°C (with no icing or condensation) |
| Ambient humidity | Operating: 0% to 80%, Storage: 0% to 90% (with no condensation) |

## Optical Chart

Refer to page **94**.

# Non-telecentric Macro Lens for C-mount Cameras
# VS-MC Series

- Lineup of 4 models with magnifications ranging from 0.1x to 1.0x and WD ranging from 82.4 to 325.5 mm.
- 16-mm-dia. simple mechanism with high resistance to vibration.

## Ordering Information

| Recommend camera | Model | Dimensions | Magnification | Effective FNO | O/I (mm) | WD (mm) | Depth of field *1 (mm) | Resolution *2 (μm) | TV distortion |
|---|---|---|---|---|---|---|---|---|---|
| FZ-S□ FZ-SH□ FH-S□ FH-S□X FZ-S□2M FZ-S□5M3 FH-S□05R FH-S□X05 FHV7X-□ | 3Z4S-LE VS-MC01-330 | A | 0.1x | 4.43 | 364.5 | 325.5 | 35.4 | 30.5 | 0.01% max. |
| | 3Z4S-LE VS-MC03-180 | B | 0.3x | 5.29 | 248.5 | 184.8 | 4.7 | 11.6 | 0.00% max. |
| | 3Z4S-LE VS-MC05-130 | C | 0.5x | 6.10 | 198.8 | 126.3 | 2.0 | 8.2 | 0.00% max. |
| | 3Z4S-LE VS-MC1-80 | D | 1.0x | 8.14 | 176.8 | 82.4 | 0.7 | 5.5 | 0.00% max. |

*1. Calculated using a permissible circle of confusion diameter of 0.04 mm.
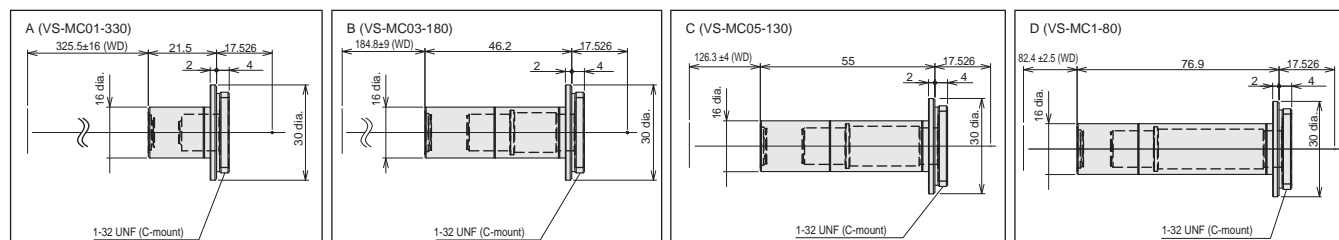*2. Calculated using a wavelength of 550 nm.

## Camera and Field of View Table

| Camera | Size of image element (inch) | Imaging area H×V (mm) | Field of view H×V (mm) | | | |
|---|---|---|---|---|---|---|
| | | | 0.1 × (VS-MC01-330) | 0.3 × (VS-MC03-180) | 0.5 × (VS-MC05-130) | 1.0 × (VS-MC1-80) |
| FH-S□/FZ-S□/FZ-SH□ | 1/3" equivalent | 4.8 × 3.6 | 48.0 × 36.0 | 16.0 × 12.0 | 9.6 × 7.2 | 4.8 × 3.6 |
| FH-S□X | 1/2.9" equivalent | 5.0 × 3.8 | 50.0 × 38.0 | 16.7 × 12.7 | 10.0 × 7.6 | 5.0 × 3.8 |
| FH-S□05R | 1/2.5" equivalent | 5.7 × 4.3 | 57.0 × 43.0 | 19.0 × 14.3 | 11.4 × 8.6 | 5.7 × 4.3 |
| FZ-S□2M | 1/1.8" equivalent | 7.0 × 5.3 | 70.0 × 53.0 | 23.3 × 17.7 | 14.0 × 10.6 | 7.0 × 5.3 |
| FH-S□X05/FZ-S□5M3 | 2/3" equivalent | 8.4 × 7.1 | 84.0 × 71.0 | 28.0 × 23.7 | 16.8 × 14.2 | 8.4 × 7.1 |
| FHV7X-□004-C | 1/2.9" equivalent | 5.0×3.8 | 50.0×38.0 | 16.7×12.7 | 10.0×7.6 | 5.0×3.8 |
| FHV7X-□016-C | 1/2.9" equivalent | 5.0×3.8 | 50.0×38.0 | 16.7×12.7 | 10.0×7.6 | 5.0×3.8 |
| FHV7X-□032-C | 1/1.8" equivalent | 7.1×5.3 | 71.0×53.0 | 23.7×17.7 | 14.2×10.6 | 7.1×5.3 |
| FHV7X-□050-C | 2/3" equivalent | 8.5×7.1 | 85.0×71.0 | 28.3×23.7 | 17.0×14.2 | 8.5×7.1 |
| FHV7X-□063R-C | 1/1.8" equivalent | 7.4×5.0 | 74.0×50.0 | 24.7×16.7 | 14.8×10.0 | 7.4×5.0 |
| FHV7X-□120R-C | 1/1.7" equivalent | 7.4×5.6 | 74.0×56.0 | 24.7×18.7 | 14.8×11.2 | 7.4×5.6 |

Note: 1. The field of view is a calculated value and not a guaranteed value.

## Dimensions

(Unit:mm)



A (VS-MC01-330)
325.5±16 (WD)  21.5  17.526
16 dia.  2  4  30 dia.
1-32 UNF (C-mount)

B (VS-MC03-180)
184.8±9 (WD)  46.2  17.526
16 dia.  2  4  30 dia.
1-32 UNF (C-mount)

C (VS-MC05-130)
126.3 ±4 (WD)  55  17.526
16 dia.  2  4  30 dia.
1-32 UNF (C-mount)

D (VS-MC1-80)
82.4 ±2.5 (WD)  76.9  17.526
16 dia.  2  4  30 dia.
1-32 UNF (C-mount)

## Specifications

| Mounting | C mount |
|---|---|
| Ambient temperature | Operating: 0 to 50°C, Storage: -10 to 60°C (with no icing or condensation) |
| Ambient humidity | Operating: 35% to 80%, Storage: 35% to 90% (with no condensation) |

# Lens Option

## Polarizing Filter SV-PLA Series

• Prevents diffused reflection.
• Available for lenses for C-mount cameras.

Polarizing Filter          Step-Up Ring

### Ordering Information

| Item | Size | Model | Weight (g) |
|------|------|-------|-----------|
| Polarizing Filter | M22.5 P0.5 | **3Z4S-LE SV-PLA225** | 7.2 |
| | M25.5 P0.5 | **3Z4S-LE SV-PLA255** | 8.5 |
| | M27.0 P0.5 | **3Z4S-LE SV-PLA270** | 9.3 |
| | M30.5 P0.5 | **3Z4S-LE SV-PLA305** | 11.0 |
| | M34.0 P0.5 | **3Z4S-LE SV-PLA340** | 13.1 |
| | M35.5 P0.5 | **3Z4S-LE SV-PLA355** | 13.7 |
| | M37.5 P0.5 | **3Z4S-LE SV-PLA375** | 14.9 |
| | M40.5 P0.5 | **3Z4S-LE SV-PLA405** | 17.3 |
| | M55.0 P0.75 | **3Z4S-LE SV-PLA550** | 27.3 |
| | M62.0 P0.75 | **3Z4S-LE SV-PLA620** | 32.7 |
| Step-Up Ring * | • Connection part with 3Z4S-LE SV-PLA550 M52.0 P0.75 M55.0 P0.75<br>• Lens attachment part M55.0 P0.75 M52.0 P0.75 | **3Z4S-LE VS-FAD520-550** | 3.7 |

✱ When replacing model 3Z4S-LE SV-PL520 and 3Z4S-LE SV-PL520-SS with the alternative model 3Z4S-LE SV-PLA550, a step-up ring Model 3Z4S-LE VS-FAD520-550 (sold separately) is required.

## Polarizing Filter  SV-PL Series

• Prevents diffused reflection.
• Available for lenses for C-mount cameras.

**Note:** Orders for 3Z4S SV-PL series will be accepted until the end of March 2025.

### Ordering Information

| Item | Size | Anti-rotation mechanism: Provided | | Anti-rotation mechanism: Not provided | |
|---|---|---|---|---|---|
| | | Model | Weight (g) | Model | Weight (g) |
| Polarizing Filter | M22.5 P0.5 | **3Z4S-LE SV-PL225-SS** | 5 | – | – |
| | M25.5 P0.5 | **3Z4S-LE SV-PL255-SS** | 6 | **3Z4S-LE SV-PL255** | 5.5 |
| | M27.0 P0.5 | **3Z4S-LE SV-PL270-SS** | 6.5 | **3Z4S-LE SV-PL270** | 6 |
| | M30.5 P0.5 | **3Z4S-LE SV-PL305-SS** | 8 | **3Z4S-LE SV-PL305** | 7.5 |
| | M34.0 P0.5 | **3Z4S-LE SV-PL340-SS** | 10 | **3Z4S-LE SV-PL340** | 9.5 |
| | M35.5 P0.5 | **3Z4S-LE SV-PL355-SS** | 10 | **3Z4S-LE SV-PL355** | 9.5 |
| | M37.5 P0.5 | **3Z4S-LE SV-PL375-SS** | 12 | **3Z4S-LE SV-PL375** | 11.5 |
| | M40.5 P0.5 | **3Z4S-LE SV-PL405-SS** | 12.5 | **3Z4S-LE SV-PL405** | 12 |
| | M52.0 P0.75 | **3Z4S-LE SV-PL520-SS** | 19 | **3Z4S-LE SV-PL520** | 18.5 |
| | M55.0 P0.75 | **3Z4S-LE SV-PL550-SS** | 21 | **3Z4S-LE SV-PL550** | 20.5 |
| | M62.0 P0.75 | **3Z4S-LE SV-PL620-SS** | 28.5 | **3Z4S-LE SV-PL620** | 27.5 |

### Specifications

| Ambient temperature | Operating: 0 to 50°C, Storage: -10 to 60°C (with no icing or condensation) |
|---|---|
| Ambient humidity | Operating: 35% to 80%, Storage: 35% to 90% (with no condensation) |

# Lens Option

## Protection Cover Filter  SV-GA Series

- Used to protect lens surface from dust.
- Available for lenses for C-mount cameras.

### Ordering Information

| Item | Model | Size | Weight (g) |
|---|---|---|---|
| Protection Cover Filter | **3Z4S-LE SV-GA225** | M22.5 P0.5 | 4 |
| | **3Z4S-LE SV-GA255** | M25.5 P0.5 | 4.5 |
| | **3Z4S-LE SV-GA270** | M27.0 P0.5 | 5.5 |
| | **3Z4S-LE SV-GA305** | M30.5 P0.5 | 6.5 |
| | **3Z4S-LE SV-GA340** | M34.0 P0.5 | 8 |
| | **3Z4S-LE SV-GA355** | M35.5 P0.5 | 8.5 |
| | **3Z4S-LE SV-GA375** | M37.5 P0.5 | 9 |
| | **3Z4S-LE SV-GA405** | M40.5 P0.5 | 10.5 |
| | **3Z4S-LE SV-GA520** | M52.0 P0.75 | 15 |
| | **3Z4S-LE SV-GA550** | M55.0 P0.75 | 16 |
| | **3Z4S-LE SV-GA620** | M62.0 P0.75 | 25 |

### Specifications

| Ambient temperature | Operating: 0 to 50°C, Storage: -10 to 60°C (with no icing or condensation) |
|---|---|
| Ambient humidity | Operating: 35% to 80%, Storage: 35% to 90% (with no condensation) |

## Extension Tubes

### Ordering Information

| Lenses | Model | Contents |
|---|---|---|
| For C-mount Lens | 3Z4S-LE SV-EXR | Set of 7 tubes *1,*2<br>(40 mm, 20 mm,10 mm, 5 mm, 2mm,<br>1 mm, 0.5 mm)<br>Maximum outer diameter: 30 mm dia. |
| For M42-mount Cameras | 3Z4S-LE VS-EXR/M42 | Set of 5 tubes *1<br>(20 mm, 10 mm, 8 mm, 2 mm,<br>and 1 mm)<br>Maximum outer diameter: 47.5 mm dia. |
| For Small Digital CCD Cameras | FZ-LESR | Set of 3 tubes (15 mm, 10 mm, 5 mm)<br>Maximum outer diameter: 12 mm dia. |

*1. Do not use the 0.5-mm, 1.0-mm, and 2.0-mm Extension Tubes attached to each other. Since these Extension Tubes are placed over the threaded section of the Lens or other Extension Tube, the connection may loosen when more than one 0.5-mm, 1.0-mm or 2.0-mm Extension Tube are used together.
Reinforcement is required to protect against vibration when Extension Tubes exceeding 30 mm are used. When using the Extension Tube, check it on the actual device before using it.

*2. These Extension Tubes are also available individually. Order using the following model number, replacing the box with the desired length: 3Z4SLE SV-EXR□. (0.5, 1, 2, 5, 10, 15, 20, 25, 30, 40, 50 mm)

## Rear Converter Lens

### Ordering Information

| Model |
|---|
| **3Z4S-LE SV-1.5X** *1 |
| **3Z4S-LE SV-2.0X** *2 |
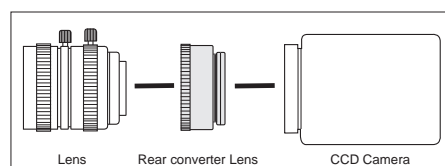
*1. In the following lenses, it is necessary to use it together with the extension tubes of 5 mm or more.
SV-0614H, SV-0814H, SV-1214H, SV-2514H, SV-0614V, SV-0813V

*2. In the following lenses, it is necessary to use it together with the extension tubes of 5 mm or more.
SV-0614H, SV-0814H, SV-1214H, SV-2514H, SV-0813V

**Configuration**

Lens        Rear converter Lens        CCD Camera

## M42 - F Mount Conversion Adapter

### Ordering Information

| Cameras | Lenses | Model |
|---|---|---|
| FH-S□12<br>(M42 mount) | F mount | **FH-ADF/M42-10** |

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses

# Optical Chart

## Optical Chart

### Meaning of Optical Chart

The X axis of the optical chart shows the field of vision (mm) (*1), and the Y axis of the optical chart shows the camera installation distance (mm) (*2).
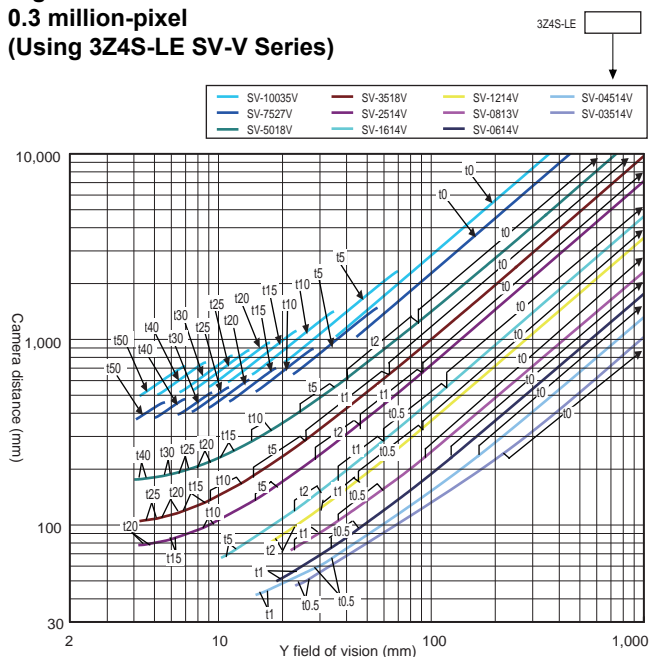
Camera

Extension Tube thickness: t □ (mm)

Lens

X — Y

Field of vision (mm)

WD (mm)

Camera distance (mm)
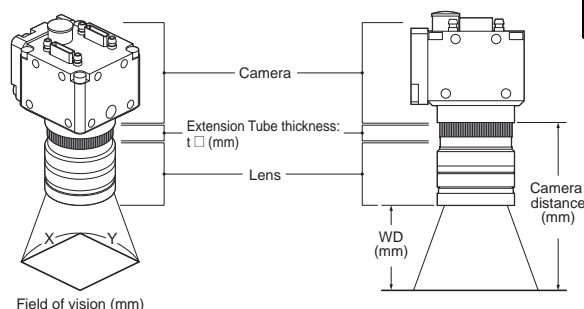
To select a lens, use the WEB Selector.
https://www.fa.omron.co.jp/lens_en

*1. The lengths of the fields of vision given in the optical charts are the lengths of the Y axis.
*2. The vertical axis represents WD for small cameras.
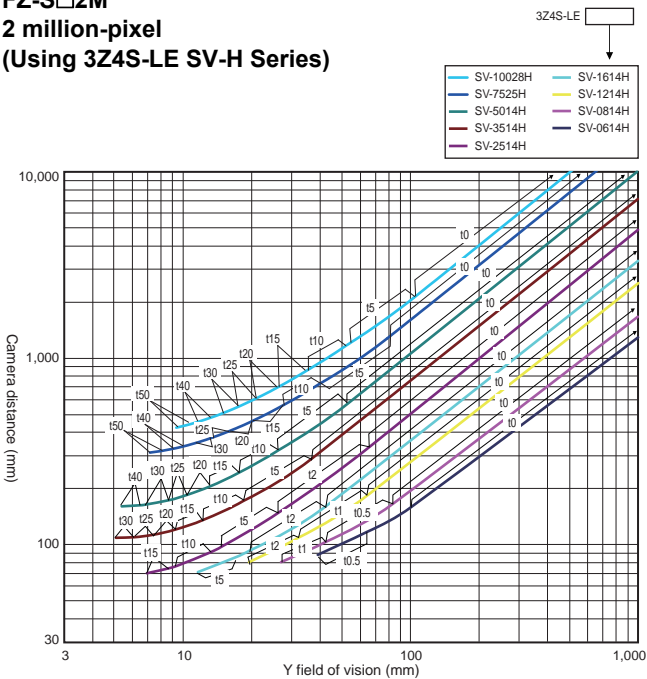
---

### Vision system FH/FZ Series
### Standard Lenses

**High-speed Digital CMOS Camera FH-S□,**
**High-speed Digital CCD Camera FZ-SH□,**
**Digital CCD Camera FZ-S□**
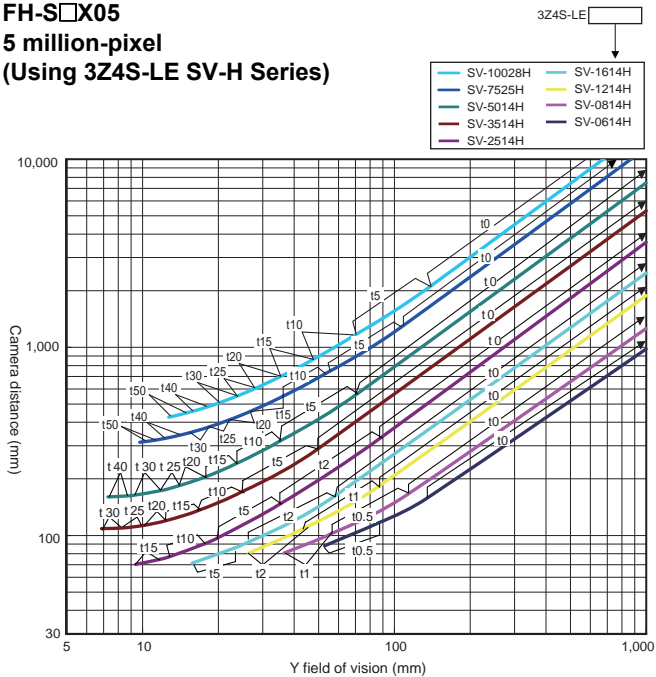**0.3 million-pixel**
**(Using 3Z4S-LE SV-V Series)**

3Z4S-LE

| | | | |
|---|---|---|---|
| SV-10035V | SV-3518V | SV-1214V | SV-04514V |
| SV-7527V | SV-2514V | SV-0813V | SV-03514V |
| SV-5018V | SV-1614V | SV-0614V | |



**High-speed Digital CMOS Camera**
**FH-S□X**
**0.4 million-pixel**
**(Using 3Z4S-LE SV-V Series)**

3Z4S-LE

| | |
|---|---|
| SV-10035V | SV-1214V |
| SV-7527V | SV-0813V |
| SV-5018V | SV-0614V |
| SV-3518V | SV-04514V |
| SV-2514V | SV-03514V |
| SV-1614V | |

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses

**Digital CCD Camera
FZ-S□2M
2 million-pixel
(Using 3Z4S-LE SV-H Series)**

3Z4S-LE

| | |
|---|---|
| SV-10028H | SV-1614H |
| SV-7525H | SV-1214H |
| SV-5014H | SV-0814H |
| SV-3514H | SV-0614H |
| SV-2514H | |



**Digital CMOS Camera FZ-S□5M3,
High-speed Digital CMOS Camera
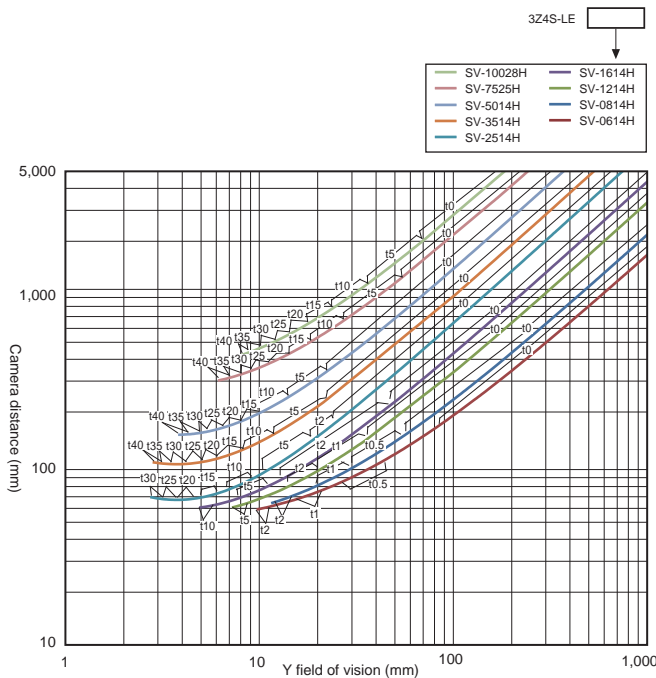FH-S□X05
5 million-pixel
(Using 3Z4S-LE SV-H Series)**

3Z4S-LE

| | |
|---|---|
| SV-10028H | SV-1614H |
| SV-7525H | SV-1214H |
| SV-5014H | SV-0814H |
| SV-3514H | SV-0614H |
| SV-2514H | |



**Digital CMOS Camera
FH-S□05R
5 million-pixel
(Using 3Z4S-LE SV-H Series)**

3Z4S-LE

| | |
|---|---|
| SV-10028H | SV-1614H |
| SV-7525H | SV-1214H |
| SV-5014H | SV-0814H |
| SV-3514H | SV-0614H |
| SV-2514H | |



**High-speed Digital CMOS Camera
FH-S□X01
1.6 million-pixel
(Using 3Z4S-LE SV-H Series)**

3Z4S-LE

| | |
|---|---|
| SV-10028H | SV-1614H |
| SV-7525H | SV-1214H |
| SV-5014H | SV-0814H |
| SV-3514H | SV-0614H |
| SV-2514H | |
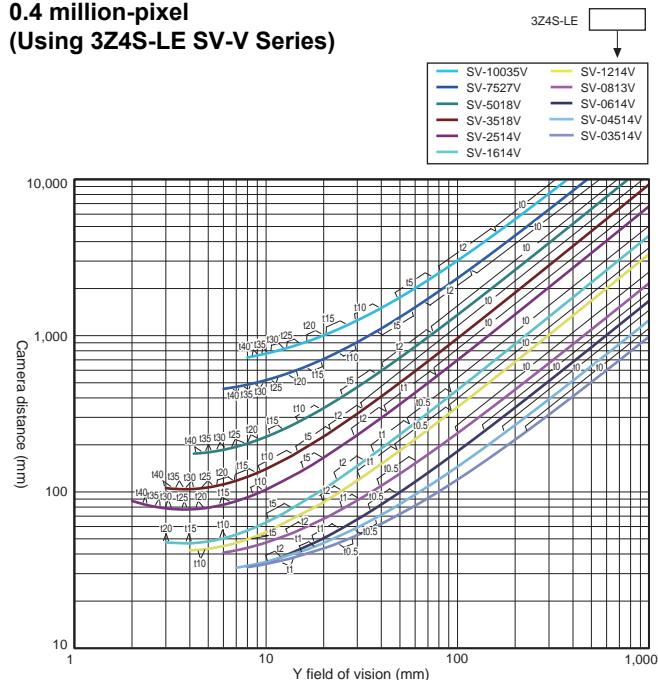
# Optical Chart

## High-speed Digital CMOS Camera
## FH-S□X03
## 3.2 million-pixel
## (Using 3Z4S-LE SV-H Series)
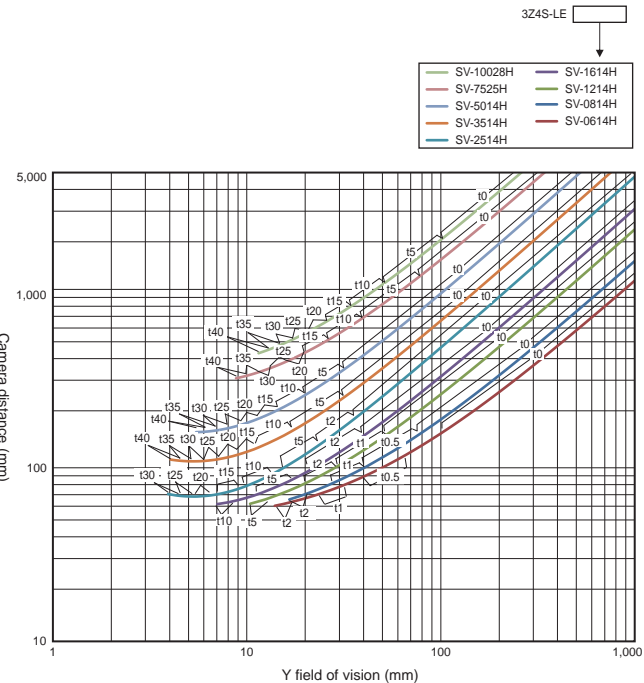
3Z4S-LE

| | |
|---|---|
| SV-10028H | SV-1614H |
| SV-7525H | SV-1214H |
| SV-5014H | SV-0814H |
| SV-3514H | SV-0614H |
| SV-2514H | |



Camera distance (mm) vs Y field of vision (mm)

## High-speed Digital CMOS Camera
## FH-S□02
## 2 million-pixel
## (Using 3Z4S-LE SV-H/VS-H1 Series)

3Z4S-LE

- SV-10028H
- SV-7525H
- VS-5018H1
- VS-3514H1
- VS-2514H1
- VS-1614H1N
- VS-1214H1
- VS-0814H1
- VS-0618H1



Camera distance (mm) vs Y field of vision (mm)

## High-speed Digital CMOS Camera
## FH-S□04
## 4 million-pixel
## (Using 3Z4S-LE SV-H/VS-H1 Series)

3Z4S-LE

- SV-10028H
- SV-7525H
- VS-5018H1
- VS-3514H1
- VS-2514H1
- VS-1614H1N
- VS-1214H1
- VS-0814H1
- VS-0618H1



Camera distance (mm) vs Y field of vision (mm)
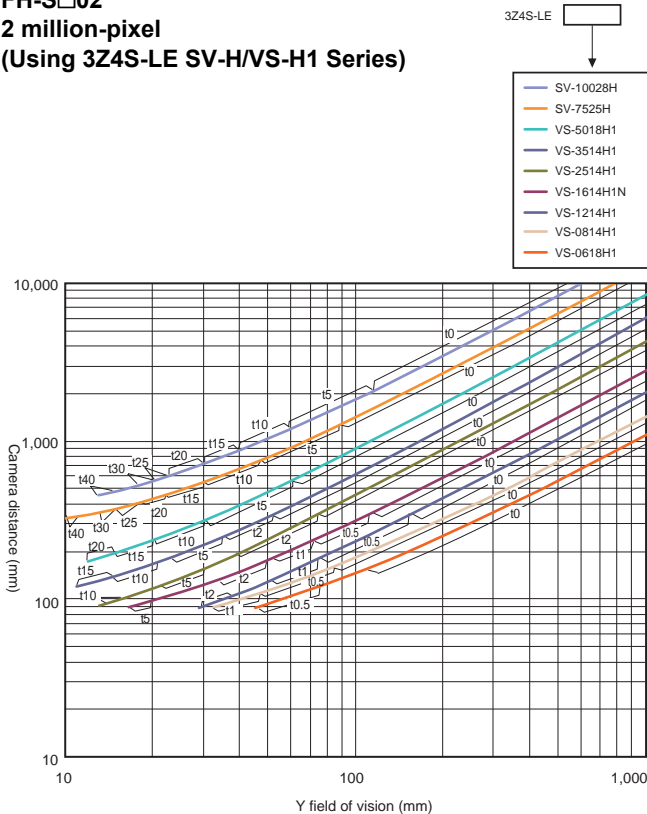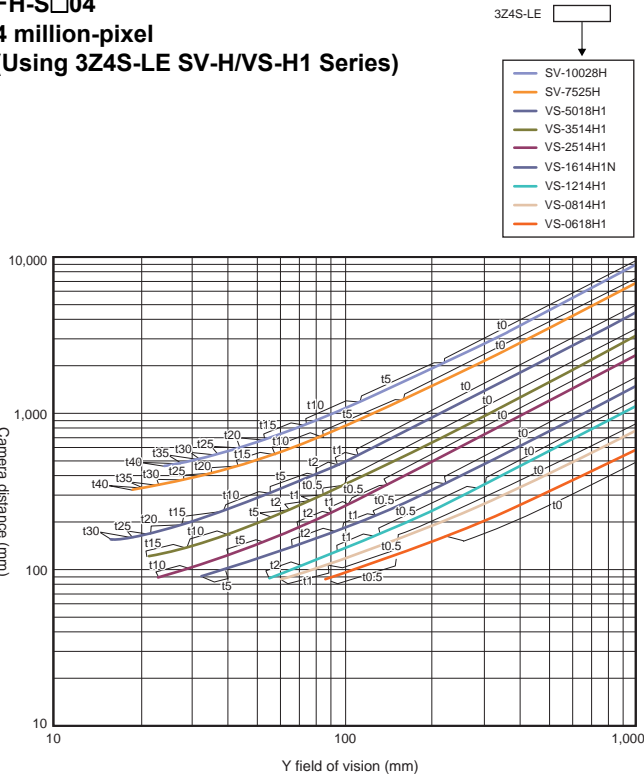
## High-speed Digital CMOS Camera
## FH-S□12
## 12 million-pixel
## (Using 3Z4S-LE VS-L/M42-10 Series)

3Z4S-LE

- VS-L10028/M42-10
- VS-L8540/M42-10
- VS-L5028/M42-10
- VS-L3528/M42-10
- VS-L2526/M42-10
- VS-L1828/M42-10



Camera distance (mm) vs Y field of vision (mm)

# Optical Chart
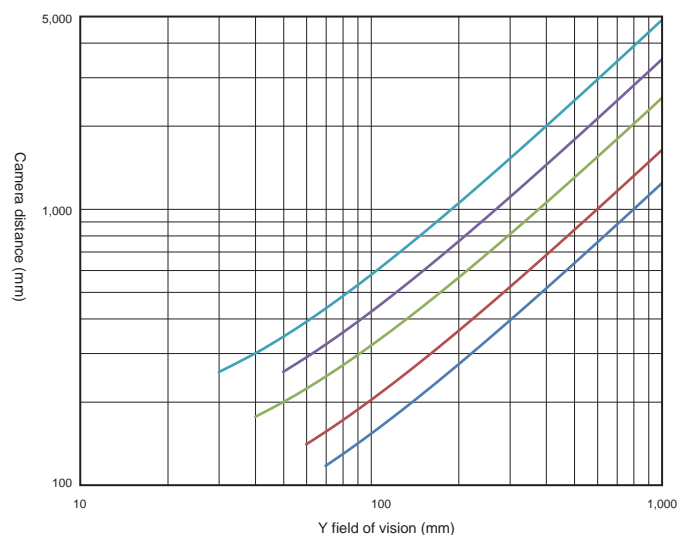
Standard Models
FLV Series

High-brightness Models
FL Series
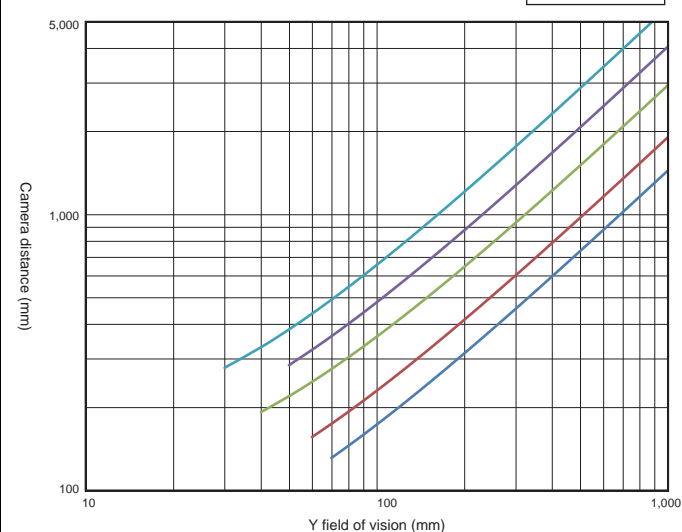
LED Characteristics

Lenses

## High-speed Digital CMOS Camera
## FH-S□X12
## 12 million-pixel
## (Using 3Z4S-LE VS-HVA Series)

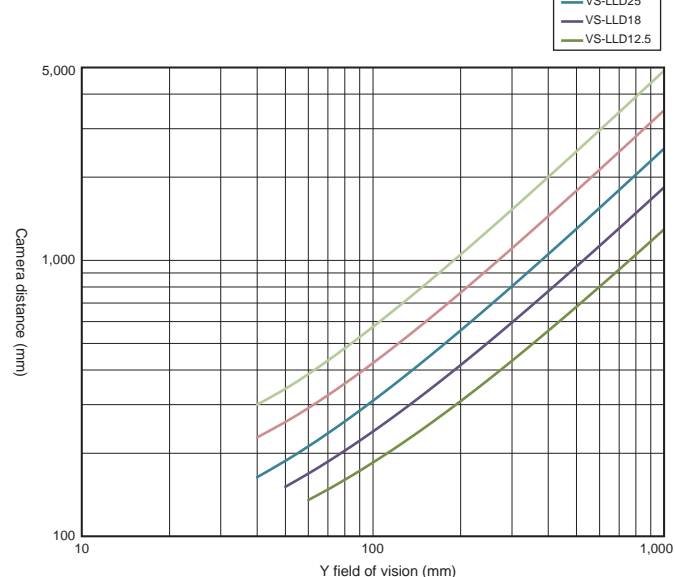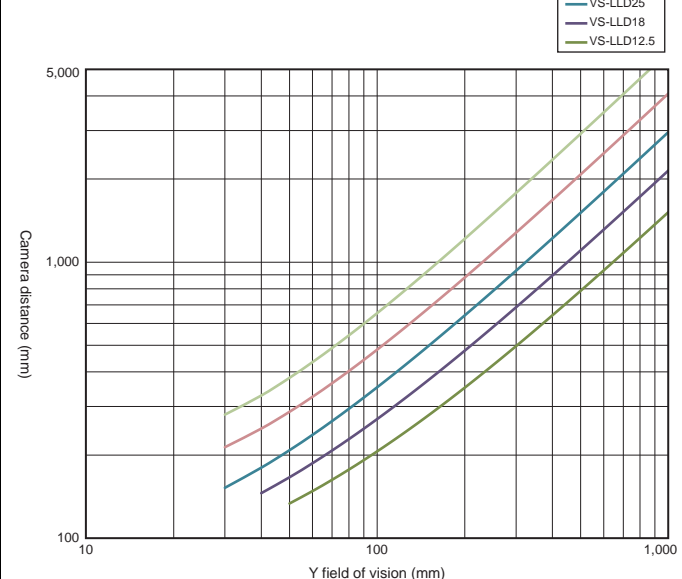Note: The 3Z4S-LE VS-HVA Series cannot be used with an extension tube.

3Z4S-LE [      ]

- VS-HVA1226
- VS-HVA1626
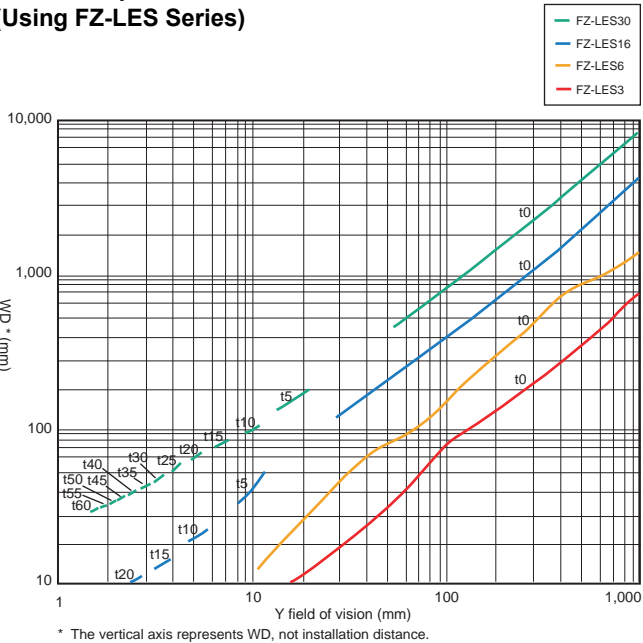- VS-HVA2524
- VS-HVA3522
- VS-HVA5024



## Digital CMOS Camera
## FH-S□21R
## 20.4 million-pixel
## (Using 3Z4S-LE VS-HVA Series)

Note: The 3Z4S-LE VS-HVA Series cannot be used with an extension tube.

3Z4S-LE [      ]

- VS-HVA1226
- VS-HVA1626
- VS-HVA2524
- VS-HVA3522
- VS-HVA5024



## High-speed Digital CMOS Camera
## FH-S□X12
## 12 million-pixel
## (Using 3Z4S-LE VS-LLD Series)

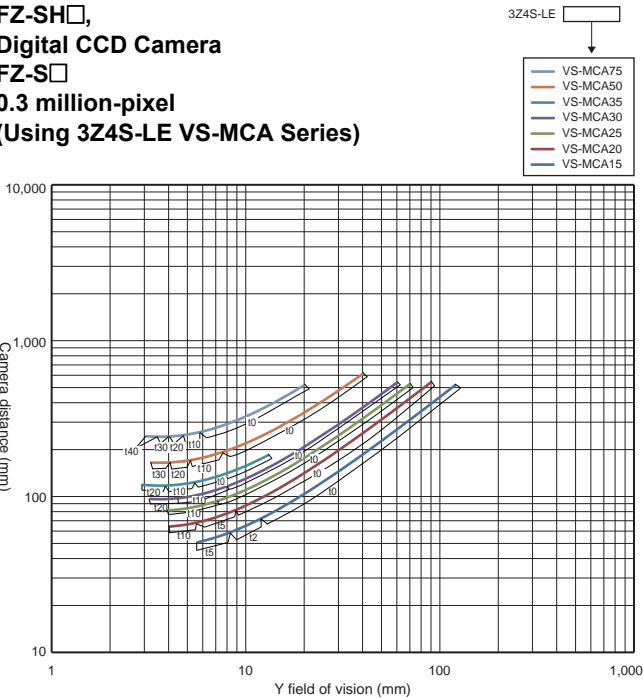Note: The 3Z4S-LE VS-LDD Series cannot be used with an extension tube.

3Z4S-LE [      ]

- VS-LLD50
- VS-LLD35
- VS-LLD25
- VS-LLD18
- VS-LLD12.5



## Digital CMOS Camera
## FH-S□21R
## 20.4 million-pixel
## (Using 3Z4S-LE VS-LLD Series)

Note: The 3Z4S-LE VS-LDD Series cannot be used with an extension tube.

3Z4S-LE [      ]

- VS-LLD50
- VS-LLD35
- VS-LLD25
- VS-LLD18
- VS-LLD12.5

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses

# Optical Chart

**Small Digital CCD Cameras**
**FZ-SF□,**
**FZ-SP□**
**0.3 million-pixel**
**(Using FZ-LES Series)**

— FZ-LES30
— FZ-LES16
— FZ-LES6
— FZ-LES3



WD * (mm) vs Y field of vision (mm)

t0, t5, t10, t15, t20, t25, t30, t35, t40, t45, t50, t55, t60

* The vertical axis represents WD, not installation distance.

# Vibrations and Shocks Resistant Lenses

**High-speed Digital CMOS Camera**
**FH-S□,**
**High-speed Digital CCD Camera**
**FZ-SH□,**
**Digital CCD Camera**
**FZ-S□**
**0.3 million-pixel**
**(Using 3Z4S-LE VS-MCA Series)**

3Z4S-LE

— VS-MCA75
— VS-MCA50
— VS-MCA35
— VS-MCA30
— VS-MCA25
— VS-MCA20
— VS-MCA15



Camera distance (mm) vs Y field of vision (mm)

**High-speed Digital CMOS Camera**
**FH-S□X**
**0.4 million-pixel**
**High-speed Digital CMOS Camera**
**FH-S□X01**
**1.6 million-pixel**
**(Using 3Z4S-LE VS-MCA Series)**

3Z4S-LE

— VS-MCA75
— VS-MCA50
— VS-MCA35
— VS-MCA30
— VS-MCA25
— VS-MCA20
— VS-MCA15



Camera distance (mm) vs Y field of vision (mm)

**Digital CCD Camera**
**FZ-S□2M**
**2 million-pixel**
**(Using 3Z4S-LE VS-MCA Series)**

3Z4S-LE

| | |
|---|---|
| | VS-MCA75 |
| | VS-MCA50 |
| | VS-MCA35 |
| | VS-MCA30 |
| | VS-MCA25 |
| | VS-MCA20 |
| | VS-MCA15 |



**High-speed Digital CMOS Camera**
**FH-S□X03**
**3.2 million-pixel**
**(Using 3Z4S-LE VS-MCA Series)**

3Z4S-LE

| | |
|---|---|
| | VS-MCA75 |
| | VS-MCA50 |
| | VS-MCA35 |
| | VS-MCA30 |
| | VS-MCA25 |
| | VS-MCA20 |
| | VS-MCA15 |



**Digital CMOS Camera FZ-S□5M3,**
**High-speed Digital CMOS Camera FH-S□X05**
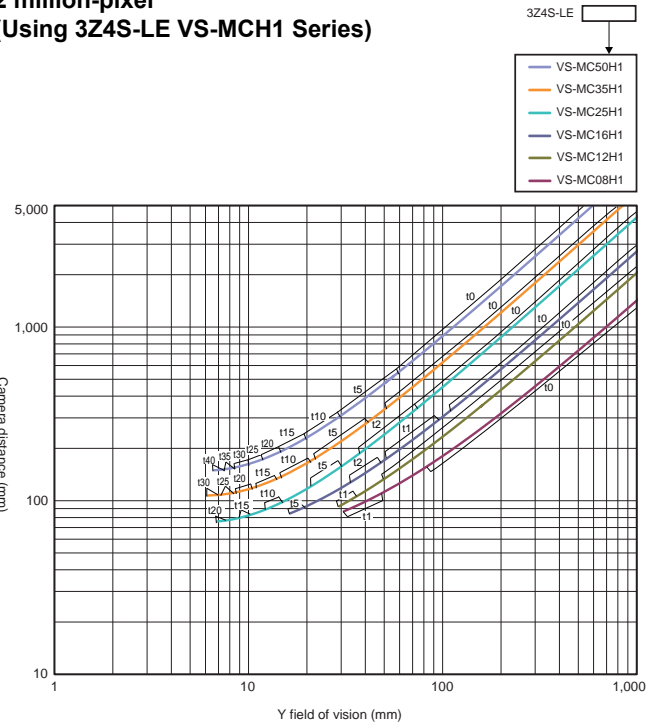**5 million-pixel**
**(Using 3Z4S-LE VS-MCA Series)**

3Z4S-LE

| | |
|---|---|
| | VS-MCA75 |
| | VS-MCA50 |
| | VS-MCA35 |
| | VS-MCA30 |
| | VS-MCA25 |
| | VS-MCA20 |
| | VS-MCA15 |



**Digital CMOS Camera**
**FH-S□05R**
**5 million-pixel**
**(Using 3Z4S-LE VS-MCA Series)**

3Z4S-LE

| | |
|---|---|
| | VS-MCA75 |
| | VS-MCA50 |
| | VS-MCA35 |
| | VS-MCA30 |
| | VS-MCA25 |
| | VS-MCA20 |
| | VS-MCA15 |
| | VS-MCA10 |
| | VS-MCA6.5 |
| | VS-MCA4 |



**OMRON**

**93**

# Optical Chart

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses

**High-speed Digital CMOS Camera**
**FH-S☐02**
**2 million-pixel**
**(Using 3Z4S-LE VS-MCH1 Series)**

3Z4S-LE ☐

- VS-MC50H1
- VS-MC35H1
- VS-MC25H1
- VS-MC16H1
- VS-MC12H1
- VS-MC08H1



**High-speed Digital CMOS Camera**
**FH-S☐04**
**4 million-pixel**
**(Using 3Z4S-LE VS-MCH1 Series)**

3Z4S-LE ☐

- VS-MC50H1
- VS-MC35H1
- VS-MC25H1
- VS-MC16H1
- VS-MC12H1
- VS-MC08H1



**Digital CMOS Camera**
**FH-S☐21R**
**20.4 million-pixel**
**(Using 3Z4S-LE VS-MCH1 Series)**

3Z4S-LE ☐

- VS-MC50H1
- VS-MC35H1
- VS-MC25H1
- VS-MC16H1
- VS-MC12H1
- VS-MC08H1
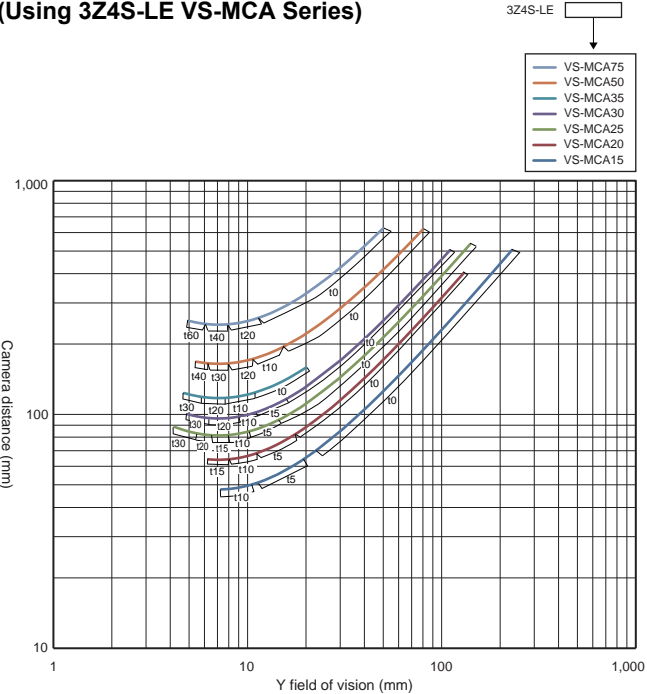
## Smart Camera FHV7 Series
## Standard Lenses

**0.4 million pixels**
**1.6 million pixels**
**Smart Cameras:**
**FHV7X-☐004, FHV7X-☐016**
**(for 3Z4S-LE SV-V series)**
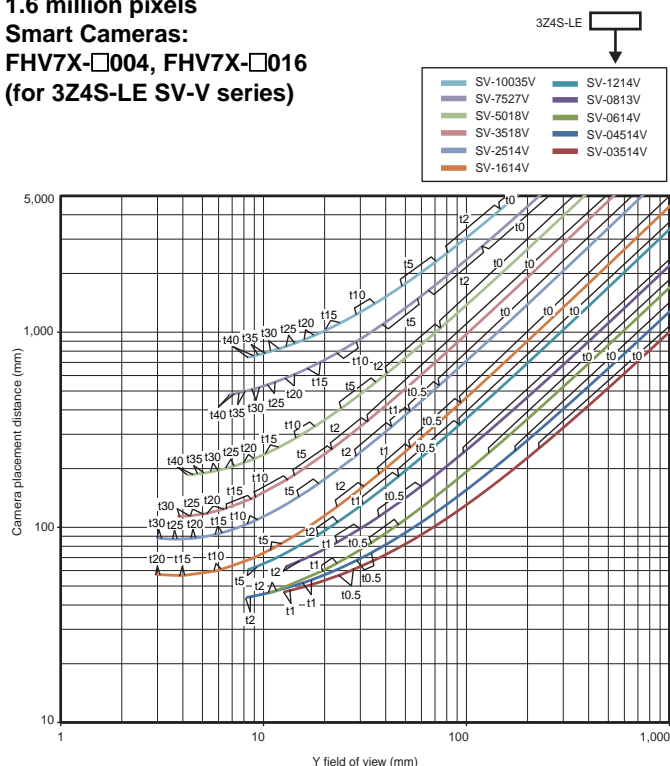
3Z4S-LE ☐

| | |
|---|---|
| SV-10035V | SV-1214V |
| SV-7527V | SV-0813V |
| SV-5018V | SV-0614V |
| SV-3518V | SV-04514V |
| SV-2514V | SV-03514V |
| SV-1614V | |



**0.4 million pixels**
**1.6 million pixels**
**Smart Cameras:**
**FHV7X-☐004, FHV7X-☐016**
**(for 3Z4S-LE SV-H series)**

3Z4S-LE ☐

| | |
|---|---|
| SV-10028H | SV-1614H |
| SV-7525H | SV-1214H |
| SV-5014H | SV-0814H |
| SV-3514H | SV-0614H |
| SV-2514H | |
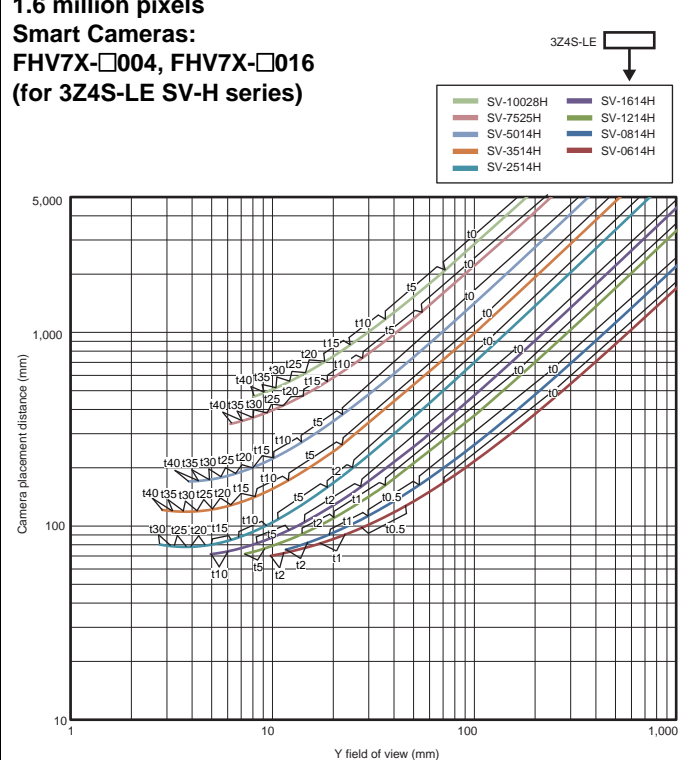
**3.2 million pixels**
**Smart Cameras: FHV7X-☐032**
**(for 3Z4S-LE SV-H series)**

3Z4S-LE ☐

| | |
|---|---|
| SV-10028H | SV-1614H |
| SV-7525H | SV-1214H |
| SV-5014H | SV-0814H |
| SV-3514H | SV-0614H |
| SV-2514H | |
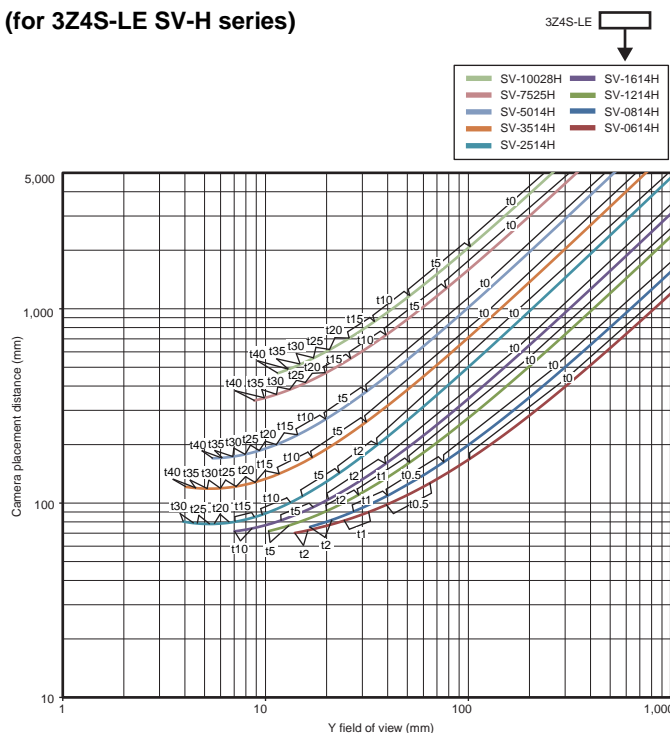


**5 million pixels**
**Smart Cameras: FHV7X-☐050**
**(for 3Z4S-LE SV-H series)**

3Z4S-LE ☐

| | |
|---|---|
| SV-10028H | SV-1614H |
| SV-7525H | SV-1214H |
| SV-5014H | SV-0814H |
| SV-3514H | SV-0614H |
| SV-2514H | |

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics

Lenses

# Optical Chart

## 6.3 million pixels
**Smart Cameras: FHV7X-□063R**
**(for 3Z4S-LE SV-H series)**

3Z4S-LE

| | |
|---|---|
| SV-10028H | SV-1614H |
| SV-7525H | SV-1214H |
| SV-5014H | SV-0814H |
| SV-3514H | SV-0614H |
| SV-2514H | |



## 12 million pixels
**Smart Cameras: FHV7X-□120R**
**(for 3Z4S-LE SV-H series)**

3Z4S-LE

| | |
|---|---|
| SV-10028H | SV-1614H |
| SV-7525H | SV-1214H |
| SV-5014H | SV-0814H |
| SV-3514H | SV-0614H |
| SV-2514H | |



## Vibrations and Shocks Resistant Lenses

### 0.4 million pixels
### 1.6 million pixels
**Smart Cameras: FHV7X-□004, FHV7X-□016**
**(for 3Z4S-LE VS-MCA series)**

3Z4S-LE

| | |
|---|---|
| VS-MCA75 | VS-MCA20 |
| VS-MCA50 | VS-MCA15 |
| VS-MCA35 | VS-MCA10 |
| VS-MCA30 | VS-MCA6.5 |
| VS-MCA25 | VS-MCA4 |



### 3.2 million pixels
**Smart Cameras: FHV7X-□032**
**(for 3Z4S-LE VS-MCA series)**

3Z4S-LE

| |
|---|
| VS-MCA75 |
| VS-MCA50 |
| VS-MCA35 |
| VS-MCA30 |
| VS-MCA25 |
| VS-MCA20 |
| VS-MCA15 |

**Standard Models
FLV Series**

**High-brightness Models
FL Series**

**LED Characteristics**

**Lenses**

**5 million pixels
Smart Cameras: FHV7X-☐050
(for 3Z4S-LE VS-MCA series)**
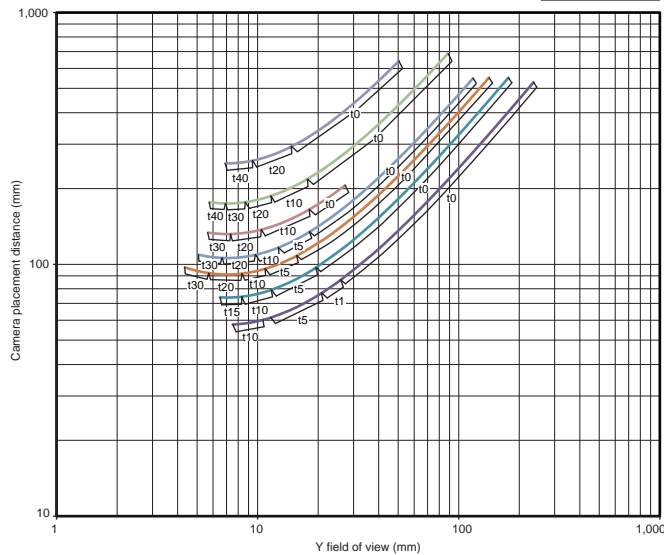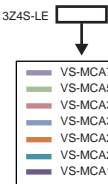
3Z4S-LE

| | |
|---|---|
| | VS-MCA75 |
| | VS-MCA50 |
| | VS-MCA35 |
| | VS-MCA30 |
| | VS-MCA25 |
| | VS-MCA20 |
| | VS-MCA15 |



**6.3 million pixels
Smart Cameras: FHV7X-☐063R
(for 3Z4S-LE VS-MCA series)**

3Z4S-LE

| | |
|---|---|
| | VS-MCA75 |
| | VS-MCA50 |
| | VS-MCA35 |
| | VS-MCA30 |
| | VS-MCA25 |
| | VS-MCA20 |
| | VS-MCA15 |



**12 million pixels
Smart Cameras: FHV7X-☐120R
(for 3Z4S-LE VS-MCA series)**

3Z4S-LE

| | |
|---|---|
| | VS-MCA75 |
| | VS-MCA50 |
| | VS-MCA35 |
| | VS-MCA30 |
| | VS-MCA25 |
| | VS-MCA20 |
| | VS-MCA15 |

Standard Models
FLV Series

High-brightness Models
FL Series

LED Characteristics
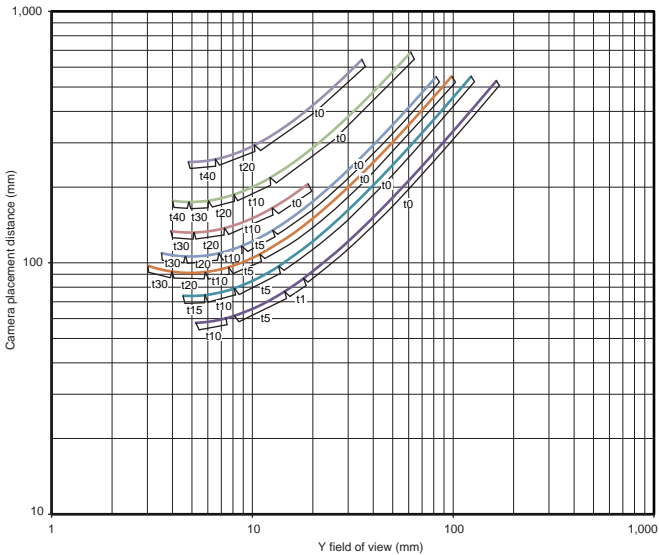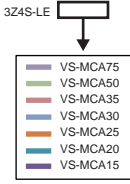
Lenses
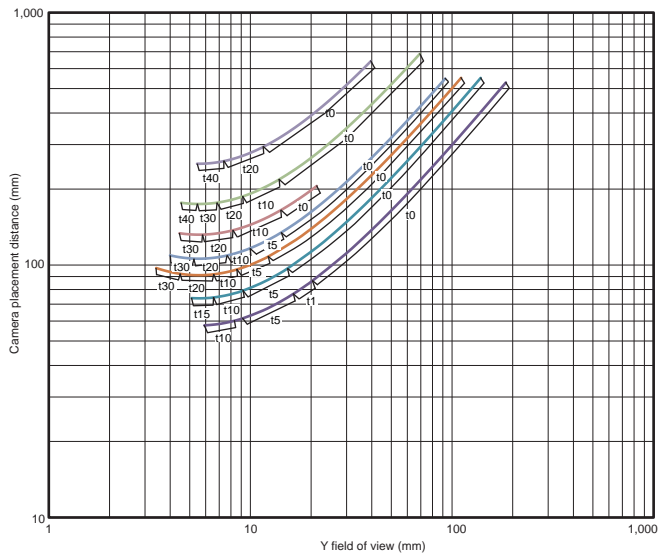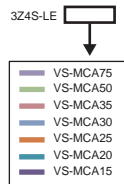
# Safety Precautions

## Precautions on Safety

### Meaning of Signal Word

In order for the product to be used safely, the following indication is used in this catalog to draw your attention to the cautions. The cautions with the indication describe the important contents for safety.

| ⚠ WARNING | Indicates a potentially hazardous situation which, if not avoided, will result in minor or moderate injury, or may result in serious injury or death. Additionally there may be significant property damage. |
|---|---|

| ⚠ CAUTION | Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or property damage. |
|---|---|

### Meaning of Alert Symbol

| 🚫 | Indicates general prohibitions for which there is no specific symbol. |
|---|---|

### Alert Statements

#### ⚠ WARNING

| This product is not designed or rated for ensuring safety of persons. Do not use it for such purposes. | 🚫 |
|---|---|

| It may cause permanent damage to vision. Do not look directly at the sun through the lens. | 🚫 |
|---|---|

## Precautions for Safe Use

The following points are important to ensure safety, so make sure that they are strictly observed.

**1. Installation and Storage Sites**

Do not install and store the product in locations subjected to the following conditions:
- Ambient temperature outside the rating
- Rapid temperature fluctuations (causing condensation)
- Presence of corrosive or flammable gases
- Presence of dust, salt, or iron particles
- Direct vibration or shock
- Strong ambient light (such as other laser beams or light from arc-welding machines)
- Direct sunlight or near heaters
- Water, oil, or chemical fumes or spray
- Near high-voltage equipment or power equipment

**2. Installation**
- Make sure to tighten all installation screws securely

**3. Others**
- Do not attempt to dismantle, repair, or modify the product.
- Do not drop, impose excessive vibration or shock on the product.
- If you notice an abnormal condition, immediately stop using the product and consult your OMRON representative.
- Be sure to dispose of the product as industrial waste.

## Precautions for Correct Use

Observe the following precautions to prevent failure to operate, malfunctions, or undesirable effects on product performance.

**1. Maintenance**
- Clean the lens with a lens-cleaning cloth or air brush.
- Avoid blowing off foreign matter with your breath. Do not use thinner, benzene, acetone, or kerosene.

**2. Using with Product from Other Manufacturer**
- Refer to the manual of the product from other manufacturer for installation and replacement.

**3. Others**
- After removing the lens from the camera, do not leave it in a place exposed to direct sunlight. Failure to do so may cause a fire.

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Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

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**Note: Do not use this document to operate the Unit.**

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