# FLV-DR Series/-DL Series

#### **Order Information**

|                  |              |                   |                    |               | Connectable Option    | Connectable Ligh                                      | nting Controller *                              |            |
|------------------|--------------|-------------------|--------------------|---------------|-----------------------|---|---|------------|
|                  | Model        | Light Color       | Electricity<br>(W) | Weight<br>(g) | Diffusion Plates      | Camera-mount<br>Lighting Controller<br>FLV-TCC Series | Analog Lighting<br>Controller<br>FLV-ATC Series | Dimensions |
| Direct           | FLV-DR3220W  | White             | 1.2                | 60            | FLV-DR3220DF          | 0   | 0   | Α          |
| Ring             | FLV-DR3220R  | Red               | 1.2                | 60            | FLV-DR3220DF          | 0   | 0   | Α          |
| Lighting         | FLV-DR3220B  | Blue              | 1.2                | 60            | FLV-DR3220DF          | 0   | 0   | Α          |
|                  | FLV-DR5030W  | White             | 2.4                | 60            | FLV-DR5030DF          | 0   | 0   | В          |
|                  | FLV-DR5030R  | Red               | 1.6                | 60            | FLV-DR5030DF          | 0   | 0   | В          |
|                  | FLV-DR5030B  | Blue              | 2.4                | 60            | FLV-DR5030DF          | 0   | 0   | В          |
|                  | FLV-DR5030IR | Infrared Light    | 1.5                | 60            | FLV-DR5030DF          | 0   | 0   | В          |
|                  | FLV-DR5030UV | Ultraviolet Light | 2.9                | 60            | FLV-DR5030DF          | 0   | 0   | В          |
|                  | FLV-DR6615W  | White             | 3.4                | 120           | FLV-DR6615DF          | 0   | 0   | С          |
|                  | FLV-DR6615R  | Red               | 2.4                | 120           | FLV-DR6615DF          | 0   | 0   | С          |
|                  | FLV-DR6615B  | Blue              | 3.4                | 120           | FLV-DR6615DF          | 0   | 0   | С          |
|                  | FLV-DR7000W  | White             | 3.6                | 110           | FLV-DR7000DF          | 0   | 0   | D          |
|                  | FLV-DR7000R  | Red               | 2.4                | 110           | FLV-DR7000DF          | 0   | 0   | D          |
|                  | FLV-DR7000B  | Blue              | 3.6                | 110           | FLV-DR7000DF          | 0   | 0   | D          |
|                  | FLV-DR7030W  | White             | 3.6                | 120           | FLV-DR7030DF          | 0   | 0   | E          |
|                  | FLV-DR7030R  | Red               | 2.4                | 120           | FLV-DR7030DF          | 0   | 0   | E          |
|                  | FLV-DR7030B  | Blue              | 3.6                | 120           | FLV-DR7030DF          | 0   | ©   | E          |
|                  | FLV-DR7030IR | Infrared Light    | 2.4                | 120           | FLV-DR7030DF          | 0   | ©   | E          |
|                  | FLV-DR7030UV | Ultraviolet Light | 5.3                | 120           | FLV-DR7030DF          | 0   | ©   | E          |
|                  | FLV-DR9000W  | White             | 6.3                | 230           | FLV-DR9000DF          | 0   |   | F          |
|                  | FLV-DR9000R  | Red               | 4.4                | 230           | FLV-DR9000DF          | 0   |   | F          |
|                  | FLV-DR9000B  | Blue              | 6.3                | 230           | FLV-DR9000DF          | 0   |   | F          |
|                  | FLV-DR9030W  | White             | 5.8                | 200           | FLV-DR9030DF          | 0   |   | G          |
|                  | FLV-DR9030R  | Red               | 4.4                | 200           | FLV-DR9030DF          | 0   |   | G          |
|                  | FLV-DR9030B  | Blue              | 5.8                | 200           | FLV-DR9030DF          | 0   |   | G          |
|                  | FLV-DR9030IR | Infrared Light    | 3.9                | 200           | FLV-DR9030DF          | 0   |   | G          |
|                  | FLV-DR9030UV | Ultraviolet Light | 6.8                | 200           | FLV-DR9030DF          | 0   |   | G          |
|                  | FLV-DR9215W  | White             | 5.3                | 200           | FLV-DR9215DF          | 0   |   | Н          |
|                  | FLV-DR9215R  | Red               | 4.6                | 200           | FLV-DR9215DF          | 0   |   | Н          |
|                  | FLV-DR9215B  | Blue              | 5.3                | 200           | FLV-DR9215DF          | 0   | ©   | Н          |
|                  | FLV-DR12030W | White             | 8.7                | 360           | FLV-DR12030DF         | 0   | ©   | I          |
|                  | FLV-DR12030R | Red               | 6.5                | 360           | FLV-DR12030DF         | 0   | ©   | I          |
|                  | FLV-DR12030B | Blue              | 8.7                | 360           | FLV-DR12030DF         | 0   | ©   | I          |
| Low              | FLV-DL5890W  | White             | 1.6                | 90            | FLV-DL5890DF          | 0   | ©   | J          |
| Angle            | FLV-DL5890R  | Red               | 1.2                | 90            | FLV-DL5890DF          | 0   |   | J          |
| Ring<br>Lighting | FLV-DL5890B  | Blue              | 1.6                | 90            | FLV-DL5890DF          | 0   |   | J          |
| Ligituig         | FLV-DL7260W  | White             | 4.4                | 120           | FLV-DL7260DF          | 0   | ©   | К          |
|                  | FLV-DL7260R  | Red               | 3.5                | 120           | FLV-DL7260DF          | 0   |   | К          |
|                  | FLV-DL7260B  | Blue              | 4.4                | 120           | FLV-DL7260DF          | 0   | 0   | K          |
|                  | FLV-DL9090W  | White             | 2.4                | 100           | -                     | 0   | ©   | L          |
|                  | FLV-DL9090R  | Red               | 1.6                | 100           | -                     | 0   | ©   | L          |
|                  | FLV-DL9090B  | Blue              | 2.4                | 100           | -                     | 0   | ©   | L          |
|                  | FLV-DL12060W | White             | 11.6               | 310           | FLV-DL12060DF         | 0   |   | М          |
|                  | FLV-DL12060R | Red               | 7.7                | 310           | FLV-DL12060DF         | 0   |   | М          |
|                  | FLV-DL12060B | Blue              | 11.6               | 310           | FLV-DL12060DF         | Ö   |   | М          |
|                  | FLV-DL15060W | White             | 13.5               | 260           | FLV-DL15060DF         | Ö   |   | N          |
|                  | FLV-DL15060R | Red               | 10.1               | 260           | FLV-DL15060DF         | Ö   |   | N          |
|                  | FLV-DL15060B | Blue              | 13.5               | 260           | FLV-DL15060DF         | 0   | 0   | N          |
| لا: The tob      | 1            |                   |                    | l             | ng Controllers When m |   |   |            |

<sup>\*:</sup> The table shows whether each Lighting can be connected to Lighting Controllers. When multiple Lightings are connected to a Lighting Controller, make sure that the total electricity of all connected Lightings does not exceed the electricity of connectable lighting of each Lighting Controller.

Connectable. Light can be continuously emitted.

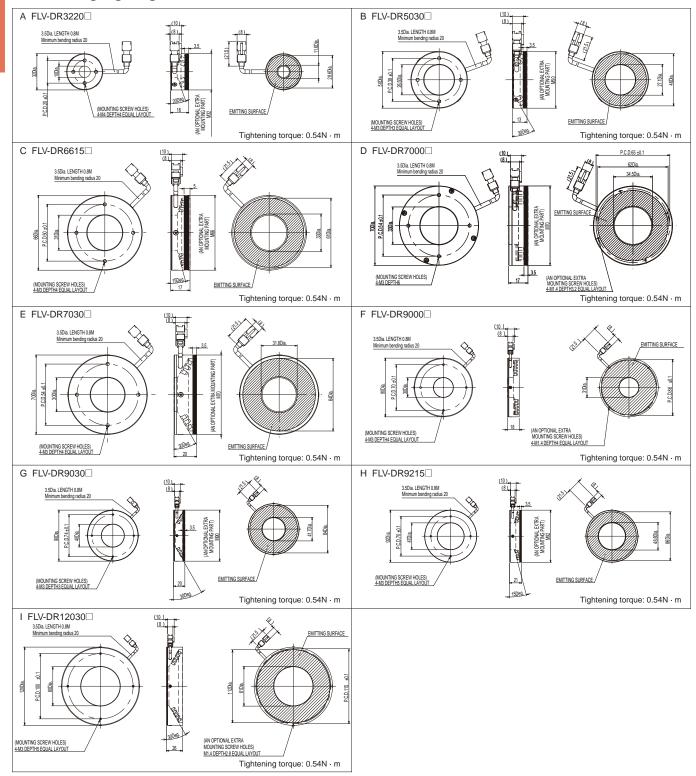
<sup>:</sup> Connectable. Light can be emitted only while the trigger is input.

X: Not connectable

#### Direct Ring Lighting/Low Angle Ring Lighting FLV-DR Series/-DL Series

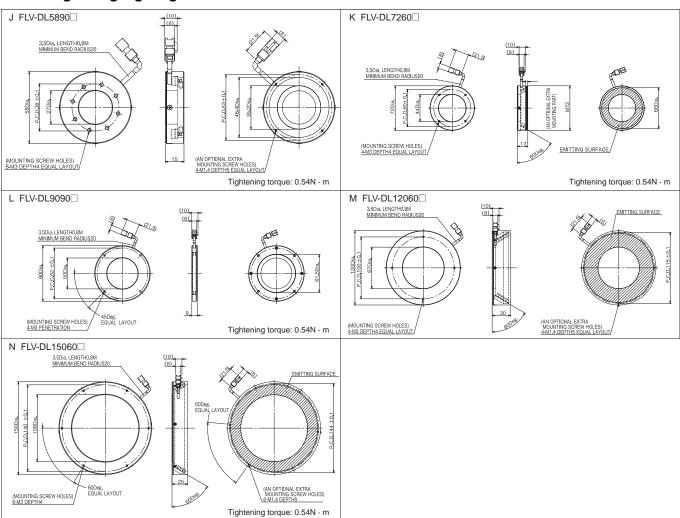
#### **Dimensions**

#### **●**Direct Ring Lighting



## Direct Ring Lighting/Low Angle Ring Lighting FLV-DR Series/-DL Series

#### **●Low Angle Ring Lighting**



# **Bar Lighting FLV-BR Series**

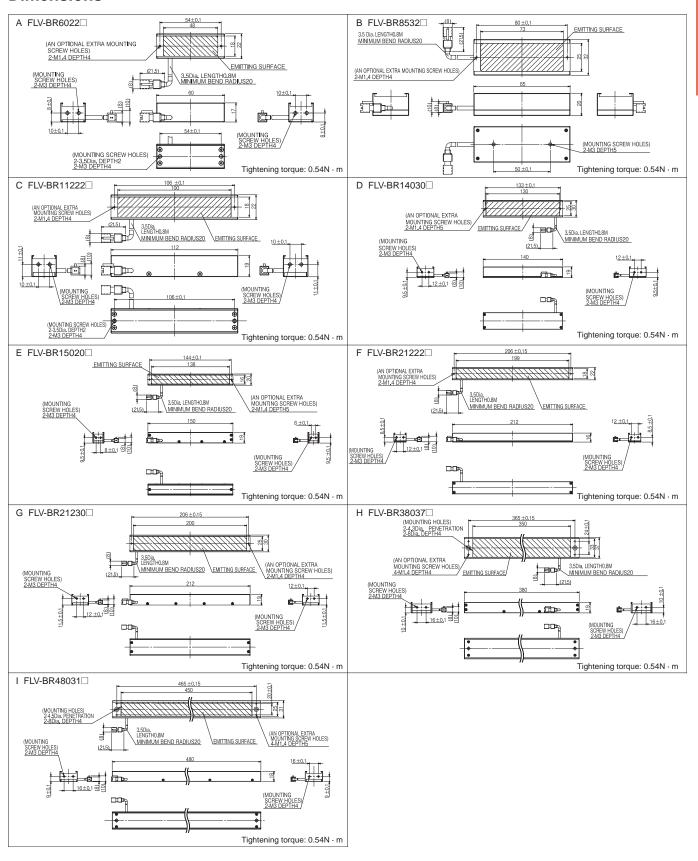
#### **Order Information**

|               |                   |                    |               | Connectable Option | Connectable Light                                     | ting Controller *                               |            |
|---------------|-------------------|--------------------|---------------|--------------------|---|---|------------|
| Model         | Light Color       | Electricity<br>(W) | Weight<br>(g) | Diffusion Plates   | Camera-mount<br>Lighting Controller<br>FLV-TCC Series | Analog Lighting<br>Controller<br>FLV-ATC Series | Dimensions |
| FLV-BR6022W   | White             | 1.2                | 60            | FLV-BR6022DF       | 0   | 0   | Α          |
| FLV-BR6022R   | Red               | 1.2                | 60            | FLV-BR6022DF       | 0   | 0   | Α          |
| FLV-BR6022B   | Blue              | 1.2                | 60            | FLV-BR6022DF       | 0   | 0   | Α          |
| FLV-BR6022IR  | Infrared Light    | 0.9                | 60            | FLV-BR6022DF       | 0   | 0   | Α          |
| FLV-BR6022UV  | Ultraviolet Light | 1.7                | 60            | FLV-BR6022DF       | 0   | 0   | Α          |
| FLV-BR8532W   | White             | 3.9                | 130           | FLV-BR8532DF       | 0   | 0   | В          |
| FLV-BR8532R   | Red               | 2.9                | 130           | FLV-BR8532DF       | 0   | 0   | В          |
| FLV-BR8532B   | Blue              | 3.9                | 130           | FLV-BR8532DF       | 0   | 0   | В          |
| FLV-BR11222W  | White             | 2.4                | 100           | FLV-BR11222DF      | 0   | 0   | С          |
| FLV-BR11222R  | Red               | 2                  | 100           | FLV-BR11222DF      | 0   | 0   | С          |
| FLV-BR11222B  | Blue              | 2.4                | 100           | FLV-BR11222DF      | 0   | 0   | С          |
| FLV-BR11222IR | Infrared Light    | 1.7                | 100           | FLV-BR11222DF      | 0   | 0   | С          |
| FLV-BR11222UV | Ultraviolet Light | 3.9                | 100           | FLV-BR11222DF      | 0   | 0   | С          |
| FLV-BR14030W  | White             | 6                  | 140           | FLV-BR14030DF      | 0   | 0   | D          |
| FLV-BR14030R  | Red               | 4.1                | 140           | FLV-BR14030DF      | 0   | 0   | D          |
| FLV-BR14030B  | Blue              | 6                  | 140           | FLV-BR14030DF      | 0   | 0   | D          |
| FLV-BR15020W  | White             | 2.9                | 120           | FLV-BR15020DF      | 0   | 0   | E          |
| FLV-BR15020R  | Red               | 2.4                | 120           | FLV-BR15020DF      | 0   | 0   | E          |
| FLV-BR15020B  | Blue              | 2.9                | 120           | FLV-BR15020DF      | 0   | 0   | E          |
| FLV-BR21222W  | White             | 6                  | 140           | FLV-BR21222DF      | 0   | 0   | F          |
| FLV-BR21222R  | Red               | 4.4                | 140           | FLV-BR21222DF      | 0   | 0   | F          |
| FLV-BR21222B  | Blue              | 6                  | 140           | FLV-BR21222DF      | 0   | 0   | F          |
| FLV-BR21230W  | White             | 8.4                | 220           | FLV-BR21230DF      | 0   | 0   | G          |
| FLV-BR21230R  | Red               | 6.8                | 220           | FLV-BR21230DF      | 0   | 0   | G          |
| FLV-BR21230B  | Blue              | 8.4                | 220           | FLV-BR21230DF      | 0   | 0   | G          |
| FLV-BR21230IR | Infrared Light    | 6                  | 220           | FLV-BR21230DF      | 0   | 0   | G          |
| FLV-BR21230UV | Ultraviolet Light | 13                 | 220           | FLV-BR21230DF      | 0   | 0   | G          |
| FLV-BR38037W  | White             | 14.9               | 430           | FLV-BR48031DF      | 0   | 0   | Н          |
| FLV-BR38037R  | Red               | 11.6               | 430           | FLV-BR48031DF      | 0   | 0   | Н          |
| FLV-BR38037B  | Blue              | 14.9               | 430           | FLV-BR48031DF      | 0   | 0   | Н          |
| FLV-BR48031W  | White             | 17.6               | 460           | FLV-BR48031DF      | ×   | 0   | I          |
| FLV-BR48031R  | Red               | 15.9               | 460           | FLV-BR48031DF      | ×   | 0   | I          |
| FLV-BR48031B  | Blue              | 17.6               | 460           | FLV-BR48031DF      | ×   | 0   | I          |

<sup>\*:</sup> The table shows whether each Lighting can be connected to Lighting Controllers. When multiple Lightings are connected to a Lighting Controller, make sure that the total electricity of all connected Lightings does not exceed the electricity of connectable lighting of each Lighting Controller.

<sup>©:</sup> Connectable. Light can be continuously emitted.Connectable. Light can be emitted only while the trigger is input.

X: Not connectable



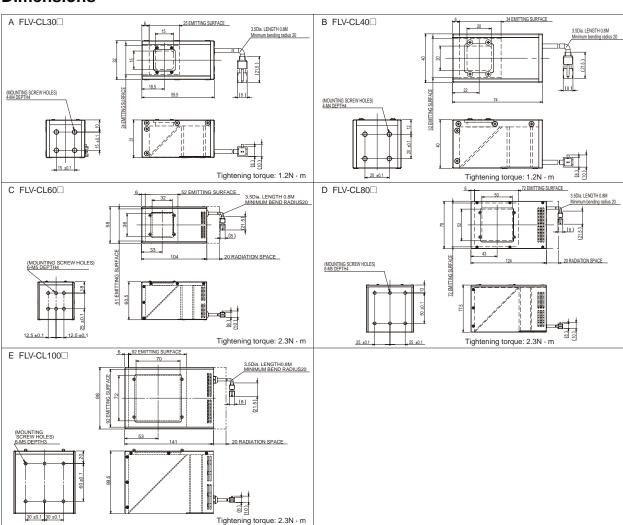
# **FLV-CL Series**

#### **Order Information**

|            |                   | Electricity        | Wajaht        | Connectable Lighting                            | Controller *                              |            |
|------------|-------------------|--------------------|---------------|---|---|------------|
| Model      | Light Color       | Electricity<br>(W) | Weight<br>(g) | Camera-mount Lighting Controller FLV-TCC Series | Analog Lighting Controller FLV-ATC Series | Dimensions |
| FLV-CL30W  | White             | 2                  | 110           | ©   | ©   | Α          |
| FLV-CL30R  | Red               | 1.1                | 110           | ©   | ©   | Α          |
| FLV-CL30B  | Blue              | 2                  | 110           | ©   | ©   | Α          |
| FLV-CL40W  | White             | 3.6                | 170           | ©   | ©   | В          |
| FLV-CL40R  | Red               | 2.2                | 170           | ©   | ©   | В          |
| FLV-CL40B  | Blue              | 3.6                | 170           | ©   | ©   | В          |
| FLV-CL60W  | White             | 9.2                | 380           | 0   | ©   | С          |
| FLV-CL60R  | Red               | 4.8                | 380           | ©   | ©   | С          |
| FLV-CL60B  | Blue              | 9.2                | 380           | 0   | 0   | С          |
| FLV-CL60IR | Infrared Light    | 3.9                | 380           | ©   | ©   | С          |
| FLV-CL60UV | Ultraviolet Light | 9.2                | 380           | 0   | ©   | С          |
| FLV-CL80W  | White             | 14.4               | 580           | 0   | ©   | D          |
| FLV-CL80R  | Red               | 9.6                | 580           | 0   | ©   | D          |
| FLV-CL80B  | Blue              | 14.4               | 580           | 0   | 0   | D          |
| FLV-CL100W | White             | 21.2               | 820           | ×   | 0   | E          |
| FLV-CL100R | Red               | 14                 | 820           | 0   | 0   | E          |
| FLV-CL100B | Blue              | 21.2               | 820           | ×   | 0   | E          |

<sup>\*:</sup> The table shows whether each Lighting can be connected to Lighting Controllers. When multiple Lightings are connected to a Lighting Controller, make sure that the total electricity of all connected Lightings does not exceed the electricity of connectable lighting of each Lighting Controller.

©: Connectable. Light can be continuously emitted. 
©: Connectable. Light can be emitted only while the trigger is input. 
X: Not connectable

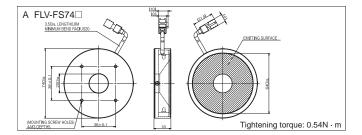


# **FLV-FS Series**

#### **Order Information**

| Model Ligi |             | Electricity | Weight (g) | Connectable Lighting                            |   |            |
|------------|-------------|-------------|------------|---|---|------------|
|            | Light Color | (W)         |            | Camera-mount Lighting Controller FLV-TCC Series | Analog Lighting Controller FLV-ATC Series | Dimensions |
| FLV-FS74W  | White       | 4.1         | 140        | ©   | ©   | Α          |
| FLV-FS74R  | Red         | 2.9         | 140        | ©   | ©   | Α          |
| FLV-FS74B  | Blue        | 4.1         | 140        | 0   | ©   | Α          |

- \*: The table shows whether each Lighting can be connected to Lighting Controllers. When multiple Lightings are connected to a Lighting Controller, make sure that the total electricity of all connected Lightings does not exceed the electricity of connectable lighting of each Lighting Controller.
  - Connectable. Light can be continuously emitted.
  - : Connectable. Light can be emitted only while the trigger is input. X: Not connectable



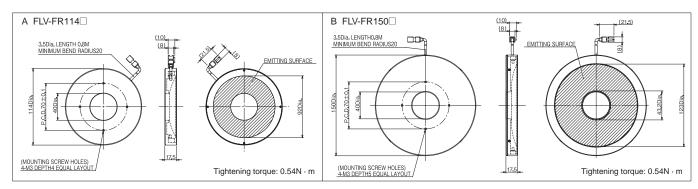
# **FLV-FR Series**

#### **Order Information**

|            |             | Electricity | Weight | Connectable Lighting                            |   |            |
|------------|-------------|-------------|--------|---|---|------------|
| Model      | Light Color | (W)         | (g)    | Camera-mount Lighting Controller FLV-TCC Series | Analog Lighting Controller FLV-ATC Series | Dimensions |
| FLV-FR114W | White       | 3.2         | 270    | ©   | ©   | Α          |
| FLV-FR114R | Red         | 2.4         | 270    | ©   | ©   | Α          |
| FLV-FR114B | Blue        | 3.2         | 270    | ©   | ©   | Α          |
| FLV-FR150W | White       | 4.8         | 500    | ©   | ©   | В          |
| FLV-FR150R | Red         | 2.9         | 500    | ©   | ©   | В          |
| FLV-FR150B | Blue        | 4.8         | 500    | ©   | ©   | В          |

- \*: The table shows whether each Lighting can be connected to Lighting Controllers. When multiple Lightings are connected to a Lighting Controller, make sure that the total electricity of all connected Lightings does not exceed the electricity of connectable lighting of each Lighting Controller.
  - Connectable. Light can be continuously emitted.
  - Connectable. Light can be emitted only while the trigger is input.

    X: Not connectable



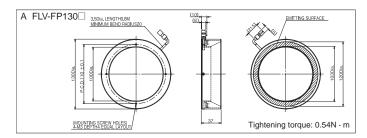
# **Shadowless Lighting**

# **FLV-FP Series**

#### **Order Information**

| Model      |             | Electricity (W) | Weight (g) | Connectable Lighting                            |   |            |
|------------|-------------|-----------------|------------|---|---|------------|
|            | Light Color |                 |            | Camera-mount Lighting Controller FLV-TCC Series | Analog Lighting Controller FLV-ATC Series | Dimensions |
| FLV-FP130W | White       | 6.8             | 320        | ©   | ©   | Α          |
| FLV-FP130R | Red         | 6               | 320        | ©   | ©   | Α          |
| FLV-FP130B | Blue        | 6.8             | 320        | 0   | 0   | Α          |

- \*: The table shows whether each Lighting can be connected to Lighting Controllers. When multiple Lightings are connected to a Lighting Controller, make sure that the total electricity of all connected Lightings does not exceed the electricity of connectable lighting of each Lighting Controller.
  - Connectable. Light can be continuously emitted.
  - Connectable. Light can be emitted only while the trigger is input.
     X: Not connectable

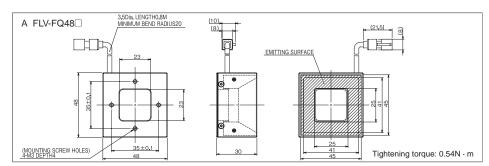


# FLV-FQ Series

#### **Order Information**

|           | Model Light Color Electricit (W) | Electricity | Weight - (g) | Connectable Lighting                            |   |            |
|-----------|----------------------------------|-------------|--------------|---|---|------------|
| Model     |                                  |             |              | Camera-mount Lighting Controller FLV-TCC Series | Analog Lighting Controller FLV-ATC Series | Dimensions |
| FLV-FQ48W | White                            | 1.8         | 100          | ©   | ©   | Α          |
| FLV-FQ48R | Red                              | 1.1         | 100          | ©   | ©   | Α          |
| FLV-FQ48B | Blue                             | 1.8         | 100          | ©   | ©   | Α          |

- \*: The table shows whether each Lighting can be connected to Lighting Controllers. When multiple Lightings are connected to a Lighting Controller, make sure that the total electricity of all connected Lightings does not exceed the electricity of connectable lighting of each Lighting Controller.
  - Connectable. Light can be continuously emitted.
  - Connectable. Light can be emitted only while the trigger is input.
     Not connectable

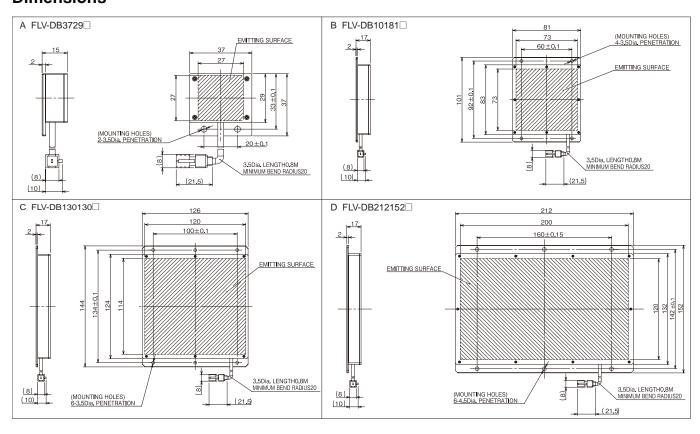


# **FLV-DB Series**

#### **Order Information**

|               |             | Electricity (W) | Weight (g) | Connectable Lighting                            | g Controller *                            |            |
|---------------|-------------|-----------------|------------|---|---|------------|
| Model         | Light Color |                 |            | Camera-mount Lighting Controller FLV-TCC Series | Analog Lighting Controller FLV-ATC Series | Dimensions |
| FLV-DB3729W   | White       | 0.9             | 50         | ©   | 0   | А          |
| FLV-DB3729R   | Red         | 0.9             | 50         | ©   | 0   | Α          |
| FLV-DB3729B   | Blue        | 0.9             | 50         | ©   | 0   | Α          |
| FLV-DB10181W  | White       | 8               | 160        | 0   | 0   | В          |
| FLV-DB10181R  | Red         | 4.8             | 160        | ©   | 0   | В          |
| FLV-DB10181B  | Blue        | 8               | 160        | 0   | 0   | В          |
| FLV-DB130130W | White       | 15.2            | 270        | ×   | 0   | С          |
| FLV-DB130130R | Red         | 10.1            | 270        | 0   | 0   | С          |
| FLV-DB130130B | Blue        | 15.2            | 270        | ×   | 0   | С          |
| FLV-DB212152W | White       | 28.8            | 510        | ×   | 0   | D          |
| FLV-DB212152R | Red         | 17.3            | 510        | ×   | 0   | D          |
| FLV-DB212152B | Blue        | 28.8            | 510        | ×   | 0   | D          |

- \*: The table shows whether each Lighting can be connected to Lighting Controllers. When multiple Lightings are connected to a Lighting Controller, make sure that the total electricity of all connected Lightings does not exceed the electricity of connectable lighting of each Lighting Controller.
  - Connectable. Light can be continuously emitted.
  - : Connectable. Light can be emitted only while the trigger is input.
  - X: Not connectable



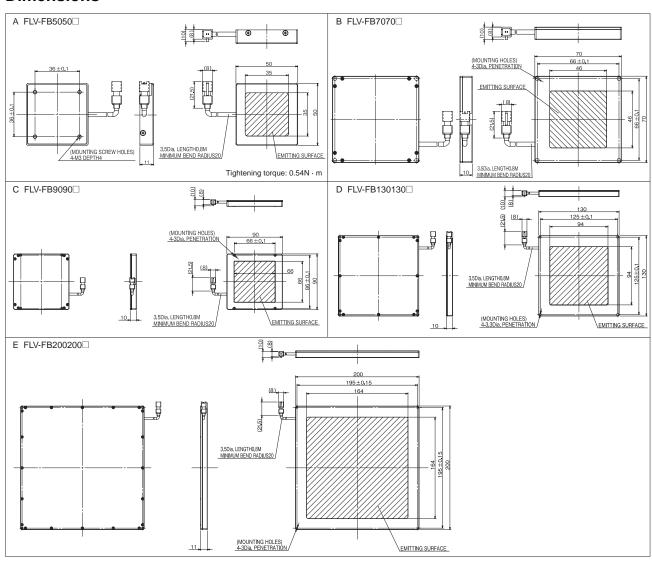
# **FLV-FB Series**

#### **Order Information**

|               |             | Electricity | VA/a:a:b.4    | Connectable Lighting                            | g Controller *                            |            |
|---------------|-------------|-------------|---------------|---|---|------------|
| Model         | Light Color | (W)         | Weight<br>(g) | Camera-mount Lighting Controller FLV-TCC Series | Analog Lighting Controller FLV-ATC Series | Dimensions |
| FLV-FB5050W   | White       | 1.8         | 80            | ©   | ©   | Α          |
| FLV-FB5050R   | Red         | 0.9         | 80            | ©   | ©   | Α          |
| FLV-FB5050B   | Blue        | 1.8         | 80            | ©   | ©   | Α          |
| FLV-FB7070W   | White       | 1.8         | 90            | ©   | ©   | В          |
| FLV-FB7070R   | Red         | 1.8         | 90            | ©   | ©   | В          |
| FLV-FB7070B   | Blue        | 1.8         | 90            | ©   | ©   | В          |
| FLV-FB9090W   | White       | 3.4         | 160           | ©   | ©   | С          |
| FLV-FB9090R   | Red         | 1.8         | 160           | ©   | ©   | С          |
| FLV-FB9090B   | Blue        | 3.4         | 160           | ©   | ©   | С          |
| FLV-FB130130W | White       | 5.3         | 230           | ©   | ©   | D          |
| FLV-FB130130R | Red         | 2.7         | 230           | ©   | ©   | D          |
| FLV-FB130130B | Blue        | 5.3         | 230           | ©   | ©   | D          |
| FLV-FB200200W | White       | 6.8         | 710           | ©   | 0   | E          |
| FLV-FB200200R | Red         | 5.1         | 710           | ©   | 0   | E          |
| FLV-FB200200B | Blue        | 6.8         | 710           | 0   | 0   | E          |

<sup>\*:</sup> The table shows whether each Lighting can be connected to Lighting Controllers. When multiple Lightings are connected to a Lighting Controller, make sure that the total electricity of all connected Lightings does not exceed the electricity of connectable lighting of each Lighting Controller.

©: Connectable. Light can be emitted only while the trigger is input. X: Not connectable



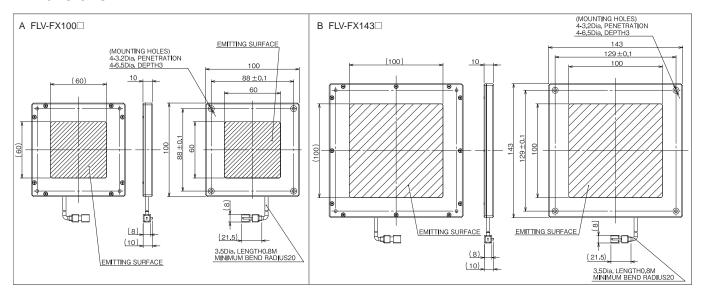
# **Edge Type Coaxial Lighting**

# **FLV-FX Series**

#### **Order Information**

|               |             | Electricity | Weight (g) | Connectable Lighting                            |   |            |
|---------------|-------------|-------------|------------|---|---|------------|
| Model Light C | Light Color | (W)         |            | Camera-mount Lighting Controller FLV-TCC Series | Analog Lighting Controller FLV-ATC Series | Dimensions |
| FLV-FX100W    | White       | 3.9         | 180        | ©   | 0   | A          |
| FLV-FX100R    | Red         | 2           | 180        | ©   | 0   | Α          |
| FLV-FX100B    | Blue        | 3.9         | 180        | ©   | 0   | Α          |
| FLV-FX143W    | White       | 5.3         | 240        | ©   | 0   | В          |
| FLV-FX143R    | Red         | 3.9         | 240        | ©   | 0   | В          |
| FLV-FX143B    | Blue        | 5.3         | 240        | ©   | 0   | В          |

- \*: The table shows whether each Lighting can be connected to Lighting Controllers. When multiple Lightings are connected to a Lighting Controller, make sure that the total electricity of all connected Lightings does not exceed the electricity of connectable lighting of each Lighting Controller.
  - O: Connectable. Light can be continuously emitted.
  - Connectable. Light can be emitted only while the trigger is input. X: Not connectable

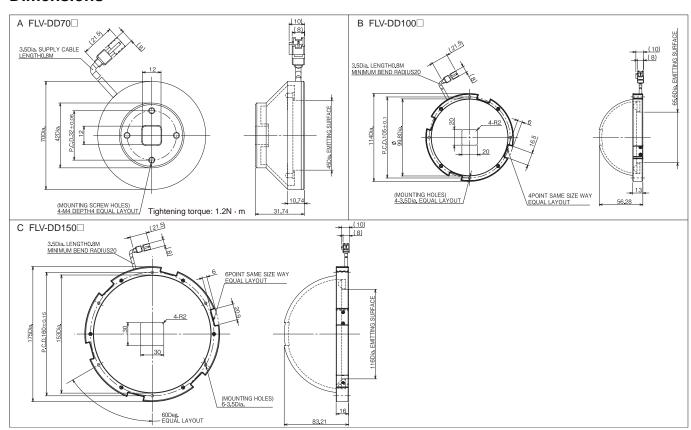


# **FLV-DD Series**

#### **Order Information**

|            | Light Color | Electricity (W) | Weight (g) | Connectable Lighting                            |   |            |
|------------|-------------|-----------------|------------|---|---|------------|
| Model      |             |                 |            | Camera-mount Lighting Controller FLV-TCC Series | Analog Lighting Controller FLV-ATC Series | Dimensions |
| FLV-DD70W  | White       | 2               | 130        | ©   | ©   | Α          |
| FLV-DD70R  | Red         | 2               | 130        | ©   | ©   | А          |
| FLV-DD70B  | Blue        | 2               | 130        | ©   | ©   | А          |
| FLV-DD100W | White       | 14.4            | 210        | 0   | ©   | В          |
| FLV-DD100R | Red         | 9.6             | 210        | 0   | ©   | В          |
| FLV-DD100B | Blue        | 14.4            | 210        | 0   | ©   | В          |
| FLV-DD150W | White       | 14.4            | 490        | 0   | ©   | С          |
| FLV-DD150R | Red         | 9.6             | 490        | 0   | 0   | С          |
| FLV-DD150B | Blue        | 14.4            | 490        | 0   | 0   | С          |

- \*: The table shows whether each Lighting can be connected to Lighting Controllers. When multiple Lightings are connected to a Lighting Controller, make sure that the total electricity of all connected Lightings does not exceed the electricity of connectable lighting of each Lighting Controller.
  - Connectable. Light can be continuously emitted.
  - Connectable. Light can be emitted only while the trigger is input.
     Not connectable

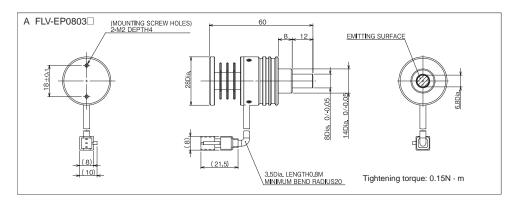


# High-power Spot Lighting FLV-EP08 Series

#### **Order Information**

| Model       |             | Electricity<br>(W) | Weight (g) | Connectable Lighting                            |   |            |
|-------------|-------------|--------------------|------------|---|---|------------|
|             | Light Color |                    |            | Camera-mount Lighting Controller FLV-TCC Series | Analog Lighting Controller FLV-ATC Series | Dimensions |
| FLV-EP0803W | White       | 2.3                | 80         | ×   | 0   | Α          |
| FLV-EP0803R | Red         | 2.3                | 80         | ×   | ©   | Α          |
| FLV-EP0803B | Blue        | 2.3                | 80         | ×   | ©   | Α          |

- \*: The table shows whether each Lighting can be connected to Lighting Controllers. When multiple Lightings are connected to a Lighting Controller, make sure that the total electricity of all connected Lightings does not exceed the electricity of connectable lighting of each Lighting Controller.
  - : Connectable. Light can be continuously emitted.
  - Connectable. Light can be emitted only while the trigger is input.
     Not connectable



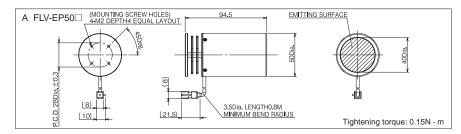
# **Spot Lighting**

# FLV-EP50 Series

#### **Order Information**

| Electricity W |             | Weight | Connectable Lighting |   |   |            |  |
|---------------|-------------|--------|----------------------|---|---|------------|--|
| Model         | Light Color | (W)    | (g)                  | Camera-mount Lighting Controller FLV-TCC Series | Analog Lighting Controller FLV-ATC Series | Dimensions |  |
| FLV-EP50W     | White       | 2.3    | 200                  | ×   | ©   | Α          |  |
| FLV-EP50R     | Red         | 2.3    | 200                  | ×   | ©   | Α          |  |

- \*: The table shows whether each Lighting can be connected to Lighting Controllers. When multiple Lightings are connected to a Lighting Controller, make sure that the total electricity of all connected Lightings does not exceed the electricity of connectable lighting of each Lighting Controller.
  - O: Connectable. Light can be continuously emitted.
  - Connectable. Light can be emitted only while the trigger is input. X: Not connectable



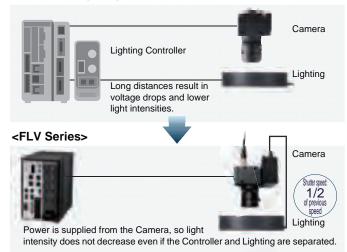
Camera-mount Compact
Lighting Controller to Perform
Multistage Control with up to 4
Lightings



#### **Product features**

- Compact design helps save space in the control panel.
- Lighting intensity can be maintained even with long wiring distances.
- No complicated wiring to the Vision Sensor is required.

#### <Standard Lighting System>



#### **Order Information**

|          | Number of Connectable | Applicable Lighting             |                             | Power Supply | Electricity of       | Luminance Control |
|----------|-----------------------|---------------------------------|-----------------------------|--------------|----------------------|-------------------|
| Model    | Lightings             | Standard Lighting FLV Series *1 | Spot Lighting FLV-EP Series | Voltage      | Connectable Lighting |                   |
| FLV-TCC1 | 1ch                   | 0                               | -                           | 24 VDC *2    | 15W max.             | Digital *3        |
| FLV-TCC4 | 4ch                   | 0                               | -                           | 24 VDC 42    | i jovi iliax.        | Digital 43        |

<sup>\*1.</sup> Standard lighting is all FLV-series Lightings excluding the FLV-EP-series Spot Lightings.

<sup>\*2.</sup> If the total power consumption of Lightings is 7.5 W or less, an external power supply is not required because the power is supplied from the Camera.

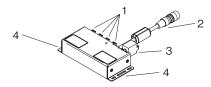
**<sup>\*3</sup>**. Luminance can be controlled by setting from the Vision Sensor Controller.

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

# Specification

| Item                               |                                    | Model                 | FLV-TCC1  | FLV-TCC4  |  |
|------------------------------------|------------------------------------|-----------------------|---|---|--|
| Numb                               | er of connectable                  | lightings             | 1   | 4   |  |
| Appli                              | cable Lighting                     |                       | FLV series (However, FLV-EP series is excluded.)  |   |  |
| Appli                              | cable Cameras                      |                       | FH-S series, FZ-S series  |   |  |
| Appli                              | Applicable Image Sensor Controller |                       | FH series, FZ5 series   |   |  |
| Input                              | Voltage                            |                       | Supplied from applicable camera (13 V) or ea  | xternal power supply (24 V)   |  |
| Exter                              | External power supply voltage      |                       | 24 VDC ± 10% (including ripple)   |   |  |
|                                    | Recommended power supply           |                       | Model S8VS-06024 (manufactured by OMRC  | ON, 24 VDC, 2.5 A, 60 W)  |  |
| Conn                               | Connectable lighting               |                       |   |   |  |
| 13                                 | VDC for camera                     | supply                |   |   |  |
|                                    | Continuous light                   | ting                  | 7.5 W max.  | 4ch total 7.5 W max.  |  |
|                                    | Trigger lighting                   | Simultaneous lighting | 7.5 W max.  | 4ch total 7.5 W max.  |  |
|                                    |                                    | Individual lighting   |   | 7.5 W max. for 1ch  |  |
| 24                                 | VDC for external                   | supply                |   |   |  |
|                                    | Continuous light                   | ting                  | 7.5 W max.  | 4ch total 7.5 W max.  |  |
|                                    | Trigger lighting                   | Simultaneous lighting | No duty restriction: 7.5 W max.<br>Duty by 50%: 15 W max.   | No duty restriction: 4ch total 7.5 W max.<br>Duty by 50%: 4ch total 15 W max. |  |
|                                    |                                    | Individual lighting   |   | No duty restriction: 7.5 W max. for 1ch<br>Duty by 50%: 15 W max. for 1ch     |  |
| Drive                              | method                             |                       | Contrast voltage method   |   |  |
| Lighti                             | ng method                          |                       | Trigger lighting, Continuous lighting   |   |  |
| Lumii                              | nance Control Met                  | hod                   | 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 set with image sensor controller) |   |  |
| Trigg                              | er lighting                        |                       | Lighting in synchronization with trigger input timing from the controller.  (auto setting in accordance with shutter speed)   |   |  |
|                                    | Trigger light                      | ing delay time        | Ton: 30 µs max.   |   |  |
|                                    | Lighting dur                       | ation setting         | Synchronized with the shutter speed of the camera (when the trigger is illuminated)   |   |  |
|                                    | Lighting time                      | e control             | Set with image sensor controller, or synchronized with shutter speed  |   |  |
| Exter                              | nal Interface                      |                       | Camera connection cable (directly connected with the main unit)   |   |  |
| Insula                             | tion Resistance                    |                       | 0.5 MΩ (100 VDC)  |   |  |
| Ambi                               | ent Temperature                    |                       | Operating: 0 to +50°C, Storage: -15 to +60°C (with no icing or condensation)  |   |  |
| Ambi                               | ent Humidity                       |                       | Operating and storage: 35% to 85% (with no condensation)  |   |  |
| Degree of Protection               |                                    |                       | IP20 (IEC60529)   |   |  |
| Vibration Resistance (destructive) |                                    |                       | 10 to 150 Hz, (0.7 mm double amplitude) 80 min each in X, Y, and Z directions   |   |  |
| Shock Resistance (destructive)     |                                    |                       | 150 m/s <sup>2</sup> 3 times each in 6 directions (up/dov   | wn, left/right, forward/backward)   |  |
| Materials                          |                                    |                       | Case: Aluminum, Cable: PVC  |   |  |
| Weigl                              | nt                                 |                       | Approx: 120 g (including the camera mount plate)  Approx. 130 g (including the camera mount plate)  |   |  |
| Acces                              | ssories                            |                       | Instruction manual, Camera Mount plate, mo head screw $\times$ 4, M4 flat head screw $\times$ 4)  | unting screws (M2 set screw X 4, M2 flat                                      |  |

#### **Part Names and Functions**



| No. | Name  | Description  |
|-----|---|--|
| 1   | Lighting connecting connector                   | Connects the LED lighting.   |
| 2   | Camera connecting cable                         | Connects to the extension connector of the camera.   |
| 3   | 24 V external power supply input terminal block | Connects the 24 VDC power supply.  |
| 4   | Mounting hole for fixing screw                  | Holes to mount the screws to secure the Lighting Controller to a mounting plate or device. |

#### 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) Upper mount, (2) Right side mount, (3) Left side mount.

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

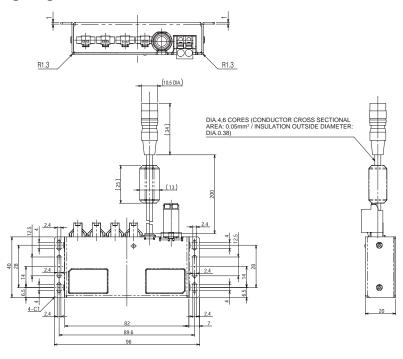




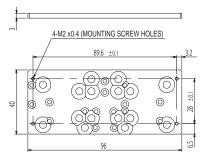


#### **Dimensions**

#### **Lighting Controller**

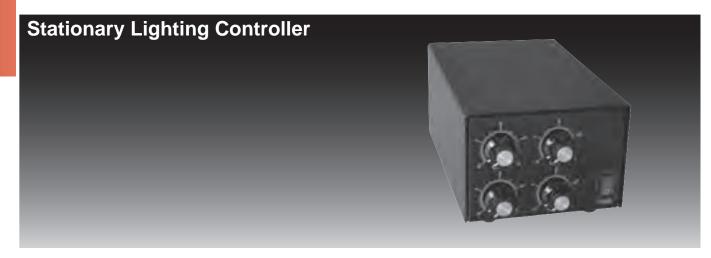


#### ●Camera mount plate (provided)



# **Analog Lighting Controller for FLV Series**

# **FLV-ATC Series**



#### **Product features**

- Suitable for small installation space near the Camera
- Light emission trigger can be input directly even without Omron's Vision Sensor.

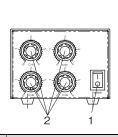
#### **Order Information**

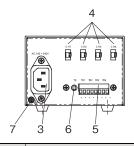
| Applicable Lighting   | Model *2     | Number of<br>Connectable Lightings | Power Supply<br>Voltage | Electricity of<br>Connectable Lighting | Luminance<br>Control Method |
|-----------------------|--------------|------------------------------------|-------------------------|--|-----------------------------|
| Standard Lighting *1  | FLV-ATC21024 | 2ch                                |                         | 40W max.                               |                             |
| Standard Lighting & I | FLV-ATC41024 | 4ch                                | 100 to 240 VAC          | 40VV IIIax.                            | Analog                      |
| For Spot Lighting     | FLV-ATC10405 | 1ch                                | 100 to 240 VAC          | 3W max.                                | Allalog                     |
| For Spot Lighting     | FLV-ATC40405 | 4ch                                |                         | 12W max.                               |                             |

- \*1. Standard lighting is all FLV-series Lightings excluding the FLV-EP-series Spot Lightings.
- \*2. The standard plug is A type. C, B, B3, SE, BF, and O types are also available. (The suffix "-C", "-B", "-B3", "-SE", "-BF", or "-O" is added to the model name.)

#### ●Standard Lighting FLV-ATC21024/-ATC41024

#### **Parts 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 lighting.   |
| 5   | Terminal block for trigger input | A terminal block for lighting illumination trigger input from outside to each lighting.   |
| 6   | Lighting mode switching button   | Illumination 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.    |
|     |                                  | Illumination 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 OFF, turning the light ON. |
| 7   | Frame ground terminal            | A terminal for frame ground. Connect the ground line.   |

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

#### **Specifications**

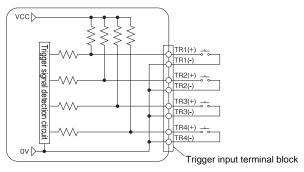
| Item Model                          | FLV-ATC21024-□  | FLV-ATC41024-□                           |  |  |
|-------------------------------------|---|--|--|--|
| Number of connectable lightings     | 1   | 4  |  |  |
| Applicable lighting                 | FLV series (However, FLV-EP series is exc                                     | cluded.)                                 |  |  |
| Power supply voltage                | 100 to 240 VAC  |  |  |  |
| Electricity of connectable lighting | 2ch total 40 W max.<br>30 W max. for 1ch                                      | 4ch total 40 W max.<br>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         | Ton: 100 μs max.  |  |  |  |
| External interface                  | Trigger input terminal block  |  |  |  |
| Dielectric strength                 | AC 1500 V 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 co                                     | ndensation)                              |  |  |
| 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 manual, AC input cable *1   |  |  |  |

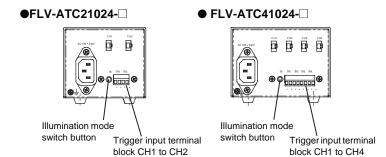
<sup>\*1:</sup> The suffixed symbol of the model name means the plug shape of the accessory cable. A model name with no suffix means type A.

#### Connection with external trigger input terminal block

• Connection of this terminal block is not required if external lighting issuance trigger is not used.

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





Illumination 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.

Illumination 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.

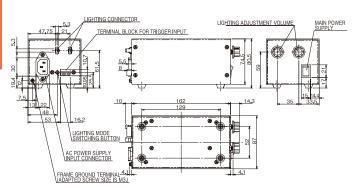
#### [Important]

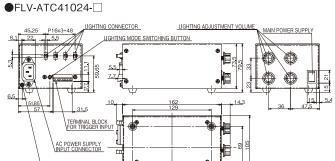
- Make sure that excessive force is not imposed on the wire and terminal block.
- Do not install the product in which loads are constantly applied to the terminal block such as the wire being under tension.
- When wiring the terminal block, use an applicable cable (AWG 14 to 24, tip processing length: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

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

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

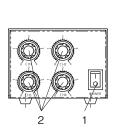
●FLV-ATC21024-□

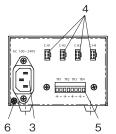




## ●For Spot Lighting FLV-ATC10405/-ATC40405

#### **Parts 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 lighting.  |
| 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**

| ItemModel                           | FLV-ATC10405-□  | FLV-ATC40405-□                          |  |  |  |
|-------------------------------------|---|---|--|--|--|
| Number of connectable lightings     | 1 4   |   |  |  |  |
| Applicable lighting                 | FLV-EP series   | ·                                       |  |  |  |
| Power supply voltage                | 100 to 240 VAC  |   |  |  |  |
| Electricity of connectable lighting | 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   |   |  |  |  |
| Trigger lighting                    | Turning the light off in synchronization with input from the trigger input terminal |   |  |  |  |
| Trigger lighting delay time         | Ton: 100 μs max.  |   |  |  |  |
| External interface                  | Trigger input terminal block  |   |  |  |  |
| Dielectric strength                 | AC 1500 V 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 cond   | ensation)                               |  |  |  |
| 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 manual, AC input cable *1   |   |  |  |  |

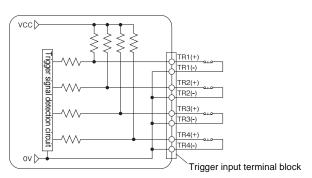
<sup>\*1:</sup> The suffixed symbol of the model name means the plug shape of the accessory cable. A model name with no suffix means type A.

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

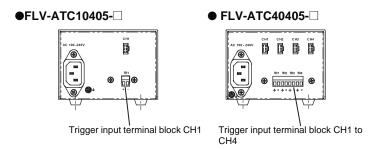
#### Connections with external trigger input terminal block

• Connection of this terminal block is not required if external lighting issuance trigger is not used.

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



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



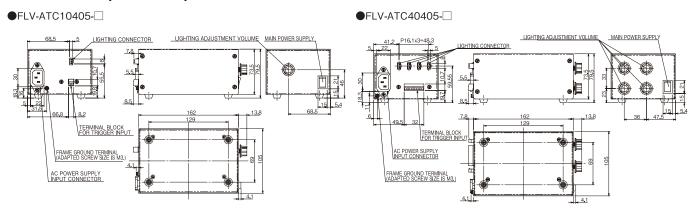
Short-circuiting (+) and (-) of TR1 to TR4 respectively makes the trigger input status OFF, turning the light OFF.

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)**



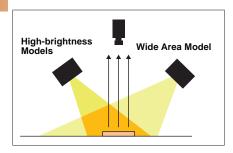
# **FL-BR Series**

Lightings

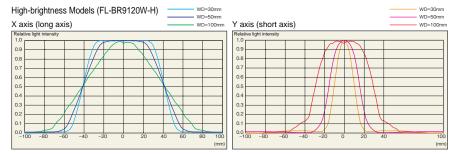
High-brightness Mode FL Series



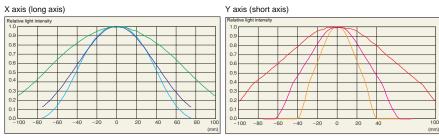
#### **Illumination Structure**



#### **Lighting Intensity Distribution Characteristics**



Wide Area Model (FL-BR9120W)



#### **Application**

Standard Lighitng



It is difficult to read characters with low contrast.

**FL Series** 



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

#### **Order Information**

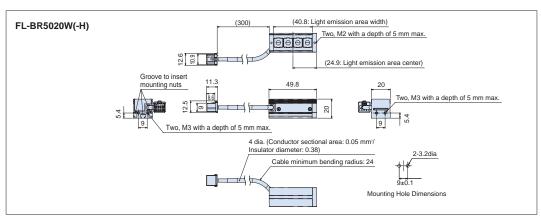
| Standard Models        | Model         | Light color  |
|------------------------|---------------|--------------|
| Wide Area Model        | FL-BR5020W    |              |
| High-brightness Models | FL-BR5020W-H  |              |
| Wide Area Model        | FL-BR9120W    | White LEDs   |
| High-brightness Models | FL-BR9120W-H  | VVIIILE LLDS |
| Wide Area Model        | FL-BR13120W   |              |
| High-brightness Models | FL-BR13120W-H |              |

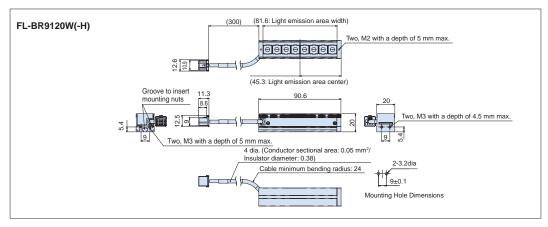
#### **Ratings and Specifications**

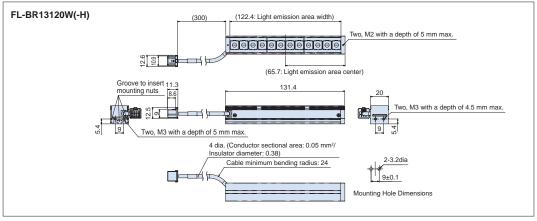
| Model                | Wide Area Model  | High-brightness<br>Models | Wide Area Model                | High-brightness<br>Models | Wide Area Model       | High-brightness<br>Models |
|----------------------|--|---------------------------|--------------------------------|---------------------------|-----------------------|---------------------------|
|                      | 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 (Doub        | le amplitude: 0.7 mn           | n), 80 min each in X      | , Y, and Z directions |                           |
| Shock resistance     |  |                           | 150 m/s <sup>2</sup> 3 times e | each in 6 directions      |                       |                           |
| Ambient temperature  |  | Operation: 0 to 4         | 0°C, Storage: -15 to           | 60°C (with no icing       | or condensation)      |                           |
| Ambient humidity     | Operation or storage: 35% to 85% (with no condensation)  |                           |                                |                           |                       |                           |
| Ambient atmosphere   | No corrosive gases.  |                           |                                |                           |                       |                           |
| Degree of protection |  |                           | IEC602                         | 59 IP20                   |                       |                           |
| Weight               | Appro  | x. 40g                    | Appro                          | x. 70g                    | Approx                | k. 100g                   |
| Materials            | Light: Case: Aluminum; Cover, side parts, and lens: Heat resistant polyvinyl chloride; Connector: Thermoplastic resin with |                           |                                | stic resin with glass     |                       |                           |
| LED Class            | Class2 (JIS C 6802:2005)   |                           |                                |                           |                       |                           |
| Accessories          |  |                           | Instructio                     | n manual                  |                       |                           |

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

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







Lightings

/lodels

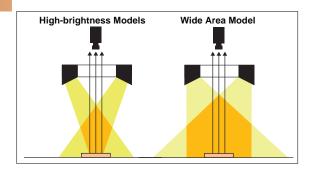
# **FL-DR Series**

Lightings

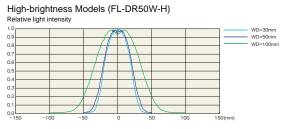
High-brightness Mod FL Series



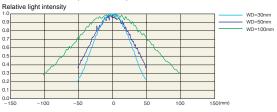
#### **Illumination Structure**



## **Lighting Intensity Distribution Characteristics**



Wide Area Model (FL-DR50W)



#### **Application**

Standard Lighitng



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

FL series



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

#### **Order Information**

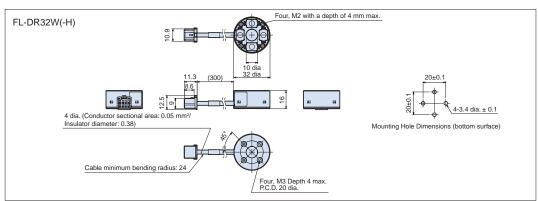
| Standard Models        | Model      | Light color  |
|------------------------|------------|--------------|
| Wide Area Model        | FL-DR32W   |              |
| High-brightness Models | FL-DR32W-H |              |
| Wide Area Model        | FL-DR50W   | - White LEDs |
| High-brightness Models | FL-DR50W-H | Willie LEDS  |
| Wide Area Model        | FL-DR90W   |              |
| High-brightness Models | FL-DR90W-H |              |

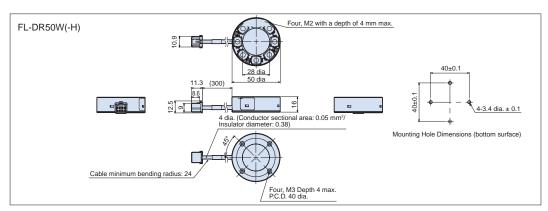
## **Ratings and Specifications**

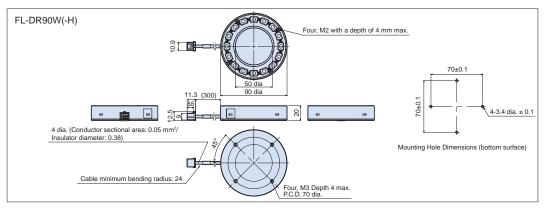
| Model                | Wide Area Model  | High-brightness<br>Models | Wide Area Model                | High-brightness<br>Models | Wide Area Model       | High-brightness<br>Models |
|----------------------|--|---------------------------|--------------------------------|---------------------------|-----------------------|---------------------------|
|                      | 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 (Doub        | le amplitude: 0.7 mn           | n), 80 min each in X      | , Y, and Z directions |                           |
| Shock resistance     |  |                           | 150 m/s <sup>2</sup> 3 times e | each in 6 directions      |                       |                           |
| Ambient temperature  | Operation: 0 to 40°C, Storage: -15 to 60°C (with no icing or condensation)   |                           |                                |                           |                       |                           |
| Ambient humidity     | Operation or storage: 35% to 85% (with no condensation)  |                           |                                |                           |                       |                           |
| Ambient atmosphere   | No corrosive gases.  |                           |                                |                           |                       |                           |
| Degree of protection |  |                           | IEC602                         | 59 IP20                   |                       |                           |
| Weight               | Approx. 25g Approx. 30g Approx. 70g Ap   |                           |                                |                           | Approx. 80g           |                           |
| Materials            | Light: Case: Aluminum; Cover, side parts, and lens: Heat resistant polyvinyl chloride; Connector: Thermoplastic resin with glass |                           |                                | stic resin with glass     |                       |                           |
| LED Class            | Class2 (JIS C 6802:2005)   |                           |                                |                           |                       |                           |
| Accessories          |  |                           | Instructio                     | n manual                  |                       |                           |

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

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







Lightings

# **FL-STC Series**

Lightings
High-brightne

The smallest body in the industry is combined with the industry's longest cable at 25 m.
Install in essentially any location.

Two-channel models

One-channel

#### **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 be connected to an image processing device to control lighting without any programming on a PLC.

#### [ Control Output ]

- PNP/NPN compatible
- Power source: 24 V

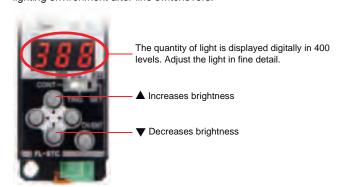
#### [ Lighting Emission Controls ]

- 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.

models



# High-brightness Model FL Series

#### **Order Information**

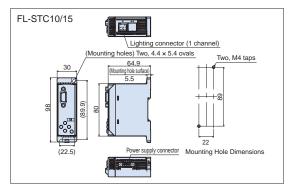
| Standard Models     | Model    | I/O specifications | Input voltage |
|---------------------|----------|--------------------|---------------|
| One-channel models  | FL-STC10 | NPN                |               |
| One-channel models  | FL-STC15 | PNP                | 24 VDC        |
| Two-channel models  | FL-STC20 | NPN                | 24 VDC        |
| i wo-channel models | FL-STC25 | PNP                |               |

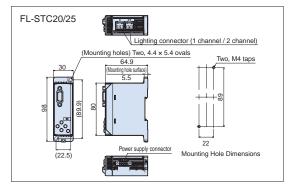
## **Ratings and Specifications**

| Product name                                    |                                | One-chan   | nel models  | Two-chan                    | nel 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)           | 1                     |
| Power consumption                               |                                | 36 W, 1.5 A max. (including the lighting section) 72 W, 3 A max. (including the lighting section)  |   | ing the lighting section)   |                       |
| Number of output                                | channels                       |  | 1   | 2                           | 2                     |
| Applicable lights                               |                                |  | FL-□ Se   | eries <b>*</b> 1            |                       |
| Light control modes                             | Continuous light emission mode |  | While the Strobe Controller power source is ON, light is continuously emitted. PWM frequency: 100 kHz, Light adjustment: 400 levels |                             |                       |
|   | Triggered light emission mode  | Light emission: Contir   | nt emission is synchronized<br>nuous while the trigger is in<br>PWM frequency: 100 kHz, I   | put, or 0.1 to 99.9 ms (set | in 0.1-ms increments) |
|   | Strobe light emission mode     |  |   |                             | •                     |
| Light adjustment setting Operation on the light |                                | Light adjustment mode settings and light adjustment value input: slide switch and directional pad  |   |                             |                       |
|   | Remote operation               | Light adjustment value input: 9-bit binary input   |   |                             |                       |
| 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 tempera                                 | ture                           | Operation: 0 to 40°C, Storage: -15 to 60°C (with no icing or condensation)   |   |                             |                       |
| Ambient humidity                                | 1                              | Operation or storage: 35% to 85% (with no condensation)  |   |                             |                       |
| Vibration resistan                              | ice                            | 10 to 150 Hz (Double amplitude: 0.7mm), 80 min each in X, Y, and Z directions  |   |                             |                       |
| Shock resistance                                |                                | 150 m/s <sup>2</sup> 3 times each in 6 direction (up-down, left-right, front-back)   |   |                             |                       |
| Materials                                       |                                | Case: PC   |   |                             |                       |
| Degree of protection                            |                                | IEC60529 IP20  |   |                             |                       |
| Weight  |                                | Approx. 100 g  |   |                             |                       |
| Accessories                                     |                                | Instruction manual,Terminal block Connector  |   |                             |                       |

(\*1) Ask your OMRON representative for details on applicable models.

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

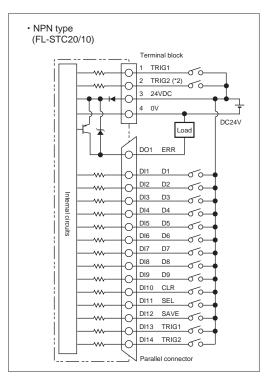




Lightings

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#### I/O Circuit Diagrams



(\*2) no use for FL-STC10

#### • PNP type (FL-STC25/15) Terminal block TRIG1 0 TRIG2 (\*2) 2 3 24VDC $\overline{\phantom{a}}$ DC24V Load DI1 0 O DI2 D2 00 O DI3 00 O DI4 D4 00 O DI5 0 O DI6 O DI7 00 DI8 D8 0 DI9 D9 -O C $\bigcirc$ O DI10 CLR 00 DI11 SEL -O C DI12 DI13 TRIG1 0 -O C O DI14 TRIG2

(\*2) no use for FL-STC15

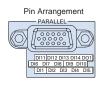
#### Electrical Specifications

| Output circuit                 | Input circuit                  |
|--------------------------------|--------------------------------|
| NPN Open-collector 30VDC       | ON: Connected to 0 V or 1.5 V  |
| 50mA max.                      | max.                           |
| ON: residual voltage 1.2V max. | OFF: Open                      |
| OFF: leakage current 0.1mA     | (Leakage current: 0.1 mA max.) |
| max.                           |                                |

#### **●**Electrical Specifications

| Output circuit | Input circuit  |
|----------------|--|
| max.           | ON: Connected to power supply<br>voltage or power supply voltage<br>-1.5 V max.<br>OFF: Open (Leakage current:<br>0.1 mA max.) |

#### Wiring diagram



| Pin No. | Signal | Signal direction | Function  |   |  |
|---------|--------|------------------|---|---|--|
| DI1     | D1     | Input            | Bit 1 of light control data (least significant bit)   | (1)CONT/TRIG Mode Light control data is specified using 9 bits of binary                                |  |
| DI2     | D2     | Input            | Bit 2 of light control data   | data from D1 to D9. The specifiable range is the 400 levels from 1 to                                   |  |
| DI3     | D3     | Input            | Bit 3 of light control data   | 400 (binary 000000001 to 110010000).  |  |
| DI4     | D4     | Input            | Bit 4 of light control data   | (2)STB Mode   |  |
| DI5     | D5     | Input            | Bit 5 of light control data   | Strobe light emission data is specified in 9 bits of binary data from D1 to D9 The specifiable range is |  |
| DI6     | D6     | Input            | Bit 6 of light control data   | the 500 values from 0.01 to 5.00 ms (binary   |  |
| DI7     | D7     | Input            | Bit 7 of light control data   | 000000001 to 111110100).  |  |
| DI8     | D8     | Input            | Bit 8 of light control data   | Each bit is 1 for ON and 0 for OFF (open).  |  |
| DI9     | D9     | Input            | Bit 9 of light control data (most significant bit)  |   |  |
| DI10    | CLR    | Input            | Error reset input. Errors are reset when the error reset input changes from OFF (open) to ON.                   |   |  |
| DI11    | SEL    | Input            | Lighting control channel selection input.  OFF (open) specifies channel 1, ON specifies channel 2.              |   |  |
| DI12    | SAVE   | Input            | The light control data (D1 to D9) is saved in the built-in memory when the input changes from OFF (open) to ON. |   |  |
| DI13    | TRIG1  | Input            | Inputs the light emission trigger signal for channel 1.   |   |  |
| DI14    | TRIG2  | Input            | Inputs the light emission trigger signal for channel 2. (*)   |   |  |
| DO1     | ERR    | output           | Turns ON when an error or   | ccurs.  |  |

<sup>\*</sup> An input with the same function as the lighting emission trigger input is also available on the terminal block (pins 1 and 2). When using the trigger input, connect the input line only to the parallel connector or only to the terminal block. It is not possible to use both input lines at the same time.

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

# **FL-TCC Series**

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

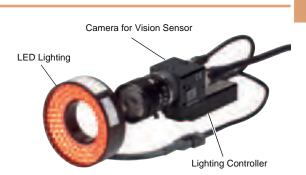


Lightings

High-brightness Mo

#### **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



#### **Order 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  |

#### **Ratings and Specifications**

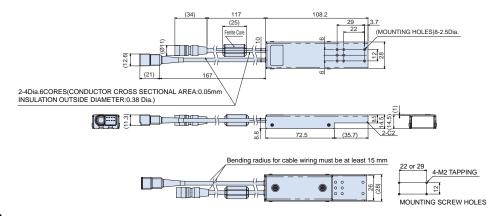
#### **Lighting Controller**

| Model                |                             | Lighting Controller  |  |
|----------------------|-----------------------------|--|--|
| Model Name           |                             | FL-TCC1  |  |
| Input Voltage        |                             | Supplied from compatible camera.   |  |
| Compatible Cameras   |                             | FH-S/SC/S02/SC02/S04/SC04, FZ-S/SC/S2M/SC2M/S5M2/SC5M2/SH/SHC/SF/SFC/SP/SPC and others. (*)                                  |  |
| Compatible           | Controllers                 | FH Series, FZ5 Series, FZ4 Series, FZ3 Series (H900, H950, H700, H750, H300, H350, L350) and others. (*)                     |  |
| <b>Currant Con</b>   | sumption                    | MAX 10W, 0.9A (Lighting Included)  |  |
| Lighting Cha         | annel                       | 1  |  |
| Applicable L         | ighting                     | FL-□ series  |  |
| Luminance            | Functions                   | PWM frequency: 100 KHz, Control step: 255 steps (configurable from the Controller)   |  |
| Control<br>Method    | 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)<br>Toff: 10 μs max.   |  |
| External Inte        | erface                      | Dedicated communication connector  |  |
| Ambient Ten          | nperature                   | Operating: 0 to +50°C, Storage: -15 to +60°C (with no icing or condensation)   |  |
| Ambient Hur          | midity                      | Operating and storage: 35% to 85% (with no condensation)   |  |
| Vibration res        | sistance                    | 10 to 55 Hz, (0.7mm double amplitude) 80 min each in X, Y, and Z directions  |  |
| Shock resistance     |                             | 150 m/s <sup>2</sup> 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 × 6 mm) × 4  |  |
|                      | ·                           | to Contact your OMDON cales representative for many information on model compatibility.                                      |  |

 $\begin{tabular}{ll} $\star$ Contact your OMRON sales representative for more information on model compatibility. \end{tabular}$ 

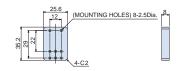
## **Dimensions (Unit: mm)**

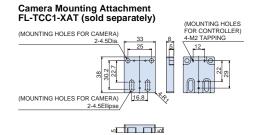
## ●Lighting Controller FL-TCC1



#### **Optional Products**

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





# **Lighting Options**

# Cable/Diffusion Plates/Mounting Brackets

#### Cable

#### For FL series

#### **Order Information**



#### ●Extension Cable, Standard Cables

| Model   | Cable Length | Weight         |
|---------|--------------|----------------|
| FL-XC1  | 1m           | Approx. 50 g   |
| FL-XC2  | 2m           | Approx. 80 g   |
| FL-XC3  | 3m           | Approx. 120 g  |
| FL-XC5  | 5m           | Approx. 190 g  |
| FL-XC10 | 10m          | Approx. 400 g  |
| FL-XC25 | 25m          | Approx. 1000 g |

#### ●Extension Cables, Flexible Cables

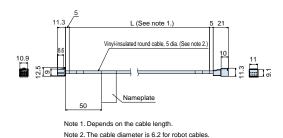
| Model    | Cable Length | Weight         |
|----------|--------------|----------------|
| FL-XC1R  | 1m           | Approx. 60 g   |
| FL-XC2R  | 2m           | Approx. 100 g  |
| FL-XC3R  | 3m           | Approx. 150 g  |
| FL-XC5R  | 5m           | Approx. 240 g  |
| FL-XC10R | 10m          | Approx. 500 g  |
| FL-XC25R | 25m          | Approx. 1200 g |

#### ●Parallel Cable

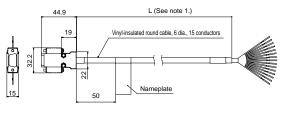
| I | Model   | Cable Length | Weight        |
|---|---------|--------------|---------------|
| ı | FL-XCP2 | 2m           | Approx. 180 g |

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

#### ●Extension Cable



#### ●Parallel Cable



Note 1. Depends on the cable length.

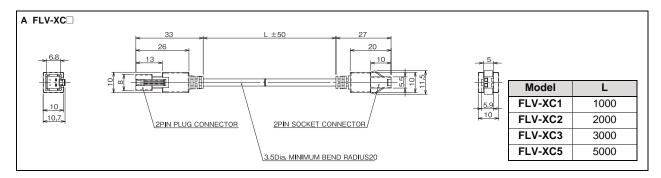
#### For FLV series

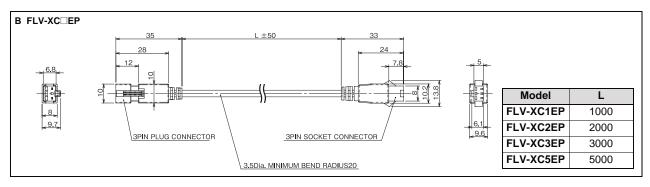
#### **Order Information**

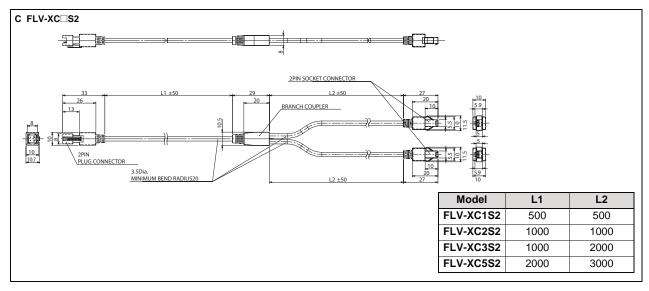
| Туре                                     | Model     | Cable Length | Dimensions |  |
|--|-----------|--------------|------------|--|
| Extension Cable for Standard Lighting *1 | FLV-XC1   | 1m           | _          |  |
|  | FLV-XC2   | 2m           |            |  |
|  | FLV-XC3   | 3m           | A          |  |
|  | FLV-XC5   | 5m           |            |  |
| Extension Cable for Spot Lighting        | FLV-XC1EP | 1m           |            |  |
|  | FLV-XC2EP | 2m           | В          |  |
|  | FLV-XC3EP | 3m           | В          |  |
|  | FLV-XC5EP | 5m           |            |  |
| Branch Cable for Standard Lighting *1    | FLV-XC1S2 | 1m           |            |  |
|  | FLV-XC2S2 | 2m           | С          |  |
|  | FLV-XC3S2 | 3m           |            |  |
|  | FLV-XC5S2 | 5m           |            |  |

**<sup>\*1.</sup>** Standard lighting is all FLV-series Lightings excluding the FLV-EP-series Spot Lightings.

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







## **Diffusion Plates and Polarization Plates**

#### For FL series

#### **Order Information**



#### Diffusion Plates

| Standard Models | Model        | Weight     |              |
|-----------------|--------------|------------|--------------|
|                 | FL-BR5020DF  | 49.8×18×4  | Approx. 5 g  |
| Bar Lighting    | FL-BR9120DF  | 90.6×18×4  | Approx. 10 g |
|                 | FL-BR13120DF | 131.4×18×4 | Approx. 15 g |

| Standard Models      | Model     | Outer diameter/Inner diameter/Thickness (mm) |              |  |  |
|----------------------|-----------|--|--------------|--|--|
|                      | FL-DR32DF | 32/10/4                                      | Approx. 5 g  |  |  |
| Direct Ring Lighting | FL-DR50DF | 50/28/4                                      | Approx. 10 g |  |  |
|                      | FL-DR90DF | 90/50/4                                      | Approx. 15 g |  |  |

#### Polarization Plates

| Standard Models      | Model     | Outer diameter/Inner diameter/Thickness (mm) | Weight       |
|----------------------|-----------|--|--------------|
|                      | FL-DR32PL | 32/10/2                                      | Approx. 3 g  |
| Direct Ring Lighting | FL-DR50PL | 50/28/2                                      | Approx. 5 g  |
|                      | FL-DR90PL | 90/50/2                                      | Approx. 15 g |

## For FLV series

#### **Order Information**

#### Diffusion Plates

| Standard Models      | Model         | Connectable Lighting              |
|----------------------|---------------|-----------------------------------|
|                      | FLV-DR12030DF | Direct Ring Lighting FLV-DR12030□ |
|                      | FLV-DR9215DF  | Direct Ring Lighting FLV-DR9215□  |
|                      | FLV-DR9030DF  | Direct Ring Lighting FLV-DR9030□  |
|                      | FLV-DR9000DF  | Direct Ring Lighting FLV-DR9000□  |
| Direct Ring Lighting | FLV-DR7000DF  | Direct Ring Lighting FLV-DR7000□  |
|                      | FLV-DR7030DF  | Direct Ring Lighting FLV-DR7030□  |
|                      | FLV-DR6615DF  | Direct Ring Lighting FLV-DR6615□  |
|                      | FLV-DR5030DF  | Direct Ring Lighting FLV-DR5030□  |
|                      | FLV-DR3220DF  | Direct Ring Lighting FLV-DR3220□  |

#### **●**Diffusion Plates

| Standard Models | Model         | Connectable Lighting      |
|-----------------|---------------|---------------------------|
|                 | FLV-BR48031DF | Bar Lighting FLV-BR48031□ |
|                 | FLV-BR38037DF | Bar Lighting FLV-BR38037□ |
|                 | FLV-BR21230DF | Bar Lighting FLV-BR21230□ |
|                 | FLV-BR21222DF | Bar Lighting FLV-BR21222□ |
| Bar Lighting    | FLV-BR15020DF | Bar Lighting FLV-BR15020□ |
|                 | FLV-BR14030DF | Bar Lighting FLV-BR14030□ |
|                 | FLV-BR11222DF | Bar Lighting FLV-BR11222□ |
|                 | FLV-BR8532DF  | Bar Lighting FLV-BR8532□  |
|                 | FLV-BR6022DF  | Bar Lighting FLV-BR6022□  |

#### Diffusion Plates

| Standard Models | Model         | Connectable Lighting                 |
|-----------------|---------------|--------------------------------------|
|                 | FLV-DL15060DF | Low Angle Ring Lighting FLV-DL15060□ |
| Low Angle Ring  | FLV-DL12060DF | Low Angle Ring Lighting FLV-DL12060□ |
| Lighting        | FLV-DL7260DF  | Low Angle Ring Lighting FLV-DL7260□  |
|                 | FLV-DL5890DF  | Low Angle Ring Lighting FLV-DL5890□  |

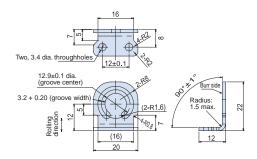
# **Mounting Brackets**

For FL series

## **Order Information**

| Standard Models | Model   |
|-----------------|---------|
| Bar Lighting    | FL-XBK1 |

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



Burrs must extend less than 0.1 mm.

## **Standard Lens**

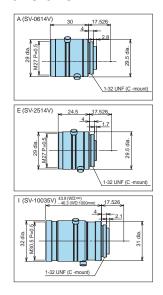
# **SV-V Series**

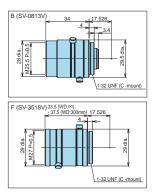
- Standard CCTV lens.
- Lineup of 9 models with focal lengths ranging from 6 to 100 mm.
- Locking set screws for focus and iris.
- More robust structure designed for machine vision.
- Lower distortion and higher resolution than previous CCTV lenses.

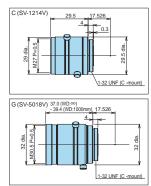


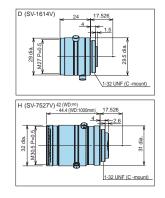
#### **Order Information**

| Series             | Model             | Dimension | Focal distance (mm) | Focus<br>(F No) | Field of view (V × H) | Closest distance (mm) | Filter size | Weight (g) | Total<br>length<br>(mm) | Maximum compatible CCD |
|--------------------|-------------------|-----------|---------------------|-----------------|-----------------------|-----------------------|-------------|------------|-------------------------|------------------------|
|                    | 3Z4S-LE SV-0614V  | Α         | 6                   | 1.4             | 42.3°× 54.6°          | 200                   | M27.0 P0.5  | 49         | 30                      | 1/3 inch               |
| C-mount            | 3Z4S-LE SV-0813V  | В         | 8                   | 1.3             | 44.6°× 57.3°          | 200                   | M25.5 P0.5  | 55         | 34                      | 1/3 inch               |
| Lens for 1/3-inch  | 3Z4S-LE SV-1214V  | С         | 12                  | 1.4             | 21.9°× 38.9°          | 300                   | M27.0 P0.5  | 44         | 29.5                    | 1/3 inch               |
| image              | 3Z4S-LE SV-1614V  | D         | 16                  | 1.4             | 22.8°× 30.1°          | 400                   | M27.0 P0.5  | 34         | 24.5                    | 1/3 inch               |
| sensor             | 3Z4S-LE SV-2514V  | Е         | 25                  | 1.4             | 14.9°× 19.8°          | 500                   | M27.0 P0.5  | 36         | 24                      | 1/3 inch               |
| (Recommend: FZ-S□/ | 3Z4S-LE SV-3518V  | F         | 35                  | 1.8             | 10.8°× 14.4°          | 300                   | M27.0 P0.5  | 47         | 33.5                    | 1/3 inch               |
| FZ-SH□/            | 3Z4S-LE SV-5018V  | G         | 50                  | 1.8             | 7.9°× 10.5°           | 300                   | M30.5 P0.5  | 67         | 37                      | 1/3 inch               |
| FH-S□)             | 3Z4S-LE SV-7527V  | Н         | 75                  | 2.7             | 4.9°× 6.6°            | 1200                  | M30.5 P0.5  | 76         | 42                      | 1/3 inch               |
|                    | 3Z4S-LE SV-10035V | I         | 100                 | 3.5             | 4.0°× 5.3°            | 2000                  | M30.5 P0.5  | 79         | 43.9                    | 1/3 inch               |









# SV-H/VS-H1 Series

- High-resolution lens for megapixel camera.
- Lineup of 9 models for 2/3-inch cameras, with focal lengths ranging from 6 to 100 mm, and 5 models for 1-inch Cameras.
- Locking set screws for focus and iris.
- Bright F number of 1.4 for high-speed CMOS camera.
- Compact design but minimized decrease in distortion and brightness.



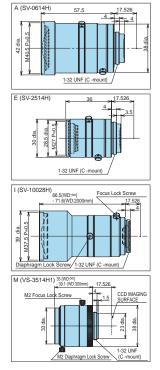
for 2/3-inch image sensor SV-H series

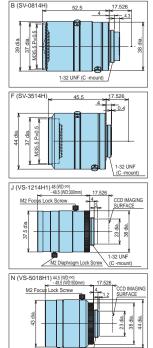


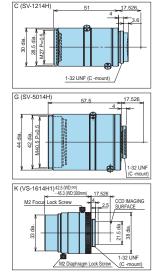
for 1-inch image sensor VS-H1 series

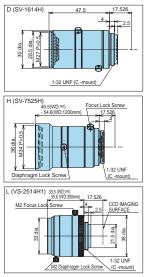
#### Order Information

| Series               | Model             | Dimension | Focal<br>distance<br>(mm) | Focus<br>(F No) | Field of view (V × H)                | Closest distance (mm) | Filter size | Weight (g) | Total length (mm) | Maximum compatible CCD |
|----------------------|-------------------|-----------|---------------------------|-----------------|--------------------------------------|-----------------------|-------------|------------|-------------------|------------------------|
|                      | 3Z4S-LE SV-0614H  | Α         | 6                         | 1.4             | 56.8°× 71.5°                         | 100                   | M40.5 P0.5  | 145        | 57.5              | 2/3 inch               |
|                      | 3Z4S-LE SV-0814H  | В         | 8                         | 1.4             | 44.9°× 57.6°                         | 100                   | M35.5 P0.5  | 125        | 52.5              | 2/3 inch               |
| C-mount<br>Lens for  | 3Z4S-LE SV-1214H  | С         | 12                        | 1.4             | 30.2°× 39.6°                         | 100                   | M27 P0.5    | 85         | 51                | 2/3 inch               |
| 2/3-inch             | 3Z4S-LE SV-1614H  | D         | 16                        | 1.4             | 23.1°× 30.6°                         | 100                   | M27 P0.5    | 85         | 47.5              | 2/3 inch               |
| image                | 3Z4S-LE SV-2514H  | Е         | 25                        | 1.4             | 15.0°× 20.0°                         | 150                   | M27 P0.5    | 65         | 36                | 2/3 inch               |
| sensor               | 3Z4S-LE SV-3514H  | F         | 35                        | 1.4             | 10.8°× 14.3°                         | 200                   | M35.5 P0.5  | 150        | 45.5              | 2/3 inch               |
| (Recommend: FZ-S□2M/ | 3Z4S-LE SV-5014H  | G         | 50                        | 1.4             | 7.5°× 10.0°                          | 300                   | M40.5 P0.5  | 170        | 57.7              | 2/3 inch               |
| FZ-S□5M/<br>FH-S□02) | 3Z4S-LE SV-7525H  | Н         | 75                        | 2.5             | 2/3"= 5.0° × 6.7°<br>1"= 7.3° × 9.7° | 1200                  | M34.0 P0.5  | 85         | 49.5              | 1 inch                 |
|                      | 3Z4S-LE SV-10028H | I         | 100                       | 2.8             | 2/3"= 3.9° × 5.1°<br>1"= 5.6° × 7.5° | 2000                  | M37.5 P0.5  | 105        | 66.5              | 1 inch                 |
| C-mount              | 3Z4S-LE VS-1214H1 | J         | 12                        | 1.4             | 44.0°× 56.9°                         | 300                   | M35.5 P0.5  | 140        | 48                | 1 inch                 |
| Lens for             | 3Z4S-LE VS-1614H1 | K         | 16                        | 1.4             | 33.7°× 44.3°                         | 300                   | M30.5 P0.5  | 110        | 42.5              | 1 inch                 |
| 1-inch image sensor  | 3Z4S-LE VS-2514H1 | L         | 25                        | 1.4             | 21.5°× 28.5°                         | 300                   | M30.5 P0.5  | 90         | 33.5              | 1 inch                 |
| (Recommend:          | 3Z4S-LE VS-3514H1 | М         | 35                        | 1.4             | 15.6°× 20.7°                         | 300                   | M30.5 P0.5  | 100        | 35                | 1 inch                 |
| FH-S□04)             | 3Z4S-LE VS-5018H1 | N         | 50                        | 1.8             | 11.0°× 14.6°                         | 500                   | M40.5 P0.5  | 135        | 44.5              | 1 inch                 |









## **Vibrations and shocks resistant C-mount Lens**

# **VS-MC Series**

- Lineup of 7 models with focal lengths ranging from 15 to 75 mm.
- A fixation ring is used to fasten to the surface.
- Internal structure of the lens is designed to strengthen against vibration to achieve higher resistance to vibration than previous lenses, which allows the lens to be moved or to be used in a place subject to vibration.
- Install in narrow space without a locking set screw.

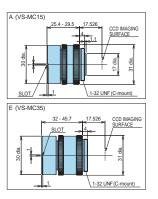


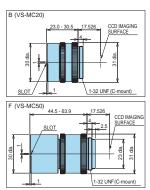
#### **Order Information**

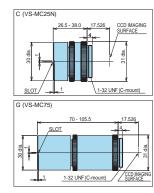
| Series                       | Model                     | Dimension | Focal distance (mm) | Focus<br>(F No.) | Maximum outer diameter: (mm) | Total length (mm) | Filter size  | WD<br>(mm)    | Depth of field (mm) | Maximum compatible CCD |
|------------------------------|---------------------------|-----------|---------------------|------------------|------------------------------|-------------------|--------------|---------------|---------------------|------------------------|
|                              |                           |           |                     |                  |                              |                   |              | 492.2         | 183.1               |                        |
|                              | 3Z4S-LE VS-MC15           |           |                     | Maximum aperture | 31 dia.                      | 29.5              | M27.0 P0.5   | 67.3          | 4.8                 |                        |
|                              |                           |           |                     | aperture         |                              |                   |              | 42.3          | 2.3                 |                        |
|                              |                           |           |                     |                  |                              |                   |              | 492.2         | 512.7               |                        |
|                              | 3Z4S-LE VS-MC15-FNO56     | Α         | 15                  | 5.6              | 31 dia.                      | 29.5              | M27.0 P0.5   | 67.3          | 13.4                | 2/3 inch               |
|                              |                           |           |                     |                  |                              |                   |              | 42.3          | 6.5                 |                        |
|                              |                           |           |                     |                  |                              |                   |              | 492.2         | 732.4               |                        |
|                              | 3Z4S-LE VS-MC15-FNO80     |           |                     | 8                | 31 dia.                      | 29.5              | M27.0 P0.5   | 67.3          | 13.4                |                        |
|                              |                           |           |                     |                  |                              |                   |              | 42.3          | 9.2                 |                        |
|                              |                           |           |                     | Maximum          |                              |                   |              | 516.5         | 110.8               |                        |
|                              | 3Z4S-LE VS-MC20           |           |                     | aperture         | 31 dia.                      | 30.5              | M27.0 P0.5   | 81.0          | 3.4                 |                        |
|                              |                           |           |                     |                  |                              |                   |              | 49.8          | 1.5                 |                        |
|                              |                           |           |                     |                  |                              |                   |              | 516.5         | 291.2               |                        |
|                              | 3Z4S-LE VS-MC20-FNO56     | В         | 20                  | 5.6              | 31 dia.                      | 30.5              | M27.0 P0.5   | 81.0          | 9.0                 | 2/3 inch               |
|                              |                           |           |                     |                  |                              |                   |              | 49.8          | 3.9                 |                        |
|                              |                           |           |                     |                  | 31dia.                       | 30.5              | M27.0 P0.5   | 516.5         | 416.0               |                        |
|                              | 3Z4S-LE VS-MC20-FNO80     |           |                     | 8                |                              |                   |              | 81.0          | 12.8                |                        |
| Vibrations                   |                           |           |                     |                  |                              |                   |              | 49.8          | 5.6                 |                        |
| and shocks                   |                           |           |                     | Maximum aperture | 31dia.                       | 38.0              | M27.0 P0.5   | 513.9         | 67.2                | 2/3 inch               |
| resistant                    | 3Z4S-LE VS-MC25N          |           |                     |                  |                              |                   |              | 106.0         | 3.2                 |                        |
| C-mount Lens<br>for 2/3-inch |                           |           |                     |                  |                              |                   |              | 54.9          | 1.0                 |                        |
| image sensor                 |                           |           | 25                  | 5.6              | 31dia.                       | 38.0              | M27.0 P0.5   | 513.9         | 188.2               |                        |
| (Recommend:                  |                           | С         |                     |                  |                              |                   |              | 106.0         | 9.0                 |                        |
| FZ-S□/FZ-                    |                           |           |                     |                  |                              |                   |              | 54.9          | 2.7                 |                        |
| S□2M/FZ-                     | 3Z4S-LE VS-MC25N-FNO80    |           |                     |                  | 0.4 1                        | 00.0              | 1407 0 D0 5  | 513.9         | 268.8               |                        |
| S□5M2/FZ-<br>SH□/FH-S□/      |                           |           |                     | 8                | 31dia.                       | 38.0              | M27.0 P0.5   | 106.0         | 12.8                |                        |
| FH-S□02)                     |                           |           |                     |                  |                              |                   |              | 54.9          | 3.8                 |                        |
| 1111-0-02)                   | 740 LE VO MO20            |           |                     | Maximum          | 04 -1' -                     | 05.7              |              | 514.6         | 47.1                |                        |
|                              | 3Z4S-LE VS-MC30           |           |                     | aperture         | 31dia.                       | 35.7              | M27.0 P0.5   | 214.5         | 8.2                 |                        |
|                              |                           |           |                     |                  |                              |                   |              | 81.1          | 11.0                |                        |
|                              | 2746 LE VC MC20 FNOEC     | D         | 30                  | 5.6              | 31dia.                       | 35.7              | M07 0 D0 5   | 514.6         | 131.9<br>22.9       | 0/0 :                  |
|                              | 3Z4S-LE VS-MC30-FNO56     | U         | 30                  | 5.0              | 3 Iula.                      | 35.7              | M27.0 P0.5   | 214.5<br>81.1 | 3.2                 | 2/3 inch               |
|                              |                           |           |                     |                  |                              |                   |              | 514.6         | 188.4               |                        |
|                              | 3Z4S-LE VS-MC30-FNO80     |           |                     | 8                | 31dia.                       | 35.7              | M27.0 P0.5   | 214.5         | 32.7                |                        |
|                              | 3243-LE VS-IVIC3U-FINOSU  |           |                     | 0                | STula.                       | 33.7              | IVI27.0 PU.5 | 81.1          | 4.6                 |                        |
|                              |                           |           |                     |                  |                              |                   |              | 213.0         | 2.8                 |                        |
|                              | 3Z4S-LE VS-MC35           |           |                     | Maximum          | 31dia.                       | 45.7              | M27.0 P0.5   | 196.4         | 2.0                 |                        |
|                              | 02-0-12 VO-141033         |           |                     | aperture         | o Tula.                      | 75.1              | 14121.010.0  | 145.9         | 0.6                 |                        |
|                              | 3Z4S-LE VS-MC35-FNO56     |           |                     |                  |                              |                   |              | 213.0         | 8.4                 |                        |
|                              |                           | Е         | 35                  | 5.6              | 31dia                        | <i>1</i> 5 7      | M27 0 D0 5   | 196.4         | 6.5                 | 2/3 inch               |
|                              |                           | _         | 33                  | 5.0              | 31dia.                       | 45.7              | M27.0 P0.5   | 145.9         | 1.7                 | 2/3 inch               |
|                              | 3Z4S-LE VS-MC35-FNO80     |           |                     |                  |                              |                   |              | 213.0         | 11.9                |                        |
|                              |                           |           |                     | 8                | 31dia.                       | 45.7              | M27.0 P0.5   | 196.4         | 9.2                 |                        |
|                              | 02-0-12 VO-141033-1 14000 |           |                     |                  |                              |                   |              | 145.9         | 2.5                 |                        |
|                              |                           |           |                     | I                |                              | <u> </u>          | 1            | 170.0         | 2.0                 |                        |

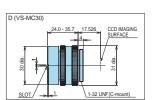
#### Vibrations and shocks resistant C-mount Lens VS-MC Series

| Series                  | Model                 | Dimension | Focal distance (mm) | Focus<br>(F No.) | Maximum outer diameter: (mm) | Total length (mm) | Filter size | WD<br>(mm) | Depth of<br>field<br>(mm) | Maximum compatible CCD |
|-------------------------|-----------------------|-----------|---------------------|------------------|------------------------------|-------------------|-------------|------------|---------------------------|------------------------|
|                         |                       |           |                     | Maximum          |                              |                   |             | 625.8      | 33.8                      |                        |
|                         | 3Z4S-LE VS-MC50       |           |                     | aperture         | 31dia.                       | 63.9              | M27.0 P0.5  | 262.4      | 6.0                       |                        |
|                         |                       |           |                     | aportaro         |                              |                   |             | 121.1      | 1.3                       |                        |
|                         |                       |           |                     |                  |                              |                   |             | 625.8      | 75.6                      |                        |
| Vibrations              | 3Z4S-LE VS-MC50-FNO56 | F         | 50                  | 5.6              | 31dia.                       | 63.9              | M27.0 P0.5  | 262.4      | 13.4                      | 2/3 inch               |
| and shocks resistant C- |                       |           |                     |                  |                              |                   |             | 121.1      | 2.9                       |                        |
| mount Lens              | 3Z4S-LE VS-MC50-FNO80 |           |                     | 8                | 31dia.                       | 63.9              | M27.0 P0.5  | 625.8      | 108.0                     |                        |
| for 2/3-inch            |                       |           |                     |                  |                              |                   |             | 262.4      | 19.2                      |                        |
| image sensor            |                       |           |                     |                  |                              |                   |             | 121.1      | 4.1                       |                        |
| (Recommend:             |                       |           |                     |                  | " 31dia                      | 105.5             | M27.0 P0.5  | 563.0      | 17.7                      |                        |
| FZ-S□/FZ-               | 3Z4S-LE VS-MC75       |           |                     | Maximum aperture |                              |                   |             | 404.4      | 9.1                       |                        |
| S□2M/FZ-<br>S□5M2/FZ-   |                       |           |                     | aperture         |                              |                   |             | 153.8      | 1.3                       |                        |
| SHD/FH-SD/              |                       |           |                     |                  |                              |                   |             | 563.0      | 26.1                      |                        |
| FH-S□02)                | 3Z4S-LE VS-MC75-FNO56 | G         | 75                  | 5.6              | 31dia.                       | 105.5             | M27.0 P0.5  | 404.4      | 13.4                      | 2/3 inch               |
| , , ,                   |                       |           |                     |                  |                              |                   |             | 153.8      | 1.9                       |                        |
|                         | 3Z4S-LE VS-MC75-FNO80 |           |                     |                  |                              |                   |             | 563.0      | 37.2                      |                        |
|                         |                       |           |                     | 8                | 31dia.                       | 105.5             | M27.0 P0.5  | 404.4      | 19.2                      |                        |
|                         |                       |           |                     |                  |                              |                   |             | 153.8      | 2.7                       |                        |









# Lens for small camera of Vision Sensor FZ series

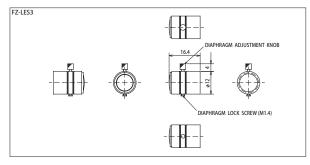
# **FZ-LES Series**

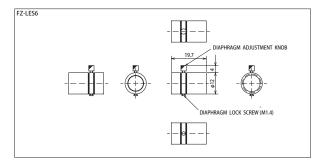
 Lenses for small cameras: 12 x 12 mm pen-shaped camera and 17 mm thick flat camera.

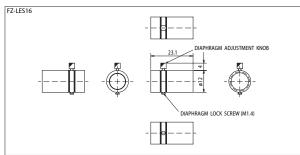


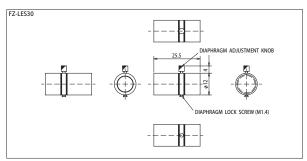
#### **Order Information**

| Model    | Focal length | Brightness |
|----------|--------------|------------|
| FZ-LES3  | 3mm          | F2.0       |
| FZ-LES6  | 6mm          | F2.0       |
| FZ-LES16 | 16mm         | F3.4       |
| FZ-LES30 | 30mm         | F3.4       |









## **Non-telecentric Macro Lens**

# **VS-MC** Series

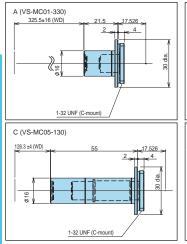
- Lineup of 4 models with magnifications ranging from 1.0 to 0.1 and WD ranging from 325.5 to 82.4 mm.
- 16-mm-dia. simple mechanism with high resistance to vibration.

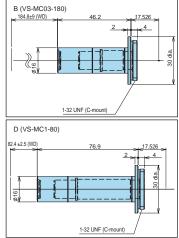


#### **Order Information**

| Model               | Dimension | Magnification | Field of vision *1<br>(V × H) mm | Dimension<br>Effective<br>FNO | O/I<br>(mm) | WD<br>(mm) | Depth of field *2 | Resolution<br>*3 | TV distortion |
|---------------------|-----------|---------------|----------------------------------|-------------------------------|-------------|------------|-------------------|------------------|---------------|
| 3Z4S-LE VS-MC01-330 | Α         | 0.1           | $66.0 \times 88.0$               | 4.43                          | 364.5       | 325.5      | 35.4mm            | 30.5μm           | 0.01% max.    |
| 3Z4S-LE VS-MC03-180 | В         | 0.3           | 22.0 × 29.3                      | 5.29                          | 248.5       | 184.8      | 4.7mm             | 11.6μm           | 0.00% max.    |
| 3Z4S-LE VS-MC05-130 | С         | 0.5           | 13.2 × 17.6                      | 6.10                          | 198.8       | 126.3      | 2.0mm             | 8.2µm            | 0.00% max.    |
| 3Z4S-LE VS-MC1-80   | D         | 1.0           | 6.6 × 8.8                        | 8.14                          | 176.8       | 82.4       | 0.7mm             | 5.5μm            | 0.00% max.    |

- \$1 Calculated using the size of an image element (2/3 inch = 6.6  $\times$  8.8 mm).
- \*2 Calculated using a permissible circle of confusion diameter of 0.04 mm.
- \*3 Calculated using a wavelength of 550 nm.





# **Lens Option**

#### **Order Information**

#### **Polarizing Filter**

| Model            |
|------------------|
| 3Z4S-LE SV-PL255 |
| 3Z4S-LE SV-PL270 |
| 3Z4S-LE SV-PL305 |



#### **Extension Tubes**

| Model          | Length (mm)                                   |  |  |  |  |
|----------------|---|--|--|--|--|
| 3Z4S-LE SV-EXR | 7-piece set (40, 20, 10, 5, 2.0, 1.0, 0.5 mm) |  |  |  |  |

<sup>\*</sup> These Extension Tubes are also available individually. Order using the following model number, replacing the box with the desired length: 3Z4S-LE SV-EXR□. (0.5, 1, 2, 5, 10, 15, 20, 25, 30, 40, 50 mm)



#### **Extension Tubes for Small Digital CCD Cameras**

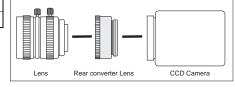
| Model | Contents   |  |  |  |
|-------|--|--|--|--|
|       | Set of 3 tubes (15 mm, 10 mm, 5 mm) Maximum outer diameter: 12 mm dia. |  |  |  |

#### **Rear Converter Lens**

| 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 5mm 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 5mm or more.
  - SV-0614H, SV-0814H, SV-1214H, SV-2514H, SV-0813V

#### ●Configuration





## Terms and Conditions of Sale

- Offer; Acceptance. These terms and conditions (these "Terms") are deemed part of all quotes, agreements, purchase orders, acknowledgments, price lists, catalogs, manuals, brochures and other documents, whether electronic or in catalogs, manuals, brochures and other documents, whether electronic or in writing, relating to the sale of products or services (collectively, the "Products") by Omron Electronics LLC and its subsidiary companies ("Omron"). Omron objects to any terms or conditions proposed in Buyer's purchase order or other documents which are inconsistent with, or in addition to, these Terms. Prices: Payment Terms. All prices stated are current, subject to change without notice by Omron. Omron reserves the right to increase or decrease prices on any unshipped portions of outstanding orders. Payments for Products are due net 30 days unless otherwise stated in the invoice. Discounts. Cash discounts, if any, will apply only on the net amount of invoices sent to Buyer after deducting transportation charges, taxes and duties, and will be allowed only if (i) the invoice is paid according to Omron's payment terms and (ii) Buyer has no past due amounts.

- and (ii) Buyer has no past due amounts.

  Interest. Omron, at its option, may charge Buyer 1-1/2% interest per month or the maximum legal rate, whichever is less, on any balance not paid within the
- Orders. Omron will accept no order less than \$200 net billing.

  Governmental Approvals. Buyer shall be responsible for, and shall bear all costs involved in, obtaining any government approvals required for the importation or sale of the Products.
- Taxes. All taxes, duties and other governmental charges (other than general real property and income taxes), including any interest or penalties thereon, imposed directly or indirectly on Omron or required to be collected directly or indirectly by Omron for the manufacture, production, sale, delivery, importation, consumption or use of the Products sold hereunder (including customs duties and sales, excise, use, turnover and license taxes) shall be charged to and remitted by Buyer to Omron.

  Financial. If the financial position of Buyer at any time becomes unsatisfactory
- <u>Financial</u>. If the financial position of Buyer at any time becomes unsatisfactory to Omron, Omron reserves the right to stop shipments or require satisfactory security or payment in advance. If Buyer fails to make payment or otherwise comply with these Terms or any related agreement, Omron may (without liability and in addition to other remedies) cancel any unshipped portion of Products sold hereunder and stop any Products in transit until Buyer pays all amounts, including amounts payable hereunder, whether or not then due, which are owing to it by Buyer. Buyer shall in any event remain liable for all unpaid accounts. unpaid accounts
- Cancellation: Etc. Orders are not subject to rescheduling or cancellation unless Buyer indemnifies Omron against all related costs or expenses.

  10. Force Majeure. Omron shall not be liable for any delay or failure in delivery
- resulting from causes beyond its control, including earthquakes, fires, floods, strikes or other labor disputes, shortage of labor or materials, accidents to machinery, acts of sabotage, riots, delay in or lack of transportation or the requirements of any government authority.

  11. Shipping: Delivery. Unless otherwise expressly agreed in writing by Omron:
  a. Shipments shall be by a carrier selected by Omron; Omron will not drop ship
- - except in "break down" situations.
    b. Such carrier shall act as the agent of Buyer and delivery to such carrier shall
  - constitute delivery to Buyer; c. All sales and shipments of Products shall be FOB shipping point (unless oth-
- c. All sales and shipments of Products shall be FOB shipping point (unless otherwise stated in writing by Omron), at which point title and risk of loss shall pass from Omron to Buyer; provided that Omron shall retain a security interest in the Products until the full purchase price is paid;
   d. Delivery and shipping dates are estimates only; and
   e. Omron will package Products as it deems proper for protection against normal handling and extra charges apply to special conditions.

  12. Claims. Any claim by Buyer against Omron for shortage or damage to the Products occurring before delivery to the carrier must be presented in writing to Omron within 30 days of receipt of shipment and include the original transportation bill signed by the carrier noting that the carrier received the Products. portation bill signed by the carrier noting that the carrier received the Products from Omron in the condition claimed.
- Warranties. (a) Exclusive Warranty. Omron's exclusive warranty is that the Products will be free from defects in materials and workmanship for a period of twelve months from the date of sale by Omron (or such other period expressed in writing by Omron). Omron disclaims all other warranties, express or implied.

  (b) <u>Limitations</u>. OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABIL-

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- prevent disclosure to any third party.

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- "forbidden" or other proscribed persons; and (ii) disclosure to non-citizens of regulated technology or information.

  Miscellaneous. (a) Waiver. No failure or delay by Omron in exercising any right and no course of dealing between Buyer and Omron shall operate as a waiver of rights by Omron. (b) Assignment. Buyer may not assign its rights hereunder without Omron's written consent. (c) Law. These Terms are governed by the law of the jurisdiction of the home office of the Omron company from which Buyer is purchasing the Products (without regard to conflict of law principles). (d) Amendment. These Terms constitute the entire agreement between Buyer and Omron relating to the Products, and no provision may be changed or waived unless in writing signed by the parties. (e) Severability If any provior waived unless in writing signed by the parties. (e) <u>Severability</u> If any provision hereof is rendered ineffective or invalid, such provision shall not invalidate any other provision. (f) Setoff. Buyer shall have no right to set off any amounts against the amount owing in respect of this invoice. (g) <u>Definitions</u>. As used herein, "<u>including</u>" means "including without limitation"; and "<u>Omron Companies</u>" (or similar words) mean Omron Corporation and any direct or indirect subsidiary or affiliate thereof.

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- Suitability of Use. Omron Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer's application or use of the Product. At Buyer's request. Omron will provide application of use of the Product. At Buyer's lequest, omron will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer's application, product or system. the particular Product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases but the following is a non-exhaustive list of applications for which particular attention must be given:

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  (ii) Use in consumer products or any use in significant quantities.

  (iii) Energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject and industrial consumers and consumers are consumers and status of the consumers and consumers.
  - ment, and installations subject to separate industry or government regulations. (iv) Systems, machines and equipment that could present a risk to life or prop erty. Please know and observe all prohibitions of use applicable to this Prod-
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- to confirm actual specifications of purchased Product.

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