

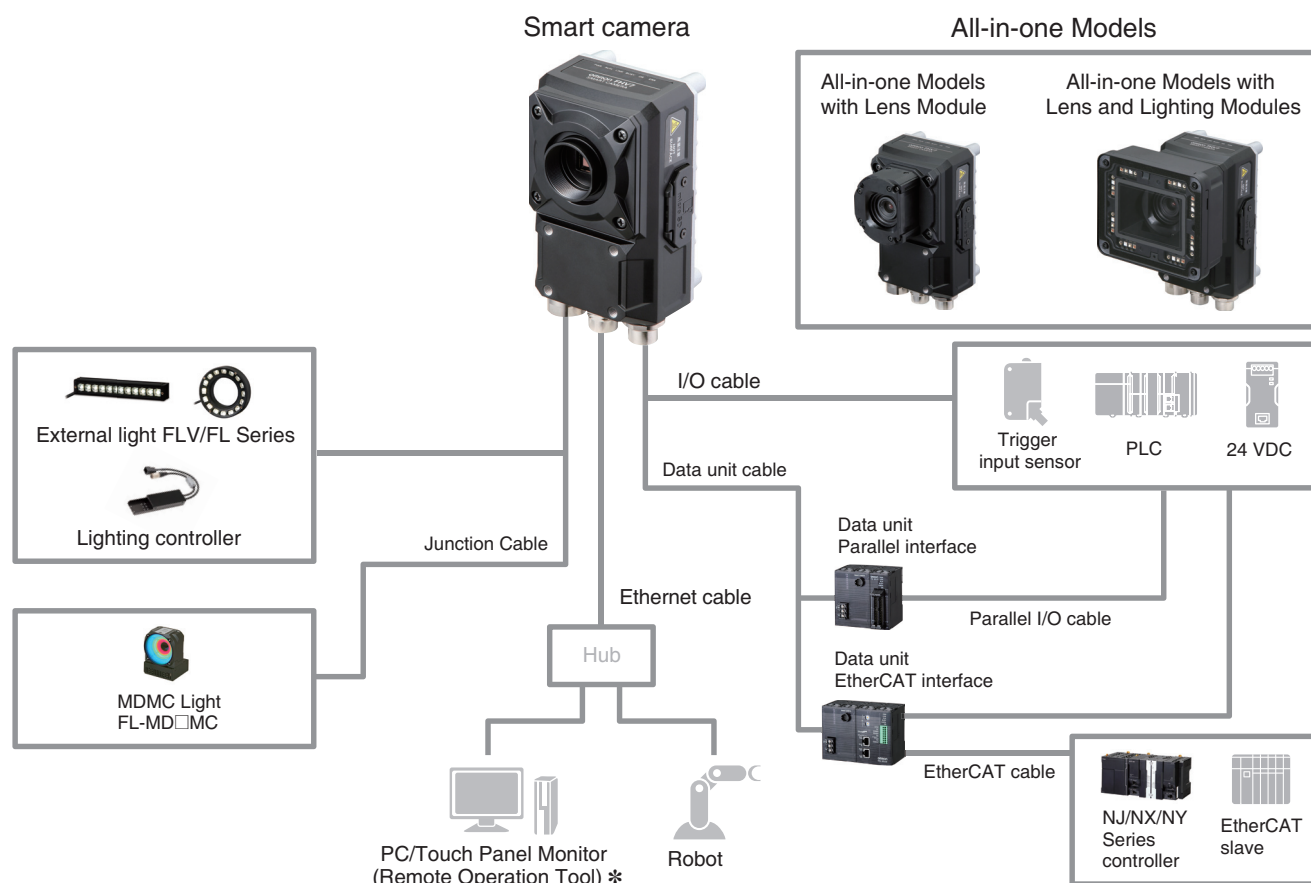
# Smart Camera FHV7 Series

The functionality and speed  
that your production site demands  
packed in an all-in-one device

- A robust all-in-one body that makes it easy to install
- Flexibly accommodates object changes
- Excellent productivity performance



## System Configuration



\* After purchasing the product, you can register as a member to download this for free. For details, see the member registration sheet included with the FHV7 Smart Camera.

## Model Selection

To select a model of Smart Camera, use the WEB Selector.

[http://www.ia.omron.com/fhv\\_select\\_e](http://www.ia.omron.com/fhv_select_e)

**Note:** With certain module types, the operation of some combinations cannot be guaranteed. Use the Web Selector to select the correct combination of image sensor, lens, resolution, and light.



## Model Number Structure

### FHV7 Series Model Number Legend

Use this legend when determining the product specifications from the model number. When ordering, use a model number from the table in *Ordering Information*.

**FHV7 H-**

|   |   |   |   |   |
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| No. | Classification | Code | Meaning                            |
|-----|----------------|------|------------------------------------|
| 1   | Image sensors  | M    | Monochrome                         |
|     |                | C    | Color                              |
| 2   | Resolution     | 004  | 0.4 million pixels                 |
|     |                | 016  | 1.6 million pixels                 |
|     |                | 032  | 3.2 million pixels                 |
|     |                | 050  | 5 million pixels                   |
|     |                | 063  | 6.3 million pixels                 |
|     |                | 120  | 12 million pixels                  |
| 3   | Shutter type   | -    | Global shutter                     |
|     |                | R    | Rolling shutter                    |
| 4   | Lens           | C    | C mount                            |
|     |                | H    | High-speed lens module (autofocus) |
|     |                | S    | Standard lens module (autofocus)   |

| No. | Classification | Code | Meaning     |
|-----|----------------|------|-------------|
| 5   | Focal length   | 06   | 6 mm        |
|     |                | 09   | 9 mm        |
|     |                | 12   | 12 mm       |
|     |                | 16   | 16 mm       |
|     |                | 19   | 19 mm       |
|     |                | 25   | 25 mm       |
| 6   | Light color    | R    | Red         |
|     |                | W    | White       |
|     |                | IR   | IR          |
|     |                | MC   | Multi color |

## Configuration

For the Smart Camera FHV7 series, there are five configurations below by module combinations.

| Smart camera                                                                                                                  | Lens                                                                                           | Internal lighting                                        | Protective structure | Integrated model                                            | Appearance                                                                                                                        | Configuration                         |
|-------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|----------------------------------------------------------|----------------------|-------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| 0.4 million pixels<br>1.6 million pixels<br>3.2 million pixels<br>5 million pixels<br>6.3 million pixels<br>12 million pixels | FHV7H-□004-□<br>FHV7H-□016-□<br>FHV7H-□032-□<br>FHV7H-□050-□<br>FHV7H-□063R-□<br>FHV7H-□120R-□ | C mount lens<br>3Z4SLE<br>SV-□□□□V<br>3Z4SLE<br>SV-□□□□H | N/A                  | IP40                                                        | FHV7H-□□□□□-C<br>                            | C mount lens/IP40                     |
|                                                                                                                               |                                                                                                |                                                          |                      | IP67<br>Waterproof Hoods required<br>FHV-XHD-S<br>FHV-XHD-L | N/A<br>                                      | C mount lens/IP67                     |
| 0.4 million pixels<br>1.6 million pixels<br>3.2 million pixels<br>6.3 million pixels                                          | FHV7H-□004-□<br>FHV7H-□016-□<br>FHV7H-□032-□<br>FHV7H-□063R-□                                  | FHV lens module<br>FHV-LEM-H□□<br>FHV-LEM-S□□            | N/A                  | IP40                                                        | FHV7H-□□□□□-H□□<br>FHV7H-□□□□□-S□□<br>       | Lens module/IP40                      |
|                                                                                                                               |                                                                                                |                                                          |                      | IP67<br>Waterproof Hoods required<br>FHV-XHD-LEM            | N/A<br>                                      | Lens module/IP67                      |
|                                                                                                                               |                                                                                                |                                                          | FHV-LTM-□□           | IP67                                                        | FHV7H-□□□□□-H□□-□□<br>FHV7H-□□□□□-S□□-□□<br> | Lens module /Internal lighting - IP67 |

## FHV7 Series

### Ordering Information

#### Smart Cameras

##### C Mount Models

| Item                                                                              | Resolution         | Model         |               |
|-----------------------------------------------------------------------------------|--------------------|---------------|---------------|
|                                                                                   |                    | Color         | Monochrome    |
|  | 0.4 million pixels | FHV7H-C004-C  | FHV7H-M004-C  |
|                                                                                   | 1.6 million pixels | FHV7H-C016-C  | FHV7H-M016-C  |
|                                                                                   | 3.2 million pixels | FHV7H-C032-C  | FHV7H-M032-C  |
|                                                                                   | 5 million pixels   | FHV7H-C050-C  | FHV7H-M050-C  |
|                                                                                   | 6.3 million pixels | FHV7H-C063R-C | FHV7H-M063R-C |
|                                                                                   | 12 million pixels  | FHV7H-C120R-C | FHV7H-M120R-C |

#### All-in-one Models with Lens Module

| Item                                                                                | Resolution         | Lens                               | Focal length | Model           |                 |
|-------------------------------------------------------------------------------------|--------------------|------------------------------------|--------------|-----------------|-----------------|
|                                                                                     |                    |                                    |              | Color           | Monochrome      |
|  | 0.4 million pixels | High-speed lens module (autofocus) | 6 mm         | FHV7H-C004-H06  | FHV7H-M004-H06  |
|                                                                                     |                    |                                    | 19 mm        | FHV7H-C004-H19  | FHV7H-M004-H19  |
|                                                                                     |                    | Standard lens module (autofocus)   | 6 mm         | FHV7H-C004-S06  | FHV7H-M004-S06  |
|                                                                                     |                    |                                    | 9 mm         | FHV7H-C004-S09  | FHV7H-M004-S09  |
|                                                                                     |                    |                                    | 12 mm        | FHV7H-C004-S12  | FHV7H-M004-S12  |
|                                                                                     |                    |                                    | 16 mm        | FHV7H-C004-S16  | FHV7H-M004-S16  |
|                                                                                     |                    |                                    | 25 mm        | FHV7H-C004-S25  | FHV7H-M004-S25  |
|                                                                                     | 1.6 million pixels | High-speed lens module (autofocus) | 6 mm         | FHV7H-C016-H06  | FHV7H-M016-H06  |
|                                                                                     |                    |                                    | 19 mm        | FHV7H-C016-H19  | FHV7H-M016-H19  |
|                                                                                     |                    | Standard lens module (autofocus)   | 6 mm         | FHV7H-C016-S06  | FHV7H-M016-S06  |
|                                                                                     |                    |                                    | 9 mm         | FHV7H-C016-S09  | FHV7H-M016-S09  |
|                                                                                     |                    |                                    | 12 mm        | FHV7H-C016-S12  | FHV7H-M016-S12  |
|                                                                                     |                    |                                    | 16 mm        | FHV7H-C016-S16  | FHV7H-M016-S16  |
|                                                                                     |                    |                                    | 25 mm        | FHV7H-C016-S25  | FHV7H-M016-S25  |
|                                                                                     | 3.2 million pixels | High-speed lens module (autofocus) | 6 mm         | FHV7H-C032-H06  | FHV7H-M032-H06  |
|                                                                                     |                    |                                    | 19 mm        | FHV7H-C032-H19  | FHV7H-M032-H19  |
|                                                                                     |                    | Standard lens module (autofocus)   | 6 mm         | FHV7H-C032-S06  | FHV7H-M032-S06  |
|                                                                                     |                    |                                    | 9 mm         | FHV7H-C032-S09  | FHV7H-M032-S09  |
|                                                                                     |                    |                                    | 12 mm        | FHV7H-C032-S12  | FHV7H-M032-S12  |
|                                                                                     |                    |                                    | 16 mm        | FHV7H-C032-S16  | FHV7H-M032-S16  |
|                                                                                     |                    |                                    | 25 mm        | FHV7H-C032-S25  | FHV7H-M032-S25  |
|                                                                                     | 6.3 million pixels | High-speed lens module (autofocus) | 6 mm         | FHV7H-C063R-H06 | FHV7H-M063R-H06 |
|                                                                                     |                    |                                    | 19 mm        | FHV7H-C063R-H19 | FHV7H-M063R-H19 |
|                                                                                     |                    | Standard lens module (autofocus)   | 6 mm         | FHV7H-C063R-S06 | FHV7H-M063R-S06 |
|                                                                                     |                    |                                    | 9 mm         | FHV7H-C063R-S09 | FHV7H-M063R-S09 |
|                                                                                     |                    |                                    | 12 mm        | FHV7H-C063R-S12 | FHV7H-M063R-S12 |
|                                                                                     |                    |                                    | 16 mm        | FHV7H-C063R-S16 | FHV7H-M063R-S16 |
|                                                                                     |                    |                                    | 25 mm        | FHV7H-C063R-S25 | FHV7H-M063R-S25 |

\* For the focal length and horizontal field of view, refer to specifications (P.12) and optical charts of the lens module (P.29).

## All-in-one Models with Lens and Lighting Modules

| Item                                                                                | Resolution         | Lens                               | Focal length | Light color | Model             |                   |
|-------------------------------------------------------------------------------------|--------------------|------------------------------------|--------------|-------------|-------------------|-------------------|
|                                                                                     |                    |                                    |              |             | Color             | Monochrome        |
|  | 0.4 million pixels | High-speed lens module (autofocus) | 6 mm         | Multi color | FHV7H-C004-H06-MC | FHV7H-M004-H06-MC |
|                                                                                     |                    |                                    |              | Red         | ---               | FHV7H-M004-H06-R  |
|                                                                                     |                    |                                    |              | White       | FHV7H-C004-H06-W  | FHV7H-M004-H06-W  |
|                                                                                     |                    |                                    |              | IR          | ---               | FHV7H-M004-H06-IR |
|                                                                                     |                    |                                    | 19 mm        | Multi color | FHV7H-C004-H19-MC | FHV7H-M004-H19-MC |
|                                                                                     |                    |                                    |              | Red         | ---               | FHV7H-M004-H19-R  |
|                                                                                     |                    |                                    |              | White       | FHV7H-C004-H19-W  | FHV7H-M004-H19-W  |
|                                                                                     |                    |                                    |              | IR          | ---               | FHV7H-M004-H19-IR |
|                                                                                     |                    | Standard lens module (autofocus)   | 6 mm         | Multi color | FHV7H-C004-S06-MC | FHV7H-M004-S06-MC |
|                                                                                     |                    |                                    |              | Red         | ---               | FHV7H-M004-S06-R  |
|                                                                                     |                    |                                    |              | White       | FHV7H-C004-S06-W  | FHV7H-M004-S06-W  |
|                                                                                     |                    |                                    |              | IR          | ---               | FHV7H-M004-S06-IR |
|                                                                                     |                    |                                    | 9 mm         | Multi color | FHV7H-C004-S09-MC | FHV7H-M004-S09-MC |
|                                                                                     |                    |                                    |              | Red         | ---               | FHV7H-M004-S09-R  |
|                                                                                     |                    |                                    |              | White       | FHV7H-C004-S09-W  | FHV7H-M004-S09-W  |
|                                                                                     |                    |                                    |              | IR          | ---               | FHV7H-M004-S09-IR |
|                                                                                     |                    |                                    | 12 mm        | Multi color | FHV7H-C004-S12-MC | FHV7H-M004-S12-MC |
|                                                                                     |                    |                                    |              | Red         | ---               | FHV7H-M004-S12-R  |
|                                                                                     |                    |                                    |              | White       | FHV7H-C004-S12-W  | FHV7H-M004-S12-W  |
|                                                                                     |                    |                                    |              | IR          | ---               | FHV7H-M004-S12-IR |
|                                                                                     |                    |                                    | 16 mm        | Multi color | FHV7H-C004-S16-MC | FHV7H-M004-S16-MC |
|                                                                                     |                    |                                    |              | Red         | ---               | FHV7H-M004-S16-R  |
|                                                                                     |                    |                                    |              | White       | FHV7H-C004-S16-W  | FHV7H-M004-S16-W  |
|                                                                                     |                    |                                    |              | IR          | ---               | FHV7H-M004-S16-IR |
|                                                                                     |                    |                                    | 25 mm        | Multi color | FHV7H-C004-S25-MC | FHV7H-M004-S25-MC |
|                                                                                     |                    |                                    |              | Red         | ---               | FHV7H-M004-S25-R  |
|                                                                                     |                    |                                    |              | White       | FHV7H-C004-S25-W  | FHV7H-M004-S25-W  |
|                                                                                     |                    |                                    |              | IR          | ---               | FHV7H-M004-S25-IR |
|                                                                                     | 1.6 million pixels | High-speed lens module (autofocus) | 6 mm         | Multi color | FHV7H-C016-H06-MC | FHV7H-M016-H06-MC |
|                                                                                     |                    |                                    |              | Red         | ---               | FHV7H-M016-H06-R  |
|                                                                                     |                    |                                    |              | White       | FHV7H-C016-H06-W  | FHV7H-M016-H06-W  |
|                                                                                     |                    |                                    |              | IR          | ---               | FHV7H-M016-H06-IR |
|                                                                                     |                    |                                    | 19 mm        | Multi color | FHV7H-C016-H19-MC | FHV7H-M016-H19-MC |
|                                                                                     |                    |                                    |              | Red         | ---               | FHV7H-M016-H19-R  |
|                                                                                     |                    |                                    |              | White       | FHV7H-C016-H19-W  | FHV7H-M016-H19-W  |
|                                                                                     |                    |                                    |              | IR          | ---               | FHV7H-M016-H19-IR |
|                                                                                     |                    | Standard lens module (autofocus)   | 6 mm         | Multi color | FHV7H-C016-S06-MC | FHV7H-M016-S06-MC |
|                                                                                     |                    |                                    |              | Red         | ---               | FHV7H-M016-S06-R  |
|                                                                                     |                    |                                    |              | White       | FHV7H-C016-S06-W  | FHV7H-M016-S06-W  |
|                                                                                     |                    |                                    |              | IR          | ---               | FHV7H-M016-S06-IR |
|                                                                                     |                    |                                    | 9 mm         | Multi color | FHV7H-C016-S09-MC | FHV7H-M016-S09-MC |
|                                                                                     |                    |                                    |              | Red         | ---               | FHV7H-M016-S09-R  |
|                                                                                     |                    |                                    |              | White       | FHV7H-C016-S09-W  | FHV7H-M016-S09-W  |
|                                                                                     |                    |                                    |              | IR          | ---               | FHV7H-M016-S09-IR |
|                                                                                     |                    |                                    | 12 mm        | Multi color | FHV7H-C016-S12-MC | FHV7H-M016-S12-MC |
|                                                                                     |                    |                                    |              | Red         | ---               | FHV7H-M016-S12-R  |
|                                                                                     |                    |                                    |              | White       | FHV7H-C016-S12-W  | FHV7H-M016-S12-W  |
|                                                                                     |                    |                                    |              | IR          | ---               | FHV7H-M016-S12-IR |
|                                                                                     |                    |                                    | 16 mm        | Multi color | FHV7H-C016-S16-MC | FHV7H-M016-S16-MC |
|                                                                                     |                    |                                    |              | Red         | ---               | FHV7H-M016-S16-R  |
|                                                                                     |                    |                                    |              | White       | FHV7H-C016-S16-W  | FHV7H-M016-S16-W  |
|                                                                                     |                    |                                    |              | IR          | ---               | FHV7H-M016-S16-IR |
|                                                                                     |                    |                                    | 25 mm        | Multi color | FHV7H-C016-S25-MC | FHV7H-M016-S25-MC |
|                                                                                     |                    |                                    |              | Red         | ---               | FHV7H-M016-S25-R  |
|                                                                                     |                    |                                    |              | White       | FHV7H-C016-S25-W  | FHV7H-M016-S25-W  |
|                                                                                     |                    |                                    |              | IR          | ---               | FHV7H-M016-S25-IR |

# FHV7 Series

| Item                                                                                | Resolution         | Lens                               | Focal length | Light color | Model              |                    |
|-------------------------------------------------------------------------------------|--------------------|------------------------------------|--------------|-------------|--------------------|--------------------|
|                                                                                     |                    |                                    |              |             | Color              | Monochrome         |
|  | 3.2 million pixels | High-speed lens module (autofocus) | 6 mm         | Multi color | FHV7H-C032-H06-MC  | FHV7H-M032-H06-MC  |
|                                                                                     |                    |                                    |              | Red         | ---                | FHV7H-M032-H06-R   |
|                                                                                     |                    |                                    |              | White       | FHV7H-C032-H06-W   | FHV7H-M032-H06-W   |
|                                                                                     |                    |                                    |              | IR          | ---                | FHV7H-M032-H06-IR  |
|                                                                                     |                    |                                    | 19 mm        | Multi color | FHV7H-C032-H19-MC  | FHV7H-M032-H19-MC  |
|                                                                                     |                    |                                    |              | Red         | ---                | FHV7H-M032-H19-R   |
|                                                                                     |                    |                                    |              | White       | FHV7H-C032-H19-W   | FHV7H-M032-H19-W   |
|                                                                                     |                    |                                    |              | IR          | ---                | FHV7H-M032-H19-IR  |
|                                                                                     |                    | Standard lens module (autofocus)   | 6 mm         | Multi color | FHV7H-C032-S06-MC  | FHV7H-M032-S06-MC  |
|                                                                                     |                    |                                    |              | Red         | ---                | FHV7H-M032-S06-R   |
|                                                                                     |                    |                                    |              | White       | FHV7H-C032-S06-W   | FHV7H-M032-S06-W   |
|                                                                                     |                    |                                    |              | IR          | ---                | FHV7H-M032-S06-IR  |
|                                                                                     |                    |                                    | 9 mm         | Multi color | FHV7H-C032-S09-MC  | FHV7H-M032-S09-MC  |
|                                                                                     |                    |                                    |              | Red         | ---                | FHV7H-M032-S09-R   |
|                                                                                     |                    |                                    |              | White       | FHV7H-C032-S09-W   | FHV7H-M032-S09-W   |
|                                                                                     |                    |                                    |              | IR          | ---                | FHV7H-M032-S09-IR  |
|                                                                                     |                    |                                    | 12 mm        | Multi color | FHV7H-C032-S12-MC  | FHV7H-M032-S12-MC  |
|                                                                                     |                    |                                    |              | Red         | ---                | FHV7H-M032-S12-R   |
|                                                                                     |                    |                                    |              | White       | FHV7H-C032-S12-W   | FHV7H-M032-S12-W   |
|                                                                                     |                    |                                    |              | IR          | ---                | FHV7H-M032-S12-IR  |
|                                                                                     |                    |                                    | 16 mm        | Multi color | FHV7H-C032-S16-MC  | FHV7H-M032-S16-MC  |
|                                                                                     |                    |                                    |              | Red         | ---                | FHV7H-M032-S16-R   |
|                                                                                     |                    |                                    |              | White       | FHV7H-C032-S16-W   | FHV7H-M032-S16-W   |
|                                                                                     |                    |                                    |              | IR          | ---                | FHV7H-M032-S16-IR  |
|                                                                                     |                    |                                    | 25 mm        | Multi color | FHV7H-C032-S25-MC  | FHV7H-M032-S25-MC  |
|                                                                                     |                    |                                    |              | Red         | ---                | FHV7H-M032-S25-R   |
|                                                                                     |                    |                                    |              | White       | FHV7H-C032-S25-W   | FHV7H-M032-S25-W   |
|                                                                                     |                    |                                    |              | IR          | ---                | FHV7H-M032-S25-IR  |
|                                                                                     | 6.3 million pixels | High-speed lens module (autofocus) | 6 mm         | Multi color | FHV7H-C063R-H06-MC | FHV7H-M063R-H06-MC |
|                                                                                     |                    |                                    |              | Red         | ---                | FHV7H-M063R-H06-R  |
|                                                                                     |                    |                                    |              | White       | FHV7H-C063R-H06-W  | FHV7H-M063R-H06-W  |
|                                                                                     |                    |                                    |              | IR          | ---                | FHV7H-M063R-H06-IR |
|                                                                                     |                    |                                    | 19 mm        | Multi color | FHV7H-C063R-H19-MC | FHV7H-M063R-H19-MC |
|                                                                                     |                    |                                    |              | Red         | ---                | FHV7H-M063R-H19-R  |
|                                                                                     |                    |                                    |              | White       | FHV7H-C063R-H19-W  | FHV7H-M063R-H19-W  |
|                                                                                     |                    |                                    |              | IR          | ---                | FHV7H-M063R-H19-IR |
|                                                                                     |                    | Standard lens module (autofocus)   | 6 mm         | Multi color | FHV7H-C063R-S06-MC | FHV7H-M063R-S06-MC |
|                                                                                     |                    |                                    |              | Red         | ---                | FHV7H-M063R-S06-R  |
|                                                                                     |                    |                                    |              | White       | FHV7H-C063R-S06-W  | FHV7H-M063R-S06-W  |
|                                                                                     |                    |                                    |              | IR          | ---                | FHV7H-M063R-S06-IR |
|                                                                                     |                    |                                    | 9 mm         | Multi color | FHV7H-C063R-S09-MC | FHV7H-M063R-S09-MC |
|                                                                                     |                    |                                    |              | Red         | ---                | FHV7H-M063R-S09-R  |
|                                                                                     |                    |                                    |              | White       | FHV7H-C063R-S09-W  | FHV7H-M063R-S09-W  |
|                                                                                     |                    |                                    |              | IR          | ---                | FHV7H-M063R-S09-IR |
|                                                                                     |                    |                                    | 12 mm        | Multi color | FHV7H-C063R-S12-MC | FHV7H-M063R-S12-MC |
|                                                                                     |                    |                                    |              | Red         | ---                | FHV7H-M063R-S12-R  |
|                                                                                     |                    |                                    |              | White       | FHV7H-C063R-S12-W  | FHV7H-M063R-S12-W  |
|                                                                                     |                    |                                    |              | IR          | ---                | FHV7H-M063R-S12-IR |
|                                                                                     |                    |                                    | 16 mm        | Multi color | FHV7H-C063R-S16-MC | FHV7H-M063R-S16-MC |
|                                                                                     |                    |                                    |              | Red         | ---                | FHV7H-M063R-S16-R  |
|                                                                                     |                    |                                    |              | White       | FHV7H-C063R-S16-W  | FHV7H-M063R-S16-W  |
|                                                                                     |                    |                                    |              | IR          | ---                | FHV7H-M063R-S16-IR |
|                                                                                     |                    |                                    | 25 mm        | Multi color | FHV7H-C063R-S25-MC | FHV7H-M063R-S25-MC |
|                                                                                     |                    |                                    |              | Red         | ---                | FHV7H-M063R-S25-R  |
|                                                                                     |                    |                                    |              | White       | FHV7H-C063R-S25-W  | FHV7H-M063R-S25-W  |
|                                                                                     |                    |                                    |              | IR          | ---                | FHV7H-M063R-S25-IR |

\* For the focal length and horizontal field of view, refer to specifications (P.12) and optical charts of the lens module (P.29)

## Lens Modules

| Item                                                                              | Focal length | Model              |
|-----------------------------------------------------------------------------------|--------------|--------------------|
|  | 6 mm         | <b>FHV-LEM-H06</b> |
|                                                                                   | 19 mm        | <b>FHV-LEM-H19</b> |
|  | 6 mm         | <b>FHV-LEM-S06</b> |
|                                                                                   | 9 mm         | <b>FHV-LEM-S09</b> |
|                                                                                   | 12 mm        | <b>FHV-LEM-S12</b> |
|                                                                                   | 16 mm        | <b>FHV-LEM-S16</b> |
|                                                                                   | 25 mm        | <b>FHV-LEM-S25</b> |

\* For the focal length and horizontal field of view, refer to specifications (P.12) and optical charts of the lens module (P.29).

**Note:** Refer to the *Vision Accessory Catalog* (Cat No. Q198) for details on C-mount lenses.

## Lighting Modules

| Item                                                                              | Light color | Model             |
|-----------------------------------------------------------------------------------|-------------|-------------------|
|  | Multi color | <b>FHV-LTM-MC</b> |
|  | Red         | <b>FHV-LTM-R</b>  |
|  | White       | <b>FHV-LTM-W</b>  |
|  | IR          | <b>FHV-LTM-IR</b> |

## Optical Filters

| Item                                                                                                                                              | Model             |
|---------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
|  Polarization Filter For visible light                          | <b>FHV-XPL</b>    |
|  Polarization Filter For both infrared light and visible light | <b>FHV-XPL-IR</b> |
|  Diffusion Filter                                              | <b>FHV-XDF</b>    |

## Waterproof Hoods

Required to ensure IP67 protection without using a lighting module.

| Item                                                                                                                            | Model              |
|---------------------------------------------------------------------------------------------------------------------------------|--------------------|
|  Waterproof Hood for Lens Modules            | <b>FHV-XHD-LEM</b> |
|  Waterproof Hood for C-mount Lens (Short) *1 | <b>FHV-XHD-S</b>   |
|  Waterproof Hood for C-mount Lens (Long) *2  | <b>FHV-XHD-L</b>   |

\*1. Can be used with the following lenses.

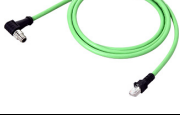
3Z4S-LE SV-0614V, 3Z4S-LE SV-0813V, 3Z4S-LE SV-1214V, 3Z4S-LE SV-1614V, 3Z4S-LE SV-2514V

\*2. Can be used with the following lenses.

3Z4S-LE SV-0614H, 3Z4S-LE SV-0814H, 3Z4S-LE SV-1214H, 3Z4S-LE SV-1614H, 3Z4S-LE SV-2514H, 3Z4S-LE SV-3514H, 3Z4S-LE SV-5014H

# FHV7 Series

## Cables

| Item                                                                                |                                                       | Cable length | Model         |
|-------------------------------------------------------------------------------------|-------------------------------------------------------|--------------|---------------|
|    | I/O Cable (Bend Resistant) *1                         | 2m           | FHV-VDB 2M    |
|                                                                                     |                                                       | 3m           | FHV-VDB 3M    |
|                                                                                     |                                                       | 5m           | FHV-VDB 5M    |
|                                                                                     |                                                       | 10m          | FHV-VDB 10M   |
|                                                                                     |                                                       | 20m          | FHV-VDB 20M   |
|    | I/O Cable (Bend Resistant, Right-angle) *1            | 2m           | FHV-VDLB 2M   |
|                                                                                     |                                                       | 3m           | FHV-VDLB 3M   |
|                                                                                     |                                                       | 5m           | FHV-VDLB 5M   |
|                                                                                     |                                                       | 10m          | FHV-VDLB 10M  |
|                                                                                     |                                                       | 20m          | FHV-VDLB 20M  |
|    | I/O Cable (Super Bend Resistant) *1, *2               | 2m           | FHV-VDBX 2M   |
|                                                                                     |                                                       | 3m           | FHV-VDBX 3M   |
|                                                                                     |                                                       | 5m           | FHV-VDBX 5M   |
|                                                                                     |                                                       | 10m          | FHV-VDBX 10M  |
|    | I/O Cable (Super Bend Resistant, Right-angle) *1, *2  | 2m           | FHV-VDLBX 2M  |
|                                                                                     |                                                       | 3m           | FHV-VDLBX 3M  |
|                                                                                     |                                                       | 5m           | FHV-VDLBX 5M  |
|                                                                                     |                                                       | 10m          | FHV-VDLBX 10M |
|   | Ethernet Cable (Bend Resistant)                       | 2m           | FHV-VNB 2M    |
|                                                                                     |                                                       | 3m           | FHV-VNB 3M    |
|                                                                                     |                                                       | 5m           | FHV-VNB 5M    |
|                                                                                     |                                                       | 10m          | FHV-VNB 10M   |
|                                                                                     |                                                       | 20m          | FHV-VNB 20M   |
|  | Ethernet Cable (Bend Resistant, Right-angle)          | 2m           | FHV-VNLB 2M   |
|                                                                                     |                                                       | 3m           | FHV-VNLB 3M   |
|                                                                                     |                                                       | 5m           | FHV-VNLB 5M   |
|                                                                                     |                                                       | 10m          | FHV-VNLB 10M  |
|                                                                                     |                                                       | 20m          | FHV-VNLB 20M  |
|  | Ethernet Cable (Super Bend resistant) *2              | 2m           | FHV-VNBX 2M   |
|                                                                                     |                                                       | 3m           | FHV-VNBX 3M   |
|                                                                                     |                                                       | 5m           | FHV-VNBX 5M   |
|                                                                                     |                                                       | 10m          | FHV-VNBX 10M  |
|  | Ethernet Cable (Super Bend resistant, Right-angle) *2 | 2m           | FHV-VNLBX 2M  |
|                                                                                     |                                                       | 3m           | FHV-VNLBX 3M  |
|                                                                                     |                                                       | 5m           | FHV-VNLBX 5M  |
|                                                                                     |                                                       | 10m          | FHV-VNLBX 10M |
|  | External Light Conversion Cable for MDMC Light        | 0.1m         | FHV-VFLX-GD   |

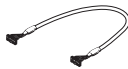
\*1. The FHV-VDB/VDLB/VDBX/VDLBX I/O Cable cannot be connected when the smart camera data unit is used.  
Use the FHV-VUB/VULB/VUBX/VULBX Smart Camera Data Unit Cable.

\*2. The Super Bend Resistant cables (FHV-VN□BX, FHV-VD□BX) do not protect against water.  
(If using them, the IP Protection level for the smart camera will not be IP67, but rather IP60.)  
If protection against water is required, please use a Bend Resistant cable (FHV-VN□B, FHV-VD□B).

## Smart Camera Data Unit

| Item                                                                              | Model                                  |
|-----------------------------------------------------------------------------------|----------------------------------------|
|  | Parallel interface<br><b>FHV-SDU10</b> |
|  | EtherCAT interface<br><b>FHV-SDU30</b> |

## Smart Camera Data Unit Cable

| Item                                                                                | Cable length            | Model                |
|-------------------------------------------------------------------------------------|-------------------------|----------------------|
|    | 2m                      | <b>FHV-VUB 2M</b>    |
|                                                                                     | 3m                      | <b>FHV-VUB 3M</b>    |
|                                                                                     | 5m                      | <b>FHV-VUB 5M</b>    |
|                                                                                     | 10m                     | <b>FHV-VUB 10M</b>   |
|                                                                                     | 20m                     | <b>FHV-VUB 20M</b>   |
|    | 2m                      | <b>FHV-VULB 2M</b>   |
|                                                                                     | 3m                      | <b>FHV-VULB 3M</b>   |
|                                                                                     | 5m                      | <b>FHV-VULB 5M</b>   |
|                                                                                     | 10m                     | <b>FHV-VULB 10M</b>  |
|                                                                                     | 20m                     | <b>FHV-VULB 20M</b>  |
|   | 2m                      | <b>FHV-VUBX 2M</b>   |
|                                                                                     | 3m                      | <b>FHV-VUBX 3M</b>   |
|                                                                                     | 5m                      | <b>FHV-VUBX 5M</b>   |
|                                                                                     | 10m                     | <b>FHV-VUBX 10M</b>  |
|  | 2m                      | <b>FHV-VULBX 2M</b>  |
|                                                                                     | 3m                      | <b>FHV-VULBX 3M</b>  |
|                                                                                     | 5m                      | <b>FHV-VULBX 5M</b>  |
|                                                                                     | 10m                     | <b>FHV-VULBX 10M</b> |
|  | 2m                      | <b>XW2Z-S013-2</b>   |
|                                                                                     | 5m                      | <b>XW2Z-S013-5</b>   |
|  | 0.5m                    | <b>XW2Z-050EE</b>    |
|                                                                                     | 1m                      | <b>XW2Z-100EE</b>    |
|                                                                                     | 1.5m                    | <b>XW2Z-150EE</b>    |
|                                                                                     | 2m                      | <b>XW2Z-200EE</b>    |
|                                                                                     | 3m                      | <b>XW2Z-300EE</b>    |
|                                                                                     | 5m                      | <b>XW2Z-500EE</b>    |
|  | Phillips screw          | <b>XW2R-J34GD-T</b>  |
|                                                                                     | Slotted screw (rise up) | <b>XW2R-E34GD-T</b>  |
|                                                                                     | Push-in spring          | <b>XW2R-P34GD-T</b>  |

\*1. The FHV-VDB/VDLB/VDBX/VDLBX I/O Cable cannot be connected when this cable is used.

\*2. Refer to the XW2R Series catalog (Cat. No. G077) for details.

\*3. The Super Bend Resistant cables (FHV-VU□BX) do not protect against water.  
(If using them, the IP Protection level for the smart camera will not be IP67, but rather IP60.)  
If protection against water is required, please use a Bend Resistant cable (FHV-VU□B).

## FHV7 Series

### Accessories

| Item                                                                                |                                                                                                             | Model                                        |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|----------------------------------------------|
|    | Base Mount for Smart Cameras and Lighting Controllers                                                       | <b>FHV-XMT-7</b>                             |
|    | Base Mount for Lighting Controllers                                                                         | <b>FHV-XMT-7-TCC</b>                         |
|    | Light Cover (for replacement) *1                                                                            | <b>FHV-XCV</b>                               |
|    | Waterproof Cap (for replacement)                                                                            | for Ethernet Connector<br><b>FHV-XWC-ECN</b> |
|    |                                                                                                             | for Light Connector<br><b>FHV-XWC-LCN</b>    |
|    | Waterproof Packing *2<br>(for replacement, 5 pcs)                                                           | for Camera<br><b>FHV-XWP-CAM</b>             |
|    |                                                                                                             | for Lighting Module<br><b>FHV-XWP-LTM</b>    |
|   |                                                                                                             | for Waterproof Hood<br><b>FHV-XWP-HD-SL</b>  |
|  | Light-shielding for Lighting Module (for replacement, 3 pcs) *3                                             | <b>FHV-XLS-LTM</b>                           |
|  | Cover for High-speed Lens Module<br>(for replacement, cover 1pcs, screws 5 pcs (including one spare piece)) | <b>FHV-XFC-LEM-H</b>                         |
|  | Cover for Standard Lens Module<br>(for replacement, cover 1pcs, screws 5 pcs (including one spare piece))   | <b>FHV-XFC-LEM-S</b>                         |
|  | Cover for C-mount Lens<br>(for replacement, cover 1pcs, screws 5 pcs (including one spare piece))           | <b>FHV-XFC-C</b>                             |
| ---                                                                                 | Screw for microSD card cover (for replacement, 10 pcs)                                                      | <b>FHV-XSCR-MSD</b>                          |

\*1. Adapted lighting module

FHV-LTM-W, FHV-LTM-R, FHV-LTM-IR, FHV-LTM-MC

\*2. Always replace when a module is removed.

\*3. It is considered a consumable item that will deteriorate. Please replace as needed.

### Accessories

| Item                                                                                | Descriptions                                           |        |                              |                                     | Model           |
|-------------------------------------------------------------------------------------|--------------------------------------------------------|--------|------------------------------|-------------------------------------|-----------------|
| —                                                                                   | External Lights                                        |        | External lighting controller | LED                                 | FLV Series      |
|                                                                                     |                                                        |        |                              | High-brightness LED                 | FL-BR/DR Series |
|  | Industrial Switching Hubs for EtherNet/IP and Ethernet | 3 port | Failure detection: None      | Current consumption: 0.22 A or less | W4S1-03B        |
|  |                                                        | 5 port | Failure detection: None      | Current consumption: 0.22 A or less | W4S1-05B        |
|                                                                                     |                                                        | 5 port | Failure detection: Supported | Current consumption: 0.22 A or less | W4S1-05C        |

## Lenses

Refer to the *Vision Accessory Catalog* (Cat. No. Q198) for details.

| Resolution        | Camera Model | Size of image element | Recommended lens |                  |                                                        |
|-------------------|--------------|-----------------------|------------------|------------------|--------------------------------------------------------|
|                   |              |                       | Standard Lens    | Telecentric Lens | Vibrations and Shocks Resistant Lens                   |
| 0.4 million-pixel | FHV7H-□004   | 1/2.9" equivalent     | SV-V Series      | VS-TCH Series    | VS-MCA Series<br>Non-telecentric Macro<br>VS-MC Series |
| 1.6 million-pixel | FHV7H-□016   | 1/2.9" equivalent     |                  |                  |                                                        |
| 3.2 million-pixel | FHV7H-□032   | 1/1.8" equivalent     | SV-H Series      |                  |                                                        |
| 5 million-pixel   | FHV7H-□060   | 2/3" equivalent       |                  |                  |                                                        |
| 6.3 million-pixel | FHV7H-□063R  | 1/1.8" equivalent     |                  |                  |                                                        |
| 12 million-pixel  | FHV7H-□120R  | 1/1.7" equivalent     |                  |                  |                                                        |

## Recommended EtherCAT Communications Cables

Use Straight STP (shielded twisted-pair) cable of category 5 or higher with double shielding (braiding and aluminum foil tape) for EtherCAT.

### Cable with Connectors

| Item                                                                                                                                                                                                                                  | Appearance                                                                          | Recommended manufacturer | Cable length (m) | Model                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------|------------------|----------------------|
| Cable with Connectors on Both Ends (RJ45/RJ45)<br>Standard RJ45 plugs type *1<br>Wire Gauge and Number of Pairs: AWG26, 4-pair Cable<br>Cable Sheath material: LSZH *2<br>Cable color: Yellow *3                                      |    | OMRON                    | 0.3              | XS6W-6LSZH8SS30CM-Y  |
|                                                                                                                                                                                                                                       |                                                                                     |                          | 0.5              | XS6W-6LSZH8SS50CM-Y  |
|                                                                                                                                                                                                                                       |                                                                                     |                          | 1                | XS6W-6LSZH8SS100CM-Y |
|                                                                                                                                                                                                                                       |                                                                                     |                          | 2                | XS6W-6LSZH8SS200CM-Y |
|                                                                                                                                                                                                                                       |                                                                                     |                          | 3                | XS6W-6LSZH8SS300CM-Y |
|                                                                                                                                                                                                                                       |                                                                                     |                          | 5                | XS6W-6LSZH8SS500CM-Y |
| Cable with Connectors on Both Ends (RJ45/RJ45)<br>Rugged RJ45 plugs type *1<br>Wire Gauge and Number of Pairs: AWG22, 2-pair Cable<br>Cable color: Light blue                                                                         |   | OMRON                    | 0.3              | XS5W-T421-AMD-K      |
|                                                                                                                                                                                                                                       |                                                                                     |                          | 0.5              | XS5W-T421-BMD-K      |
|                                                                                                                                                                                                                                       |                                                                                     |                          | 1                | XS5W-T421-CMD-K      |
|                                                                                                                                                                                                                                       |                                                                                     |                          | 2                | XS5W-T421-DMD-K      |
|                                                                                                                                                                                                                                       |                                                                                     |                          | 5                | XS5W-T421-GMD-K      |
|                                                                                                                                                                                                                                       |                                                                                     |                          | 10               | XS5W-T421-JMD-K      |
| Cable with Connectors on Both Ends<br>(M12 Straight/M12 Straight)<br>Shield Strengthening Connector cable *4<br>M12/Smartclick Connectors<br>Wire Gauge and Number of Pairs: AWG22, 2-pair Cable<br>Cable color: Black                |  | OMRON                    | 0.5              | XS5W-T421-BM2-SS     |
|                                                                                                                                                                                                                                       |                                                                                     |                          | 1                | XS5W-T421-CM2-SS     |
|                                                                                                                                                                                                                                       |                                                                                     |                          | 2                | XS5W-T421-DM2-SS     |
|                                                                                                                                                                                                                                       |                                                                                     |                          | 3                | XS5W-T421-EM2-SS     |
|                                                                                                                                                                                                                                       |                                                                                     |                          | 5                | XS5W-T421-GM2-SS     |
|                                                                                                                                                                                                                                       |                                                                                     |                          | 10               | XS5W-T421-JM2-SS     |
| Cable with Connectors on Both Ends (M12 Straight/RJ45)<br>Shield Strengthening Connector cable *4<br>M12/Smartclick Connectors<br>Rugged RJ45 plugs type<br>Wire Gauge and Number of Pairs: AWG22, 2-pair Cable<br>Cable color: Black |  | OMRON                    | 0.5              | XS5W-T421-BMC-SS     |
|                                                                                                                                                                                                                                       |                                                                                     |                          | 1                | XS5W-T421-CMC-SS     |
|                                                                                                                                                                                                                                       |                                                                                     |                          | 2                | XS5W-T421-DMC-SS     |
|                                                                                                                                                                                                                                       |                                                                                     |                          | 3                | XS5W-T421-EMC-SS     |
|                                                                                                                                                                                                                                       |                                                                                     |                          | 5                | XS5W-T421-GMC-SS     |
|                                                                                                                                                                                                                                       |                                                                                     |                          | 10               | XS5W-T421-JMC-SS     |

- \*1 Cables with standard RJ45 plugs are available in the following lengths: 0.2 m, 0.3 m, 0.5 m, 1 m, 1.5 m, 2 m, 3 m, 5 m, 7.5 m, 10 m, 15 m, 20 m. Cables with rugged RJ45 plugs are available in the following lengths: 0.3 m, 0.5 m, 1 m, 2 m, 3 m, 5 m, 10 m, 15 m.  
For details, refer to the Industrial Ethernet Connectors Catalog (Cat. No. G019).
- \*2 The lineup features Low Smoke Zero Halogen cables for in-cabinet use and PUR cables for out-of-cabinet use. Although the LSZH cable is single shielded, its communications and noise characteristics meet the standards.
- \*3 Cables colors are available in yellow, green, and blue.
- \*4 For details, contact your OMRON representative.

## FHV7 Series

### Cables / Connectors

| Item                                                                                                      |                                                                                                              | Recommended manufacturer     | Model                          |
|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|------------------------------|--------------------------------|
| Products for EtherCAT<br>(100BASE-T/100BASE-TX)<br>Wire gauge and number of pairs:<br>AWG24, 4-pair cable | Cable                                                                                                        | Hitachi Metals, Ltd.         | NETSTAR-C5E SAB 0.5 x 4P CP *1 |
|                                                                                                           |                                                                                                              | Kuramo Electric Co.          | KETH-SB *1                     |
|                                                                                                           |                                                                                                              | SWCC Showa Cable Systems Co. | FAE-5004 *1                    |
| Products for EtherCAT<br>(100BASE-TX/10BASE-T)<br>Wire gauge and number of pairs:<br>AWG22, 2-pair cable  | RJ45 Connector                                                                                               | Panduit Corporation          | MPS588-C *1                    |
|                                                                                                           | Cable                                                                                                        | Kuramo Electric Co.          | KETH-PSB-OMR *2                |
|                                                                                                           |                                                                                                              | JMACS Japan Co., Ltd.        | PNET/B *2                      |
|                                                                                                           | RJ45 Assembly Connector<br> | OMRON                        | XS6G-T421-1 *2                 |

\*1 We recommend you to use the above Cable and RJ45 Connector together.

\*2 We recommend you to use the above Cable and RJ45 Assembly Connector together.

### Touch Panel Monitor

| Item                                                                              |                                             | Model            |
|-----------------------------------------------------------------------------------|---------------------------------------------|------------------|
|  | Touch Panel Monitor                         | PPC-3100S-OMR    |
|                                                                                   | ARM VESA Standard (A-CLEVER) for PPC Series | PPC-ARM-A03      |
|                                                                                   | Wall mount kit for PPC Series               | PPC-174T-WL-MTE  |
|                                                                                   | Stand for PPC Series                        | PPC-Stand-A1E    |
|                                                                                   | ADP A/D 100-240V 90W 19V W/PFC              | 96PSA-A90W19OT-3 |
|                                                                                   | Power cord 3P UL 10 A 125 V 1.8 m           | 1700001524       |

Recommended Industrial Touch Panel IPC/ Monitor

If you require a more industrial solution or larger screensizes, our FHV7 smart camera's work perfect with Omron's Industrial PC systems (e.g. NYP-series)

Find your preferred Industrial PC systems at: <http://www.ia.omron.com/products/family/3633/>

### Automation Software Sysmac Studio

Please purchase a DVD and licenses the first time you purchase the Sysmac Studio. DVDs and licenses are available individually. The license does not include the DVD.

| Item                                           | Specifications                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Number of licenses | Media  | Model         |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|---------------|
|                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |        |               |
| Sysmac Studio<br>Standard Edition<br>Ver.1.□□  | The Sysmac Studio is the software that provides an integrated environment for setting, programming, debugging and maintenance of machine automation controllers including the NJ/NX-series CPU Units, NY-series Industrial PC, EtherCat Slave, and the HMI.<br>Sysmac Studio runs on the following OS.<br>Windows 7 (32-bit/64-bit version) /<br>Windows 8 (32-bit/64-bit version) /<br>Windows 8.1 (32-bit/64-bit version) /<br>Windows 10 Pro (32/64bit) or Enterprise (32/64bit)<br>This software provides functions of the Vision Edition.<br>Refer to your local OMRON website for details such as supported models and functions. | -- (Media only)    | DVD *1 | SYSMAC-SE200D |
|                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1 license *2       | —      | SYSMAC-SE201L |
| Sysmac Studio<br>Vision Edition<br>Ver.1.□□ *3 | Sysmac Studio Vision Edition is a limited license that provides selected functions required for Vision Sensor FH-series/Smart Camera FHV7-series/FQ-M-series settings.                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1 license          | —      | SYSMAC-VE001L |

\*1. The same media is used for both the Standard Edition and the Vision Edition.

\*2. Multi licenses are available for the Sysmac Studio (3, 10, 30, or 50 licenses).

\*3. This product is a license only. You need the Sysmac Studio Standard Edition DVD media to install it.

## Ratings and Specifications

### Smart Camera

| Item                |                                                |                                                                                                                          | Model                                                                                        | FHV7H-M004-C | FHV7H-C004-C                        | FHV7H-M016-C | FHV7H-C016-C                        | FHV7H-M032-C | FHV7H-C032-C                        | FHV7H-M050-C | FHV7H-C050-C                        | FHV7H-M063R-C | FHV7H-C063R-C                                                      | FHV7H-M120R-C | FHV7H-C120R-C                                                      |  |
|---------------------|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|--------------|-------------------------------------|--------------|-------------------------------------|--------------|-------------------------------------|--------------|-------------------------------------|---------------|--------------------------------------------------------------------|---------------|--------------------------------------------------------------------|--|
| Specifications      | Operation Mode                                 | Standard                                                                                                                 | Yes                                                                                          |              |                                     |              |                                     |              |                                     |              |                                     |               |                                                                    |               |                                                                    |  |
|                     |                                                | Double speed multi-input                                                                                                 | Yes                                                                                          |              |                                     |              |                                     |              |                                     |              |                                     |               |                                                                    |               |                                                                    |  |
|                     |                                                | Non-stop adjustment mode                                                                                                 | Yes                                                                                          |              |                                     |              |                                     |              |                                     |              |                                     |               |                                                                    |               |                                                                    |  |
|                     | Parallel processing                            |                                                                                                                          | Yes                                                                                          |              |                                     |              |                                     |              |                                     |              |                                     |               |                                                                    |               |                                                                    |  |
|                     | Possible No. of captured images                |                                                                                                                          | 256                                                                                          |              | 64                                  |              | 36                                  |              | 25                                  |              | 19                                  |               | 10                                                                 |               |                                                                    |  |
|                     | Possible No. of logging images to Smart Camera |                                                                                                                          | 214                                                                                          |              | 52                                  |              | 25                                  |              | 15                                  |              | 12                                  |               | 5                                                                  |               |                                                                    |  |
|                     | Possible No. of scenes                         |                                                                                                                          | 128 *1                                                                                       |              |                                     |              |                                     |              |                                     |              |                                     |               |                                                                    |               |                                                                    |  |
|                     | UI operation                                   |                                                                                                                          | Remote Operation Tool                                                                        |              |                                     |              |                                     |              |                                     |              |                                     |               |                                                                    |               |                                                                    |  |
|                     | Setup                                          |                                                                                                                          | Create the processing flow using Flow editing.                                               |              |                                     |              |                                     |              |                                     |              |                                     |               |                                                                    |               |                                                                    |  |
| Language            |                                                | Japanese, English, Simplified Chinese, Traditional Chinese, German, French, Italian, Spanish, Korean, Vietnamese, Polish |                                                                                              |              |                                     |              |                                     |              |                                     |              |                                     |               |                                                                    |               |                                                                    |  |
| Imaging             | CMOS Image elements                            |                                                                                                                          | 1/2.9-inch equivalent                                                                        |              | 1/2.9-inch equivalent               |              | 1/1.8-inch equivalent               |              | 2/3-inch equivalent                 |              | 1/1.8-inch equivalent               |               | 1/1.7-inch equivalent                                              |               |                                                                    |  |
|                     | Color/Monochrome                               |                                                                                                                          | Monochrome                                                                                   | Color        | Monochrome                          | Color        | Monochrome                          | Color        | Monochrome                          | Color        | Monochrome                          | Color         | Monochrome                                                         | Color         |                                                                    |  |
|                     | Effective pixels (H x V)                       |                                                                                                                          | 720 × 540                                                                                    |              | 1440 × 1080                         |              | 2048 × 1536                         |              | 2448 × 2048                         |              | 3072 × 2048                         |               | 4000 × 3000                                                        |               |                                                                    |  |
|                     | Pixel size                                     |                                                                                                                          | 6.9 × 6.9 μm                                                                                 |              | 3.45 × 3.45 μm                      |              | 3.45 × 3.45 μm                      |              | 3.45 × 3.45 μm                      |              | 2.4 × 2.4 μm                        |               | 1.85 × 1.85 μm                                                     |               |                                                                    |  |
|                     | Imaging area H × V (opposing corner)           |                                                                                                                          | 5.0 × 3.8 (6.3 mm)                                                                           |              | 5.0 × 3.8 (6.3 mm)                  |              | 7.1 × 5.3 (8.9 mm)                  |              | 8.5 × 7.1 (11.1 mm)                 |              | 7.4 × 5.0 (8.9 mm)                  |               | 7.4 × 5.6 (9.3 mm)                                                 |               |                                                                    |  |
|                     | Shutter system                                 |                                                                                                                          | Global Shutter                                                                               |              |                                     |              |                                     |              |                                     |              |                                     |               | Rolling shutter (Global reset mode compatible)                     |               |                                                                    |  |
|                     | Shutter function                               |                                                                                                                          | Electronic shutter: Shutter speed can be set from 1 μs to 100 ms.                            |              |                                     |              |                                     |              |                                     |              |                                     |               | Electronic shutter: Shutter speed can be set from 55 μs to 100 ms. |               | Electronic shutter: Shutter speed can be set from 84 μs to 100 ms. |  |
|                     | Partial function                               |                                                                                                                          | 4 to 540 lines (4-line increments)                                                           |              | 4 to 1080 lines (4-line increments) |              | 4 to 1536 lines (4-line increments) |              | 4 to 2048 lines (4-line increments) |              | 4 to 2048 lines (4-line increments) |               | 4 to 3000 lines (4-line increments)                                |               |                                                                    |  |
|                     | Frame rate (image acquisition time)            |                                                                                                                          | 430 fps (2.3 ms)                                                                             |              | 224 fps (4.5 ms)                    |              | 55 fps (18.0 ms)                    |              | 35 fps (28.0 ms)                    |              | 59 fps (16.7 ms)                    |               | 19 fps (25.0 ms)                                                   |               |                                                                    |  |
|                     | Lens mounting                                  |                                                                                                                          | C mount                                                                                      |              |                                     |              |                                     |              |                                     |              |                                     |               |                                                                    |               |                                                                    |  |
|                     | Field of view, Installation distance           |                                                                                                                          | Selecting a lens according to the field of view and installation distance                    |              |                                     |              |                                     |              |                                     |              |                                     |               |                                                                    |               |                                                                    |  |
| External Interface  | Serial                                         |                                                                                                                          | RS-232C × 1                                                                                  |              |                                     |              |                                     |              |                                     |              |                                     |               |                                                                    |               |                                                                    |  |
|                     | Ethernet                                       |                                                                                                                          | Protocol: Non-procedure (TCP/UDP)<br>I/F: 1000BASE-T × 1                                     |              |                                     |              |                                     |              |                                     |              |                                     |               |                                                                    |               |                                                                    |  |
|                     | EtherNet/IP                                    |                                                                                                                          | Yes (Target/Ethernet port)                                                                   |              |                                     |              |                                     |              |                                     |              |                                     |               |                                                                    |               |                                                                    |  |
|                     | PROFINET                                       |                                                                                                                          | Yes (Slave/Ethernet port), Conformance class A                                               |              |                                     |              |                                     |              |                                     |              |                                     |               |                                                                    |               |                                                                    |  |
|                     | Parallel I/O                                   |                                                                                                                          | NPN/PNP common                                                                               |              |                                     |              |                                     |              |                                     |              |                                     |               |                                                                    |               |                                                                    |  |
|                     | Parallel I/F                                   |                                                                                                                          | High-speed input: 1, General input: 3, High-speed output: 1, General output: 4               |              |                                     |              |                                     |              |                                     |              |                                     |               |                                                                    |               |                                                                    |  |
|                     | Encoder I/F                                    |                                                                                                                          | N/A                                                                                          |              |                                     |              |                                     |              |                                     |              |                                     |               |                                                                    |               |                                                                    |  |
|                     | Monitor I/F                                    |                                                                                                                          | N/A                                                                                          |              |                                     |              |                                     |              |                                     |              |                                     |               |                                                                    |               |                                                                    |  |
|                     | USB I/F                                        |                                                                                                                          | N/A                                                                                          |              |                                     |              |                                     |              |                                     |              |                                     |               |                                                                    |               |                                                                    |  |
| SD Card I/F         |                                                | microSD card: SDHC × 1                                                                                                   |                                                                                              |              |                                     |              |                                     |              |                                     |              |                                     |               |                                                                    |               |                                                                    |  |
| Indicator Lamps     |                                                | Main                                                                                                                     | PWR: Green, RUN: Green, LINK: Yellow, BUSY: Green, OR: Yellow, ERR: Red                      |              |                                     |              |                                     |              |                                     |              |                                     |               |                                                                    |               |                                                                    |  |
|                     |                                                | SD                                                                                                                       | SD ACCESS: Yellow                                                                            |              |                                     |              |                                     |              |                                     |              |                                     |               |                                                                    |               |                                                                    |  |
| Supply Voltage      |                                                |                                                                                                                          | 21.6 VDC to 26.4 VDC (When an I/O cable with 20 m is connected, it is 24.0 VDC to 26.4 VDC.) |              |                                     |              |                                     |              |                                     |              |                                     |               |                                                                    |               |                                                                    |  |
| Current Consumption |                                                |                                                                                                                          | With lighting modules: 4.2 A or less<br>Without lighting modules: 0.60 A                     |              |                                     |              |                                     |              |                                     |              |                                     |               |                                                                    |               |                                                                    |  |

\*1. The number of scenes can be increased up to 1,024 with the Conversion scene group data tool.

# FHV7 Series

| Item              |                           | Model                                                                                                                                                                                                                                                                                                                                                                                           | FHV7H-M004-C | FHV7H-C004-C | FHV7H-M016-C | FHV7H-C016-C | FHV7H-M032-C | FHV7H-C032-C | FHV7H-M050-C | FHV7H-C050-C | FHV7H-M063R-C | FHV7H-C063R-C | FHV7H-M120R-C | FHV7H-C120R-C |
|-------------------|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|
| Usage Environment | Ambient temperature range | Operating: 0 to +40°C, Storage: -25 to +65°C (with no icing or condensation)                                                                                                                                                                                                                                                                                                                    |              |              |              |              |              |              |              |              |               |               |               |               |
|                   | Ambient humidity range    | Operating & Storage: 35 to 85%RH (With no condensation)                                                                                                                                                                                                                                                                                                                                         |              |              |              |              |              |              |              |              |               |               |               |               |
|                   | Ambient atmosphere        | No corrosive gases                                                                                                                                                                                                                                                                                                                                                                              |              |              |              |              |              |              |              |              |               |               |               |               |
|                   | Vibration tolerance       | Oscillation frequency: 10 to 150Hz, Half amplitude: 0.35 mm, Vibration direction: X/Y/Z, Sweep time: 8 minute/count, Sweep count: 10 times<br>With standard lens modules, FHV-LEM-S: Half amplitude: 0.15 mm (Others are the same as above.)                                                                                                                                                    |              |              |              |              |              |              |              |              |               |               |               |               |
|                   | Shock resistance          | Impact force: 150 m/s <sup>2</sup> , Test direction: 6 directions, three time each (up/down, front/behind, left/right)                                                                                                                                                                                                                                                                          |              |              |              |              |              |              |              |              |               |               |               |               |
|                   | Noise immunity            | Fast transient burst<br>• DC power<br>Direct infusion: 2kV, Pulse rising: 5 ns, Pulse width: 50 ns, Burst continuation time: 15 ms/0.75 ms, Period: 300 ms, Application time: 1 min.<br>• I/O line<br>Direct infusion: 1kV, Pulse rising: 5 ns, Pulse width: 50 ns, Burst continuation time: 15 ms/0.75 ms, Period: 300 ms, Application time: 1 min.                                            |              |              |              |              |              |              |              |              |               |               |               |               |
|                   | Grounding                 | Class D grounding (100 Ω or less grounding resistance) *2                                                                                                                                                                                                                                                                                                                                       |              |              |              |              |              |              |              |              |               |               |               |               |
| External shape    | Dimensions                | 110 mm × 68.5 mm × 55.5 mm (H × W × D)                                                                                                                                                                                                                                                                                                                                                          |              |              |              |              |              |              |              |              |               |               |               |               |
|                   | Weight                    | Approx. 670 g                                                                                                                                                                                                                                                                                                                                                                                   |              |              |              |              |              |              |              |              |               |               |               |               |
|                   | Degree of protection      | With lighting modules or waterproof hoods: IEC60529 - IP67 (except a connector cap removed)<br>Other than the above: IEC60529 - IP40                                                                                                                                                                                                                                                            |              |              |              |              |              |              |              |              |               |               |               |               |
|                   | Case material             | Aluminum die-casting (ADC12)                                                                                                                                                                                                                                                                                                                                                                    |              |              |              |              |              |              |              |              |               |               |               |               |
| Accessories       |                           | <ul style="list-style-type: none"> <li>• Connector cap for Ethernet cable (mounted on the body): 1</li> <li>• Connector cap for an external lighting (mounted on the body): 1</li> <li>• C mount cap (mounted on the body): 1</li> <li>• C mount cover (mounted on the body): 1</li> <li>• Instruction sheet: 1</li> <li>• Membership registration: 1</li> <li>• Compliance sheet: 1</li> </ul> |              |              |              |              |              |              |              |              |               |               |               |               |

\*2. Existing the third class grounding

## Lens Modules

### High-speed Lens Modules (Autofocus)

| Item                             |                           | FHV-LEM-H06                                                                                                                                                                                                    | FHV-LEM-H19                           |
|----------------------------------|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| System                           |                           | Liquid lens auto focus                                                                                                                                                                                         |                                       |
| Installation distance            |                           | 102 to 650 mm                                                                                                                                                                                                  | 202 to 1050 mm                        |
| Horizontal field of view range * | 0.4 million pixels        | 64 × 48 mm to 505 × 376 mm                                                                                                                                                                                     | 50 × 37 mm to 266 × 200 mm            |
|                                  | 1.6 million pixels        |                                                                                                                                                                                                                |                                       |
|                                  | 3.2 million pixels        | 92 × 68 mm to 731 × 539 mm                                                                                                                                                                                     | 71 × 53 mm to 378 × 284 mm            |
|                                  | 6.3 million pixels        | 97 × 63 mm to 766 × 499 mm                                                                                                                                                                                     | 74 × 49 mm to 394 × 264 mm            |
| Focal length *                   |                           | 6 mm                                                                                                                                                                                                           | 19 mm                                 |
| Usage environment                | Ambient temperature range | Operating: 0 to +40°C, Storage: -25 to +65°C (with no icing or condensation)                                                                                                                                   |                                       |
|                                  | Ambient humidity range    | Operating & Storage: 35 to 85%RH (With no condensation)                                                                                                                                                        |                                       |
|                                  | Ambient atmosphere        | No corrosive gases                                                                                                                                                                                             |                                       |
|                                  | Vibration tolerance       | Oscillation frequency: 10 to 150Hz, Half amplitude: 0.35 mm, Vibration direction: X/Y/Z, Sweep time: 8 minute/count, Sweep count: 10 times                                                                     |                                       |
|                                  | Shock resistance          | Impact force: 150 m/s <sup>2</sup> , Test direction: 6 directions, three time each (up/down, front/behind, left/right)                                                                                         |                                       |
| External shape                   | Dimension                 | 50 mm × 41.1 mm × 37.1 mm (H × W × D)                                                                                                                                                                          | 50 mm × 41.1 mm × 36.3 mm (H × W × D) |
|                                  | Weight                    | Approx. 25 g                                                                                                                                                                                                   |                                       |
|                                  | Case material             | Polycarbonate                                                                                                                                                                                                  |                                       |
| Accessories                      |                           | <ul style="list-style-type: none"> <li>• Special cover for FHV-LEM-H: 1</li> <li>• Screws: M3 × 8 mm: 5 (including one spare piece)</li> <li>• Instruction sheet : 1</li> <li>• Compliance sheet: 1</li> </ul> |                                       |

\* Refer to optical chart (P.29) for details.

### Standard Lens Modules (Autofocus)

| Item                              |                           | FHV-LEM-S06                                                                                                                                                                                                    | FHV-LEM-S09             | FHV-LEM-S12             | FHV-LEM-S16             | FHV-LEM-S25             |
|-----------------------------------|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| System                            |                           | Mechanical auto focus                                                                                                                                                                                          |                         |                         |                         |                         |
| Focal length range *1             |                           | 59 to 1,000 mm                                                                                                                                                                                                 | 60 to 1,000 mm          | 60 to 1,000 mm          | 110 to 2,000 mm         | 188 to 2,000 mm         |
| Horizontal field of view range *1 | 0.4 million pixels        | 39 × 29 to 845 × 624 mm                                                                                                                                                                                        | 24 × 18 to 543 × 407 mm | 17 × 13 to 407 × 305 mm | 27 × 20 to 614 × 461 mm | 30 × 23 to 391 × 293 mm |
|                                   | 1.6 million pixels        | 57 × 42 to 1,234 × 905 mm                                                                                                                                                                                      | 34 × 25 to 772 × 579 mm | 24 × 18 to 579 × 434 mm | 38 × 29 to 874 × 655 mm | 43 × 33 to 556 × 417 mm |
|                                   | 3.2 million pixels        |                                                                                                                                                                                                                |                         |                         |                         |                         |
|                                   | 6.3 million pixels        | 50 × 39 to 1,293 × 836 mm                                                                                                                                                                                      | 35 × 23 to 807 × 538 mm | 25 × 17 to 606 × 404 mm | 40 × 27 to 913 × 608 mm | 45 × 30 to 581 × 387 mm |
| Focal length                      |                           | 6 mm                                                                                                                                                                                                           | 9 mm                    | 12 mm                   | 16 mm                   | 25 mm                   |
| Usage environment                 | Ambient temperature range | Operating: 0 to +40°C, Storage: -25 to +65°C (with no icing or condensation)                                                                                                                                   |                         |                         |                         |                         |
|                                   | Ambient humidity range    | Operating & Storage: 35 to 85%RH (With no condensation)                                                                                                                                                        |                         |                         |                         |                         |
|                                   | Ambient atmosphere        | No corrosive gases                                                                                                                                                                                             |                         |                         |                         |                         |
|                                   | Vibration tolerance       | Oscillation frequency: 10 to 150Hz, Half amplitude: 0.15 mm *2, Vibration direction: X/Y/Z, Sweep time: 8 minute/count, Sweep count: 10 times                                                                  |                         |                         |                         |                         |
|                                   | Shock resistance          | Impact force: 150 m/s <sup>2</sup> , Test direction: 6 directions, three time each (up/down, front/behind, left/right)                                                                                         |                         |                         |                         |                         |
| External shape                    | Dimension                 | 50 mm × 41 mm × 31 mm (H × W × D)                                                                                                                                                                              |                         |                         |                         |                         |
|                                   | Weight                    | Approx. 50 g                                                                                                                                                                                                   |                         |                         |                         |                         |
|                                   | Case material             | Polycarbonate                                                                                                                                                                                                  |                         |                         |                         |                         |
| Accessories                       |                           | <ul style="list-style-type: none"> <li>• Special cover for FHV-LEM-S: 1</li> <li>• Screws: M3 × 8 mm: 5 (including one spare piece)</li> <li>• Instruction sheet : 1</li> <li>• Compliance sheet: 1</li> </ul> |                         |                         |                         |                         |

\*1. Refer to optical chart (P.29) for details.

\*2. When the lens module is mounted to the product, the vibration tolerance is applied for the specifications of the smart camera.

# FHV7 Series

## Lighting Modules

| Model             |                           | FHV-LTM-W                                                                                                                                                                                                                                                                                                                              | FHV-LTM-R   | FHV-LTM-IR     | FHV-LTM-MC                                                            |
|-------------------|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------|-----------------------------------------------------------------------|
| Color             |                           | White                                                                                                                                                                                                                                                                                                                                  | Red         | Infrared light | Multi color                                                           |
| Peak wave length  |                           | -                                                                                                                                                                                                                                                                                                                                      | Typ. 630 nm | Typ. 850 nm    | R: Typ. 630 nm<br>G: Typ. 525 nm<br>B: Typ. 465 nm<br>IR: Typ. 850 nm |
| Light source      |                           | LED                                                                                                                                                                                                                                                                                                                                    | LED         | LED            | LED                                                                   |
| Risk group        |                           | Group 2                                                                                                                                                                                                                                                                                                                                | Group 1     | Group 1        | R: Group 1<br>G: Group 2<br>B: Group 2<br>IR: Group 1                 |
| Usage environment | Ambient temperature range | Operating: 0 to +40°C, Storage: -25 to +65°C (with no icing or condensation)                                                                                                                                                                                                                                                           |             |                |                                                                       |
|                   | Ambient humidity range    | Operating & Storage: 35 to 85%RH (With no condensation)                                                                                                                                                                                                                                                                                |             |                |                                                                       |
|                   | Ambient atmosphere        | No corrosive gases                                                                                                                                                                                                                                                                                                                     |             |                |                                                                       |
|                   | Vibration tolerance       | Oscillation frequency: 10 to 150Hz, Half amplitude: 0.35 mm, Vibration direction: X/Y/Z, Sweep time: 8 minute/count, Sweep count: 10 times                                                                                                                                                                                             |             |                |                                                                       |
|                   | Shock resistance          | Impact force: 150 m/s <sup>2</sup> , Test direction: 6 directions, three time each (up/down, front/behind, left/right)                                                                                                                                                                                                                 |             |                |                                                                       |
| Dimensions        |                           | 52 mm × 91 mm × 77 mm (H × W × D)                                                                                                                                                                                                                                                                                                      |             |                |                                                                       |
| Weight            |                           | 270 g                                                                                                                                                                                                                                                                                                                                  | 270 g       | 270 g          | 270 g                                                                 |
| Material          |                           | Aluminum die-casting (ADC12), polycarbonate                                                                                                                                                                                                                                                                                            |             |                |                                                                       |
| Accessories       |                           | <ul style="list-style-type: none"> <li>Waterproof packing (small) FHV-XWP-CAM:1</li> <li>Waterproof packing (large) FHV-XWP-LTM: 1</li> <li>Light shielding sheet FHV-XLS-LTM: 1</li> <li>Lighting cover FHV-XCV: 1</li> <li>Hexagonal wrench (length: 60 mm): 1</li> <li>Instruction sheet: 1</li> <li>Compliance sheet: 1</li> </ul> |             |                |                                                                       |

## Optical Filters

| Model                   |                           | FHV-XDF                                                                                                                                    | FHV-XPL                                                            | FHV-XPL-IR                                         |
|-------------------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|----------------------------------------------------|
| Filter type             |                           | Diffusion filter                                                                                                                           | Polarization filter                                                | Polarization filter                                |
| Wavelength              |                           | Visible to infrared                                                                                                                        | Visible                                                            | Visible to infrared                                |
| Adapted lighting module |                           | FHV-LTM-W<br>FHV-LTM-R<br>FHV-LTM-IR<br>FHV-LTM-MC                                                                                         | FHV-LTM-W<br>FHV-LTM-R<br>FHV-LTM-MC (Infrared light is not used.) | FHV-LTM-W<br>FHV-LTM-R<br>FHV-LTM-IR<br>FHV-LTM-MC |
| Usage environment       | Ambient temperature range | Operating: 0 to +40°C, Storage: -25 to +65°C (with no icing or condensation)                                                               |                                                                    |                                                    |
|                         | Ambient humidity range    | Operating & Storage: 35 to 85%RH (With no condensation)                                                                                    |                                                                    |                                                    |
|                         | Vibration tolerance       | No corrosive gases                                                                                                                         |                                                                    |                                                    |
|                         | Shock resistance          | Oscillation frequency: 10 to 150Hz, Half amplitude: 0.35 mm, Vibration direction: X/Y/Z, Sweep time: 8 minute/count, Sweep count: 10 times |                                                                    |                                                    |
|                         | Vibration tolerance       | Impact force: 150 m/s <sup>2</sup> , Test direction: 6 directions, three time each (up/down, front/behind, left/right)                     |                                                                    |                                                    |
| Material                |                           | Aluminum (A6061), polycarbonate                                                                                                            |                                                                    |                                                    |
| Weight                  |                           | Approx. 70 g                                                                                                                               | Approx. 70 g                                                       | Approx. 70 g                                       |

## Waterproof Hoods

| Model             |                           | FHV-XHD-S                                                                                                                                  | FHV-XHD-L                                                                                                     | FHV-XHD-LEM                                                                                                                                       |
|-------------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Suitable lens     |                           | 3Z4S-LE SV-V series<br>SV-0614V<br>SV-0813V<br>SV-1214V<br>SV-1614V<br>SV-2514V                                                            | 3Z4S-LE SV-H series<br>SV-0614H *1<br>SV-0814H *2<br>SV-1214H<br>SV-1614H<br>SV-2514H<br>SV-3514H<br>SV-5014H | FHV-LEM-S series<br>FHV-LEM-S06<br>FHV-LEM-S09<br>FHV-LEM-S12<br>FHV-LEM-S16<br>FHV-LEM-S25<br><br>FHV-LEM-H series<br>FHV-LEM-H06<br>FHV-LEM-H09 |
| Usage environment | Ambient temperature range | Operating: 0 to +40°C, Storage: -25 to +65°C (with no icing or condensation)                                                               |                                                                                                               |                                                                                                                                                   |
|                   | Ambient humidity range    | Operating & Storage: 35 to 85%RH (With no condensation)                                                                                    |                                                                                                               |                                                                                                                                                   |
|                   | Ambient atmosphere        | No corrosive gases                                                                                                                         |                                                                                                               |                                                                                                                                                   |
|                   | Vibration tolerance       | Oscillation frequency: 10 to 150Hz, Half amplitude: 0.35 mm, Vibration direction: X/Y/Z, Sweep time: 8 minute/count, Sweep count: 10 times |                                                                                                               |                                                                                                                                                   |
|                   | Shock resistance          | Impact force: 150 m/s <sup>2</sup> , Test direction: 6 directions, three time each (up/down, front/behind, left/right)                     |                                                                                                               |                                                                                                                                                   |
| Material          |                           | Aluminum (A6061), polycarbonate                                                                                                            |                                                                                                               |                                                                                                                                                   |
| Weight            |                           | Approx. 220 g                                                                                                                              | Approx. 220 g                                                                                                 | Approx. 220 g                                                                                                                                     |

\*1. This is not available in FHV7H-□050, FHV7H-□063R, FHV7H-□120R.

\*2. This is not available in FHV7H-□050.

## Smart Camera Data Unit

| Item                        |                           | Parallel interface                                                                                                                                                                                                                                                                                                                                                  | EtherCAT interface                                                                 |
|-----------------------------|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Model                       |                           | FHV-SDU10                                                                                                                                                                                                                                                                                                                                                           | FHV-SDU30                                                                          |
| Input/output specifications | Parallel I/O              | Input: 12<br>Output: 24<br>(NPN/PNP combined use)                                                                                                                                                                                                                                                                                                                   | Input: 1<br>Output: 2<br>(NPN/PNP combined use)                                    |
|                             | EtherCAT communications   | None                                                                                                                                                                                                                                                                                                                                                                | Yes (slave)                                                                        |
| Smart Camera Interface      |                           | Special cable to connect<br>No. of connectable cameras: 1                                                                                                                                                                                                                                                                                                           |                                                                                    |
| Indicator                   | Main                      | POWER: Green, ERROR: Red, RUN: Green, BUSY: Green, CAMERA: Yellow, OR: Yellow                                                                                                                                                                                                                                                                                       |                                                                                    |
|                             | EtherCAT                  | None                                                                                                                                                                                                                                                                                                                                                                | ECAT RUN: Green,<br>LINK/ACT IN: Green,<br>LINK/ACT OUT: Green,<br>ECAT ERROR: Red |
| Power supply voltage        |                           | 21.6 to 26.4 VDC<br>(Note: 24.0 to 26.4 VDC when a data unit cable with 20 m is connected.)                                                                                                                                                                                                                                                                         |                                                                                    |
| Insulation resistance       |                           | Between DC terminal block and FG terminal: 0.5 MΩ (250V Megger)                                                                                                                                                                                                                                                                                                     |                                                                                    |
| Current consumption         |                           | 4.5 A or less                                                                                                                                                                                                                                                                                                                                                       |                                                                                    |
| Usage environment           | Ambient temperature range | Operating: 0 to +50°C, Storage: -25 to +65°C (with no icing or condensation)                                                                                                                                                                                                                                                                                        |                                                                                    |
|                             | Ambient humidity range    | Operating and storage: 35 to 85%RH (with no condensation)                                                                                                                                                                                                                                                                                                           |                                                                                    |
|                             | Ambient atmosphere        | No corrosive gases                                                                                                                                                                                                                                                                                                                                                  |                                                                                    |
|                             | Vibration tolerance       | Oscillation frequency: 10 to 150 Hz, Half amplitude: 0.1 mm, Vibration direction: X/Y/Z,<br>Sweep time: 8 minutes, Sweep count: 10 times                                                                                                                                                                                                                            |                                                                                    |
|                             | Shock resistance          | Impact force: 150 m/s <sup>2</sup> , Test direction: 6 directions, Three times each (up/down, front/behind, left/right)                                                                                                                                                                                                                                             |                                                                                    |
|                             | Noise immunity            | Fast transient burst<br>• DC power<br>Direct infusion: 2 kV, Pulse rising: 5 ns, Pulse width: 50 ns,<br>Burst continuation time: 15 ms / 0.75 ms, Period: 300 ms, Application time: 1 minute<br>• I/O line<br>Coupling clamp: 1 kV, Pulse rising: 5 ns, Pulse width: 50 ns,<br>Burst continuation time: 15 ms / 0.75 ms, Period: 300 ms, Application time: 1 minute |                                                                                    |
|                             | Grounding                 | Class D grounding (100 Ω or less grounding resistance)<br>* Existing the third class grounding                                                                                                                                                                                                                                                                      |                                                                                    |
| External shape              | Dimensions                | H (90 mm) × W (93 mm) × D (65 mm)                                                                                                                                                                                                                                                                                                                                   | H (90 mm) × W (124 mm) × D (65 mm)                                                 |
|                             | Weight                    | Approx. 250 g                                                                                                                                                                                                                                                                                                                                                       | Approx. 325 g                                                                      |
|                             | Degree of protection      | IEC60529 - IP20                                                                                                                                                                                                                                                                                                                                                     |                                                                                    |
|                             | Case material             | PC+ABS, PC                                                                                                                                                                                                                                                                                                                                                          |                                                                                    |
| Accessories                 |                           | <ul style="list-style-type: none"> <li>Instruction sheet: 1</li> <li>Compliance sheet: 1</li> </ul>                                                                                                                                                                                                                                                                 |                                                                                    |

## I/O cables

### Bending Resistance Cables

| Item                |                           | FHV-VDB 2M                                                                                                                                  | FHV-VDLB 2M          | FHV-VDB 3M         | FHV-VDLB 3M          | FHV-VDB 5M         | FHV-VDLB 5M          | FHV-VDB 10M        | FHV-VDLB 10M         | FHV-VDB 20M        | FHV-VDLB 20M         |
|---------------------|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------|----------------------|--------------------|----------------------|--------------------|----------------------|--------------------|----------------------|
| Cable length        |                           | 2 m                                                                                                                                         |                      | 3 m                |                      | 5 m                |                      | 10 m               |                      | 20 m               |                      |
| Connector type      |                           | Straight connector                                                                                                                          | Rightangle connector | Straight connector | Rightangle connector | Straight connector | Rightangle connector | Straight connector | Rightangle connector | Straight connector | Rightangle connector |
| Cable type          |                           | Bending resistance cable                                                                                                                    |                      |                    |                      |                    |                      |                    |                      |                    |                      |
| Size                | Power line                | AWG21                                                                                                                                       |                      |                    |                      |                    |                      |                    |                      |                    |                      |
|                     | Others                    | AWG26                                                                                                                                       |                      |                    |                      |                    |                      |                    |                      |                    |                      |
| Outer diameter      |                           | 9.0±0.3 mm dia.                                                                                                                             |                      |                    |                      |                    |                      |                    |                      |                    |                      |
| Min. bending radius |                           | Fixed use: 54 mm, Sliding use: 72 mm                                                                                                        |                      |                    |                      |                    |                      |                    |                      |                    |                      |
| Usage environment   | Ambient temperature range | Operating: -30 to +80°C, Storage: -30 to +100°C (with no icing or condensation)                                                             |                      |                    |                      |                    |                      |                    |                      |                    |                      |
|                     | Ambient humidity range    | Operating & Storage: 0 to 93%RH (With no condensation)                                                                                      |                      |                    |                      |                    |                      |                    |                      |                    |                      |
|                     | Ambient atmosphere        | No corrosive gases                                                                                                                          |                      |                    |                      |                    |                      |                    |                      |                    |                      |
|                     | Vibration tolerance       | Oscillation frequency: 10 to 150 Hz, Half amplitude: 0.35 mm, Vibration direction: X/Y/Z, Sweep time: 8 minute/count, Sweep count: 10 times |                      |                    |                      |                    |                      |                    |                      |                    |                      |
|                     | Shock resistance          | Impact force: 150 m/s <sup>2</sup> , Test direction: 6 directions, three time each (up/down, front/behind, left/right)                      |                      |                    |                      |                    |                      |                    |                      |                    |                      |
| Material            |                           | Mold part: Nylon, Thermoplastic polyurethane, Sheath part: PVC                                                                              |                      |                    |                      |                    |                      |                    |                      |                    |                      |
| Weight              |                           | Approx. 270 g                                                                                                                               |                      | Approx. 390 g      |                      | Approx. 620 g      |                      | Approx. 1200 g     |                      | Approx. 2350 g     |                      |

### Super Bending Resistance Cables

| Item                |                           | FHV-VDBX<br>2M                                                                                                                              | FHV-VDLBX<br>2M       | FHV-VDBX<br>3M     | FHV-VDLBX<br>3M       | FHV-VDBX<br>5M     | FHV-VDLBX<br>5M       | FHV-VDBX<br>10M    | FHV-VDLBX<br>10M      |
|---------------------|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------------|-----------------------|--------------------|-----------------------|--------------------|-----------------------|
| Cable length        |                           | 2 m                                                                                                                                         |                       | 3 m                |                       | 5 m                |                       | 10 m               |                       |
| Connector type      |                           | Straight connector                                                                                                                          | Right angle connector | Straight connector | Right angle connector | Straight connector | Right angle connector | Straight connector | Right angle connector |
| Cable type          |                           | Super bending resistance cable                                                                                                              |                       |                    |                       |                    |                       |                    |                       |
| Outer diameter      |                           | 7.2±0.3 mm dia.                                                                                                                             |                       |                    |                       |                    |                       |                    |                       |
| Min. bending radius |                           | 44 mm                                                                                                                                       |                       |                    |                       |                    |                       |                    |                       |
| Usage environment   | Ambient temperature range | Operating: -30 to +80°C, Storage: -30 to +100°C (with no icing or condensation)                                                             |                       |                    |                       |                    |                       |                    |                       |
|                     | Ambient humidity range    | Operating & Storage: 0 to 93%RH (With no condensation)                                                                                      |                       |                    |                       |                    |                       |                    |                       |
|                     | Ambient atmosphere        | No corrosive gases                                                                                                                          |                       |                    |                       |                    |                       |                    |                       |
|                     | Vibration tolerance       | Oscillation frequency: 10 to 150 Hz, Half amplitude: 0.35 mm, Vibration direction: X/Y/Z, Sweep time: 8 minute/count, Sweep count: 10 times |                       |                    |                       |                    |                       |                    |                       |
|                     | Shock resistance          | Impact force: 150 m/s <sup>2</sup> , Test direction: 6 directions, three time each (up/down, front/behind, left/right)                      |                       |                    |                       |                    |                       |                    |                       |
| Material            |                           | Mold part: Nylon, Thermoplastic polyurethane, Sheath part: PVC                                                                              |                       |                    |                       |                    |                       |                    |                       |
| Weight              |                           | Approx. 190 g                                                                                                                               |                       | Approx. 260 g      |                       | Approx. 400 g      |                       | Approx. 750 g      |                       |

## Ethernet Cables

### Bending Resistance Cables

| Item                |                           | FHV-VNB 2M                                                                                                                                  | FHV-VNLB 2M          | FHV-VNB 3M         | FHV-VNLB 3M          | FHV-VNB 5M         | FHV-VNLB 5M          | FHV-VNB 10M        | FHV-VNLB 10M         | FHV-VNB 20M        | FHV-VNLB 20M         |
|---------------------|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------|----------------------|--------------------|----------------------|--------------------|----------------------|--------------------|----------------------|
| Cable length        |                           | 2 m                                                                                                                                         |                      | 3 m                |                      | 5 m                |                      | 10 m               |                      | 20 m               |                      |
| Connector type      |                           | Straight connector                                                                                                                          | Rightangle connector | Straight connector | Rightangle connector | Straight connector | Rightangle connector | Straight connector | Rightangle connector | Straight connector | Rightangle connector |
| Cable type          |                           | Bending resistance cable                                                                                                                    |                      |                    |                      |                    |                      |                    |                      |                    |                      |
| Outer diameter      |                           | 7.2+0.3 mm dia.                                                                                                                             |                      |                    |                      |                    |                      |                    |                      |                    |                      |
| Min. bending radius |                           | Fixed use: 35 mm, Sliding use: 70 mm                                                                                                        |                      |                    |                      |                    |                      |                    |                      |                    |                      |
| Usage environment   | Ambient temperature range | Operating: -40 to +80°C, Storage: -40 to +100°C (with no icing or condensation)                                                             |                      |                    |                      |                    |                      |                    |                      |                    |                      |
|                     | Ambient humidity range    | Operating & Storage: 0 to 93%RH (With no condensation)                                                                                      |                      |                    |                      |                    |                      |                    |                      |                    |                      |
|                     | Ambient atmosphere        | No corrosive gases                                                                                                                          |                      |                    |                      |                    |                      |                    |                      |                    |                      |
|                     | Vibration tolerance       | Oscillation frequency: 10 to 150 Hz, Half amplitude: 0.35 mm, Vibration direction: X/Y/Z, Sweep time: 8 minute/count, Sweep count: 10 times |                      |                    |                      |                    |                      |                    |                      |                    |                      |
|                     | Shock resistance          | Impact force: 150 m/s <sup>2</sup> , Test direction: 6 directions, three time each (up/down, front/behind, left/right)                      |                      |                    |                      |                    |                      |                    |                      |                    |                      |
| Material            |                           | Mold part: Nylon, Thermoplastic polyurethane, Sheath part: Polyurethane                                                                     |                      |                    |                      |                    |                      |                    |                      |                    |                      |
| Weight              |                           | Approx. 210 g                                                                                                                               |                      | Approx. 240 g      |                      | Approx. 310 g      |                      | Approx. 380 g      |                      | Approx. 730 g      |                      |

### Super Bending Resistance Cables

| Item                |                           | FHV-VNBX 2M                                                                                                                                 | FHV-VNLBX 2M          | FHV-VNBX 3M        | FHV-VNLBX 3M          | FHV-VNBX 5M        | FHV-VNLBX 5M          | FHV-VNBX 10M       | FHV-VNLBX 10M         |
|---------------------|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------------|-----------------------|--------------------|-----------------------|--------------------|-----------------------|
| Cable length        |                           | 2 m                                                                                                                                         |                       | 3 m                |                       | 5 m                |                       | 10 m               |                       |
| Connector type      |                           | Straight connector                                                                                                                          | Right angle connector | Straight connector | Right angle connector | Straight connector | Right angle connector | Straight connector | Right angle connector |
| Cable type          |                           | Super bending resistance cable                                                                                                              |                       |                    |                       |                    |                       |                    |                       |
| Outer diameter      |                           | 6.3+0.6 mm dia.                                                                                                                             |                       |                    |                       |                    |                       |                    |                       |
| Min. bending radius |                           | 38 mm                                                                                                                                       |                       |                    |                       |                    |                       |                    |                       |
| Usage environment   | Ambient temperature range | Operating: -30 to +80°C, Storage: -30 to +100°C (with no icing or condensation)                                                             |                       |                    |                       |                    |                       |                    |                       |
|                     | Ambient humidity range    | Operating & Storage: 0 to 93%RH (With no condensation)                                                                                      |                       |                    |                       |                    |                       |                    |                       |
|                     | Ambient atmosphere        | No corrosive gases                                                                                                                          |                       |                    |                       |                    |                       |                    |                       |
|                     | Vibration tolerance       | Oscillation frequency: 10 to 150 Hz, Half amplitude: 0.35 mm, Vibration direction: X/Y/Z, Sweep time: 8 minute/count, Sweep count: 10 times |                       |                    |                       |                    |                       |                    |                       |
|                     | Shock resistance          | Impact force: 150 m/s <sup>2</sup> , Test direction: 6 directions, three time each (up/down, front/behind, left/right)                      |                       |                    |                       |                    |                       |                    |                       |
| Material            |                           | Mold part: Nylon, Thermoplastic polyurethane, Sheath part: Low friction PVC                                                                 |                       |                    |                       |                    |                       |                    |                       |
| Weight              |                           | Approx. 170 g                                                                                                                               |                       | Approx. 220 g      |                       | Approx. 330 g      |                       | Approx. 590 g      |                       |

### External Light Junction Cables for MDMC Light

| Item                | FHV-VFLX-GD                                                                               |                                                                                                                                             |
|---------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Cable length        | 0.1 m                                                                                     |                                                                                                                                             |
| Outer diameter      | 4.0±0.1 mm dia.                                                                           |                                                                                                                                             |
| Min. bending radius | 15 mm                                                                                     |                                                                                                                                             |
| Usage environment   | Ambient temperature range                                                                 | Operating: 0 to +40°C, Storage: -25 to +65°C (with no icing or condensation)                                                                |
|                     | Ambient humidity range                                                                    | Operating & Storage: 0 to 93%RH (With no condensation)                                                                                      |
|                     | Ambient atmosphere                                                                        | No corrosive gases                                                                                                                          |
|                     | Vibration tolerance                                                                       | Oscillation frequency: 10 to 150 Hz, Half amplitude: 0.35 mm, Vibration direction: X/Y/Z, Sweep time: 8 minute/count, Sweep count: 10 times |
|                     | Shock resistance                                                                          | Impact force: 150 m/s <sup>2</sup> , Test direction: 6 directions, three time each (up/down, front/behind, left/right)                      |
| Material            | Shell part: Zinc alloy and Brass, Sheath part: Heat-resistant oilproof polyvinyl chloride |                                                                                                                                             |
| Weight              | Approx. 30 g                                                                              |                                                                                                                                             |

## Smart Camera Data Unit Cable

### Bending Resistance Cables

| Item                 |                              | FHV-VUB<br>2M                                                                                                                               | FHV-<br>VULB 2M             | FHV-VUB<br>3M         | FHV-<br>VULB 3M             | FHV-VUB<br>5M         | FHV-<br>VULB 5M             | FHV-VUB<br>10M        | FHV-<br>VULB 10M            | FHV-VUB<br>20M        | FHV-<br>VULB 20M            |
|----------------------|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------------------|-----------------------------|-----------------------|-----------------------------|-----------------------|-----------------------------|-----------------------|-----------------------------|
| Cable length         |                              | 2 m                                                                                                                                         |                             | 3 m                   |                             | 5 m                   |                             | 10 m                  |                             | 20 m                  |                             |
| Connector type       |                              | Straight<br>connector                                                                                                                       | Right<br>angle<br>connector | Straight<br>connector | Right<br>angle<br>connector | Straight<br>connector | Right<br>angle<br>connector | Straight<br>connector | Right<br>angle<br>connector | Straight<br>connector | Right<br>angle<br>connector |
| Cable type           |                              | Bending resistance cable                                                                                                                    |                             |                       |                             |                       |                             |                       |                             |                       |                             |
| Outer diameter       |                              | 7.9±0.2 mm dia.                                                                                                                             |                             |                       |                             |                       |                             |                       |                             |                       |                             |
| Min. bending radius  |                              | 47 mm                                                                                                                                       |                             |                       |                             |                       |                             |                       |                             |                       |                             |
| Usage<br>environment | Ambient temperature<br>range | Operating: -10 to +60°C, Storage: -10 to +60°C (with no icing or condensation)                                                              |                             |                       |                             |                       |                             |                       |                             |                       |                             |
|                      | Ambient humidity range       | Operating & Storage: 0 to 93%RH (With no condensation)                                                                                      |                             |                       |                             |                       |                             |                       |                             |                       |                             |
|                      | Ambient atmosphere           | No corrosive gases                                                                                                                          |                             |                       |                             |                       |                             |                       |                             |                       |                             |
|                      | Vibration tolerance          | Oscillation frequency: 10 to 150 Hz, Half amplitude: 0.35 mm, Vibration direction: X/Y/Z, Sweep time: 8 minute/count, Sweep count: 10 times |                             |                       |                             |                       |                             |                       |                             |                       |                             |
|                      | Shock resistance             | Impact force: 150 m/s², Test direction: 6 directions, three time each (up/down, front/behind, left/right)                                   |                             |                       |                             |                       |                             |                       |                             |                       |                             |
| Material             |                              | Mold part: Nylon and Thermoplastic polyurethane, Sheath part: PVC                                                                           |                             |                       |                             |                       |                             |                       |                             |                       |                             |
| Weight               |                              | Approx. 220 g                                                                                                                               |                             | Approx. 310 g         |                             | Approx. 500 g         |                             | Approx. 980 g         |                             | Approx. 1,930 g       |                             |

### Super Bending Resistance Cables

| Item                |                           | FHV-VUBX<br>2M                                                                                                                              | FHV-VULBX<br>2M       | FHV-VUBX<br>3M     | FHV-VULBX<br>3M       | FHV-VUBX<br>5M     | FHV-VULBX<br>5M       | FHV-VUBX<br>10M    | FHV-VULBX<br>10M      |
|---------------------|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------------|-----------------------|--------------------|-----------------------|--------------------|-----------------------|
| Cable length        |                           | 2 m                                                                                                                                         |                       | 3 m                |                       | 5 m                |                       | 10 m               |                       |
| Connector type      |                           | Straight connector                                                                                                                          | Right angle connector | Straight connector | Right angle connector | Straight connector | Right angle connector | Straight connector | Right angle connector |
| Cable type          |                           | Super bending resistance cable                                                                                                              |                       |                    |                       |                    |                       |                    |                       |
| Outer diameter      |                           | 7.5±0.6 mm dia.                                                                                                                             |                       |                    |                       |                    |                       |                    |                       |
| Min. bending radius |                           | 47 mm                                                                                                                                       |                       |                    |                       |                    |                       |                    |                       |
| Usage environment   | Ambient temperature range | Operating: -10 to +60°C, Storage: -10 to +60°C (with no icing or condensation)                                                              |                       |                    |                       |                    |                       |                    |                       |
|                     | Ambient humidity range    | Operating & Storage: 0 to 93%RH (With no condensation)                                                                                      |                       |                    |                       |                    |                       |                    |                       |
|                     | Ambient atmosphere        | No corrosive gases                                                                                                                          |                       |                    |                       |                    |                       |                    |                       |
|                     | Vibration tolerance       | Oscillation frequency: 10 to 150 Hz, Half amplitude: 0.35 mm, Vibration direction: X/Y/Z, Sweep time: 8 minute/count, Sweep count: 10 times |                       |                    |                       |                    |                       |                    |                       |
|                     | Shock resistance          | Impact force: 150 m/s², Test direction: 6 directions, three time each (up/down, front/behind, left/right)                                   |                       |                    |                       |                    |                       |                    |                       |
| Material            |                           | Mold part: Nylon and Thermoplastic polyurethane, Sheath part: PVC                                                                           |                       |                    |                       |                    |                       |                    |                       |
| Weight              |                           | Approx. 200 g                                                                                                                               |                       | Approx. 280 g      |                       | Approx. 440 g      |                       | Approx. 860 g      |                       |

## Touch panel monitor

| Model                  |                           | PPC-3100S-OMR (Advantech)                                                                   |
|------------------------|---------------------------|---------------------------------------------------------------------------------------------|
| LCD                    | Display Type              | 10.4" TFT LCD (LED backlight)                                                               |
|                        | Resolution                | 1,024 × 768                                                                                 |
|                        | Luminance                 | 350 cd/m <sup>2</sup>                                                                       |
|                        | Contrast Ratio            | 1,200                                                                                       |
|                        | Backlight Lifetime        | 30,000 hr (min.)                                                                            |
|                        | Touch Type                | Capacitive                                                                                  |
| External Interface     | Ethernet                  | 10/100/1,000 Mbps Ethernet × 2                                                              |
|                        | USB I/F                   | USB 2.0 × 1, USB 3.0 × 1                                                                    |
| Power Consumption      | Input Voltage             | 12 to 24 VDC                                                                                |
|                        | Power Consumption         | 16 W                                                                                        |
| Environment            | Ambient Temperature Range | Operating: 0 to 50°C<br>Storage: -40 to 60°C                                                |
|                        | Ambient Humidity Range    | 10% to 95% at 40°C (With no condensation)                                                   |
|                        | Vibration                 | Operating Random Vibration Test 5 to 500 Hz, 2 Grms, follow IEC 60068-2-64                  |
|                        | Shock                     | Operating 10 G peak acceleration (11 ms duration), follow IEC 60068-2-27                    |
|                        | EMC                       | CE, FCC Class B, BSMI                                                                       |
|                        | Safety                    | CB, CCC, BSMI, UL                                                                           |
| Dimensions             |                           | 272 × 217 × 46 mm                                                                           |
| Weight                 |                           | 1.9 kg                                                                                      |
| Front Panel Protection |                           | IP65 compliant                                                                              |
| Mounting               |                           | Panel mount, VESA mount, Wall mount                                                         |
| Accessories            |                           | Instruction sheet, Connector for power supply, Mounting screws and brackets for panel mount |

## EtherCAT Communications Specifications

| Item                          |        | Specifications                                                                                              |
|-------------------------------|--------|-------------------------------------------------------------------------------------------------------------|
| Communications standard       |        | IEC61158 Type 12                                                                                            |
| Physical layer                |        | 100 BASE-TX (IEEE802.3)                                                                                     |
| Modulation                    |        | Base band                                                                                                   |
| Baud rate                     |        | 100 Mbps                                                                                                    |
| Topology                      |        | Depends on the specifications of the EtherCAT master.                                                       |
| Transmission Media            |        | Twisted-pair cable of category 5 or higher (double-shielded straight cable with aluminum tape and braiding) |
| Transmission Distance         |        | Distance between nodes: 100 m or less                                                                       |
| Node address setting          |        | 00 to 99                                                                                                    |
| External connection terminals |        | RJ45 × 2 (shielded) IN: EtherCAT input data, OUT: EtherCAT output data                                      |
| Send/receive PDO data sizes   | Input  | 56 to 280 bytes/line (including input data, status, and unused areas) Up to 8 lines can be set. *           |
|                               | Output | 28 bytes/line (including output data and unused areas) Up to 8 lines can be set. *                          |
| Mailbox data size             | Input  | 512 bytes                                                                                                   |
|                               | Output | 512 bytes                                                                                                   |
| Mailbox                       |        | Emergency messages, SDO requests, and SDO information                                                       |
| Refreshing methods            |        | I/O-synchronized refreshing (DC)                                                                            |

\* This depends on the upper limit of the master.

## Version Information

### FHV7 Series and Programming Devices

Use the latest version of Sysmac Studio Standard Edition/Vision Edition.

| Version of FHV7 Series | Corresponding version of Sysmac Studio Standard Edition/Vision Edition |
|------------------------|------------------------------------------------------------------------|
| Ver.6.30 or higher     | Supported by version 1.29 or higher.                                   |

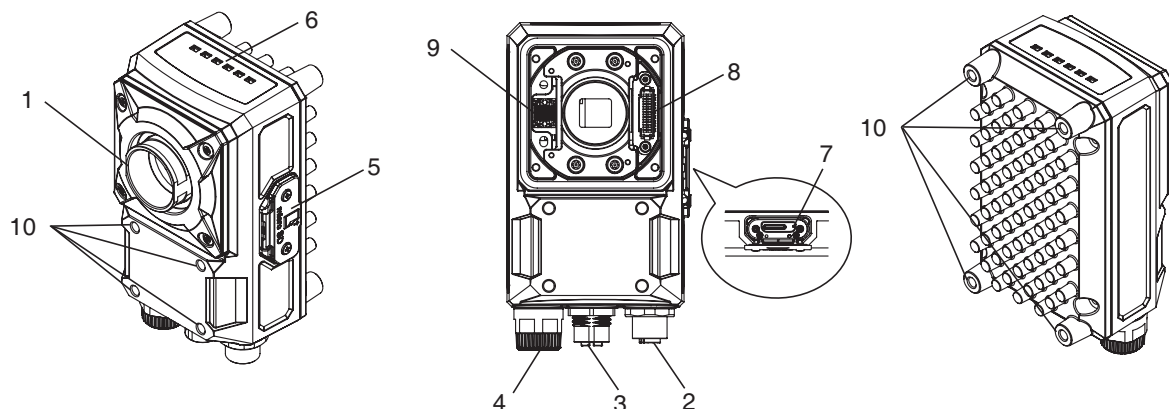
## Recommended Operational Environment for Remote Operation Tool

| Name            | Description                                                                                                                                                                                                                                                  |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CPU             | Intel Pentium Processor (SSE2 or higher)                                                                                                                                                                                                                     |
| OS              | <ul style="list-style-type: none"> <li>Windows 7 Professional (32/64-bit)</li> <li>or</li> <li>Enterprise (32/64-bit)</li> <li>or</li> <li>Ultimate (32/64-bit)</li> <li>• Windows 10 Pro (32/64-bit)</li> <li>or</li> <li>Enterprise (32/64-bit)</li> </ul> |
| Memory          | 2GB (3GB or more recommended)                                                                                                                                                                                                                                |
| Hard disk space | 2GB or more                                                                                                                                                                                                                                                  |
| Display         | Resolution: 1280 x 1240 dots or more<br>Color: True Color (32-bit)                                                                                                                                                                                           |
| Network         | 10BASE-T (100BASE-TX recommended)                                                                                                                                                                                                                            |

Using the FH/FHV Launcher requires Microsoft .NET Framework 3.5 installed.

# FHV7 Series

## Parts and Names



| No. | Name                                                 |                    | Description                                                                                                                                                                                                                                                                                              |
|-----|------------------------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Imaging unit                                         |                    | Captures images.                                                                                                                                                                                                                                                                                         |
| 2   | Connector for I/O cable/Smart camera data unit cable |                    | Use this connector when connecting the smart camera with its power supply or an external device using an I/O cable. Moreover, use this when connecting the smart camera with its data unit using its data unit cable.<br>Dedicated I/O cable: FHV-VD□<br>Dedicated smart camera data unit cable: FHV-VU□ |
| 3   | Connector for Ethernet cable                         |                    | Use this connector when connecting the smart camera with a personal computer and so on using an Ethernet cable. Dedicated Ethernet cable: FHV-VN□□                                                                                                                                                       |
| 4   | Connector for external lighting                      |                    | Use this connector when connecting an external lighting and the external lighting controller.<br>Connectable external lighting controller: FL-TCC□ and FLV-TCC□<br>Connectable external light: FL-MD□MC                                                                                                  |
| 5   | Connector to attach microSD card                     |                    | Use this connector to attach a microSD card. Do not extract/insert the microSD card during processing.<br>Otherwise, measurement time may be influenced or data may be broken.                                                                                                                           |
| 6   | Operation indicator                                  | PWR (Green)        | Lights while power is supplied.                                                                                                                                                                                                                                                                          |
|     |                                                      | RUN (Green)        | Lights when switching to the layout in which the RUN signal output is set ON.                                                                                                                                                                                                                            |
|     |                                                      | LINK (Yellow)      | Lights when connected with Ethernet equipment and blinks during communication.                                                                                                                                                                                                                           |
|     |                                                      | BUSY (Green)       | Lights while processing is in progress.                                                                                                                                                                                                                                                                  |
|     |                                                      | OR (Yellow)        | Lights when the overall judgment output signal is ON.                                                                                                                                                                                                                                                    |
|     |                                                      | ERR (Red)          | Lights when an error occurs.                                                                                                                                                                                                                                                                             |
| 7   |                                                      | SD ACCESS (Yellow) | Lights when accessing to the microSD card.                                                                                                                                                                                                                                                               |
| 8   | Connector for lighting module (White)                |                    | Use this connector when mounting the lighting module.                                                                                                                                                                                                                                                    |
| 9   | Connector for lens module (Black)                    |                    | Use this connector when mounting the lens module.                                                                                                                                                                                                                                                        |
| 10  | Mounting screw holes                                 |                    | Recommended tightening torque: 2.3N·m                                                                                                                                                                                                                                                                    |

## Processing Items

| Group       | Icon | Processing Item  |                                                                                                                                                                                                                                               |
|-------------|------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Measurement |      | Search           | Used to identify the shapes and calculate the position of measurement objects.                                                                                                                                                                |
|             |      | Search II        | Even if the Search processing item cannot detect a model, the Search II can stably detect it by creating the optimal model according to the size and rotation of the measurement object.                                                      |
|             |      | Flexible Search  | Recognizing the shapes of workpieces with variation and detecting their positions.                                                                                                                                                            |
|             |      | Sensitive Search | Search a small difference by dividing the search model in detail, and calculating the correlation.                                                                                                                                            |
|             |      | Shape Search III | Robust detection of positions is possible at high-speed and with high precision incorporating environmental fluctuations, such as differences in individual shapes of the workpieces, pose fluctuations, noise superimposition and shielding. |
|             |      | Classification   | Used when various kinds of products on the assembly line need to be sorted and identified.                                                                                                                                                    |
|             |      | Edge Position    | Measure position of measurement objects according to the color change in measurement area.                                                                                                                                                    |
|             |      | Edge Pitch       | Detect edges by color change in measurement area. Used for calculating number of pins of IC and connectors.                                                                                                                                   |

| Group       | Icon | Processing Item             |                                                                                                                                                            |
|-------------|------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Measurement |      | Scan Edge Position          | Measure peak/bottom edge position of workpieces according to the color change in separated measurement area.                                               |
|             |      | Scan Edge Width             | Measure max/min/average width of workpieces according to the color change in separated measurement area.                                                   |
|             |      | Circular Scan Edge Position | Measure center axis, diameter and radius of circular workpieces.                                                                                           |
|             |      | Circular Scan Edge Width    | Measure center axis, width and thickness of ring workpieces.                                                                                               |
|             |      | Intersection                | Calculate approximate lines from the edge information on two sides of a square workpiece to measure the angle formed at the intersection of the two lines. |
|             |      | Color Data                  | Used for detecting presence and mixed varieties of products by using color average and deviation.                                                          |
|             |      | Gravity and Area            | Used to measure area, center of gravity of workpieces by extracting the color to be measured.                                                              |
|             |      | Labeling                    | Used to measure number, area and gravity of workpieces by extracting registered color.                                                                     |
|             |      | Precise Defect              | Check the defect on the object. Parameters for extraction defect can be set precisely.                                                                     |

| Group               | Icon | Processing Item                                                                                                                                                                                                                                                                       |
|---------------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Measurement         |      | <b>Fine Matching</b><br>Difference can be detected by overlapping and comparing (matching) registered fine images with input images.                                                                                                                                                  |
|                     |      | <b>Character Inspect</b><br>Recognize character according correlation search with model image registered in [Model Dictionary].                                                                                                                                                       |
|                     |      | <b>Date Verification</b><br>Reading character string is verified with internal date.                                                                                                                                                                                                  |
|                     |      | <b>Model Dictionary</b><br>Register character pattern as dictionary. The pattern is used in [Character Inspection].                                                                                                                                                                   |
|                     |      | <b>2DCode II *1</b><br>Recognize 2D code and display where the code quality is poor.                                                                                                                                                                                                  |
|                     |      | <b>2DCode *2</b><br>Recognize 2D code and display where the code quality is poor.                                                                                                                                                                                                     |
|                     |      | <b>Barcode *3</b><br>Recognize barcode, verify and output decoded characters.                                                                                                                                                                                                         |
|                     |      | <b>OCR</b><br>Recognize and read characters in images as character information.                                                                                                                                                                                                       |
| Input Image         |      | <b>OCR User Dictionary</b><br>Register dictionary data to use for OCR.                                                                                                                                                                                                                |
|                     |      | <b>Glue Bead Inspection</b><br>You can inspect coating of a specified color for gaps or runoffs along the coating path.                                                                                                                                                               |
|                     |      | <b>Camera Image Input FHV</b><br>To input images from cameras. And set up the conditions to input images from cameras. (For FHV only)                                                                                                                                                 |
|                     |      | <b>Camera Image Input HDR</b><br>Create high-dynamic range images by acquiring several images with different conditions.                                                                                                                                                              |
| Compensate image    |      | <b>Measurement Image Switching</b><br>To switch the images used for measurement. Not input images from camera again.                                                                                                                                                                  |
|                     |      | <b>Multi-trigger Imaging</b><br>The Multi-trigger Imaging processing item captures multiple images at user-defined timings and executes parallel measurement for each image. Insert the Multi-trigger Imaging to the top of the flow.                                                 |
|                     |      | <b>Multi-trigger Imaging Task</b><br>The Multi-trigger Imaging processing item captures multiple images at user-defined timings and executes parallel measurement for each image. Insert this processing item to the top of the processing which requires imaging for multiple times. |
|                     |      | <b>Position Compensation</b><br>Used when positions are differed. Correct measurement is performed by correcting position of input images.                                                                                                                                            |
| Support measurement |      | <b>Filtering</b><br>Used for processing images input from cameras in order to make them easier to be measured.                                                                                                                                                                        |
|                     |      | <b>Background Suppression</b><br>To enhance contrast of images by extracting color in specified brightness.                                                                                                                                                                           |
|                     |      | <b>Brightness Correct Filter</b><br>Track brightness change of entire screen and remove gradual brightness change such as uneven brightness.                                                                                                                                          |
|                     |      | <b>Color Gray Filter</b><br>Color image is converted into monochrome images to emphasize specific color.                                                                                                                                                                              |
|                     |      | <b>Extract Color Filter</b><br>Convert color image to color extracted image or binary image.                                                                                                                                                                                          |
|                     |      | <b>Anti Color Shading</b><br>To remove the irregular color/pattern by uniformizing max.2 specified colors.                                                                                                                                                                            |
|                     |      | <b>Stripes Removal Filter II</b><br>Remove the background pattern of vertical, horizontal and diagonal stripes.                                                                                                                                                                       |
|                     |      | <b>Polar Transformation</b><br>Rectify the image by polar transformation. Useful for OCR or pattern inspection printed on circle.                                                                                                                                                     |
|                     |      | <b>Trapezoidal Correction</b><br>Rectify the trapezoidal deformed image.                                                                                                                                                                                                              |
|                     |      | <b>Image Subtraction</b><br>The registered model image and measurement image are compared and only the different pixels are extracted and converted to an image.                                                                                                                      |
|                     |      | <b>Advanced filter</b><br>Process the images acquired from cameras in order to make them easier to measure. This processing item consolidates existing image conversion filtering into one processing item and adds extra functions.                                                  |
|                     |      | <b>Calculation</b><br>Used when using the judge results and measured values of Procltem which are registered in processing units.                                                                                                                                                     |
| Support measurement |      | <b>Line Regression</b><br>Used for calculating regression line from plural measurement coordinate.                                                                                                                                                                                    |
|                     |      | <b>Circle Regression</b><br>Used for calculating regression circle from plural measurement coordinate.                                                                                                                                                                                |
|                     |      | <b>Precise Calibration</b><br>Used for calibration corresponding to trapezoidal distortion and lens distortion.                                                                                                                                                                       |
|                     |      | <b>Trend Monitor</b><br>Used for displaying the information about results on the monitor, facilitating to avoid NG and analyze causes.                                                                                                                                                |
|                     |      | <b>Image Logging</b><br>Used for saving the measurement images to the memory and USB memory.                                                                                                                                                                                          |
|                     |      | <b>Image Conversion Logging</b><br>Used for saving the measurement images in JPEG and BMP format.                                                                                                                                                                                     |
|                     |      | <b>Elapsed Time</b><br>Used for calculating the elapsed time since the measurement trigger input.                                                                                                                                                                                     |
|                     |      | <b>Wait</b><br>Processing is stopped only at the set time. The stand-by time is set by the unit of [ms].                                                                                                                                                                              |

| Group               | Icon | Processing Item                                                                                                                                                                                                                                                                          |
|---------------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Support measurement |      | <b>Parallelize</b><br>A part of the measurement flow is divided into two or more tasks and processed in parallel to shorten the measurement time. This processing item is placed at the top of processing to be performed in parallel.                                                   |
|                     |      | <b>Parallelize Task</b><br>A part of the measurement flow is divided into two or more tasks and processed in parallel to shorten the measurement time. This processing item is placed immediately before processing to be performed in parallel between Parallelize and Parallelize End. |
|                     |      | <b>Statistics</b><br>Used when you need to calculate an average of multiple measurement results.                                                                                                                                                                                         |
|                     |      | <b>Reference Calib Data</b><br>Calibration data and distortion compensation data held under other processing items can be referenced.                                                                                                                                                    |
|                     |      | <b>Position Data Calculation</b><br>The specified position angle is calculated from the measured positions.                                                                                                                                                                              |
|                     |      | <b>Stage Data</b><br>Sets and stores data related to stages.                                                                                                                                                                                                                             |
|                     |      | <b>Robot Data</b><br>Sets and stores data related to robots.                                                                                                                                                                                                                             |
|                     |      | <b>Vision Master Calibration</b><br>This processing item automatically calculates the entire axis movement amount of the control equipment necessary for calibration.                                                                                                                    |
|                     |      | <b>Convert Position Data</b><br>The position angle after the specified axis movement is calculated.                                                                                                                                                                                      |
|                     |      | <b>Movement Single Position</b><br>The axis movement that is required to match the measured position angle to the reference position angle is calculated.                                                                                                                                |
|                     |      | <b>Movement Multi Points</b><br>The axis movements that are required to match the measured position angles to the corresponding reference position angles are calculated.                                                                                                                |
|                     |      | <b>Camera Calibration</b><br>By setting the camera calibration, the measurement result can be converted and output as actual dimensions.                                                                                                                                                 |
| Branch              |      | <b>Scene</b><br>The specified scene is copied to the current scene.                                                                                                                                                                                                                      |
|                     |      | <b>System Information</b><br>Obtain system information (e.g., memory and disk space and I/O input signal status) of the Sensor Controller.                                                                                                                                               |
|                     |      | <b>End</b><br>This Procltem must be set up as the last processing unit of a branch.                                                                                                                                                                                                      |
|                     |      | <b>Conditional Execution (If)</b><br>The measurement flow is divided according to the comparison result obtained using the set expressions and conditions.                                                                                                                               |
| Output result       |      | <b>Conditional Execution (Else)</b><br>Insert between the Conditional Execution (If) processing item and End If processing item. The measurement flow is divided according to the comparison result obtained using the set expressions and conditions.                                   |
|                     |      | <b>Loop</b><br>The set processes are repeated until the loop count reaches the specified number, and then the next process starts.                                                                                                                                                       |
|                     |      | <b>Loop Suspension</b><br>Insert between the Loop processing item and End Loop processing item. Used to stop the loop before the loop count reaches the specified number.                                                                                                                |
|                     |      | <b>Select Execution (Select)</b><br>Used to set conditions. The measurement flow is divided according to the comparison result obtained using the conditions given by expressions.                                                                                                       |
| Display result      |      | <b>Select Execution (Case)</b><br>Used to make a judgment. The measurement flow is divided according to the comparison result obtained using the conditions given by expressions.                                                                                                        |
|                     |      | <b>Result Output (I/O)</b><br>Output data to the external devices such as a programmable controller or a PC via PLC Link, Fieldbus interface (EtherCAT *4, EtherNet/IP (other than message communication), PROFINET).                                                                    |
|                     |      | <b>Result Output (Message)</b><br>Output data to the external devices such as a programmable controller or a PC with non-procedure mode via Ethernet or RS-232C. This processing item allows you to save the logging data as a ".csv" file into the Sensor Controller as well.           |
|                     |      | <b>Result output (Parallel I/O)</b><br>Output measurement results and/or judgment results to the external devices such as a programmable controller or a PC via Parallel interface *5.                                                                                                   |
| Display result      |      | <b>Result Display</b><br>Used for displaying the texts or the figures in the camera image.                                                                                                                                                                                               |
|                     |      | <b>Display Last NG Image</b><br>Display the last NG images.                                                                                                                                                                                                                              |
|                     |      | <b>Display Image Hold</b><br>Processing item to retain images, including measurement results.                                                                                                                                                                                            |

- \*1 2D Codes that can be read : Data Matrix (ECC200)  
 \*2 2D Codes that can be read : Data Matrix (ECC200), QR Code  
 \*3 Bar Codes that can be read : JAN/EAN/UPC (including add-on codes), Code 39, Codabar (NW-7), ITF (Interleaved 2 of 5), Code 93, Code 128, GS1-128, GS1 DataBar (RSS-14 / RSS Limited / RSS Expanded), Pharmacode  
 \*4 The FHV-SDU30 EtherCAT Interface is required for EtherCAT connection.  
 \*5 The FHV-SDU10 Parallel Interface is required for Parallel I/O connection.

# FHV7 Series

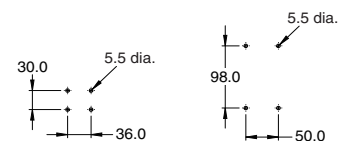
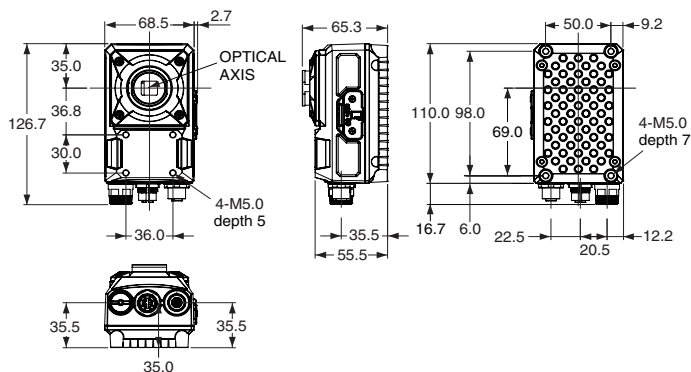
## Dimensions

(Unit: mm)

### Smart Cameras

#### C Mount Models

FHV7H-□□□□-C

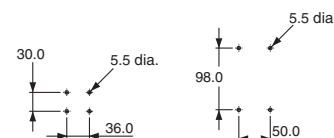
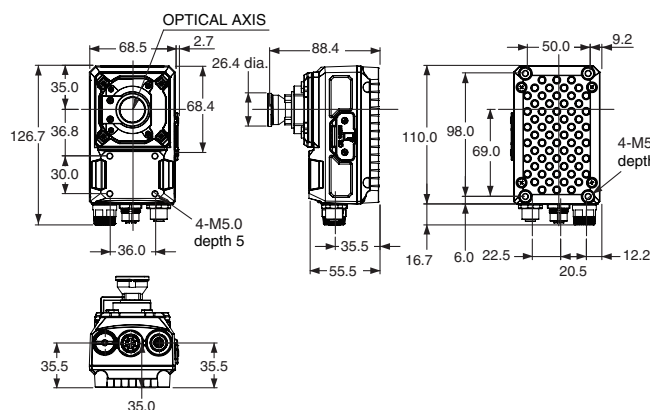


Mounting screw holes  
(The tolerance:  $\pm 0.1$  mm)  
Recommend tightening torque: 2.3N·m

#### All-in-one Models with Lens Module

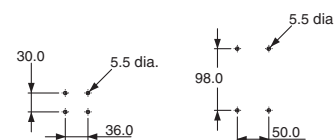
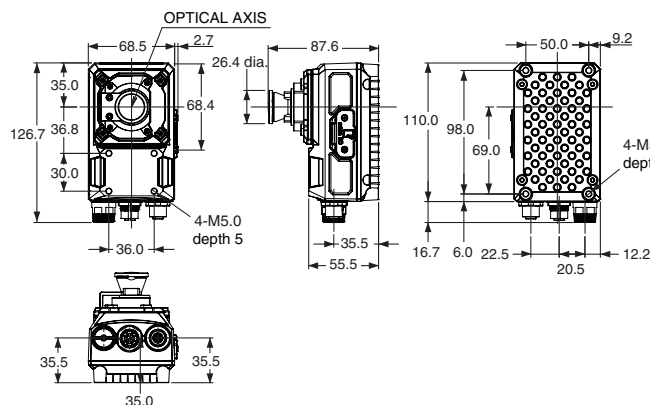
##### High-speed Lens Modules

FHV7H-□□□□-H06



Mounting screw holes  
(The tolerance:  $\pm 0.1$  mm)  
Recommend tightening torque: 2.3N·m

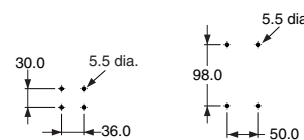
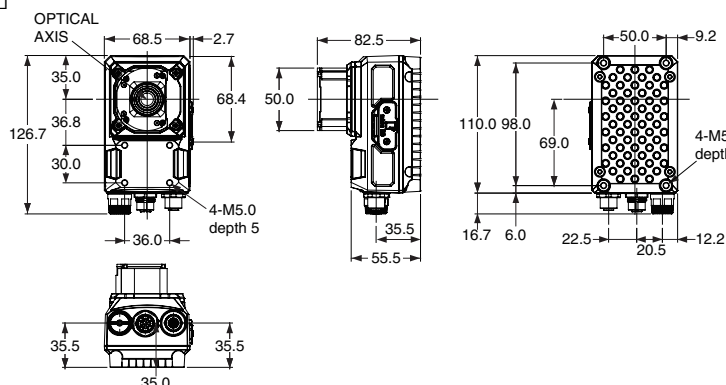
FHV7H-□□□□-H19



Mounting screw holes  
(The tolerance:  $\pm 0.1$  mm)  
Recommend tightening torque: 2.3N·m

#### Standard Lens Modules

FHV7H-□□□□-S□□

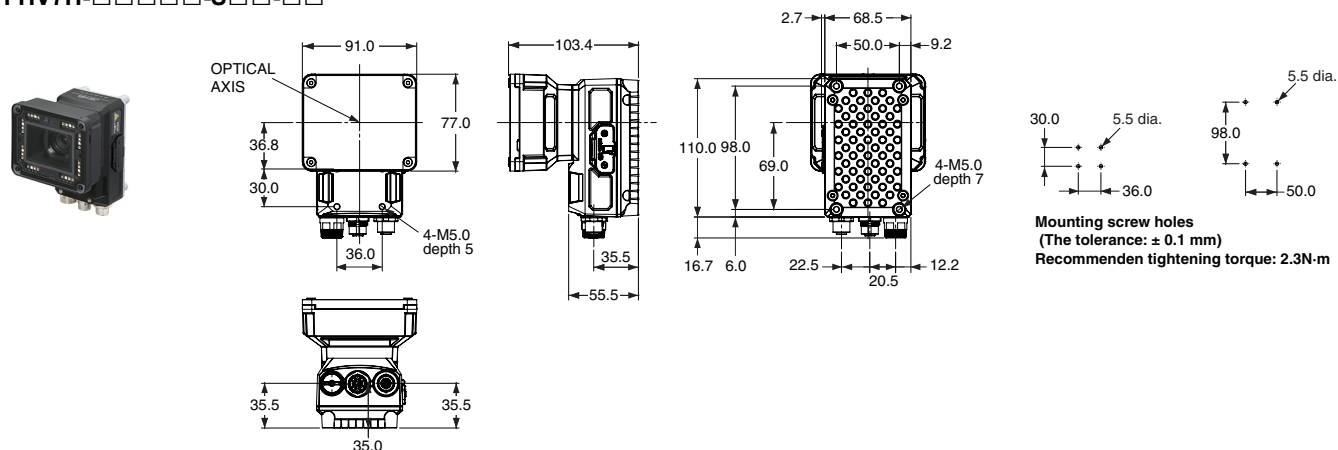


Mounting screw holes  
(The tolerance:  $\pm 0.1$  mm)  
Recommend tightening torque: 2.3N·m

## All-in-one Models with Lens and Lighting Modules

FHV7H-□□□□□-H□□-□□/

FHV7H-□□□□□-S□□-□□

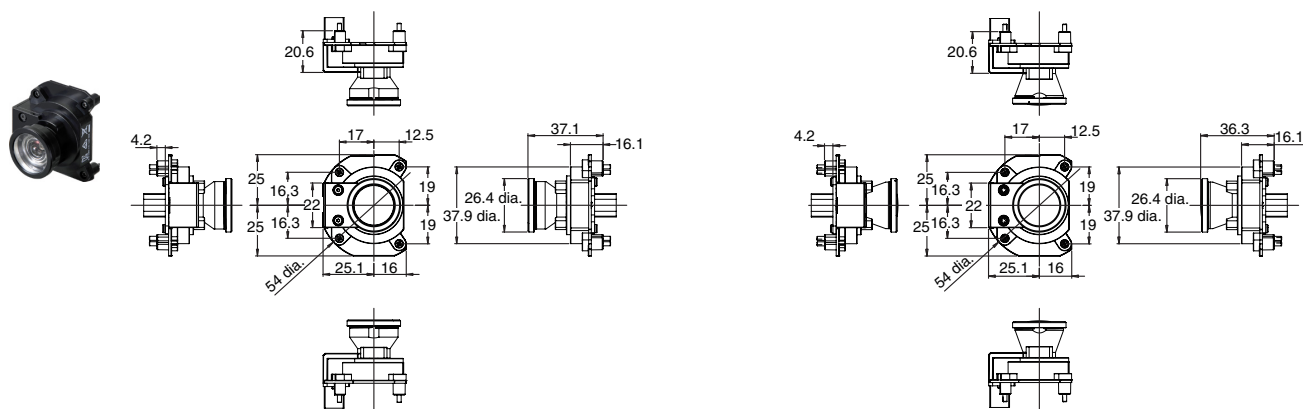


## Lens Modules

High-speed Lens Modules

FHV-LEM-H06

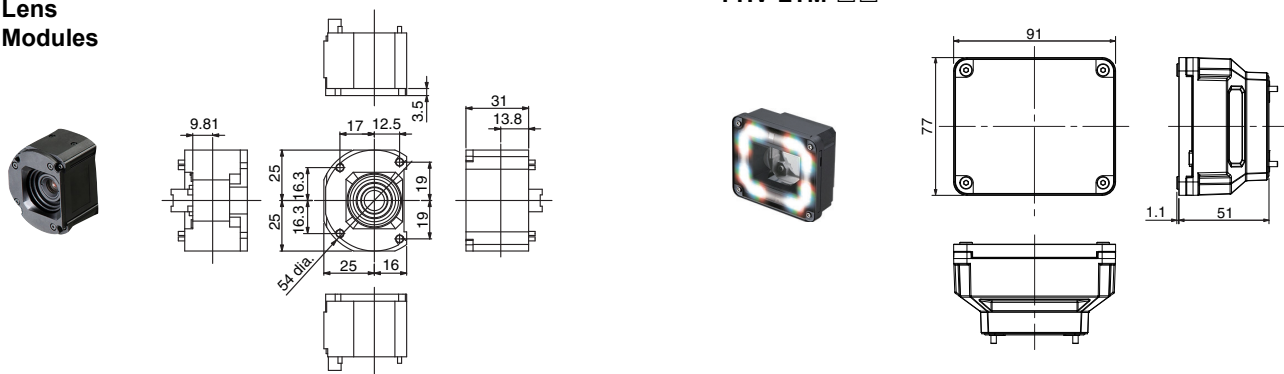
FHV-LEM-H19



Standard  
Lens  
Modules

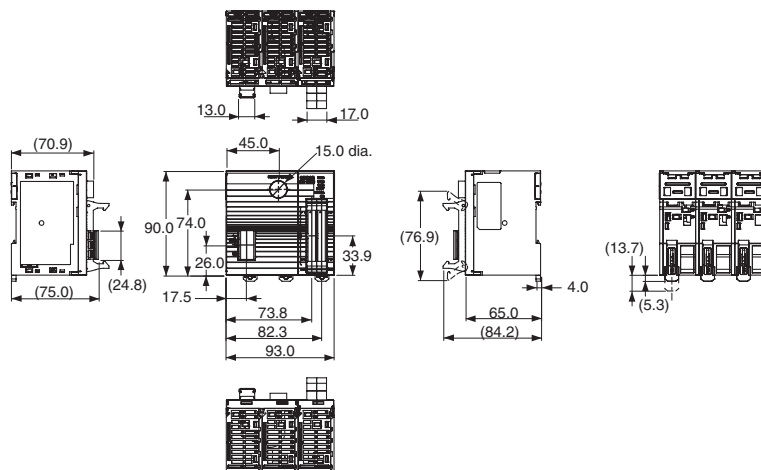
## Lighting Modules

FHV-LTM-□□

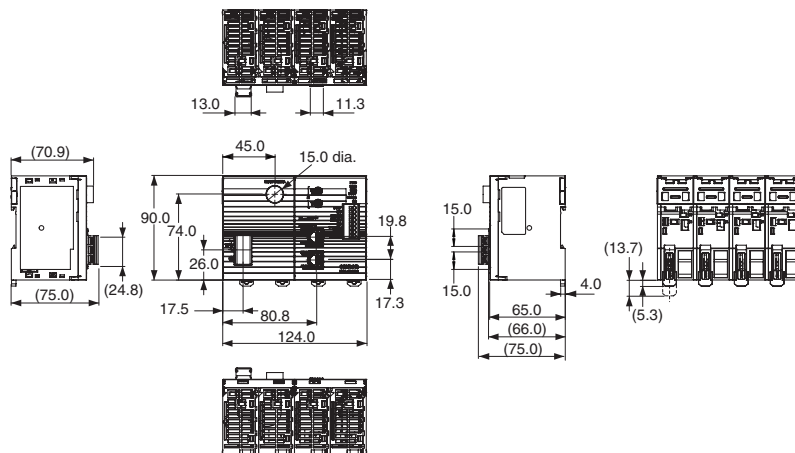


## Smart Camera Data Unit

FHV-SDU10



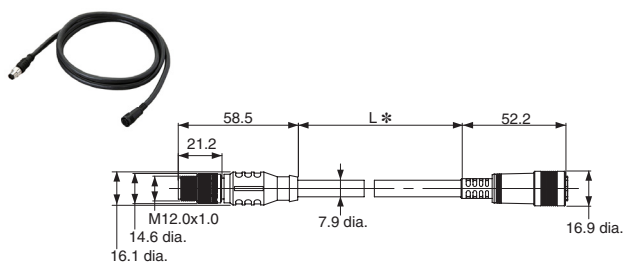
FHV-SDU30



## Smart Camera Data Unit Cables

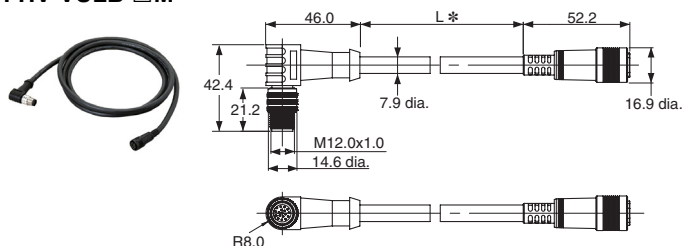
Bending Resistance Cables (Straight)

FHV-VUB □M



Bending Resistance Cables (Right angle)

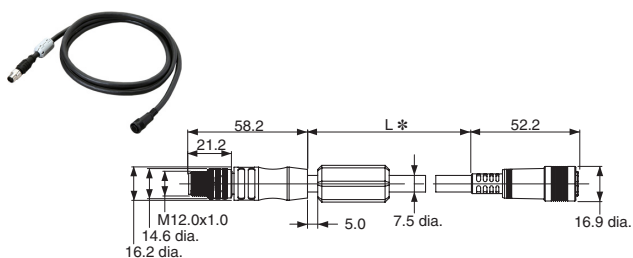
FHV-VULB □M



\* Cable is available in 2m/3m/5m/10m/20m.

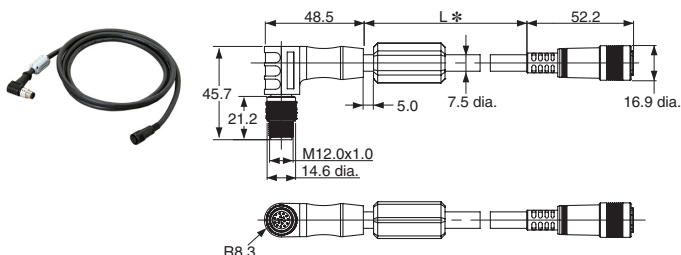
Super Bending Resistance Cables (Straight)

FHV-VUBX □M



Super Bending Resistance Cables (Right angle)

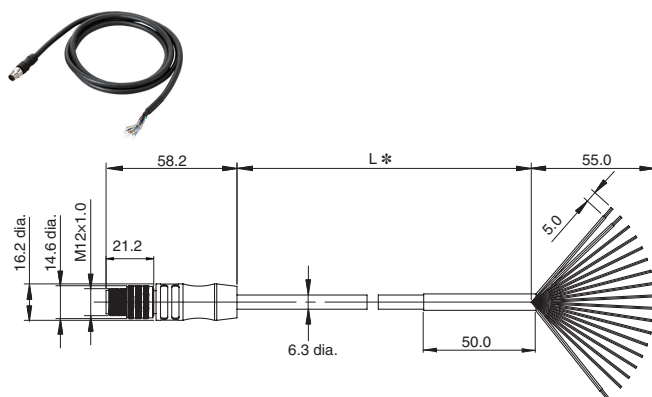
FHV-VULBX □M



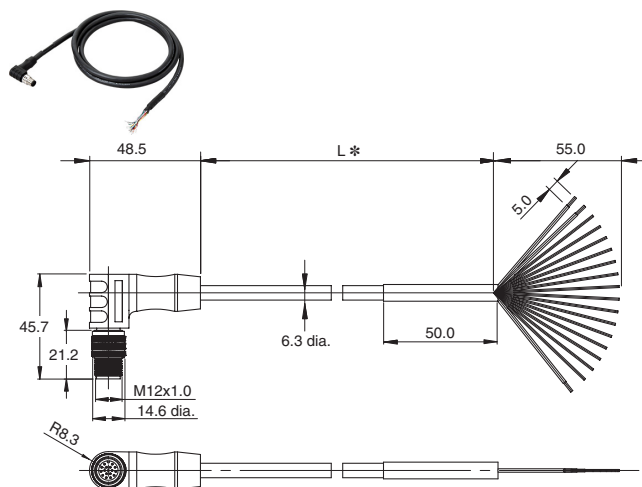
\* Cable is available in 2m/3m/5m/10m.

## Cables

**I/O cable (Bend resistant, straight)**  
**FHV-VDB □M**

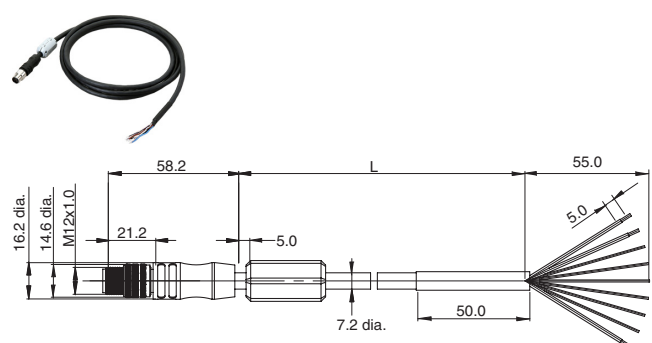


**I/O cable (Bend resistant, right angle)**  
**FHV-VDLB □M**

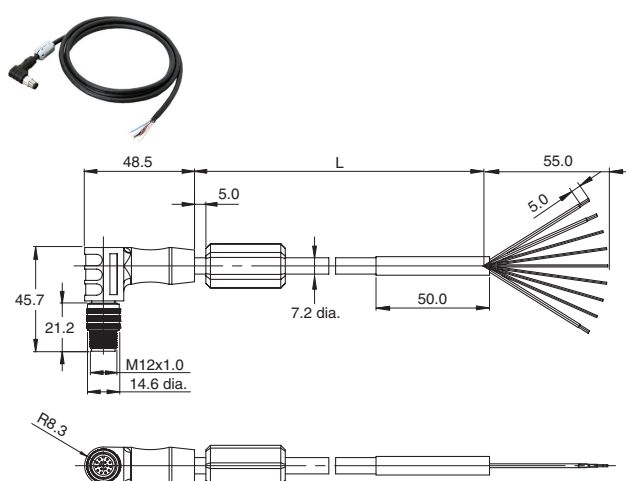


\* Cable is available in 2m/3m/5m/10m/20m.

**I/O cable (Super bend resistant, straight)**  
**FHV-VDBX □M**

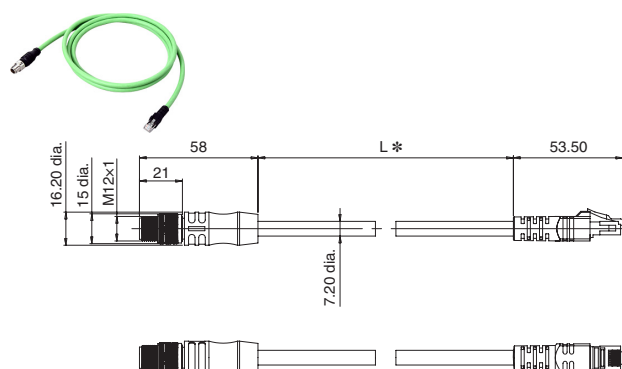


**I/O cable (Super bend resistant, right angle)**  
**FHV-VDLBX □M**

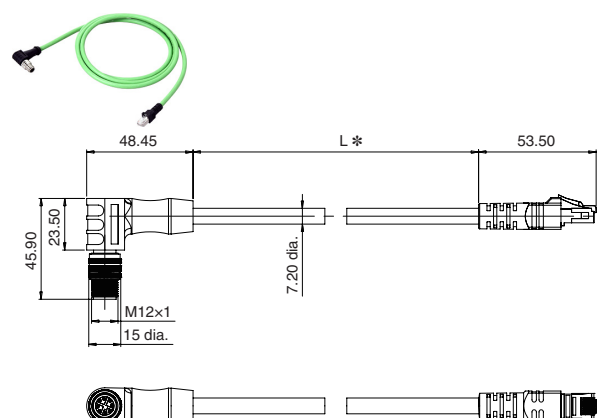


\* Cable is available in 2m/3m/5m/10m.

**Ethernet cable (Bend resistant, straight)**  
**FHV-VNB □M**



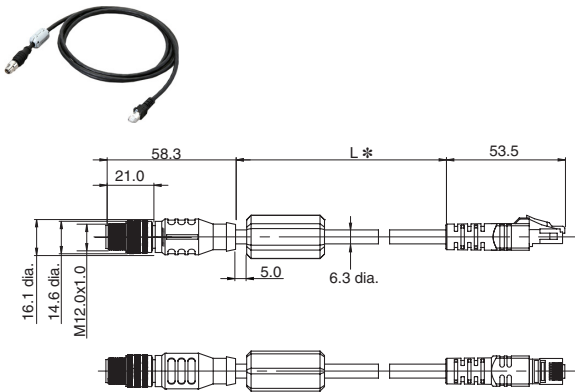
**Ethernet cable (Bend resistant, right angle)**  
**FHV-VNLB □M**



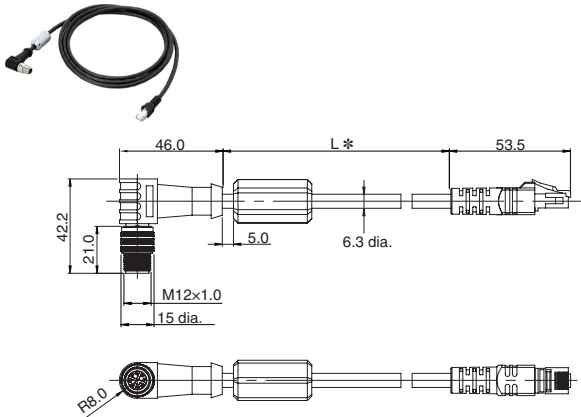
\* Cable is available in 2m/3m/5m/10m/20m.

# FHV7 Series

Ethernet cable (Super bend resistant, straight)  
FHV-VNBX □M

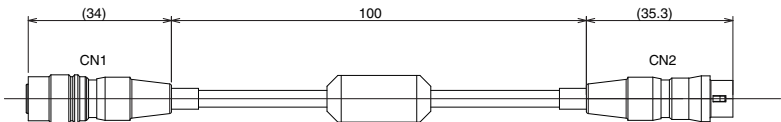


Ethernet cable (Super bend resistant, right angle)  
FHV-VNLBX □M



\* Cable is available in 2m/3m/5m/10m/20m.

External Light Junction Cables for MDMC Light  
FHV-VFLX-GD



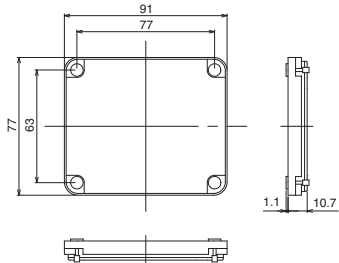
## Optical Filters

Polarization Filter, Diffusion Filter  
FHV-XDF/-XPL/-XPL-IR



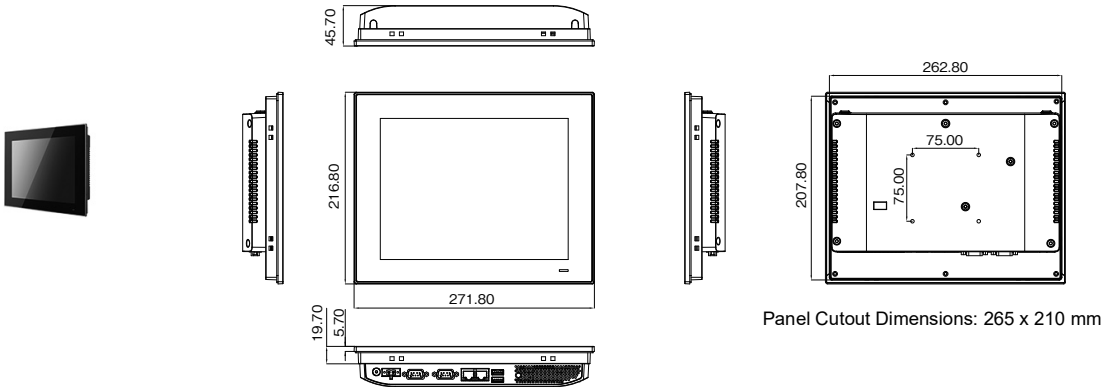
## Light Cover

FHV-XCV



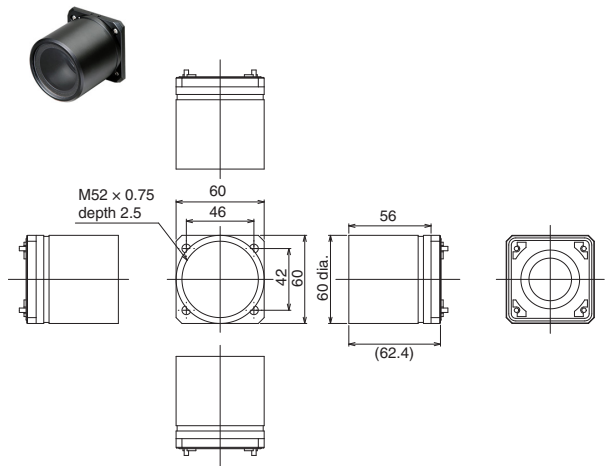
## Touch Panel Monitor

Advantech PPC-3100S-OMR

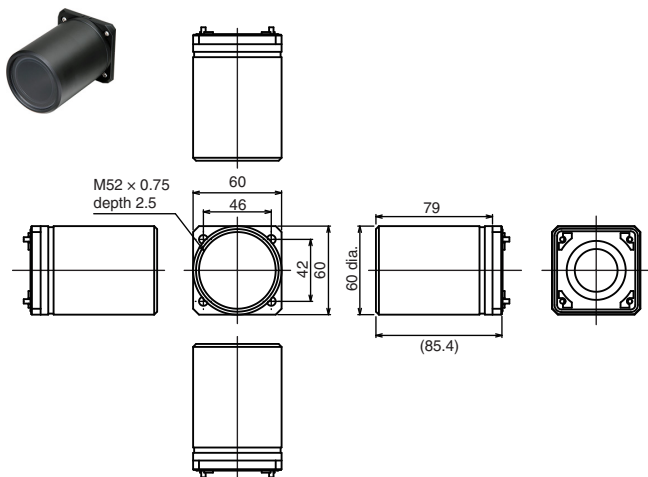


Waterproof Hoods

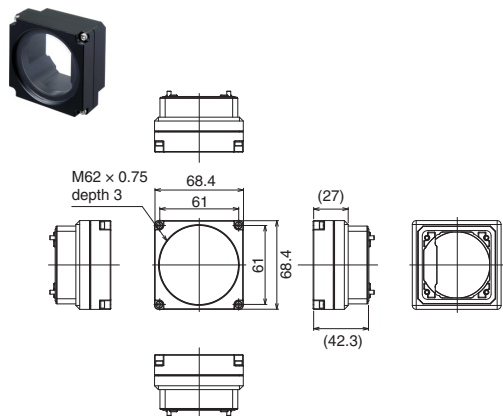
for C-mount Lens (Short)  
FHV-XHD-S



for C-mount Lens (Long)  
FHV-XHD-L



for Lens Modules  
FHV-XHD-LEM



# FHV7 Series

## Meaning of Optical Chart

### How-to View the Optical Chart

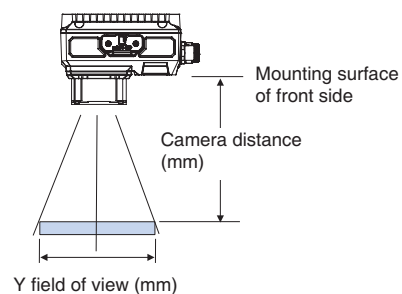
The X axis of the optical chart shows the field of vision (mm).

The Y axis of the optical chart shows the camera installation distance (mm).

The lengths of the fields of view given in the optical charts are the lengths of the Y axis.

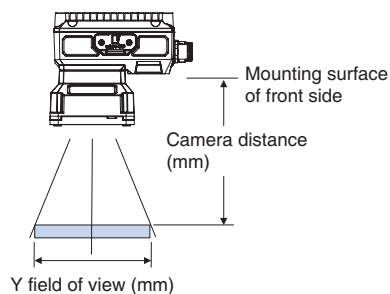
All-in-one Models  
with Lens Module

FHV7H-□□□□□-S□□



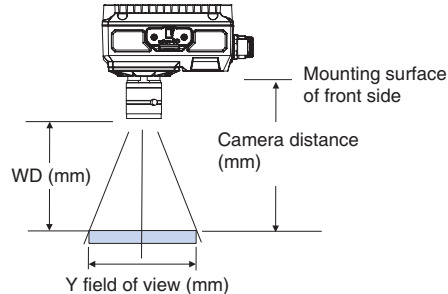
All-in-one Models  
with Lens and Lighting Modules

FHV7H-□□□□□-S□□-□□



C Mount Models

FHV7H-□□□□□-C



## Lens Modules: High-speed Lens Modules (Autofocus)

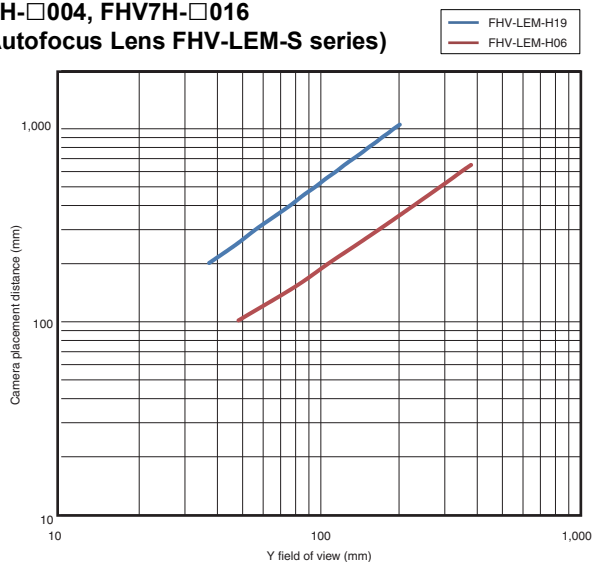
0.4 million pixels

1.6 million pixels

Smart Cameras:

FHV7H-□004, FHV7H-□016

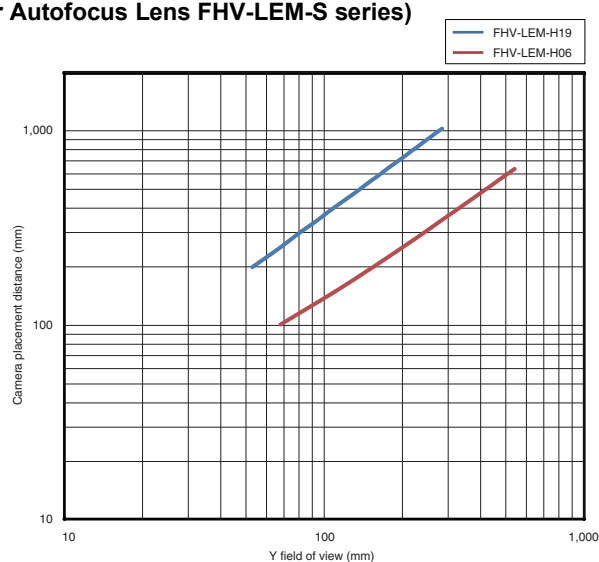
(for Autofocus Lens FHV-LEM-S series)



3.2 million pixels

Smart Cameras: FHV7H-□032

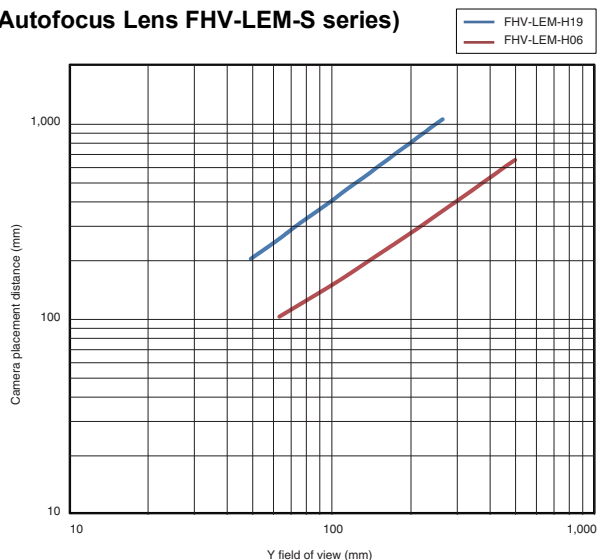
(for Autofocus Lens FHV-LEM-S series)



6.3 million pixels

Smart Cameras: FHV7H-□063R

(for Autofocus Lens FHV-LEM-S series)



Lens Modules: Standard Lens Modules (Autofocus)

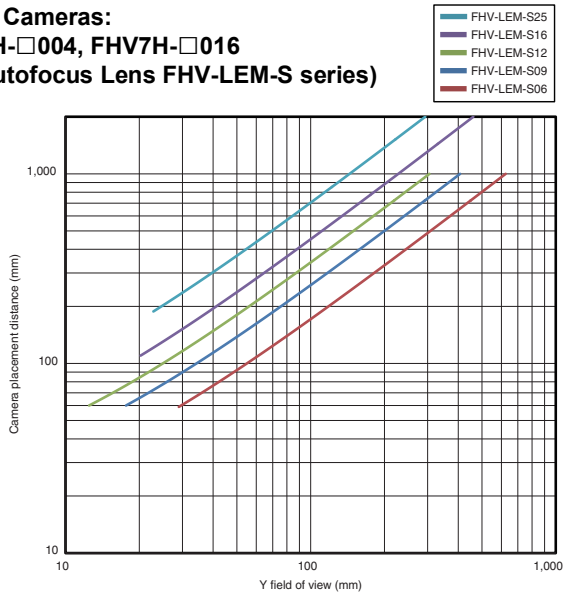
0.4 million pixels

1.6 million pixels

Smart Cameras:

FHV7H-□004, FHV7H-□016

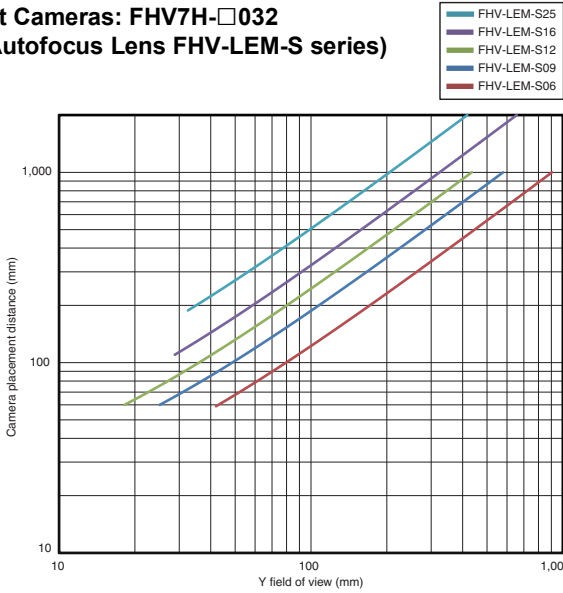
(for Autofocus Lens FHV-LEM-S series)



3.2 million pixels

Smart Cameras: FHV7H-□032

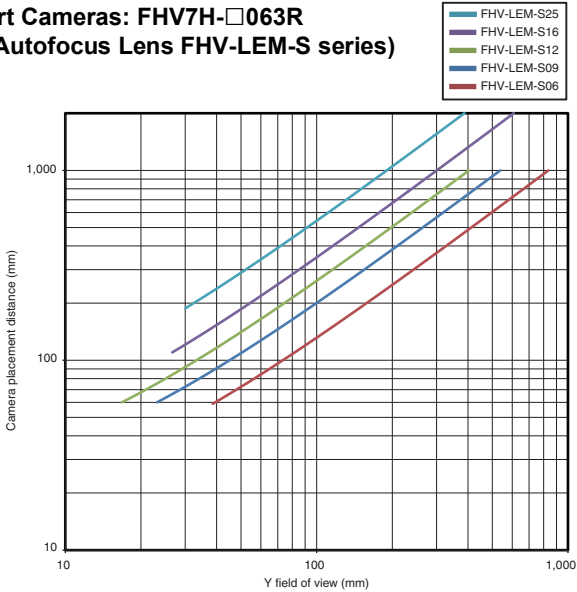
(for Autofocus Lens FHV-LEM-S series)



6.3 million pixels

Smart Cameras: FHV7H-□063R

(for Autofocus Lens FHV-LEM-S series)



## C Mount Lenses: Normal Lenses

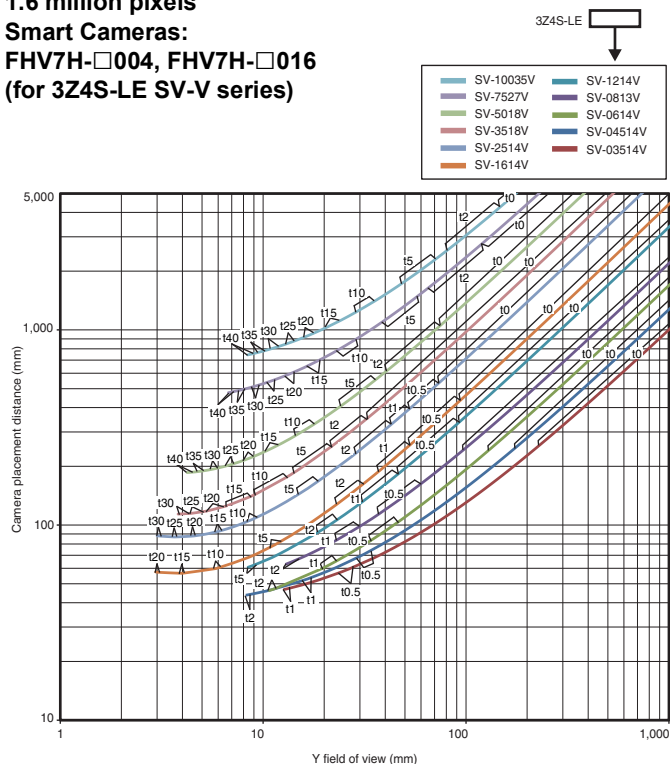
0.4 million pixels

1.6 million pixels

Smart Cameras:

FHV7H-□004, FHV7H-□016

(for 3Z4S-LE SV-V series)



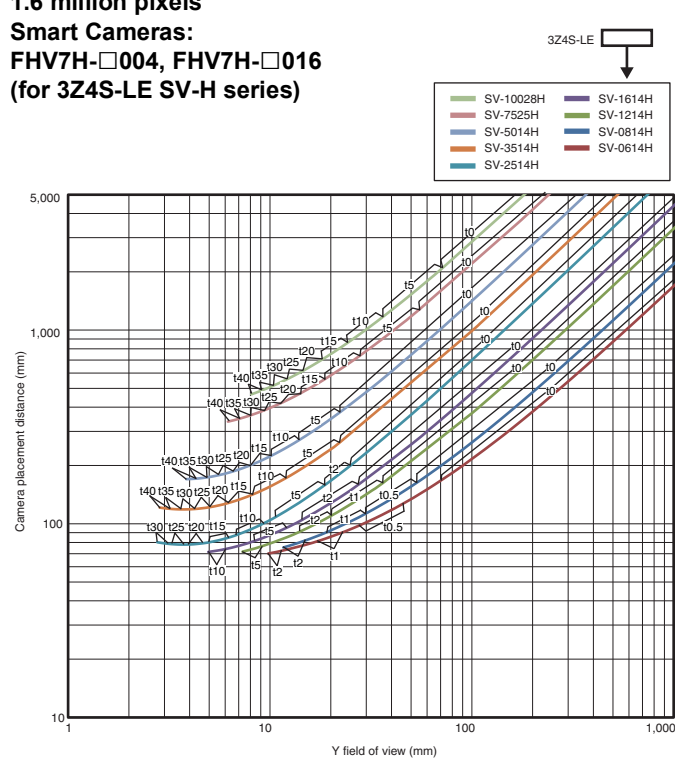
0.4 million pixels

1.6 million pixels

Smart Cameras:

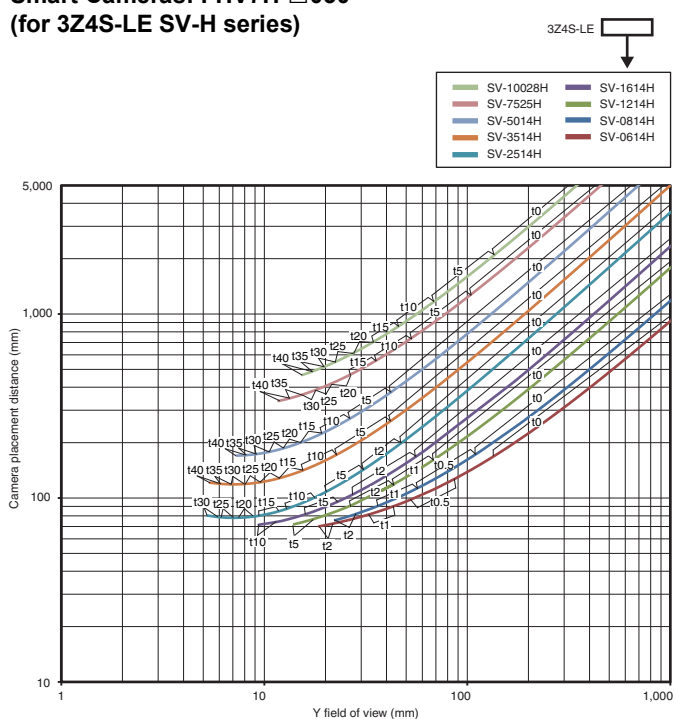
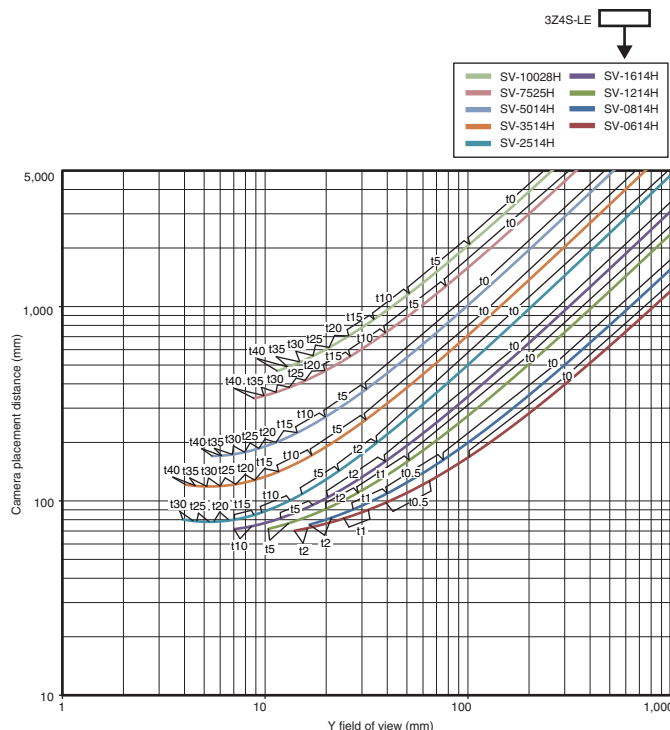
FHV7H-□004, FHV7H-□016

(for 3Z4S-LE SV-H series)

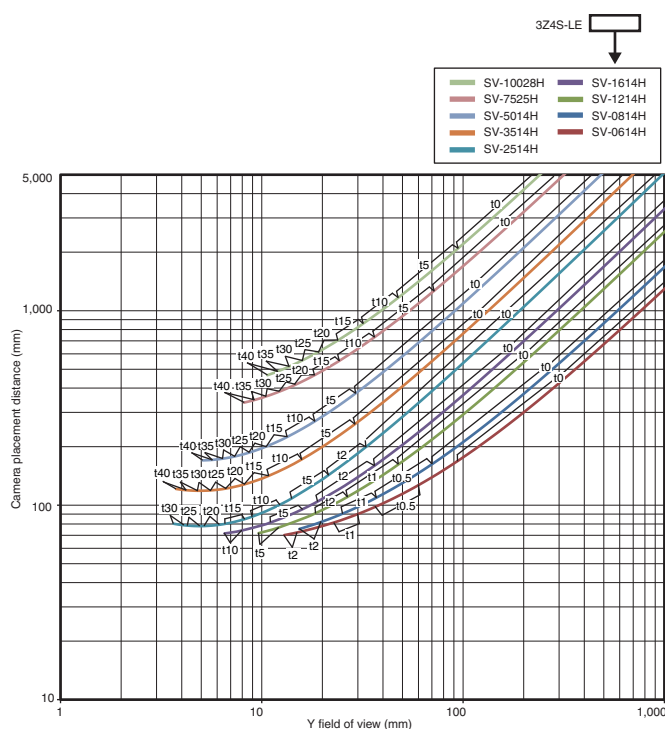


3.2 million pixels

5 million pixels  
Smart Cameras: FHV7H-□050  
(for 3Z4S-LE SV-H series)

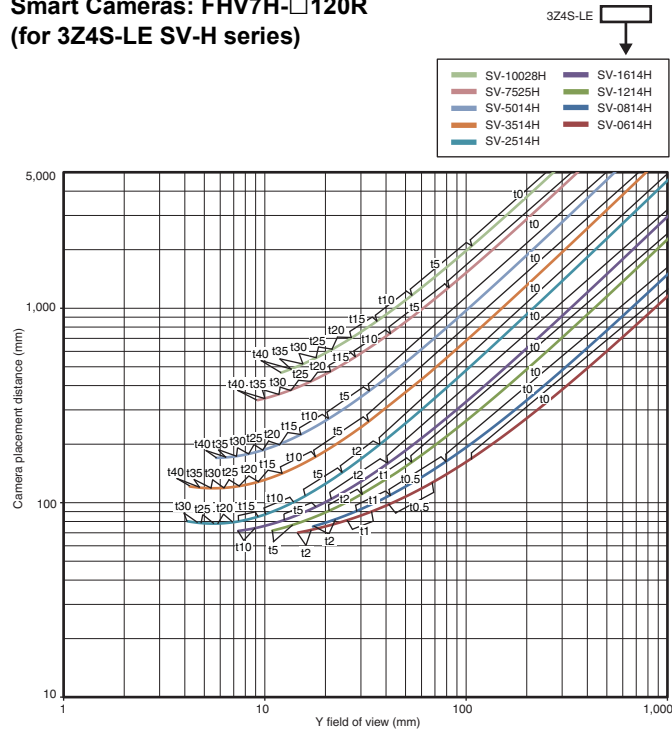


## 6.3 million pixels



## 12 million pixels

Smart Cameras: FHV7H-□120R  
(for 3Z4S-LE SV-H series)

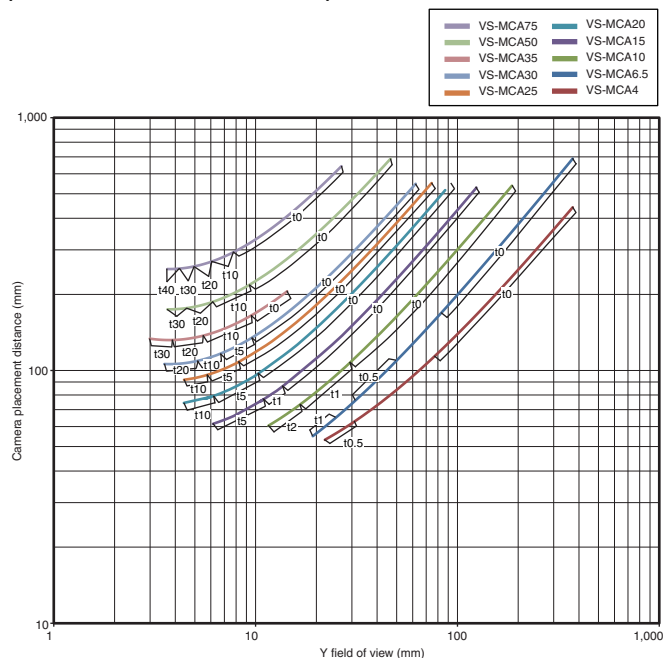


## C Mount Lenses: Vibration/Shock-resistance Lens

400,000 pixels

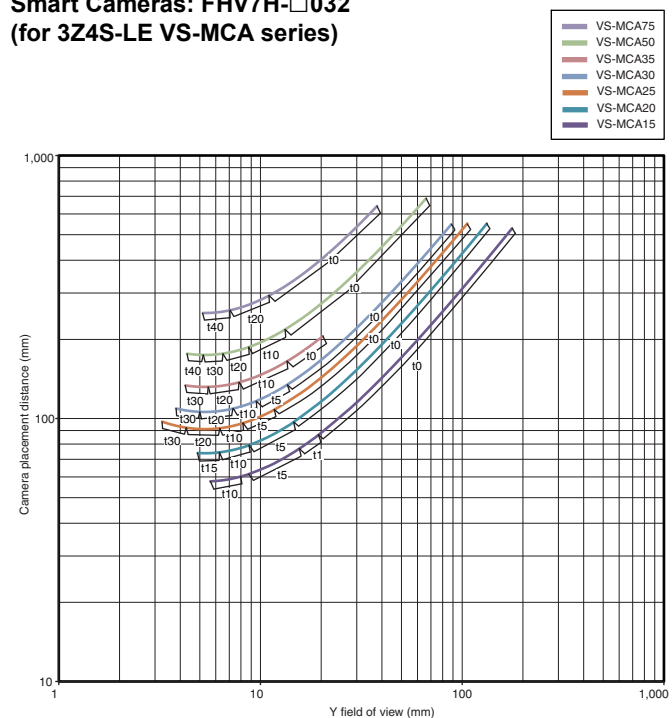
1.6 million pixels

Smart Cameras: FHV7H-□004, FHV7H-□016  
(for 3Z4S-LE VS-MCA series)



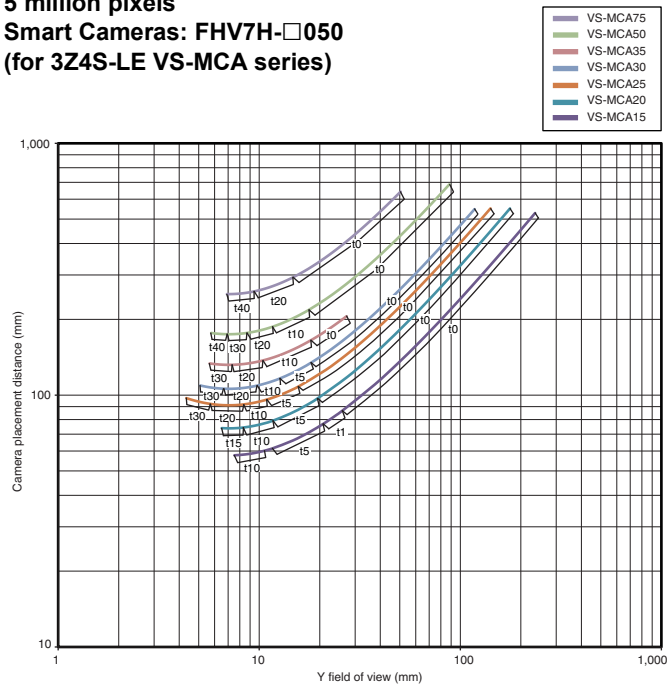
3.2 million pixels

Smart Cameras: FHV7H-□032  
(for 3Z4S-LE VS-MCA series)

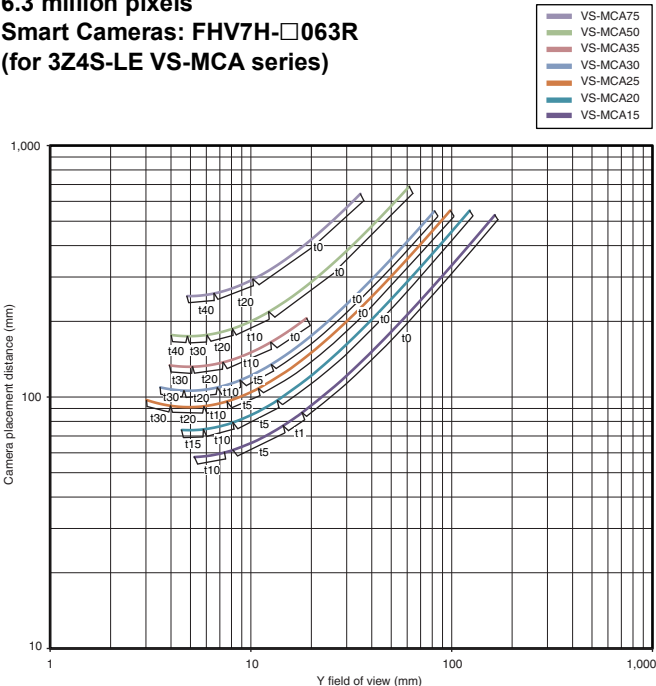


# FHV7 Series

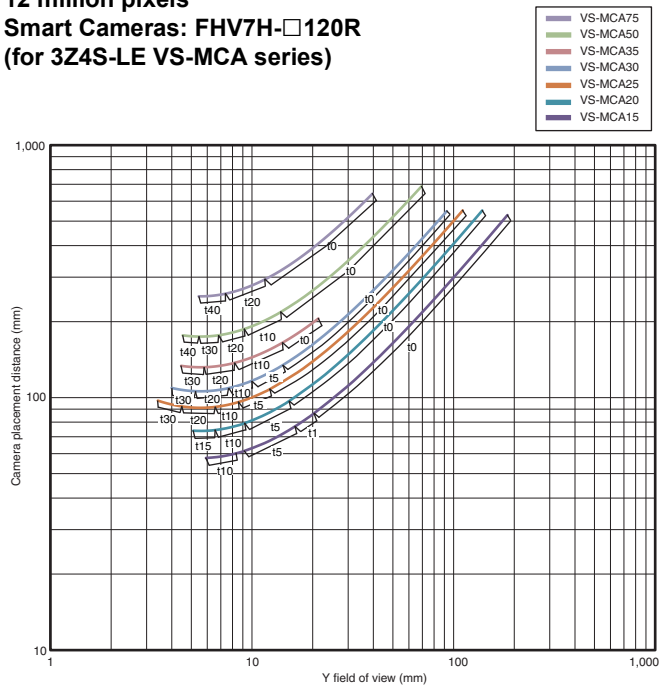
5 million pixels  
Smart Cameras: FHV7H-□050  
(for 3Z4S-LE VS-MCA series)



6.3 million pixels  
Smart Cameras: FHV7H-□063R  
(for 3Z4S-LE VS-MCA series)



12 million pixels  
Smart Cameras: FHV7H-□120R  
(for 3Z4S-LE VS-MCA series)



## Related Manuals/Catalog

| Cat. No. | Series  | Manual                                                                |
|----------|---------|-----------------------------------------------------------------------|
| Z365     | FH/FHV7 | Vision System FH/FHV Series User's Manual                             |
| Z341     | FH/FHV7 | Vision System FH/FHV Series Processing Item Function Reference Manual |
| Z342     | FH/FHV7 | Vision System FH/FHV Series User's Manual for Communications Settings |
| Z408     | FHV7    | Smart Camera FHV Series Setup Manual                                  |
| Q198     | FLV/FL  | FLV/FL Vision Accessory CATALOG                                       |

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