

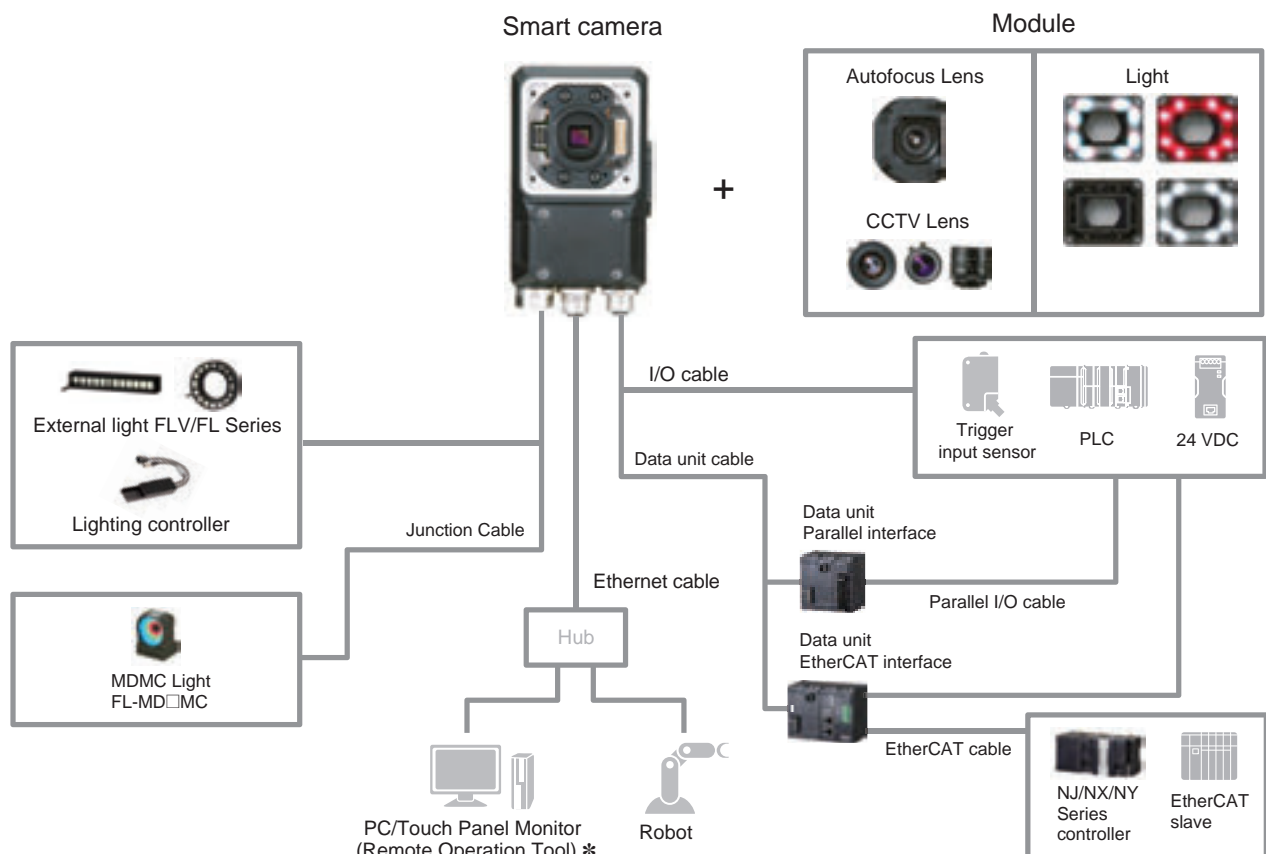
Smart Camera FHV7H Series

Ultimate flexibility to fit ever-changing production scene

- Modular structure for a wide range of applications
- Responding to changes of objects like human eyes
- Raising quality standard without sacrificing cycle time



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

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.



FHV7H Series

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*.

FHV7H- - -






1 2 3 4 5 6

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 1.6 million pixels 3.2 million pixels 5 million pixels 6.3 million pixels 12 million pixels	FHV7H- 004- FHV7H- 016- FHV7H- 032- FHV7H- 050- FHV7H- 063R- FHV7H- 120R- 	C mount lens 3Z4SLE SV- V 3Z4SLE SV- H	N/A	IP40	FHV7H- -C		C mount lens/IP40
			IP67 Waterproof Hoods required FHV-XHD-S FHV-XHD-L	N/A		C mount lens/IP67	
0.4 million pixels 1.6 million pixels 3.2 million pixels 6.3 million pixels	FHV7H- 004- FHV7H- 016- FHV7H- 032- FHV7H- 063R- 	FHV lens module FHV-LEM-H FHV-LEM-S 	N/A	IP40	FHV7H- -H FHV7H- -S 		Lens module/IP40
			IP67 Waterproof Hoods required FHV-XHD-LEM	N/A		Lens module/IP67	
			FHV-LTM- 	IP67	FHV7H- - H FHV7H- - S 		Lens module /Internal lighting - IP67



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

Lens Modules

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

* For the focal length and horizontal field of view, refer to specifications (P.13) and optical charts of the lens module (P.30).


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

Lighting Modules

Item	Light color	Model
	Multi color	FHV-LTM-MC
	Red	FHV-LTM-R
	White	FHV-LTM-W
	IR	FHV-LTM-IR


FHV7H Series

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
	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
	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
	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.13) and optical charts of the lens module (P.30).

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			

FHV7H 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.13) and optical charts of the lens module (P.30)

Optical Filters

	Item		Model
	Polarization Filter	For visible light	FHV-XPL
	Polarization Filter	For both infrared light and visible light	FHV-XPL-IR
	Diffusion Filter		FHV-XDF

Waterproof Hoods

Required to ensure IP67 protection without using a lighting module.

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

*1. Can be used with the following lenses.






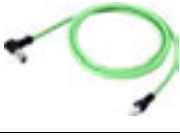



3Z4S-LE SV-0614V, 3Z4S-LE SV-0813V, 3Z4S-LE SV-1214V, 3Z4S-LE SV-1614V, 3Z4S-LE SV-2514V

*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

FHV7H 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/ Photometric Stereo Light	0.1m	FHV-VFLX-GD






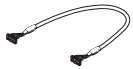

*1. The FHV-VDB/VDLB/VDBX/VDLBX I/O Cable cannot be connected when the smart camera data unit is used.
Use the FHV-VUB/VULB/VUBX/VULBX Smart Camera Data Unit Cable.

*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
 Paralle linterface	FHV-SDU10
 EtherCAT interface	FHV-SDU30

Smart Camera Data Unit Cable

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










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

*2. Refer to the XW2R datasheet 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).

FHV7H Series

Accessories

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


*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	LED	FLV Series	
		High-brightness LED	FL-BR/DR Series	
		Photometric Stereo Light	FL-PS Series	
		MDMC Light (Built-in lighting controller)	FL-MD Series	
—	Lighting controller	LED	FLV-TCC/ATC	
		High-brightness LED	FL-TCC/STC	
		For photometric Stereo Light	FL-TCC1PS	
	Industrial Switching Hubs for EtherNet/IP and Ethernet	5 port	Current consumption: 0.07 A	W4S1-05D

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 Non-telecentric Macro 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) Standard RJ45 plugs type *1 Wire Gauge and Number of Pairs: AWG26, 4-pair Cable Cable Sheath material: LSZH *2 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) Rugged RJ45 plugs type *1 Wire Gauge and Number of Pairs: AWG22, 2-pair Cable 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 (M12 Straight/M12 Straight) Shield Strengthening Connector cable *4 M12/Smartclick Connectors Wire Gauge and Number of Pairs: AWG22, 2-pair Cable 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) Shield Strengthening Connector cable *4 M12/Smartclick Connectors Rugged RJ45 plugs type Wire Gauge and Number of Pairs: AWG22, 2-pair Cable 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.

FHV7H Series

Cables / Connectors


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

Ask Advantech about the warranty period and coverage of this product.

Item	Model	Recommended manufacturer
	Touch Panel Monitor	PPC-310-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
	Power cord 3P Europe (WS-010+083) 1.83 m	170203183C
	Power cord 3P/3P PSE 1.8 m	1700008921-11
	Power cord 3P CCC (China) 1.8 m	96CB-POWER-B-1.8M
		Advantech Find your local office on the Advantech website https://www.advantech.com/contact/offices/

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 Standard Edition 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. This software provides functions of the Vision Edition. Refer to your local OMRON website for details such as supported models and functions.	-- (Media only)	Sysmac Studio (32bit) DVD *1	SYSMAC-SE200D
		-- (Media only)	Sysmac Studio (64bit) DVD *1	SYSMAC-SE200D-64
		1 license *2	—	SYSMAC-SE201L
Sysmac Studio Vision Edition 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 x 540		1440 x 1080		2048 x 1536		2448 x 2048		3072 x 2048		4000 x 3000	
	Pixel size	6.9 x 6.9 μm		3.45 x 3.45 μm		3.45 x 3.45 μm		3.45 x 3.45 μm		2.4 x 2.4 μm		1.85 x 1.85 μm	
	Imaging area H x V (opposing corner)	5.0 x 3.8 (6.3 mm)		5.0 x 3.8 (6.3 mm)		7.1 x 5.3 (8.9 mm)		8.5 x 7.1 (11.1 mm)		7.4 x 5.0 (8.9 mm)		7.4 x 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 x 1											
	Ethernet	Protocol: Non-procedure (TCP/UDP) I/F: 1000BASE-T x 1											
	EtherNet/IP	Yes (Target/Ethernet port)											
	PROFINET	Yes (Slave/Ethernet port), Conformance class A											
	Parallel I/O	NPN/PNP common											
	Parallel I/O	Input signals	4 signals • STEP (Measurement trigger input) • DI 0 to 2 (Command input signal)										
		Output signals	5 signals • ERROR (ON when there is an error) • OR (Overall Judgement Result) • BUSY (Processing in progress) • READY (ON when Image input is allowed) • STGOUT/SHTOUT (Strobe trigger signal/Shutter output signal)										
	Encoder I/F	N/A											
	Monitor I/F	N/A											
	USB I/F	N/A											
SD Card I/F	microSD card: SDHC x 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 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.

FHV7H 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 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 ² , Test direction: 6 directions, three time each (up/down, front/behind, left/right)											
	Noise immunity	Fast transient burst <ul style="list-style-type: none"> • DC power <ul style="list-style-type: none"> 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. • I/O line <ul style="list-style-type: none"> 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 x 68.5 mm x 55.5 mm (H x W x D)											
	Weight	Approx. 670 g											
	Degree of protection	With lighting modules or waterproof hoods: IEC60529 - IP67 (except a connector cap removed) Other than the above: IEC60529 - IP40											
	Case material	Aluminum die-casting (ADC12)											
Accessories	<ul style="list-style-type: none"> • Connector cap for Ethernet cable (mounted on the body): 1 • Connector cap for an external lighting (mounted on the body): 1 • C mount cap (mounted on the body): 1 • C mount cover (mounted on the body): 1 • Instruction sheet: 1 • Membership registration: 1 • Compliance sheet: 1 												

*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 ² , 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"> • Special cover for FHV-LEM-H: 1 • Screws: M3 × 8 mm: 5 (including one spare piece) • Instruction sheet : 1 • Compliance sheet: 1 			

* Refer to optical chart (P.30) 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					
	3.2 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
	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 ² , 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"> • Special cover for FHV-LEM-S: 1 • Screws: M3 × 8 mm: 5 (including one spare piece) • Instruction sheet : 1 • Compliance sheet: 1 					

*1. Refer to optical chart (P.30) for details.

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

FHV7H 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 G: Typ. 525 nm B: Typ. 465 nm IR: Typ. 850 nm
Light source	LED	LED	LED	LED
Risk group	Group 2	Group 1	Group 1	R: Group 1 G: Group 2 B: Group 2 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 ² , Test direction: 6 directions, three time each (up/down, front/behind, left/right)		
Dimensions	52 mm x 91 mm x 77 mm (H x W x D)			
Weight	270 g	270 g	270 g	270 g
Material	Aluminum die-casting (ADC12), polycarbonate			
Accessories	<ul style="list-style-type: none"> Waterproof packing (small) FHV-XWP-CAM:1 Waterproof packing (large) FHV-XWP-LTM: 1 Light shielding sheet FHV-XLS-LTM: 1 Lighting cover FHV-XCV: 1 Hexagonal wrench (length: 60 mm): 1 Instruction sheet: 1 Compliance sheet: 1 			

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 FHV-LTM-R FHV-LTM-IR FHV-LTM-MC	FHV-LTM-W FHV-LTM-R FHV-LTM-MC (Infrared light is not used.)	FHV-LTM-W FHV-LTM-R FHV-LTM-IR 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 ² , 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 SV-0614V SV-0813V SV-1214V SV-1614V SV-2514V	3Z4S-LE SV-H series SV-0614H *1 SV-0814H *2 SV-1214H SV-1614H SV-2514H SV-3514H SV-5014H	FHV-LEM-S series FHV-LEM-S06 FHV-LEM-S09 FHV-LEM-S12 FHV-LEM-S16 FHV-LEM-S25 FHV-LEM-H series FHV-LEM-H06 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 ² , 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 Output: 24 (NPN/PNP combined use)	Input: 1 Output: 2 (NPN/PNP combined use)
	EtherCAT communications	None	Yes (slave)
Smart Camera Interface		Special cable to connect No. of connectable cameras: 1	
Indicator	Main	POWER: Green, ERROR: Red, RUN: Green, BUSY: Green, CAMERA: Yellow, OR: Yellow	
	EtherCAT	None	ECAT RUN: Green, LINK/ACT IN: Green, LINK/ACT OUT: Green, ECAT ERROR: Red
Power supply voltage		21.6 to 26.4 VDC (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, Sweep time: 8 minutes, Sweep count: 10 times	
	Shock resistance	Impact force: 150 m/s ² , Test direction: 6 directions, Three times each (up/down, front/behind, left/right)	
	Noise immunity	Fast transient burst • DC power Direct infusion: 2 kV, Pulse rising: 5 ns, Pulse width: 50 ns, Burst continuation time: 15 ms / 0.75 ms, Period: 300 ms, Application time: 1 minute • I/O line Coupling clamp: 1 kV, Pulse rising: 5 ns, Pulse width: 50 ns, 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) * 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"> • Instruction sheet: 1 • Compliance sheet: 1 	

FHV7H Series

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	Right angle connector	Straight connector	Right angle connector	Straight connector	Right angle connector	Straight connector	Right angle connector	Straight connector	Right angle 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									
Input/Output signals	Input signals	4 signals: STEP, DI 0 to 2								
	Output signals	5 signals: ERROR, OR, BUSY, READY, STGOUT/SHTOUT								
	RS-232C	2 signals: Transmission data, Reception data								
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 ² , 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 2M	FHV-VDLBX 2M	FHV-VDBX 3M	FHV-VDLBX 3M	FHV-VDBX 5M	FHV-VDLBX 5M	FHV-VDBX 10M	FHV-VDLBX 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							
Input/Output signals	Input signals	1 signal: STEP						
	Output signals	3 signals: OR, READY, STGOUT/SHTOUT						
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 ² , 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 ² , 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 ² , 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 ² , 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	

FHV7H Series

Smart Camera Data Unit Cable

Bending Resistance Cables

Item	FHV-VUB 2M	FHV-VULB 2M	FHV-VUB 3M	FHV-VULB 3M	FHV-VUB 5M	FHV-VULB 5M	FHV-VUB 10M	FHV-VULB 10M	FHV-VUB 20M	FHV-VULB 20M
Cable length	2 m		3 m		5 m		10 m		20 m	
Connector type	Straight connector	Right angle connector	Straight connector	Right angle connector	Straight connector	Right angle connector	Straight connector	Right angle connector	Straight connector	Right angle connector
Cable type	Bending resistance cable									
Outer diameter	7.9±0.2 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/s ² , 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 2M	FHV-VULBX 2M	FHV-VUBX 3M	FHV-VULBX 3M	FHV-VUBX 5M	FHV-VULBX 5M	FHV-VUBX 10M	FHV-VULBX 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/s ² , 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-310-OMR (Advantech)
LCD	Display Type	10.4" TFT LCD (LED backlight)
	Resolution	1,024 × 768
	Luminance	350 cd/m ²
	Contrast Ratio	1,000
	Backlight Lifetime	30,000 hr (min.)
	Touch Type	Capacitive
External Interface	Ethernet	10/100/1,000/2,500 Mbps Ethernet × 2
	USB I/F	USB 2.0 × 2, USB 3.0 × 2, TypeC × 1
Power Consumption	Input Voltage	12 to 30 VDC
	Power Consumption	35 W
Environment	Ambient Temperature Range	Operating: 0 to 50°C Storage: -20 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, UKCA, VCCI
	Safety	CB, CCC, UL, UKCA
Dimensions	272 × 217 × 50 mm	
Weight	3.1 kg	
Front Panel Protection	IP66 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
Version 6.51 or higher	Supported by version 1.53* or higher.
Version 6.41 or higher	Supported by version 1.44 or higher.
Version 6.30 or higher	Supported by version 1.29 or higher.

* Sysmac Studio version 1.53 will be supported on January 2023.

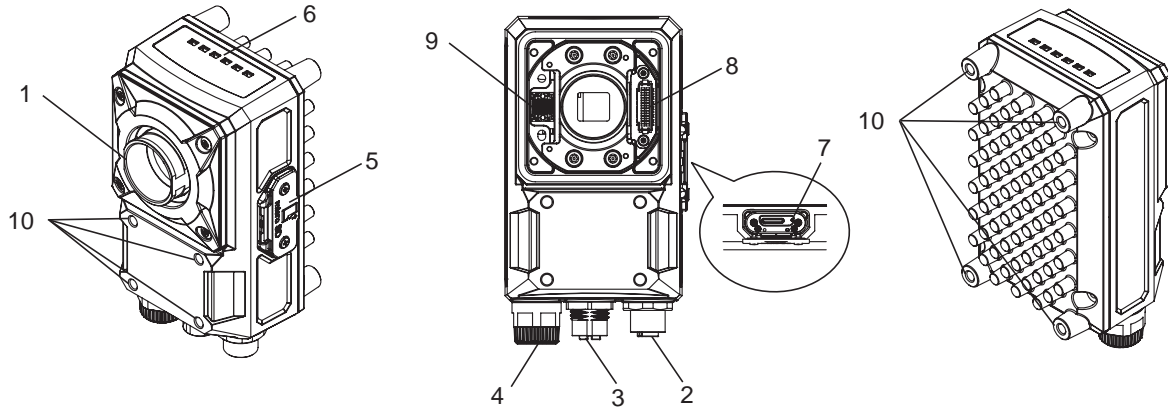
Recommended Operational Environment for Remote Operation Tool

Name	Description
CPU	Intel Pentium Processor (SSE2 or higher)
OS	<ul style="list-style-type: none"> • Windows 7 Professional (32/64-bit) or Enterprise (32/64-bit) or Ultimate (32/64-bit) • Windows 10 Pro (32/64-bit) or Enterprise (32/64-bit) • Windows 11 Pro (64bit) or Enterprise (64bit)
Memory	2GB (3GB or more recommended)
Hard disk space	2GB or more
Display	Resolution: 1280 x 1240 dots or more Color: True Color (32-bit)
Network	10BASE-T (100BASE-TX recommended)

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

FHV7H 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. Dedicated I/O cable: FHV-VD□ 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. Connectable external lighting controller: FL-TCC□ and FLV-TCC□ 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. 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.
7		ERR (Red)	Lights when an error occurs.
		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		Fine Matching	Difference can be detected by overlapping and comparing (matching) registered fine images with input images.
		Character Inspect	Recognize character according correlation search with model image registered in [Model Dictionary].
		Date Verification	Reading character string is verified with internal date.
		Model Dictionary	Register character pattern as dictionary. The pattern is used in [Character Inspection].
		2DCode II *1	Recognize 2D code and display where the code quality is poor.
		2DCode *2	Recognize 2D code and display where the code quality is poor.
		Barcode *3	Recognize barcode, verify and output decoded characters.
		OCR	Recognize and read characters in images as character information.
		OCR User Dictionary	Register dictionary data to use for OCR.
		Glue Bead Inspection	You can inspect coating of a specified color for gaps or runoffs along the coating path.
Input Image		Camera Image Input FHV	To input images from cameras. And set up the conditions to input images from cameras. (For FHV only)
		Camera Image Input HDR	Create high-dynamic range images by acquiring several images with different conditions.
		Photometric Stereo Image Input	Capture images under different illumination directions using a photometric stereo light.
		Measurement Image Switching	To switch the images used for measurement. Not input images from camera again.
		Multi-trigger Imaging	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.
Compensate image		Multi-trigger Imaging Task	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.
		Position Compensation	Used when positions are differed. Correct measurement is performed by correcting position of input images.
		Filtering	Used for processing images input from cameras in order to make them easier to be measured.
		Background Suppression	To enhance contrast of images by extracting color in specified brightness.
		Brightness Correct Filter	Track brightness change of entire screen and remove gradual brightness change such as uneven brightness.
		Color Gray Filter	Color image is converted into monochrome images to emphasize specific color.
		Extract Color Filter	Convert color image to color extracted image or binary image.
		Anti Color Shading	To remove the irregular color/pattern by uniformizing max.2 specified colors.
		Stripes Removal Filter II	Remove the background pattern of vertical, horizontal and diagonal stripes.
		Polar Transformation	Rectify the image by polar transformation. Useful for OCR or pattern inspection printed on circle.
Support measurement		Trapezoidal Correction	Rectify the trapezoidal deformed image.
		Image Subtraction	The registered model image and measurement image are compared and only the different pixels are extracted and converted to an image.
		Advanced filter	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.
		Calculation	Used when using the judge results and measured values of Procltem which are registered in processing units.
		Line Regression	Used for calculating regression line from plural measurement coordinate.
Support measurement		Circle Regression	Used for calculating regression circle from plural measurement coordinate.
		Precise Calibration	Used for calibration corresponding to trapezoidal distortion and lens distortion.
		Trend Monitor	Used for displaying the information about results on the monitor, facilitating to avoid NG and analyze causes.
		Image Logging	Used for saving the measurement images to the memory and USB memory.
		Image Conversion Logging	Used for saving the measurement images in JPEG and BMP format.
		Elapsed Time	Used for calculating the elapsed time since the measurement trigger input.
		Wait	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		Parallelize	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.
		Parallelize Task	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.
		Statistics	Used when you need to calculate an average of multiple measurement results.
		Reference Calib Data	Calibration data and distortion compensation data held under other processing items can be referenced.
		Position Data Calculation	The specified position angle is calculated from the measured positions.
		Stage Data	Sets and stores data related to stages.
		Robot Data	Sets and stores data related to robots.
		Vision Master Calibration	This processing item automatically calculates the entire axis movement amount of the control equipment necessary for calibration.
		Convert Position Data	The position angle after the specified axis movement is calculated.
		Movement Single Position	The axis movement that is required to match the measured position angle to the reference position angle is calculated.
Branch		Movement Multi Points	The axis movements that are required to match the measured position angles to the corresponding reference position angles are calculated.
		Camera Calibration	By setting the camera calibration, the measurement result can be converted and output as actual dimensions.
		Scene	The specified scene is copied to the current scene.
		System Information	Obtain system information (e.g., memory and disk space and I/O input signal status) of the Sensor Controller.
		End	This Procltem must be set up as the last processing unit of a branch.
		Conditional Execution (If)	The measurement flow is divided according to the comparison result obtained using the set expressions and conditions.
		Conditional Execution (Else)	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.
		Loop	The set processes are repeated until the loop count reaches the specified number, and then the next process starts.
		Loop Suspension	Insert between the Loop processing item and End Loop processing item. Used to stop the loop before the loop count reaches the specified number.
		Select Execution (Select)	Used to set conditions. The measurement flow is divided according to the comparison result obtained using the conditions given by expressions.
Output result		Select Execution (Case)	Used to make a judgment. The measurement flow is divided according to the comparison result obtained using the conditions given by expressions.
		Result Output (I/O)	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).
		Result Output (Message)	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.
		Result output (Parallel I/O)	Output measurement results and/or judgment results to the external devices such as a programmable controller or a PC via Parallel interface *5.
		Result Display	Used for displaying the texts or the figures in the camera image.
Display result		Display Last NG Image	Display the last NG images.
		Display Image Hold	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.

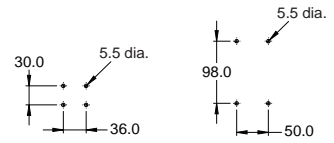
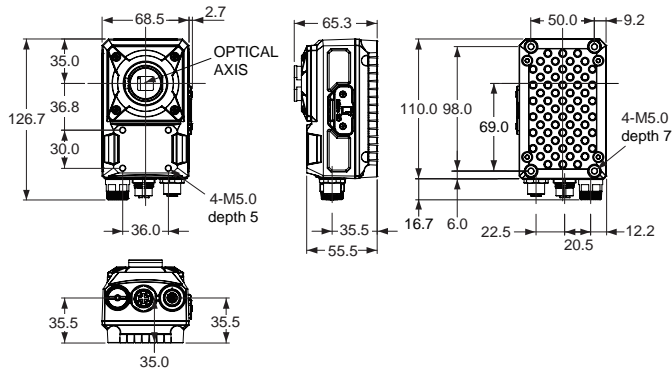
FHV7H Series

Dimensions

(Unit: mm)

Smart Cameras

C Mount Models
FHV7H-□□□□□-C

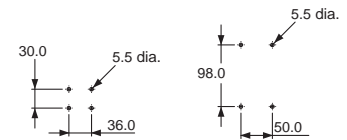
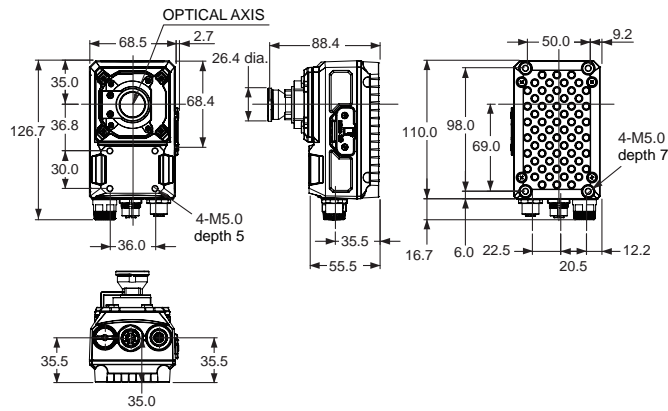


Mounting screw holes
(The tolerance: ± 0.1 mm)
Recommend tightening torque: 2.3N·m

All-in-one Models with Lens Module

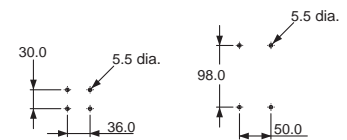
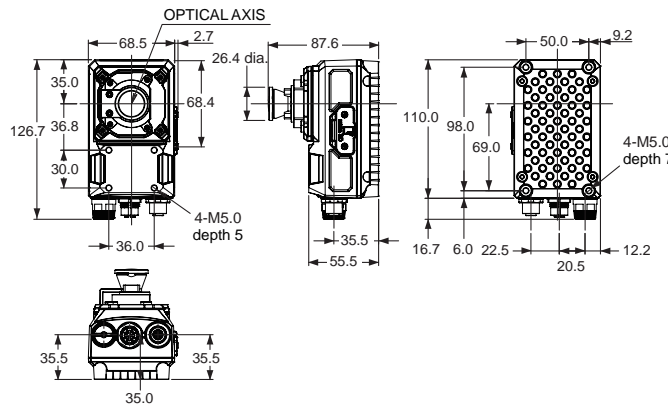
High-speed Lens Modules

FHV7H-□□□□□-H06



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

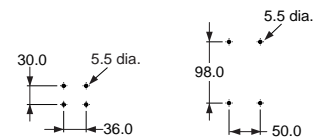
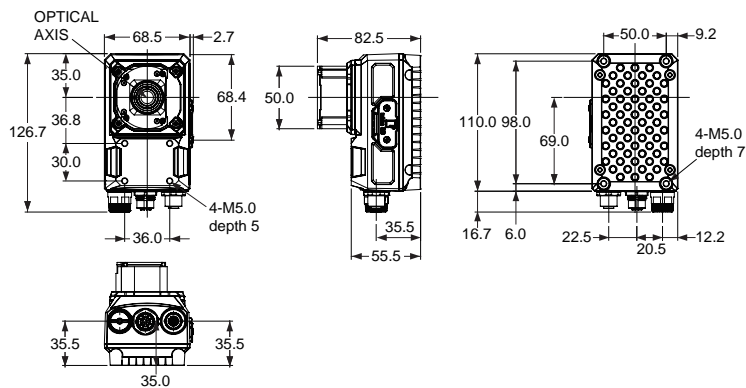
FHV7H-□□□□□-H19



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

Standard Lens Modules

FHV7H-□□□□□-S□□

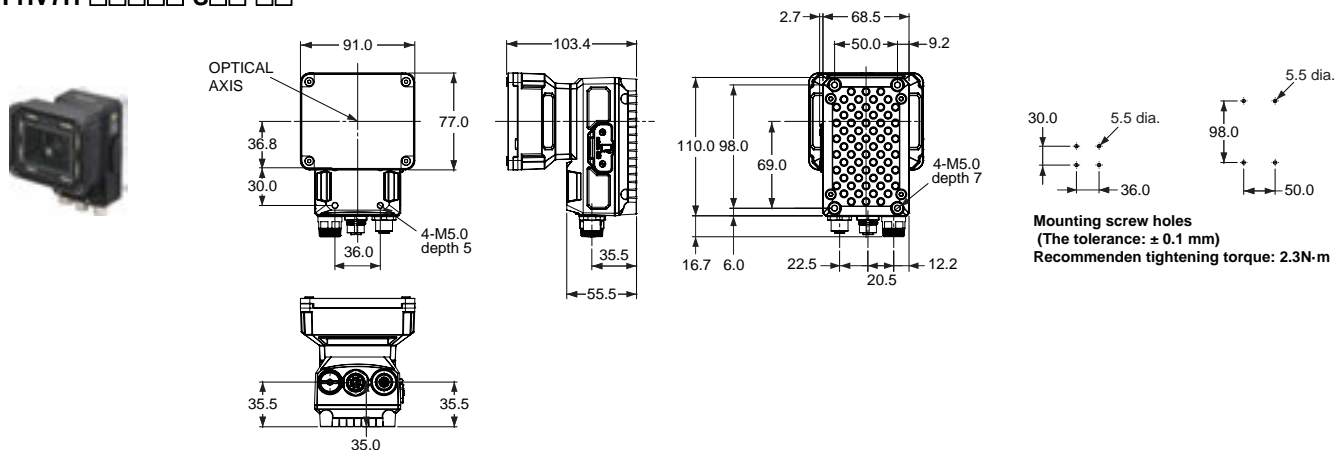


Mounting screw holes
(The tolerance: ± 0.1 mm)
Recommend tightening torque: 2.3N·m

All-in-one Models with Lens and Lighting Modules

FHV7H-□□□□□-H□□-□□/

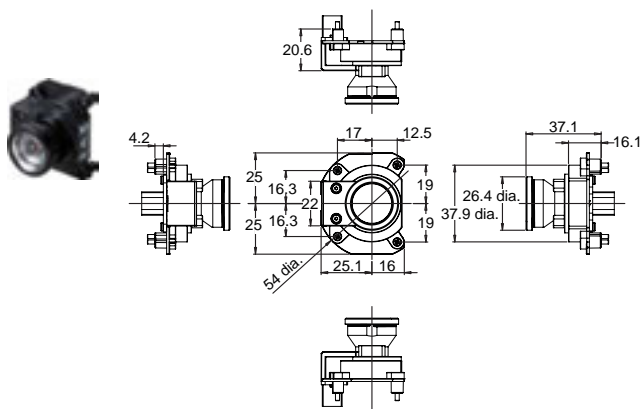
FHV7H-□□□□□-S□□-□□



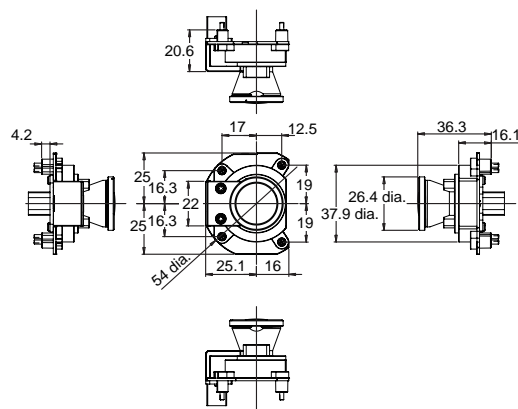
Lens Modules

High-speed Lens Modules

FHV-LEM-H06

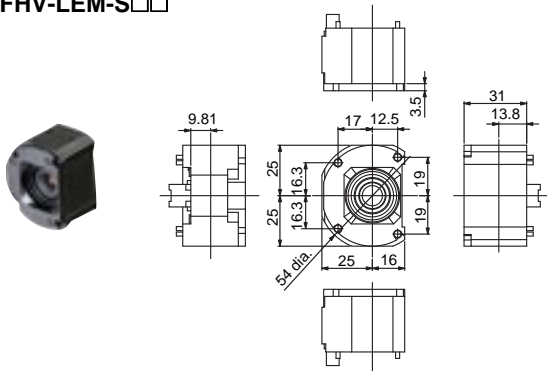


FHV-LEM-H19



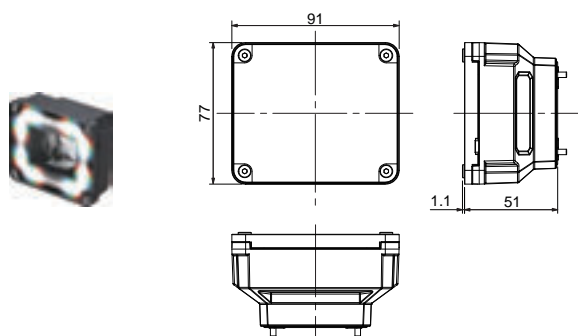
Standard Lens Modules

FHV-LEM-S□□



Lighting Modules

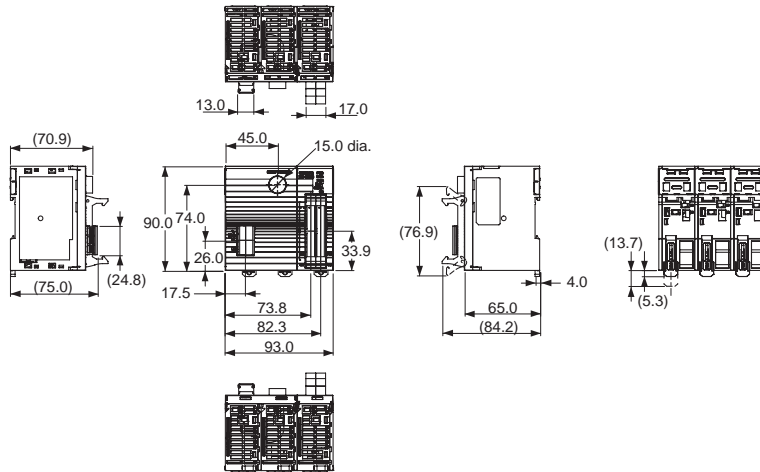
FHV-LTM-□□



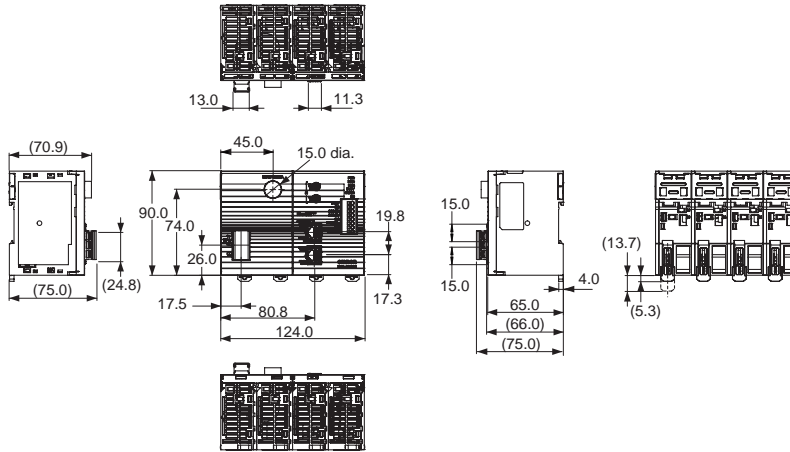
FHV7H Series

Smart Camera Data Unit

FHV-SDU10



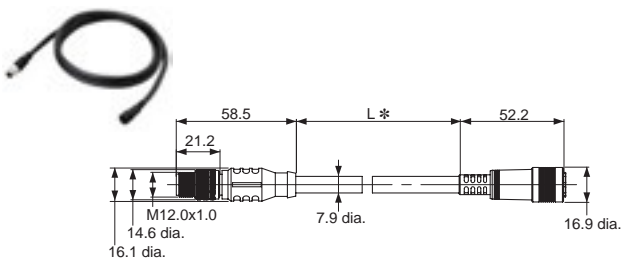
FHV-SDU30



Smart Camera Data Unit Cables

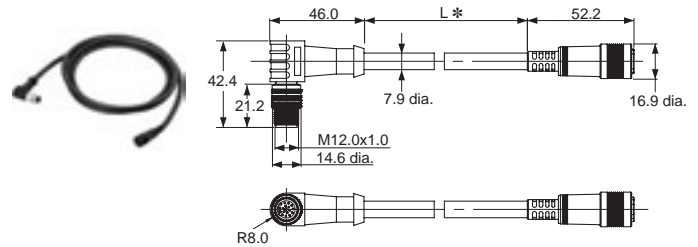
Bending Resistance Cables (Straight)

FHV-VUB □M



Bending Resistance Cables (Right angle)

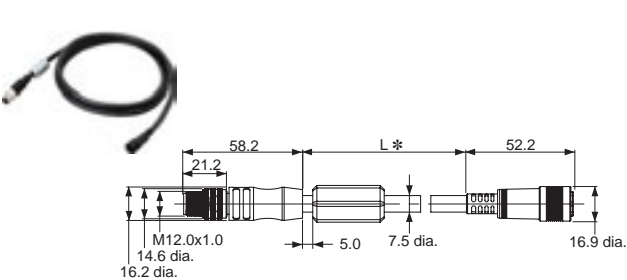
FHV-VULB □M



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

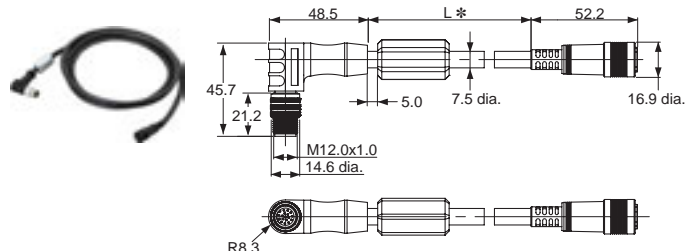
Super Bending Resistance Cables (Straight)

FHV-VUBX □M



Super Bending Resistance Cables (Right angle)

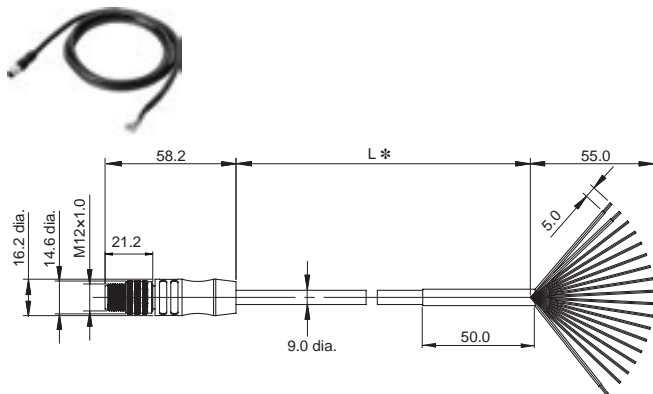
FHV-VULBX □M



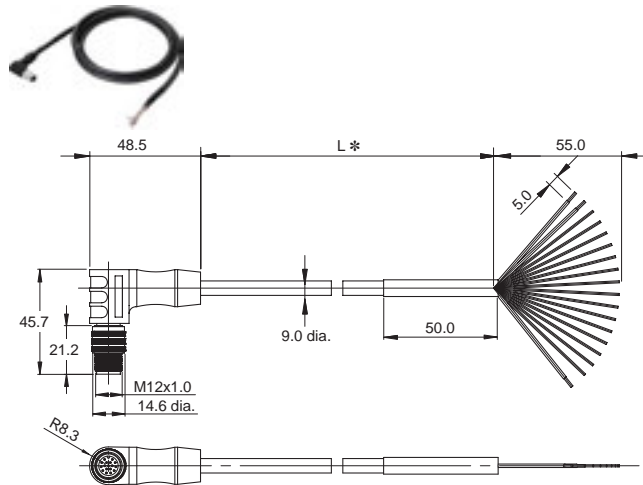
* Cable is available in 2m/3m/5m/10m.

Cables

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

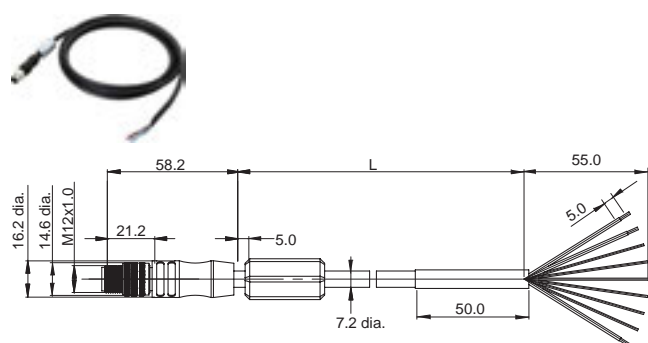


I/O cable (Bend resistant, right angle)
FHV-VDLB □M

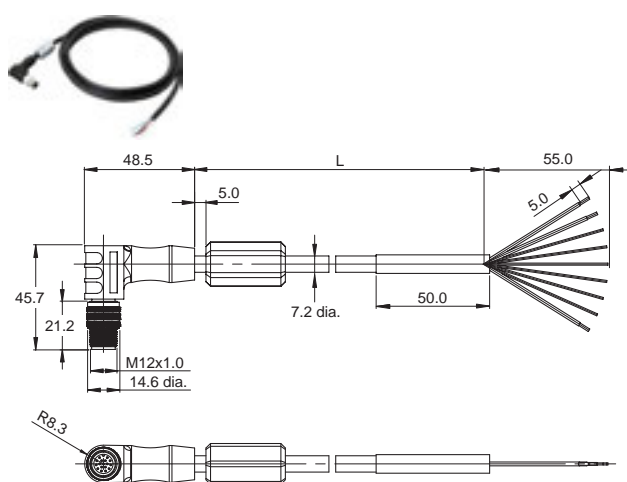


* Cable is available in 2m/3m/5m/10m/20m.

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

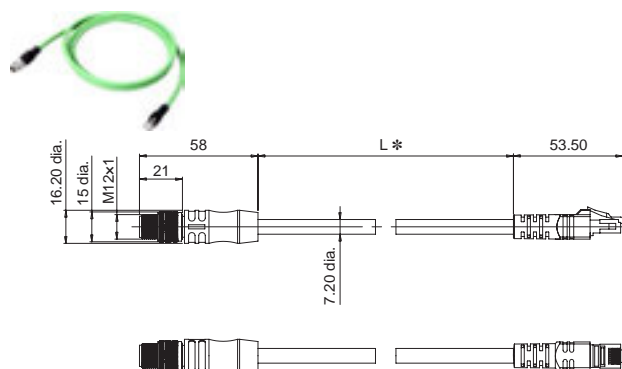


I/O cable (Super bend resistant, right angle)
FHV-VDLBX □M

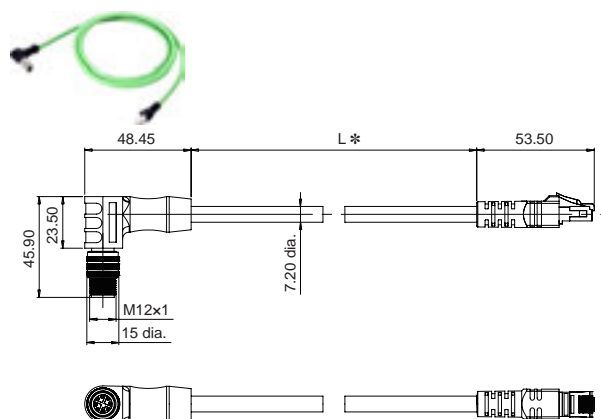


* Cable is available in 2m/3m/5m/10m.

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



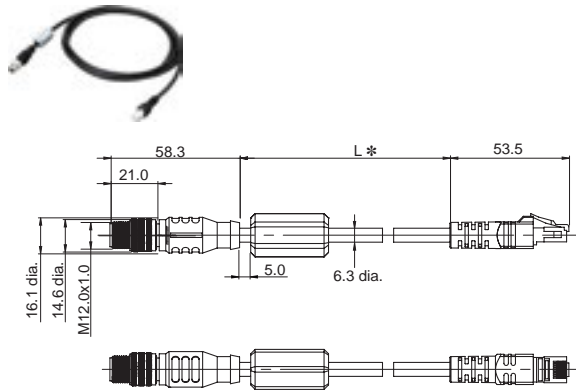
Ethernet cable (Bend resistant, right angle)
FHV-VNLB □M



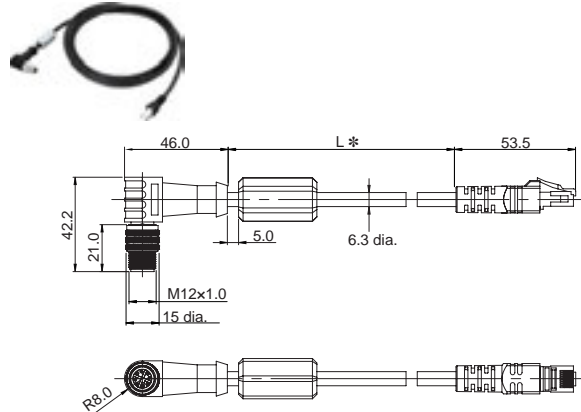
* Cable is available in 2m/3m/5m/10m/20m.

FHV7H Series

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

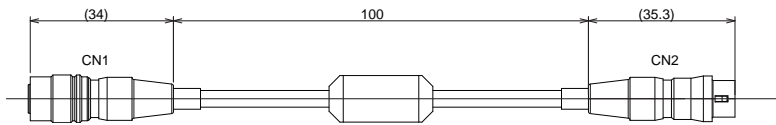


Ethernet cable (Super bend resistant, right angle)
FHV-VNLBX □M



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

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



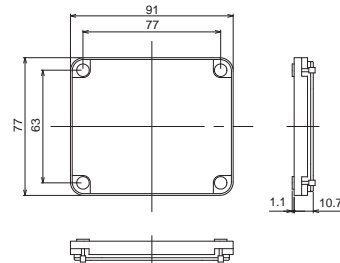
Optical Filters

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



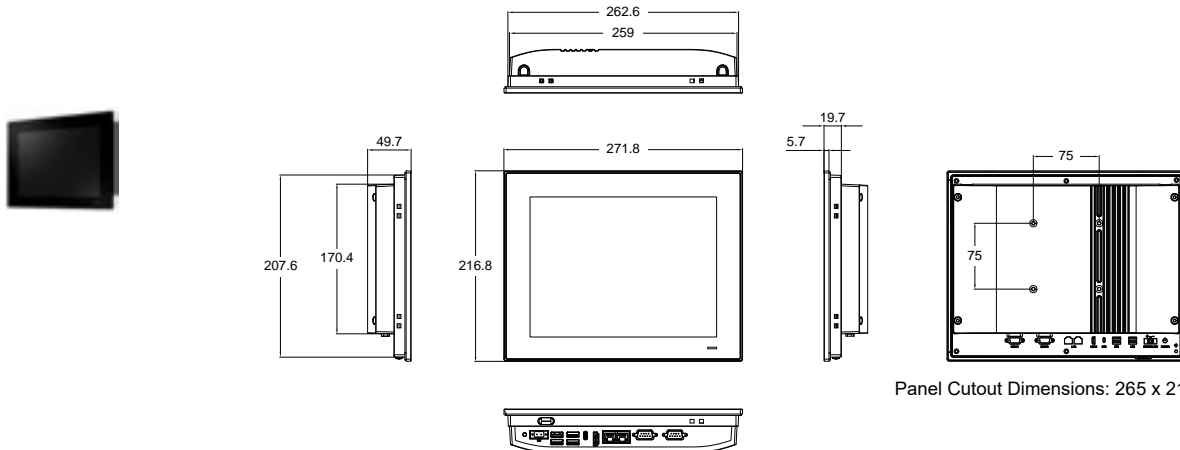
Light Cover

FHV-XCV



Touch Panel Monitor

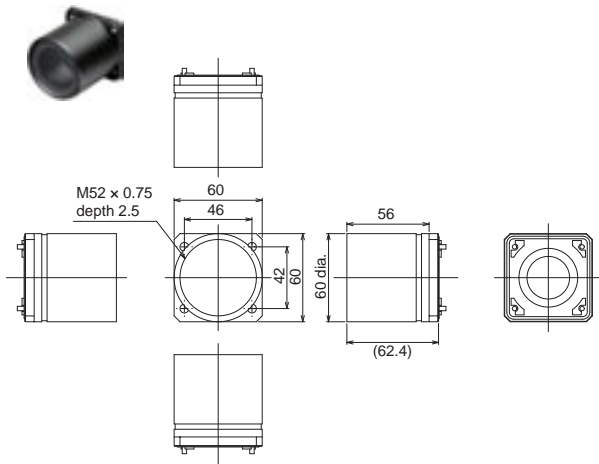
Advantech PPC-310-OMR



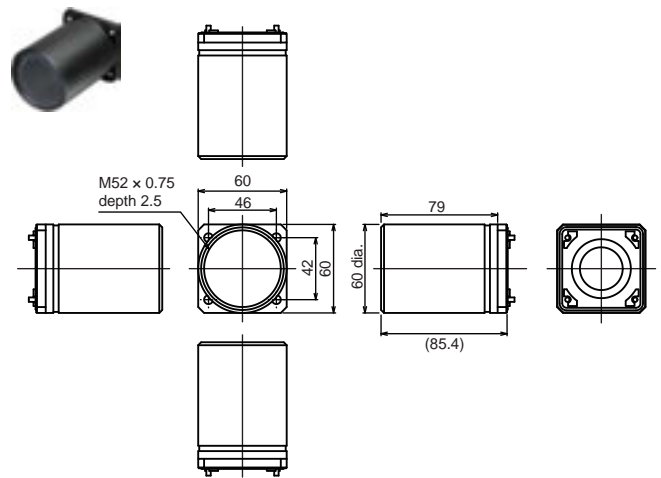
Panel Cutout Dimensions: 265 x 210 mm

Waterproof Hoods

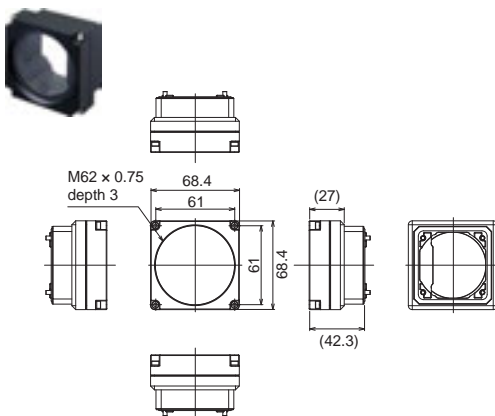
for C-mount Lens (Short)
FHV-XHD-S



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



for Lens Modules
FHV-XHD-LEM



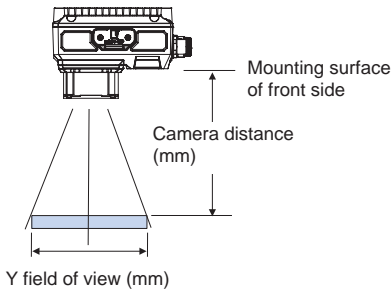
FHV7H Series

Meaning of Optical Chart

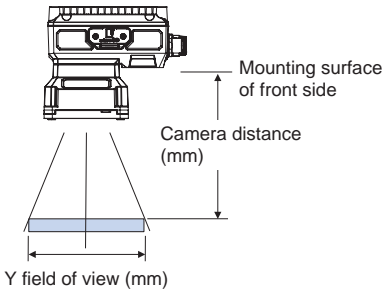
How-to View the Optical Chart

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.

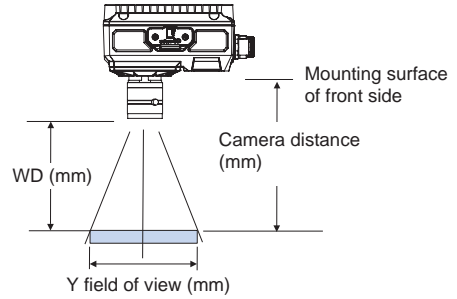
All-in-one Models
with Lens Module
FHV7H-□□□□□-S□□□



All-in-one Models
with Lens and Lighting Modules
FHV7H-□□□□□-S□□□□□

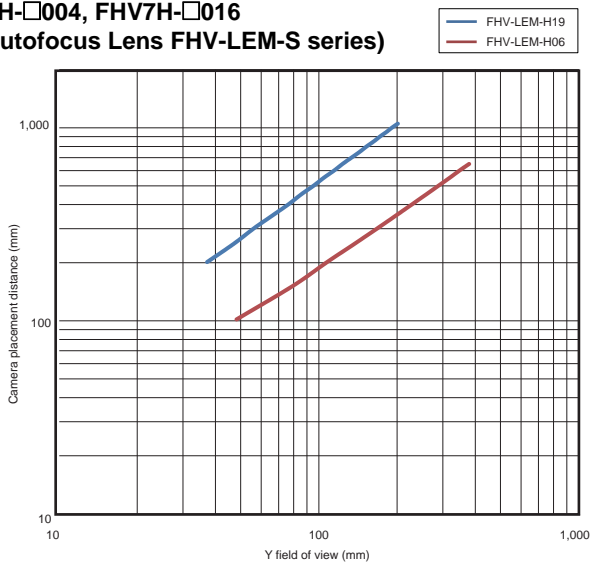


C Mount Models
FHV7H-□□□□□-C

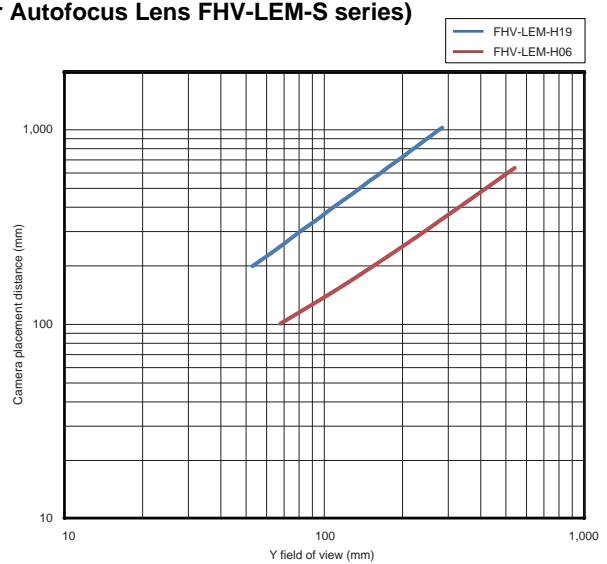


Lens Modules: High-speed Lens Modules (Autofocus)

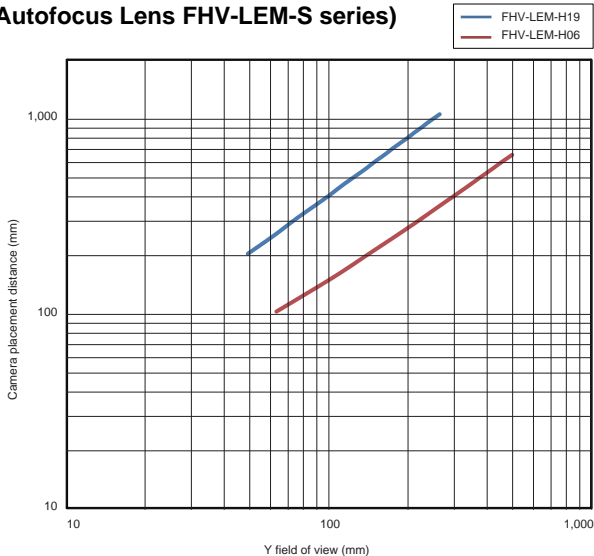
0.4 million pixels
1.6 million pixels
Smart Cameras:
FHV7H-□004, FHV7H-□016
(for Autofocus Lens FHV-LEM-S series)



3.2 million pixels
Smart Cameras: FHV7H-□032
(for Autofocus Lens FHV-LEM-S series)



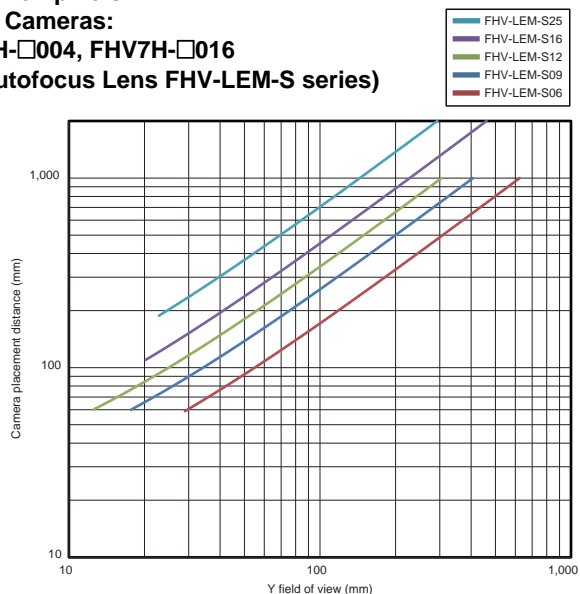
6.3 million pixels
Smart Cameras: FHV7H-□063R
(for Autofocus Lens FHV-LEM-S series)



Lens Modules: Standard Lens Modules (Autofocus)

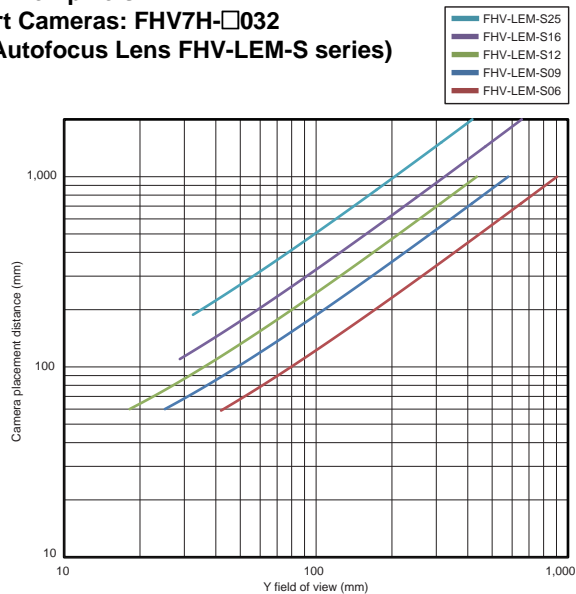
0.4 million pixels
1.6 million pixels

Smart Cameras:
FHV7H-□004, FHV7H-□016
(for Autofocus Lens FHV-LEM-S series)



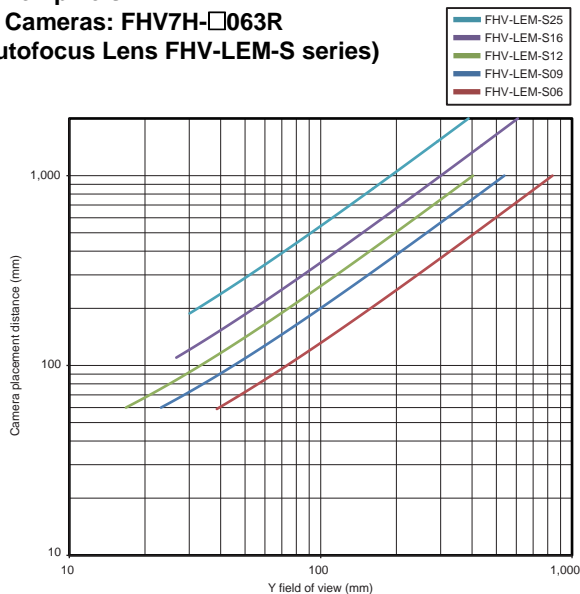
3.2 million pixels

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)



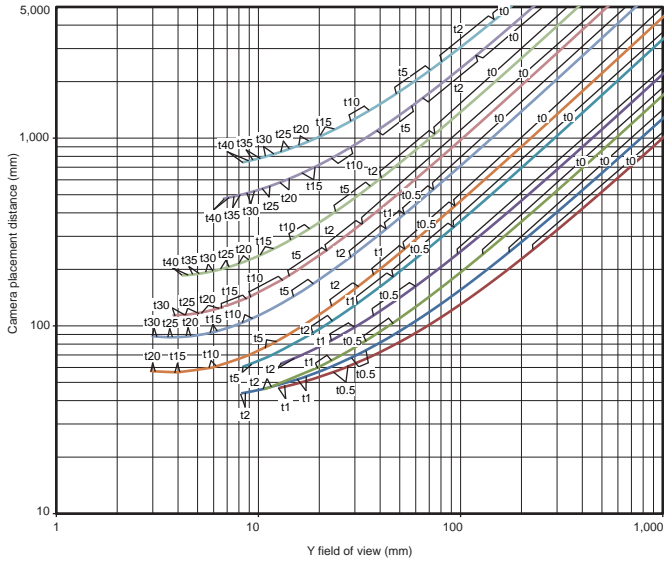
FHV7H Series

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)



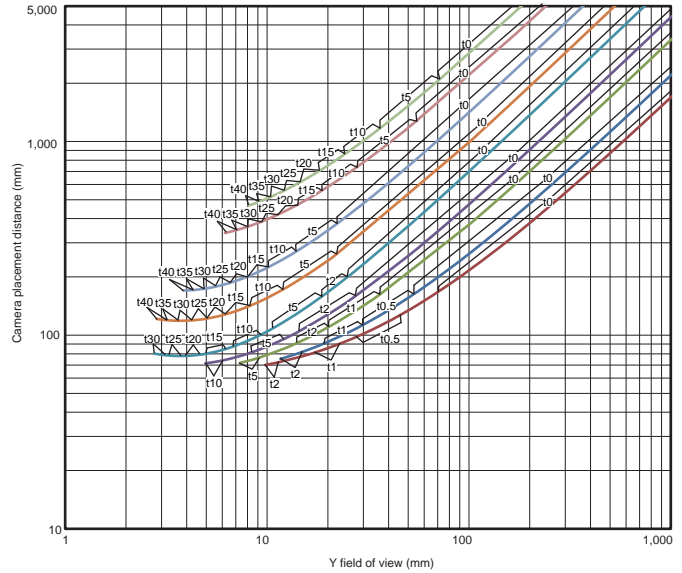
SV-10035V	SV-1214V
SV-7527V	SV-0813V
SV-5018V	SV-0614V
SV-3518V	SV-04514V
SV-2514V	SV-03514V
SV-1614V	



0.4 million pixels
1.6 million pixels
Smart Cameras:
FHV7H-□004, FHV7H-□016
(for 3Z4S-LE SV-H series)



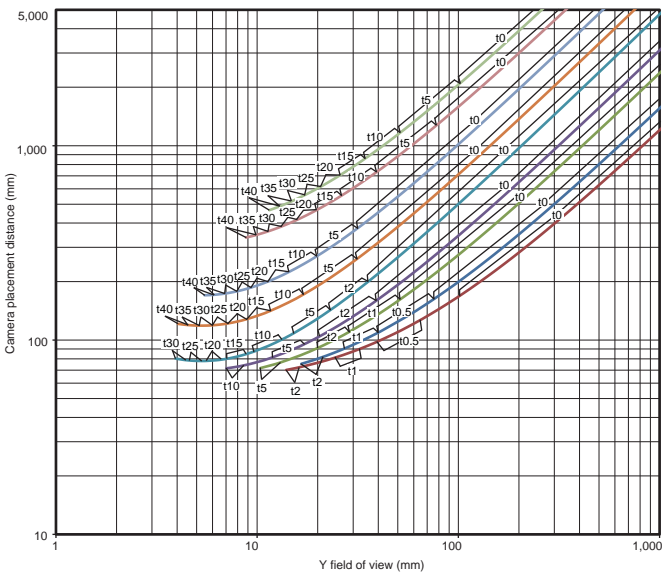
SV-10028H	SV-1614H
SV-7525H	SV-1214H
SV-5014H	SV-0814H
SV-3514H	SV-0614H
SV-2514H	



3.2 million pixels
Smart Cameras: FHV7H-□032
(for 3Z4S-LE SV-H series)



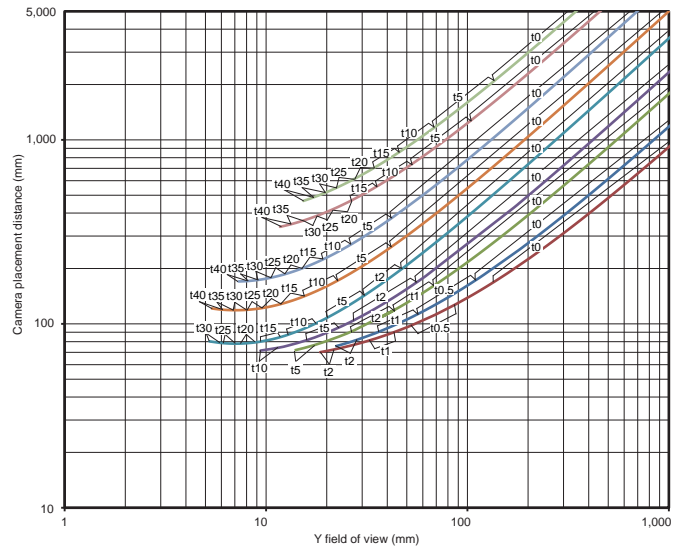
SV-10028H	SV-1614H
SV-7525H	SV-1214H
SV-5014H	SV-0814H
SV-3514H	SV-0614H
SV-2514H	



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



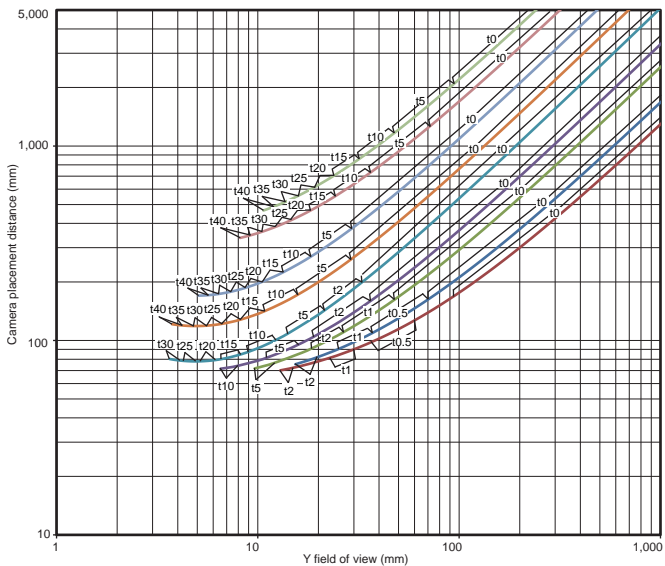
SV-10028H	SV-1614H
SV-7525H	SV-1214H
SV-5014H	SV-0814H
SV-3514H	SV-0614H
SV-2514H	



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



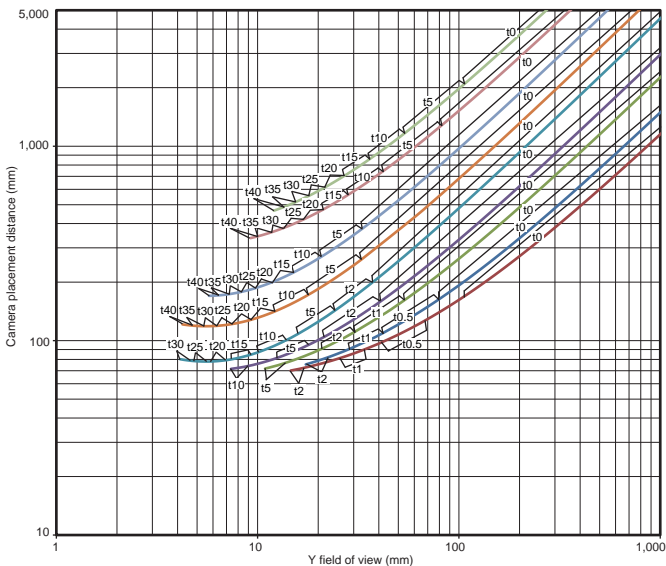
- | | |
|-----------|----------|
| SV-10028H | SV-1614H |
| SV-7525H | SV-1214H |
| SV-5014H | SV-0814H |
| SV-3514H | SV-0614H |
| SV-2514H | |



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



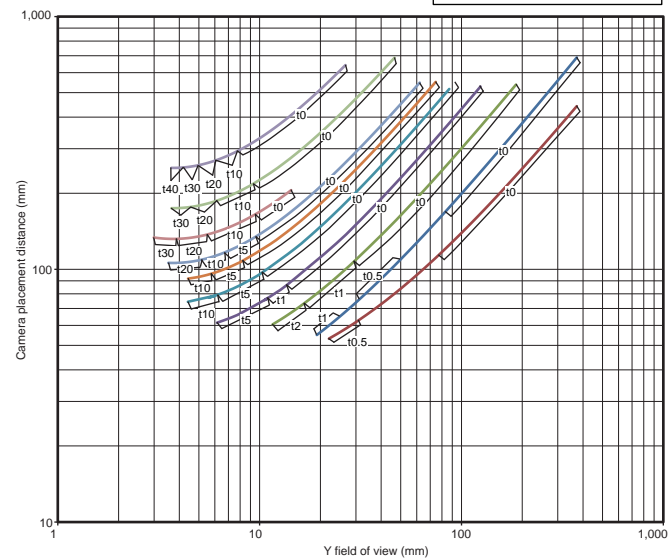
- | | |
|-----------|----------|
| SV-10028H | SV-1614H |
| SV-7525H | SV-1214H |
| SV-5014H | SV-0814H |
| SV-3514H | SV-0614H |
| SV-2514H | |



C Mount Lenses: Vibration/Shock-resistance Lens

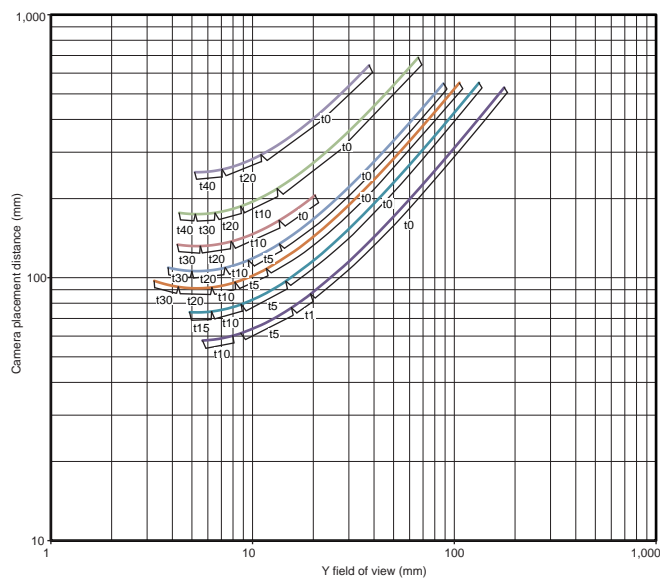
400,000 pixels 1.6 million pixels Smart Cameras: FHV7H-□004, FHV7H-□016 (for 3Z4S-LE VS-MCA series)

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



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

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

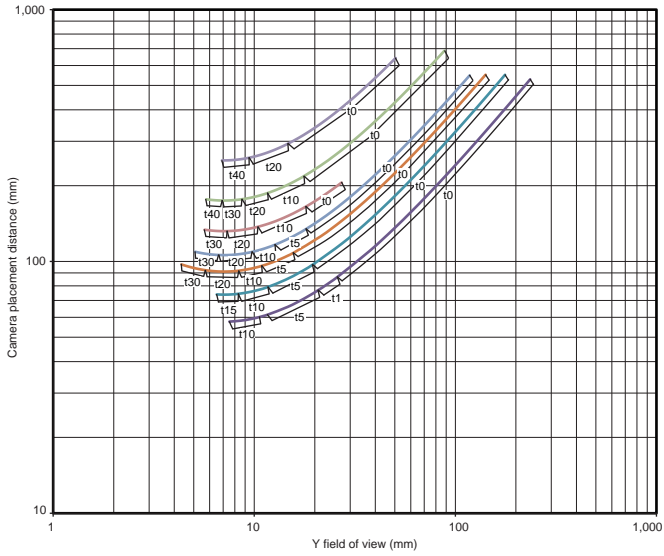


FHV7H Series

5 million pixels

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

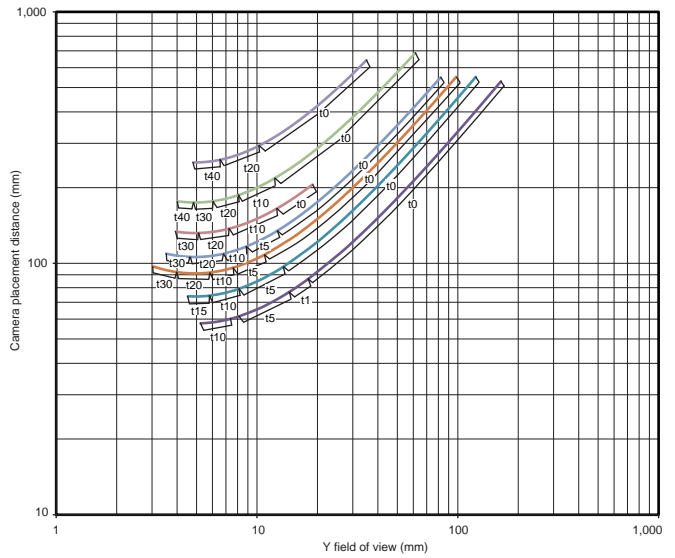
- VS-MCA75
- VS-MCA50
- VS-MCA35
- VS-MCA30
- VS-MCA25
- VS-MCA20
- VS-MCA15



6.3 million pixels

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

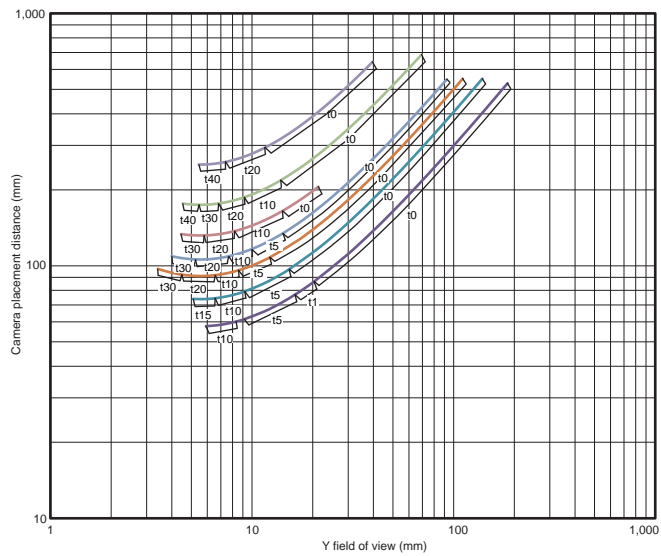
- VS-MCA75
- VS-MCA50
- VS-MCA35
- VS-MCA30
- VS-MCA25
- VS-MCA20
- VS-MCA15



12 million pixels

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

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



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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