Vision System
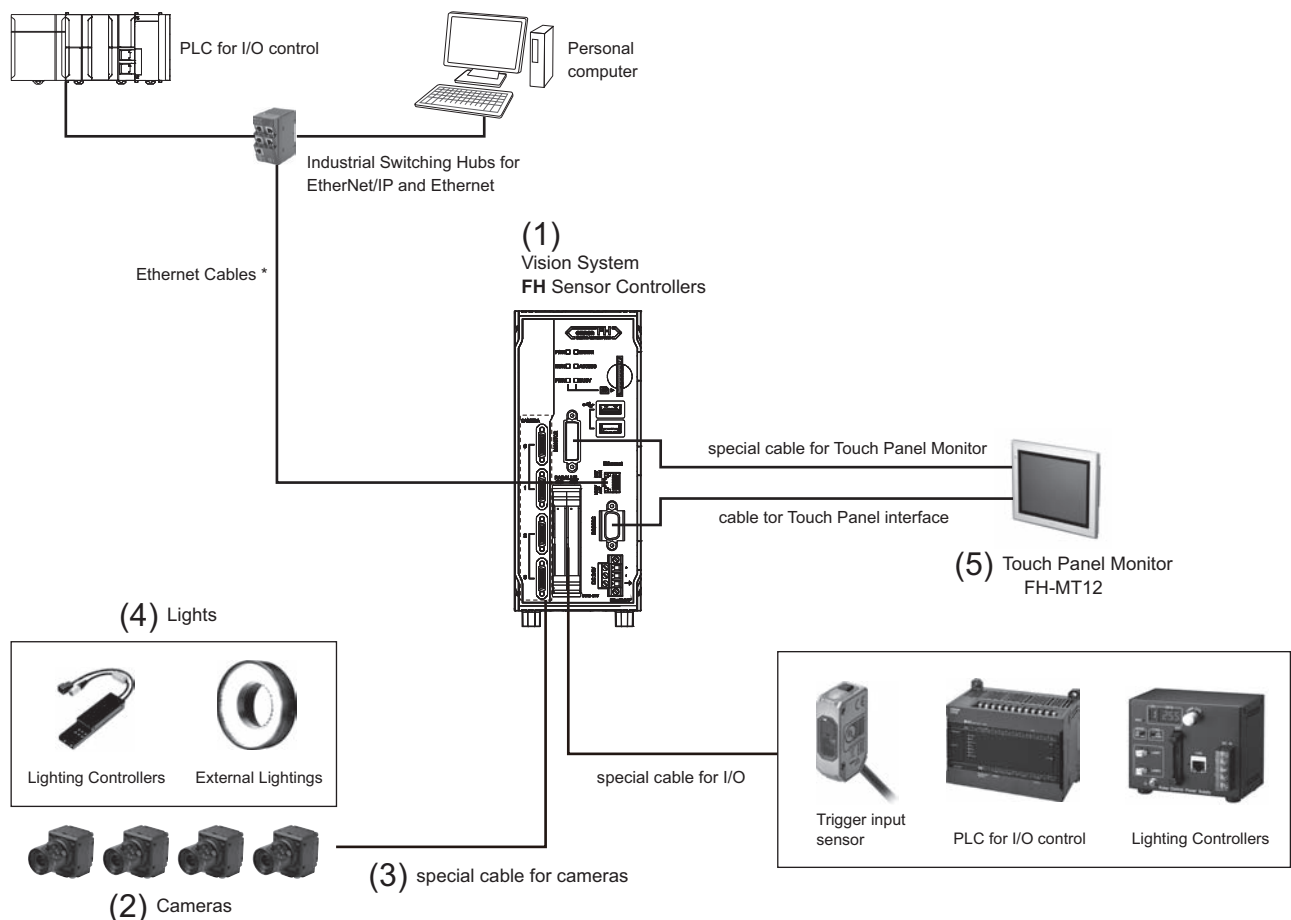# FH-L550 Series

Lite Controller

- Software for flexible automation
- Design interface for quick setup

System configuration

PLC for I/O control

Personal computer

Industrial Switching Hubs for EtherNet/IP and Ethernet

Ethernet Cables *

(1) Vision System **FH** Sensor Controllers

special cable for Touch Panel Monitor

cable tor Touch Panel interface

(5) Touch Panel Monitor FH-MT12

(4) Lights

Lighting Controllers   External Lightings

special cable for I/O

Trigger input sensor

PLC for I/O control

Lighting Controllers

(3) special cable for cameras

(2) Cameras

* To use STP (shielded twisted-pair) cable of category 5 or higher for Ethernet and RJ45 connector.
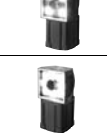
FH-L550 Series

Ordering Information

FH Series Sensor Controllers

Item		CPU	AI function		No. of cameras	Output	Model
			AI Scratch Detect Filter	AI FineMatching			
Box-type controllers		Intel® Atom® processor 2 cores	Not available	Not available	2	NPN/PNP	FH-L550
					4	NPN/PNP	FH-L550-10

Cameras

Item		Lens mount	Descriptions	Color / Monochrome	Image Acquisition Time *1	Model
High-speed Digital CMOS Cameras (Lens required)		C mount	12 million pixels *2	Color	24.9 ms *3	FH-SCX12
				Monochrome		FH-SMX12
			5 million pixels	Color	10.3 ms *3	FH-SCX05
				Monochrome		FH-SMX05
			0.4 million pixels	Color	1.9ms	FH-SCX
				Monochrome		FH-SMX
High-speed Digital CMOS Cameras (Lens required)		M42 mount	12 million pixels *2	Color	25.7 ms *3	FH-SC12
				Monochrome		FH-SM12
High-speed Digital CMOS Cameras (Lens required)		C mount	4 million pixels	Color	8.5 ms *3	FH-SC04
				Monochrome		FH-SM04
			2 million pixels	Color	4.6 ms *3	FH-SC02
				Monochrome		FH-SM02
			0.3 million pixels	Color	3.3 ms	FH-SC
				Monochrome		FH-SM
Digital CMOS Cameras (Lens required)		C mount	5 million pixels	Color	71.7ms	FH-SC05R
				Monochrome		FH-SM05R
			5 million pixels	Color	38.2 ms	FZ-SC5M3
				Monochrome		FZ-S5M3
Digital CCD Cameras (Lens required)		C mount	2 million pixels	Color	33.3 ms	FZ-SC2M
				Monochrome		FZ-S2M
			0.3 million pixels	Color	12.5 ms	FZ-SC
				Monochrome		FZ-S
Small Digital CCD Cameras (Lens required)		Lenses for small camera required	300,000-pixel flat type	Color	12.5 ms	FZ-SFC
				Monochrome		FZ-SF
			300,000-pixel pen type	Color	12.5 ms	FZ-SPC
				Monochrome		FZ-SP
Intelligent Compact Digital CMOS Camera		Built-in lens	Narrow view	Color	16.7 ms	FZ-SQ010F
			Standard view	Color		FZ-SQ050F
			Wide View (long-distance)	Color		FZ-SQ100F
			Wide View (short-distance)	Color		FZ-SQ100N

*1 The image acquisition time does not include the image conversion processing time of the sensor controller.
The camera image input time varies depending on the sensor controller model, number of cameras, and camera settings. Check before you use the camera.
*2 Up to four cameras of this model can be connected to one controller.
*3 Frame rate in high speed mode when the camera is connected using two camera cables. For other conditions, refer to the table on the next page.

OMRON

Model			FH-SM02	FH-SC02	FH-SM04	FH-SC04	FH-SM12	FH-SC12	FH-SMX	FH-SCX	FH-SMX05	FH-SCX05	FH-SMX12	FH-SCX12
Image Acquisition Time *4	2 Cables *5	High Speed Mode *6	4.6 ms		8.5 ms		25.7 ms		---		10.3 ms		24.9 ms	
		Standard Mode	9.7 ms		17.9 ms		51.3 ms		---		22.1 ms		53.5 ms	
	1 Cables	High Speed Mode *6	9.2 ms		17.0 ms		51.3 ms		1.9 ms		20.6 ms		50.0 ms	
		Standard Mode	19.3 ms		35.8 ms		102.0 ms		3.8 ms		44.1 ms		106.4 ms	

*4 The image acquisition time does not include the image conversion processing time of the sensor controller.
*5 Two Camera ports of the controller are used per one camera.
*6 Up to 5 m Camera Cable length.

Camera Cables

Item	Descriptions	Model *3
	Camera Cable Cable length: 2 m, 3 m, 5 m, or 10 m *2	**FZ-VS3 ▢M**
	Bend resistant Camera Cable Cable length: 2 m, 3 m, 5 m, or 10 m *2	**FZ-VSB3 ▢M**
	Super Bend resistant Camera Cable Cable length: 5 m or 10 m	**FZ-VSBX ▢M**
	Right-angle Camera Cable *1 Cable length: 2 m, 3 m, 5 m, or 10 m *2	**FZ-VSL3 ▢M**
	Bend resistant Right-angle Camera Cable *1 Cable length: 2 m, 3 m, 5 m, or 10 m *2	**FZ-VSLB3 ▢M**
	Long-distance Camera Cable Cable length: 15 m *2	**FZ-VS4 15M**
	Long-distance Right-angle Camera Cable *1 Cable length: 15 m *2	**FZ-VSL4 15M**
	Cable Extension Unit Up to two Extension Units and three Cables can be connected. (Maximum cable length: 45 m *2)	**FZ-VSJ**

*1 This Cable has an L-shaped connector on the Camera end.
*2 The maximum cable length depends on the camera being connected, and the model and length of the cable being used. For further information, refer to the *Cameras / Cables Connection Table and Maximum Extension Length Using Cable Extension Units FZ-VSJ* table.
When a High-speed Digital CMOS Camera FH-S▢02/-S▢04/-S▢12/-S▢21R is used in the high speed mode of transmission speed, two camera cables are required.
*3 Insert the cables length into ▢ in the model number as follows. 2 m = 2, 3 m = 3, 5 m = 5, 10 m = 10

Cameras / Cables Connection Table

Camera Cables	Model	Cable length	High-speed Digital CMOS cameras						
			300,000-pixel	2 million-pixel		4 million-pixel		12 million-pixel	
			FH-SM/SC	FH-SM02/SC02		FH-SM04/SC04		FH-SM12/SC12	
			—	High speed mode of transmission speed select	Standard mode of transmission speed select	High speed mode of transmission speed select	Standard mode of transmission speed select	High speed mode of transmission speed select	Standard mode of transmission speed select
Camera Cables Right-angle camera cables	FZ-VS3 FZ-VSL3	2 m	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		3 m	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		5 m	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		10 m	Yes	No	Yes	No	Yes	No	Yes
Bend resistant camera cables Bend resistant Right-angle Camera Cable	FZ-VSB3 FZ-VSLB3	2 m	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		3 m	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		5 m	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		10 m	Yes	No	Yes	No	Yes	No	Yes
Super Bend resistant Camera Cable	FZ-VSBX	5 m	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		10 m	Yes	No	Yes	No	Yes	No	Yes
Long-distance camera cable Long-distance right-angle camera cable	FZ-VS4 FZ-VSL4	15 m	Yes	No	Yes	No	Yes	No	Yes

Camera Cables	Model	Cable length	High-speed Digital CMOS cameras					
			400,000-pixel		5 million-pixel		12 million-pixel	
			FH-SMX/SCX		FH-SMX05/SCX05		FH-SMX12/SCX12	
			High speed mode of transmission speed select	Standard mode of transmission speed select	High speed mode of transmission speed select	Standard mode of transmission speed select	High speed mode of transmission speed select	Standard mode of transmission speed select
Camera Cables Right-angle camera cables	FZ-VS3 FZ-VSL3	2 m	Yes	Yes	Yes	Yes	Yes	Yes
		3 m	Yes	Yes	Yes	Yes	Yes	Yes
		5 m	Yes	Yes	Yes	Yes	Yes	Yes
		10 m	No	Yes	No	Yes	No	Yes
Bend resistant camera cables Bend resistant Right-angle Camera Cable	FZ-VSB3 FZ-VSLB3	2 m	Yes	Yes	Yes	Yes	Yes	Yes
		3 m	Yes	Yes	Yes	Yes	Yes	Yes
		5 m	Yes	Yes	Yes	Yes	Yes	Yes
		10 m	No	Yes	No	Yes	No	Yes
Super Bend resistant Camera Cable	FZ-VSBX	5 m	Yes	Yes	Yes	Yes	Yes	Yes
		10 m	No	Yes	No	Yes	No	Yes
Long-distance camera cable Long-distance right-angle camera cable	FZ-VS4 FZ-VSL4	15 m	No	Yes	No	Yes	No	Yes

Camera Cables	Model	Cable length	Digital CMOS Camera				Digital CCD cameras	
			5 million-pixel	20.4 million-pixel		5 million-pixel	300,000-pixel	2 million-pixel
			FH-SM05R/SC05R	FH-SM21R/SC21R		FZ-S5M3/SC5M3	FZ-S/SC	FZ-S2M/SC2M
			—	High speed mode of transmission speed select	Standard mode of transmission speed select	—	—	—
Camera Cables Right-angle camera cables	FZ-VS3 FZ-VSL3	2 m	Yes	Yes	Yes	Yes	Yes	Yes
		3 m	Yes	Yes	Yes	Yes	Yes	Yes
		5 m	Yes	Yes	Yes	Yes	Yes	Yes
		10 m	Yes	No	Yes	No	Yes	Yes
Bend resistant camera cables Bend resistant Right-angle Camera Cable	FZ-VSB3 FZ-VSLB3	2 m	Yes	Yes	Yes	Yes	Yes	Yes
		3 m	Yes	Yes	Yes	Yes	Yes	Yes
		5 m	Yes	Yes	Yes	Yes	Yes	Yes
		10 m	Yes	No	Yes	No	Yes	Yes
Super Bend resistant Camera Cable	FZ-VSBX	5 m	Yes	Yes	Yes	Yes	Yes	Yes
		10 m	Yes	No	Yes	No	Yes	Yes
Long-distance camera cable Long-distance right-angle camera cable	FZ-VS4 FZ-VSL4	15 m	Yes	No	Yes	No	Yes	Yes

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Camera Cables	Model	Cable length	Small digital CCD cameras Pen type / flat type	Intelligent Compact Digital CMOS Camera
			FZ-SF/SFC FZ-SP/SPC	FZ-SQ□
Camera Cables Right-angle camera cables	FZ-VS3 FZ-VSL3	2 m	Yes	Yes
		3 m	Yes	Yes
		5 m	Yes	Yes
		10 m	Yes	Yes
Bend resistant camera cables Bend resistant Right-angle Camera Cable	FZ-VSB3 FZ-VSLB3	2 m	Yes	Yes
		3 m	Yes	Yes
		5 m	Yes	Yes
		10 m	Yes	Yes
Super Bend resistant Camera Cable	FZ-VSBX	5 m	Yes	Yes
		10 m	Yes	Yes
Long-distance camera cable Long-distance right-angle camera cable	FZ-VS4 FZ-VSL4	15 m	Yes	Yes

Maximum Extension Length Using Cable Extension Units FZ-VSJ

Item	Model	Transmission speed (*1)	No. of CH used for connection (*2)	Maximum cable length using 1 Camera Cable (*1)	Max. number of connectable Extension Units	Using Cable Extension Units FZ-VSJ	
						Max. cable length	Connection configuration
High-speed Digital CMOS Cameras	FH-SM/SC	---	---	15 m (Using FZ-VS4/VSL4)	2	45 m	[Configuration 1] Camera cable: 15 m × 3 Extension Unit: 2
	FH-SMX/SCX	Standard	---	15 m (Using FZ-VS4/VSL4)	2	45 m	[Configuration 1] Camera cable: 15 m × 3 Extension Unit: 2
		High speed	---	5 m (Using FZ-VS□/VSL□)	2	15 m	[Configuration 3] Camera cable: 5 m × 3 Extension Unit: 2
	FH-SM02/SC02 FH-SM04/SC04 FH-SM12/SC12 FH-SMX05/SCX05 FH-SMX12/SCX12	Standard	1	15 m (Using FZ-VS4/VSL4)	2	45 m	[Configuration 1] Camera cable: 15 m × 3 Extension Unit: 2
			2	15 m (Using FZ-VS4/VSL4)	4 (*3)	45 m	[Configuration 2] Camera cable: 15 m × 6 Extension Unit: 4
		High speed	1	5 m (Using FZ-VS□/VSL□)	2	15 m	[Configuration 3] Camera cable: 5 m × 3 Extension Unit: 2
			2	5 m (Using FZ-VS□/VSL□)	4 (*3)	15 m	[Configuration 4] Camera cable: 5 m × 6 Extension Unit: 4
Digital CMOS Cameras	FH-SM05R/SC05R	---	---	15 m (Using FZ-VS□/VSL□)	2	45 m	[Configuration 1] Camera cable: 15 m × 3 Extension Unit: 2
	FZ-S5M3/SC5M3	---	---	5 m (Using FZ-VS□/VSL□)	2	15 m	[Configuration 3] Camera cable: 5 m × 3 Extension Unit: 2
Digital CCD Cameras	FZ-S/SC FZ-S2M/SC2M	---	---	15 m (Using FZ-VS4/VSL4)	2	45 m	[Configuration 1] Camera cable: 15 m × 3 Extension Unit: 2
Small Digital CCD Cameras Flat type/ Pen type	FZ-SF/SFC FZ-SP/SPC	---	---	15 m (Using FZ-VS4/VSL4)	2	45 m	[Configuration 1] Camera cable: 15 m × 3 Extension Unit: 2
Intelligent Compact Digital CMOS Camera	FZ-SQ□	---	---	15 m (Using FZ-VS4/VSL4)	2	45 m	[Configuration 1] Camera cable: 15 m × 3 Extension Unit: 2

*1 The FH-S□□□ enables switching between standard and high speed modes. In high speed mode, images can be transferred approximately two times faster than in standard mode, but the connectable cable length will be shorter.

*2 The FH-S□□□ has two channels to connect Camera Cables. Connection to two channels makes image transfer two times faster than connection to one channel: high speed mode using two channels can transfer approximately four times as many images as standard mode using one channel.

*3 Each channel can be used to connect up to two Cable Extension Units: up to four extension units, two channels x two units, can be connected by using two channels.

FH-L550 Series

Connection Configuration

	Connection configuration using the maximum length of Camera Cables	Remarks
Configuration 1	15 m (1)　15 m (2)　15 m (3)　*4	
Configuration 2	CH1 15 m (1)　15 m (2)　15 m (3)　*4 / 15 m (4)　15 m (5)　15 m (6) CH2	Camera cable connector CH2 / Camera cable connector CH1
Configuration 3	5 m (1)　5 m (2)　5 m (3)　*4	
Configuration 4	CH1 5 m (1)　5 m (2)　5 m (3)　*4 / 5 m (4)　5 m (5)　5 m (6) CH2	Camera cable connector CH2 / Camera cable connector CH1

*4 Select the Camera Cables between the Controller and Extension Unit, between the Extension Units, and between the Extension Unit and Camera according to the connected Camera.
Different types or lengths of Camera Cables can be used for (1), (2), and (3) as well as for (4), (5), and (6). However, the type and length of Camera Cable (1) must be the same as those of Camera Cable (4), (2) must be the same as (5), and (3) must be the same as (6).

Monitor

Item	Descriptions	Model
	Touch Panel Monitor 12.1 inches For FH Sensor Controllers *	FH-MT12
	LCD Monitor 8.4 inches	FZ-M08

* FH Series Sensor Controllers version 5.32 or higher is required.

Monitor Cables

Item	Descriptions	Model
	DVI-Analog Conversion Cable for Touch Panel Monitor/LCD Monitor Cable length: 2 m, 5 m or 10 m	FH-VMDA □M *1
	RS-232C Cable for Touch Panel Monitor Cable length: 2 m, 5 m or 10 m	XW2Z-□□□PP-1 *2
	USB Cable for Touch Panel Monitor Cable length: 2 m or 5 m	FH-VUAB □M *1

*1 Insert the cables length into □ in the model number as follows. 2 m = 2, 5 m = 5, 10 m = 10
*2 Insert the cables length into □□ in the model number as follows. 2 m = 200, 5 m = 500, 10 m = 010.

A video signal cable and an operation signal cable are required to connect the Touch Panel Monitor.

Signal	Cable	2 m	5 m	10 m
Video signal	DVI-Analog Conversion Cable	Yes	Yes	Yes
Touch panel operation signal	USB Cable	Yes	Yes	No
	RS-232C Cable	Yes	Yes	Yes

Parallel I/O Cables/Encoder Cable

Item	Descriptions	Model
	Parallel I/O Cable *1 Cable length: 2m, 5m or 15m	XW2Z-S013-□ *2
	Parallel I/O Cable for Connector-terminal Conversion Unit *1 Cable length: 0.5 m, 1 m, 1.5 m, 2 m, 3 m, 5 m Connector-Terminal Block Conversion Units can be connected (Terminal Blocks Recommended Products: OMRON XW2K-34G-T)	XW2Z-□□□EE *3
	Ultra-Compact Interface Wiring System (General-Purpose)	XW2K-34G-T *4
	Encoder Cable for line-driver Cable length: 1.5 m	FH-VR 1.5M

*1 2 Cables are required for all I/O signals.
*2 Insert the cables length into □ in the model number as follows. 2 m = 2, 5 m = 5, 15 m = 15
*3 Insert the cables length into □□ in the model number as follows. 0.5 m = 050, 1 m = 100, 1.5 m = 150, 2 m = 200, 3 m = 300, 5 m = 500
*4 Refer to the XW2K Series Datasheet (Cat. No. G152) for details.

Parallel Converter Cable

When you change to connect the F series, FZ5 series, or FZ5-L series to FH series Sensor Controller,
you can convert by using the appropriate parallel converter cable of FH-VPX series under the usable condition.

Item	Applicable Model		Usable Condition	Model
	FZ☐ series		• Do not use RESET signal. * • Use with COMIN and COMUT are same power source.	**FH-VPX-FZ**
	FZ☐-L35x series		• Do not use RESET signal. *	**FH-VPX-FZL**
	F160 series	F160-C10	• Do not use RESET signal. * • Use with COMIN and COMOUT are same power source. • Do not use DI5 and DI6.	**FH-VPX-F160**
	F210 series	F210-C10	• Do not use RESET signal. * • Use with COMIN and COMOUT are same power source. • Do not use DI8 and DI9.	**FH-VPX-F210**
		F210-C10-ETN		
	F500 series	F500-C10		

* Even if RESET signal cannot be use by conversion, conversion is possible to convert satisfying other usable condition.
Note: Cannot be used for the F160-C10CP/-C10CF.

Recommended EtherNet/IP Communications Cables
Use Straight or cross STP (shielded twisted-pair) cable of category 5 or higher for EtherNet/IP.
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: PUR Cable color: Yellow *2		OMRON	0.3	**XS6W-6PUR8SS30CM-YF**
			0.5	**XS6W-6PUR8SS50CM-YF**
			1	**XS6W-6PUR8SS100CM-YF**
			2	**XS6W-6PUR8SS200CM-YF**
			3	**XS6W-6PUR8SS300CM-YF**
			5	**XS6W-6PUR8SS500CM-YF**
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 *3 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 *3 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 Cables colors are available in yellow, green, and blue.
*3 For details, contact your OMRON representative.

FH-L550 Series

Cables / Connectors

Item		Recommended manufacturer	Model
Products for EtherNet/IP (1000BASE-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
		Kuramo Electric Co.	**KETH-SB ✳1**
	RJ45 Connector	Panduit Corporation	**MPS588-C ✳1**
Products for EtherNet/IP (100BASE-TX/10BASE-T) Wire gauge and number of pairs: AWG22, 2-pair cable	Cable	Kuramo Electric Co.	**KETH-PSB-OMR ✳2**
		JMACS Japan Co., Ltd.	**PNET/B ✳2**
	RJ45 Assembly Connector	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.

Development Environment

Please purchase a CD-ROM and licenses the first time you purchase the Application Producer. CD-ROMs and licenses are available individually. The license does not include the CD-ROM.

Product	Specifications	Number of Model Standards licenses	Media	Model
Application Producer	Software components that provide a development environment to further customize the standard controller features of the FH Series. System requirements: CPU: Intel Pentium Processor (SSE2 or higher) OS: Windows 7 Professional (32/64bit) or Enterprise(32/64bit) or Ultimate (32/64bit), Windows 8 Pro (32/64bit) or Enterprise (32/64bit), Windows 8.1 Pro (32/64bit) or Enterprise (32/64bit), Windows 10 Pro (32/64bit) or Enterprise (32/64bit) .NET Framework: .NET Framework 3.5 SP1 or higher Memory: At least 2 GB RAM Available disk space: At least 2 GB Browser: Microsoft® Internet Explorer 6.0 or later Display: XGA (1024 × 768), True Color (32-bit) or higher Optical drive: CD/DVD drive The following software is required to customize the software: Microsoft® Visual Studio® 2008 Professional or Microsoft® Visual Studio® 2010 Professional or Microsoft® Visual Studio® 2012 Professional	— (Media only)	CD-ROM	**FH-AP1**
		1 license	—	**FH-AP1L**

Accessories

Item	Descriptions			Model
USB Memory	2 GB			**FZ-MEM2G**
	16 GB			**FZ-MEM16G**
SD Card	2 GB			**HMC-SD293**
	4 GB			**HMC-SD493**
	16 GB			**HMC-SD1A3**
	Display/USB Switcher			**FZ-DU**
–	Mouse Recommended Products Driverless wired mouse (A mouse that requires the mouse driver to be installed is not supported.)			---
	Industrial Switching Hubs for EtherNet/IP and Ethernet	5 port	Current consumption: 0.07 A	**W4S1-05D**
–	Calibration Plate			**FZD-CAL**
	Common items related to DIN rail (for FH-L551/-L551-10)	DIN rail mounting bracket (For Lite Controllers)		**FH-XDM-L**
		DIN 35mm rail	PHOENIX CONTACT	• Length: 75.5/95.5/115.5/200 cm • Height: 7.5mm • Material: Iron • Surface: Conductive	**NS 35/7,5 PERF**
				• Length:75.5/95.5/115.5/200 cm • Height: 15mm • Material: Iron • Surface: Conductive	**NS 35/15 PERF**
–		End plate	PHOENIX CONTACT	Need 2 pieces each Sensor Controller	**CLIPFIX 35**
–	External Lights *1	External lighting controller	LED	**FLV Series**
			High-brightness LED	**FL-BR/DR Series**
			Photometric Stereo Light	**FL-PS Series**
		Built-in lighting controller	MDMC Light	**FL-MD Series**
	For Intelligent Compact Digital CMOS Camera	Mounting Bracket		**FQ-XL**
		Mounting Brackets		**FQ-XL2**
		Polarizing Filter Attachment		**FQ-XF1**
		Cover Attachment (for replacement)		**FQ-XF2**
–	Mounting Bracket for FZ-S☐, FH-S☐05R, FZ-S☐X			**FZ-S-XLC**
	Mounting Bracket for FZ-S☐2M			**FZ-S2M-XLC**
	Mounting Bracket for FH-S☐, FZ-S☐5M☐, FH-S☐X05, FH-S☐X12			**FH-SM-XLC**
	Mounting Bracket for FH-S☐12			**FH-SM12-XLC**
	M42 - F Mount Conversion Adapter			**FH-ADF/M42-10**

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

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
300,000-pixel	FZ-SF/SFC	1/3" equivalent	FZ-LES Series	---	---
	FZ-SP/SPC				
	FZ-S/SC		SV-V Series	VS-TCH Series	VS-MCA Series Non-telecentric Macro VS-MC Series
	FH-SM/SC				
400,000-pixel	FH-SMX/SCX	1/2.9" equivalent			
2 million-pixel	FZ-S2M/SC2M	1/1.8" equivalent	SV-H Series		
	FH-SM02/SC02	2/3" equivalent *1	VS-H1 Series	VS-TEV Series	VS-MCA Series
4 million-pixel	FH-SM04/SC04	1" equivalent			VS-MCH1 Series
5 million-pixel	FH-SM05R/SC05R	1/2.5" equivalent	SV-H Series	VS-TCH Series	VS-MCA Series Non-telecentric Macro VS-MC Series
	FZ-S5M3/SC5M3	2/3" equivalent			
	FH-SMX05/SCX05	2/3" equivalent			
12 million-pixel	FH-SMX12/SCX12	1.1" equivalent	VS-LLD Series VS-HVA Series	VS-TEV Series	---
	FH-SM12/SC12	1.76" equivalent	VS-L/M42-10 Series	---	VS-MCL/M42-10 Series

*1 A lens recommended for a 1" image element should be used for an image element size equivalent to 2/3". Vignetting may occur with a lens recommended for a 2/3" image element.

Ratings and Specifications (FH Sensor Controllers)

Lite Controllers

Sensor Controller Series			FH-L550 Series	
Sensor Controller Model			FH-L550	FH-L550-10
Parallel IO			NPN/PNP (common)	
Memory, Storage			4 GB RAM, 4 GB ROM	
Main Functions	Operation Mode	Standard	Yes	
		Double Speed Multi-input	Yes	
		Non-stop adjustment mode	Yes	
		Multi-line random-trigger mode	No	
	Parallel Processing		Yes	
	Number of Connectable Camera		2	4
	Supported Camera	FH-S series camera	All of the FH-S series cameras except FH-SM21R/SC21R	
		FZ-S series camera	All of the FZ-S series cameras are connectable.	
	Camera I/F		OMRON I/F	
	Possible Number of Captured Images		Refer to page 12.	
	Possible Number of Logging Images to Sensor Controller		Refer to the *Vision System FH Series User's Manual* (Cat. No. Z365).	
	Possible Number of Scenes		128	
	UI Operations	USB Mouse	Yes (wired USB driver-less type)	
		Touch Panel	Yes (RS-232C/USB connection: FH-MT12)	
	Setup		Create the processing flow using Flow editing.	
	Language		Japanese, English, Simplified Chinese, Traditional Chinese, Korean, German, French, Spanish, Italian, Vietnamese, Polish	
External Interface	Serial Communication		RS-232C × 1	
	Ethernet Communication	Protocol	Non-procedure (TCP/UDP)	
		I/F	1000BASE-T × 1	
	EtherNet/IP Communication		Yes (Target/Ethernet port)	
	PROFINET Communication		• Yes (Slave/Ethernet port) • Conformance class A	
	EtherCAT Communication		No	
	Parallel I/O		• High-speed input: 1 • Normal speed: 9 • High-speed output: 4 • Normal speed: 23	
	Encoder Interface		None	
	Monitor Interface		DVI-I output (Analog RGB & DVI-D single link) × 1	
	USB I/F		USB2.0 host × 1: BUS Power: Port 5 V/0.5 A USB3.0 × 1: BUS Power: Port 5 V/0.5 A	
	SD Card I/F		SDHC × 1	
Indicator Lamps	Main		POWER: Green ERROR: Red RUN: Green ACCESS: Yellow	
	Ethernet		NET RUN: Green LINK/ACT: Yellow	
	SD Card		SD POWER: Green SD BUSY: Yellow	
	EtherCAT		None	
Power-supply voltage			20.4 VDC to 26.4 VDC	
Current consumption	When connecting an intelligent compact digital camera • When connecting the following light or lighting controller without an external power supply 　FLV-TCC1, FLV-TCC4, FLV-TCC3HB 　FLV-TCC1EP, FL-TCC1 • When connecting the following light or lighting controller 　FL-TCC1PS, FL-MD□MC		2.7 A max.	4.4 A max.
	Other than above		1.5 A max.	2.0 A max.
Built-in FAN			No	
Usage Environment	Ambient temperature range		Operating: 0°C to 55°C Storage: -25 to +70°C	
	Ambient humidity range		Operating and Storage: 10 to 90%RH (with no condensation)	
	Ambient atmosphere		No corrosive gases	
	Vibration tolerance		5 to 8.4 Hz with 3.5 mm amplitude, 8.4 to 150 Hz, acceleration of 9.8 m/s^2 100 min each in X, Y, and Z directions (10 sweeps of 10 min each = 100 min total)	
	Shock resistance		Impact force: 150 m/s^2 Test direction: up and down/front and behind/left and right	
	Noise immunity	Fast Transient Burst	• DC power 　Direct infusion: 2kV, Pulse rising: 5ns, Pulse width: 50ns, 　Burst continuation time: 15ms/0.75ms, Period: 300ms, Application time: 1 min • I/O line 　Direct infusion: 1kV, Pulse rising: 5ns, Pulse width: 50ns, 　Burst continuation time: 15ms/0.75ms, Period: 300ms, Application time: 1 min	
	Grounding		Type D grounding (100 Ω or less grounding resistance) *	
External Features	Dimensions		200 mm × 80 mm × 130 mm	
	Weight		Approx. 1.5 kg	Approx. 1.5 kg
	Degree of protection		IEC60529 IP20	
	Case materials		PC	
Accessories			Instruction Sheet (Japanese and English): 1, Installation Instruction Manual for FH-L series:1, General Compliance Information and Instructions for EU:1, Member registration sheet: 1, Power source (FH-XCN-L):1 (male)	

* Existing third class grounding

FH-L550 Series

Maximum Number of Loading Images during Multi-input

Camera	Model	Max. Number of Loading Images during Multi-input *1
Intelligent Compact Digital CMOS Cameras *2	FZ-SQ010F/-SQ050F/-SQ100F/-SQ100N	256
0.3 million pixels CCD/CMOS Cameras	FZ-S/-SC/-SF/SFC/-SH/-SHC/-SP/-SPC FH-SM/-SC	256
0.4 million pixels CMOS Cameras	FH-SMX/-SCX	256
2 million pixels CCD Cameras	FZ-S2M/-SC2M	64
2 million pixels CMOS Cameras	FH-SM02/-SC02	51
4 million pixels CMOS Cameras	FH-SM04/-SC04	32
5 million pixels CCD/CMOS Cameras	FZ-S5M3/-SC5M3/-S5M2 FH-SMX05/-SCX05/-SM05R/-SC05R	25
12 million pixels CMOS Cameras	FH-SM12/-SC12/-SMX12/-SCX12	10

*1 When using two camera cables for connection, the maximum number of loaded images during multi-input is twice the number given in the table.
*2 The multi-input function cannot be used when the built-in light of an intelligent compact digital camera is used.
Refer to the *Vision System FH Series User's Manual* (Cat. No. Z340) for details.

Ratings and Specifications (Cameras)

High-speed Digital CMOS cameras

Model	FH-SM	FH-SC	FH-SM02	FH-SC02	FH-SM04	FH-SC04	FH-SM12	FH-SC12
Image elements	CMOS image elements (1/3-inch equivalent)		CMOS image elements (2/3-inch equivalent) *1		CMOS image elements (1-inch equivalent)		CMOS image elements (1.76-inch equivalent)	
Color/Monochrome	Monochrome	Color	Monochrome	Color	Monochrome	Color	Monochrome	Color
Effective pixels	640 (H) × 480 (V)		2040 (H) × 1088 (V)		2040 (H) × 2048 (V)		4084 (H) × 3072 (V)	
Pixel size	7.4 (µm) × 7.4 (µm)		5.5 (µm) × 5.5 (µm)		5.5 (µm) × 5.5 (µm)		5.5 (µm) × 5.5 (µm)	
Shutter function	Electronic shutter; Shutter speeds can be set from 20 µs to 100 ms.		Electronic shutter; Shutter speeds can be set from 25 µs to 100 ms.				Electronic shutter; Shutter speeds can be set from 60 µs to 100 ms.	
Partial function	1 to 480 lines	2 to 480 lines	1 to 1088 lines	2 to 1088 lines	1 to 2048 lines	2 to 2048 lines	4 to 3072 lines (4-line increments)	
Frame rate (Image Acquisition Time *2)	308 fps (3.3 ms)		219 fps (4.6 ms) *3		118 fps (8.5 ms) *3		38.9 fps (25.7 ms) *3	
Lens mounting	C mount						M42 mount	
Field of vision, installation distance	Selecting a lens according to the field of vision and installation distance							
Ambient temperature range	Operating: 0 to 40 °C, Storage: -25 to 65 °C (with no icing or condensation)							
Ambient humidity range	Operating and storage: 35% to 85% (with no condensation)							
Weight	Approx.105 g		Approx.110 g				Approx.320 g	
Accessories	Instruction manual							

Model	FH-SMX	FH-SCX	FH-SMX05	FH-SCX05	FH-SMX12	FH-SCX12
Image elements	CMOS image elements (1/2.9-inch equivalent)		CMOS image elements (2/3-inch equivalent)		CMOS image elements (1.1-inch equivalent)	
Color/Monochrome	Monochrome	Color	Monochrome	Color	Monochrome	Color
Effective pixels	720 (H) × 540 (V)		2448 (H) × 2048 (V)		4092 (H) × 3000 (V)	
Pixel size	6.9 (µm) × 6.9 (µm)		3.45 (µm) × 3.45 (µm)			
Shutter function	Electronic shutter; Shutter speeds can be set from 1 µs to 100 ms.				Electronic shutter; Shutter speeds can be set from 15 µs to 100 ms.	
Partial function	4 to 540 lines (4-line increments)		4 to 2048 lines (4-line increments)		4 to 3000 lines (4-line increments)	
Frame rate (Image Acquisition Time *2)	523.6 fps (1.9 ms)		97.2 fps (10.3 ms) *3		40.1 fps (24.9 ms) *3	
Lens mounting	C mount					
Field of vision, installation distance	Selecting a lens according to the field of vision and installation distance					
Ambient temperature range	Operating: 0 to 50 °C, Storage: -25 to 65 °C (with no icing or condensation)		Operating: 0 to 40 °C, Storage: -25 to 65 °C (with no icing or condensation)			
Ambient humidity range	Operating and storage: 35% to 85% (with no condensation)					
Weight	Approx.48 g		Approx.85 g			
Accessories	Instruction manual, General Compliance Information and Instructions for EU					

*1 A lens recommended for a 1" image element should be used for an image element size equivalent to 2/3". Vignetting may occur with a lens recommended for a 2/3" image element.
*2 The image acquisition time does not include the image conversion processing time of the sensor controller.
*3 Frame rate in high speed mode when the camera is connected using two camera cables.

Digital CMOS Cameras

Model	FH-SM05R	FH-SC05R	FZ-S5M3	FZ-SC5M3
Image Elements	CMOS image elements (1/2.5-inch equivalent)		CMOS image elements (2/3-inch equivalent)	
Color/Monochrome	Monochrome	Color	Monochrome	Color
Effective Pixels	2592 (H) × 1944 (V)		2448 (H) × 2048 (V)	
Pixel Size	2.2 (µm) × 2.2 (µm)		3.45 (µm) × 3.45 (µm)	
Scan Type	Progressive			
Shutter Method	Rolling shutter (Global reset mode supported)		Global shutter	
Shutter Function	Electronic shutter; Shutter speeds can be set from 500 µs to 100 ms in multiples of 50 µs		Electronic shutter; Shutter speeds can be set from 20 µs to 100 ms.	
Partial function	4 to 1944 lines (2-line increments)		4 to 2048 lines	
Frame rate (Image Acquisition Time *)	14 fps (71.7ms)		25.6 fps (38.2ms)	
Lens Mounting	C mount			
Field of vision, Installation distance	Selecting a lens according to the field of vision and installation distance			
Ambient temperature range	Operating: 0 to +40°C Storage: -30 to 65°C (with no icing or condensation)		Operating: 0 to +40°C Storage: -30 to 65°C (with no icing or condensation)	
Ambient humidity range	Operating: 35 to 85%RH, Storage: 35 to 85%RH (with no condensation)			
Weight	Approx. 52 g		Approx. 85 g	
Accessories	Instruction Sheet		Instruction Sheet, General Compliance Information and Instructions for EU	

* The image acquisition time does not include the image conversion processing time of the sensor controller.

FH-L550 Series

Digital CCD Cameras

Model	FZ-S	FZ-SC	FZ-S2M	FZ-SC2M
Image elements	Interline transfer reading all pixels, CCD image elements (1/3-inch equivalent)		Interline transfer reading all pixels, CCD image elements (1/1.8-inch equivalent)	
Color/Monochrome	Monochrome	Color	Monochrome	Color
Effective pixels	640 (H) $\times$ 480 (V)		1600 (H) $\times$ 1200 (V)	
Pixel size	7.4 (μm) $\times$ 7.4 (μm)		4.4 (μm) $\times$ 4.4 (μm)	
Shutter function	Electronic shutter; select shutter speeds from 20 μs to 100 ms			
Partial function	12 to 480 lines		12 to 1200 lines	
Frame rate (Image Acquisition Time *)	80 fps (12.5 ms)		30 fps (33.3 ms)	
Lens mounting	C mount			
Field of vision, installation distance	Selecting a lens according to the field of vision and installation distance			
Ambient temperature range	Operating: 0 to 50 °C Storage: -25 to 65 °C (with no icing or condensation)		Operating: 0 to 40 °C Storage: -25 to 65 °C (with no icing or condensation)	
Ambient humidity range	Operating and storage: 35% to 85% (with no condensation)			
Weight	Approx. 55 g		Approx. 76 g	
Accessories	Instruction manual			

* The image acquisition time does not include the image conversion processing time of the sensor controller.

Small CCD Digital Cameras

Model	FZ-SF	FZ-SFC	FZ-SP	FZ-SPC
Image elements	Interline transfer reading all pixels, CCD image elements (1/3-inch equivalent)			
Color/Monochrome	Monochrome	Color	Monochrome	Color
Effective pixels	640 (H) $\times$ 480 (V)			
Pixel size	7.4 (μm) $\times$ 7.4 (μm)			
Shutter function	Electronic shutter; select shutter speeds from 20 μm to 100 ms			
Partial function	12 to 480 lines			
Frame rate (Image Acquisition Time *)	80 fps (12.5ms)			
Lens mounting	Special mount (M10.5 P0.5)			
Field of vision, installation distance	Selecting a lens according to the field of vision and installation distance			
Ambient temperature range	Operating: 0 to 50 °C (camera amp) 0 to 45 °C (camera head) Storage: -25 to 65 °C (with no icing or condensation)			
Ambient humidity range	Operating and storage: 35% to 85% (with no condensation)			
Weight	Approx. 150 g			
Accessories	Instruction manual, installation bracket, Four mounting brackets (M2)		Instruction manual	

* The image acquisition time does not include the image conversion processing time of the sensor controller.

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Intelligent Compact Digital CMOS Cameras

Model	FZ-SQ010F	FZ-SQ050F	FZ-SQ100F	FZ-SQ100N
Image elements	CMOS color image elements (1/3-inch equivalent)			
Color/Monochrome	Color			
Effective pixels	752 (H) × 480 (V)			
Pixel size	6.0 (μm) × 6.0 (μm)			
Shutter function	1/250 to 1/32,258			
Partial function	8 to 480 lines			
Frame rate (Image Acquisition Time *1)	60 fps (16.7 ms)			
Field of vision	7.5 × 4.7 to 13 × 8.2 mm	13 × 8.2 to 53 × 33 mm	53 × 33 to 240 × 153 mm	29 × 18 to 300 × 191 mm
Installation distance	38 to 60 mm	56 to 215 mm	220 to 970 mm	32 to 380 mm
LED class *2	Risk Group2			
Ambient temperature range	Operating: 0 to 50 °C Storage: -25 to 65 °C			
Ambient humidity range	Operating and storage: 35% to 85% (with no condensation)			
Weight	Approx. 150 g		Approx. 140 g	
Accessories	Mounting bracket (FQ-XL), polarizing filter attachment (FQ-XF1), instruction manual and warning label			

*1   The image acquisition time does not include the image conversion processing time of the sensor controller.
*2   Applicable standards: IEC62471-2

- **Narrow View**
  FZ-SQ010F
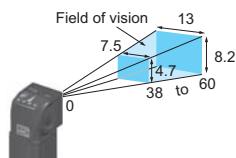
- **Standard**
  FZ-SQ050F
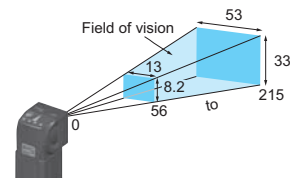
- **Wide View (Long-distance)**
  FZ-SQ100F
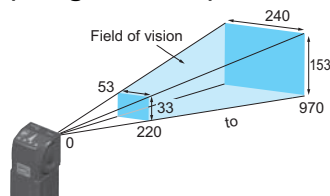
- **Wide View (Short-distance)**
  FZ-SQ100N
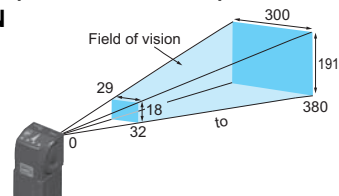
FH-L550 Series

Ratings and Specifications (Cable, Monitor)

Camera Cables

Model	FZ-VS3 (5 m)	FZ-VSB3 (5 m)	FZ-VSBX (5 m)	FZ-VSL3 (5 m)	FZ-VSLB3 (5 m)
Type	Standard	Bend resistant	Super-bend-resistant	Right-angle	Bend resistant Right-angle
Shock resistiveness (durability)	10 to 150 Hz single amplitude 0.15 mm 3 directions, 8 strokes, 4 times				
Ambient temperature range	Operation and storage: 0 to 65 °C (with no icing or condensation)				
Ambient humidity range	Operation and storage: 40 to 70%RH (with no condensation)				
Ambient atmosphere	No corrosive gases				
Material	Cable sheath, connector: PVC				
Minimum bending radius	69 mm	69 mm	69 mm	69 mm	69 mm
Weight	Approx. 390 g	Approx. 430 g	Approx. 460 g	Approx. 390 g	Approx. 430 g

Long-distance Camera Cables

Model	FZ-VS4 (15 m)	FZ-VSL4 (15 m)
Type	Standard	Right-angle
Shock resistiveness (durability)	10 to 150 Hz single amplitude 0.15 mm 3 directions, 8 strokes, 4 times	
Ambient temperature range	Operation and storage: 0 to 65 °C (with no icing or condensation)	
Ambient humidity range	Operation and storage: 40 to 70%RH (with no condensation)	
Ambient atmosphere	No corrosive gases	
Material	Cable sheath, connector: PVC	
Minimum bending radius	78 mm	
Weight	Approx. 1400 g	

Cable Extension Unit

Model	FZ-VSJ
Power supply voltage *1	11.5 to 13.5 VDC
Current consumption *2	1.5 A max.
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% (with no condensation)
Weight	Approx. 240 g
Accessories	Instruction Sheet and 4 mounting screws

*1 A 12-VDC power supply must be provided to the Cable Extension Unit when connecting the Intelligent Compact Camera, or the Lighting Controller.
*2 The current consumption shows when connecting the Cable Extension Unit to an external power supply.

Encoder Cable

Model	FH-VR
Vibration resistiveness	10 to 150 Hz single amplitude 0.1 mm 3 directions, 8 strokes, 10 times
Ambient temperature range	Operation: 0 to 50 °C; Storage: -10 to 60 °C (with no icing or condensation)
Ambient humidity range	Operation and storage: 35 to 85%RH (with no condensation)
Ambient atmosphere	No corrosive gases
Material	Cable Jacket: Heat, oil and flame resistant PVC Connector: polycarbonate resin
Minimum bending radius	65 mm
Weight	Approx. 104 g

Touch Panel Monitor

Model		FH-MT12
Major Function	**Display area**	12.1 inch
	Resolution	1024 (V) × 768 (H)
	Number of color	16,200,000 colors (8 bit/color)
	Brightness	500cd/m^2 (Typ)
	Contrast Ratio	700:1 (Typ)
	Viewing angle	Horizontal (left and right): -80° to 80° (Typ) Vertical (top and bottom): -70° to 70° (Typ)
	Backlight Unit	LED, edge-light
	Backlight lifetime	About 80,000 hour
	Touch panel	4wire resistive touch screen
External interface	**Video input**	analog RGB
	Touch panel signal	USB
		RS-232C
Ratings	**Power supply voltage**	24 VDC (21.6 to 26.4 VDC)
	Current consumption	0.5A
	Insulation resistance	Between DC power supply and Touch Panel Monitor FG: 20 MΩ or higher (rated voltage 250 V)
Operating environment	**Ambient temperature range**	Operating: 0 to 50°C, Storage: -20 to +65°C (with no icing or condensation)
	Ambient humidity range	Operating and Storage: 20 to 90 %RH (with no icing or condensation)
	Ambient environment	No corrosive gas
	Vibration resistance	10 to 150 Hz, one-side amplitude 0.1 mm (Max. acceleration 15 m/s^2) 10 times for 8 minutes for each three direction
	Degree of protection	Panel mounting: IP65 on the front
Operation		Touch pen
Structure	**Mounting**	Panel mounting, VESA mounting
	Weight	Approx.2.4 kg
	Material	Front panel: PC/PBT, Front Sheet: PET, Rear case: SUS

Note: FH Series Sensor Controllers version 5.32 or higher is required.

Monitor Cables

Model	FH-VMDA (2 m)	FH-VUAB (2 m)	XW2Z-200PP-1 (2 m)
Cable type	DVI-Analog Conversion Cable	USB Cable	RS-232C Cable
Vibration resistance	10 to 150 Hz, one-side amplitude 0.1 mm, 10 times for 8 minutes for each three direction		
Ambient Temperature	Operating Condition: 0 to 50°C, Storage Condition: -10 to 60°C (with no icing or condensation)		
Ambient Humidity	Operating Condition: 35 to 85%RH, Storage Condition: 35 to 85%RH (with no icing or condensation)		
Ambient environment	No corrosive gases		
Material	Cable outer sheath, Connector: PVC		Cable outer sheath: PVC, Connector: ABS/Ni Plating
Minimum bend radius	62 mm	25 mm	59 mm
Weight	Approx.210 g	Approx.95 g	Approx.162 g

LCD Monitor

Model	FZ-M08
Size	8.4 inches
Type	Liquid crystal color TFT
Resolution	1,024 × 768 dots
Input signal	Analog RGB video input, 1 channel
Power supply voltage	21.6 to 26.4 VDC
Current consumption	Approx. 0.7 A max.
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% (with no condensation)
Weight	Approx. 1.2 kg
Accessories	Instruction Sheet and 4 mounting brackets

FH-L550 Series

Components and Functions

**Lite Controllers
(4-camera type)**
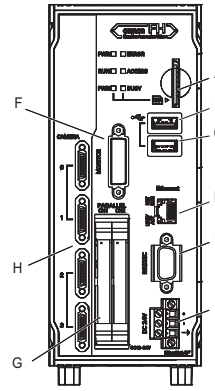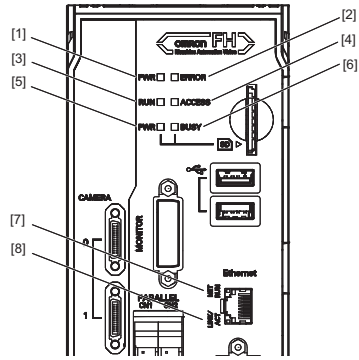
	LED name	Description
[1]	PWR LED	Lit while power is ON.
[2]	ERROR LED	Lit when an error has occurred.
[3]	RUN LED	Lit while the layout turned on output setting is displayed.
[4]	ACCESS LED	Blinks while the internal nonvolatile memory is accessed.
[5]	SD PWR LED	Lit while power is supplied to the SD memory card and the card is usable.
[6]	SD BUSY LED	Lit when access to the SD memory card.
[7]	Ethernet NET RUN LED	Lit while Ethernet communications are usable.
[8]	Ethernet LINK/ACT LED	Blinks when connected with an Ethernet device, and blinks while performing communications.

	Connector name	Description
A	SD memory card installation connector	Install the SD memory card. Do not plug or unplug the SD memory card during measurement operation. Otherwise measurement time may be affected or data may be destroyed.
B	USB 2.0 connector	Connects to USB 2.0. Do not insert or remove during loading or writing of measurement or data. The measurement time can be longer or data can be damaged.
C	USB 3.0 connector	Connects to USB 3.0. Do not insert or remove during loading or writing of measurement or data. The measurement time can be longer or data can be damaged. USB 3.0 has a high ability to supply the bus power. Use the Sensor Controller by combining USB 3.0, faster transport can be realized.
D	Ethernet connector	Connect an Ethernet device. Ethernet port, EtherNet/IP port, and PROFINET port are sharing use.
E	RS-232C connector	Connect an external device such as a programmable controller.
F	DVI-I connector	Connect a monitor.
G	Parallel connector (control lines, data lines)	Connect the controller to external devices such as a sync sensor.
H	Camera connector	Connect a camera.
I	Power supply terminal connector	Connect a DC power supply. Wire the controller independently on other devices. Wire * the ground line. Be sure to ground the FH Sensor Controller alone.

* Use the attachment power terminal connector (male) of FH-XCN-L series.
  For details, refer to 5-3 Sensor Controller Installation on Vision System FH series Hardware Setup Manual(Z366).

OMRON

Processing Items

Group	Icon	Processing Item	
Measurement		Search	Used to identify the shapes and calculate the position of measurement objects.
		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.
		ECM Search	Used to search the similar part of model form input image. Detect the evaluation value and position.
		EC Circle Search	Extract circles using "round " shape information and get position, radius and quantity in high preciseness.
		Shape Search II	Used to search the similar part of model from input image regardless of environmental changes. Detect the evaluation value and position.
		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.
		EC Corner	This processing item measures a corner position (corner) of a workpiece.
		Ec Cross	The center position of a crosshair shape is measured using the lines created by the edge information on each side of the crosshair.
		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.
		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 workpices by extracting the color to be measured.
		Labeling	Used to measure number, area and gravity of workpieces by extracting registered color.
		Label Data	Selecting one region of extracted Labeling, and get that measurement. Area and Gravity position can be got and judged.
		Defect	Used for appearance measurement of plain-color measurement objects such as defects, stains and burrs.
		Precise Defect	Check the defect on the object. Parameters for extraction defect can be set precisely.
		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.
		Circle Angle	Used for calculating angle of inclination of circular measurement objects.
		Glue Bead Inspection	You can inspect coating of a specified color for gaps or runoffs along the coating path.

Group	Icon	Processing Item	
Input Image		Camera Image Input FH	To input images from cameras. And set up the conditions to input images from cameras. (For FH Sensor Controllers only)
		Camera Image Input HDR	Create high-dynamic range images by acquiring several images with different conditions.
		Camera Image Input HDRLite	HDR function for FZ-SQ☐ Intelligent Compact Cameras.
		Photometric Stereo Image Input	Capture images under different illumination directions using a photometric stereo light.
		Camera Switch	To switch the cameras used for measurement. Not input images from cameras again.
		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.
		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.
Compensate image		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.
		Trapezoidal Correction	Rectify the trapezoidal deformed image.
		Machine Simulator	How the alignment marks would move on the image when each stage or robot axis is controlled can be checked.
		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.
		Panorama	Combine multiple image to create one big image.
Support measurement		Unit Macro	Advanced arithmetic processing can be easily incorporated into workflow as Unit Macro processing items.
		Unit Calculation Macro	This function is convenient when the user wants to calculate a value using an original calculation formula or change the set value or system data of a processing item.
		Calculation	Used when using the judge results and measured values of ProcItem which are registered in processing units.
		Line Regression	Used for calculating regression line from plural measurement coodinate.
		Circle Regression	Used for calculating regression circle from plural measurement coordinate.
		Precise Calibration	Used for calibration corresponding to trapezoidal distortion and lens distortion.
		User Data	Used for setting of the data that can be used as common constants and variables in scene group data.
		Set Unit Data	Used to change the ProcItem data (setting parameters, etc.) that has been set up in a scene.
		Get Unit Data	Used to get one data (measured results, setting parameters, etc.) of ProcItem that has been set up in a scene.
		Set Unit Figure	Used for re-setting the figure data (model, measurement area) registered in an unit.
		Get Unit Figure	Used for get the figure data (model, measurement area) registered in an unit.

Group	Icon	Processing Item	
Support measurement		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.
		Data Logging	Used for saving the measurement data to the memory and USB memory.
		Elapsed Time	Used for calculating the elapsed time since the measurement trigger input.
		Wait	Processing is stopped only at the set time. The standby time is set by the unit of [ms].
		Focus	Focus setting is supported.
		Iris	Focus and aperture setting is supported.
		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.
		PLC Master Calibration	Calibration data is created using a communication command from PLC.
		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.
		Movement Multi Points	The axis movements that are required to match the measured position angles to the corresponding reference position angles are calculated.
		Detection Point	Obtains position/angle information by referring to the coordinate values measured with the Measurement Processing Unit.
		Manual Position Setting	Used to change the measurement coordinates X and Y of the measurement processing unit.
		Camera Calibration	By setting the camera calibration, the measurement result can be converted and output as actual dimensions.
		Data Save	The set data can be saved in the controller main unit or as scene data. The data is held even after the FH/FZ power is turned off.
		Conveyor Calibration	Conveyor Calibration is used to calibrate camera, conveyor, and robots for conveyor tracking application.
		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.

Group	Icon	Processing Item	
Branch		Conditional Branch	Used where more than two kinds of products on the production line need to detected separately.
		End	This ProcItem must be set up as the last processing unit of a branch.
		DI Branch	Same as ProcItem "Branch". But you can change the targets of conditional branching via external inputs.
		Control Flow Normal	Set the measurement flow processing into the wait state in which the specific no-protocol command can be executed.
		Control Flow PLC Link	Set the measurement flow processing into the wait state in which the specific PLC Link command can be executed.
		Control Flow Parallel	Set the measurement flow processing into the wait state in which the specific parallel command can be executed.
		Control Flow Fieldbus	Set the measurement flow processing into the wait state in which the specific Fieldbus command can be executed.
		Selective Branch	Easily branch to multiple destinations.
		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.
		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.
Output result		Result Output (I/O)	Output data to the external devices such as a programmable controller or a PC via PLC Link, Parallel interface, Fieldbus interface (EtherCAT, 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 the serial interface or EtherNet/IP (message communication). This processing item allows you to save the logging data as a ".csv" file into the Sensor Controller as well.
		Data Output	Used when you need to output data to the external devices such as PLC or PC via serial ports.
		Parallel Data Output	Used when you need to output data to the external devices such as PLC or PC via parallel ports.
		Parallel Judgement Output	Used when you need to output judgement results to the external devices such as PLC or PC via parallel ports.
		Fieldbus Data Output	Outputs data to an external device, such as a Programmable Controller, through a fieldbus interface.
Display result		Result Display	Used for displaying the texts or the figures in the camera image.
		Display Image File	Display selected image file.
		Display Last NG Image	Display the last NG images.
		Conveyor Panorama Display	Display images of the tracking area as a panoramic image.
		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

Dimensions

(Unit: mm)

Sensor Controllers

Lite Controllers
FH-L550/-L550-10

Four, M4 mounting holes
with a depth of 6.5 mm

Four, M4 mounting holes
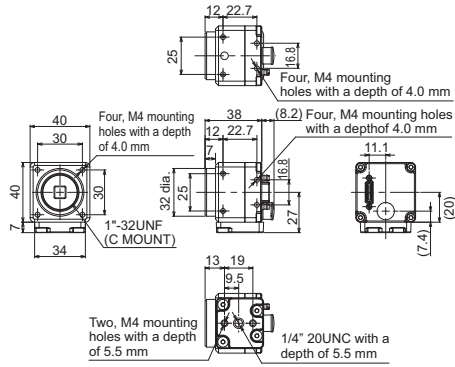with a depth of 6.5 mm
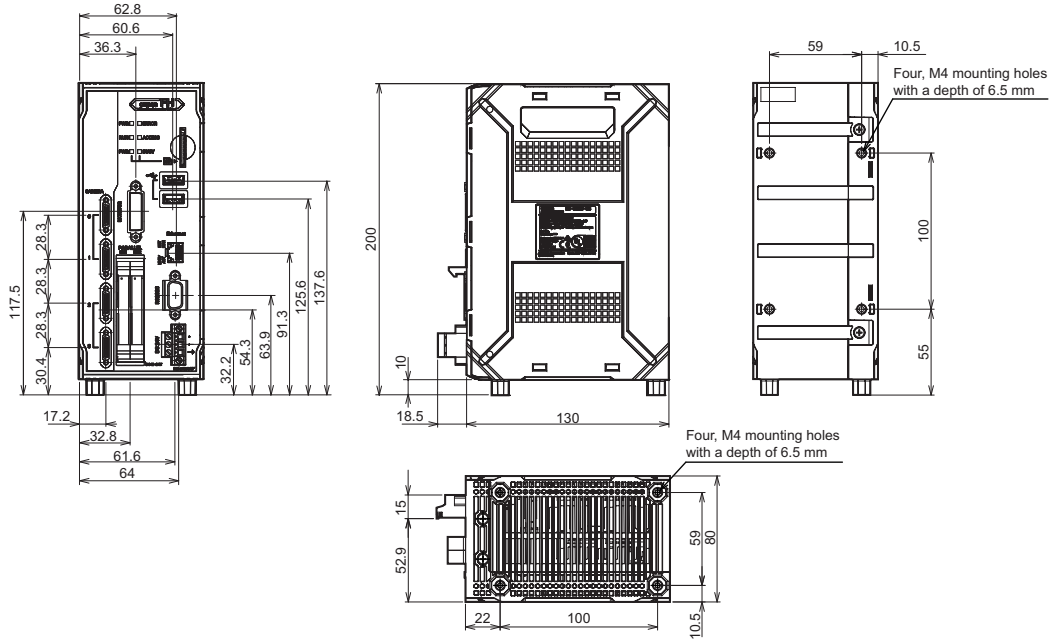
Cameras

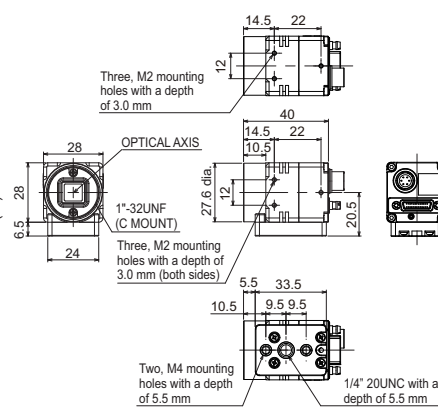### High-speed Digital CMOS Camera/Digital CMOS Camera
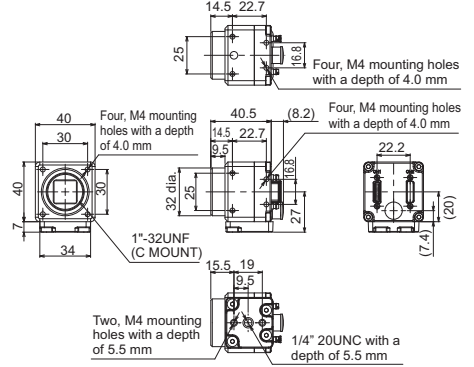
300,000-pixel camera

FH-SC
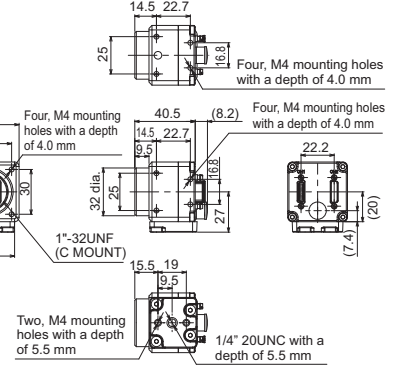FH-SM

400,000-pixel camera

FH-SCX
FH-SMX

2 million-pixel camera

FH-SC02
FH-SM02

4 million-pixel camera

FH-SC04
FH-SM04

5 million-pixel camera

FH-SM05R
FH-SC05R
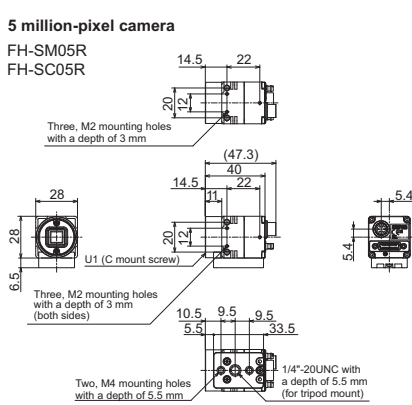
FZ-S5M3
FZ-SC5M3
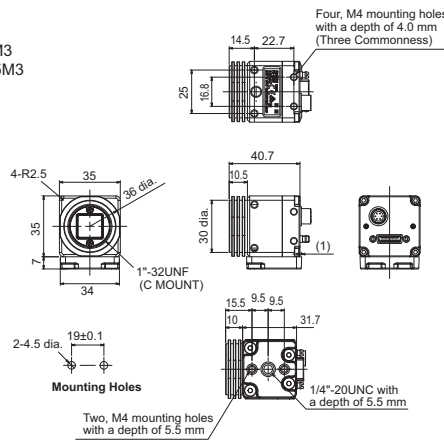
5 million-pixel camera

FH-SCX05
FH-SMX05
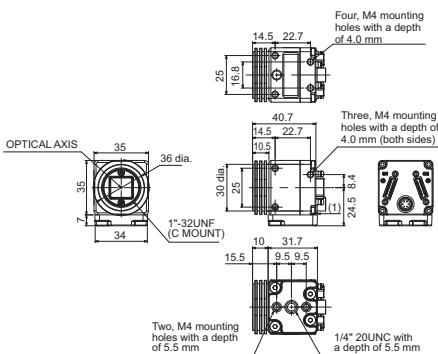
12 million-pixel camera

FH-SCX12
FH-SMX12

12 million-pixel camera

FH-SC12
FH-SM12
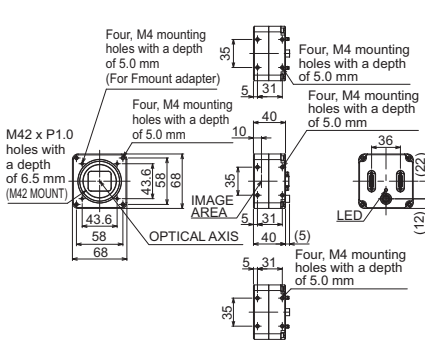
Digital CCD/CMOS Cameras

300,000-pixel camera
FZ-S
FZ-SC

14.5 22
12
Three, M2 mounting holes with a depth of 3.0 mm

Three, M2 mounting holes with a depth of 3.0mm (both sides)

40 (7.3)
28 14.5 22
28 10.5
12
20.5 (19.4)
6.5 (5.4)
24 (7.9)
1"-32UN-2A (C mount)

5.5 33.5
10.5 9.5 9.5
Two, M4 mounting holes with a depth of 5.5 mm
1/4" 20UNC with a depth of 5.5 mm
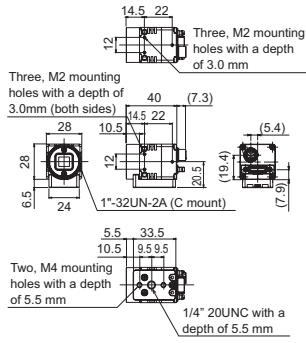
2 million-pixel camera
FZ-S2M
FZ-SC2M

14.5 29
12
Three, M2 mounting holes with a depth of 3.0 mm

46.5 (7.3)
14.5 29
28 10.5
12
20.5 (19.4)
6.5 (5.4)
28 24 (7.9)
1"-32UN-2A (C MOUNT)
Three, M2 mounting holes with a depth of 3.0mm (both sides)

5.5 40.5
9.5
10.5 9.5
Two, M4 mounting holes with a depth of 5.5 mm
1/4" 20UNC with a depth of 5.5 mm
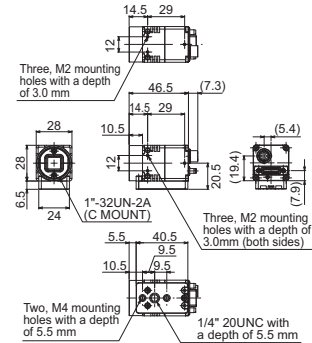
Small digital CCD cameras

Camera head

Flat camera
FZ-SF
FZ-SFC

26
8
Two-4.3 dia.

16.9
3.4 13.5
3
34
26
9.2 (From ccd surface)
3
17
22
4.5
10 12
5.5
M10.5
17
Four-4.3 dia.
3 dia.
3 dia.
3000
43
12.5 dia.
16 pin round connector
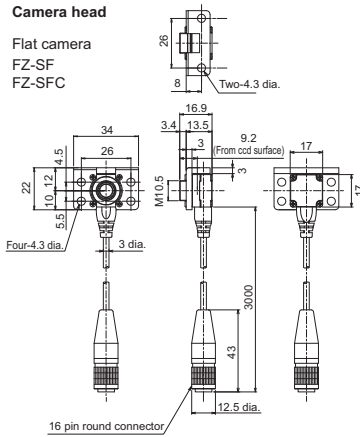
Pen-shaped camera
FZ-SP
FZ-SPC

9.5 16
9
Four, M1.7 mounting holes with a depth of 1.5 mm

44
33
11.5 16
12
6 12
M10.5
9
9.2 (From ccd surface)
Eight, M1.7 mounting holes with a depth of 1.5 mm
3 dia.
3000
43
12.5 dia.
16 pin round connector

12.7 9.6
7.5 20
Two, M3 mounting holes with a depth of 4 mm
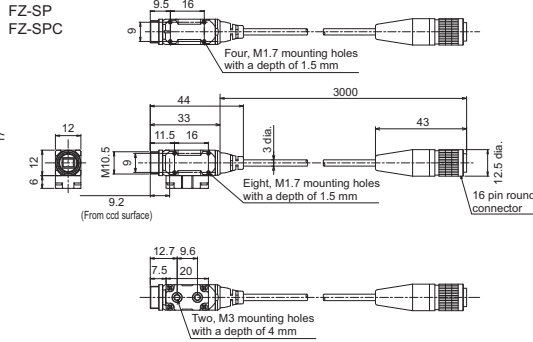
Camera amplifier

Can be used for both flat cameras and pen-shaped cameras

11 22
12
Three, M2 mounting holes with a depth of 3.0 mm

(43.8)
36.5 (6.5)
11 22
28 7
12
(8.8 dia.) 5.4
5.4
(20.7)
8.5
28 24
6.5
Three, M2 mounting holes with a depth of 3.0 mm

2 7 9.5 9.5
33.5
Two, M4 mounting holes with a depth of 5.5 mm
1/4" 20UNC with a depth of 5.5 mm
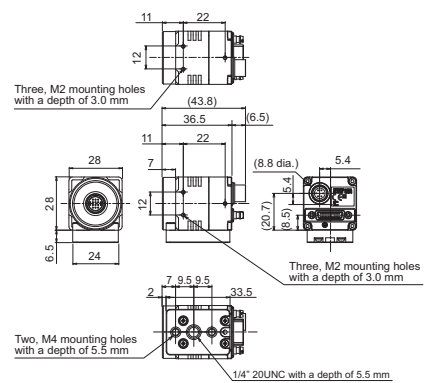
Intelligent Compact Digital CMOS Cameras

Narrow view / Standard
FZ-SQ010F
FZ-SQ050F

46
Optical axis
45
67
Polarizing Filter Attachment

1
(94.8)
32
9
11 38 8
(57) 4.8

44
20
Mounting Bracket *1
1/4-20UNC Depth: 6
Four, M4 Depth: 6
20
38
42
(25)

Mounting Hole Dimensions
Two, 4.5 dia.
20±0.1
Tightening torque: 1.2 N·m
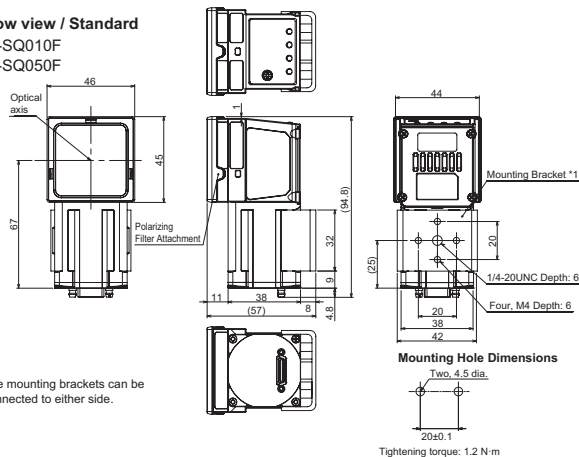
*1. The mounting brackets can be connected to either side.

Wide View
FZ-SQ100F (long-distance)
FZ-SQ100N (short-distance)

46
Optical axis
45
67
Polarizing Filter Attachment

1
(94.8)
32
9
3 38 8
(49) 4.8

44
20
Mounting Bracket *1
1/4-20UNC Depth: 6
Four, M4 Depth: 6
20
38
42
(25)

Mounting Hole Dimensions
Two, 4.5 dia.
20±0.1
Tightening torque: 1.2 N·m
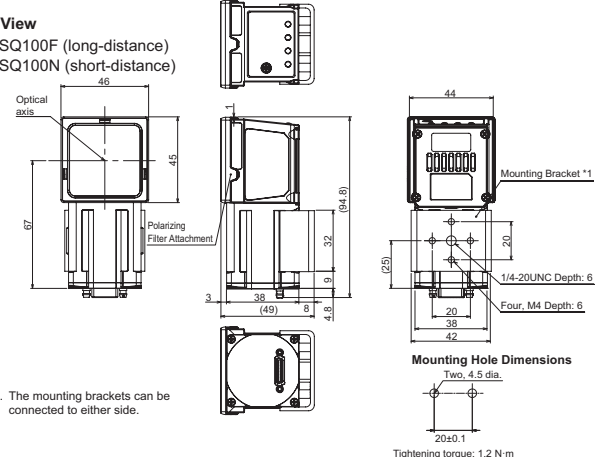
*1. The mounting brackets can be connected to either side.

Cables

Camera Cable

Camera Cable
FZ-VS3
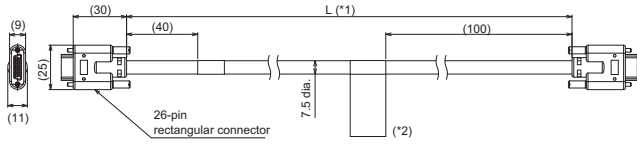
Bend resistant Camera Cable
FZ-VSB3
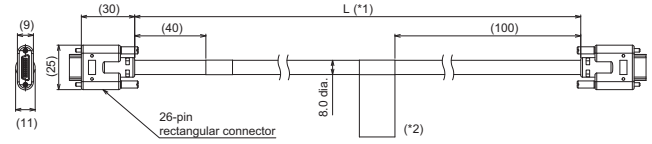
Super Bend resistant Camera Cable
FZ-VSBX
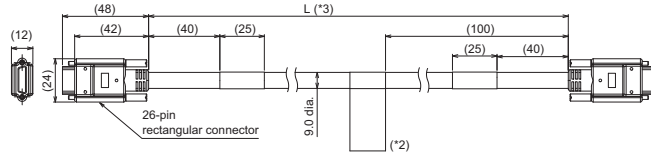
Right-angle Camera Cable
FZ-VSL3
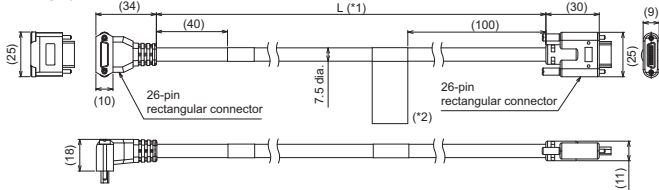
Bend resistant Right-angle Camera Cable
FZ-VSLB3
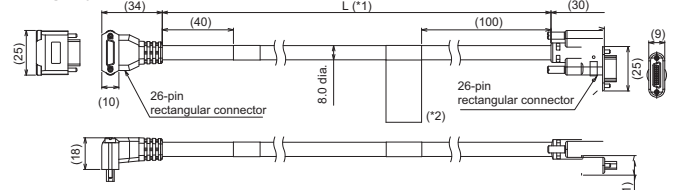
Long-distance Camera Cable
FZ-VS4
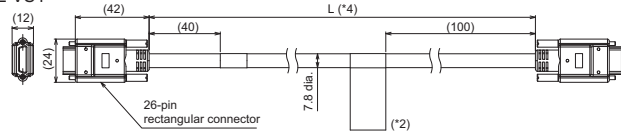
Long-distance Right-angle Camera Cable
FZ-VSL4
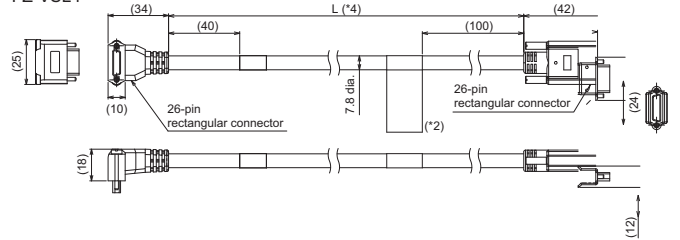
*1. Cable is available in 2m/3m/5m/10m.
*2. Each camera cables has polarity.
  Please ensure that the name plate side of the cable is connected to the controller.
*3. Cable is available in 5m/10m.
*4. Cable is available in 15m.

Camera Cable Extension Unit

FZ-VSJ

Camera Cable Connector (Camera side)
POWER LED Indicator
Four, 3.4 dia.
Camera Cable Connector (Controller side)
Power terminal
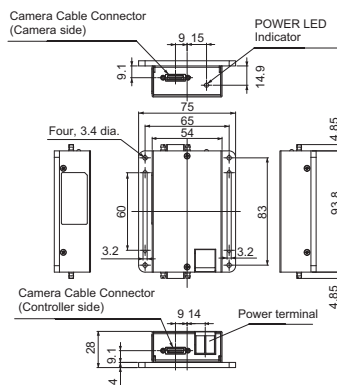
Extension Tubes for Small Camera

FZ-LESR

Extension tubes 5 mm
Extension tubes 10 mm
Extension tubes 15 mm
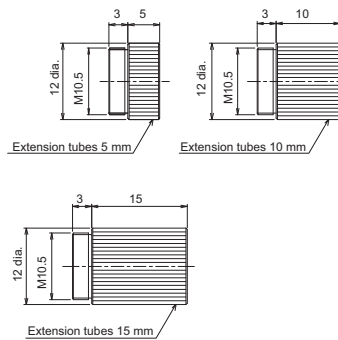
Lens for Small Camera

FZ-LES Series

Diaphragm adjustment knob
Diaphragm look screw (M1.4)
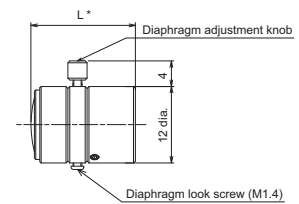
* Overall length is available in 16.4mm/19.7mm/23.1mm/25.5mm.

Encoder Cable

FH-VR
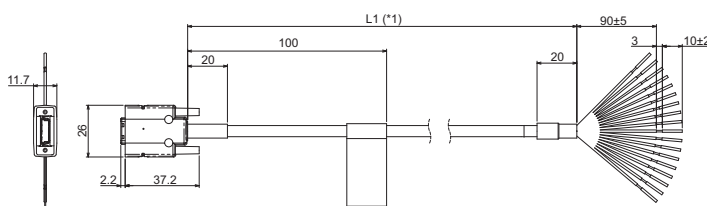
*1. Cable is available in 1.5 m.

Parallel I/O Cable

XW2Z-S013-□

UNFUSED PART
FUSED PART
CABLE MARK
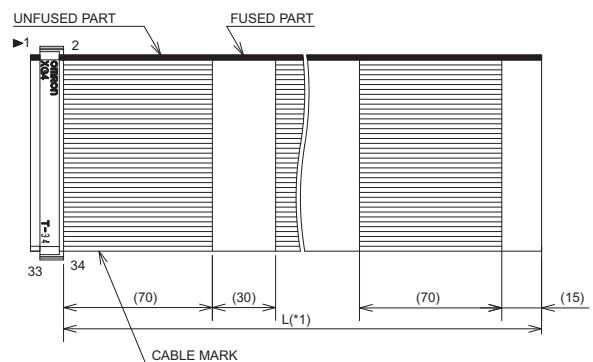
*1. Cable is available in 2m/5m.

Touch Panel Monitor

FH-MT12

Mounting plate thickness 1.6-4.8

8-M4 Effective screw length 6

Panel cutout dimensions
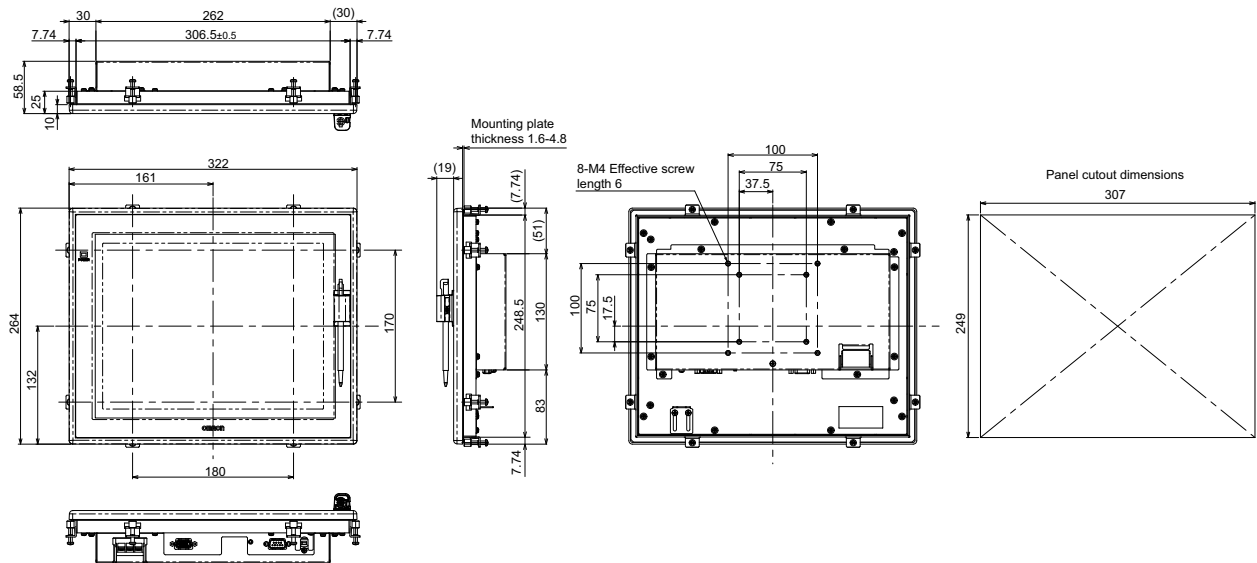
DVI-Analog Conversion Cable for Touch Panel Monitor/LCD Monitor

FH-VMDA

L (*1)

45±5   10±2   45±5

17-pin DVI connector

15-pin D-SUB connector
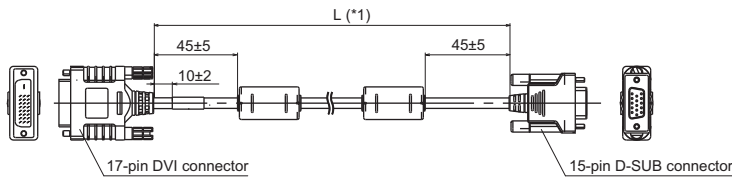
RS-232C Cable for Touch Panel Monitor

XW2Z-□□□PP-1

L (*1)

40

9-pin D-SUB connector

9-pin D-SUB connector

USB Cable for Touch Panel Monitor

FH-VUAB

L (*2)

12 ±0.25   45 ±5   10 ±2   45 ±5   12 ±0.25   11.5 max.

15

8 max.

4-pin USB A type connector

4-pin USB B type connector

10.5 max.
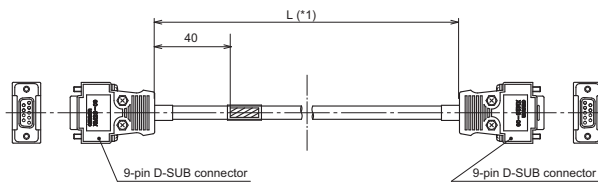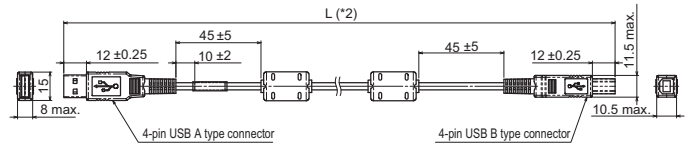
*1. Cable is available in 2m/5m/10m.
*2. Cable is available in 2m/5m.

LCD Monitor

FZ-M08

Mountable plate thickness:
1.6 to 5.0 mm

Four, M4
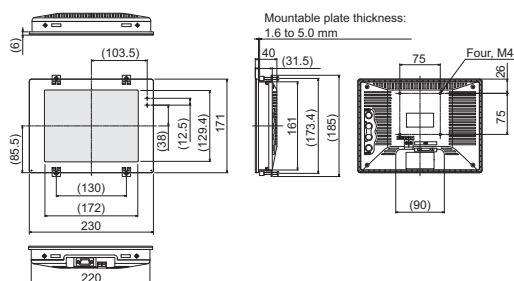
FH-L550 Series

Optical Chart

Meaning of Optical Chart

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

Camera

Extension Tube thickness: t □ (mm)

Lens

Camera distance (mm)

WD (mm)

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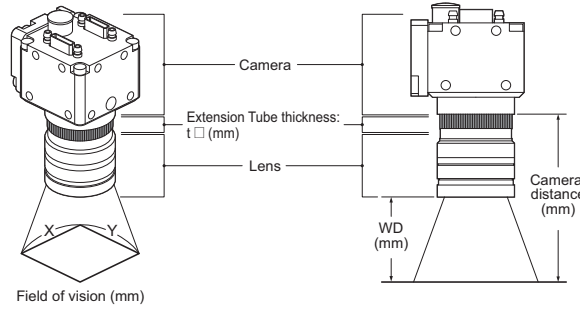
*1. The lengths of the fields of vision given in the optical charts are the lengths of the Y axis.
*2. The vertical axis represents WD for small cameras.

Standard Lenses

Small Digital CCD Cameras FZ-SF□, FZ-SP□ 300,000-pixel (Using FZ-LES Series)

Legend:
- FZ-LES30
- FZ-LES16
- FZ-LES6
- FZ-LES3
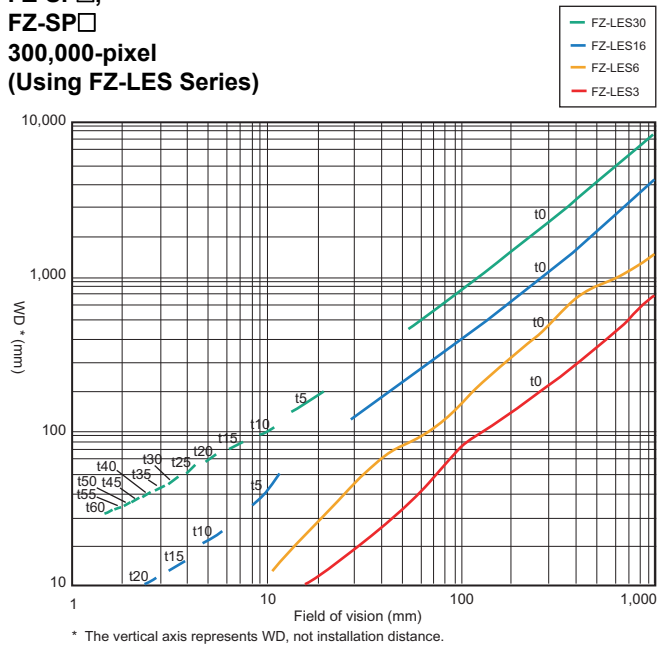
* The vertical axis represents WD, not installation distance.

High-speed Digital CMOS Camera FH-S□, Digital CCD Camera FZ-S□ 300,000-pixel (Using 3Z4S-LE SV-V Series)

3Z4S-LE

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

High-speed Digital CMOS Camera FH-S□X 400,000-pixel (Using 3Z4S-LE SV-V Series)

3Z4S-LE

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

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

3Z4S-LE

Legend:
- SV-10028H
- SV-7525H
- SV-5014H
- SV-3514H
- SV-2514H
- SV-1614H
- SV-1214H
- SV-0814H
- SV-0614H
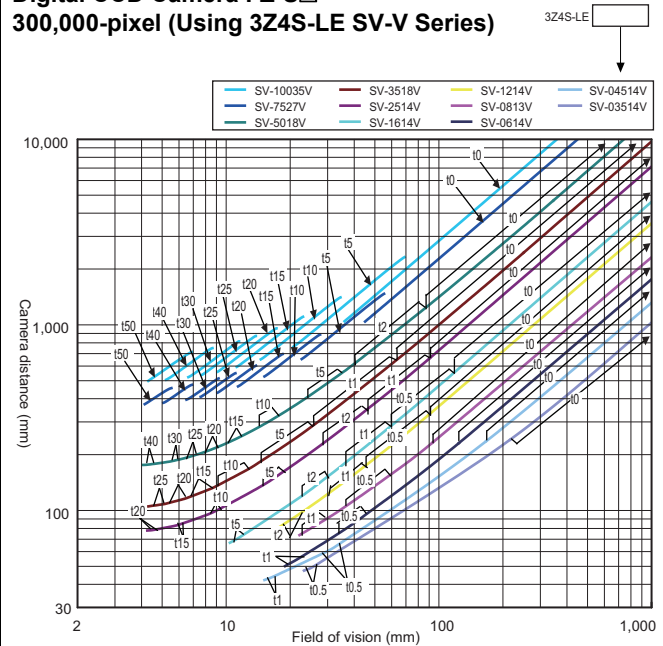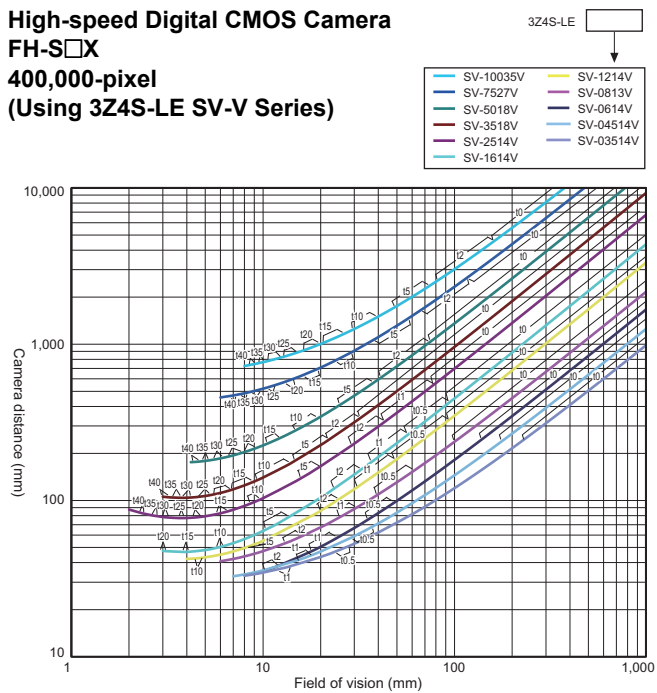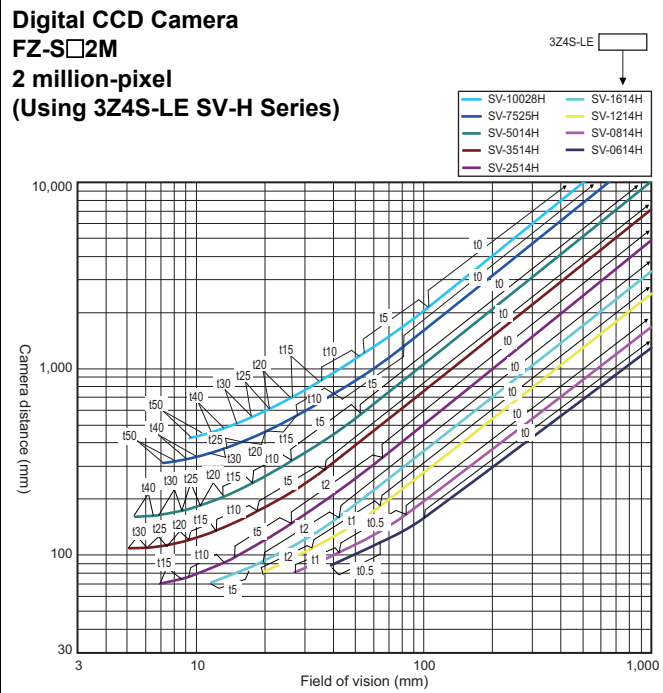
High-speed Digital CMOS Camera
FH-S□02
2 million-pixel
(Using 3Z4S-LE SV-H/VS-H1 Series)

3Z4S-LE

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

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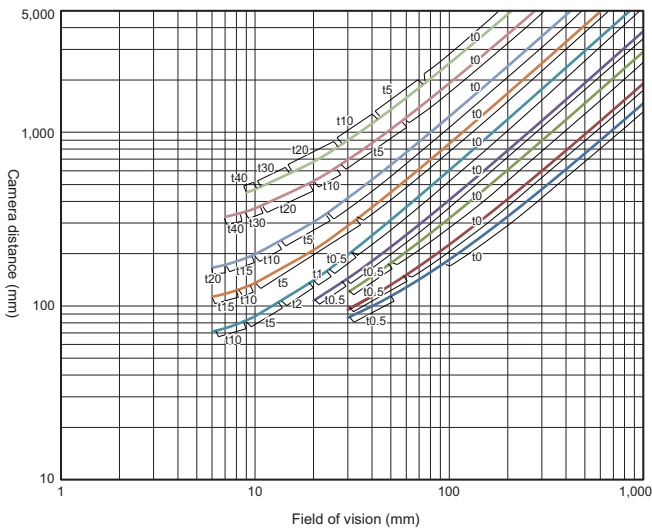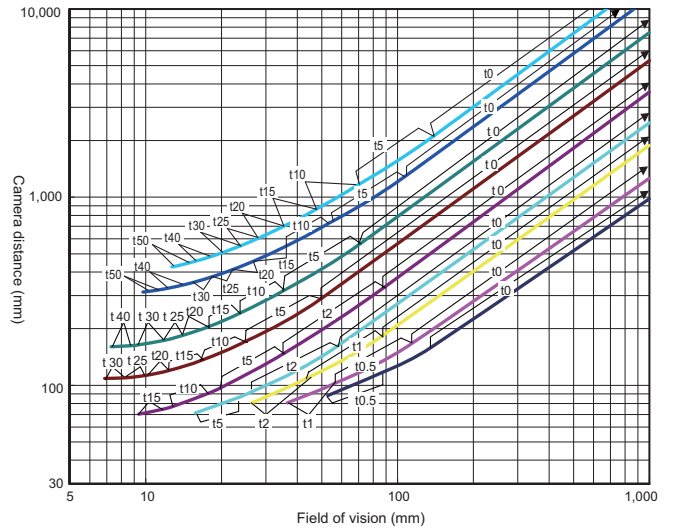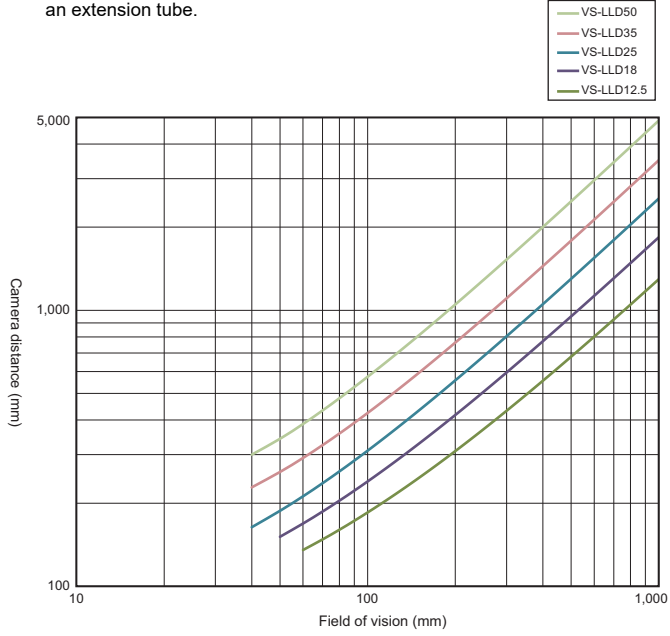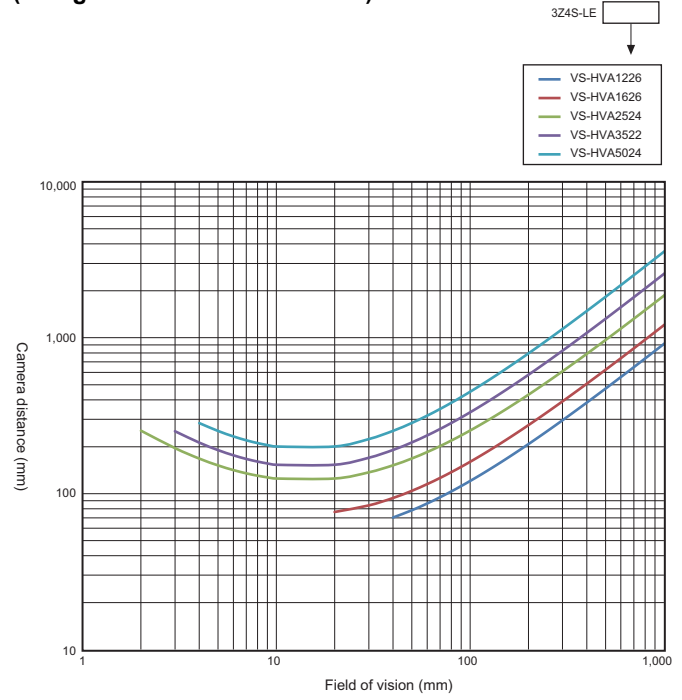**4 million-pixel**
(Using 3Z4S-LE SV-H/VS-H1 Series)

3Z4S-LE

- SV-10028H
- SV-7525H
- VS-5018H1
- VS-3514H1
- VS-2514H1
- VS-1614H1N
- VS-1214H1
- VS-0814H1
- VS-0618H1
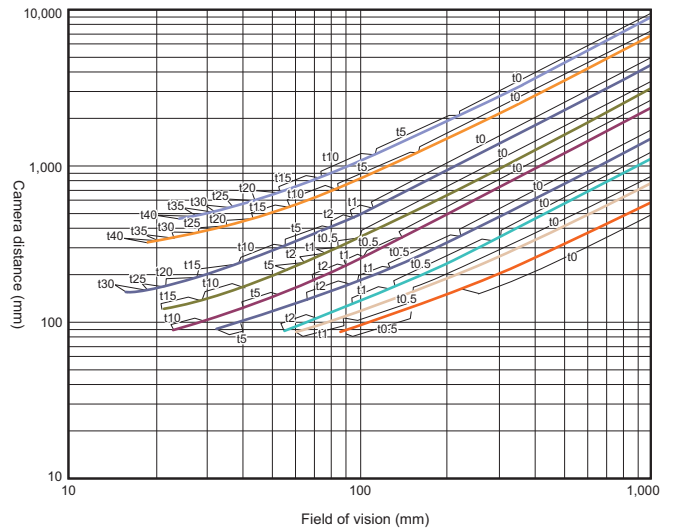
Digital CMOS Camera
FH-S□05R
5 million-pixel
(Using 3Z4S-LE SV-H Series)

3Z4S-LE

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

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

3Z4S-LE

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

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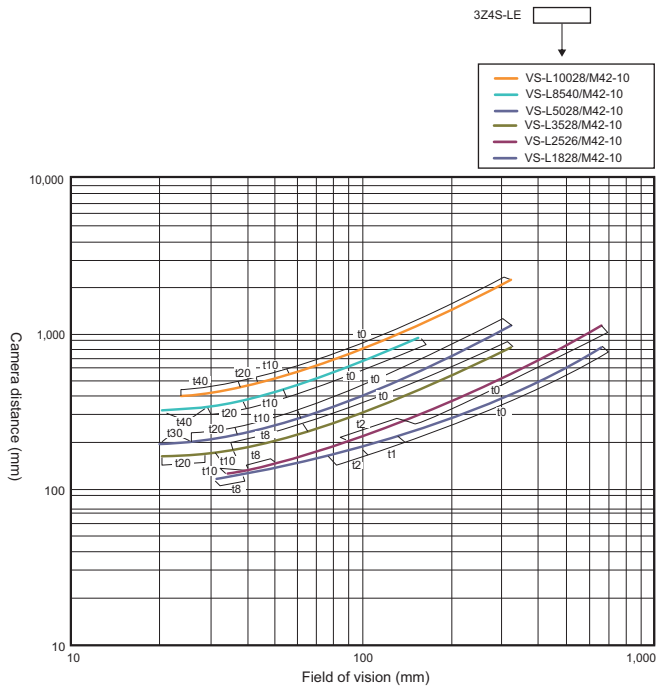## FH-S☐X12
12 million-pixel
(Using 3Z4S-LE VS-LLD Series)

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

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

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

3Z4S-LE [ ]

Legend:
- VS-HVA1226
- VS-HVA1626
- VS-HVA2524
- VS-HVA3522
- VS-HVA5024

High-speed Digital CMOS Camera
FH-S☐12
12 million-pixel
(Using 3Z4S-LE VS-L/M42-10 Series)

3Z4S-LE [ ]

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

Vibrations and Shocks Resistant Lenses/Telecentric Lenses

**High-speed Digital CMOS Camera
FH-S□,
Digital CCD Camera
FZ-S□
300,000-pixel
(Using 3Z4S-LE VS-MCA Series)**

3Z4S-LE

- VS-MCA75
- VS-MCA50
- VS-MCA35
- VS-MCA30
- VS-MCA25
- VS-MCA20
- VS-MCA15
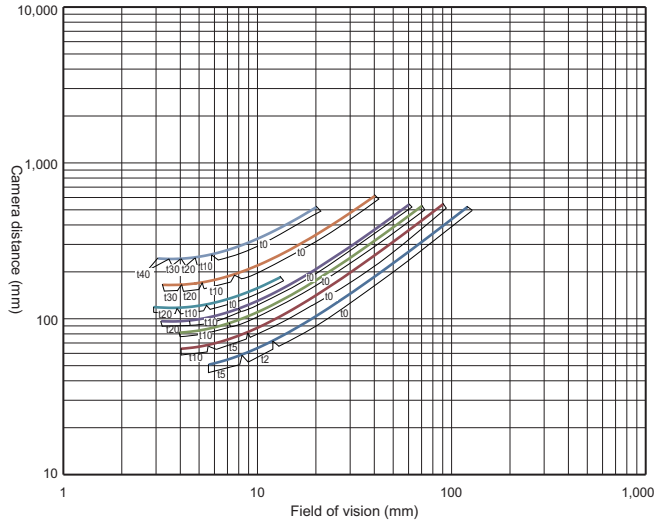
**High-speed Digital CMOS Camera
FH-S□X
400,000-pixel
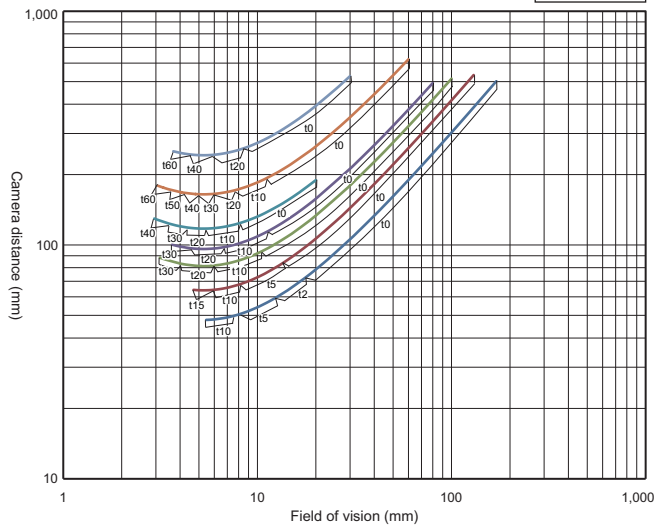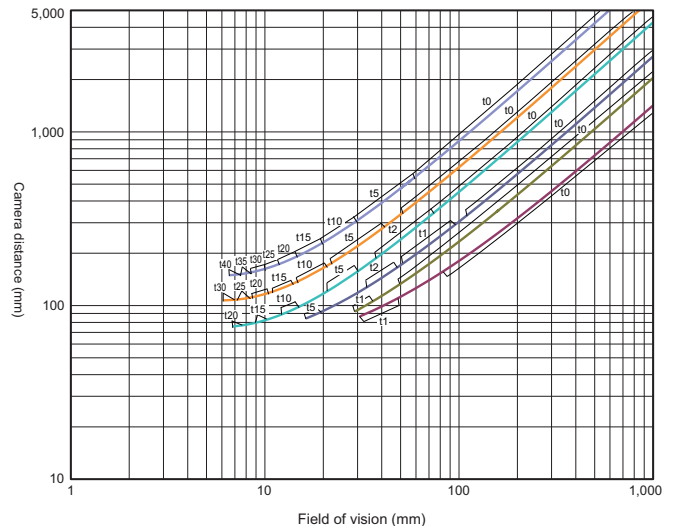(Using 3Z4S-LE VS-MCA Series)**

3Z4S-LE

- VS-MCA75
- VS-MCA50
- VS-MCA35
- VS-MCA30
- VS-MCA25
- VS-MCA20
- VS-MCA15
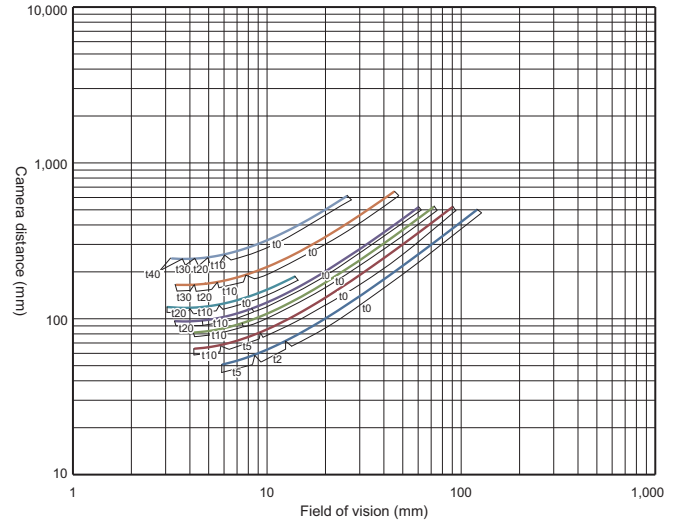
**Digital CCD Camera
FZ-S□2M
2 million-pixel
(Using 3Z4S-LE VS-MCA Series)**

3Z4S-LE

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

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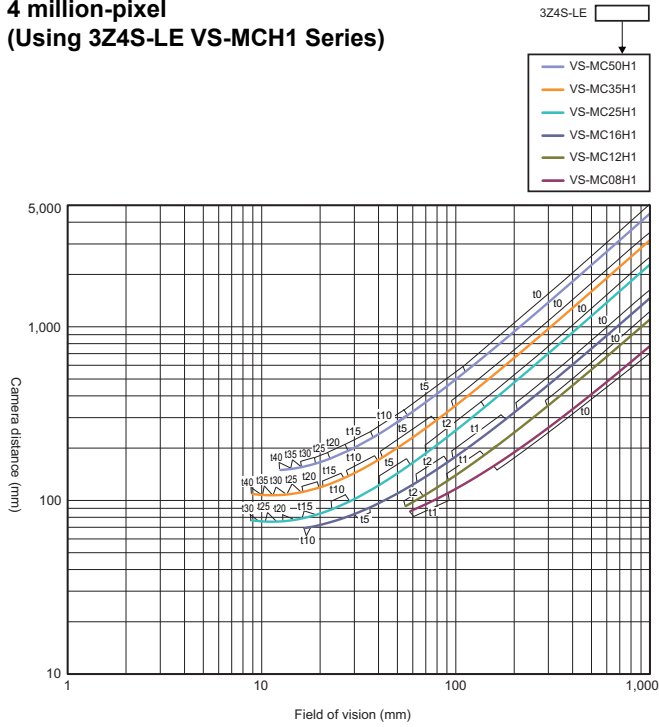2 million-pixel
(Using 3Z4S-LE VS-MCH1 Series)**

3Z4S-LE

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

FH-L550 Series

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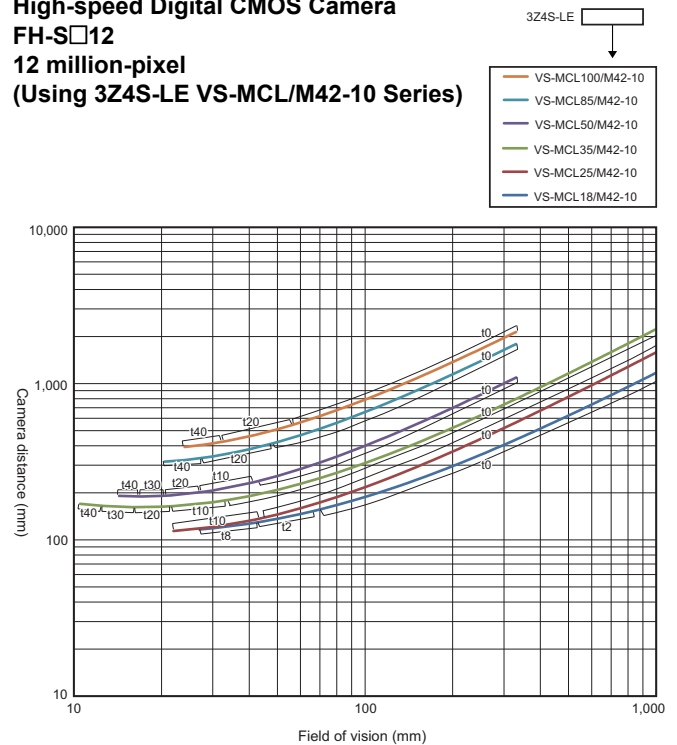## FH-S□04
4 million-pixel
(Using 3Z4S-LE VS-MCH1 Series)

3Z4S-LE [ ]

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

Camera distance (mm) vs Field of vision (mm)

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

3Z4S-LE [ ]

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

Camera distance (mm) vs Field of vision (mm)

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

3Z4S-LE [ ]

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

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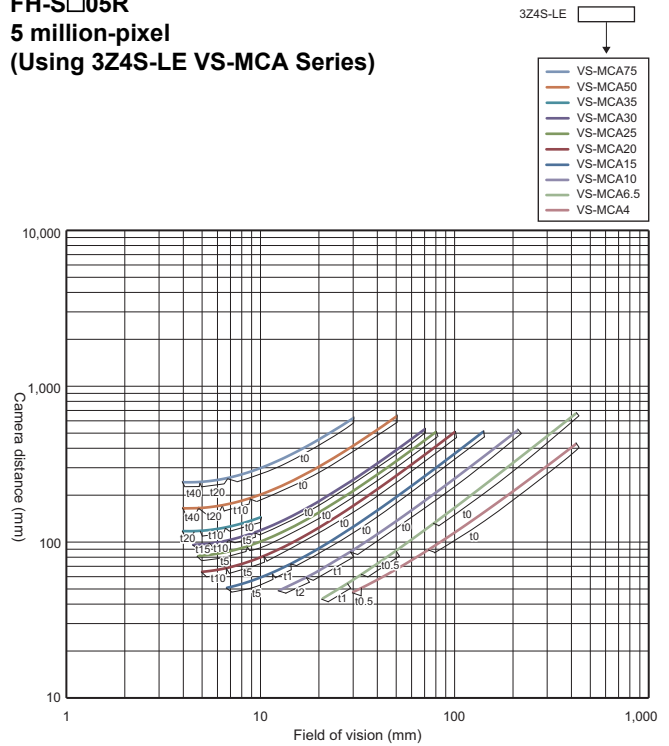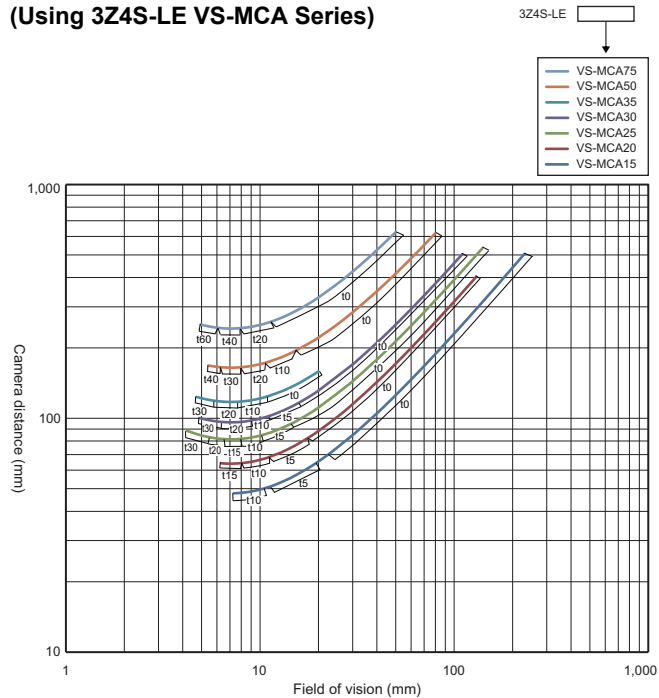
High-speed Digital CMOS Camera
FH-S□12
12 million-pixel
(Using 3Z4S-LE VS-MCL/M42-10 Series)

3Z4S-LE [ ]

—	VS-MCL100/M42-10
—	VS-MCL85/M42-10
—	VS-MCL50/M42-10
—	VS-MCL35/M42-10
—	VS-MCL25/M42-10
—	VS-MCL18/M42-10

Camera distance (mm) vs Field of vision (mm)

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Related Manuals

Man.No.	Model number	Manual
Z365	FH/FHV7	Vision System FH/FHV7 Series User's Manual
Z341	FH/FHV7	Vision System FH/FHV7 series Processing Item Function Reference Manual
Z342	FH/FHV7	Vision System FH/FHV7 Series User's Manual for Communications Settings
Z343	FH/FHV7	Vision System FH/FHV7 Series Operation Manual for Sysmac Studio
Z366	FH	Vision System FH series Hardware Setup Manual
Z367	FH	Vision System FH series Macro Customize Functions Programming Manual
Z437	FH-UMAI	FH Application Software FH-UMAI Processing Item Function Reference Manual
Z438	FH-UMAI	FH Application Software FH-UMAI Version Update Tool Operating Manual

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