

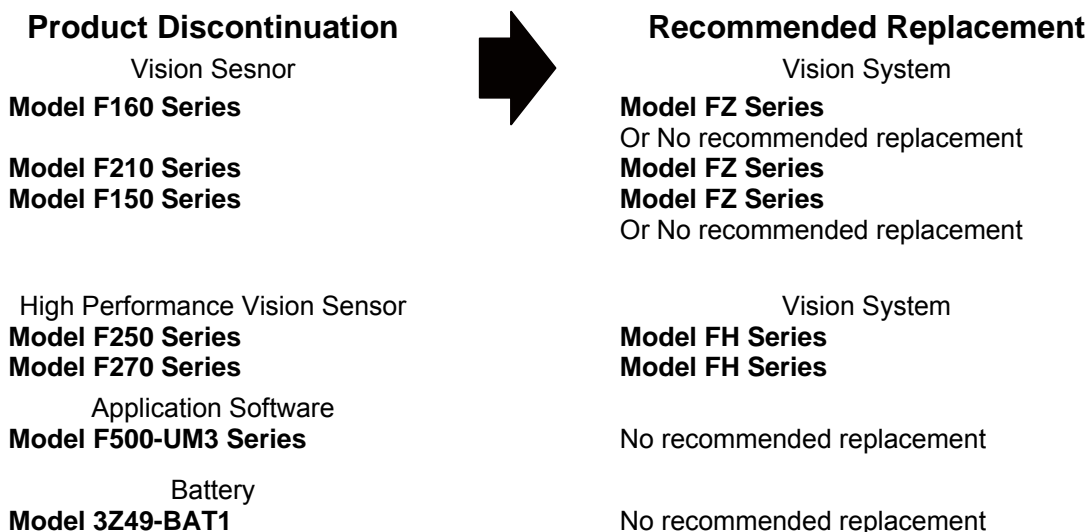
NO: VS-050 PRODUCT: Legacy Vision Sensors
 DATE: April 2015 TYPE: Discontinuation Notice

Older Vision Sensors to be Discontinued February 2016

F150, F160, F210, F250, F270, series, F500-UM3, and Battery 3Z49-BAT1

Last Order Date: February 2016

Note: Date is subject to change based on raw materials and components availability at the factory.



Caution on Applying Recommended Replacements

Please replace a whole vision system, because the Camera, the Camera Cable, the Monitor and the Monitor Cable, etc. cannot be used with the replacement Controller.

Affected Parts

Product discontinuation	Recommended replacement
F160-C10V2	FZ5-L350
F160-C10E-2	FZ5-L350
F160-C15E-2	FZ5-L355
F160-C10CP	FZ5-L350
F160-C10CF	FZ5-L350
F160-S2	FZ-S
F160-SLC20	FZ-SQ050F
F160-SLC50	FZ-SQ050F
F160-KP 2M	No recommended replacement
F160-KP 5M	No recommended replacement
F160-N256S	No recommended replacement
F160-DU	FZ-DU
F160-PCB2	No recommended replacement
F160-PCBE-2	No recommended replacement




Product discontinuation	Recommended replacement
F160-VKP 2M	No recommended replacement
F160-VKP 5M	No recommended replacement
F160-VKP 10M	No recommended replacement
F160-VKP 15M	No recommended replacement
F160-VKP 20M	No recommended replacement
F160-VP 2M	FZ-VP 2M
F160-VP 5M	FZ-VP 5M
F160-VSR3 3M	No recommended replacement
F160-VSR3 5M	No recommended replacement
F160-VSR3 10M	No recommended replacement
F160-VSR3 15M	No recommended replacement
F160-VSR3 20M	No recommended replacement
F160-VSR3 25M	No recommended replacement
F160-VSR3 30M	No recommended replacement
F160-VSR3 35M	No recommended replacement
F160-VSR3 40M	No recommended replacement
F160-VSR4 3M	No recommended replacement
F160-VSR4 5M	No recommended replacement
F160-VSR4 10M	No recommended replacement
F160-VSR4 15M	No recommended replacement
F160-VSR4 20M	No recommended replacement
F210-C15	FZ5-L355
F210-C10	FZ5-L350
F250-C10	FH-1050-10
F250-C50	FH-1050-10
F250-C55	FH-1050-10
F270-C10	FH-3050-10
F270-C15	FH-3050-10
F500-UM3M	No recommended replacement
F500-UM3ME	No recommended replacement
F500-UM3F	No recommended replacement
F500-UM3FE	No recommended replacement
F150-M05L	FZ-M08
F150-S1A	FZ-S
F150-SLC20	FZ-SQ050F
F150-SLC50	FZ-SQ050F
F150-SL20A	FZ-SQ050F
F150-SL50A	FZ-SQ050F
F150-KP 2M	No recommended replacement
F150-KP 5M	No recommended replacement
F150-KP 10M	No recommended replacement
F150-KP 15M	No recommended replacement
F150-KP 20M	No recommended replacement
F150-VS 3M	FZ-VS3 3M
F150-VS 4.5M	No recommended replacement
F150-VS 5M	FZ-VS3 5M
F150-VS 10M	FZ-VS3 10M
F150-VS 15M	FZ-VS4 15M
F150-VS 20M	No recommended replacement
F150-VS 25M	No recommended replacement
F150-VS 30M	No recommended replacement
F150-VS 35M	No recommended replacement
F150-VS 40M	No recommended replacement
F150-VSLB 5M	FZ-VSLB3 5M
F150-VSLB 10M	FZ-VSLB3 10M



Product discontinuation	Recommended replacement
F150-VSLB 15M	No recommended replacement
F150-VSLB 20M	No recommended replacement
F150-VSB-J 2M	No recommended replacement
F150-VSB-J 5M	No recommended replacement
F150-VSB-J 10M	No recommended replacement
F150-VSB 3M	FZ-VSB3 3M
F150-VSB 5M	FZ-VSB3 5M
F150-VSB 10M	FZ-VSB3 10M
F150-VSB 15M	No recommended replacement
F150-VSB 20M	No recommended replacement
F150-VM 2M	FZ-VM 2M
F150-VM 5M	FZ-VM 5M
F150-VM 10M	No recommended replacement
F150-VM 15M	No recommended replacement
F150-VM 20M	No recommended replacement
F150-VM 25M	No recommended replacement
F150-VM 30M	No recommended replacement
F150-LTC50	No recommended replacement
F150-LTC50L	No recommended replacement
F150-LTC20	No recommended replacement
F150-LTC20L	No recommended replacement
F150-LT10	No recommended replacement
F150-LT10A	No recommended replacement
F150-LT20A	No recommended replacement
F150-LT50A	No recommended replacement
F150-LE20	No recommended replacement
F150-LE50	No recommended replacement
F150-L2	No recommended replacement
3Z49-BAT1	No recommended replacement

See the following tables for details of the differences.



Detail of Differences



Body Color

Product discontinuation Model F160-C□□	Recommended replacement Model FZ5-L35□
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Model F160-C□□</p>  </div> <div style="text-align: center;"> <p>Model F210-C□□</p>  </div> </div>	




Product discontinuation Model F250-C□□ / F270-C□□	Recommended replacement Model FH-1050-10 / FH-3050-10
	

Body Color (continued)

<p>Product discontinuation Model F160-S2 / F150-S1A</p>	<p>Recommended replacement Model FZ-S</p>
	

<p>Product discontinuation Model F150-M05L</p>	<p>Recommended replacement Model FZ-M08</p>
	

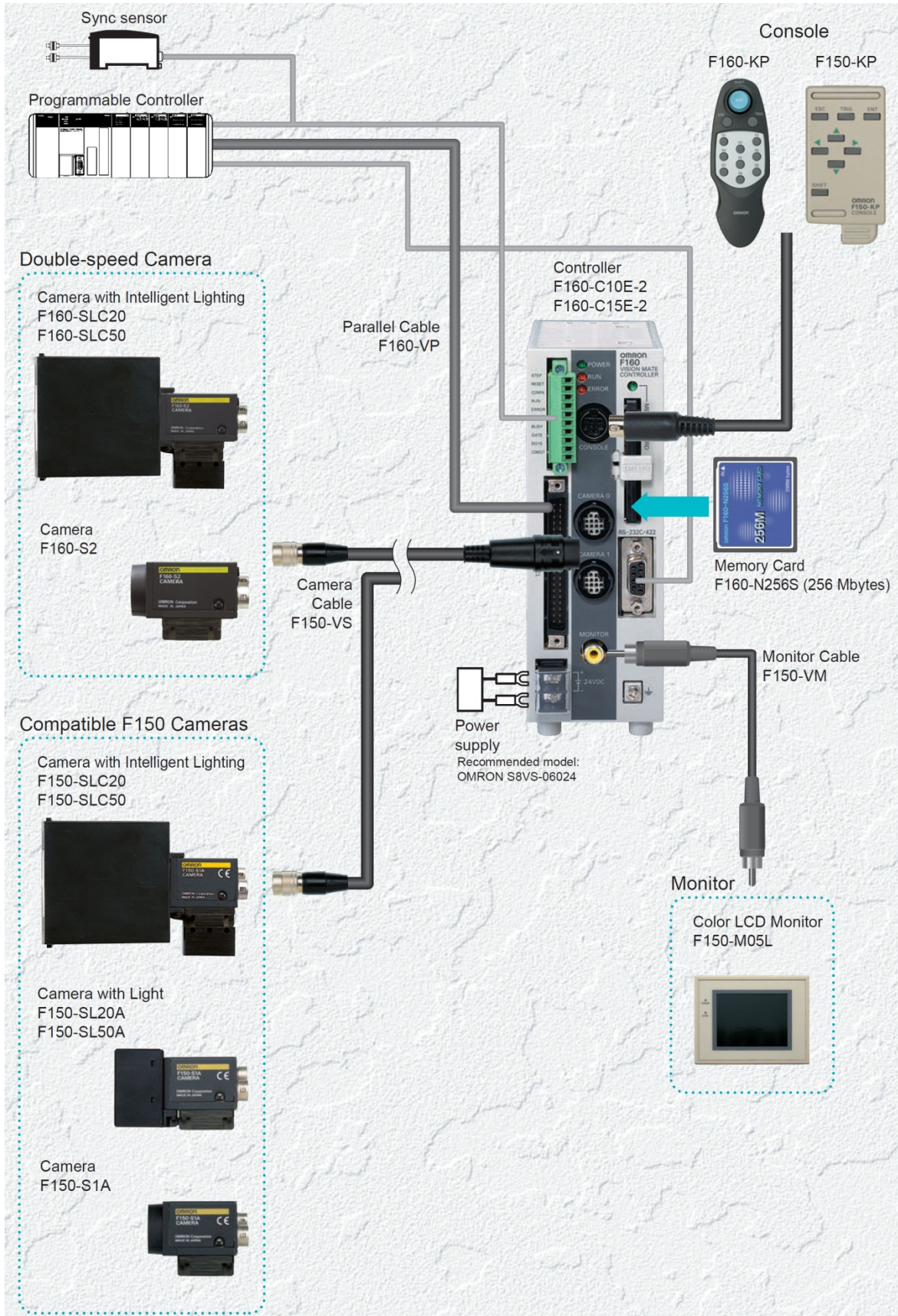
<p>Product discontinuation Model F160-KP / F150-KP</p>	<p>Recommended replacement No recommended replacement</p>
<p>Model F160-KP Model F150-KP</p>  	

<p>Product discontinuation Model F150-SL□□A, Model F160-SLC□□</p>	<p>Recommended replacement Model FZ-SQ050F</p>
<p>Model F150-SL□□A Model F150-SLC□□ F160-SLC□□</p>  	

Wiring Diagrams

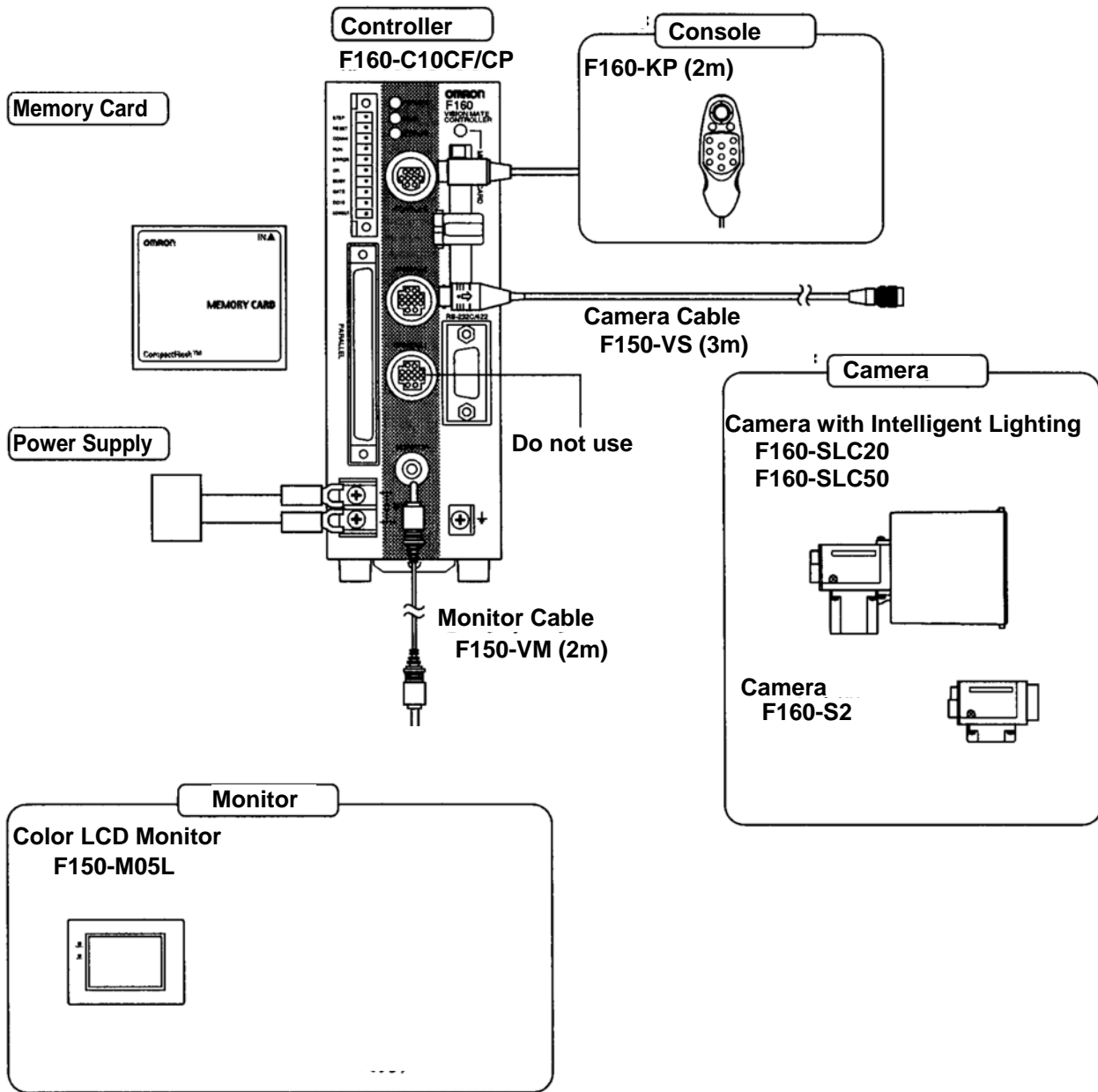
Product discontinuation Model F160 and F210 Series

Model F160-C10V2/C10E-2/C15E-2
Model F210-C10/C15

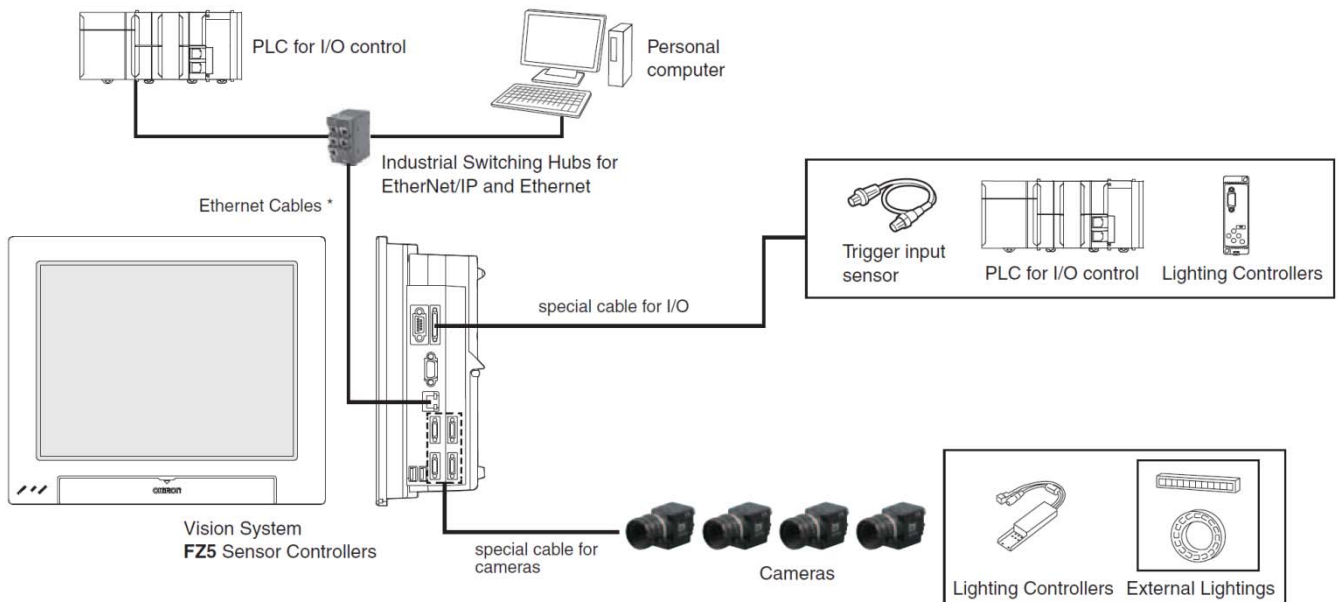
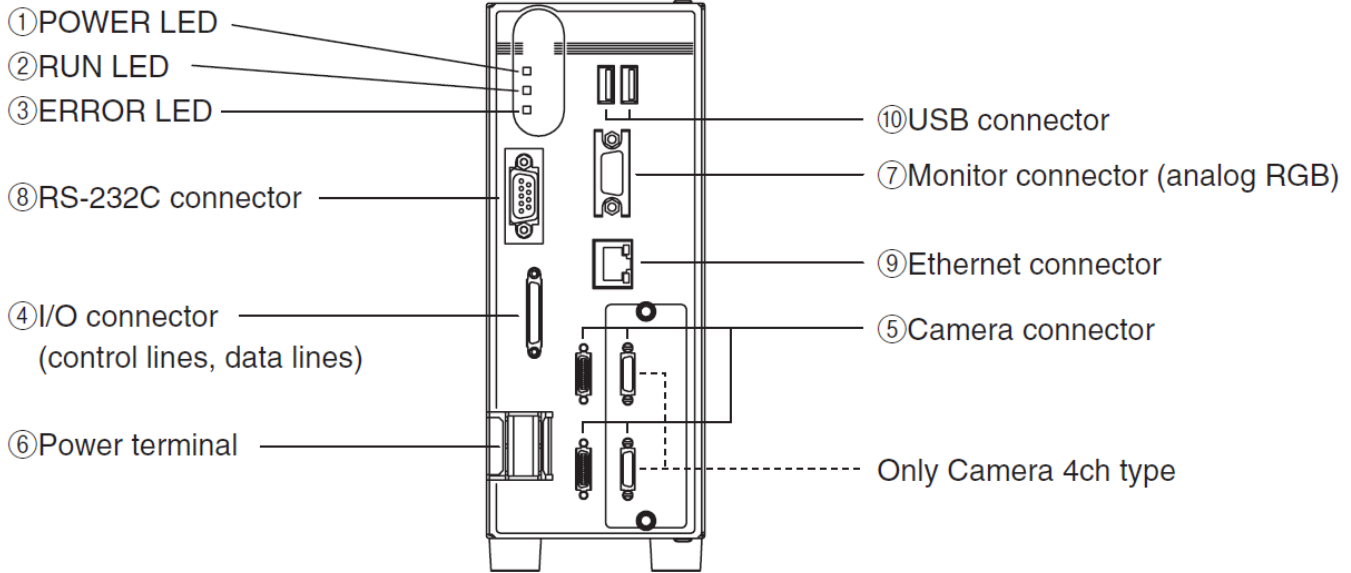


Product discontinuation
Model F160 and F210 Series

Model F160-C10CF/CP

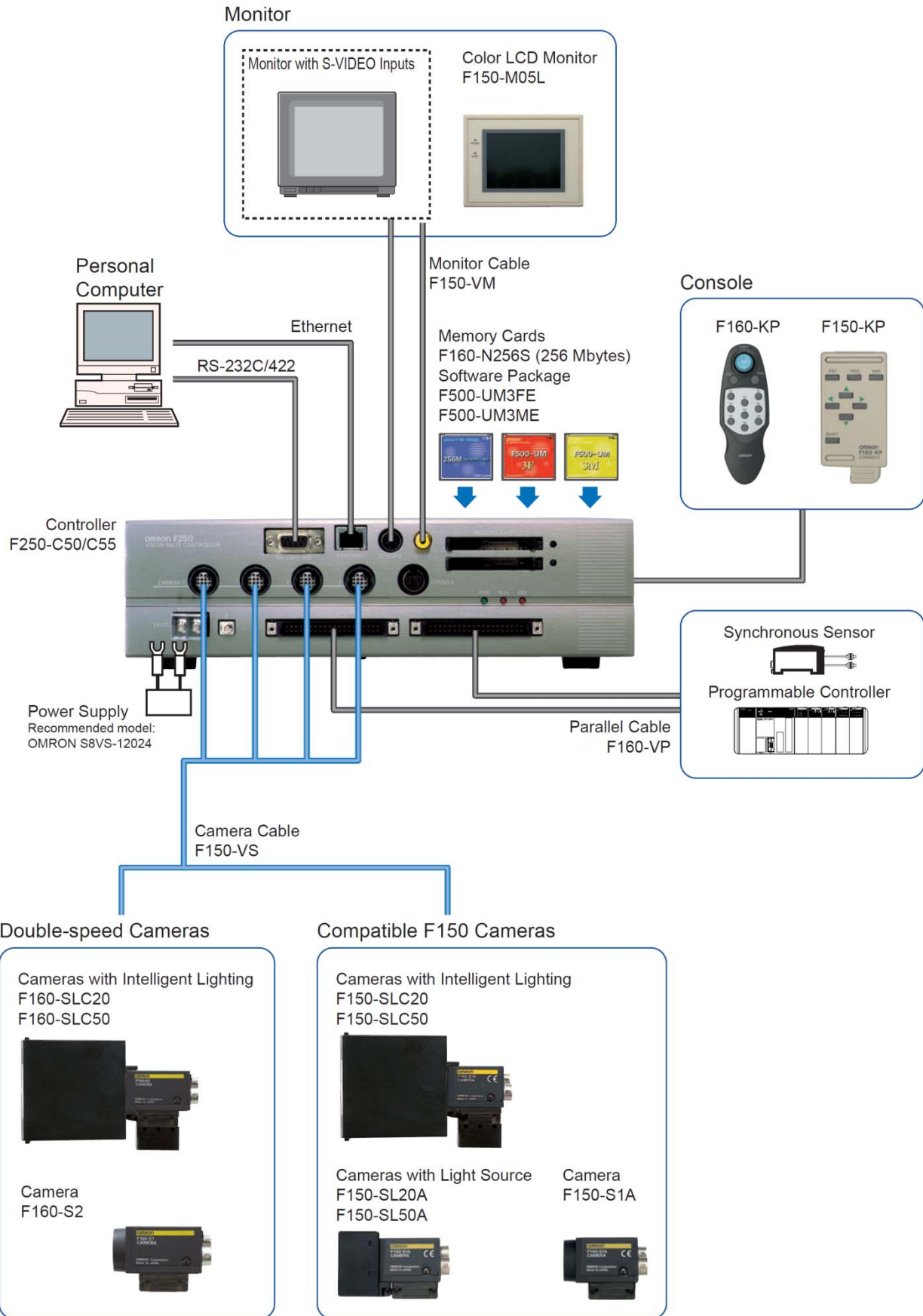


**Recommended replacement
Model FZ5-L350 / L355**

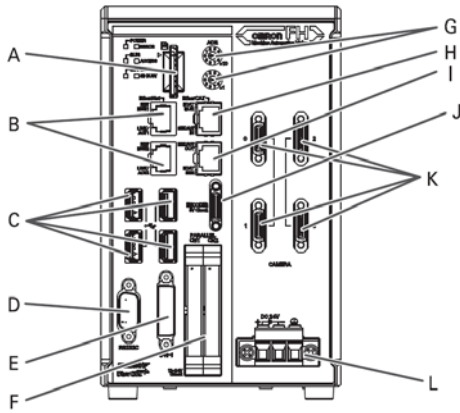


* To use Straight or cross STP (shielded twisted-pair) cable of category 5 or higher for Ethernet and RJ45 connector.

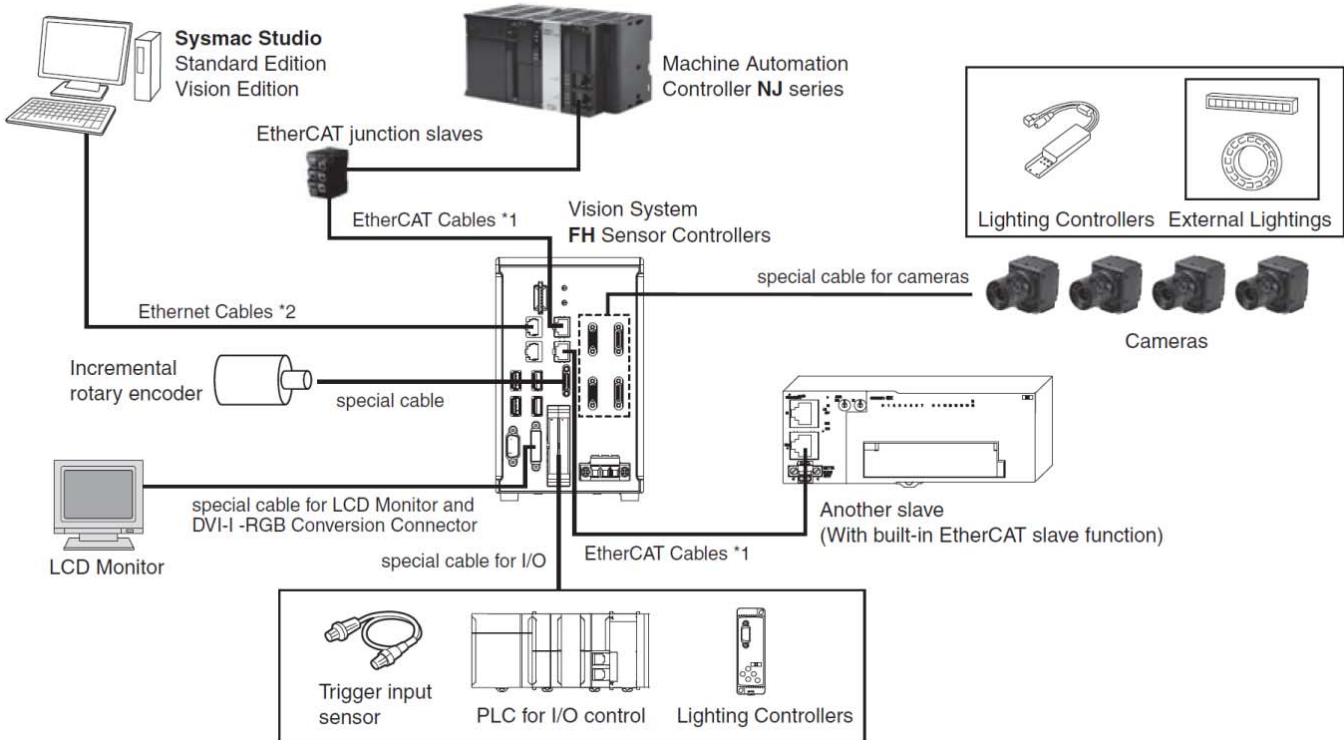
**Product discontinuation
Model F250 and F270 Series**



Recommended replacement Model FH-1050-10/FH-3050-10

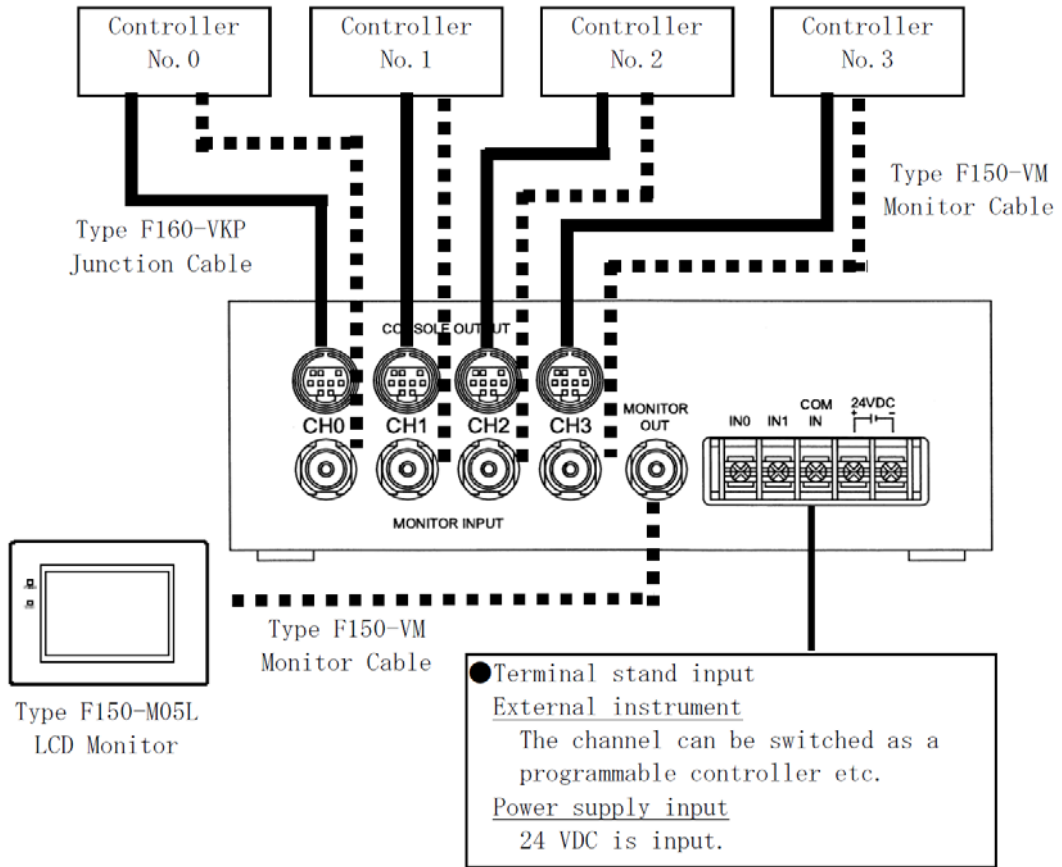


Connector name	Description						
A	SD memory card installation connector Install the SD memory card. Do not plug or unplug the SD memory card during measurement operation. Otherwise measurement time may be affected or data may be destroyed.						
B	EtherNet connector Connect an EtherNet device. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Camera 2ch type</th> <th>Camera 4ch / 8ch type</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> </tr> <tr> <td style="text-align: center;"> Ethernet port and EtherNet/IP port are sharing use. </td> <td style="text-align: center;"> Upper port : Ethernet port Lower port : Ethernet port and EtherNet/IP port are sharing use. </td> </tr> </tbody> </table>	Camera 2ch type	Camera 4ch / 8ch type			Ethernet port and EtherNet/IP port are sharing use.	Upper port : Ethernet port Lower port : Ethernet port and EtherNet/IP port are sharing use.
Camera 2ch type	Camera 4ch / 8ch type						
Ethernet port and EtherNet/IP port are sharing use.	Upper port : Ethernet port Lower port : Ethernet port and EtherNet/IP port are sharing use.						
C	USB connector Connect a USB device. Do not plug or unplug it during measurement. Measurement time might be affected otherwise.						
D	RS-232C connector Connect an external device such as a PLC.						
E	DVI-I connector Connect a monitor.						
F	I/O(Parallel) connector(control lines, data lines) Connect the controller to external devices such as a sync sensor and PLC.						
G	EtherCAT address setup volume Used to set a station address (00 to 99) as an EtherCAT communication device.						
H	EtherCAT communication connector (IN) Connect the opposed EtherCAT device.						
I	EtherCAT communication connector (OUT) Connect the opposed EtherCAT device.						
J	Encoder connector Connect an encoder.						
K	Camera connector Camera connector No. is consistent with Camera Image Input No. of Sensor controller software. Check and connect them.						
L	Power supply terminal connector Connect a DC power supply. Wire the FH Sensor Controller independently on other devices. Wire the ground line. Be sure to ground the FH Sensor Controller alone. Perform wiring using the attached terminal block connector as referring to the description of wiring that connector.						

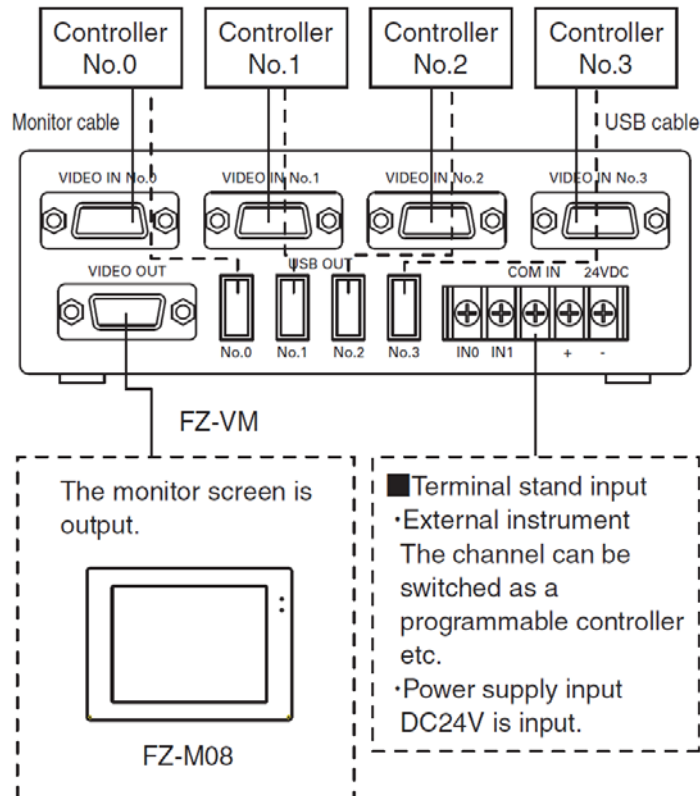


- *1. To use STP (shielded twisted-pair) cable of category 5 or higher with double shielding (braiding and aluminum foil tape) for EtherCAT and RJ45 connector.
- *2. To use STP (shielded twisted-pair) cable of category 5 or higher for Ethernet and RJ45 connector.

**Product discontinuation
Model F160-DU**



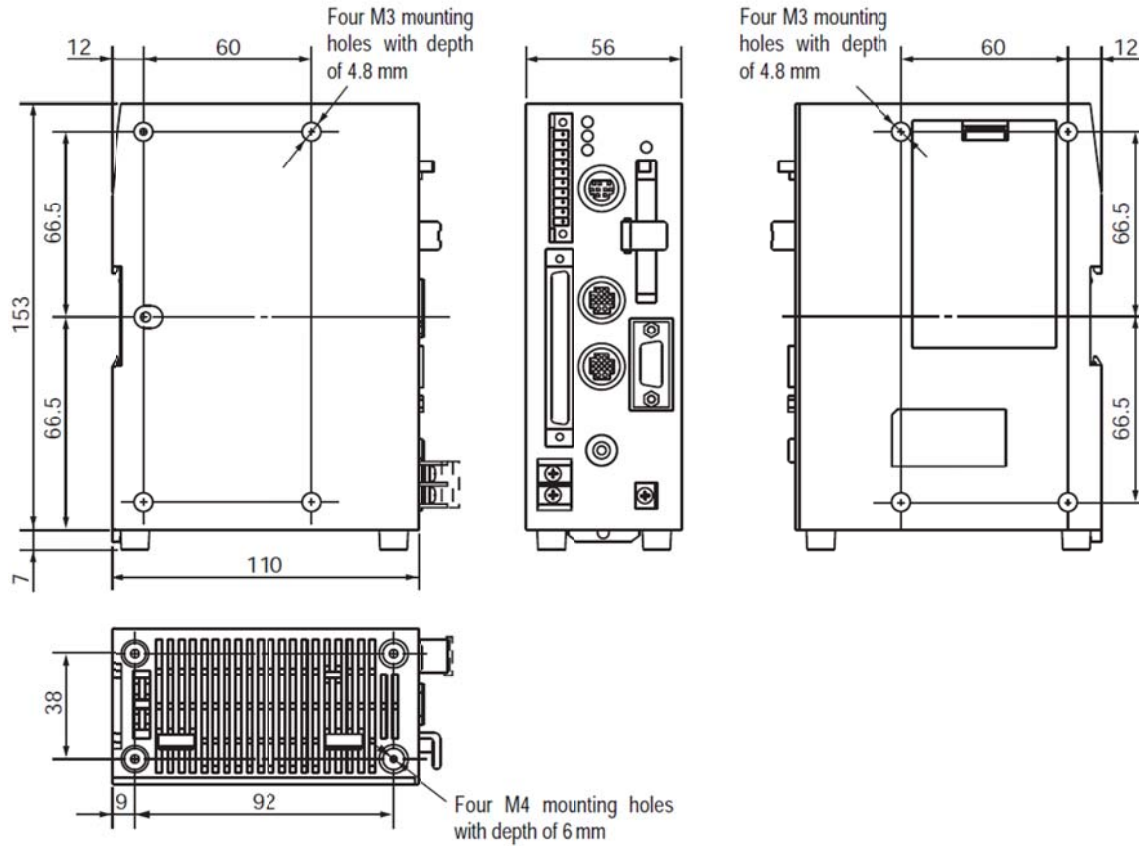
**Recommended replacement
Model FZ-DU**



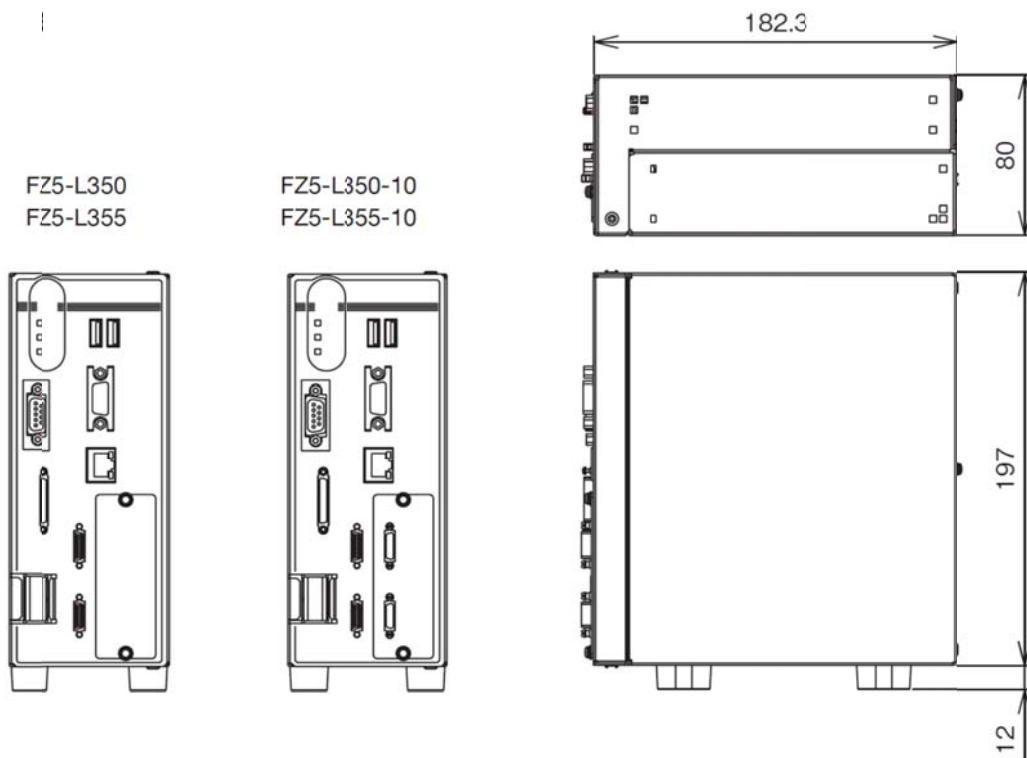
Dimensions

Controllers

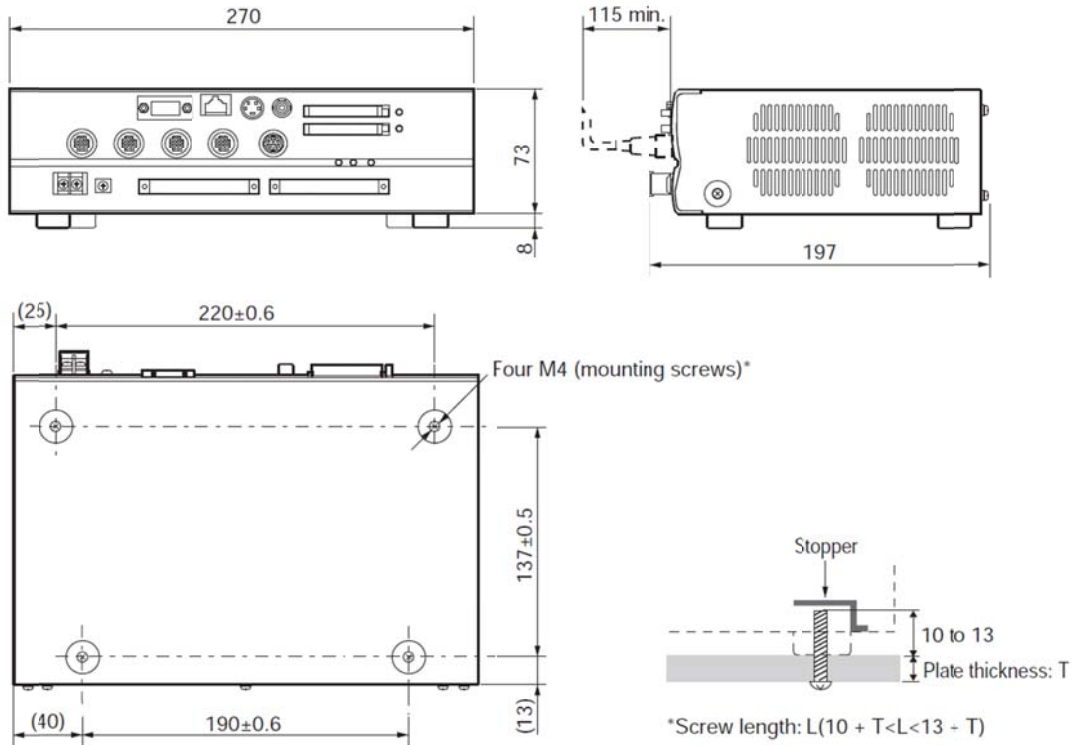
Product discontinuation Model F160-C□□ / Model F210-C□□



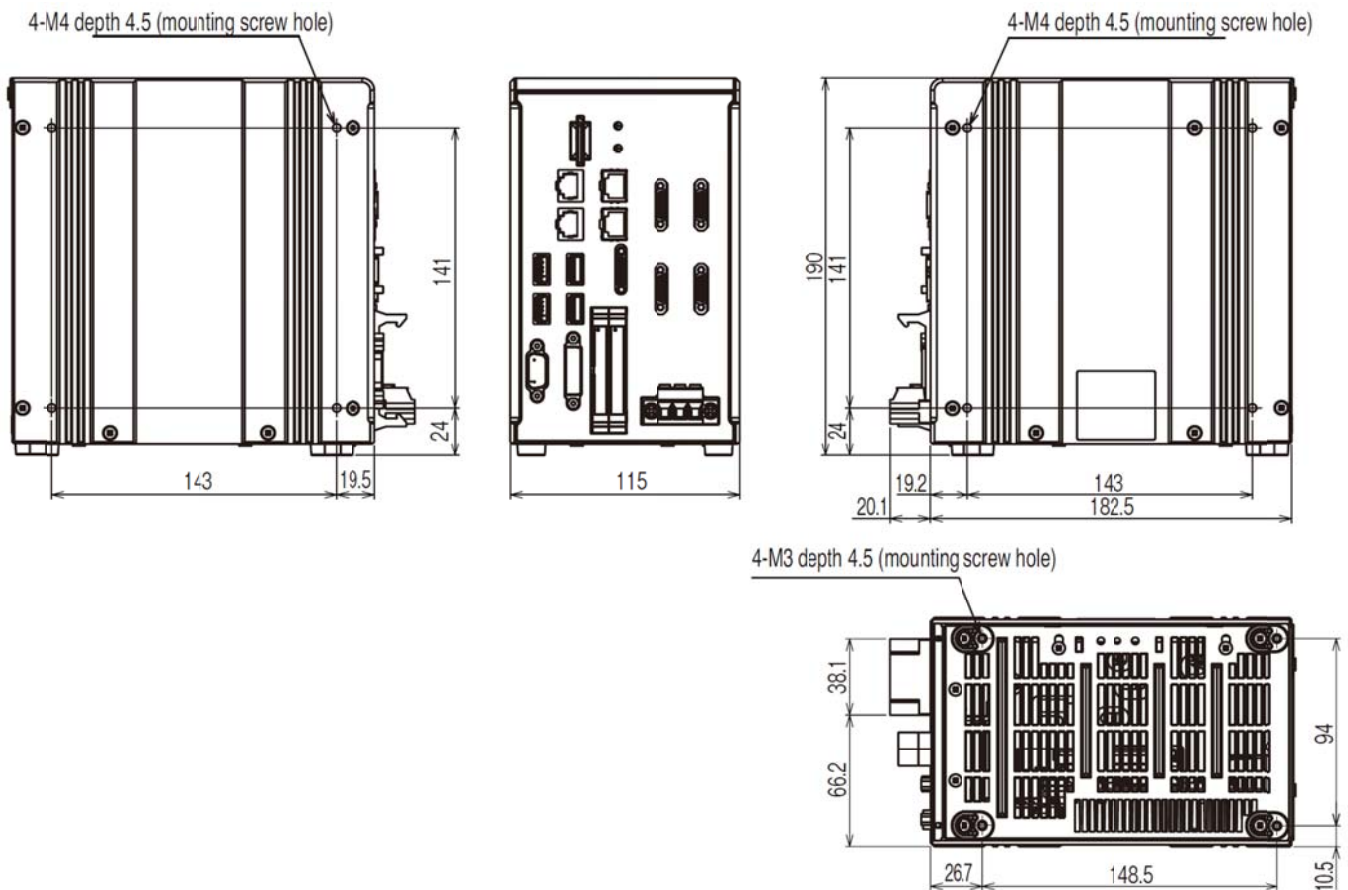
Recommended replacement Model FZ5-L350/355



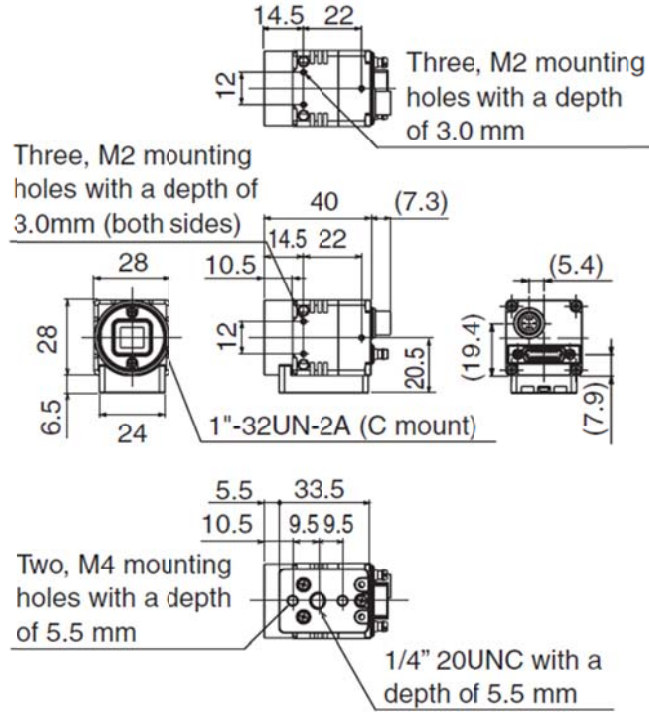
Product discontinuation
Model F250-C□□ / Model F270-C□□



Recommended replacement
Model FH-1050-10 / Model FH-3050-10



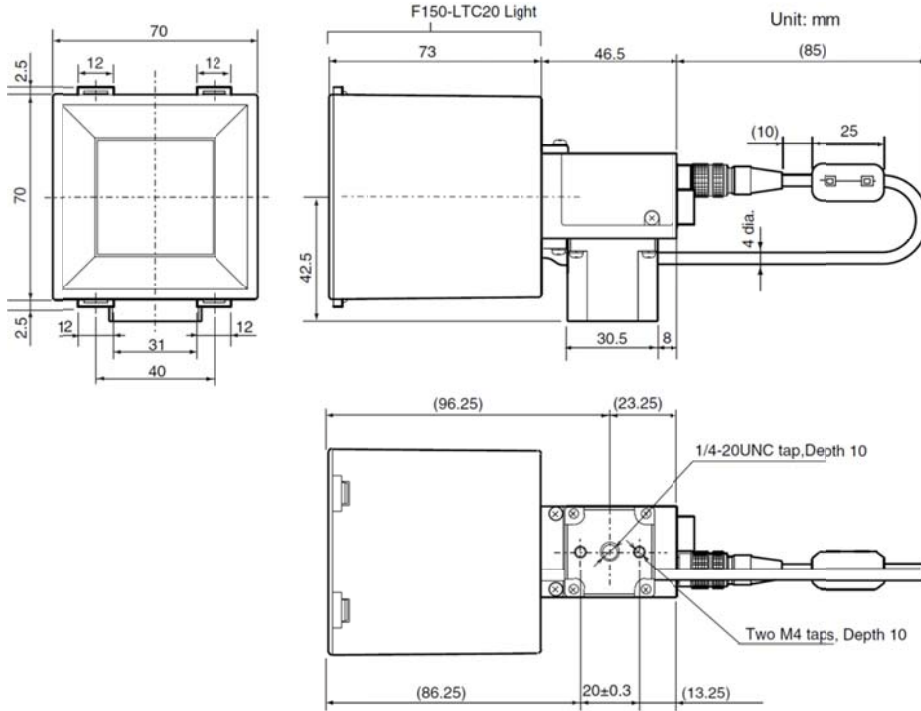
**Recommended replacement
Model FZ-S**



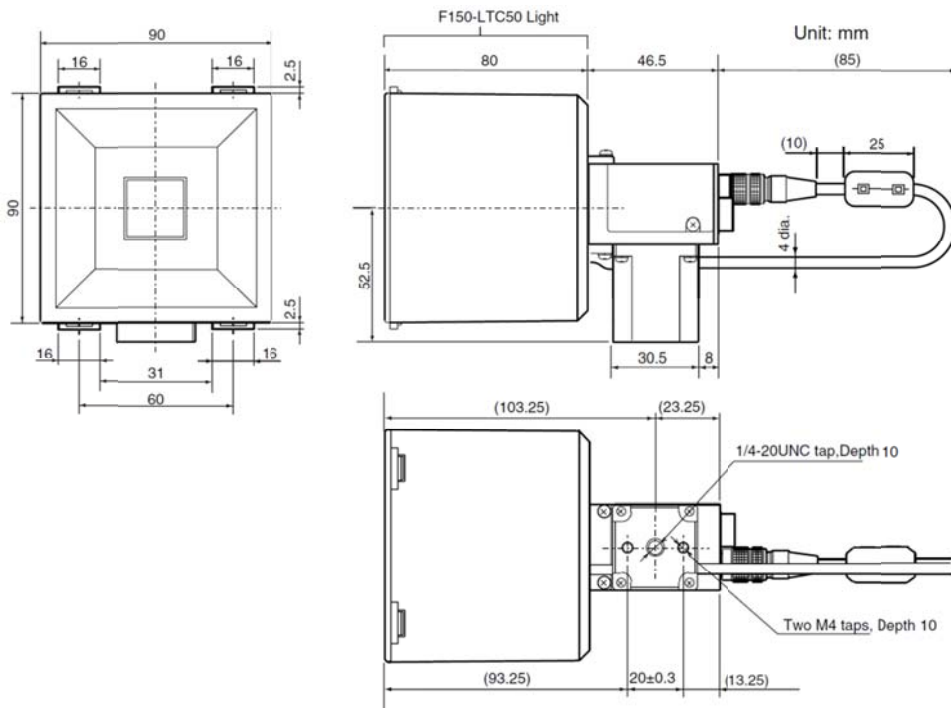
Product discontinuation

- Model F160-SLC20 (with Intelligent Lighting Model F150-LTC20)**
- Model F160-SLC50 (with Intelligent Lighting Model F150-LTC50)**
- Model F150-SLC20 (with Intelligent Lighting Model F150-LTC20)**
- Model F150-SLC50 (with Intelligent Lighting Model F150-LTC50)**
- Model F150-SL20A/SL50A (with Lighting Model F150-LT10A)**

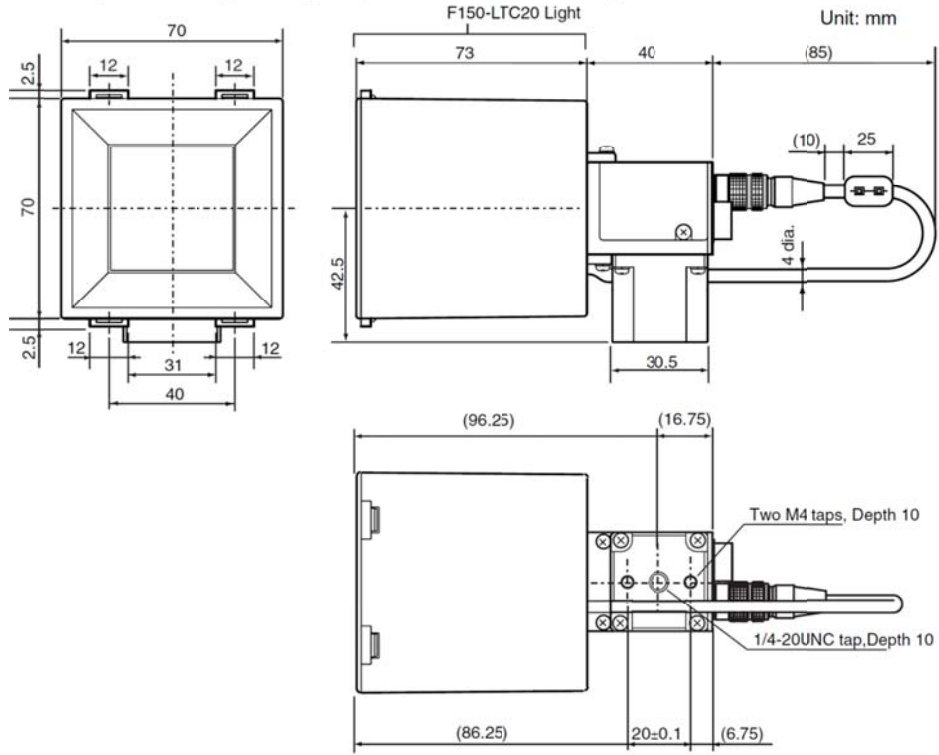
Model F160-SLC20 (with Intelligent Lighting Model F150-LTC20)



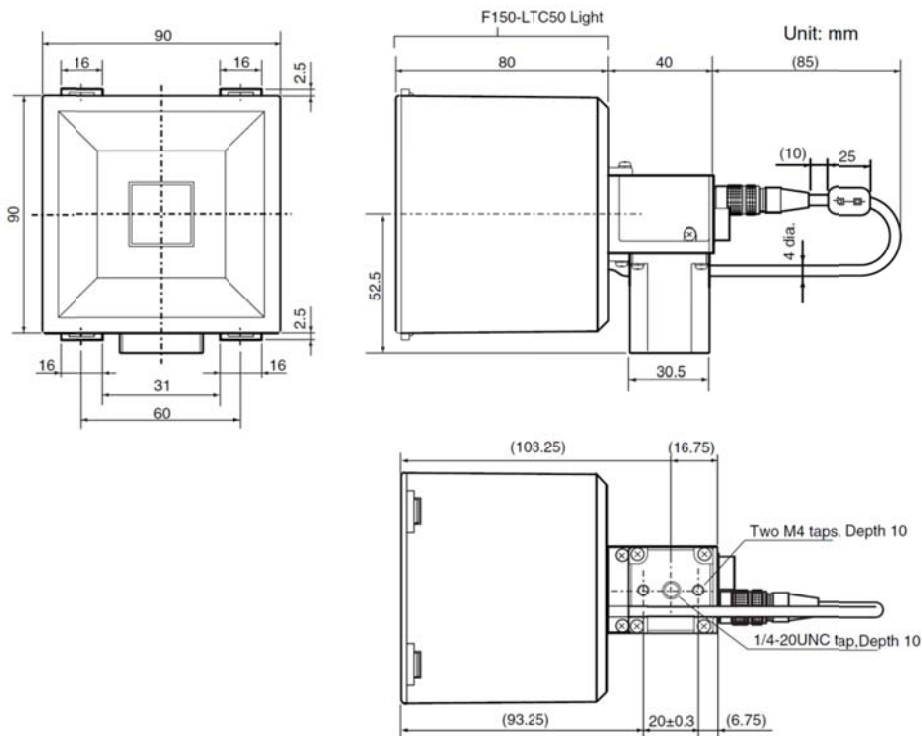
Model F160-SLC50 (with Intelligent Lighting Model F150-LTC50)



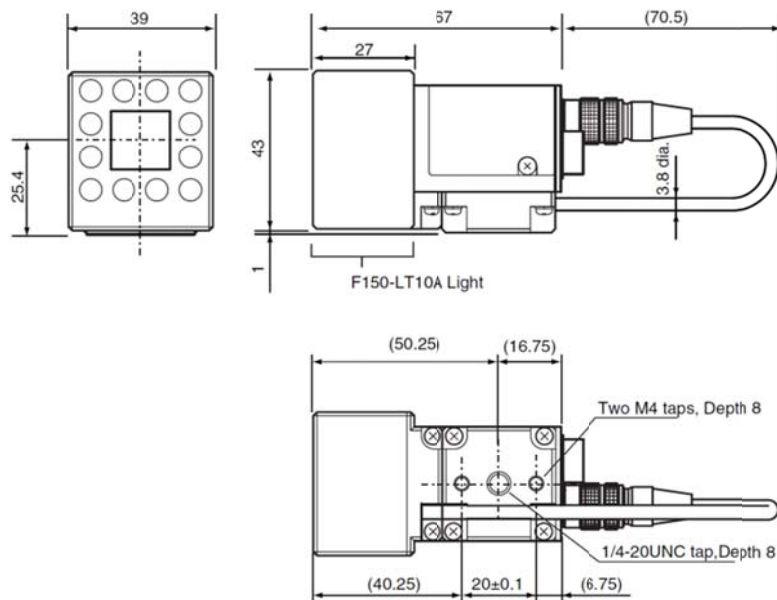
Model F150-SLC20 (with Intelligent Lighting Model F150-LTC20)



Model F150-SLC50 (with Intelligent Lighting Model F150-LTC50)



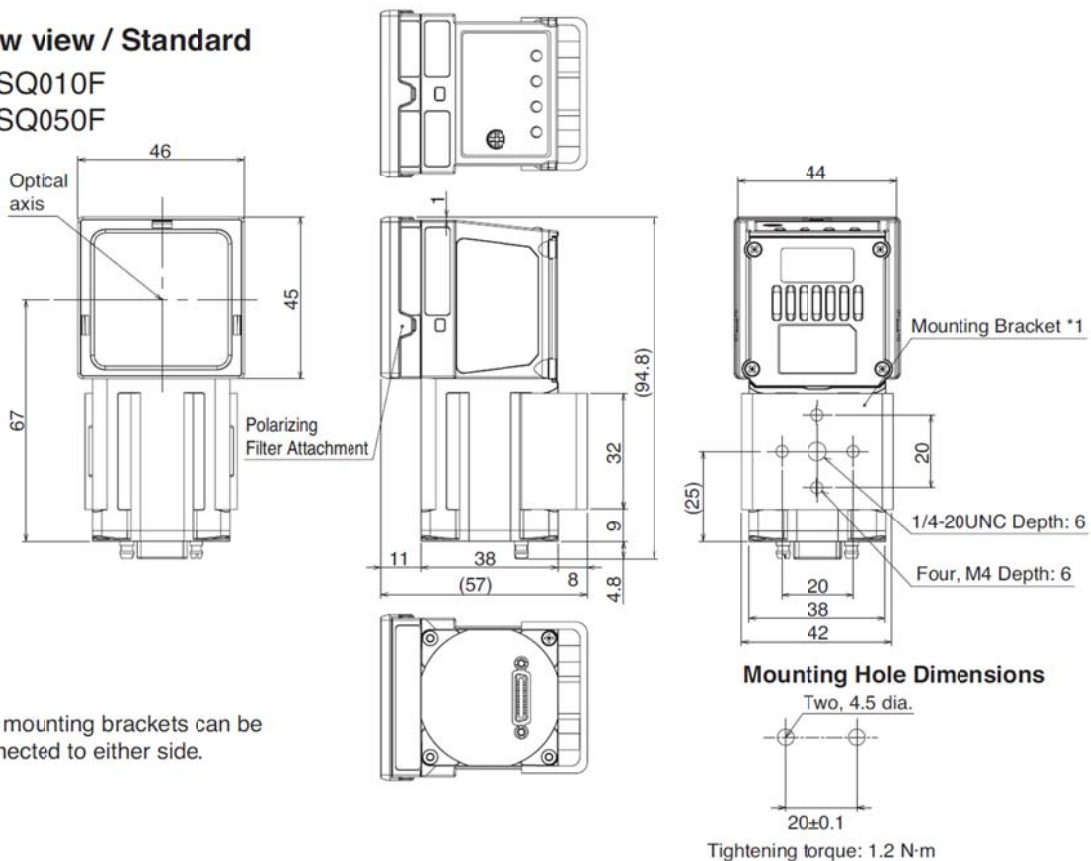
Model F150-SL20A/SL50A (with Lighting Model F150-LT10A)



**Recommended replacement
Model FZ-SQ050F**

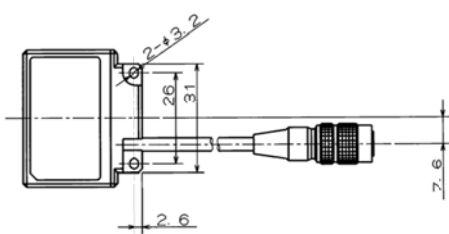
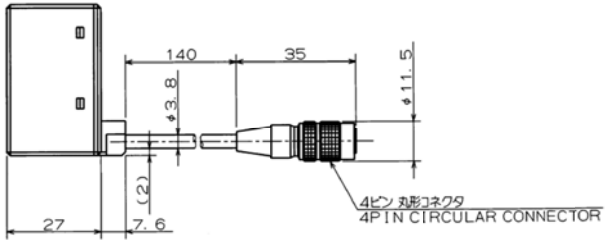
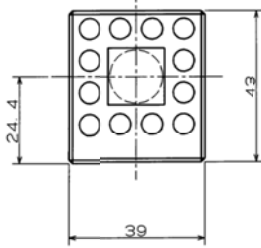
Narrow view / Standard

FZ-SQ010F
FZ-SQ050F



*1. The mounting brackets can be connected to either side.

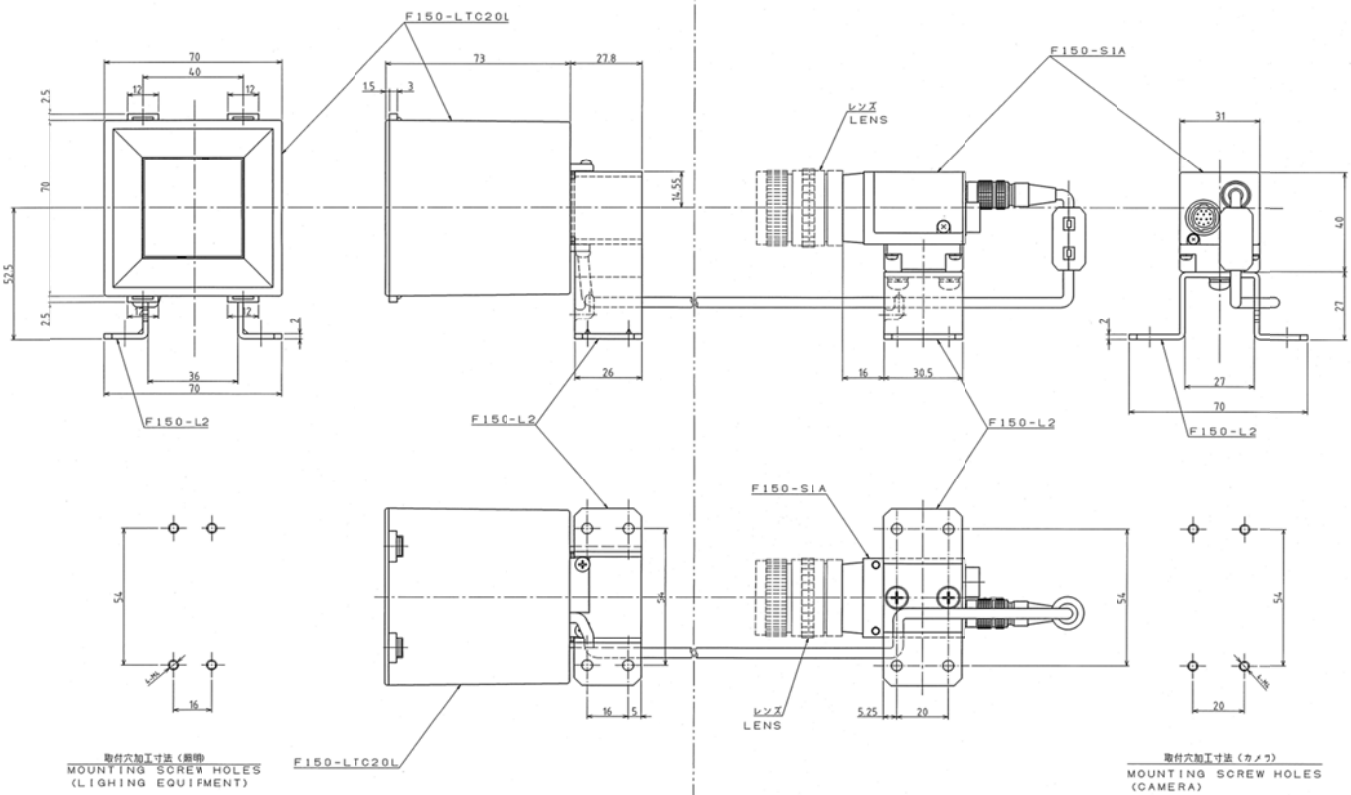
**Product discontinuation
Model F150-LT10/LT10A**



**Recommended replacement
No recommended replacement**

**Product discontinuation
Model F150-LTC20L, Model F150-L2 and F150-LT20A**

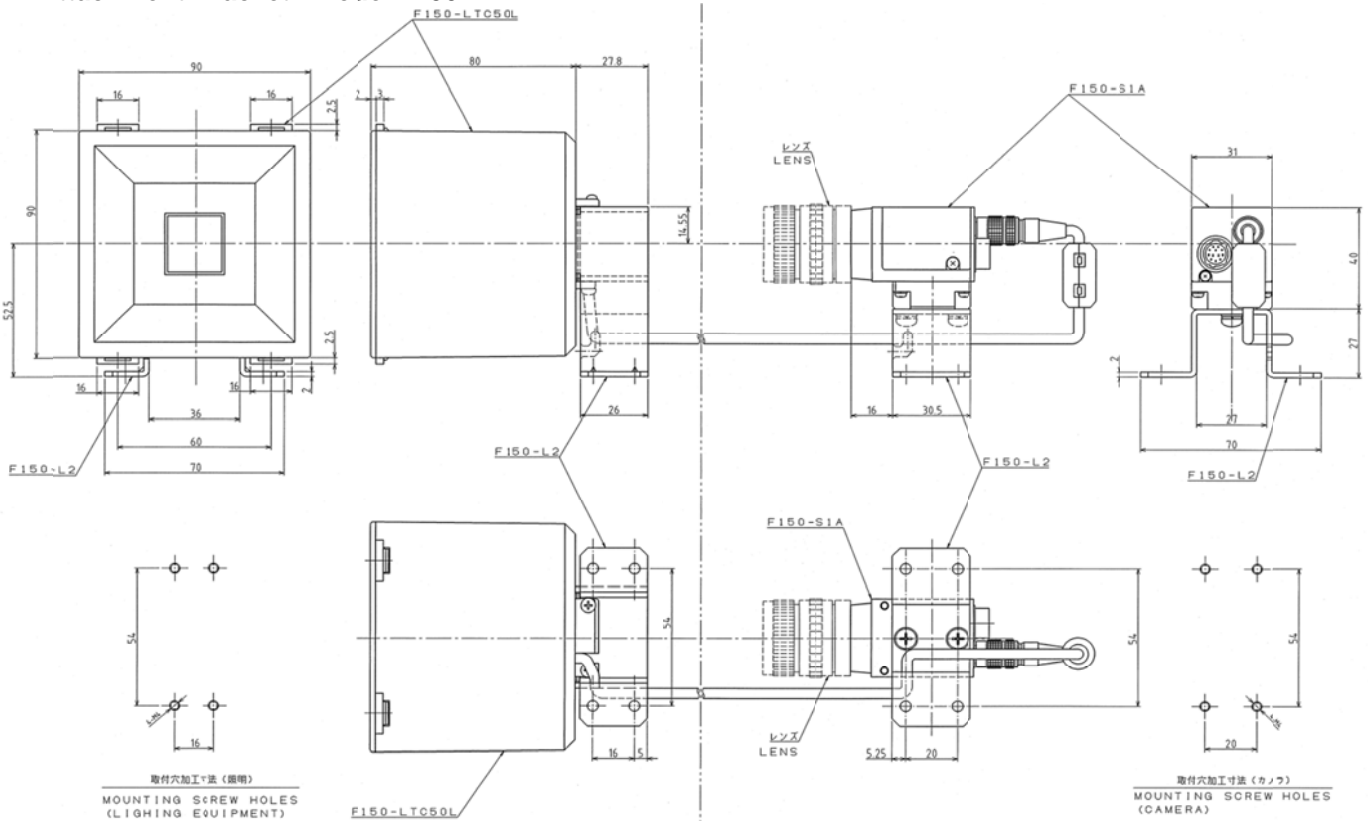
**Set Model F150-LT20A
Intelligent Lighting : Model F150-LTC20L
Attachment Bracket : Model F150-L2**



**Recommended replacement
No recommended replacement**

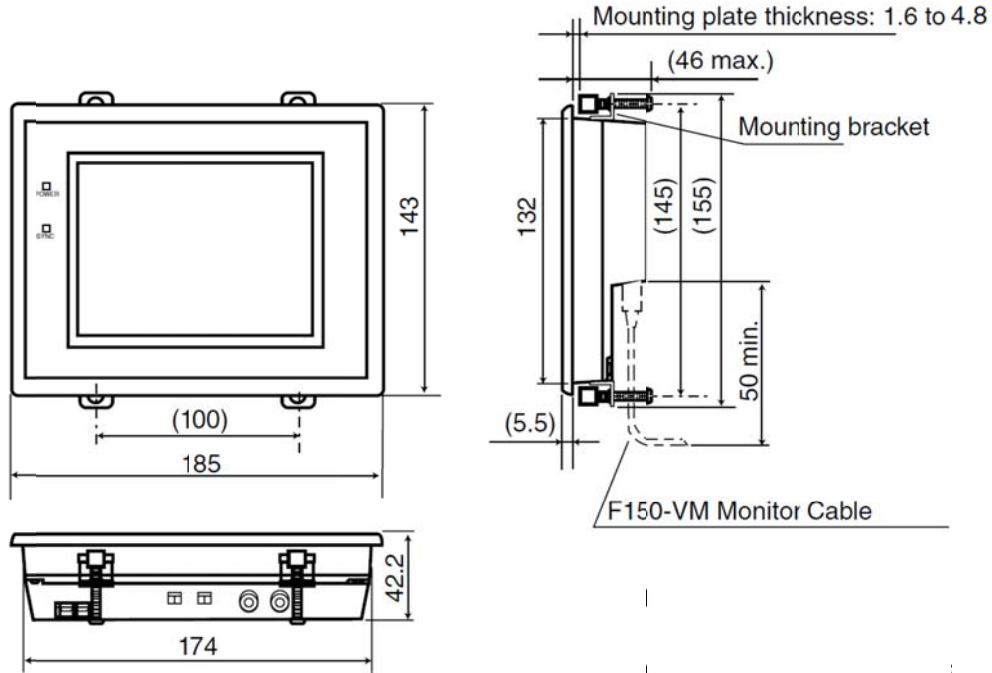
Product discontinuation
Model F150-LTC50L, Model F150-L2 and F150-LT50A

Set Model F150-LT50A
Intelligent Lighting : Model F150-LTC50L
Attachment Bracket : Model F150-L2

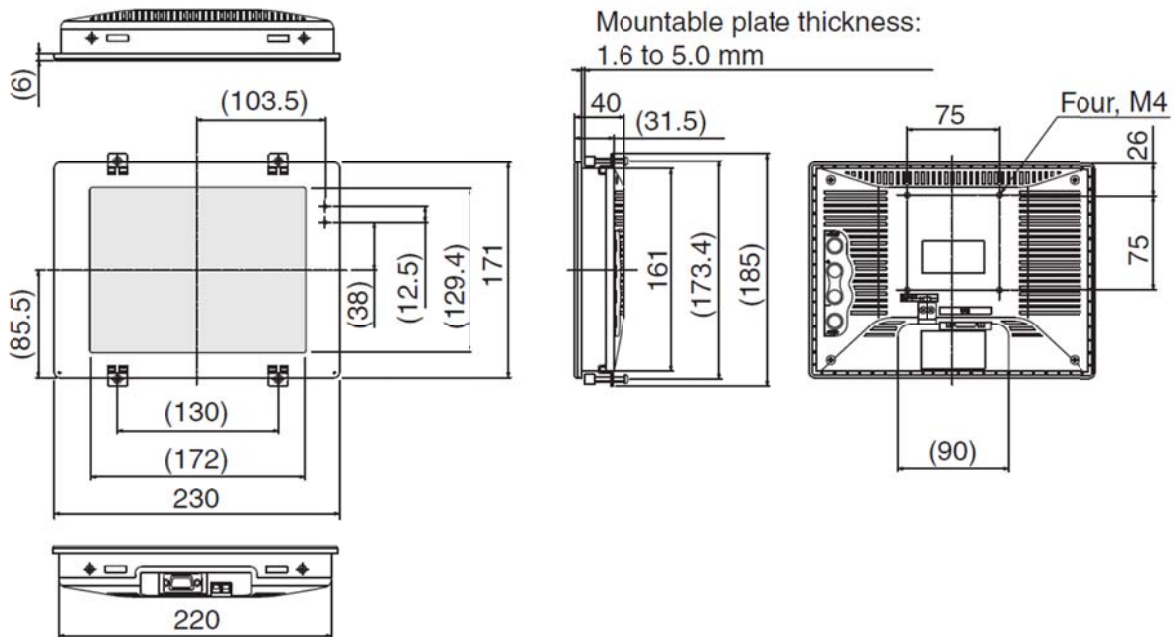


Recommended replacement
No recommended replacement

**Product discontinuation
Model F150-M05L**



**Recommended replacement
Model FZ-M08**



Accessories

**Product discontinuation
Model F160-KP**

Cable Length: 2 m

**Recommended replacement
No recommended replacement**

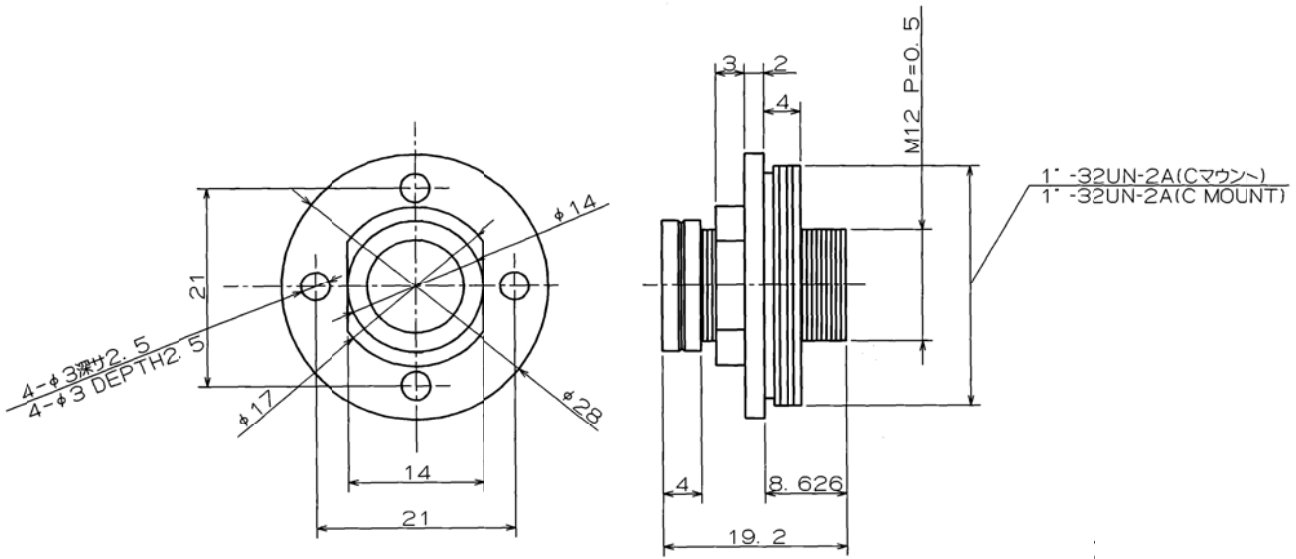
**Product discontinuation
Model F150-KP**

Cable Length : 2m

**Recommended replacement
No recommended replacement**

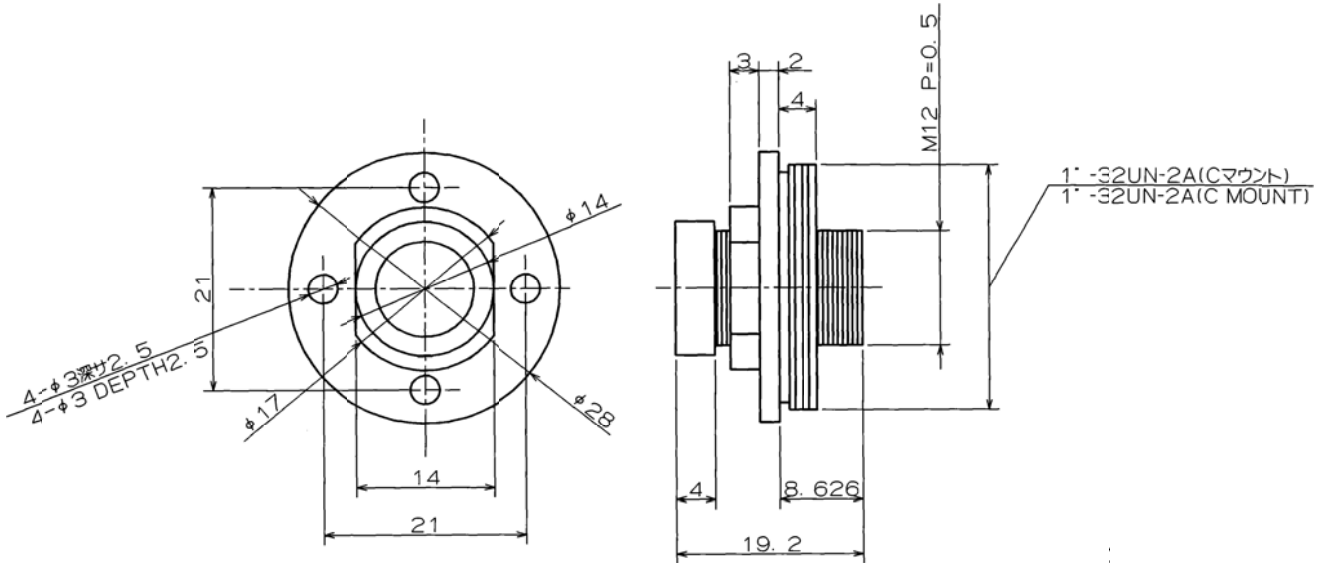
<p>Product discontinuation Model F160-N256S, Model F500-UM3□□</p>	<p>Recommended replacement No recommended replacement</p>
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**Product discontinuation
Model F150-LE20**



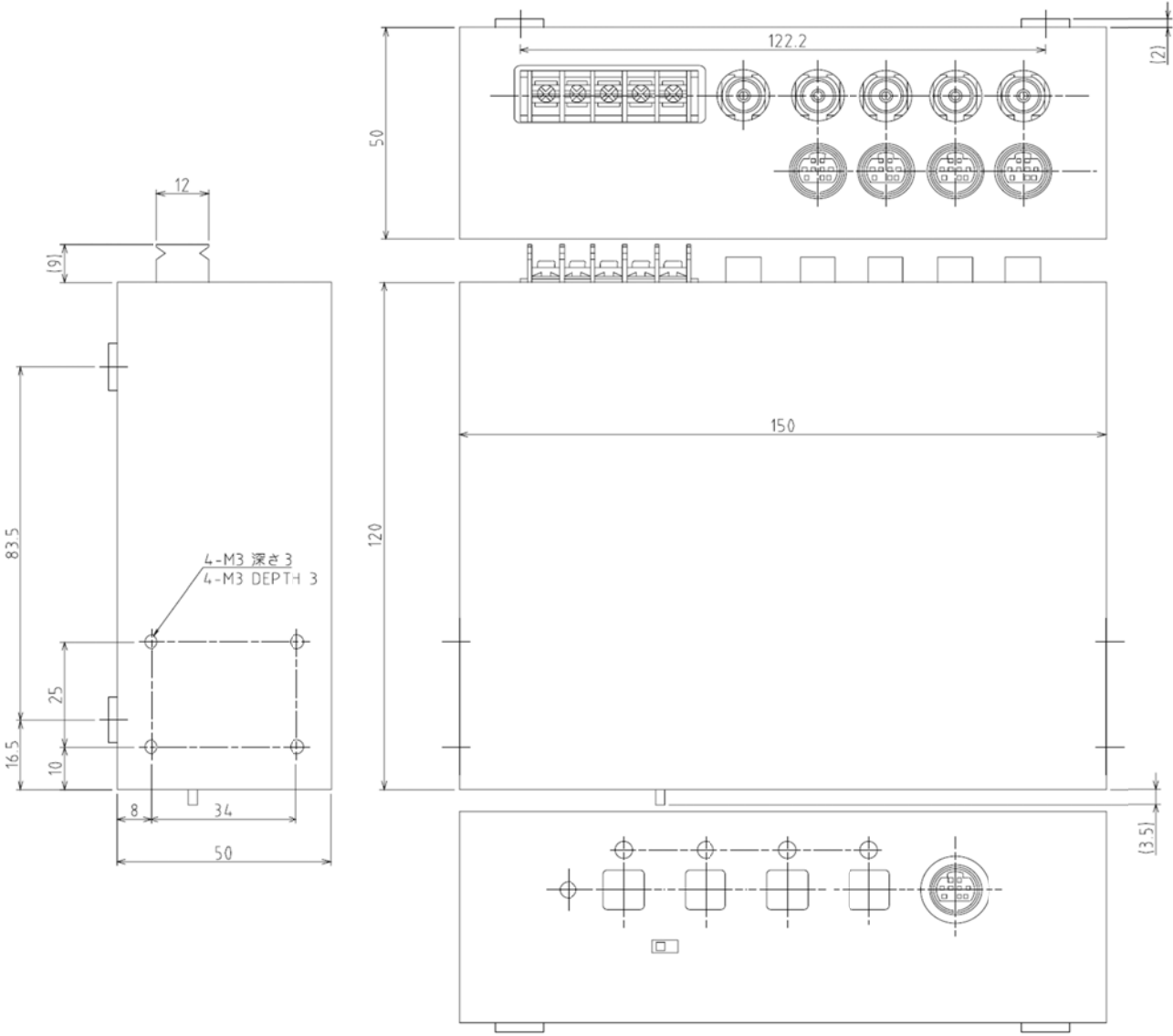
**Recommended replacement
No recommended replacement**

**Product discontinuation
Model F150-LE50**

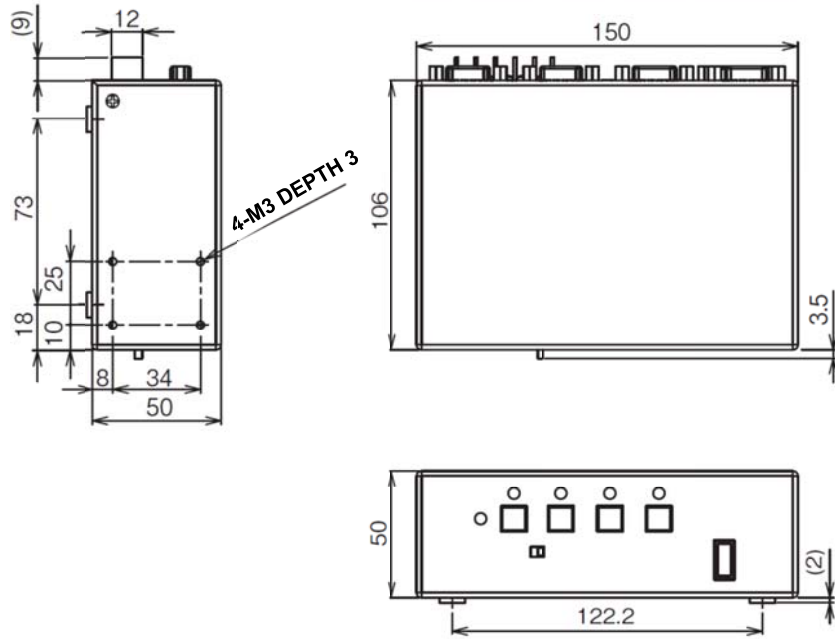


**Recommended replacement
No recommended replacement**

Product discontinuation
Model F160-DU



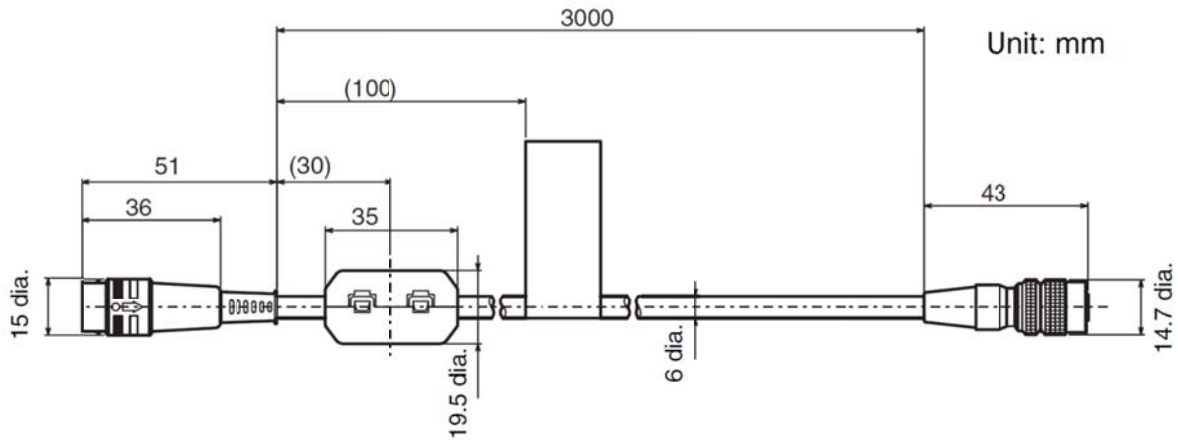
Recommended replacement
Model FZ-DU



Cables

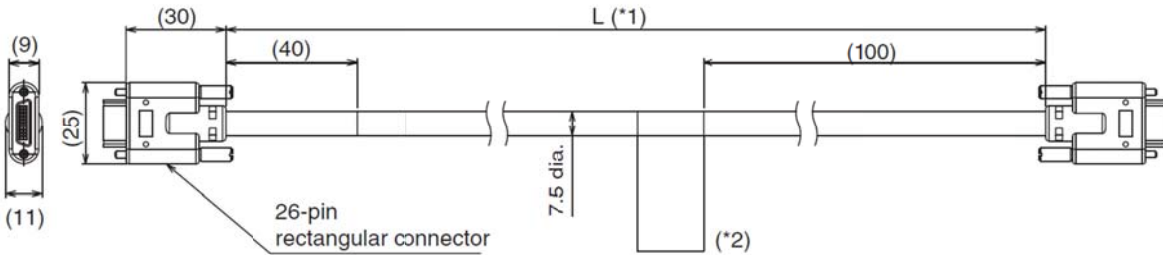
Product discontinuation Model F150-VS

Ex.) Cable Length: 3 m

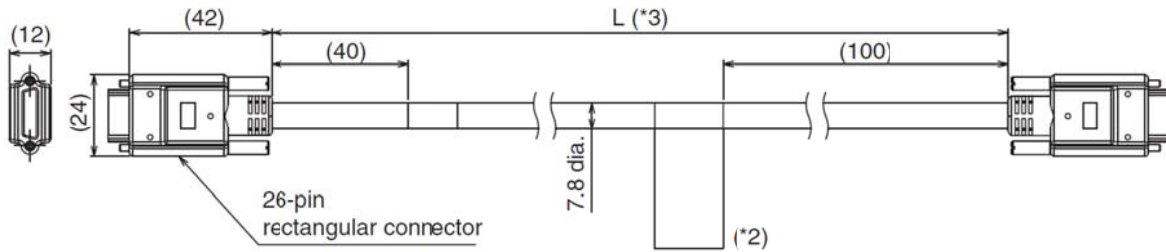


Recommended replacement Model FZ-VS3/VS4

Model FZ-VS3



Model FZ-VS4



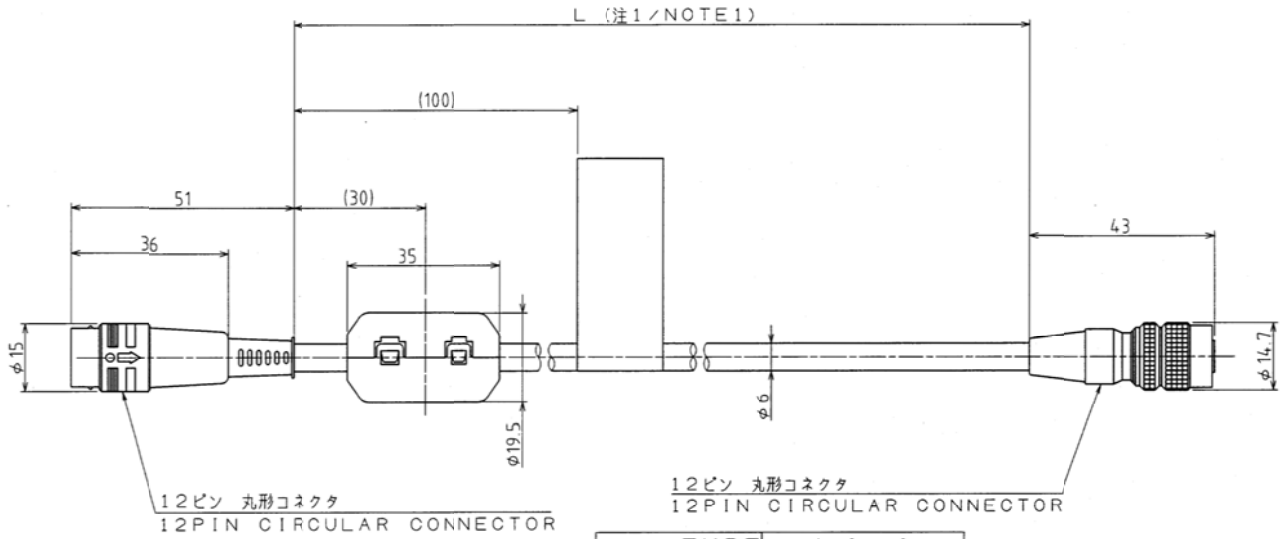
*1. Cable is available in 2 m/3 m/5 m/10 m.

*2. Each camera cable has polarity.

Please ensure that the name plate side of the cable is connected to the controller.

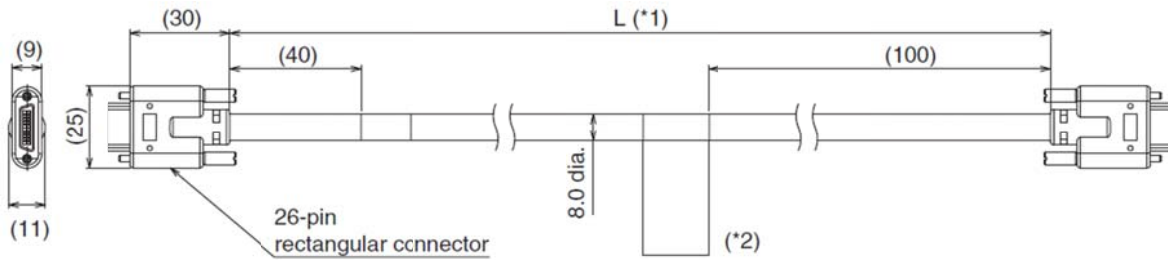
*3. Cable is available in 15 m.

**Product discontinuation
Model F150-VSB**



仕様 / TYPE	L (mm)
3 m	3000 ± 150
5 m	5000 ± 250
10 m	10000 ± 300
15 m	15000 ± 350
20 m	20000 ± 400

**Recommended replacement
Model FZ-VSB3**

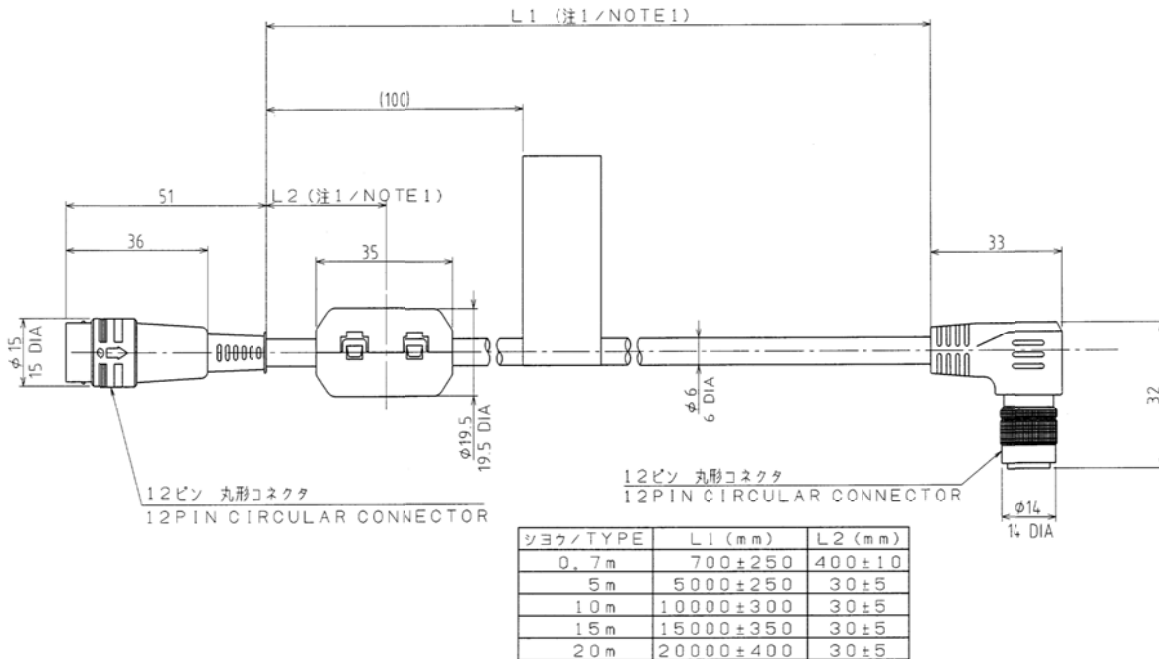


*1. Cable is available in 2 m/3 m/5 m/10 m.

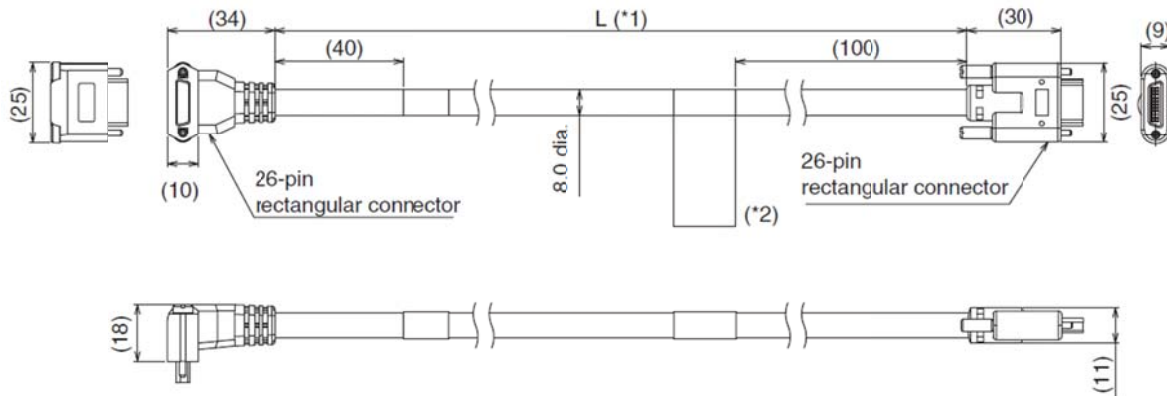
*2. The camera cable has polarity.

Please ensure that the name plate side of the cable is connected to the controller.

**Product discontinuation
Model F150-VSLB**



**Recommended replacement
Model FZ-VSLB3**



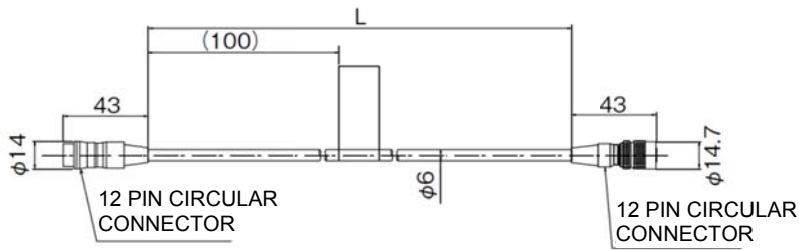
*1. Cable is available in 2 m/3 m/5 m/10 m.

*2. The camera cable has polarity.

Please ensure that the name plate side of the cable is connected to the controller.

Product discontinuation
Model F150-VSB-J

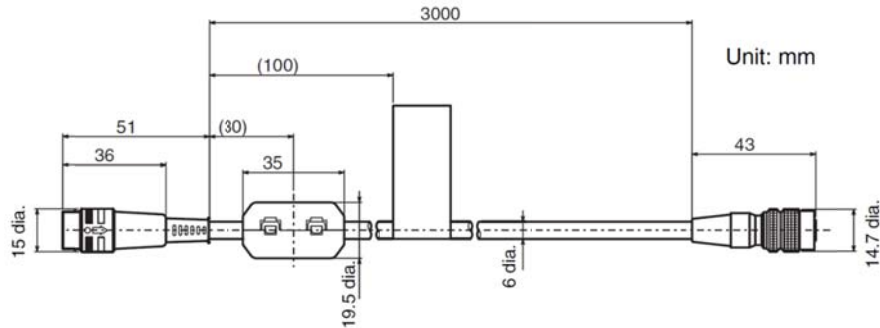
Recommended replacement
No recommended replacement



TYPE	L (mm)
1m	1000±100
2m	2000±100
5m	5000±250
10m	10000±350

Product discontinuation
Model F160-VSR3/VSR4

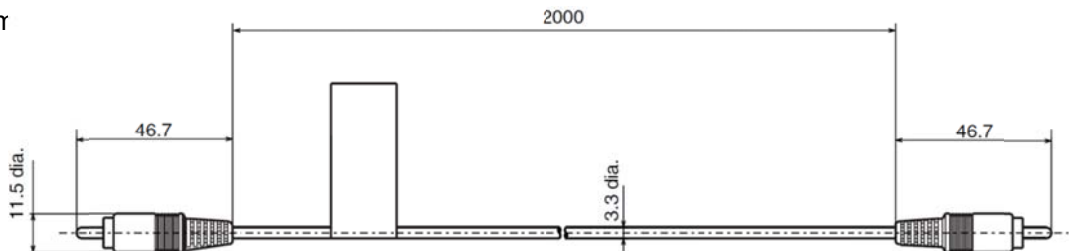
Ex.) Cable Length: 3 m



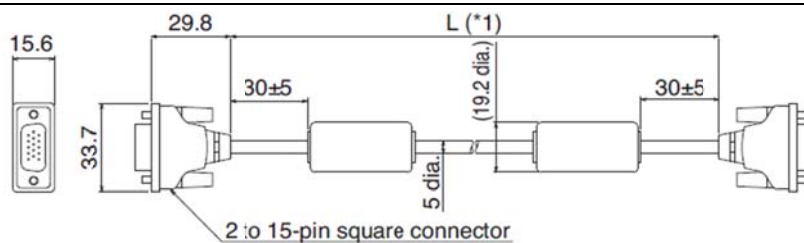
Recommended replacement
No recommended replacement

Product discontinuation
Model F150-VM

Ex.) Cable Length: 2 m

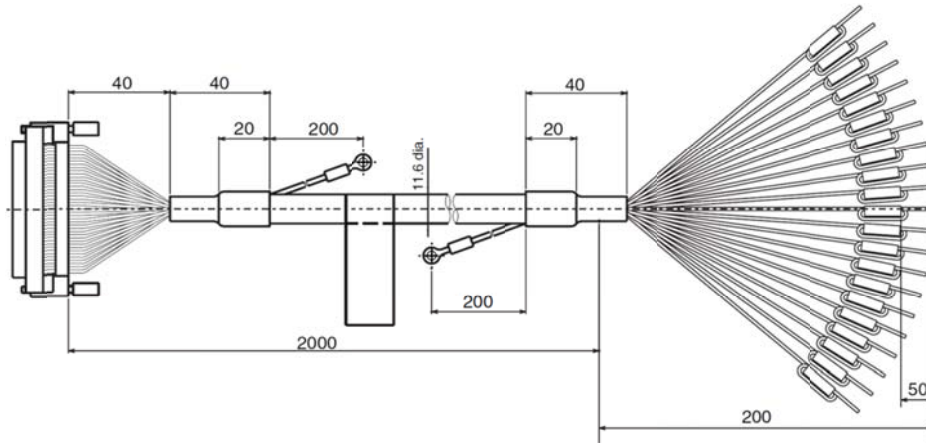


Recommended replacement
Model FZ-VM

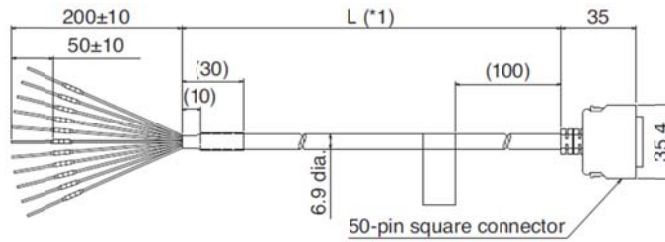


*1. cable is available in 2 m/5 m.

**Product discontinuation
Model F160-VP**



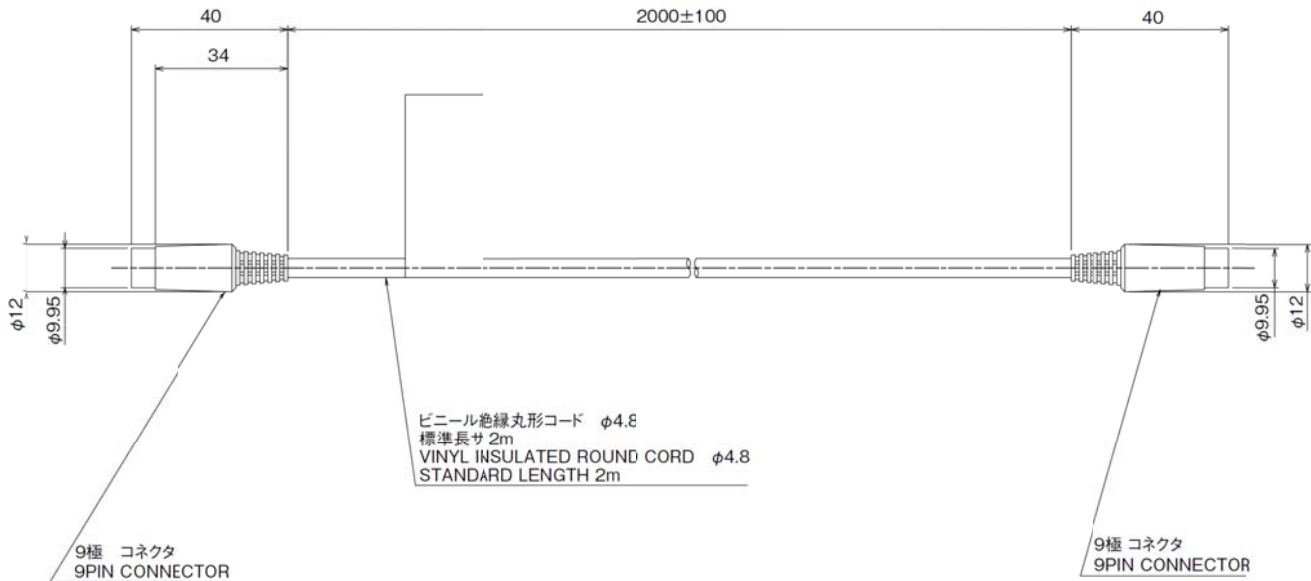
**Recommended replacement
Model FZ-VP**



*1. Cable is available in 2 m/5 m.

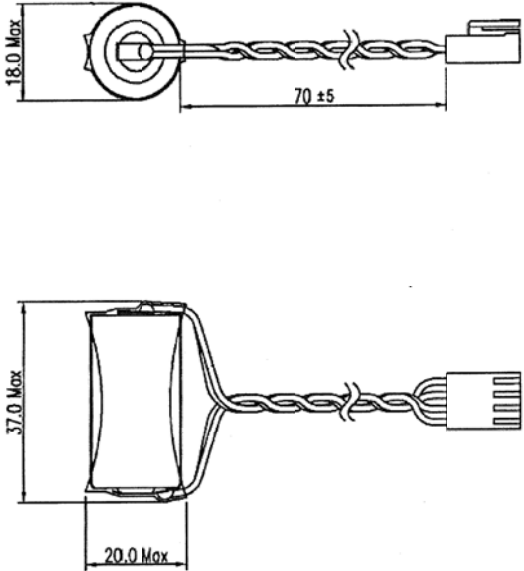
**Product discontinuation
Model F160-VKP**

Ex.) Cable Length: 2 m



**Recommended replacement
No recommended replacement**

Battery

Product discontinuation Model 3Z49-BAT1	Recommended replacement No recommended replacement
 <p>18.0 Max</p> <p>70 ±5</p> <p>37.0 Max</p> <p>20.0 Max</p>	

Characteristics

1. Controller

(1) Model F160-C□□ and F210-C□□

Item		Product discontinuation Model F160-C□□ and F210-C□□			Recommended replacement Model FZ5-L35□	
I/O type	NPN	F160-C10V2 (Japanese Menu) F160-C10E-2 (English Menu)		F210-C10	F160-C10CF (For Food) F160-C10CP (For Drug)	FZ5-L350
	PNP	F160-C15E-2 (English Menu)		F210-C15	-	FZ5-L355
Settings		Conversational Menu Mode	Expert Menu Mode	Installing measurement items using application software, and combining and setting measurement items by menu operations	Character Verification I Menu	Create series of processing steps by editing the flowchart (Help messages provided).
Connectable cameras		F150-S1A/SL20A/SL50A/SLC20/SLC50 F160-S2/SLC20/SLC50, F300-S/S2R/S3DR/S4R etc.			F160-SLC50, F160-S2	Can be connected to FZ-S series. (Cannot be connected to FH-S series. When connecting 5 million-pixel cameras, up to two cameras can be connected.)
No. of Cameras		1	2	2	1	2
Menu language		Japanese or English (Can be switched.)			Japanese Only	Japanese, English, Chinese (switchable)
Processing resolution		512 (H) X 484 (V)				When connected to a 300,000-pixel camera: 640 (H) × 480 (V)
Number of scenes		32 (Expansion possible using Memory Cards.)				128
Image storage function		Maximum of 35 images stored				When connected to a 300,000-pixel camera Connected to 2 cameras Monochrome Camera: 126
Operation		Console F160-KP, F150-KP			Console F160-KP	Mouse or similar device
Memory card I/F		1 slot				Not supported.
Monitor I/F		1 channel (Color/Monochrome)				Analog RGB video output, 1 channel (Resolution: XGA 1,024 × 768 dots)
Serial communications		RS-232C/422A: 1 channel			Not supported.	RS-232: 1 channel
USB I/F		Not supported.				2 channels (supports USB1.1/2.0)
EtherNet communications		Not supported.				Ethernet 100BASE-T/ 100BASE-TX/ 10BASE-T
EtherNet/IP communications		Not supported.				Ethernet port baud rate: 100 Mbps (100Base-TX)
Parallel I/O		13 inputs and 22 outputs				11 inputs and 26 outputs
Power supply voltage		20.4 to 26.4 VDC				
Current consumption		Approx. 1.6 A (when two F160-SLC50 Cameras are connected)				When connected to a 300,000-pixel camera 2.6 A max.
Ambient temperature		Operating: 0° to 50°C Storage: -25° to 65°C (with no icing or condensation)				Operating: 0° to 45°C, 0° to 50°C Storage: -20° to 65°C (with no icing or condensation)
Ambient humidity		Operating and storage: 35% to 85% RH (with no condensation)				
Weight		Approx. 570 g (Controller only)				Approx. 1.8 kg

(2) Model F250-C□□ and F270-C□□

Item		Product discontinuation			Recommended replacement	
I/O type	NPN	F250-C10	F250-C50	F270-C10	Standard (2 core) FH-1050-10	High-speed (4 core) FH-3050-10
	PNP	-	F250-C55	F270-C15		
Mode	Nonstop adjustment	Yes	No	Yes	Yes	
	One-line high-speed	No	No	Yes	Yes	
	Random trigger	No	No	Yes	Yes	
Connectable Cameras		F150-S1A/SL20A/SL50A/SLC20/SLC50, F160-S2/SLC20/SLC50, etc.			Can be connected to all cameras. (FZ-S series/FH-S series)	
No. of Cameras		4			4	
Processing resolution		512 (H) × 484 (V)			When connected to a 300,000-pixel camera: 640 (H) × 480 (V)	
No. of scenes		32 (Expansion possible using Memory Cards.)			128	
Image storage function		Maximum of 35 images stored			When connected to four 300,000-pixel camera (FZ-S/FH-S) (Monochrome): 68	
Operation		Console F160-KP, F150-KP			Mouse or similar device	
Settings		Installing measurement items using application software, and combining and setting measurement items by menu operations			Create series of processing steps by editing the flowchart (Help messages provided).	
Menu language		Japanese or English (Can be switched.)			Japanese, English, Chinese, German, French, Italian, Spanish, and Korean (switchable)	
Trend monitor		Supported			Supported	
CF card slots		2 slots			Not supported	
SD card slots		Not supported			SDHC card of Class4 or higher rating is recommended.	
USB interface		Not supported			4 channels (supports USB 1.1 and 2.0)	
Monitor interface		Composite video output: 1 channel, S-VIDEO output: 1 channel			DVI-I(Single Link) output IF × 1ch	
EtherNet communications		10Base-T: 1 channel			No-protocol (TCP/UDP) 1000BASE-T 2 port	
EtherNet/IP communications		Not supported			Ethernet port baud rate: 1 Gbps (1000 BASE-T)	
EtherCAT communications		Not supported			EtherCAT protocol (100BASE-TX)	
Serial communications		RS-232C/422A: 1 channel			RS-232C: 1 channel	
Parallel I/O		21 inputs and 46 outputs			(In the 2-line random trigger mode) 17 inputs and 37 outputs (In the 5-line to 8-line random trigger mode) 19 inputs and 34 outputs	
Strobe interface		4 channels (included in parallel outputs)			4 channels (included in parallel outputs)	
Encoder interface		Not supported			RS422-A line driver level. Phase A/B: single-phase 4MHz (multiplying phase difference of 1MHz by 4 times), Phase Z: 1MHz	
Connectable Cameras		F150-S1A/SL20A/SL50A/SLC20/SLC50, F160-S2/SLC20/SLC50, etc.			Can be connected to all cameras. (FZ-S series/FH-S series)	
Power supply voltage		20.4 to 26.4 VDC				
Current consumption		Approx. 3.7 A (when four F160-SLC50 Cameras connected)			Connected to 4 cameras FH-1050-10: 4.3 A max. FH-3050-10 : 4.8 A max.	
Ambient temperature		Operating: 0° to 50°C, Storage: -25° to 65°C (with no icing or condensation)			Operating: 0° to 50°C, Storage: -20° to 65°C (with no icing or condensation)	
Ambient humidity		Operating and storage: 35% to 85% RH (with no condensation)				
Weight		Approx. 3.1 kg			Approx. 3.4 kg	

2. Camera, Lighting and Lens

(1) Camera only

Item	Product discontinuation		Recommended replacement
Model	F160-S2	F150-S1A	FZ-S
Color/Monochrome	Monochrome		Monochrome
Current consumption	Approx. 1.7W Max.	Approx. 1.2W Max.	Approx. 2.4W Max.
Vibration resistance	10 to 150 Hz, one-side amplitude 0.35mm (Max. acceleration 50m/s ²) 10 times for 8 minutes for each three directions		
Shock resistance	150m/s ² : 3 times each in 6 directions		
Ambient temperature	Operating: 0 to 50°C Storage: -25° to 65°C (with no icing or condensation)		
Ambient humidity	Operating and storage: 35% to 85% RH (with no condensation)		
Materials	Cover: Galvanized steel sheet metal Case: Die-cast aluminum alloy Camera mounting base: Fiber-reinforced plastic (black)	Case (Front and Rear): Aluminum Camera mounting base: PC / ABS	
Picture element	1/3-inch interline CCD (reading all pixels)		
Effective pixels	659(H) × 494(V)		
Synchronization	External sync. via horizontal sync signal		Internal sync.
Shutter speed (Electronic shutter)	1/120, 1/200, 1/500, 1/1000, 1/2000, 1/4000, 1/8000, 1/20000s	1/100, 1/500, 1/2000, 1/10000s	Select shutter speeds from 1/10 to 1/50000s
Partial function	Supported	Not supported	Supported
Lens mounting	C mount		
Weight	Approx. 85g	Approx. 80g	Approx. 55g

(2) Cameras with Intelligent Lighting

Item	Product discontinuation						Recommended replacement
Set Model	F150 -SL20A	F150 -SL50A	F150 -SLC20	F150 -SLC50	F160 -SLC20	F160 -SLC50	FZ-SQ050F
Camera Model	F150-S1A			F160-S2			-
Image elements	1/3-inch interline CCD (reading all pixels)						CMOS color image elements (1/3-inch equivalent)
Color/Monochrome	Monochrome						Color
Effective pixels	659 (H) X 484 (V)						752 (H) X 480 (V)
Synchronization	External sync. via horizontal sync signal						Internal Sync.
Shutter speed (Electronic shutter)	1/100, 1/500, 1/2000, 1/10000s			1/120, 1/200, 1/500, 1/1000, 1/2000, 1/4000, 1/8000, 1/20000s			1/250 to 1/32,258s
Partial function	Not supported			Supported			Supported
Materials	Cover: Galvanized steel sheet metal Case: Die-cast aluminum alloy Camera mounting base: Fiber-reinforced plastic (black)						PBT, PC, SUS
Lighting Model	F150-LT10A		F150 -LTC20	F150 -LTC50	F150 -LTC20	F150 -LTC50	-
Light source	Red LED (Peak emission wavelength: 680 nm)		Red and green LED combination (Peak emission wavelengths: 660 nm and 570 nm)			White LED	
Light emission method	Pulse emission (synchronized with the camera shutter)						
Materials	Case: ABS Transparent cover: PC						—
Lens Model	F150 -LE20	F150 -LE50	F150 -LE20	F150 -LE50	F150 -LE20	F150 -LE50	—
Method	Fixed focal point, fixed iris						
Brightness	F2.8						—
Focal length	13mm	6.1mm	13mm	6.1mm	13mm	6.1mm	Adjustable focus
Mounting distance	61 to 71mm	66 to 76mm	15 to 25mm	16.5 to 26.5mm	15 to 25mm	16.5 to 26.5mm	56 to 215mm
Field of vision	20mm X 20mm	50mm X 50mm	20mm X 20mm	50mm X 50mm	20mm X 20mm	50mm X 50mm	13 X 8.2 to 53 X 33mm
Vibration resistance	10 to 150Hz, one-side amplitude 0.35mm (Max. acceleration 50m/s ²) 10 times for 8 minutes for each three directions						
Shock resistance	150m/s ² : 3 times each in 6 directions						
Ambient temperature	Operating: 0° to 50°C Storage: -25° to +60°C (with no icing nor no condensation)						Operating: 0° to 50°C Storage: -20° to +65°C (with no icing nor no condensation)
Ambient humidity	Operating and storage: 35% to 85% RH (no condensation)						
Current consumption	1.4W Max.		2.4W Max.		3.4W Max.	4.4W Max.	Approx. 1.3W Max.
Weight	Approx. 135g	Approx. 135g	Approx. 280g	Approx. 370g	Approx. 285g	Approx. 375g	Approx. 150g
Mounting Bracket	PBT (black)		Fiber-reinforced plastic (black)				PBT, brass, sponge rubber (EPDM)
Polarizing Filter	Built-in		--				Accessories

(3) Intelligent Lighting Set

Item	Product discontinuation		Recommended replacement
Set Model	F150-LT20A	F150-LT50A	No recommended replacement
Lighting Model	F150-LTC20L	F150-LTC50L	
Light source	Red and green LED combination (Peak emission wavelengths: 660 nm and 570 nm)		
Light emission method	Pulse emission (synchronized with the camera shutter)		
Materials	Case: ABS Transparent cover: PC		
Cable Length	Approx. 300mm		
Mounting Bracket	F150-L2		
Part	For Lighting and For Camera : each 1 pcs		
Weight	Approx. 180g		
Weight	Approx. 200g	Approx. 290g	

Item	Product discontinuation	Recommended replacement
	F150-LT10	No recommended replacement
Connectable Cameras	F150-S1 (Discontinued)	
Light source	Red LED (Peak emission wavelength: 680 nm)	
Light emission method	Pulse emission (synchronized with the camera shutter)	
Materials	Case: ABS Transparent cover: PC	

3. Memory Card

Item	Product discontinuation	Recommended replacement
	F160-N256S	No recommended replacement
Ambient temperature range	Operating: 0° to 60°C (with no condensation) Storage: -25° to 85°C (with no condensation)	
Ambient humidity range	Operation and storage: 8% to 95% RH (with no condensation)	
Ambient environment	No corrosive gases	
Life expectancy	300,000 overwrite operations	
Number of pins	50 pins	
Weight	Approx. 15g	

4. Monitor

Item	Product discontinuation F150-M05L	Recommended replacement FZ-M08
Panel size	5.7 inches	8.4 inches
Panel type	TFT color liquid crystal	
Resolution	640 X 480 dots	1024 X 768 dots
Contrast	850 : 1 (typical)	600 : 1 (typical)
Viewable angle	80° up/down and 60° left/right (with a contrast ratio > 10:1)	60° up, 80° down and 80° left/right (with a contrast ratio > 10:1)
Luminance	400 cd/m ² (typical)	500 cd/m ² (typical)
Backlight	White LED	
Input signal	NTSC composite video (1.0 V/75 Ω termination)	Analog RGB video input, 1 channel Power supply
Power supply voltage	20.4 to 26.4 VDC	21.6 to 26.4 VDC
Current consumption	Approx. 0.7A Max.	
Vibration resistance	10 to 150 Hz; half-amplitude: 0.1 mm; maximum acceleration: 15 m/s ² , 10 times for 8 minutes each in 3 directions	
Ambient temperature range	Operating: 0° to 50°C (with no condensation) Storage: -25° to 65°C (with no condensation)	
Ambient humidity range	35% to 85% RH (with no condensation)	
Degree of protection	IEC60529 IP20 (in-panel)	
Materials	Case: ABS/PC Display surface: PMMA (Acrylic)	Front panel: PC Case: PC/PBT Buttons: ABS
Weight	Approx. 610g	Approx. 1.2 kg

5. Console

Item	Product discontinuation		Recommended replacement No recommended replacement
	F150-KP	F160-KP	
Vibration resistance	10 to 150 Hz; half-amplitude: 0.15 mm; 4 times for 8 minutes each in 3 directions	10 to 150 Hz; half-amplitude: 0.35 mm; maximum acceleration: 50 m/s ² , 10 times for 8 minutes each in 3 directions	
Shock resistance	196 m/s ² ; 3 times each in 6 directions	150 m/s ² ; 3 times each in 6 directions	
Ambient temperature range	Operating: 0° to 50°C (with no condensation) Storage: -25° to 65°C (with no condensation)		
Ambient humidity range	35% to 85% RH (with no condensation)		
Ambient environment	No corrosive gases		
Degree of protection	IEC60529 IP20 (in-panel)		
Minimum bending radius	75mm		
Materials	Body: ABS Cable sheathing: Heat-resistant chlorinated vinyl Connector: PC and PBT		
Weight	Approx. 135g	Approx. 160g	

6. Camera Cable

(1) Standard Camera Cable

Item	Product discontinuation F150-VS		Recommended replacement	
			FZ-VS3	FZ-VS4 (15m)
Vibration resistance (durability)	10 to 150 Hz; half-amplitude: 0.15 mm, 4 times for 8 minutes each in 3 directions			
Ambient temperature range	Operating: 0°C to 50°C Storage: -25° to 65°C (with no condensation)		Operation and storage: 0° to 65°C (with no icing or condensation)	
Ambient humidity range	Operation and storage: 35 to 85% RH (with no condensation)		Operation and storage: 40 to 70% RH (with no condensation)	
Ambient atmosphere	No corrosive gases			
Material	Cable sheathing: Heat-resistant PVC Connector: PC (GF), PBT		Cable sheath, connector: PVC	
Minimum bending radius	75m		69mm	78mm
Weight	3m : Approx. 170g		2m : Approx. 170g	15m : Approx. 1400g

(2) Bend resistant Camera Cable / Bend resistant Right-Angle Camera Cable

Item		Product discontinuation	Recommended replacement	
Type	Straight	F150-VSB	FZ-VSB3	
	Right-Angle	F150-VSLB	FZ-VSLB3	
Vibration resistance (durability)		10 to 150 Hz; half-amplitude: 0.15 mm, 4 times for 8 minutes each in 3 directions		
Ambient temperature range		Operating: 0° to 50°C Storage: -25° to 65°C (with no condensation)	Operation and storage: 0° to 65°C (with no icing or condensation)	
Ambient humidity range		Operation and storage: 35 to 85% RH (with no condensation)	Operation and storage: 40 to 70% RH (with no condensation)	
Ambient atmosphere		No corrosive gases		
Material		Cable sheathing: Heat-resistant PVC Connector: PC (GF), PBT	Cable sheath, connector: PVC	
Minimum bending radius		-	69mm	
Weight		5m : Approx. 250g	2m : Approx. 180g	

(3) Camera Cable for F300 series Camera

Item	Product discontinuation		Recommended replacement No recommended replacement
	F160-VSR3	F160-VSR4	
Connectable Cameras	F300-S2R/S3DR/S4R, F200-S	F300-S	
Vibration resistance (durability)	10 to 150 Hz; half-amplitude: 0.15 mm, 4 times for 8 minutes each in 3 directions		
Shock resistance	196 m/s ² , 3 times each in 6 directions		
Ambient temperature range	Operating: 0° to 50°C Storage: -25° to 65°C (with no condensation)		
Ambient humidity range	Operation and storage: 35 to 85% RH (with no condensation)		
Ambient atmosphere	No corrosive gases		
Material	Cable sheathing: Heat-resistant PVC Connector: PC(GF), PBT		
Minimum bending radius	75mm		
Weight	3m : Approx. 170g		

(4) Connection Bend resistant Camera Cable

Item	Product discontinuation		Recommended replacement No recommended replacement
	F150-VSB-J		
Connectable Product	Camera	F160-S2, F150-S1A	
	Camera Cable	F150-VS, F150-VSB	
Maximum length	35 m (Not including Camera Cable)		
Maximum number of extension	2 pcs (Except for Camera Cable)		
Vibration resistance (durability)	10 to 150 Hz; half-amplitude: 0.15 mm, 4 times for 8 minutes each in 3 directions		
Shock resistance	196 m/s ² , 3 times each in 6 directions		
Ambient temperature range	Operating: 0° to 50°C Storage: -25° to 65°C (with no condensation)		
Ambient humidity range	Operation and storage: 35 to 85% RH (with no condensation)		
Ambient atmosphere	No corrosive gases		
Material	Cable sheathing: Heat-resistant PVC Connector: PC (GF), PBT		
Minimum bending radius	75mm		
Weight	5m : Approx.260g		

7. Monitor Cable

Item	Product discontinuation F150-VM	Recommended replacement FZ-VM
Vibration resistance (durability)	10 to 150 Hz; half-amplitude: 0.15 mm, 4 times for 8 minutes each in 3 directions	10 to 150 Hz single amplitude 0.15 mm 3 directions, 8 strokes, 4 times
Ambient temperature range	Operating: 0 to 50 °C Storage: -25 to 65 °C (with no condensation)	Operation: 0 to 50 °C; Storage: -20 to 65 °C (with no icing or condensation)
Ambient humidity range	Operation and storage: 35 to 85%RH (with no condensation)	
Ambient atmosphere	No corrosive gases	
Materials	Cable sheathing : Heat-resistant chlorinated vinyl Connector: PVC	Cable sheath: heat-resistant PVC Connector: PVC
Minimum bending radius	50mm	75mm
Weight	2m : Approx. 40g	2m : Approx.170g
Accessories	BNC Jack Adapter	Non

8. Parallel I/O Cable

Item	Product discontinuation F160-VP	Recommended replacement FZ-VP
Vibration resistance (durability)	10 to 150 Hz; half-amplitude: 0.15 mm, 4 times for 8 minutes each in 3 directions	
Ambient temperature range	Operating: 0° to 50°C Storage: -25° to 65°C (with no condensation)	Operation: 0° to 50°C; Storage: -20° to 65°C (with no icing or condensation)
Ambient humidity range	Operation and storage: 35 to 85% RH (with no condensation)	
Ambient atmosphere	No corrosive gases	
Materials	Cable sheathing: Heat-resistant PVC Connector: Polyester resin	Cable sheath: heat-resistant PVC Connector: resin
Minimum bending radius	120mm	75mm
Weight	2m : Approx. 340g	2m : Approx. 160g

9. Console Adapter

Item	Product discontinuation F160-DU	Recommended replacement FZ-DU
Console input interface	1 channel (Console type F160-KP or type F150-KP)	Not supported
USB input interface	Not supported	Type A 1 channel It is not likely to be able to connect it according to USB mouse's kind etc.
Console output Interface	4 channels (Junction Cable type F160-VKP is needed.)	Not supported
USB output interface	Not supported	Type A 4channels (It is impossible to output at the same time.)
Monitor output Interface	1 channel (Monitor Cable type F150-VM RCA plug connector)	1 channel (Analog RGB video)
Monitor input Interface	4 channels (Monitor Cable type F150-VM RCA plug connector)	4 channels (Analog RGB video)
Channel switch	Channel switch button or external signal	
Operation interface	Button for Channel switch: 4 pieces Slide switch for Mode Change: 1 piece (Remote / Manual)	
Power supply voltage	20.4 to 26.4 VDC	
Current consumption	200 mA max.	
Vibration resistance	10 to 150 Hz: half-amplitude : 0.1 mm 10 times each in X, Y and Z directions for 8 minutes	
Ambient temperature	0° to 50°C	
Ambient humidity	35 to 85% RH (with no condensation)	
Ambient environment	No corrosive gasses	
Storage temperature	-25° to +65°C	-5° to +55°C
Degree of protection	IEC60529 IP20 (in-panel)	
Weight	Approx. 420g (with mounting attachment)	Approx. 500g

10. Console Cable

Item	Product discontinuation F160-VKP	Recommended replacement No recommended replacement
Connectable Console Adapter	F160-DU	
Ambient temperature range	Operation: 0 to 50 °C; Storage: -25 to 65 °C (with no icing or condensation)	
Ambient humidity range	35 to 85 %RH (with no condensation)	
Ambient atmosphere	No corrosive gasses	
Minimum bending radius	75mm	

11.ROM Module for Version UP

Item	Product discontinuation		Recommended replacement No recommended replacement
	F160-PCB2	F160-PCBE-2	
Applied Controller	F160-C10	F160-C10E F160-C15E	
Ambient temperature range	Operation: 0° to 50°C; Storage: -25° to 65°C (with no icing or condensation)		
Ambient humidity range	35 to 85% RH (with no condensation)		
Ambient atmosphere	No corrosive gasses		

12. Application Software

Item	Product discontinuation				Recommended replacement No recommended replacement
	F500-UM3F	F500-UM3M	F500-UM3FE	F500-UM3ME	
Menu language	Japanese		English		
Macro function	No	Yes	No	Yes	
Ambient temperature range	Operation: 0° to 60°C; Storage: -25° to 85°C (with no icing or condensation)				
Ambient humidity range	Operation and storage : 8 to 95% RH (with no condensation)				
Ambient atmosphere	No corrosive gasses				
Number of pins	50 pins				
Weight	Approx. 15g				

13. Backup Battery

Item	Product discontinuation 3Z49-BAT1	Recommended replacement No recommended replacement	
Nominal Voltage	3 V		
Nominal Capacity	1800m Ah It is determined to an end voltage of 2.0V when the battery is allowed to discharge at a standard current level at 23 °C		
Weight	Approx. 20g		
Ambient temperature range	-40° to 85°C		

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