

Smart Sensors with Ultra-High-Speed Color CCD Cameras

ZFV-C

CSM_ZFV-C_DS_E_1_2

Simple to use.

Detection abilities close to human vision.

- One-touch automatic setting for stable detection
- 2.2-inch monitor integrated in compact housing
- Sensor Heads with field of view up to 150 mm



Ordering Information

Models

Sensor Heads

Appearance	Type	Setting distance	Sensing area	Degree of protection	Model
	Narrow View	34 to 49 mm (variable)	5 × 4.6 mm to 9 × 8.3 mm (variable)	IP65	ZFV-SC10
				IP65	ZFV-SC10R *
	Standard	31 to 187 mm (variable)	10 × 9.2 mm to 50 × 46 mm (variable)	IP65	ZFV-SC50
				IP65	ZFV-SC50R *
				IP67	ZFV-SC50W
	Wide View	66 to 141 mm (variable)	50 × 46 mm (H × V) to 90 × 83 mm (H × V)	IP65	ZFV-SC90
				IP65	ZFV-SC90R *
				IP67	ZFV-SC90W
	Ultra-wide View	114 to 226 mm (variable)	90 × 83 mm (H × V) to 150 × 138 mm (H × V)	IP65	ZFV-SC150
				IP65	ZFV-SC150R *
				IP67	ZFV-SC150W

* Robot Cable type.

Amplifier Units

Appearance	Type	Power supply	Output type	Model
	Single-function Amplifier Unit	24 VDC	NPN	ZFV-CA40
	Multifunction Amplifier Unit		PNP	ZFV-CA45
			NPN	ZFV-CA50
			PNP	ZFV-CA55

Accessories

Data Storage Units

Appearance	Power supply	Output type	Model
	24 VDC	NPN	ZS-DSU11
		PNP	ZS-DSU41

Controller Link Unit

Appearance	Model
	ZS-XCN

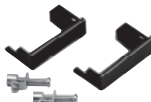
Sensor Head Extension Cable

Cable length	Model
3 m	ZFV-XC3BV2
3 m	ZFV-XC3BRV2 (Robot cable type)
8 m	ZFV-XC8BV2 *

Note: A maximum of two Extension Cables can be connected to extend the cable length of each Sensor Head. There are no restrictions on the combinations of the two Extension Cables to be used.

* The ZFV-XC8BV2 Extension Cable can be used only with ZFV-SC10/SC50/SC50W Sensor Heads.

Panel-mounting Adapter

Appearance	Model	
	ZS-XPM1	First Unit
	ZS-XPM2	Additional Units (for expansion)

External Lighting

Appearance	Type	Model
	Bar Lighting	ZFV-LTL01
	Bar Double Lighting	ZFV-LTL02
	Bar Low-angle Lighting	ZFV-LTL04
	Light Source for Through-beam Lighting	ZFV-LTF01

Specifications

Sensor Heads

Item	ZFV-SC10	ZFV-SC10R	ZFV-SC50/ SC50W	ZFV-SC50R	ZFV-SC90/ SC90W	ZFV-SC90R	ZFV-SC150/ SC150W	ZFV-SC150R
Type	Narrow View Type		Standard Type		Wide View Type		Ultra-wide View Type	
Setting distance (L)	34 to 49 mm (variable)		31 to 187 mm (variable)		67 to 142 mm (variable)		115 to 227 mm (variable)	
Sensing range (H × V) Sensing range (V) (H)	5 × 4.6 mm to 9 × 8.3 mm (variable)		10 × 9.2 mm to 50 × 46 mm (variable)		50 × 46 mm to 90 × 83 mm (variable)		90 × 83 mm to 150 × 138 mm (variable)	
Relation between setting distance and sensing range	Setting distance (L) 49 mm 34 mm 5 mm 9 mm Sensing range (H)		Setting distance (L) 187 mm 31 mm 10 mm 50 mm Sensing range (H)		Setting distance (L) 142 mm 67 mm 50 mm 90 mm Sensing range (H)		Setting distance (L) 227 mm 115 mm 90 mm 150 mm Sensing range (H)	
Built-in lens	Focus: f15.65		Focus: f13.47		Focus: f6.1		---	
Object lighting method	Pulse lighting							
Object light source	Eight white LEDs		Thirty-six white LEDs		Twenty white LEDs		Seventy-two white LEDs	
Optional lighting interface	No		Yes				No	
Sensing element	1/3-inch CCD							
Shutter	Electronic shutter, shutter time: 1/500 to 1/8,000							
Power supply voltage	15 VDC (Supplied from Amplifier Unit.)		15 VDC, 48 VDC (Supplied from Amplifier Unit.)					
Current consumption	Approx. 200 mA		Approx. 350 mA (15 V: approx. 150 mA, 48 V: approx. 200 mA, including current when external light is connected)					
Dielectric strength	1,000 VAC, 50/60 Hz for 1 min							
Vibration resistance (destruction)	10 to 150 Hz, 0.35-mm single amplitude, 10 times each in X, Y, and Z directions for 8 min							
Shock resistance (destruction)	150 m/s ² , three times each in six directions (up/down, left/right, forward/backward)							
Ambient temperature range	Operating: 0 to 40°C, Storage: -20 to +65°C (with no icing or condensation)							
Ambient humidity range	Operating and storage: 35% to 85% (with no condensation)							
Ambient atmosphere	Must be free of corrosive gas.							
Connection method	Prewired, Standard cable length: 2 m							
Cable length	Standard Cable: 2m	Robot Cable: 2m	Standard Cable: 2m	Robot Cable: 2m	Standard Cable: 2m	Robot Cable: 2m	Standard Cable: 2m	Robot Cable: 2m
Degree of protection (IEC 60529 standard)	IP65		ZFV-SC□□□: IP65 ZFV-SC□□□W: IP67 ZFV-SC□□□R: IP65					
Materials	Case	ABS						
	Mounting bracket	ZFV-SC□□□□/SC□□□□W/SC150R: PBT ZFV-SC10R/SC50R/SC90R base: aluminum, bracket: stainless steel						
Weight (including mounting bracket and cord)	Approx. 200 g	Approx. 270 g	Approx. 270 g	Approx. 400 g	Approx. 300 g	Approx. 400 g	Approx. 600 g	
Accessories	Mounting brack	ZFV-XMF (1)	ZFV-XMF3 (1)	ZFV-XMF2 (1)	ZFV-XMF4 (1)	ZFV-XMF2 (1)	ZFV-XMF4 (1)	---
	Ferrite core	2						
	Instructio n sheet	1						
LED class	Risk Group 1 (IEC62471)							

Amplifier Units

Item		ZFV-CA40	ZFV-CA45	ZFV-CA50	ZFV-CA55
Output method		NPN open collector, 30 VDC 50 mA max., residual voltage 1.2 V max.	PNP open collector, 50 mA max., residual voltage 1.2 V max.	NPN open collector, 30 VDC 50 mA max., residual voltage 1.2 V max.	PNP open collector, 50 mA max., residual voltage 1.2 V max.
Serial I/O	USB2.0	1 port, full-speed (12 Mbps) MINI-B			
	RS-232C	1 port, 115200 bps max.			
Number of inspection items that can be executed simultaneously		1 item		8 items max.	
Inspection items		Patterns (PATTERN), Brightness (BRIGHT), Area (AREA), Width (WIDTH), Position (POSITION), Count (COUNT), Color inspection (HUE), Character (CHARA)			
Teaching area		Rectangular, one area			
Teaching area size		• Patterns (PATTERN), Brightness (BRIGHT): Any rectangular area (256 × 256 max.) • Area (AREA), Width (WIDTH), Position (POSITION), Count (COUNT), Color inspection (HUE), Character (CHARA): Any rectangular area (full screen max.)			
Sensing area		Full screen			
Resolution		468 × 432 (H × V) max.			
Number of models that can be registered	Amplifier Unit	8 models		1 model *2	
	External bank *1	128 models		16 models *2	
Image logging *1	Logging trigger	Stores NG images or all images (selectable).			
	Sampling rate	ZFV measurement cycle *2			
	Number of logged images	Logs up to 128 images in series			
Image input cycle		13 ms (Standard), 8 ms (FAST mode), 5 ms (MAX mode)			
Other functions		Control output switching: ON for OK or ON for NG, ON delay/OFF delay, One-shot output, "ECO" mode			
Gang-mounting Amplifier Units		5 units max.		Not connectable	
Output signals		(1) Control output (OUTPUT) (2) Enable output (ENABLE) (3) Error output (ERROR)			
Input signals		(1) Sync measurement input (TRIG)/Continuous measurement input (TRIG); switched from menu (2) Bank selection input (BANK1-3) (3) Object stationary teaching (TEACH)/Object motion teaching (TEACH); switched from menu			
Sensor Head interface		Digital interface			
Image display		TFT 2.2-inch LCD (Display dots: 930 × 234)			
Indicators		• Judgment result indicator (OUTPUT, Color: orange) • Inspection mode indicator (RUN, Color: green) • Error indicator (ERR, Color: red) • Ready status indicator (READY, Color: blue)			
Operation interface		• Cursor keys (up, down, left, right) • Setting key (SET) • Escape key (ESC) • Operating mode switching (slide switch) • Menu switching (slide switch) • Teaching/Display switching key (TEACH/VIEW) • Function keys (A to D, 4 inputs)			
Power supply voltage		20.4 to 26.4 VDC (including ripple)			
Current consumption		800mA max. (with Sensor Head ZFV-SC10/SC50/SC90 connected, power supply voltage 24VDC) 930mA max. (with Sensor Head ZFV-SC150/Option Lighting Unit ZFV-LTL01/LTL02 connected, power supply voltage 24VDC) 1050mA max. (Option Lighting Unit ZFV-LTL04/LTF01 connected, power supply voltage 24VDC)			
Dielectric strength		1,000 VAC, 50/60 Hz for 1 min between leads and Amplifier Unit case			
Noise immunity		1 kV, Pulse rise: 5 ns, Pulse width: 50 ns, Burst duration: 15 ms, Cycle: 300 ms			
Vibration resistance (destruction)		10 to 150 Hz, 0.1-mm single amplitude, 10 times each in X, Y, and Z directions for 8 min			
Shock resistance (destruction)		150 m/s ² , three times each in six directions (up/down, left/right, forward/backward)			
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)			
Ambient atmosphere		Must be free of corrosive gas.			
Degree of protection		IEC 60529, IP20			
Materials		Polycarbonate			
Weight		Approx. 300 g (including cord; packaged condition: 450 g)			
Accessories		Ferrite core (1), Instruction sheet			

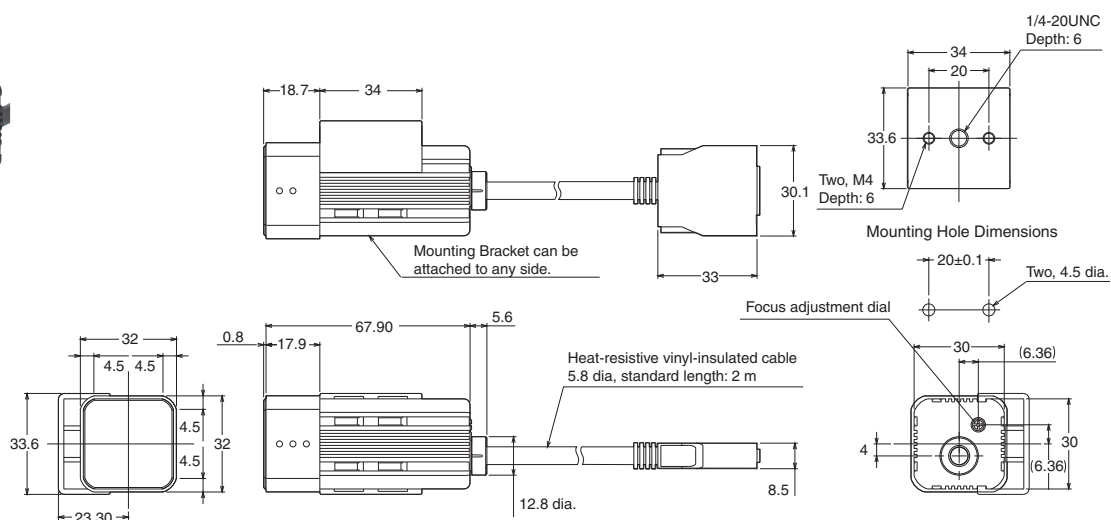
*1 A ZS-DSU Data Storage Unit is required. There are restrictions in the versions of Units that can be connected. Ask your OMRON representative for details.

*2 If there is only one inspection item, the measurement mode can be switched to Single Bank Mode to increase the number of models that can be registered to eight for the Amplifier Unit and 128 for the external bank.

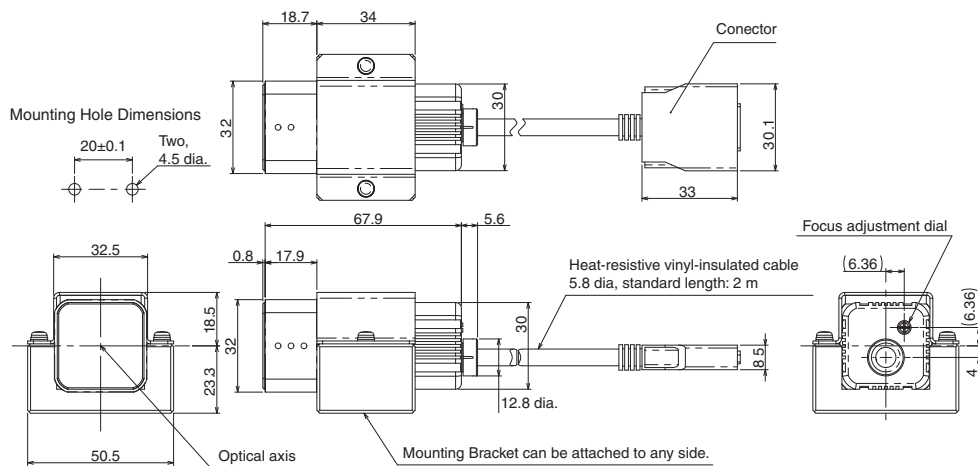
Dimensions

Sensor Heads

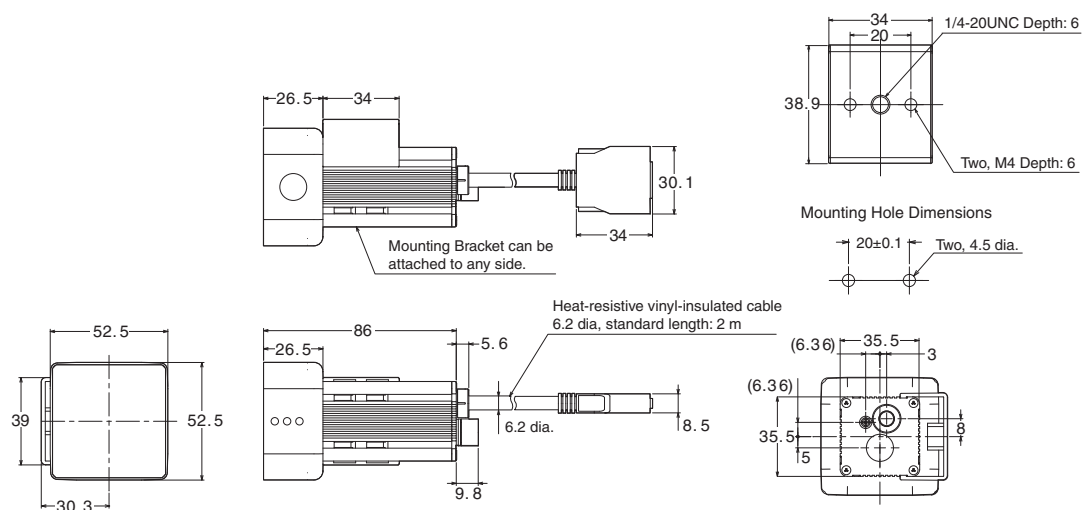
ZFV-SC10



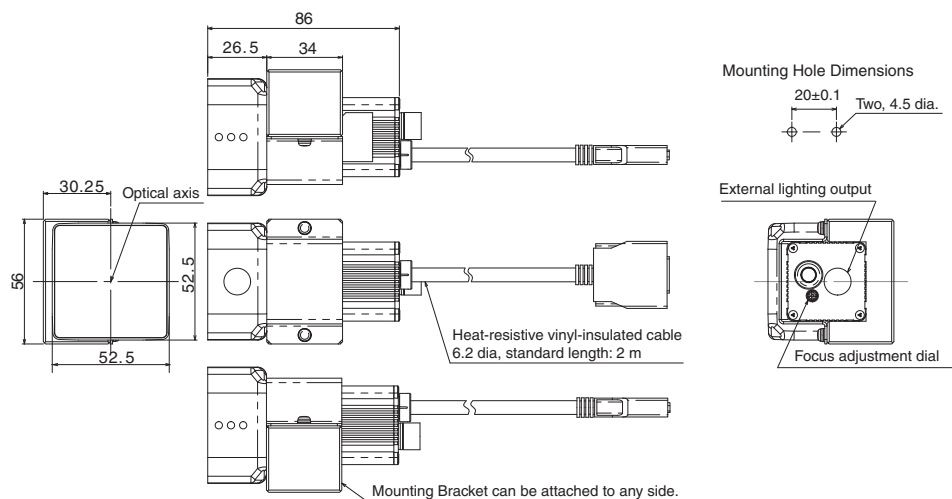
ZFV-SC10R



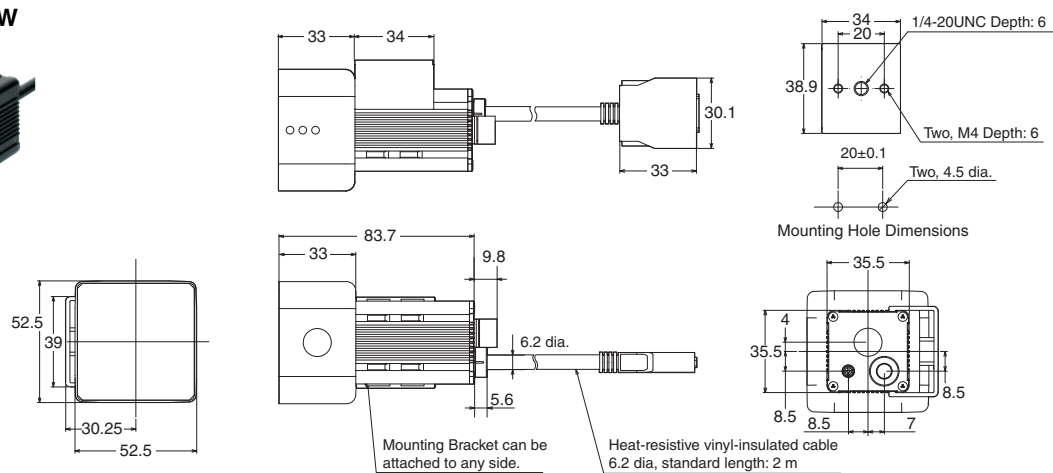
ZFV-SC50/SC50W



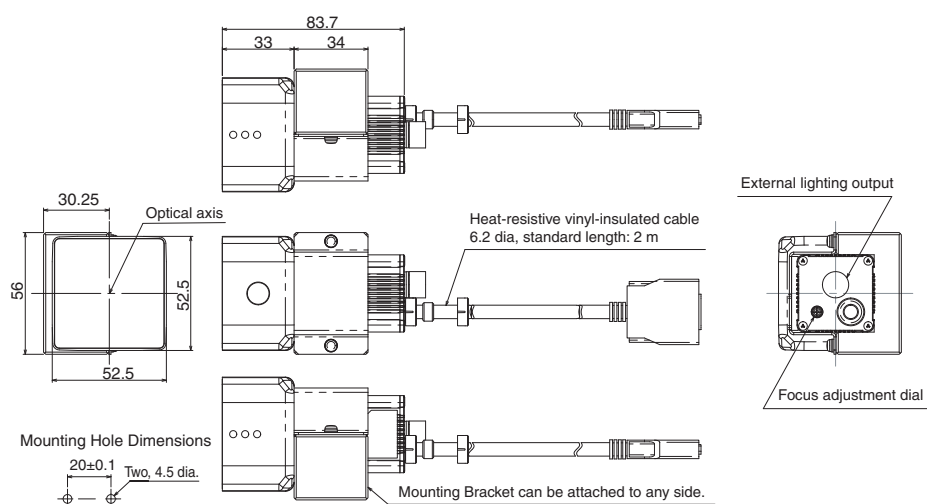
ZFV-SC50R



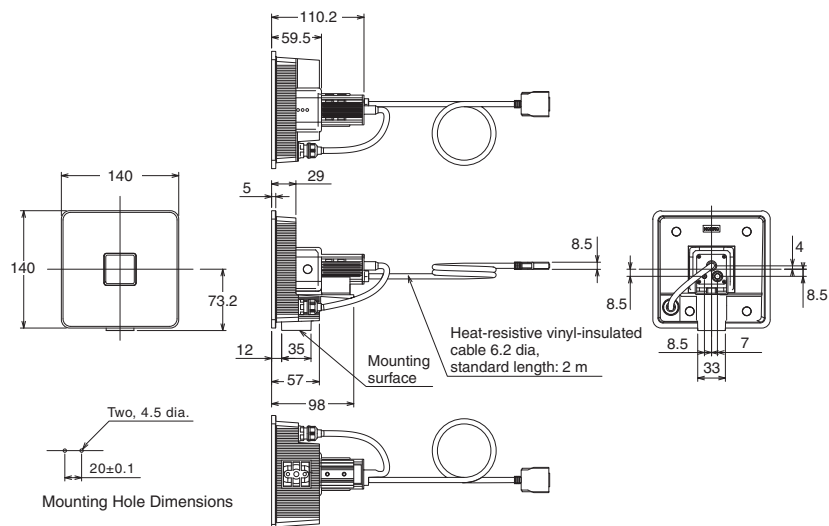
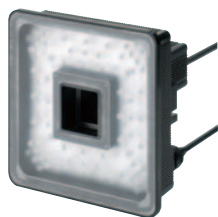
ZFV-SC90/SC90W



ZFV-SC90R

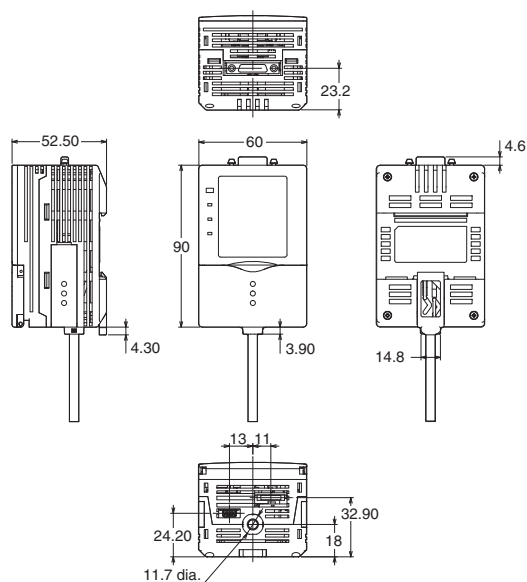


ZFV-SC150/SC150W/SC150R



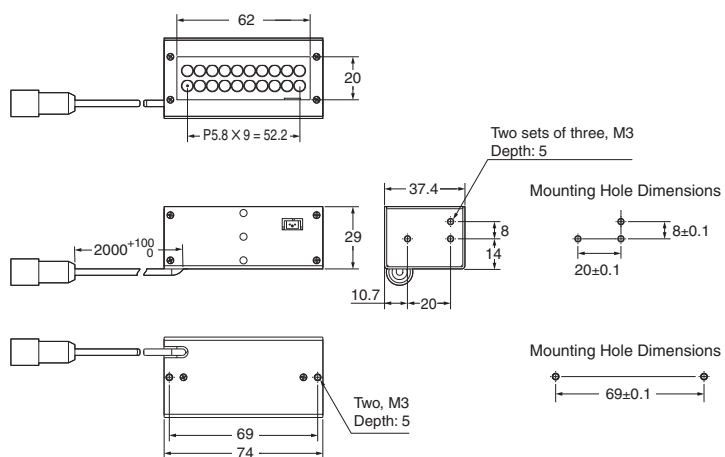
Amplifier Units

ZFV-CA□□



Optional Lighting

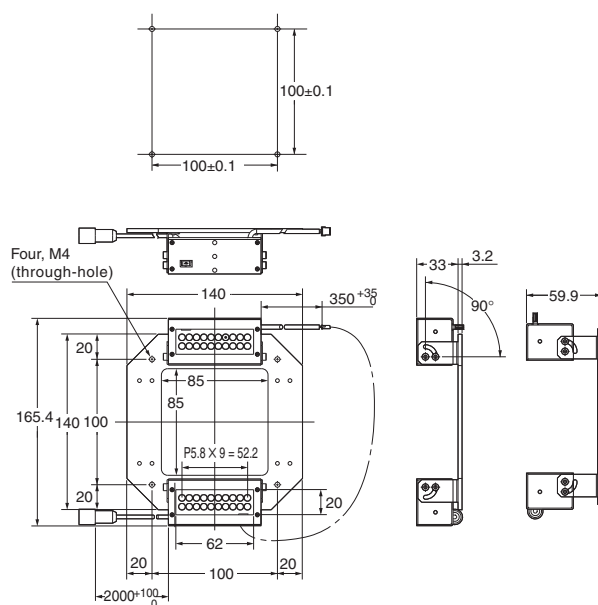
ZFV-LTL01



ZFV-LTL02



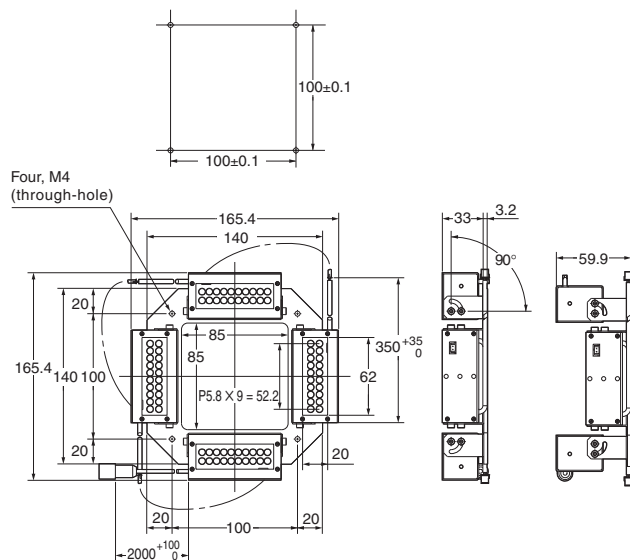
Mounting Hole Dimensions



ZFV-LTL04



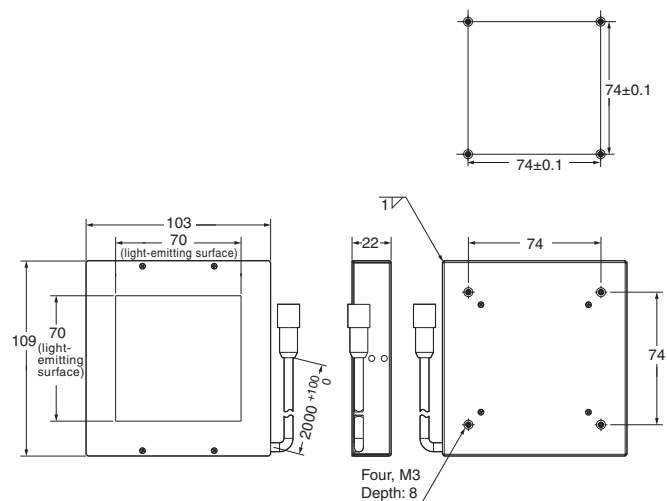
Mounting Hole Dimensions



ZFV-LTF01



Mounting Hole Dimensions



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