High-speed Fiber Optic: SA1C-F

Key features:

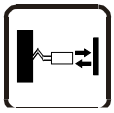
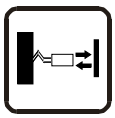
- Ideal for remote sensing applications
- Featuring quick-connect cable and easy-insert fiber optic units for simple installation
- Through-beam and reflected-light sensing available
- Sensing range up to 7.09" (180mm) for through-beam sensors
- Dual outputs: Select NPN and PNP transistor outputs or NPN transistor output combined with a self-diagnostic output
- Outputs selectable for light on or dark on
- High-speed, 50µs response time
- Featuring variable off-delay (0 to 100msec) and fine-tune sensitivity adjustment
- Stable LED makes alignment easy
- Red or green LEDs available for detecting color marks
- Mount on a 35mm DIN rail

The perfect fiber optic sensor for applications where you have difficulty mounting regular or miniature sensors or where accessability is a problem.

Available in through-beam and retro-reflective models, the built-in variable off-delay (0 - 10ms) can help you bring your complete system in tune.

The 50µs response time ensures detection of fast moving targets in a high-speed manufacturing environment where speed counts.

Part Numbers

Function	Amplifier	Output	Light Source	Response	Through-Beam Units		Diffuse-Reflected Units	
					Part Number	Range	Part Number	Range
	SA1C-FN3E (Cable) SA1C-FN3EC (Quick-Connect)	30V DC NPN transistor: 100mA (maximum) Self-diagnostic: 50mA (maximum)	Red LED	Standard speed: 0.5 ms	SA9F-TS: ø0.16" (M4) Straight SA9F-TC: ø0.16" (M4) Coiled SA9F-TT: ø0.12" (M3) Straight SA9F-TM: ø0.16" (M4) Multicore SA9F-TH: Heat-resistant glass fiber SA9F-TL: Side view	180mm (7.09") 150mm (5.91") 50mm (1.97") 150mm (5.91") 100mm (3.94") 40mm (1.57")	SA9F-DS: ø0.24" (M6) Straight SA9F-DC: ø0.24" (M6) Coiled SA9F-DD: ø0.24" (M6) Coaxial SA9F-DT: ø0.12" (M3) Straight SA9F-DM: ø0.01" (0.26mm) Multicore SA9F-DH: Heat-resistant glass fiber SA9F-DL: Side view	60mm (2.36") 25mm (0.98") 60mm (2.36") 20mm (0.79") 60mm (2.36") 27mm (1.06") 10mm (0.39")
	SA1C-FD3F (Cable) SA1C-FD3FC (Quick-Connect)	30V DC NPN transistor: 100mA (maximum) PNP transistor: 200mA (maximum)						
	SA1C-FN3EG (Cable) SA1C-FN3EGC (Quick-Connect)	30V DC NPN transistor: 100mA (maximum) Self-diagnostic: 50mA (maximum)	Green LED	Standard speed: 0.5 ms	SA9F-TS: ø0.16" (M4) Straight SA9F-TC: ø0.16" (M4) Coiled SA9F-TT: ø0.12" (M3) Straight SA9F-TM: ø0.16" (M4) Multicore SA9F-TH: Heat-resistant glass fiber SA9F-TL: Incompatible with green LED	16mm (0.63") 14mm (0.55") 5mm (0.20") 14mm (0.55") 8mm (0.31") N/A	SA9F-DS: ø0.24" (M6) Straight SA9F-DC: Incompatible with green LED SA9F-DD: ø0.24" (M6) Coaxial SA9F-DT: Incompatible with green LED SA9F-DM: ø0.01" (0.26mm) Multicore SA9F-DH: Incompatible with green LED SA9F-DL: Incompatible with green LED	7mm (0.28") N/A 7mm (0.28") N/A 4mm (0.16") N/A N/A
	SA1C-FD3FG (Cable) SA1C-FD3FGC (Quick-Connect)	30V DC NPN transistor: 100mA (maximum) PNP transistor: 200mA (maximum)						
	SA1C-F1N3E (Cable) SA1C-F1N3EC (Quick-Connect)	30V DC NPN transistor: 100mA (maximum) Self-diagnostic: 50mA (maximum)	Red LED	High-speed: 50 µs	SA9F-TS: ø0.16" (M4) Straight SA9F-TC: ø0.16" (M4) Coiled SA9F-TT: ø0.12" (M3) Straight SA9F-TM: ø0.16" (M4) Multicore SA9F-TH: Heat-resistant glass fiber SA9F-TL: Side view	50mm (1.97") 40mm (1.57") 15mm (0.59") 40mm (1.57") 30mm (1.18") 13mm (0.51")	SA9F-DS: ø0.24" (M6) Straight SA9F-DC: ø0.24" (M6) Coiled SA9F-DD: ø0.24" (M6) Coaxial SA9F-DT: ø0.12" (M3) Straight SA9F-DM: ø0.01" (0.26mm) Multicore SA9F-DH: Heat-resistant glass fiber SA9F-DL: Side view	20mm (0.79") 7mm (0.28") 20mm (0.79") 6mm (0.24") 18mm (0.71") 7mm (0.28") 3mm (0.12")
	SA1C-F1D3F (Cable) SA1C-F1D3FC (Quick-Connect)	30V DC NPN transistor: 100mA (maximum) PNP transistor: 200mA (maximum)						

Function is determined by the fiber optic unit used.

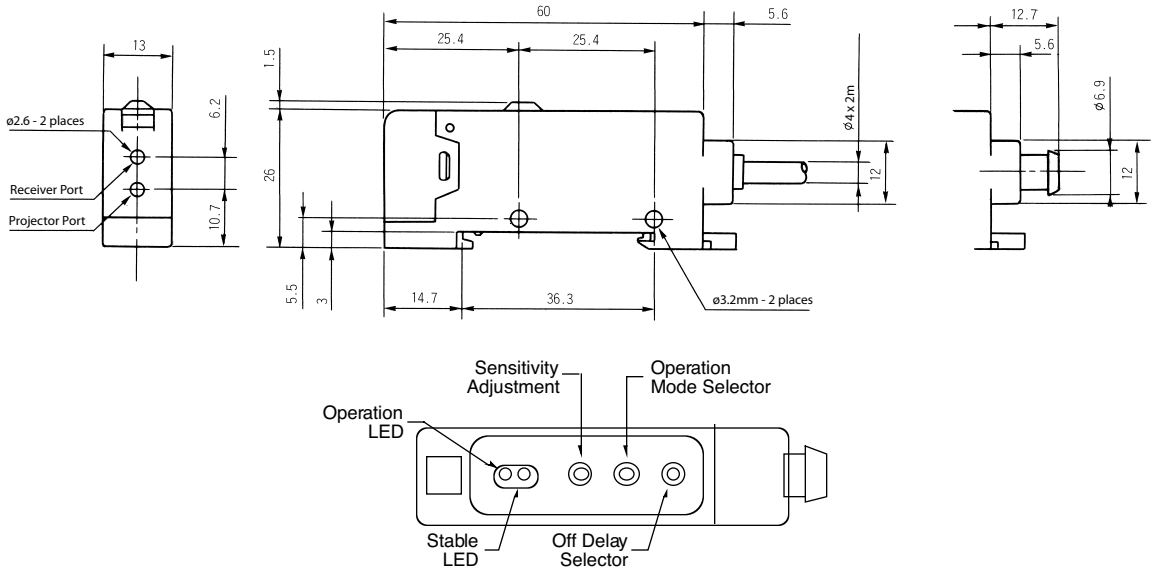
For information on accessories, see page 203.

Specifications

				SA1C-FN, -FD (Standard Speed)	SA1C-F1N, -F1D (High-speed)
General Specifications	Power Voltage		12V to 24V DC	√	√
	Operating Voltage		10V to 30V DC, ripple 10% (maximum)	√	√
	Current Draw		30mA (maximum)	√	–
			40mA (maximum)	–	√
	Operating Temperature		Amplifier only: –25° to +55°C Fiber optic cords (except heat-resistant types): –40° to +70°C Heat-resistant fiber optic cords: –40°C to +350°C (avoid ice coating)	√	√
	Operating Humidity		35 to 85% RH (avoid condensation)	√	√
	Extraneous Light Immunity		Sunlight: 10,000 lux (maximum); Incandescent light: 3,000 lux (maximum) on receiver surface— defined as incident or unwanted light received by a sensor, unrelated to the presence or absence of the intended object	√	√
	Material		Amplifier only: PBT resin (housing) with polycarbonate lens Fiber optic cords (except heat-resistant types): Nickel-plated brass (sensing head), polyethylene-covered PMMA (cord), and SUS304 stainless (sleeve) Heat-resistant fiber optic cords: SUS 304 stainless (sensing head) and SUS spiral tube around glass fiber cord	√	√
	Degree of Protection		IP66 — IEC Pub 529, sensors rated IP66 are dust-tight, water-resistant, and perform best when not subjected to heavy particle or water blasts	√	√
	Connection		Cable type: 0.2mm^2; Vinyl cabtyre cable #24 AWG, 6'–6-3/4' (2m) long Connector type: Ø 0.31" (8mm) 3- or 4-pin connector (cable ordered separately for quick connect sensors)	√	√
	Light Source		Red or green LED (pulse-modulated)	√	√
	Output		NPN transistor: 30V DC (1.2V residual), 100mA (maximum) PNP transistor: 30V DC (2.0V residual), 200mA (maximum) Self-diagnostic: 30V DC (1.2V residual), 50mA (maximum)	√	√
	Response		0.5ms (maximum)	√	–
			50µs (maximum)	–	√
	Off Delay		0 to 100 ms (adjustable)	√	√
	Sensitivity		4-turn adjustment	√	√
	Minimum Bending Radius		Fiber optic cord (except SA9F-TT, -DT, -TL, and -DL): 1"R (25mm); Sleeve: 0.39"R (10mm) SA9F-TT and -DT: 0.59"R (15mm); Sleeve: 0.39"R (10mm) SA9F-TL and DL: 0.59"R (15mm); Sleeve: Unbendable	√	√
Function Specifications	Operation Mode		Light on or dark on (selectable by switch on amplifier)	√	√
	Indicator		Operation indicator: Red LED (out)	√	√
			Stable level indicator: Green LED (stable)	√	√
	Noise Resistance	Normal Mode	500V	√	–
			300V	–	√
		Common Mode	300V	√	–
			150V	–	√
		Pulse Width	50ns –1µs, 100Hz (using a noise simulator)	√	√
	Storage Temperature		–30 to +70°C (avoid freezing)	√	√
	Insulation Resistance		20M minimum with 500V DC megger (between live & dead parts)	√	√
	Dielectric Strength		1000V, 1 minute (between live & dead parts)	√	√
	Vibration Resistance		Damage limits: 10 – 55Hz Amplitude: 1.5mm p-p, 20 cycles in each of 3 axes crossed (one cycle = 5 minutes)	√	√
	Shock Resistance		Damage limits: 500m/s^2 (approximately 49G), 10 shocks in each of 3 axes	√	√
	Weight		Cable type: Approximately 75g Quick-connect type: Approximately 30g	√	√

CE

Dimensions (mm)



Detecting Color Marks

Color of Mark	Background Color										
	White	Yellow	Chartreuse	Orange	Red	Magenta	Turquoise	Blue	Violet	Green	Black
White	–	❖	◆	❖	❖	◆	◆	◆	◆	◆	◆
Yellow	❖	–	◆	❖	❖	❖	◆	◆	◆	◆	◆
Chartreuse	◆	◆	–	□	□	❖	□	◆	❖	◆	◆
Orange	❖	❖	□	–	–	❖	□	◆	◆	◆	◆
Red	❖	❖	□	–	–	□	□	◆	◆	◆	◆
Magenta	◆	❖	❖	❖	□	–	□	□	–	□	◆
Turquoise	◆	◆	□	□	□	□	–	□	◆	❖	◆
Blue	◆	◆	◆	◆	◆	□	□	–	□	□	□
Violet	◆	◆	❖	◆	◆	–	◆	□	–	□	□
Green	◆	◆	◆	◆	◆	□	❖	□	□	–	□
Black	◆	◆	◆	◆	◆	◆	◆	□	□	□	–

□ = Use Red LED
❖ = Use Green LED
◆ = Use Red or Green LED
– = Not Detectable

Accessories

Reflectors

Appearance	Item	Use with	Part Number
	Standard reflector	SA1E	IAC-R5
	Small reflector		IAC-R6
	Large reflector		IAC-R8
	Narrow (rear/side mounting)		IAC-R7M
	Narrow (side mounting)		IAC-R7S
	Narrow (rear mounting)		IAC-R7B
	Tape (35 x 40mm)		IAC-RS1
	Tape (70 x 80mm)		IAC-RS2
	Standard	SA1E-X	IAC-R9
	Small		IAC-R10
	Ultra-small		IAC-R11

Brackets

Appearance	Item	Use with	Part Number
	Vertical mounting bracket	SA1E	SA9Z-K01
	Horizontal mounting bracket		SA9Z-K02
	Cover mounting bracket		SA9Z-K03
	Back mounting bracket		SA9Z-K04
	Reflector mounting bracket		IAC-L2
	Reflector mounting bracket		IAC-L3
photo not available	Reflector mounting bracket		IAC-L5

Slits

Appearance	Item	Slit Size	Use with	Part Number	Min. Order Qty
	Vertical slit	0.5mm x 18mm	SA1E	SA9Z-S06	2
		1.0mm x 18mm		SA9Z-S07	
		2.0mm x 18mm		SA9Z-S08	
	Horizontal slit	0.5mm x 6.5mm		SA9Z-S09	
		1.0mm x 6.5mm		SA9Z-S10	
		2.0mm x 6.5mm		SA9Z-S11	
	Round slit	ø0.5mm		SA9Z-S12	
		ø1.0mm		SA9Z-S13	
		ø2.0mm		SA9Z-S14	

Connector Cables (for connector model sensors)

Appearance	Number of Core Wires	Type & Length	Use with	Part No.
	4	Straight, 2m	SA1E	SA9Z-CM8K-4S2
		Straight, 5m		SA9Z-CM8K-4S5
		Right angle, 2m		SA9Z-CM8K-4L2
		Right angle, 5m		SA9Z-CM8K-4L5
photo not available	4	2m	SA1C-F	SA9C-CA4D2
		5m		SA9C-CA4D5
		2m		SA9C-CA4D2S
		5m		SA9C-CA4D5S

Air Blower Mounting Blocks

Appearance	Item	Use with	Part Number
	Air blower mounting block	SA1E	SA9Z-A02

Sensitivity Control Screwdriver

Item	Part No.	Package Quantity
Sensitivity Control Screwdriver 	SA9Z-AD01	1

Diffuse-Reflected Light Fiber Optic Units - SA9F

Appearance	Part Number	Description	Use with	Range
	**SA9F-DS31** No sleeve **SA9F-DS32** 3.54" (90mm) sleeve **SA9F-DS33** 1.77" (45mm) sleeve	Straight: Two fibers ø1mm (0.04") Threaded mount: ø6mm (M6) Detects: ø0.03mm (0.0012") minimum object	SA1C-FK3 SA1C-FK3G SA1C-F	60mm (2.36") 7mm (0.28")
	**SA9F-DC31** No sleeve **SA9F-DC32** 3.54" (90mm) sleeve **SA9F-DC33** 1.77" (45mm) sleeve (All three not compatible with green LED)	Coiled: Two fibers ø1mm (0.04") Threaded mount: ø6mm (M6) Detects: ø0.03mm (0.0012") minimum object	SA1C-FK3 SA1C-FK3G SA1C-F	25mm (0.98") —
	**SA9F-DT11** No sleeve **SA9F-DT12** 3.54" (90mm) sleeve **SA9F-DT13** 1.77" (45mm) sleeve (All three not compatible with green LED)	Straight: Two fibers ø0.5mm (0.02") Threaded mount: ø3mm (M3) Detects: ø0.03mm (0.0012") minimum object	SA1C-FK3 SA1C-FK3G SA1C-F	20mm (0.78") —
	**SA9F-DD31**	Coaxial: Core ø1mm (0.04") + 16 fibers: ø0.26mm (0.01") Threaded mount: ø6mm (M6) Detects: ø0.03mm (0.0012") minimum object	SA1C-FK3 SA1C-FK3G SA1C-F	60mm (2.36") 7mm (0.28")
	**SA9F-DM74** 1 row = 32 fibers **SA9F-DM75** 2 rows = 16 each (Not compatible with green LED)	Multicore: 32 fibers ø0.26mm (0.010") Detects: ø0.06mm (0.0024") minimum object	SA1C-FK SA1C-FK3G SA1C-F (not compatible with SA9F-DM75, SA9F-DM76)	60mm (2.36") 4mm (0.16")
	**SA9F-DH21** No sleeve **SA9F-DH22** 3.54" (90mm) sleeve (Both not compatible with green LED)	Heat-resistant glass: Two fibers ø0.7mm (0.03") Threaded mount: ø4mm (M4) Detects: ø0.03mm (0.0012") minimum object	SA1C-FK3 SA1C-FK3G SA1C-F	27mm (1.06") —

Through-Beam Fiber Optic Units - SA9F

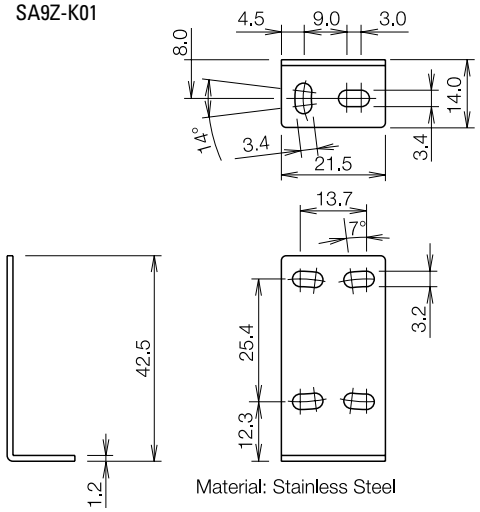
Appearance	Part Number	Description	Amplifier	Range
	**SA9F-TS21** No sleeve **SA9F-TS23** 1.77" (45mm) sleeve	Straight fiber: ø1mm (0.04") Threaded mount: ø4mm (M4) Detects: ø0.3mm (0.012") minimum object	SA1C-FK3 SA1C-FK3G SA1C-F	180mm (7.09") 16mm (0.63")
	**SA9F-TC21** No sleeve	Coiled fiber: ø1mm (0.04") Threaded mount: ø4mm (M4) Detects: ø0.3mm (0.012") minimum object	SA1C-FK3 SA1C-FK3G SA1C-F	150mm (5.91") 14mm (0.55")
	**SA9F-TT11** No sleeve	Straight fiber: ø0.5mm (0.02") Threaded mount: ø3mm (M3) Detects: ø0.15mm (0.006") minimum object	SA1C-FK3 SA1C-FK3G SA1C-F	50mm (1.97") 5mm (0.2")
	**SA9F-TM21** No sleeve **SA9F-TM22** 3.54" (90mm) sleeve **SA9F-TM23** 1.77" (45mm) sleeve 16 fibers (cluster)	Multicore: ø0.26mm (0.010") Threaded mount: ø4mm (M4) Detects: ø0.3mm (0.012") minimum object	SA1C-FK3 SA1C-FK3G SA1C-F	150mm (5.91") 14mm (0.55")
	**SA9F-TM74** 16 fibers in one row	Multicore: 16 fibers (one row) ø0.26mm (0.010") Detects: ø0.06mm (0.0024") minimum object	SA1C-FK3 SA1C-FK3G SA1C-F	150mm (5.91") 14mm (0.55")
	**SA9F-TH21** No sleeve **SA9F-TH22** 3.54" (90mm) sleeve	Heat-resistant glass fiber: ø1mm (0.04") Threaded mount: ø4mm (M4) Detects: ø0.3mm (0.012") minimum object	SA1C-FK3 SA1C-FK3G SA1C-F	100mm (3.94") 8mm (0.31")

Miscellaneous Accessories

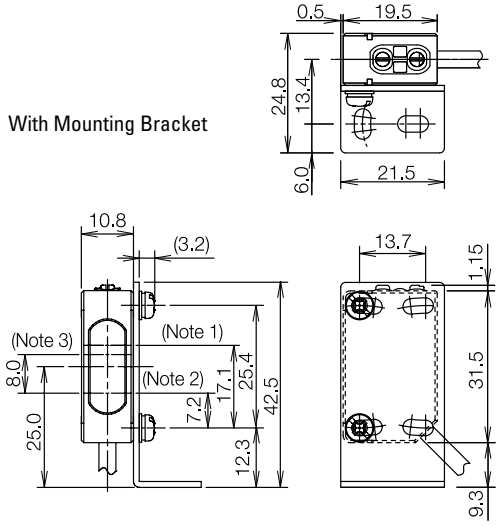
Description	Use with		Part Number
Fiber cutter	All fiber units except heat resistant	HxLxD: 23x 45 x 8mm (0.91" x 1.77" x 0.31") Included with fiber units; order replacement only	SA9Z-F01
Set of 2 easy-insert adaptors	SA9F-TT, SA9F-TL, SA9F-DT, and SA9F-DL	ø2.2 x 24mm long (ø0.087" (OD) x 0.945") Included with applicable fiber optic units; order replacement set only	SA9Z-F02
Lens attachment for long-range detection of opaque objects, minimum size: Ø 0.14" (3.5mm)	SA1C-F through-beam fiber unit only		SA9Z-F11
	Sensing ranges: Standard speed red LED: SA9F-TS21: 1.3m (4' – 3-3/16") SA9F-TC21: 1m (3' – 3-3/8") 0.1m (3.94") SA9F-TM21: 1.05m (3' – 5-3/8")		
	Sensing ranges: Standard speed green LED: SA9F-TS21: 0.135m (5.31") SA9F-TC21: 0.1m (3.94") SA9F-TM21: 0.13m (5.12")		
	Sensing ranges: High-speed red LED: SA9F-TS21: 0.4m (5.75") SA9F-TC21: 0.3m (1.81") SA9F-TM21: 0.38m (4.96")		
Side view attachment to rotate axis by 90° for detection of opaque objects, minimum size: Ø 0.14" (3.5mm)	SA1C-F through-beam fiber unit only		SA9Z-F12
	Sensing ranges: Standard speed red LED: SA9F-TS21: 200mm (7.87") SA9F-TC21: 130mm (5.12") SA9F-TM21: 160mm (6.30")		
	Sensing ranges: High-speed red LED: SA9F-TS21: 50mm (1.97") SA9F-TC21: 35mm (1.38") SA9F-TM21: 40mm (1.57")		
Side-on attachment for narrow clearance, Range: 1.26" (32mm), for detection of transparent or opaque objects	SA1C-F diffuse-reflected light fiber unit only		SA9Z-F13
	Sensing ranges: Standard speed red LED: SA9F-TS21: 35mm (1.38") SA9F-TC21: 30mm (1.81") SA9F-TM21: 35mm (1.38")		
Attachment for high-accuracy: Range: 0.4" ± 0.04" (10mm ± 1mm), for detection of transparent or opaque objects	SA1C-F through-beam fiber unit only		SA9Z-F14
	Sensing ranges: Standard speed red LED:		
	SA9F-TS21: SA9F-TC21: SA9F-TM21:	10mm ± 1mm (0.394" ± 0.039")	

Accessory Dimensions (mm)

Mounting Bracket
SA9Z-K01

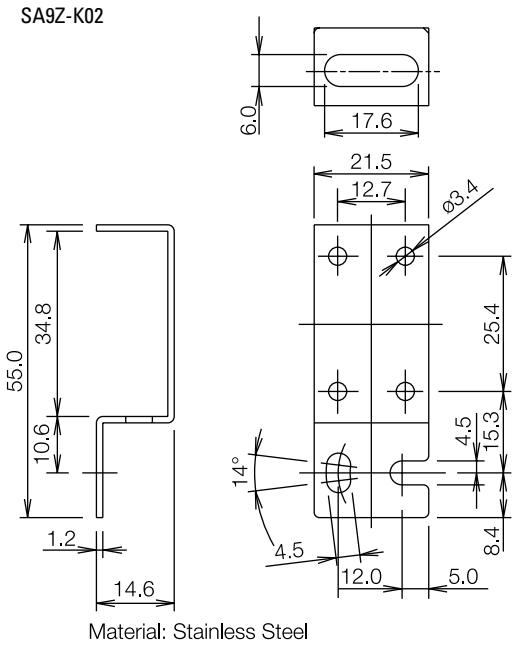


With Mounting Bracket

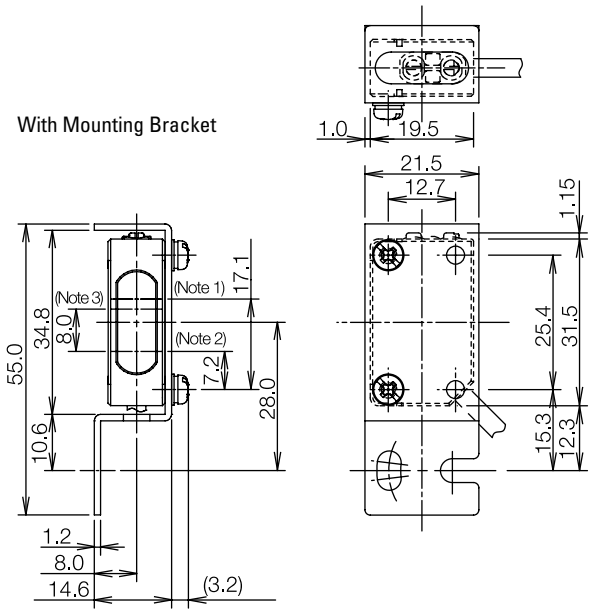


Note 1: Projector (through-beam)Receiver (through-beam)
Note 2: Projector (polarized retroreflective, background suppression)
Note 3: Receiver (polarized retroreflective)

SA9Z-K02

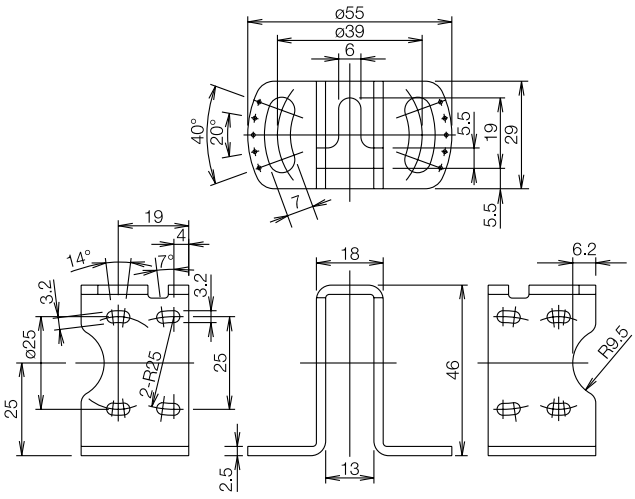


With Mounting Bracket



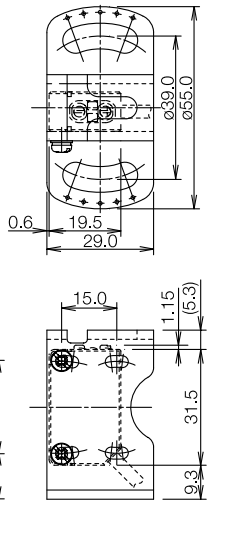
Note 1: Projector (through-beam)Receiver (through-beam)
Note 2: Projector (polarized retroreflective, background suppression)
Note 3: Receiver (polarized retroreflective)

SA9Z-K03



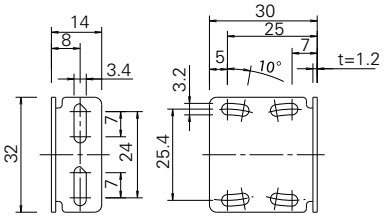
Material: Stainless Steel

With Mounting Bracket



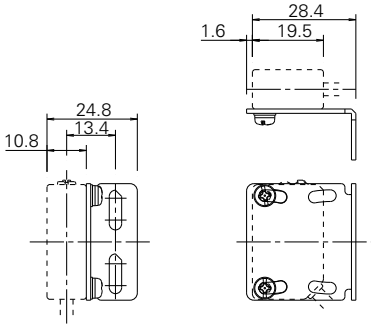
Note 1: Projector (through-beam)Receiver (through-beam)
Note 2: Projector (polarized retroreflective, background suppression)
Note 3: Receiver (polarized retroreflective)

SA9Z-K04

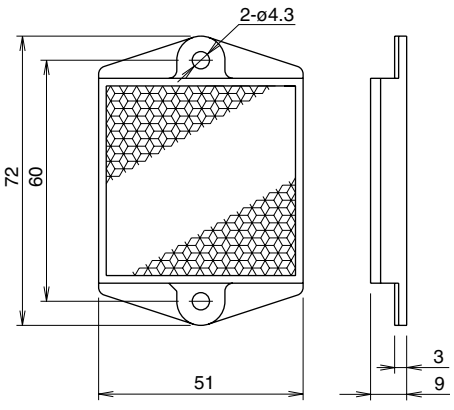


Material: Stainless Steel

With Mounting Bracket

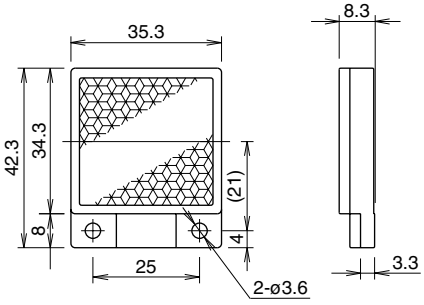


Reflector
IAC-R5



(Effective reflecting area: 47.2 □ 47.2)
Material: PMMA (reflector), ABS (base)

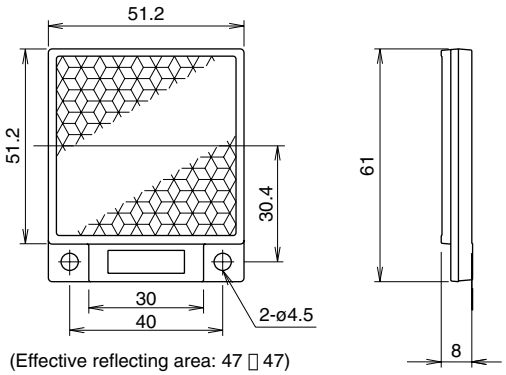
IAC-R6



(Effective reflecting area: 30 □ 31)
Material: PMMA (reflector), ABS (base)

Reflector

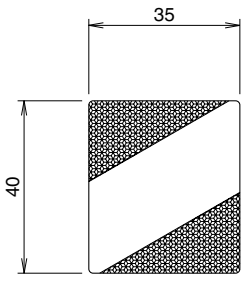
IAC-R8



(Effective reflecting area: 47 □ 47)

Material: PMMA (reflector), ABS (base)

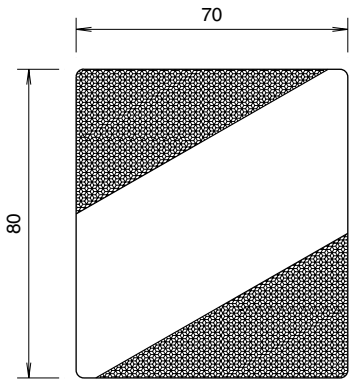
IAC-RS1



Thickness = 0.5 mm

Material: PMMA

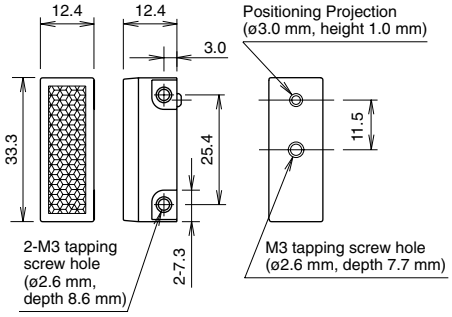
IAC-RS2



Thickness = 0.5 mm

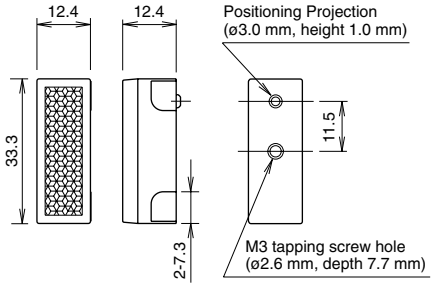
Material: PMMA

IAC-R7M (rear/side mounting)



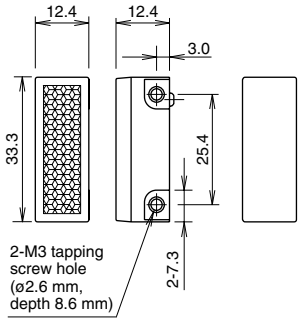
Material: PMMA (reflector), ABS (base)

IAC-R7B (rear mounting)



Material: PMMA (reflector), ABS (base)

IAC-R7S (side mounting)

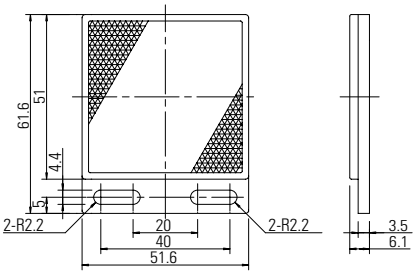


Material: PMMA (reflector), ABS (base)

Effective reflecting area: 8.6 × 29.5

The mounting plate for reflector must be 0.8 to 2.5 mm in thickness.

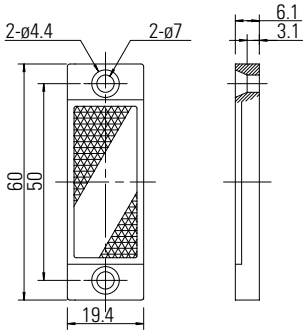
IAC-R9



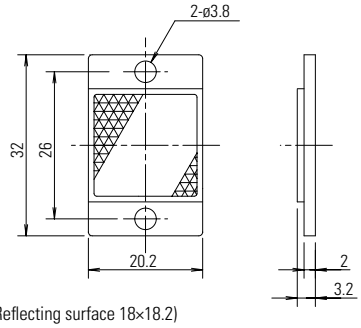
(Reflecting surface 47×47.6)

Material: PMMA (reflector), ABS (base)

IAC-R10



IAC-R11

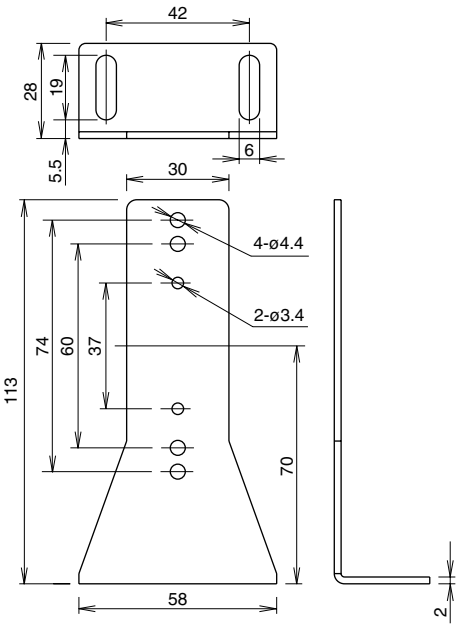


(Reflecting surface 18×18.2)

Material: PMMA (reflector), ABS (base)

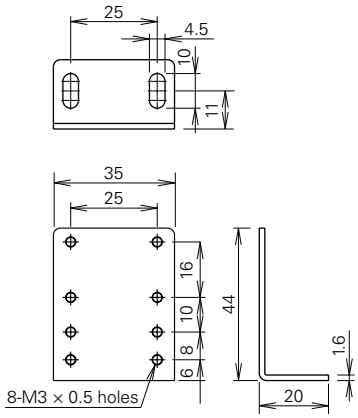
Reflector Mounting Bracket

IAC-L2 (for IAC-R5)



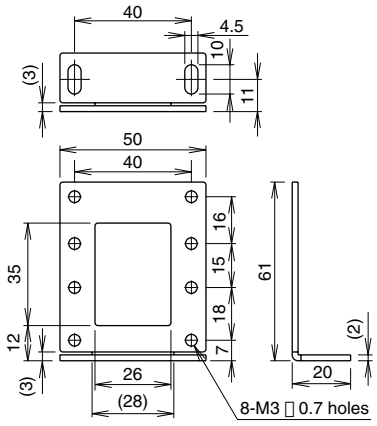
Material: SPCC (zinc chromate plating, black)

IAC-L3 (for IAC-R6)



Material: SPCC (zinc plating)

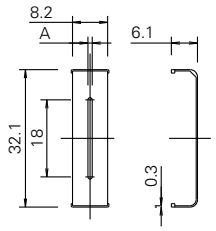
IAC-L5 (for IAC-R8)



Material: SPCC (zinc plating)

Slit (Vertical Slit)

SA9Z0S06, -S07, -S08

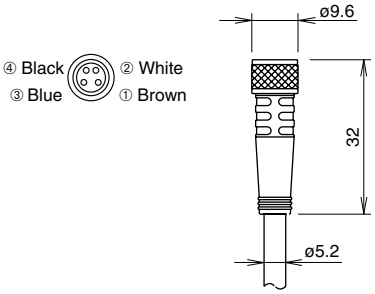


Material: Stainless Steel

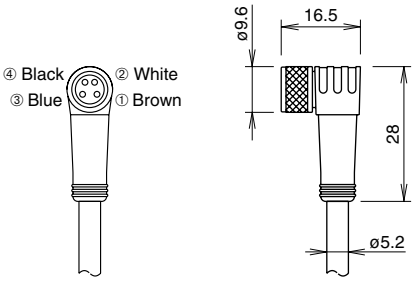
Slit	
Part No.	Slight Width: A
SA9Z-S06	0.5 mm
SA9Z-S07	1.0 mm
SA9Z-S08	2.0 mm

Connector Cable (connector on one end)

Straight (SA9Z-CM8K-4S□)

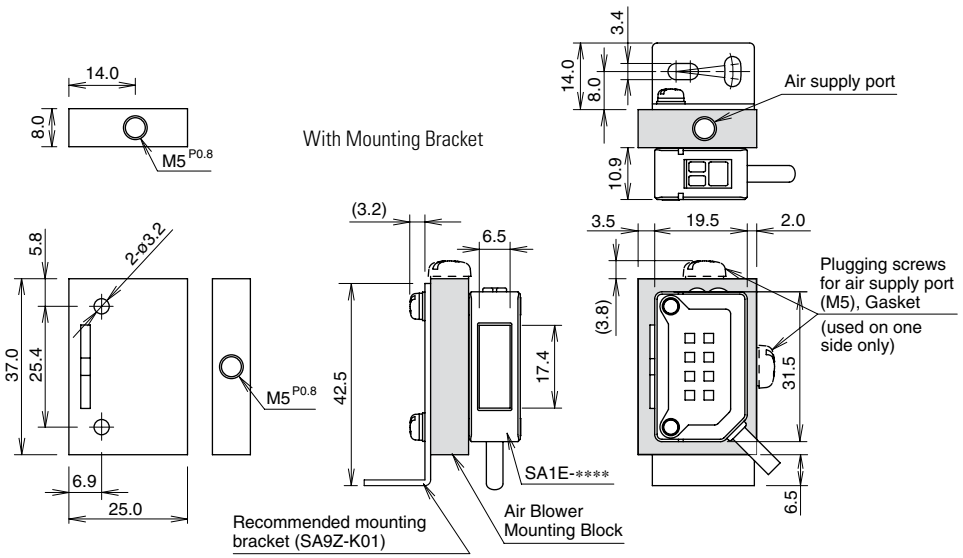


Right-angle (SA9Z-CM8K-4L□)



Dielectric strength when installed on the SA1E: 1000V AC (between live part and mounting bracket, except between live part and tightening ring)

Air Blower Mounting Block

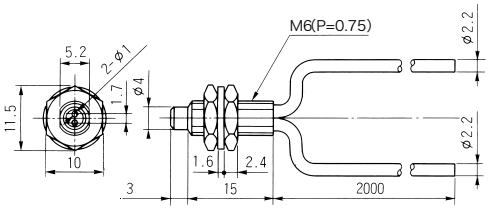


(Material: Anodized aluminum surface)

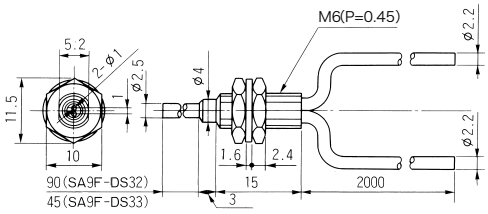
- The SA9Z-A02 air blower mounting block is supplied with two mounting screws (M3 × 20 mm sems screws), one screw for plugging the air supply port (M5 × 6 mm), and one gasket for plugging the air supply port.
- An air tube fitting (M5) can be installed to either the top or side. Tighten the fitting to a torque of 0.5 N·m maximum.
- The air tube fitting and mounting bracket are not supplied and must be ordered separately (recommended mounting bracket: SA9Z-K01).

Diffuse-Reflective Light Fiber Optic Units

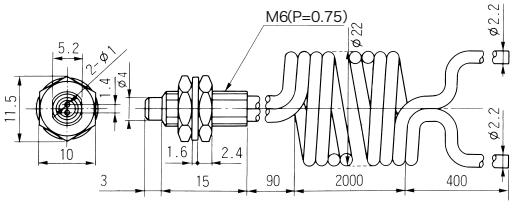
SA9F-DS31



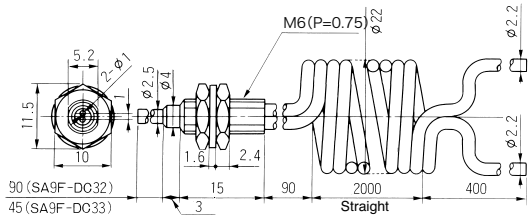
SA9F-DS32, SA9F-DS33



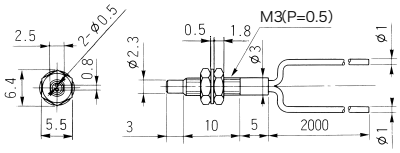
SA9F-DC31



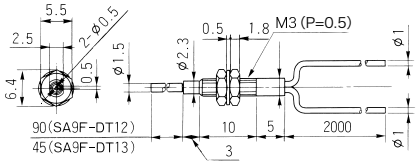
SA9F-DC32, SA9F-DC33



SA9F-DT11



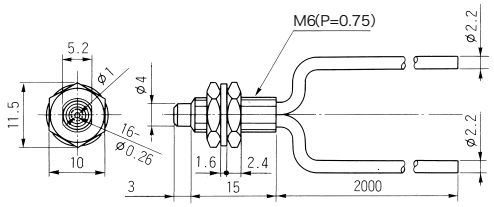
SA9F-DT12, SA9F-DT13



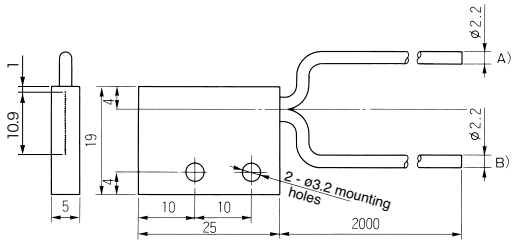
Diffuse-Reflective Light Fiber Optic Units con't

Dimensions (mm)

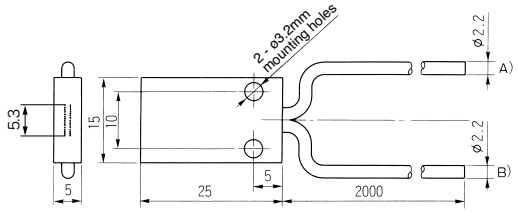
SA9F-DD31



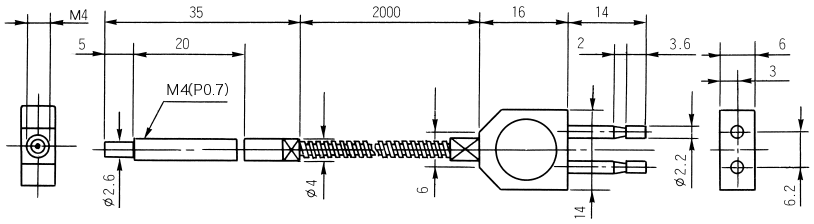
SA9F-DM74



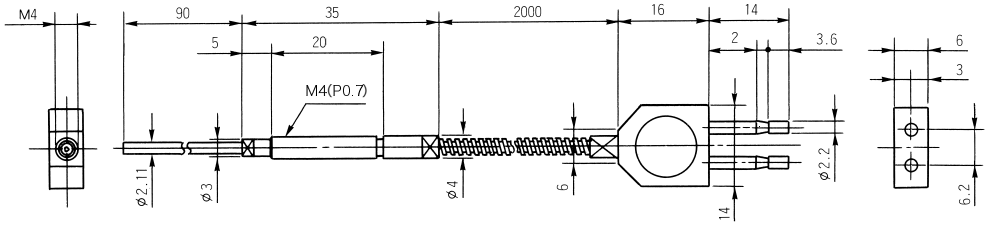
SA9F-DM75



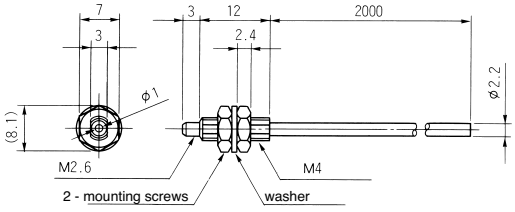
SA9F-DH21



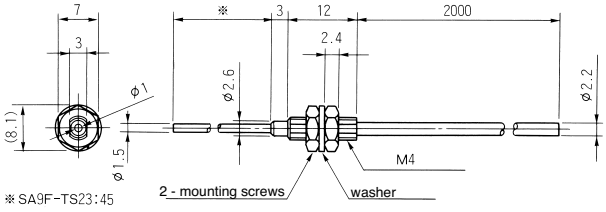
SA9F-DH22



SA9F-TS21



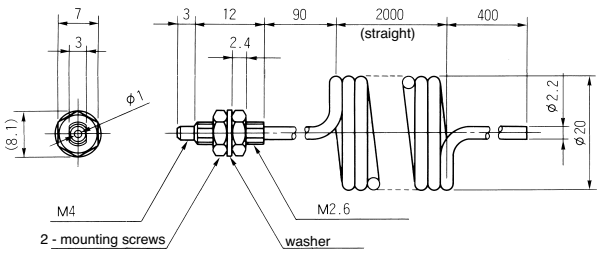
SA9F-TS23



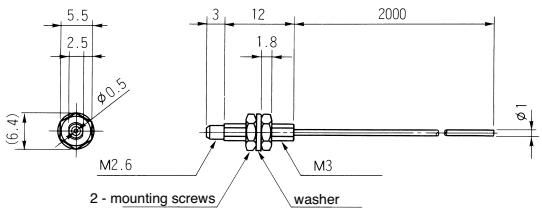
Diffuse-Reflective Light Fiber Optic Units con't

Dimensions (mm)

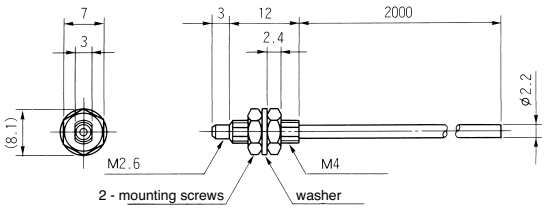
SA9F-TC21



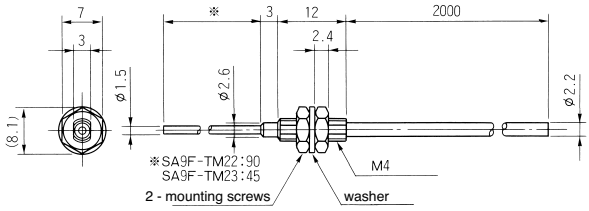
SA9F-TT11



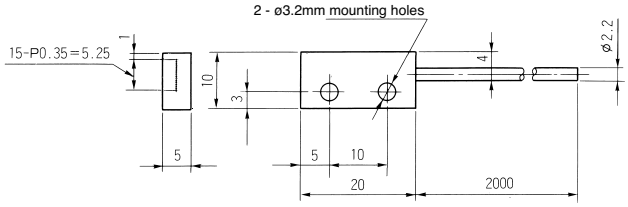
SA9F-TM21



SA9F-TM22, SA9F-TM23



SA9F-TM74



SA9F-TH21