

Make Life Easy

Safeguarding Personnel from Injury and Machines from Damage



Ensuring Your Safety in the Field

Standard / High Performance Type Safety Light Curtains

SFL Series

The SFL series safety light curtains are installed in potentially dangerous or hazardous areas to safeguard personnel from injury. The light curtains feature proven technology from Autonics area sensors and mapping sensors. The light curtains are built to meet internationally safety standards and regulations. Various detection models (finger/hand/hand-body detection) and safety functions are available for diverse applications.



Finger Detection



Hand Detection



Finger-Hand Detection



7-Segment Display



Long Range (Long Mode)



Various Protection Circuits



Dedicated Software



Protection Rating

www.autonics.com

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Ordering Information

SFL ① ② - ③

① Type

No-mark: Standard type
A: Advanced type

② Detection capability

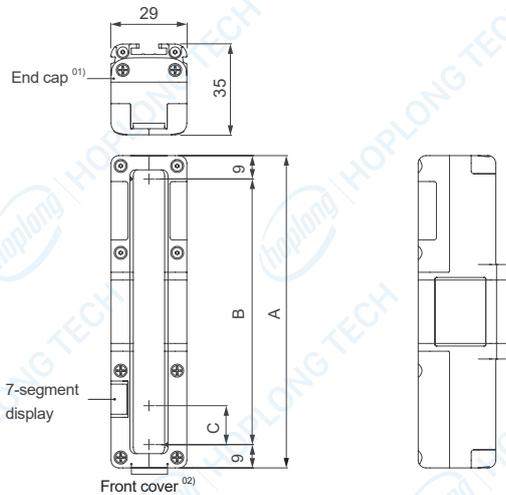
14: Ø 14 mm, finger
20: Ø 20 mm, hand
30: Ø 30 mm, hand-body

③ Number of optical axes

Number: Number of optical axes

Dimensions

- Unit: mm, For the detailed dimensions of the product, follow the Autonics web site.
- This dimension is based on the SFL(A) 14 model. The appearance varies depending on the detection capability.



When removing the end cap, there is the lamp output terminal (top) or the power supply terminal (bottom).

01) When removing the front cover, there is the setting switch (on the emitter and the receiver) or the PC communication port (on the receiver).

Detection capability	Models	Number of beams	A (protective height)	B (sensing height)	C (optical axis pitch)
Ø 14 mm (finger)	Standard	15 to 111	144 to 1,008	126 to 990	9
	Advanced	15 to 199	144 to 1,800	126 to 1,782	
Ø 20 mm (hand)	Standard	12 to 68	183 to 1,023	165 to 1,005	15
	Advanced	12 to 124	183 to 1,863	165 to 1,845	
Ø 30 mm (hand-body)	Standard	42 to 75	1,043 to 1,868	1,025 to 1,850	25
	Advanced	9 to 75	218 to 1,868	200 to 1,850	

Sold Separately

- Power I/O cable (connector type: SFL-BCT(R), wire type: SFL-C□T(R))
- Connector cable (socket type: CID8-□T(R), socket-plug type: C1D8-□T(R))
- Series connector cable (SFL-EC□T(R))
- Lamp output cable (SFL-LC)
- Brackets (Top/Bottom (adjustable), Side (adjustable): BK-SFL-□□)
- USB / Serial communication converter (SCM-US)
- SFL / SFLA dedicated converter cable (EXT-SFL)
- Test piece (SFL-T□)

Specifications

Type	Standard type		
Models	SFL14-□	SFL20-□	SFL30-□
Sensing type	Through-beam		
Light source	Infrared LED (855 nm)		
Effective aperture angle (EAA)	Within ± 2.5 ° when the sensing distance is greater than 3 m for both emitter and receiver.		
Sensing distance	Short - Long mode (setting switch)		
Short mode	0.2 to 5 m	0.2 to 8 m	0.2 to 8 m
Long mode	0.2 to 10 m	0.2 to 15 m	0.2 to 15 m
Detection capability	Ø 14 mm (finger)	Ø 20 mm (hand)	Ø 30 mm (hand-body)
Detection object	Opaque object		
Number of optical axes ⁰¹⁾	15 to 111	12 to 68	42 to 75
Protective height	144 to 1,008 mm	183 to 1,023 mm	1,043 to 1,868 mm
Optical axis pitch	9 mm	15 mm	25 mm
Series connection	Max. 3 SET (≤ 300 optical axes)		

Type	Advanced type		
Models	SFLA14-□	SFLA20-□	SFLA30-□
Sensing type	Through-beam		
Light source	Infrared LED (855 nm)		
Effective aperture angle (EAA)	Within ± 2.5 ° when the sensing distance is greater than 3 m for both emitter and receiver.		
Sensing distance	Short - Long mode (setting switch or atLightCurtain)		
Short mode	0.2 to 5 m	0.2 to 8 m	0.2 to 8 m
Long mode	0.2 to 10 m	0.2 to 15 m	0.2 to 15 m
Detection capability	Ø 14 mm (finger)	Ø 20 mm (hand)	Ø 30 mm (hand-body)
Detection object	Opaque object		
Number of optical axes ⁰¹⁾	15 to 199	12 to 124	9 to 75
Protective height	144 to 1,800 mm	183 to 1,863 mm	218 to 1,868 mm
Optical axis pitch	9 mm	15 mm	25 mm
Series connection	Max. 4 SET (≤ 400 optical axes)		

01) It may differ depending on the models. For more information, see the "SFL/SFLA User Manual."

Power supply	24 VDC±± 20 % (Ripple P-P: ≤ 10 %)
Current consumption ⁰¹⁾	Emitter: ≤ 106 mA, receiver: ≤ 181 mA
Response time ⁰¹⁾	T _{OFF} (ON → OFF): ≤ 32.3 ms, T _{ON} (OFF → ON): ≤ 76.6 ms
Safety related output : OSSD output	NPN or PNP open collector Load voltage ⁰²⁾ : ON - 24 VDC± (except for the residual voltage), OFF - 0 VDC±, Load current ⁰³⁾ : ≤ 300 mA, Residual voltage ⁰⁴⁾ : ≤ 2 VDC± (except for voltage drop due to wiring), Load capability: ≤ 2.2µF, Leakage current: ≤ 2.0 mA, Wire resistance of load: ≤ 2.7 Ω
Auxiliary output (AUX 1/2) ⁰⁵⁾	NPN or PNP open collector Load voltage: ≤ 24 VDC±, Load current: ≤ 100 mA, Residual voltage: ≤ 2 VDC± (except for voltage drop due to wiring)
Lamp output (LAMP 1/2) ⁰⁵⁾	NPN or PNP open collector Load voltage: ≤ 24 VDC±, Load current: ≤ 300 mA, Residual voltage: ≤ 2 VDC± (except for voltage drop due to wiring), Incandescent lamp: 24 VDC± / 3 to 7 W, LED lamp: Load current ≤ 50 to 300 mA
External input	Reset input, mute 1/2 input, EDM, external test When setting NPN output ON: 0 - 3 VDC±, OFF: 9 - 24 VDC± or open, short-circuit current: ≤ 3 mA When setting PNP output ON: 9 - 24 VDC±, OFF: 0 - 3 VDC± or open, short-circuit current: ≤ 3 mA
Protection circuit	Reverse power polarity, reverse output polarity, output short-circuit over-current protection
Safety-related functions	Interlock (reset hold), external device monitoring (EDM), muting/override, Blanking (fixed blanking, floating blanking), reduced resolution
General functions	Self-test, alarm for reduction of incident light level, mutual interference prevention
Others functions	Change of sensing distance, switching to NPN or PNP, external test (light emission stops), auxiliary output (AUX 1, 2), lamp output (LAMP 1, 2)
Synchronization type	Timing method by synchronous line
Insulation resistance	≥ 20MΩ (at 500 VDC± megger)
Noise immunity	± 240 VDC± the square wave noise (pulse width: 1µs) by the noise simulation
Dielectric strength	1,000 VAC~ 50/60Hz for 1 minute
Vibration	0.7 mm amplitude at frequency of 10 to 55Hz (for 1 min), 20 sweeps in each X, Y, Z direction
Shock	100 m/s ² (≈ 10 G), pulse width 16 ms in each X, Y, Z direction for 1,000 times
Ambient illumination	Incandescent lamp: ≤ 3,000 lx, sunlight: ≤ 10,000 lx (illumination of light receiving surface)
Ambient temperature	-10 to 55 °C, storage: -20 to 70 °C (non-freezing or non-condensation)
Ambient humidity	35 to 85 %RH, storage: 35 to 95 %RH (non-freezing or non-condensation)
Protection structure	IP65, IP67 (IEC standard)
Material	Case: Aluminum, Front cover and sensing part: Polymethyl methacrylate, End cap: polycarbonate, Cable: polyurethane (PUR)
Approval	
International standards	UL 508, CSA C22.2 No. 14, ISO 13849-1 (PL e, Cat. 4), ISO 13849-2 (PL e, Cat. 4), UL 61496-1 (Type 4, ESPE), UL 61496-2 (Type 4, AOPDs), IEC/EN 61496-1 (Type 4, ESPE), IEC/EN 61496-2 (Type 4, AOPDs), IEC/EN 61508-1~7 (SIL 3), IEC/EN 62061 (SIL CL 3)

01) It may differ depending on the models. For more information, see the "SFL/SFLA User Manual."

02) The values of load voltage were drawn with PNP output, and in case of NPN output, apply these in reverse.

03) Be sure that the load current should be greater than 6 mA.

04) The residual voltage was drawn with 300 mA of load current.

05) It is the non-safety output. Do not use it for safety purposes.

06) In case of the KCs certified model, see the "SFL/SFLA User Manual."