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NEW SF4D-H40-01 | Compact & Robust Safety Light Curtain [Type 4 PLe SIL3] SF4D

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RoHS compliant

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Product Number	SF4D-H40-01
Part Number	SF4D-H40-01
Product	Safety Light Curtain [Type 4 PLe SIL3]
Details	Min. sensing object ø25 mm ø0.984 in (20 mm 0.787 in beam pitch)
Product name	Compact & Robust Safety Light Curtain [Type 4 PLe SIL3] SF4D

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As of July 31, 2018

Specifications and design of the products are subject to change without notice for the product improvement.

Spec Detail

Item	Specifications
Product Number	SF4D-H40-01
Part Number	SF4D-H40-01
No. of beam channels	40
Protective height	790 mm 31.102 in (Note): When using as a safety device for a press machine in China or when using SF4D-□-01 as a safety device for a press machine or paper shearing machine in Japan, the length from the center of the first beam channel to the center of the last beam channel become to be protective height.
Protective height : When using as safety equipment for Chinese press machine or when using for Japanese press machine or paper shearing machine	780 mm 30.709 in (Note): When using as a safety device for a press machine in China or when using SF4D-□-01 as a safety device for a press machine or paper shearing machine in Japan, the length from the center of the first beam channel to the center of the last beam channel become to be protective height.
Current consumption	Emitter : 120 mA or less Receiver : 140 mA or less
PFH _D	2.17×10 ⁻⁹
MTTF _D	552 years or more
Weight(Total of emitter and receiver)	1,900g approx.

Applicable standards:International standard	IEC 61496-1/2 (Type 4), ISO 13849-1 (Category 4, PLLe), IEC 61508-1 to 7 (SIL3)
Applicable standards:Japan	JIS B 9704-1/2 (Type 4), JIS B 9705-1 (Category 4), JIS C 0508-1 to 7 (SIL3)
Applicable standards:Europe (EU)	EN 61496-1/2 (Type 4), EN ISO 13849-1 (Category 4, PLLe), EN 55011, EN 61000-6-2, EN 50178
Applicable standards:North America	ANSI/UL 61496-1/2 (Type 4),CAN/CSA C22.2 No.14, CAN/CSA E61496-1/2
Applicable standards:China (GB)	GB/T 4584
CE marking directive compliance	Machinery Directive, EMC Directive, RoHS Directive
Operating range	Short mode : 0.2 to 9 m 0.656 to 29.528 ft Long mode : 0.8 to 15 m 2.625 to 49.213 ft (selectable by DIP switch) (Note): The operating range is the possible setting distance between the emitter and the receiver.
Min. sensing object	ø25 mm ø0.984 in opaque object (Note): When the floating blanking function is used, the size of the minimum sensing object varies. For the detail, refer to the section on Safety distance.
Effective aperture angle	±2.5° or less at a sensing range of 3 m 9.843 ft or longer (based on IEC 61496-2)
Power voltage	24 V DC ⁺²⁰ ₋₃₀ % Ripple P-P 10 % or less (excluding voltage drop due to cable) (Note): In consideration of the voltage drop caused by the cable, use Control output (OSSD 1, OSSD 2) source / sink current and cable length as a guideline.
Control outputs (OSSD 1, OSSD 2)	PNP open-collector transistor / NPN open collector transistor (selectable) <ul style="list-style-type: none"> •Maximum source current : 350 mA •Applied voltage : Same as supply voltage (between control output and +V) •Residual voltage : 2 V or less (source current 350 mA) (excluding voltage drop due to cable) •Leakage current : 0.2 mA or less (including power OFF state) •Maximum load capacity : 2.2 µF •Load wiring resistance : 3 Ω or less <ul style="list-style-type: none"> •Maximum sink current : 350 mA •Applied voltage : Same as supply voltage (between control output and 0 V) •Residual voltage : 2 V or less (sink current 350 mA) (excluding voltage drop due to cable) •Leakage current : 0.2 mA or less (including power OFF state) •Maximum load capacity : 2.2 µF •Load wiring resistance : 3 Ω or less
Control outputs (OSSD 1, OSSD 2):Operation mode	ON when all beams are received, OFF when one or more beams are blocked (Also OFF when internal sensor error or synchronization signal error occurs) (Note): Note that the setting cannot be changed when SF4D-□-01 is used.
Control outputs(OSSD1, OSSD2):Protection circuit	Incorporated
Control output(OSSD 1, OSSD 2):Response time	OFF response : 10 ms or less (Not connected in series / parallel), 18 ms or less (Connected in series / parallel)(Note 1) ON response : 50 ms or less (Note 2)(Note 3) (Note 1): For response times by number of beams, refer to the Control output (OSSD 1, OSSD 2) OFF response times. (Note 2): Because the control output (OSSD 1, OSSD 2) must be OFF for at least 80 ms, the ON response will be delayed more than 50 ms when the light blocked time is less than 30 ms. (Note 3): When optical synchronization is selected, if the beam axes of both the top end and bottom end are blocked, the ON response speed decreases by as much as 1 sec.
Auxiliary output (AUX)(Non-safety output)	PNP open-collector transistor / NPN open collector transistor (selectable) <ul style="list-style-type: none"> •Maximum source current : 60 mA •Applied voltage : Same as supply voltage (between auxiliary output and +V) •Residual voltage : 2 V or less (source current 60 mA) (excluding voltage drop due to cable) •Leakage current : 0.2 mA or less (including power OFF state) <ul style="list-style-type: none"> •Maximum sink current : 60 mA •Applied voltage : Same as supply voltage (between auxiliary output and 0 V) •Residual voltage : 2 V or less (sink current 60 mA) (excluding voltage drop due to cable) •Leakage current : 0.2 mA or less (including power OFF state)
Auxiliary output (AUX)(Non-safety output) : Operation mode	Control output ON : OFF, Control output OFF : ON (Note): Note that the setting cannot be changed when SF4D-□-01 is used.
Auxiliary output (AUX)(Non-safety output) : Protection circuit	Incorporated

Auxiliary output (AUX)(Non-safety output) : Response time	OFF response : 60 ms or less, ON response : 60 ms or less
Synchronization method	Line synchronization / optical synchronization (selectable by DIP switch)
Interference prevention function	<ul style="list-style-type: none"> •Line synchronization : 2 units or less (auto) •Optical synchronization : 2 units or less (selectable by DIP switch) •Series connection : 5 units or less (total number of beam channels 256 or less) •Parallel connection : 3 units or less (total number of beam channels 192 or less)(Note) •Series / parallel connection mixed : 5 units or less (total number of beam channels 144 or less)(Note) (Note): Note that the setting cannot be changed when SF4D-□-01 is used.
Test input function	Incorporated
Interlock function	Incorporated [Manual reset / auto reset (selectable by wiring)] (8-core cable or 12-core cable)
Lockout release function	Incorporated
External device monitoring function	Incorporated (8-core cable or 12-core cable)
Application indicator function	Incorporated (only the receiver lights up when optical synchronization is used)
Muting function	Incorporated (12-core cable)
Override function	Incorporated (12-core cable)
Power save function	Incorporated
Optional functions	Optional functions cannot be used when SF4D-□-01 is used.
Pollution degree	3
Operating altitude	2,000 m 6,561.68 ft or less (Note): Do not use or store in an environment pressurized to atmospheric pressure or higher at an altitude of 0 m.
Environmental resistance:Degree of protection	IP67, IP65 (IEC), NEMA Type 13 (NEMA 250)
Ambient temperature	-10 to +55 °C +14 to +131 °F (No dew condensation or icing allowed), Storage : -25 to +60 °C -13 to +140 °F
Ambient humidity	30 to 85 % RH, Storage : 30 to 95 % RH
Ambient illuminance	Incandescent light : 5,000 lx or less at the light-receiving surface
Environmental resistance:Dielectric strength voltage	1,000 V AC for one minute, between all supply terminals connected together and enclosure
Insulation resistance	20 MΩ, or more, with 500 V DC megger, between all supply terminals connected together and enclosure
Vibration resistance	10 to 55 Hz, 0.75 mm 0.030 in double amplitude in X, Y, and Z directions for two hours each Malfunction resistance 10 to 55 Hz, 0.75 mm 0.030 in double amplitude in X, Y, and Z directions twenty times each
Shock resistance	300 m/s ² acceleration (30 G approx.) in X, Y, and Z directions three times each Malfunction resistance 100 m/s ² acceleration (10 G approx.) in X, Y, and Z directions 1,000 times each
SFF (Safe Failure Fraction)	99%
HFT (Hardware Fault Tolerance)	1
Subsystem type	Type B (IEC 61508-2)
T1 (proof test interval)	20 years
Failure response time	Within response time (OFF response)
Safety state	Control output (OSSD 1 / 2) OFF state
Emitting element	Infrared LED (peak emission wavelength : 850 nm 0.0335 mil)
Material	Enclosure : Aluminum, Detection surface : Polycarbonate resin and stainless steel (SUS304), Upper cap / lower cap : Nylon
Connecting method	By connector
Cable extension	Total length of emitter / receiver can be extended up to 70 m 229.659 ft each using optional mating cable (including the length of series mating cables) (Note): In consideration of the voltage drop caused by the cable, use Control output (OSSD 1, OSSD 2) source / sink current and cable length as a guideline.




Accessories	SF4B-TR25 (test rod) : 1 pc.
Remark	Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +20 °C +68 °F. PFH _D : Probability of Dangerous Failure per Hour, MTTF _D : Mean Time to Dangerous Failure (in years).

→ Dimensions

↓ Accessories (Option)

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Accessories (Option)

		
Product Number NEW FC-SFDH-40	Product Number NEW FC-SFDH-40-S	Product Number MS-SFB-2
Part Number FC-SFDH-40	Part Number FC-SFDH-40-S	Part Number MS-SFB-2
Product name Front protection cover	Product name Front protection cover	Product name Intermediate supporting bracket

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