



SZ-01S

Main Unit, Single-function Type



*Please note that accessories depicted in the image are for illustrative purposes only and may not be included with the product.

Specifications

Model	SZ-01S		
Type	Simple function type		
Detection capability	Minimum detectable object size		Diameter 30 mm 1.18" /40 mm 1.58" , 50 mm 1.97" , 70 mm 2.76" , 150 mm 5.91" (depends on the setting) Reflectance 1.8% min., Speed 1.6 m/s 5.25 ft/s max.
	Detectable angle		270° (-45° to 225°)
	Response time (ON to OFF)	General scan cycle (Scan cycle A)	60 ms (2 scans) to 480 ms (16 scans)
		Specific scan cycle (Scan cycle B)	66 ms (2 scans) to 528 ms (16 scans)
	Response time (OFF to ON)	General scan cycle (Scan cycle A)	Response time of ON to OFF +125 ms
		Specific scan cycle (Scan cycle B)	
	Max. protection zone	Minimum detectable object size: 70 mm 2.76" /150 mm 5.91"	4.2 m 13.78' (-5° to 185°), 2.8 m 9.19' (-45° to -5°, 185° to 225°)
		Minimum detectable object size: 50 mm 1.97"	3.0 m 9.84' (-5° to 185°), 2.0 m 6.56' (-45° to -5°, 185° to 225°)
		Minimum detectable object size: 40 mm 1.58"	2.4 m 7.87' (-5° to 185°), 1.6 m 5.25' (-45° to -5°, 185° to 225°)
		Minimum detectable object size: 30 mm 1.18"	1.8 m 5.91' (-5° to 185°), 1.2 m 3.94' (-45° to -5°, 185° to 225°)
	Max. warning zone (non safety related)	Minimum detectable object size: 70 mm 2.76" /150 mm 5.91"	10.0 m 32.18' (-5° to 185°), 7.0 m 22.97' (-45° to -5°, 185° to 225°)*1
		Minimum detectable object size: 50 mm 1.97"	7.5 m 24.61' (-5° to 185°), 5.0 m 16.4' (-45° to -5°, 185° to 225°)*1
		Minimum detectable object size: 40 mm 1.58"	6.0 m 19.69' (-5° to 185°), 4.0 m 13.12' (-45° to -5°, 185° to 225°)*1
		Minimum detectable object size: 30 mm 1.18"	4.5 m 14.76' (-5° to 185°), 3.0 m 9.84' (-45° to -5°, 185° to 225°)*1
	Additional safety distance		100 mm 3.94" *2
Light source	Type, wavelength		Infrared laser diode, 905 nm
	Laser class		Class 1 Laser Product (IEC 60825-1, FDA (CDRH) Part 1040.10 *3)
OSSD output	Output		PNP or NPN (Selectable according to the connector cable) 2 outputs

	Max. load current	500 mA ⁴
	Residual voltage (during ON)	Max. 2.5 V (with a cable length of 5 m 16.4')
	OFF-state voltage	Max. 2.0 V (with a cable length of 5 m 16.4')
	Leakage current	Max. 1 mA ⁵
	Max. capacitive load	2.2 μ F (with a load resistance of 100 Ω)
	Load wiring resistance	Max. 2.5 Ω ⁶
Input (safety-related)	Input resistance	4.4 k Ω (for Input 1) 2.2 k Ω (for Input 2)
Non safety-related output (AUX output)	Output	PNP/NPN totem pole output 2 outputs
	Max. load current	50 mA
	Residual voltage (during ON)	Max. 2.5 V (with a cable length of 5 m 16.4')
Muting lamp output	(AUX6 output can be assigned for the muting lamp output)	-
Cable length		30 m 98.43' or less ⁷
Approved standards	EMC	IEC61496-1, EN61496-1, UL 61496-1
	EMI	EN55011 Class A, FCC Part15B Class A
	Safety	IEC61496-1, EN61496-1, UL 61496-1 (Type 3 ESPE), IEC61496-3, EN61496-3 (Type 3 AOPDDR) IEC61508, EN61508, IEC62061, EN62061 (SIL2), EN ISO13849-1:2015 (PL d, Category 3) UL508, UL1998
Rating	Power voltage	When using a converter power supply: 24 VDC \pm 10 %, Ripple (P-P) 10 % or less When using a battery: 24 VDC +20 %/-30 %
	Power consumption	Max. 9.5 W (without load) Max. 39 W (with load)
Environmental resistance	Enclosure rating	IP65 (IEC60529) ⁸
	Ambient light	Incandescent lamp: 1,500 lux or less ⁹
	Operating ambient temperature	-10 to +50 °C 14 to 122 °F (No freezing)
	Operating relative humidity	35 to 85 % RH (No condensation)
	Storage temperature	-25 to +60 °C -13 to 140 °F (No freezing)
	Storage relative humidity	35 to 95 % RH
	Vibration resistance	10 to 55 Hz, Double amplitude 0.7 mm 0.03" , 20 sweeps in each of the X, Y, and Z directions
Material	Main unit case	Aluminum die casting, SPHC (Bottom)
	Window	Polycarbonate
Weight		Approx. 1.6 kg

¹ 20% or more reflectance is necessary for the minimum detectable object in the warning zone.

² If there is a high reflective background within 1.5 m [4.921'](#) from the boundary of the protection zone, 200 mm [7.87"](#) must be added as supplementary necessary distance to the protection zone in case of calculation of the minimum safety distance.

³ The laser classification for FDA (CDRH) is implemented based on IEC60825-1 in accordance with the requirements of Laser Notice.

⁴ For the load current calculation of the OSSD output and the AUX output, make sure it is 1.5 A or less when using converter power supply (or 1.0 A or less when the cable length is 25 m [82.02'](#) or more),

and 1.0 A or less when using a battery (or 0.5 A or less when the cable length is 5 m [16.40'](#) or more)

⁵ This also takes into account the situations when power is either off or disconnected.

⁶ The wiring resistance between the OSSD output and the connected equipment (excluding the resistance of the cable) must be 2.5 Ω or less to ensure operation. However, it must be 1.0 Ω or less if the load current is 300 mA or more.

⁷ It must be 10 m [32.81'](#) or less if the power is supplied by battery.

⁸ When the setting cover is open, or the connector cable is not connected, the IP65 certification cannot be met. In addition, the SZ-16D doesn't fulfill the requirements of IP65 degree of protection with the connector cable for the RS-422A communication unattached..

⁹ The SZ should not be installed so as to have light interference within $\pm 5^\circ$ to the detection plane.

Dimensions

* Download CAD file or product manual for larger image/text and more detail.

■ SZ-01S/SZ-04M/SZ-16V

