

SC300 Safety Sensor

Description

The GuardMaster SC300 is a compact hand detection, safety sensor system, which operates based on image processing technology. The safety sensing function is performed by a single-image sensing device viewing a single two-dimensional image against a passive pattern as the background. The detection principle is based on an object of a certain resolution blocking the image-sensing device's view of the pattern.



This Type 3 vision-based protective device is designed for use in certain machine-guarding applications where reflective tape can be attached to a square or rectangular frame to define the detection boundaries. There are two resolutions tape kits offered, 24 mm and 30 mm. The required resolution tape kit is determined by the size and geometry of the frame. Openings of 0.4...1.2 m (1.31...3.94 ft) can use the 24 mm tape kit. Openings from 0.6...1.5 m (1.97...4.92 ft) can use the 30 mm resolution tape kit.

Each tape kit is supplied with two pre-cut adhesive strips of diamond reflector material and a 24 mm or 30 mm test rod. The test rod is used to verify the sensing-field detection area after teaching the device.

The SC300 has a maximum operating range of 2.12 m (6.96 ft) and is suitable for machine openings and monitored areas of up to 1.5 x 1.5 m² (4.92 x 4.92 ft²). It is possible to synchronize two SC300 hand-detection safety sensors to increase the maximum monitored area to 1.5 x 3.0 m (4.92 x 9.84 ft).

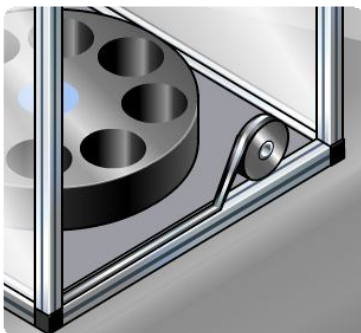
The SC300 hand-detection safety sensor system has an environmental rating of IP54, so machine guarding applications where this safety device is applied should not require more stringent environmental ratings. It fulfills safety integrity level SIL2 according to IEC 61508 and Performance Level PL d per EN ISO 13849.

Features

- One size fits all solutions
- No software required
- Teach-in of sensing area via key switch or stylus
- EDM, restart/reset integrated
- Synchronization of two systems to increase opening area
- Vertical or horizon mounting

Applications

- Inspection and test stations
- Automated assembly machines
- Filling, dispensing and weighing machines
- Pad printing and labeling equipment
- Riveting and forming equipment





Specifications

Safety Ratings	
Standards	DIN EN61496-1: 2009-03, IEC/TR 61496-4: 2007-07 DIN EN 61508:2002/2003, DIN EN ISO 13849-1: 2008-12
Safety Classification	Category 3 EN ISO 13849-1 Type 3 DIN EN61496-1 SIL 2 IEC 61508, SIL CL2 EN 62061 PLd EN ISO 13849-1
Functional Safety Data Note: For up-to-date information, visit http://www.ab.com/Safety/...	PFHD =< 3.2 x10 ⁻⁹ Mission Time (TM) = 20 years (EN ISO 13849) Suitable for Performance Level PLd (according to ISO 13849-1:2006) and for use in SIL 2 systems (according to IEC 62061)
Certifications	cULus, IFA, and CE Marked for all applicable directives
Power Supply	
Input Voltage	24V DC ± 20%
Power Consumption	4 W (24V no load), 19 W (max. output load)
Outputs	
Safety Outputs	2 OSSD. 0.25 A, short-circuit protected, cross fault monitored
Switching Current @ Voltage, Min.	6...250 mA @ 24V DC (≤500 mA allowed 100 ms)
Operating Characteristics	
Response Time	20 ms
Recovery Time	130 ms
Indicator LEDs	ON-state, OFF-state, invalid configuration, reset required, warning, error
Field of View	103° ± 3°
Resolution	24 and 30 mm
Operating Range	2.12 m (6.94 ft) max.
Wavelength	850 nm
Environmental	
Enclosure Type Rating	IP54 (EN 60529)
Relative Humidity	15...95% (noncondensing)
Operating Temperature [C (F)]	0...50° (32...122°)
Storage Temperature [C (F)]	-25...70° (-13...158°) (≤24 hours)
Vibration	IEC 60068-2-6, 5 g, frequency 10...55 Hz
Shock	IEC 60068-2-27; acceleration 10 g, pulse duration 16 ms
Physical Characteristics	
Weight [kg (lb)]	0.355 (0.782)
Housing Cross Section	50 x 93.9 x 93.9 mm (1.97 x 3.7 x 3.7 in.)
Housing Material	Die-cast aluminum
Connector Type	M12, 8-pin male
Cable Length	400 mm (including connector)

Product Selection

Selection	Description	Cat. No.
1	 Guardmaster SC300 safety sensor	442L-SAFCAM1
Required kit – select one		
2	 Reflective tape kit, 2 pcs of 1.5 m strips, 24 mm resolution with test rod.	442L-ACAM24MMKIT
2	 Reflective tape kit, 2 pcs of 1.5 m strips, 30 mm resolution with test rod.	442L-ACAM30MMKIT

Accessories

Selection	Description	Cat. No.
Optional Accessories		
3	 Mounting brackets (2 brackets per kit includes 2 - M6 stainless steel socket head screws)	442L-ACAMBRK1
Not required	 Teach-in stylus (1 pc supplied with each SC300)	442L-ACAMTS
	 Test rod 24 mm resolution (1 pc supplied with each 24 mm tape kit)	442L-ATRD24MM
	 Test rod 30 mm resolution (1 pc supplied with each 30 mm tape kit)	442L-ATRD30MM

Recommended Logic Interfaces

Description	Safety Outputs	Auxiliary Outputs	Terminals	Reset Type	Power Supply	Cat. Page No.	Cat. No.
Single-Function Safety Relays for 2 N.C. Contact Switch							
MSR127RP	3 N.O.	1 N.C.	Removable (Screw)	Monitored Manual	24V AC/DC	Description	440R-N23135
MSR127TP	3 N.O.	1 N.C.		Auto./Manual		Description	440R-N23132
GSR CI	3 N.O.	1 N.C.	Removable (Screw)	Configured Auto./Manual or Monitored Manual	24V DC	Description	440R-S13R2
GSR SI	2 N.O.	1 S.S.				Description	440R-S12R2
GSR DI	2 N.O.	1 S.S.				Description	440R-D22R2
Muting Modules							
MSR22LM	2 N.O.	1 N.C.	Removable	Auto./Manual	24V DC	Description	440R-P23071
MSR42 (requires optical interface to configure 445L-AF6150)	2 PNP	2 PNP, configurable		Auto./manual or manual monitored		Description	440R-P226AGS-NNR

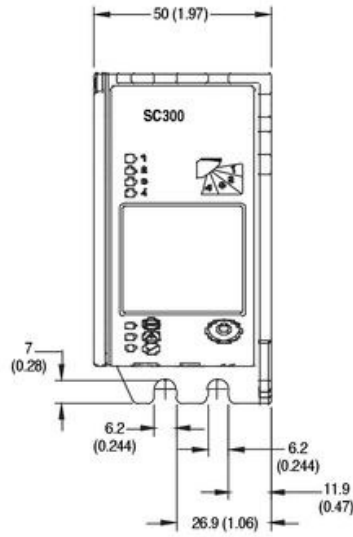
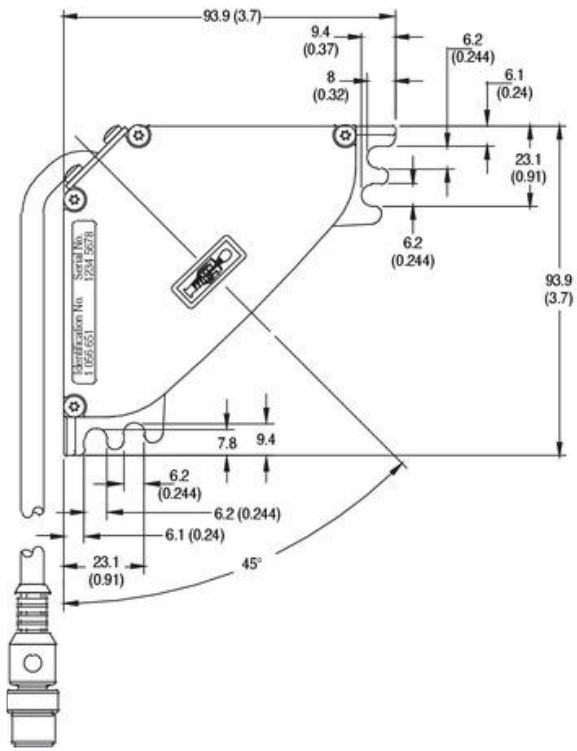
Note: The use of a category 4 safety relay module does not improve the category rating of the safety system beyond the Category 3 rating of the Type 3, Category 3 SC300 in use.

Cordsets

Female Patchcord Connector		Cable			Cat. No.
Face View of Female	Connector Style	Pin/Wire Color	Wire Rating	Length [m (ft)]	
	Straight, Shielded	1 White 2 Brown 3 Green 4 Yellow 5 Grey 6 Pink 7 Blue 8 Red	22 AWG 300V, 4 A	2 (6.5)	889D-F8FB-2
				5 (16.4)	889D-F8FB-5
				10 (32.8)	889D-F8FB-10

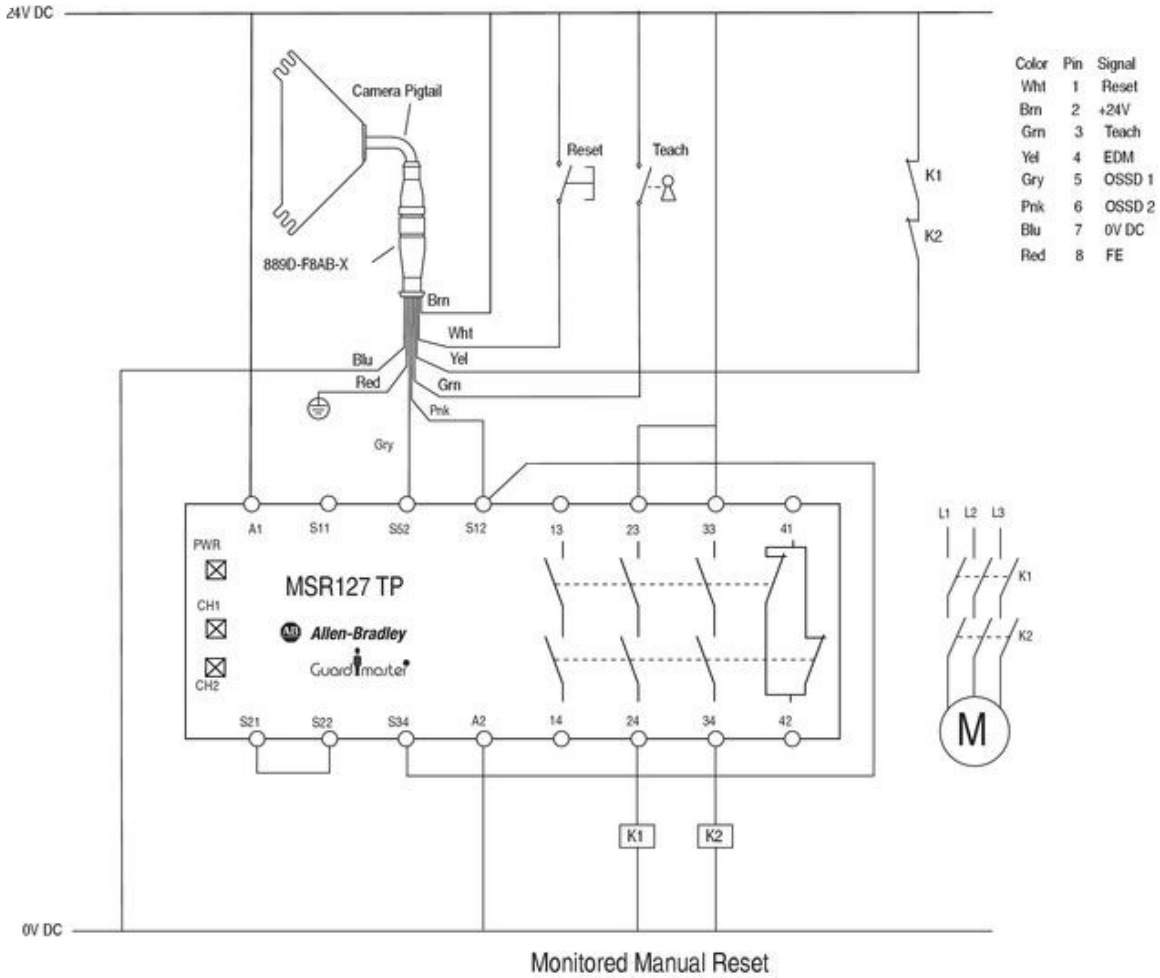
Approximate Dimensions

Dimensions are shown in mm (in.). Dimensions are not intended to be used for installation purposes.



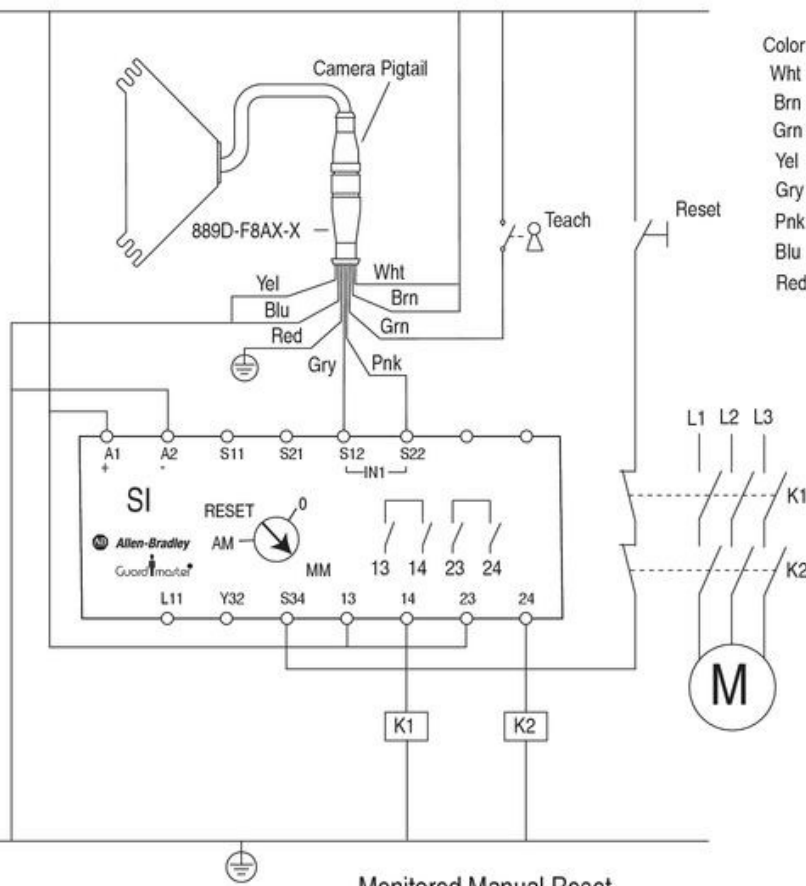
Typical Wiring Diagrams

Wiring diagram is not intended to be used for installation purposes.



24V DC

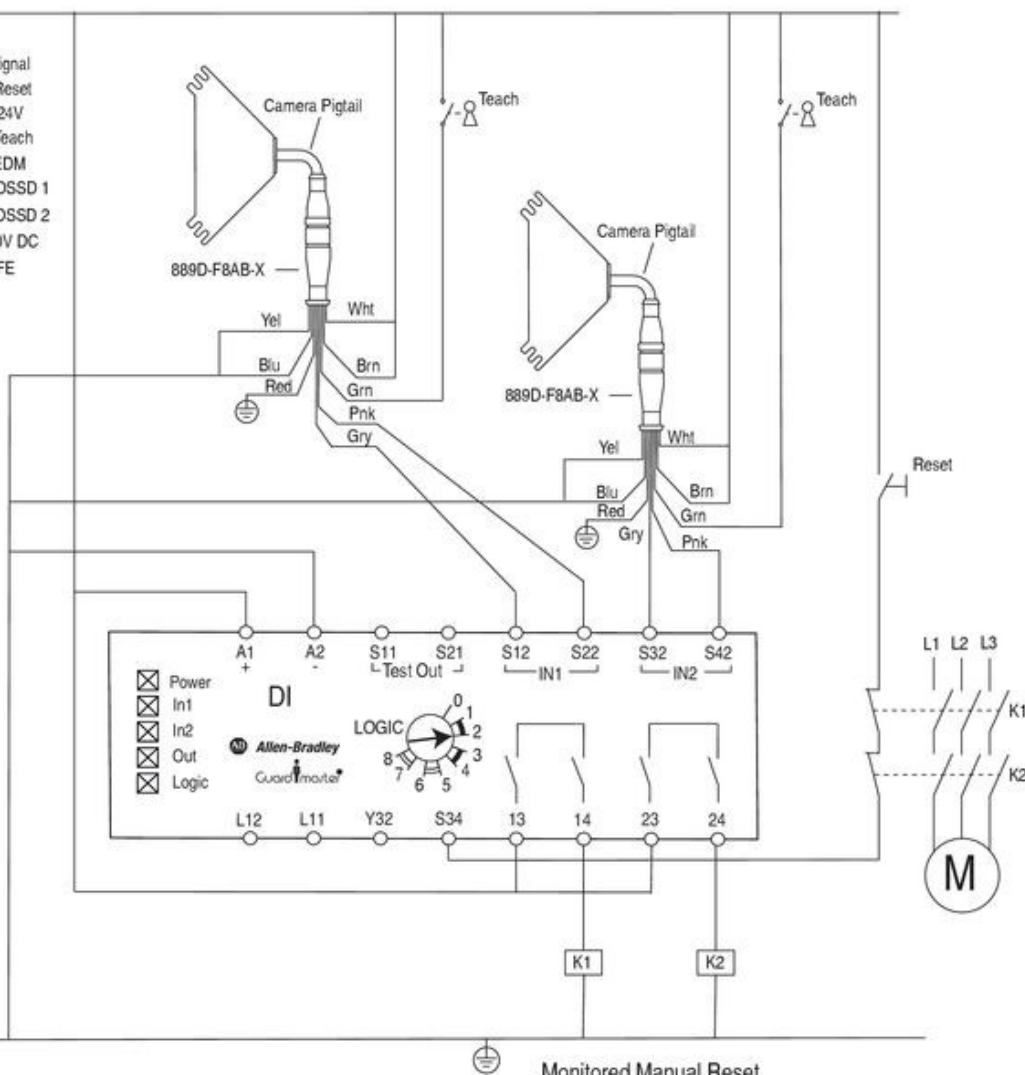
Color	Pin	Signal
Wht	1	Reset
Brn	2	+24V
Grn	3	Teach
Yel	4	EDM
Gry	5	OSSD 1
Pnk	6	OSSD 2
Blu	7	0V DC
Red	8	FE



Monitored Manual Reset

24V DC

Color	Pin	Signal
Wht	1	Reset
Brn	2	+24V
Grn	3	Teach
Yel	4	EDM
Gry	5	OSSD 1
Pnk	6	OSSD 2
Blu	7	0V DC
Red	8	FE



Monitored Manual Reset

