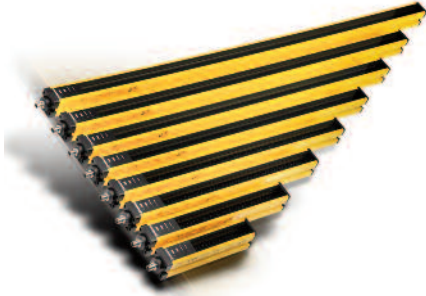
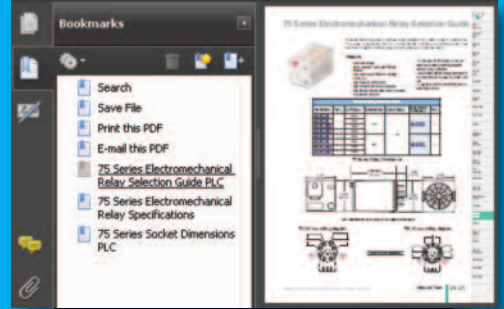


Safety Components

Section 35



In this interactive PDF you can:



- Use bookmarks to navigate by product category
- Use bookmarks to save, search, print or e-mail the catalog section
- Click on part #s to link directly to our online store for current pricing, specs, stocking information and more



A superb line of machine safety devices ... at incredible prices!

Why buy safety components from AutomationDirect?

- **Our safety components are IN-STOCK and ready to ship**
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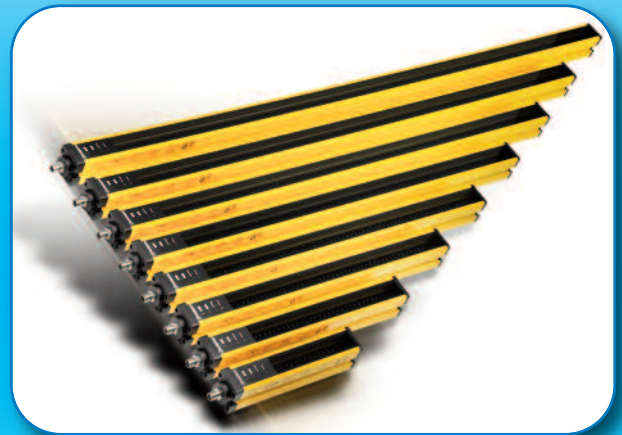
Don't let price stand in the way of making a machine or process as safe as possible. You need to be in compliance with national and international standards but don't overpay to get reliability and high performance for maximum machine safety. AutomationDirect now offers a superb line of machine guarding safety devices with prices that let you do even more to protect what's important.

Choose from our certified offering of components to meet your protection needs, including relays, safety switches and safety light curtains.

Light Curtains

AutomationDirect offers two series of safety light curtains; the YBB-14 series with 14mm resolution for finger protection, and the YBB-30 series with 30mm resolution for hand protection. Prices start at \$582 for sender/receiver pair.

- YBB-14 Series - Safety light curtain with 14mm resolution - Finger Safe protection
- YBB-30 Series - Safety light curtain with 30mm resolution - Hand Safe protection
- **All models:**
 - Double PNP outputs
 - M12 quick-disconnect models (order cable separately)
 - Mounting brackets included with all light curtain units
 - IP65 rated



IDEM Non-Contact Safety Switches



Non-contact safety switches are interlocking devices that are designed to protect both people and machines. They are preferred in certain applications where no physical contact (under normal conditions) takes place between the switch and actuator.

Prices start at \$75.00.

- Available in industry standard style plastic and stainless steel housings
- Styles: Non-contact magnetic and non-contact coded magnetic
- Wide (>10mm) sensing distance
- High tolerance to misalignment after sensing
- Enclosure protections: IP67, IP69K
- **All Models:** cULus, RoHS, CE approvals

Interlock Switches

These safety switches are developed and manufactured according to IEC and EN European standards for Type 4 machine safety/ OSHA machine guarding. Prices start at \$13.00.



IDEM Interlock Safety Switches

- **IDIS Series** - 22 mm safety interlock switches, tongue key or lever hinge operated, plastic only
- **KM/KM-SS Series** - 30 mm safety interlock switches, tongue key operated, die-cast aluminum and 316 stainless steel options
- **KP/K-SS and K-15 Series** - 40 mm safety interlock switches, tongue key operated, plastic and 316 stainless steel options
- **GLM and GLS Series Pull Cord Housings** - 57 mm, 63 mm, and 65 mm mounting profiles, 50m, 80m, and 100m length systems, die-cast aluminum and 316 stainless steel options
- **Interlock Safety Actuator Keys** - nine models available, all keys are 316 stainless steel

Comepi Interlock Safety Switches

- **SP2 Series** - 30mm safety interlock switches with tongue keys, shaft hinge, or lever hinge
- **SDM Series** - 50mm safety interlock switches with tongue keys, shaft hinge, lever hinge or cable-pull
- **SBM Series** - 40mm safety interlock switches with tongue keys or cable-pull
- **CM Series** - 60mm safety interlock switches with tongue keys or cable-pull
- **AP2 Series** - 30mm safety limit switches with pull button reset
- **All models:** IEC 947-5-1, EN 60947-5-1, UL 508, CSA C22.2 No. 14 approvals



Safety Relays



These dependable relays are designed to protect people and machines in applications requiring safety interlocks and controls. Prices start at \$88.00.

- Speed Monitor
- Standstill Monitor
- Single-channel E-Stop
- Dual-channel E-Stop/Safety Gate
- Dual-channel E-Stop/Safety Gate with Time Delay
- Two-hand Controllers
- Light Curtain Controllers
- LG5929 Extension Module
- **All Models:** cULus, RoHS, CE, TUV* approvals

*No TUV on BH5932 models

Warning: Machine safety products sold by AutomationDirect are Safety components only.

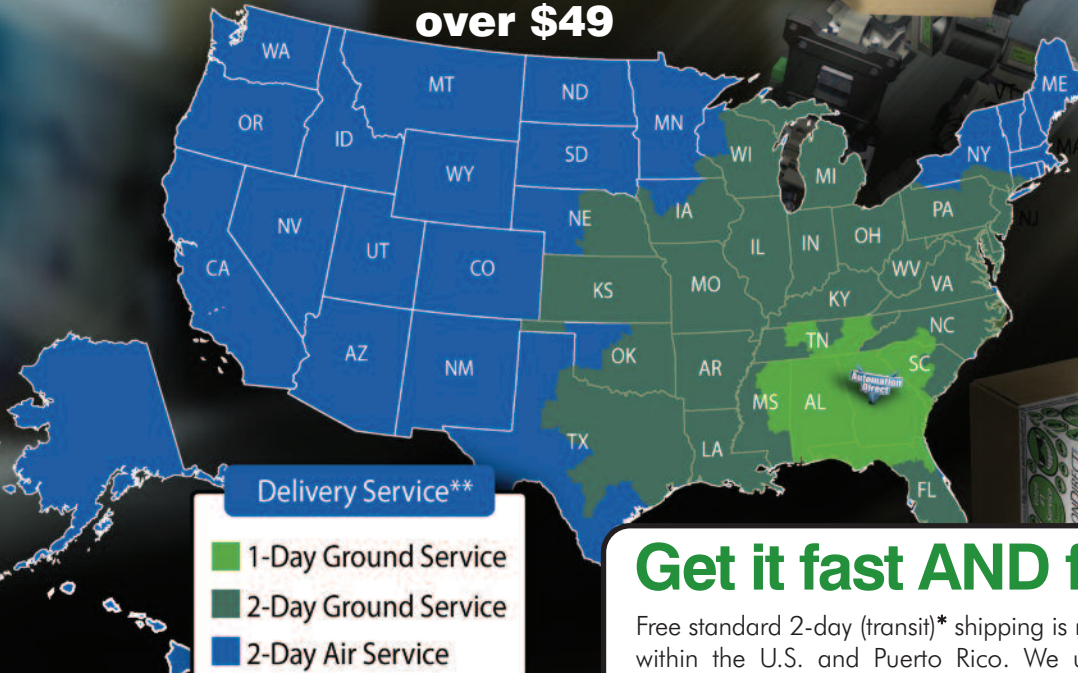
The purchaser/installer is solely responsible for the application of these components and ensuring all necessary steps have been taken to assure each application and use meets all performance and applicable safety requirements and/or local, national and/or international safety codes as required by the application. AutomationDirect cannot certify that our products used solely or in conjunction with other AutomationDirect or other vendors products will assure safety for any application.

Any person using or applying any safety products sold by AutomationDirect is responsible for learning the safety requirements for their individual application and applying them, and therefore assumes all risks, and accepts full and complete responsibility for the selection and suitability of the product for their respective application.

AutomationDirect does not provide design or consulting services, and cannot advise whether any specific application or use of our products would ensure compliance with the safety requirements for any application.

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Free on orders over \$49



- Delivery Service****
- 1-Day Ground Service
 - 2-Day Ground Service
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** for items shipped from Cumming, GA



Get it fast AND free!

Free standard 2-day (transit)* shipping is now available for orders over \$49, within the U.S. and Puerto Rico. We use our choice of carrier and a combination of ground and air services that allow us to reach any U.S. destination within 2 days transit time (or less). (Canadian orders use the same method, but may take longer based on destination.) Orders placed by 6 p.m. EST will ship the same day (with approved company credit or credit card; LTL items require 5 p.m. order cutoff).

Note that the 2-day transit time does not apply for LTL shipping of heavy items or drop-shipped items. (We can ship heavy items to Alaska, Hawaii and Puerto Rico, but they will always incur a shipping charge. To determine if an item must ship LTL, check the "Availability" column of the printed price list.)

For orders under \$49, a flat \$6 shipping charge is applied. Or, you may request that your order ship via the 2-day (transit) method; shipping charges will be added to invoice.

For complete details on shipping methods and charges, see Terms and Conditions or online at our Web site for most up-to-date information.

* We do not guarantee delivery times of the carriers. AutomationDirect is not responsible for carrier delays due to weather, mechanical failures or other issues.



Contrinex Safety Light Curtains Selection Guide



Specification	YBB-14*4 Series	YBB-30*4 Series
Description	Finger Protection, 14 mm resolution	Hand Protection, 30 mm resolution
Protective Height	142 to 1045 mm (5.59 to 41.14 in.)	279 to 1827 mm (10.98 to 71.65)
Safety Level	Cat.4, PL e (EN/ISO 13849 - 1:2006) Type 4 (IEC 61496 - 1:2004/ - 2:2006)	Cat.4, PL e (EN/ISO 13849 - 1:2006) Type 4 (IEC 61496 - 1:2004/ - 2:2006)
Operating Range	0.25 to 3.5 m. (0.82 to 11.48 ft.)	0.25 to 12 m. (0.82 to 39.37 ft.)
Output State	N.C.	N.C.
Logic Output	Dual PNP outputs, short-circuit protected	Dual PNP outputs, short-circuit protected
Connection Type	M12 connector	M12 connector
Supply Voltage	24 VDC \pm 20%	24 VDC \pm 20%
Rating	IEC IP65	IEC IP65

Contrinex Safety Light Curtains – Finger-safe



Safety light curtain with 14 mm resolution

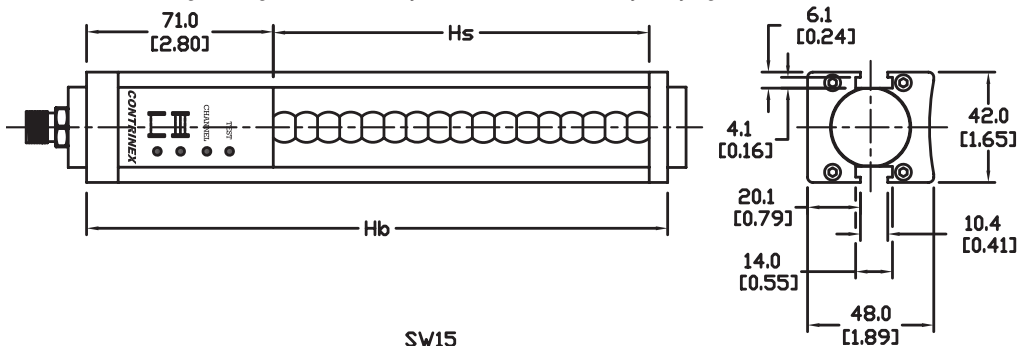
- Order sender and receiver to make a complete sensor
- Protective height from 142 mm to 1045 mm
- Operating distance up to 3.5 m
- M12 quick-disconnect (order cable separately)
- Dual PNP outputs
- Mounting brackets included with all units.
- Instruction manual and testing rod included with sender unit.
- IP65 rated
- Type 4 and Category 4 PL e

YBB -14 Series Safety Light Curtain Selection Chart

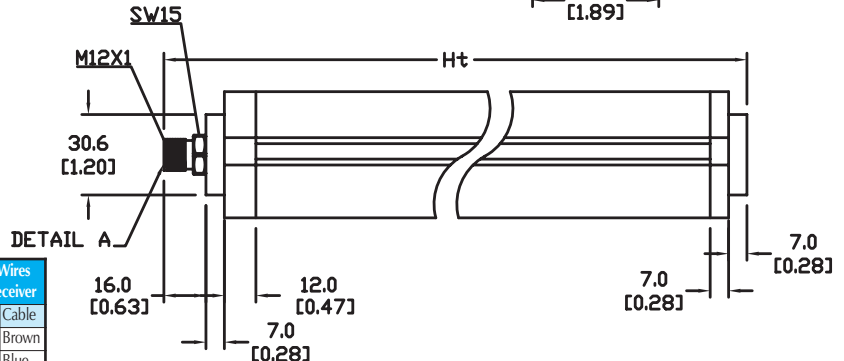
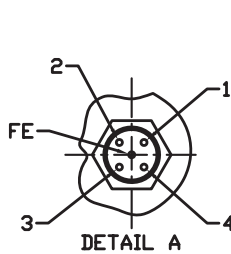
Part Number	Price	Protective Height Hs - mm[in]	Housing Height Hb - mm[in]	Total Height Ht - mm[in]	Number of Beams	Current Consumption [mA]	Response Time [ms]	MTTF _d (years)	DC _{avg}	Product Weight per unit
YBB-14S4-0150-G012	Sender	142 [5.59]	221 [8.70]	251 [9.81]	17	50	5.2	142	96%	470 g. 1.04 lbs.
YBB-14R4-0150-G012	Receiver					90				
YBB-14S4-0250-G012	Sender	271 [10.67]	350 [13.78]	380 [23.94]	33	50	8.4	114	96%	740 g. 1.63 lbs.
YBB-14R4-0250-G012	Receiver					95				
YBB-14S4-0400-G012	Sender	400 [15.75]	479 [18.86]	509 [20.04]	49	50	11.6	96	95%	1000 g. 2.20 lbs.
YBB-14R4-0400-G012	Receiver					100				
YBB-14S4-0500-G012	Sender	529 [20.83]	608 [23.94]	638 [25.12]	65	50	14.8	83	95%	1270 g. 2.80 lbs.
YBB-14R4-0500-G012	Receiver					110				
YBB-14S4-0700-G012	Sender	658 [25.91]	737 [29.02]	767 [30.20]	81	50	18	73	95%	1540 g. 3.40 lbs.
YBB-14R4-0700-G012	Receiver					115				
YBB-14S4-0800-G012	Sender	787 [30.98]	866 [34.09]	896 [35.28]	97	50	21.2	65	94%	1800 g. 3.97 lbs.
YBB-14R4-0800-G012	Receiver					120				
YBB-14S4-0900-G012	Sender	916 [36.06]	995 [39.17]	1025 [40.35]	113	50	24.4	59	94%	2070 g. 4.56 lbs.
YBB-14R4-0900-G012	Receiver					125				
YBB-14S4-1000-G012	Sender	1045 [41.14]	1124 [44.25]	1154 [45.43]	129	50	27.6	53	94%	2340 g. 5.16 lbs.
YBB-14R4-1000-G012	Receiver					130				

Note: AutomationDirect does not recommend using these light curtains with any device other than our Safety Relay Light Curtain Controllers.

Dimensions mm [in]



Pin outs

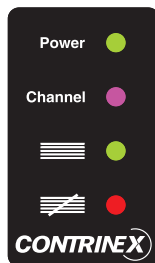
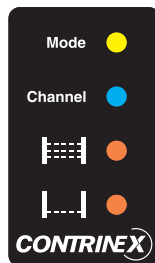


Assignment	Function	Pins/Wires on Sender	Pins/Wires on Receiver
Supply Voltage	24 VDC for channel 1; 0V for channel 2	M12 Cable 1 Brown	M12 Cable 1 Brown
Supply Voltage	0V for channel 1; 24 VDC for channel 2	M12 Cable 3 Blue	M12 Cable 3 Blue
Test Mode	0V test active; 24 V test inactive	M12 Cable 4 Black	-
Output	OSSD1 (Output Single Switching Device)	-	M12 Cable 2 White
Output	OSSD2 (Output Single Switching Device)	-	M12 Cable 4 Black
Functional Earth	Shield (Ground)	FE Gray	FE Gray

Contrinex Safety Light Curtains – Finger-safe

Specifications	
Resolution	14 mm
Safety Level	Category 4, PL e (EN/ISO 13849-1:2008). Type 4 (IEC 61496-1:2004/-2:2006)
Beam Axis Interval	8 mm
Supply Voltage	24 VDC ± 20%
Current Consumption	See Selection Table
Outputs	2 PNP outputs, short-circuit protected
Output Current	Maximum 0.2 amps per output (@ 50°C/122°F)
Output Voltage ON minimum	1.0V less than the supplied operating voltage at 25°C (77°F)
Output Voltage OFF	<1.0 V
Leakage Current	< 1 mA
Maximum Load Inductance	100 mH
Response Time	See Selection Table
Sender Wavelength	IR 950 nm
Operating Range	0.25 to 3.5 m
Protection Class	Class III (IEC 61140)
Startup Delay	< 0.5 seconds
Vibration Resistance	10 to 55 Hz, 0.35 mm amplitude, 1 octave/min., 20 sweeps for each axis
Shock Resistance	10 g during 16 ms, 1000 times for each axis
Light Immunity	Incandescent lamp: 3000 lx max. (light intensity on receiver surface) Xenon flash tube: flash duration 1.2 ms max. with a frequency of 2 Hz max. (TS 61496-2:2006)
Operating Temperature	0 to 50°C (32 to 122°F)
Storage Temperature	-25 to 70°C (-13 to 158 °F)
Humidity	15 to 95% (non-condensing)
Degree of Protection (EN 60529)	IP65
Ambient Brightness	TS 61496-2: 2006
Reference Standards	IEC 61496-1: 2004, IEC 61496-2: 2006
Housing Material	Aluminum, PMMA (Polymethylmethacrylate [acrylic]) front screen
Material of Upper and Lower Cover	PA (Polyamide [nylon]) + 30% fiberglass
Material of Optics	PMMA (Polymethylmethacrylate [acrylic])
Cable Runs	10 m maximum (at 10 nF capacitive load)
Dimensions	42 mm x 48 mm x Ht (mm)
Approvals	CE, UL file #E321951, RoHS, TUV

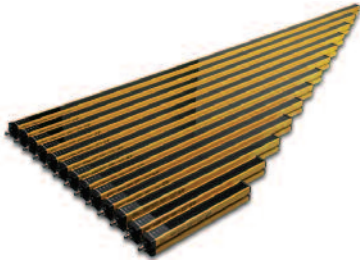
LED Status Indicators



Sender	
LED	Finger & hand protection (YBB)
Mode	Yellow when test mode is active
Channel	Blue when channel 1 is selected
	Purple when channel 2 is selected
Alignment	Steady orange when the screen is not fully aligned
	Flashing orange when the first third of the screen is aligned
	Off when screen is fully aligned
Alignment	Steady orange when the lowest beam is not aligned
	Flashing orange when the lowest beam is aligned
	Off when screen is fully aligned

Receiver	
LED	Finger & hand protection (YBB)
Power	Green when power is ON
Channel	Blue when channel 1 is selected
	Purple when channel 2 is selected
Status	Green when OSSD outputs are ON
Status	Red when OSSD outputs are OFF

Contrinex Safety Light Curtains – Hand-safe



Safety light curtain with 30 mm resolution

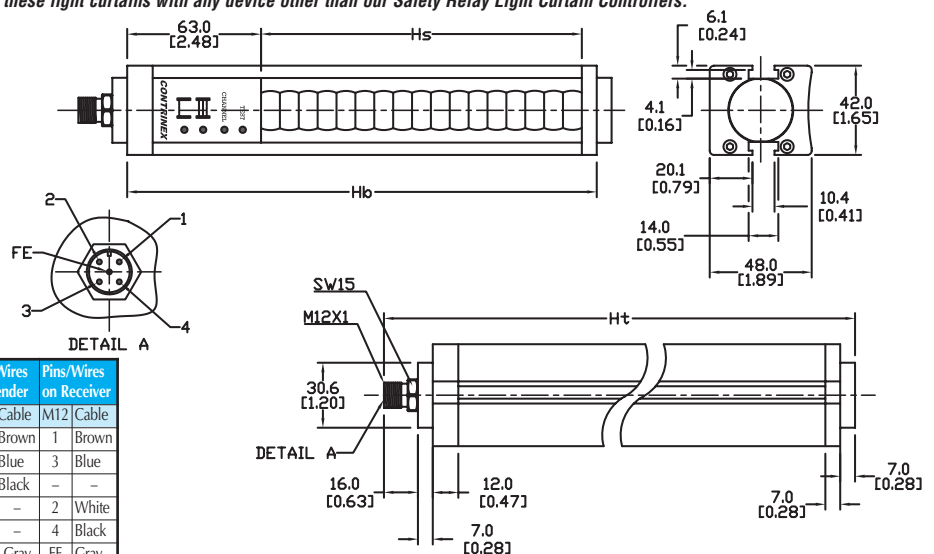
- Order sender and receiver to make a complete sensor
- Protective height from 279 mm to 1827 mm
- Operating distance up to 12 m
- M12 quick-disconnect (order cable separately)
- Dual PNP outputs
- Mounting brackets included with all units.
- Instruction manual and testing rod included with sender unit.
- IP65 rated
- Type 4 and Category 4 PL e

YBB -30 Series Safety Light Curtain Selection Chart

Part Number	Price	Protective Height Hs mm [in]	Housing Height Hb mm [in]	Total Height Ht mm [in]	Number of Beams	Current Consumption [mA]	Response Time [ms]	MTTF _d (years)	DC _{avg}	Product Weight per Unit	
YBB-30S4-0250-G012	Sender	<-->	279 [10.98]	350 [13.78]	380 [23.94]	17	45	5.2	142	96%	750 g. 1.65 lb.
YBB-30R4-0250-G012	Receiver	<-->				85					
YBB-30S4-0400-G012	Sender	<-->	408 [16.06]	479 [18.86]	509 [20.04]	25	45	6.8	126	96%	1020 g. 2.25 lb.
YBB-30R4-0400-G012	Receiver	<-->					85				
YBB-30S4-0500-G012	Sender	<-->	537 [21.14]	608 [23.94]	638 [25.12]	33	45	8.4	114	96%	1300 g. 2.87 lb.
YBB-30R4-0500-G012	Receiver	<-->					90				
YBB-30S4-0700-G012	Sender	<-->	666 [26.22]	737 [29.02]	767 [30.20]	41	45	10	104	95%	1580 g. 3.48 lb.
YBB-30R4-0700-G012	Receiver	<-->					95				
YBB-30S4-0800-G012	Sender	<-->	795 [31.30]	866 [34.09]	896 [35.28]	49	45	11.6	96	95%	1850 g. 4.08 lb.
YBB-30R4-0800-G012	Receiver	<-->					100				
YBB-30S4-0900-G012	Sender	<-->	924 [36.38]	995 [39.17]	1025 [40.35]	57	45	13.2	89	95%	2130 g. 4.70 lb.
YBB-30R4-0900-G012	Receiver	<-->					100				
YBB-30S4-1000-G012	Sender	<-->	1053 [41.46]	1124 [44.25]	1154 [45.43]	65	45	14.8	83	95%	2400 g. 5.29 lb.
YBB-30R4-1000-G012	Receiver	<-->					105				
YBB-30S4-1200-G012	Sender	<-->	1182 [46.54]	1253 [49.33]	1283 [50.51]	73	45	16.4	77	95%	2680 g. 5.91 lb.
YBB-30R4-1200-G012	Receiver	<-->					110				
YBB-30S4-1300-G012	Sender	<-->	1311 [51.61]	1382 [54.41]	1412 [55.59]	81	45	18	73	95%	2960 g. 6.53 lb.
YBB-30R4-1300-G012	Receiver	<-->					110				
YBB-30S4-1400-G012	Sender	<-->	1440 [56.69]	1511 [59.49]	1541 [60.67]	89	45	19.6	69	95%	3230 g. 7.12 lb.
YBB-30R4-1400-G012	Receiver	<-->					115				
YBB-30S4-1600-G012	Sender	<-->	1569 [61.77]	1640 [64.57]	1670 [65.75]	97	45	21.2	65	94%	3510 g. 7.74 lb.
YBB-30R4-1600-G012	Receiver	<-->					120				
YBB-30S4-1700-G012	Sender	<-->	1698 [66.85]	1769 [69.65]	1799 [70.83]	105	45	22.8	62	94%	3780 g. 8.33 lb.
YBB-30R4-1700-G012	Receiver	<-->					125				
YBB-30S4-1800-G012	Sender	<-->	1827 [71.93]	1898 [74.72]	1928 [75.91]	113	45	24.4	59	94%	4060 g. 8.95 lb.
YBB-30R4-1800-G012	Receiver	<-->					130				

Note: AutomationDirect does not recommend using these light curtains with any device other than our Safety Relay Light Curtain Controllers.

Dimensions mm [in]



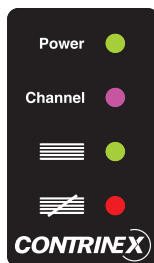
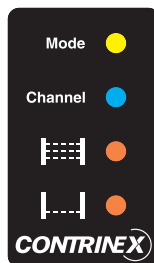
Pin outs

Assignment	Function	Pins/Wires on Sender		Pins/Wires on Receiver	
		M12 Cable	1	M12 Cable	1
Supply Voltage	24 VDC for channel 1; 0V for channel 2	1	Brown	1	Brown
Supply Voltage	0V for channel 1; 24 VDC for channel 2	3	Blue	3	Blue
Test Mode	0V test active; 24V test inactive	4	Black	-	-
Output	OSSD1 (Output Single Switching Device)	-	-	2	White
Output	OSSD2 (Output Single Switching Device)	-	-	4	Black
Functional Earth	Shield (Ground)	FE	Gray	FE	Gray

Contrinex Safety Light Curtains – Hand-safe

Specifications	
Resolution	30 mm
Safety Level	Category 4, PL e (EN/ISO 13849-1:2006). Type 4 (IEC 61496-1:2004/-2:2006)
Beam Axis Interval	16 mm
Supply Voltage	24 VDC ± 20%
Current Consumption	See Selection Table
Outputs	2 PNP outputs, short-circuit protected
Output Current	Maximum 0.2 amps per output (@ 50°C/122°F)
Output Voltage ON minimum	1.0V less than the supplied operating voltage at 25°C (77°F)
Output Voltage OFF	<1.0V
Leakage Current	< 1 mA
Maximum Load Inductance	100 mH
Response Time	See Selection Table
Sender Wavelength	IR 880 nm
Operating Range	0.25 to 12 m
Protection Class	Class III (IEC 61140)
Startup Delay	< 0.5 seconds
Vibration Resistance	10 to 55 Hz, 0.35 mm amplitude, 1 octave/min., 20 sweeps for each axis
Shock Resistance	10 g during 16 ms, 1000 times for each axis
Light Immunity	Incandescent lamp: 3000 lx max. (light intensity on receiver surface) Xenon flash tube: flash duration 1.2 ms max. with a frequency of 2 Hz max. (TS 61496-2:2006)
Operating Temperature	0 to 50°C (32 to 122°F)
Storage Temperature	-25 to 70°C (-13 to 158 °F)
Humidity	15 to 95% (non-condensing)
Degree of Protection (EN 60529)	IP65
Ambient Brightness	TS 61496-2: 2006
Reference Standards	IEC 61496-1: 2004, IEC 61496-2: 2006
Housing Material	Aluminum, PMMA (Polymethylmethacrylate [acrylic]) front screen
Material of Upper and Lower Cover	PA (Polyamide [nylon])+ 30% fiberglass
Material of Optics	PMMA (Polymethylmethacrylate [acrylic])
Cable Runs	10 m maximum (at 10 nF capacitive load)
Dimensions	42 mm x 48 mm x Ht (mm)
Approvals	CE, UL file #E321951, RoHS, TUV

LED Status Indicators



Sender	
LED	Finger & hand protection (YBB)
Mode	Yellow when test mode is active
Channel	Blue when channel 1 is selected Purple when channel 2 is selected
Alignment	Steady orange when the screen is not fully aligned Flashing orange when the first third of the screen is aligned Off when screen is fully aligned
Alignment	Steady orange when the lowest beam is not aligned Flashing orange when the lowest beam is aligned Off when screen is fully aligned

Receiver	
LED	Finger & hand protection (YBB)
Power	Green when power is ON
Channel	Blue when channel 1 is selected Purple when channel 2 is selected
Status	Green when OSSD outputs are ON
Status	Red when OSSD outputs are OFF

Contrinex Safety Light Curtains Accessories



Safety Light Curtains Accessories Specifications		
Part Number	Price	Description
YXW-0001-000	<--->	Safety light curtain mounting brackets for top and bottom mounting. Plastic. 2/pk.
YXW-0003-000	<--->	Safety light curtain sliding T-nuts for side mounting. Metal. 2/pk. Ideal torque from M5x0.8 thread is 6 Nm (4.42 lb-ft, 53.1 lb-in.).
YXC-1060-F00	<--->	Safety light curtain protective column. 974 mm housing height, aluminum profile with steel floor plates. Powder-varnished yellow (RAL1021) finish. Use with YBB-xxxx-0150-xxx to YBB-xxxx-0800-xxxx units. Mounting hardware included. Two required to protect sender and receiver. 1/pk.
YXC-1360-F00	<--->	Safety light curtain protective column. 1274 mm housing height, aluminum profile with steel floor plates. Powder-varnished yellow (RAL1021) finish. Use with YBB-xxxx-0900-xxx to YBB-xxxx-1000-xxxx units. Mounting hardware included. Two required to protect sender and receiver. 1/pk.
YXC-1660-F00	<--->	Safety light curtain protective column. 1574 mm housing height, aluminum profile with steel floor plates. Powder-varnished yellow (RAL1021) finish. Use with YBB-xxxx-1200-xxx to YBB-xxxx-1400-xxxx units. Mounting hardware included. Two required to protect sender and receiver. 1/pk.
YXC-1960-F00	<--->	Safety light curtain protective column. 1874 mm housing height, aluminum profile with steel floor plates. Powder-varnished yellow (RAL1021) finish. Use with YBB-xxxx-1600-xxx to YBB-xxxx-1800-xxxx* units. Mounting hardware included. Two required to protect sender and receiver. 1/pk.

Light Curtain Protective Column

- Automatically bounces back after physical shock or vibration
- Robust baseplate allows radial and vertical alignment
- Solid aluminum profile



YXW-0001-000



YXW-0003-000

M12 Quick-Disconnect Cables (Euro, Micro DC-Single Key)							
Part Number	Price	Length	Poles	Connector	LED	Jacket	Dimensions
M12 Quick-Disconnects							
CD12L-0B-020-A0	<--->	2m (6.5ft)	4	Axial	No	PVC	Figure 1
CD12L-0B-020-C0	<--->	2m (6.5ft)	4	Right-angle	No	PVC	Figure 2
CD12M-0B-070-A1	<--->	7m (23ft)	4	Axial	No	PVC	Figure 1
CD12M-0B-070-C1	<--->	7m (23ft)	4	Right-angle	No	PVC	Figure 2

* Note: Do not use with: DM, FA, QX, SS, SSF, SU, TU, VM, VK, MV, MS or MSF series sensors. These sensors require 4-pole cables.

Figure 1

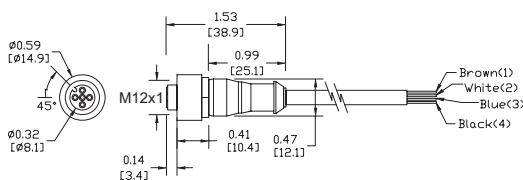
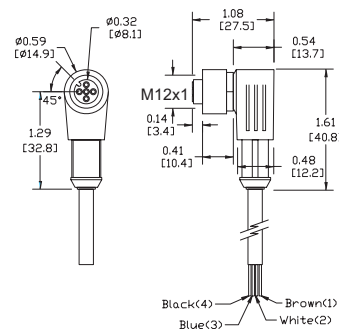


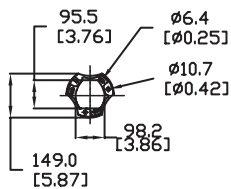
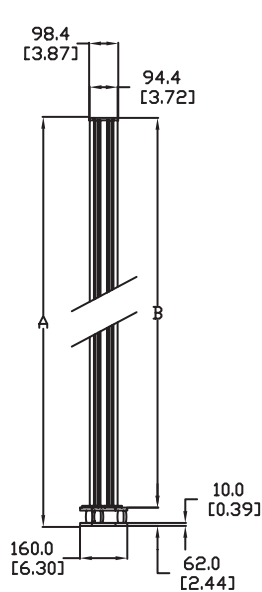
Figure 2



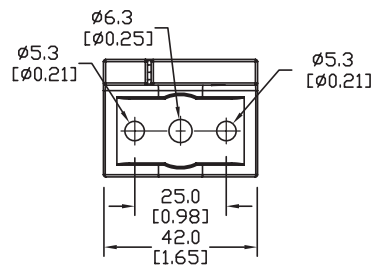
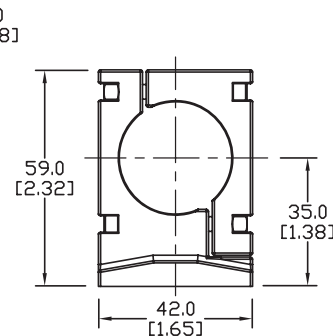
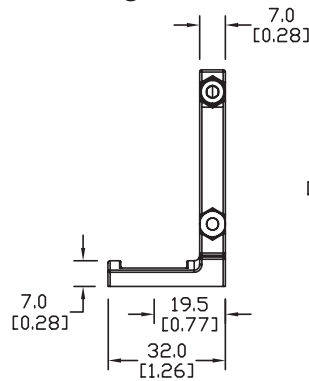
Contrinex Safety Light Curtains Accessories

Dimensions mm [in]

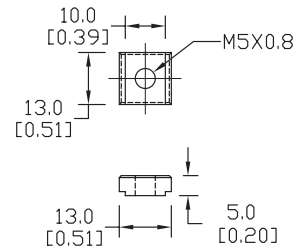
Column



Mounting bracket



T-Nuts for side mounting



Safety Light Curtains Columns Dimensions			
Part Number	Total Height A mm [in]	Housing Height B mm [in]	Use With
YXC-1060-F00	1060 [41.73]	974 [38.35]	YBB-xxxx-0150-xxx to YBB-xxxx-0800-xxx units
YXC-1360-F00	1360 [53.54]	1274 [50.16]	YBB-xxxx-0900-xxx to YBB-xxxx-1000-xxxx units
YXC-1660-F00	1660 [65.35]	1574 [61.97]	YBB-xxxx-1200-xxx to YBB-xxxx-1400-xxxx units
YXC-1960-F00	1960 [77.17]	1874 [73.78]	YBB-xxxx-1600-xxx to YBB-xxxx-1800-xxxx units

Note: Full and open top caps are provided to accommodate taller units.



Warning: Safety products sold by AutomationDirect are Safety components only.

The purchaser/installer is solely responsible for the application of these components and ensuring all necessary steps have been taken to assure each application and use meets all performance and applicable safety requirements and/or local, national and/or international safety codes as required by the application. AutomationDirect cannot certify that our products used solely or in conjunction with other AutomationDirect or other vendors' products will assure safety for any application.

Any person using or applying any products sold by AutomationDirect is responsible for learning the safety requirements for their individual application and applying them, and therefore assumes all risks, and accepts full and complete responsibility for the selection and suitability of the product for their respective application. AutomationDirect does not provide design or consulting services, and cannot advise whether any specific application or use of our products would ensure compliance with the safety requirements for any application.

IDEM Interlock Safety Switch Selection Guide

IDIS-190051



IDIS-192002



KM-203002
KM-203002-SS



KM-SS-204002



Series	IDIS-1	IDIS-2	KM	KM-SS
Prices start at	<--->	<--->	<--->	<--->
Description	Safety switch, tongue (key) interlock operated, 90 degree adjustable head	Safety switch, lever hinge interlock operated, 90 degree adjustable head	Safety switch, tongue (key) interlock operated, 90 degree adjustable head	
Construction Material	31.5 mm wide, plastic body and head		40 mm wide, die-cast aluminum body and head or die-cast aluminum body and 316 stainless steel head	41.6 mm wide, 316 stainless body and head
Degree of Protection (IEC529)	IEC IP67			IEC IP67, IEC IP69K
Mechanical Service Life	2.5 x 10 ⁶ operations at 100 mA load			
Conduit Opening	One conduit opening, 1/2 in. female NPT			
Agency Approvals	cULus E258676, CE			

KP-200002
KP-200002-SS



K-SS-208002



K-15-207002



K-15-207002-SS



Series	KP	K-SS	K-15	K-15-SS
Prices start at	<--->	<--->	<--->	<--->
Description	Safety switch, tongue (key) interlock operated, 180 degree adjustable head		Safety switch, tongue (key) interlock operated, 180 degree adjustable head	
Construction Material	58 mm wide, plastic body and head or plastic body and 316 stainless head	58 mm wide, 316 stainless body and head	54 mm wide, plastic body and head	54 mm wide, plastic body and 316 stainless head
Degree of Protection (IEC529)	IEC IP67	IEC IP67, IEC IP69K	IEC IP67	
Mechanical Service Life	2.5 x 10 ⁶ operations at 100 mA load			
Conduit Opening	Three conduit openings, 1/2 in. female NPT			
Agency Approvals	cULus E258676, CE			

GLM-143067-AS



GLS-142053



GLM-SS-144020-AS



Series	GLM	GLS	GLS-SS
Prices start at	<--->	<--->	<--->
Description	Safety switch, cable-pull interlock operated, with reset. Protection up to 50 meters (164 ft)	Safety switch, cable-pull interlock operated, with reset. Protection up to 80 meters (262 ft)	Safety switch, cable-pull interlock operated, with reset. Protection up to 100 meters (328 ft)
Construction Material	57 mm wide, die-cast aluminum body	63 mm wide, die-cast aluminum body	65 mm wide, 316 stainless steel body
Degree of Protection (IEC529)	IEC IP67		IEC IP67, IP69K
Mechanical Service Life	1.5 x 10 ⁶ operations at 100 mA load		
Conduit Opening	Three conduit openings, 1/2 in. female NPT		
Agency Approvals	cULus E258676, CE		

IDEM IDIS Interlock Safety Switches

IDIS Series Housing

- Tongue (key) (IDIS-1) or lever hinge (IDIS-2) interlock operated
 - 90 degree adjustable head
 - One 1/2 in. NPT female conduit opening
 - 22 mm mounting profile
 - Standard and compact housings
 - Force guided NC contacts
 - Purchase actuating key separately (See accessories)
- See electrical specifications later in this section.**

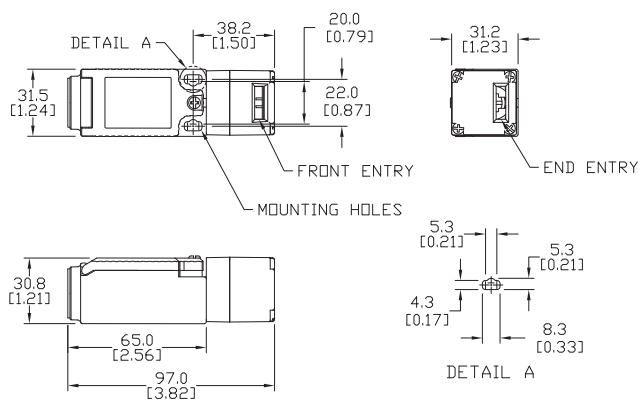
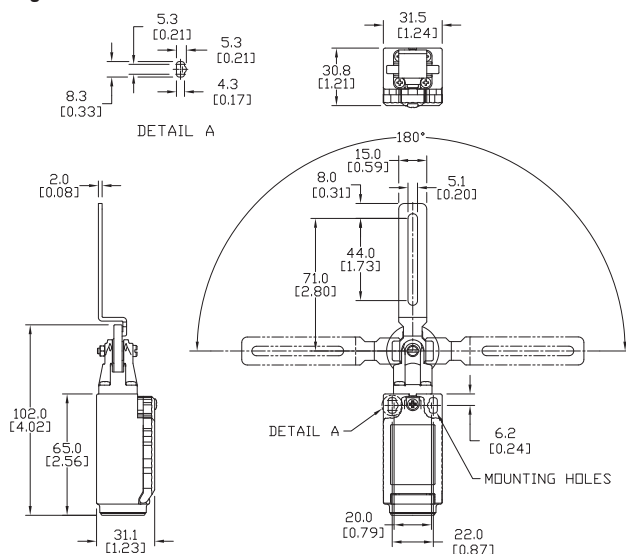
IDEM IDIS-1 Tongue (Key) Interlock Safety Switches							
Part Number	Price	Body Material	Head Material	Weight (lbs)	Actuator Travel / Force for Positive Opening	Contact Configuration	Dimensions
IDIS-190051	<--->	Plastic	Plastic	0.35	6mm/12N	1 N.O., 2 N.C. Slow action	Figure 1
IDIS-190055	<--->					3 N.C. Slow action	Figure 1
IDIS-190059	<--->					1 N.O., 1 N.C. Snap action	Figure 1

IDIS-190051


IDEM IDIS-2 Hinge Interlock Safety Switches							
Part Number	Price	Body Material	Head Material	Weight (lbs)	Actuator Rotation / Force for Positive Opening	Contact Configuration	Dimensions
IDIS-192002	<--->	Plastic	Plastic	0.35	7 degrees / 0.5N	1 N.O., 2 N.C. Slow action	Figure 2
IDIS-192005	<--->					3 N.C. Slow action	Figure 2
IDIS-192008	<--->					1 N.O., 1 N.C. Snap action	Figure 2


IDIS-192002


Dimensions mm[in]

Figure 1

Figure 2


IDEM KM/KM-SS Interlock Safety Switches

KM/KM-SS Series Housing

- Tongue (key) interlock operated
- 90 degree adjustable head
- 8 actuator entry positions
- One 1/2 in. NPT female conduit opening
- Force guided NC contacts 
- 30 mm mounting profile
- Aluminum and 316 stainless steel options available
- Includes one tamper-proof T20 Torx bit
- Purchase actuating key separately. (See accessories)

See electrical specifications later in this section.



IDEM KM /KM-SS Interlock Safety Switches							
Part Number	Price	Body Material	Head Material	Weight (lbs)	Actuator Travel / Force for Positive Opening	Contact Configuration	Dimensions
KM-203002	<--->	Die-cast aluminum	Die-cast aluminum	0.92	6mm/12N	1 N.O., 2 N.C. Slow action	Figure 1
KM-203008	<--->					1 N.O., 3 N.C. Slow action	Figure 1
KM-203011	<--->					2 N.O., 2 N.C. Slow action	Figure 1
KM-203002-SS	<--->		316 stainless steel	1.1		1 N.O., 2 N.C. Slow action	Figure 2
KM-203008-SS	<--->					1 N.O., 3 N.C. Slow action	Figure 2
KM-203011-SS	<--->					2 N.O., 2 N.C. Slow action	Figure 2
KM-SS-204002	<--->	316 stainless steel	1.4	1 N.O., 2 N.C. Slow action	Figure 2		
KM-SS-204008	<--->			1 N.O., 3 N.C. Slow action	Figure 2		
KM-SS-204011	<--->			2 N.O., 2 N.C. Slow action	Figure 2		

Dimensions mm[in]

Figure 1

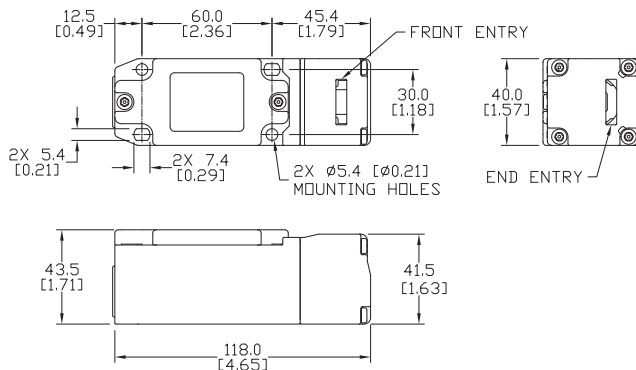
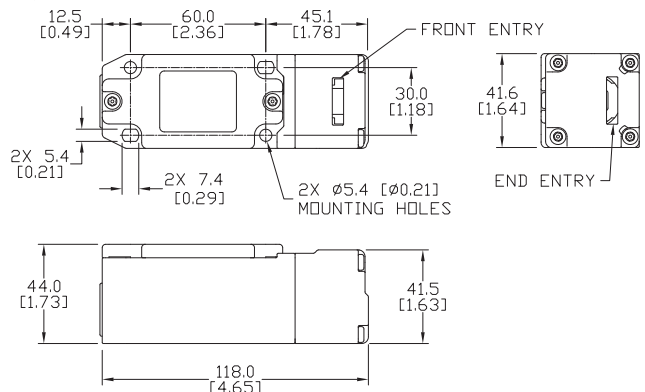


Figure 2



IDEM KP/K-SS and K-15 Interlock Safety Switches

KP/K-SS and K-15 Series Housing

- Tongue (key) interlock operated
 - 180 degree adjustable head
 - 4 actuator entry positions
 - Three 1/2 in. NPT female conduit openings
 - Force guided NC contacts
 - 40 mm mounting profile
 - Purchase actuating key separately. (See accessories.)
- See electrical specifications later in this section.**

KP-200002

KP-200002-SS

K-SS-208002


IDEM KP/K-SS Interlock Safety Switches

Part Number	Price	Body Material	Head Material	Weight (lbs)	Actuator Travel/Force for Positive Opening	Contact Configuration	Dimensions		
KP-200002	<-->	Plastic	Plastic	0.7	6mm/12N	1 N.O., 2 N.C. Slow action	Figure 1		
KP-200008	<-->					1 N.O., 3 N.C. Slow action	Figure 1		
KP-200011	<-->					2 N.O., 2 N.C. Slow action	Figure 1		
KP-200002-SS	<-->					316 stainless steel	0.85	1 N.O., 2 N.C. Slow action	Figure 2
KP-200008-SS	<-->							1 N.O., 3 N.C. Slow action	Figure 2
KP-200011-SS	<-->	2 N.O., 2 N.C. Slow action	Figure 2						
K-SS-208002	<-->	316 stainless steel	1.63	1 N.O., 2 N.C. Slow action	Figure 3				
K-SS-208008	<-->			1 N.O., 3 N.C. Slow action	Figure 3				
K-SS-208011	<-->			2 N.O., 2 N.C. Slow action	Figure 3				

K-15-207002

K-15-207002-SS


IDEM K-15 Interlock Safety Switches

Part Number	Price	Body Material	Head Material	Weight (lbs)	Actuator Travel / Force for Positive Opening	Contact Configuration	Dimensions
K-15-207002	<-->	Plastic	Plastic	0.66	6mm/12N	1 N.O., 2 N.C. Slow action	Figure 4
K-15-207005	<-->					3 N.C. Slow action	Figure 4
K-15-207002-SS	<-->		316 Stainless Steel	0.8		1 N.O., 2 N.C. Slow action	Figure 5
K-15-207005-SS	<-->					3 N.C. Slow action	Figure 5

IDEM KP/K-SS and K-15 Interlock Safety Switches

Dimensions mm[in]

Figure 1

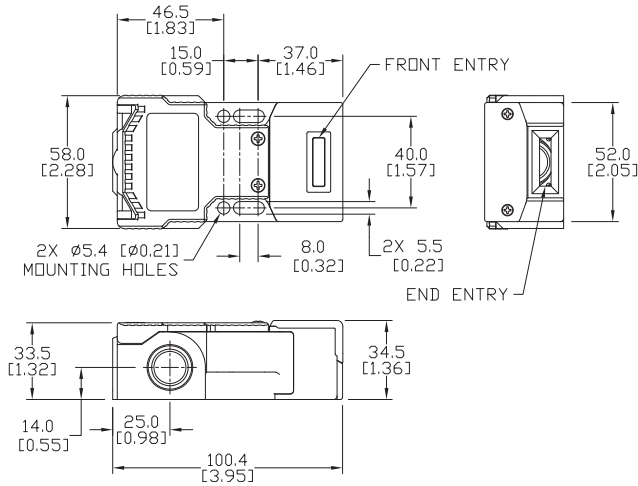


Figure 2

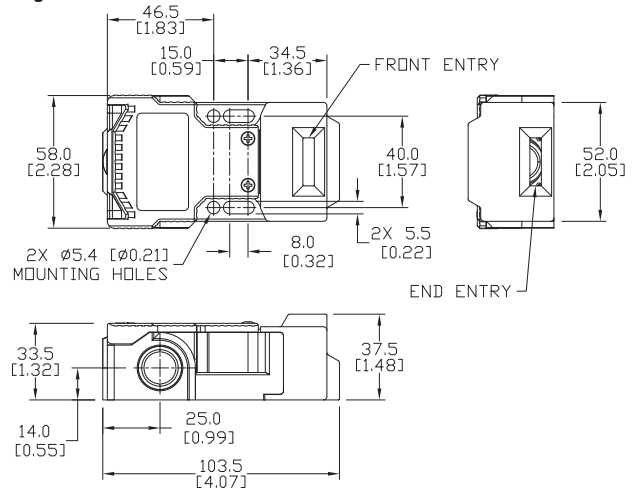


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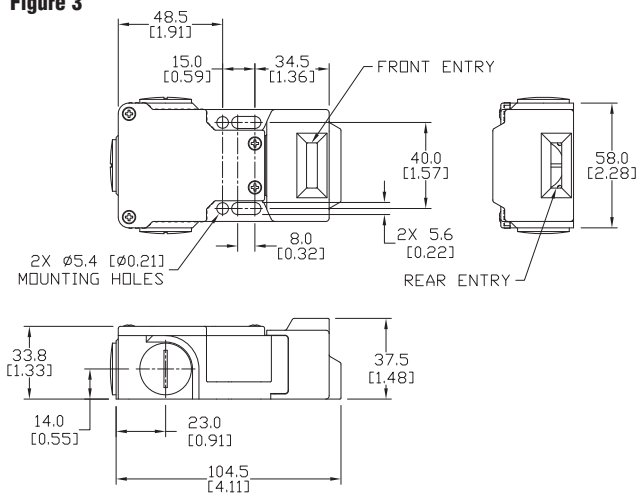


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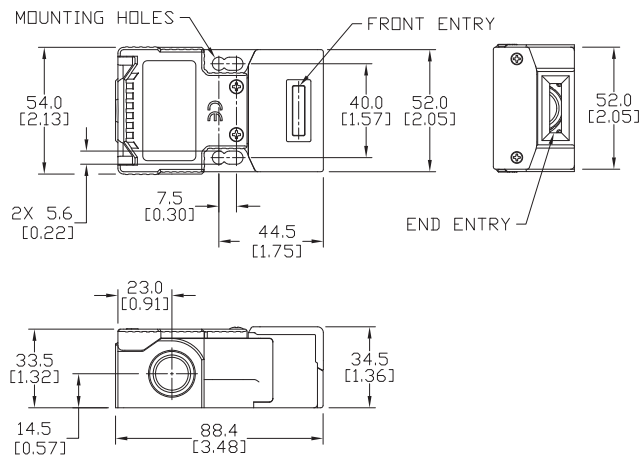
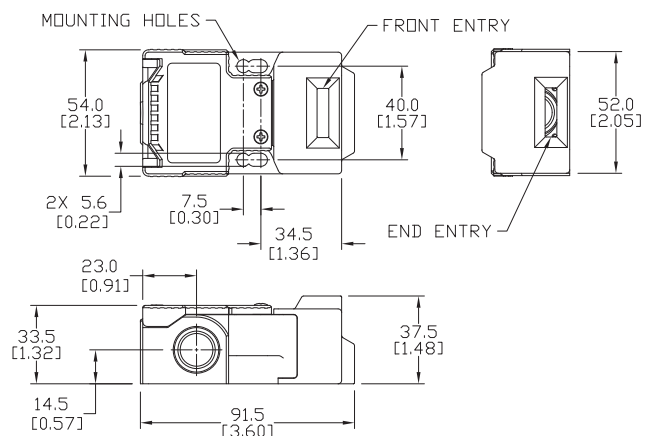


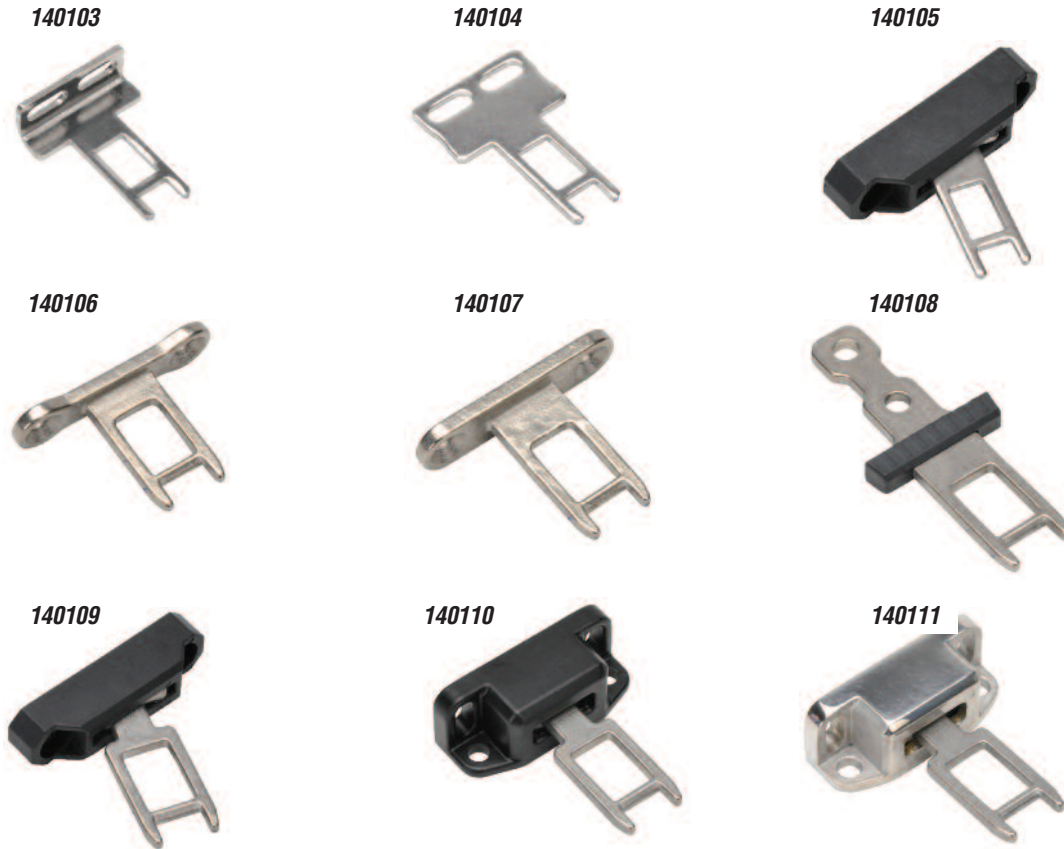
Figure 5



IDEM Interlock Safety Actuator Keys

Actuator Keys

- 9 available keys
- All keys are 316 stainless steel
- Flexible key options available



IDEM Interlock Safety Switch Actuator Tongue (Keys)								
Part Number	Price	Description	Use with:			Weight (lbs)	Minimum Entry Radius	Dimensions
			IDIS-1	KP/K15	K-SS/KM/KM-SS			
140103	<--->	14.4 mm mounting hole spacing, 90-degree bent stainless steel key/mounting tab	✓			0.03	175 mm	Figure 1
140104	<--->	14.4 mm mounting hole spacing, straight stainless steel key/mounting tab	✓			0.03	175 mm	Figure 2
140105	<--->	40 mm mounting hole spacing, stainless steel key with polyester flexible mounting tab	✓			0.06	100 mm	Figure 3
140106	<--->	40 mm mounting hole spacing, 90-degree stainless steel key/mounting tab		✓**		0.07	175 mm	Figure 4
140107	<--->	40 mm mounting hole spacing, 90-degree stainless steel key/mounting tab		✓*	✓	0.07	175 mm	Figure 5
140108	<--->	20 mm mounting hole spacing, straight stainless steel key with plastic stop		✓	✓	0.07	175 mm	Figure 6
140109	<--->	40 mm mounting hole spacing, stainless steel key with polyester flexible mounting tab		✓	✓	0.10	100 mm	Figure 7
140110	<--->	40 mm mounting hole spacing, stainless steel key with black-painted aluminum flexible mounting tab		✓	✓	0.16	100 mm	Figure 8
140111	<--->	40 mm mounting hole spacing, stainless steel key with mirror polished stainless steel flexible mounting tab		✓	✓	0.22	100 mm	Figure 9

* Stainless steel head only

** Plastic head only

IDEM Interlock Safety Actuator Keys

Dimensions mm[in]

Figure 1

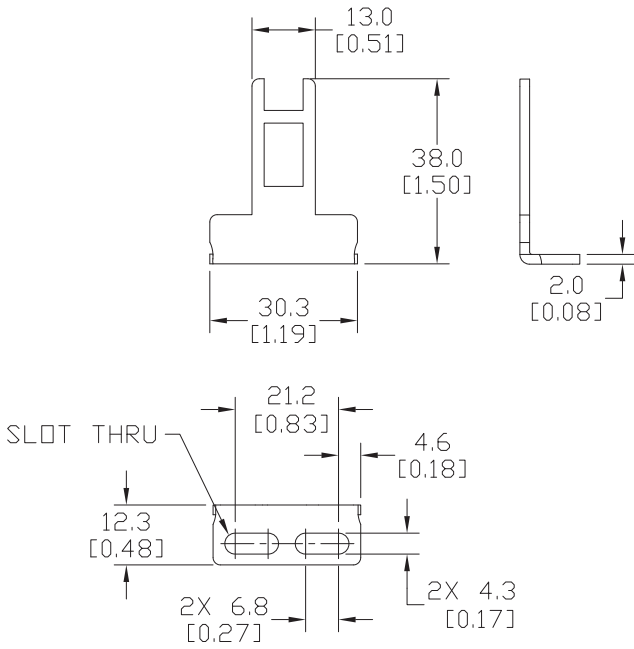


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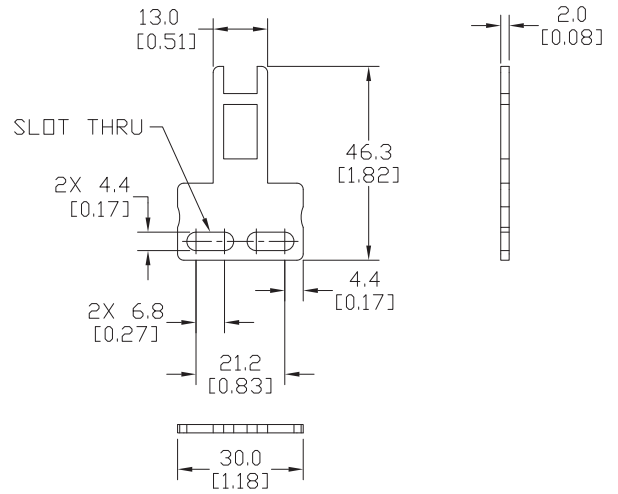


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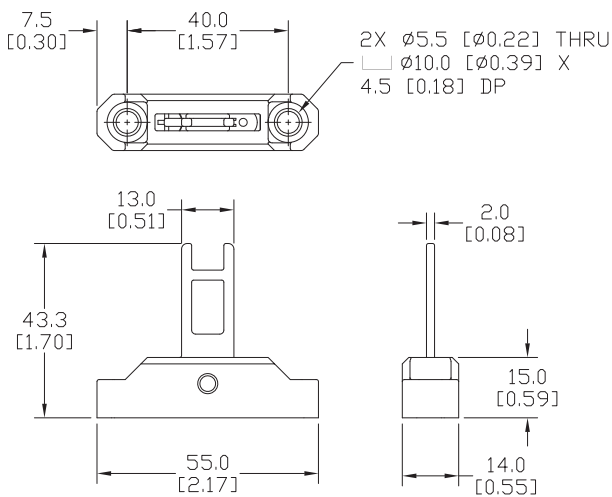
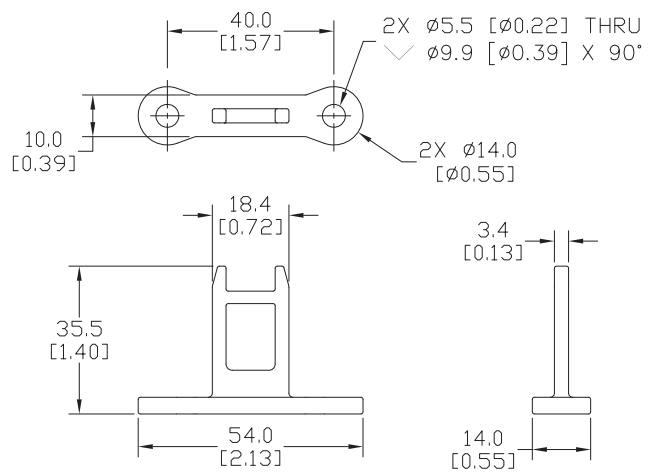


Figure 4



IDEM Interlock Safety Actuator Keys

Dimensions mm[in]

Figure 6

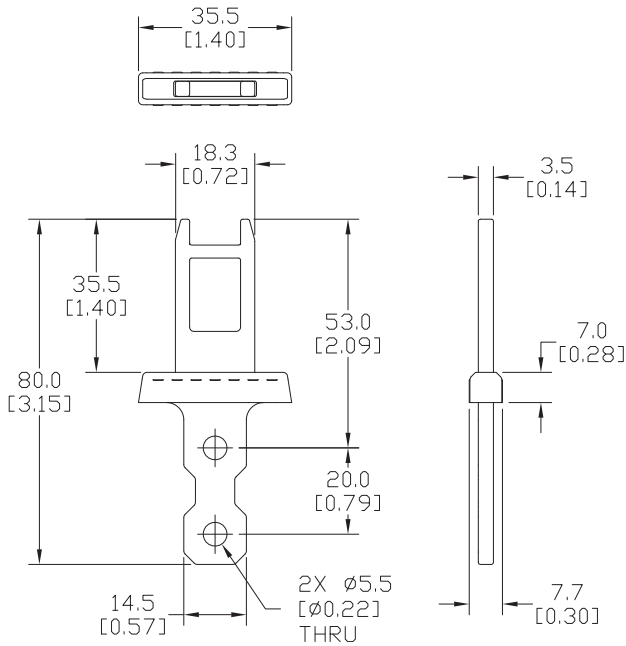


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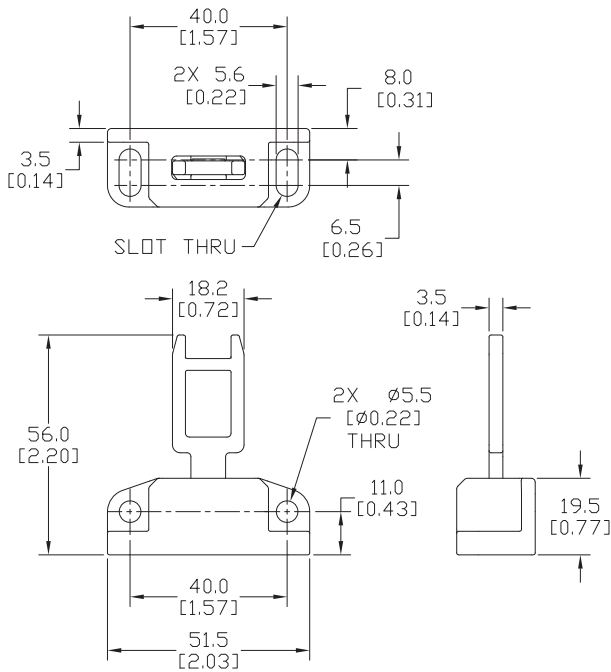


Figure 5

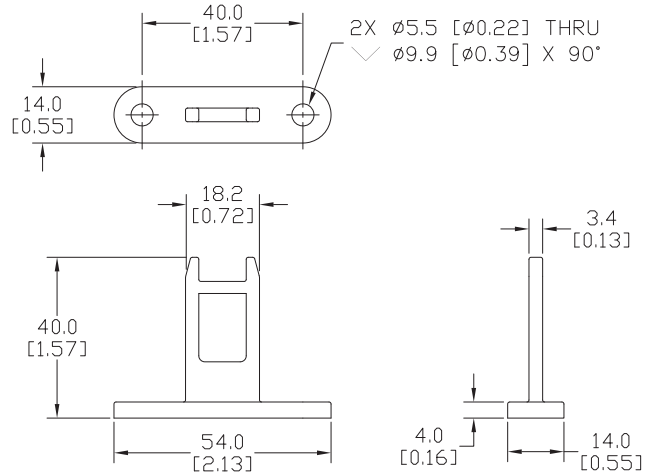


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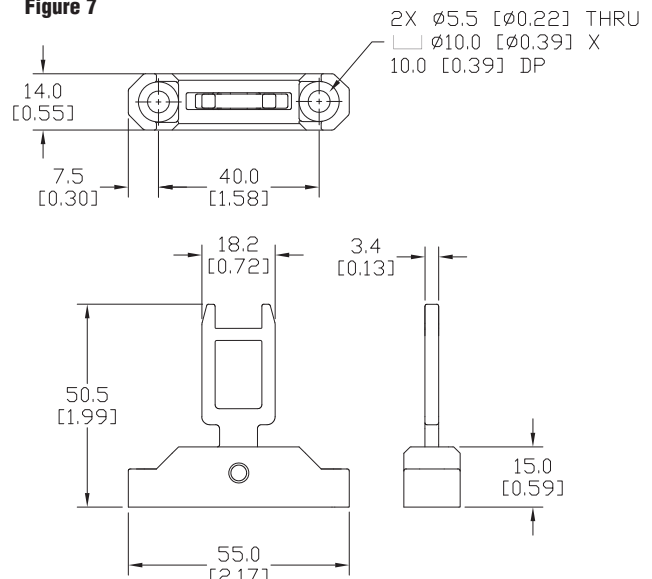
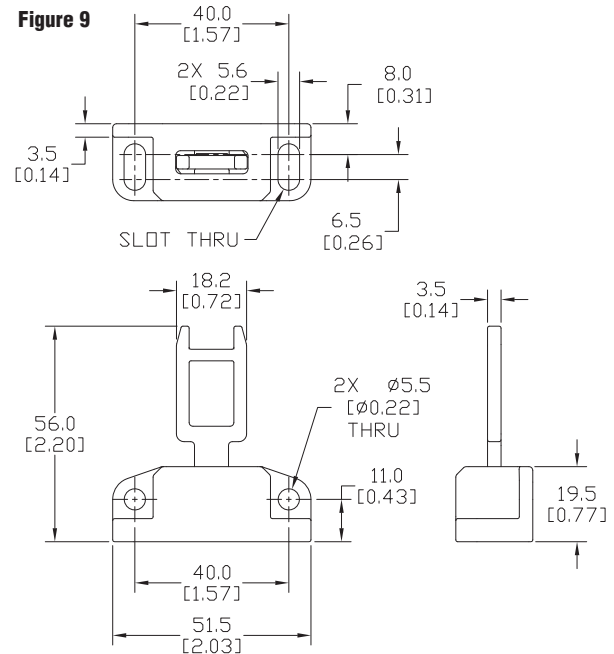


Figure 9



IDEM GM and GLS Safety Rope Switches

GLM and GLS Series Pull Cord Housings

- Three 1/2 in. NPT female fittings
- Includes one tamper-proof T20 Torx bit
- 57 mm, 63 mm, and 65 mm mounting profiles
- Rope Pull kits sold separately and recommended for increased reliability
- 50m, 80m, and 100m length systems

See electrical specifications later in this section.

IDEM GLM/GLS Interlock Safety Switches							
Part Number	Price	Construction Material	Weight (lbs)	E-Stop	LED	Maximum Rope Length	Contact Configuration Dimensions
GLM-143002	<-->	57 mm Die-cast Aluminum	1.5	No	No	50m/164 ft.*	1 N.O., 2 N.C. Slow Figure 1
GLM-143051	<-->		1.5	No	No		1 N.O., 3 N.C. Figure 1
GLM-143053	<-->		1.5	No	No		2 N.O., 2 N.C. Figure 1
GLM-143057	<-->		1.6	Yes	No		1 N.O., 3 N.C. Figure 1
GLM-143067-AS	<-->		1.7	Yes	24VDC		1 N.O., 3 N.C. Figure 2
GLM-143067-BS	<-->		1.7	Yes	110VAC		1 N.O., 3 N.C. Figure 2
GLS-142002	<-->	63 mm Die-cast Aluminum	1.75	No	No	80m/262 ft.*	1 N.O., 2 N.C. Figure 3
GLS-142051	<-->		1.75	No	No		1 N.O., 3 N.C. Figure 3
GLS-142053	<-->		1.75	No	No		2 N.O., 2 N.C. Figure 3
GLS-142063	<-->		1.85	Yes	No		1 N.O., 3 N.C. Figure 3
GLS-142075-AS	<-->		1.9	Yes	24VDC		1 N.O., 3 N.C. Figure 4
GLS-142075-BS	<-->		1.9	Yes	110VAC		1 N.O., 3 N.C. Figure 4
GLS-SS-144002	<-->	65 mm Stainless Steel	4.2	No	No	100m/328 ft.*	1 N.O., 3 N.C. Figure 5
GLS-SS-144004	<-->		4.2	No	No		2 N.C., 2 N.O. Figure 5
GLS-SS-144014	<-->		4.3	Yes	No		1 N.O., 3 N.C. Figure 5
GLS-SS-144020-AS	<-->		4.4	Yes	24VDC		1 N.O., 3 N.C. Figure 6
GLS-SS-144020-BS	<-->		4.4	Yes	110VAC		1 N.O., 3 N.C. Figure 6

GLM-143067-AS



GLS-142053



GLS-SS-144020-AS



*See Recommended Rope Span Options and Fittings for number of switches recommended with specific maximum rope lengths.

Cable Kits for IDEM Cable-Pull Safety Switches

- One end of cables terminated with a thimble, permanent clamp, and a threaded quick link
- Kit includes everything needed for installation
- 4 mm diameter cable with red plastic coating
- 4 mm Allen key

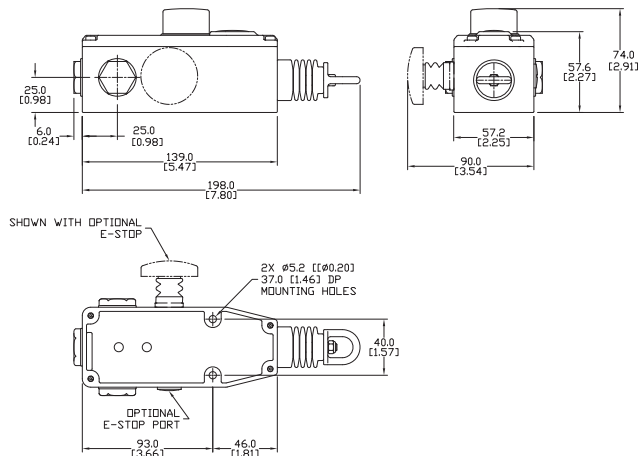
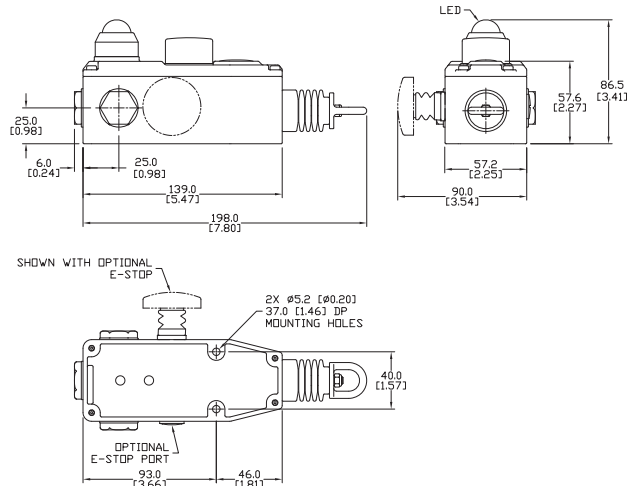
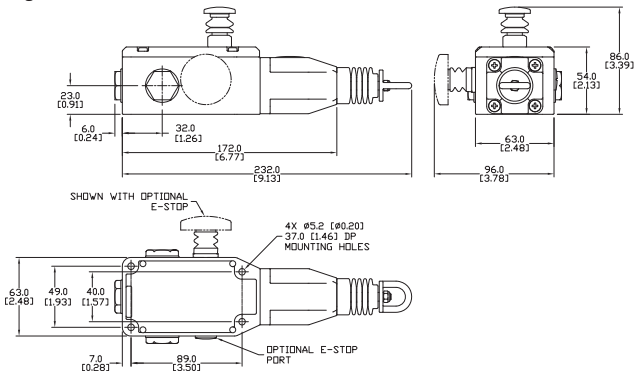
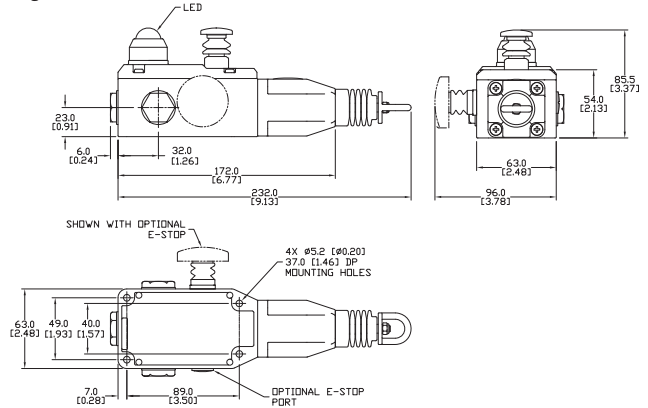
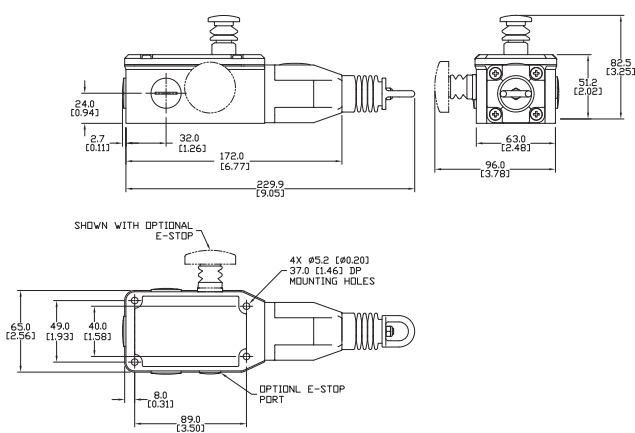
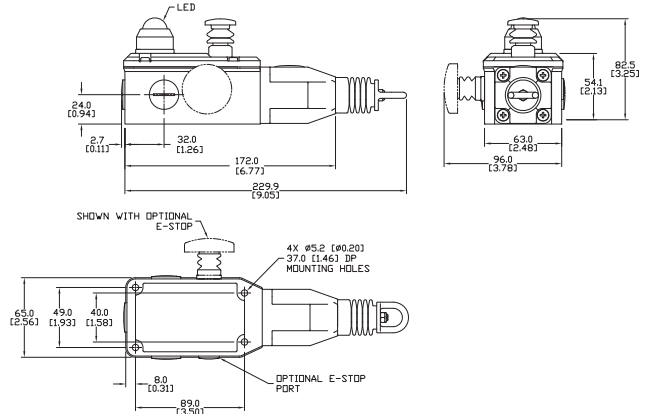
Cable Kits for IDEM Cable-Pull Safety Switches					
Part Number	Price	Description	Cable Length	Construction Material	Weight (lbs)
140002	<-->	Includes (1) cable, (5) eyebolts, (1) tensioner / gripper and (1) allen key.	10m/32 ft.	galvanized steel	0.8
140011	<-->			stainless steel	1.3
140004	<-->	Includes (1) cable, (9) eyebolts, (1) tensioner / gripper and (1) allen key.	20m/65 ft.	galvanized steel	2.2
140013	<-->			stainless steel	2.9
140005	<-->	Includes (1) cable, (12) eyebolts, (1) tensioner / gripper and (1) allen key.	30m/98 ft.	galvanized steel	2.8
140014	<-->			stainless steel	3.9
140006	<-->	Includes (1) cable, (20) eyebolts, (1) tensioner / gripper and (1) allen key.	50m/164 ft.	galvanized steel	4.5
140015	<-->			stainless steel	6.0
140007	<-->	Includes (1) cable, (30) eyebolts, (2) tensioner / grippers and (1) allen key.	80m/262 ft.	galvanized steel	7.0
140016	<-->			stainless steel	9.5

140002



IDEM GLM and GLS Safety Rope Switches

Dimensions mm[in]

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6


IDEM Interlock Safety Rope Switch Accessories

Steel Cable for IDEM Cable-Pull Safety Switches				
Part Number	Price	Description	Cable Length	Weight (lbs)
140033	<--->	5 meter length steel cable, 4mm diameter, red	5m/16 ft.	0.35
140034	<--->	10 meter length steel cable, 4mm diameter, red	10m/32 ft.	0.7
140036	<--->	20 meter length steel cable, 4mm diameter, red	20m/65 ft.	1.4
140037	<--->	30 meter length steel cable, 4mm diameter, red	30m/98 ft.	2.1
140038	<--->	50 meter length steel cable, 4mm diameter, red	50m/164 ft.	3.5
140039	<--->	80 meter length steel cable, 4mm diameter, red	80m/262 ft.	5.4
140040	<--->	100 meter length steel cable, 4mm diameter, red	100m/328 ft.	6.6
140041	<--->	126 meter length steel cable, 4mm diameter, red	126m/413 ft.	8.42

140033



IDEM Interlock Safety Switch Accessories					
Part Number	Price	Description	Construction Material	Weight (lbs)	Dimensions
140019	<--->	Cable Tensioner / Gripper. Includes 4mm allen wrench	Stainless Steel	0.5	Figure 1
140020	<--->		Galvanized Steel	0.3	Figure 1
140021	<--->	Pulley assembly	Stainless Steel	0.3	Figure 2
140064	<--->		Galvanized Steel	0.2	Figure 2
140045	<--->	Eye bolt 84mm long, M8 x 1.25 threads. Includes (2) flat washers and (2) nuts per eye bolt. Package of 8.	Stainless Steel	0.8	Figure 3
140046	<--->		Galvanized Steel	0.5	Figure 3
140043	<--->	Spring, 220mm long	Stainless Steel	0.4	Figure 4
140132-AS	<--->	Replacement LED assembly, 24VDC, bi-color steady green and red. Use with GLM, GLS or GLS-SS series cable pull switches.	NA	0.08	NA
140132-BS	<--->	Replacement LED assembly, 110VAC, bi-color steady green and red. Use with GLM, GLS or GLS-SS series cable pull switches.	NA	0.08	NA

140019



140021



140045



140132-AS



Dimensions mm[in]

Figure 1

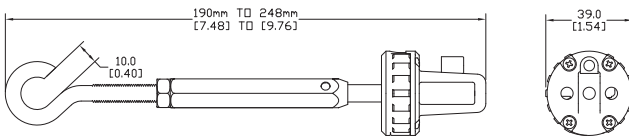


Figure 2

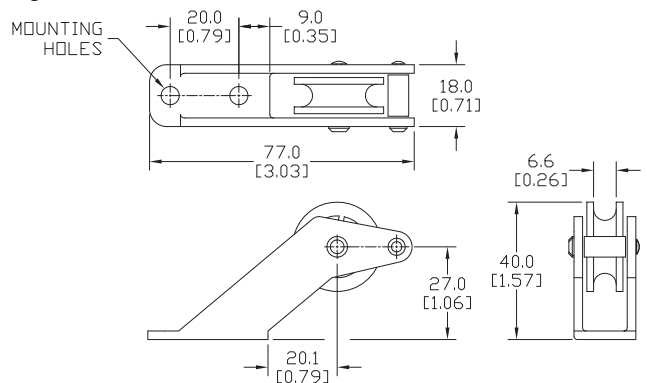


Figure 3

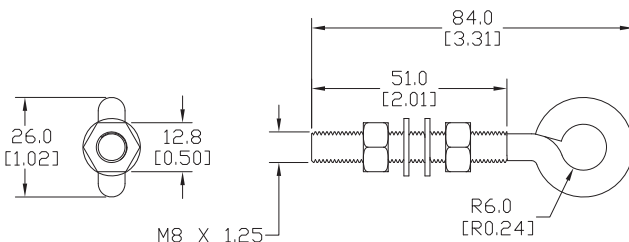
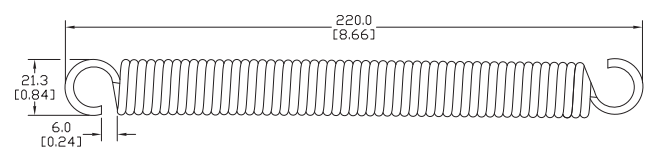


Figure 4



IDEM Interlock Rope Span Options

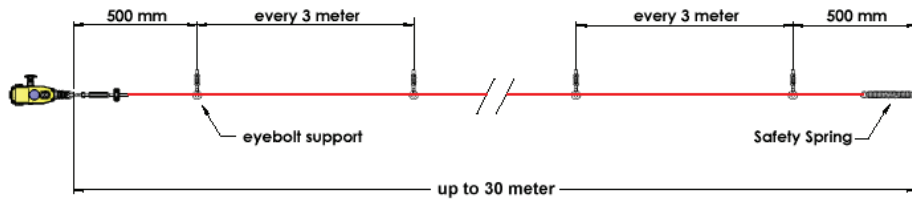
Recommended Options and Fittings

Recommended options and fittings:

- Use two switches when using two pulleys
- When using a safety spring, use a maximum of one corner pulley

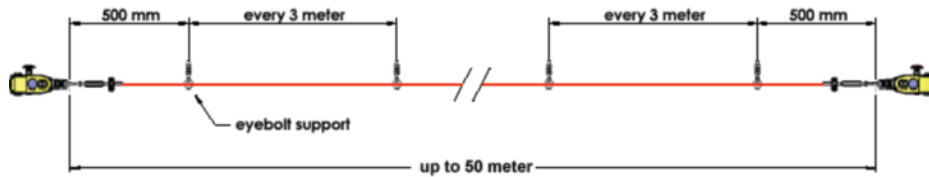
GLM 30m

Up to 30m
1 switch/1 spring



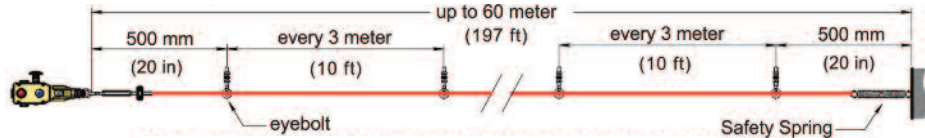
GLM 50m

30 to 60m
2 switches



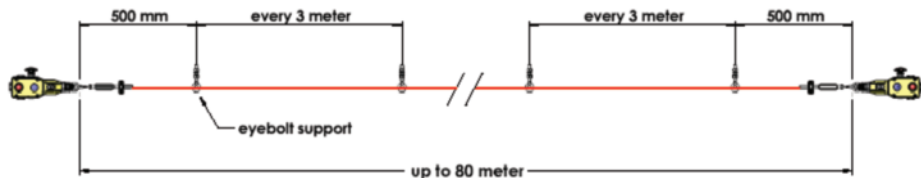
GLS 60m

Up to 60m
1 switch/1 spring



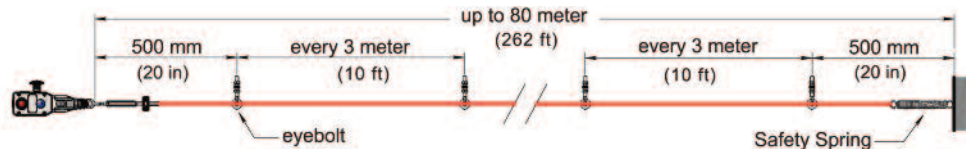
GLS 80m

60 to 80m
2 switches



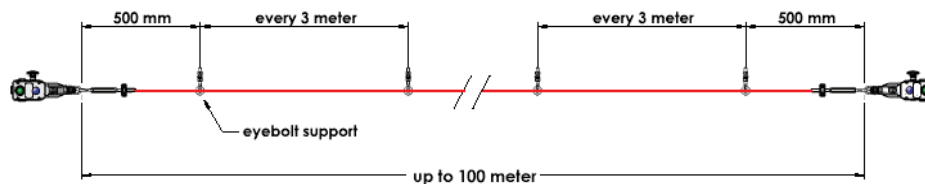
GLS-SS 80m

Up to 80m
1 switch/1 spring

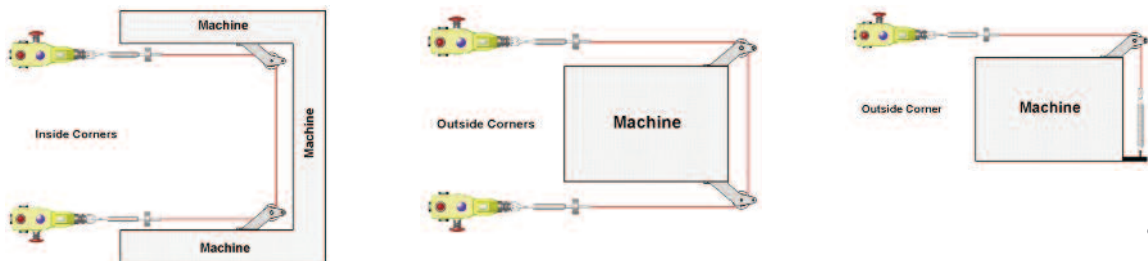


GLS-SS 100m

80 to 100m
2 switches



Universal Pulley Examples



LED

When power is applied to the Red wire (terminal 1), the lamp will illuminate Red. When power is applied to the Green Wire (terminal 3), the Lamp will illuminate Green. Black is 0 VDC or Neutral for 110 VAC and 230 VAC versions.

LED Steady Red - Stopped LED Steady Green - Run



Safety Components

Volume 14

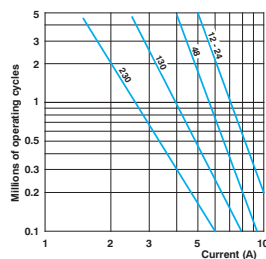
e35-23

IDEM Interlock Safety Switches Specifications

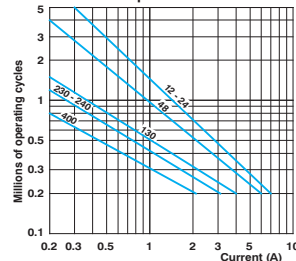
Specifications					
	IDIS	KM	KP/K-SS	K-15	GLM/GLS
Safety Classification and Reliability Data					
Switching Reliability (B10d)	2.5 x 10 ⁶ operations at 100mA load				
EN 954-1	Up to Category 4 with Safety Relay				
ISO 13849-1	Up to PLe depending upon system architecture				
EN 62061	Up to SIL3 depending upon system architecture				
Safety Data - Annual Usage	8 cycles per hour / 24 hours per day / 365 days				
Agency Approvals	cULus (E258676), CE, TUV (rope pull switches)				
Electrical and General Specifications					
Conductor Sizes	16-12 AWG (1.5 to 2.5 mm ²)				
Utilization Category	AC15, A300,3A				
Thermal Current	10A				
Short Circuit Overload Protection	External 10A Fast Acting recommended				
Rated Insulation Voltage	500 VAC				
Contacts	Stainless steel (Snap action Plated Brass); Max conductor 1.5m ² (IDIS), 2.5 m ² (KM, K/K-15); 1 Nm torque				
Max. Switching Current	2.5A @24 VDC 6A @ 120VDC, 3A @ 240VDC (720VA Break)				
Maximum Approach/Withdrawal Speed	600mm/s.				
Enclosure Protection	IP67 (IP69K on all models with both stainless steel head and body)				
Operating Temperature	-25C to 80C / -13F to 176F				
Vibration	IEC 68-2-6, 10-55Hz+1Hz				
Lid Screws/Torque	Plated Brass;1Nm (.74 lb-ft)	Stainless Steel; T20 Torx; 1Nm (.74 lb-ft)	Stainless Steel;1Nm (.74 lb-ft)	Stainless Steel;1Nm (.74 lb-ft)	Stainless Steel; T20 Torx; 1Nm (.74 lb-ft)
Recommended Mounting Screws/Torque	M4; 1.5Nm (1.11 lb-ft)	M5; 4Nm (2.95 lb-ft)	M5; 4Nm (2.95 lb-ft)	M5; 4Nm (2.95 lb-ft)	M5; 4Nm (2.95 lb-ft)
Head Screws/Torque	Stainless Steel, except snap (Plated Brass);1Nm (.74 lb-ft)	Stainless Steel; T20 Torx; 1Nm (.74 lb-ft)	Stainless Steel; ;1Nm (.74 lb-ft)	Stainless Steel;1Nm (.74 lb-ft)	Stainless Steel; 1Nm (.74 lb-ft)

Electrical Durability (according to IEC 947-5-1)

AC-15 Slow Action



AC-15 Snap Action



IDEM Interlock Safety Travel Charts

Interlock Safety Switch Types

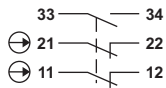
Slow-make/slow-break contacts: A contact element in which the contact motion is dependent on the actuator speed.

Snap-action contact: A contact element in which the contact motion is independent of the speed of the actuator. This feature ensures reliable electrical performance even in applications involving very slow moving actuators.

Contacts Configuration

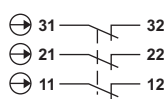
1 N.O. and 2 N.C.

Slow-make/ slow-break contacts



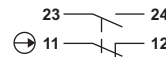
3 N.C.

Slow-make/ slow-break contacts



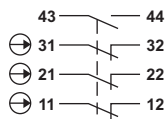
1 N.O. and 1 N.C.

Snap action contacts



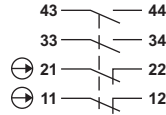
1 N.O. and 3 N.C.

Slow-make/ slow-break contacts

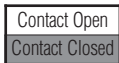


2 N.O. and 2 N.C.

Slow-make/ slow-break contacts



Travel Charts



Interlock Switches

2NC 1NO 6.8 6.0 0 mm

11/12	Open	
21/22	Open	
33/34		Open

3NC 6.0 0 mm

11/12	Open	
21/22	Open	
31/32	Open	

1NC 1NO (SNAP) 6.5 0 mm

11/12	Open	
23/24		Open

3NC 1NO 6.8 6.0 0 mm

11/12	Open	
21/22	Open	
31/32	Open	
43/44		Open

2NC 2NO 6.8 6.0 0 mm

11/12	Open	
21/22	Open	
33/34		Open
43/44		Open

Safety Rope Switches

EX	1 N.O./2 N.C.	1 N.O./3 N.C.	2 N.O./2 N.C.	Latched off - Rope Slack	Tension Range (Switch Reset)	Rope Pulled
NC	11/12	11/12	11/12	Open		Open
	21/22	21/22	21/22	Open		Open
		31/32		Open		Open
NO	33/34	43/44	33/44		Open	
			43/44		Open	

130N Force

Comepi Safety Limit Switches Selection Guide



Series	SP2 Series	SDM Series	SBM Series
Prices start at	<--->	<--->	<--->
Description	30 mm safety limit switch with keys or shaft lever	50 mm safety limit switch with keys, shaft lever or pull wire	40 mm safety limit switch with keys or pull wire
Material of Construction	Plastic casing, double insulated <input type="checkbox"/>	ZAMAK (zinc alloy) casing	Aluminum casing
Degree of Protection (IEC529)	IEC IP65	IEC IP66	IEC IP66
Maximum Switching Frequency	Contact blocks: 1 cycle per second (all)	Contact blocks: 1 cycle per second (all)	Contact blocks: 1 cycle per second (all)
Mechanical Service Life	1,000,000 operations interlock and limit switches	1,000,000 operations. interlock and limit switches 25,000 operations for pull wire	1,000,000 operations. interlock and limit switches 25,000 operations for pull wire
Contact Configuration	X11 - Slow action break before make, positive opening, 1 N.O. + 1 N.C. W02 - Simultaneous, slow action, positive opening, 2 N.C.	X11 - Slow action break before make, positive opening, 1 N.O. + 1 N.C. W02 - Simultaneous, slow action, positive opening, 2 N.C.	X11 - Slow action break before make, positive opening, 1 N.O. + 1 N.C. W02 - Simultaneous, slow action, positive opening, 2 N.C. X12 - Slow action break before make, positive opening, 1 N.O. + 2 N.C. W03 - Simultaneous, slow action, positive opening 3 N.C.
Conduit Opening	One cable hole, 1/2" NPT adapter	Three cable holes, 1/2" NPT	One cable hole, 1/2" NPT
Connection	2x2.5mm ² (AWG14) to 2x0.5mm ² (AWG 18)	2x2.5mm ² (AWG14) to 2x0.5mm ² (AWG 18)	2x2.5mm ² (AWG14) to 2x0.5mm ² (AWG 18)
Agency Approvals	CE, UL file E189258, CSA 176294, RoHS	CE, UL file E189258, CSA 176294, RoHS	CE, UL file E189258, CSA 176294, RoHS



Series	SCM Series	AP2 Series
Prices start at	<--->	<--->
Description	60 mm safety limit switches with keys or pull wire	30 mm limit switches with pull button reset
Material of Construction	Aluminum casing	Plastic casing, double insulated <input type="checkbox"/>
Degree of Protection (IEC529)	IEC IP66	IEC IP65
Maximum Switching Frequency	Contact blocks: 1 cycle per second (all)	Contact blocks: 1 cycle per second (all)
Mechanical Service Life	1,000,000 operations interlock and limit switches 25,000 operations for pull wire	1,000,000 operations interlock and limit switches
Contact Configuration	X11 - Slow action break before make, positive opening, 1 N.O. + 1 N.C. W02 - Simultaneous, slow action, positive opening, 2 N.C. X12 - Slow action break before make, positive opening, 1 N.O. + 2 N.C. W03 - Simultaneous, slow action, positive opening 3 N.C.	X11 - Slow action break before make, positive opening, 1 N.O. + 1 N.C. W02 - Simultaneous, slow action, positive opening, 2 N.C.
Conduit Opening	Three cable holes, 1/2" NPT	One cable hole, 1/2" NPT adapter
Connection	2x2.5mm ² (AWG14) to 2x0.5mm ² (AWG 18)	2x2.5mm ² (AWG14) to 2x0.5mm ² (AWG 18)
Agency Approvals	CE, UL file E189258, CSA 176294, RoHS	CE, UL file E189258, CSA 176294, RoHS

Comepi Safety Limit Switches

These limit switches are developed and manufactured according to IEC and EN European standards.

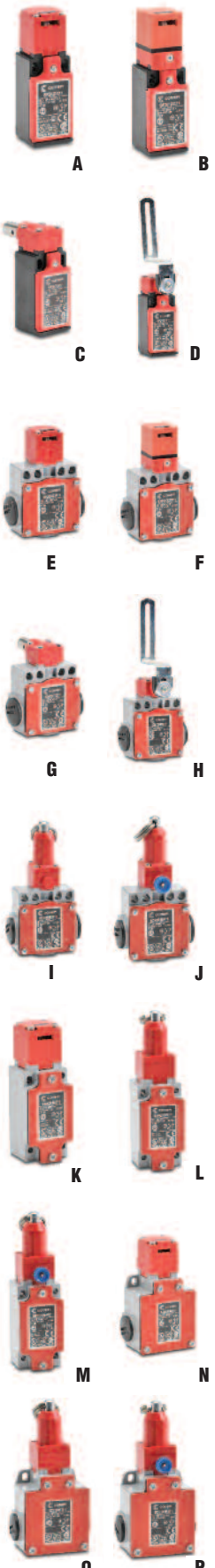
Easy to use, electromechanical limit switches provide:

- Visible operation
- Ability to switch large currents (10 A conventional thermal current)
- Precise operating points (consistency)

- Immunity to electromagnetic disturbances
- Electrically separated contacts (Zb) →
- N.C. contacts with positive opening operation
- Actuation Speed: Max. - 0.5 m/s; Min. - 0.01 m/s
- Conduit opening - 1/2" NPT threaded or adapter

Note: Purchase actuating tongue (key) separately.

Safety Limit Switches											
Part Number	Price	Actuator Type	No. of Conduit Holes	Min Force for Key Actuation	Min Torque	Positive Opening Force	B10 _d	Dimensions Body / Head	Contact Config. Diagram	Weight (lbs.)	Photo
SP2K20X11	<-->	90° adjustable head, tongue (key) interlock	One	15N	0.12 Nm	0.60 Nm	2,000,000 operations	Figures 1, 5	1	0.2	A
SP2K20W02	<-->		One					Figures 1, 5	2	0.2	A
SP2K120X11	<-->	360° adjustable head, tongue (key) interlock	One					Figures 1, 6	1	0.2	B
SP2K120W02	<-->		One					Figures 1, 6	2	0.2	B
SP2K72X11	<-->	90° adjustable head, shaft hinge interlock	One	15N	0.12 Nm	0.60 Nm	2,000,000 operations	Figures 1, 7	1	0.2	C
SP2K72W02	<-->		One					Figures 1, 7	2	0.2	C
SP2K61X11	<-->	90° adjustable head, lever hinge interlock	One					Figures 1, 8	1	0.2	D
SP2K61W02	<-->		One					Figures 1, 8	2	0.2	D
SDM2K20X11	<-->	90° adjustable head, tongue (key) interlock	Three	15N	0.12 Nm	0.60 Nm	25,000 operations	Figures 2, 5	1	0.6	E
SDM2K20W02	<-->		Three					Figures 2, 5	2	0.6	E
SDM2K120X11	<-->	360° adjustable head, tongue (key) interlock	Three					Figures 2, 6	1	0.6	F
SDM2K120W02	<-->		Three					Figures 2, 6	2	0.6	F
SDM2K72X11	<-->	90° adjustable head, shaft hinge interlock	Three	15N	0.12 Nm	0.60 Nm	25,000 operations	Figures 2, 7	1	0.6	G
SDM2K72W02	<-->		Three					Figures 2, 7	2	0.6	G
SDM2K61X11	<-->	90° adjustable head, lever hinge interlock	Three					Figures 2, 8	1	0.6	H
SDM2K61W02	<-->		Three					Figures 2, 8	2	0.6	H
SDM2K96X11	<-->	Cable-pull interlock, no reset	Three	30N	45N	2,000,000 operations	25,000 operations	Figures 2, 9	1	0.6	I
SDM2K96W02	<-->		Three					Figures 2, 9	2	0.6	I
SDM2K98X11	<-->	Cable-pull interlock with reset	Three					Figures 2, 10	1	0.6	J
SDM2K98W02	<-->		Three					Figures 2, 10	2	0.6	J
SBM2K40X11	<-->	90° adjustable head, tongue (key) interlock	One	30N	45N	2,000,000 operations	25,000 operations	Figures 3, 11	1	0.4	K
SBM2K40W02	<-->		One					Figures 3, 11	2	0.4	K
SBM2K40X12	<-->		One					Figures 3, 11	3	0.4	K
SBM2K40W03	<-->		One					Figures 3, 11	4	0.4	K
SBM2K97X11	<-->	Cable-pull interlock, no reset	One	30N	45N	2,000,000 operations	25,000 operations	Figures 3, 12	1	0.6	L
SBM2K97W02	<-->		One					Figures 3, 12	2	0.6	L
SBM2K97X12	<-->		One					Figures 3, 12	3	0.6	L
SBM2K97W03	<-->		One					Figures 3, 12	4	0.6	L
SBM2K99X11	<-->	Cable-pull interlock with reset	One	30N	45N	2,000,000 operations	25,000 operations	Figures 3, 13	1	0.6	M
SBM2K99W02	<-->		One					Figures 3, 13	2	0.6	M
SBM2K99X12	<-->		One					Figures 3, 13	3	0.6	M
SBM2K99W03	<-->		One					Figures 3, 13	4	0.6	M
SCM2K40X11	<-->	90° adjustable head, tongue (key) interlock	Three	30N	45N	2,000,000 operations	25,000 operations	Figures 4, 11	1	0.5	N
SCM2K40W02	<-->		Three					Figures 4, 11	2	0.5	N
SCM2K40X12	<-->		Three					Figures 4, 11	3	0.5	N
SCM2K40W03	<-->		Three					Figures 4, 11	4	0.5	N
SCM2K97X11	<-->	Cable-pull interlock, no reset	Three	30N	45N	2,000,000 operations	25,000 operations	Figures 4, 12	1	0.7	O
SCM2K97W02	<-->		Three					Figures 4, 12	2	0.7	O
SCM2K97X12	<-->		Three					Figures 4, 12	3	0.7	O
SCM2K97W03	<-->		Three					Figures 4, 12	4	0.7	O
SCM2K99X11	<-->	Cable-pull interlock with reset	Three	30N	45N	2,000,000 operations	25,000 operations	Figures 4, 13	1	0.7	P
SCM2K99W02	<-->		Three					Figures 4, 13	2	0.7	P
SCM2K99X12	<-->		Three					Figures 4, 13	3	0.7	P
SCM2K99W03	<-->		Three					Figures 4, 13	4	0.7	P



Comepi Safety Limit Switches

Switch Body Dimensions mm [in]

Figure 1: SP2K body

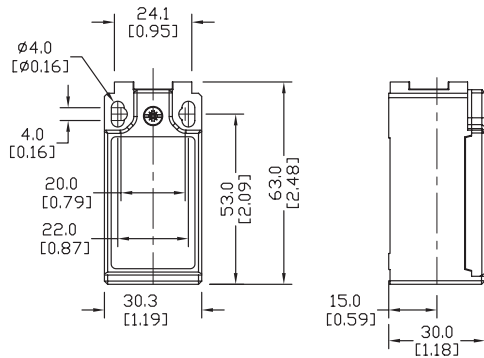


Figure 2: SDM2K body

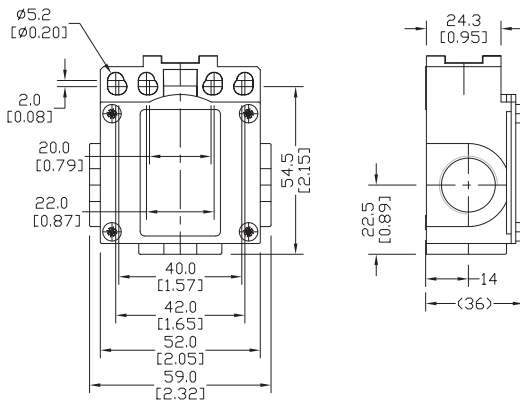


Figure 3: SBM2K body

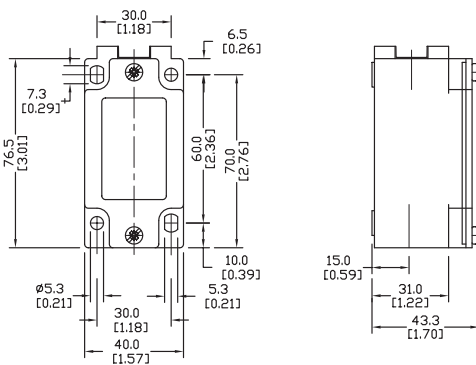
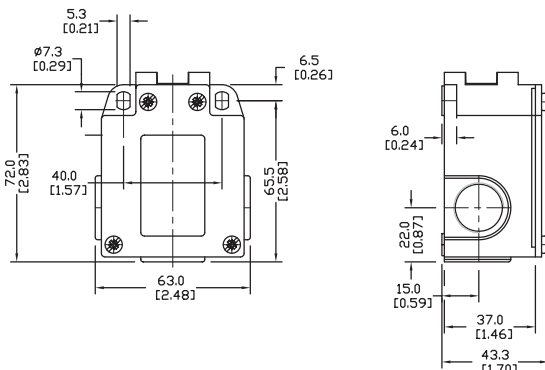


Figure 4: SCM2K body



Actuator Dimensions mm [in]

Figure 5: 90° adjustable head - SP2K20, SDM2K20 models

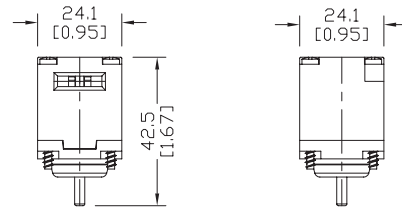


Figure 6: Fully turnable 360° head - SP2K120, SDM2K120 models

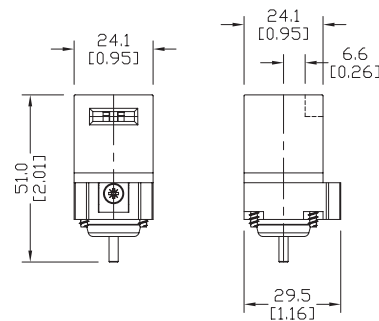


Figure 7: 90° adjustable head with shaft hinge interlock - SP2K72, SDM2K72 models

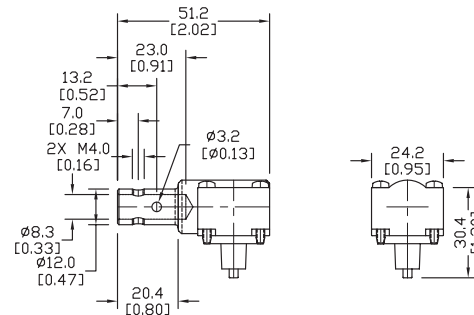
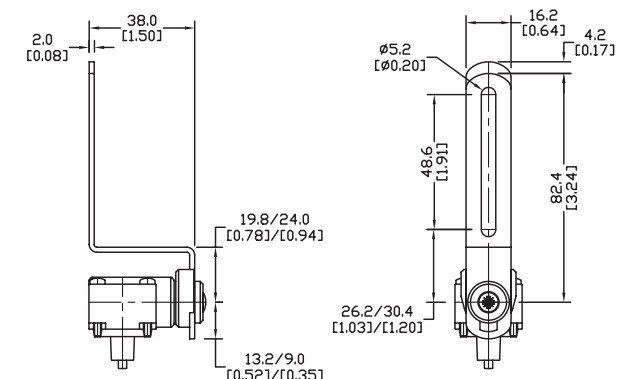


Figure 8: 90° adjustable head with lever hinge interlock - SP2K61, SDM2K61 models



Comepi Safety Limit Switches

Actuators Dimensions mm [in]

Figure 9: Pull wire without reset for simple stop - SDM2K96 models

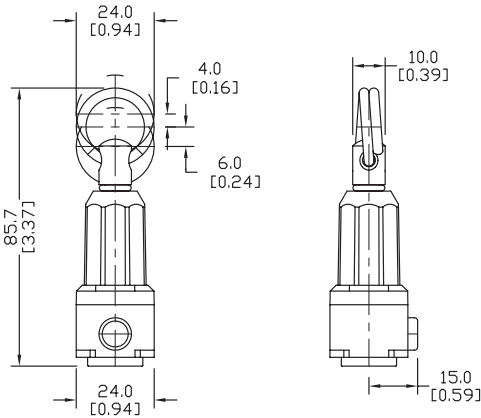


Figure 12: Pull wire without reset for simple stop - SBM2K97 and SCM2K97 models

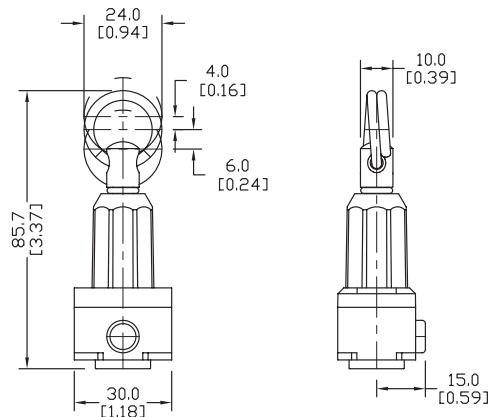


Figure 10: Pull wire with reset for emergency stop - SDM2K98 models

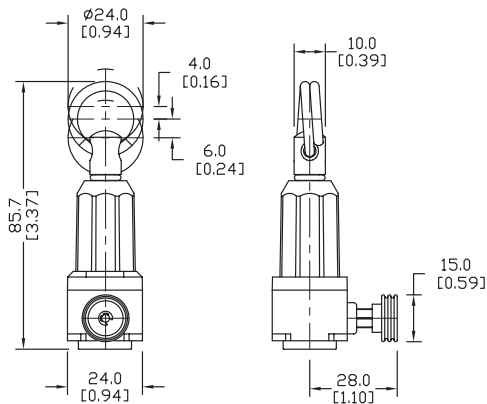


Figure 13: Pull wire with reset for emergency stop - SBM2K99 and SCM2K99 models

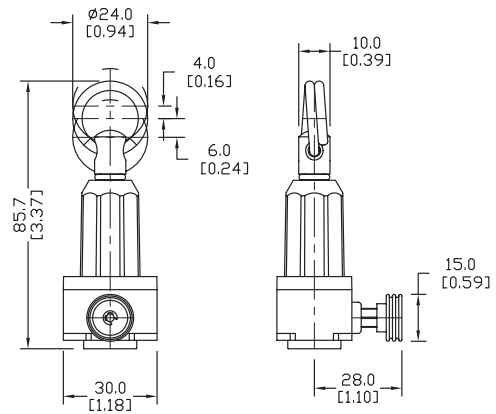
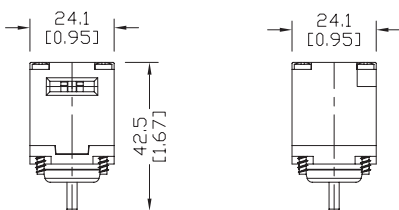


Figure 11: 90° adjustable head - SBM2K40, SCM2K40 models



Comepi Safety Limit Switches

These limit switches are developed and manufactured according to IEC and EN European standards. Easy to use, electromechanical limit switches provide:

- Visible operation
- Ability to switch large currents (10 A conventional thermal current)

- Precise operating points (consistency)
- Immunity to electromagnetic disturbances
- Electrically separated contacts (Zb)
- N.C. contacts with positive opening operation \rightarrow
- Conduit threads - 1/2" NPT adapter



AP2R Series Safety Limit Switches Selection Chart											
Part Number	Price	Actuator Type	No. of Conduit Holes	Max. Actuation Speed (m/s)	Min. Actuation Force (N) / Torque (Nm)	Min. Positive Opening Force (N) / Torque (Nm)	B10 _d	Head Dimensions	Contact Config. Diagram	Weight (lbs.)	Photo
AP2R11X11	<--->	Steel plunger with reset	One	0.5	9N	44N	2,000,000 operations	Figure 1	1	0.2	A
AP2R11W02	<--->		One					Figure 1	2	0.2	
AP2R13X11	<--->	Steel plunger with nylon roller with reset	One	0.3	12N	44N		Figure 2	1	0.2	B
AP2R13W02	<--->		One					Figure 2	2	0.2	
AP2R31X11	<--->	Steel plunger with one-way horizontal actuated nylon roller with reset	One	1.0	7N	24N		Figure 3	1	0.2	C
AP2R31W02	<--->		One					Figure 3	2	0.2	
AP2R32X11	<--->	Steel plunger with one-way vertical actuated nylon roller with reset	One	1.0	7N	24N		Figure 4	1	0.2	D
AP2R32W02	<--->		One					Figure 4	2	0.2	
AP2R41X11	<--->	Lever with nylon roller with reset	One	1.5	0.10Nm	0.32Nm		Figure 5	1	0.2	E
AP2R41W02	<--->		One					Figure 5	2	0.2	
AP2R51X11	<--->	Adjustable lever with nylon roller with reset	One	1.5	0.10Nm	0.32Nm		Figure 6	1	0.2	F
AP2R51W02	<--->		One					Figure 6	2	0.2	

Dimensions mm [in]

AP2R Series Body

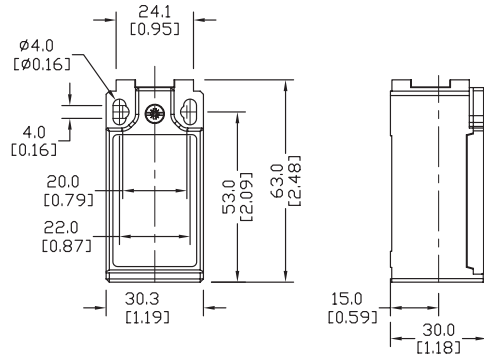
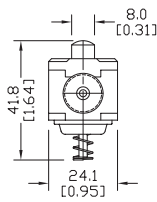
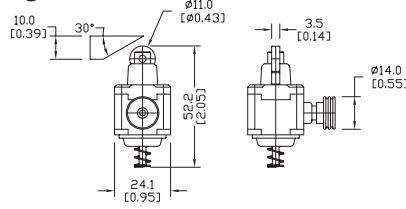


Figure 1



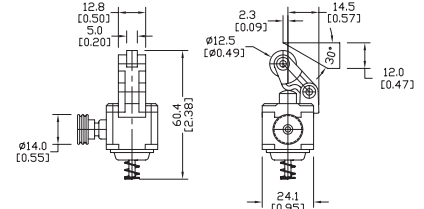
AP2R11

Figure 2



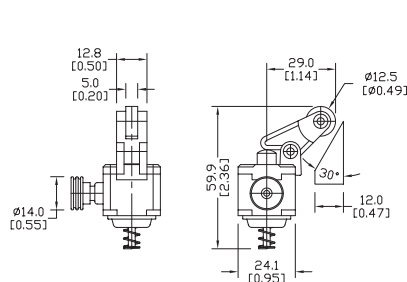
AP2R13

Figure 3



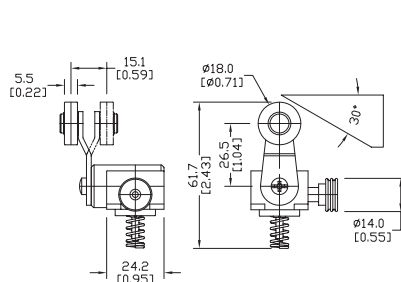
AP2R31

Figure 4



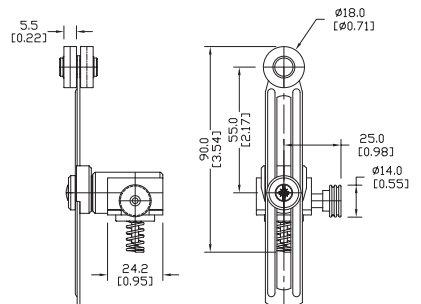
AP2R32

Figure 5



AP2R41

Figure 6



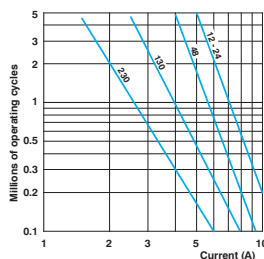
AP2R51

Comepi Safety Limit Switches

Approvals	
All: IEC 947-5-1, EN 60947-5-1, UL 508, CSA C22.2 No 14, RoHS	
Environmental	
Degree of Protection	Plastic models: IP65 according to IEC 529 Aluminum and ZAMAK (zinc alloy) models: IP66 according to IEC 529
Temperature Range	Plastic models: storage: -30° to 80°C (-22° to 176°F) operating: -25° to 70°C (-13° to 158°F) Aluminum and ZAMAK (zinc alloy) models: storage: -30° to 80°C (-22° to 176°F) operating: -25° to 70°C (-13° to 158°F); minimum temperatures assume that the atmosphere is free of moisture, which could cause moving parts to freeze up.
Rated Insulation Voltage	SDM:400V, All others 500V; (degree of pollution - 3)
Mechanical Ratings	
Mechanical Life	1 million operations. Pull wire models - 25,000 operations
Enclosure Material	Plastic models: fiberglass-reinforced plastic-V0 class (UL94); aluminum models: die-cast aluminum; ZAMAK models: zinc alloy
Contact Blocks Rating	
Positive Opening	Yes, all models
Electrical Ratings	AC15 Make: 60A@120VAC; 30A @ 240VAC; 18A @ 400VAC Break: 10A @ 24VAC; 6.5A @130VAC; 3.1A @ 230VAC; 1.8A @ 400VAC
	DC13 2.8A @ 24VDC; 0.5A @ 110VDC
Maximum Switching Frequency	Contact blocks: all one cycle per second
Repeat Accuracy	0.01mm on the operating points at 1 million operations
Short-Circuit Protection	Cartridge fuses, general purpose, gl 10A-500V 10.3x38 1 100KA
Contact Resistance	25 milli Ω
Recommended Minimum Operating Speed	With slow-action contacts: 500 mm per minute*
Rated Insulation Voltage	660V
Terminals Marking	According to CENELEC EN 50013
Wiring Connections	2 x 2.5mm ² (AWG14) to 2 x 0.5mm ² (AWG18)
Wiring Terminal Type	Captive screw with self-lifting pressure plate
Wiring Terminal Markings	According to CENELEC EN50013
User Protection	Double insulation (plastic models only)
Contact Blocks Performance	
Operation Frequency	3600 ops/h
Electrical Durability (according to IEC 947-5-1)	Utilization categories AC-15 and DC-13; load factor of 0.5. See table and curves below.
Tools Needed	
Phillips screwdriver, #1 #2 / Hex wrench, 10mm	
*Note: Slow-action contacts must not be operated at very low speeds because of the tendency to maintain the arc if contacts are not rapidly separated.	

Electrical Durability (according to IEC 947-5-1)

AC-15 Slow Action



DC-13	Slow Action
	Power breaking for a durability of 5 million cycles
24 Volts	12W
48 Volts	9W
110 Volts	6W

Comepi Safety Limit Switches

Contacts Configuration Charts

Chart 1

X11 Slow action break before make 1NO+1NC

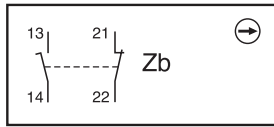


Chart 2

W02 Simultaneous slow action 2NC

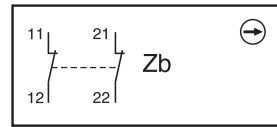


Chart 3

X12 Slow action break before make 1NO+2NC

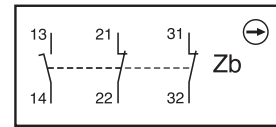
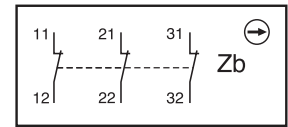


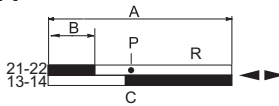
Chart 4

W03 Simultaneous slow action 3NC

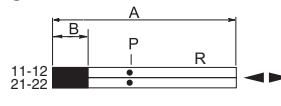


Bar charts for keys, shaft lever or limit switches

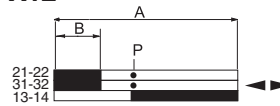
X11



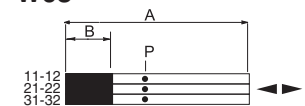
W02



X12



W03



A = Max. travel of the operator in mm or degrees

B = Tripping travel of the N.C. contact

C = Tripping travel of the N.O. contact

P = Point from which positive opening is assured

R = Reset latch activates

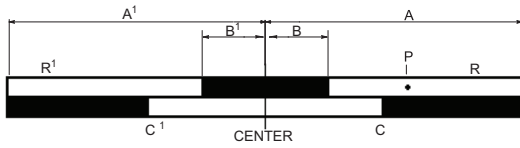
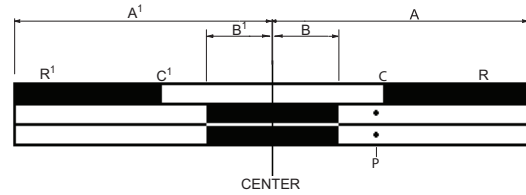
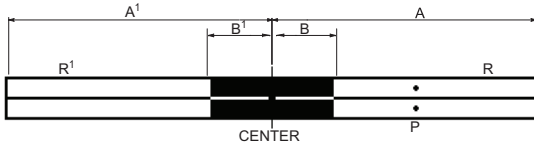
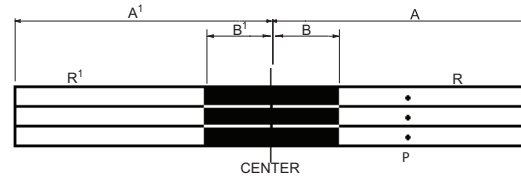
= Contact open

= Contact closed

Part Series	Contact Configuration	Displacement Values mm(in) or degrees				
		A	B	C	P	R
SP2K20, SP2K120, SDM2K20, SDM2K120 Top Key Extraction	X11	21.5 (0.85)	2.0 (0.08)	3.0 (0.12)	3.5 (0.14)	–
	W02	21.5 (0.85)	1.8 (0.07)	–	3.3 (0.13)	–
SP2K20, SP2K120, SDM2K20, SDM2K120 Front Key Extraction	X11	21.5 (0.85)	3.8 (0.15)	4.8(0.19)	5.3 (0.21)	–
	W02	21.5 (0.85)	3.5 (0.14)	–	5.0 (0.20)	–
SP2K72, SP2K61, SDM2K72, SDM2K61	X11	±90°	±6°	±15°	±31°	–
	W02	±90°	±5°	–	±30°	–
SBM2K40, SCM2K40 Top Key Extraction	X11	26.6 (1.05)	4.6 (0.18)	6.1 (0.24)	5.8 (0.23)	–
	W02	26.6 (1.05)	4.1 (0.16)	–	5.6 (0.22)	–
	X12	26.6 (1.05)	4.3 (0.17)	5.8 (0.23)	5.5 (0.21)	–
	W03	26.6 (1.05)	4.1 (0.16)	–	5.6 (0.22)	–
SBM2K40, SCM2K40 Front Key Extraction	X11	26.6 (1.05)	5.8 (0.23)	7.3 (0.29)	7.0 (0.28)	–
	W02	26.6 (1.05)	5.3 (0.21)	–	6.8 (0.27)	–
	X12	26.6 (1.05)	5.5 (0.21)	7.0 (0.28)	6.7 (0.26)	–
	W03	26.6 (1.05)	5.3 (0.21)	–	6.8 (0.27)	–
AP2R11	X11	5.6 (0.22)	1.6 (0.06)	2.5 (0.10)	3.2 (0.13)	4.4 (0.17)
	W02	5.6 (0.22)	1.5 (0.06)	–	3.1 (0.12)	4.4 (0.17)
AP2R13	X11	9.6 (0.38)	3.2 (0.13)	4.6 (0.18)	6.0 (0.23)	7.5 (0.30)
	W02	9.6 (0.38)	3.0 (0.12)	–	5.9 (0.23)	7.5 (0.30)
AP2R31, AP2R32	X11	21.0 (0.83)	6.0 (0.24)	8.6 (0.34)	10.5 (0.41)	15.6 (0.61)
	W02	21.0 (0.83)	5.7 (0.22)	–	10.2 (0.40)	15.6 (0.61)
AP2R41, AP2R51	X11	±74°	±21°	±30°	±37°	±60°
	W02	±74°	±19°	–	±37°	±60°

Comepi Safety Limit Switches

Bar charts for cable pulls

X11

X12

W02

W03


Pull Tension from Center

A = Max. travel of the operator in mm
 B = Tripping travel of the N.C. contact
 C = Tripping travel of the N.O. contact
 P = Point from which positive opening is assured
 R = Reset latch activates

Lax Tension from Center

A^1 = Max. travel of the operator in mm
 B^1 = Tripping travel of the N.C. contact
 C^1 = Tripping travel of the N.O. contact
 R^1 = Reset latch activates



Part Series	Contact Configuration	Displacement Values mm(in)									
		A	B	C	P	R	Center**	A^1	B^1	C^1	R^1
SBM2K97* SBM2K99 SCM2K97* SCM2K99	X11	4 (0.16)	1.4(0.06)	2.3 (0.09)	2.6 (0.10)	3.7 (0.15)	0	6 (0.24)	1.4 (0.06)	2.4 (0.09)	4.7 (0.19)
	W02	4 (0.16)	1.2 (0.05)	–	2.4 (0.09)	3.7 (0.15)	0	6 (0.24)	1.2 (0.05)	–	4.7 (0.19)
	X12	4 (0.16)	1.5 (0.06)	3.0(0.12)	2.7 (0.11)	3.7 (0.15)	0	6 (0.24)	1.5 (0.06)	3.0 (0.12)	4.7 (0.19)
	W03	4 (0.16)	1.4 (0.06)	–	2.6 (0.10)	3.7 (0.15)	0	6 (0.24)	1.4 (0.06)	–	4.7 (0.19)
SDM2K96 SDM2K98	X11	4 (0.16)	1.4 (0.06)	2.3 (0.09)	2.6 (0.10)	3.7 (0.15)	0	6 (0.24)	1.4 (0.06)	2.4 (0.09)	4.7 (0.19)
	W02	4 (0.16)	1.2 (0.05)	–	2.4 (0.09)	3.7 (0.15)	0	6 (0.24)	1.2 (0.05)	–	4.7 (0.19)

Part Series	Contact Configuration	Force Values N									
		A	B	C	P	R	Center**	A^1	B^1	C^1	R^1
SBM2K97* SBM2K99 SCM2K97* SCM2K99	X11	300	170	190	240	260	100	0	70	55	40
	W02	300	170	–	240	260	100	0	70	–	40
	X12	300	170	190	240	260	100	0	70	55	40
	W03	300	170	–	240	260	100	0	70	–	40
SDM2K96 SDM2K98	X11	140	95	100	115	120	70	0	50	40	30
	W02	140	95	–	115	120	70	0	50	–	30

Notes:

* K97 models do not support Rest Latch (R).

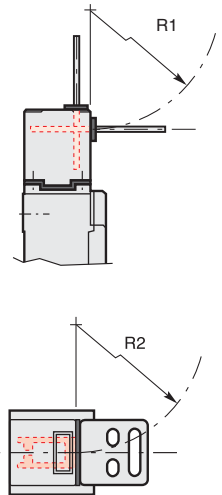
**At center line, green ring on switch will be visible.

Comepi Safety Limit Switches

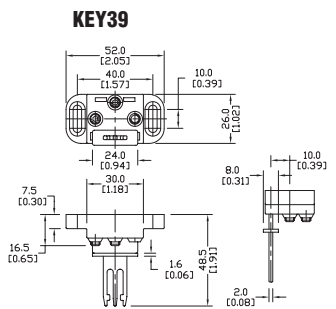
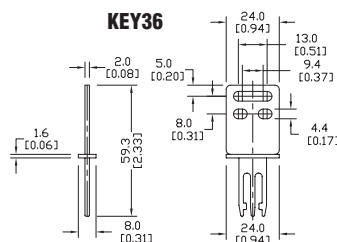
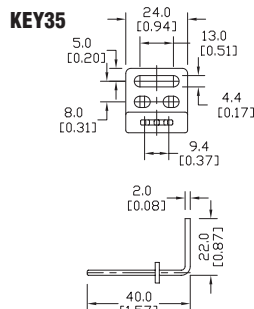
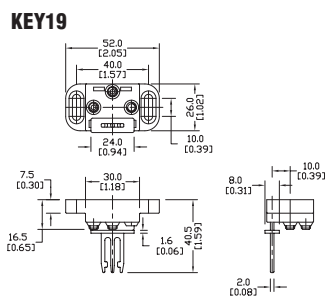
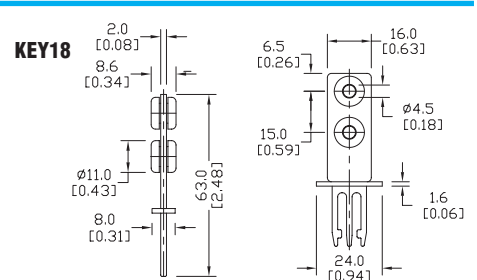
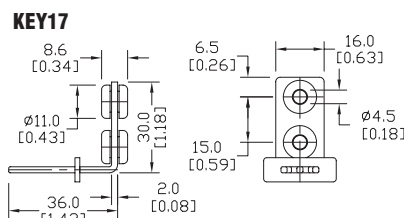
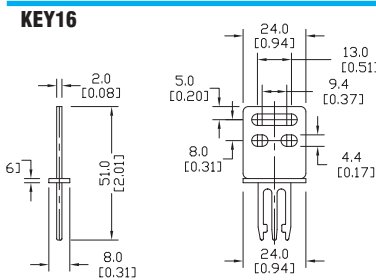
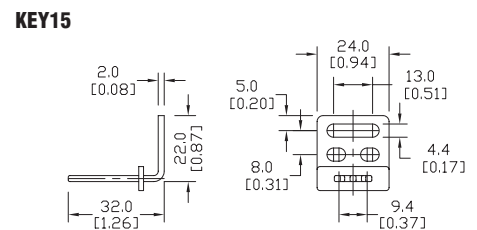
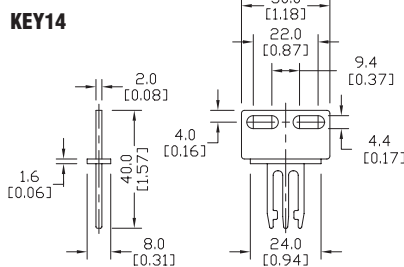
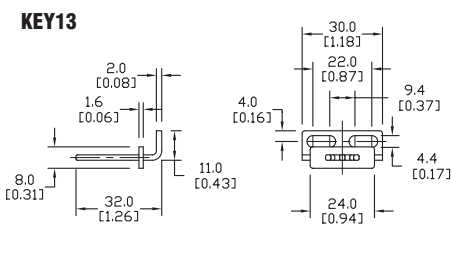


Safety Limit Switches Operating Keys

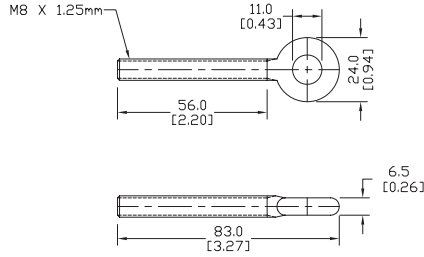
Part Number	Price	Description	Weight (lbs.)	Mounting Holes Spacing mm [in]	Use With	Minimum Values mm [in]	
						R1	R2
KEY13	<-->	Actuator tongue. Key with 90-degree bent mounting tab.	0.1	22 [0.87]	SP2K and SDM2K series safety switches	400 [15.75]	400 [15.75]
KEY14	<-->	Actuator tongue. Key with straight mounting tab.	0.1	22 [0.87]		400 [15.75]	400 [15.75]
KEY15	<-->	Actuator tongue. Key with 90-degree bent mounting tab.	0.1	13 [0.51]		400 [15.75]	400 [15.75]
KEY16	<-->	Actuator tongue. Key with straight mounting tab.	0.1	13 [0.51]		400 [15.75]	400 [15.75]
KEY17	<-->	Shock-absorbing actuator tongue. Key with 90-degree bent mounting tab.	0.1	15 [0.59]		250 [9.84]	350 [13.78]
KEY18	<-->	Shock-absorbing actuator tongue. Key with straight mounting tab.	0.1	15 [0.59]		350 [13.78]	350 [13.78]
KEY19	<-->	Actuator tongue. Key with adjustable mounting tab.	0.1	40 [1.57]	SBM2K and SCM2K series safety switches	180 [7.09]	200 [7.87]
KEY35	<-->	Actuator tongue. Key with 90-degree bent mounting tab.	0.1	13 [0.51]		400 [15.75]	400 [15.75]
KEY36	<-->	Actuator tongue. Key with straight mounting tab.	0.1	13 [0.51]		400 [15.75]	400 [15.75]
KEY39	<-->	Actuator tongue. Key with adjustable mounting tab.	0.1	40 [1.57]		180 [7.09]	200 [7.87]



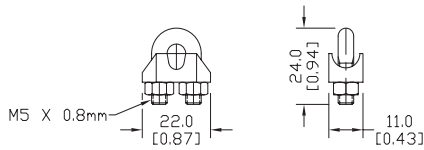
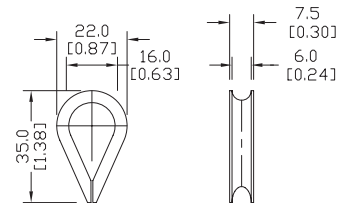
Dimensions mm[in]



Comepi Safety Limit Switches Accessories

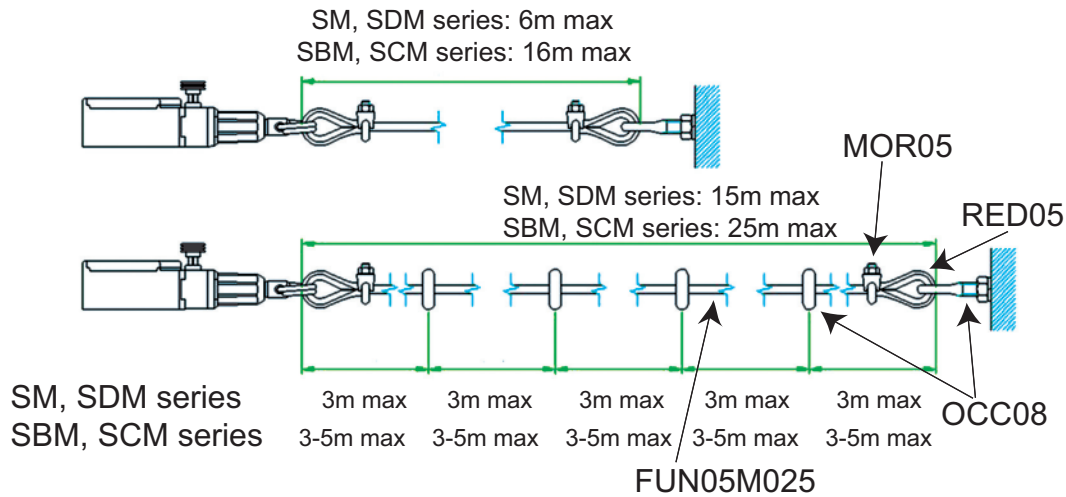

OCC08


Safety Limit Switches Cable Pull Accessories			
Part Number	Price	Description	Weight (lbs.)
OCC08	<--->	Eye bolt	0.2
MOR05	<--->	Cable Clamp	0.1
RED05	<--->	Eye thimble	0.0
FUN05M015	<--->	15 meter length steel cable 5 mm diameter, Red	2.0
FUN05M025	<--->	25 meter length steel cable, 5 mm diameter, Red	3.3


MOR05

RED05

FUN05M025

All dimensions are in mm [in].

Installation example



Safety Products



Warning: Safety products sold by AutomationDirect are Safety components only. The purchaser/installer is solely responsible for the application of these components and ensuring all necessary steps have been taken to assure each application and use meets all performance and applicable safety requirements and/or local, national and/or international safety codes as required by the application. AutomationDirect cannot certify that our products, used solely or in conjunction with other AutomationDirect or other vendors' products, will assure safety for any application. Any person using or applying any products sold by AutomationDirect is responsible for learning the safety requirements for their individual application and applying them, and therefore assumes all risks, and accepts full and complete responsibility, for the selection and suitability of the product for their respective application. AutomationDirect does not provide design or consulting services, and cannot advise whether any specific application or use of our products would ensure compliance with the safety requirements for any application.

IDEM Non-Contact Safety Switches Overview



Plastic Housing



Stainless Steel Housing

Non-Contact Safety Switches

Non-contact safety switches are interlocking devices that are designed to protect both people and machines. They are preferred in certain applications where no physical contact (under normal conditions) takes place between the switch and actuator, such as:

- Where a high level of protection from tampering is required.
- Where reduced wear from frequent mechanical contact is desired.

- Where poor guard alignment exists. Their operating principle enables greater tolerances, making them ideal for applications where precise guidance of guards is difficult.
- Where there is exposure to contamination or where there are strict hygiene standards (for example, in the food industry). The devices are easy to clean, making them ideal for these environments.
- Where a long service life is required. The switches are mechanically non-wearing, insensitive to shock and vibration, and resistant to moisture and extreme temperatures.

Two Styles Available: Non-Contact Magnetic and Non-Contact Coded Magnetic

Both style switches provide a wide (>10mm) sensing distance and a high tolerance to misalignment after sensing. Both styles are available with plastic and stainless steel housings. Up to ten magnetic or four coded switches can be connected in series to one of our Dold safety relays.

Non-Contact Magnetic Safety Switches

These are simple magnetic reed switches and are designed to conform to IEC 60947-5-3 and be used as directed by EN1088, EN ISO12100 and EN 60204-1.



Non-Contact Coded Magnetic Safety Switches

Coded non-contact safety switches use coded magnets to close the circuits, thereby offering even more protection. The safety switch and actuator work together in such a way that the enable condition from the safety device is only triggered if the actuating element is within the switch's response range and the code on the actuator matches that of the switch.

All coded non-contact safety switches are designed to conform to IEC 60947-5-3 and be used as directed by EN1088, EN ISO12100 and EN 60204-1.

When used in combination with a dual channel safety relay, non-contact coded switches can be used to provide protection up to Category 4 and Ple to ISO13849-1.



IDEM Non-Contact Safety Switches Selector Guide

Magnetic Safety Switches



Specification	MPR Series Light Duty	LPR and LMR Series Medium Duty	SPR, SMR, and SMR-F Series Medium Duty
Body Material	Plastic	Plastic, Stainless steel	Plastic, Stainless steel
Contact Configuration & Rating	2 N.C. and 1 N.O. contacts; 0.5A	2 N.C. and 1 N.O. contacts; 1A	2 N.C. and 1 N.O. contacts; 1A



Specification	CPR, CMR, and CMR-F Series Heavy Duty	WPR Series Heavy Duty
Body Material	Plastic, Stainless steel	Plastic
Contact Configuration & Rating	1 N.C. and 1 N.O. contacts; 2A	2 N.C. and 1 N.O. contacts; 2A

Coded Magnetic Safety Switches



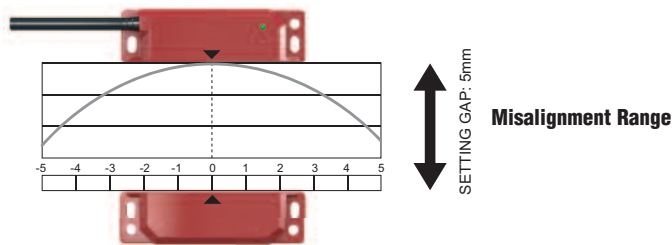
Specification	MPC Series	LPC and LMC Series	SPC, SMC, and SMC-F Series
Body Material	Plastic	Plastic, Stainless steel	Plastic, Stainless steel
Contact Configuration & Rating	2 N.C. and 1 N.O. contacts; 0.2A	2 N.C. and 1 N.O. contacts; 0.2A	2 N.C. and 1 N.O. contacts; 0.2A



Specification	CPC, CMC, and CMC-F Series	WPC Series
Body Material	Plastic, Stainless steel	Plastic
Contact Configuration & Rating	2 N.C. and 1 N.O. contacts; 0.2A	2 N.C. and 1 N.O. contacts; 0.2A

IDEM Non-Contact Safety Switches Specifications

Specifications		
	Non-Contact Magnetic Switches	Non-Contact Coded Magnetic Switches
Safety Classification and Reliability Data		
Switching Reliability (B10d)	3.3 x 10 ⁶ operations at 100 mA load	
EN 954-1	Up to category 4 with safety relay	
ISO 13849-1	Up to PL _e depending upon system architecture	
EN 62061	Up to SIL3 depending upon system architecture	
Safety Data - Annual Usage	8 cycles per hour / 24 hours per day / 365 days	
PFHd	2.52 x 10 ⁻⁸	
Proof Test Interval (Life)	47 Years	
MTTFd	470 Years	
Agency Approvals	CE, cULus, RoHS	
Electrical and General Specifications		
Contact Ratings:	MPR: Voltage free: 250 VAC, 0.5 A Max.	
Safety Contact NC	LPR, LMR, SPR, SMR, SMR-F: Voltage free: 250 VAC, 1.0A Max.	24 VDC, 0.2A Max. (Optocoupler)
	CPR, CMR, CMR-F, WPR: Voltage free: 250 VAC, 2.0A Max.	
Monitoring (Auxiliary) Contact NO	Voltage free: 24 VDC, 0.2A Max.	24 VDC, 0.2A Max.
Fuses (NC Circuits)	MPR: Fuse externally 0.4A (F) LPR, LMR, SPR, SMR, SMR-F, CPR, CMR, CMR-F: Fuse externally 0.8A (F) WPR: Fuse externally 1.6A (F)	NA
Contact Release Time	<2ms	NA
Initial Contact Resistance	<500 milliohm	NA
Minimum Switched Current	10 VDC, 1mA	
Dielectric Withstand	250 VAC	
Insulation Resistance	100 Megohms	
Recommended Setting Gap	5mm	
NC Switching Distance	Sao (assured ON) 10 mm close; Sar (assured OFF) 20 mm open	
N.O. Switching Operation	Opens before NC circuits close	
Tolerance to Misalignment	5mm in any direction from 5mm setting gap (See Misalignment Range drawing on this page)	
Switching Frequency	1.0 Hz Max.	
Approach Speed	200 mm per minute to 1000 mm per second	
Body Material - Polyester	CPR, LPR, MPR, SPR, WPR	CPC, LPC, MPC, SPC, WPC
Body Material - 316 Stainless Steel	CMR, CMR-F, LMR, SMR, SMR-F	CMC, CMC-F, LMC, SMC, SMC-F
Temperature Range	Polyester: -25° to +80°C (-13° to +176° F)	
	316 Stainless Steel: -25° to +105° C (-13° to +221° F)	
Enclosure Protection	IP67, IP69K	
Shock Resistance	IEC 68-2-27 11 ms 30g	
Vibration Resistance	IEC 68-2-6 10-55 Hz 1mm	
Cable Type	PVC, 6.5 mm outside diameter max.	
Mounting Bolts (recommended)	2 x M4; Tightening torque: 1.0 Nm	



IDEM MPR Light Duty Non-Contact Magnetic Safety Switches

MPR Series Plastic Housing



Cable Right

MPR-114005

- Compact yet robust fitting suitable for all small guard applications
- Can be mounted unobtrusively in channels or behind doors - left or right cable exit
- Hygienic screw cap covers ensure suitability for food processing washdown
- Can be high-pressure hosed at high temperature - IP69K rated
- Wide 12 mm sensing, high tolerance to misalignment
- High switching capability - up to 0.5A
- Will operate with most safety relays
- Available with 2m, 5m, or 10m cable

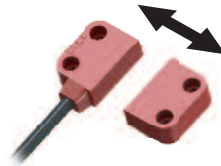
See Dimensions later in this section.



Cable Left

MPR-114013

Actuator Operating Direction



MPR

MPR Non-Contact Magnetic Safety Switches					
Part Number	Price	Body Material	Cable Length / Exit Type	Circuits	Contact Type / Rating
MPR-114005	<-->	Plastic	2m / Right	2 N.C., 1 N.O.	Light duty / 0.5A
MPR-114006	<-->		5m / Right		
MPR-114007	<-->		10m / Right		
MPR-114013	<-->		2m / Left		
MPR-114014	<-->		5m / Left		
MPR-114015	<-->		10m / Left		

IDEM LPR and LMR Medium Duty Non-Contact Magnetic Safety Switches

LPR Series Plastic Housing



LPR-110013

LMR Series Stainless Steel Housing



LMR-133013

- Popular housing suitable for all industry applications
- Narrow style for flush mounting
- Can be high-pressure hosed at high temperature - IP69K rated
- Medium duty 1A
- Wide 12 mm sensing, high tolerance to misalignment
- Will operate with most safety relays
- Available with 2m, 5m, or 10m cable

LMR Series Only

- Specifically designed for food processing applications
- Suitable for CIP SIP cleaning - food splash zones per EHEDG guidelines
- 316 Stainless steel mirror polished finish

See Dimensions later in this section.

Actuator Operating Direction



LPR, LMR

LPR and LMR Non-Contact Magnetic Safety Switches

Part Number	Price	Body Material	Cable Length	Circuits	Contact Type / Rating
LPR-110013	<-->	Plastic	2m	2 N.C., 1 N.O.	Medium duty / 1A
LPR-110014	<-->		5m		
LPR-110015	<-->		10m		
LMR-133013	<-->	Stainless steel	2m		
LMR-133014	<-->		5m		
LMR-133015	<-->		10m		

IDEM SPR, SMR, and SMR-F Medium Duty Non-Contact Magnetic Safety Switches

SPR Series Plastic Housing

SMR Series Stainless Steel Housing

SMR-F Series Stainless Steel Housing Rear Mount



SPR-111013

- Universal housing - 22mm fixing footprint suitable for most general applications; 50 mm wide body
- Withstands environments where high humidity or hose down is required.
- Wide 12 mm sensing, high tolerance to misalignment
- Long life switching capability - up to 1A
- Will operate with most safety relays
- SPR and SMR series available with 2m, 5m, or 10m cable

SMR Series, SMR-F Only

- Specifically designed for food processing applications
- Suitable for CIP SIP cleaning - Food Splash Zones per EHEDG guidelines
- 316 Stainless steel mirror polished finish
- Can be high-pressure hosed at high temperature - IP69K rated

SMR-F Only

- Same as SMR series, but with no-food-trap housing - rear mounting holes
- 5m cable only

See Dimensions later in this section.

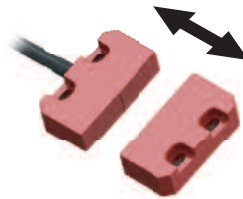


SMR-139013

Actuator Operating Direction



SMR-F-137014



**SPR, SMR
SMR-F**

SPR, SMR, and SMR-F Non-Contact Magnetic Safety Switches					
Part Number	Price	Body Material	Cable Length	Circuits	Contact Type / Rating
SPR-111013	<--->	Plastic	2m	2 N.C., 1 N.O.	Medium duty / 1A
SPR-111014	<--->		5m		
SPR-111015	<--->		10m		
SMR-139013	<--->	Stainless steel	2m		
SMR-139014	<--->		5m		
SMR-139015	<--->		10m		
SMR-F-137014	<--->		5m		

IDEM CPR, CMR, and CMR-F Heavy Duty Non-Contact Magnetic Safety Switches

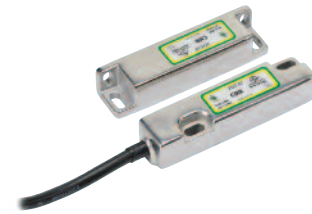


CPR-113013

CPR Series Plastic Housing

CMR Series Stainless Steel Housing

CMR-F Series Stainless Steel Housing Rear Mount



CMR-138030

- Slim 20mm wide housing can be fitted into narrow channels
- Can be high-pressure hosed at high temperature - IP69K rated
- Wide 12 mm sensing, high tolerance to misalignment
- High switching capability - up to 2A
- Will operate with most safety relays
- CPR and CMR series available with 2m, 5m, or 10m cable

CMR Series, CMR-F Only

- Specifically designed for food processing applications
- Suitable for CIP SIP cleaning - Food Splash Zones per EHEDG guidelines
- 316 Stainless steel mirror polished finish

CMR-F Only

- Same as CMR series, but with no-food-trap housing - rear mounting holes
- 5m cable only

Actuator Operating Direction

See Dimensions later in this section.



CMR-F-135030



**CPR, CMR
CMR-F**

CPR, CMR, and CMR-F Non-Contact Magnetic Safety Switches					
Part Number	Price	Body Material	Cable Length	Circuits	Contact Type / Rating
CPR-113013	<-->	Plastic	2m	1 N.C., 1 N.O.	Heavy duty / 2A
CPR-113014	<-->		5m		
CPR-113015	<-->		10m		
CMR-138030	<-->	Stainless steel	5m		
CMR-138031	<-->		10m		
CMR-F-135030	<-->		5m		

IDEM WPR Heavy Duty Non-Contact Magnetic Safety Switches

WPR Series Plastic Housing



- Robust wide housing suitable for all industry applications
- Can be high-pressure hosed at high temperature - IP69K rated
- Wide 12 mm sensing, high tolerance to misalignment

- High switching capability - up to 2A
- Will operate with most safety relays
- Available with 2m or 5m cable

Actuator Operating Direction

See Dimensions later in this section.



WPR

WPR Non-Contact Magnetic Safety Switches					
Part Number	Price	Body Material	Cable Length	Circuits	Contact Type / Rating
WPR-112005	<--->	Plastic	2m	2 N.C., 1 N.O.	Heavy duty / 2A
WPR-112006	<--->		5m		

IDEM MPC Non-Contact Coded Magnetic Safety Switches

MPC Series Plastic Housing



MPC-114105

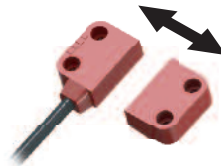
- Coded magnetic actuation
- Compact yet robust fitting suitable for all small guard applications
- Hygienic screw cap covers ensure suitability for food processing washdown
- Cost effective interlock solution
- Can be mounted unobtrusively in channels or behind doors - left or right cable exit
- High specification polyester housing with backplate
- LED indication
- Can be high-pressure hosed at high temperature - IP69K rated
- Sensing distance up to 10 mm
- Switching capability up to 0.2A
- Will operate with most safety relays
- Available with 2m, 5m, or 10m cable

See Dimensions later in this section.



MPC-114113

Actuator Operating Direction



MPC

MPC Non-Contact Coded Magnetic Safety Switches

Part Number	Price	Body Material	Cable Length / Exit Type	Circuits	Contact Rating
MPC-114105	<--->	Plastic	2m / Right	2 N.C., 1 N.O.	0.2A
MPC-114106	<--->		5m / Right		
MPC-114107	<--->		10m / Right		
MPC-114113	<--->		2m / Left		
MPC-114114	<--->		5m / Left		
MPC-114115	<--->		10m / Left		

IDEM LPC and LMC Duty Non-Contact Coded Magnetic Safety Switches



LPC-110005

LPC Series Plastic Housing

LMC Series Stainless Steel Housing



LMC-133005

- Coded magnetic actuation
- Narrow housing can be fitted into narrow channels
- Can be high-pressure hosed at high temperature - IP69K rated
- LED indication
- Wide 14 mm sensing distance, high tolerance to misalignment
- Long life switching capability - up to 0.2A
- Will operate with most safety relays
- Available with 2m, 5m, or 10m cable

LMC Only

- Specifically designed for food processing applications
- Suitable for CIP SIP cleaning - Food Splash Zones per EHEDG guidelines
- 316 Stainless steel mirror polished finish

See Dimensions later in this section.

Actuator Operating Direction



LPC, LMC

LPC and LMC Non-Contact Coded Magnetic Safety Switches					
Part Number	Price	Body Material	Cable Length	Circuits	Contact Rating
LPC-110005	<-->	Plastic	2m	2 N.C., 1 N.O.	0.2A
LPC-110006	<-->		5m		
LPC-110007	<-->		10m		
LMC-133005	<-->	Stainless steel	2m		
LMR-133006	<-->		5m		
LMR-133007	<-->		10m		

IDEM SPC, SMC, and SMC-F Non-Contact Coded Magnetic Safety Switches



SPC-111005

SPC Series Plastic Housing

SMC Series Stainless Steel Housing

SMC-F Series Stainless Steel Housing Rear Mount



SMC-139005

- Coded magnetic actuation
- Universal housing suitable for most general applications
- Can be high-pressure hosed at high temperature - IP69K rated
- LED indication
- Wide 14 mm sensing distance, high tolerance to misalignment
- Long life switching capability - up to 0.2A
- Will operate with most safety relays
- SPC and SMC series available with 2m, 5m, or 10m cable

SMC Series Only

- Specifically designed for food processing applications
- Suitable for CIP SIP cleaning - Food Splash Zones per EHEDG guidelines
- 316 Stainless steel mirror polished finish

SMC-F Only

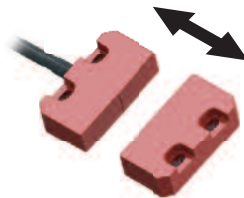
- Same as SMC series, but with no-food-trap housing - rear mounting holes
- 5m cable only

See Dimensions later in this section.



SMC-F-137006

Actuator Operating Direction



**SPC, SMC
SMC-F**

SPC, SMC, and SMC-F Non-Contact Coded Magnetic Safety Switches					
Part Number	Price	Body Material	Cable Length	Circuits	Contact Rating
SPC-111005	<--->	Plastic	2m	2 N.C., 1 N.O.	0.2A
SPC-111006	<--->		5m		
SPC-111007	<--->		10m		
SMC-139005	<--->	Stainless steel	2m		
SMC-139006	<--->		5m		
SMC-139007	<--->		10m		
SMC-F-137006	<--->		5m		

IDEM CPC, CMC, and CMC-F Non-Contact Coded Magnetic Safety Switches



CPC-115005

CPC Series Plastic Housing

CMC Series Stainless Steel Housing

CMC-F Series Stainless Steel Housing Rear Mount



CMC-138005

- Coded magnetic actuation
- Universal housing suitable for most general applications
- Can be high-pressure hosed at high temperature - IP69K rated
- LED indication
- Wide 14 mm sensing distance, high tolerance to misalignment
- Long life switching capability - up to 0.2A
- Will operate with most safety relays
- CPC and CMC series available with 2m, 5m, or 10m cable

CMC Series Only

- Specifically designed for food processing applications
- Suitable for CIP/SIP cleaning - Food Splash Zones per EHEDG guidelines
- 316 Stainless steel mirror polished finish

CMC-F Only

- Same as CMC series, but with no-food-trap housing - rear mounting holes
- 5m cable only

See Dimensions later in this section.



CMC-F-135006

Actuator Operating Direction



**CPC, CMC
CMC-F**

CPC, CMC, and CMC-F Non-Contact Coded Magnetic Safety Switches					
Part Number	Price	Body Material	Cable Length	Circuits	Contact Rating
CPC-115005	<-->	Plastic	2m	2 N.C., 1 N.O.	0.2A
CPC-115006	<-->		5m		
CPC-115007	<-->		10m		
CMC-138005	<-->	Stainless steel	2m		
CMC-138006	<-->		5m		
CMC-F-135006	<-->		5m		

IDEM WPC Non-Contact Coded Magnetic Safety Switches

WPC Series Plastic Housing



- Coded magnetic actuation
- Slim fitting suitable for all industry applications
- LED indication
- Can be high-pressure hosed at high temperature - IP69K rated
- Wide 14 mm sensing, high tolerance to misalignment
- Switching capability up to 0.2A
- Will operate with most safety relays
- Available with 2m or 5m cable

See Dimensions later in this section.

Actuator Operating Direction



WPC

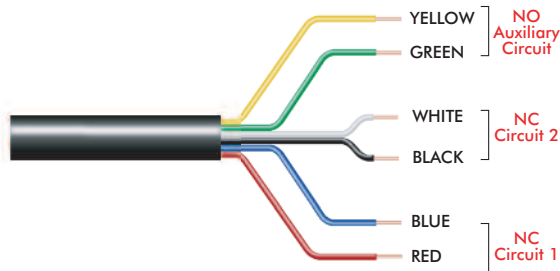
WPC Non-Contact Coded Magnetic Safety Switches

Part Number	Price	Body Material	Cable Length	Circuits	Contact Rating
WPC-112017	<-->	Plastic	2m	2 N.C., 1 N.O.	0.2A
WPC-112018	<-->		5m		

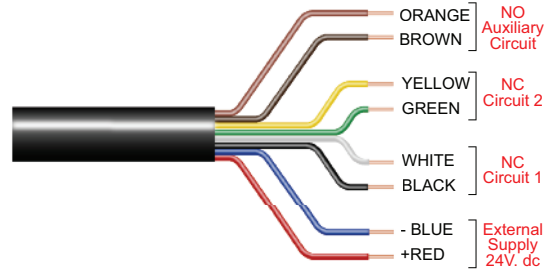
IDEM Non-Contact Safety Switches Electrical Connections and Dimensions

Electrical Connections

Magnetic Switches



Coded Switches



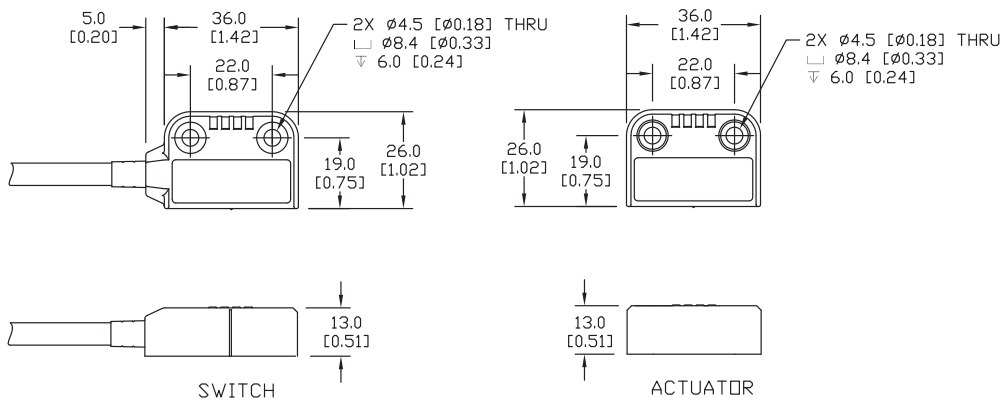
Magnetic Switches - Electrical Connections	
Lead Color	Type of Circuit (Actuator Present)
Yellow	NO
Green	NO
Black	NC2
White	NC2
Red	NC1
Blue	NC1

Coded Magnetic Switches - Electrical Connections		
Lead Color	Type of Circuit (Actuator Present)	Output Types (Solid State)
Orange	Auxiliary (NO)	200 mA max. 24 VDC
Brown	Auxiliary (NO)	
Yellow	NC2 +	200 mA max. 24 VDC (Optocoupler)
Green	NC2 -	
Black	NC1 +	200 mA max. 24 VDC (Optocoupler)
White	NC1 -	
Red	Supply +24 VDC	Supply 24 VDC +10% / -15%
Blue	Supply 0VDC	

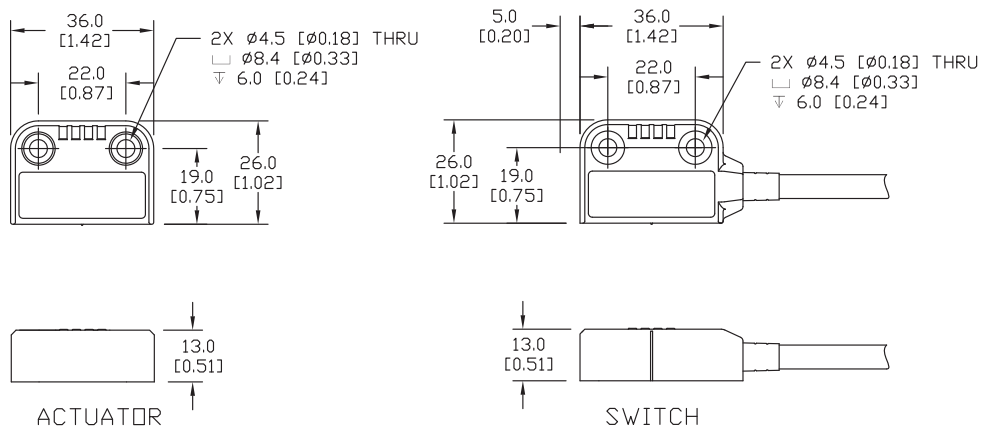
Dimensions

MPR Series

Left Cable Exit

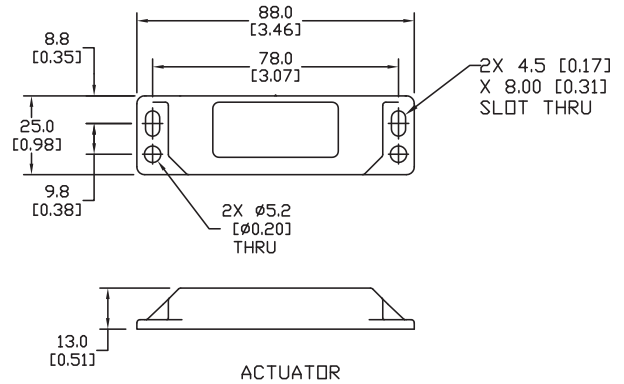
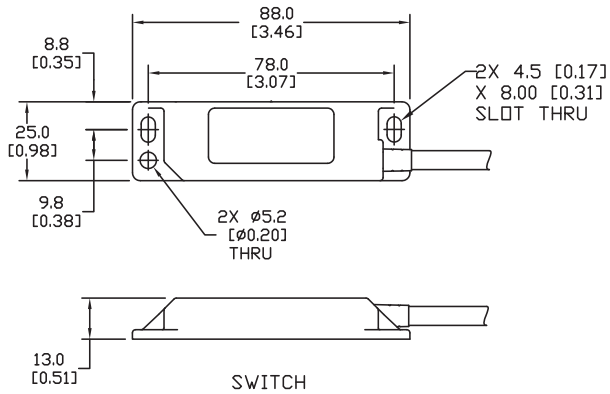


Right Cable Exit

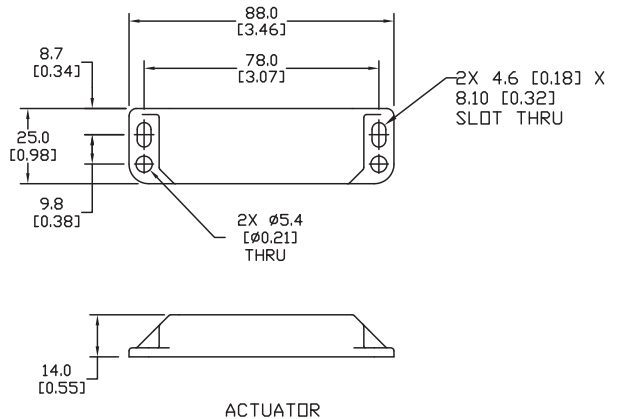
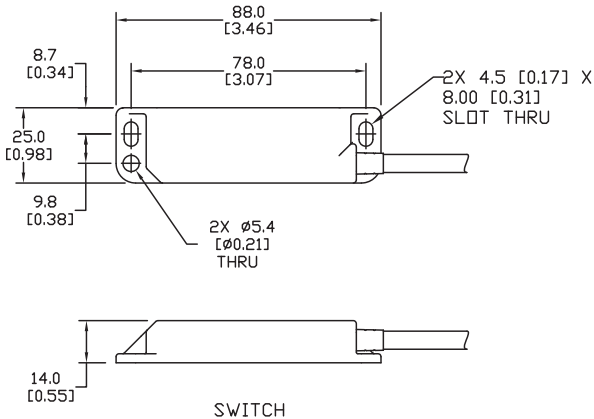


IDEM Non-Contact Safety Switches Dimensions

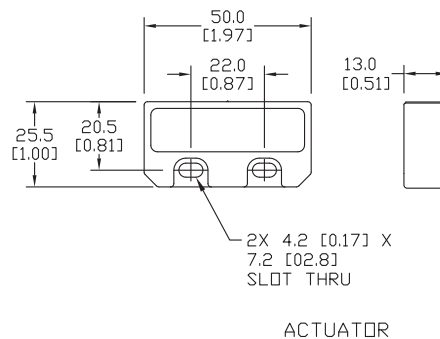
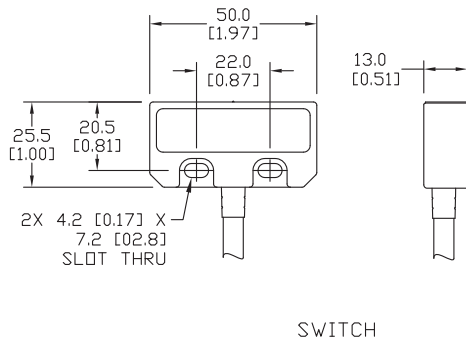
LPR Series



LMR Series

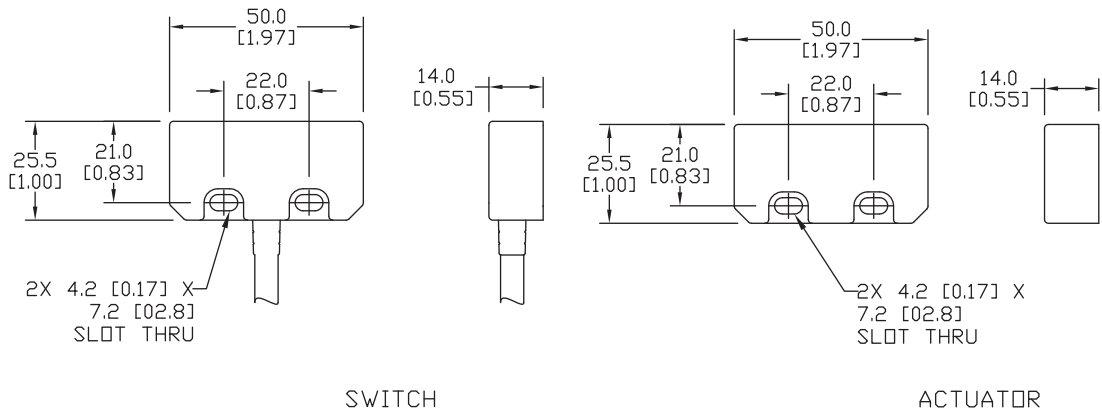


SPR Series

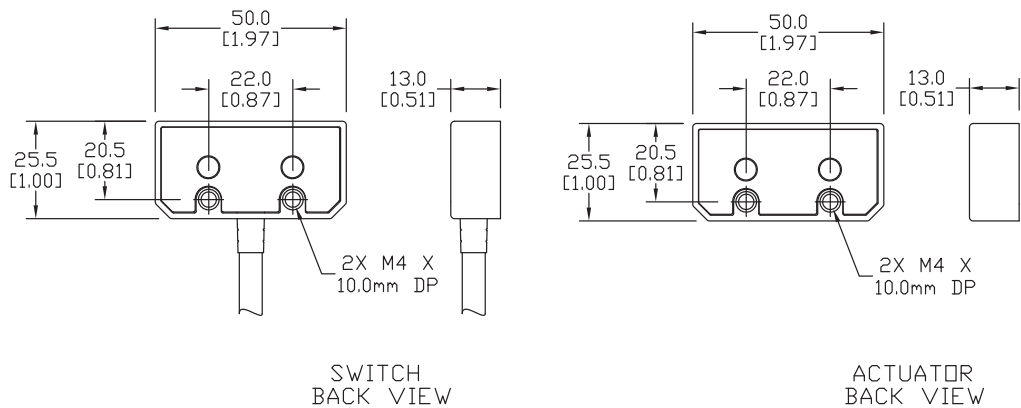


IDEM Non-Contact Safety Switches Dimensions

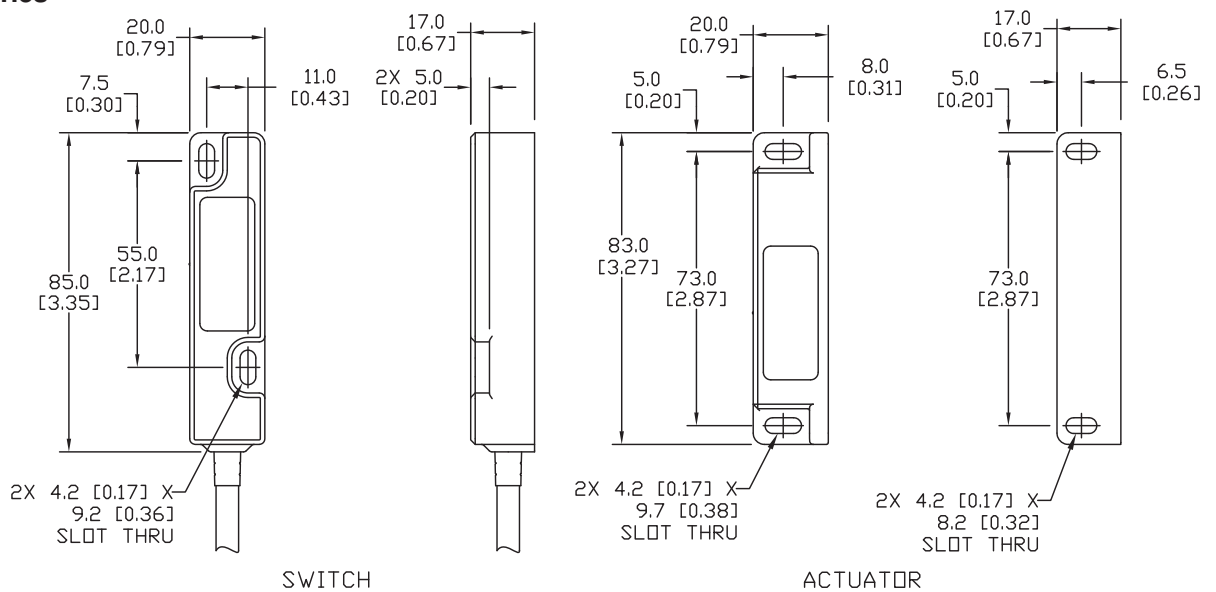
SMR Series



SMR-F Series

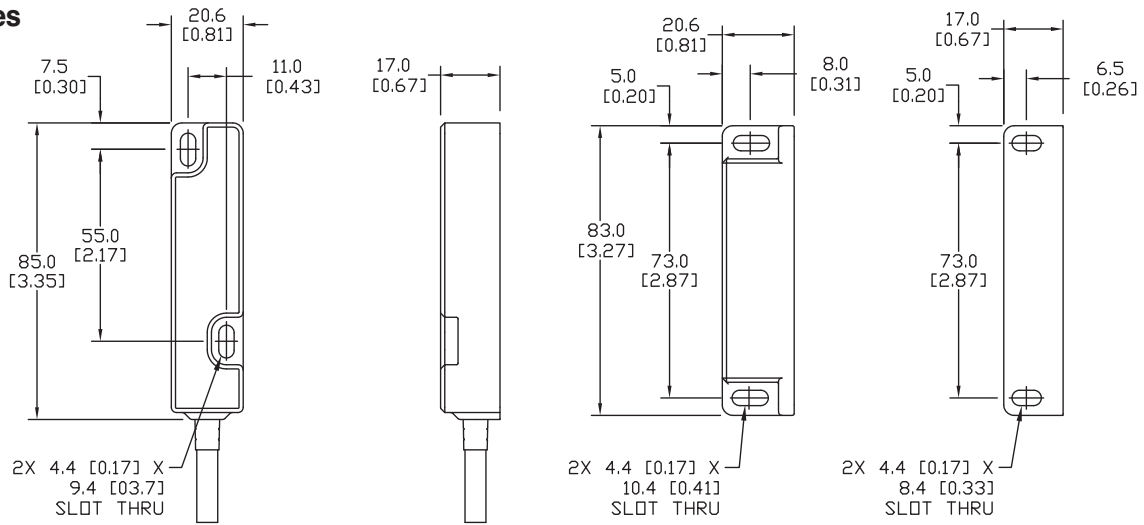


CPR Series



IDEM Non-Contact Safety Switches Dimensions

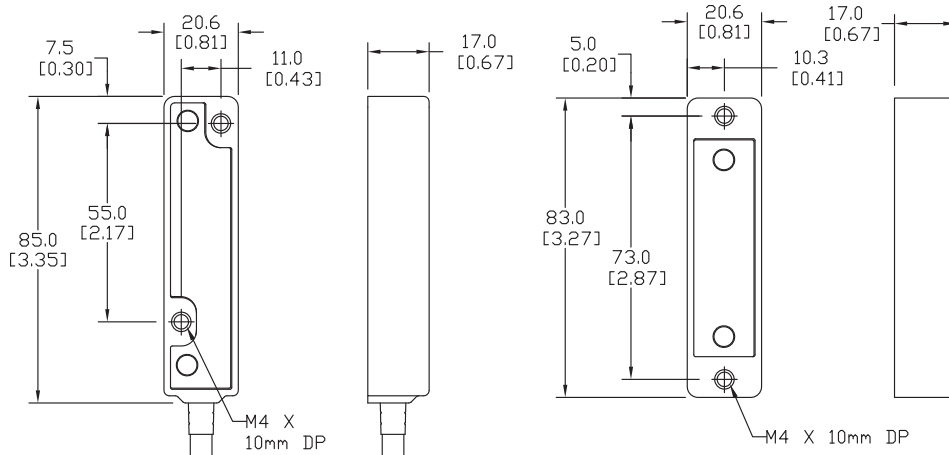
CMR Series



SWITCH

ACTUATOR

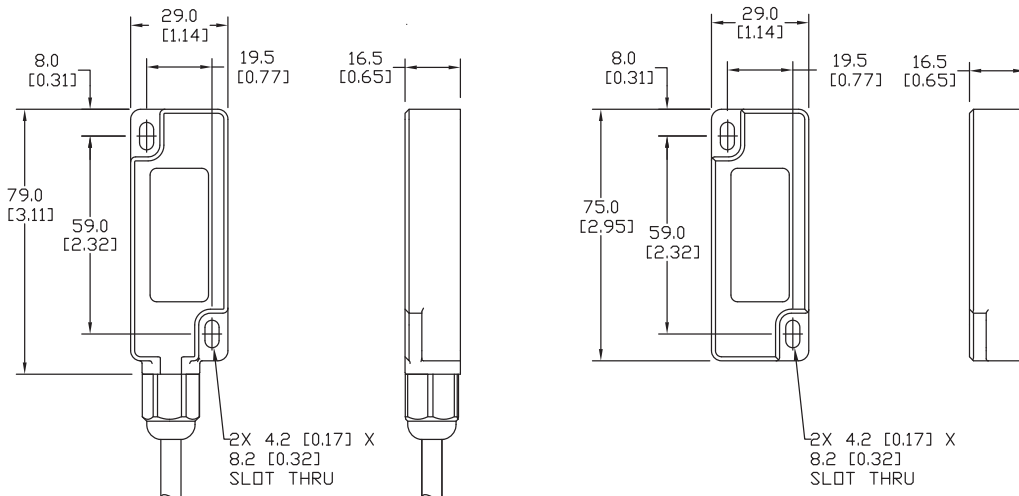
CMR-F Series



SWITCH

ACTUATOR

WPR Series



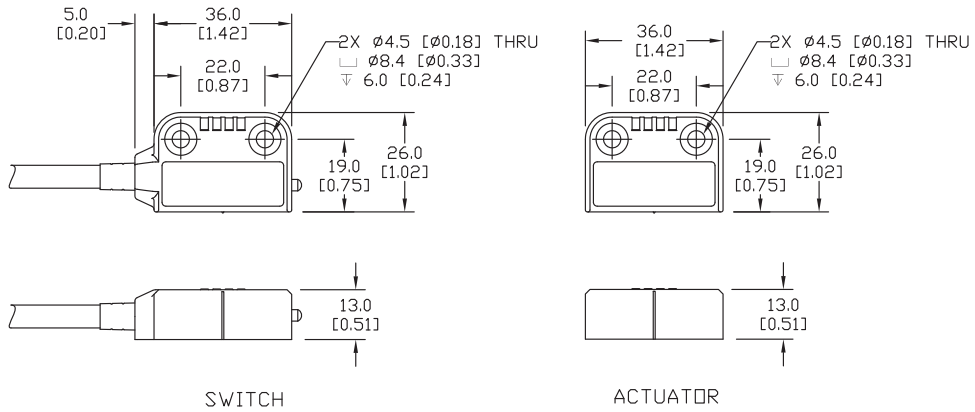
SWITCH

ACTUATOR

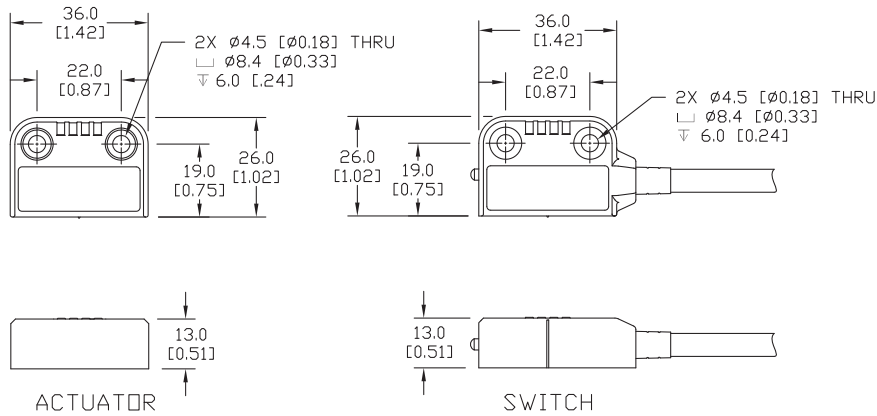
IDEM Non-Contact Safety Switches Dimensions

MPC Series

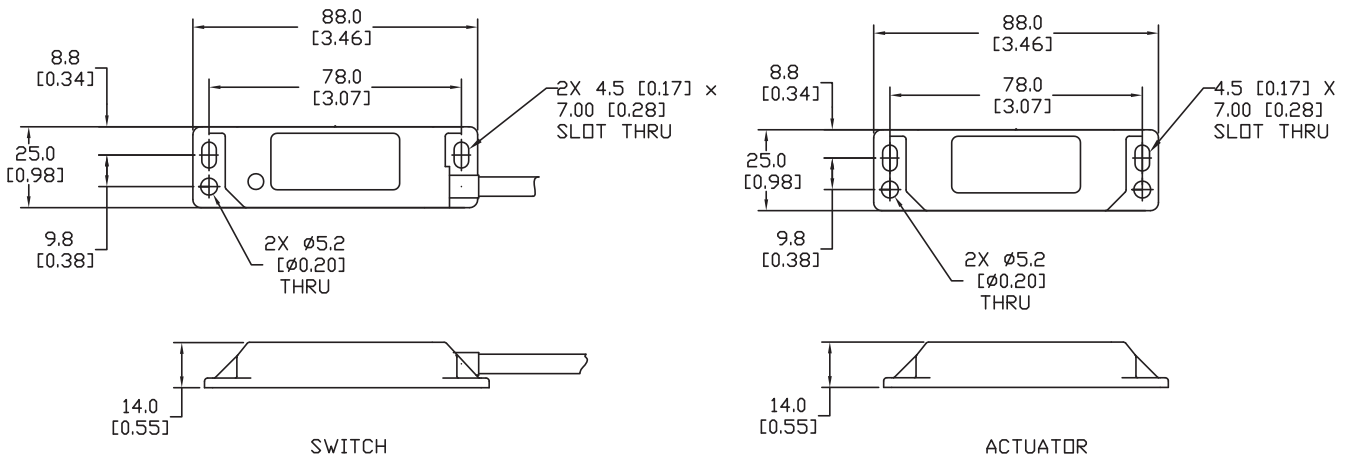
Left Cable Exit



Right Cable Exit

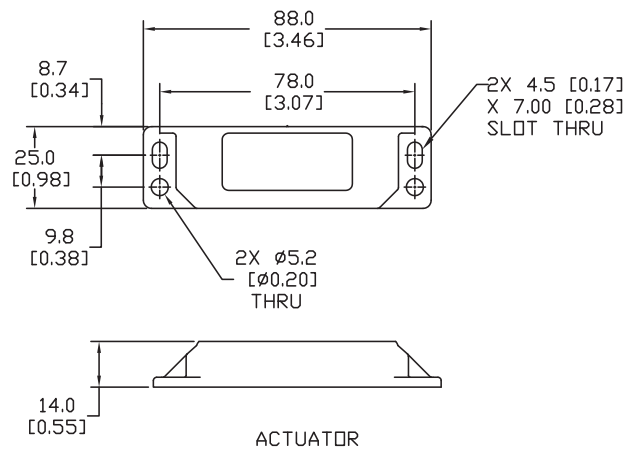
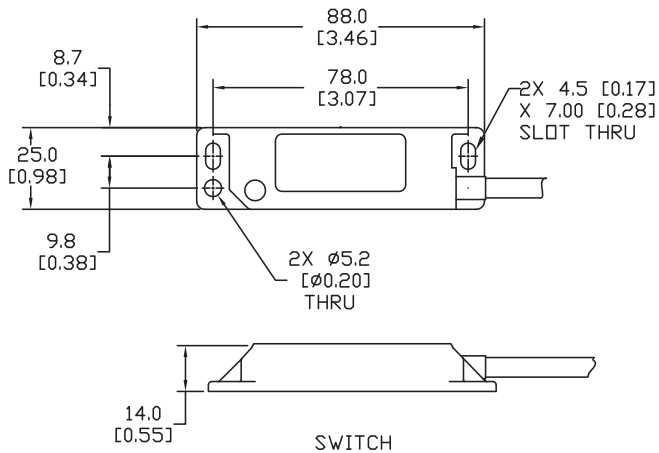


LPC Series

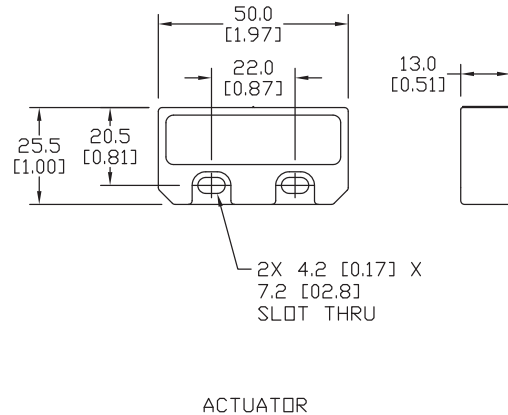
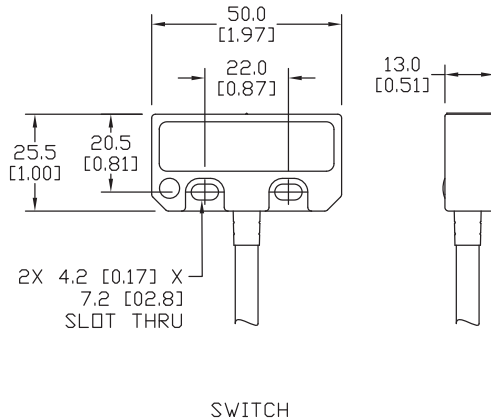


IDEM Non-Contact Safety Switches Dimensions

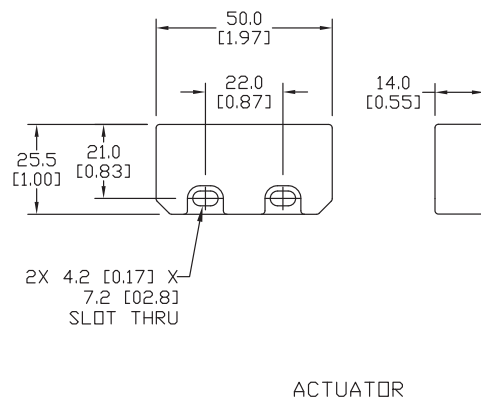
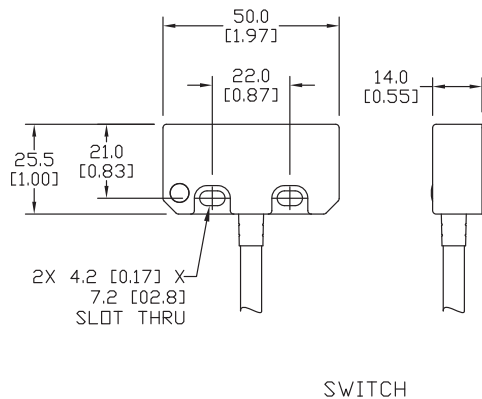
LMC Series



SPC Series

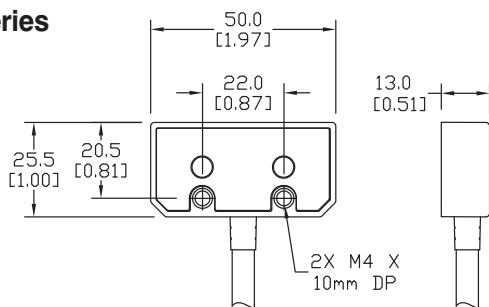


SMC Series

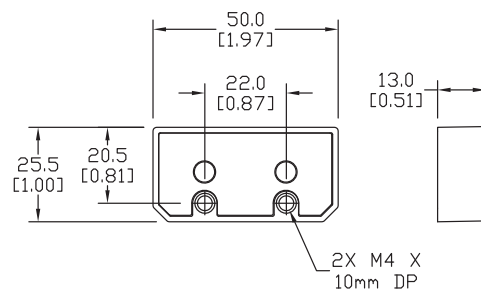


IDEM Non-Contact Safety Switches Dimensions

SMC-F Series

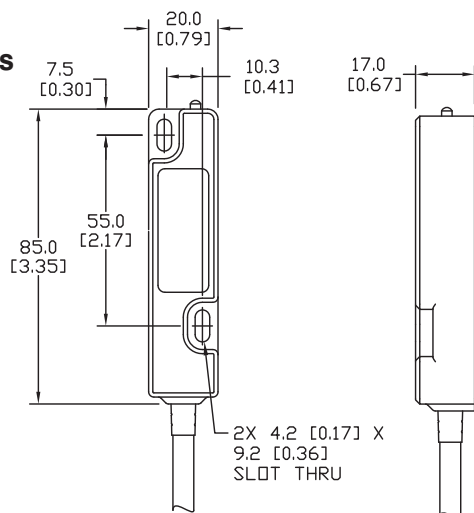


SWITCH
BACK VIEW

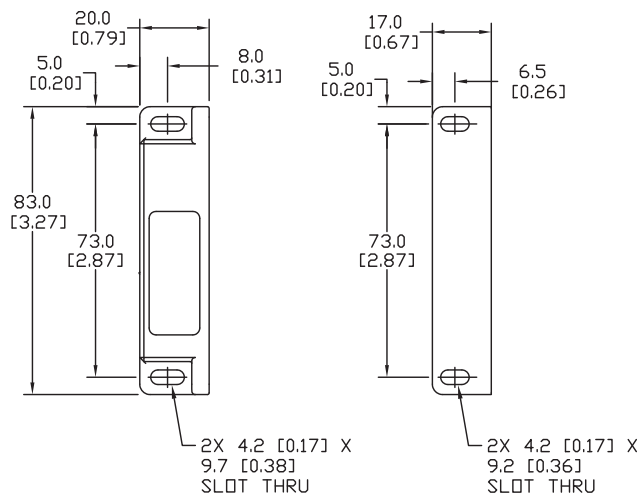


ACTUATOR
BACK VIEW

CPC Series

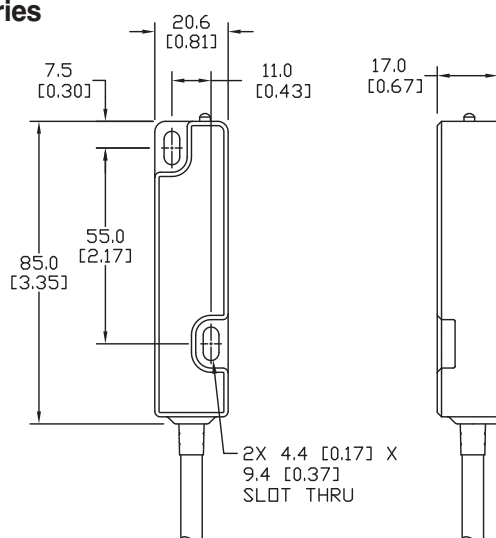


SWITCH

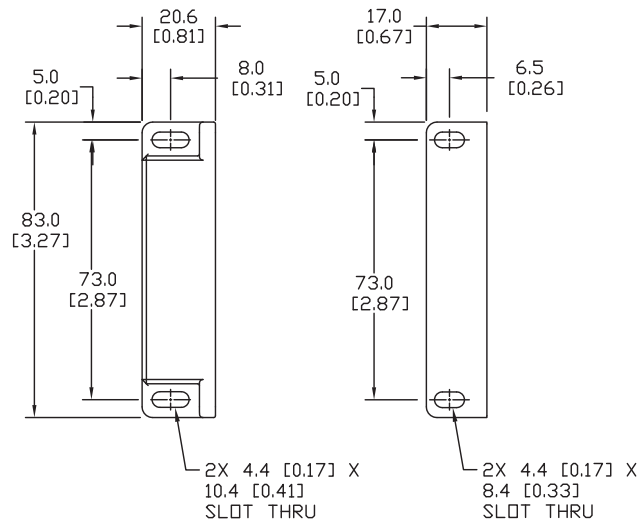


ACTUATOR

CMC Series



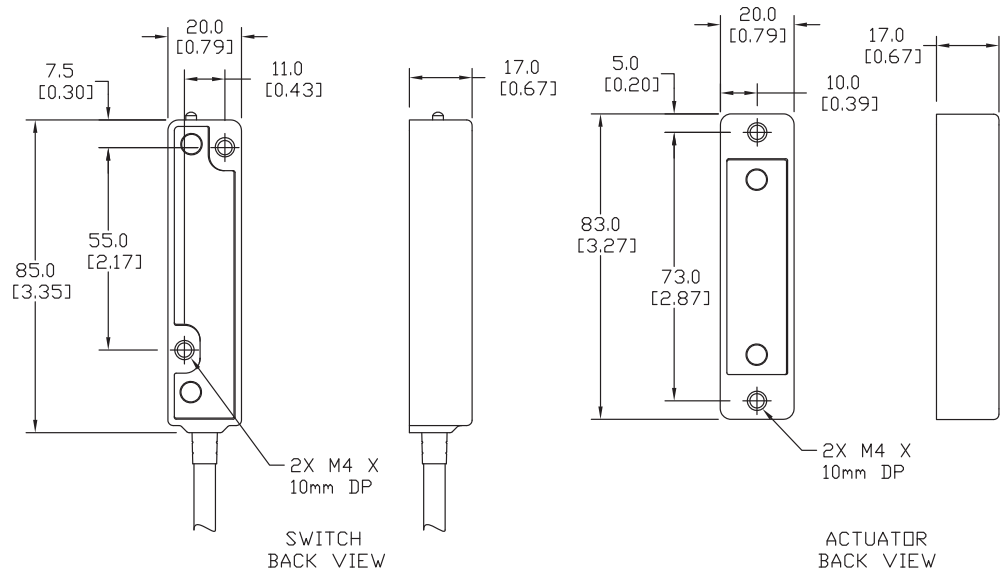
SWITCH



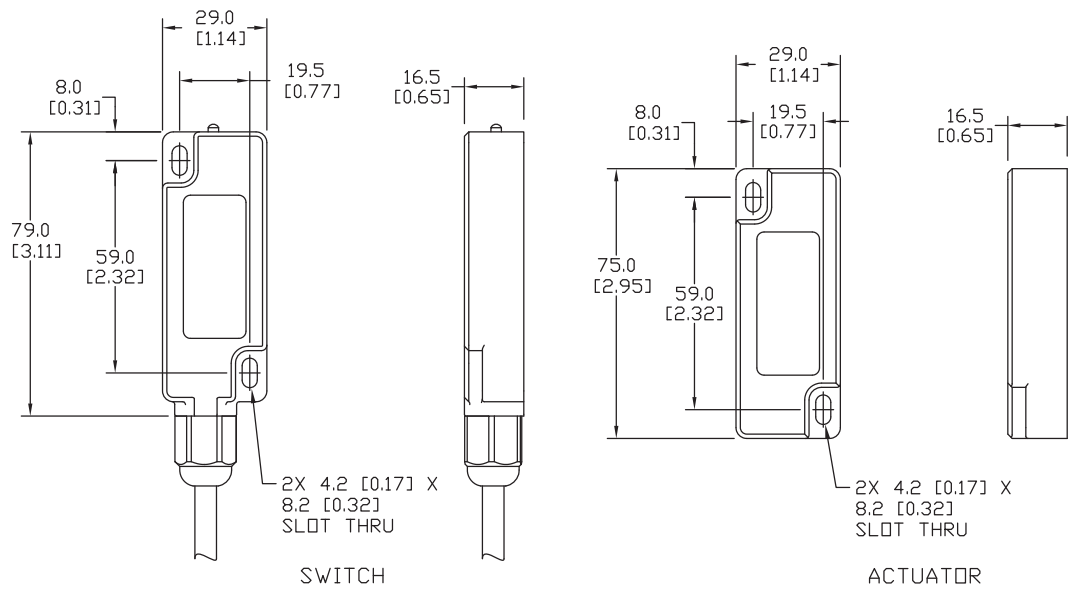
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IDEM Non-Contact Safety Switches Dimensions

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Dold Safety Relays Selection Guide



Specification	Single-channel E-Stop	Dual-channel E-Stop/Safety Gate	Dual-channel E-Stop/Safety Gate with Time Delay
Coil Voltages	24VDC, 110VAC, 230VAC	24VAC/DC, 110VAC, 230VAC	24VAC/DC
Contact Configuration	2 N.O. positive guided safety contacts or 3 N.O. positive guided safety contacts and 1 N.C. monitoring contact	3 N.O. positive guided safety contacts and 1 N.C. monitoring contact	3 N.O. time delay positive guided safety contacts, 2 N.O. instantaneous positive guided safety contacts and 1 N.C. instantaneous monitoring contact
Safety Data	Category 2 according to EN 954-1 PL _d according to EN 13849-1 SIL 2 according to IEC/EN 61508	Category 4 according to EN 954-1 PL _e according to EN 13849-1 SIL 3 according to IEC/EN 61508	Category 4 according to EN 954-1 PL _e according to EN 13849-1 SIL 3 according to IEC/EN 61508
Agency Approvals	cULus, RoHS, CE, TUV	cULus, RoHS, CE, TUV	cULus, RoHS, CE



Specification	Two-hand Controllers	Light Curtain Controllers	LG5929 Extension Module
Coil Voltages	24VDC, 110VAC, 230VAC	24VDC	24VAC/DC
Contact Configuration	2 N.O. positive guided safety contacts and 1 N.C. monitoring contact or 3 N.O. positive guided safety contacts and 1 N.C. monitoring contact	2 N.O. positive guided safety contacts and 1 N.C. monitoring contact or 3 N.O. positive guided safety contacts and 1 N.C. monitoring contact	5 N.O. positive guided safety contacts and 1 N.C. monitoring contact
Safety Data	Category 4 according to EN 954-1 PL _e according to EN 13849-1 SIL 3 according to IEC/EN 61508	Category 4 according to EN 954-1 PL _e according to EN 13849-1 SIL 3 according to IEC/EN 61508	Category 4 according to EN 954-1 PL _e according to EN 13849-1 SIL 3 according to IEC/EN 61508
Agency Approvals	cULus, RoHS, CE, TUV	cULus, RoHS, CE, TUV	cULus, RoHS, CE, TUV

Dold LG5924 Series 1-Channel Emergency Stop



LG5924-48-61-24

Designed to protect people and machines in applications with E-stop buttons.

- Single channel operation
- Output options: 2 N.O. contacts, or 3 N.O. contacts and 1 N. C. contact
- LED indicators for power and state of operation
- Short circuit detection between terminal Y1 and common

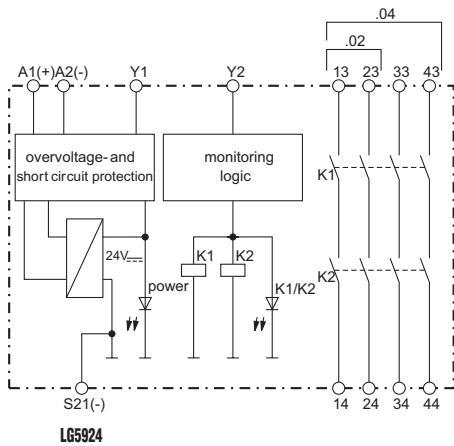
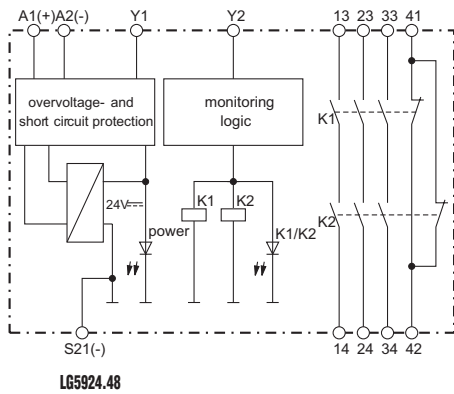
LG5924 Series Single Channel Safety Relays Selection Chart				
Part Number	Price	Marking Type	Voltage	Outputs
LG5924-02-61-24	<--->	1-channel E-STOP	24 VDC	2 N.O.
LG5924-48-61-24	<--->	1-channel E-STOP	24 VDC	3 N.O. and 1 N.C.
LG5924-48-61-110	<--->	1-channel E-STOP	110 VAC	3 N.O. and 1 N.C.
LG5924-48-61-230	<--->	1-channel E-STOP	230 VAC	3 N.O. and 1 N.C.

Safety Data – Values per EN ISO 13849-1	
Category	2 according to EN 954-1
Performance level	PLd according to EN 13849-1
MTTF _d	180.3 years
DC _{avg}	99%
Safety Data – Values per IEC/EN 62061 /IEC/EN 61508	
SIL CL	2 per IEC/EN 62061
SIL	2 per IEC/EN 61508
HFT (Hardware Failure Tolerance)	1
DC _{avg}	99%
SFF	99.7%
PFHD	2.60E-10 h ⁻¹

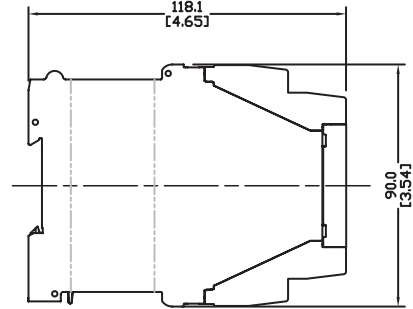
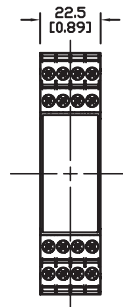
LG5924 Controllers Safety Relay Specification Table	
General Specifications	
Temperature	Storage: -25°C to 85°C (-13°F to 185°F) Operating: -15°C to 55°C (5°F to 131°F)
Altitude	< 2,000 meters
Vibration Resistance	Amplitude: 0.35mm, Frequency: 10 to 55 Hz (IEC/EN 60-068-2-6)
Degree of Protection	Per IEC/EN 60 529. Housing: IP40; Terminals IP20
Housing	UL 94V-0 Thermoplastic; DIN mount, 35 mm x 7.5 mm
Weight	LG5924 24VDC 200 g (7.05 oz.) LG5924 110, 230VAC 270 g (9.52 oz.)
Agency Approvals and Standards	cULus file E107778, CE, RoHS, TUV
Terminal Designation per EN 50 005	1x4 mm ² solid or 1 x 2.5 mm ² stranded ferruled (isolated) or 2 x 1.5 mm ² stranded ferruled (isolated) DIN 46 228-1/-2/-3/-4
Wire Connections	or 2 x 2.5 mm ² solid DIN 46 228-1/-2/-3
Wire Fixing	Plus-minus terminal screws M3.5 box terminals with self-lifting wire protection or cage clamp terminals.
Input Specifications	
Nominal Voltage	110, 230VAC, 24VDC
Voltage Range	AC: 0.85 to 1.1 U _N . At 10% residual ripple: DC: 0.9 to 1.1 U _N . At 48% residual ripple: DC: 0.85 to 1.1 U _N
Maximum Consumption	230VAC approx. 3.5 A; 24V DC approx. 1.5W
Nominal Frequency	50 to 60 Hz
Control Voltage on Y1	24V DC: typ. 22V DC. 110V, 230V AC: typ. 45V DC
Control Current	24VDC: typ. DC 65 mA. 110V, 230V AC: typ. AC 16 mA
Short Circuit Protection	Internal with PTC (Positive Temperature Coefficient resistor)
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)
Output Specifications	
Electrical Contact Life	According to DC15: at 5A, 230V AC: >1.5x150,000 switching cycles. According to DC13: N.O. contacts, 2 contacts in series: 8A/24V >25x25,000- ON: 0.4s, OFF: 9.6 s
Mechanical Life	>10x10 ⁶ switching cycles
Contact Type	LG5924.02: 2 N.O. relay contacts, positively driven. LG5924.48: 3 N.O. positively driven and 1 N.C relay contacts. (N.O. contacts are safety contacts.)
Operate Delay	Operate delay: 24VDC: typ. 40 ms; 110VAC, 230VAC typ. 200 ms
Release Delay	Release delay: 24VAC/DC typ. 70 ms; 230VAC typ. 35 ms.
Nominal Output Voltage	250VAC
Thermal Current (I _{th})	Max. 5A. See continuous current limit curve in installation manual.
Short Circuit Strength	Max. fuse rating: 10A gL (IEC/EN 60 947-5-1); Line circuit breaker: B 6A
Switching Capacity (IEC/EN 60947-5-1)	To AC 15: N.O. contacts: 3A/230VAC; N.C. contacts: 2A/230VAC To DC 13: N.C. contacts: 4A/24VDC; N.O. contacts: 4A/24VDC; 0.5A/110V
Switching Frequency	Max. 600 switching cycles/hr

Dold LG5924 Series 1-Channel Emergency Stop

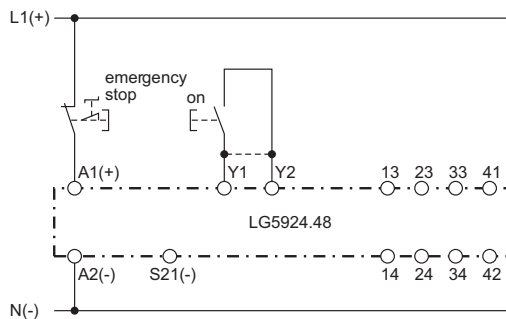
LG5924 Block Diagrams



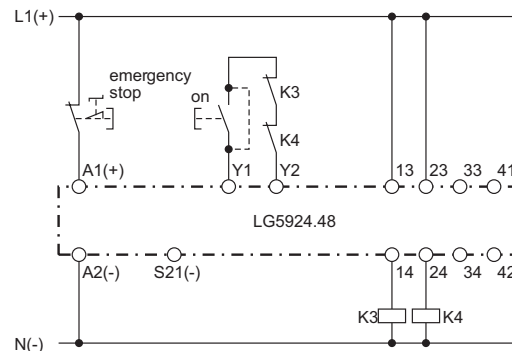
Dimensions mm(in)



Applications



Single-channel, emergency-stop circuit without feedback loop, with or without automatic restart. For automatic restart, terminals Y1 - Y2 must be jumpered. No ON pushbutton necessary.



Contact reinforcement by external contactors, 2-channel controlled. For currents >5A, the output contacts can be reinforced by external contactors. Functioning of the external contactors is monitored by looping the N.C. contacts into the start circuit (Y1 - Y2).

***Note:** When switching inductive loads, surge suppressors are recommended.

Dold LG5925 Series 2-Channel Emergency Stop and Safety Gates



LG5925-48-61-24

Designed to protect people and machines in applications with E-stop buttons and safety gates.

- Outputs: 3 N.O. contacts and 1 N.C. contact
- Feedback circuit to monitor external contactors used for reinforcement of contacts
- Overvoltage and short-circuit protection
- Monitored manual restart
- Single and 2-channel operation
- LED indicators for power and state of operation

Safety Data – Values per EN ISO 13849-1	
Category	4 according to EN 954-1
Performance level	PLe according to EN 13849-1
MTTF _d	>100 years
DC _{avg}	99%
Safety Data – Values per IEC/EN 62061 /IEC/EN 61508	
SIL CL	3 per IEC/EN 62061
SIL	3 per IEC/EN 61508
HFT (Hardware Failure Tolerance)	1
DC _{avg}	99%
SFF	99.7%
PFH _D	2.66E-10 h ⁻¹

Safety Relays Selection Chart				
Part Number	Price	Marking Type	Voltage	Outputs
LG5925-48-61-24	<--->	2-channel E-STOP / GATE	24 VAC/DC	3 N.O. and 1 N.C.
LG5925-48-61-110	<--->	2-channel E-STOP / GATE	110 VAC	3 N.O. and 1 N.C.
LG5925-48-61-230	<--->	2-channel E-STOP / GATE	230 VAC	3 N.O. and 1 N.C.

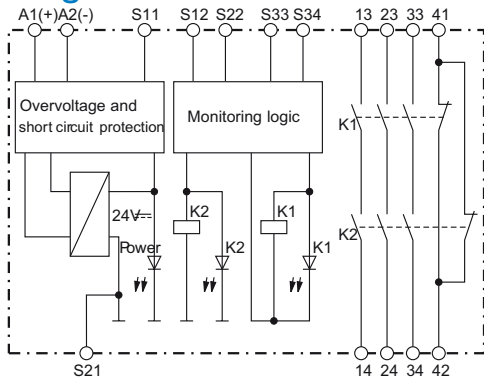
LG5925 Controllers Safety Relay Specification Table	
General Specifications	
Temperature	Storage: -25°C to 85°C (-13°F to 185°F) Operating: -15°C to 55°C (5°F to 131°F)
Altitude	<2,000 meters
Vibration Resistance	Amplitude: 0.35mm, Frequency: 10 to 55 Hz (IEC/EN 60-068-2-6)
Degree of Protection	Per IEC/EN 60 529. Housing: IP40; Terminals IP20
Housing	UL 94V-0 Thermoplastic; Din mount 35 mm x 7.5 mm
Weight	LG5925 24V AC/DC: 210 g (7.40 oz.); LG5925 110V, 230V AC: 275 g (9.70 oz.)
Agency Approvals and Standards	CSA, cULus file E107778, CE, RoHS, TUV
Terminal Designation per EN 50 005 Wire Connections	1x4 mm ² solid or 1 x 2.5 mm ² stranded ferruled (isolated) or 2 x 1.5 mm ² stranded ferruled (isolated) DIN 46 228-1/-2/-3/-4 or 2 x 2.5 mm ² solid DIN 46 228-1/-2/-3/-4
Wire Fixing	Terminal screws M3.5 box terminals with wire protection or cage clamp terminals.
Input Specifications	
Nominal Voltage	110VAC, 230VAC, 24VAC/DC
Voltage Range	At 10% residual ripple: AC/DC: 0.9 to 1.1 U _N ; AC: 0.85 to 1.1 U _N
Maximum Consumption	DC approx. 1.5W; AC approx. 3.7 VA
Nominal Frequency	50 to 60 Hz
Minimum Off-time	250 ms
Control Voltage on S11 At U _N	AC/DC units: 22VDC; AC units: 24VDC
Control Current Typ. Over S12, S22	30 mA at U _N
Min. Voltage on S12, S22 (relay activated)	AC/DC units: 20VDC; AC units: 19VDC
Short Circuit Protection	Internal with PTC (Positive Temperature Coefficient resistor)
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)
Output Specifications	
Electrical Contact Life	AC 15 at 5A, 230VAC: > 2.2x10 ⁶ switching cycles
Mechanical Life	> 20x10 ⁶ switching cycles
Contact Type	3 positively driven N.O. and 1 N.C. relay contacts (N.O. contacts are safety contacts)
Operate Delay	Manual start: 30 ms; automatic start: 350 ms.
Release Delay	Disconnecting the supply: AC units: 150 ms; DC units: 50 ms Disconnecting S12, S22: AC units: 130 ms. DC units: 50 ms
Nominal Output Voltage	AC: 250V; DC: See continuous current limit curve in installation manual.
Thermal Current (I _{th})	Max. 8A. See continuous current limit curve in installation manual.
Short Circuit Strength	Max. fuse rating: 10A gL (IEC/EN 60 947-5-1); Line circuit breaker: B 6A
Switching Capacity (IEC/EN 60 947-5-1)	AC 15: N.O. contacts: 3A/230V; N.C. contacts: 2A/230V DC 13: N.O. contacts: 4A/DC24V. 0.5A/110V; N.C. contacts: 4A/24V; DC 13: N.O. contacts: 8A/24V >25x10 ³ . ON: 0.4s, OFF: 9.6 s
Switching Frequency	Max. 1200 switching cycles/hr

Dold LG5925 Series

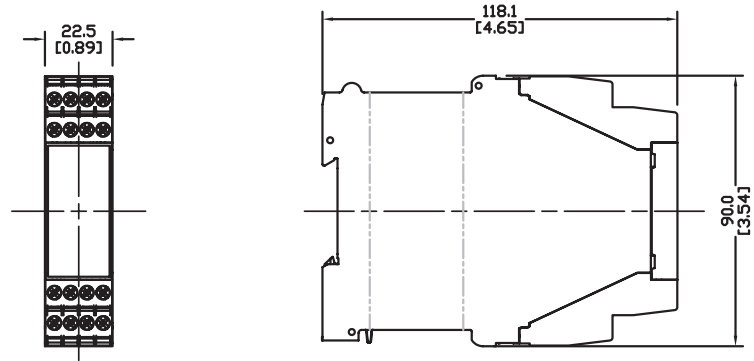
2-Channel Emergency Stop and Safety Gates

Wiring

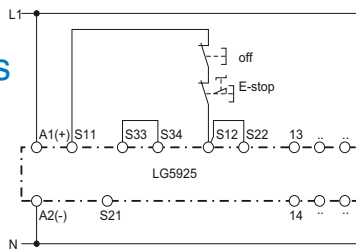
LG5925 Block Diagram



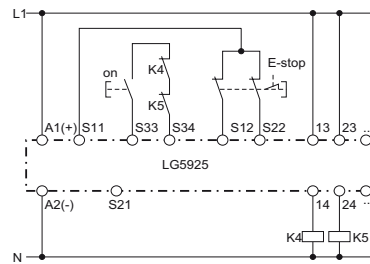
Dimensions mm(in)



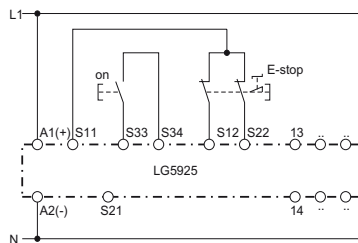
Applications



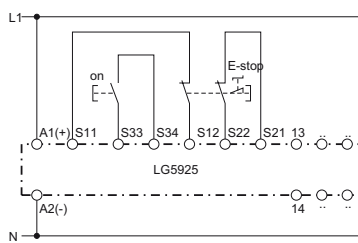
Single channel emergency stop circuit. This circuit does not have any redundancy in the emergency-stop control circuit.
 Note: Refer to "Unit programming"
 Set switch or dip switch in pos.: S1 no cross fault detection
 S2 automatic start



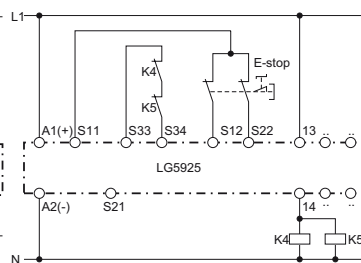
Contact reinforcement by external contactors, 2-channel controlled.
 The output contacts can be reinforced by external contactors with positive guided contacts for switching currents > 8 A.
 Functioning of the external contactors is monitored by looping the N.C. contacts into the closing circuit (terminals S33-S34).
 Note: Refer to "Unit programming"
 Set switch or dip switch in pos.: S1 no cross fault detection
 S2 manual start



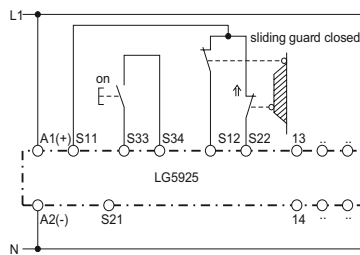
2-channel emergency stop circuit without cross fault monitoring.
 Note: Refer to "Unit programming"
 Set switch or dip switch in pos.: S1 no cross fault detection
 S2 manual start



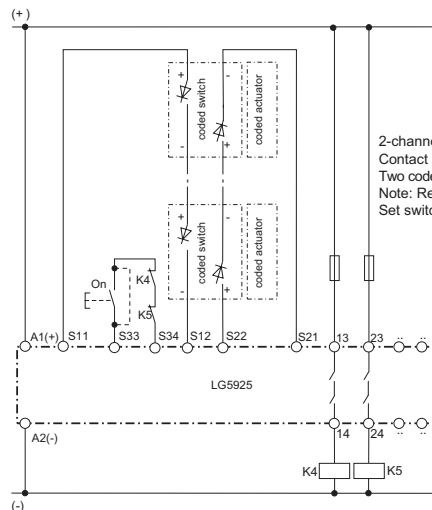
2-channel emergency stop circuit with cross fault detection.
 Note: Refer to "Unit programming"
 Set switch or dip switch in pos.: S1 cross fault detection
 S2 manual start



Contact reinforcement by external contactors controlled by one contact path.
 Note: Refer to "Unit programming"
 Set switch or dip switch in pos.: S1 no cross fault detection
 S2 automatic start



2-channel safety gate monitoring.
 Note: Refer to "Unit programming"
 Set switch or dip switch in pos.: S1 no cross fault detection
 S2 manual start



2-channel emergency stop circuit with cross fault.
 Contact reinforcement by external contactors.
 Two coded non-contact sensors in series.
 Note: Refer to "Unit programming"
 Set switch or dip switch in pos.: S1 cross fault detection
 S2 Manual or Automatic (dotted jumper)

Note: When switching inductive loads, surge suppressors are recommended.

Dold BH5928 Series – 2-Channel Emergency Stop and Safety Gates with Delay



BH5928-92-61-24-1

Designed to protect people and machines in applications with E-stop buttons and safety gates. One or two channels can be monitored with time-delay function.

- Three time-delay options with potentiometer adjustment
- Single and 2-channel operation
- Output: 3 N.O. contacts with delay, 2 N.O. instantaneous contacts, 1 N.C. instantaneous contact
- Line fault detection for **ON** button, when connected to S33-S34
- Manual restart with button on S33-S34 or automatic restart with jumper between S13-S14
- Can be wired with or without cross-fault monitoring in the E-stop loop
- LED indicators for power and state of operation

Safety Relays					
Part Number	Price	Marking Type	Voltage	Outputs	Time Delay
BH5928-92-61-24-1	<--->	2-channel E-STOP / GATE	24 VDC	3 N.O. time delay positive guided safety contacts,	0.1 to 1 second
BH5928-92-61-24-5	<--->	2-channel E-STOP / GATE	24 VDC	2 N.O. instantaneous positive guided safety contacts and	0.5 to 5 seconds
BH5928-92-61-24-30	<--->	2-channel E-STOP / GATE	24 VDC	1 N.C. instantaneous monitoring contact	3 to 30 seconds

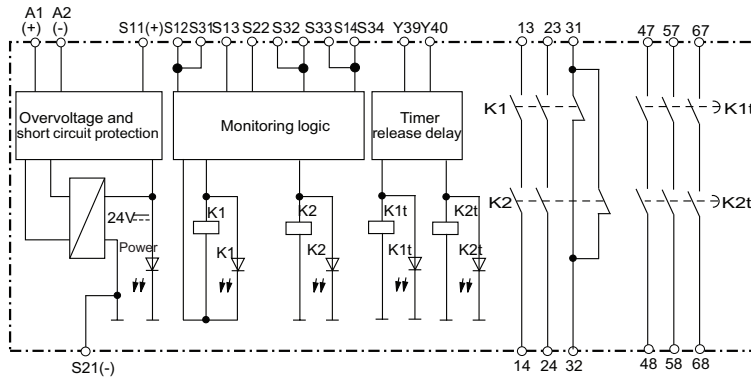
Safety Data – Values per EN ISO 13849-1	
Category	4 according to EN 954-1
Performance level	PLe according to EN 13849-1
MTTF _d	>240.5 years
DC _{avg}	99%
Safety Data – Values per IEC/EN 62061 / IEC/EN 61508	
SIL CL	3 per IEC/EN 62061
SIL	3 per IEC/EN 61508
HFT (Hardware Failure Tolerance)	1
DC _{avg}	99%
SFF	99.9%
PFH _D	1.94E-10 h ⁻¹

Two-Hand Controllers Safety Relay Specification Table	
General Specifications	
Temperature	Storage: -25°C to 85°C (-13°F to 185°F) Operating: -15°C to 55°C (5°F to 131°F)
Altitude	< 2,000 meters
Vibration Resistance	Amplitude: 0.35mm, Frequency: 10 to 55 Hz (IEC/EN 60-068-2-6)
Degree of Protection	Per IEC/EN 60 529. Housing: IP40; Terminals IP20
Housing	UL 94V-0 Thermoplastic; Din mount 35 mm x 7.5 mm
Weight	400 g (14.11 oz.)
Agency Approvals and Standards	cULus file E107778, CE, RoHS
Terminal Designation per EN 50 005	1x4 mm ² solid or 1 x 2.5 mm ² stranded ferruled (isolated) or 2 x 1.5 mm ² stranded ferruled (isolated) DIN 46 228-1/-2/-3/-4
Wire Connections	or 2 x 2.5 mm ² stranded ferruled DIN 46 228-1/-2/-3
Wire Fixing	Box terminal with wire protection
Input Specifications	
Nominal Voltage	24VDC
Voltage Range	At 10% residual ripple: DC: 0.9 to 1.1 U _N At 48% residual ripple: DC: 0.8 to 1.1 U _N
Maximum Consumption	DC approx. 3.5W
Minimum Off-time	1.0 second
Short Circuit Protection	Internal with PTC (Positive Temperature Coefficient resistor)
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)
Output Specifications	
Electrical Contact Life	To DC 13 at 2A, DC 24V: >1.5 x 10 ⁶ switching cycles To AC 15 at 2A, 230VAC: 10 ⁶ switching cycles IEC/EN 60 947-5-1
Mechanical Life	10 x 10 ⁶ switching cycles
Contact Type	2 N.O. positively driven and 1 N.C. relay contacts, and 3 N.O. positively driven relay contacts with delay. (N.O. contacts are safety contacts)
Operate Delay	Operate delay typ at U _N : manual start: 40 ms; automatic start: 500 ms;
Release Delay	Release delay typ at U _N : Disconnecting supply: 40 ms; Disconnecting S12, S22, S31 and S32: 15ms
Repeat Accuracy	±1% of setting value
Nominal Output Voltage	AC: 250V; DC: See continuous current limit curve in manual.
Thermal Current (I _{th})	Max. 5A, See continuous current limit curve in manual.
Switching of Low Loads	≥100 mV; (contacts with 5μ Au) ≥ 1 mA
Short Circuit Strength	Max. fuse rating: 6 A gL (IEC/EN 60 947-5-1); Line circuit breaker C 8 A
Switching Capacity	AC 15: N.O. contacts: 3A/230V; N.C. contacts: 2A/230VAC; DC 13: N.O. contacts: 5A/24VDC; ON: 0.4s, OFF: 9.6 s
Switching Frequency	Max. 1200 switching cycles/hr, with manual restart and short release delay time
Indicator Contact	DC 13: N.C. contact: 2A/24VDC

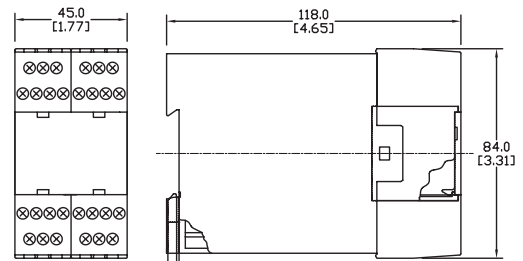
Dold BH5928 Series – 2-Channel Emergency Stop and Safety Gates with Delay

Wiring

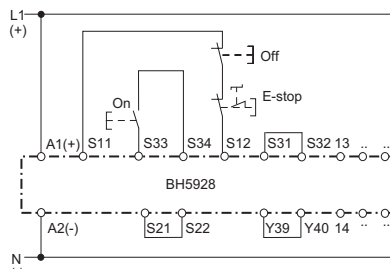
BH5928 Block Diagram



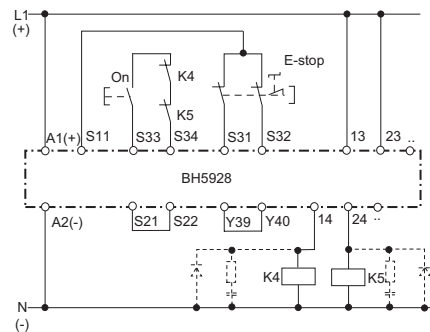
Dimensions mm(in)



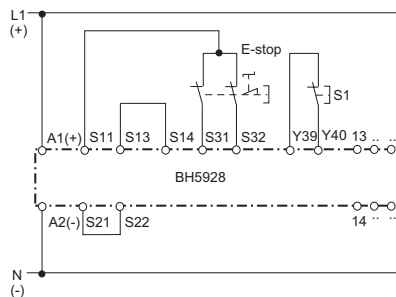
Applications



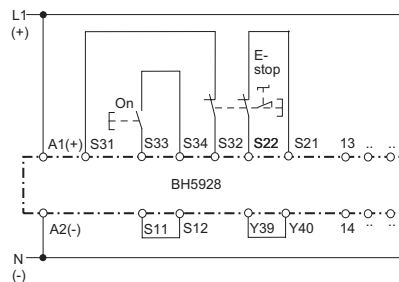
Single channel emergency stop circuit. This circuit does not have any redundancy in the emergency-stop control circuit.



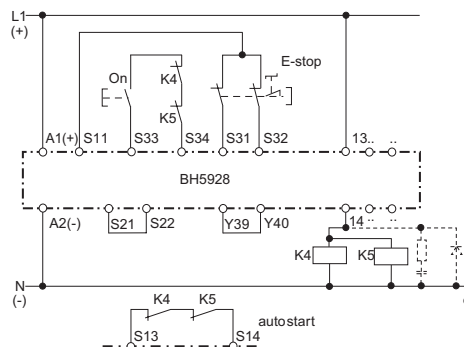
Contact reinforcement by external contactors, 2-channel controlled. The output contacts can be reinforced by external contactors with positive guided contacts for switching currents > 5 A. Functioning of the external contactors is monitored by looping the N.C. contacts into the closing circuit (terminals S13-S14 or S33-S34)



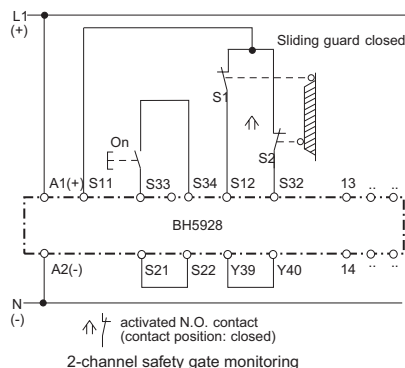
2-channel emergency stop circuit without cross fault monitoring autostart and interruption of time by S1



2-channel emergency stop circuit with cross fault detection



Contact reinforcement by external contactors controlled by one contact path. S33 - S34 must be opened.



activated N.O. contact (contact position: closed)

2-channel safety gate monitoring

***Note: When switching inductive loads, surge suppressors are recommended.**

Dold BG5933 and BH5933 Series – Two-Hand Controllers



BH5933-48-61-230

Designed to protect people and machines in applications with two-hand buttons or production machinery with dangerous closing movements.

- Inputs for 2 pushbuttons, each with 1 N.C. and 1 N.O. contact
- Output options: 2 N.O. contacts and 1 N.C. contact, or 3 N.O. contacts and 1 N.C. contact
- Feedback circuit Y1 - Y2 to monitor external contactors used for reinforcement of contacts
- Overvoltage and short-circuit protection
- LED indicators for power and state of operation

Two-Hand Controllers Selection Chart

Part Number	Price	Marking Type	Voltage	Outputs
BG5933-22-61-24	<-->	Two-hand controller	24 VDC	2 N.O. and 1 N.C.
BH5933-48-61-110	<-->	Two-hand controller	110 VAC	3 N.O. and 1 N.C.
BH5933-48-61-230	<-->	Two-hand controller	230 VAC	3 N.O. and 1 N.C.

Note: Output contacts will be switched if both pushbuttons are operated within ≤0.5s. If both buttons are pressed while switching on the operating voltage (e.g. after voltage functions), the output contacts do not energize.

Safety Data – Values per EN ISO 13849-1

Category	4 according to EN 954-1
Performance level	PLe according to EN 13849-1
MTTF _d	30.7 years
DC _{avg}	99%

Safety Data – Values per IEC/EN 62061 /IEC/EN 61508

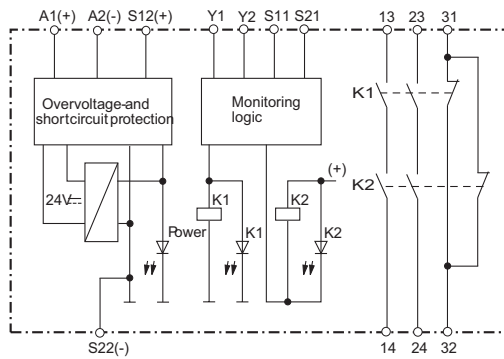
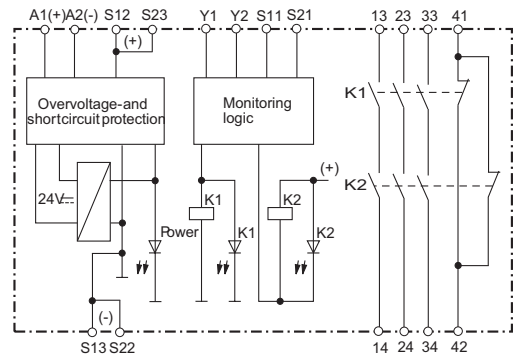
SIL CL	3 per IEC/EN 62061
SIL	3 per IEC/EN 61508
HFT (Hardware Failure Tolerance)	1
DC _{avg}	99%
SFF	99.7%
PFH _D	7.51E-9 h ⁻¹

Two-Hand Controllers Safety Relay Specification Table

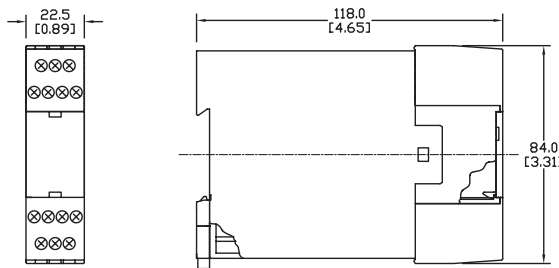
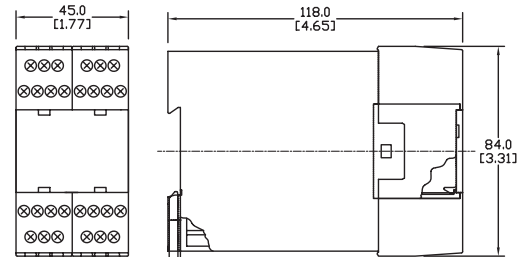
Part Numbers	BG5933-22-61-24	BH5933-48-61-110	BH5933-48-61-230
General Specifications			
Temperature	Storage: -25°C to 85°C (-13°F to 185°F) Operating: -15°C to 55°C (5°F to 131°F)		
Altitude	< 2,000 meters		
Vibration Resistance	Amplitude: 0.35mm, Frequency: 10 to 55 Hz (IEC/EN 60-068-2-6)		
Degree of Protection	Per IEC/EN 60 529. Housing: IP40; Terminals IP20		
Housing	UL 94V-0 Thermoplastic; Din mount 35 mm x 7.5 mm		
Weight	200 g (7.05 oz.)	400 g (14.11 oz.)	400 g (14.11 oz.)
Agency Approvals and Standards	cULus file E107778, CE, RoHS, TUV		
Terminal Designation per EN 50 005	1x4 mm ² solid or 1 x 2.5 mm ² stranded ferruled (isolated) or 2 x 1.5 mm ² stranded ferruled (isolated) DIN 46 228-1/-2/-3/-4 or 2 x 2.5 mm ² stranded ferruled DIN 46 228-1/-2/-3		
Wire Fixing	Terminal screws M3.5. Box terminals with self-lifting wire protection		
Input Specifications			
Nominal Voltage	24V DC	110V AC, 230V AC	
Voltage Range	At 10% residual ripple: DC: 0.9 to 1.1 U _N	At 10% residual ripple: AC: 0.85 to 1.1 U _N	
Maximum Consumption	DC approx. 2.3W	AC approx. 4 VA	
Nominal Frequency		50 to 60 Hz	
Time Delay for Simultaneous Demand	0.5 sec max		
Recovery time	1 second		
Control Contacts	2 x (1 N.O. and 1 N.C. contacts)		
Current via Control Contacts with 24VDC	N.O. contact: typ. 50 mA; N.C. contact: typ. 20 mA		
Short Circuit Protection	Internal with PTC (Positive Temperature Coefficient resistor)		
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)		
Output Specifications			
Electrical Contact Life	To DC 13 at 2A, DC 24V: >1.5 x 10 ⁵ switching cycles To AC 15 at 2A, 230 VAC : 10 ⁵ switching cycles IEC/EN 60 947-5-1		
Mechanical Life	10 x 10 ⁶ switching cycles		
Contact Type (N.O. are safety contacts)	2 N.O. positively driven and 1 N.C. relay contacts	3 positively driven N.O. and 1 N.C. relay contacts	
Operate Time	Operate time: typ. 40 ms		
Release Time	Release time: typ. 15 ms		
Nominal Output Voltage	AC: 250V; DC: See continuous current limit curve in manual.		
Thermal Current (I_{th})	Max. 5A See continuous current limit curve in manual.		
Switching of Low Loads	≥100 mV; (contacts with 5μ Au) ≥ 1 mA		
Short Circuit Strength	Max. fuse rating: 6 A gl (IEC/EN 60 947-5-1); line circuit breaker C 6 K		
Switching Capacity	AC 15: N.O. contacts: 3A/230V; N.C. contacts: 2A/230VAC DC 13: N.C. contacts: 2A/24VDC 2 N. O. contacts in series; 8 A/24V >10 ⁵ ; ON: 0.4s, OFF: 9.6 s		
Switching Frequency	Max. 1800 switching cycles/hr		

Dold BG5933 and BH5933 Series – Two-Hand Controllers

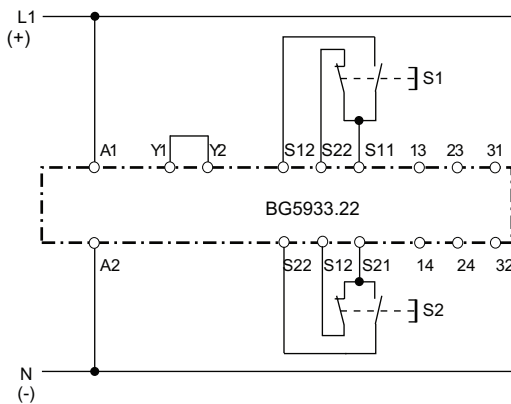
Wiring

BG5933 Block Diagram

BH5933 Block Diagram


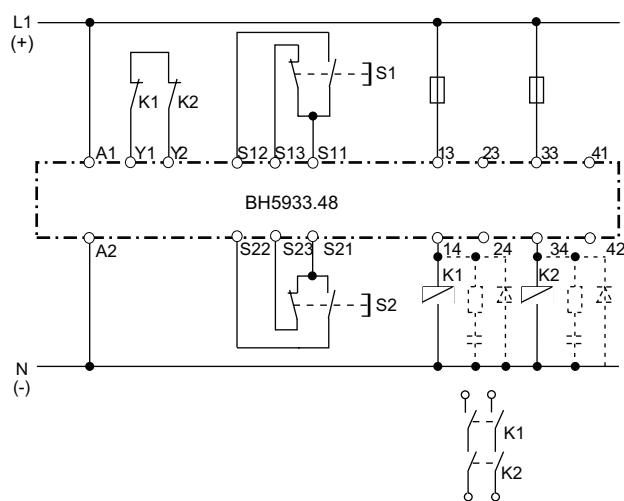
Dimensions mm(in)

BG5933

BH5933


Applications



Two-hand control



Two-hand control with contact reinforcement via external positively-driven contactors

**Note: When switching inductive loads, surge suppressors are recommended.*

Dold Safety Relays – Multi-Function Light Curtain Controller



Designed to protect people and machinery in applications with light curtains; can be operated in protection, muting and stepping modes.

- Connect up to 3 light curtains
- Broken wire detection on light curtain input
- Multifunction device - different functions selectable by rotational switches: protective, muting, stepping
- Suitable to connect light curtains of type 4 or self-testing light curtains type 2 according to IEC/EN 61 496-1, cross-fault monitoring in the light curtain
- Undervoltage and overvoltage detection and indication
- LED indicators for RUN and Status Outputs 1 and 2

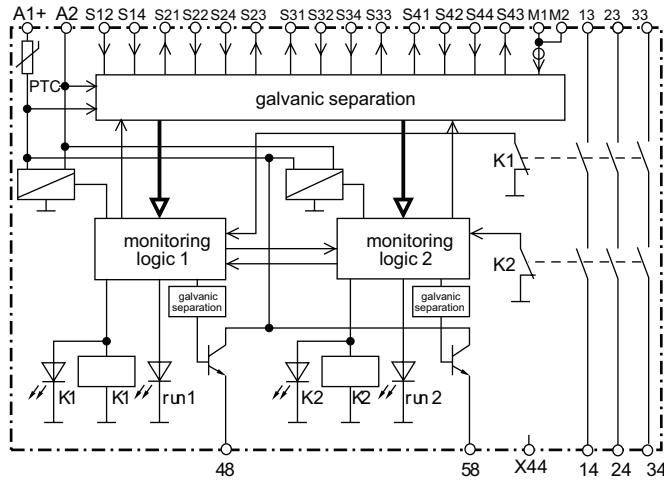
Safety Data – Values per EN ISO 13849-1	
Category	4 according to EN 954-1
Performance level	PLe according to EN 13849-1
MTTF _d	31.5 years
DC _{avg}	98.9%
Safety Data – Values per IEC/EN 62061 /IEC/EN 61508	
SIL CL	3 per IEC/EN 62061
SIL	3 per IEC/EN 61508
HFT (Hardware Failure Tolerance)	1
DC _{avg}	98.9%
SFF	99.6%
PFH _D	7.80E-9 h ⁻¹

Selection Chart				
Part Number	Price	Marking Type	Voltage	Outputs
BH5902-22-01MF2-61	<--->	Light curtain controller, with 2-channel operation and selectable standard, with protective, muting or stepping modes	24 VDC	2 N.O. and 1 N.C.

2-Channel Light Curtain Controller Specification Table	
General Specifications	
Temperature	Storage: -25°C to 85°C (-13°F to 185°F) Operating: 0°C to 50°C (32°F to 122°F)
Altitude	< 2,000 meters
Vibration Resistance	Amplitude: 0.35mm, Frequency: 10 to 55 Hz (IEC/EN 60-068-2-6)
Degree of Protection	Per IEC/EN 60 529. Housing: IP40; Terminals IP20
Housing	UL 94V-0 Thermoplastic; Din mount 35 mm x 7.5 mm
Weight	320 g (11.29 oz.)
Agency Approvals and Standards	cULus file E107778, CE, RoHS, TUV
Terminal Designation per EN 50 005 Wire Connections	1x4 mm ² solid or 1 x 2.5 mm ² stranded ferruled (isolated) or 2 x 1.5 mm ² stranded ferruled (isolated) DIN 46 228-1/-2/-3/-4 or 2 x 2.5 mm ² stranded ferruled DIN 46 228-1/-2/-3
Wire Fixing	Terminal screws M3.5 box terminals with wire protection or cage clamp terminals.
Input Specifications	
Nominal Voltage	24V DC
Voltage Range	At 5% residual ripple: 0.85 to 1.15 U _N
Maximum Consumption	170 mA (no load on semiconductor outputs)
Control Voltage - S21, S23, S31, S33, S41, S43, S48, S58	23V DC at U _N
Control Current on S12, S14, S22, S24, S32, S34, S42, S44	each 4.5 mA at U _N
Minimum Voltage on Terminals S12, S14, S22, S24, S32, S34, S42, S44	16V DC
Minimum Current on M1, M2	25 mA with active lamp
Short Circuit Protection	Internal with PTC (Positive Temperature Coefficient resistor)
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)
Output Specifications	
Electrical Contact Life	To AC 15 at 2A, AC 230V: 10 ⁵ switching cycles IEC/EN 60 947-5-1
Mechanical Life	10 x 10 ⁶ switching cycles
Contact Type	2 N.O., positively driven and 1 N.C relay contacts; (N.O. contacts are safety contacts)
Operate Delay	Operate delay typ. at U _N : manual start 50 ms; automatic start: 1.5 s.; automatic restart: max. 55 ms.;
Release Delay	Release delay typ at U _N : Max: 30 ms (max 50 ms when failure on LC and only one input channel de-energizes)
Nominal Output Voltage	AC: 250V; DC: See continuous current limit curve in manual.
Thermal Current (I _{th})	Max. 5A. See continuous current limit curve in manual.
Switching of Low Loads	≥100 mV; (contacts with 5μ Au) ≥ 1 mA
Short Circuit Strength	Max fuse rating: 6A gl (IEC/EN 60 9470-5-1); Line circuit breaker: C 8 A
Switching Capacity	AC 15: N.O. contacts: 3A/230V; N.C. contacts: 2A/230V AC DC 13 at 0.1 Hz: N.C. contacts: 8A/24V DC
Switching Frequency	Max. 1,200 switching cycles/hr
Semi-conductor Output Type (over-temperature and overload protected)	Transistor plus switching, max 100 mA continuous; 400mA for 0.5 sec.

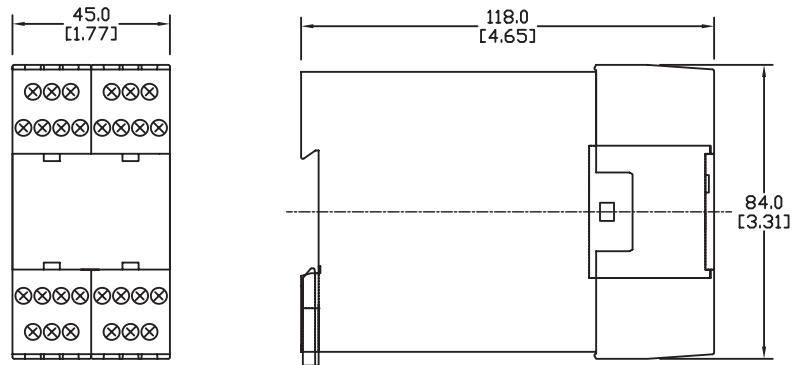
Dold Safety Relays – Multi-Function Light Curtain Controller

Wiring

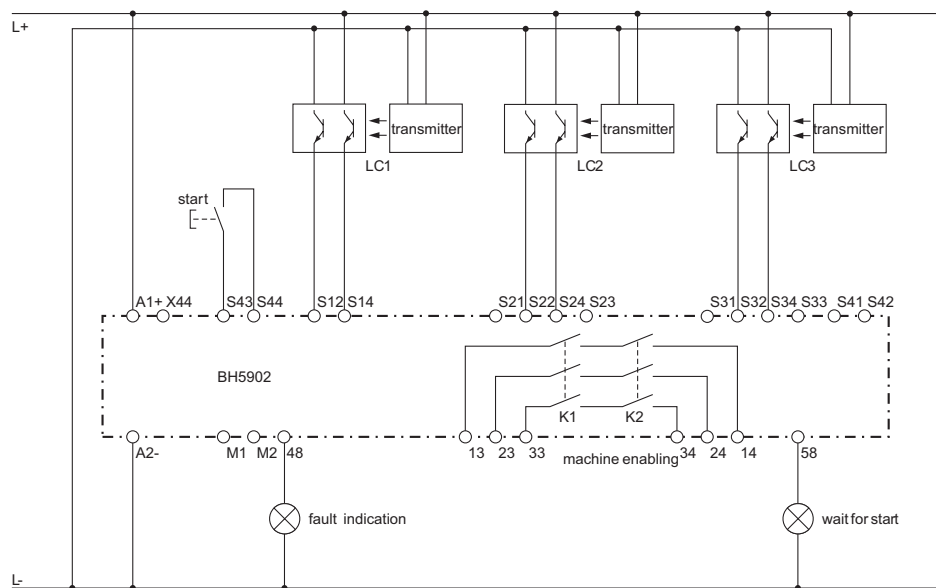
BH5902-22-01MF2-61 Block Diagram


Note: All drawings are for a 3 N.O. configuration. The units will actually have a 2 N.O. and 1 N.C. configuration.

Dimensions mm [in]



Applications

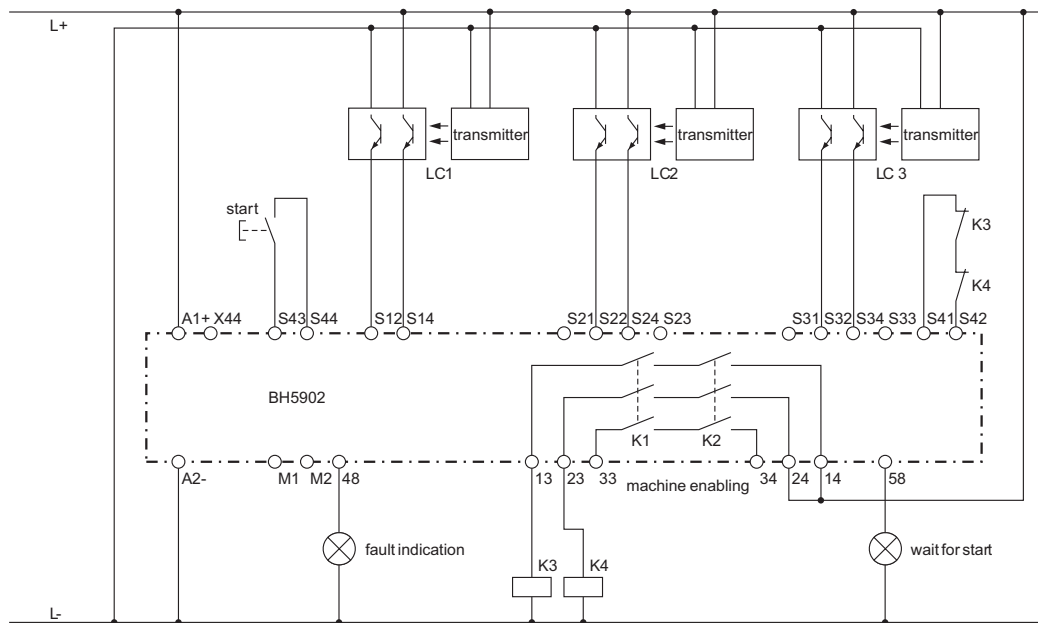


Protective operation with 3 Light Curtains, manual or auto start, setting without feedback input

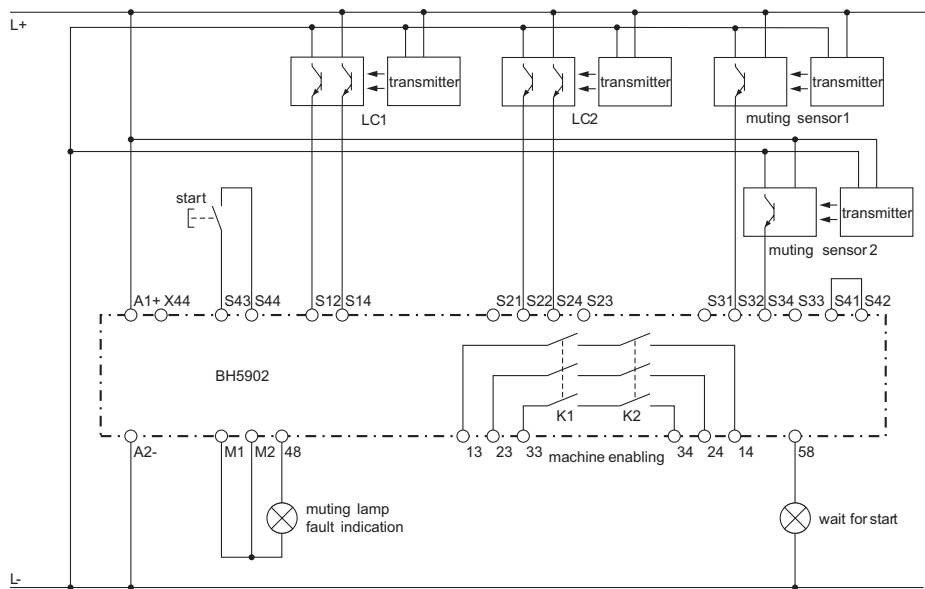
***Note: When switching inductive loads, surge suppressors are recommended.**

Dold Safety Relays – Multi-Function Light Curtain Controller

Applications



Protective operation with 3 Light Curtains, manual or autostart, setting with contact reinforcement and feedback input

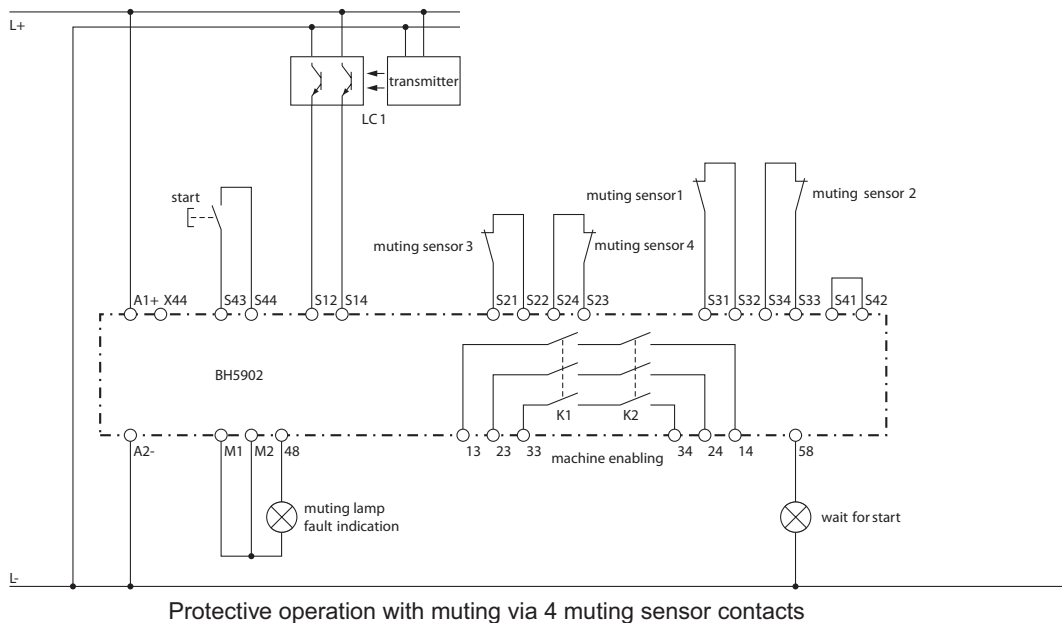
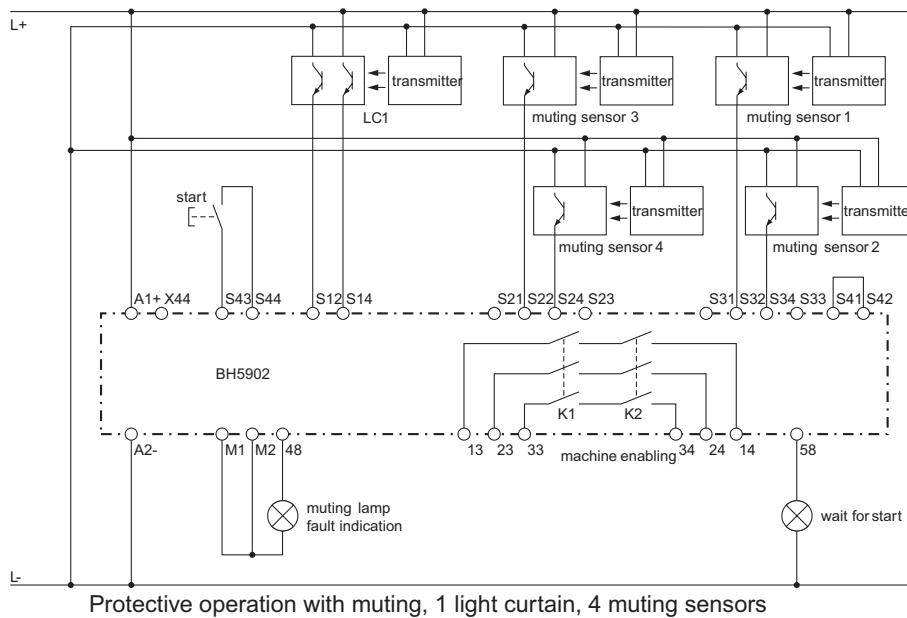


Protective operation with muting a light curtain via 2 muting sensors, 2 light curtains

**Note: When switching inductive loads, surge suppressors are recommended.*

Dold Safety Relays – Multi-Function Light Curtain Controller

Applications



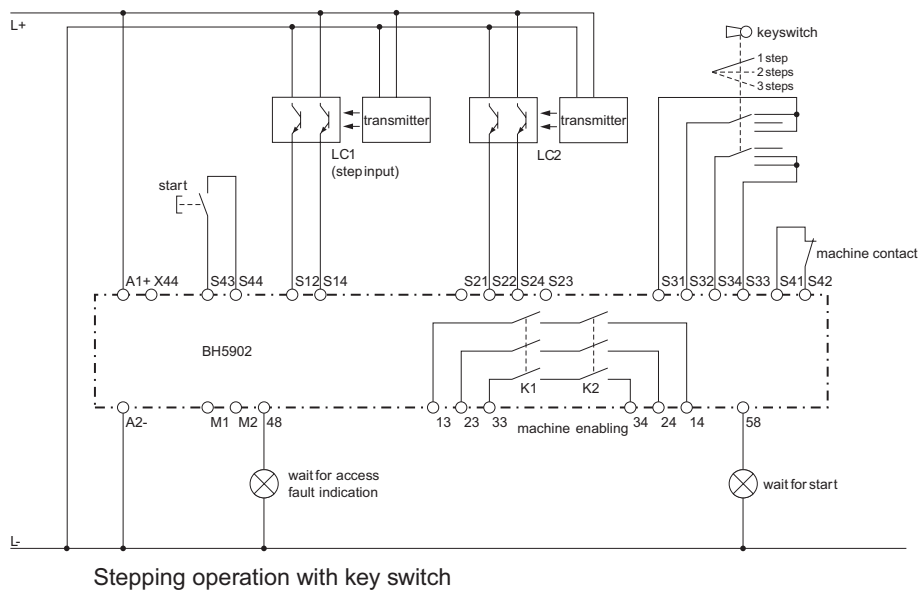
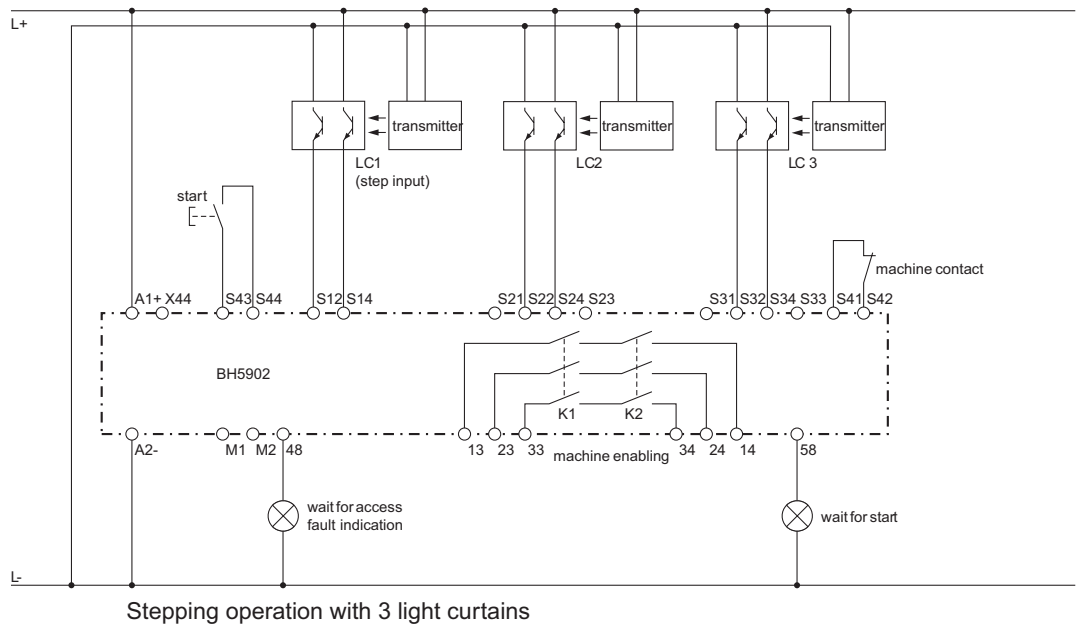
Contact reinforcement

If external relays or contactors are used to reinforce or multiply the contacts of the safety relays, these must be monitored by feeding back one N.C. contact from each relay/contactors into the feedback inputs.

**Note: When switching inductive loads, surge suppressors are recommended.*

Dold Safety Relays – Multi-Function Light Curtain Controller

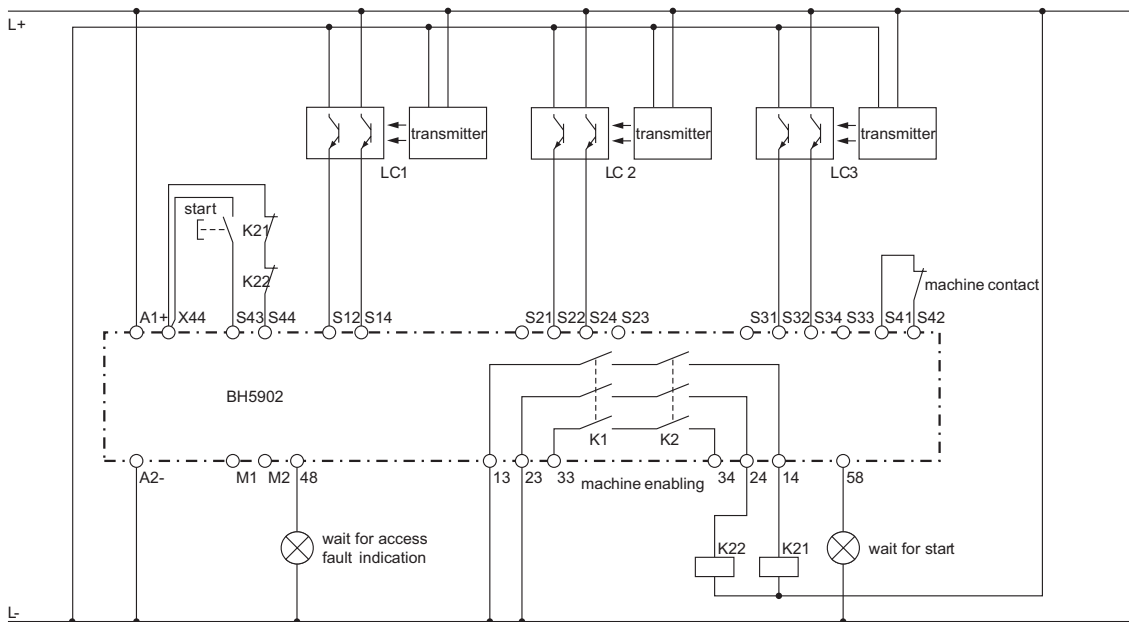
Applications



**Note: When switching inductive loads, surge suppressors are recommended.*

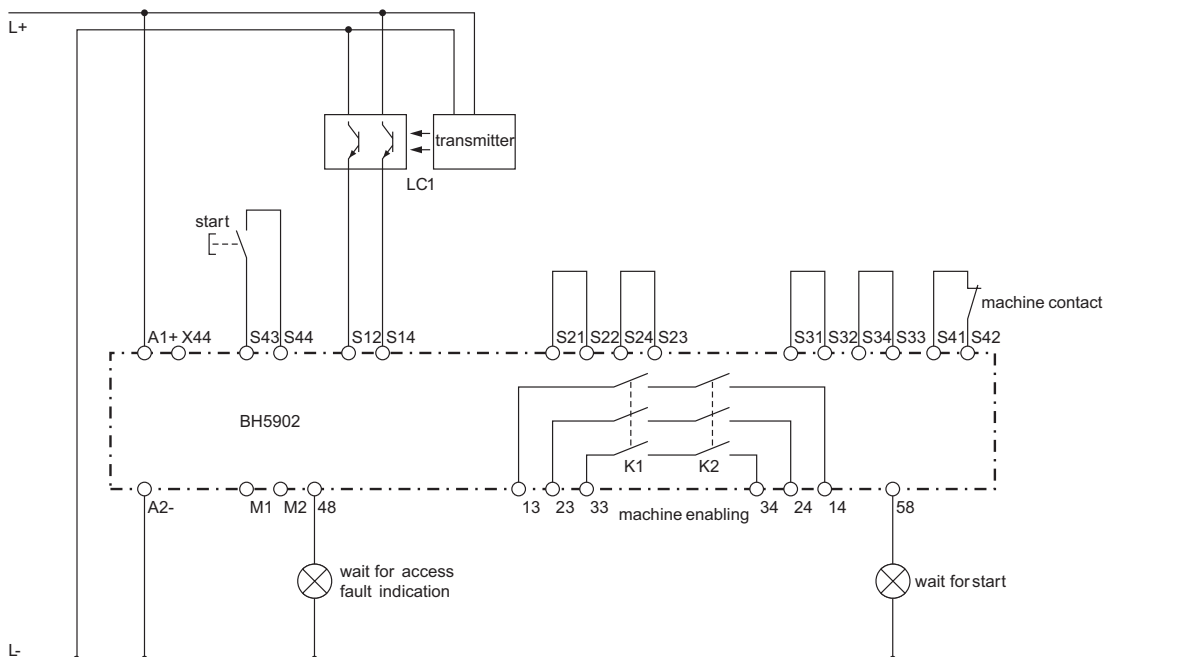
Dold Safety Relays – Multi-Function Light Curtain Controller

Applications



Stepping operation with 3 light curtains and contact reinforcement by external contactors, 2-channel operation (switching of feedback input can also be used at protective operation with muting)

The feedback circuit of the external relays is only tested when the module is started by pressing the pushbutton. When using this circuit, the safe function has to be tested at regular intervals. This can be done by interrupting a light curtain so that a reset requires activation of the START button. Activating the module is only possible when all external relays are de-energized.



Stepping operation with one light curtain (with all operating modes, unused inputs must be jumpered).

**Note: When switching inductive loads, surge suppressors are recommended.*

Dold Safety Relays – Light Curtain Controller



Designed to protect people and machinery in applications with light curtains.

- For light curtains with symmetric or asymmetric outputs, adjustment with switch S1
- Output: 3 N.O. and 1 N.C. contacts
- Line fault detection for **ON**-button
- LED indicators for power and state of operation
- Single and 2-channel operation

Safety Data – Values per EN ISO 13849-1	
Category	4 according to EN 954-1
Performance level	PLe according to EN 13849-1
MTTF _d	584.5 years
DC _{avg}	99%
Safety Data – Values per IEC/EN 62061 /IEC/EN 61508	
SIL CL	3 per IEC/EN 62061
SIL	3 per IEC/EN 61508
HFT (Hardware Failure Tolerance)	1
DC _{avg}	99%
SFF	99.7%
PFFH _D	2.66E-10 h ⁻¹

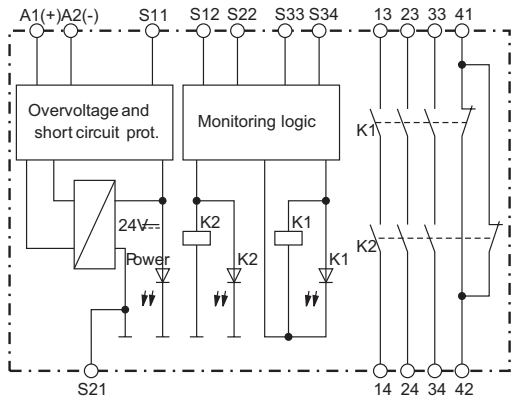
Safety Relays Selection Chart				
Part Number	Price	Marking Type	Voltage	Outputs
LG5925-48-900-61	<--->	Light curtain controller, 2-channel	24 VDC	3 N.O. and 1 N.C.

2-Channel Light Curtain Controller Specification Table	
General Specifications	
Temperature	Storage: -25°C to 85°C (-13°F to 185°F) Operating: -15°C to 55°C (5°F to 131°F)
Altitude	< 2,000 meters
Vibration Resistance	Amplitude: 0.35mm, Frequency: 10 to 55 Hz (IEC/EN 60-068-2-6)
Degree of Protection	Per IEC/EN 60 529. Housing: IP40; Terminals IP20
Housing	UL 94V-0 Thermoplastic; Din mount 35 mm x 7.5 mm
Weight	220 g (7.76 oz.)
Agency Approvals and Standards	cULus file E107778, CE, RoHS, TUV
Terminal Designation per EN 50 005 Wire Connections	1x4 mm ² solid or 1 x 2.5 mm ² stranded ferruled (isolated) or 2 x 1.5 mm ² stranded ferruled (isolated) DIN 46 228-1/-2/-3/-4 or 2 x 2.5 mm ² stranded ferruled DIN 46 228-1/-2/-3
Wire Fixing	Terminal screws M3.5 box terminals with wire protection or cage clamp terminals.
Input Specifications	
Nominal Voltage	24V DC
Voltage Range	At 5% residual ripple: 0.9 to 1.1 U _N
Maximum Consumption	DC approx. 1.7 W
Control Voltage - S11	U _N : 22.5V DC
Control Current on S12, S22	35 mA at U _N
Minimum Voltage on Terminals S12, S22(when relay activated)	21V DC
Short Circuit Protection	Internal with PTC (Positive Temperature Coefficient resistor)
Oversvoltage Protection	Internal VDR (Voltage Dependent Resistor)
Output Specifications	
Electrical Contact Life	To 5 A, AC 230V: >.5 x 10 ⁵ switching cycles IEC/EN 60 947-5-1
Mechanical Life	20 x 10 ⁶ switching cycles
Contact Type	3 N.O. positively driven and 1 N.C. relay contacts, (N.O. contacts are safety contacts)
Operate Delay	Operate delay typ at U _N : manual start 20 ms; automatic start: 350 ms.
Release Delay	Release delay typ. at U _N : Disconnecting the supply: 20 ms.; Disconnecting S12, S22: 15 ms.
Nominal Output Voltage	AC: 250V; DC: See continuous current limit curve in installation manual.
Thermal Current (I _{th})	Max. 8A per contact. See continuous current limit curve in installation manual.
Switching of Low Loads	≥100 mV; (contacts with 5μ Au) ≥ 1 mA
Short Circuit Strength	Max fuse rating:10A gl (IEC/EN 60 9470-5-1); Line circuit breaker: B 6 A
Switching Capacity	AC 15: N.O. contacts: 3A/230V; N.C. contacts: 2A/230V AC DC 13: N.O. contacts: 4A/24V AC, 0.5A/110V AC; N.C. contacts: 4A/24V DC
Switching Frequency	Max. 1,200 switching cycles/hr

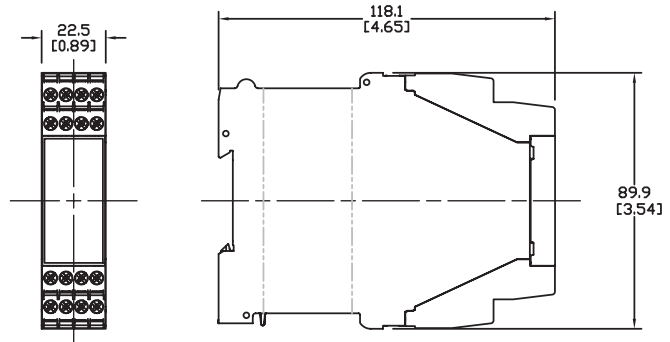
Dold Safety Relays – Light Curtain Controller

Wiring

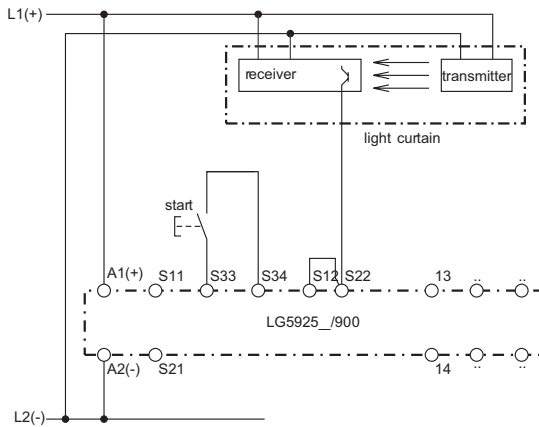
LG5925-48-900-61 Block Diagram



Dimensions mm [in]



Applications



Single channel connection of light curtains with self-test according to EN 61 496-1.

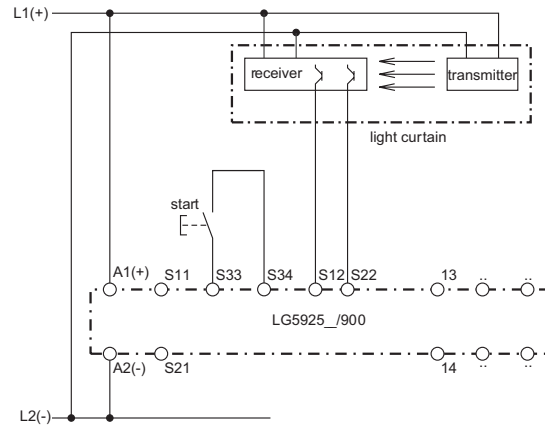
Note: Refer to "Unit programming"

Set switch or dip switches in position:

S1 "without"

S2 "manual"

With autostart link S33 - S34 set to "automatic."



2 channel connection of light curtains with self-test according to EN 61 496-1.

Cross fault detection in the light curtain.

Note: Refer to "Unit programming"

Set switch or dip switches in position:

S1: With symmetric outputs on light curtain, switch S1 in position "without."

With asymmetric outputs on light curtains, switch S1 in position "with."

S2: "manual"

Contact reinforcement and contact extension by external contactors

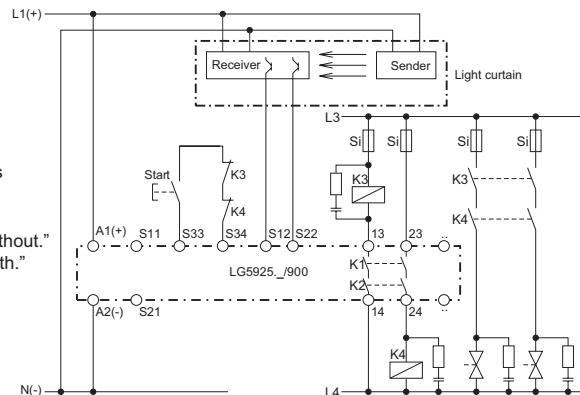
Note: Refer to "Unit programming"

Set switches or dip switches in position:

S1: With symmetric outputs on light curtain, switch S1 in position "without."

With asymmetric outputs on light curtains, switch S1 in position "with."

S2: "manual"



*Note: When switching inductive loads, surge suppressors are recommended.

Dold LG5929 Extension Module



Additional contacts for emergency-stop modules and safety gate monitors.

- 1-channel or 2-channel connection
- LED indication for operation
- Output: 5 N.O. and 1 N.C. contacts

Safety Data – Values per EN ISO 13849-1	
Category	4 according to EN 954-1
Performance level	PLe according to EN 13849-1
MTTF _d	>100 years
DC _{avg}	99%
Safety Data – Values per IEC/EN 62061 / IEC/EN 61508	
SIL CL	3 per IEC/EN 62061
SIL	3 per IEC/EN 61508
HFT (Hardware Failure Tolerance)	1
DC _{avg}	99%
SFF	99.7%
PFH _D	4.68E-10 h ⁻¹

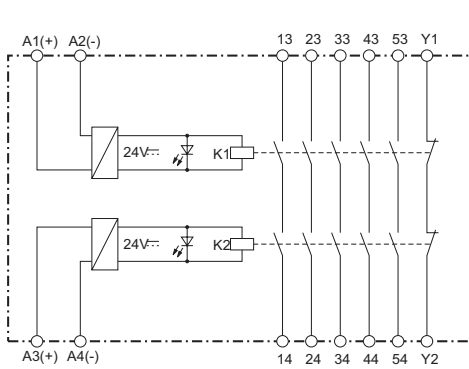
Safety Relays Selection Chart				
Part Number	Price	Marking Type	Voltage	Outputs
LG5929-60-100-61	<--->	Safety relay extension module	24 VAC/VDC	5 N.O./1 N.C.

Safety Relay Extension Module Specification Table	
General Specifications	
Temperature	Storage: -25°C to 85°C (-13°F to 185°F) Operating: -15°C to 55°C (5°F to 131°F)
Altitude	< 2,000 meters
Vibration Resistance	Amplitude: 0.35mm, Frequency: 10 to 55 Hz (IEC/EN 60-068-2-6)
Degree of Protection	Per IEC/EN 60 529. Housing: IP40; Terminals IP20
Housing	UL 94V-0 Thermoplastic; Din mount 35 mm x 7.5 mm
Weight	205g (7.23 oz.)
Agency Approvals and Standards	CSA, cULus file E107778, CE, RoHS, TUV
Terminal Designation per EN 50 005 Wire Connections	1x4 mm ² solid or 1 x 2.5 mm ² stranded ferruled (isolated) or 2 x 1.5 mm ² stranded ferruled (isolated) DIN 46 228-1/-2/-3/-4 or 2 x 2.5 mm ² solid per DIN 46 228-1/-2/-3 /-4
Wire Fixing	Plus-minus terminal screws M3.5 box terminals with wire protection or cage clamp terminals.
Input Specifications	
Nominal Voltage	24V AC/DC
Voltage Range	AC: 0.85 to 1.1 U _N At 10% residual ripple: 0.9 to 1.1 U _N ; At 48% residual ripple: 0.85 to 1.1 U _N
Maximum Consumption	24VAC/DC: 1.8VA
Nominal Frequency	50 to 60 Hz
Control Current	Control current typ. at 24V over 2 relays: 75 mA
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)
Output Specifications	
Electrical Contact Life	To AC15 at 2 A, 230V: 10 ⁵ switching cycles IEC/EN 60 947-5-1
Mechanical Life	20 x 10 ⁶ switching cycles
Contact Type	5 N.O. positively driven and 1 N.C. relay contacts (N.O. contacts are safety contacts)
Operate/Release Time	Operate typ at U _N : 20 ms.; Release typ at U _N : 35 ms.
Nominal Output Voltage	250VAC
Thermal Current (I_{th})	Max. 5A per contact. See continuous current limit curve in installation manual.
Short Circuit Strength	Max fuse rating: 10A gl (IEC/EN 60 9470-5-1); Line circuit breaker: B6A
Switching Capacity IEC/EN 60 947-5-1	AC 15: N.O. contacts: 3A/230V; N.C. contacts: 2A/230VAC DC 13: N.O. contacts: 4A/24V; N.C. contacts: 4A/24VDC; N.O. contact: 8A/24V >25x10 ³ ON: 0.4s, OFF: 9.6s
Switching Frequency	Max. 1,200 switching cycles/hr

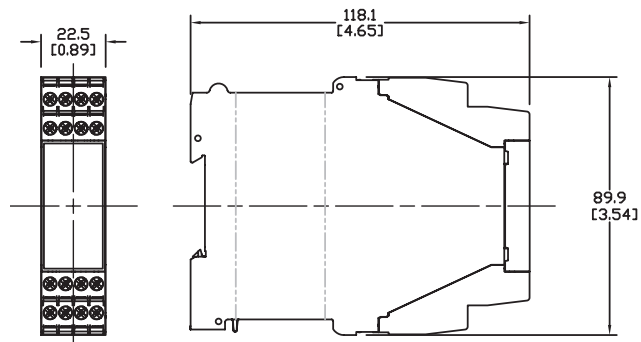
Dold LG5929 Extension Module

Wiring

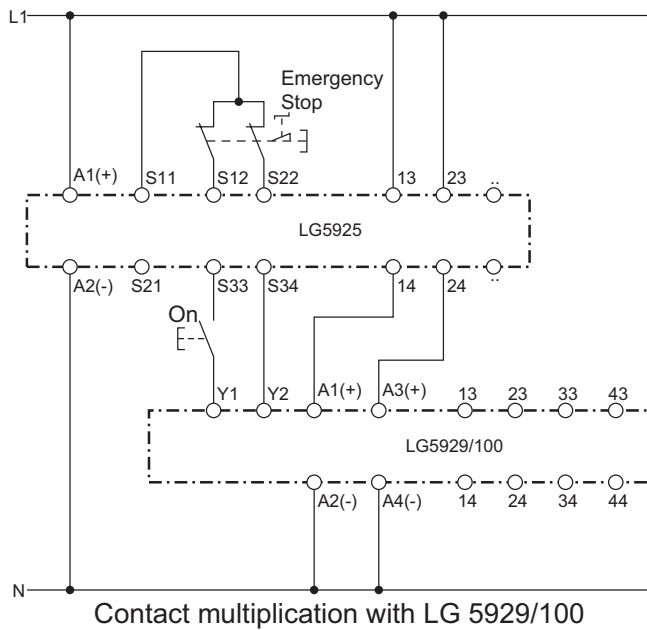
LG5929 Block Diagram



Dimensions mm [in]



Applications



**Note: When switching inductive loads, surge suppressors are recommended.*

Dold BH5932 Speed Monitor Relays



BH5932 speed monitoring safety relay modules use inputs from proximity sensors that are detecting rotating targets on the motor that needs monitoring.

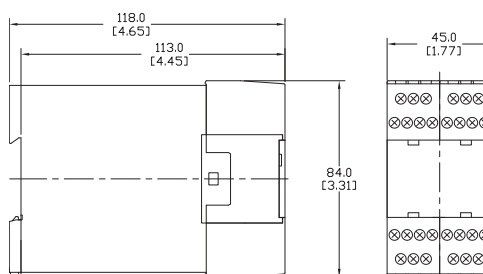
- Energized when speed is under setting value
- Two PNP sensor inputs
- 10 to 20,000 IPM (impulses per minute) adjustable range
- Monitors rotation and linear movement
- 2-channel operation for standstill and over-speed monitoring
- 2 N.O. and 1 N.C. positive-guided contacts
- LED status indicators

Safety Data – Values per EN ISO 13849-1	
Category	3 according to EN 954-1
Performance level	PL _e according to EN 13849-1
MTTF _d	>273 years
DC _{avg}	99%
Safety Data – Values per IEC/EN 62061 / IEC/EN 61508	
SIL CL	3 per IEC/EN 62061
SIL	3 per IEC/EN 61508
HFT (Hardware Failure Tolerance)	1
DC _{avg}	99%
SFF	99.7%
PFFH _D	1.69E-10 h ⁻¹

Safety Speed Monitor Relays Selection Chart				
Part Number	Price	Marking Type	Voltage	Outputs
BH5932-22-113-24	<--->	Speed-monitoring safety relay module	24 VAC/VDC	2 N.O. and 1 N.C.
BH5932-22-113-120	<--->		120 VAC	
BH5932-22-113-230	<--->		230 VAC	

Safety Speed Monitor Relay Module Specification Table	
General Specifications	
Temperature	Storage: -25°C to 85°C (-13°F to 185°F) Operating: -25°C to 60°C (-13°F to 140°F)
Altitude	< 2,000 meters
Vibration Resistance	Amplitude: 0.35mm, Frequency: 10 to 55 Hz (IEC/EN 60-068-2-6)
Degree of Protection	Per IEC/EN 60 529. Housing: IP40; Terminals IP20
Housing	UL 94V-0 Thermoplastic; Din mount 35 mm x 7.5 mm
Weight	410g (14.46 oz.)
Agency Approvals and Standards	cULus file E107778, CE, RoHS
Terminal Designation per EN 50 005 Wire Connections	1x4 mm ² solid or 1 x 2.5 mm ² stranded ferruled (isolated) or 2 x 1.5 mm ² stranded ferruled (isolated) DIN 46 228-1/-2/-3/-4 or 2 x 2.5 mm ² solid per DIN 46 228-1/-2/-3 /-4
Wire Fixing	Plus-minus terminal screws M3.5 box terminals with wire protection. Torque 0.8 Nm (7 lb-in)
Input Specifications	
Nominal Voltage	24V AC/DC, 110 VAC, 239VAC
Voltage Range	AC: 0.85 to 1.1 U _N . At 10% residual ripple: 0.9 to 1.1 U _N . At 48% residual ripple: 0.85 to 1.1 U _N DC: 0.9 to 1.1 U _N . At 10% residual ripple: 0.9 to 1.1 U _N . At 48% residual ripple: 0.85 to 1.1 U _N
Nominal Consumption	ca. 4 VA, 2.5W
Nominal Frequency	50 to 60 Hz. Frequency range: 45 to 65 Hz
Control Current	Control current typ. at 24V over 2 relays: 75 mA
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)
Sensor Inputs	24 VDC; 25 mA max./3 mA min. per channel.; 1 ms On/1ms Off min. pulse time; 30,000 lpm max. at inputs IN _A and IN _B
Output Specifications	
Electrical Contact Life	To AC15 at 2 A, 230V: 3x10 ⁵ switching cycles IEC/EN 60 947-5-1
Mechanical Life	≥50 x 10 ⁶ switching cycles
Contact Type	2 N.O. positively driven and 1 N.C. relay contacts (N.O. contacts are safety contacts)
Operate Delay on Standstill	Depends on setting; see manual and supplement
Release Delay on Overspeed	t _{off} = typ. 350 ms
Nominal Output Voltage	250VAC
Thermal Current (I_{th})	Max. 4A per contact. See continuous current limit curve in installation manual.
Short Circuit Strength	Max fuse rating: 4A gl (IEC/EN 60 9470-5-1)
Switching Capacity IEC/EN 60 947-5-1	AC 15: N.O. contacts: 3A/230V; N.C. contacts: 2A/230VAC
Switching Frequency	Max. 1,200 switching cycles/hr

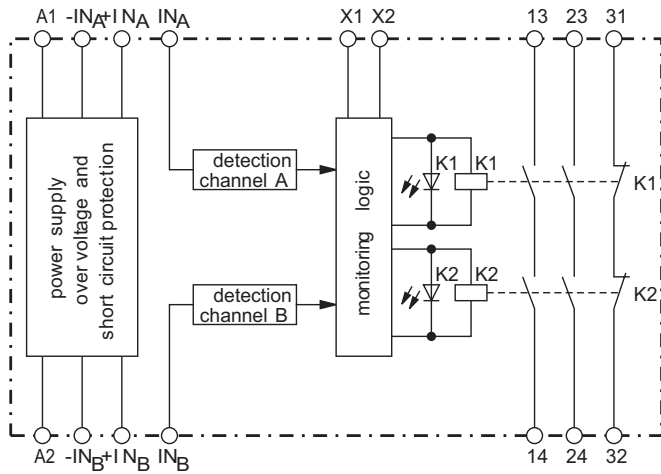
Dimensions mm [in]



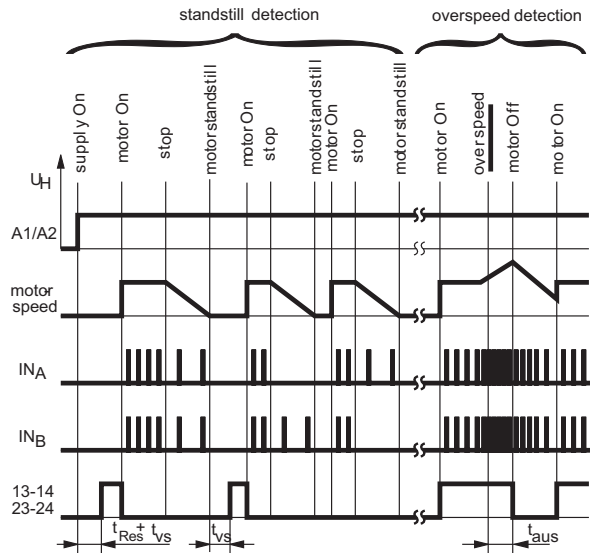
Dold BH5932 Speed Monitor Relays

Wiring

BH5932 Block Diagram



Function diagram

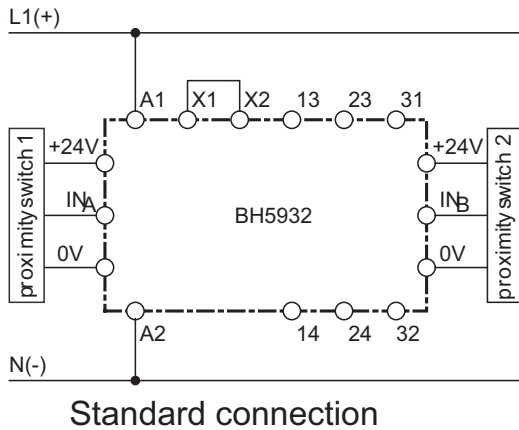


INA : proximity switch A
INB : proximity switch B

t_{Res} : reset time after connection of supply voltage
 t_{vs} : operate delay after detection of standstill/underspeed
 t_{aus} : release delay after detection of overspeed

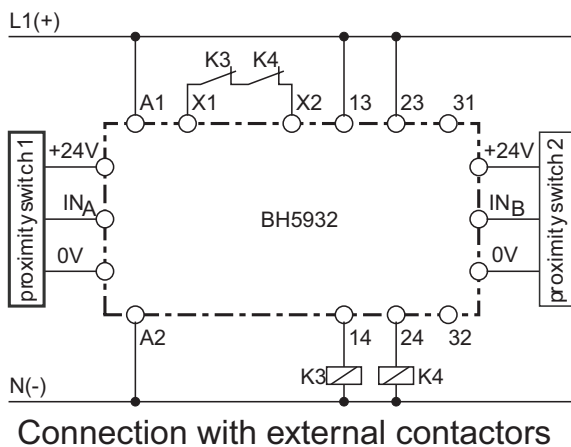
Application

Two PNP Proximity Sensors Monitoring a 3-Phase Motor



Connection Terminals

Terminal designation	Signal designation
A1 (+)	+ / L
A2	- / N
X1, X2	Feedback circuit
+24V	+ supply for proximity sensors 1 e. g. 2
0V	- supply for proximity sensors 1 e. g. 2
INA, INB	measuring output of proximity sensors 1 e. g. 2
13, 14, 23, 24	Positive driven NO contacts for release circuit
31, 32	Positive driven NC contacts for release circuit



Dold LH5946 Standstill Monitor Relays



LH5946 speed monitoring safety relay modules provide safe standstill detection on 3-phase and single-phase motors by monitoring remanence voltage.

- Can monitor motor voltages up to 690 VAC or VDC
- No external sensors necessary
- Independent of direction
- Broken wire detection
- Monitors rotation and linear movement

- 2-channel operation for standstill and over-speed monitoring
- 3 N.O. and 1 N.C. positive-guided safety contacts
- LED status indicator
- Adjustable voltage setting
- Adjustable standstill time delay
- Semi-conductor outputs for monitoring

Safety Standstill Monitor Relays Selection Chart					
Part Number	Price	Marking Type	Voltage Monitor Range	Voltage	Outputs
LH5946-48-24-04	<--->	Standstill-monitoring safety relay module	20mV to 400mV	24 VDC	3 N.O./1 N.C.
LH5946-48-115-04	<--->			115 VAC	
LH5946-48-230-04	<--->			230 VAC	
LH5946-48-24-40	<--->		200mV to 4V	24 VDC	
LH5946-48-115-40	<--->			115 VAC	
LH5946-48-230-40	<--->			230 VAC	

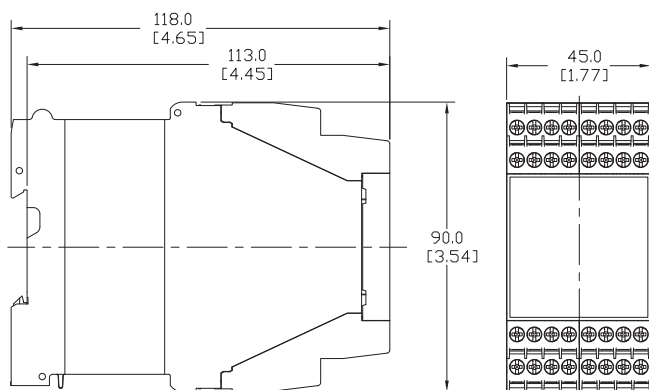
Note: The -04 models are recommended for applications where motors are controlled directly from contactors. The -40 models are recommended for applications involving VFDs or soft starters where OFF-state leakage is present and higher voltage settings are required.

Safety Data – Values per EN ISO 13849-1	
Category	4 according to EN 954-1
Performance level	PLe according to EN 13849-1
MTTF _d	>93 years
DC _{avg}	99%
Safety Data – Values per IEC/EN 62061 / IEC/EN 61508	
SIL CL	3 per IEC/EN 62061
SIL	3 per IEC/EN 61508
HFT (Hardware Failure Tolerance)	1
DC _{avg}	99%
SFF	99.7%
PFH _D	4.10E-10 h ⁻¹

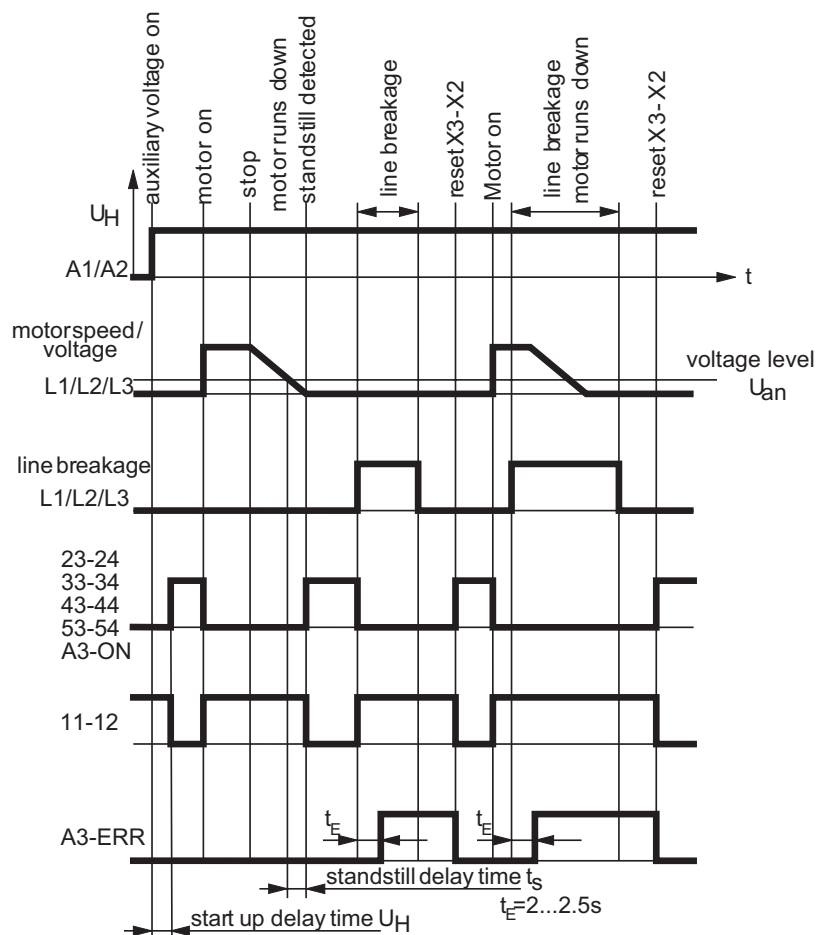
Safety Standstill Monitor Relays Specification Table																			
General Specifications																			
Temperature	Storage: -40°C to 75°C (-40°F to 167°F) Operating: -25°C to 60°C (-13°F to 140°F)																		
Altitude	< 2,000 meters																		
Vibration Resistance	Amplitude: 0.35mm, Frequency: 10 to 55 Hz (IEC/EN 60-068-2-6)																		
Degree of Protection	Per IEC/EN 60 529. Housing: IP40; Terminals IP20																		
Housing	UL 94V-0 Thermoplastic; Din mount 35 mm x 7.5 mm																		
Weight	400g (14.11 oz.)																		
Agency Approvals and Standards	cULus file E107778, CE, RoHS, TUV																		
Terminal Designation per EN 50 005 Wire Connections	1x4 mm ² solid or 1 x 2.5 mm ² stranded ferruled (isolated) or 2 x 1.5 mm ² stranded ferruled (isolated) DIN 46 228-1/-2/-3/-4 or 2 x 2.5 mm ² solid per DIN 46 228-1/-2/-3 /-4																		
Wire Fixing	Plus-minus terminal screws M3.5 box terminals with wire protection. Torque 0.8 Nm (7 lb-in)																		
Input Specifications																			
Nominal Voltage	24V DC, 115 V AC, 230V AC																		
Measuring/Motor Voltage	690 V																		
Input Resistance	500 k ohms																		
Response Value U _{an}	20 mV to 400 mV, adjustable or 0.2 to 4V adjustable																		
Response Value Dependent on Frequency	<table border="1"> <thead> <tr> <th>Input Frequency (Hz)</th> <th>50</th> <th>100</th> <th>200</th> <th>400</th> <th>600</th> <th>1k</th> <th>1.5k</th> <th>2k</th> </tr> </thead> <tbody> <tr> <td>Response Value U_{an}</td> <td>1.0</td> <td>1.1</td> <td>1.2</td> <td>1.5</td> <td>2.0</td> <td>2.8</td> <td>5</td> <td>8</td> </tr> </tbody> </table>	Input Frequency (Hz)	50	100	200	400	600	1k	1.5k	2k	Response Value U _{an}	1.0	1.1	1.2	1.5	2.0	2.8	5	8
Input Frequency (Hz)	50	100	200	400	600	1k	1.5k	2k											
Response Value U _{an}	1.0	1.1	1.2	1.5	2.0	2.8	5	8											
Voltage Range	AC: 0.8 to 1.1 U _N . At 10% residual ripple: 0.9 to 1.1 U _N . At 48% residual ripple: 0.85 to 1.1 U _N DC: 0.9 to 1.2 U _N . At 10% residual ripple: 0.9 to 1.1 U _N . At 48% residual ripple: 0.85 to 1.1 U _N																		
Nominal Consumption	ca. 5 VA, 3W																		
Nominal Frequency	50 to 60 Hz. Frequency range: 45 to 65 Hz																		
Control Current	Control current typ. at 24V over 2 relays: 75 mA																		
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)																		
Output Specifications																			
Electrical Contact Life	To AC15 at 2 A, 230V: 2x10 ⁵ switching cycles IEC/EN 60 947-5-1																		
Mechanical Life	≥50 x 10 ⁶ switching cycles																		
Contact Type	3 N.O. positively driven and 1 N.C. relay contacts (N.O. contacts are safety contacts)																		
Operate Delay on Standstill	Depends on setting; adjust by potentiometer																		
Release Delay on Overspeed	t _{off} = typ. 700 ms																		
Nominal Output Voltage	250VAC																		
Thermal Current (I _{th})	Max. 5A per contact. See continuous current limit curve in installation manual.																		
Short Circuit Strength	Max fuse rating: 4A gl (IEC/EN 60 9470-5-1), line circuit breaker C6A																		
Switching Capacity IEC/EN 60 947-5-1	AC 15: N.O. contacts: 3A/230V; N.C. contacts: 2A/230VAC. DC13: 2A/24V																		
Switching Frequency	Max. 1,200 switching cycles/hr																		
Semi-conductor Monitoring	100 mA DC 24V; supply via A3+/A4																		

Dold LH5946 Standstill Monitor Relays

Dimensions mm [in]

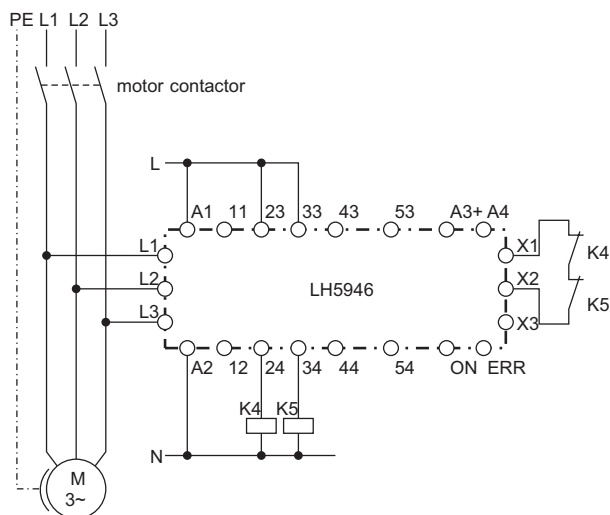


Function diagram

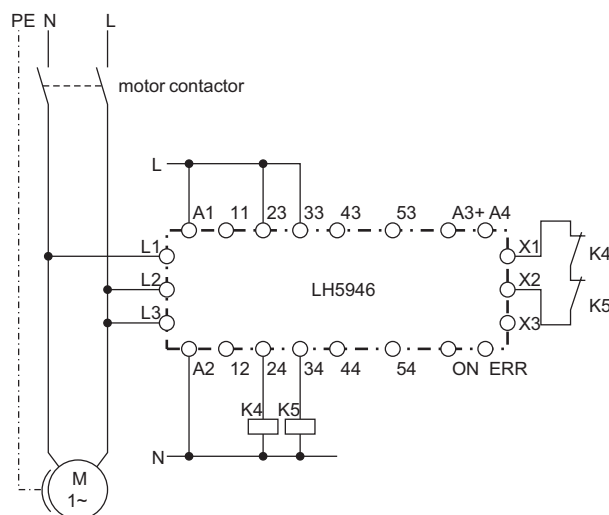


Dold LH5946 Standstill Monitor Relays

Applications



With 3-phase motor



With single-phase motor

Connection terminals

Terminal designation	Signal designation
L1 - L2 - L3	Connection to monitored motor
11 - 12	Safety contacts (NC)
23 - 24, 33 - 34, 43 - 44	Safety contacts (NO)
53 - 54	Monitoring contact (NO)
X1 - X2	Connection of feedback circuit (for external contactors)
X2 - X3	Manual reset for external faults
A1 - A2	Auxiliary supply (U_H)
A3(+)- A4	Supply for semiconductor outputs
ON:	Semiconductor output indicates state of safety contacts
ERR:	Semiconductor output indicates failures
Attention: The outputs 53-54, ON and ERR are only monitoring outputs and must not be used in safety circuits	

Setting

Poti „ U_{an} “:	Adjustment of voltage level for standstill detection
Poti „ t_s “:	Adjustment of time delay before activation of safety contacts

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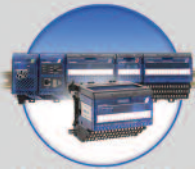
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Wearable Safety Gear

SAFETY meets STYLE

Ultra-Flex TR90 frame and temple material



STYLES

Safety Glasses

- Standard
- Readers
- Foam-lined
- Polarized
- Over-the-glasses

Dupont® Zytel ST
Makrolon® Grilamid TR90®
Panlite® L1250VX



Lens quality and performance meet or exceed ANSI Z87 2010 standards

Crosstech gel temple grips

Lens cavities are designed for superior peripheral sight and maximum eye protection

Crosstech gel nosepieces

Temples are designed to gently curve with the natural shape of the head resulting in a snug and comfortable fit

Frames are designed at an 8 to 10 base curve resulting in maximum side coverage and superior peripheral vision

- General purpose
- Anti-static, pre-washed
- Puncture and cut resistant
- Puncture-resistant with knuckle padding
- Cut-resistant, polyurethane-coated or rubber-coated
- Arc flash-rated, cut resistant, full leather
- Mechanic style, cowhide leather palm
- 18-inch ambidextrous arm protective sleeves

STYLES

Industrial Work Gloves



Safety Eyewear

Features



- All Crossfire lenses meet or exceed ANSI Z87+ requirements for safety eyewear.
- All foam-lined frames use closed-cell Ethylene Vinyl Acetate 35 (EVA 35) which is fire-retardant, non-absorbent and resistant to material breakdown from perspiration.
- Select styles feature de-centered cut lenses, resulting in 100% visual accuracy.
- Bayer's Makrolon[®] polycarbonate or Grilamid[®] TR90 materials provide lightweight, stress-resistant and outstanding impact strength to select Crossfire safety glasses.
- Thermoplastic rubber (TPR) provides maximum durability, hypoallergenic non-slip comfort to select nose pieces and temples.
- Panlite[®] L1250VX polycarbonate lenses provide superior optical quality and impact protection while blocking 99.9% of harmful UVA and UVB rays. (Polycarbonate lenses should not be exposed to temperatures in excess of 200°F.)

Frame construction offered in full, 3/4, 1/2 or frameless based on style.

- Full frame indicates the lens is completely supported by the frame.
- 3/4 frame indicates a majority of the frame is supporting the lens.
- 1/2 frame indicates the lens is supported by the top portion of the frame and no lower frame is present.
- Frameless designs have the hinges mounted directly to a solid lens.

Style Categories

Standard

- Infinity
- RPG
- Core
- KP6
- ES4
- ES5
- Cobra
- Sniper
- Viper
- Blade
- Mini-Blade

Foam-lined

- Eclipse
- MP7
- Raptor
- Diamondback
- Concept
- Shield
- Element

Over-the-glass

- OG3

Readers

- ES5

Polarized





- Infinity
- RPG
- Core
- ES4
- ES5
- Sniper
- MP7

Accessories

- Microfiber storage bag
- Black cloth zipper pouch
- Adjustable string cord (for all) and strap (Eclipse only)

LENS SELECTION GUIDE

TRANSMISSION (Typical)

	Smoke: The perfect all-around tint for normal outdoor conditions.	18% of light passes through
	Colored Mirror: The mirrored surface over a smoke base lens diminishes glare by absorbing reflection across the mirror surface. Good for bright outdoor conditions.	16% of light passes through
	Silver Mirror: Similar to a smoke lens, but has the added mirror coating which filters more light, further reducing the glare. Ideal for bright outdoor conditions.	16% of light passes through
	HD Brown: Filters blue light which can cause eye fatigue and a haze effect. Use in normal to bright outdoor conditions.	22% of light passes through
	Indoor/Outdoor: Offers protection from the glare of bright artificial lighting and sunlight. Great for indoor and outdoor use.	50% of light passes through
	Clear: Allows maximum light transmission without changing or distorting sight or colors. Suitable for indoor or low light conditions.	91% of light passes through
	Yellow: Enhances available light. Appropriate for low light conditions in both indoor and outdoor environments.	80% of light passes through
	Orange: Enhances available light. Made for low light conditions in both indoor and outdoor environments.	80% of light passes through
	Ice Blue lens: Counteracts the effects of yellow light which cause glare and eye stress. Used in high yellow light conditions (fluorescent lighting).	80% of light passes through
	Polarized: Filters bent light caused by reflection, reducing glare and eye fatigue. Suitable for sunny outdoor conditions.	18% of light passes through
	HD Copper: Enhances available light. Made for low light conditions in both indoor and outdoor environments.	25% of light passes through
	HD Green: Filters blue light which can cause eye fatigue and a haze effect. Use in normal to bright outdoor conditions.	20% of light passes through



Infinity Style Safety Eyewear

Features

- ANSI Z87.1.2010 rated
- Full frame
- Lightweight, shatterproof, polycarbonate lenses
- De-centered cut lens for superior optical quality
- Scratch-resistant coating
- Microfiber storage bag included with single-piece part numbers only
- Accessories sold separately


SG-2243

SG-2244

SG-2254

SG-22528

SG-224

Cobra Safety Eyewear Specifications

Part Number	SG-2243	SG-2244	SG-2254	SG-22528	SG-224	SG-224-12
Price	<--->	<--->	<--->	<--->	<--->	<--->
Pieces/package	1	1	1	1	1	12
Frame Color	Pearl White	Pearl White	Pearl Pink	Pearl Pink	Shiny Pearl Gray	Shiny Pearl Gray
Lens Color	Silver Mirror	Clear	Clear	Smoke	Clear	Clear
Lens Features	-	-	-	-	-	-
Material						
Frame	Full frame, TR90 ThermoPlastic					
Lens	Polycarbonate					
Nosepiece	TPR (ThermoPlastic Rubber)					
Temple Width	126 mm					
Light Transmission % (True tested values)	16	91	91	18	91	91
UV Blocking Transmission %	99.9					
Agency Approvals	ANSI Z87.1.2010					


SG-241

SG-2117

SG-2812

SG-21126

SG-263

Cobra Safety Eyewear Specifications

Part Number	SG-241	SG-2117	SG-2812	SG-21126	SG-263
Price	<--->	<--->	<--->	<--->	<--->
Pieces/package	1	1	1	1	1
Frame Color	Crystal Black	Crystal Brown	Orange and Black	Crystal Brown	Shiny Black
Lens Color	Smoke	Brown Flash Mirror	Gold Mirror	Brown	Silver Mirror
Lens Features	-	HD	-	Polarized, HD	-
Material					
Frame	Full frame, TR90 ThermoPlastic				
Lens	Polycarbonate				
Nosepiece	TPR (ThermoPlastic Rubber)				
Temple Width	126 mm				
Light Transmission % (True tested values)	18	20	16	20	16
UV Blocking Transmission %	99.9				
Agency Approvals	ANSI Z87.1.2010				



RPG Style Safety Eyewear

Features

- ANSI Z87.1.2010 rated
- Full frame
- Lightweight, shatterproof, polycarbonate lenses
- De-centered cut lens for superior optical quality
- Scratch-resistant coating
- Microfiber storage bag included
- Accessories sold separately



SG-23615



SG-23421



SG-23233



SG-23125



SG-23226

RPG Safety Eyewear Specifications					
Part Number	SG-23615	SG-23421	SG-23233	SG-23125	SG-23226
Price	<--->	<--->	<--->	<--->	<--->
Pieces/package	1	1	1	1	1
Frame Color	Shiny Pearl Gray	Crystal Black	Shiny Black and Pearl Red	Burnt Orange	Matte Black
Lens Color	Indoor/Outdoor	Smoke	Silver Mirror	Demi-copper Flash Mirror	Blue Mirror
Lens Features	-	-	-	HD	HD Polarized
Material					
Frame	Full frame, TR90 ThermoPlastic with TPR Temples				
Lense	Polycarbonate				
Nosepiece	TPR (ThermoPlastic Rubber)				
Temple Width	132 mm				
Light Transmission % (True tested values)	50	18	16	23	20
UV Blocking Transmission %	99.9				
Agency Approvals	ANSI Z87.1.2010				



Core Style Safety Eyewear

Features

- ANSI Z87.1.2010 rated
- 3/4 frame
- Lightweight, shatterproof, polycarbonate lenses
- De-centered cut lens for superior optical quality
- Scratch-resistant coating
- Microfiber storage bag included with single piece part numbers only
- Accessories sold separately



SG-1864



SG-18615



SG-1821



SG-18117



SG-18146



SG-181212



SG-181813

Core Safety Eyewear Specifications

Part Number	SG-1864	SG-1864-12	SG-18615	SG-18615-12	SG-1821	SG-18117	SG-18146	SG-181212	SG-181813
Price	<--->	<--->	<--->	<--->	<--->	<--->	<--->	<--->	<--->
Pieces/package	1	12	1	12	1	1	1	1	1
Frame Color	Shiny Pearl Gray	Shiny Pearl Gray	Shiny Pearl Gray	Shiny Pearl Gray	Matte Black	Crystal Brown	Woodland Brown Camo	Emerald Pearl	Mocha Brown
Lens Color	Clear	Clear	Indoor/Outdoor	Indoor/Outdoor	Smoke	Brown Flash Mirror	Brown	Gold Mirror	Brown
Lens Features	Anti-fog	Anti-fog	-	-	-	HD	HD	-	HD Polarized
Material									
Frame	3/4 frame, Polycarbonate with TPR Temples								
Lens	Polycarbonate								
Nosepiece	TPR (ThermoPlastic Rubber)								
Temple Width	130 mm								
Light Transmission % (True tested values)	91	91	50	50	18	20	22	16	22
UV Blocking Transmission %	99.9								
Agency Approvals	ANSI Z87.1.2010								



KP6 Style Safety Eyewear

Features

- ANSI Z87.1.2010 rated
- 3/4 frame
- Scratch-resistant coating
- Microfiber storage bag included with single piece part numbers only
- Lightweight, shatterproof, polycarbonate lenses
- Accessories sold separately



SG-3464



SG-3441



SG-3463



SG-341116



SG-3469

KP6 Safety Eyewear Specifications						
Part Number	SG-3464	SG-3464-12	SG-3441	SG-3463	SG-341116	SG-3469
Price	<--->	<--->	<--->	<--->	<--->	<--->
Pieces/package	1	12	1	1	1	1
Frame Color	Shiny Pearl Gray	Shiny Pearl Gray	Crystal Black	Shiny Black	Crystal Brown	Shiny Black
Lens Color	Clear	Clear	Smoke	Silver Mirror	Dark Copper	Red Mirror
Lens Features	-	-	-	-	HD	-
Material						
Frame	3/4 frame, Polycarbonate					
Lens	Polycarbonate					
Nosepiece	TPR (ThermoPlastic Rubber)					
Temple Width	132 mm					
Light Transmission % (True tested values)	91	91	18	16	25	16
UV Blocking Transmission %	99.9					
Agency Approvals	ANSI Z87.1.2010					



ES4 Style Safety Eyewear

Features

- ANSI Z87.1.2010 rated
- 1/2 frame
- Lightweight, shatterproof, polycarbonate lenses
- Adjustable nose piece
- De-centered cut lens for superior optical quality
- Scratch-resistant coating
- Microfiber storage bag included with single piece part numbers only
- Accessories sold separately



SG-2164



SG-2141



SG-2123



SG-211125



SG-2169



SG-21427

ES4 Safety Eyewear Specifications							
Part Number	SG-2164	SG-2164-12	SG-2141	SG-2123	SG-211125	SG-2169	SG-21427
Price	<--->	<--->	<--->	<--->	<--->	<--->	<--->
Pieces/package	1	12	1	1	1	1	1
Frame Color	Shiny Pearl Gray	Shiny Pearl Gray	Crystal Black	Shiny Black	Crystal Brown	Matte Black	Crystal Black
Lens Color	Clear	Clear	Smoke	Silver Mirror	Brown Flash Mirror	Red Mirror	Silver Mirror
Lens Features	-	-	-	-	HD	HD	Polarized
Material							
Frames	1/2 frame, TR90 ThermoPlastic						
Lens	Polycarbonate						
Nosepiece	TPR (ThermoPlastic Rubber)						
Temple Width	125 mm						
Light Transmission % (True tested values)	91	91	18	16	16	16	16
UV Blocking Transmission %	99.9						
Agency Approvals	ANSI Z87.1.2010 (Lenses marked "H" as tested for smaller head sizes)						



ES5 Style Safety Eyewear

Features

- ANSI Z87.1.2010 rated
- 1/2 frame
- Lightweight, shatterproof, polycarbonate lenses
- De-centered cut lens for superior optical quality
- Scratch-resistant coating
- Microfiber storage bag included with single piece part numbers only
- Accessories sold separately



SG-2964



SG-29215



SG-2961



SG-29117



SG-2968



SG-291113

ES5 Safety Eyewear Specifications							
Part Number	SG-2964	SG-2964-12	SG-29215	SG-2961	SG-29117	SG-2968	SG-291113
Price	<--->	<--->	<--->	<--->	<--->	<--->	<--->
Pieces/package	1	12	1	1	1	1	1
Frame Color	Shiny Pearl Gray	Shiny Pearl Gray	Matte Black	Pearl Black	Crystal Brown	Shiny Black	Crystal Brown
Lens Color	Clear	Clear	Indoor/Outdoor	Smoke	Brown flash Mirror	Blue Mirror	Brown
Lens Features	-	-	-	-	HD	-	Polarized, HD
Material							
Frame	1/2 frame, TR90 ThermoPlastic						
Lens	Polycarbonate						
Nosepiece	TPR (ThermoPlastic Rubber)						
Temple Width	130 mm						
Light Transmission % (True tested values)	91	91	50	18	16	16	18
UV Blocking Transmission %	99.9						
Agency Approvals	ANSI Z87.1.2010						



Cobra Style Safety Eyewear

Features

- ANSI Z87.1.2010 rated
- 1/2 frame
- Lightweight, shatterproof, polycarbonate lenses
- De-centered cut lens for superior optical quality
- Scratch-resistant coating
- Accessories sold separately



SG-1524



SG-15415



SG-1541

Cobra Safety Eyewear Specifications						
Part Number	SG-1524	SG-1524-12	SG-15415	SG-15415-12	SG-1541	SG-1541-12
Price	<--->	<--->	<--->	<--->	<--->	<--->
Pieces/package	1	12	1	12	1	12
Frame Color	Shiny Black	Shiny Black	Crystal Black	Crystal Black	Crystal Black	Crystal Black
Lens Color	Clear	Clear	Indoor/Outdoor	Indoor/Outdoor	Smoke	Smoke
Lens Features	-	-	-	-	-	-
Material						
Frame	1/2 frame, TR90 ThermoPlastic					
Lens	Polycarbonate					
Nosepiece	TPR (ThermoPlastic Rubber)					
Temple Width	130 mm					
Light Transmission % (True tested values)	91	91	50	50	18	18
UV Blocking Transmission %	99.9					
Agency Approvals	ANSI Z87.1.2010					



SG-1583



SG-15117



SG-1528

Cobra Safety Eyewear Specifications						
Part Number	SG-1583	SG-1583-12	SG-15117	SG-15117-12	SG-1528	SG-1528-12
Price	<--->	<--->	<--->	<--->	<--->	<--->
Pieces/package	1	12	1	12	1	12
Frame Color	Black Crystal and Burnt Orange	Black Crystal and Burnt Orange	Crystal Brown	Crystal Brown	Matte Black	Matte Black
Lens Color	Silver Mirror	Silver Mirror	Brown Flash Mirror	Brown Flash Mirror	Red Mirror	Red Mirror
Lens Features	-	-	HD	HD	-	-
Material						
Frame	1/2 frame, TR90 ThermoPlastic					
Lens	Polycarbonate					
Nosepiece	TPR (ThermoPlastic Rubber)					
Temple Width	130 mm					
Light Transmission % (True tested values)	16	16	20	20	16	16
UV Blocking Transmission %	99.9					
Agency Approvals	ANSI Z87.1.2010					



Sniper Style Safety Eyewear

Features

- ANSI Z87.1.2010 rated
- 1/2 frame
- Lightweight, shatterproof, polycarbonate lenses
- De-centered cut lens for superior optical quality
- Scratch-resistant coating
- Microfiber storage bag included with polarized pair only
- Accessories sold separately



SG-924



SG-9215



SG-921



SG-9141

Sniper Safety Eyewear Specifications								
Part Number	SG-924	SG-924-12	SG-9215	SG-9215-12	SG-921	SG-921-12	SG-9141	SG-9141-12
Price	<--->	<--->	<--->	<--->	<--->	<--->	<--->	<--->
Pieces/package	1	12	1	12	1	12	1	12
Frame Color	Matte Black	Matte Black	Shiny Pearl Gray	Shiny Pearl Gray	Matte Black	Matte Black	Woodland Brown Camo	Woodland Brown Camo
Lens Color	Clear	Clear	Indoor/Outdoor	Indoor/Outdoor	Smoke	Smoke	Smoke	Smoke
Lens Features	-	-	-	-	-	-	-	-
Material								
Frame	1/2 frame, TR90 ThermoPlastic							
Lens	Polycarbonate							
Nosepiece	TPR (ThermoPlastic Rubber)							
Temple Width	128 mm							
Light Transmission % (True tested values)	91	91	50	50	18	18	18	18
UV Blocking Transmission %	99.9							
Agency Approvals	ANSI Z87.1.2010 (Lenses marked "H" as tested for smaller head sizes)							



SG-9233



SG-9117



SG-91116



SG-9221



SG-9614

Sniper Safety Eyewear Specifications									
Part Number	SG-9233	SG-9233-12	SG-9117	SG-9117-12	SG-91116	SG-91116-12	SG-9221	SG-9221-12	SG-9614
Price	<--->	<--->	<--->	<--->	<--->	<--->	<--->	<--->	<--->
Pieces/package	1	12	1	12	1	12	1	12	1
Frame Color	Shiny Black Crystal Burgundy Red	Shiny Black Crystal Burgundy Red	Crystal Brown	Crystal Brown	Crystal Brown	Crystal Brown	Matte Black	Matte Black	Shiny Black
Lens Color	Silver Mirror	Silver Mirror	Brown Flash Mirror	Brown Flash Mirror	Copper	Copper	Green	Green	Smoke
Lens Features	-	-	HD	HD	HD	HD	HD	HD	Polarized
Materials									
Frame	1/2 frame, TR90 ThermoPlastic								
Lens	Polycarbonate								
Nosepiece	TPR (ThermoPlastic Rubber)								
Temple Width	128 mm								
Light Transmission % (True tested values)	16	16	16	16	25	25	20	20	18
UV Blocking Transmission %	99.9								
Agency Approvals	ANSI Z87.1.2010 (Lenses marked "H" as tested for smaller head sizes)								



Viper Style Safety Eyewear

Features

- ANSI Z87.1.2010 rated
- Frameless temples
- Lightweight, shatterproof, polycarbonate lenses
- Scratch-resistant coating
- Adjustable temples
- Accessories sold separately



SG-754



SG-7415



SG-741



SG-743

Viper Safety Eyewear Specifications								
Part Number	SG-754	SG-754-12	SG-7415	SG-7415-12	SG-741	SG-741-12	SG-743	SG-743-12
Price	<--->	<--->	<--->	<--->	<--->	<--->	<--->	<--->
Pieces/package	1	12	1	12	1	12	1	12
Temple Color	Crystal Clear	Crystal Clear	Crystal Clear	Crystal Clear	Crystal Black	Crystal Black	Crystal Black	Crystal Black
Lens Color	Clear	Clear	Indoor/Outdoor	Indoor/Outdoor	Smoke	Smoke	Silver Mirror	Silver Mirror
Lens Features	-	-	-	-	-	-	-	-
Material								
Temple	Polycarbonate							
Lens	Polycarbonate							
Nosepiece	Polycarbonate							
Temple Width	127 mm							
Light Transmission % (True tested values)	91	91	50	50	18	18	16	16
UV Blocking Transmission %	99.9							
Agency Approvals	ANSI Z87.1.2010							



SG-745



SG-7416

Viper Safety Eyewear Specifications				
Part Number	SG-745	SG-745-12	SG-7416	SG-7416-12
Price	<--->	<--->	<--->	<--->
Pieces/package	1	12	1	12
Temple Color	Black	Black	Ice Blue	Ice Blue
Lens Color	Yellow	Yellow	Ice Blue	Ice Blue
Lens Features	-	-	-	-
Material				
Temple	Polycarbonate			
Lens	Polycarbonate			
Nosepiece	Polycarbonate			
Temple Width	127 mm			
Light Transmission % (True tested values)	80	80	80	80
UV Blocking Transmission %	99.9			
Agency Approvals	ANSI Z87.1.2010			



Blade Style Safety Eyewear

Features

- ANSI Z87.1.2010 rated
- Frameless temples
- Lightweight, shatterproof, polycarbonate lenses
- Scratch-resistant coating
- Accessories sold separately



SG-3024



SG-30137



SG-3021

Blade Safety Eyewear Specifications						
Part Number	SG-3024	SG-3024-12	SG-30137	SG-30137-12	SG-3021	SG-3021-12
Price	<--->	<--->	<--->	<--->	<--->	<--->
Pieces/package	1	12	1	12	1	12
Temple Color	Black	Black	Brown	Brown	Black	Black
Lens Color	Clear	Clear	Brown indoor/outdoor	Brown indoor/outdoor	Smoke	Smoke
Lens Features	Anti-fog	Anti-fog	-	-	Anti-fog	Anti-fog
Material						
Temple	TR90 ThermoPlastic					
Lens	Polycarbonate					
Nosepiece	TPR (ThermoPlastic Rubber)					
Temple Width	130 mm					
Light Transmission % (True tested values)	91	91	50	50	16	16
UV Blocking Transmission %	99.9					
Agency Approvals	ANSI Z87.1.2010					



SG-30219



SG-3025

Blade Safety Eyewear Specifications				
Part Number	SG-30219	SG-30219-12	SG-3025	SG-3025-12
Price	<--->	<--->	<--->	<--->
Pieces/package	1	12	1	12
Temple Color	Black	Black	Black	Black
Lens Color	Orange	Orange	Yellow	Yellow
Lens Features	Anti-fog	Anti-fog	Anti-fog	Anti-fog
Material				
Temple	TR90 ThermoPlastic			
Lens	Polycarbonate			
Nosepiece	TPR (ThermoPlastic Rubber)			
Temple Width	130 mm			
Light Transmission % (True tested values)	80	80	80	80
UV Blocking Transmission %	99.9			
Agency Approvals	ANSI Z87.1.2010			



Mini Blade Style Safety Eyewear

Features

- ANSI Z87.1.2010 rated
- Frameless temples
- Lightweight, shatterproof, polycarbonate lenses
- Scratch-resistant coating
- Accessories sold separately



SG-32224



SG-321315



SG-32231

Mini Blade Safety Eyewear Specifications						
Part Number	SG-32224	SG-32224-12	SG-321315	SG-321315-12	SG-32231	SG-32231-12
Price	<--->	<--->	<--->	<--->	<--->	<--->
Pieces/package	1	12	1	12	1	12
Temple Color	Pink	Pink	Brown	Brown	Aqua	Aqua
Lens Color	Clear	Clear	Brown indoor/outdoor	Brown indoor/outdoor	Smoke	Smoke
Lens Features	Anti-fog	Anti-fog	-	-	Anti-fog	Anti-fog
Material						
Temple	TR90 ThermoPlastic					
Lens	Polycarbonate					
Nosepiece	TPR (ThermoPlastic Rubber)					
Temple Width	120 mm					
Light Transmission % (True tested values)	91	91	50	50	18	18
UV Blocking Transmission %	99.9					
Agency Approvals	ANSI Z87.1.2010					



Eclipse Style Foam-lined Safety Eyewear

Features

- ANSI Z87.1.2010 rated
- Foam lined
- Full frame
- Lightweight, shatterproof, polycarbonate lenses
- De-centered cut lens for superior optical quality
- Scratch-resistant coating
- Ratcheting temples
- Microfiber storage bag included
- Accessories sold separately, including 18" elastic adjustable safety strap



SG-26164



SG-2641



SG-26116



SG-26222

Accessory



Optional elastic safety strap

SG-ES26



Eclipse Safety Eyewear Specifications				
Part Number	SG-26164	SG-2641	SG-26116	SG-26222
Price	<--->	<--->	<--->	<--->
Pieces/package	1	1	1	1
Frame Color	Gun Metal	Matte Black	Brown Crystal	Matte Black
Lens Color	Clear	Smoke	Brown	Yellow Flash Mirror
Lens Features	Anti-fog	Anti-fog	HD, Anti-fog	Anti-fog
Material				
Frame	Full frame, EVA Foam-lined Polycarbonate			
Lens	Polycarbonate			
Nosepiece	Polycarbonate			
Temple Width	138 mm			
Light Transmission % (True tested values)	91	18	22	16
UV Blocking Transmission %	99.9			
Agency Approvals	ANSI Z87.1.2010			



MP7 Style Safety Eyewear

Features

- ANSI Z87.1.2010 rated
- Full frame, foam-lined
- Anti-fog lenses on most models
- Lightweight, shatterproof, polycarbonate lenses
- De-centered cut lens for superior optical quality
- Scratch-resistant coating
- Microfiber storage bag included
- Accessories sold separately



SG-2444



SG-2463



SG-24264



SG-24116



SG-24223



SG-2461



SG-24615



SG-24222

MP7 Safety Eyewear Specifications								
Part Number	SG-2444	SG-24263	SG-24264	SG-24116	SG-24223	SG-2461	SG-24615	SG-24222
Price	<-->	<-->	<-->	<-->	<-->	<-->	<-->	<-->
Pieces/package	1	1	1	1	1	1	1	1
Frame Color	Crystal Black	Soft Pink	Soft Pink	Crystal Brown	Shiny Chrome	Shiny Black	Shiny Pearl Gray	Matte Black
Lens Color	Clear	Silver Mirror	Clear	Brown	Silver Mirror	Smoke	Indoor/Outdoor	Yellow
Lens Features	Anti-fog	-	Anti-fog	HD, Anti-fog	-	Anti-fog	Anti-fog	Anti-fog
Material	Full frame, EVA Foam-lined TR90 ThermoPlastic							
Frame	Polycarbonate							
Lens	TPR (ThermoPlastic Rubber)							
Nosepiece	129 mm							
Temple Width	129 mm							
Light Transmission % (True tested values)	91	16	91	22	16	18	18	16
UV Blocking Transmission %	99.9							
Agency Approvals	ANSI Z87.1.2010							

Company Information

Systems Overview

Programmable Controllers

Field I/O

Software

C-more & other HMI

Drives

Soft Starters

Motors & Gearbox

Steppers/ Servos

Motor Controls

Proximity Sensors

Photo Sensors

Limit Switches

Encoders

Current Sensors

Pressure Sensors

Temperature Sensors

Pushbuttons/ Lights

Process

Relays/ Timers

Comm.

Terminal Blocks & Wiring

Power

Circuit Protection

Enclosures

Tools

Pneumatics

Appendix

Product Index

Part # Index



Raptor Style Foam-lined Safety Eyewear

Features

- ANSI Z87.1.2010 rated
- Foam lined
- Full frame
- Lightweight, shatterproof, polycarbonate lenses
- De-centered cut lens for superior optical quality
- Scratch-resistant coating
- Microfiber storage bag included
- Accessories sold separately



SG-1164



SG-11615



SG-1161



SG-1169

Raptor Safety Eyewear Specifications				
Part Number	SG-1164	SG-11615	SG-1161	SG-1169
Price	<--->	<--->	<--->	<--->
Pieces/package	1	1	1	1
Frame Color	Shiny Pearl Gray	Shiny Pearl Gray	Shiny Pearl Gray	Shiny Black
Lens Color	Clear	Indoor/Outdoor	Smoke	Red Mirror
Lens Features	Anti-fog	Anti-fog	Anti-fog	HD, Anti-fog
Material				
Frame	Full frame, EVA Foam-lined Polycarbonate			
Lens	Polycarbonate			
Nosepiece	Polycarbonate			
Temple Width	132 mm			
Light Transmission % (True tested values)	91	50	18	22
UV Blocking Transmission %	99.9			
Agency Approvals	ANSI Z87.1.2010			



Diamondback Style Foam-lined Safety Eyewear

Features

- ANSI Z87.1.2010 rated
- Foam lined
- Full frame
- Lightweight, shatterproof, polycarbonate lenses
- De-centered cut lens for superior optical quality
- Scratch-resistant coating
- Microfiber storage bag included
- Accessories sold separately



SG-2724



SG-27615



SG-2761



SG-27103

Diamondback Safety Eyewear Specifications				
Part Number	SG-2724	SG-27615	SG-2761	SG-27103
Price	<-->	<-->	<-->	<-->
Pieces/package	1	1	1	1
Frame Color	Matte Black	Shiny Black	Shiny Black	Shiny Red
Lens Color	Clear	Indoor/Outdoor	Smoke	Silver Mirror
Lens Features	Anti-fog	Anti-fog	Anti-fog	—
Material				
Frame	Full frame, EVA Foam-lined Polycarbonate			
Lens	Polycarbonate			
Nosepiece	TPR (ThermoPlastic Rubber)			
Temple Width	134 mm			
Light Transmission % (True tested values)	91	50	18	16
UV Blocking Transmission %	99.9			
Agency Approvals	ANSI Z87.1.2010			



Concept Style Foam-lined Safety Eyewear

Features

- ANSI Z87.1.2010 rated
- Foam lined
- 1/2 frame
- Lightweight, shatterproof, polycarbonate lenses
- De-centered cut lens for superior optical quality
- Scratch-resistant coating
- Microfiber storage bag included
- Accessories sold separately



SG-844



SG-821



SG-867



SG-873

Concept Safety Eyewear Specifications				
Part Number	SG-844	SG-821	SG-867	SG-873
Price	<--->	<--->	<--->	<--->
Pieces/package	1	1	1	1
Frame Color	Crystal Black	Matte Black	Crystal Brown	Orange/Black
Lens Color	Clear	Smoke	Brown	Silver Mirror
Lens Features	Anti-fog	Anti-fog	HD, Anti-fog	—
Material				
Frame	1/2 frame, EVA Foam-lined Thermoplastic TR90			
Lens	Polycarbonate			
Nosepiece	TPR (ThermoPlastic Rubber)			
Temple Width	130 mm			
Light Transmission % (True tested values)	91	18	22	16
UV Blocking Transmission %	99.9			
Agency Approvals	ANSI Z87.1.2010			



Shield Style Foam-lined Safety Eyewear

Features

- ANSI Z87.1.2010 rated
- Foam lined
- Anti-fog lenses available
- Frameless temples
- Lightweight, shatterproof, polycarbonate lenses
- Scratch-resistant coating
- Accessories sold separately



SG-548



SG-554



SG-5515

Shield Safety Eyewear Specifications						
Part Number	SG-548	SG-548-12	SG-554	SG-554-12	SG-5515	SG-5515-12
Price	<--->	<--->	<--->	<--->	<--->	<--->
Pieces/package	1	12	1	12	12	12
Temple Color	Crystal Black	Crystal Black	Crystal Clear	Crystal Clear	Crystal Clear	Crystal Clear
Lens Color	Blue Mirror	Blue Mirror	Clear	Clear	Indoor/Outdoor	Indoor/Outdoor
Lens Features	-	-	Anti-fog	Anti-fog	Anti-fog	Anti-fog
Material	Frameless, EVA Foam-lined Polycarbonate					
Temple	Frameless, EVA Foam-lined Polycarbonate					
Lens	Polycarbonate					
Nosepiece	Polycarbonate					
Temple Width	128 mm					
Light Transmission % (True tested values)	16	16	91	91	50	50
UV Blocking Transmission %	99.9					
Agency Approvals	ANSI Z87.1.2010					



SG-541



SG-546

Shield Safety Eyewear Specifications				
Part Number	SG-541	SG-541-12	SG-546	SG-546-12
Price	<--->	<--->	<--->	<--->
Pieces/package	1	12	1	12
Temple Color	Crystal Black	Crystal Black	Crystal Black	Crystal Black
Lens Color	Smoke	Smoke	Brown	Brown
Lens Features	Anti-fog	Anti-fog	HD, Anti-fog	HD, Anti-fog
Material	Frameless, EVA Foam-lined Polycarbonate			
Temple	Frameless, EVA Foam-lined Polycarbonate			
Lens	Polycarbonate			
Nosepiece	Polycarbonate			
Temple Width	128 mm			
Light Transmission % (True tested values)	18	18	22	22
UV Blocking Transmission %	99.9			
Agency Approvals	ANSI Z87.1.2010			



Element Style Safety Eyewear

Features

- ANSI Z87.1.2010 rated
- Full frame
- Foam-lined with adjustable straps
- Anti-fog lenses
- Lightweight, shatterproof, polycarbonate lenses
- De-centered cut lens for superior optical quality
- Scratch-resistant coating
- Microfiber storage bag included
- Accessories sold separately



SG-91351



SG-91352



SG-91353

Element Safety Eyewear Specifications			
Part Number	SG-91351	SG-91352	SG-91353
Price	<--->	<--->	<--->
Pieces/package	1	1	1
Frame Color	Black	Black	Black
Lens Color	Clear	Smoke	Yellow
Lens Features	Anti-fog	Anti-fog	Anti-fog
Material			
Frame	Full frame, Open Cell Foam-Lined Polycarbonate		
Lens	Polycarbonate		
Nosepiece	Polycarbonate		
Temple Width	138 mm		
Light Transmission % (True tested values)	91	18	80
UV Blocking Transmission %	99.9		
Agency Approvals	ANSI Z87.1.2010		



OG3 Style Safety Eyewear

Features

- ANSI Z87.1.2010 rated
- Designed to fit well over prescription glasses
- Accommodates Small to XL glasses with frames up to 5.25 inches wide with lens 1.5 inches high x 2.5 inches wide.
- Full frame
- Lightweight, shatterproof, polycarbonate lenses
- Scratch-resistant coating
- Accessories sold separately



SG-3114



SG-3115



SG-3116

OG3 Safety Eyewear Specifications			
Part Number	SG-3114	SG-3115	SG-3116
Price	<--->	<--->	<--->
Pieces/package	1	1	1
Frame Color	Shiny Pearl Gray	Crystal Brown	Crystal Black
Lens Color	Clear	Brown	Smoke
Lens Features	-	-	-
Material	Full frame, Polycarbonate		
Frame	Full frame, Polycarbonate		
Lens	Polycarbonate		
Nosepiece	Polycarbonate		
Temple Width	141 mm		
Light Transmission % (True tested values)	91	22	18
UV Blocking Transmission %	99.9		
Agency Approvals	ANSI Z87.1.2010		



ES5 Readers Style Safety Eyewear

Features

- ANSI Z87.1.2010 rated
- 1/2 frame
- Four magnification levels available
- Magnification is only on bottom of lens
- Lightweight, shatterproof, polycarbonate lenses
- De-centered cut lens for superior optical quality
- Scratch-resistant coating
- Microfiber storage bag included
- Accessories sold separately



SG-2911712 (1.25x)

SG-2911715 (1.5x)

SG-2911720 (2x)

SG-2911725 (2.5x)



SG-296412 (1.25x)

SG-296415 (1.5x)

SG-296420 (2x)

SG-296425 (2.5x)

ES5 Readers Safety Eyewear Specifications								
Part Number	SG-2911712	SG-2911715	SG-2911720	SG-2911725	SG-296412	SG-296415	SG-296420	SG-296425
Price	<--->	<--->	<--->	<--->	<--->	<--->	<--->	<--->
Pieces/package	1	1	1	1	1	1	1	1
Frame Color	Crystal Brown	Crystal Brown	Crystal Brown	Crystal Brown	Shiny Pearl Gray	Shiny Pearl Gray	Shiny Pearl Gray	Shiny Pearl Gray
Lens Color	Brown	Brown	Brown	Brown	Clear	Clear	Clear	Clear
Lens Features	1.25 Diopter, HD	1.5 Diopter, HD	2.0 Diopter, HD	2.5 Diopter, HD	1.25 Diopter	1.5 Diopter	2.0 Diopter	2.5 Diopter
Material								
Frame	1/2 frame, TR90 ThermoPlastic							
Lens	Polycarbonate							
Nosepiece	TPR (ThermoPlastic Rubber)							
Temple Width	130 mm							
Light Transmission % (True tested values)	22	22	22	22	91	91	91	91
UV Blocking Transmission %	99.9							
Agency Approvals	ANSI Z87.1.2010							



Safety Eyewear with Polarized Lenses

Features

- ANSI Z87.1.2010 rated
- 1/2, 3/4 or full frame
- Choose polarized or polarized with high definition lenses
- Lightweight, shatterproof, polycarbonate lenses
- Scratch-resistant coating
- Microfiber storage bag included.
- Additional accessories sold separately



Infinity



RPG



Core



ES4



ES5



Sniper



MP7

Polarized Safety Eyewear Specifications

Style	Infinity	RPG	Core	ES4	ES5	Sniper	MP7
Part Number	SG-21126	SG-23226	SG-181813	SG-21427	SG-291113	SG-9614	SG-24426
Price	<--->	<--->	<--->	<--->	<--->	<--->	<--->
Pieces/package	1	1	1	1	1	1	1
Frame Color	Crystal Brown	Matte Black	Mocha Brown	Crystal Black	Crystal Brown	Shiny Black	Crystal Black
Lens Color	Brown	Blue Mirror	Brown	Silver Mirror	Brown	Smoke	Blue-Green
Lens Features	Polarized, HD	Polarized, HD	Polarized, HD	Polarized	Polarized, HD	Polarized	Polarized
Material							
Frame	Full frame, TR90 ThermoPlastic with TPR Temples	Full frame, TR90 ThermoPlastic with TPR Temples	Full frame, TR90 ThermoPlastic	1/2 frame, TR90 ThermoPlastic	1/2 frame, TR90 ThermoPlastic	1/2 frame, TR90 ThermoPlastic	Full frame, TR90 ThermoPlastic
Lens	Polycarbonate	Polycarbonate	Polycarbonate	Polycarbonate	Polycarbonate	Polycarbonate	Polycarbonate
Nosepiece	TPR (Thermoplastic Rubber)	TPR (Thermoplastic Rubber)	TPR (Thermoplastic Rubber)	TPR (Thermoplastic Rubber)	TPR (Thermoplastic Rubber)	TPR (Thermoplastic Rubber)	TPR (Thermoplastic Rubber)
Temple Width	126 mm	132 mm	130 mm	125 mm	130 mm	128 mm	129 mm
Light Transmission % (True tested values)	20	20	18	16	18	18	18
UV Blocking Transmission %	99.9	99.9	99.9	99.9	99.9	99.9	99.9
Agency Approvals	ANSI Z87.1.2010						



Safety Eyewear Accessories



SG-CR1



SG-CR3



SG-G3



Optional elastic safety strap for Eclipse series eyewear only

SG-ES26

Safety Eyewear Accessories				
Part Number	SG-CR1	SG-CR3	SG-G3	SG-ES26
Price	<--->	<--->	<--->	<--->
Pieces/package	1	1	1	1
Description	Black microfiber storage bag	Black cloth zipper pouch with hook and belt loop	Adjustable string cord with loop ends Length: 14 inches	Adjustable strap for Crossfire Eclipse series safety glasses only Length: 18 inches

Industrial Gloves



Industrial Work Gloves Selection

- General purpose
- Anti-static, pre-washed
- Puncture and cut resistant
- Puncture resistant with knuckle padding
- Cut-resistant, polyurethane-coated or rubber-coated
- Arc flash-rated, cut resistant, full leather
- Mechanic style, cowhide leather palm
- Cut resistant sleeves

Sizing Chart					
6	7	8	9	10	11
X-Small	Small	Medium	Large	X-Large	2X-Large



Measure around your hand across the widest part of your palm.

The reading in inches is an estimate of the equivalent glove size. If your reading is between sizes, order the larger size.

Company Information

Systems Overview

Programmable Controllers

Field I/O

Software

C-more & other HMI

Drives

Soft Starters

Motors & Gearbox

Steppers/ Servos

Motor Controls

Proximity Sensors

Photo Sensors

Limit Switches

Encoders

Current Sensors

Pressure Sensors

Temperature Sensors

Pushbuttons/ Lights

Process

Relays/ Timers

Comm.

Terminal Blocks & Wiring

Power

Circuit Protection

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Part # Index

Industrial Gloves



General purpose industrial work gloves

- For basic assembly and chore use
- Close fit for excellent dexterity
- Quality nylon yarn for stretch
- Polyurethane coated for grip
- Cuff color-coded by size

TTP-NYPU-11

General Purpose Industrial Gloves Specifications						
Part Number	TTP-NYPU-6	TTP-NYPU-7	TTP-NYPU-8	TTP-NYPU-9	TTP-NYPU-10	TTP-NYPU-11
Price	<--->	<--->	<--->	<--->	<--->	<--->
Pairs/package	6	6	6	6	6	6
Size	6 (XS)	7 (S)	8 (M)	9 (L)	10 (XL)	11 (XXL)
Glove Color	Black	Black	Black	Black	Black	Black
Cuff Color	Pink	Yellow	Blue	White	Green	Black
Material						
Glove	Nylon					
Coating	Polyurethane					
Gauge	13					
Cut Resistance						
Cut Test	Not cut resistant					



Anti-static industrial work gloves

- Protect hand and product from electrostatic build-up
- Nylon and Resi-stat yarn blend for fit and static dissipation
- Maximum dexterity
- Pre-washed
- Ambidextrous
- Cuff color-coded by size

TTP-ESD-10

Anti-Static Industrial Gloves Specifications						
Part Number	TTP-ESD-6	TTP-ESD-7	TTP-ESD-8	TTP-ESD-9	TTP-ESD-10	TTP-ESD-11
Price	<--->	<--->	<--->	<--->	<--->	<--->
Pairs/package	6	6	6	6	6	6
Size	6 (XS)	7 (S)	8 (M)	9 (L)	10 (XL)	11 (XXL)
Glove Color	White and gray blend	White and gray blend	White and gray blend	White and gray blend	White and gray blend	White and gray blend
Cuff Color	Yellow	Blue	Green	Red	Black	Brown
Material						
Glove	Carbon fiber nylon knit with Resi-stat yarn					
Coating	None					
Gauge	13					
Electro-static Dissipative Exposure						
Test Compliance	ANSI/ESD STM2.1 Resistance test method for electrostatic discharge protective garments. 8 ¹⁰ Ω resistivity					

Industrial Gloves

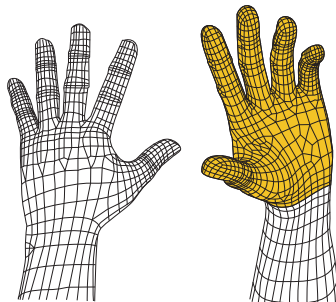


TTP452-8

TTP455-10

Puncture and cut-resistant industrial work gloves

- High level of puncture resistance
- Full palm and inside finger protection
- Cut-resistant with highest rating of puncture resistance
- Good dexterity



Full palm and inside finger protection

Puncture and Cut-resistant Palm Protection Industrial Gloves Specifications			
Part Number	TTP452-8	TTP452-9	TTP452-10
Price	<-->	<-->	<-->
Pairs/package	1	1	1
Size	8 (M)	9 (L)	10 (XL)
Glove Color	Green with black palm		
Cuff Color	None	None	None
Material			
Glove	Tilsatec Rhino steel core cut-resistant knit		
Coating	Nylon-Polyester outer coating. RhinoGuard palm		
Gauge	13		
Cut Resistance			
Cut Test	ANSI cut level 4 based on 2706g CPPT ASTM test, EN388, cut level 5.		
Puncture Resistance			
Test Compliance	ANSI level 5 EN 388 level 4. ASTM F1342-05 Test: 150N for 4.5 mm probe 86N for 2.03 mm probe. 4.1N for 25 gauge sharpened medical grade needle		

Puncture and Cut-resistant Palm and Knuckle Protection Industrial Gloves Specifications			
Part Number	TTP455-8	TTP455-9	TTP455-10
Price	<-->	<-->	<-->
Pairs/package	1	1	1
Size	8 (M)	9 (L)	10 (XL)
Glove Color	Green with black palm		
Cuff Color	None	None	None
Material			
Glove	Tilsatec Rhino steel core cut-resistant knit		
Coating	Flexible molded rubber knuckles. RhinoGuard palm		
Gauge	13		
Cut Resistance			
Cut Test	ANSI cut level 4 based on 2706g CPPT ASTM test, EN388, cut level 5.		
Puncture Resistant			
Test Compliance	ANSI level 5 EN 388 level 4. ASTM F1342-05 Test: 150N for 4.5 mm probe 86N for 2.03mm probe. 4.1N for 25 gauge sharpened medical grade needle		

Industrial Gloves



Cut-resistant industrial work gloves

- Suitable for precision work
- Ultra light weight
- Excellent dexterity and cut resistance
- Polyurethane palm for secure grip
- Cuff color-coded by size

TTP050-10

Cut-resistant Industrial Gloves Specifications						
Part Number	<i>TTP050-6</i>	<i>TTP050-7</i>	<i>TTP050-8</i>	<i>TTP050-9</i>	<i>TTP050-10</i>	<i>TTP050-11</i>
Price	<--->	<--->	<--->	<--->	<--->	<--->
Pairs/package	1	1	1	1	1	1
Size	6 (XS)	7 (S)	8 (M)	9 (L)	10 (XL)	11 (XXL)
Glove Color	Black	Black	Black	Black	Black	Black
Cuff Color	Yellow	Light Blue	Green	Red	Black	Brown
Material						
Glove	Tilsatec Rhino steel core, cut-resistant nylon knit					
Coating	Polyurethane					
Gauge	13					
Cut Resistance						
Cut Test	ANSI cut level 4 based on 1537grams CPPT ASTM test, EN388, cut level 5.					



NBR foam-coated industrial work gloves

- NBR foam coating from palm to backs of fingers for secure grip
- Seamless knit
- Excellent dexterity and cut resistance
- Cuff color-coded by size

TTP060NBR-10

NBR Foam-coated Industrial Gloves Specifications						
Part Number	<i>TTP060NBR-6</i>	<i>TTP060NBR-7</i>	<i>TTP060NBR-8</i>	<i>TTP060NBR-9</i>	<i>TTP060NBR-10</i>	<i>TTP060NBR-11</i>
Price	<--->	<--->	<--->	<--->	<--->	<--->
Pairs/package	1	1	1	1	1	1
Size	6 (XS)	7 (S)	8 (M)	9 (L)	10 (XL)	11 (XXL)
Glove Color	Green	Green	Green	Green	Green	Green
Cuff Color	Yellow	Light Blue	Green	Red	Black	Brown
Material						
Glove	Tilsatec Rhino steel core, cut-resistant nylon knit					
Coating	NBR foam coating on palm and backs of fingers					
Gauge	13					
Cut Resistance						
Cut Test	ANSI cut level 4 based on 2706 grams CPPT ASTM test, EN388, cut level 5.					

Industrial Gloves



Electric arc-resistant industrial work gloves

- Electrical Arc Flash tested
- Full grain goatskin leather
- Driver's glove style with cut-resistant liner
- Full leather wrist with shirred back
- Good dexterity
- Cuff color-coded by size

TTP203-10

Electric Arc-resistant Industrial Gloves Specifications					
Part Number	TTP203-7	TTP203-8	TTP203-9	TTP203-10	TTP203-11
Price	<--->	<--->	<--->	<--->	<--->
Pairs/package	1	1	1	1	1
Size	7 (S)	8 (M)	9 (L)	10 (XL)	11 (XXL)
Glove Color	Buff	Buff	Buff	Buff	Buff
Cuff Color	Light Blue	Green	Red	Black	White
Material					
Glove	Tilsatec Rhino steel core, cut-resistant nylon knit liner				
Coating	Full grain goatskin leather outer covering				
Gauge	7				
Cut Resistance					
Cut Test	ANSI cut level 4 based on 2775 grams CPPT ASTM test, EN388, cut level 5.				
Electric Arc Resistance					
Test Compliance	NFPA Hazard Risk Category 3 based on Arc Thermal Performance Value of 37.5 calories per cm ²				

Industrial Gloves



TTP250-9

TTP350-6

Cut-resistant industrial work gloves

- Steel core yarn provides excellent cut resistance
- Good dexterity
- Reinforced stitched thumb webbing
- Two cut levels available
- Ambidextrous
- Cuff color-coded by size

Cut-resistant Industrial Gloves Specifications						
Part Number	TTP250-6	TTP250-7	TTP250-8	TTP250-9	TTP250-10	TTP250-11
Price	<--->	<--->	<--->	<--->	<--->	<--->
Pairs/package	1	1	1	1	1	1
Size	6 (XS)	7 (S)	8 (M)	9 (L)	10 (XL)	11 (XXL)
Glove Color	White and gray blend	White and gray blend	White and gray blend	White and gray blend	White and gray blend	White and gray blend
Cuff Color	Yellow	Light Blue	Green	Red	Black	Brown
Material						
Glove	Tilsatec Rhino tri-core, cut-resistant knit					
Coating	None					
Gauge	7					
Cut Resistance						
Cut Test	ANSI cut level 4 based on 3212 grams CPPT ASTM test, EN388, cut level 5.					

Cut-resistant Industrial Gloves Specifications						
Part Number	TTP350-6	TTP350-7	TTP350-8	TTP350-9	TTP350-10	TTP350-11
Price	<--->	<--->	<--->	<--->	<--->	<--->
Pairs/package	1	1	1	1	1	1
Size	6 (XS)	7 (S)	8 (M)	9 (L)	10 (XL)	11 (XXL)
Glove Color	White and gray blend	White and gray blend	White and gray blend	White and gray blend	White and gray blend	White and gray blend
Cuff Color	Yellow	Light Blue	Green	Red	Black	Brown
Material						
Glove	Tilsatec Rhino tri-core, cut-resistant knit					
Coating	None					
Gauge	7					
Cut Resistance						
Cut Test	ANSI cut level 5 based on 5230 grams CPPT ASTM test, EN388, cut level 5.					

Industrial Gloves

Company Information

Systems Overview

Programmable Controllers

Field I/O

Software

C-more & other HMI

Drives

Soft Starters

Motors & Gearbox

Steppers/Servos

Motor Controls

Proximity Sensors

Photo Sensors

Limit Switches

Encoders

Current Sensors

Pressure Sensors

Temperature Sensors

Pushbuttons/Lights

Process

Relays/Timers

Comm.

Terminal Blocks & Wiring

Power

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Part # Index



Mechanic-style industrial gloves

- Cow grain leather palm and woven nylon back
- Adjustable hook and loop wrist closure for proper fit
- Form-fitting for excellent dexterity
- Excellent general purpose glove

TTP-MEC1-10

Mechanic-style Industrial Gloves Specifications					
Part Number	TTP-MEC1-7	TTP-MEC1-8	TTP-MEC1-9	TTP-MEC1-10	TTP-MEC1-11
Price	<-->	<-->	<-->	<-->	<-->
Pairs/package	1	1	1	1	1
Size	7 (S)	8 (M)	9 (L)	10 (XL)	11 (XXL)
Glove Color	Black and Tan	Black and Tan	Black and Tan	Black and Tan	Black and Tan
Cuff Color	N/A	N/A	N/A	N/A	N/A
Material					
Glove	Woven nylon with top cow grain leather palm				
Coating	None				
Gauge	None				

Industrial Protective Sleeves



TTP880SP-18

TTP880-18

Industrial protective sleeves

- Steel cut-resistant knit
- Choose from single or double layer sleeve with thumbhole
- Tube knit for snug fit
- Integrated knit wrist
- Ambidextrous
- Sold as single sleeve

Industrial Protective Sleeves Specifications		
Part Number	TTP880SP-18	TTP880-18
Price	<-->	<-->
Pieces/package	1	1
Size	18" long	18" long
Sleeve Color	white and green blend	white and green blend
Material		
Sleeve	Single layer Tilsatec Rhino steel core cut-resistant knit	Dual layer Tilsatec Rhino steel core cut-resistant knit
Coating	None	None
Gauge	Tube knit	Tube knit
Cut Resistance		
Cut Test	ANSI cut level 4 based on 1800 grams CPPT ASTM test, EN388, cut level 5.	ANSI cut level 5 based on 5170 grams CPPT ASTM test, EN388, cut level 5.