

Professionalism and experience to promote safety...

“We will make the industrial workplace a safer place”

Honeywell, a world leader in industrial machine safety, offers a range of global solutions backed up with products that comply with the highest standards of safety and reliability. Working from a global perspective, our engineers design safety products which scrupulously adhere to published standards for safety, especially in Europe and North America. Our safety specialists are active members of standards committees in Europe and contribute to the definition of standards and Directives in Europe and the USA.

As a result of our years of experience in industrial safety, we can offer global solutions that meet the constraints of your work environment. In fact, safety choices are not limited to the selection of a safety component. Safety must be integrated within the physical limitations of your machine design and, if necessary, additional forms of protection must be put in place.

This guide should facilitate your understanding of the broad questions relating to safety and show you all that Honeywell has to offer in this area. The information provided here is summary information only. Honeywell advises that you consult relevant legislation, regulations, standards, instruction manuals, technical brochures, etc. for a full understanding of industrial safety.



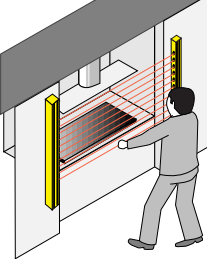
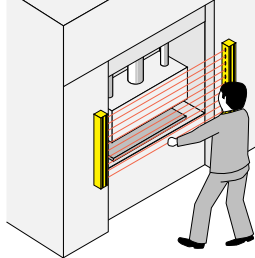
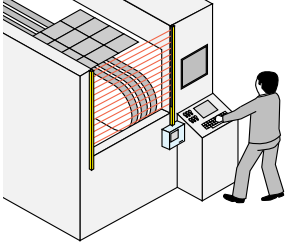
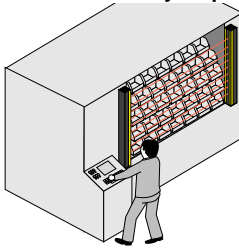
⚠ WARNING

MISUSE OF DOCUMENTATION

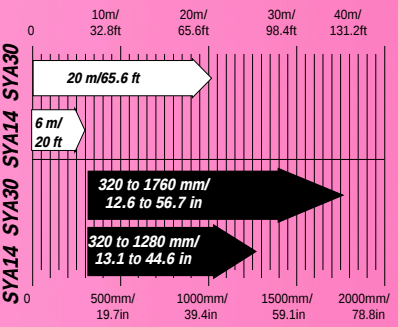
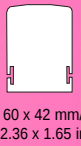
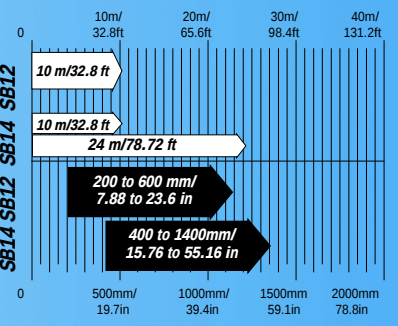
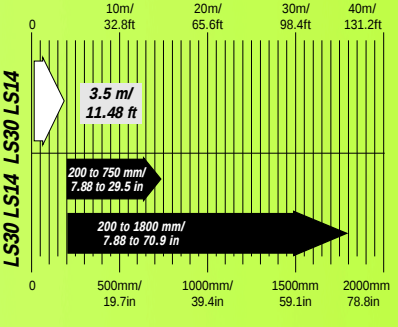
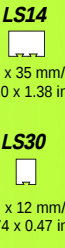
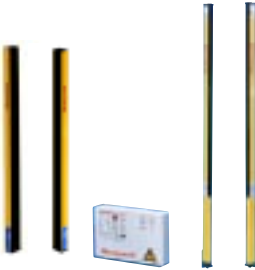
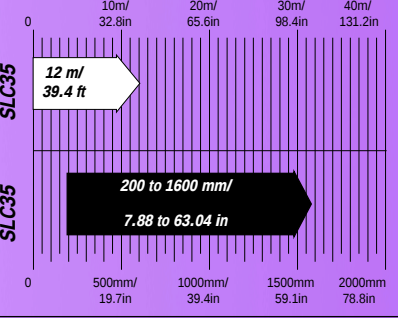
- The information presented in this product sheet (or catalogue) is for reference only. DO NOT USE this document as system installation information.
- Complete installation, operation and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.

Safety Light Curtains for

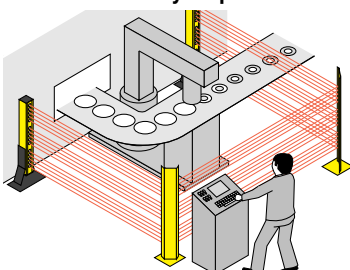
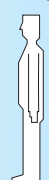
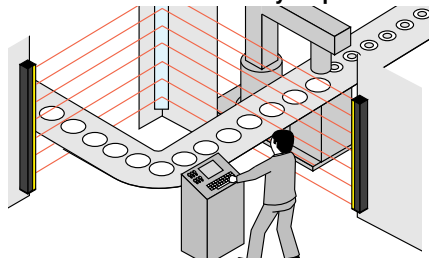
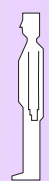
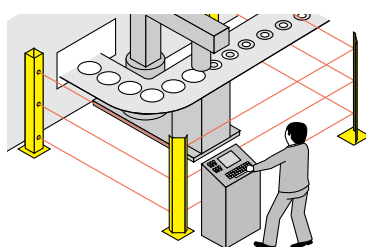
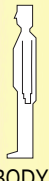
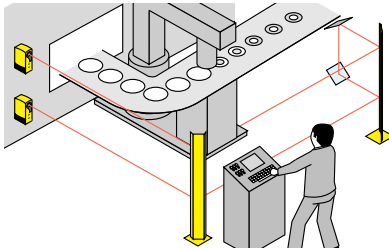
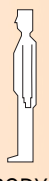
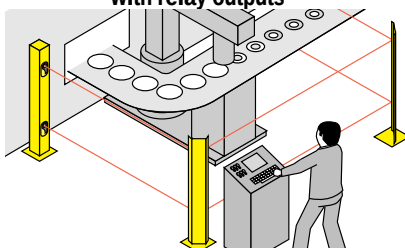
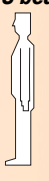
TYPICAL APPLICATIONS		RESOLUTION	VOLTAGE RESPONSE TIME
Compact Type 4 light curtain with failsafe static outputs 	Heavy industry and material conversion - Pressing, moulding and thermoforming machines - Conveyors, handling equipment and assembly lines - Copying lathes and machining centers - Door and gate, lift and hoist technology - Stacking machines, transporting and conveyor technology - Textile, packaging machines - Jigging sieves, sorters and milling machines	 FINGER DETECTION ø14 mm / 0.6 in  HAND DETECTION ø30 mm / 1.2 in	Voltage: 24 Vdc Response time: SYA14: 14 to 22.5 ms SYA30: 13.5 to 17.5 ms according to models
Harsh-duty Type 4 self-contained light curtain with relay outputs 	Heavy industry and material conversion - Presses and punches for metals, plastics and leather - Deep-drawing presses, moulding presses and filter presses - Metal forming, milling and drilling machines - Spot-welding machines and fine-boring machines	 FINGER DETECTION ø22 mm / 0.86 in  HAND DETECTION ø35 mm / 1.38 in	Voltage: 120/240 Vac 24 to 48 Vdc Response time: SB12: 25 to 29 ms SB14: 25 to 30 ms according to models
Type 4 light curtain with separate control unit 	Light industry - Paper cutting machines - Pick-and-place robots - Light electronic assembly machines - Goods lifts - Small carousels	 FINGER DETECTION ø14 mm / 0.55 in  HAND DETECTION ø30 mm / 1.18 in	Voltage: 22 to 30 Vdc or 18 to 25 Vac Response time: LS30: < 50ms LS14: < 50ms
Compact Type 2 light curtain with separate control unit and relay outputs 	Light industry and material conversion, transportation and storage - Packaging and wrapping machines - Automated warehouse - Machinery for merchandise handling such as palletising and self-organisers - Automated assembly lines - Wood and leather industry	 HAND DETECTION ø35 mm / 1.38 in	Voltage: 24 Vdc Response time: 28 to 32 ms according to models

point of operation protection

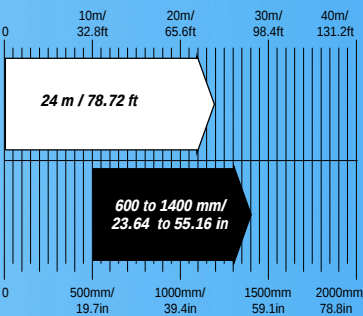
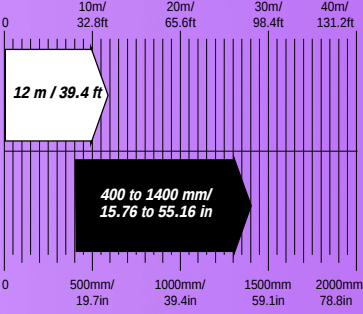
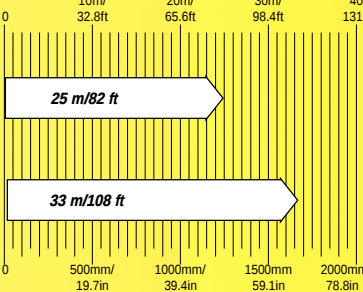
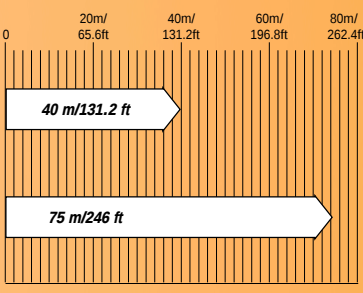
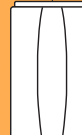
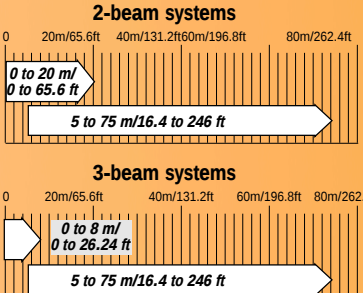
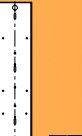
FUNCTIONS		APPROVALS	DIMENSIONS OF THE PROTECTED AREA SCANNING RANGE (m/ft) PROTECTION HEIGHT (mm/in)	DIMENSIONS	
Automatic restart	•	   Approved as Type 4 per IEC/EN 61496-1/2		 60 x 42 mm/ 2.36 x 1.65 in	FF-SYA14 / FF-SYA30 
Start and restart interlock (*)	•				
Test input	•				
FSD monitoring (*)	•				
Cross-talk detection/reduction	•				
Output contacts (static outputs)	2NO				
Output contacts (*)	2NO+1NC				
*through external relay module					
Automatic restart	•	   Approved as Type 4 per pr EN 50100 - 1/2		 116 x 56 mm/ 4.57 x 2.20 in	FF-SB12 / FF-SB14 
Start and restart interlock	•				
Test input	•				
FSD monitoring	•				
Beam status output	•				
Output contacts	2NO+1NC				
Automatic restart	•	   Approved as Type 4 per pr EN 50100 - 1/2		 23 x 35 mm/ 0.90 x 1.38 in 19 x 12 mm/ 0.74 x 0.47 in	FF-LS14 / FF-LS30 
Start and restart interlock	•				
Test input	•				
FSD monitoring	•				
Beam status output	•				
Output contacts	2NO				
Self-diagnostic LED	•				
Automatic restart	•	   Approved as Type 2 per EN 50100 - 1/2		 70 x 50 mm/ 2.75 x 1.97 in	FF-SLC35 
Start and restart interlock	•				
Test input	•				
FSD monitoring	•				
Beam status output	•				
Output contacts	1NO+1NC				
Self-diagnostic LED	•				

Note 1:
for FF-SB14E/R/Q/K-Q-2 model only

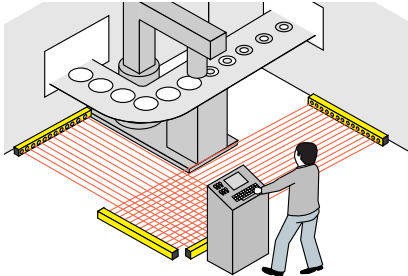
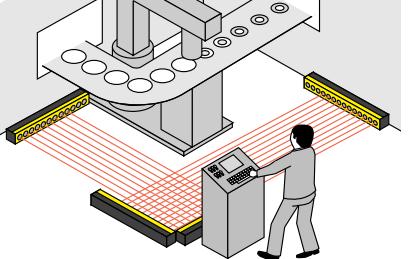
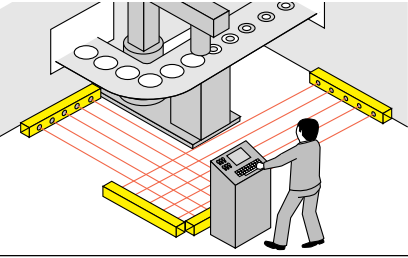
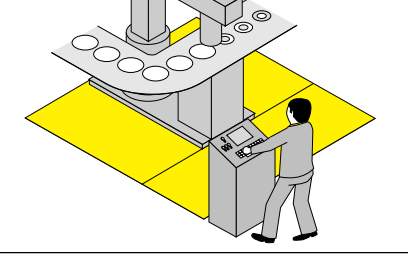
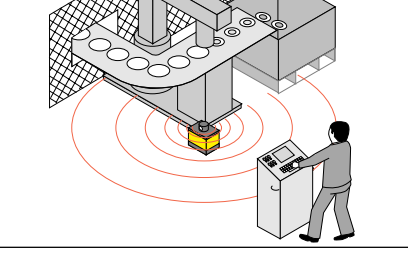
Multiple Light Beams for

TYPICAL APPLICATIONS		RESOLUTION	VOLTAGE RESPONSE TIME
Harsh-duty Type 4 self-contained light curtain with relay outputs 	Heavy industry and material conversion - Access control for: - Robotic and transfer areas - Machinery centers - Palletising areas - Storage and stacking areas - Max. length of a U-shaped perimeter: 19 m/62.32 ft	2, 3 or 4 beams per EN 999  BODY DETECTION ø235 mm / 9.25 in	Voltage: 120/240 Vac 24 to 48 Vdc Response time: 25 to 29 ms according to models
Compact Type 2 light curtain with separate control unit and relay outputs 	Light industry and material conversion, transportation and storage - Access control for robotic areas - Access control for transfer areas - Perimeter protection - Max. length of a U-shaped perimeter: 8 m/26.2 ft	3 to 9 beams  BODY DETECTION ø184 mm / 7.24 in	Voltage: 24 Vdc Response time: 28 to 30 ms according to models
Type 4 modular light curtain with M18 sensors and separate control unit with relay outputs 	Heavy industry and material conversion - Access protection on palletising areas - Access control of areas containing robots or automatic machines - Detection of automatic guided vehicles - Thermoforming, agglomerating and moulding press - Max. length of a U-shaped perimeter: 27 m/88.56 ft	2 to 8 beams  BODY DETECTION According to EN 999	Voltage: 120/240 Vac 24 to 48 Vdc Response time: 30 ms
Compact Type 4 self-contained single beam with relay outputs 	Heavy industry and material conversion - Access control of perimeter protection around a robot zone, trip device at the entrance and the exit of a paint shop, etc. - Access control at the rear of a press brake - Max. length of a U-shaped perimeter: 19 m/62.32 ft	1 beam  BODY DETECTION According to EN 999	Voltage: 120 or 240 Vac 24 Vdc Response time: 20 ms
Harsh-duty Type 4 access control systems with relay outputs 	Heavy industry and material conversion - Access control for perimeter protection around a robot zone, trip device at the entrance and the exit of a paint shop, etc. - Access control at the rear of a press brake - Max. length of a U-shaped perimeter: 60 m/196.8 ft	2 or 3 beams  BODY DETECTION According to EN 999	Voltage: 120 Vac 240 Vac 24 Vdc Response time: 20 ms

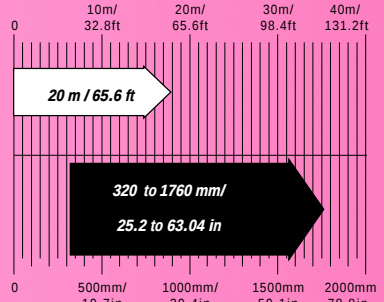
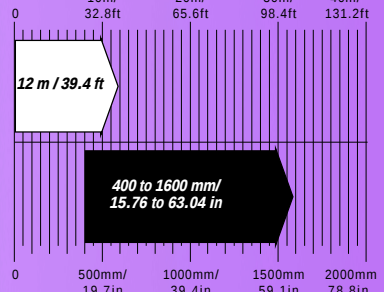
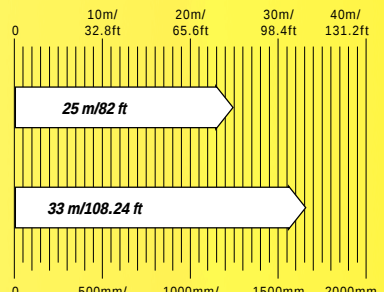
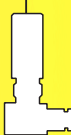
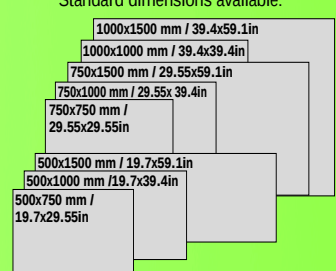
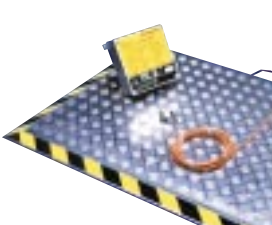
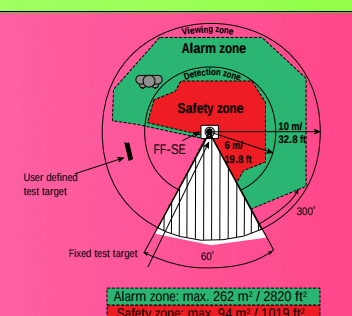
Access Control to Dangerous Areas

FUNCTIONS		APPROVALS	DIMENSIONS OF THE PROTECTED AREA SCANNING RANGE (m/ft) PROTECTION HEIGHT (mm/in)		DIMENSIONS	
Automatic restart	•	   Approved as Type 4 per pr EN 50100 - 1/2		 116 x 56 mm/ 4.57 x 2.20 in	FF-SB15 	FF-SB P. 89
Start and restart interlock	•					
Test input	•					
FSD monitoring	•					
Beam status output	•					
Output contacts	2NO+1NC					
Automatic restart	•	   Approved as Type 2 per EN 50100 - 1/2		 70 x 50 mm/ 2.75 x 1.97 in	FF-SLC18 	FF-SLC P. 109
Start and restart interlock	•					
Test input	•					
FSD monitoring	•					
Beam status output	•					
Output contacts	2NO+1NC					
Self-diagnostic output	•					
Automatic restart	•	  Approved as Type 4 per pr EN 50100 - 1/2		 99 x Ø18 mm/ 3.90 x 0.70 in	FF-SCAN 	FF-SCAN P. 119
Start and restart interlock	•					
Test input	•					
FSD monitoring	•					
Beam status output	•					
Output contacts	2NO+1NC					
Automatic restart	•	   Approved as Type 4 per pr EN 50100 - 1/2		 120 x 50 mm/ 4.72 x 0.02 in	FF-SPS4 	FF-SPS4 P. 127
Start and restart interlock	•					
Test input	•					
FSD monitoring	•					
Beam status output	•					
Output contacts	2NO+1NC					
Optical interference immunity	•					
Automatic restart	•	   Approved as Type 4 per pr EN 50100 - 1/2		 a 1170 46.09 b 200 7.88 c 128 5.04 d 133.2 5.24	FF-SPS4 systems 	FF-SPS4 P. 133
Start and restart interlock	•					
Test input	•					
FSD monitoring	•					
Beam status output	•					
Output contacts	2NO+1NC					

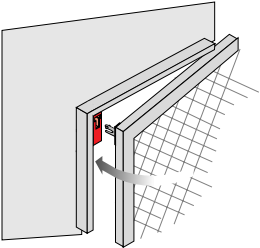
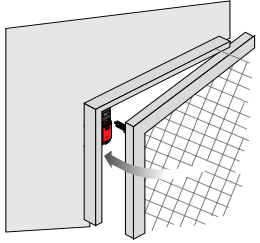
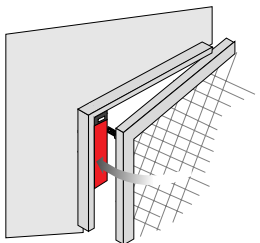
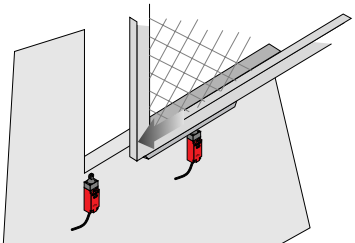
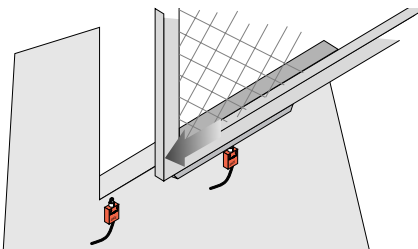
Electro-Sensitive Protective Equipment for

TYPICAL APPLICATIONS		RESOLUTION	VOLTAGE RESPONSE TIME
Compact Type 4 light curtain with fail-safe static outputs 	Heavy industry and material conversion • Presence control for: - Robotic and transfer areas - Machinery centers - Palletizing areas - Storage and stacking areas	 BODY DETECTION ø60 mm / 2.4 in	Voltage: 24 Vdc Response time: 13.5 to 17.5 ms according to models
Compact Type 2 light curtain with separate control unit and relay outputs 	Light industry and material conversion, transportation and storage • Presence control for robotic areas • Presence control for transfer areas	 BODY DETECTION ø55 mm / 2.16 in	Voltage: 24 Vdc Response time: 28 to 30 ms according to models
Type 4 modular light curtain with M18 sensors and separate control unit with relay outputs 	Heavy industry and material conversion • Protection on palletising areas • Presence control of areas containing robots or automatic machines • Detection of automatic guided vehicles • Thermoforming, agglomerating and moulding presses	 BODY DETECTION According to EN 999	Voltage: 120/240 Vac 24 to 48 Vdc Response time: 30 ms
Category 3 Pressure sensitive mat and separate control unit with relay outputs 	Heavy industry and material conversion • Presence sensing device for the control of dangerous areas such as robot areas, automotive transfer lines • Additional protection for optoelectronic trip devices • Suitable for cutting oils, welding splashes, shavings, etc.	 BODY DETECTION Sensitivity ≥ 30 kg/66lbs	Voltage: 120 Vac 240 Vac 24 Vdc Response time: 25 ms
Category 3 laser scanner with relay outputs 	Light industry • Ground level trip device as an alternative to the safety mat • Industrial robot areas • Automatically guided vehicles • For the control of large areas of any shape • Suitable for relatively clean environments	 BODY DETECTION ø70 mm / 2.75 in	Voltage: 24 Vdc Response time: 280 ms (including relays)

Presence Control in Dangerous Zones

FUNCTIONS		APPROVALS	DIMENSIONS OF THE PROTECTED AREA SCANNING RANGE PROTECTION HEIGHT	DIMENSIONS		
Automatic restart	•	   Approved as Type 4 per IEC/EN 61496-1/2		 60 x 42 mm/ 2.36 x 1.65 in		FF-SYA60
Start and restart interlock (*)	•					
Test input	•					
FSD monitoring (*)	•					
Cross-talk detection/reduction	•					
Output contacts (static outputs)	2NO					
Output contacts (*)	2NO+1NC					
*through external relay module						
Automatic restart	•	   Approved as Type 2 per EN 50100 - 1/2		 70 x 50 mm/ 2.75 x 1.97 in		FF-SLC55
Start and restart interlock	•					
Test input	•					
FSD monitoring	•					
Beam status output						
Output contacts	2NO+1NC					
Self-diagnostic output	•					
Automatic restart	•	  Approved as Type 4 per pr EN 50100 - 1/2		 99 x Ø18 mm/ 3.90 x 0.70 in		FF-SCAN
Start and restart interlock	•					
Test input	•					
FSD monitoring	•					
Beam status output	•					
Output contacts	2NO+1NC					
Automatic restart	•	  INRS EN 1760 MAT: Category 3 EN 954-1 CONTROL UNIT: Category 4 EN 954-1		- Max. surface per control unit is: 6 m²/64.5 ft² - Thickness: ≤ 20 mm/0.78 in - Control unit dimensions: H 211 x W 211 x D 96 mm/ H 8.31 x W 8.31 x D 3.78 in		FF-SM
Start and restart interlock	•					
Test input	•					
FSD monitoring	•					
Beam status output						
Output contacts	2NO+1NC					
Automatic restart	•	 NRTL/C Pending   Approved as Type 3 per IEC/EN 61496-1		Device dimensions: W 172 x H 176 x D 107 mm/ W 6.77 x H 6.93 x D 4.21 in		FF-SE
Start and restart interlock	•					
Test input						
FSD monitoring						
Beam status output	•					
Output contacts	2NO					
Optical interference immunity	•					
Contamination control	•					

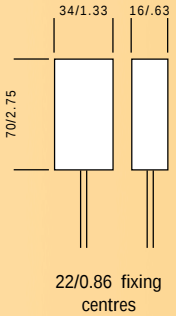
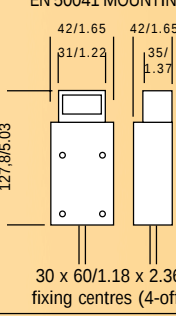
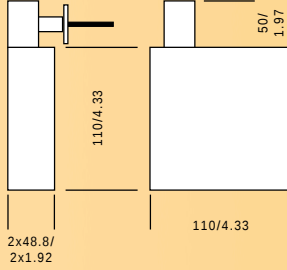
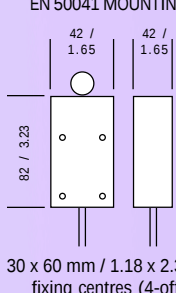
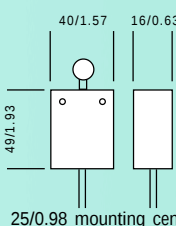
Safety Electromechanical

TYPICAL APPLICATIONS		FUNCTIONS	CONTACTS
Miniature Safety Key Interlock Switch 	- Door control for: - Electronic assembly - Packaging / wrapping - Printing	Key operated guard for door interlock	- Slow action 1NC + 1NO 2NC
Dual Entry Key Operated Safety Interlock Switch 	- Key operated switch for: - Sliding guard doors and screens - Protective covers or enclosures with hinge, or removable	Key operated guard for door interlock	- Slow action 1NC + 1NO (BBM)⁽¹⁾ 2NC 2NC + 2NO 3NC + 1NO 4NC - Snap action 1NC + 1NO
Dual Entry Solenoid Key Operated Safety Interlock Switch 	- Locking key operated switch for: - Very dangerous machines - Presses - Metal working - Machine tool - Automotive plant floor	Key operated guard with solenoid locking capability	- Slow action 1NC + 1NO (BBM)⁽¹⁾ 2NC 2NC + 2NO 3NC + 1NO
Global Safety Switch 	- Door control for: - Machine tools - Wood machinery - Automatic assembling machines	Safety switch with forced disconnection	- Slow action 1NC + 1NO (MBB)⁽²⁾ 2NC 2NC + 1NO (BBM)⁽¹⁾ 2NC + 2NO (BBM)⁽¹⁾ 3NC + 1NO (BBM)⁽¹⁾ 4NC - Snap action 1NC + 1NO 2NC + 2NO 2NC + 2NO sequential
Miniature Safety Electromechanical Switch 	- Door control for: - Material handling equipment - Packaging machinery - Textile machinery - Small construction machinery	Pre-wired switch with positive opening	- Slow action 1NC 1NC + 1NO (BBM)⁽¹⁾ 1NC + 1NO (MBB)⁽²⁾

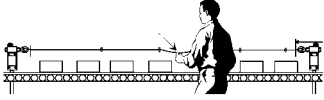
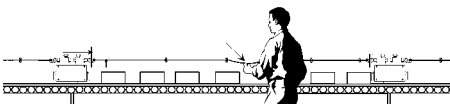
⁽¹⁾ BBM: Break before make

⁽²⁾ MBB: Make before break

Switches for Gate Monitoring

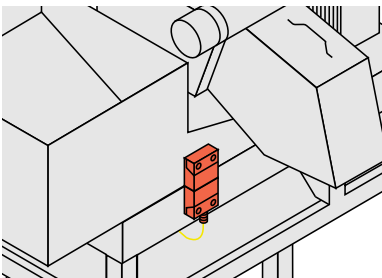
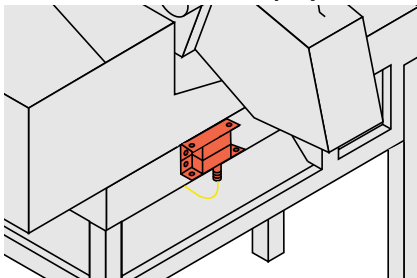
APPROVALS	FEATURES	DIMENSIONS		
    EN 60947-5-1-3 Pending	• Compact design • Side or top key entry • Prewired or connectorized • Daisy chain with pin to pin cross monitoring • Positive opening	 22/0.86 fixing centres		GKM GKM P. 167
    EN 60947-5-1-3 Pending	• Harsh duty design • Side or top key entry • 4 key styles • Single and dual LED indicator versions • IP 67 - NEMA 4 sealing • -25 to 85 °C / -13 to 185 °F operating temperature • Galvanically isolated contacts • Positive opening	 EN 50041 MOUNTING 30 x 60/1.18 x 2.36 fixing centres (4-off)		GK GK P. 171
    EN 60947-5-1-3 Pending	• Harsh duty design • Side or top key entry • Separate contact blocks control key entry and solenoid status • Solenoid power to lock or unlock key • IP 68 - NEMA 6 sealing • Dual indicator LED • Wide range of solenoid voltages available • Positive opening	 2x48.8/2x1.92 110/4.33 50/1.97 110/4.33		GKR/L GKR/L P. 175
    EN 60947-5-1-3 Pending	• Range of body sizes • Harsh duty design • Modular • Up to IP 67 sealing • -25 to 85 °C / -13 to 185 °F operating temperature • Galvanically isolated contacts • Sequential basic • Positive opening	 EN 50041 MOUNTING 30 x 60 mm / 1.18 x 2.36 in fixing centres (4-off)		GSS GSS P. 179
  (924CE only) (924CE only)   EN 60947-5-1-3 24CE only	• Compact design • Prewired and miniature switch • Stackable • IP 66 or 67 sealing • 0 to 70 °C / 32 to 158 °F operating temperature • 3 mm/ 0.11 in contact spacing • Positive opening	 25/0.98 mounting centres Dimensions in mm/in		24CE/924CE 24CE/924CE P. 191

Safety Electromechanical Switches

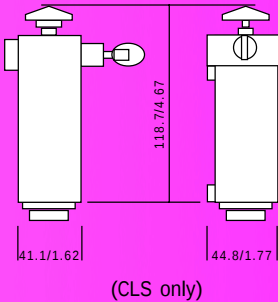
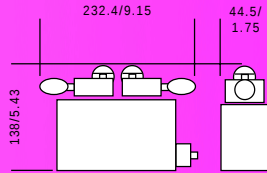
TYPICAL APPLICATIONS		FUNCTIONS	CONTACTS
Cable Pull Safety Switch Single Head 	• Cable pull switch for: - Conveyors - Packaging machinery - Assembly lines - Process equipment - Transfer lines - Material handling equipment	• Cable actuated safety switch with forced disconnection	• Slow action . 1NC + 1NO (BBM)⁽¹⁾ . 2NC . 2NC + 2NO . 3NC + 1NO . 4NC
Cable Pull Safety Switch Dual Head 	• Cable pull switch for: - Conveyors - Packaging machinery - Assembly lines - Process equipment - Transfer lines - Material handling equipment	• Cable actuated safety switch with forced disconnection	Primary: • Slow action: . 1NC + 1NO (BBM)⁽¹⁾ . 2NC Auxiliary: • Slow action: . 1NC + 1NO (BBM)⁽¹⁾ . 2NC

⁽¹⁾ BBM: Break before make

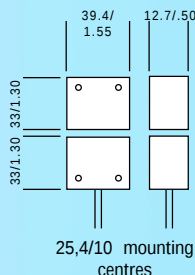
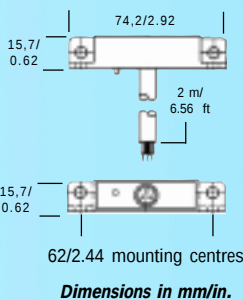
Hall Effect Door Interrupt

Hall Effect Door Interrupt System 	• Door control for: - Food and beverage machinery - Machine tools - Automotive - Material handling machinery	• Door interrupt system	• 2 NO contacts in series (2 safety relays with guided contacts)
Hall Effect Door Interrupt System 	• Door control for: - Food and beverage machinery - Material handling machinery - Light industrial equipment - Packaging equipment - Electronic assembly equipment	• Door interrupt system	• Solid state open collector outputs (note: use of FF-SR Series recommended)

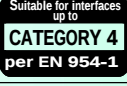
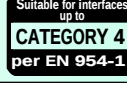
for Perimeter Emergency Stop

APPROVALS	FEATURES	DIMENSIONS	
   EN 60947-5-1-3  Pending	• Tension indicator for easy adjustment • Broken/Slackened cable detection • Snap action head • Four conduit thread sizes • -1 to 70 °C / 30 to 158 °F operating temperature • IP 67 - NEMA 1, 3, 4, 13 sealing • Indicator lights available • 60 m / 200 ft maximum cable run • Explosion-proof version available	 (CLS only)	CLS CLSX 
   EN 60947-5-1-3  Pending	• Tension indicator for easy adjustment • Broken/Slackened cable detection • Snap action head • Four conduit thread sizes • -1 to 70 °C / 30 to 158 °F operating temperature • IP 67 - NEMA 1, 3, 4, 13 sealing • Indicator lights available • 120 m / 400 ft maximum cable run		2CLS 

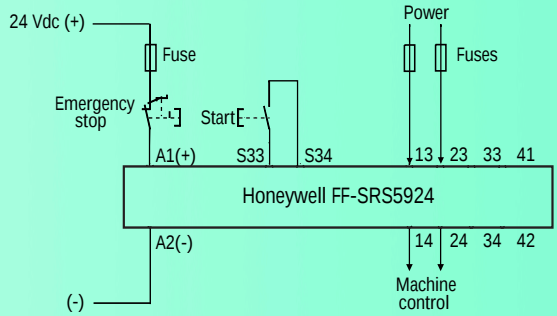
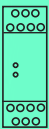
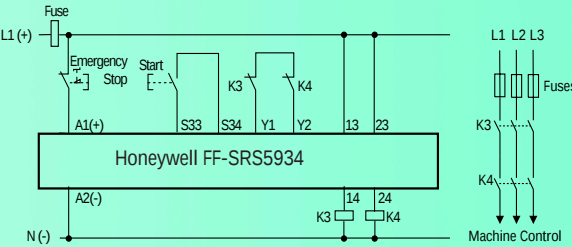
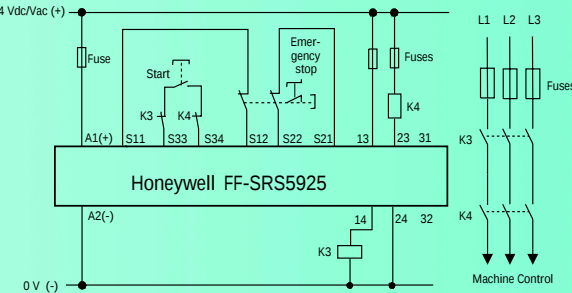
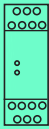
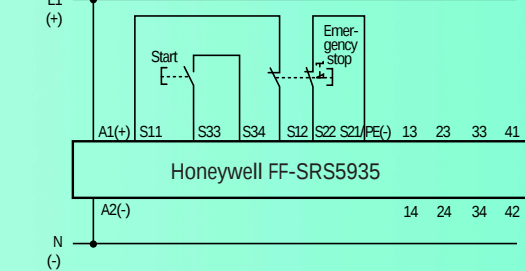
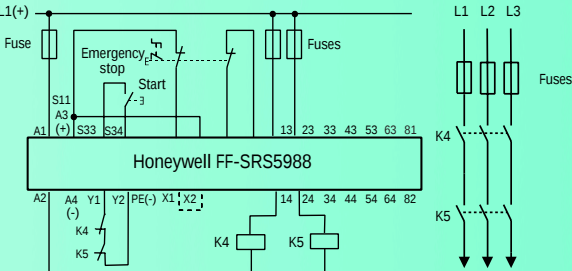
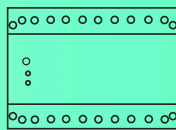
Systems for Gate/Door Monitoring

 CATEGORY 3 EN 954-1  EN 60947-5-1-3	• Up to 6 sensors per amplifier • LED indicators • Tamper resistant • Corrosion resistant plastic housing • IP 67 sealing • -40 to 85 °C / -40 to 153 °F operating temperature		50FY 
 CATEGORY 1 EN 954-1  EN 60947-5-1-3	• Compact design • Alignment LED indicator • Tamper resistant • Corrosion resistant plastic housing • Pre-leaded or connectorized • IP 67 sealing, washdown • Wide temperature rating	 Dimensions in mm/in.	40FY 

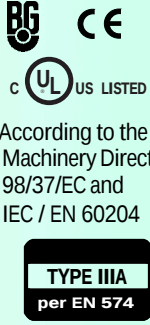
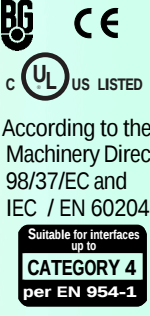
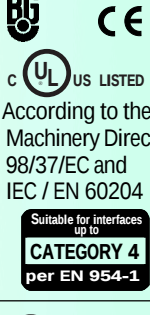
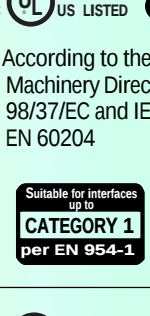
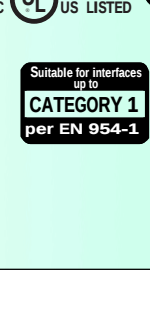
Safety Modules For

TYPICAL APPLICATIONS	FEATURES	VOLTAGES	APPROVAL	CONDITIONS OF USE
Single Channel Emergency Stop Module - E-Stop circuits up to Category 2 (EN 954-1) - Sliding door protection - Conveyors/transfer lines	- Single channel input - Slim 22,5 mm/0.88 in housing - Automatic or manual restart - FSD monitoring - Power and outputs LED indicators - Removable terminal strips	Voltage: 24 Vdc	 According to the Machinery Directive: 98/37/EC and IEC / EN 60204 	- Switching capacity: 10 mA - 4 A - Typical electrical lifespan: 10⁶ operations - Response time: 35 ms
Single Channel Emergency Stop Module - E-Stop circuits up to Category 2 (EN 954-1) - Sliding door protection - Conveyors/transfer lines	- Single channel input - Automatic or manual restart - FSD monitoring - Power and outputs LED indicators	- Voltages: 24 Vdc, 120 Vac, 230 Vac - Frequency: 50/60 Hz	 According to the Machinery Directive: 98/37/EC and IEC / EN 60204 	- Switching capacity: 10 mA - 10 A - Typical electrical lifespan: 10⁶ operations - Response time: 35 ms
Dual Channel Emergency Stop Module - E-Stop circuits up to Category 4 (EN 954-1) - Point of operation protection - Door protection - Perimeter guarding - Conveyor/transfer lines	- Dual channel input - Slim 22,5 mm/0.88 in housing - Short-circuit detection on start push-button - Automatic or manual restart - Cross-fault detection - FSD monitoring - Power and outputs LED indicators - Removable terminal strips	Voltage: 24 Vac/Vdc	 According to the Machinery Directive: 98/37/EC and IEC / EN 60204 	- Switching capacity: 1 mA - 7 A - Typical electrical lifespan: 10⁶ operations - Response time: 15 ms - Overvoltage and short-circuit protection
Dual Channel Emergency Stop Module - E-Stop circuits up to Category 4 (EN 954-1) - Point of operation protection - Door protection - Perimeter guarding - Conveyor/transfer lines	- Dual channel input - Short-circuit detection on start push-button - Automatic or manual restart - Cross-fault detection - FSD monitoring - Power and outputs LED indicators - Removable terminal strips	- Voltages: 24 Vdc, 120 Vac, 230 Vac - Frequency: 50/60 Hz	 According to the Machinery Directive: 98/37/EC and IEC / EN 60204 	- Switching capacity: 1 mA - 10 A - Typical electrical lifespan: 10⁶ operations - Response time: 25 ms - Overvoltage and short-circuit protection
Dual Channel Emergency Stop Module - E-Stop circuits up to Category 4 (EN 954-1) - Point of operation protection - Door protection - Perimeter guarding - Conveyor/transfer lines	- Dual channel input - Dual voltage device - Multiple output contacts - Short-circuit detection on start push-button - Automatic or manual restart - Cross-fault detection - FSD monitoring - Power and outputs LED indicators - Removable terminal strips	- Voltages: 120 Vac/24 Vdc, 230 Vac/24 Vdc - Frequency: 50/60 Hz	 According to the Machinery Directive: 98/37/EC and IEC / EN 60204 	- Switching capacity: 1 mA - 10 A - Typical electrical lifespan: 10⁶ operations - Response time: 30 ms - Overvoltage and short-circuit protection

Emergency Stop Circuits

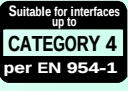
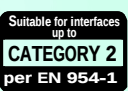
APPLICATION SCHEMATICS	OUTPUT	DIMENSIONS	
	• 3 NO contacts • 1 NC contact	Front view  W 22,5 x D 121 x H 84 mm/ W 0.89 x D 4.77 x H 3.31 in	FF-SRS5924 
	• 2 NO contacts	Front view  W 45 x D 121 x H 74 mm/ W 1.77 x D 4.76 x H 2.91 in	FF-SRS5934 
	• 2 NO contacts • 1 NC contact	Front view  W 22,5 x D 118 x H 84 mm/ W 0.89 x D 4.65 x H 3.31 in	FF-SRS5925 
	• 3 NO contacts • 1 NC contact	Front view  W 45 x D 121 x H 74 mm/ W 1.77 x D 4.76 x H 2.91 in	FF-SRS5935 
	• 6 NO contacts • 1 NC contact	Front view  W 100 x D 121 x H 74 mm/ W 3.93 x D 4.76 x H 2.91 in	FF-SRS5988 

Safety Control Modules

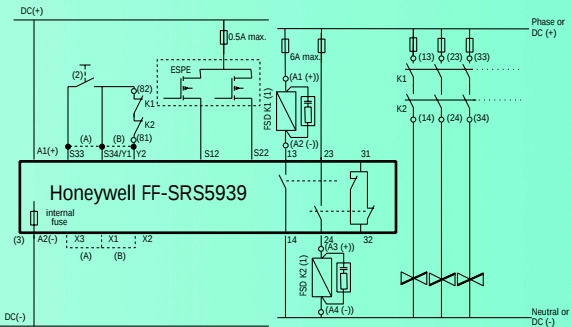
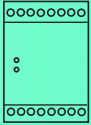
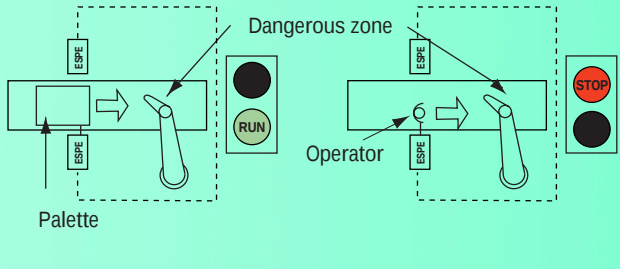
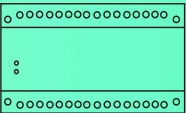
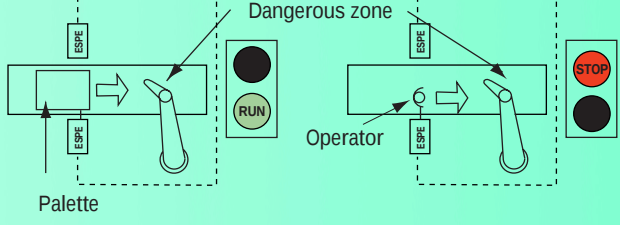
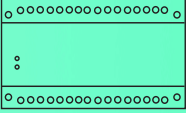
TYPICAL APPLICATIONS	FEATURES	VOLTAGES	APPROVAL	CONDITIONS OF USE
Two hand control - Interfaces up to Category 1 (EN 954-1) - Type IIIA (EN 574) - Hand injury protection e.g. due to dangerous machine movement - Robotics - Pick and place machines	- Dual channel input for two hand devices - FSD monitoring - Power and output LED indicators	- Voltages: 24 Vdc, 120 Vac, 230 Vac - Frequency: 50/60 Hz	 According to the Machinery Directive: 98/37/EC and IEC / EN 60204	- Switching capacity: 1 mA - 10 A - Typical electrical lifespan: 10⁶ operations - Simultaneity conditions between 2 inputs max. 0.5 s - Response time: 30 ms - Voltage drop and short-circuit protection
Safety door monitor - Interfaces up to Category 4 (EN 954-1) - Monitors the status of position switches on a safety door	- Dual channel input - Automatic start - FSD monitoring	- Voltages: 24 Vdc, 120 Vac, 230 Vac - Frequency: 50/60 Hz	 According to the Machinery Directive: 98/37/EC and IEC / EN 60204	- Switching capacity: 1 mA - 10 A - Typical electrical lifespan: 10⁶ operations - Simultaneity conditions between 2 inputs max. 3 s - Response time: 30 ms - Voltage drop and short-circuit protection
Expansion module - Interfaces up to Category 4 (EN 954-1) - Contact multiplication for: - safety control modules - safety light curtains - other safety devices	- Single or dual channel protection - Redundant guided safety contacts - FSD monitoring - Outputs LED indicators - Removable terminal strips	- Voltages: 24 Vdc, 120 Vac, 230 Vac - Frequency: 50/60 Hz	 According to the Machinery Directive: 98/37/EC and IEC / EN 60204	- Switching capacity: 10mA - 10 A - Typical electrical lifespan: 10⁶ operations - Response time: 15 ms
Time delay module Time delay before disconnection of safety interface circuits	1 or 2 channel outputs - Fixed or adjustable delay on de-energisation: (0.1 s up to 30 s) - Power LED indicator	- Voltages: 24 Vdc, 120 Vac, 230 Vac - Frequency: 50/60 Hz	 According to the Machinery Directive: 98/37/EC and IEC / EN 60204	- Switching capacity: 30 mA - 8 A - Typical electrical lifespan: 10⁶ operations
Standstill monitor - Standstill detection of asynchronous motors. - Example: Allows the opening of a protective door when movement is stopped or applies a brake while movement exists	- Broken wire detection in measuring circuit with LED indicator - Power and outputs LED indicator - Self-checked. - For Category 1 Emergency Stop Interfaces (per EN 418)	- Voltages: 24 Vdc, 120 Vac, 230 Vac - Frequency: 50/60 Hz		- Switching capacity: 30 mA - 8 A - Typical electrical lifespan: 300.000 operations

FF-SR05936

Safety Control Modules

TYPICAL APPLICATIONS	FEATURES	VOLTAGE	APPROVAL	CONDITIONS OF USE
Category 4 interface control module <i>Compatible with the FF-SYA Series and the FF-SRM muting module ONLY</i>	- Dual inputs compatible with failsafe solid state outputs of Honeywell electrosensitive protective equipment - Selectable start and restart interlock - Optional FSD monitoring loop - LED indicators for inputs/ outputs status and for restart condition - Removable terminal strips	• 24 Vdc	 Pending   	- Switching capacity: 1 mA to 6A - DIN rail mounting 15 ms response time
Category 4 muting for conveyor or machine applications <i>Compatible with any Honeywell Type 3 or 4 protective equipment</i>	- Connection of 2 or 4 muting sensors with coincidence monitoring - Variable timings - Override facility - Start & restart interlock facility - FSD monitoring loop - Optional test input for the control of the ESPE at power up - Failure diagnostic output - Removable terminal strips	• 24 Vdc	   	- Switching capacity: 0.5A / 24 Vdc for connections to the machine control circuit including the muting lamp, 100 mA / 24 Vdc for status outputs - Protection against overload, short-circuits and reversed polarity - DIN rail mounting 5 ms response time
Category 2 muting for conveyor or machine applications <i>Compatible with the FF-SLC Series ONLY</i>	- Connection of 2 or 3 muting sensors with coincidence monitoring - Override facility - Test input for the control of the ESPE at power up and after each actuation - FSD monitoring loop - Failure diagnostic output - Removable terminal strips	• 24 Vdc	   	- Switching capacity: 2A / 125 Vac for connections to the machine control circuit, 0.5A / 60 Vdc for the self-diagnostic output, 200 mA / 24 Vdc for the muting lamp - DIN rail mounting 15 ms response time

to be used with ESPE

APPLICATION SCHEMATICS	OUTPUT	DIMENSIONS	FF-SRS5939 FF-SRM FF-SLM
	• 2 NO and 1 NC contacts provided by two cross-monitored relays	Front view  W 45 x D 121 x H 74 mm/ W 1.77 x D 4.76 x H 2.91 in	
	• Connection to the machine control circuit: 2 NO failsafe static outputs and 1 NO failure alarm static output (tested at start up) • Status indication: 1 static output for the muting lamp with permanent monitoring, 3 static outputs for remote indication on restart conditions and outputs status	Front view  W 152 x D 118 x H 73 mm/ W 5.98 x D 4.64 x H 2.87 in	
	• Connection to the machine control circuit: 2 NO and 1 NC contacts, 1 NO contact for self-diagnostic • Status indication: 1 output for the muting lamp with permanent monitoring	Front view  W 152 x D 118 x H 73 mm/ W 5.98 x D 4.64 x H 2.87 in	