

Safety over IO-Link: Safe I/O Module BNI IOF

Safe signal acquisition and communication

- Only one infrastructure for automation and safety engineering up to PLe/SIL3 via IO-Link
- Cost savings – due to uniform M12 connection cables
- Reduction in IP address space
- Standardized wiring concept, direct connection of safe guard locking devices possible
- Low maintenance costs when service is required – due to comprehensive diagnostics and simple device replacement

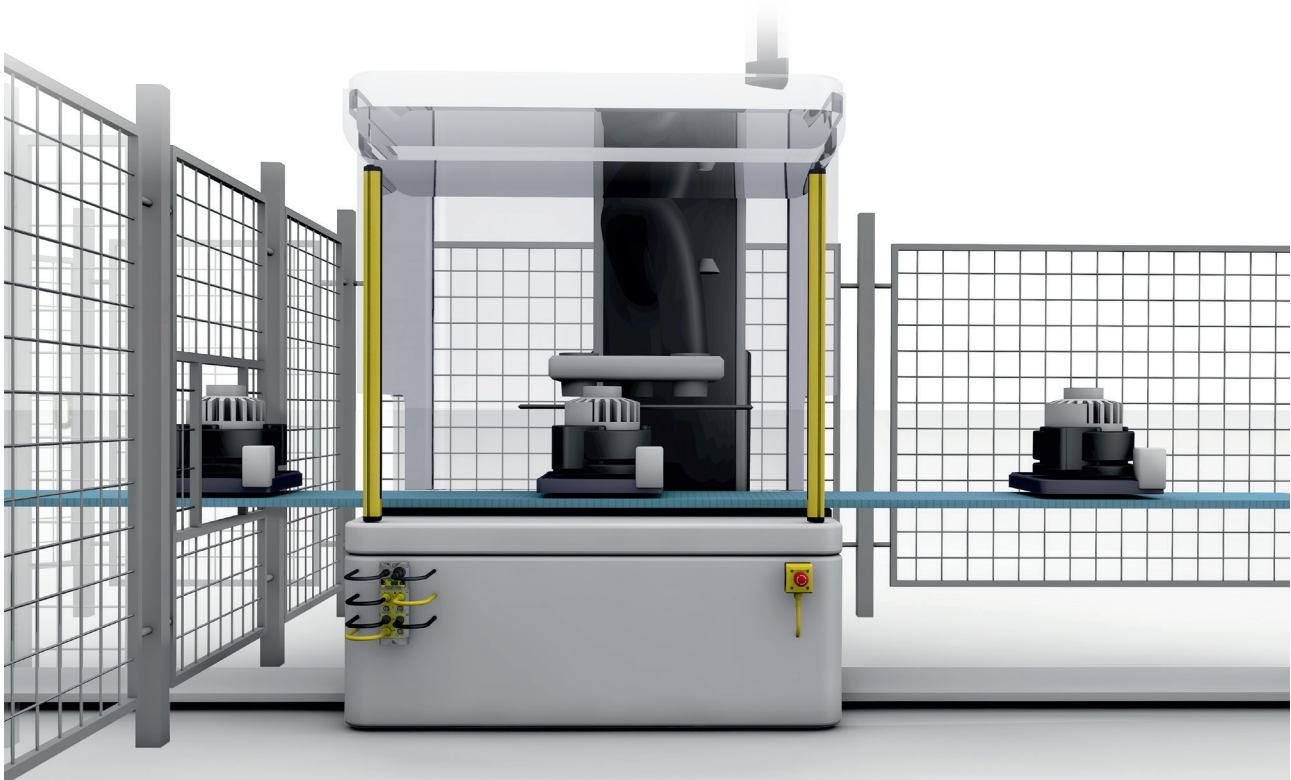


IO-Link



The new safe I/O module combines automation and safety engineering using IO-Link for the first time. Now the machine can be safeguarded in the same system. Because IO-Link provides both sensor/actuator details and safety information as well. This means with Safety over IO-Link you have the best of both worlds. The integration of safety engineering is now simpler than ever.

A system which is open to the sensor level is simple to integrate into the existing equipment. The safe I/O module is connected to the IO-Link master, and virtually any safety device can be connected to the module. Parameters are set centrally from the controller. The safety relevant information is sent through the master to the controller.





Type	Safe I/O module
	BNI0098
Device interface	Profisafe over IO-Link
Baud rate	COM2 (38.4 kBaud)
Cycle time	max. 20 ms
PL (EN ISO 13849-1)/SIL CL (EN/IEC 62061)	PLe/SIL CL 3
Power supply	19.2...30 V DC
Degree of protection per IEC 60529	IP67 (when threaded tight)
Ambient temperature	-5...+55 °C
Number of inputs/safe inputs	2/12
Number of outputs/safe outputs	2/2
Total current $I_{Actuator}$	8 A
Cable length for in-/outputs	max. 30 m
Approvals	TÜV, UL (in preparation)

Connectors



Type	2 m cable PUR (yellow) for safety applications	2 m cable PUR (black), yellow head for safety applications	2 m cable PUR (yellow) for safety applications	2 m cable PUR (black)
	BCC0H1T	BCC0H1E	BCC0H25	BCC09H1
Head 1	M12 female, 5-pin (straight)	M12 female, 4-pin (straight)	M12 female, 8-pin (straight)	M12 female, 5-pin (straight)
Head 2	M12 male, 5-pin (straight)	M12 male, 4-pin (straight)	M12 male, 8-pin (straight)	M12 male, 5-pin (straight)

Accessories



Type	Anti-sabotage protection	Tee	Tee	Tee
	BAM01Z4	BCC09MU	BCC0F58	BCC07WR
Head 1		M12 male, 5-pin	M12 male, 5-pin	M12 female, 5-pin
Head 2		M12 female, 5-pin	M12 female, 5-pin	M12 female, 5-pin
Head 3		M12 female, 5-pin	M12 female, 5-pin	M12 male, 5-pin

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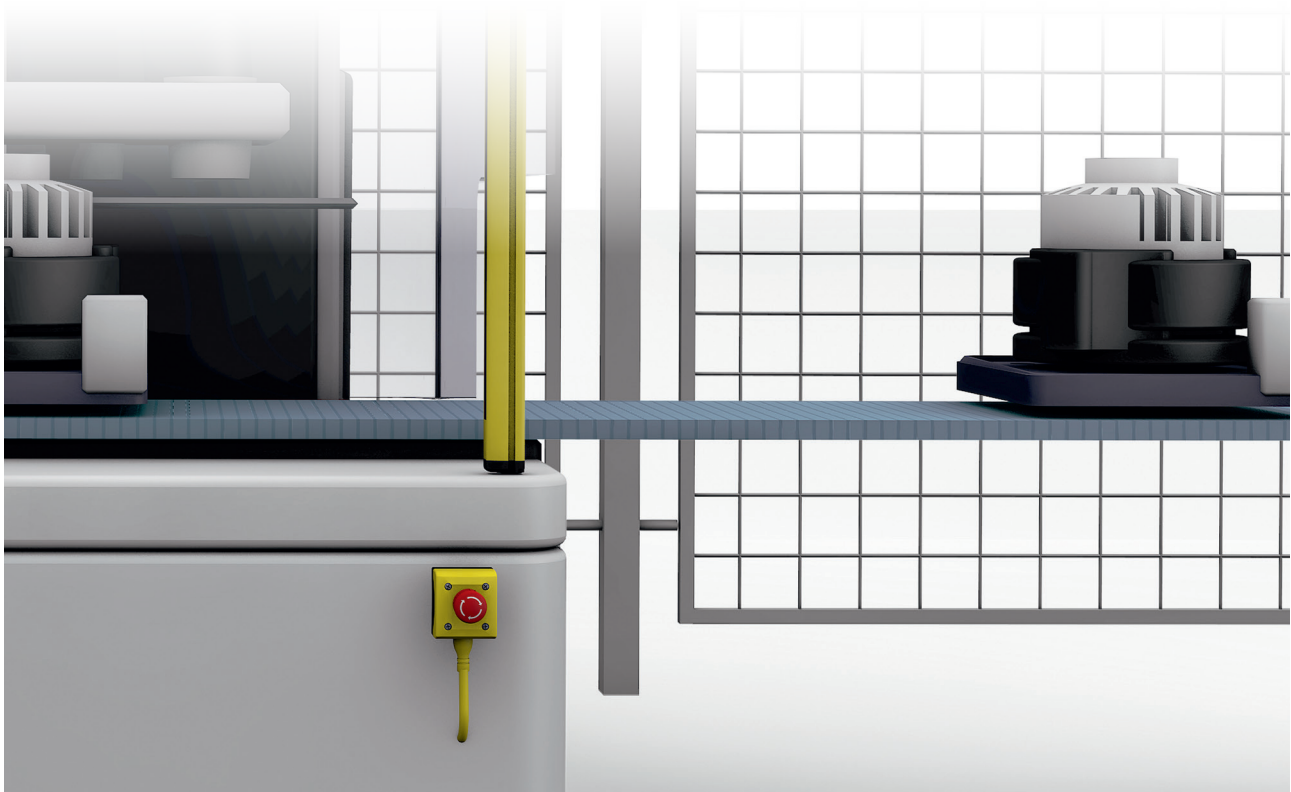
BAM ES E-Stop Device

Compact housing for simple installation
on various machines and equipment

- Reliable power turn-off
- Forced opening per IEC 60947-5-1
- M12 plug connection (5-pin)
- Mushroom pushbutton with rotary release
- High protection against dust and water



The E-stop function is a supplementary protection measure and must always be available for any automated equipment. The E-stop device initiates an immediate stop command and can be used for personal protection functions. The device must be visible and always easily accessible in order to enable stopping in emergency situations.





Emergency stop device	BAM02HA
Contacts	2 × positive opening contacts
Switching voltage	24 V AC/DC
Eff. operating voltage U_e	AC15 24 V
	DC13 24 V
Eff. operating current I_e	AC15 3 A
	DC13 3 A
Mechanical life expectancy	60000 switching cycles
Switching operation force	40 N
Safety characteristic B10d	1.0E+05 switching cycles
Ambient temperature	-25...+70 °C
Degree of protection per IEC 60529	IP65
Housing material	Plastic
Dimensions	72 × 106 × 80 mm
Connection	M12 connector, 5-pin

Connectors



Type	2 m cable PUR (yellow) for safety applications	
	BCC0H1T	BCC0H20
Connection	Head 1	M12 female, 5-pin (straight)
	Head 2	M12 male, 5-pin (straight)
		M12 male, 5-pin (right-angle)

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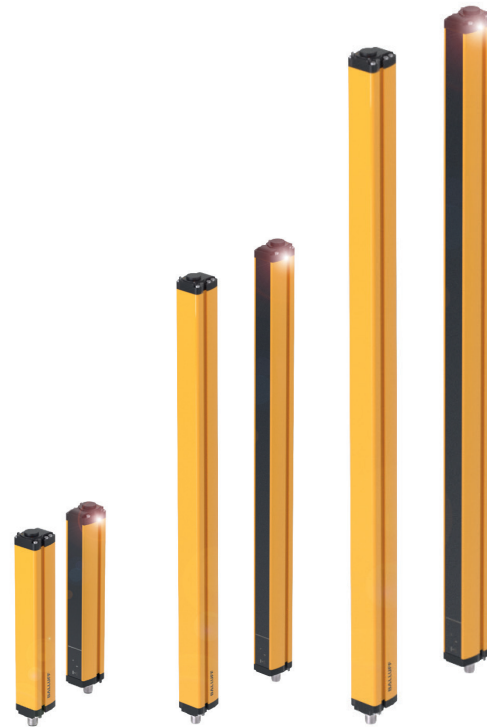
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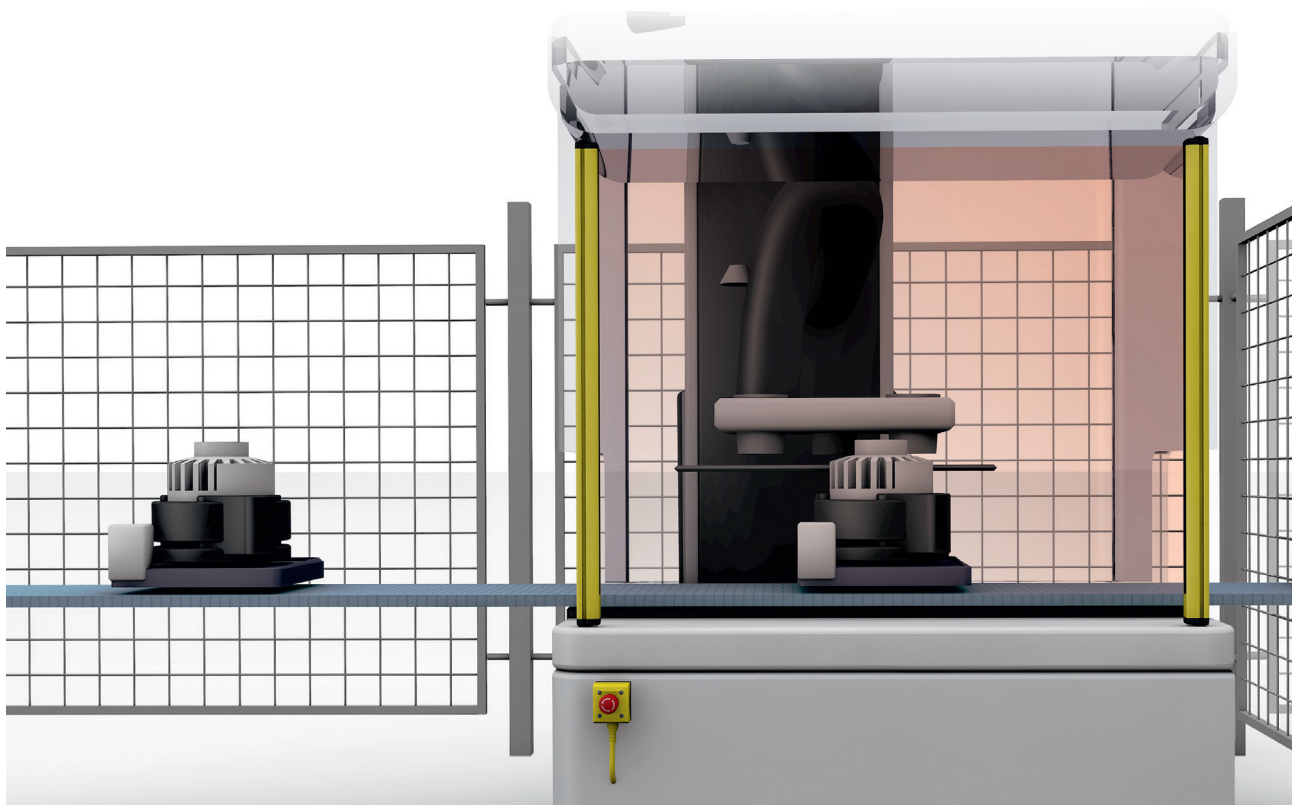
Safety Light Curtains BLG 4A

Economical hazardous area safeguarding for personal protection

- Replaces protective fence constructions for better space utilization
- For fast interaction between man and machine
- High tamper protection
- For finger, hand or body detection
- PLe / SIL 3



Safety light curtains are non-contacting guard devices for detecting fingers, hands or bodies. They are used in work areas where machines present potential hazards. Their most important task is to stop hazard-inducing movements. The device consists of an emitter and a receiver and covers the protected area using an infrared field. As soon as the beams from the emitter are interrupted by an object, both output signal switching devices (OSSDs) on the receiver are turned off. This stops the machine connected to the OSSD outputs.



BALLUFF



Application for		Finger protection	Hand protection	Body protection
Range		< 6 m	< 19 m	< 50 m
Response time		11...50 ms	9...28 ms	14...16 ms
Resolution		14 mm	30 mm	> 315 mm
Photoelectric light grid	150 mm	BLG000A	BLG000T	
	300 mm	BLG000C	BLG000U	
	450 mm	BLG000E	BLG000W	
	515 mm			BLG0006
	600 mm	BLG000F	BLG000Y	
	750 mm	BLG000H	BLG000Z	
	815 mm			BLG0007
	900 mm	BLG000J	BLG0010	
	915 mm			BLG0008
	1050 mm	BLG000K	BLG0011	
	1200 mm	BLG000L	BLG0012	
	1215 mm			BLG0009
	1350 mm	BLG000R	BLG0013	
1500 mm	BLG000M	BLG0014		
1650 mm	BLG000N	BLG0015		
1800 mm	BLG000P	BLG0016		
Switching output		OSSD	OSSD	OSSD
PL (EN ISO 13849-1)/SIL CL (EN/IEC 62061)		PLe/SIL CL 3	PLe/SIL CL 3	PLe/SIL CL 3
Connection	Emitter	M12 male, 4-pin	M12 male, 4-pin	M12 male, 4-pin
	Receiver	M12 male, 5-pin	M12 male, 5-pin	M12 male, 5-pin

Connectors



Type		Tee	2 m cable PUR (black), yellow head for safety applications	2 m cable PUR (black), yellow head for safety applications
		BCC07WR	BCC0H1E	BCC0H1L
Connection	Head 1	M12 female, 5-pin	M12 female, 4-pin (straight)	M12 female, 4-pin (straight)
	Head 2	M12 female, 5-pin	M12 male, 4-pin (straight)	M12 male, 4-pin (right-angle)
	Head 3	M12 male, 5-pin		

Accessories



Type	Installation accessory	Mounting accessory	Laser module	Tool
	BAM02N6	BAM02NE	BAE00WJ	BAM02P9

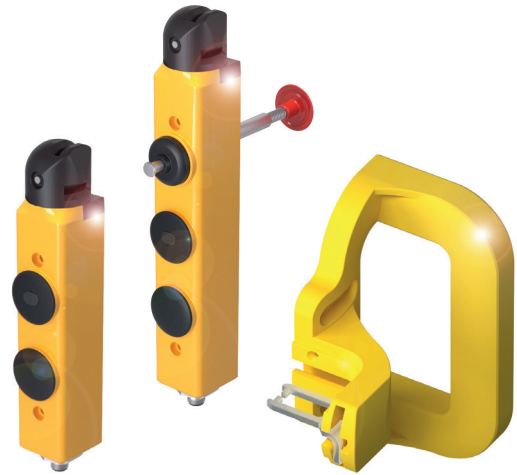
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BID F101 Safety Switch with or without guard locking (function)

Rugged and reliable interlocking (devices) and guard locking devices

- Rigid metal housing with status indicator
- Rotating head (90° increments) with two insertion openings
- M12 plug connection (5-pin, 8-pin)
- Guard locking device for operating or quiescent current
- High locking force up to 2500 N



Safety switches with separate actuator are protection devices which simultaneously provide personal and machine protection. Together with a machine controller and a guard they secure the hazardous area against access. Depending on the requirements, safety switches without guard locking, with mechanical guard locking, or with electrical guard locking can be used.





Safety switch	BID0005	BID0004	BID0002	BID0003	BID0001
Guard locking		mechanical (closed-circuit current)	mechanical (closed-circuit current)	electrical (open-circuit current)	electrical (open-circuit current)
Escape release			Yes		Yes
Door contacts	2 × positive opening contacts and 1 × NO	1 × NO	1 × NO	1 × NO	1 × NO
Magnetic contacts		2 × positive opening contacts	2 × positive opening contacts	2 × positive opening contacts	2 × positive opening contacts
Connection	M12 connector, 5-pin	M12 connector, 8-pin	M12 connector, 8-pin	M12 connector, 8-pin	M12 connector, 8-pin

Connectors



Type		2 m cable PUR (yellow) for safety applications	2 m cable PUR (yellow) for safety applications	2 m cable PUR (yellow) for safety applications	2 m cable PUR (yellow) for safety applications
		BCC0H1T	BCC0H20	BCC0H25	BCC0H2A
Connection	Head 1	M12 female, 5-pin (straight)	M12 female, 5-pin (straight)	M12 female, 8-pin (straight)	M12 female, 8-pin (straight)
	Head 2	M12 male, 5-pin (straight)	M12 male, 5-pin (right-angle)	M12 male, 8-pin (straight)	M12 male, 8-pin (right-angle)

Accessories



Actuator	BAM0270	BAM0271	BAM0272
Description	Actuator, angled	Actuator, swinging doors handle	Actuator, sliding doors handle

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