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Safety multibeam system for access detection with integrated muting function

Compact, Smart and Full-featured

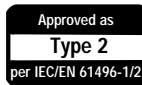*FF-SLG234 Series*

FF-SLG234

FEATURES

- Active Optoelectronic Protective Device compliant with the requirements of the IEC/EN 61496-parts 1 and 2 European Norms for Type 2 electrosensitive protective equipment
- Two, three or four beams for access and body detection
- Integrated muting function: no need for an external safety control module
- Self contained unit. No electrical connection necessary between emitter and receiver, no control unit required
- 2 static safety outputs with short-circuit and cross-fault detection
- Scanning range: up to 45 m / 147.34 ft
- Automatic or Manual restart
- Temporary manual muting function
- Enhanced indicators for alignment, restart, output status and failure
- Electrical connections: M12 connectors
- Compact: cross section 35 mm x 40 mm / 1.38 in x 1.57 in
- Optional floor mounting posts for FF-SLG234 emitter and receiver
- Optional floor mounting mirror posts

CE

TÜV
PRODUCT SERVICE
Safety tested
Functional Safety

Approved as
Type 2
per IEC/EN 61496-1/2

The Honeywell FF-SLG234 multibeam system is designed in compliance with IEC/EN 61496 parts 1 & 2 standard and meets the requirements for a Type 2 Active Protective Device.

The muting function is integrated into the FF-SLG234. Thanks to two inputs-muting 1 and muting 2 - the FF-SLG234 internal logic is able to monitor the inhibition of the safety light curtain during specific stages of operation. In addition, the FF-SLG234 multibeam systems are equipped with an auxiliary partial muting function that deactivates selected beams inside the protection field. The desired configuration can be obtained using the dip-switches positioned on the receiver unit.

The cross section of 35 mm x 40 mm / 1.38 in x 1.57 in makes installation possible in tight spaces, especially with the help of the T-shape bolts supplied with the light curtains. Indicators provide information on the output status, on failure diagnostic and ensure a correct alignment of the FF-SLG234.

A test input on the receiver allows for a cycle test of the system, for use in single channel connection schemes.

Where Type 2 safety products are appropriate, the long scanning distance covers most perimeter guarding applications. The optional FF-SYZPF mirror posts can be used to protect several sides of a machine.

TYPICAL APPLICATIONS

- Conveyors
- Wood working machines
- Textile industry
- Packaging industry
- Automatic warehouses

⚠ DANGER

IMPROPER SAFETY PRODUCT USE IN THE US

- Type 2 safety light curtains as defined by IEC/EN 61496-1 and IEC/pr EN 61496-2 **do not meet** US OSHA 1910.217, US ANSI B11.1, B11.2, B11.19 and B11.20 requirements. Although Type 2 safety products are acceptable for certain applications outside the US, they are not generally acceptable in the US due to current US regulations and standards.
- In the US, Type 2 safety light curtains may be used under limited circumstances as defined by the ANSI/R15.06-1999 standard. In Canada, IEC/EN 61496-1 and IEC/pr EN 61496-2 are recognised as product standards, however application standards do not typically allow Type 2 light curtain use.
- Do not use Type 2 safety products in the US if the applicable standard requires a control reliable solution. For Risk Assessment, refer to ANSI TR3 and ANSI/R15.06-1999 for the USA and the Ministry of Labour for Canada.
- Consult with local safety agencies before installing a Type 2 safety light curtain product.

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

⚠ 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 to be referenced for each product.

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


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Muting function

The muting sensors must be able to recognise the passing material (pallets, vehicles, etc.) according to the material's length and speed.

The Figure below shows an FF-SLG234 multibeam system placed on a conveyor, with the relative muting sensors.

The muting activation sensors A1, A2, B1, B2 temporarily inhibit the ESPE if a package passes between the sensors; the outputs of these sensors are connected to the muting 1 and muting 2 inputs of the receiver unit of the FF-SLG234.

The contacts of these sensors are controlled by the receiver unit, which checks the correct time difference (3 s max.) between the two muting sensors.
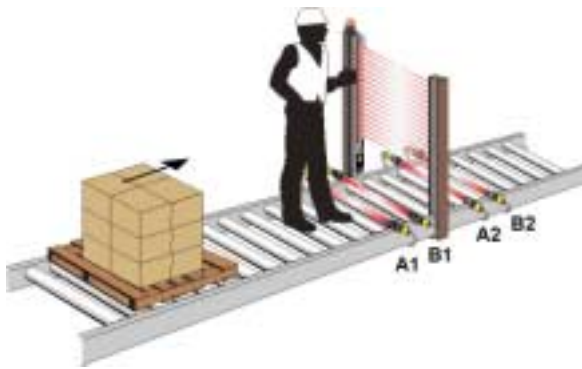
Optoelectronic, mechanical, proximity sensors, etc. can be used as muting sensors, with a closed contact in the presence of the object to be detected.

The following are some configuration examples when using the muting function:

Application with four optoelectronic sensors

Muting sensors connection
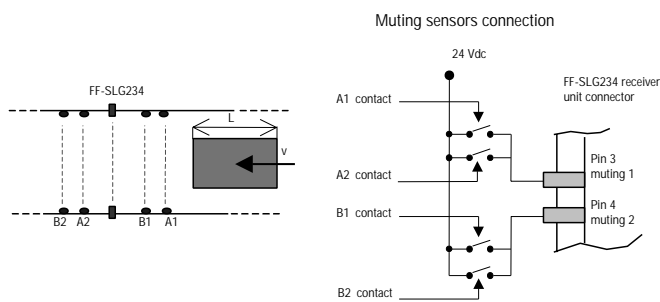
Application with two optoelectronic sensors

Muting sensors connection
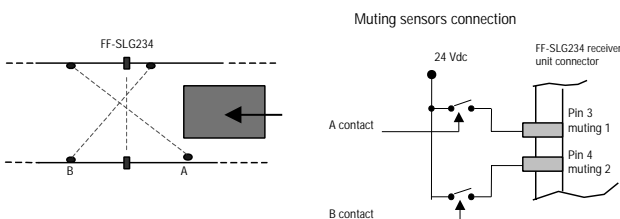
LED status indicators

The FF-SLG234 Series emitters have two different LED indicators. The receivers have four different LED indicators. These LED indicators provide important information related to the light curtain status.

Emitter indicators

Power indicator (emitter)

Power ☀ green Normal operation	Power ○ green Power off

The power indicator is a green LED. It is on when power is on.

Error indicator (emitter)

Status ☀ yellow Normal operation	Status ☀ yellow Emitter error

The error indicator is a yellow LED. It is on when the operation is correct. It flashes in case of emitter failure.

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Receiver indicators

Power indicator (receiver)

Power	Power
☼ Normal operation	○ Power off
green	green

Operation indicator (receiver)

Output status	Output status
☼	☼
green	red
Outputs are closed	Outputs are open

The operation indicator is a dual color (green and red) LED indicator that provides information on output status. The green color indicates the receiver is operating normally and the sensing field is clear. This indicator must be ON to ensure the equipment is working properly. The red color indicates that the light curtain is in an alarm state. If the sensing field is interrupted, the FF-SLG234 Series multibeam system will immediately generate a stop signal. This indicator will flicker if a problem is detected on the safety outputs (overload, short-circuit, etc.).

Signal margin indicator (receiver)

Signal margin	Signal margin
○	☼
yellow	yellow
Optimum signal	Low signal or no signal

The signal strength indicator is a yellow indicator which is ON if the received light level is lower than the normal operating level, but is still sufficient for operation. If the received light level drops too low, an alarm state results and the light curtain generates a stop signal. To prevent unnecessary shutdowns, this indicator will signal the need for cleaning and/or alignment. This indicator also provides useful indication for troubleshooting.

Restart indicator (receiver)

☼ Restart	○ Restart
yellow	yellow
Restart expected	Normal operation

When the Restart LED is continously ON, it shows that the FF-SLG234 is expecting a restart command after an interruption of the sensing field. This is only valid in manual restart mode. This indicator also provides useful indication for troubleshooting.

Dip-switches settings

A key door situated in the front side of the receiver unit, can be opened using a screwdriver, to access the internal dip-switches for the configuration of:

• Restart mode
• Total muting function
• Partial muting function.

Dip-switch

### Standard configuration:

The system is supplied with the following standard configuration:

• Automatic restart
• Total active muting.

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FF-SLG234

Safety multibeam system for access detection with integrated muting function

- Type 2 according to the IEC/EN 61496-1 and IEC/pr EN 61496-2 standards
- Two, three or four beam systems for access detection
- Beam spacing per EN 999

Approved as Type 2 per IEC/EN 61496-1/2
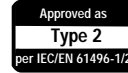
Dimensions in millimeters / inches, meters / feet, weights in kg / lbs

Features — Type	FF-SLG02500	FF-SLG03400	FF-SLG04300
Number of beams	2	3	4
Beam spacing	500 mm / 19.7 in	400 mm / 15.76 in	300 mm / 11.82 in
Nominal scanning distance	0,5 m to 45 m / 1.64 ft to 147.64 ft		
Supply voltage	24 Vdc (±20 %)		
Power consumption	Emitter: 70 mA max. / Receiver: 100 mA excluding the loads		
Output type	2 PNP safety static outputs (switching capacity: 0,3 A / 24 Vdc each,		
	0,25 A total between 45° and 55° C)		
Response time	14 ms		
Test input	Normally closed contact to +24 Vdc - must remain open for 10 ms		
Muting lamp output	To +24 Vdc - max. 300 mA		
Muting lamp specifications	24 Vdc, 3 W min. (125 mA), 7 W max. (300 mA)		
Muting sensor inputs	2 NO contacts - muting active when contacts are closed within 3 s		
LED status indicators	*Emitter:* power, failure		
	Receiver: power, outputs status, optical signal strength, restart		
Cross sectional area	W 35 mm x D 40 mm / W 1.38 in x D 1.57 in		
(Wavelength) Emission	Infrared modulated light source (880 nm)		
Effective aperture angle	±5° (in compliance with IEC/pr EN 61496-2)		
Electrical noise immunity	IEC 61000-4-4: level III / IEC 61000-4-3: level III		
Ambient temperature	*Operating temperature:* -10 °C to 55 °C / 14 °F to 131 °F		
	Storage temperature: -20 °C to 75 °C / -4 °F to 167 °F		
Vibrations	IEC/EN 61496-1: 10 to 55 Hz frequency range, 1 octave/min.sweep rate, 0,7 mm		
	amplitude, 10 sweeps per axis, for 3 axes		
Sealing	IP 65, NEMA 4, 13		
Material	*Housing:* aluminium alloy black paint • *Front plate:* polymethyl methacrylate (PMMA),		
	End caps: polycarbonate		
Electrical connection	M 12 4 pole (emitter) and 8 pole (receiver) male connectors		

Ordering information:

Each listing consists of an emitter, a receiver, 2 pairs of mounting pins.

FF-SLG ☐☐☐☐☐ CM 2

CM: M12 connectors

Number + of beams	Beam spacing
02	500
03	400
04	300

Dimensions
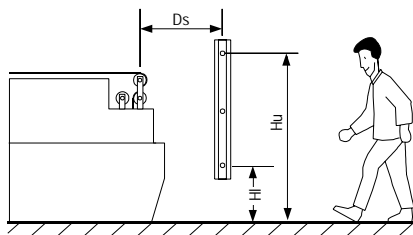
Table 1   (mm/in)

	Number of beams N	Beam spacing BS	Total height TH	A	B	Weight per device
		mm / in	mm / in	mm / in	mm / in	kg / lb
FF-SLG02500	2	500 / 19.70	652 / 25.67	35 / 1.38	107 / 4.21	0,78 / 1.72
FF-SLG03400	3	400 / 15.76	952 / 37.50	35 / 1.38	107 / 4.21	1,15 / 2.53
FF-SLG04300	4	300 / 11.82	1052 / 41.42	35 / 1.38	107 / 4.21	1,26 / 2.78

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■ Safety distances

European EN 999 standard (in mm, 100 mm = 3.9 in)

Normal approach	FF-SLG234		
	$S \geq 1600\,(t1 + t2) + 850$		
	Reference	Number of beams (N)	Beam heights above the reference floor
			mm	in
	FF-SLG02500	2	400 / 900	15.7 / 35.4
	FF-SLG03400	3	300 / 700 / 1100	11.8 / 27.6 / 43.3
	FF-SLG04300	4	300 / 600 / 900 / 1200	11.8 / 23.6 / 35.4 / 47.2

Where
S: Minimum safety distance (in mm, 100 mm = 3.9 in)
t1: Light curtain response time (s)
t2: Machine stopping time (s)
Hu: Height of the uppermost beam above the reference floor (mm)
Hl: Height of the lowest beam above the reference floor (mm)

For more information, refer to the EN 999 European standard or comply with the requirements on safety distances given by the type C European standard if existing for the considered machine.
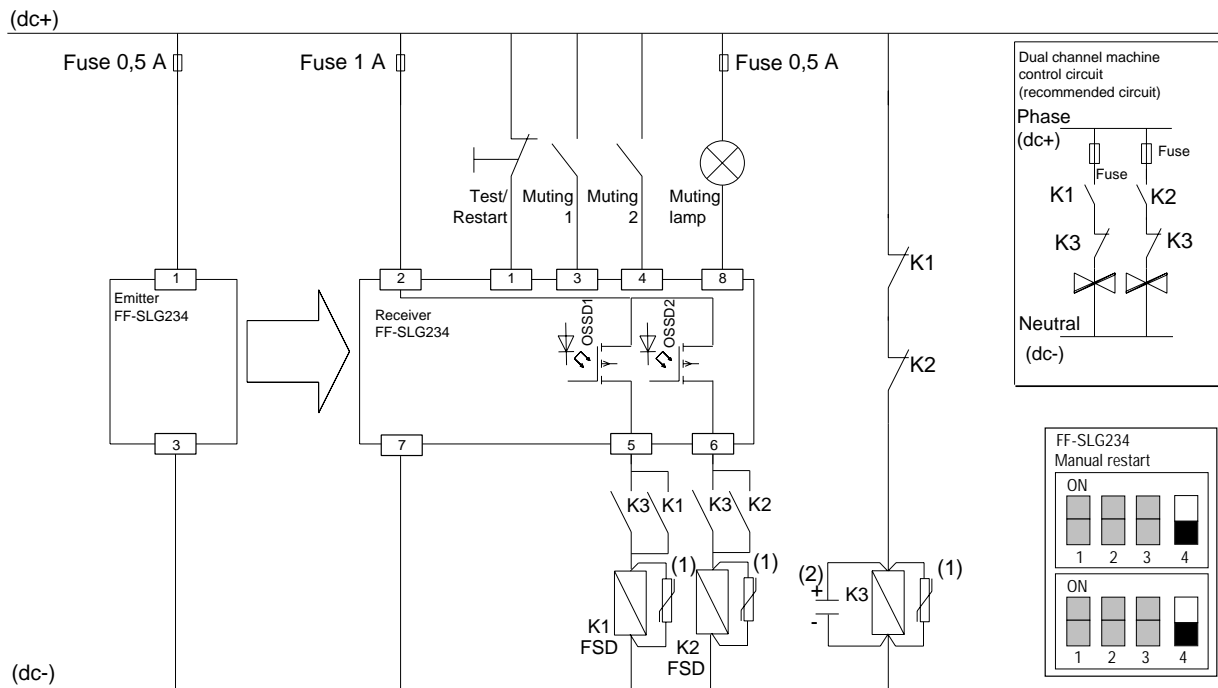

⚠ WARNING
IMPROPER USE OF FF-SLG234 MULTIBEAM SYSTEM
Do not use the FF-SLG234 multibeam system in parallel or angled approach applications. Use the FF-SLG234 only in normal approach applications.
Failure to comply with these instructions could result in death or serious injury.

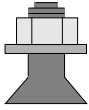## Wiring diagram (using three independent stop circuit safety relays)

(1) 31 Vdc varistors
(2) 50 V / 100 µF capacitor

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Accessories

FF-SLG234

Mounting kit

FF-SGZ001001
Mounting kit including 2 M5 dovetail shape bolts, 2 M5 nuts and 2 rip-lock washers.
Order one kit per emitter or receiver element, 2 kits for an emitter/receiver system.
(already included in the FF-SLG234 package, to be ordered as spares only).

Cordsets

Female keyway M12, female straight, 8 pins receiver

Catalogue listing	Description
FF-SXZCAM128U02-S	2 m / 6.56 ft length with 360° shielding
FF-SXZCAM128U05-S	5 m / 16.40 ft length with 360° shielding
FF-SXZCAM128U10-S	10 m / 32.8 ft length with 360° shielding

**Female keyway M12, female straight, 5 pins emitter (fits into the male 4 pin emitter connector)**

Catalogue listing	Description
FF-SXZCAM125U02-S	2 m / 6.56 ft length with 360° shielding
FF-SXZCAM125U05-S	5 m / 16.40 ft length with 360° shielding
FF-SXZCAM125U10-S	10 m / 32.8 ft length with 360° shielding

Right-angle bracket kit
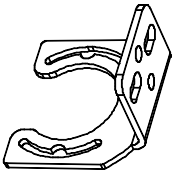
FF-SLGZ634178
One kit includes 2 brackets. Order one bracket kit per emitter or receiver element, 2 kits for an emitter/receiver system.
**(to be ordered separately as an option).**
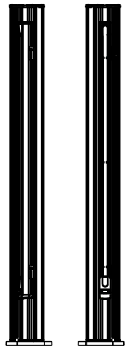
FF-SYZPF
Floor mounting post for installation of one FF-SLG234 emitter or receiver. Two right-angle bracket kits are used to mount the emitter and receiver on the post.
We recommend using straight connectors.
To be ordered separately as an option. Order one post for the emitter and one post for the receiver (does not include the emitter or receiver).

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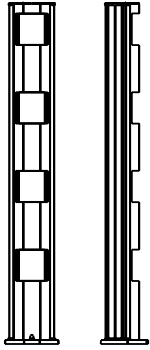
FF-SYZPF❏❏

Floor mounting post with two, three or four individual mirrors. Mirrors with 10 % or 25 % scanning distance attenuation are available and are factory pre-aligned at beam heights per EN 999.

Reference (*)	To be used with	Beam Heights (mm/in)			
		A	B	C	D
FF-SYZPF02	FF-SLG02500❏❏2	400 / 15.76	900 / 35.46	-	-
FF-SYZPF12	FF-SLG02500❏❏2	400 / 15.76	900 / 35.46	-	-
FF-SYZPF03	FF-SLG03400❏❏2	300 / 11.82	700 / 27.58	1100 / 43.34	-
FF-SYZPF13	FF-SLG03400❏❏2	300 / 11.82	700 / 27.58	1100 / 43.34	-
FF-SYZPF04	FF-SLG04300❏❏2	300 / 11.82	600 / 23.64	900 / 35.46	1200 / 47.28
FF-SYZPF14	FF-SLG04300❏❏2	300 / 11.82	600 / 23.64	900 / 35.46	1200 / 47.28
(*)FF-SYZPF0❏: 10 % loss per mirror post					
FF-SYZPF1❏: 25 % loss per mirror post					

To be ordered separately as an option (for further information, refer to the mirror section of the "Safety Products for machine safeguarding" catalogue).

ac to dc power supply
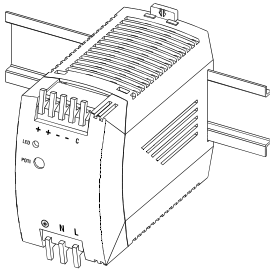
FF-SYZPWR050
ac to dc power supply
Input voltage: 85 to 264 Vac
Output voltage: 24 to 28 Vdc / 2,1 A to 1,8 A
Dimensions: 97 mm x 75 mm x 45 mm / 3.82 in x 2.95 in x 1.77 in
Mounting: DIN rail
Approvals: UL508 listed, UL1950, cUL/CSA-C22.2, EN/IEC 60950, EN 50178
(to be ordered separately as an option).

Warranty and remedy

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Contact your local sales office for warranty information. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace without charge those items it finds defective. The foregoing is Buyer's sole remedy and is **in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose.**

While we provide application assistance, personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

Specifications may change at any time without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

Sales and Service

Honeywell serves its customers through a worldwide network of sales offices and distributors. For application assistance,current specifications, pricing or name of the nearest Authorised Distributor, contact a nearby sales office or:

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