



# SH4

TYPE 4  
SAFETY LIGHT CURTAIN



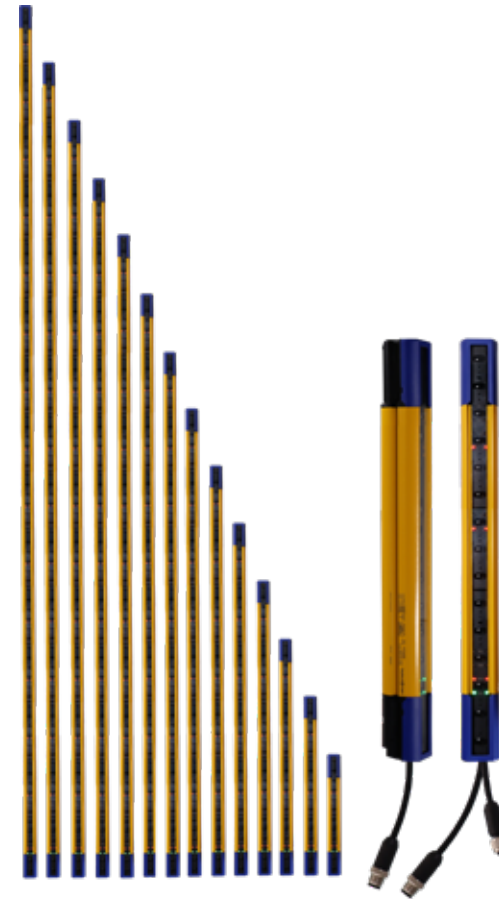




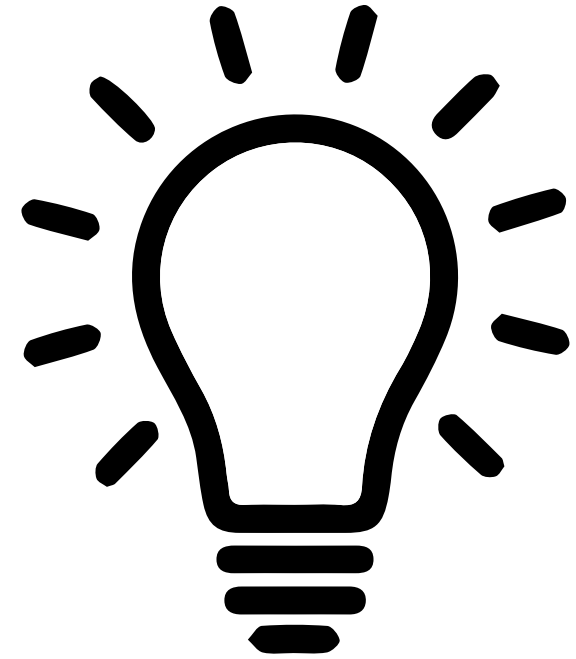
# SH4

## TYPE 4 SAFETY LIGHT CURTAINS

- Complete type 4 safety light curtains line
- Finger (14 mm), hand (30 mm), or body protection
- Improved performance and features
- Compact profile (35 x 40 mm)
- Wide range scalable in Basic, Standard and Advanced models
- Simultaneous muting and blanking
- Innovative wireless monitoring and configuration system
- Optical two beams synchronization and anti-interference coding
- Basic functions: alignment, automatic restart
- Standard functions: manual restart, EDM
- Standard Muting functions: 2-signals mono and bidirectional muting, override
- Advanced functions: partial muting, dynamic partial muting, 4-signals muting, reduced resolution, multiple fixed or floating blanking zones



**COMPLETE:  
ALL APPLICATIONS  
CAN BE SOLVED**



# COUNTLESS SAFETY APPLICATIONS:



Point of operation guarding

**Basic:** no configuration  
**Standard:** configuration by wiring



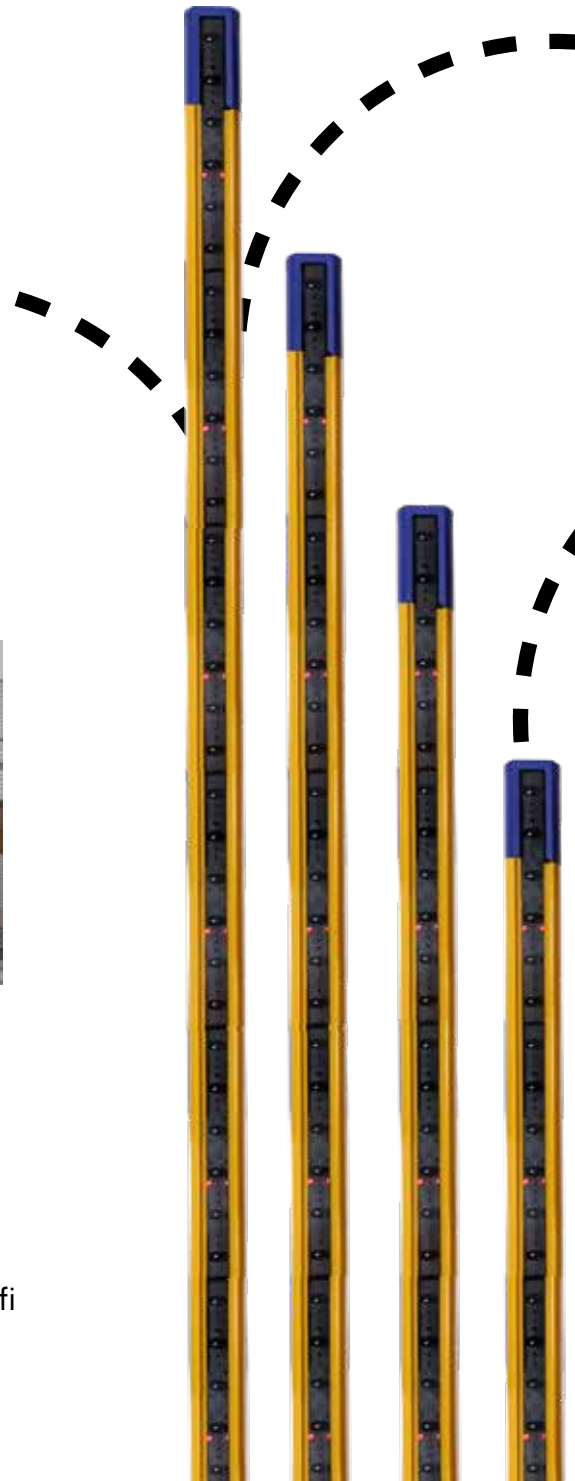
Selective passage of material (Muting)

**Standard muting:**  
 configuration by dip switches



**Advanced:**  
 Configuration by App using Wi-fi

**Cascade:** Simply connect to main unit



**MONITORED HEIGHT:**  
 From 300 to 2250 mm  
 with 150 mm steps

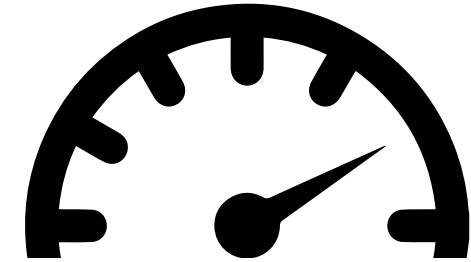


**DETECTION CAPABILITY:**  
 SH4 offers finger, hand and body detection capability sharing the same mechanics and modules

**FUNCTIONALITY LEVEL AND CONFIGURATION MODE:**  
 4 different functionality levels for any application and customer preferences.  
 Dedicated cascade models adapt themselves to the main unit functionality (standard muting or advanced)

- BENEFITS:**
- Scalability of the product fitting the real need of application
  - Simpler management of different models for various applications
  - Reduction of accessories
  - Flexibility in the design of machinery
  - Easy passage from one model to another one.

# PERFORMANT: THE BEST DESIGN TO IMPROVE RELIABILITY, SPEED AND FEATURES



Optical synchronization on two beams

**BENEFIT:**

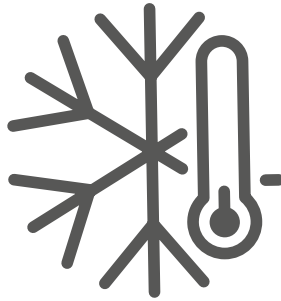
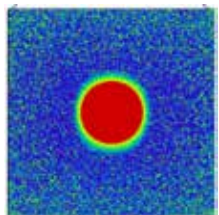
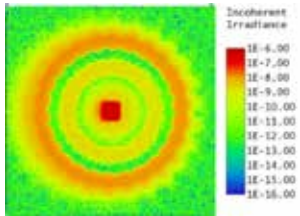
- Emitter and receiver don't need to be connected on the same cable
- The Off-On time following the detection of an object is reduced
- More flexibility in the use of muting and blanking



Improvement of optics design to optimize effectiveness of beams

**BENEFITS:**

- Longer operating range:
  - 10 m for 14 mm detection capability
  - 20 m for 30 mm detection capability
  - 70 m body detection capability
- Stronger stability in presence of dirt
- Easier and more stable alignment



Low temperature operating range: -30°C

**BENEFITS:**

Extension to applications in refrigerated areas (i.e. food intralogistics)



Zero dead zone and pigtails with M12 connectors

**BENEFITS:**

- Reduction of overall dimensions
- Flexibility in installation

Improvement of IP Protection: IP65 and IP67

**BENEFIT:**

Extension to applications where heavy cleaning with water jets and temporary immersion are possible

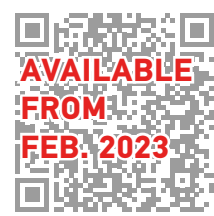
SH4 can withstand 3 g vibrations/ 25 g shock (class 3M7)

**BENEFIT:**

Extension to applications with noticeable vibrations and shocks (i.e. press machinery)



**EASY:  
ORDER,  
INSTALL,  
CONFIGURE,  
PROGRAM,  
MAINTAIN HAS  
NEVER  
BEEN EASIER**





**EASY ALIGNMENT:**

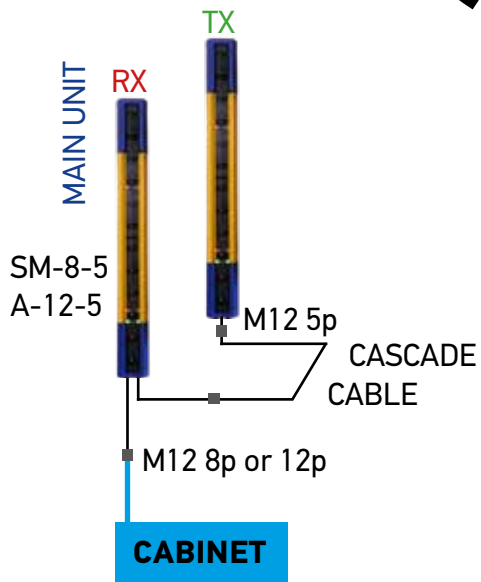
SH4 Advanced models offer integrated aimers:  
 Laser for finger/hand, and red LED for body  
 Each beam intensity is visible on SH4 Designer App

**BENEFIT:**

Less time for installation  
 Easy re-alignment without special tools after misalignment

**EASY WIRING:**

Pigtails with connectors make the wiring flexible, fast and easy  
 Cascade cables can be used up to 10m to power a couple with just one cable to the cabinet.



**EASY TO PROGRAM:**

Programming and diagnostic of Advanced models is possible any smartphone through wi-fi

**BENEFIT:**

no special interfaces or tools are needed for the installation and the maintenance.  
 The configuration can be saved and reused

**EASY TO ORDER:**

SH4 has in the same package all the necessary to install: emitter, receiver, pigtails, angular brackets.

**BENEFIT:**

no need to order several codes for standard applications  
 All necessary material arrives with same packing

**EASY CONFIGURATION AND REPLACEMENT:**

Wiring and DIP switch configuration for standard models is easy and remains on the cabinet side of the cable

**BENEFIT:**

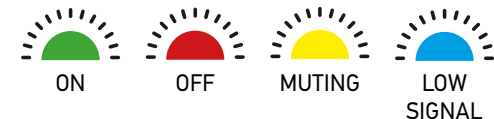
in case of substitution, the cofiguration is already in place

**EASY TO MANTAIN:**

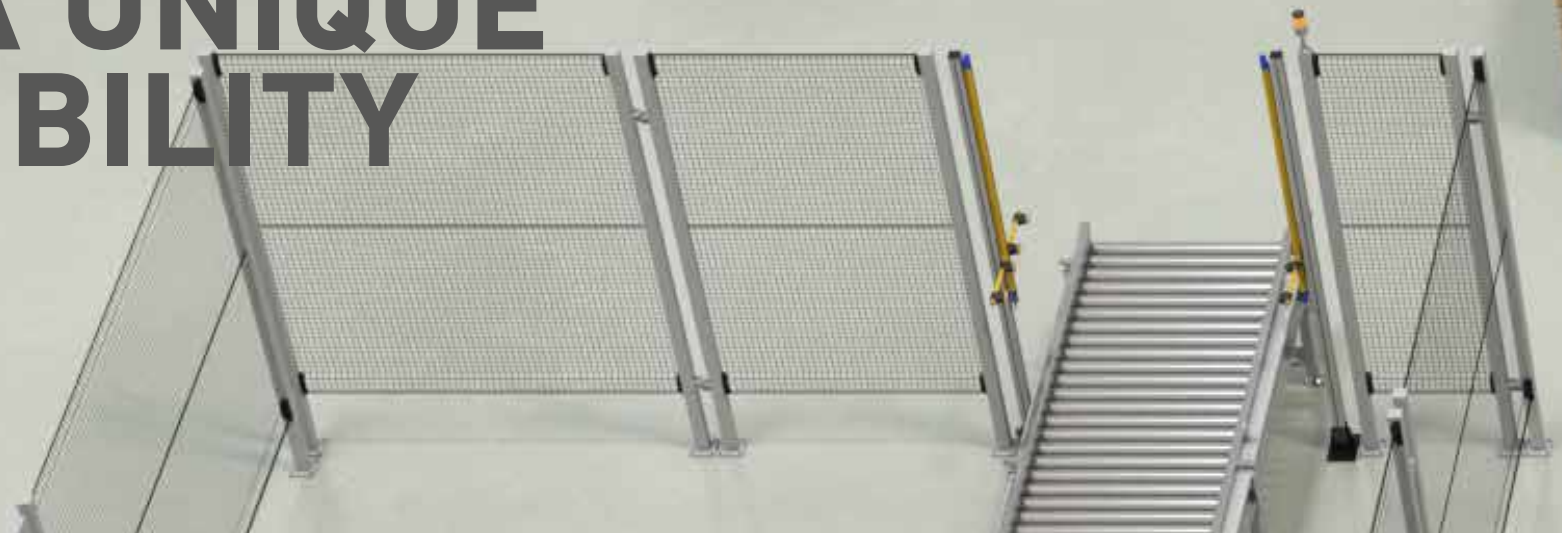
Informative indicators with High-visible LEDs all along the light curtain

**BENEFIT:**

- The status of any optical module of SH4 (ON, OFF, Muted, Alignment quality) is immediately seen and intuitively understood by operators and maintenance people.
- The muting indicator is integrated in the light curtain



**FLEXIBLE:  
SH4 OFFERS  
INNOVATIVE  
SAFETY  
FUNCTIONS  
FOR A UNIQUE  
FLEXIBILITY**





**PARTIAL MUTING:**

The passage of material can be defined only in the part of light curtain that is strictly necessary, corresponding to the height of the material

**BENEFIT:**

Machinery safety is increased reducing as much as possible the muted area

**4- SIGNALS MUTING:**

2-signals muting covers the biggest part of muting applications, with minimum number of sensors and using muting accessories

4-signals muting allows the passage of material in applications with special characteristics like a change in the speed of movement or muting sensors positioned with crossed beams

**BENEFIT:**

Particular conditions in the shape of material in movement, or in its speed, can be solved choosing between different types of muting

**DYNAMIC PARTIAL MUTING:**

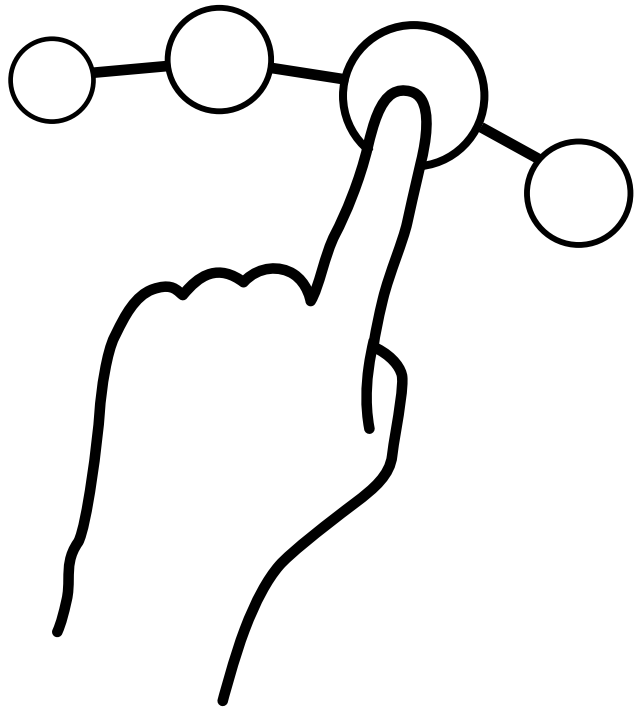
When the material is regular and has variable height, dynamic partial muting adapts automatically the muting area to the needed size

**BENEFIT:**

Also in case of objects with variable height, muted area can be reduced to the minimum, increasing the safety level

# SH4

## SELECTION GUIDE



	SH	4	-	14	-	0300	-	SM	-	8	-	5
series	SH	Safety light curtain										
type	4	Type 4										
detection capability	14	Finger: 14 mm										
	30	Hand: 30 mm										
	2	Body: 2 Beams										
	3	Body: 3 Beams										
	4	Body: 4 Beams										
monitored height	0300	300 mm										
	0450	450 mm										
	...											
	2250	2250 mm										
functionality	B	Basic										
	S	Standard										
	SM	Standard muting										
	A	Advanced										
	C	Cascade										
receiver main connector	5	5-pin male M12										
	8	8-pin male M12										
	12	12-pin male M12										
		No connector										
receiver secondary connector	5	5-pin female M12										
		No connector										

# STEP 1: SELECT THE DETECTION CAPABILITY

Detection capability is linked:

- to the minimum distance of light curtain from the hazard point
- the maximum distance possible between emitt



SH 4 - 14 - 0300 - SM - 8 - 5

14	Finger: 14 mm
30	Hand: 30 mm
2	Body: 2 Beams
3	Body: 3 Beams
4	Body: 4 Beams



**14 mm**

Min. distance from the hazard point:  
2000 mm/s \* Response time when > 100 mm  
Max distance emitter receiver: 10 m



**30 mm**

Min. distance from the hazard point:  
2000 mm/s \* Response time + 128 mm  
Max distance emitter receiver: 20 m



**2/3/4 beams (body detection)**

Min. distance from the hazard point:  
1800 mm/s \* Response time + 850 mm  
Max distance emitter receiver: 70 m

\*minimum distance examples are for vertical applications: always refer to your local norms for correct evaluation of minimum safety distances. The response time is the overall response time of the safety function (including controllers and actuators)

## STEP 2: SELECT THE HEIGHT

The height of the safety light curtain is linked to:

- the position of the light curtain relating to the hazard point
- the possibility of reaching the hazard point passing over the safety light curtain

SH4 finger and hand models have heights from 300 to 2250 mm with 150 mm steps

SH4 body models have 500/800/900/1200 mm heights, that are standard for 2/3/4 beams

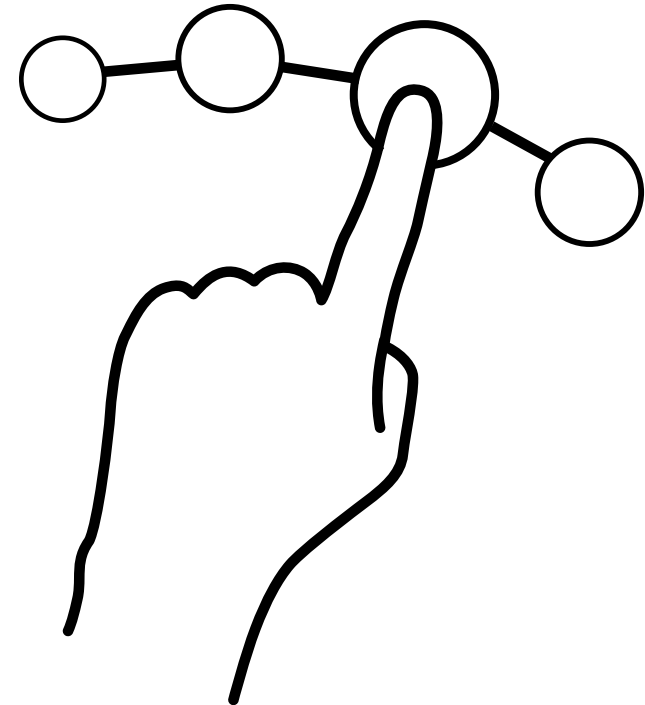
SH 4 - 14 - 0300 - SM - 8 - 5

monitored height for 14/30

<b>0300</b>	300 mm
<b>0450</b>	450 mm
...	
<b>2250</b>	2250 mm

monitored height for body

<b>0500</b>	500 mm
<b>0800</b>	800 mm
<b>0900</b>	900 mm
<b>1200</b>	1200 mm



\*For the correct calculation of the minimum height of a safety light curtain in order to avoid the always refer to your local norms

# STEP 3: SELECT THE FUNCTIONALITY LEVEL

SH 4 - 14 - 0300 - SM - 8 - 5

The functionality level is related to the mode of configuration of SH4 and to the safety functions that are available.

<b>B</b>	Basic
<b>S</b>	Standard
<b>SM</b>	Standard muting
<b>A</b>	Advanced
<b>C</b>	Cascade

	LEVEL	FUNCTIONS	CONFIGURATIONS	RECEIVER MAIN CONNECTOR	TYPICAL APPLICATION
<b>B</b>	BASE	Automatic restart Test	Not needed	5 Poles	Manual load assembly machines (No advanced functions or manual restart needed)
<b>S</b>	STANDARD	Base functions Manual restart External Device Monitoring Reset	By wiring	8 poles	Machine access guarding with manual restart (Manual restart and EDM are needed)
<b>SM</b>	STANDARD MUTING	Standard functions 2-signals T/L Muting functions Partial muting (on group of beams) 2-inputs Override (level triggered) 2-inputs Override (edge triggered) 1-input Override (pulses triggered) External muting lamp output	By DIP switches	8 poles	Machine Access guarding with material passage (Muting inputs are needed to mute product passing through the curtain)
<b>A</b>	ADVANCED	Standard muting functions Integrated aimer (Laser on finger/hand models) Integrated aimer (Red LED on body models) Fixed blanking *Floating blanking *Reduced resolution *Fine tuning of muting parameters (timeouts)Partial dynamic muting *4-signals T muting time-monitored4-signals T muting sequence-monitoredPartial muting (on single beams)	By SH4 Designer App, using wi-fi and PC, tablet or smartphone	12 poles	Applications that require: Muting and/or blanking The use of corner mirrors Long distances between transmitter and receiver Quickest installation time Best in class alignment aids
<b>C</b>	CASCADE	It works only if connected to Standard Muting or Advanced model, and inherits its functionality	Inherits the configuration of the main unit	5 Poles	Access and presence monitoring (Daisy chaining)

# STEP 4: SELECT THE RECEIVER SECONDARY CONNECTOR

SH4 receiver main connector is linked to functionality level and the number of inputs needed. These are receiver the main connectors pin numbers depending on functionality:

- BASE: 5
- STANDARD: 8
- ADVANCED: 12

The receiver secondary connector is instead optional and can be choosed based on the connection preferences of customer.

Secondary connector is a M12 5-pin female connector that can be used to:

- input muting signals from integrated muting arms like SH-T-ARM or SH-L-ARM
- to connect cascade models from Advanced or Standard Muting models
- for retrocompatibility with the connection used with SG family light curtains.

NOTE: in Advanced models it's possible to configure the muting inputs on 12-pin main connector or on 5-pin secondary connector, depending on preferences.

SH 4 - 14 - 0300 - SM - 8 - 5

5	5-pin female M12
	No connector



Main connector M12 male

Optional secondary connector M12 female

\*Only for Advanced body models, the secondary connector is always present (e.g. SH4-3-0800-A-12-5)



# STEP 5: SELECT THE RIGHT ACCESSORIES

	CODE	TYPE	FUNCTIONS
	ST-KSTD	BRACKETS	Angular brackets ST-KSTD (included in SH4 package)
	ST-K4ROT-SH	BRACKETS	Top-bottom rotating brackets (optional)
	SH-T-ARMS	ACCESSORIES FOR MUTING	For bidirectional 2-signals muting
	SH-L-ARMS	ACCESSORIES FOR MUTING	For monodirectional 2-signals muting
	SH-LP		External laser pointer
	SH-TARGET		Reflective target for integrated aimer (Advanced body models)

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Strada S.Caterina, 235  
41122 - Modena (Italy)

Tel. +39 059 420411  
Fax. +39 059 253 973

info@datasensing.com  
www.datasensing.com



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