

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



CODE DESCRIPTION

	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										

	SH4-2-****-**-***	SH4-3-****-**-***	SH4-4-****-**-***
Protection	 body		
Type (EN61496-1)	4		
PL (EN ISO 13849-1)	e		
SIL (IEC 61508)	3		
Protected height	500 mm	800 mm	900 or 1200 mm
Detection capability	500 mm	400 mm	300 or 400 mm
Operating range	Short range: 0.5 ... 15 m (default value); Long range: 5 ... 70 m (selectable)		
Operating distance using muting arms	0.5 ... 7 m		
Operating distance using reflective muting arms	0.5 ... 3 m		
Dead Zone	130 mm Distance from bottom to first beam		
Cascade connection	Not possible		
Power supply (Vdc)	24 Vdc $\pm$ 20%		
Transmitter consumption	3.5 W max		
Receiver consumption	4.0 W max (without load)		
Safe Outputs	2 OSSD, with short circuit protection		
Auxiliary Outputs	2 PNP, with short circuit protection		
Output current	250 mA max / each output, 500 mA max total outputs		
Capacitive load	1 μ F @ 24Vdc max		
Leakage current	< 1 mA		
Response time	from 12 to 15 ms		
Cables length	30 m receiver; 50 m transmitter		
Electrical protection	Class III		
Light source	Infrared LED (850 nm wavelength)		
Effective aperture angle (EAA)	< $\pm$ 2.5° at 3 m		
Operating temperature	-30 ... +55 °C		
Storage temperature	-30 ... +60 °C		
Temperature class	T6		
Humidity	15 ... 95 % (no condensation)		
Mechanical protection	IP65, IP 67 (EN 60529)		
Vibrations resistance	10 mm / 3 g, 5 ... 150 Hz frequency (EN 60068-2-6 / Class 3M7 IEC TR 60721-4-3)		
Shock resistance	25 g x 6 ms x 600 (EN 60068-2-27 / Class 3M7 IEC TR 60721-4-3)		
Weight	1.4 Kg/m (single bar, without package)		
Housing Material	Painted aluminium (yellow RAL 1003)		
Caps and covers material	PBT		
Window material	MAKROLON AR 7099 Clear PC		
Functions BASIC models (SH4-*-B-*)	Automatic Restart		
Functions STANDARD models (SH4-*-S-*)	Manual / Automatic Restart, Reset, External Device Monitoring (EDM), Alignment mode		
Functions STANDARD MUTING models (SH4-*-SM-*)	2-signals T Muting / L Muting, Muting dependent Override, Partial muting (half protection height), Muting input filtering and timeout setting, Anti-interference coding		
Functions ADVANCED models (SH4-*-A-*)	4-signals Muting, Dynamic partial muting, Partial Muting (at beams level), integrated pointer		
Functions CASCADE models (SH4-*-C-*)	Cascade models inherit the same functions of the main unit to which they are connected		
Configuration BASIC models (SH4-*-B-*) and STANDARD models (SH4-*-S-*)	By Wiring		
Configuration STANDARD MUTING models (SH4-*-SM-*)	By DIP-Switches		
Configuration ADVANCED models (SH4-*-A-*)	By DATASENSING SH4 DESIGNER and wi-fi connection		

Capability	Range	Functionality	Receiver connector	Protected height (mm)	beams	Response time (ms) with Anti-Interference code disabled	Response time (ms) with Anti-Interference code enabled	Model
14 mm	0.2 ... 10 m	standard muting	8 poles	300	30	9	14	SH4-14-0300-SM-8 (957920043)
				450	45	10	18	SH4-14-0450-SM-8 (957920044)
				600	60	12	22	SH4-14-0600-SM-8 (957920045)
				750	75	13	26	SH4-14-0750-SM-8 (957920046)
				900	90	15	30	SH4-14-0900-SM-8 (957920047)
				1050	105	16	33	SH4-14-1050-SM-8 (957920048)
				1200	120	18	37	SH4-14-1200-SM-8 (957920049)
				1350	135	20	41	SH4-14-1350-SM-8 (957920050)
				1500	150	21	45	SH4-14-1500-SM-8 (957920051)
				1650	165	23	49	SH4-14-1650-SM-8 (957920052)
				1800	180	24	52	SH4-14-1800-SM-8 (957920053)
				1950	195	26	56	SH4-14-1950-SM-8 (957920054)
				2100	210	27	60	SH4-14-2100-SM-8 (957920055)
				2250	225	29	64	SH4-14-2250-SM-8 (957920056)
14 mm	0.2 ... 10 m	standard muting	8 and 5 poles	300	30	9	14	SH4-14-0300-SM-8-5 (957920565)
				450	45	10	18	SH4-14-0450-SM-8-5 (957920566)
				600	60	12	22	SH4-14-0600-SM-8-5 (957920567)
				750	75	13	26	SH4-14-0750-SM-8-5 (957920568)
				900	90	15	30	SH4-14-0900-SM-8-5 (957920569)
				1050	105	16	33	SH4-14-1050-SM-8-5 (957920570)
				1200	120	18	37	SH4-14-1200-SM-8-5 (957920571)
				1350	135	20	41	SH4-14-1350-SM-8-5 (957920572)
				1500	150	21	45	SH4-14-1500-SM-8-5 (957920573)
				1650	165	23	49	SH4-14-1650-SM-8-5 (957920574)
				1800	180	24	52	SH4-14-1800-SM-8-5 (957920575)
				1950	195	26	56	SH4-14-1950-SM-8-5 (957920576)
				2100	210	27	60	SH4-14-2100-SM-8-5 (957920577)
				2250	225	29	64	SH4-14-2250-SM-8-5 (957920578)

For units in cascade, the overall response time is given by this formula. 2 units: (sum of units response time + 1 ms); 3 units: (sum of units response time - 1 ms)

Capability	Range	Functionality	Receiver connector	Protected height (mm)	beams	Response time (ms) with Anti-Interference code disabled	Response time (ms) with Anti-Interference code enabled	Model
14 mm	0.2 ... 10 m	cascade	5 and 5 poles	300	30	9	14	SH4-14-0300-C-5-5 (957920029)
				450	45	10	18	SH4-14-0450-C-5-5 (957920030)
				600	60	12	22	SH4-14-0600-C-5-5 (957920031)
				750	75	13	26	SH4-14-0750-C-5-5 (957920032)
				900	90	15	30	SH4-14-0900-C-5-5 (957920033)
				1050	105	16	33	SH4-14-1050-C-5-5 (957920034)
				1200	120	18	37	SH4-14-1200-C-5-5 (957920035)
				1350	135	20	41	SH4-14-1350-C-5-5 (957920036)
				1500	150	21	45	SH4-14-1500-C-5-5 (957920037)
				1650	165	23	49	SH4-14-1650-C-5-5 (957920038)
				1800	180	24	52	SH4-14-1800-C-5-5 (957920039)
				1950	195	26	56	SH4-14-1950-C-5-5 (957920040)
				2100	210	27	60	SH4-14-2100-C-5-5 (957920041)
				2250	225	29	64	SH4-14-2250-C-5-5 (957920042)
30 mm	0.2 ... 20 m	basic	5 poles	300	12	7	10	SH4-30-0300-B-5 (957920057)
				450	18	8	12	SH4-30-0450-B-5 (957920058)
				600	24	9	13	SH4-30-0600-B-5 (957920059)
				750	30	9	15	SH4-30-0750-B-5 (957920060)
				900	36	10	17	SH4-30-0900-B-5 (957920061)
				1050	42	11	18	SH4-30-1050-B-5 (957920062)
				1200	48	12	20	SH4-30-1200-B-5 (957920063)
				1350	54	12	22	SH4-30-1350-B-5 (957920064)
				1500	60	13	23	SH4-30-1500-B-5 (957920065)
				1650	66	14	25	SH4-30-1650-B-5 (957920066)
				1800	72	14	27	SH4-30-1800-B-5 (957920067)
				1950	78	15	28	SH4-30-1950-B-5 (957920068)
				2100	84	16	30	SH4-30-2100-B-5 (957920069)
				2250	90	17	32	SH4-30-2250-B-5 (957920070)

For units in cascade, the overall response time is given by this formula. 2 units: (sum of units response time + 1 ms); 3 units: (sum of units response time - 1 ms)

Capability	Range	Functionality	Receiver connector	Protected height (mm)	beams	Response time (ms) with Anti-Interference code disabled	Response time (ms) with Anti-Interference code enabled	Model
30 mm	0.2 ... 20 m	standard muting	8 and 5 poles	300	12	7	10	SH4-30-0300-SM-8-5 (957920085)
				450	18	8	12	SH4-30-0450-SM-8-5 (957920086)
				600	24	9	13	SH4-30-0600-SM-8-5 (957920087)
				750	30	9	15	SH4-30-0750-SM-8-5 (957920088)
				900	36	10	17	SH4-30-0900-SM-8-5 (957920089)
				1050	42	11	18	SH4-30-1050-SM-8-5 (957920090)
				1200	48	12	20	SH4-30-1200-SM-8-5 (957920091)
				1350	54	12	22	SH4-30-1350-SM-8-5 (957920092)
				1500	60	13	23	SH4-30-1500-SM-8-5 (957920093)
				1650	66	14	25	SH4-30-1650-SM-8-5 (957920094)
				1800	72	14	27	SH4-30-1800-SM-8-5 (957920095)
				1950	78	15	28	SH4-30-1950-SM-8-5 (957920096)
				2100	84	16	30	SH4-30-2100-SM-8-5 (957920097)
				2250	90	17	32	SH4-30-2250-SM-8-5 (957920098)
30 mm	0.2 ... 20 m	advanced	12 poles	300	12	7	10	SH4-30-0300-A-12 (957920189)
				450	18	8	12	SH4-30-0450-A-12 (957920190)
				600	24	9	13	SH4-30-0600-A-12 (957920191)
				750	30	9	15	SH4-30-0750-A-12 (957920192)
				900	36	10	17	SH4-30-0900-A-12 (957920193)
				1050	42	11	18	SH4-30-1050-A-12 (957920194)
				1200	48	12	20	SH4-30-1200-A-12 (957920195)
				1350	54	12	22	SH4-30-1350-A-12 (957920196)
				1500	60	13	23	SH4-30-1500-A-12 (957920197)
				1650	66	14	25	SH4-30-1650-A-12 (957920198)
				1800	72	14	27	SH4-30-1800-A-12 (957920199)
				1950	78	15	28	SH4-30-1950-A-12 (957920200)
				2100	84	16	30	SH4-30-2100-A-12 (957920201)
				2250	90	17	32	SH4-30-2250-A-12 (957920202)

For units in cascade, the overall response time is given by this formula. 2 units: (sum of units response time + 1 ms); 3 units: (sum of units response time - 1 ms)

Capability	Range	Functionality	Receiver connector	Protected height (mm)	beams	Response time (ms) with Anti-Interference code disabled	Response time (ms) with Anti-Interference code enabled	Model
body detection	0.5 ... 70 m	basic	5 poles	500	2	12	23	SH4-2-0500-B-5 (957920127)
				800	3	15	27	SH4-3-0800-B-5 (957920128)
				900	4	15	29	SH4-4-0900-B-5 (957920129)
				1200	4	15	29	SH4-4-1200-B-5 (957920130)
		standard	8 poles	500	2	12	23	SH4-2-0500-S-8 (957920131)
				800	3	15	27	SH4-3-0800-S-8 (957920132)
				900	4	15	29	SH4-4-0900-S-8 (957920133)
				1200	4	15	29	SH4-4-1200-S-8 (957920134)
		standard muting	8 poles	500	2	12	23	SH4-2-0500-SM-8 (957920139)
				800	3	15	27	SH4-3-0800-SM-8 (957920140)
				900	4	15	29	SH4-4-0900-SM-8 (957920141)
				1200	4	15	29	SH4-4-1200-SM-8 (957920142)
		standard muting	8 and 5 poles	500	2	12	23	SH4-2-0500-SM-8-5 (957920135)
				800	3	15	27	SH4-3-0800-SM-8-5 (957920136)
				900	4	15	29	SH4-4-0900-SM-8-5 (957920137)
				1200	4	15	29	SH4-4-1200-SM-8-5 (957920138)
		advanced	12 and 5 poles	500	2	12	23	SH4-2-0500-A-12-5 (957920231)
				800	3	15	27	SH4-3-0800-A-12-5 (957920232)
				900	4	15	29	SH4-4-0900-A-12-5 (957920233)
				1200	4	15	29	SH4-4-1200-A-12-5 (957920234)

For units in cascade, the overall response time is given by this formula. 2 units: (sum of units response time + 1 ms); 3 units: (sum of units response time - 1 ms)

CONNECTION DIAGRAMS (RECEIVER SECONDARY CONNECTOR)

SH4 STANDARD MUTING (SH4-**-****-S-8-5): M12 female 5-poles				
SH4 ADVANCED MUTING (SH4-**-****-S-12-5): M12 female 5-poles				
	1	BROWN	24 Vdc	POWER OUTPUT
	2	WHITE	MUTING2	SAFE OUTPUT
	3	BLUE	0 Vdc	POWER OUTPUT
	4	BLACK	MUTING1	SAFE OUTPUT
	5	GREY	COM	COM

CONNECTION DIAGRAMS (TRANSMITTER MAIN CONNECTOR)

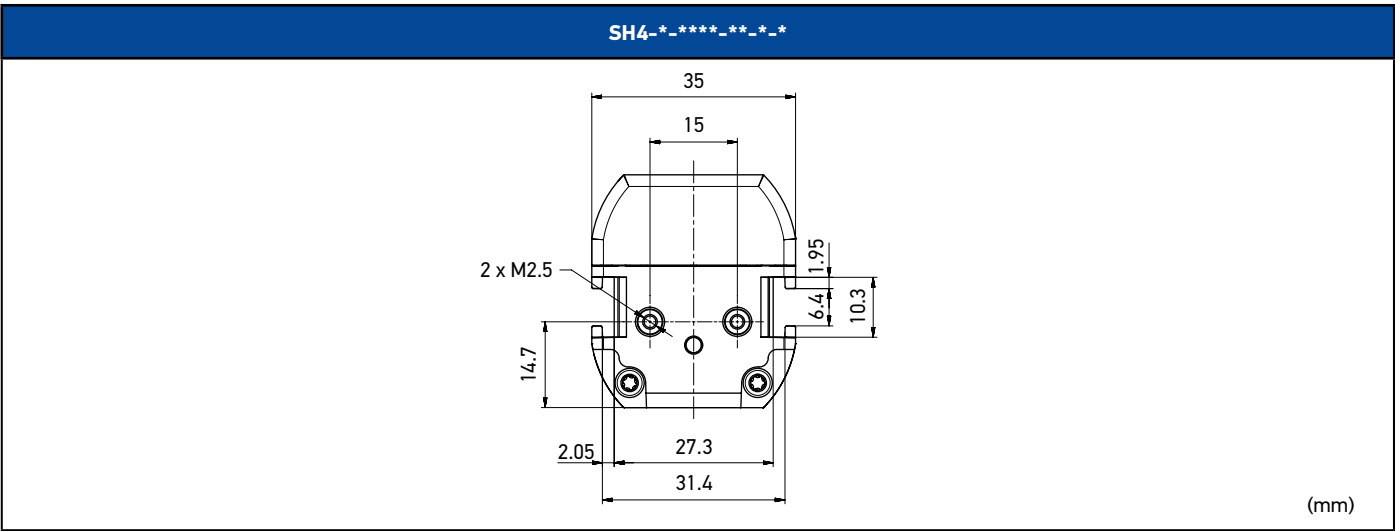
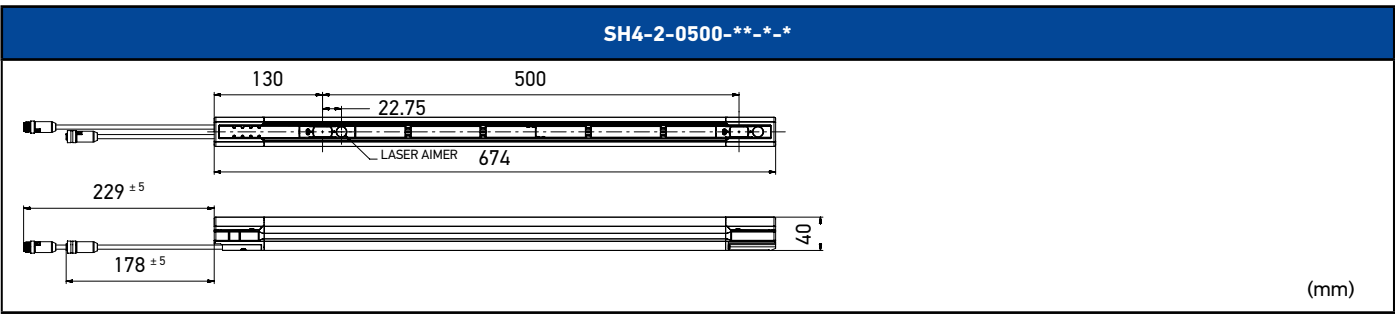
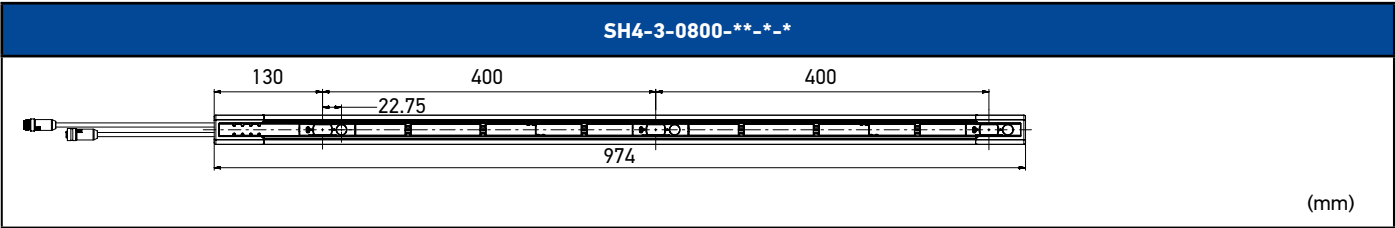
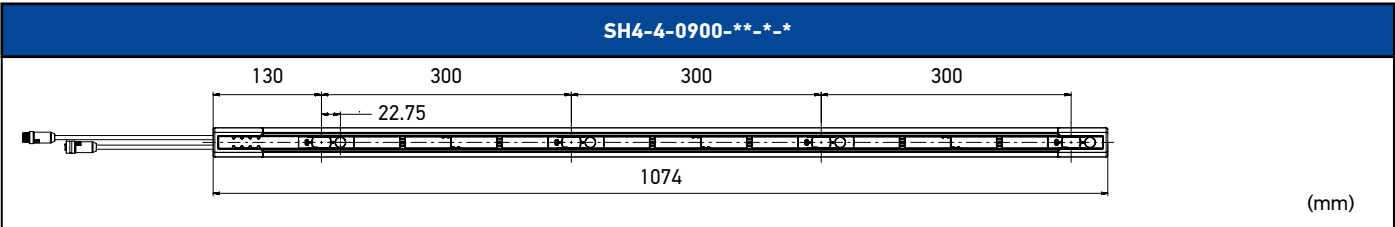
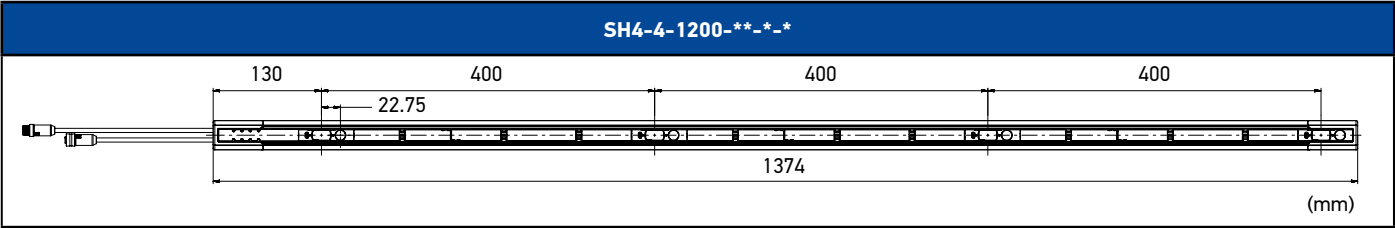
SH4 BASE (SH4-**-****-B-**-5): M12 male 5-poles					SH4 STANDARD (SH4-**-****-S-8): M12 male 5-poles				
					SH4 STANDARD MUTING (SH4-**-****-SM-*): M12 male 5-poles				
	1	BROWN	24 Vdc	POWER		1	BROWN	24 Vdc	POWER
	2	WHITE	N/A			2	WHITE	TEST	INPUT
	3	BLUE	0 Vdc	POWER		3	BLUE	0 Vdc	POWER
	4	BLACK	N/A			4	BLACK	CODE	INPUT
	5	GREY	N/A			5	GREY	N/A	
SH4 ADVANCED (SH4-**-****-A-*): M12 male 5-poles									
	1	BROWN	24 Vdc	POWER					
	2	WHITE	TEST/ POINTER	INPUT					
	3	BLUE	24 Vdc	POWER					
	4	BLACK	CODE	INPUT					
	5	GREY	COM	COM					

CONNECTION DIAGRAMS (TRANSMITTER SECONDARY CONNECTOR)

SH4 STANDARD MUTING (SH4-**-****-SM-8-5): M12 female 5-poles					SH4 ADVANCED (SH4-**-****-A-8-5): M12 female 5-poles				
	1	BROWN	24 Vdc	POWER		1	BROWN	24 Vdc	POWER
	2	WHITE	TEST	INPUT		2	WHITE	TEST/ POINTER	INPUT
	3	BLUE	0 Vdc	POWER		3	BLUE	0 Vdc	POWER
	4	BLACK	CODE	INPUT		4	BLACK	CODE	INPUT
	5	GREY	COM	COM		5	GREY	COM	COM

NOTE: PIN2 on transmitter main connector of body resolution models (SH4-2/3/4-*-*-*) can be used for selection of short or long range.

DIMENSIONS (BODY)



ACCESSORIES: TRANSMITTER AND RECEIVER CABLES

SH4 BASE (SH4-**-***-B-**-*)		
Receiver main connector	Length (m)	Order code
CS-A1-03-U-03	3	95ASE1170
CS-A1-03-U-05	5	95ASE1180
CS-A1-03-U-10	10	95ASE1190
CS-A1-03-U-15	15	95ASE1200
CS-A1-03-U-25	25	95ASE1210
CS-A1-03-U-50	50	95A252700
SH4 STANDARD (SH4-**-***-S/SM-**-*)		
Receiver main connector	Length (m)	Order code
CS-A1-06-U-03	3	95ASE1220
CS-A1-06-U-05	5	95ASE1230
CS-A1-06-U-10	10	95ASE1240
CS-A1-06-U-15	15	95ASE1250
CS-A1-06-U-25	25	95ASE1260
CS-A1-06-U-50	50	95A252710
SH4 ADVANCED (SH4-**-***-A-**-*)		
Receiver main connector	Length (m)	Order code
CS-A1-10-U-03	3	95A252720
CS-A1-10-U-05	5	95A252730
CS-A1-10-U-10	10	95A252740
CS-A1-10-U-15	15	95A252750
CS-A1-10-U-25	25	95A252760
CS-A1-10-U-50	50	95A252770
SH4 all models		
Transmitter main connector	Length (m)	Order code
CS-A1-03-U-03	3	95ASE1170
CS-A1-03-U-05	5	95ASE1180
CS-A1-03-U-10	10	95ASE1190
CS-A1-03-U-15	15	95ASE1200
CS-A1-03-U-25	25	95ASE1210
CS-A1-03-U-50	50	95A252700
SH4 all Muting models (SH4-**-***-SM/A-*-5)		
Receiver/Transmitter secondary connector	Length (m)	Order code
CD12M/0B-050B1	5	CD12M/0B-050B1
CD12M/0B-100B1	10	CD12M/0B-100B1

ACCESSORIES: CASCADE CABLES

CS-H2-03-B-**-*		
Model	Length (m)	Order code
CS-H2-03-B-01	1 m	95ASE0031
CS-H2-03-B-03	3 m	95ASE0032
CS-H2-03-B-10	10 m	95ASE0033

Cascade cables have 5 poles, M12 male connector on one side, and M12 female connector on the opposite side. They can be used to cascade SH4 safety light curtains (refer to manual for technical details)

SH4

TYPE 4

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