

# LASER SENTINEL™

Safety laser scanner based on Time Of Flight measurement  
 More than 72 m2 safely monitored, with 5.5 m over 275°  
 High detection performances in compact size  
 Advanced dust filtering  
 Easy programming with intuitive Graphic User Interface



Dimensions (w,d,h): 102 , 112.5, 152 mm  
 I/O connection with standard 8 pins female M12 cable  
 2 Warning zones up to 40 m  
 40 / 70 mm detection capability  
 Up to 10 zone sets  
 Metal brackets allowing full orientation  
 Auto/Manual restart  
 Total muting function  
 Colour graphic display for monitoring and diagnostics



## APPLICATIONS

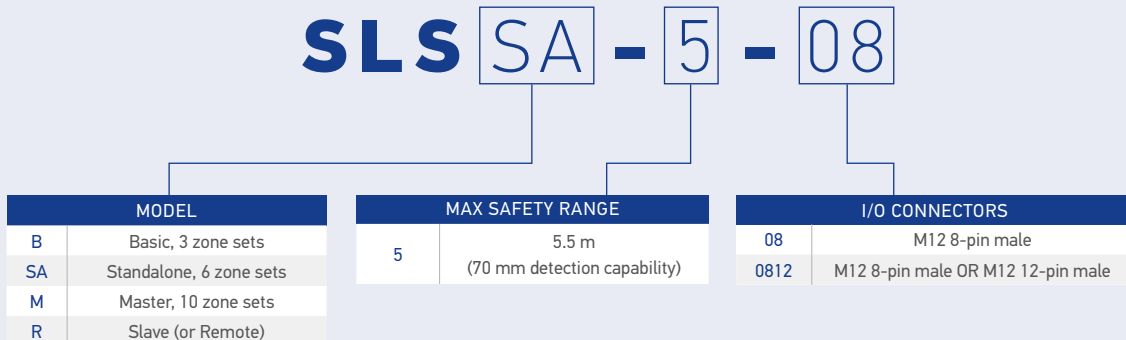
- Robot cells (pick and place, inspection, testing, welding, etc)
- Palletizers / depalletizers
- Open machinery, process lines
- Automated Guided Vehicles (AGV)
- Automated Guided Carts (AGC)
- Mobile Industrial Robots

## INDUSTRIES

- Automotive
- Material handling
- Secondary Packaging
- Food
- Wood
- Ceramics

	FINGER	HAND	ARM	BODY
Type 3			x	x

**SLS SA - 5 - 08**



# TECHNICAL DATA

	SLS-B5	SLS-SA5-08	SLS-M5-0812	SLS-R5	
GENERAL DATA					
Type ( EN61496-1 )			3		
PL ( EN ISO 13849-1 )			d		
SIL ( IEC 61508 )			2		
DETECTION DATA					
Detection capability	70 mm	40 / 70 mm selectable			
Angular resolution	0.1°				
Safety zone operating range	0.05 ... 5.5 m				
Warning zone max operating range	0.05 ... 40 m with remission of target = 90% (white)				
Max. number of symultaneous warning zones	1	2			
Max. opening angle	275°				
Tolerance zone	150 mm	100 mm			
ELECTRICAL DATA					
Power supply (Vdd)	24 Vdc ± 20%				
Output current	0.25 A max / each OSSD			N/A	
Output Capacitive load	2.2 uF @ 24Vdc max			N/A	
Input Load current	6 ... 15 mA			N/A	
Input saturation voltage	> 15 V			N/A	
Input Capacitive Load	22 uF			N/A	
MECHANICAL AND ENVIRONMENTAL DATA					
Operating temperature	0 ... +50 °C				
Storage temperature	-20 ... 70 °C				
Humidity	15 ... 95 % (no condensation)				
Mechanical protection	IP 65 (EN 60529)				
INPUTS / OUTPUTS CONFIGURATION					
Connector used	M12 8 pin	M12 8 pin	M12 8 pin	M12 12 pin	N/A
Safety Outputs (OSSDs)	1 x 2	1 x 2	1 x 2	1 x 2	N/A
Standard Inputs	2	0	2	1	N/A
Standard Inputs/Standard Outputs (configurable)	1	3	1	4	N/A
CONFIGURABLE PARAMETERS					
Response time for main unit	Min: 62 ms; Max: 482 ms				
for any additional slave unit	10 ms				
Max. Zone sets number in any activation order (*1):					N/A
with 1 safety zone	3	3	3	10	
with 1 safety zone + 1 warning zone	2	2	2	6	
with 1 safety zone + 2 warning zone	N/A	N/A	N/A	3	
Max. Zone sets number in a particular activation order (*2):	N/A	6	N/A	N/A	
Zone set input switching time	Min: 30 ms; Max: 5000 ms				
FUNCTIONS					
Manual / automatic restart	Yes				N/A
Reset ( power cycle )	Yes				
Total Muting ( monodirectional or bidirectional)	No	Yes			
Reference Points	No	Yes			
Override	No	Yes (*3)	Yes		N/A
Muting Lamp	No	Yes			N/A
Muting Enable	No	Yes (*3)	Yes		N/A
Clean Window Alarm	No	No	Yes		
Generic Fault Alarm	No	Yes	Yes		
Measurement data	No	Yes (*4)	Yes (*5)		
Measurement data angular resolution	No	0.1°			0.5°
APPLICATIONS					
Horizontal static	Yes				
Vertical static	No	Yes			
Moving ( simple AGVs )	No	Yes			
Moving ( medium complexity AGVs )	No	No	Yes		

## NOTES

(\*1) The max number of zone sets switching is reached when all available inputs are used for zone set switching

(\*2) With 1 safety zone only, up to 3 zone sets are available in any activation order. Up to 6 are available only using some allowed activation order. Refer to Manual and GUI for details.

(\*3) Override Input, Muting Enable input and Muting Lamp output on SLS-SAx are mutually exclusive

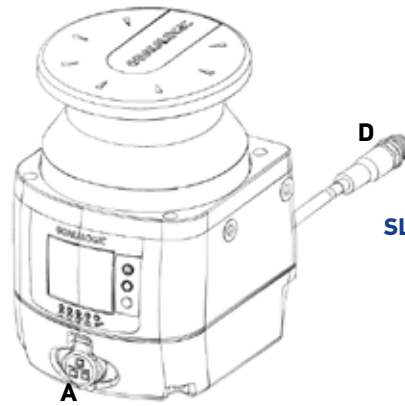
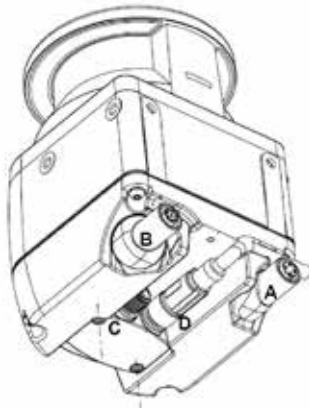
(\*4) Using the programming connector on the front of the device

(\*5) Using the rotating connector in the back of the device

# CONNECTIONS

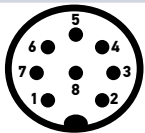
	CHARACTERISTICS	SLS-B5	SLS-Sax	SLS-Mx-0812	SLS-Rx
<b>A</b>	M12 4 pole rotatable side connector	Ethernet port for Programming and Monitoring	Not Present	Ethernet port for Programming and Monitoring	Safe connection to Master or previous Slave
<b>B</b>	M12 8 pole rotatable side connector	Not used	Not Present	Safe Connection to Slave device	Safe Connection to next Slave device
<b>C</b>	M12 12 poles connector on the memory group	Not used	Not Present	Used for power and I/O in alternative to D	Not Present
<b>D</b>	M12 8 poles connector on the memory group	Machine interface: power supply and inputs/outputs	Machine interface: power supply and inputs/outputs	Used for power and I/O in alternative to C	Not Present

**SLS-B5 (Base)  
SLS-M (Master)  
SLS-R (Slave)**



**SLS-SA (Standalone)**

## CONNECTOR (M12, 8-POLE)

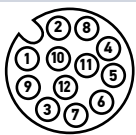


	SIGNAL	DESCRIPTION	COLOR	PIN NUMBER
<b>POWER</b>	POWER SUPPLY	24Vdc	BROWN	2
	GND_ISO	0 V	BLUE	7
<b>INPUT/OUTPUT</b>	MULTI IN/OUT (*)	Selectable by GUI	GREEN	3
	MULTI IN/OUT (*)	Selectable by GUI	YELLOW	4
	MULTI IN/OUT	Selectable by GUI	WHITE	1
<b>SAFETY OUTPUTS</b>	OSSD11	Safety Output	GRAY	5
	OSSD12	Safety Output	PINK	6
<b>OTHER</b>	F_EARTH	Functional Earth	RED	8

### NOTE

(\*) Only MULTI IN for SLS-B5 and SLS-N

## CONNECTOR (M12, 12-POLE)



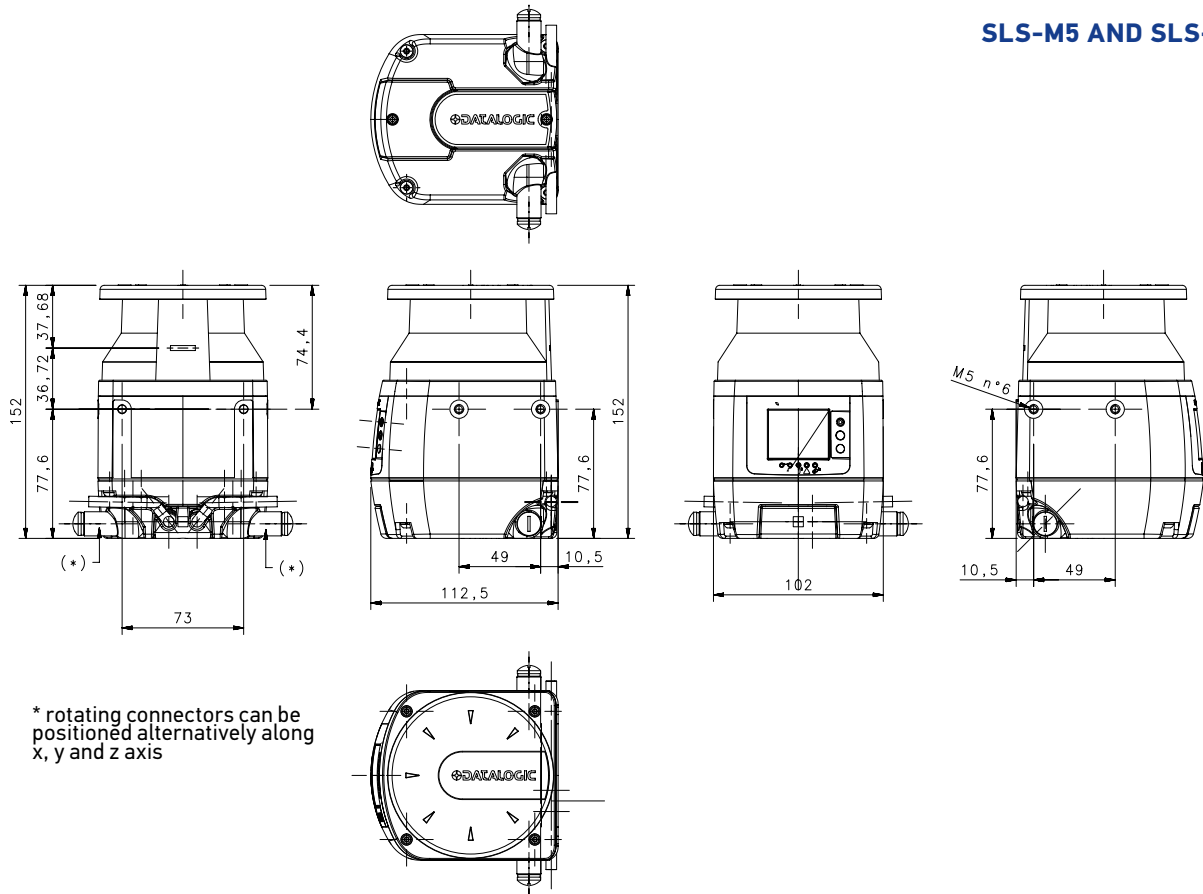
	SIGNAL	DESCRIPTION	COLOR	PIN NUMBER
<b>POWER</b>	POWER SUPPLY	24Vdc	BROWN	1
	POWER SUPPLY	24Vdc	GREEN	4
	GND_ISO	0 V	BLUE	2
	GND_ISO	0 V	YELLOW	6
<b>INPUT</b>	MULTI IN	Selectable by GUI	WHITE	3
<b>INPUT/OUTPUT</b>	MULTI IN/OUT	Selectable by GUI	BLACK	7
	MULTI IN/OUT	Selectable by GUI	RED	9
	MULTI IN/OUT	Selectable by GUI	VIOLET	10
	MULTI IN/OUT	Selectable by GUI	GREY/PINK	11
<b>SAFETY OUTPUTS</b>	OSSD11	Safety Output	GRAY	8
	OSSD12	Safety Output	PINK	5
<b>OTHER</b>	F_EARTH	Functional Earth	RED/BLUE	12

# CONNECTIONS

SELECTABLE INPUTS AND OUPUTS					
IN / OUT	SIGNAL	SLS-B5	SLS-SA5	SLS-M	NOTES
MULTI IN	Reset		Yes		
	Restart		Yes		
	Reset/Restart		Yes		
	Area Switch 1		Yes		
	Area Switch 2		Yes		
	Area Switch 3		Yes		
	Area Switch 4	No		Yes	
	Area Switch 5	No		Yes	
	Muting Enable	No		Yes	
	Muting 1	No		Yes	In order to activate muting, both muting inputs must be used
	Muting 2	No		Yes	
Override	No		Yes	Can be used in combination with muting function	
MULTI OUT	Warning 1		Yes		
	Warning 2	No		Yes	
	Muting lamp	No		Yes	Can be used in combination with muting function
	Alarm 1	No		Yes	Clean Window Alarm
	Alarm 2	No		Yes	General Fault Alarm

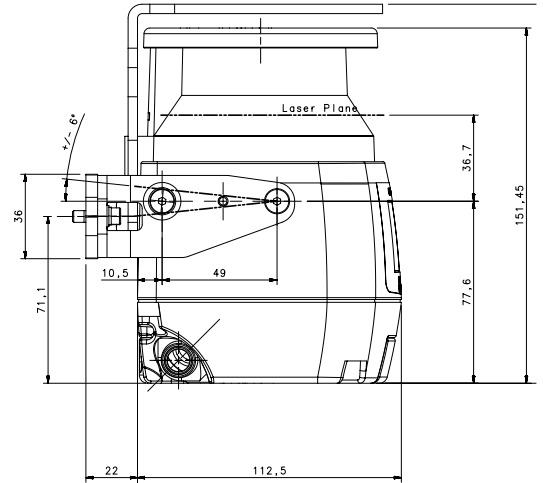
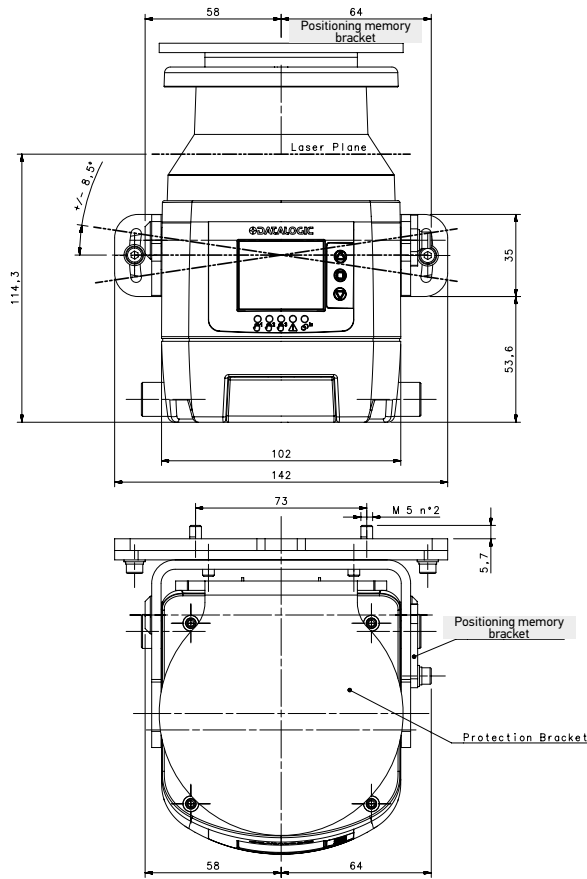
# DIMENSIONS

## SLS-M5 AND SLS-B5

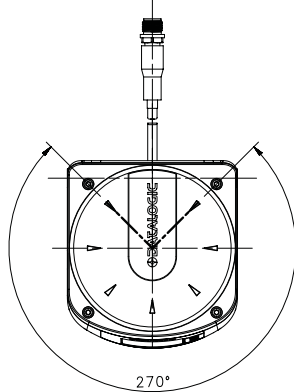
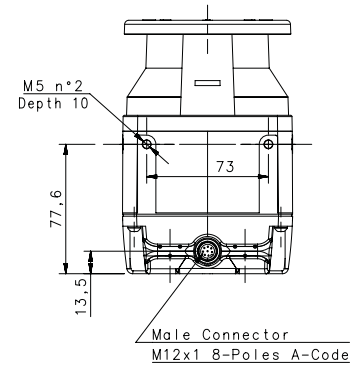
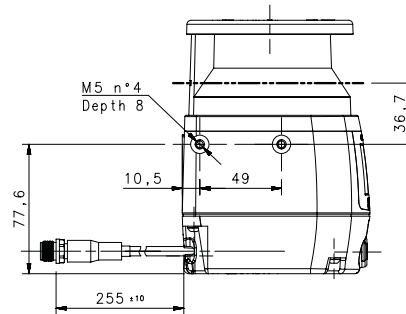
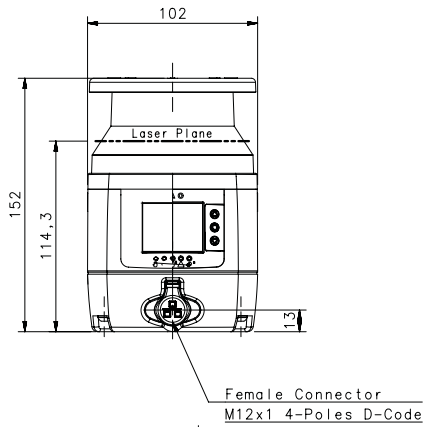


# DIMENSIONS

## SLS-M5 AND SLS-B5 WITH BRACKETS

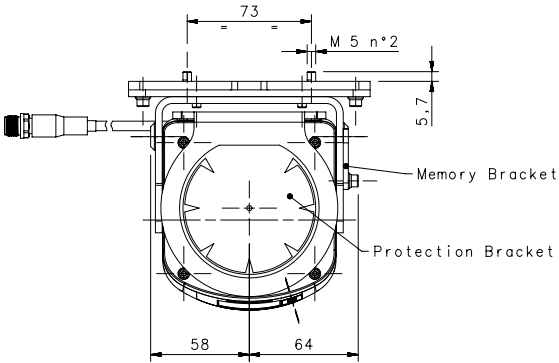
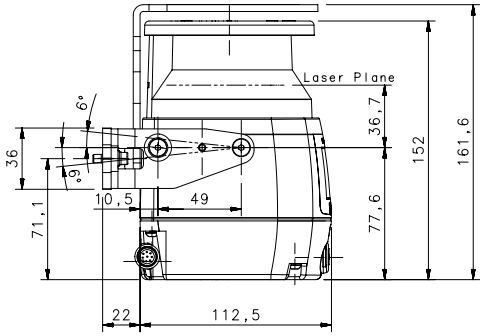
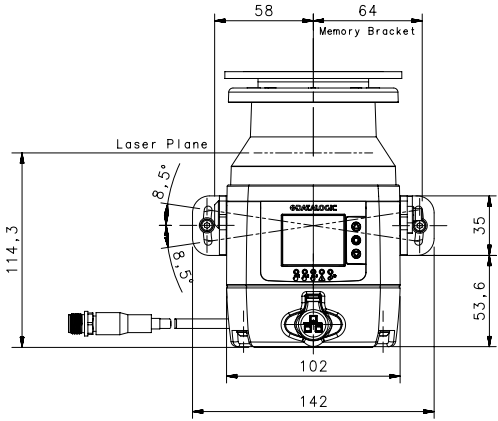


## SLS-SAX



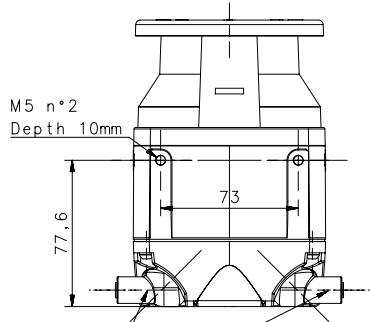
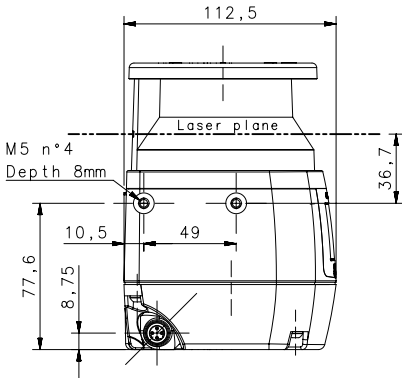
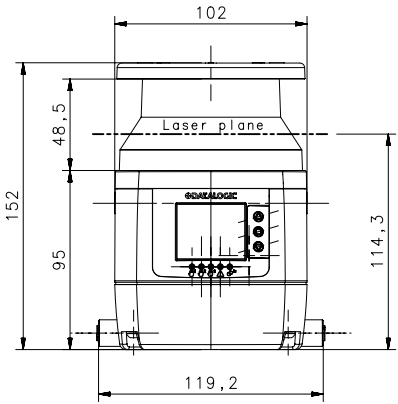
# DIMENSIONS

## SLS-SAX WITH BRACKETS

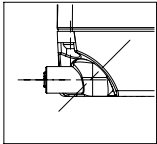
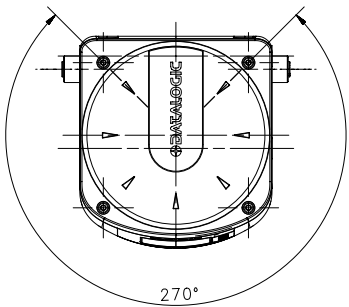


FIXING  
 N°2 Holes M5  
 Depth 6 mm  
 Drilling Distance 73 mm

## SLS-R5



Rotating connectors



Rotating connectors 120°

# MODEL SELECTION AND ORDER INFORMATION

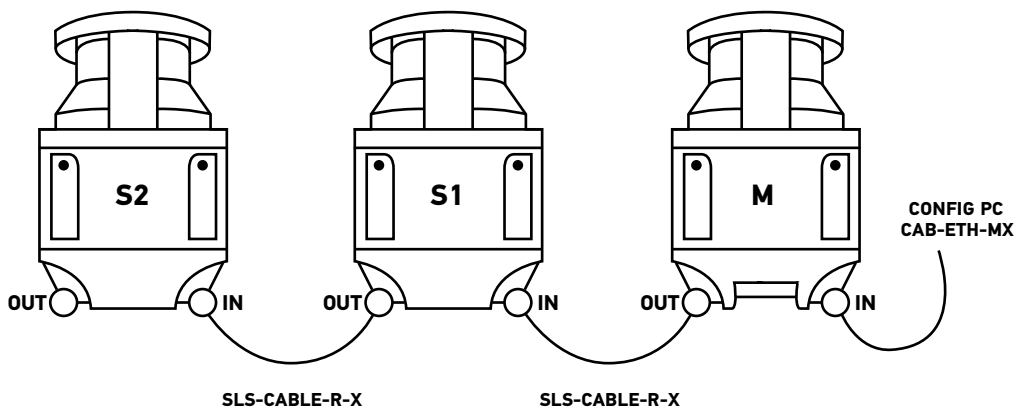
MODEL	PRODUCT DESCRIPTION	ORDER NO.	
<b>BASE</b>	SLS-B5	Base 5.5m 3 zone sets	958001100
<b>STANDALONE</b>	SLS-SA5-08	Standalone 5.5m 6 zone sets	958001090
<b>MASTER/SLAVE</b>	SLS-M5-08012	Master 5.5m 10 zone sets	958001040
	SLS-R5	Remote 5.5m	958001070

## CABLES

	MODEL	POLES	LENGTH	CODE
<b>MAIN CABLES</b>	CS-A1-06-U-03	8	3 m	95ASE1220
	CS-A1-06-U-05		5 m	95ASE1230
	CS-A1-06-U-10		10 m	95ASE1240
	CS-A1-06-U-15		15 m	95ASE1250
	CS-A1-06-U-25		25 m	95ASE1260
	CS-A1-10-U-03	12	3 m	95A252720
	CS-A1-10-U-05		5 m	95A252730
	CS-A1-10-U-10		10 m	95A252740
	CS-A1-10-U-15		15 m	95A252750
	CS-A1-10-U-25		25 m	95A252760
<b>ETHERNET TO HOST CABLES</b>	CAB-ETH-M01 M12-IP67 ETHERNET CAB. (1M)	4	1 m	93A051346
	CAB-ETH-M03 M12-IP67 ETHERNET CAB. (3M)		3 m	93A051347
	CAB-ETH-M05 M12-IP67 ETHERNET CAB. (5M)		5 m	93A051348
	CAB-ETH-M10 M12-IP67 ETHERNET CAB. (10M)		10 m	93A051391
<b>CABLES TO REMOTE</b>	SLS-CABLE-R-5	8	5 m	95ASE2890
	SLS-CABLE-R-10		10 m	95ASE2900
	SLS-CABLE-R-20		20 m	95ASE2910

### NOTES





ETHERNET TO HOST CABLES are used for programming and monitoring the device with DL Sentinel, and for reading the measurement data.  
CABLES TO REMOTE are used to connect the Master models to the Slaves like in the following picture








## ACCESSORIES

	SLS-B5 / SLS-SA <sub>x</sub>	ORDER NUMBER
<b>BRACKETS</b>		
<b>Complete bracket system</b>	SLS-BRACKET-A	95ASE2920
<b>Pitch regulation bracket system</b>	SLS-BRACKET-B	95ASE2930
<b>Head protective bracket</b>	SLS-BRACKET-C	95ASE2940
<b>SAFETY UNITS</b>		
<b>Safety Unit</b>	SE-SR2	95ACC6170
<b>OTHERS</b>		
<b>Liquid cleaner in spray bottle ( 1 lt )</b>	SLS-CLEANER	95ASE2990
<b>Cleaning cloth ( 22 cm x 22 cm ), 100 pcs.</b>	SLS-CLOTH	95ASE3000

The colour graphical display of LASER SENTINEL shows if any person has been detected in the safety or warning areas, causing by consequence the stopping of the machine or the warning signal to activate.  
The presence of 11 angular sectors allow to show the direction in which the person has been detected, and its colour indicate if it has been inside the safety (red) or the warning zone (yellow).

DISPLAYED ICON	NAME	DESCRIPTION
 <b>GO</b>	<b>ON state</b>	The device is correctly functioning (OSSDs GO Condition). No presence detected in the Safety and Warning Area. (Configuration accepted)
 <b>WARNING</b>	<b>OFF State for intrusion in Safety Area</b>	The device is correctly functioning. The device has detected a presence in the Warning Area (Configuration accepted)
 <b>STOP</b>	<b>Warning for intrusion in Warning Area</b>	The device is correctly functioning (OSSDs STOP Condition). The device has detected a presence in the Safety Zone. (Configuration accepted)
 <b>REFERENCE</b>	<b>OFF State for Reference Points</b>	The device has detected that Reference Points have moved. The Display Sector in the direction of the moved reference point is lit in blue.

LED NUMBER	SYMBOL	DEFINITION	COLOR	MEANING	OUTPUT STATUS
1		Object Detection in Safety Zone (OSSD 11/12).	GREEN	No object detected in Safety Zone	OSSDs OFF
			RED	Object detected in Safety Zone	OSSDs ON
2				Not used	
3		Object Detection in Warning Zone 2.	AMBER	Object detected in Warning Zone 2	Warning 2 Output OFF
			OFF	No object detected in Warning Zone 2	Warning 2 Output ON
4		Object Detection in Warning Zone 1.	AMBER	Object detected in Warning Zone 1	Warning 1 Output OFF
			OFF	No object detected in Warning Zone 1	Warning 1 Output ON
5		Interlock.	AMBER	No Object detected in Safety Zone Device waiting for Manual Restart (LED1 RED)"	OSSDs OFF
			OFF	No Object detected in Safety Zone Device in ON Status (LED 1 GREEN)"	OSSDs ON

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