



# Laser Sentinel Enhanced

## SAFETY LASER SCANNER FOR PROFINET/PROFIsafe



Safety laser scanner based on Time of Flight measurement with command integration in Profinet/Profisafe fieldbus.

- 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

- Dimensions (w,d,h): 102 , 112.5, 152 mm
- More than 72 m2 safely monitored, with 5.5 m over 275°
- Easy programming and fieldbus emulation with intuitive Graphic User Interface
- Dynamic reference points
- Advanced dust filtering
- Local I/O connection with standard M12 cables
- Up to 8 simultaneous safety zones
- Up to 7 Simultaneous warning zones
- Up to 70 zone sets
- 30/40/50/70/150 mm selectable detection capability
- Metal brackets allowing full orientation and fast replacement
- Advanced measurement data protocol
- Colour graphic display for monitoring and diagnostics



### CODE DESCRIPTION

**SLS - M 5 - - PP - BA**

series	<b>SLS</b>	Enhanced laser sentinel					
	<b>SA</b>	Standalone					
model	<b>M</b>	Master					
	<b>R</b>	Slave (or remote)					
max safety range	<b>5</b>	5.5 m					
	<b>3</b>	3 m					
encoder inputs	<b>E</b>	encoder inputs on secondary connector					
		not present					
Command integration	<b>08</b>	M12 8-pin male I/O					
	<b>0812</b>	M12 8-pin male or M12 12-pin male I/O					
	<b>1708</b>	M12 17-pin male and M12 8-pin male I/O					
enhanced version	<b>PP</b>	Profinet - Profisafe					
	<b>E</b>	Enhanced version					
		Standard Enhanced version (*)					
	<b>BA</b>	Connector module on back					
	<b>BO</b>	Connector module on bottom					



# TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS	SLS-M5-PP-BA	SLS-M5-PP-B0
<b>FEATURES AND PERFORMANCES</b>		
detection capability	30/40/50/70/150 mm selectable	
Angular resolution	0,1°	
Safety range ( min)	0,05 m	
Safety range (max) [ detection capability]	2,5m[30mm]; 3m[40mm]; 4m[50mm]; 5,5m[70,150mm]	
warning range (max)	40 m	
Detectable target remission	1,8% .. "1000%"	
N°of simultaneous safety zone (max)	8	
N°of simultaneous warning zone (max)	7	
N°of zone set (max)	70	
N°of reference point set (max)	70	
N°of points of each reference point set (max)	15	
Response time max	94 ms - 1750 ms (Fast Mode) 105 ms - 2065 ms (Standard Mode)	
Tolerance Zone	100 mm	
Supplement for retroreflectors on scan plane in front of a safety zone	200 mm	
<b>ELECTRICAL DATA</b>		
Power Supply	16.8 Vdc ... 28.8 Vdc	
Maximum residual ripple	+/- 5%	
Power consumption	8.5 W @24 V, no digital I/O connected	
Protection class	III (EN/IEC 61140)	
<b>POWER CONNECTOR'S CONFIGURABLE INPUT/OUTPUT</b>		
N° of configurable input (max)	5	
N° of configurable output (max)	4	
<b>POWER CONNECTOR'S CONFIGURABLE INPUT/OUTPUT - ELECTRICAL DATA</b>		
Input voltage (HIGH)	> 8 V	
Input voltage (Low)	< 5,5 V	
Input current (HIGH)	2 mA @ 24 Vdc	
Output voltage for ON status (HIGH)	≥Vdc-1.5V @400mA	
Output voltage for ON status (Low)	≤ 0.4V	
Output current for ON status (HIGH)	max. 300 mA	
Output type	Push-Pull	
<b>COMMUNICATION</b>		
Network Interfaces	10/100 Mbit/s Ethernet (3X)	
PROFINET specification	V2.43	
PROFIsafe profile	V2.6.1 & 2.4 (w/o iPar) / Conformance class B	
GSDML specification	V2.43	
<b>CONNECTORS</b>		
Power and I/O	M12 male type A connector - 8 poles	
Ethernet to GUI / Data transmission	M12 male type D connector - 4 poles	
Profinet / Profisafe	M12 male type D connector - 4 poles (2X)	
Connectors module positioning on device	back	bottom
<b>HMI/UI</b>		
Configuration and monitoring interfaces	DL Sentinel 4.0.x	
LED indicators	safe/normal operation - Profinet	

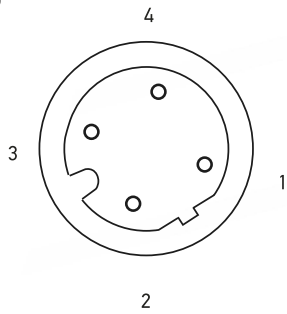
# TECHNICAL SPECIFICATIONS

	SLS-M5-PP-BA	SLS-M5-PP-B0
<b>MECHANICAL DATA</b>		
Dimensions	102x113x152 mm	
Material	Metal - Aluminium / PMMA	
Housing material	Painted aluminium / PC	
Optic window material	PMMA	
Connections	M12	
<b>ENVIRONMENTAL DATA</b>		
Humidity	95% max non-condensing	
Enclosure Rating	IP65	
Operating Temperature	-10 ... 50 °C	
Storage temperature max	-20 ... 70 °C	
Vibration Resistance	"According to IEC 61496-1 (4.3.3.1;4.3.3.2;5.4.4.1) Class 3M7 (Stationary Use) Class 5M1 (Ground vehicle Installation) "	
Shock Resistance	"According to IEC 61496-1 (4.3.3.1;4.3.3.3;5.4.4.2) IEC 61496-3 (5.4.4); IEC 60068-2-75 Class 3M7 (Stationary Use) Class 5M1 (Ground vehicle Installation) "	
<b>OPTICAL DATA</b>		
Wavelength	905 nm	
Pulse duration	3 ns	
Average output power	8 mw	
Laser class/Laserklass	CLASS 1 (EN 60825-1:2014)	
Divergence of collimated beam	0.12 °	
<b>SAFETY PARAMETERS</b>		
Type	3 (EN 61496-1)	
SIL	SIL 2 (IEC 61508)	
Maximum SIL	SIL 2 (EN 62061)	
Cat.	3 (EN ISO 13849-1)	
PFHd	2.24 x 10 <sup>-8</sup>	
MTTFd	61 years	
TM (Mission Time)	20 years (EN ISO 13849-1)	
<b>MAIN CERTIFICATIONS</b>		
Safety of Machinery -electro sensitive protective equipment -	IEC 61496 -1 / 3	
Safety of laser products – Equipment classification and requirements -	IEC 60825-1:2014	
Industrial communication networks - Functional safety fieldbuses	IEC 61784-3-18 2010	
Safety of machinery. Safety-related parts of control systems	EN ISO 13849-1	
Functional safety of electrical/electronic/programmable electronic safety related systems	IEC 61508-1-2-3-4	
<b>FUNCTIONS</b>		
Generic Alarm	Available	
Clean Window Alarm	Available	
Muting enable	Not Available	
Muting	Available	
Override	Available	
Dust filtering	Available	
EDM (External Device Monitoring)	Not Available	
Partial Muting	Available	
Pre-alarm (warning)	Available	
Advanced data transfer protocol	Available	
Reset (restart cycle)	Available	
Manual / automatic restart	Available	
Shut off (mute)	Available	
Dynamic Reference Points	Available	
High speed input for encoders	Not Available	

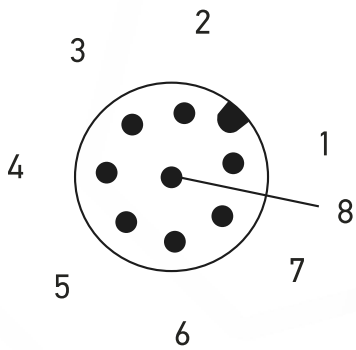
# AVAILABLE MODELS

Description	Model
Laser Sentinel Profisafe	<b>SLS-M5-PP-BA</b> (958000012)
Laser Sentinel Profisafe	<b>SLS-M5-PP-B0</b> (958000013)

## PLUGS



N.o	Definition
1	Transmit data +
2	Receive data +
3	Transmit data -
4	Receive data -



N.o	Definition
2	24Vdc
7	0 V
3	Selectable by GUI
4	Selectable by GUI
1	Selectable by GUI
5	Selectable by GUI
6	Selectable by GUI
8	Functional Earth

Category	Type	Color
Power	POWER SUPPLY	BROWN
	GND_ISO	BLUE
Input/Output	INPUT	GREEN
	MULTI IN/OUT	YELLOW
	MULTI IN/OUT	WHITE
	MULTI IN/OUT	GRAY
	MULTI IN/OUT	PINK
OTHER	F_EARTH	RED

# ACCESSORIES AND CABLES

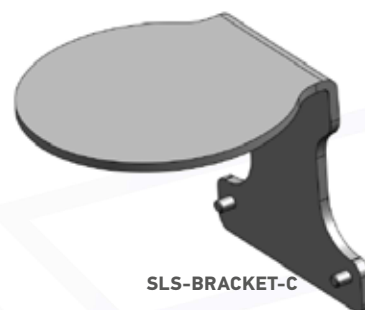
	BRACKETS	ORDER NUMBER
Complete bracket system	SLS-BRACKET-A	95ASE2920
Pitch regulation bracket system	SLS-BRACKET-B	95ASE2930
Head protective bracket	SLS-BRACKET-C	95ASE2940
<b>FIELD REPLACEMENT ACCESSORIES</b>		
Replacement window	SLS-WINDOW	95ASE2971
Fieldbus memory group	SLS-MG-FB	95ASE0105
<b>MAINTENANCE ACCESSORIES</b>		
Liquid cleaner in spray bottle ( 1 lt )	SLS-CLEANER	95ASE2990
Cleaning cloth ( 22 cm x 22 cm ), 100 pcs.	SLS-CLOTH	95ASE3000



SLS-BRACKET-A



SLS-BRACKET-B



SLS-BRACKET-C

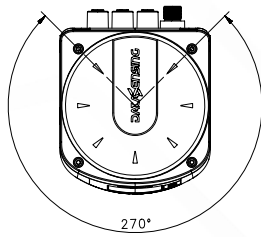
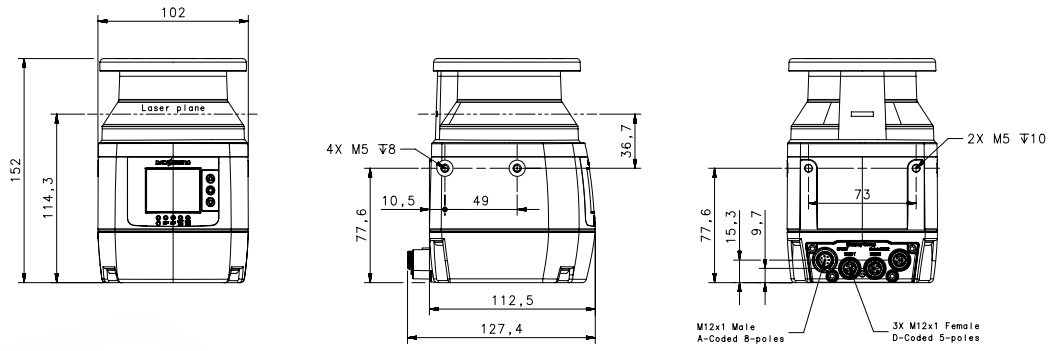


FIELDBUS MEMORY GROUP

	MODEL	1 <sup>st</sup> end	2 <sup>nd</sup> end	LENGHT	CODE
POWER AND I/O CONNECTION	CS-A1-06-U-03	8 pin female	free wires	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
ETHERNET TO HOST CABLES	CAB-ETH-M01 M12-IP67 ETHERNET CAB. (1M)	4 pin male	RJ45	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

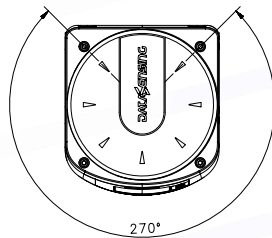
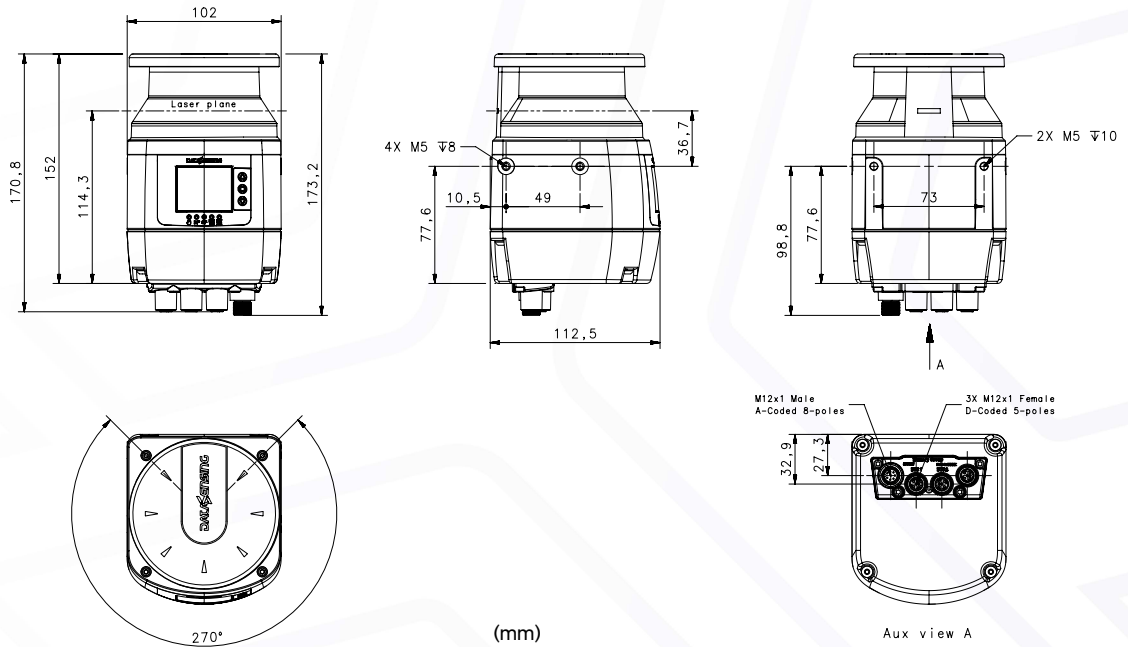
# MECHANICAL DRAWINGS

## SLS-M5-PP-BA



(mm)

## SLS-M5-PP-B0



(mm)



