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Laser Sentinel Enhanced For PROFISAFE

Safety Laser Scanner

OUR EXPERTISE
MAKES YOUR WORK
EASIER

AT A GLANCE

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Safety laser scanner

Datasensing is pleased to announce the expansion of its line of Safety Laser Scanners with the introduction of new models offering PROFIsafe and PROFINET command integration.

Safety system integration has never been easier!

The excellent features of the existing family are improved by these fieldbus models, introducing extreme flexibility in setting and processing in the same proven rugged housing.

New functions such as Dynamic Reference Points and local digital I/O management make these models unique in intralogistics and industrial manufacturing applications.

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KEY FEATURES

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Safety laser scanner

▶ **Profinet** / **Profisafe** connectivity

PROFI INDUSTRIAL ETHERNET NET

PROFIsafe

Efficient solution to minimize connectivity
Maintenance optimization
Flexible programming and configuration
Easy integration in a system

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KEY FEATURES

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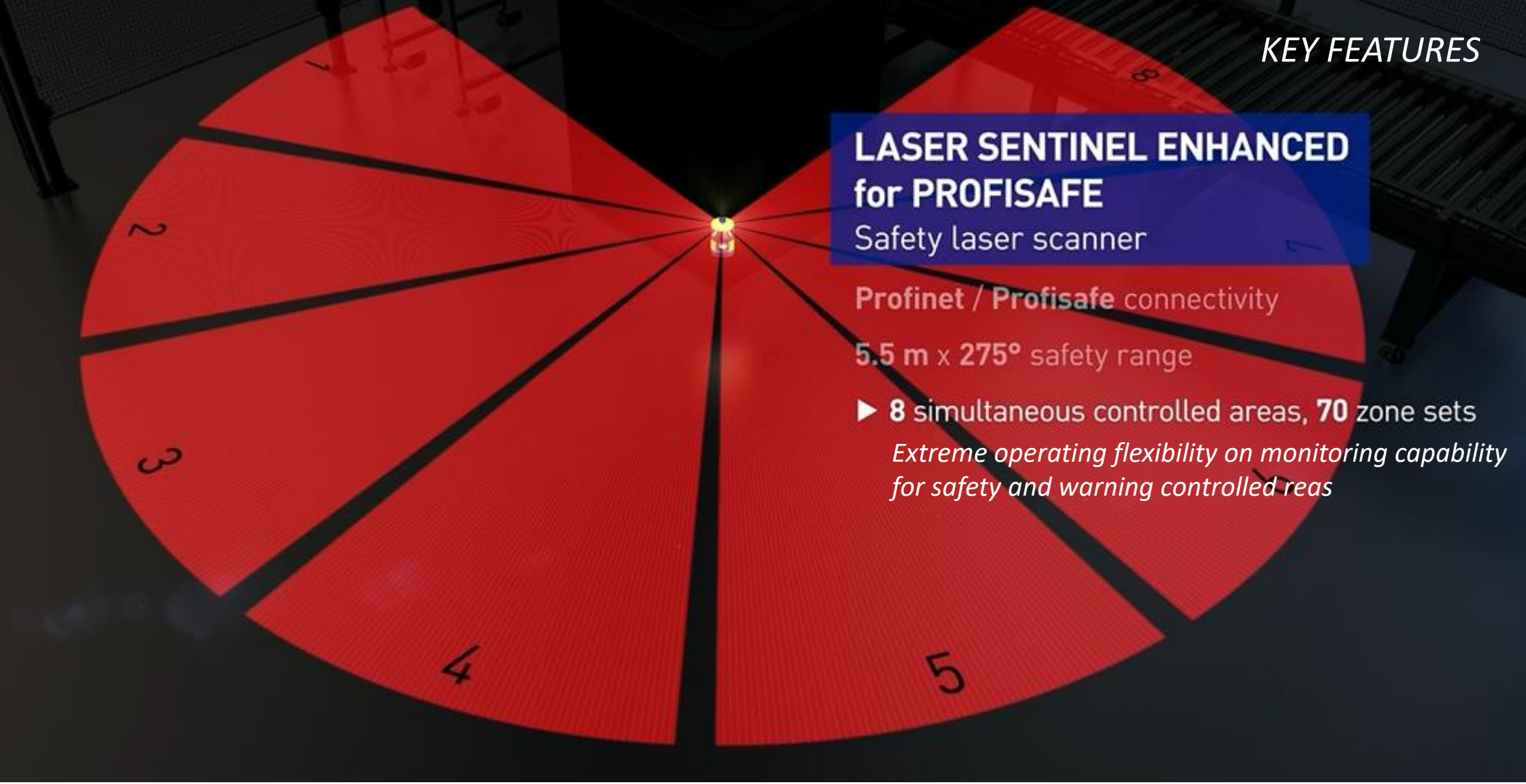
KEY FEATURES



Extreme operating flexibility on monitoring capability for safety and warning controlled reas

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KEY FEATURES

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Safety laser scanner

Profinet / **Profisafe** connectivity

5.5 m x **275°** safety range

8 simultaneous controlled areas, **70** zone sets

▶ **Dynamic reference** points

Innovative solution to use the reference points as pattern recognition for zone set switching in safety

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KEY FEATURES

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KEY FEATURES

LASER SENTINEL ENHANCED for PROFISAFE

Safety laser scanner

Profinet / **Profisafe** connectivity

5.5 m x **275°** safety range

8 simultaneous controlled areas, **70** zone sets

Dynamic reference points

5 local programmable I/O

▶ **Smart Programmable** User Interface

Allows to emulate the configuration and the process imagine even with off-line PLC for an easier and faster integration with safety system

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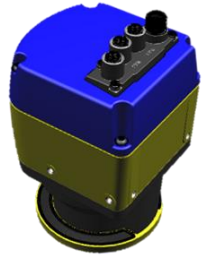
MODELS

Models Description	P/N
SLS-M5-PP-BA	958000012
SLS-M5-PP-BO	958000013

SLS-M5-PP-BO



SLS-M5-PP-BA

Accesories	P/N
SLS-MG-FB	95ASE0105

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SPECS

technical Specifications	SLS-M5-PP-BA I SLS-M5-PP-BO
FEATURES AND PERFORMANCES	
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 retro reflectors on scan plane in front of a safety zone	200 mm
ELECTRICAL DATA	
Power Supply	16.8 Vdc ... 28.8 Vdc
Maximum residual ripple	+/- 5%
Power consumption	8,5W @24 V, no digital I/O connected
Protection class	III (EN/IEC 61140)
POWER CONNECTOR'S CONFIGURABLE INPUT/OUTPUT	
N° of configurable input (max)	5
N° of configurable output (max)	4
POWER CONNECTOR'S CONFIGURABLE INPUT/OUTPUT - ELECTRICAL DATA	
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 @ 400 mA
Output voltage for ON status (Low)	≤ 0,4 V
Output current for ON status (HIGH)	max. 250 mA
Output type	Push-Pull
COMMUNICATION	
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

ENVIRONMENTAL DATA	
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)
OPTICAL DATA	
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 °
SAFETY PARAMETERS	
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 10-8
MTTFd	61 years
TM (Mission Time)	20 years (EN ISO 13849-1)
FUNCTIONS	
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

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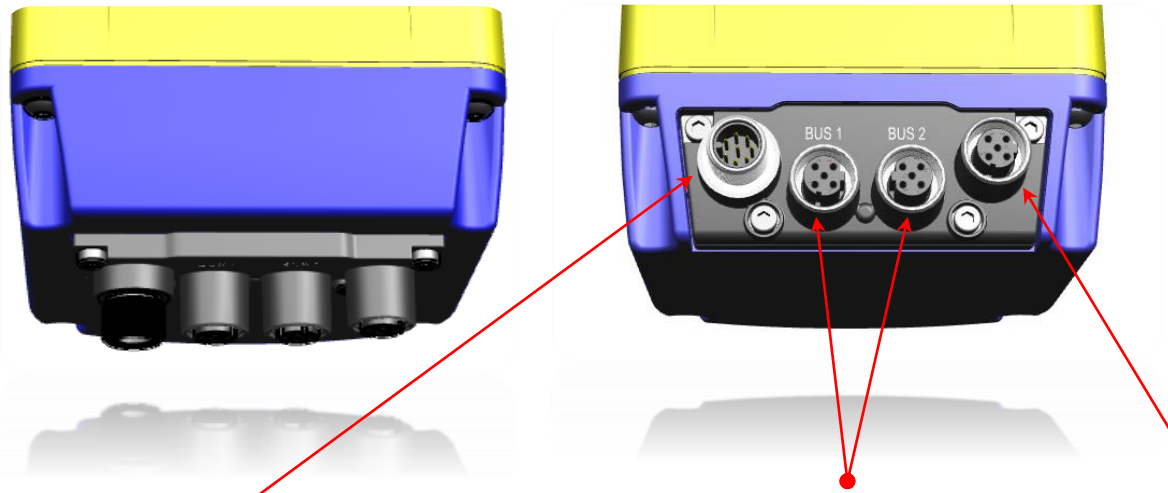
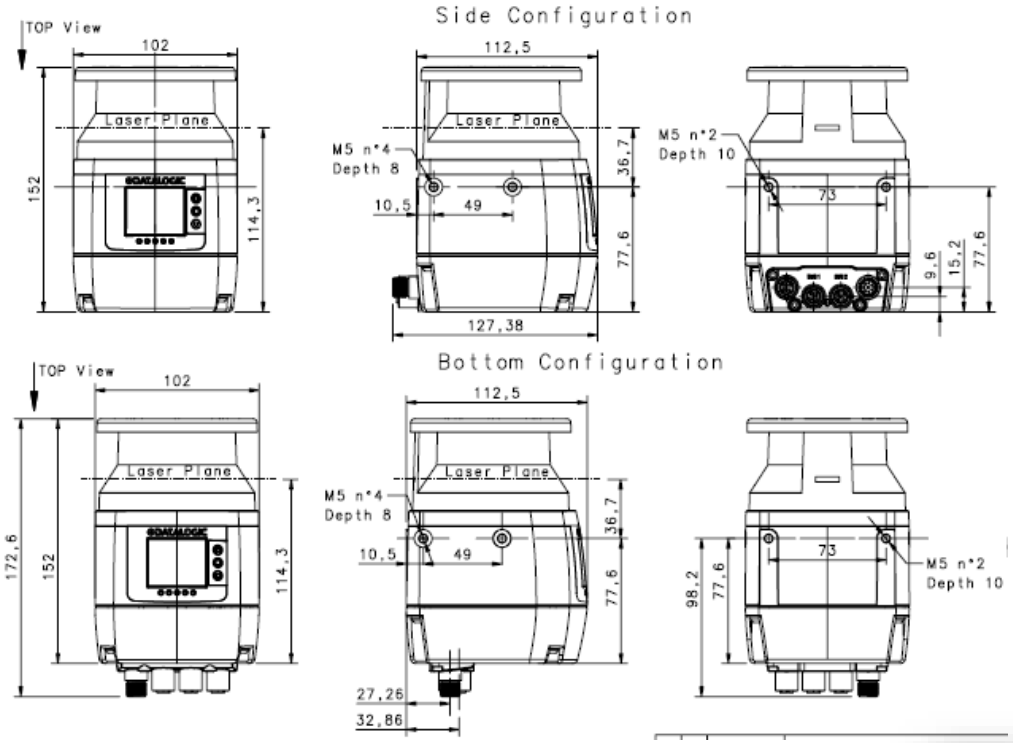
CONNECTIVITY

4x M12 Connectors:



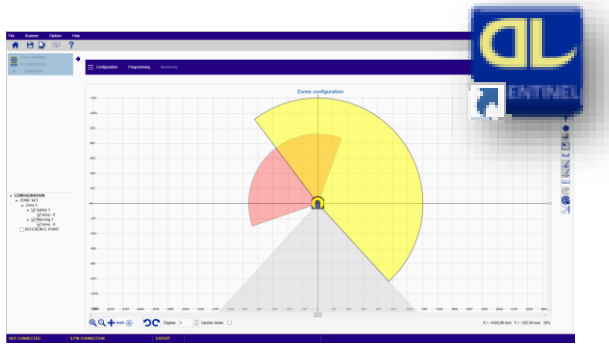
Power and digital I/O
(muting+override i.e)

2 Ethernet ports for
- PROFISAFE communication (safe data)
- PROFINET communication
- (TCP/IP) measurement data (optional)



Removable module
For Fast Replacement

1 Ethernet port for
- configuration by DL sentinel UI
- (TCP/IP, UDP) measurement data (standard)



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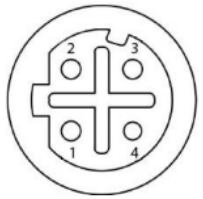
CONNECTORS

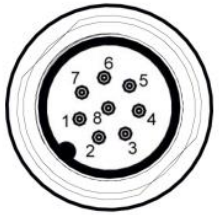
Ethernet
M12-4poles-KeyD-F



No.	DEFINITION
1	Transmit data +
2	Receive data +
3	Transmit data -
4	Receive data -

Power & I/O
M12-8poles-M

SLS can use some phisical I/Os with aim to manage local function as muting and override . DL Sentinel UI allows the selection of these I/O in zone set #1; functions and setting assigned to digital I/O will still be available also in Profinet/Profisafe



No.	DEFINITION	CATEGORY	TYPE	COLOR
2	24Vdc	POWER	POWER SUPPLY	BROWN
7	0 V		GND_ISO	BLUE
3	Selectable by GUI	INPUT/OUTPUT	INPUT	GREEN
4	Selectable by GUI		MULTI IN/OUT	YELLOW
1	Selectable by GUI		MULTI IN/OUT	WHITE
5	Selectable by GUI		MULTI IN/OUT	GRAY
6	Selectable by GUI		MULTI IN/OUT	PINK
8	Functional Earth	OTHER	F_EARTH	RED

TYPE	FUNCTION	DESCRIPTION	CONNECTION
MULTI-IN	RESET	Restore he device after a failure condition	+24VDC
	RESTART 1	Restarts the Safety Zone 1	+24VDC
	OVERRIDE (Single line pattern)	Enable the override function	+24VDC
	OVERRIDE 11(EDGE)	Enables the override function (either edge or level triggered)	+24VDC
	OVERRIDE 12(EDGE)		+24VDC
	OVERRIDE 11 (LEVEL)		+24VDC
	OVERRIDE 12 (LEVEL)		+24VDC
	MUTING 11	Automatically deactivates the safety status on the Safety Zone 1	+24VDC
	MUTING 12		+24VDC
	NO FUNCTION	Not used	
MULTI OUT	MUTING LAMP 1	Active Muting functional signal for Safety Zone 1. Connect LED lamp providing it with 24 Vdc	0V
	ALARM 1	Clean Window	PNP 0V
	ALARM 2	Device Error	PNP 0V
	OVERRIDE STATUS	Status of override	PNP 0V
	NO FUNCTION	Not used	

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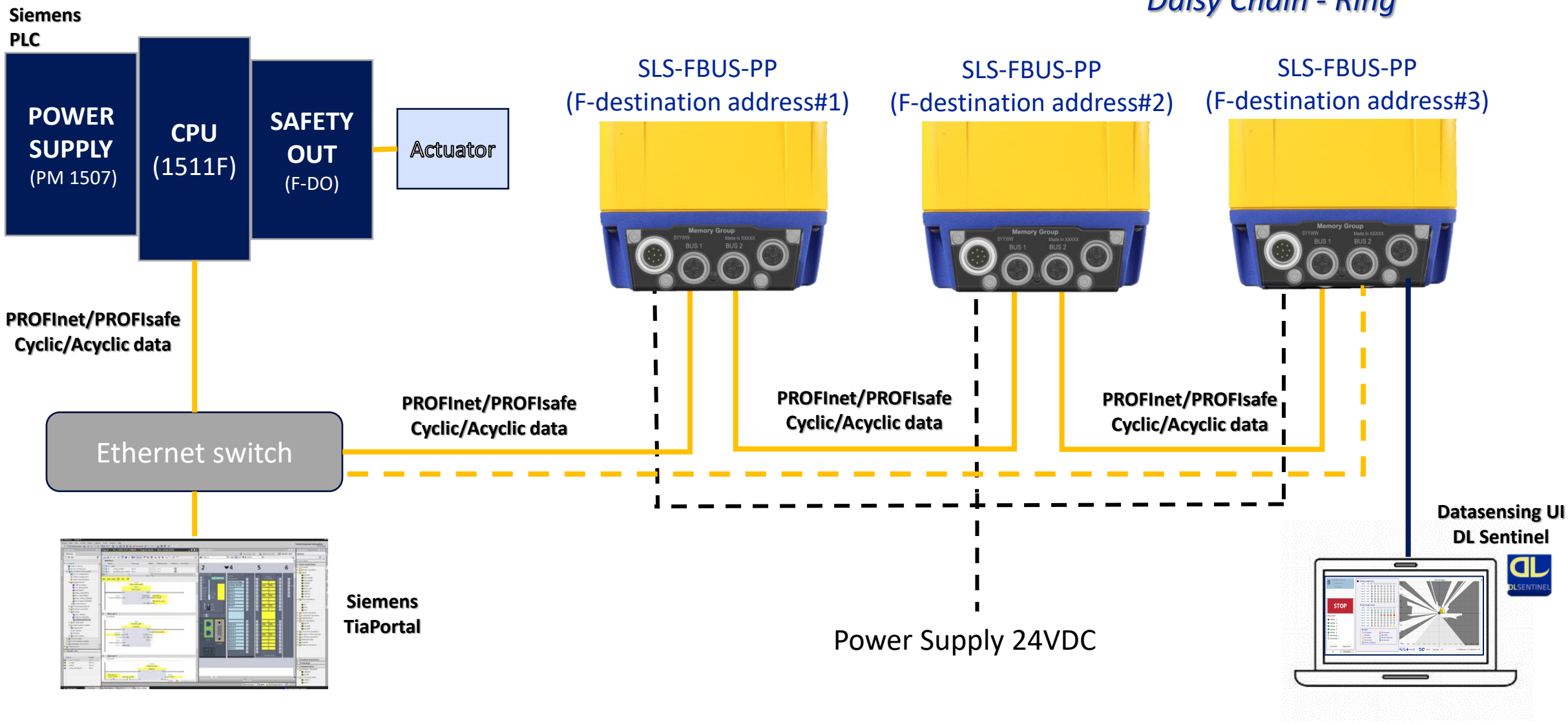
NETWORK TOPOLOGY

Daisy Chain - Ring



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NETWORK TOPOLOGY

Star

Siemens PLC

POWER SUPPLY (PM 1507)

CPU (1511F)

SAFETY OUT (F-DO)

Actuator

SLS-FBUS-PP (F-destination address#1)

SLS-FBUS-PP (F-destination address#2)

SLS-FBUS-PP (F-destination address#3)

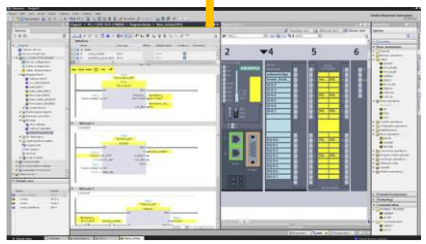
PROFInet/PROFIsafe Cyclic/Acyclic data

PROFInet/PROFIsafe Cyclic/Acyclic data

PROFInet/PROFIsafe Cyclic/Acyclic data

PROFInet/PROFIsafe Cyclic/Acyclic data

Ethernet switch



Siemens TiaPortal

Power Supply 24VDC

Datasensing UI DL Sentinel

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DISPLAY

SYMBOL	DEFINITION	COLOR	MEANING
	Status of the SafetyZones	Green	No intrusion in any safety zone of the monitored zone set
		Orange	Intrusion in any of the warning zone of the monitored zone set
		Red	Intrusion in any safety zone of the monitored zone set (or lockout)
BF	Bus Failure	Off	No error (normal operation)
		Red (Flashing 2Hz)	No data exchange
		Red (ON)	Incorrect PROFINET configuration; low speed physical link; no physical link
SF	System Failure	Off	No error (normal operation)
		Red (Flashing 2Hz)	DCP signal service is initiated via the bus
		Red (ON)	Watchdog timeout; generic or extended diagnosis present; system error
Link/ Act1 Link/ Act2	Link/Act1 Link/Act2	Off	The device has no link to the Ethernet port FBUS1/FBUS2
		Green (ON)	The device is linked to the Ethernet port FBUS1/FBUS2
		Yellow (Flashing 10Hz)	The device sends/receives Ethernet frame on port FBUS1/FBUS2
	**Button 1**: to quickly browse the Menu functions		
	**Button 2**: to quickly browse the Menu and confirm the selected function		
	**Button 3**: to quickly browse the Menu functions		

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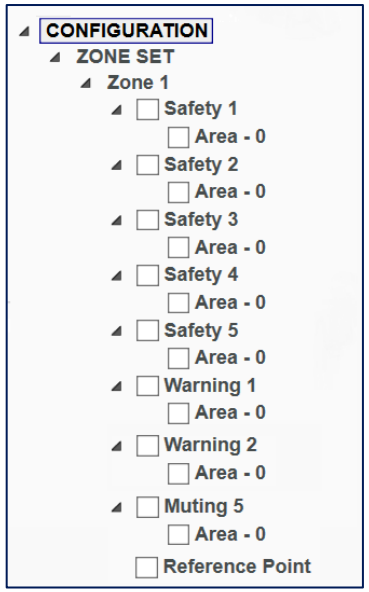
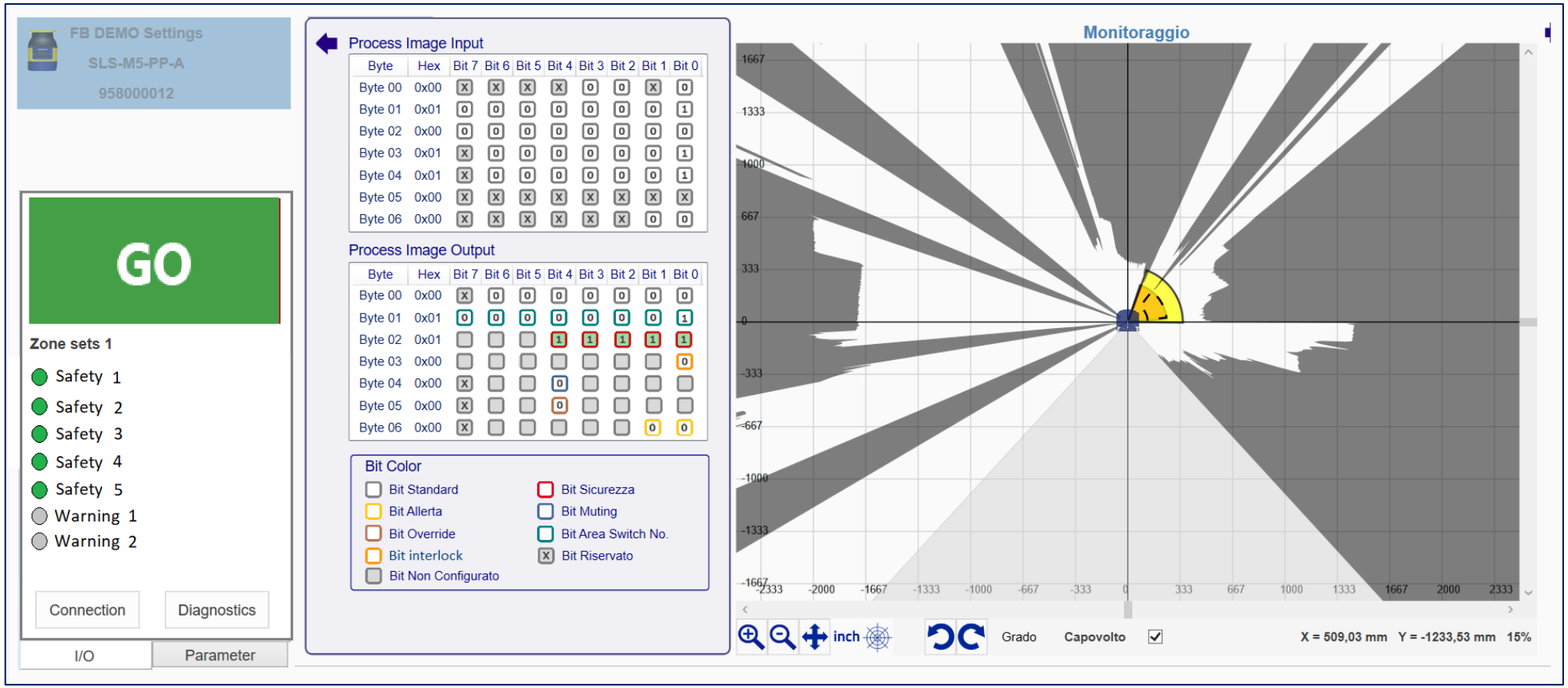
DLSentinel GUI

process image and display appearance





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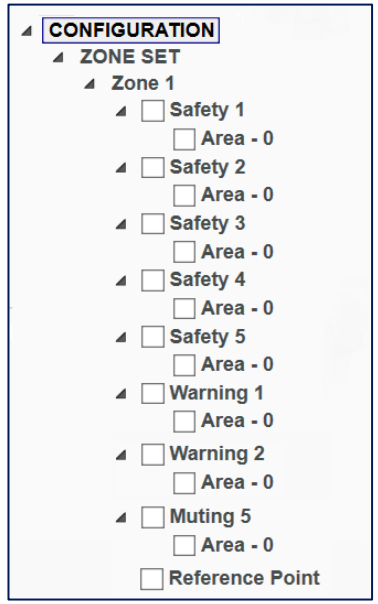
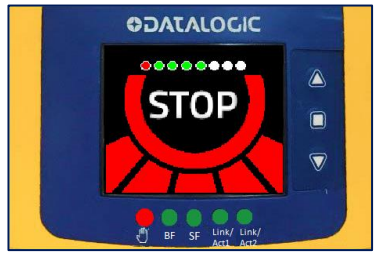
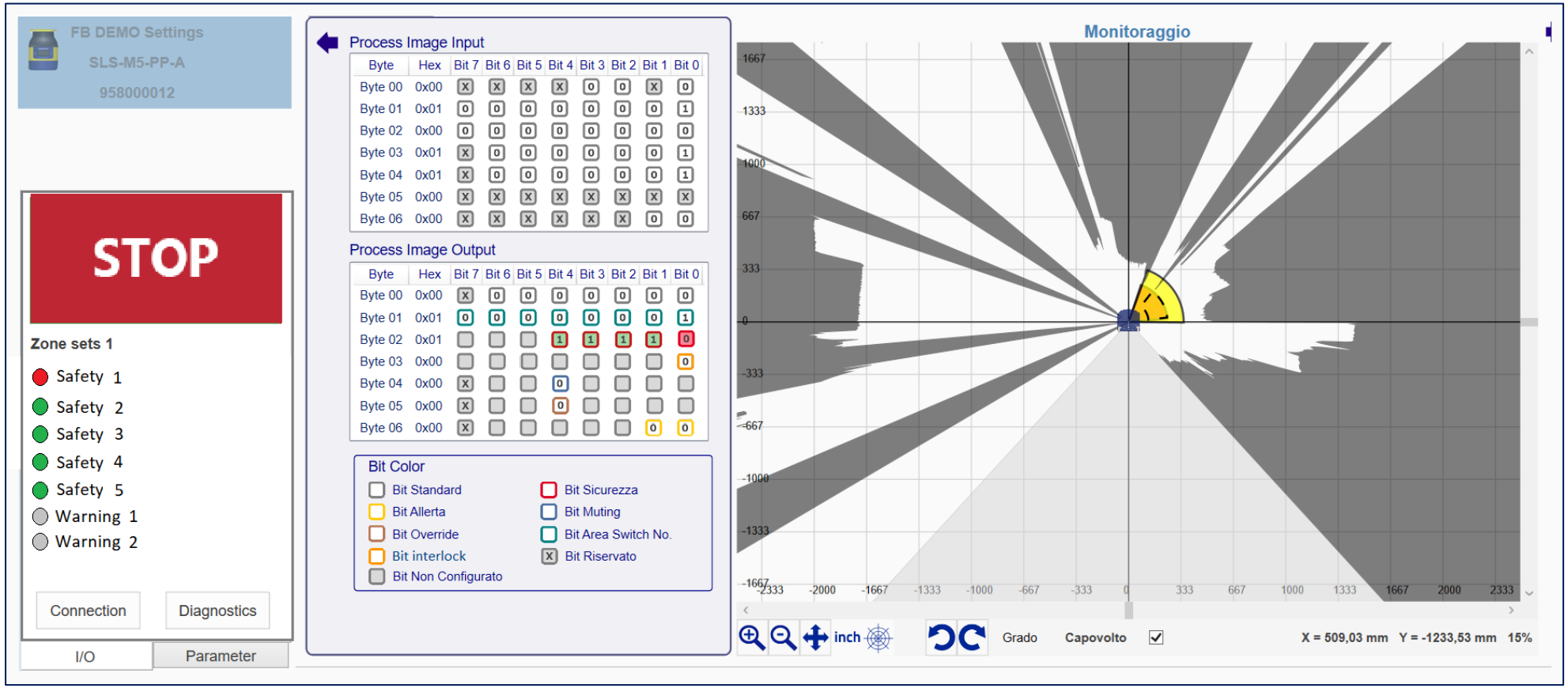
DLSentinel GUI

process image and display appearance







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PROCESS IMAGE

Image process output (7 bytes) → From PLC to SLS

BYTE	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
0	Reserved				Shut-off	Stop Event Report	Reserved	Wink
1	Area Switch No.							
2	RestartSafetyZone 1..8 (according to the number of safety zones and for manual restart)							
3	Reserved	MutingActivationZone (maximum 4, according to configuration)						
4	Reserved	OverrideActivationZone (maximum 4, according to configuration)						
5	Reserved							
6	Reserved						ResetWith Network	ResetWithout-Network

Image process input (7 bytes) → From SLS to PLC

BYTE	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
0	Event Report Status	DeviceSta-tus	Antitam-pering Warning-Status	Antitam-pering Status	Shut-off status	Referen-cePoint Status	Contami-nation Error	Contamina-tion Warning
1	Area Switch No.							
2	SafetyStatusZone 1..8							
3	InterlockReqZone 1..8 (according to the number of safety zone and for manual restart)							
4	Reserved	OverrideActivationZone (maximum 4, according to configuration)						
5	Reserved	OverrideStatusZone (maximum 4, according to configuration)						
6	RefPoint activation status	WarningStatusZone (maximum 7, according to configuration)						

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PROCESS IMAGE

- Image process size (7 bytes or 12 bytes) is configured by DLSentinel in the PROFINET/PROFIsafe section

Image process output (12 bytes) → From PLC to SLS

BYTE	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
0	Reserved				Shut-off	Stop Event Report	Reserved	Wink
1	Area Switch No.							
2	Reserved							
3	Reserved							
4	RestartSafetyZone 1..8 (according to the number of safety zones and for manual restart)							
5	Reserved							
6	Reserved	MutingActivationZone (maximum 4, according to configuration)						
7	Reserved							
8	Reserved	OverrideActivationZone (maximum 4, according to configuration)						
9	Reserved							
10	Reserved							
11	Reserved						ResetWith Network	ResetWithout-Network

Image process input (12 bytes) → From SLS to PLC

BYTE	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
0	Event Report Status	DeviceSta-tus	Antitam-pering Warning-Status	Antitam-pering Status	Shut-off status	Referen-cePoint Status	Contami-nation Error	Contamina-tion Warning
1	Area Switch No.							
2	SafetyStatusZone 1..8							
3	Reserved							
4	InterlockReqZone 1..8 (according to the number of safety zone and for manual restart)							
5	Reserved							
6	Reserved	MutingStatusZone (maximum 4, according to configuration)						
7	Reserved							
8	Reserved	OverrideStatusZone (maximum 4, according to configuration)						
9	Reserved							
10	RefPoint activation status	WarningZone (maximum 7, according to configuration)						
11	Reserved							

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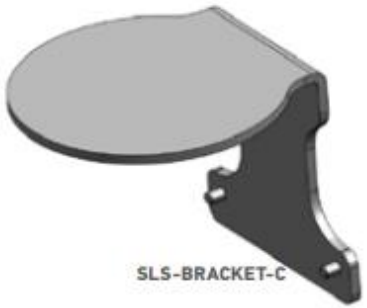
ACCESSORIES

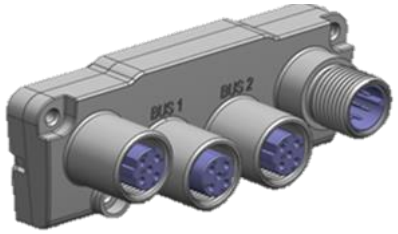
		ORDER NUMBER
	BRACKETS	
Complete bracket system	SLS-BRACKET-A	95ASE2920
Pitch regulation bracket system	SLS-BRACKET-B	95ASE2930
Head protective bracket	SLS-BRACKET-C	95ASE2940
	FIELD REPLACEMENT ACCESSORIES	
Replacement window	SLS-WINDOW	95ASE2971
Fieldbus memory group	SLS-MG-FB	95ASE0105
	MAINTENANCE ACCESSORIES	
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



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CABLES

	MODEL	1st end	2nd 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

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THANK YOU

This presentation contains statements that are neither reported financial results nor other historical information. These statements are forward-looking statements. These forward-looking statements rely on a number of assumptions and are subject to a number of risks and uncertainties, many of which are outside the control of DATASENSING S.r.l., that could cause actual results to differ materially from those expressed in or implied by such statements, such as future market conditions, currency fluctuations, the behavior of other market participants and the actions of governmental and state regulators.

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