



BeyondTM

Safety Solution

XSC Compact type Safety PLC
XSR Safety Relay Unit



LS ELECTRIC



Safety Solution

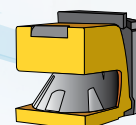
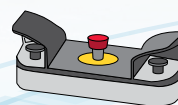
XSC Compact type Safety PLC
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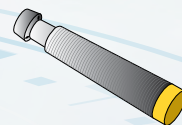
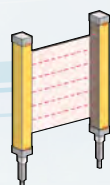
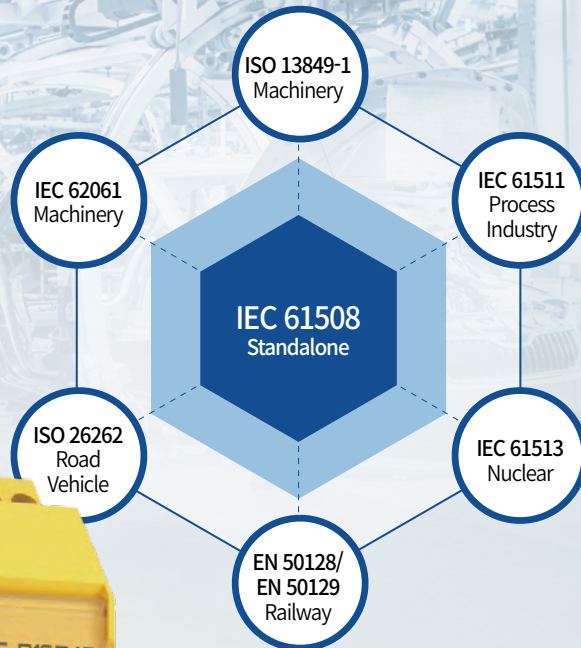
Why Safety PLC?

Safety Controllers and Relays are developed to create safety control environments compliant with international safety standards such as IEC 61508. By connecting to safety devices such as emergency stop switches and light curtains, they detect various hazards in industrial sites in advance and cut off power to prevent accidents.

Safety Level

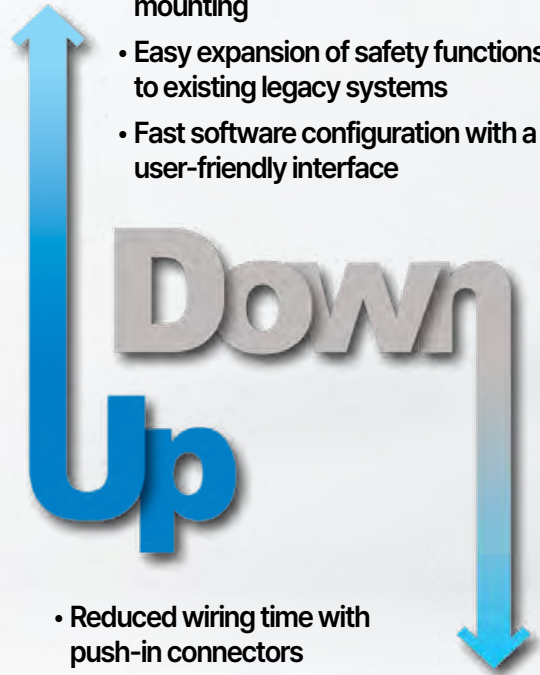
SIL 3	IEC 61508
SIL CL3	EN 62061
PLe	ISO/EN 13849-1
Category 4	ISO/EN 13849-1







- Supports connection with various safety devices
- Flexible installation with DIN rail mounting
- Easy expansion of safety functions to existing legacy systems
- Fast software configuration with a user-friendly interface



- Reduced wiring time with push-in connectors
- Optimized pricing with solution-specific product lineup

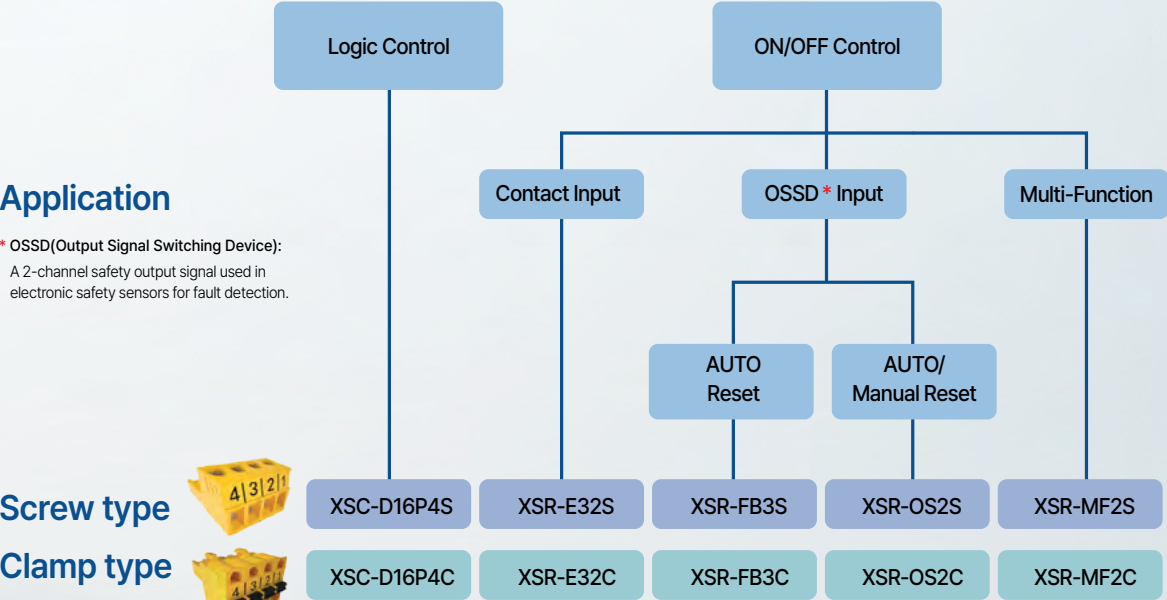
Selection Guide

Application

* OSSD(Output Signal Switching Device):
A 2-channel safety output signal used in
electronic safety sensors for fault detection.

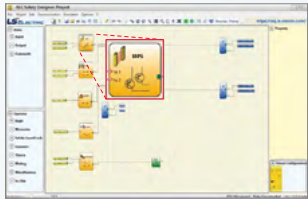
Screw type

Clamp type

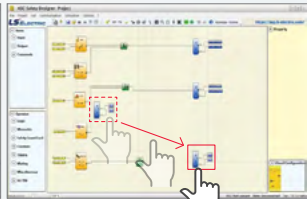


Safety Input	16	2	2	2	2
Safety Output	4	2 NO	2 NO + 1 NC	2 NO	2 NO
MDM/RST Input	4	1	1	1	1
General Input	4	1	-	1	1

XSC Safety Designer



User-friendly interface



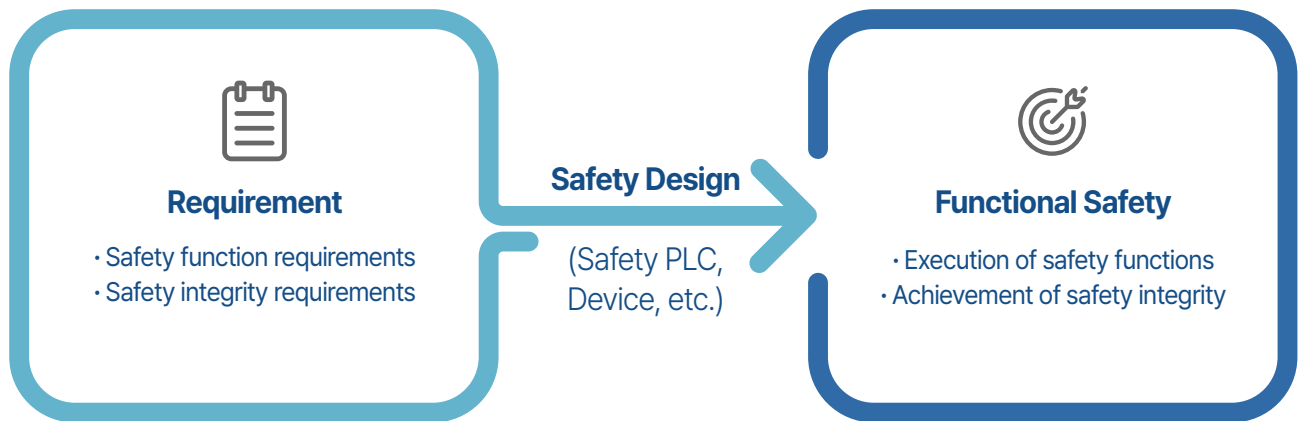
Drag & Drop



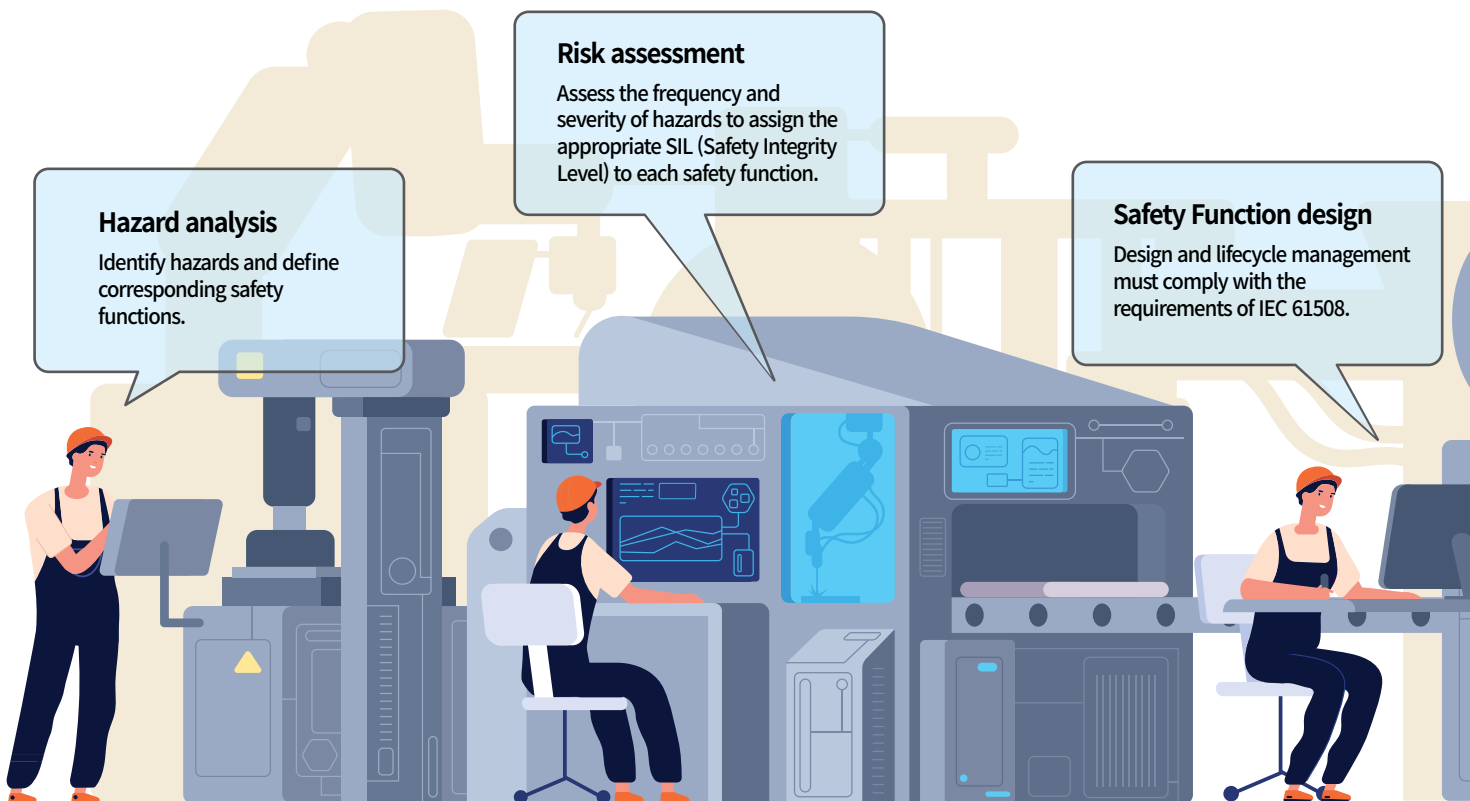
Simulator

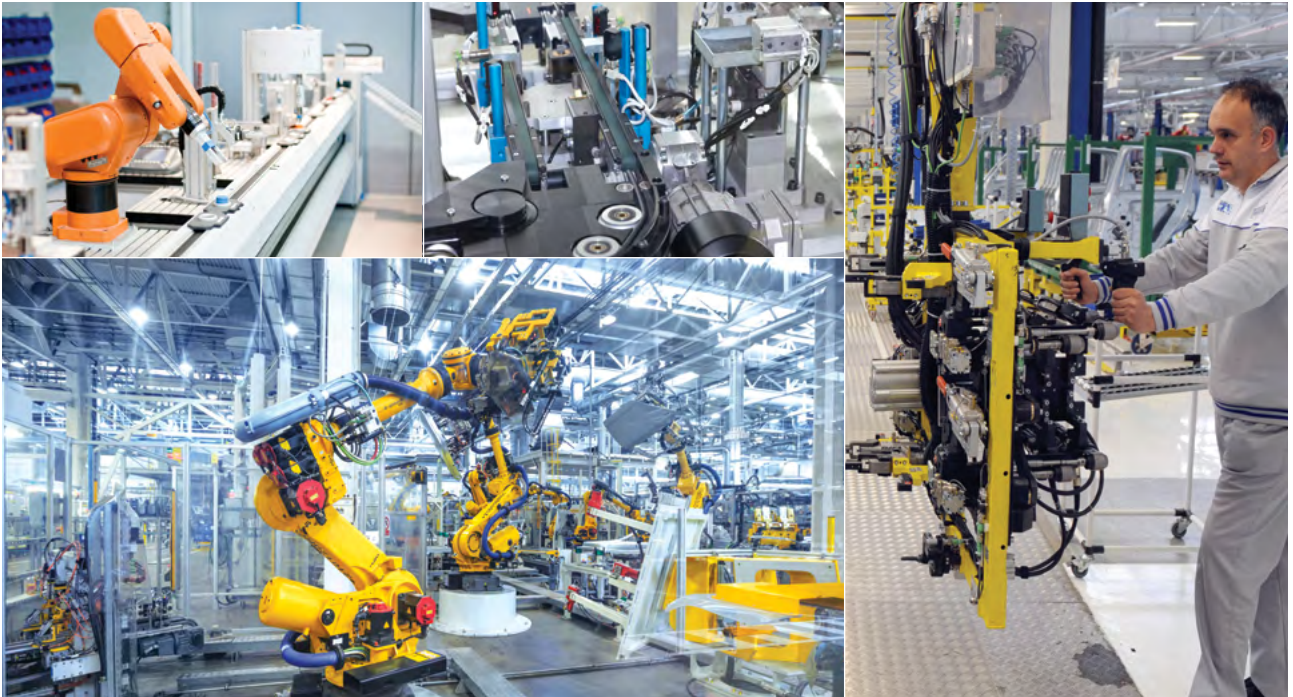
Functional Safety

Through safety design based on functional safety, hazards in the field can be eliminated or reduced.



Functional Safety Flow



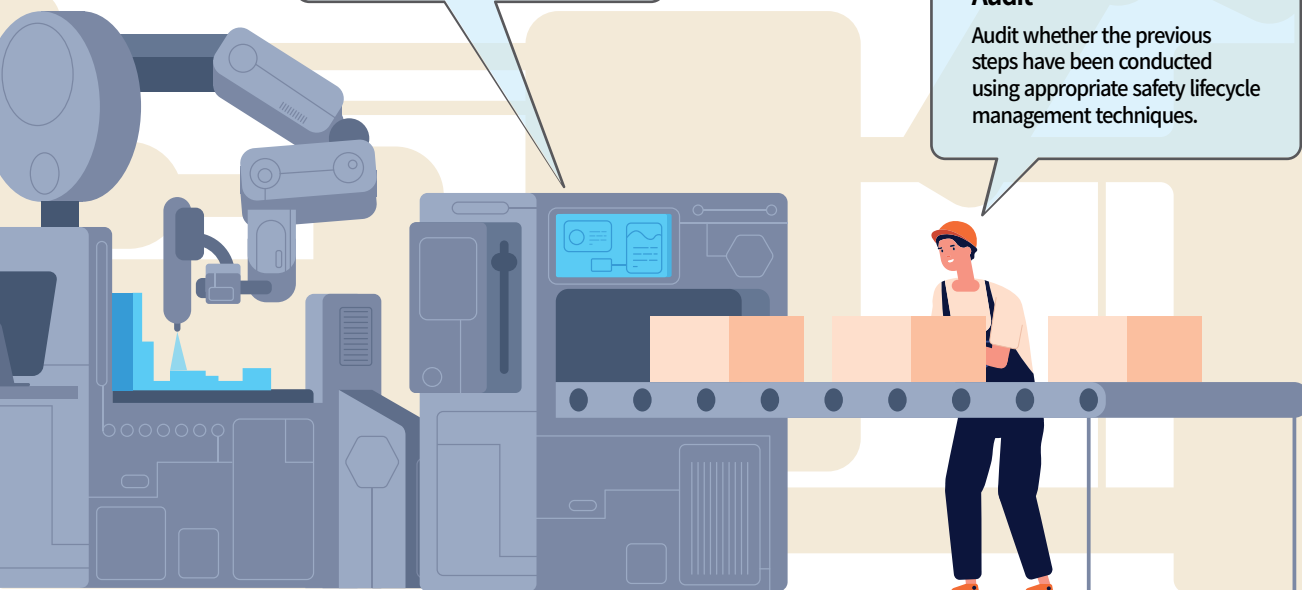


System verification

Verify by testing that the assigned SIL level is achieved (SFF, PFH).

Audit

Audit whether the previous steps have been conducted using appropriate safety lifecycle management techniques.



Safety Controller & Relay

Safety PLC

Items	Specifications				Related standards
Ambient temperature	0~55℃				
Storage temperature	-25~+70℃				
Ambient humidity	5-95%RH (Non-condensing)				
Storage humidity	5-95%RH (Non-condensing)				
Vibration resistance	Occasional vibration			-	IEC61131-2
	Frequency	Acceleration	Amplitude	times	
	5 ≤ f < 8.4 Hz	-	3.5 mm	10 times each directions (X, Y and Z)	
	8.4 ≤ f ≤ 150 Hz	9.8m/s²(1G)	-		
	Continuous vibration				
	Frequency	Acceleration	Amplitude		
	5 ≤ f < 8.4 Hz	-	1.75 mm		
8.4 ≤ f ≤ 150 Hz	4.9m/s²(0.5G)	-			
Shock resistance	••Peak acceleration: 147 m/s2(15G) •Duration: 11ms •Half-sine, 3 times each direction per each axis				IEC61131-2
Noise resistance	Electrostatic discharge	Voltage : 4kV (Contact discharge)			IEC61131-2 IEC61000-1-2
	Radiated electromagnetic field noise	80-500 MHz, 10V/m			IEC61131-2, IEC61000-4-3
	Fast transient/ bust noise	Segment	Power supply module	Digital/analog input/output communication interface	IEC61131-2 IEC61000-1-4
		Voltage	2kV	1kV	
Environment	Free from corrosive gasses and excessive dust				
Altitude	Up to 2,000 ms				
Pollution degree	2 or less				
Cooling	Air-cooling				



Stand-Alone Safety Controller

XSC-D16P4S (C)



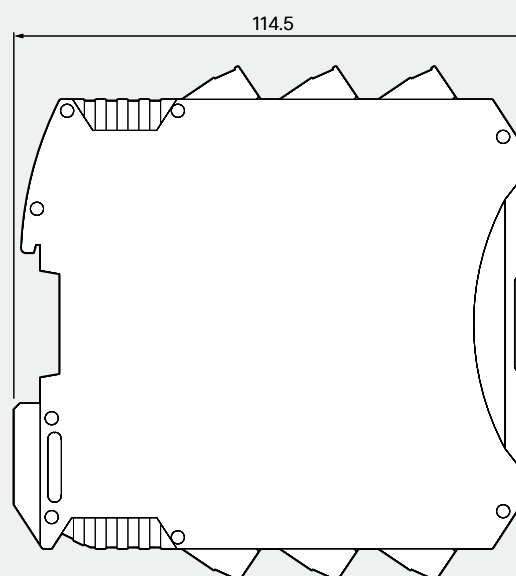
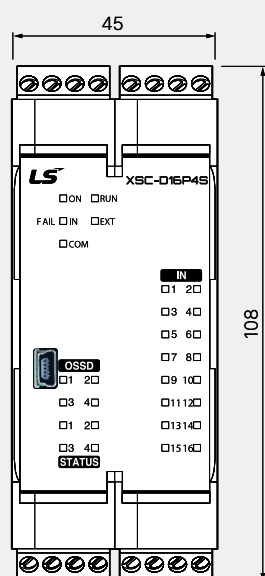
S : Screw type



C : Clamp type



Items		Specifications
Operation mode		Cyclic operation
Power supply		24VDC + 20% / PELV, Protective Class III; UL: Supply from class 2 (LVLE)
Dissipated power		6W max
Response time		22...24 ms
Digital INPUTS (No./description)		16 / PNP active high according to EN 61131-2 (type 3)
INPUT FBK/RESTART (No./description)		4 / possible Automatic or Manual operation with RESTART button, PNP active high according to EN 61131-2 (type 2)
Test OUTPUT (No./description)		4 / to check for short-circuits - overloads
SIL 1/PL c OUTPUT (No./description)		4 / programmable - PNP active high
OSSD (No./description)		4 pairs / solid state safety outputs PNP active high 400mA@24VDC max Interface type C class 3 (ZVEI CB24I)
Connection to PC		USB 2.0 (Hi Speed) - Max cable length: 3m
Connection cable cross-section		0,5...2,5 mm ² / AWG 12...30 (solid/stranded)
Max length of connections		100m
Safety level parameters	PFHd	1,50E-8
	SIL	3
	SFF	99,7%
	HFT	1
	Safety standard	Type B
	SILCL	3
	Type	4
	PL	E
	MTTFd (years)	160,81
	Category	4
Pollution degree		2



Feedback Input for EDM

XSR-FB3S (C)



S : Screw type

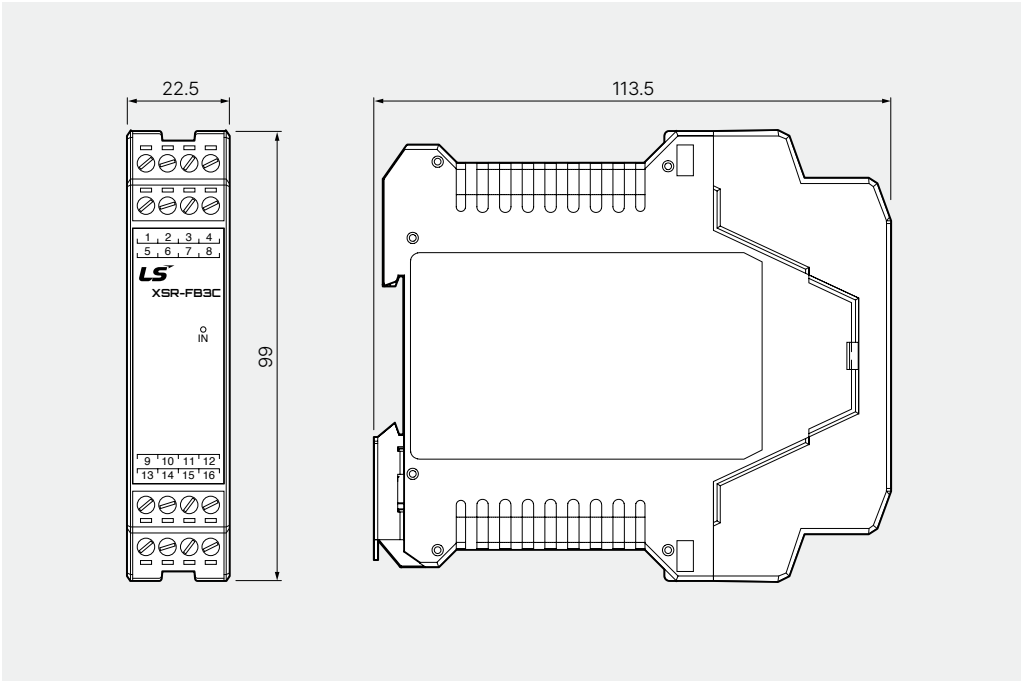


C : Clamp type



Type			Block Type	
Power supply			24VDC + 20% / PELV	
Safety level(SIL / PL)			PL e – Cat. 4	
Input Data	Input contact		2 internal coil relays	
	Number of EDM input		1 NC contact	
Output Data	System Status Output		100mA@24VDC	
	Number of safety output		2 NO + 1 NC (6A at 250VAC)	
	Response time		≤20ms	
	Mechanical service life		10 x 10E6	
	Electrical service life		> 10E5	
Operating temperature			-30°C ~ +55°C	
Connector			Removable terminal block, Screw type (XSR-FB3S) Clamp type (XSR-FB3C)	
Power requirement			3W max	
Max length of connections			100m	
Minimum switching load			18VDC / 20mA	
Safety level parameters	Load	Number of Commutations	PFHd	DCavg
	2A@230Vac	1every hour	4,99E-09	92,16%
		1 every day	3,68E-09	42,25%
	0,5A@24VDC	1every hour	6,39E-09	95,46%
		1 every day	3,77E-09	62,11%

* EN 61508:2010, EN 62061:2005/A2:2015; # EN ISO 13849-1:2015



OSSD Output Device

BeyondX™ Safety Solution

XSR-OS2S (C)



S : Screw type

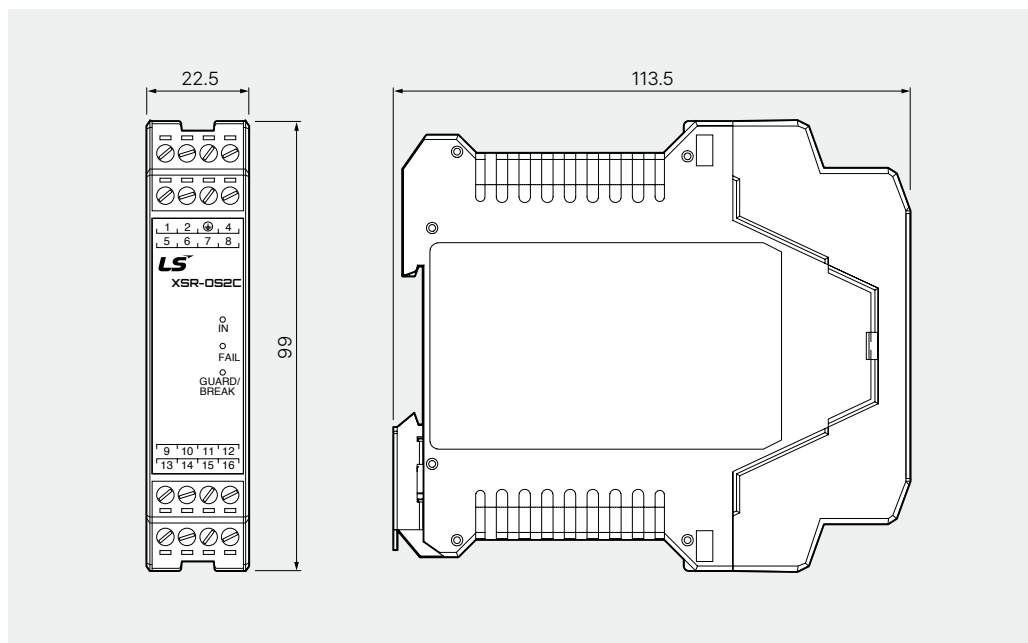


C : Clamp type



Type		Block Type
Power supply		24VDC + 20% / PELV
Safety level(SIL / PL)		PL e – Cat. 4
Input Data	Input contact/data(type3)	5 / EN61131-2, type 3
	Input current	4.3mA min
	Input voltage	0~30VDC
	Input contact/data(type2)	1 / EN61131-2, type 2
	Input current	10mA
	Input voltage	0~30VDC
	Number of EDM input	1 NC contact
	EDM Response time	300ms
Output Data	System Status Output	100mA@24VDC
	Number of safety output	2 NO (6A at 250VAC)
	Response time	≤20ms
	Mechanical service life	10 x 10E6
	Electrical service life	>10E5
Operating temperature		-30°C ~ +55°C
Connector		Removable terminal block, Screw type (XSR-OS2S) Clamp type (XSR-OS2C)
Power requirement		3W max
Max length of connections		100m
Minimum switching load		18VDC / 20mA

Safety level parameters	Load	Number of Commutations	PFHd	DCavg
	2A@230Vac	1every hour	6,22E-09	98,97%
		1 every day	4,91E-09	98,97%
	0,5A@24VDC	1every hour	7,61E-09	98,98%
		1 every day	4,99E-09	98,97%



Electromechanical Switch

XSR-ES2S (C)



S : Screw type

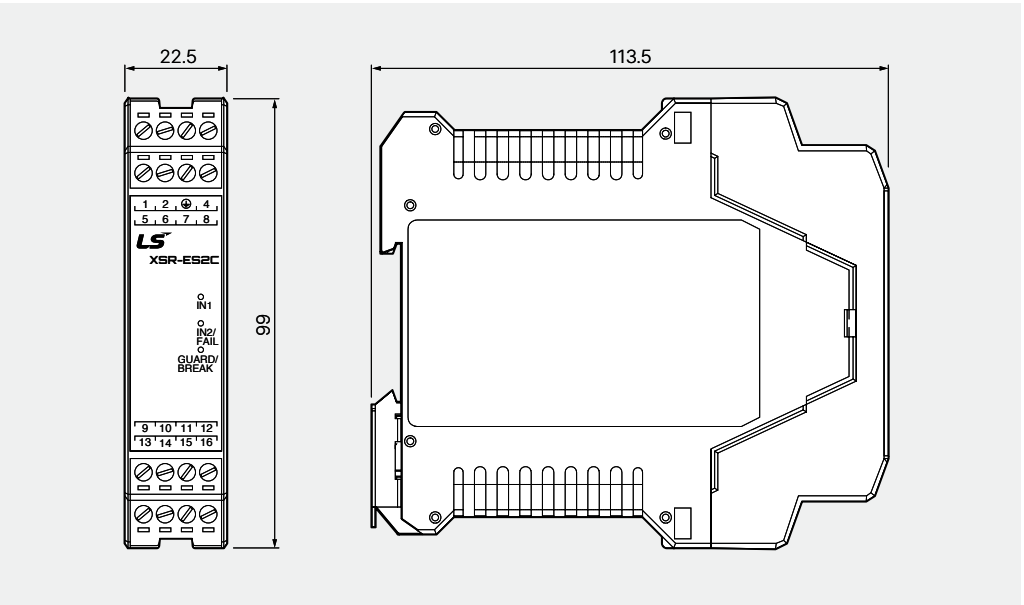


C : Clamp type



Type		Block Type
Power supply		24VDC + 20% / PELV
Safety level(SIL / PL)		PL e – Cat. 4
Input Data	Input contact/data(type3)	3 / EN61131-2, type 3
	Input current	4.3mA min
	Input voltage	0~30VDC
	Input contact/data(type2)	1 / EN61131-2, type 2
	Input current	10mA
	Input voltage	0~30VDC
	Number of EDM input	1 NC contact
	EDM Response time	300ms
Output Data	Test Output (No./voltage)	2 / 100mA@24VDC
	System Status Output	100mA@24VDC
	Number of safety output	2 NO (6A at 250VAC)
	Response time	≤20ms
	Mechanical service life	10 x 10E6
	Electrical service life	>10E5
Operating temperature		-30°C ~ +55°C
Connector		Removable terminal block, Screw type (XSR-ES2S) Clamp type (XSR-ES2C)
Power requirement		3W max
Max length of connections		100m
Minimum switching load		18VDC / 20mA

Safety level parameter	Load	Number of Commutations	PFHd	DCavg
	2A@230Vac	1every hour	6,60E-09	98,98%
		1 every day	5,29E-09	98,97%
	0,5A@24VDC	1every hour	7,99E-09	98,98%
		1 every day	5,38E-09	98,97%



Multi-functional

BeyondX™ Safety Solution

XSR-MF2S (C)



S : Screw type

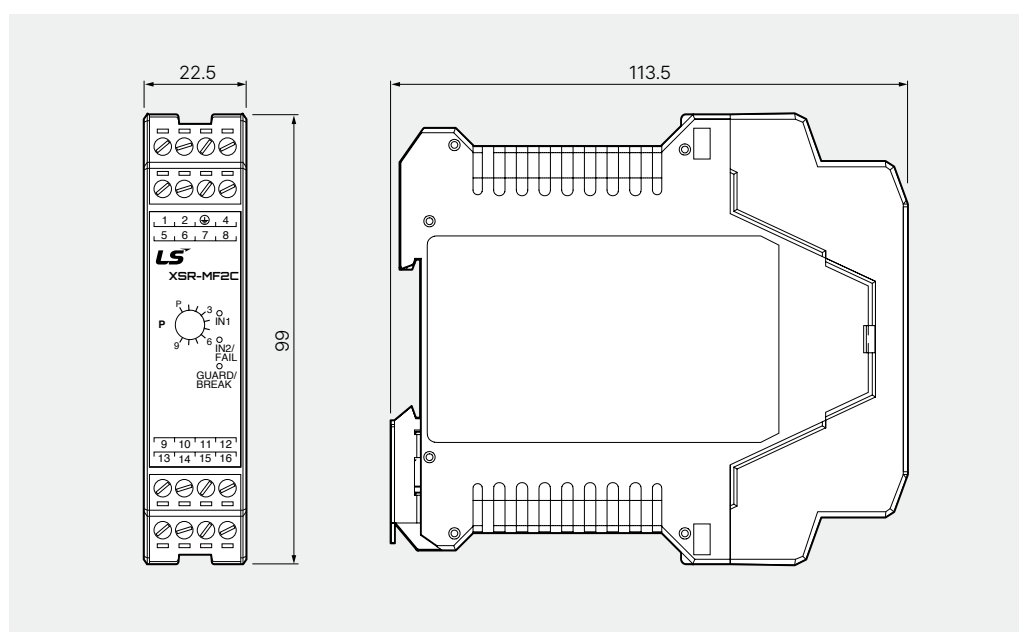


C : Clamp type

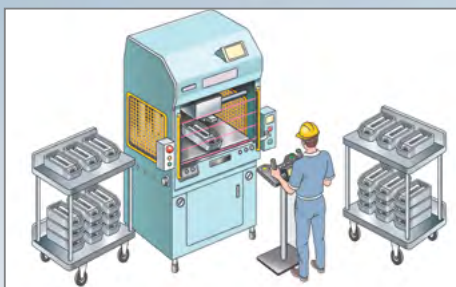


Type		Block Type
Power supply		24VDC + 20% / PELV
Safety level(SIL / PL)		PL e – Cat. 4
Input Data	Input contact/data(type3)	4 / EN61131-2, type 3
	Input current	4.3mA min
	Input voltage	0~30VDC
	Input contact/data(type2)	1 / EN61131-2, type 2
	Input current	10mA
	Input voltage	0~30VDC
	Number of EDM input	1 NC contact
	EDM Response time	300ms
Output Data	System Status Output	100mA@24VDC
	Number of safety output	2 NO (6A at 250VAC)
	Response time	≤20ms
	Mechanical service life	10 x 10E6
	Electrical service life	>10E5
Operating temperature		-30°C ~ +55°C
Connector		Removable terminal block, Screw type (XSR-MF2S) Clamp type (XSR-MF2C)
Power requirement		3W max
Max length of connections		100m
Minimum switching load		18VDC / 20mA

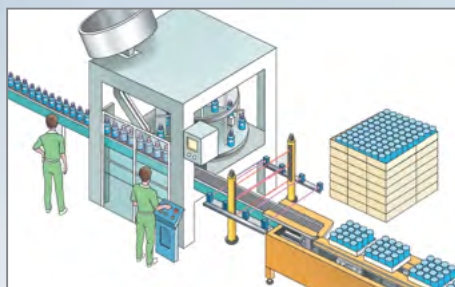
Safety level parameter	Load	Number of Commutations	PFHd	DCavg
	2A@230Vac	1every hour	6,45E-09	98,98%
		1 every day	5,14E-09	98,97%
	0,5A@24VDC	1every hour	7,85E-09	98,98%
		1 every day	5,23E-09	98,97%



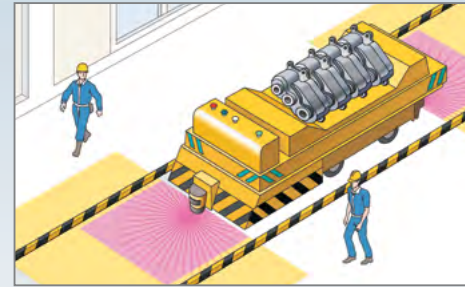
Safety Controller Programming Tool



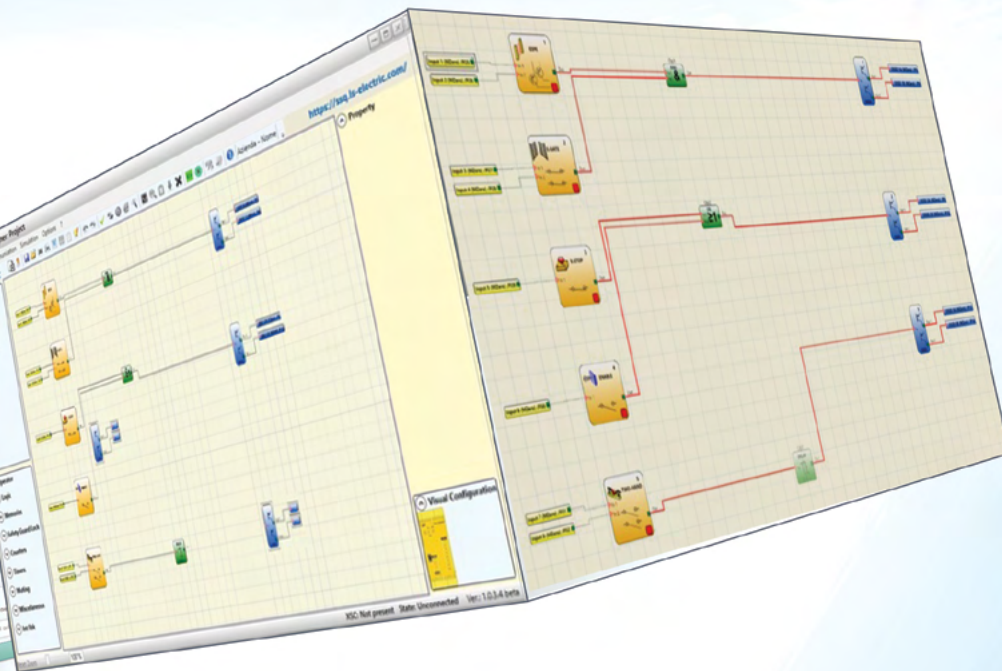
Mechanical Equipment



Packaging Equipment

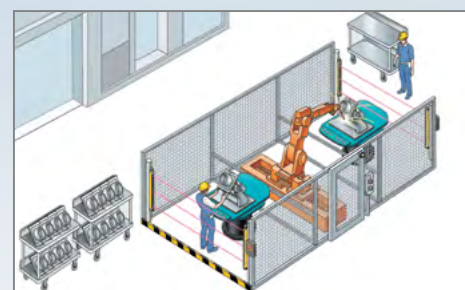


Automotive/Construction Equipment Transportation

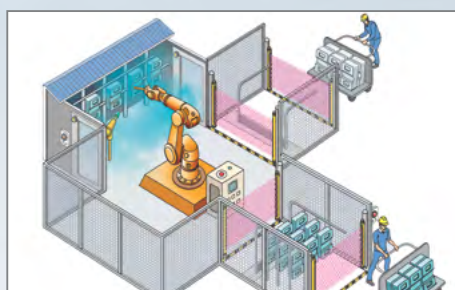


XSC Safety Designer

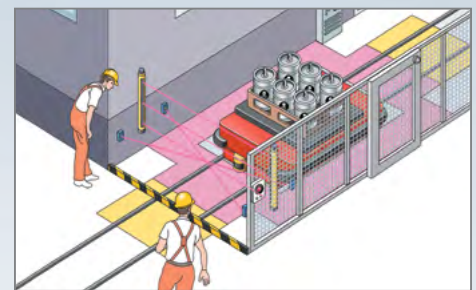
- Drag & Drop
- User-friendly interface
- Real-time monitor
- Design validation
- Security password
- Simulation
- Reports and log files



Metalworking



Repair/Furniture Equipment



Logistics



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