Machine safety

Preventa

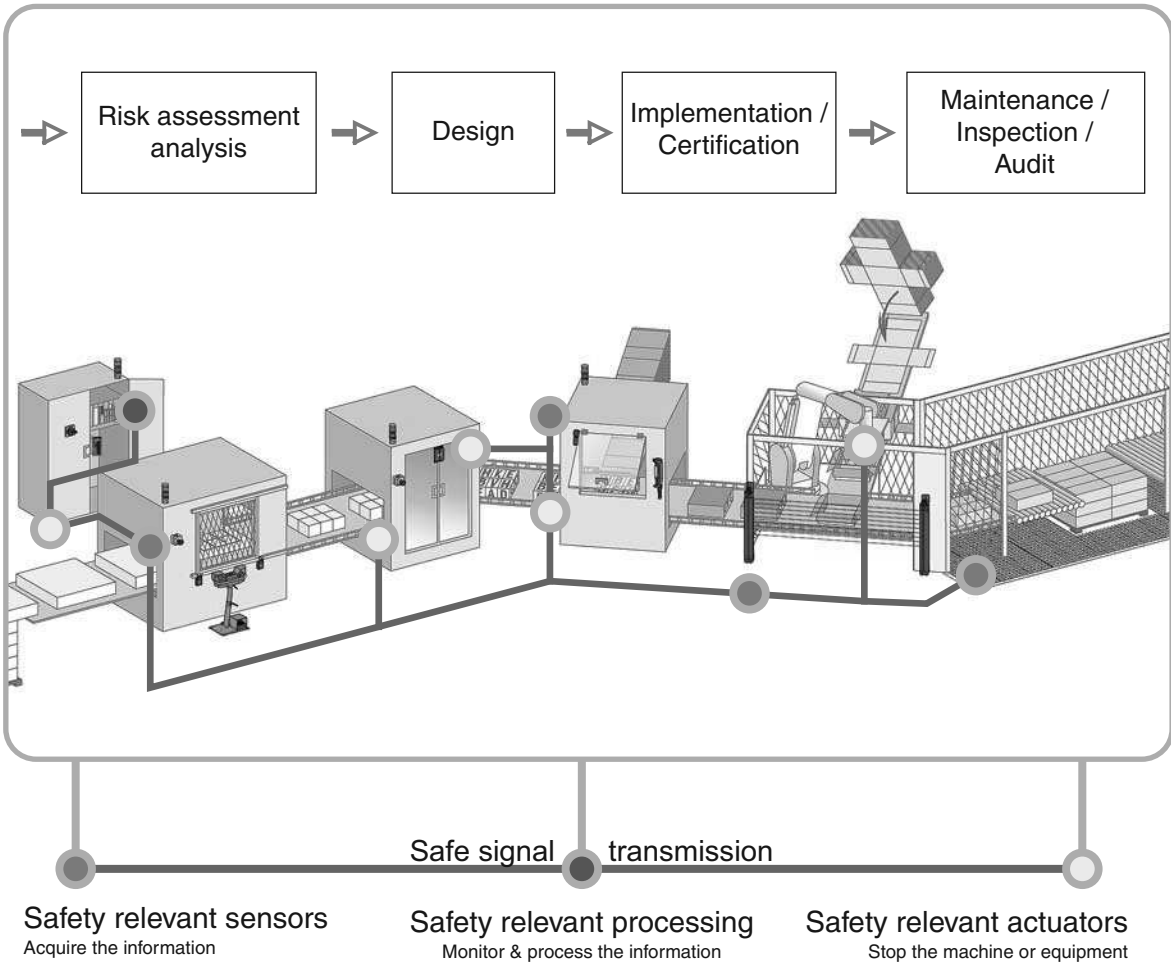
Ingenious and innovative, Preventa safety solutions provide maximum protection for all the safety functions of your automation system.

Select Preventa:

- To export your machines to any location in the world, you expect solutions that are both *approved* and *conform* to international standards.
- To maintain productivity, you need solutions *quickly* to assist you, irrespective of the circumstances.
- You seek *universal* solutions to respond to the diversity of your customers' requirements and, at the same time, *optimise* your stock.

Full safety chain:

Since a perfect safety system does not exist, the latest standards relating to functional safety and voluntary application provide new risk management methods to be used from the design stage by applying principles such as the safety integrity level (SIL) as well as extensively using established operating safety concepts.



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- Safety controllers and modules

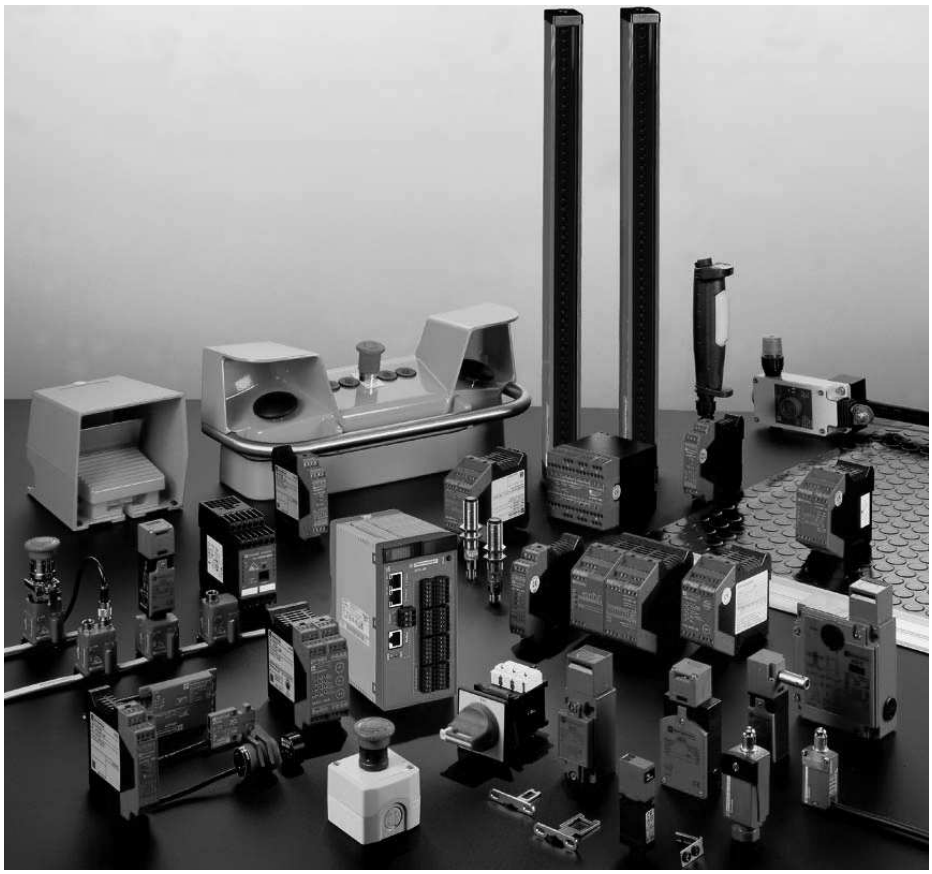
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- Safety monitors and interfaces

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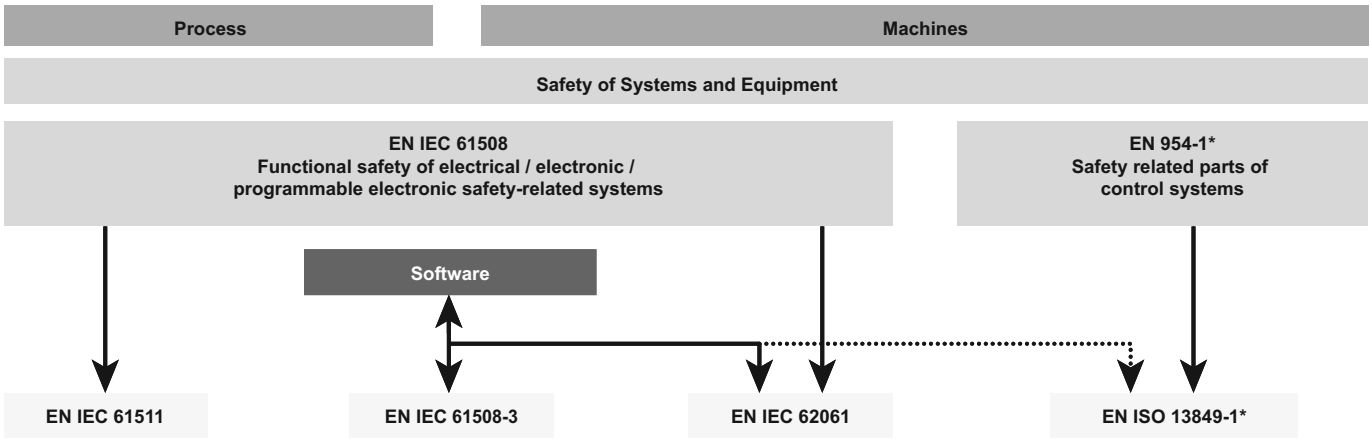
Operator dialogue ..... 9/22 to 9/26
- Emergency stops
- Foot switches
- Two-hand control and enabling switches
- Products for explosive atmospheres

(see chapter 10 “Explosive Atmospheres”)

Motor control ..... 9/27 to 9/29
- Switch disconnectors
- Te*Sys* motor starters



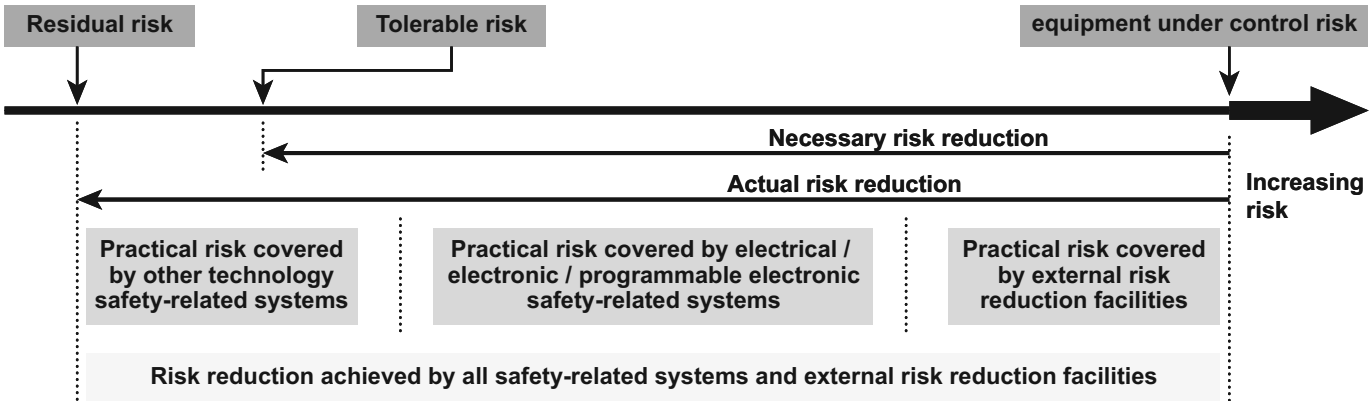
Functional Safety and Safety Integrity Level (SIL)



*Covering also the non-electrical technologies?e.g. hydraulics...

Risk reduction according to EN IEC 61508

- **Safety** is achieved by risk reduction (for those hazards that cannot be designed-out).
- **Residual risk** is the risk remaining after protective measures have been taken.
- **Protective measures** realised by E/E/PE safety related systems contribute to risk reduction.



λ_s = rate of safe failures,
λ_{dd} = rate of detected dangerous failures,
λ_{du} = rate of undetected dangerous failures

In practice, detected dangerous failure are dealt with by fault reaction functions

Safety integrity level **SIL**	High demand or continuous mode of operation (Probability of a dangerous failure per hour) **PFHD**
3	10^{-8} to < 10^{-7}
2	10^{-7} to < 10^{-6}
1	10^{-6} to < 10^{-5}

For machinery, the probability of dangerous failures per hour of a control system is denoted in EN IEC 62061 as the PFHD

- The rate of failures λ can be expressed as follows:

$$\lambda = \lambda_s + \lambda_{dd} + \lambda_{du}$$

- The calculation of the PFHD for a system or subsystem depends on several parameters:
  - the dangerous failure rate (λ_d) of the subsystem elements
  - the fault tolerance (e.g. redundancy) of the system
  - the diagnostic test interval (T2)
  - the proof test interval (T1) or lifetime whichever is smaller
  - the susceptibility to common cause failures (β)
- For each of the four different logical architectures A to D there is a different formula to calculate the PFHD. (see EN IEC 62061)
  (The principal relationship is: PFHD = λ_d x 1h)

Machinery: Risk estimation and SIL assignment of EN IEC 62061
Given as an example in an informative Annex

Risk related to the identified hazard = **Severity of the possible harm** **and**

- Frequency and duration of exposure **Fr**
- Probability of occurrence of a hazardous event **Pr**
- Probability of avoiding or limiting harm **Av**

→ **Probability of occurrence of that harm**

Machinery: Determination of the required SIL.
Example according to EN IEC 62061

Consequences	Severity (Se)
Irreversible: death, losing an eye or arm	4
Irreversible: broken limb(s), losing a finger(s)	3
Reversible: requiring attention from a medical practitioner	2
Reversible: requiring first aid	1

Frequency and duration of exposure (Fr)	
Frequency of exposure	Duration > 10 min
1 h	5
> 1 h to 1 day	5
> 1 day to 2 weeks	4
> 2 weeks to 1 year	3
> 1 year	2

Probability of occurrence	Probability (Pr)
Very high	5
Likely	4
Possible	3
Rarely	2
Negligible	1

Probability of a voiding or limiting harm (Av)	
Impossible	5
Rarely	3
Probable	1

Serial no.	Hazard	Se	Fr		Pr		Av		Cl
1	Hazard x	4	5	+	4	+	3	=	12
2									

Risk assessment and safety measures

Product : _____
Issued by : _____
Date : _____

Black area = Safetymeasures required
Grey area = Safety mesures recommended

Consequences	(Se)	Class Cl 3 - 4	5 - 7	8 - 10	11 - 13	14 - 15	Frequency and duration Fr		Probability of hzd. Event Pr		Avoidance Av	
Death, losing an eye or arm	4	SIL 2	SIL 2	SIL 2	SIL 3	SIL 3	<= 1 hour	5	Common	5		
Permanent, losing fingers	3		OM	SIL 1	SIL 2	SIL 3	> 1 h to <= 1 day	5	Likely	4		
Reversible, medical attention	2			OM	SIL 1	SIL 2	> 1 day to <= 2 wks	4	Possible	3	Impossible	5
Reversible, first aid	1				OM	SIL 1	> 2 wks to <= 1 year	3	Rarely	2	Possible	3
							> 1 year	2	Negligible	1	Likely	1

No.	Hazard	Se	Fr	Pr	Av	Cl	Safety Measure	Safe

Comments

9

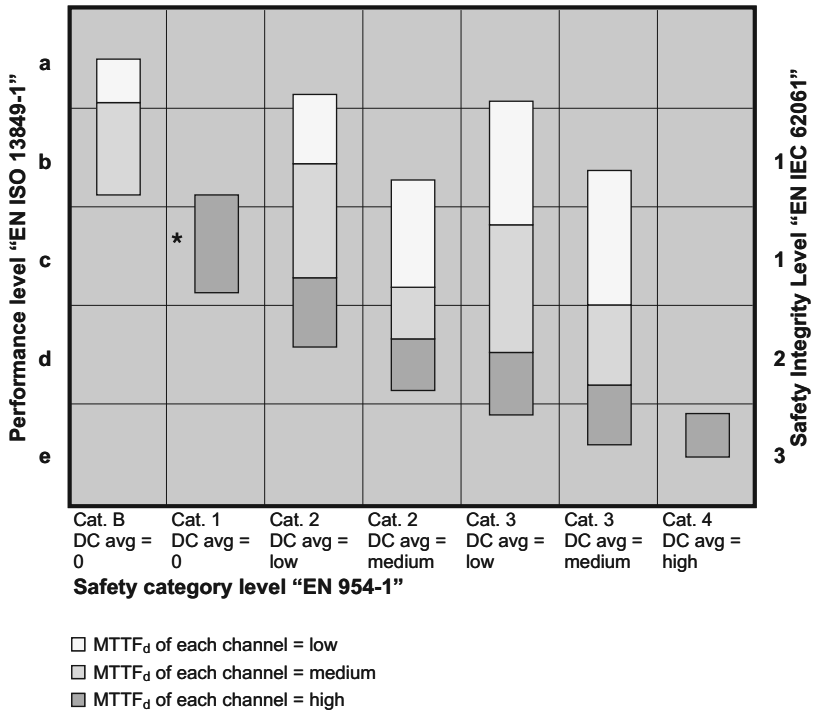
Safety of Machinery: *EN ISO 13849-1, definition of $MTTF_d$

■ **The parameter for the failure rate in EN ISO 13849-1 is the Mean Time To Failure (MTTF). This time value indicates the number of years in which the first failure probably occurs.**

- **MTTF = mean time to failure** [years]
  – The mean time after installation of devices to any first failure.
  – The general relation between λ and MTTF is:

$$MTTF = 1/\lambda$$

- **MTBF = mean time between failures**
  – Not relevant for devices which are not repaired.
- **$MTTF_d$ = mean time to *dangerous* failure**
  – The $MTTF_d$ is defined in EN ISO 13849-1 as the expectation of the mean time to dangerous failure of a safety related part of a control system.



* In several application the realisation of performance level c by category 1 may not be sufficient. In this case a higher category e.g. 2 or 3 should be chosen.

Safety of Machinery: *EN ISO 13849-1 Risk graph and parameters

S = Severity of injury

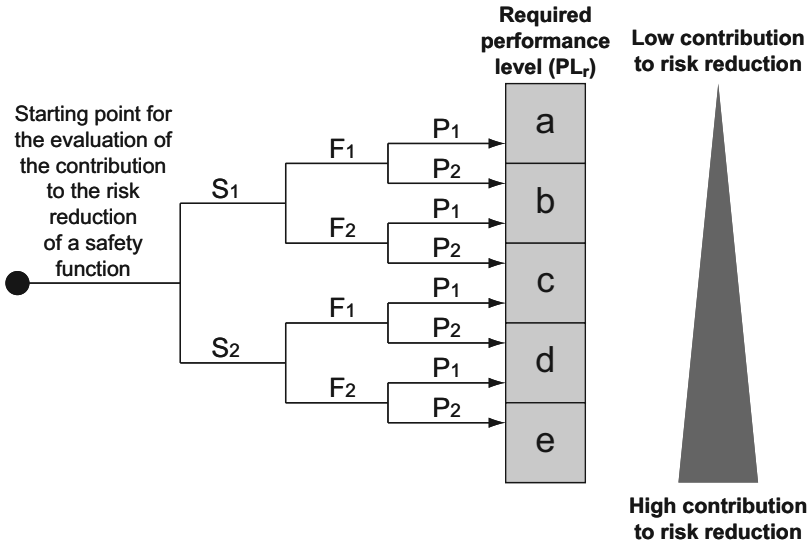
S1 = Slight (normally reversible injury)
S2 = Serious (normally irreversible) injury including death

F = Frequency and/or exposure time to the hazard

F1 = Seldom to less often and/or the exposure time is short
F2 = Frequent to continuous and/or the exposure time is long

P = Possibility of avoiding the hazard or limiting the harm

P1 = Possible under specific conditions
P2 = Scarcely possible



Safety*Suite V2* **software**

Safety*Suite V2* **software incorporates 4 software applications for machine safety, it is available in 4 complete versions and 3 versions updated, adapted to your particular needs:**



■ Protect Area Design

Safety light curtains and sensing mats configuration software.

Safety*Suite V2* comprising Protect Area Design (full version) and demo versions of the 3 other software applications.

Reference: **SISCD104200**

■ ASI SWIN

AS-Interface safety monitor configuration software.

Safety*Suite V2* comprising Protect Area Design and ASI SWIN (full versions) and demo versions of the other 2 software applications.

Reference: **ASISWIN2**

ASISWIN update version comprising the new ASISWIN 2+, only if the previous version of Safety Suite V1 with ASISWIN2 version 2.0.3 (ref: ASISWIN) have been already installed.

Reference: **SSVASISWINUP**



■ XPS MCWIN

XPS MC safety controllers configuration software.

Safety*Suite V2* comprising Protect Area Design, ASI SWIN and XPS MCWIN (full versions) and demo version of XPS MFWIN.

Reference: **XPSMCWIN**

XPSMCWIN update version comprising the new XPSMCWIN 2.10, only if the previous version of Safety Suite V1 with XPSMCWIN version 2.0 (ref: XPSMCWIN) have been already installed.

Reference: **SSVXPSMCWINUP**

■ XPS MFWIN

XPS MF safety PLCs programming software.

Safety*Suite V2* comprising Protect Area Design, ASI SWIN, XPS MCWIN and XPS MFWIN (full versions).

Reference: **SSV1XPSMFWIN**

XPSMFWIN update version comprising the new XPSMFWIN 4.1 build 6150, only if the previous version of Safety Suite V1 with XPSMFWIN version 4.1 (ref: SSV1XPSMFWIN) have been already installed.

Reference: **SSVXPSMFWINUP**

For all XPSMF PLCs

- Maximum category of the solution ..... **Category 4** (EN 954-1)
- Max performance level for the solution ..... **PL e** (EN ISO 13849-1)
- Max safety integrity level for the solution ..... **SIL 3** (EN IEC 62061)





Safety PLC type		Compact					
Number of inputs/outputs	Digital (configurable with XPSMFWIN software)	**24**					
	Pulsed (1)	2x4					
Memory capacity	Application	250 Kb					
	Data	250 Kb					
Supply		External 24 VDC supply (with separate protection conforming to IEC 61131-2)					
Communication	On Ethernet network with safe Ethernet protocol	Integrated (2xRJ45)	Integrated (2xRJ45)	Integrated (2xRJ45)	Integrated (2xRJ45)	Integrated (2xRJ45)	Integrated (2xRJ45)
	On Modbus TCP/IP	–	Integrated (2xRJ45)	–	Integrated (2xRJ45)	–	Integrated (2xRJ45)
	On Modbus (Serial link)	–	–	Integrated (1xRJ45)	Integrated (1xRJ45)	–	–
	On Profibus DP	–	–	–	–	Integrated (SUB-D9)	Integrated (SUB-D9)
Input/output connections		Removable screw terminal blocks or removable cage clamp terminal blocks coded with locating device					
References		**XPSMF4000**	**XPSMF4002**	**XPSMF4020**	**XPSMF4022**	**XPSMF4040**	**XPSMF4042**

(1) They outputs are not safety outputs.

Compact





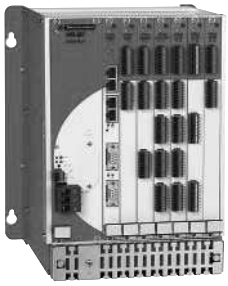


Safety PLC type		Compact				
Number of inputs	Digital	**20**	**20**	**24**	**24**	**24**
	Analogue	–	–	**8**	**8**	**8**
	Counting	–	–	**2**	**2**	**2**
Number of outputs	Digital	**8**	**8**	**8**	**8**	**8**
	Analogue	–	–	–	–	–
	Relay	–	–	–	–	–
Memory capacity	Application	250 Kb				
	Data	250 Kb				
Supply		External 24 VDC supply (with separate protection conforming to IEC 61131-2)				
Communication	On Ethernet network (Modbus TCP/IP)	Integrated (4xRJ45)	Integrated (4xRJ45)	Integrated (4xRJ45)	Integrated (4xRJ45)	Integrated (4xRJ45)
	On Modbus (Serial link)	Integrated (SUB-D9)	–	–	Integrated (SUB-D9)	–
	On Profibus DP	–	–	–	–	Integrated (SUB-D9)
Input/output connections		Removable screw terminal blocks, coded with locating device				
References (2)		**XPSMF3022**	**XPSMF31222**	**XPSMF3502**	**XPSMF3522**	**XPSMF3542**

(2) Products referenced **XPSMF30**/**MF31**/**MF35** are marked **Himatrix F30**, **F31** and **F35**.

For all XPSMF PLCs

- Maximum category of the solution ..... **Category 4** (EN 954-1)
- Max performance level for the solution ..... **PL e** (EN ISO 13849-1)
- Max safety integrity level for the solution ..... **SIL 3** (EN IEC 62061)



Type		CPU	Power supply module	Rack with 6 slots	Software
Memory capacity	Application	500 Kb	–	–	For XPSMF PLCs
	Data	500 Kb	–	–	
Supply		–	External 24 VDC, integrated	–	
Communication	On Ethernet network (Modbus TCP/IP)	Integrated (4xRJ45)	–	–	Complete version
	On Modbus bus (Serial link)	Integrated (SUB-D9)	–	–	**SSV1XPSMFWIN**
Power connections		Screw terminal blocks	Screw terminal blocks	–	(1)
Dimensions W x D x H		–	–	257 x 239 x 310 mm	Update version
References		**XPSMFCPU22**	**XPSMFPS01**	**XPSMFGEH01**	**SSVXPSMFWINUP**



I/O module type		For modular safety PLC						
		Analogue		Digital				Relay
Number of inputs	Digital	–	–	–	**24**	**32**	**24**	–
	Analogue	**8**	–	–	–	–	–	–
	Counting	–	–	**2**	–	–	–	–
Number of outputs	Digital	–	–	**4**	–	–	**16**	–
	Analogue	–	**8**	–	–	–	–	–
	Relay	–	–	–	–	–	–	**8**
Supply		Removable screw terminal blocks, coded with locating device						
References		**XPSMFAI801**	**XPSMFAO801**	**XPSMFCIO2401**	**XPSMFDI2401**	**XPSMFDI3201**	**XPSMFDIO241601**	**XPSMFDO801**

Decentralised safety I/O modules



Module type		Inputs/Ouputs Digital			
Number of inputs	Digital	16	8+2	16	20
Number of outputs	Digital	–	8	8	8
	Pulsed	4	2	2	–
Supply		External 24 VDC supply (with separate protection conforming to IEC 61131-2)			
Communication	On Safe Ethernet network (Modbus TCP/IP)	Integrated (2xRJ45)			
Input/output connections		Removable screw terminal blocks, coded with locating device			
References (2)		**XPSMF1DI1601**	**XPSMF3DIO8801**	**XPSMF3DIO16801**	**XPSMF3DIO20802**



I/O module type		Inputs/Outputs Analogue	Outputs Digital		Relay	
Number of inputs	Analogue	8	–	–	–	–
Number of outputs	Digital	–	4	16	–	–
	Analogue (not safety)	4	–	–	–	–
	Relay	–	–	–	8	16
Supply		External 24 VDC supply (with separate protection conforming to IEC 61131-2)				
Communication	On Safe Ethernet network (Modbus TCP/IP)	Integrated (2xRJ45)				
Input/output connections		Removable screw terminal blocks, coded with locating device				
References (2)		**XPSMF3AIO8401**	**XPSMF2DO401**	**XPSMF2DO1601**	**XPSMF2DO801**	**XPSMF2DO1602**

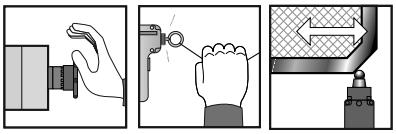
(1) To be ordered only if the previous version of have been already installed.

(2) Products referenced **XPSMF1/MF2/MF3** are marked **Himatrix F1**, **F2** and **F3**.

Safety controllers for monitoring
emergency stops and limit switches

For all XPSMC controllers

- Max performance level for the solution (EN ISO 13849-1) .....**PL e**
- Max safety integrity level for the solution (EN IEC 62061) .....**SIL 3**



Universal

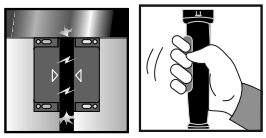


Maximum category of the solution (EN 954-1)		Category 4			
Number of circuits	Safety	2 x 2N/O + 6 solid-state			2 x 3N/O per function
	Additional	–			3 solid-state
Display (number of LEDs)		30			12
Width of housing		74 mm			45 mm
Communication interface		Modbus	Modbus, CANopen	Modbus, Profibus DP	–

Universal solutions: safety controllers (for monitoring several safety functions simultaneously)

Supply voltage	24 VDC	**XPSMC32Z** (1) (2)	**XPSMC32ZC** (1) (2)	**XPSMC32ZP** (1) (2)	**XPSMP11123P** (3)

coded magnetic switches enabling switch



Universal



Maximum category of the solution (EN 954-1)		Category 4			
For monitoring		magnetic switches and enabling switch			
Number of circuits	Safety	2 x 2N/O + 6 solid-state			2 x 3N/O per function
	Additional	–			3 solid-state
Display (number of LEDs)		30			12
Width of housing		74 mm			45 mm
Communication interface		Modbus	Modbus, CANopen	Modbus, Profibus DP	–

Universal solutions: safety controllers (for monitoring several safety functions simultaneously)

Supply voltage	24 VDC	**XPSMC32Z** (1)(2)	**XPSMC32ZC** (1)(2)	**XPSMC32ZP** (1)(2)	**XPSMP11123P** (3)

safety mats and edging



Universal



Maximum category of the solution (EN 954-1)		Category 3			
Number of circuits	Safety	2 x 2N/O + 6 solid-state			2 x 3N/O per function
	Additional	–			3 solid-state
Display (number of LEDs)		30			12
Width of housing		74 mm			45 mm
Communication interface		Modbus	Modbus, CANopen	Modbus, Profibus DP	–

Universal solutions: safety controllers (for monitoring several safety functions simultaneously)

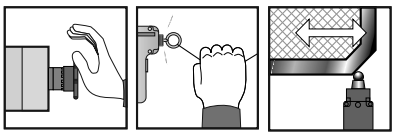
Supply voltage	24 VDC	**XPSMC32Z** (1)(2)	**XPSMC32ZC** (1)(2)	**XPSMC32ZP** (1)(2)	**XPSMP11123P** (3)

(1) Version with 32 inputs. For version with 16 inputs, replace 32 in the reference by 16 (example: XPSMC32Z becomes XPSMC16Z).

(2) Configuration software XPSMCWIN (complete version) or SSVXPSMCWINUP (update version), connecting cable, adaptor and set of screw terminal plug-in connectors XPSMCTS16 and XPSMCTS32 or set of spring clip terminal plug-in connectors XPSMCTC16 and XPSMCTC32 to be ordered separately.

(3) For fixed connector version, delete the letter P from the end of the reference (example: XPSMP11123P becomes XPSMP11123).

Safety modules for monitoring
emergency stops and limit switches





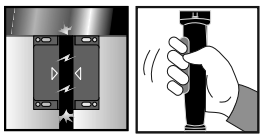
Maximum category of the solution (EN 954-1)		Category 3	Category 4				
Number of circuits	Safety	3N/O	3N/O	3N/O	7N/O	3N/O+3N/O time del.	2N/O+3N/O time del.
	Additional	1 solid-state	–	1N/C + 4 solid-state	2N/C + 4 solid-state	3 solid-state	4 solid-state
Display (number of LEDs)		2	3	4	4	11	4
Width of housing		22.5 mm	22.5 mm	45 mm	90 mm	45 mm	45 mm

Optimum solutions: safety modules (for monitoring 1 safety function)

Supply voltage (1)	24 VDC	–	–	–	–	**XPSAV11113P**	–
	24 VAC/DC	**XPSAC5121P**	**XPSAF5130P**	**XPSAK311144P**	**XPSAR311144P**	–	**XPSATE5110P**
	230 VAC	–	–	–	–	–	**XPSATE3710P**

(1) For version with non removable terminal block, delete the letter P from the end of the reference (example: XPSAV11113P becomes XPSAV11113).

coded magnetic switches enabling switch





Maximum category of the solution (EN 954-1)		Category 4		
For monitoring		2 coded magnetic switches maximum	6 coded magnetic switches maximum	enabling switch
Number of circuits	Safety	2N/O	2N/O	2N/O
	Additional	2 solid-state	2 solid-state	2 solid-state
Display (number of LEDs)		3	15	3
Width of housing		22.5 mm	45 mm	22.5 mm

Optimum solutions: safety modules (for monitoring 1 safety function)

Supply voltage	24 VDC	**XPSDMB1132P** (1)	**XPSDME1132P** (1)	**XPSVC1132P** (1)

(1) For version with non removable terminal block, delete the letter P from the end of the reference (example: XPSDMB1132P becomes XPSDMB1132).

safety mats and edging





Maximum category of the solution (EN 954-1)		Category 3
Number of circuits	Safety	3N/O
	Additional	1N/C + 4 solid-state
Display (number of LEDs)		4
Width of housing		45 mm

Optimum solutions: safety modules (for monitoring 1 safety function)

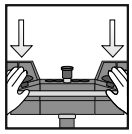
Supply voltage	24 VAC/DC	**XPSAK311144P** (1)

(1) For version with non removable terminal block, delete the letter P from the end of the reference (example: XPSAK311144P becomes XPSAK311144).

Safety controllers for monitoring
two-hand control

For all XPSMC controllers

- Max performance level for the solution (EN ISO 13849-1) .....**PL e**
- Max safety integrity level for the solution (EN IEC 62061) .....**SIL 3**



Universal



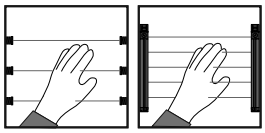


Maximum category of the solution (EN 954-1)		Category 4			
Number of circuits	Safety	2 x 2N/O + 6 solid-state			
	Additional	–			
Display (number of LEDs)		30			
Width of housing		74 mm			
Communication interface		Modbus	Modbus, CANopen	Modbus, Profibus DP	

Universal solutions: safety controllers (for monitoring several safety functions simultaneously)

Supply voltage	24 VDC	**XPSMC32Z** (1)(2)	**XPSMC32ZC** (1)(2)	**XPSMC32ZP** (1)(2)	

light curtains



Universal







Maximum category of the solution (EN 954-1)		Category 4				2 light curtains monitoring max.
Number of circuits	Safety	2 x 2N/O + 6 solid-state			2x3N/O per function	6 PNP solid-state
	Additional	–			3 solid-state	1 PNP + 1 NPN
Display (number of LEDs)		30			12	14 + double display units
Width of housing		74 mm			45 mm	100 mm
Integral Muting function		Yes			No	Yes
Communication interface		Modbus	Modbus, CANopen	Modbus, Profibus DP	–	–

Universal solutions: safety controllers (for monitoring several safety functions simultaneously)

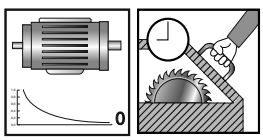
Supply voltage	24 VDC	**XPSMC32Z**(1)(2)	**XPSMC32ZC**(1)(2)	**XPSMC32ZP**(1)(2)	**XPSMP11123P** (3)	**XPSLCM1150** (4)

(1) Version with 32 inputs, for version with 16 inputs, replace 32 in the reference by 16 (example: XPSMC32Z becomes XPSMC16Z).

(3) For version with non removable terminal block, delete the letter P from the end of the reference (example: XPSMP11123P becomes XPSMP11123).

(4) Removable terminal blocks

zero speed, time delay



Universal





Maximum category of the solution (EN 954-1)		Category 4		
For monitoring		Motor zero speed condition		
Number of circuits	Safety	2 x 2N/O + 6 solid-state		
	Additional	–		
Display (number of LEDs)		30		
Width of housing		74 mm		
Communication interface		Modbus	Modbus, CANopen	Modbus, Profibus DP

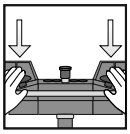
Universal solutions: safety controllers (for monitoring several safety functions simultaneously)

Supply voltage	24 VDC	**XPSMC32Z** (5) (2)	**XPSMC32ZC** (5) (2)	**XPSMC32ZP** (5) (2)

(2) Configuration software XPSMCWIN (complete version) or SSVXPSMCWINUP (update version), connecting cable, adaptor and set of screw terminal plug-in connectors XPSMCTS16 and XPSMCTS32 or set of spring clip terminal plug-in connectors XPSMCTC16 and XPSMCTC32 to be ordered separately.

(5) Plug-in connector version only.

Safety modules for monitoring
two-hand control









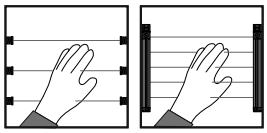
Maximum category of the solution (EN 954-1)		Category 1 (type IIIA to EN 574)	Category 4 (type IIIC to EN 574)	
Number of circuits	Safety	1N/O	2N/O	2N/O
	Additional	1N/C	1N/C	2 solid-state
Display (number of LEDs)		2	3	3
Width of housing		22.5 mm	45 mm	22.5 mm

Optimum solutions: safety modules (for monitoring 1 safety function)

Supply voltage	24 VDC	–	**XPSBC1110**	**XPSBF1132P** (1)
	24 VAC/DC	**XPSBA5120**	–	–

(1) For version with non removable terminal block, delete the letter P from the end of the reference (example: XPSBF1132P becomes XPSBF1132).

light curtains











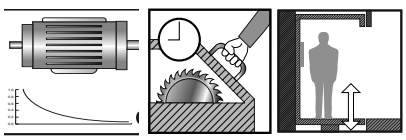
Maximum category of the solution (EN 954-1)		Category 2	Category 4		
Number of circuits	Safety	2N/O	3N/O	3N/O	7N/O
	Additional	4 solid-state	–	1N/C + 4 solid-state	1N/C + 4 solid-state
Display (number of LEDs)		4	3	4	4
Width of housing		45 mm	22.5 mm	45 mm	90 mm
Integral Muting function		Yes	No	No	No

Optimum solutions: safety modules (for monitoring 1 safety function)

Supply voltage	24 VDC	**XPSCM1144P** (1)	–	–	–
	24 VAC/DC	–	**XPSAFL5130P** (1)	**XPSAK311144P** (1)	**XPSAR311144P** (1)

(1) For version with non removable terminal block, delete the letter P from the end of the reference (example: XPSCM1144P becomes XPSCM1144).

zero speed, time delay and lifts











Maximum category of the solution (EN 954-1)		Category 3			Category 4
For monitoring		Motor zero speed condition	Safety time delay		Lifts
Number of circuits	Safety	1N/O + 1N/C	1N/O time delay	1N/O pulse	2N/O
	Additional	2 solid-state	2N/C + 2 solid-state	2N/C + 2 solid-state	2 solid-state
Display (number of LEDs)		4	4	4	4
Width of housing		45 mm	45 mm	45 mm	45 mm

Optimum solutions: safety modules (for monitoring 1 safety function)

Supply voltage	24 VDC	**XPSVNE1142P** (1)	–	–	–
	24 VAC/DC	–	**XPSTSA5142P** (2)	**XPSTSW5142P** (2)	**XPSDA5142**

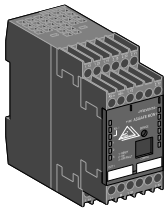
(1) Motor frequency ≤ 60 Hz.. For frequencies ≥ 60 Hz, please refer to the “Safety solution” catalogue.

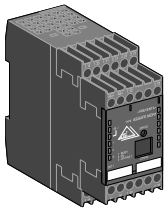
(2) Removable terminal block version only.

Safety monitors
Monitors

For all ASISAFEMON monitors

- Max performance level for the solution ..... **PL e** (EN ISO 13849-1)
- Max safety integrity level for the solution ..... **SIL 3** (EN IEC 62061)





Maximum category of the solution (EN 954-1)		Category 4	
Number of circuits	Safety	2N/O	2 x 2N/O
	Auxiliary	1 solid-state	2 solid-state
Display (number of LEDs)		5	8
Width of housing		45 mm	45 mm
AS-Interface profile		S.7.F	S.7.F
Master module compatibility		V1 / V2.1	V1 / V2.1
References of monitor with	**enhanced functions**	**ASISAFEMON1B**	**ASISAFEMON2B**
	standard functions	**ASISAFEMON1**	**ASISAFEMON2**

Configuration software, adjustment terminal and AS-Interface analyser







Type		"Safety Suite" configuration software (1)	Adjustment terminal (2)	AS-Interface Analyser
Multilingual		**EN / FR / DE / ES / IT / PT**	**–**	■ Analysis and diagnostics of AS-Interface
For use with		ASISAFEMON1/2, ASISAFEMON1B/2B	–	line and Safety at Work ■ Complements the diagnostic functions of
Media		CD-ROM PC	–	the local AS-Interface master
Environment		Windows	–	■ Maintenance or validation of AS-Interface
Degree of protection		–	IP 20	lines
Supply		–	4 x LR6 batteries	■ Print-out of AS-Interface line tests
Dimensions W x D x H		–	70 x 50 x 170 mm	92 x 28 x 139 mm
References	Complete version	**ASISWIN2**	**ASITERV2**	**ASISA01**
	Update version (3)	**SSVASISWINUP**	**–**	**–**

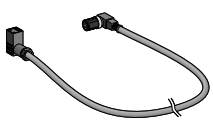
(1) CD-ROM with hardware and software user guides.

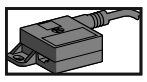
(2) For addressing safety interfaces, use the infrared adaptor ASITERIR1 or the standard adaptor ASISAD1.

(3) To be ordered only if the previous version of have been already installed.

Accessories











Type	Adaptor for the adressing of safety interfaces	Infrared adaptor for adjustment terminal	Tap-off for AS-Interface cable	Cable for monitor parametering, RS 232	Cable for monitor to monitor transfer
Degree of protection	IP 67	IP 67	IP 67	IP 20	IP 20
Cable length	–	1 m	2 m	2 m	0.2 m
References	**ASISAD1**	**ASITERIR1**	**XZCG0122**	**ASISCPC**	**ASISCM**

Safety interfaces
For Ø 22 Emergency stop



Interface type	For mushroom head pushbuttons				Control stations	
	Metal	(1)	Plastic	(1)	Plastic	
Degree of protection	IP 20	IP 20	IP 20	IP 20	IP 65	IP 65
Dimensions W x D x H (mm)	40 x 90 x 68	40 x 80 x 40	40 x 90 x 64	40 x 90 x 40	66 x 95 x 78	66 x 95 x 78
AS-Interface profile	S.0.B.F.F	S.0.B.F.F	S.0.B.F.F	S.0.B.F.F	S.0.B.F.F	S.0.B.F.F
Consumption from AS-Interface	45 mA	45 mA	45 mA	45 mA	45 mA	45 mA
Infrared addressing	Yes	No	Yes	No	No	No
Connection on AS-Interface	IDC (2)	Connector	IDC (2)	Connector	M12 connector	M12 connector
Reference with N/C + N/C contact (head not included)	**ASISSLB4**	**ASISSLE4**	**ASISSLB5**	**ASISSLE5**	**ASISEA1C**	**ASISEK1C**
Reference of head (Ø40 latching mushroom head, turn to release)	**ZB4BS844** (3)	**ZB4BS844** (3)	**ZB4AS844** (3)	**ZB5AS844** (3)	**Integrated** (4)	**Integrated** (5)

(1) For installation in enclosures.

(2) IDC: Insulation Displacement Connector.

(3) Head to be ordered separately. For other heads, please refer to www.schneider-electric.com.

(4) Turn to release latching mushroom head.

(5) Key release (n° 455) latching mushroom head.

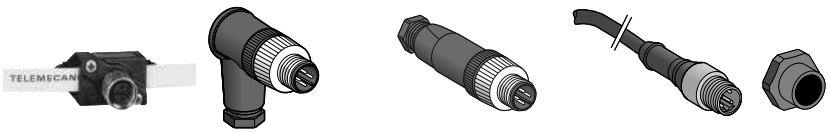
For other safety products with M12 connector outputs or ISO M16/20



Type of entry	2 x M12 entries (5)	1 x M12 entry	1 x ISO M16 entry (6)
Degree of protection	IP 67	IP 67	IP 67
Dimensions W x D x H	40 x 40 x 58 mm	40 x 40 x 58 mm	40 x 40 x 57.5 mm
AS-Interface profile	S.0.B.F.F	S.0.B.F.F	S.0.B.F.F
Consumption from AS-Interface	45 mA	45 mA	45 mA
Infrared addressing	Yes	Yes	Yes
Connection on AS-Interface	IDC (1)	IDC (1)	IDC (1)
References	**ASISSLC2**	**ASISSLC1**	**ASISSLLS**

(5) For connection using 2 pre-wired connectors, or 1 pre-wired connector + 1 connector.
(6) For 1 x ISO M20 entry, use adaptor shown below.

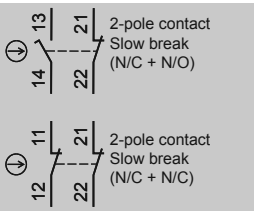
Accessories

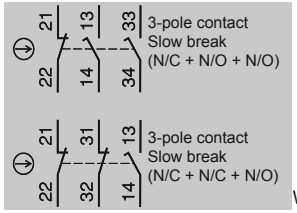


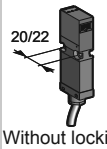
Type	Tap-off for AS-Interface cable	Connectors		Pre-wired connector	Adaptor (sold in lots of 5)
Description	M12 female, threaded	elbowed	straight	straight	ISO M16/M20
Degree of protection	IP 67	IP 67	IP 67	IP 67	IP 67
Length of cable	–	–	–	2 m	–
References	**XZCG0120**	**XZCC12MCM40B**	**XZCC12MDM40B**	**XZCP1541L2**	**DE9RI2016**

Safety switches
and actuators

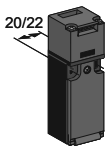
ISO entry (to EN 50262)

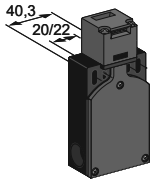


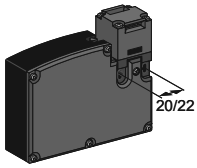




Without locking



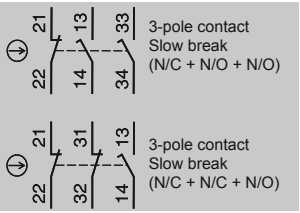




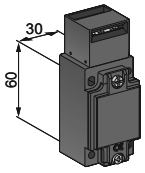
Locking on de-energisation of solenoid (1)

Plastic, double insulated switches		Type XCSMP pre-cabled, L = 2 m	Type XCSPA and TA 1xISO M16 entry. (2)	2xISO M16 entries. (2)	Type XCSTE 1 x ISO M16 cable entry (2)
Actuation speed (min → max)		0,05 m/s → 1,5 m/s	0,1 m/s → 0,5 m/s		0,1 m/s → 0,5 m/s
Degree of protection		IP 67	IP 67		IP 67
Rated operational characteristics (conforming to EN IEC 60947-5-1)		AC 15, C 300 / DC 13, Q 300	AC 15, A 300 / DC 13, Q 300		AC 15, B 300 / DC 13, Q 300
Dimensions (body + head) W x D x H		30 x 15 x 87 mm	30 x 30 x 93,5 mm	52 x 30 x 114,5 mm	110 x 33 x 93,5 mm
Solenoid supply voltage		–	–	–	24 VAC/DC
Complete switch	"N/C+N/O" stag. slow break	**XCSMP59L2** (3)	**XCSPA592**	–	**XCSTE5312**
	"N/C+N/C" slow break	**XCSMP79L2** (3)	**XCSPA792**	–	**XCSTE7312**
	"N/C+N/C+N/C" slow break	**XCSMP70L2** (3)	**XCSPA892**	**XCSTA592**	–
	"N/C+N/C+N/C" snap action	–	–	–	–
	"N/C+N/C+N/C" slow break	**XCSMP80L2** (3)	**XCSPA992**	**XCSTA792**	–
	"N/C+N/C+N/C" snap action	–	**XCSPA492**	–	–

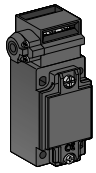
(1) For locking on energisation of solenoid, please refer to www.schneider-electric.com.
(2) With entry for n° 11 (Pg 11) cable gland, replace the last digit in the reference by 1 (example: XCSPA592 becomes XCSPA591).
(3) For other models, please refer to www.schneider-electric.com.

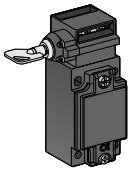


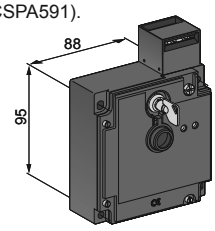
ISO entry (to EN 50262)



Without locking


With interlocking, By button


manual unlocking By key lock

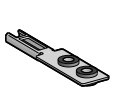


Locking on de-energisation of solenoid (1)

Metal switches		Type XCSA/B/C 1 x ISO M20 cable entry (2)			Type XCSE 2 x ISO M20 cable entries (2)		
Actuation speed (min → max)		0.1 m/s → 0.5 m/s			0.1 m/s → 0.5 m/s		
Degree of protection		IP 67			IP 67		
Rated operational characteristics (conforming to EN IEC 60947-5-1)		AC 15, A 300 / DC 13, Q 300			AC 15, B 300 / DC 13, Q 300		
Dimensions (body + head) W x D x H		40 x 44 x 113.5 mm	52 x 44 x 113.5 mm	52 x 44 x 113.5 mm	98 x 44 x 146 mm		
Solenoid supply voltage		–	–	–	24 VAC/DC	110/120 VAC/DC	220/240 VAC/DC
Complete switch	N/C + N/O + N/O slow break	**XCSA502**	**XCSB502**	**XCSC502**	**XCSE5312**	**XCSE5332**	**XCSE5342**
	N/C + N/C + N/O slow break	**XCSA702**	**XCSB702**	**XCSC702**	**XCSE7312**	**XCSE7332**	**XCSE7342**

(1) For locking on energisation of solenoid, please refer to www.schneider-electric.com.
(2) With entry for n° 13 (Pg 13.5) cable gland, replace the last digit in the reference by 1 (example: XCSA502 becomes XCSA501).

Accessories


Straight actuator


Right-angled actuator


Pivoting actuator, RH door


Pivoting actuator, LH door

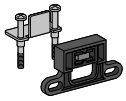
For safety switches XCSMP	Actuators			
References	**XCSZ81**	**XCSZ84**	**XCSZ83**	**XCSZ85**


Straight actuator

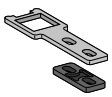

Wide actuator L=40 mm (1)

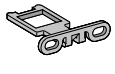

Right-angled actuator

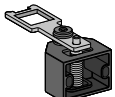

Pivoting actuator

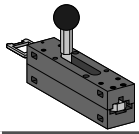

Guard/door retainer

References	Actuators				Retaining device
(1) For L = 29 mm, reference = **XCSZ15.**	**XCSZ11**	**XCSZ12**	**XCSZ14**	**XCSZ13**	**XCSZ21**


Straight actuator


Wide actuator

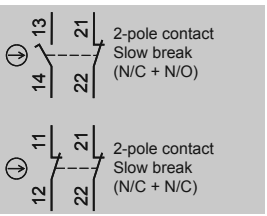

Pivoting actuator

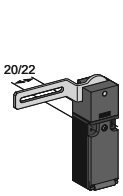


For safety switches XCSA/B/C/E	Actuators			Door lock
References	**XCSZ01**	**XCSZ02**	**XCSZ03**	**XCSZ05**

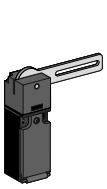
Safety switches
with rotary lever or spindle

ISO entry (to EN 50262)

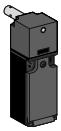




Stainless steel, elbowed (flush with rear of switch) lever
Lever to left — Lever centred — Lever to right



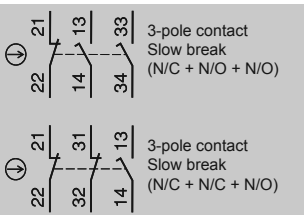
Stainless steel straight lever
Lever to left or right — Lever centred



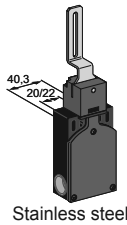
Stainless steel spindle, L = 30 mm

Plastic switches		Type XCSPL with rotary lever or XCSPR with spindle 1 x ISO M16 cable entry (1)				
Minimum torque (actuation / positive opening)		0,1 / 0,25 N.m				
Degree of protection		IP 67				
Rated operational characteristics		AC 15, A 300 / DC 13, Q 300 (selon EN IEC 60947-5-1)				
Dimensions (body + head) W x D x H		30 x 30 x 160 mm				30 x 30 x 96 mm
Tripping angle		5°				
Complete switch	"N/C+N/O" stag. slow break	**XCSPL592** ⊕	**XCSPL582** ⊕	**XCSPL572** ⊕	**XCSPL562** ⊕	**XCSPR552** ⊕
	"N/C+N/C" slow break	**XCSPL791** (2) ⊕	**XCSPL781** (2) ⊕	**XCSPL771** (2) ⊕	**XCSPL762** ⊕	**XCSPR752** ⊕
	"N/C+N/C+N/C" slow break	–	–	–	**XCSPL862** ⊕	–
	"N/C+N/C+N/C" slow break	–	**XCSPL981** (2) ⊕	–	**XCSPL962** ⊕	**XCSPR952** ⊕

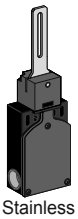
(1) With entry for n° 11 (Pg 11) cable gland, replace the last digit in the reference by 1 (example: XCSPL592 becomes XCSPL591).
(2) For entry for ISO M20 cable gland, also order adaptor DE9RA1620 (sold in lots of 5).



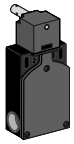
ISO entry (to EN 50262)



Stainless steel, elbowed (flush with rear of switch) lever - Lever centred



Stainless steel straight lever
Lever centred



Stainless steel spindle
Length 30 mm

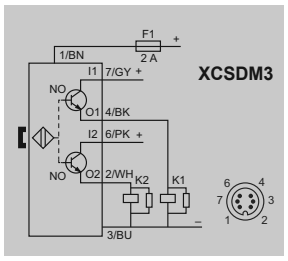
Plastic switches		Type XCSTL with rotary lever or XCSTR with spindle 2 x ISO M16 cable entries (1)		
Minimum torque (actuation / positive opening)		0.1 / 0.45 N.m		
Degree of protection		IP 67		
Rated operational characteristics		AC 15, A 300 / DC 13, Q 300 (conforming to EN IEC 60947-5-1)		
Dimensions (body + head) W x P x H		52 x 30 x 180 mm		52 x 30 x 117 mm
Tripping angle		5°		
Complete switch	N/C + N/O + N/O, 2 N/O staggered slow break	**XCSTL582** ⊕	**XCSTL552** ⊕	**XCSTR552** ⊕
	N/C + N/C + N/O, N/O staggered slow break	**XCSTL782** ⊕	**XCSTL752** ⊕	**XCSTR752** ⊕

(1) With entry for n° 11 (Pg 11) cable gland, replace the last digit in the reference by 1 (example: XCSTL582 becomes XCSTL581).

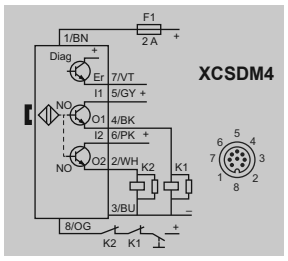
Coded magnetic technology

Plastic coded magnetic system

(1)



(1)

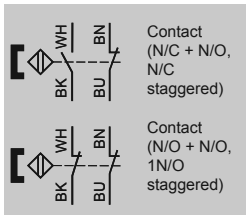




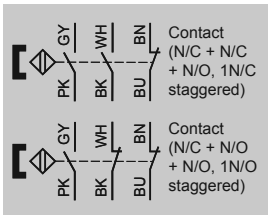
Type of system With integrated safety module			SIL2/Category 3 XCSDM3	SIl3/Category 4 XCSDM4
Switches for actuation			Face to face, face to side, side to side	
Degree of protection			Pre-cabled: IP66 / IP67, IP69K, connector: IP67	
Type of contact			2 solid-state output PNP/NO, 1,5 A / 24VDC (2 A up to 60°C)	
Rated operational characteristics			Ub: 24 VDC +10% - 20%	
Dimensions W x D x H			34 x 27 x 100 mm	
Operating zone			Sao= 10 mm / Sar= 20 mm	
References	Connection	for cable L= 2m	**XCSDM379102**	**XCSDM480102**
		for cable L= 5m	**XCSDM379105**	**XCSDM480105**
		for cable L= 10m	**XCSDM379110**	**XCSDM480110**
		for connector M12	**XCSDM3791M12**	**XCSDM4801M12**

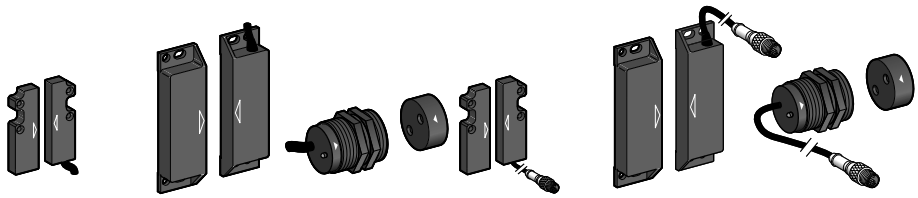
Coded magnetic

(1)



(1)



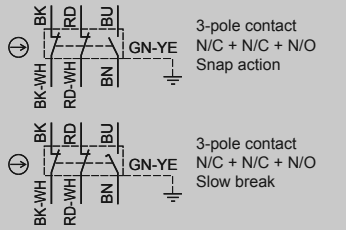


Rectangular Without LED (2) | Rectangular Without LED (2) | Cylindrical Without LED (2) | Rectangular Without LED (2) | Rectangular Without LED (2) | Cylindrical Without LED (2)

Plastic switches		Type XCSDM coded magnetic					
		Pre-cabled, L = 2 m			Connector on flying lead, L = 10 cm (3)		
Switches for actuation		Face to face, face to side, side to side		Face to face	Face to face, face to side, side to side		Face to face
Degree of protection		IP 66 + IP 67			IP 66 + IP 67		
Type of contact		REED			REED		
Rated operational characteristics		Ue = 24 VDC, Ie = 100 mA			Ue = 24 VDC, Ie = 100 mA		
Dimensions W x D x H		16 x 7 x 51 mm	25 x 13 x 88 mm	M30 x 38,5 mm	16 x 7 x 51 mm	25 x 13 x 88 mm	M30 x 38.5 mm
Operating zone (4)		Sao = 5 / Sar = 15	Sao = 8 / Sar = 20		Sao = 5 / Sar = 15	Sao = 8 / Sar = 20	
Switch with coded magnet	N/C + N/O, N/C staggered	**XCSDMC5902**	**XCSDMP5902**	**XCSDMR5902**	**XCSDMC590L01M8**	**XCSDMP590L01M12**	**XCSDMR590L01M12**
	N/O + N/O, 1N/O staggered	**XCSDMC7902**	**XCSDMR7902**	**XCSDMR7902**	**XCSDMC790L01M8**	**XCSDMP790L01M12**	**XCSDMR790L01M12**
	N/C + N/C + N/O, 1N/C staggered	–	**XCSDMP5002**	–	–	**XCSDMP500L01M12**	–
	N/C + N/O + N/O, 1N/O staggered	–	**XCSDMP7002**	–	–	**XCSDMP700L01M12**	–

(1) NB. Contact states shown are with the magnet present.
(2) For version with LED indicator, replace the last 0 in the reference by 1 (example: XCSDMC5902 becomes XCSDMC5912).
(3) For associated pre-wired female connectors, please refer to the “Safety solution” catalogue.
(4) Sao: assured operating distance. Sar: assured release distance.

Limit switches
Safety limit switches



3-pole contact
N/C + N/C + N/O
Snap action

3-pole contact
N/C + N/C + N/O
Slow break

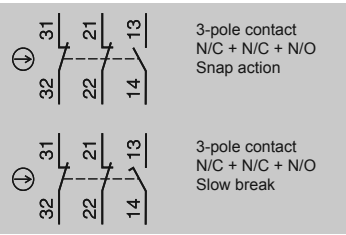

Metal
end plunger


Roller plunger


Thermoplastic
roller lever

Miniature switches		Type XCSM, metal pre-cabled, L = 1 m (1)		
Maximum actuation speed		0.5 m/s	0.5 m/s	1.5 m/s
Minimum force or torque (actuation / positive opening)		8.5 N / 42.5 N	7 N / 35 N	0.5 N.m / 0.1 N.m
Degree of protection		IP 66 + IP 67 + IP 68	IP 66 + IP 67 + IP 68	IP 66 + IP 67 + IP 68
Dimensions (body + head) W x D x H		30 x 16 x 60 mm	30 x 16 x 70.5 mm	30 x 32 x 92.5 mm
Complete switch	N/C + N/C + N/O snap action	**XCSM3910L1** ⊖	**XCSM3902L1** ⊖	**XCSM3915L1** ⊖
	N/C + N/C + N/O slow break	**XCSM3710L1** ⊖	**XCSM3702L1** ⊖	**XCSM3715L1** ⊖

(1) For a 2 m long cable, replace the last digit of the reference by 2 (example: XCSM3910L1 becomes XCSM3910L2).
For a 5 m long cable, replace the last digit of the reference by 5 (example: XCSM3910L1 becomes XCSM3910L5).



3-pole contact
N/C + N/C + N/O
Snap action

3-pole contact
N/C + N/C + N/O
Slow break


Metal
end plunger


Roller
plunger


Thermoplastic
roller lever


Metal
end plunger

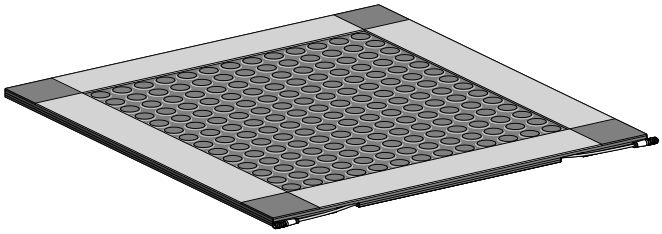

Roller
plunger


Thermoplastic
roller lever

Compact switches		Type XCSD, metal 1 x ISO M20 x 1.5 cable entry (2)			Type XCSP, plastic 1 x ISO M20 x 1.5 cable entry (2)		
Maximum actuation speed		0.5 m/s		1.5 m/s	0.5 m/s		1.5 m/s
Minimum force or torque (actuation / positive opening)		15 N / 45 N	12 N / 36 N	10 N.m / 0.1 N.m	15 N / 45 N	12 N / 36 N	10 N.m / 0.1 N.m
Degree of protection		IP 66 + IP 67			IP 66 + IP 67		
Dimensions (body + head) W x D x H (mm)		34 x 34.5 x 89	34 x 34.5 x 99.5	34 x 43 x 121.5	34 x 34.5 x 89	34 x 34.5 x 99.5	34 x 43 x 121.5
Complete switch	N/C + N/C + N/O snap action	**XCSD3910P20**	**XCSD3902P20**	**XCSD3918P20**	**XCSP3910P20**	**XCSP3902P20**	**XCSP3918P20**
	N/C + N/C + N/O slow break	**XCSD3710P20**	**XCSD3702P20**	**XCSD3718P20**	**XCSP3710P20**	**XCSP3702P20**	**XCSP3718P20**

(2) For Pg 13.5 and 1/2" NPT cable entries, refer to www.schneider-electric.com.

Mats
Safety mats (1)



(1) For simplification of installation, see the “Protect Area design” software configuration tool. Reference: SISCD104200

Maximum category usage (EN 954-1)	**Category 3**			
Degree of protection	IP 67			
Response time (s)	Mat itself: 20 ms, with module: XPSAK ≤ 40 ms, XPSMP < 30 ms			
Sensitivity	Single mat > 20 kg / Group of mats > 35 kg			
Maximum load	2000 N/cm²			
Connection (2)	By M8 jumper cable (1 male / 1 female), L = 100 mm			
Dimensions W x D x H	500 x 500 x 11 mm	500 x 750 x 11 mm	750 x 750 x 11 mm	750 x 1250 x 11 mm
References	**XY2TP1**	**XY2TP2**	**XY2TP3**	**XY2TP4**

(2) For associated jumper cable and pre-wired connector, please refer to www.schneider-electric.com

	Accessories								
Rails (set of 2) Length	194 mm	394 mm	444 mm	494 mm	644 mm	694 mm	744 mm	1194 mm	1244 mm
References	**XY2TZ10**	**XY2TZ20**	**XY2TZ30**	**XY2TZ40**	**XY2TZ50**	**XY2TZ60**	**XY2TZ70**	**XY2TZ80**	**XY2TZ90**

Corners and rail connectors	External corners (set of 4)	Internal corner + external corner	Rail connectors, L = 56 mm with outlet for cable (set of 2)	Rail connectors, L = 6 mm (set of 2)
References	**XY2TZ4**	**XY2TZ5**	**XY2TZ1**	**XY2TZ2**

Light curtains
Type 2 conforming to IEC 61496-2



Light curtain functions
- Auto/Manual,
- Monitoring of external switching devices (EDM: External Devices Monitoring),
- LED display of operating modes

Type Slim range		Multi-beam, infrared transmission Manual starting	Automatic starting
Nominal sensing distance (Sn)		0.3…15 m	
Detection capacity		30 mm “hand”	
Number of safety circuits		2 solid-state PNP	
Response time (depending on model)		14…24 ms	
Connection		M12 Connector	
Height protected (mm)	150	**XUSLNG5D0150**	**XUSLNG5C0150**
	300	**XUSLNG5D0300**	**XUSLNG5C0300**
	450	**XUSLNG5D0450**	**XUSLNG5C0450**
	600	**XUSLNG5D0600**	**XUSLNG5C0600**
	750	**XUSLNG5D0750**	**XUSLNG5C0750**
	900	**XUSLNG5D0900**	**XUSLNG5C0900**
	1050	**XUSLNG5D1050**	**XUSLNG5C1050**
	1200	**XUSLNG5D1200**	**XUSLNG5C1200**
	1350	**XUSLNG5D1350**	**XUSLNG5C1350**
	1500	**XUSLNG5D1500**	**XUSLNG5C1500**

		Accessories		
Cable length		3 m	10 m	30 m
Pre-wired connector for XUSLN (screened cable)	For receiver	**XSZNCR03**	**XSZNCR10**	**XSZNCR30**
	For transmitter	**XSZNCT03**	**XSZNCT10**	**XSZNCT30**

Type 2 conforming to IEC 61496-1 et 2



Light curtain functions
- Auto/Manual,
- Monitoring of external switching devices (EDM: External Devices Monitoring),
- LED display of operating modes
- Integral muting function.

Type			Single-beam, infrared transmission
Height protected (conforming to prEN 999)			750…1200 mm (1 to 4 beams)
Nominal sensing distance (Sn)			8 m
Number of circuits	Safety		2N/O
	Additional		4 solid-state
Response time			< 25 ms
Modules (integral muting function)		24 VDC	**XPSCM1144P** (1)
Thru-beam pairs, axially aligned	Pre-cabled, L = 5m	PNP	**XU2S18PP340L5** (2)
	M12 connector	PNP	**XU2S18PP340D** (2)

(1) For version with non removable terminal block, delete the letter P from the end of the reference. Example: XPSCM1144**P** becomes XPSCM1144).

(2) For alignment at 90° to the mounting axes, insert the letter W in the reference before the last letter. Example: XU2S18PP340L5 becomes XU2S18PP340**W**L5).

Light curtains
Type 4 conforming to IEC 61496-2



Light curtain functions
- Auto/Manual/Manual 1st cycle
- Monitoring of external switching devices (EDM: External Devices Monitoring),
- Test input (MTS: Monitoring Test Signal),
- Blanking (ECS/B),
- Floating Blanking (FB),
- Blanking + Floating Blanking,
- Alignment aid by LED display of each light beam broken,
- LED display of operating modes and alarms.

Type			**Multi-beam, infrared transmission**	
Compact range				
Nominal sensing distance (Sn)			0.3…7.5 m	0.3…9 m
Detection capacity			14 mm "finger"	30 mm "hand"
Number of circuits	Safety		2 solid-state PNP	2 solid-state PNP
	Auxiliary (alarm)		1 solid-state PNP	1 solid-state PNP
Response time (depending on model)			20…40 ms	20…30 ms
Connection			Flying lead with end M12 connector, L = 0.25 m	
Transmitter + receiver	Height protected (mm)	260	**XUSLTQ6A0260**	–
		350	**XUSLTQ6A0350**	**XUSLTR5A0350**
		435	**XUSLTQ6A0435**	–
		520	**XUSLTQ6A0520**	**XUSLTR5A0520**
		610	**XUSLTQ6A0610**	–
		700	**XUSLTQ6A0700**	**XUSLTR5A0700**
		870	**XUSLTQ6A0870**	**XUSLTR5A0870**
		955	**XUSLTQ6A0955**	–
		1045	**XUSLTQ6A1045**	**XUSLTR5A1045**
		1130	**XUSLTQ6A1130**	**XUSLTR5A1130**
		1215	**XUSLTQ6A1215**	**XUSLTR5A1215**
		1390	**XUSLTQ6A1390**	**XUSLTR5A1390**
		1570	–	**XUSLTR5A1570**
		1745	–	**XUSLTR5A1745**
		1920	–	**XUSLTR5A1920**
		2095	–	**XUSLTR5A2095**

Type 4 conforming to IEC 61496-2

Light curtain functions
- Auto/Manual/Manual 1st cycle
- Monitoring of external switching devices (EDM: External Devices Monitoring),
- Test input (MTS: Monitoring Test Signal),
- Alignment aid by LED display of each light beam broken,
- LED display of operating modes and alarms,
- Coding of the beams



Type			**Single-beam and multi-beam, infrared transmission**	
Compact range			Transmitter/receiver	Transmitter/passive receiver
Nominal sensing distance (Sn)			0.8…20 ou 70 m (according to config)	0.8…8 m
Detection capacity			Body	
Number of circuits	Safety		2 solid-state PNP	
	Auxiliary (alarm or following)		1 solid-state PNP	
Response time (depending on model)			16…24 ms	
Connection			M12 Connector (1)	M12 Connector
Beam	Interval	Number		
	–	1	**XUSLPZ1AM**	–
	300 mm	4	**XUSLPZ4A300M**	–
		5	**XUSLPZ5A300M**	–
		6	**XUSLPZ6A300M**	–
	400 mm	3	**XUSLPZ3A400M**	–
	500 mm	2	**XUSLPZ2A500M**	**XUSLPB2A500M**
		3	**XUSLPZ3A500M**	–
	600 mm	2	**XUSLPZ2A600M**	**XUSLPB2A600M**

(1) Light curtain with M12 connector output, for terminal block output, replace **M** from the end of the reference by **B**. Example : XUSLPZ1A**M** becomes XUSLPZ1A**B**

			Accessories				
Cable length			3 m	5 m	10 m	15 m	30 m
Pre-wired connector for (screened cable)	**XUSLT**	For receiver	–	**XSZTCR05**	**XSZTCR10**	**XSZTCR15**	**XSZTCR30**
		For transmitter	–	**XSZTCT05**	**XSZTCT10**	**XSZTCT15**	**XSZTCT30**
	XUSLM	For receiver	**XSZMCR03**	–	**XSZMCR10**	–	**XSZMCR30**
		For transmitter	**XSZMCT03**	–	**XSZMCT10**	–	**XSZMCT30**
	XUSLP	For receiver	–	**XSZPCR05**	**XSZPCR10**	**XSZPCR15**	**XSZPCR30**
		For transmitter	–	**XSZPCT05**	**XSZPCT10**	**XSZPCT15**	**XSZPCT30**

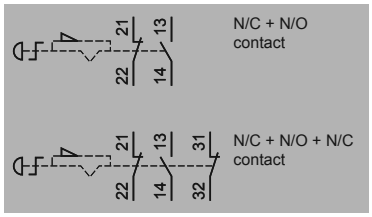
Selection guidance software

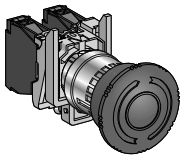


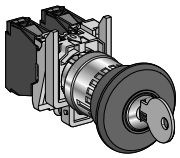
	Protect Area Design (2)
For light curtains	XUSLT, XUSLM
Reference	**SISCD104200**

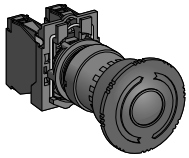
(2) "Protect Area Design" sofware is integrated in **Safety***Suite V2*

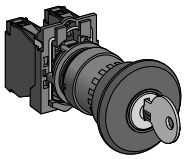
Emergency stops
Ø 22 trigger action latching pushbuttons




Turn to release


Key release
(key n° 455)

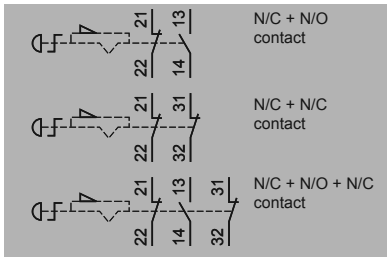

Turn to release

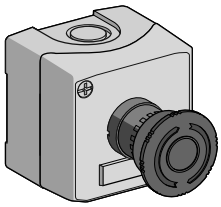

Key release
(key n° 455)

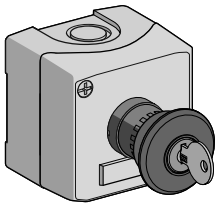
Pushbuttons		Metal		Plastic	
Mechanical life (millions of operating cycles)		0.3		0.3	
Shock / vibration resistance		10 gn / 5 gn		10 gn / 5 gn	
Degree of protection		IP 65		IP 65	
Rated operational characteristics		AC 15, A 600 / DC 13, Q 600 (conforming to EN IEC 60947-5-1)			
Dimensions Ø x Depth		Ø 40 x 82 mm	Ø 40 x 104 mm	Ø 40 x 81.5 mm	Ø 40 x 103 mm
Contact	N/C + N/O	**XB4BS8445**	**XB5AS8445**	**XB5AS8445**	**XB5AS9445**
	2 N/C + 1 N/O	**XB4BS84441**	**–**	**–**	**ZB5AS944 + ZB5AZ141**

ISO entry (to EN 50262)

Ø 22 trigger action latching pushbutton stations




Turn to release

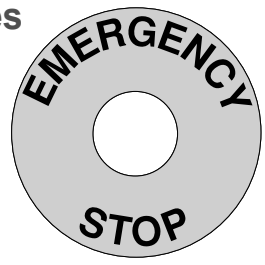

Key release (key n° 455)

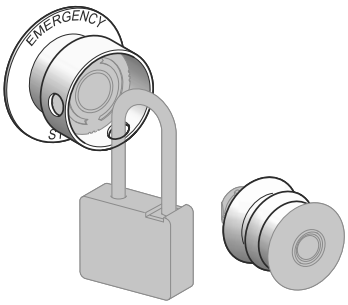
Enclosure		Plastic 2 x ISO M20 cable entries or n° 13 (Pg 13.5) cable gland	
Mechanical life (millions of operating cycles)		0.1	0.1
Shock / vibration resistance		10 gn / 5 gn	10 gn / 5 gn
Degree of protection		IP 65	IP 65
Rated operational characteristics		AC 15, A 600 / DC 13, Q 600 (conforming to EN IEC 60947-5-1)	
Dimensions W x D x H		68 x 91 x 68 mm	68 x 113 x 68 mm
Contact	N/C + N/O	**XALK178E**	**XALK188E**
	N/C + N/C	**XALK178F**	**XALK188F**
	2 N/C + 1 N/O	**–**	**XALK188G**

Accessories



With legend holder



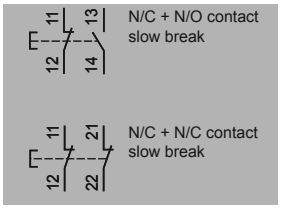


Type			Étiquettes		Padlocking kit	Bellows seals	
Colour			Red with white lettering	Yellow with black lettering	Yellow	Red Silicone	Black EPDM
Dimensions			30 x 40 mm (1)	Ø 60 mm			
Références	**Marking:**	"Emergency stop"	**ZBY2130**	**ZBY9130**	**–**	**–**	**–**
		"Arrêt d'urgence"	**ZBY2330**	**ZBY9330**	**–**	**–**	**–**
		"Not Aus"	**ZBY2230**	**ZBY9230**	**–**	**–**	**–**
			–	**–**	**ZBZ3605**	**ZBZ48**	**ZBZ28**

(1) circular appearance

Emergency stops
Cable (tripwire) operated

ISO entry (to EN 50262)



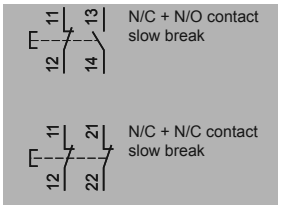


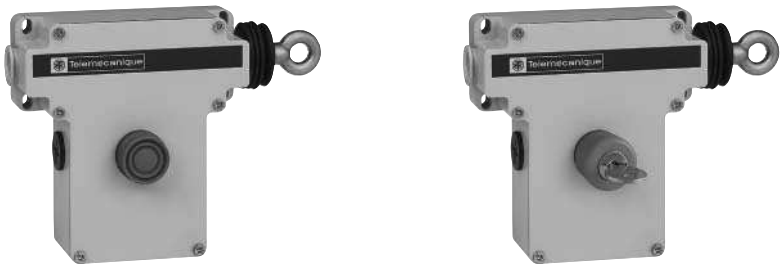
Booted pushbutton reset

Key release pushbutton reset (key n° 421)

For operating cable length ≤ 15 m		Latching, without indicator light 1 x ISO M20 cable entry (1)		with indicator light
Mechanical life (millions of operating cycles)		0.01		
Shock / vibration resistance		50 gn / 10 gn		
Degree of protection		IP 65		
Rated operational characteristics		AC-15, A300 / DC-13, Q300 (conforming to EN IEC 60947-5-1)		
Dimensions W x D x H		201 x 71 x 68 mm		
Operating cable length		≤ 15 m		
Operating cable anchoring point		To right or to left		
Contact	1 “N/C + N/O” slow break	**XY2CH13250H29**	**XY2CH13450H29**	**XY2CH13253**
	1 “N/C + N/C” slow break	**XY2CH13270H29**	**XY2CH13470H29**	**XY2CH13273**

(1) With entry for n° 13 (Pg 13.5) cable gland, delete H29 from the end of the reference (example: XY2-CH13250H29 becomes XY2-CH13250).





Booted pusbutton reset

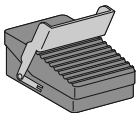
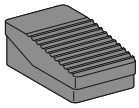
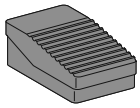
Key release pushbutton reset (key n° 421)

For operating cable length ≤ 50 m		Latching, without indicator light 3 x ISO M20 cable entries or n° 13 (Pg 13.5) cable gland			
Mechanical life (millions of operating cycles)		0.01		0.01	
Shock / vibration resistance		50 gn / 10 gn		50 gn / 10 gn	
Degree of protection		IP 65		IP 65	
Rated operational characteristics		AC-15, A300 / DC-13, Q300 (conforming to EN IEC 60947-5-1)			
Dimensions W x D x H		229 x 82 x 142 mm		229 x 82 x 142 mm	
Operating cable length		≤ 50 m		≤ 50 m	
Operating cable anchoring point		To left	To right	To left	To right
Contact	1 “N/C + N/O” slow break	**XY2CE2A250**	**XY2CE1A250**	**XY2CE2A450**	**XY2CE1A450**
	1 “N/C + N/C” slow break	**XY2CE2A270**	**XY2CE1A270**	**XY2CE2A470**	**XY2CE1A470**
	2 “N/C + N/O” slow break	**XY2CE2A290** (2)	**XY2CE1A290** (2)	**XY2CE2A490** (2)	**XY2CE1A290** (2)

(2) With 24V, 48 V, 130 V pilot lights, BA9S bulb not included, add 6 at the end of the reference. (example : XY2CE1A290 becomes XY2CE1A296).
With 230 V pilot lights, BA9S bulb included, add 7 at the end of the reference. (example : XY2CE1A290 becomes XY2CE1A297).

Foot switches - metal
Single pedal switches

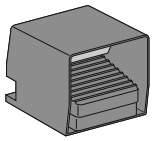
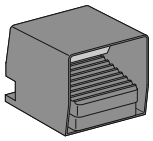
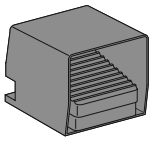
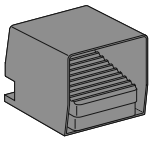
ISO entry (to EN 50262)

Type			Foot switches without protective cover 2 cable entries for n° 16 (Pg 16) cable gland (1)		
Trigger mechanism			With (positive operating action reqd.)	Without	
Colour			Orange	Blue	Orange
Mechanical life (millions of operating cycles)			15		
Degree of protection			IP 66		
Shock resistance			100 joules		
Rated operational characteristics			AC 15, A 300 / DC 13, Q 300 (conforming to EN IEC 60947-5-1)		
Dimensions W x D x H			104 x 172 x 59 mm		
Contact operation	**1 step**	1 N/C + N/O	**XPER810**	**XPEM110**	**XPER110**
		2 N/C + N/O	**XPER811**	**XPEM111**	**XPER111**
	2 step	2 N/C + N/O	**XPER911**	**XPEM211**	**XPER211**
	Analogue output	2 N/C + N/O	**XPER929**	**–**	**XPER229**

(1) For entry for ISO M20 cable gland, also order adaptor DE9RA1620 (sold in lots of 5).

ISO entry (to EN 50262)

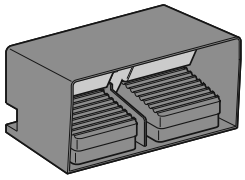
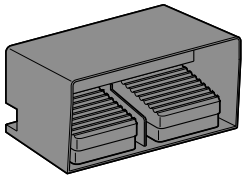





Type			Foot switches without protective cover 2 cable entries for n° 16 (Pg 16) cable gland (1)			
Trigger mechanism			With (positive operating action reqd.)		Without	
Colour			Blue	Orange	Blue	Orange
Mechanical life (millions of operating cycles)			15			
Degree of protection			IP 66			
Shock resistance			100 joules			
Rated operational characteristics			AC 15, A 300 / DC 13, Q 300 (conforming to EN IEC 60947-5-1)			
Dimensions W x D x H			160 x 186 x 152 mm			
Contact operation	**1 step**	1 N/C + N/O	**XPEM510**	**XPER510**	**XPEM310**	**XPER310**
		2 N/C + N/O	**XPEM511**	**XPER511**	**XPEM311**	**XPER311**
	1 step latching	1 N/C + N/O	**–**	**–**	**XPEM410**	**XPER410**
	2 step	2 N/C + N/O	**XPEM711**	**XPER711**	**XPEM611**	**XPER611**
	Analogue output	2 N/C + N/O	**XPEM529**	**XPER529**	**XPEM329**	**–**

(1) For entry for ISO M20 cable gland, also order adaptor DE9RA1620 (sold in lots of 5).

Double pedal switches

ISO entry (to EN 50262)

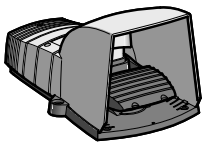
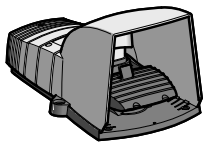



Type			Foot switches without protective cover 2 cable entries for n° 16 (Pg 16) cable gland (1)			
Trigger mechanism			With (positive operating action reqd.)		Without	
Colour			Blue	Orange	Blue	Orange
Mechanical life (millions of operating cycles)			15			
Degree of protection			IP 66			
Shock resistance			100 joules			
Rated operational characteristics			AC 15, A 300 / DC 13, Q 300 (conforming to EN IEC 60947-5-1)			
Dimensions W x D x H			295 x 190 x 155 mm			
Contact operation	**1 step**	2 x 1 N/C + N/O	**XPEM5100D**	**XPER510D**	**XPEM3100D**	**XPER3100D**
		2 x 2 N/C + N/O	**XPEM5110D**	**XPER5110D**	**XPEM3110D**	**XPER3110D**

(1) For entry for ISO M20 cable gland, also order adaptor DE9RA1620 (sold in lots of 5).

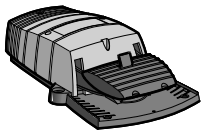
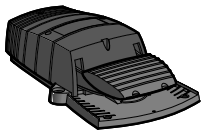
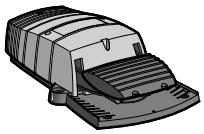
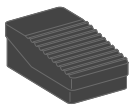
Foot switches - plastic
Single pedal switches

ISO entry (to EN 50262)

Type			Without protective cover 2 cable entries for **ISO M20 cable gland**	With protective cover	
Trigger mechanism			Without		With (positive operating action reqd.)
Colour			Yellow	Yellow	Yellow
Mechanical life (millions of operating cycles)			5		
Degree of protection			IP 55		
Shock resistance			30 joules		
Rated operational characteristics			AC 15, A 300 / DC 13, Q 300 (conforming to EN IEC 60947-5-1)		
Dimensions W x D x H			160 x 280 x 70 mm	160 x 280 x 162 mm	160 x 280 x 162 mm
Contact operation	**1 step**	1 N/C + N/O	**XPEY110**	**XPEY310**	**XPEY510**
		2 N/C + N/O	**–**	**XPEY311**	**XPEY511**
	2 step	2 N/C + N/O	**XPEY211**	**XPEY611**	**XPEY711**

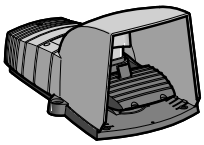
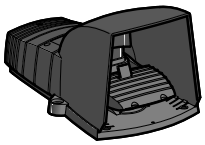
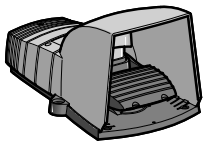
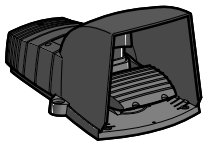
ISO entry (to EN 50262)

Type			Foot switches without protective cover 2 cable entries for ISO M20 cable gland			1 entry (1)
Trigger mechanism			With (positive operating action reqd.)	Without		Without
Colour			Grey+	Blue	Grey	Black
Mechanical life (millions of operating cycles)			10			2
Degree of protection			IP 66			IP 43
Shock resistance			100 joules			
Rated operational characteristics			AC 15, A 300 / DC 13, Q 300 (conforming to EN IEC 60947-5-1)			
Dimensions W x D x H			160 x 280 x 70 mm			94 x 161 x 54 mm
Contact operation	**1 step**	1 N/C + N/O	**XPEG810**	**XPEB110**	**XPEG110**	**XPEA110**
		2 N/C + N/O	**–**	**XPEB111**	**XPEG111**	**XPEA111**
	2 step	2 N/C + N/O	**XPEG911**	**XPEB211**	**XPEG211**	–

(1) Cable entry for ISO M16 or n° 9 (Pg 9) cable gland and for ISO M20 or n° 13 (Pg 13.5) cable gland.

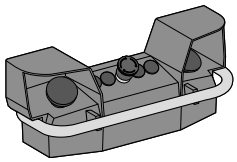
ISO entry (to EN 50262)

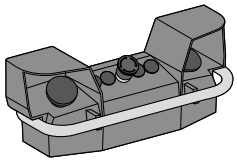
Type			Foot switches with protective cover 2 cable entries for ISO M20 cable gland			
Trigger mechanism			With (positive operating action reqd.)		Without	
Colour			Grey	Blue	Grey	Blue
Mechanical life (millions of operating cycles)			10			
Degree of protection			IP 66			
Shock resistance			100 joules			
Rated operational characteristics			AC 15, A 300 / DC 13, Q 300 (conforming to EN IEC 60947-5-1)			
Dimensions W x D x H			180 x 280 x 162 mm			
Contact operation	**1 step**	1 N/C + N/O	**XPEG510**	**XPEB510**	**XPEG310**	**XPEB310**
		2 N/C + N/O	**XPEG511**	**XPEB511**	**XPEG311**	**XPEB311**
	2 step	2 N/C + N/O	**XPEG711**	**XPEB711**	**XPEG611**	**XPEB611**

Control units
Two-hand control

ISO entry (to EN 50262)



2 control pushbuttons and 1 mushroom head Emergency stop or Lock out pushbutton



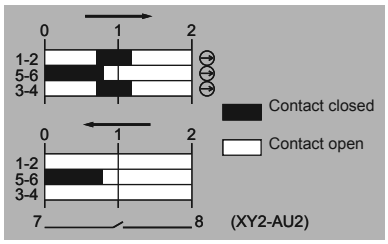
2 control pushbuttons and 1 mushroom head Emergency stop or Lock out pushbutton, with pre-wired terminal block

Type	**Two-hand control stations** 2 cable entries for ISO M20 or n° 13 (Pg 13.5) cable gland, 1 cable entry for n° 21 (Pg 21) cable gland (2)	
Mechanical life (millions of operating cycles)	1	1
Degree of protection	IP 65	IP 65
Rated operational characteristics	AC 15, A 600 / DC 13, Q 600 (conforming to EN IEC 60947-5-1)	
Dimensions W x D x H	455 x 170 x 188.5 mm	
Red emergency stop (N/C + N/C slow break)	**XY2SB71** (1)	**XY2SB72** (1)
Yellow lock out (N/C + N/O break before make)	**XY2SB75**	**XY2SB76**

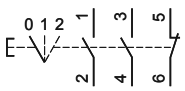
(1) To order a two-hand control station with pedestal XY2SB90, add 4 to the end of the reference (example: XY2SB71 becomes XY2SB714).
(2) For entry for ISO M25 cable gland, also order adaptor DE9RA2125 + fixing nut DE9EC21 (sold in lots of 5).

Enabling switch

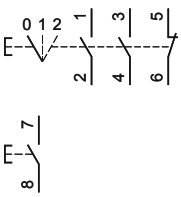
Contact states







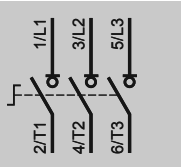


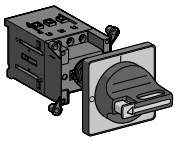


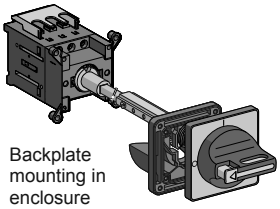
Type	**Plastic grip** Entry for Ø 7 to 13 mm cable	
Number of contacts	3	3
Type of contacts	2 “NO” + 1 “NC”	2 “NO” + 1 “NC” 1 "NO" auxiliary
Description	3 positions	3 positions with button for N/O contact (auxiliary)
Shock / vibration resistance	10 gn / 6 gn	
Degree of protection	IP 66	IP 65
Rated operational characteristics	AC 15, C300 / DC 13, R300 (conforming to EN IEC 60947-5-1)	
Dimensions W x D x H	46 x 58 x 261 mm	46 x 58 x 269 mm
References	**XY2AU1**	**XY2AU2**

For fixing accessories, please refer to www.schneider-electric.com.

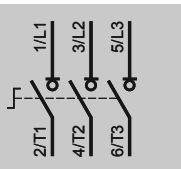
Switch disconnectors
Front mounting

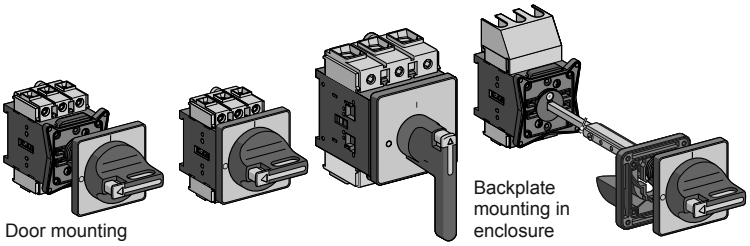



Door mounting


Backplate mounting in enclosure

Type		Mini-Vario for standard applications	
Front plate dimensions (mm)		60 x 60	60 x 60
Fixing		Ø 22.5 mm	Ø 22.5 mm
Degree of protection		IP 20	IP 20
Rated operational voltage (Ue)		690 V	690 V
Thermal current in open air (Ith)	12 A	**VCDN12**	**VCCDN12**
	20 A	**VCDN20**	**VCCDN20**

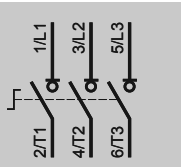



Door mounting

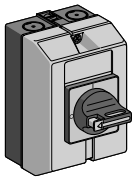
Backplate mounting in enclosure

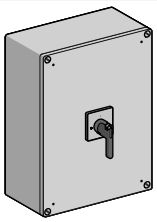
Type		Vario for high performance applications					
Front plate dimensions (mm)		60 x 60	60 x 60	90 x 90	60 x 60	60 x 60	90 x 90
Fixing		Ø 22.5 mm	4 screws	4 screws	Ø 22.5 mm	4 screws	4 screws
Degree of protection		IP 20	IP 20	IP 20	IP 20	IP 20	IP 20
Rated operational voltage (Ue)		690 V	690 V	690 V	690 V	690 V	690 V
Thermal current in open air (Ith)	12 A	**VCD02**	**VCF02**	**–**	**VCCD02**	**VCCF02**	–
	20 A	**VCD01**	**VCF01**	**–**	**VCCD01**	**VCCF01**	**–**
	25 A	**VCD0**	**VCF0**	**–**	**VCCD0**	**VCCF0**	**–**
	32 A	**VCD1**	**VCF1**	**–**	**VCCD1**	**VCCF1**	**–**
	40 A	**VCD2**	**VCF2**	**–**	**VCCD2**	**VCCF2**	**–**
	63 A	**–**	**VCF3**	**–**	**–**	**VCCF3**	**–**
	80 A	**–**	**VCF4**	**–**	**–**	**VCCF4**	**–**
	125 A	**–**	**–**	**VCF5**	**–**	**–**	**VCCF5**
	175 A	**–**	**–**	**VCF6**	**–**	**–**	**VCCF6**

Enclosed





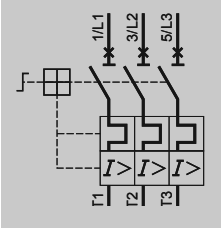




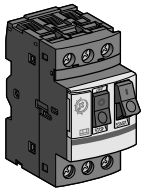
Type		Mini-Vario	Vario	
Front plate dimensions (mm)		60 x 60	60 x 60	90 x 90
Dimensions W x D x H		82.5 x 106 x 131 mm	90 x 131 x 146 mm	220 x 191 x 280 mm
Degree of protection		IP 55	IP 65	IP 65
Rated operational voltage (Ue)		690 V	690 V	690 V
Thermal current in enclosure (Ithe)	10 A	**VCFN12GE**	**VCF02GE**	–
	16 A	**VCFN20GE**	**VCF01GE**	–
	20 A	**VCFN25GE**	**VCF0GE**	–
	25 A	**VCFN32GE**	**VCF1GE**	–
	32 A	**VCFN40GE**	**VCF2GE**	–
	50 A	**–**	**VCF3GE** (1)	–
	63 A	**–**	**VCF4GE** (1)	–
	100 A	**–**	**–**	**VCF5GE**
	140 A	**–**	**–**	**VCF6GE**

(1) Dimensions W x D x H: 150 x 152 x 170 mm.

Motor starters
Enclosed thermal-magnetic motor circuit-breakers

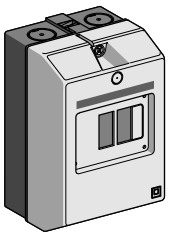


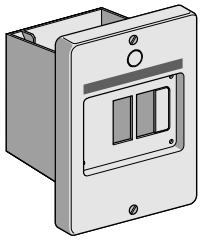
Complete circuit-breaker: circuit-breaker + enclosure + safety device.
Ex.: GV2ME01 + GV2MC02 + GV2K04.



Type		Thermal-magnetic motor circuit-breakers				
Motor power	kW (on 400 V)	–	0.06	0.09	0.12…0.18	0.25…0.37
Setting range	A	0.1…0.16	0.16…0.25	0.25…0.40	0.40…0.63	0.63…1
Current Id ± 20%	A	1.5	2.4	5	8	13
Current Ithe (in enclosure)	A	0.16	0.25	0.40	0.63	1
Reference		**GV2ME01**	**GV2ME02**	**GV2ME03**	**GV2ME04**	**GV2ME05**
Motor power	kW (on 400 V)	0.37…0.55	0.75	1.1…1.5	2.2	3…4
Setting range	A	1…1.6	1.6…2.5	2.5…4	4…6.3	6…10
Current Id ± 20%	A	22.5	33.5	51	78	138
Current Ithe (in enclosure)	A	1.6	2.5	4	6.3	9
Reference		**GV2ME06**	**GV2ME07**	**GV2ME08**	**GV2ME10**	**GV2ME14**
Motor power	kW (on 400 V)	5.5	7.5	9…11	11	15
Setting range	A	9…14	13…18	17…23	20…25	24…32
Current Id ± 20%	A	170	223	327	327	416
Current Ithe (in enclosure)	A	13	17	21	23	24
Reference		**GV2ME16**	**GV2ME20**	**GV2ME21**	**GV2ME22**	**GV2ME32**

Enclosure

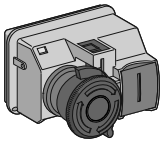


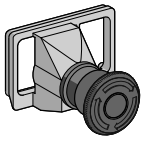


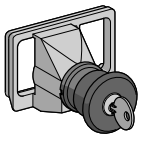
Type	Empty enclosure	
Mounting	Surface mounting	Flush mounting
Degree of protection	IP 55	IP 55 (front face)
Dimensions W x D x H (1)	93 x 145.5 x 147 mm	93 x 55 x 126 mm
References	**GV2MC02**	**GV2MP02**

(1) Dimensions with safety device GV2K04 fitted.

Safety device

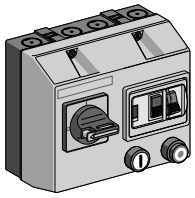
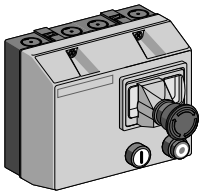
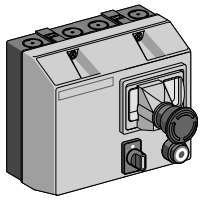




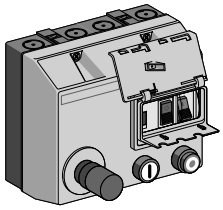


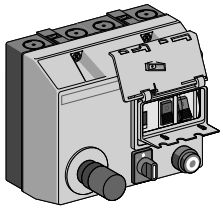
Type	Safety devices		
With red mushroom head	Turn to release Padlockable in “Off” position	Turn to release	Key release (key n° 455)
References	**GV2K04**	**GV2K031**	**GV2K021**

Motor starters
Enclosed 3-phase motor starters

Type				Non reversing		Reversing
Degree of protection				IP 657	IP 657	IP 657
Standard motor power ratings (kW), category AC3			**Ith setting**	**Basic reference, to be completed by code indicating voltage** (1)		
220/230 V	**400/415 V**	**440 V**	**range (A)**			
–	0.06	0.06	0.16…0.25	**LG1K065●●02**	**LG7K06●●02**	**LG8K06●●02**
0.06	0.09	0.12	0.25…0.40	**LG1K065●●03**	**LG7K06●●03**	**LG8K06●●03**
–	0.18	0.18	0.40…0.63	**LG1K065●●04**	**LG7K06●●04**	**LG8K06●●04**
0.12	0.25	0.25	0.63…1	**LG1K065●●05**	**LG7K06●●05**	**LG8K06●●05**
0.25	0.55	0.55	1…1.6	**LG1K065●●06**	**LG7K06●●06**	**LG8K06●●06**
0.37	0.75	1.1	1.6…2.5	**LG1K065●●07**	**LG7K06●●07**	**LG8K06●●07**
0.75	1.5	1.5	2.5…4	**LG1K065●●08**	**LG7K06●●08**	**LG8K06●●08**
1.1	2.2	3	4…6.3	**LG1K065●●10**	**LG7K06●●10**	**LG8K06●●10**
1.5	4	4	6…10	**LG1K095●●14**	**LG7K09●●14**	**LG8K09●●14**
3	5.5	5.5	9…14	**LG1D122●●16**	**LG7D12●●16**	**LG8K12●●16**
4	7.5	9	13…18	**LG1D182●●20**	**LG7D18●●20**	–
4	9	9	17…23	**LG1D182●●21**	**LG7D18●●21**	–


With integral control transformer, 400/24 V


With integral control transformer, 400/24 V

Type		Non reversing	Reversing
Degree of protection		IP 657	IP 657
Standard motor power ratings (kW), category AC3	**Ith setting**	**Basic references**	
380/400 V	**range (A)**	(The code **Q7** (380/400 V) designates the power supply voltage to which the starter will be connected)	
0.06	0.16…0.25	**LJ7K06Q702**	**LJ8K06Q702**
0.09	0.25…0.40	**LJ7K06Q703**	**LJ8K06Q703**
0.18	0.40…0.63	**LJ7K06Q704**	**LJ8K06Q704**
0.25	0.63…1	**LJ7K06Q705**	**LJ8K06Q705**
0.55	1…1.6	**LJ7K06Q706**	**LJ8K06Q706**
0.75	1.6…2.5	**LJ7K06Q707**	**LJ8K06Q707**
1.5	2.5…4	**LJ7K06Q708**	**LJ8K06Q708**
2.2	4…6.3	**LJ7K06Q710**	**LJ8K06Q710**
4	6…10	**LJ7K09Q714**	**LJ8K09Q714**

	Control circuit voltages available			
Volts 50/60 Hz	24 V	230 V	400 V	415 V
(1) **Voltage code**	**B7**	**P7**	**V7**	**N7**

The control circuit must be cabled by the user.