Catalog | July 2021

Harmony XPS

Basic & Universal Safety Modules

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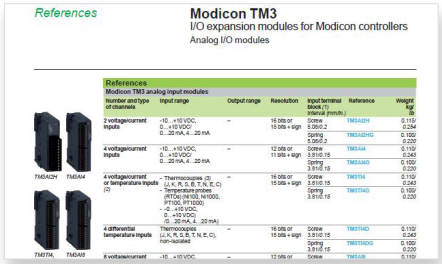

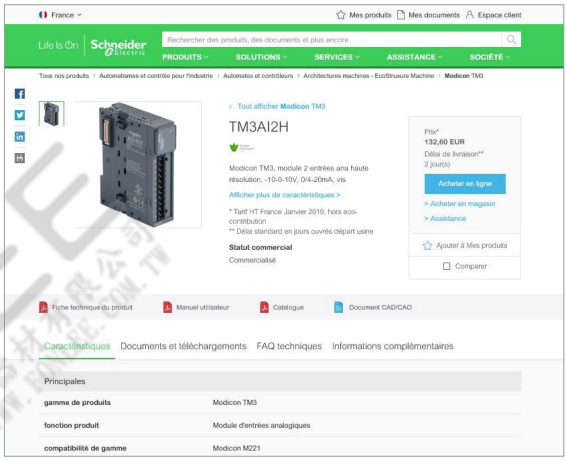

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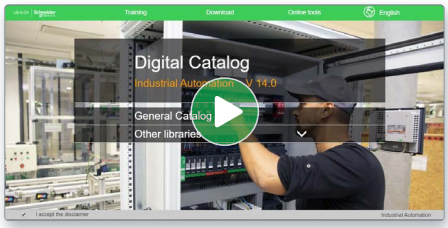

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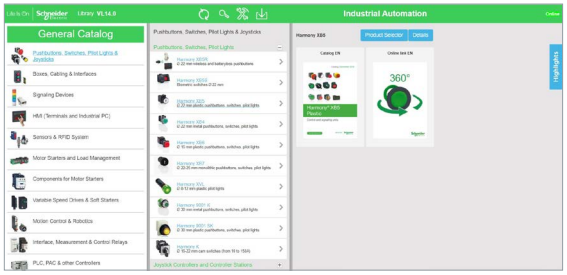

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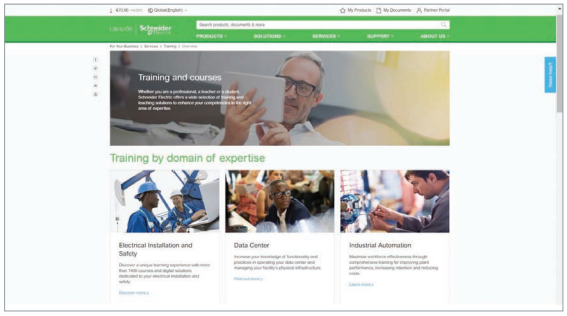

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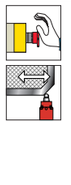
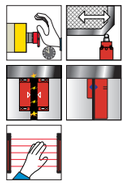
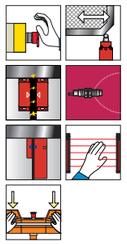
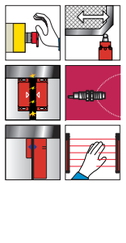
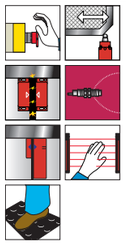
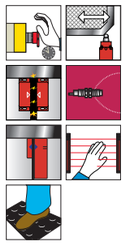
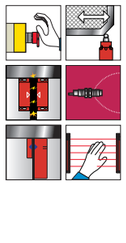
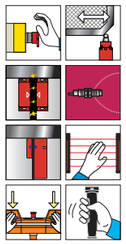
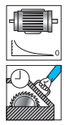
General content

Harmony™ XPS
Basic & Universal Safety Modules

Harmony XPS
Basic & Universal Safety Modules

Safety module type	**Basic safety modules with pre-defined safety function**		**Universal safety modules with pre-defined safety function, or Selectable safety functions via rotary selectors**							
Safety functions										
	- Emergency stop - Guard switch	- Emergency stop - Guard switch - Magnetic switch - RFID safety switch - Safety light curtain	- Emergency stop - Antivalent contact - Guard switch - Magnetic switch - Proximity safety switch - PNP sensor - RFID safety switch - Safety light curtain - Two-hand control station	- Emergency stop - Guard switch - Magnetic switch - Proximity safety switch - PNP sensor - RFID safety switch - Safety light curtain	- Emergency stop - Guard switch - Magnetic switch - Proximity safety switch - PNP & NPN sensor - RFID safety switch - Safety light curtain - Sensing mat/edge	- Emergency stop - Guard switch - Magnetic switch - Proximity safety switch - PNP & NPN sensor - RFID safety switch - Safety light curtain - Sensing mat/edge	- Emergency stop - Guard switch - Magnetic switch - Proximity safety switch - PNP sensor - RFID safety switch - Safety light curtain	- Emergency stop - Guard switch - Magnetic switch - Proximity safety switch - PNP sensor - RFID safety switch - Safety light curtain - Two-hand control station - Enabling switch	- For Extending the number of safety contacts	- Zero speed monitoring with delayed access to dangerous area
										
Maximum achievable safety level	■ PL e/Category 4 conforming to ISO 13849-1 ■ SILC L 3 conforming to IEC 62061 ■ SIL 3 conforming to IEC 61508		■ PL c/Category 1 conforming to ISO 13849-1 ■ SILCL 1 conforming to IEC 62061 ■ SIL 1 conforming to IEC 61508	■ PL e/Category 4 conforming to ISO 13849-1 ■ SILC L 3 conforming to IEC 62061 ■ SIL 3 conforming to IEC 61508						■ PL e/Category 3 conforming to ISO 13849-1 ■ SILC L 3 conforming to IEC 62061 ■ SIL 3 conforming to IEC 61508
Conformity to standards	■ IEC 60947-5-1 ■ IEC 61508-1 (functional safety standard) ■ IEC 61508-2 (functional safety standard) ■ IEC 61508-3 (functional safety standard) ■ ISO 13849-1 (functional safety standard) ■ IEC 62061 (functional safety standard)									
Product certifications	■ cULus ■ TÜV ■ EAC (in progress) ■ CCC (in progress) ■ KC marking (in progress)		■ cULus ■ TÜV ■ EAC ■ CCC ■ KC marking							■ cULus ■ TÜV ■ EAC (in progress) ■ CCC (in progress) ■ KC marking (in progress)
Number of outputs Safety immediate	4 NO	2 NO	1 single changeover output	3 NO	2 NO + 1 NC	3 NO	3 NO + 1 NC	2 NO	4 NO	-
Safety delayed (time delay)	-	1 NO (configurable) 0...900 s	-	-	-	3 NO + 1 NC (configurable) 0...900 s	-	-	-	1 NO (configurable) 0,5...60 s
Diagnostic	2 NC	1 solid state	1 pulsed solid state	1 pulsed solid state	1 pulsed solid state	1 pulsed solid state 1 solid state	1 pulsed solid state	1 pulsed solid state	2 NC	1 pulsed solid state 1 solid state
Display	5 LEDs	8 LEDs	6 LEDs	6 LEDs	6 LEDs	8 LEDs	16 LEDs	8 LEDs	3 LEDs	5 LEDs
Supply voltage	24 V AC/DC and 48-240 V AC/DC	24 V AC/DC	24 V AC/DC and 48-240 V AC/DC							
Synchronization time between inputs	Fixed	Fixed	Selectable	Selectable	Selectable	Selectable	Selectable	Selectable	-	Fixed
Number of inputs channels	2	2	2	2	2	3	12	4	-	3
Safety module type	**XPSBAC**	**XPSBAT**	**XPSUAB**	**XPSUAF**	**XPSUAK**	**XPSUAT**	**XPSUDN**	**XPSUS**	**XPSUEP**	**XPSUVN**
Page	5	6	7	9	10	11	12	13	15	16
Accessory type	**XPSEC, XPSES**									
Page	17		17							

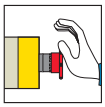
Harmony XPS
Basic safety modules
Safety functions: selection of safety modules

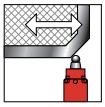
This selection table indicates which safety module to select, according to the required safety functions.

Safety functions			Safety modules		
		ISO 13849-1	PL c/Category 1	PL e/Category 3	PL e/Category 4
		IEC 62061	SILCL 1	SILCL 3	SILC L 3
		IEC 61508	SIL 1	SIL 3	SIL 3
Emergency stop	Stop category 0		**XPSUAB**	-	**XPSBAC** **XPSUAF** **XPSUAK** **XPSUDN** **XPSUS**
	Stop category 0+1		-	-	**XPSBAT** **XPSUAT**
Control of access to hazardous zones	Interlocking guard with and without guard locking		**XPSUAB**	-	**XPSBAC** **XPSBAT** **XPSUAF** **XPSUAK** **XPSUAT** **XPSUDN** **XPSUS**
	Magnetic switch		**XPSUAB**	-	**XPSBAT** **XPSUAF** **XPSUAK** **XPSUAT** **XPSUDN** **XPSUS**
	RFID safety switch		**XPSUAB**	-	**XPSBAT** **XPSUAF** **XPSUAK** **XPSUAT** **XPSUDN** **XPSUS**
	Light curtains		**XPSUAB**	-	**XPSBAT** **XPSUAF** **XPSUAK** **XPSUAT** **XPSUDN** **XPSUS**
	Safety mats		-	-	**XPSUAK** **XPSUAT**
Starting and enabling of dangerous movements	Two-hand control station		**XPSUAB**	-	**XPSUS**
	Enabling switch (grip switch)		-	-	**XPSUS**
	Proximity safety switch		**XPSUAB**	-	**XPSUAF** **XPSUAK** **XPSUAT** **XPSUDN** **XPSUS**
Safety monitoring functions	Zero speed detection (remanent voltage)		-	**XPSUVN**	-
	Safety timer		-	**XPSUVN**	-
	Increasing the number of safety contacts *(1)*		-	-	**XPSUEP**

(1) More information in the page 16.

Harmony XPS
Basic safety modules
Type **XPSBAC** For E-stop and Guard switch





Operating principle

XPSBAC safety modules are used for monitoring Emergency stop circuits conforming to standards EN/ISO 13850 and EN/IEC 60204-1 and also meet the safety requirements for the electrical monitoring of switches in protective devices conforming to standard EN/ISO 14119.

■ They provide protection for both the machine operator and the machine by immediately stopping the dangerous movement on receipt of a stop instruction from the operator, or on detection of a fault in the safety circuit itself.

■ **XPSBAC** module have 4 NO safety outputs and a serial or parallel hardwire configurable NC output for signalling to the PLC.

- The safety functions are fixed.
- To aid diagnostics, **XPSBAC** modules have a serial or parallel hardwire configurable NC output to provide information on the status of the zero speed detection circuit.
- 5 LEDs on the front face provide information on the monitoring circuit status.

Main features

Start inputs	Automatic, manual & monitored start
Safety inputs	-
Control outputs	1
Safety outputs	4 NO
Diagnostic outputs	2 NC
Connection type	Removable terminal blocks
Terminals	16
Module width	22.5 mm/*0.886 in.*
Maximum achievable safety level	■ PL e/Category 4 conforming to ISO 13849-1 ■ SILCL 3 conforming to IEC 62061 ■ SIL 3 conforming to IEC 61508
Product certifications	■ cULus ■ TÜV ■ EAC (in progress) ■ CCC (in progress) ■ KC marking (in progress)
Conformity to standards	■ IEC 60947-5-1 ■ IEC 61508-1 (functional safety standard) ■ IEC 61508-2 (functional safety standard) ■ IEC 61508-3 (functional safety standard) ■ ISO 13849-1 (functional safety standard) ■ IEC 62061 (functional safety standard)

XPSBAC●1AC

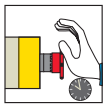
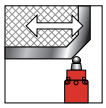
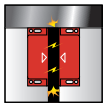
XPBAC●1AP

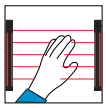
References

Description	Voltage	Terminals mm/in.	References	Weight kg/lb
Type XPSBAC For monitoring E-stop and Guard switch	24 V ∿/⎓	Spring 5.08/*0.20*	**XPSBAC14AC**	0.200 *0.440*
		Screw 5.08/*0.20*	**XPSBAC14AP**	0.200 *0.440*
	48-240 V ∿/⎓	Spring 5.08/*0.20*	**XPSBAC34AC**	0.200 *0.440*
		Screw 5.08/*0.20*	**XPSBAC34AP**	0.200 *0.440*

Harmony XPS
Basic safety modules

Type **XPSBAT** for monitoring Emergency stop, Guard switch, Magnetic switch, RFID safety switch and Safety light curtain



Operating principle

XPSBAT safety modules are used for monitoring Emergency stop circuits conforming to standards EN/ISO 13850 and EN/IEC 60204-1 and also meet the safety requirements for the electrical monitoring of switches in protection devices conforming to standard EN/ISO 14119.

■ They provide protective for both the machine operator and the machine by immediately stopping the dangerous movement on receipt of a stop instruction from the operator, or on detection of a fault in the safety circuit itself.

■ In addition to the stop category 0 instantaneous opening safety outputs, the modules incorporate 1 stop category 1 time delay output which allows for controlled deceleration of the motor components until a complete stop is achieved (for example, motor braking by variable speed drive). At the end of the preset delay, the supply is disconnected by opening the time delay output circuits.

■ The time delay of the 3 output circuits is adjustable between 0 and 15 min (900 s),

- The safety functions and the time delay are selectable and can be configured by selector switches on the front face, while the start function can be wiring configured.
- The Start button monitoring function is configurable depending on the wiring.
- 8 LEDs on the front face provide information on the monitoring circuit status, and aid diagnostics.

Main features

Start inputs	Automatic, manual & monitored start
Safety inputs	2
Control outputs	3
Safety outputs	2 NO immediate, 1 NO (configurable) 0...900 s
Diagnostic outputs	1
Connection type	Removable terminal blocks
Terminals	16
Module width	22.5 mm/*0.886 in.*
Maximum achievable safety level	■ PL e/Category 4 conforming to ISO 13849-1 ■ SILCL 3 conforming to IEC 62061 ■ SIL 3 conforming to IEC 61508
Product certifications	■ cULus ■ TÜV ■ EAC (in progress) ■ CCC (in progress) ■ KC marking (in progress)
Conformity to standards	■ IEC 60947-5-1 ■ IEC 61508-1 (functional safety standard) ■ IEC 61508-2 (functional safety standard) ■ IEC 61508-3 (functional safety standard) ■ ISO 13849-1 (functional safety standard) ■ IEC 62061 (functional safety standard)


XPSBAT12A1AC

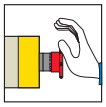
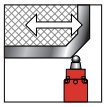
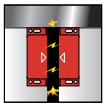
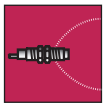
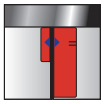
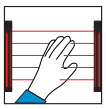
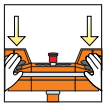

XPSBAT12A1AP

References

Description	Number of safety circuits	Setting range of time delay	Voltage	Terminals mm/in.	References	Weight kg/lb
Type XPSBAT for monitoring: - Emergency stop - Guard switch - Magnetic switch - RFID safety switch - Safety light curtain	3 NO (1 NO time delay)	0…900 s	24 V ∿/⎓	Spring 5.08/*0.20*	XPSBAT12A1AC	0.200 *0.440*
				Screw 5.08/*0.20*	XPSBAT12A1AP	0.200 *0.440*

Harmony XPS
Universal safety modules

Type **XPSUAB**, for monitoring Emergency stop, Antivalent contact, Guard switch, Magnetic switch, Proximity safety switch, PNP sensor, RFID safety switch, Safety light curtain or Two-hand control station

Operating principle

XPSUAB safety modules are designed to monitor two hand control stations IIIA which must comply with International standard ISO 13851. The control stations must be designed and installed so that they cannot be activated involuntarily or easily rendered inoperative. Depending on the application, the requirements of type C standards specific to the machinery involved must be met (additional personal protection methods may have to be considered).

To initiate a dangerous movement, both operators (two-hand control pushbuttons) must be activated within an interval of 0.5 s (synchronous activation). If one of the two pushbuttons is released during a dangerous operation, the control sequence is cancelled. Resuming the dangerous operation is possible only if both pushbuttons are returned to their initial position and reactivated within the required time interval. The safety distance between the control units and the hazardous zone must be enough to ensure that when only one operator is released, the hazardous zone cannot be reached before the dangerous movement has been completed or stopped.

■ With automatic, manual & monitored start, **XPSUAB** safety modules are used for monitoring:

□ A single contact Emergency stop conforming to standard ISO 13850

□ Switches activated by protection devices conforming to standard ISO 14119:

- Antivalent contact pair
- Mechanical guard switch
- Magnetic switch with Antivalent contact
- Proximity safety switch with Antivalent contact
- PNP sensor
- RFID safety switch

□ Type 4 light curtains conforming to IEC 61496-1 which have solid-state safety outputs with test function

■ With automatic start only, **XPSUAB** safety modules are used for monitoring two-hand control IIIA.

- The safety functions and the start function are selectable and can be configured by selector switches on the front face.
- A solid-state diagnostic output with complete status information facilitates maintenance.
- 6 LEDs on the front face provide information on the monitoring circuit status, and aid diagnostics.

Selection

Requirements of standard ISO 13851		Type I	Type II	Type III		
				A	B	C
Standard ISO 13851 defines the selection of two-hand controls according to its behavior. This table details the 3 types of two-hand control conforming to ISO 13851. For each type, it lists the operating characteristics and minimum requirements.	Use of both hands (simultaneous action)	■	■	■	■	■
	Link between input and output signals	■	■	■	■	■
	Prevention of accidental operation	■	■	■	■	■
	Tamper-proof	■	■	■	■	■
	Output signal reinitialised		■	■	■	■
	Synchronous action (specified time limit)			■	■	■
	Use of proven components (Category 1 conforming to ISO 13849-1)	■		**XPSUAB**		
	Redundancy with partial error detection (Category 3 conforming to ISO 13849-1)		■		**XPSUS**	
	Redundancy + Self-monitoring (Category 4 conforming to ISO 13849-1)					**XPSUS**
	Two-hand control station	**XY2SB** *(1)*				

Conforming to ISO 13849-1 ■ Conforming to ISO 13851

(1) Please consult "Two-hand ergonomic control stations XY2SB" Catalog.

Harmony XPS
Universal safety modules

Type **XPSUAB**, for monitoring Emergency stop, Antivalent contact, Guard switch, Magnetic switch, Proximity safety switch, PNP sensor, RFID safety switch, Safety light curtain or Two-hand control station

XPSUAB●1CC

XPSUAB●1CP

Main features

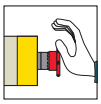
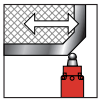
Start inputs	Automatic, manual & monitored start
Safety input	1
Control outputs	2 ON/OFF configurable pulsed outputs
Safety outputs	1 single changeover output
Diagnostic outputs	1 solid state diagnostic output with complete status information
Connection type	Removable terminal blocks
Safe expansion connection	No
Terminals	16
Module width	22.5 mm/*0.886 in.*
Maximum achievable safety level	■ PL c/Category 1 conforming to ISO 13849-1 ■ SILCL 1 conforming to IEC 62061 ■ SIL 1 conforming to IEC 61508
Product certifications	■ cULus ■ TÜV ■ EAC ■ CCC ■ KC marking
Conformity to standards	■ IEC 60947-5-1 ■ IEC 61508-1 (functional safety standard) ■ IEC 61508-2 (functional safety standard) ■ IEC 61508-3 (functional safety standard) ■ ISO 13849-1 (functional safety standard) ■ IEC 62061 (functional safety standard)

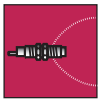
References

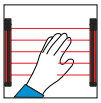
Description	Voltage	Terminals mm/in.	References	Weight kg/lb
Type XPSUAB for monitoring: - Emergency stop - Antivalent contact - Guard switch - Magnetic switch - Proximity safety switch - PNP sensor - RFID safety switch - Safety light curtain - Two-hand control station	24 V ∿/⎓	Spring 5.08/*0.20*	XPSUAB11CC	0.200 *0.440*
		Screw 5.08/*0.20*	XPSUAB11CP	0.200 *0.440*
	48-240 V ∿/⎓	Spring 5.08/*0.20*	XPSUAB31CC	0.200 *0.440*
		Screw 5.08/*0.20*	XPSUAB31CP	0.200 *0.440*

Harmony XPS
Universal safety modules

Type **XPSUAF**, for monitoring Emergency stop, Guard switch, Magnetic switch, Proximity safety switch, PNP sensor, RFID safety switch or Safety light curtain





Operating principle

XPSUAF safety modules are used for providing protection for both the machine operator and the machine by immediately stopping the dangerous movement on receipt of a stop instruction from the operator or on detection of an issue in the safety circuit itself.

XPSUAF safety modules are used for monitoring:
- ☐ Emergency stop circuits conforming to standard ISO 13850
- ☐ Switches activated by protection devices conforming to standard ISO 14119:
  - Mechanical guard switches
  - Magnetic switch with antivalent or 2 NC contacts
  - Proximity safety switch with Antivalent contact
  - PNP sensor
  - RFID safety switch
- ☐ Type 4 light curtains conforming to IEC 61496-1 having solid-state safety outputs with test function

- The safety functions and the start function are selectable and can be configured by selector switches on the front face.
- A solid-state diagnostic output with complete status information facilitates maintenance.
- To monitor a higher number of Antivalent contacts using this safety module, the Antivalent contact can be connected with a NC in series and NO in parallel.
- 6 LEDs on the front face provide information on the monitoring circuit status, and aid diagnostics.

Main features

Start inputs	Automatic, manual & monitored start
Safety inputs	2
Control outputs	3 ON/OFF configurable pulsed outputs
Safety outputs	3 NO
Diagnostic outputs	1 solid state diagnostic output with complete status information
Connection type	Removable terminal blocks
Safe expansion connection	Yes
Terminals	16
Module width	22.5 mm/*0.886 in.*
Maximum achievable safety level	■ PL e/Category 4 conforming to ISO 13849-1 ■ SILC L 3 conforming to IEC 62061 ■ SIL 3 conforming to IEC 61508
Product certifications	■ cULus ■ TÜV ■ EAC ■ CCC ■ KC marking
Conformity to standards	■ IEC 60947-5-1 ■ IEC 61508-1 (functional safety standard) ■ IEC 61508-2 (functional safety standard) ■ IEC 61508-3 (functional safety standard) ■ ISO 13849-1 (functional safety standard) ■ IEC 62061 (functional safety standard)


XPSUAF●3AC


XPSUAF●3AP

References

Description	Voltage	Terminals mm/in.	References	Weight kg/lb
Type XPSUAF for monitoring: - Emergency stop - Guard switch - Magnetic switch - Proximity safety switch - PNP sensor - RFID safety switch - Safety light curtain	24 V ∿/⎓	Spring 5.08/*0.20*	XPSUAF13AC	0.200 *0.440*
		Screw 5.08/*0.20*	XPSUAF13AP	0.200 *0.440*
	48-240 V ∿/⎓	Spring 5.08/*0.20*	XPSUAF33AC	0.200 *0.440*
		Screw 5.08/*0.20*	XPSUAF33AP	0.200 *0.440*

Harmony XPS
Universal safety modules

Type **XPSUAK**, for monitoring Emergency stop, Guard switch, Magnetic switch, Proximity safety switch, PNP & NPN sensors, RFID safety switch, Safety light curtain or Sensing mat/edge

Operating principle

XPSUAK safety modules provide protection for both the machine operator and the machine by immediately stopping the dangerous movement on receipt of a stop instruction from the operator or on detection of an issue in the safety circuit itself.

XPSUAK safety modules are used for monitoring:
- ☐ Emergency stop circuits conforming to standard ISO 13850
- ☐ Switches activated by protection devices conforming to standard ISO 14119:
  - Mechanical guard switches
  - Magnetic switch with antivalent or 2 NC contacts
  - Proximity safety switch with Antivalent contact
  - Sensor pair
  - 1 PNP + 1 NPN sensor
  - RFID safety switch
- ☐ Type 4 light curtains conforming to IEC 61496-1 having solid-state safety outputs with test function
- ☐ 4-wire sensing mats or edges conforming to ISO 13856

- The safety functions and the start function are selectable and can be configured by selector switches on the front face.
- A solid-state diagnostic output with complete status information facilitates maintenance.
- To monitor a higher number of Antivalent contacts using this safety module, the Antivalent contact can be connected with a NC in series and NO in parallel.
- 6 LEDs on the front face provide information on the monitoring circuit status, and aid diagnostics.

Main features

Start inputs	Automatic, manual & monitored start
Safety inputs	2
Control outputs	3 ON/OFF configurable pulsed outputs
Safety outputs	2 NO + 1 NC
Diagnostic outputs	1 solid state diagnostic output with complete status information
Connection type	Removable terminal blocks
Safe expansion connection	Yes
Terminals	20
Module width	22.5 mm/*0.886 in.*
Maximum achievable safety level	■ PL e/Category 4 conforming to ISO 13849-1 ■ SILC L 3 conforming to IEC 62061 ■ SIL 3 conforming to IEC 61508
Product certifications	■ cULus ■ TÜV ■ EAC ■ CCC ■ KC marking
Conformity to standards	■ IEC 60947-5-1 ■ IEC 61508-1 (functional safety standard) ■ IEC 61508-2 (functional safety standard) ■ IEC 61508-3 (functional safety standard) ■ ISO 13849-1 (functional safety standard) ■ IEC 62061 (functional safety standard)

XPSUAK●2AC

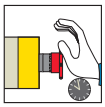
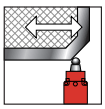
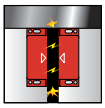
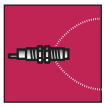
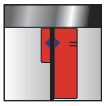
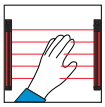
XPSUAK●2AP

References

Description	Voltage	Terminals mm/in.	References	Weight kg/lb
Type XPSUAK for monitoring: - Emergency stop - Guard switch - Magnetic switch - Proximity safety switch - PNP & NPN sensor - RFID safety switch - Safety light curtain - Sensing mat/edge	24 V ∿/⎓	Spring 5.08/*0.20*	XPSUAK12AC	0.200 *0.440*
		Screw 5.08/*0.20*	XPSUAK12AP	0.200 *0.440*
	48-240 V ∿/⎓	Spring 5.08/*0.20*	XPSUAK32AC	0.200 *0.440*
		Screw 5.08/*0.20*	XPSUAK32AP	0.200 *0.440*

Harmony XPS
Universal safety modules

Type **XPSUAT**, for monitoring Emergency stop, Guard switch, Magnetic switch, Proximity safety switch, PNP & NPN sensor, RFID safety switch, Safety light curtain or Sensing mat/edge


Operating principle

XPSUAT safety modules provide protection for both the operator and the machine by immediately stopping the dangerous movement on receipt of a stop instruction from the operator, or on detection of an issue in the safety circuit itself.

XPSUAT safety modules are used for monitoring:

- ◻ Emergency stop circuits conforming to standard ISO 13850.
- ◻ Switches activated by protection devices conforming to standard ISO 14119:
  - Mechanical guard switches
  - Magnetic switch with antivalent or 2 NC contacts
  - Proximity safety switch with Antivalent contact
  - PNP Sensor
  - 1 PNP + 1 NPN Sensor
  - RFID safety switch
- ◻ Type 4 light curtains conforming to IEC 61496-1 having solid-state safety outputs with test function.
- ◻ 4-wire sensing mats or edges conforming to ISO 13856.
- ◻ In addition to the stop category 0 instantaneous opening safety outputs, the **XPSUAT** safety modules incorporate stop category 1 time delay outputs which allow controlled deceleration of the motor to a complete stop (for example, motor braking by variable speed drive). At the end of the preset delay, the supply is disconnected by opening the time delayed output circuits. Also the time delay from 0 s to 15 min (900 s) can be selected by selector switches on the front face.

- The safety functions and the start function are selectable and can be configured by selector switches on the front face.
- A solid-state diagnostic output with complete status information facilitates maintenance.
- To monitor a higher number of Antivalent contacts using this safety module, the Antivalent contact can be connected with a NC in series and NO in parallel.
- 8 LEDs on the front face provide information on the monitoring circuit status, and aid diagnostics.

Main features

Start inputs	Automatic, manual & monitored start
Safety inputs	2 positive safety inputs 24 VDC, 1 negative safety input
Control outputs	4 ON/OFF configurable pulsed outputs
Safety outputs	3 NO immediate + 3 NO configurable + 1 NC configurable
Diagnostic outputs	■ 1 solid state diagnostic output for time delay ending ■ 1 solid state diagnostic output with complete status information
Connection type	Removable terminal blocks
Safe expansion connection	Yes
Terminals	27
Module width	45 mm/*1.77 in.*
Time delay setting	0 s to 15 min. The delay is configured with the delay base selector and the delay factor selector
Maximum achievable safety level	■ PL e/Category 4 conforming to ISO 13849-1 ■ SILCL 3 conforming to IEC 62061 ■ SIL 3 conforming to IEC 61508
Product certifications	■ cULus ■ TÜV ■ EAC ■ CCC ■ KC marking
Conformity to standards	■ IEC 60947-5-1 ■ IEC 61508-1 (functional safety standard) ■ IEC 61508-2 (functional safety standard) ■ IEC 61508-3 (functional safety standard) ■ ISO 13849-1 (functional safety standard) ■ IEC 62061 (functional safety standard)

References

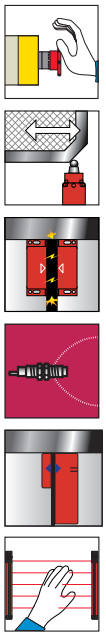
Description	Setting range of time delay	Voltage	Terminals mm/in.	References	Weight kg/lb
Type XPSUAT for monitoring - Emergency stop - Guard switch - Magnetic switch - Proximity safety switch - PNP & NPN sensor - RFID safety switch - Safety light curtain - Sensing mat/edge	0...900 s	24 V ∿/⎓	Spring 5.08/*0.20*	XPSUAT13A3AC	0.350 *0.770*
			Screw 5.08/*0.20*	XPSUAT13A3AP	0.350 *0.770*
		48-240 V ∿/⎓	Spring 5.08/*0.20*	XPSUAT33A3AC	0.350 *0.770*
			Screw 5.08/*0.20*	XPSUAT33A3AP	0.350 *0.770*


XPSUAT●3A3AC


XPSUAT●3A3AP

Harmony XPS
Universal safety modules

Type **XPSUDN**, for monitoring Emergency stop, Guard switch, Magnetic switch, Proximity safety switch, PNP sensor, RFID safety switch or safety light curtain



Operating principle

XPSUDN safety modules are used for monitoring:
- ☐ Emergency stop circuits conforming to standard ISO 13850
- ☐ Switches activated by protection devices conforming to standard ISO 14119:
  - Mechanical guard switches
  - Magnetic switch with antivalent or 2 NC contacts
  - Proximity safety switch with Antivalent contact
  - PNP Sensor
  - RFID safety switch
- ☐ Type 4 light curtains conforming to IEC 61496-1 having solid-state safety outputs with test function

- The safety functions and the start function are selectable and can be configured by selector switches on the front face.
- A solid-state diagnostic output with complete status information facilitates maintenance.
- To monitor a higher number of Antivalent contacts using this safety module, the Antivalent contact can be connected with a NC in series and NO in parallel.
- 16 LEDs on the front face provide information on the monitoring circuit status, and aid diagnostics.

Main features

Start inputs	Automatic, manual & monitored start
Safety inputs	6
Control outputs	7 ON/OFF configurable pulsed outputs
Safety outputs	3 NO + 1 NC
Diagnostic outputs	1 solid-state diagnostic output with complete status information
Connection type	Removable terminal blocks
Safe expansion connection	Yes
Terminals	32
Module width	45 mm /*1.77 in.*
Maximum achievable safety level	■ PL e/Category 4 conforming to ISO 13849-1 ■ SILCL 3 conforming to IEC 62061 ■ SIL 3 conforming to IEC 61508
Product certifications	■ cULus ■ TÜV ■ EAC ■ CCC ■ KC marking
Conformity to standards	■ IEC 60947-5-1 ■ IEC 61508-1 (functional safety standard) ■ IEC 61508-2 (functional safety standard) ■ IEC 61508-3 (functional safety standard) ■ ISO 13849-1 (functional safety standard) ■ IEC 62061 (functional safety standard)

References

Description	Voltage	Terminals mm/in.	References	Weight kg/lb
Type XPSUDN for monitoring - Emergency stop - Guard switch - Magnetic switch - Proximity safety switch - PNP sensor - RFID safety switch - Safety light curtain	24 V ∿/⎓	Spring 5.08/*0.20*	XPSUDN13AC	0.350 *0.770*
		Screw 5.08/*0.20*	XPSUDN13AP	0.350 *0.770*
	48-240 V ∿/⎓	Spring 5.08/*0.20*	XPSUDN33AC	0.350 *0.770*
		Screw 5.08/*0.20*	XPSUDN33AP	0.350 *0.770*

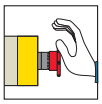
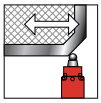
XPSUDN●3AC

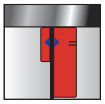
XPSUDN●3AP

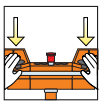
Harmony XPS

Universal safety modules

Type XPSUS, for monitoring Emergency stop, Guard switch, Magnetic switch, Proximity safety switch, PNP sensor, RFID safety switch, Safety light curtain, Two-hand control station or Enabling switch




Operating principle

XPSUS safety modules are designed to monitor two hand control stations IIIA or IIIC which must comply with International standard ISO 13851. The control stations must be designed and installed so that they cannot be activated involuntarily or easily rendered inoperative. Depending on the application, the requirements of type C standards specific to the machinery involved must be met (additional personal protection methods may have to be considered).

To initiate a dangerous movement, both operators (two-hand control pushbuttons) must be activated within an interval of 0.5 s (synchronous activation). If one of the two pushbuttons is released during a dangerous operation, the control sequence is cancelled. Resuming the dangerous operation is possible only if both pushbuttons are returned to their initial position and reactivated within the required time interval. The safety distance between the control units and the hazardous zone must be enough to ensure that when only one operator is released, the hazardous zone cannot be reached before the dangerous movement has been completed or stopped.

■ With automatic, manual & monitored start, **XPSUS** safety modules are used for monitoring:

□ 2 Emergency stop circuits conforming to standard ISO 13850

□ Switches activated by protection devices conforming to standard ISO 14119:

- 2 mechanical guard switches
- 2 magnetic switches with Antivalent contact or 2 NC contacts
- 2 proximity safety switches with Antivalent contact
- 2 independent PNP sensors
- 2 RFID safety switches

□ Type 4 light curtains conforming to IEC 61496-1 having solid-state safety outputs with test function

■ With automatic start only, **XPSUS** safety modules are used for monitoring one two-hand control IIIA, IIIC or enabling switch.

- The safety functions and the start function are selectable and can be configured by selector switches on the front face.
- A solid-state diagnostic output with complete status information facilitates maintenance.
- To monitor a higher number of Antivalent contacts using these safety modules, the Antivalent contact can be connected with a NC in series and NO in parallel.
- 8 LEDs on the front face provide information on the monitoring circuit status, and aid diagnostics.

Selection

Requirements of standard ISO 13851		Type I	Type II	Type III		
				A	B	C
Standard ISO 13851 defines the selection of two-hand controls according to its behavior. This table details the 3 types of two-hand control conforming to ISO 13851. For each type, it lists the operating characteristics and minimum requirements.	Use of both hands (simultaneous action)	■	■	■	■	■
	Link between input and output signals	■	■	■	■	■
	Prevention of accidental operation	■	■	■	■	■
	Tamper-proof	■	■	■	■	■
	Output signal reinitialised		■	■	■	■
	Synchronous action (specified time limit)			■	■	■
	Use of proven components (Category 1 conforming to ISO 13849-1)	■		**XPSUAB**		
	Redundancy with partial error detection (Category 3 conforming to ISO 13849-1)		■		**XPSUS**	
	Redundancy + Self-monitoring (Category 4 conforming to ISO 13849-1)					**XPSUS**
	Two-hand control station	**XY2SB** *(1)*				

Conforming to ISO 13849-1 ■ Conforming to ISO 13851

(1) Please consult "Two-hand ergonomic control stations XY2SB" Catalog.

Harmony XPS
Universal safety modules

Type **XPSUS**, for monitoring Emergency stop, Guard switch, Magnetic switch, Proximity safety switch, PNP sensor, RFID safety switch, Safety light curtain,Two-hand control station or Enabling switch

Main features

Start inputs	Automatic, manual & monitored start
Safety inputs	2
Control outputs	3 ON/OFF configurable pulsed outputs
Safety outputs	2 NO
Diagnostic outputs	1 solid-state diagnostic output with complete status information
Connection type	Removable terminal blocks
Safe expansion connection	Yes
Terminals	16
Module width	22.5 mm/*0.886 in.*
Maximum achievable safety level	■ PL e/Category 4 conforming to ISO 13849-1 ■ SILCL 3 conforming to IEC 62061 ■ SIL 3 conforming to IEC 61508
Product certifications	■ cULus ■ TÜV ■ EAC ■ CCC ■ KC marking
Conformity to standards	■ IEC 60947-5-1 ■ IEC 61508-1 (functional safety standard) ■ IEC 61508-2 (functional safety standard) ■ IEC 61508-3 (functional safety standard) ■ ISO 13849-1 (functional safety standard) ■ IEC 62061 (functional safety standard)

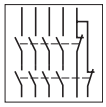
XPSUS●2AC

XPSUS●2AP

References

Description	Voltage	Terminals mm/in.	References	Weight kg/lb
Type XPSUS for monitoring: - Emergency stop - Guard switch - Magnetic switch - Proximity safety switch - PNP sensor - RFID safety switch - Safety light curtain - Two-hand control station - Enabling switch	24 V ∿/⎓	Spring 5.08/*0.20*	XPSUS12AC	0.200 *0.440*
		Screw 5.08/*0.20*	XPSUS12AP	0.200 *0.440*
	48-240 V ∿/⎓	Spring 5.08/*0.20*	XPSUS32AC	0.200 *0.440*
		Screw 5.08/*0.20*	XPSUS32AP	0.200 *0.440*

Harmony XPS
Universal safety modules
Type **XPSUEP**, for Extending the number of safety contacts



Operating principle

XPSUEP safety modules are used for extending the number of safety output contacts of XPS Universal safety modules.

XPSUEP are available as additions to base modules (Emergency stop, limit switch, two-hand control, etc.).

XPSUEP can be only used with **XPSUAF**, **XPSUAK**, **XPSUAT**, **XPSUDN** and **XPSUS** safety modules. When **XPSUAT** is the base module for instance, its configuration is used to choose whether the **XPSUEP**'s outputs follow XPSUAT's immediate or time delayed outputs.

- 3 LEDs on the front face provide information on the monitoring circuit status, and aid diagnostics.

Main features

Start input	Follows the host module
Safety inputs	0, Extension bus
Safety outputs	4 NO + 2 single NC
Connection	Connection to base module by connector
Diagnostic outputs	1 solid-state diagnostic output with complete status information
Connection type	Removable terminal blocks
Terminals	16
Module width	22.5 mm/*0.886 in.*
Maximum achievable safety level	■ PL e/Category 4 conforming to ISO 13849-1 ■ SILCL 3 conforming to IEC 62061 ■ SIL 3 conforming to IEC 61508
Product certifications	■ cULus ■ TÜV ■ EAC ■ CCC ■ KC marking
Conformity to standards	■ IEC 60947-5-1 ■ IEC 61508-1 (functional safety standard) ■ IEC 61508-2 (functional safety standard) ■ IEC 61508-3 (functional safety standard) ■ ISO 13849-1 (functional safety standard) ■ IEC 62061 (functional safety standard)

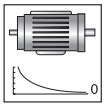
XPSUEP●4AC

XPSUEP●4AP

References

Description	Compatible with	Voltage	Terminals mm/in.	References	Weight kg/lb
Type XPSUEP For Extending the number of safety contacts	XPSUAF XPSUAK XPSUAT XPSUDN XPSUS	24 V ∿/⎓	Spring 5.08/*0.20*	XPSUEP14AC	0.200 *0.440*
			Screw 5.08/*0.20*	XPSUEP14AP	0.200 *0.440*
		48-240 V ∿/⎓	Spring 5.08/*0.20*	XPSUEP34AC	0.200 *0.440*
			Screw 5.08/*0.20*	XPSUEP34AP	0.200 *0.440*

Harmony XPS
Universal safety modules
Type **XPSUVN**, for Zero speed monitoring with delayed access to dangerous area



Operating principle

XPSUVN is a safety module for interruption of safety-related electrical circuits. **XPSUVN** provides for sensorless standstill monitoring of a motor, and measures the residual voltage that is generated by remanent magnetization after power to the motor is removed and while it coasts down. The voltage is measured via an analog voltage measuring input to determine when standstill has actually been reached. This can be used to implement a safety related function such as controlling an interlocking device with guard locking.

The following types of motors which generate a measurable residual voltage when coasting down after power supply has been removed can be connected to the safety-related input of the device:

- Three-phase AC motors
- Single-phase AC motors
- DC motors
- Three-phase AC motors with star-delta wiring

XPSUVN safety module can monitor motors that are operated via mains as well as motors that are controlled by electronic motor control equipment such as frequency inverters.

In addition, **XPSUVN** safety module uses an adjustable activation delay. The activation delay is the period between the point in time at which the measured voltage drops below the adjusted voltage threshold and the point in time at which activation of the safety-related outputs is triggered;

- The Voltage threshold and the Activation delay can be configured by selector switches on front face.
- To aid diagnostics, **XPSUVN** modules have 2 solid-state outputs to provide information on the status of the zero speed detection circuit
- 5 LEDs on the front face provide information on the monitoring circuit status, and aid diagnostics.

Main features

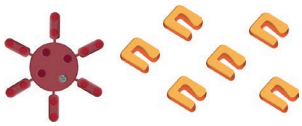
Start input	Automatic
Safety inputs	3
Control outputs	-
Safety outputs	1 NO (configurable) 0,5...60 s
Diagnostic outputs	2
Connection type	Removable terminal blocks
Safe expansion connection	Yes
Terminals	16
Module width	22.5 mm/*0.886 in.*
Time delay setting	0.5 s, 1 s, 2 s, 3 s, 5 s, 8 s, 12 s, 20 s, 35 s, 60 s
Voltage threshold selector:	50...500 mV
Maximum achievable safety level	■ PL e/Category 3 conforming to ISO 13849-1 ■ SILCL 3 conforming to IEC 62061 ■ SIL 3 conforming to IEC 61508
Product certifications	■ cULus ■ TÜV ■ EAC (in progress) ■ CCC (in progress) ■ KC marking (in progress)
Conformity to standards	■ IEC 60947-5-1 ■ IEC 61508-1 (functional safety standard) ■ IEC 61508-2 (functional safety standard) ■ IEC 61508-3 (functional safety standard) ■ ISO 13849-1 (functional safety standard) ■ IEC 62061 (functional safety standard)

References

Description	Setting range of time delay	Voltage	Terminals mm/in.	References	Weight kg/lb
Type XPSUVN For zero speed monitoring with delayed access to dangerous area	0.5...60 s	24 V ∿/⎓	Spring 5.08/*0.20*	**XPSUVN11AC**	0.200 *0.440*
			Screw 5.08/*0.20*	**XPSUVN11AP**	0.200 *0.440*
		48-240 V ∿/⎓	Spring 5.08/*0.20*	**XPSUVN31AC**	0.200 *0.440*
			Screw 5.08/*0.20*	**XPSUVN31AP**	0.200 *0.440*

XPSUVN●1AC

XPSUVN●1AP



XPSEC

Presentation

XPSEC is a set of plastic coding elements for terminal blocks

References

Description	Use for	Unit reference	Weight kg/*lb*
Terminal block coding bit	XPS Basic & Universal Safety Modules	**XPSEC** **Sold in lot of 30**	0.010/ *0.020*

XPSES

Presentation

XPSES is a set of uniquely numbered sealing strips used to seal the transparent front cover flap of any XPS Universal and Basic safety module to prevent operator or maintenance to change the configuration.

References

Description	Use for	Unit reference	Weight kg/*lb*
Sealing strips	XPS Basic & Universal Safety Modules	**XPSES** **Sold in lot of 10**	0.030/ *0.066*

Harmony XPS
Basic & Universal Safety Modules
Substitution table

Preventa XPS Safety modules (end of commercialization)		Harmony XPS Basic safety modules (new)			
Reference		**Reference**		Comment	Additional comment
XPSABV11330C	1.5…30 sec delay, only potential free inputs	XPSBAT12A1AC	-	Direct replacement	0…900 sec delay
XPSABV11330P		XPSBAT12A1AP	-	Direct replacement	
XPSABV1133C	0.15…3 sec delay, only potential free inputs	XPSBAT12A1AC	-	Direct replacement	
XPSABV1133P		XPSBAT12A1AP	-	Direct replacement	
XPSAC1321	3 NO output	XPSBAC34AP	-	Direct replacement	4 NO + 2 NC output
XPSAC1321P	3 NO output	XPSBAC34AP	-	Direct replacement	
XPSAC3421	3 NO output	XPSBAC34AP	-	Direct replacement	
XPSAC3421P	3 NO output	XPSBAC34AP	-	Direct replacement	
XPSAC3721	3 NO output	XPSBAC34AP	-	Direct replacement	
XPSAC3721P	3 NO output	XPSBAC34AP	-	Direct replacement	
XPSAC5121	3 NO output	XPSBAC14AP	-	Direct replacement	
XPSAC5121P	3 NO output	XPSBAC14AP	-	Direct replacement	
XPSAXE5120C	3 NO + 1 NC output	XPSBAC14AC	-	Direct replacement	
XPSAXE5120P	3 NO + 1 NC output	XPSBAC14AP	-	Direct replacement	
XPSAFL5130	-	XPSUAF13AP	-	Direct replacement	-
XPSAFL5130P	-	XPSUAF13AP	-	Direct replacement	-
XPSAK311144	-	XPSUAK12AP	-	Direct replacement	XPSUAK have 1 NO less than XPSAK
XPSAK311144P	-	XPSUAK12AP	-	Direct replacement	XPSUAK have 1 NO less than XPSAK
XPSAK331144P	-	XPSUAK32AP	-	Direct replacement	XPSUAK have 1 NO less than XPSAK
XPSAK351144	-	XPSUAK32AP	-	Direct replacement	XPSUAK have 1 NO less than XPSAK
XPSAK351144P	-	XPSUAK32AP	-	Direct replacement	XPSUAK have 1 NO less than XPSAK
XPSAK361144	-	XPSUAK32AP	-	Direct replacement	XPSUAK have 1 NO less than XPSAK
XPSAK361144P	-	XPSUAK32AP	-	Direct replacement	XPSUAK have 1 NO less than XPSAK
XPSAK371144	-	XPSUAK32AP	-	Direct replacement	XPSUAK have 1 NO less than XPSAK
XPSAK371144P	-	XPSUAK32AP	-	Direct replacement	XPSUAK have 1 NO less than XPSAK
XPSAR311144	Global group 1	XPSUAT13A3AP	1	OR	If max. 6 NO are used
XPSAR311144	Global group 1	XPSUAF13AP	1	AND	If all 7 NO are used
XPSAR311144	Global group 1	XPSUEP14AP	1		
XPSAR311144P	Global group 2	XPSUAT13A3AP	2	OR	If max. 6 NO are used
XPSAR311144P	Global group 2	XPSUAF13AP	2	AND	If all 7 NO are used
XPSAR311144P	Global group 2	XPSUEP14AP	2		
XPSAR351144	Global group 3	XPSUAT33A3AP	3	OR	If max. 6 NO are used
XPSAR351144	Global group 3	XPSUAF33AP	3	AND	If all 7 NO are used
XPSAR351144	Global group 3	XPSUEP14AP	3		
XPSAR351144P	Global group 4	XPSUAT33A3AP	4	OR	If max. 6 NO are used
XPSAR351144P	Global group 4	XPSUAF33AP	4	AND	If all 7 NO are used
XPSAR351144P	Global group 4	XPSUEP14AP	4		
XPSAR371144	Global group 5	XPSUAT33A3AP	5	OR	If max. 6 NO are used
XPSAR371144	Global group 5	XPSUAF33AP	5	AND	If all 7 NO are used
XPSAR371144	Global group 5	XPSUEP14AP	5		
XPSAR371144P	Global group 6	XPSUAT33A3AP	6	OR	If max. 6 NO are used
XPSAR371144P	Global group 6	XPSUAF33AP	6	AND	If all 7 NO are used
XPSAR371144P	Global group 6	XPSUEP14AP	6		

Harmony XPS
Universal Safety Modules
Substitution table *(Continued)*

Preventa XPS Safety modules (end of commercialization)		Harmony XPS Universal safety modules (new)			
Reference		**Reference**	Group	Comment	Additional comment
XPSATE3410		XPSUAT33A3AP	-	Direct replacement	-
XPSATE3410P		XPSUAT33A3AP	-	Direct replacement	-
XPSATE3710		XPSUAT33A3AP	-	Direct replacement	-
XPSATE3710P		XPSUAT33A3AP	-	Direct replacement	-
XPSATE5110		XPSUAT13A3AP	-	Direct replacement	-
XPSATE5110P		XPSUAT13A3AP	-	Direct replacement	-
XPSATR11530C		XPSUAT13A3AC	-	Direct replacement	-
XPSATR11530P		XPSUAT13A3AP	-	Direct replacement	-
XPSATR1153C		XPSUAT13A3AC	-	Direct replacement	-
XPSATR1153P		XPSUAT13A3AP	-	Direct replacement	-
XPSATR39530C		XPSUAT33A3AC	-	Direct replacement	-
XPSATR39530P		XPSUAT33A3AP	-	Direct replacement	-
XPSATR3953C		XPSUAT33A3AC	-	Direct replacement	-
XPSATR3953P		XPSUAT33A3AP	-	Direct replacement	-
XPSAV11113		XPSUAT13A3AP	-	Direct replacement	-
XPSAV11113P		XPSUAT13A3AP	-	Direct replacement	-
XPSAV11113T050		XPSUAT13A3AP	-	Direct replacement	-
XPSAV11113Z002		XPSUAT13A3AP	-	Direct replacement	-
XPSBAE3920C		XPSUAB31CC	-	Direct replacement	-
XPSBAE3920P		XPSUAB31CP	-	Direct replacement	-
XPSBAE5120C		XPSUAB11CC	-	Direct replacement	-
XPSBAE5120P		XPSUAB11CP	-	Direct replacement	-
XPSBCE3110C		XPSUS12AC	-	Direct replacement	-
XPSBCE3110P		XPSUS12AP	-	Direct replacement	-
XPSBCE3410C		XPSUS32AC	-	Direct replacement	-
XPSBCE3410P		XPSUS32AP	-	Direct replacement	-
XPSBCE3710C		XPSUS32AC	-	Direct replacement	-
XPSBCE3710P		XPSUS32AP	-	Direct replacement	-
XPSBF1132		XPSUS12AP	-	Direct replacement	-
XPSBF1132P		XPSUS12AP	-	Direct replacement	-
XPSDMB1132		XPSUS12AP	-	Direct replacement	-
XPSDMB1132P		XPSUS12AP	-	Direct replacement	-
XPSDME1132		XPSUDN13AP	-	Direct replacement	-
XPSDME1132P		XPSUDN13AP	-	Direct replacement	-
XPSDME1132TS220		XPSUDN13AP	-	Direct replacement	-
XPSECME5120C		XPSUEP14AC	-	Indirect replacement	Only in combination with XPSU host
XPSECME5120P		XPSUEP14AP	-	Indirect replacement	Only in combination with XPSU host
XPSECME5131C		XPSUEP14AC	-	Indirect replacement	Only in combination with XPSU host
XPSECME5131P		XPSUEP14AP	-	Indirect replacement	Only in combination with XPSU host
XPSVC1132		XPSUS12AP	-	Direct replacement	-
XPSVC1132P		XPSUS12AP	-	Direct replacement	-
XPSVNE1142HSP	No time delay included (must be implemented with another device) + 3 variants for different supply voltages + 3 variants for different frequency ranges	XPSUVN11AP	-	Time delay included + 2 variants for different supply voltages, no variants for different frequency ranges	
XPSVNE1142LFP		XPSUVN11AP	-		
XPSVNE1142P		XPSUVN11AP	-		
XPSVNE3442HSP		XPSUVN31AP	-		
XPSVNE3442LFP		XPSUVN31AP	-		
XPSVNE3442P		XPSUVN31AP	-		
XPSVNE3742HSP		XPSUVN31AP	-		
XPSVNE3742P		XPSUVN31AP	-		

Harmony XPS
Basic & Universal Safety Modules
Product reference index

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