

Harmony XPS

Basic & Universal Safety Modules

































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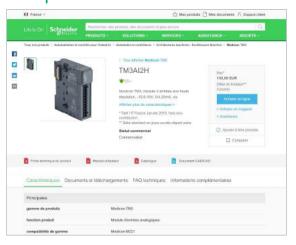
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Harmony XPS Basic & Universal Safety Modules

afety module type		Basic safety modules with pre-defined safety fu	unction	Universal safety modules with pre-defined safety function, or Selectable safety functions via rotary selectors							
Safety functions										1111 7 1111 7 1111 17	
		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	of safety contacts	ber - Zero speed monitorir with delayed access to dangerous area
		Sa Agrandor 17 Paras						BUS SANCE STREET		Sofgreener Sofgreener	
laximum achievable saf	ety level	■ PL e/Category 4 conforming to ISO 13849-1 ■ SILC L 3 conforming to II		 PLc conforming to ISO 13849-1 SILCL 1 conforming to IEC 62061 	 PL e/Category 4 conforming to ISO 1384 SILC L 3 conforming 						 PLe/Category 3 conforming to ISO 13849 SILC L 3 conforming
onformity to standards		■ SIL 3 conforming to IEC	61508	■ SIL1 conforming to IEC 61508	■ SIL 3 conforming to II	EC 61508					IEC 62061 SIL 3 conforming to 61508
,		 IEC 61508-1 (functional IEC 61508-2 (functional IEC 61508-3 (functional ISO 13849-1 (functional IEC 62061 (functional sa 	safety standard) safety standard) safety standard)								
roduct certifications		■ cULus ■ TÜV ■ EAC ■ CCC ■ KC marking		 CULus TÜV EAC CCC KC marking 							CULus TÜV EAC CCC KC marking
umber 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) 0900 s	-	-	-	3 NO + 1 NC (configurable) 0900 s	-	-	-	1 NO (configurable) 0,560 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
		5 LEDs	8 LEDs	6 LEDs	6 LEDs	6 LEDs	8 LEDs	16 LEDs	8 LEDs	3 LEDs	5 LEDs
isplay		24 V AC/DC and 48-240 V	24 V AC/DC	24 V AC/DC and 48-240 V AC/DC							
		AC/DC			Selectable	Selectable	Selectable	Selectable	Selectable	-	Fixed
upply voltage ynchronization time bet		Fixed	Fixed	Selectable			0	40	4		0
upply voltage ynchronization time bet umber of inputs chann		Fixed 2	2	2	2	2	3	12	4	-	3
isplay upply voltage ynchronization time bet umber of inputs channates afety module type		Fixed	2 XPSBAT	2 XPSUAB	2 XPSUAF	2 XPSUAK	XPSUAT	XPSUDN	XPSUS	XPSUEP	XPSUVN
upply voltage ynchronization time bet umber of inputs chann		Fixed 2	2	2	2	2	XPSUAT	XPSUDN			

Schneider Belectric

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.

			required safety fun	ctions.	
Safety functions			Safety modules		
		ISO 13849-1	PL c	PL e/Category 3	PL e/Category 4
		IEC 62061		SILCL 3	SILC L 3
		IEC 61508	SIL1	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	1	XPSUAB	-	XPSBAT XPSUAF XPSUAK XPSUAT XPSUDN XPSUS
	Light curtains	B	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 ■ 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 XPSBAC For monitoring E-stop and Guard switch	24 V ∼/ 	Spring 5.08/0.20	XPSBAC14AC	0.200 <i>0.440</i>
		Screw 5.08/0.20	XPSBAC14AP	0.200 <i>0.440</i>
	48-240 V ∼/ 	Spring 5.08/0.20	XPSBAC34AC	0.200 <i>0.440</i>
		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) 0900 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 ■ 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 Number of Setting Voltage Terminals References Weight safety range of mm/in. kg/lb time delay circuits Type XPSBAT 3 NO 0...900 s 24 V ∼/... Spring XPSBAT12A1AC 0.200 (1 NO 5.08/0.20 for monitoring: 0.440 Emergency stop Guard switch delay) 0.200 XPSBAT12A1AP Screw Magnetic switch 5.08/0.20 0.440 RFID safety switch Safety light curtain

Operating principle, selection

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 ISC	Type I	Type II	Type III			
				Α	В	С
Standard ISO 13851 defines the selection of two-hand controls	Use of both hands (simultaneous action)					
according to its behavior. This table details the 3 types of	Link between input and output signals					
two-hand control conforming to ISO 13851.	Prevention of accidental operation					
For each type, it lists the operating characteristics and minimum requirements.	Tamper-proof					
	Output signal reinitialised					
	Synchronous action (specified time limit)					
	Use of proven components (PLc, SIL1 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

Conforming to ISO 13849-1

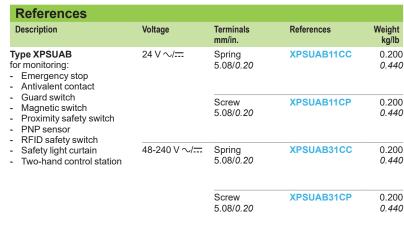
Conforming to ISO 13851

Main features, references

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

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 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)		







XPSUAB•1CP

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/ <i>0.886 in</i> .
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)
References	





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















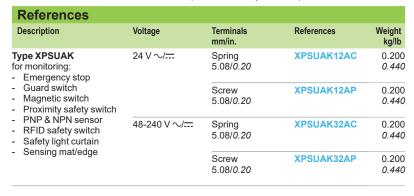
Operating principle

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 factures				
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	■ PLe/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•2AP

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















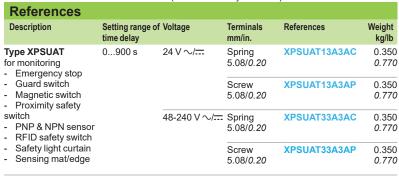
Operating principle

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.
- $\hfill \square$ 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
- 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

3	
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	■ PL e/Category 4 conforming to ISO 13849-1
safety level	■ 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
oomoning to otamaa.ao	■ 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)







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

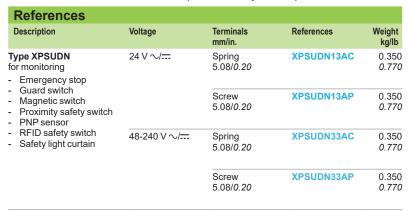
XPSUDN safety modules are used for monitoring:

- □ 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

 $\hfill \Box$ 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)







XPSUDN•3AP

Operating principle, selection

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
- 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
- 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		
				Α	В	С
Standard ISO 13851 defines the selection of two-hand controls	Use of both hands (simultaneous action)					
according to its behavior.	Link between input and output signals					
This table details the 3 types of						
two-hand control conforming to ISO 13851.	Prevention of accidental operation					
For each type, it lists the	Tamper-proof					
operating characteristics and minimum requirements.	Output signal reinitialised					
	Synchronous action (specified time limit)					
	Use of proven components (PLc, SIL1 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

Conforming to ISO 13849-1

Main features, references

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)					





	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 <i></i> √/ 	Spring 5.08/0.20	XPSUS12AC	0.200 <i>0.440</i>	
		Screw 5.08/0.20	XPSUS12AP	0.200 <i>0.440</i>	
	48-240 V ∼/ 	Spring 5.08/ <i>0.20</i>	XPSUS32AC	0.200 <i>0.440</i>	
			Screw 5.08/0.20	XPSUS32AP	0.200 <i>0.440</i>

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, XPSUVN and XPSUS safety modules. When XPSUAT is the base module for instance, its con iguration 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)





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



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) 0,560 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:	50500 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 ■ 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)





XPSUVN•1AP

References					
Description	Setting range of time delay	Voltage	Terminals mm/in.	References	Weight kg/lb
Type XPSUVN For zero speed	0.560 s	24 V ∼/ 	Spring 5.08/0.20	XPSUVN11AC	0.200 <i>0.440</i>
monitoring with delayed access to dangerous			Screw 5.08/0.20	XPSUVN11AP	0.200 0.440
area		48-240 V ∼/ 	Spring 5.08/0.20	XPSUVN31AC	0.200 0.440
			Screw 5.08/0.20	XPSUVN31AP	0.200 0.440

Harmony XPS Basic & Universal Safety Modules

Accessories



XPSEC is a set of plastic coding elements for terminal blocks

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



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.





Harmony XPS Basic & Universal Safety Modules

Substitution table

Preventa XPS Safety modules (end	of commercialization)	Harmony XPS Basic s	afetv mo	odules (new)	
Reference	or commondation,	Reference	a.o.,	Comment	Additional comment
XPSABV11330C	1.530 sec delay, only	XPSBAT12A1AC	-	Direct replacement	0900 sec delay
XPSABV11330P	potential free inputs	XPSBAT12A1AP	-	Direct replacement	
(PSABV1133C	0.153 sec delay, only	XPSBAT12A1AC	-	Direct replacement	
(PSABV1133P	potential free inputs	XPSBAT12A1AP	-	Direct replacement	
XPSAC1321	3 NO output	XPSBAC34AP	-	Direct replacement	4 NO + 2 NC output
(PSAC1321P	3 NO output	XPSBAC34AP	-	Direct replacement	
(PSAC3421	3 NO output	XPSBAC34AP	-	Direct replacement	
(PSAC3421P	3 NO output	XPSBAC34AP	-	Direct replacement	
(PSAC3721	3 NO output	XPSBAC34AP	-	Direct replacement	
(PSAC3721P	3 NO output	XPSBAC34AP	-	Direct replacement	
PSAC5121	3 NO output	XPSBAC14AP	-	Direct replacement	
(PSAC5121P	3 NO output	XPSBAC14AP	-	Direct replacement	
(PSAXE5120C	3 NO + 1 NC output	XPSBAC14AC	-	Direct replacement	
(PSAXE5120P	3 NO + 1 NC output	XPSBAC14AP	-	Direct replacement	
(PSAFL5130	-	XPSUAF13AP	-	Direct replacement	-
(PSAFL5130P	-	XPSUAF13AP	-	Direct replacement	-
(PSAK311144	-	XPSUAK12AP	-	Direct replacement	XPSUAK have 1 NO less than XPSAK
(PSAK311144P	-	XPSUAK12AP	-	Direct replacement	XPSUAK have 1 NO less than XPSAK
(PSAK331144P	-	XPSUAK32AP	-	Direct replacement	XPSUAK have 1 NO less than XPSAK
(PSAK351144	-	XPSUAK32AP	-	Direct replacement	XPSUAK have 1 NO less than XPSAK
(PSAK351144P	-	XPSUAK32AP	-	Direct replacement	XPSUAK have 1 NO less than XPSAK
(PSAK361144	-	XPSUAK32AP	-	Direct replacement	XPSUAK have 1 NO less than XPSAK
(PSAK361144P	-	XPSUAK32AP	-	Direct replacement	XPSUAK have 1 NO less than XPSAK
(PSAK371144	-	XPSUAK32AP	-	Direct replacement	XPSUAK have 1 NO less than XPSAK
(PSAK371144P	-	XPSUAK32AP	-	Direct replacement	XPSUAK have 1 NO less than XPSAK
(PSAR311144	Global group 1	XPSUAT13A3AP	1	OR	If max. 6 NO are used
(PSAR311144	Global group 1	XPSUAF13AP	1	AND	If all 7 NO are used
(PSAR311144	Global group 1	XPSUEP14AP	1		
(PSAR311144P	Global group 2	XPSUAT13A3AP	2	OR	If max. 6 NO are used
(PSAR311144P	Global group 2	XPSUAF13AP	2	AND	If all 7 NO are used
(PSAR311144P	Global group 2	XPSUEP14AP	2		
(PSAR351144	Global group 3	XPSUAT33A3AP	3	OR	If max. 6 NO are used
(PSAR351144	Global group 3	XPSUAF33AP	3	AND	If all 7 NO are used
(PSAR351144	Global group 3	XPSUEP14AP	3		
(PSAR351144P	Global group 4	XPSUAT33A3AP	4	OR	If max. 6 NO are used
(PSAR351144P	Global group 4	XPSUAF33AP	4	AND	If all 7 NO are used
(PSAR351144P	Global group 4	XPSUEP14AP	4		
PSAR371144	Global group 5	XPSUAT33A3AP	5	OR	If max. 6 NO are used
(PSAR371144	Global group 5	XPSUAF33AP	5	AND	If all 7 NO are used
(PSAR371144	Global group 5	XPSUEP14AP	5		
(PSAR371144P	Global group 6	XPSUAT33A3AP	6	OR	If max. 6 NO are used
KPSAR371144P	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 comme	ercialization)	Harmony XPS Univers			T
Reference		Reference	Group	Comment	Additional comment
XPSATE3410		XPSUAT33A3AP	-	Direct replacement	-
(PSATE3410P		XPSUAT33A3AP	-	Direct replacement	-
(PSATE3710		XPSUAT33A3AP	-	Direct replacement	-
(PSATE3710P		XPSUAT33A3AP	-	Direct replacement	-
KPSATE5110		XPSUAT13A3AP	-	Direct replacement	-
KPSATE5110P		XPSUAT13A3AP	-	Direct replacement	-
KPSATR11530C		XPSUAT13A3AC	-	Direct replacement	-
KPSATR11530P		XPSUAT13A3AP	-	Direct replacement	-
XPSATR1153C		XPSUAT13A3AC	-	Direct replacement	-
(PSATR1153P		XPSUAT13A3AP	-	Direct replacement	-
(PSATR39530C		XPSUAT33A3AC	-	Direct replacement	-
(PSATR39530P		XPSUAT33A3AP	-	Direct replacement	-
(PSATR3953C		XPSUAT33A3AC	-	Direct replacement	-
(PSATR3953P		XPSUAT33A3AP	-	Direct replacement	-
(PSAV11113		XPSUAT13A3AP	-	Direct replacement	-
(PSAV11113P		XPSUAT13A3AP	-	Direct replacement	-
(PSAV11113T050		XPSUAT13A3AP	-	Direct replacement	-
(PSAV11113Z002		XPSUAT13A3AP	-	Direct replacement	-
(PSBAE3920C		XPSUAB31CC (1)	-	Direct replacement	-
(PSBAE3920P		XPSUAB31CP(1)	-	Direct replacement	-
(PSBAE5120C		XPSUAB11CC (1)	-	Direct replacement	-
(PSBAE5120P		XPSUAB11CP (1)	-	Direct replacement	-
(PSBCE3110C		XPSUS12AC	-	Direct replacement	-
(PSBCE3110P		XPSUS12AP	-	Direct replacement	-
PSBCE3410C		XPSUS32AC	-	Direct replacement	-
PSBCE3410P		XPSUS32AP	-	Direct replacement	-
(PSBCE3710C		XPSUS32AC	-	Direct replacement	-
(PSBCE3710P		XPSUS32AP	-	Direct replacement	-
(PSBF1132		XPSUS12AP	-	Direct replacement	-
PSBF1132P		XPSUS12AP	-	Direct replacement	-
(PSDMB1132		XPSUS12AP	-	Direct replacement	-
(PSDMB1132P		XPSUS12AP	-	Direct replacement	-
(PSDME1132		XPSUDN13AP	-	Direct replacement	-
(PSDME1132P		XPSUDN13AP	-	Direct replacement	-
(PSDME1132TS220		XPSUDN13AP	-	Direct replacement	-
(PSECME5120C		XPSUEP14AC	-	Indirect replacement	Only in combination with XPSU host
(PSECME5120P		XPSUEP14AP	-	Indirect replacement	Only in combination with XPSU host
(PSECME5131C		XPSUEP14AC	-	Indirect replacement	Only in combination with XPSU hos
(PSECME5131P		XPSUEP14AP	-	Indirect replacement	Only in combination with XPSU hos
KPSVC1132		XPSUS12AP	-	Direct replacement	-
(PSVC1132P		XPSUS12AP	-	Direct replacement	-
PSVNE1142HSP	No time delay included (must be	XPSUVN11AP	-	Time delay included + 2 variants	
PSVNE1142LFP	implemented with another	XPSUVN11AP	_	for different supply voltages, no	
(PSVNE1142P	device) + 3 variants for different supply	XPSUVN11AP	_	variants for different frequency ranges	
(PSVNE3442HSP	voltages + 3 variants for different	XPSUVN31AP	-		
(PSVNE3442LFP	frequency ranges	XPSUVN31AP		_	
KPSVNE3442P	-	XPSUVN31AP	-	_	
				_	
(PSVNE3742HSP		XPSUVN31AP	-		

(1) Suitable for PLc according to ISO 13849-1.

Harmony XPS Basic & Universal Safety Modules

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DIA3ED2181204EN February 2024 - V3.3