

# Control and signaling units for safety applications

Harmony<sup>®</sup> XPE foot switches

Catalog

January 2015



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# General contents

## Harmony® XPE foot switches

**Selection guide** ..... page 2

### ■ General

□ Presentation of range ..... page 4

### ■ Metal foot switches, Harmony XPEM/R

□ Single and double pedal foot switches with protective cover ..... page 8

□ Foot switches without protective cover ..... page 8

### ■ Plastic foot switches, Harmony XPEA/B/G/Y

□ Single pedal foot switches with protective cover ..... page 9

□ Foot switches without protective cover ..... page 9

■ Accessories ..... page 9

■ Product reference index ..... page 10

# Control and signaling units for safety applications

## Dialog components

Applications	Foot switches for: - bending machines, dosing machines, assembly stations, packaging machines, cutting presses, stamping presses, - machine tools (numerical control, lathes, milling machines, grinders, machining centres), - guillotines, cutters, folders, saws, - forging machines, rolling machines, cold metal forming machines	Enabling grip switch for: - robots, - machine tools, - labellers	Ergonomic two-hand control stations for machine tool control
			
<b>Features</b>	Metal, with or without protective cover. Single or double pedal	Plastic, with or without protective cover. Single pedal	Plastic enclosure
<b>Conformity to standards</b>	Without protective cover: EN/IEC 60947-5-1, CSA C22-2 n° 14, CCC With protective cover: NF E 09-031	<b>XPEB, G:</b> EN/IEC 60947-5-1, UL 508, CSA C22-2 n° 14, CCC <b>XPEA, Y:</b> EN/IEC 60947-5-1 CCC	EN/IEC 60947-1, EN/IEC 60947-5-1, EN/IEC 60204-1, cUL us 508, CSA C22-2 n° 14
<b>Protective treatment</b>	Standard version, "TC" Special version, "TH"	Standard version, "TH"	Standard version, "TC"
<b>Ambient temperature</b> For operation	-25...+70 °C/ -13...158 °F	<b>XPEB, G:</b> -25...+70 °C/ -13...158 °F <b>XPEA, Y:</b> -25...+55 °C/ -13...131 °F	-10...+60 °C/14...140 °F
For storage	-40...+70 °C/-40...158 °F		
<b>Electric shock protection</b> conforming to IEC 61140	Class I		Class II
<b>Degree of protection</b> conforming to IEC 60529, UL 508 and CSA C22-2 n° 14	IP 66, IP 669 (with protective cover)	<b>XPEB, G:</b> IP 66 <b>XPEY:</b> IP 55 <b>XPEA:</b> IP 43	IP 66 IP 65 with pushbutton
<b>Positive operation</b> conf. to EN/IEC 60947-5-1 Appendix K	N/C contacts with positive opening operation (⊖)		N/C contacts with positive opening operation
<b>Rated insulation voltage</b>	Ui = 500 V, degree of pollution 3 conforming to EN/IEC 60947-1, group C conforming to NF C 20-040 and VDE 0110 Ui = 300 V conforming to UL 508 and CSA C22-2 n° 14		2-contact, 3-position with positive opening operation Ui = 250 V Ui = 125 V for pushbutton conforming to EN/IEC 60947-1
<b>Rated impulse withstand voltage</b> conforming to EN/IEC 60947-1	Uimp = 6 kV		Uimp = 2.5 kV
<b>Type references</b>	<b>XPEM, XPER</b>	<b>XPEA, XPEB, XPEG, XPEY</b>	<b>XY2AU</b>

Emergency stop pushbuttons for: - machine tools, - foundries, presses, - automobile industry	Emergency stop pushbuttons for: - assembly and packaging machines, - paper, cardboard and woodworking machines, - food/beverage processing and chemical industries	Control stations for: - assembly and packaging machines, - paper, cardboard and woodworking machines, - food/beverage processing, chemical and automobile industries, mechanical presses	Illuminated beacons and tower lights	Rotating beacons for long distance signaling applications	Sirens and electronic alarms for long distance signaling applications
					
Metal bezel and fixing collar	Plastic bezel and fixing collar	Plastic enclosure	Direct fixing or on support tube	Super Bright LED	Power - 106 db, 2 tones - 105 db, 43 tones
EN/IEC 60947-1, EN/IEC 60947-5-1, EN/IEC 60947-5-4, EN/IEC 60947-5-5, EN/ISO 13850 and EN/IEC 60204-1 (Emergency Stop trigger action and mechanical latching mushroom head pushbuttons), IEC 60364-5-53 (Emergency switching off mechanical latching mushroom head pushbuttons) CSA C22-2 n° 14, UL 508 and GB 14048.5 Standard version, "TH"	EN/IEC 60947-1, EN/IEC 60947-5-1, EN/IEC 60947-5-4, EN/IEC 60947-5-5, EN/ISO 13850 and EN/IEC 60204-1 (Emergency Stop trigger action and mechanical latching mushroom head pushbuttons), IEC 60364-5-53 (Emergency switching off mechanical latching mushroom head pushbuttons) CSA C22-2 n° 14, UL 508 and GB 14048.5 Standard version, "TH"	EN/IEC 60947-1, EN/IEC 60947-5-1, UL 508, CSA C22-2 n° 14 CCC, Gost	EN/IEC 60947-5-1, EN/IEC 61000-6-2 and EN/IEC 61000-6-4 (Ø 84 to 120 mm/ Ø 3.31 to 4.72 in.), EN/IEC 60947-1 and EN/IEC 60947-5-1 (Ø 130 mm/Ø 5.12 in.), UL 508, CSA C22-2-14	EN/IEC 61000-6-2 and EN/IEC 61000-6-4 (Ø 84 to 120 mm/ Ø 3.31 to 4.72 in.), EN/IEC 60947-1 and EN/IEC 60947-5-1 (Ø 130 mm/Ø 5.12 in.), UL 508, CSA C22-2-14	EN/IEC 60947-1 and EN/IEC 60947-5-1 (XVS 10 and 14) EN/IEC 61000-6-2 and EN/IEC 61000-6-3 (XVS14BMW)
Standard version, "TH"			Standard version, "TC"		
-25...+70 °C/-13...158 °F			<ul style="list-style-type: none"> <li>Illuminated units with steady light signaling: -25...+70 °C/-13...158 °F, with 7 W incandescent bulb -25...+50 °C/-13...122 °F, with LED</li> <li>Illuminated units with flashing light signaling: -25...+50 °C/-13...122 °F, with 7 W incandescent bulb -25...+50 °C/-13...122 °F, with LED</li> <li>Illuminated units with "flash" discharge tube: -25...+50 °C/-13...122 °F</li> <li>Audible units: -25...+50 °C/-13...122 °F, with buzzer</li> </ul>		
-40...+70 °C/-40...158 °F			-35...+70 °C/-31...158 °F		
Classe I		Classe II	Class I: mounted on support tube Class II: mounted directly	Class II	
IP 66, IP 69K (head fitted with bellows ZBZ●8) Enclosure type 4, 4X and 13		IP 66 Enclosure type 4, 4X and 13	IP 65 (mounted on fixing base XVBZ0●) IP 66 (mounted directly on base unit)	Ø 84: IP 23 (IP 65 with accessory) Ø 106: IP 23 (IP 55 with accessory) Ø 120: IP 23 Ø 130: IP 66 and/or IP 67	IP 53
N/C contacts with positive opening operation (⊖)			-		
Standard single and double blocks with screw clamp terminals: Ui = 600 V, degree of pollution 3 Blocks for plug-in connector or Faston connectors, standard blocks for printed circuit board connection, contact blocks for high power switching: Ui = 250 V, degree of pollution 3 conforming to EN/IEC 60947-1			Ui = 250 V conforming to EN/IEC 60947-1		
Standard single and double blocks with screw clamp terminals: Uimp = 6 kV Blocks for plug-in connector: Uimp = 4 kV Standard blocks for printed circuit board connection: Uimp = 4 kV Contact blocks for high power switching: Uimp = 4 kV			Uimp = 4 kV		
<b>XB4B</b>	<b>XB5A</b>	<b>XALK</b>	<b>XVBL, XVBC</b>	<b>XVR</b>	<b>XVS10, XVS14</b>

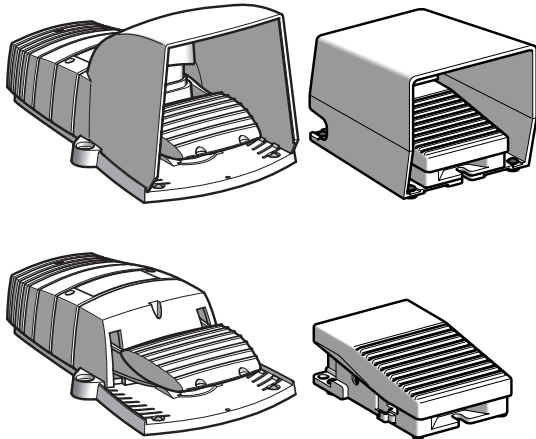
# Control and signaling units for safety applications

## Foot switches, Harmony type XPE

### Presentation

Foot switches type XPE are an ideal solution for providing start and stop instructions for many types of industrial machines, running in various operating modes: normal (pulsed) start, inching, hold to run.

The range comprises metal case foot switches (heavy duty, high risk) complying to very strict regulations, and plastic case foot switches (light duty, low risk).



**Fitted with a protective cover**, the foot switches are for applications where, for each issuing of the start instruction, a high level of danger exists (**high risk**).

Foot switches **without a protective cover** are suitable for applications where the issuing of the start instruction presents a **reduced level of danger**.

### Contact

Switches incorporate snap action contacts with positive opening operation

The foot switches can incorporate **one or two N/C + N/O contact blocks**.

Positive opening operation on release of pedal: the hold down or return to the rest position of the pedal (machine stop) is positive acting.

### Terminology

**Positive opening operation**

A switch meets this requirement when all its N/C contacts can be switched to the open position with certainty, i.e. there are no flexible links between the moving contacts and the actuator to which the operating force is applied.

All pedal operated foot switches incorporate a snap action N/C + N/O contact block with positive opening operation, and conform fully to standard IEC 60947-5-1 Section 3.

**Snap action contact** (quick break)

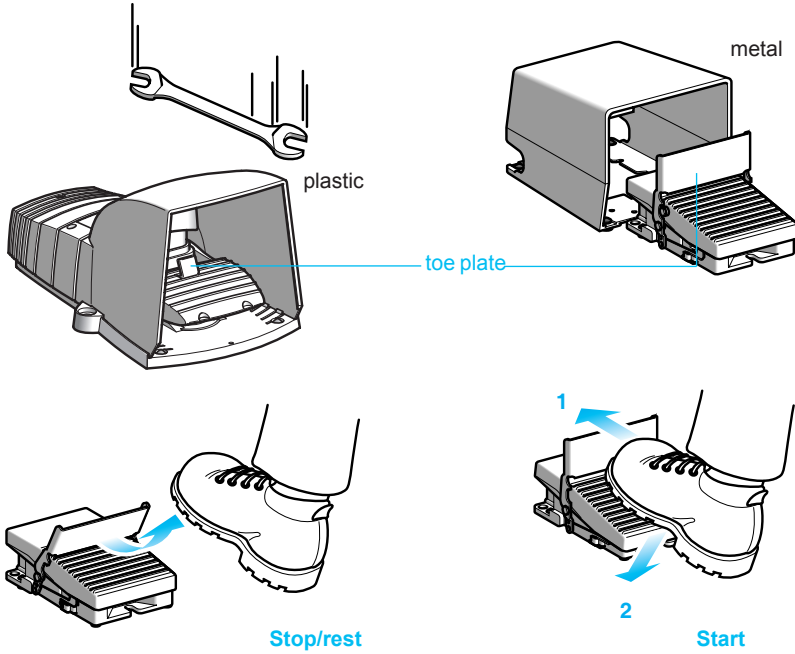
The displacement speed of the moving contacts is not related to the speed at which the contact actuator is operated. This feature gives consistent electrical performance, even when the contact actuator device is operated at low speeds.

# Control and signaling units for safety applications

## Foot switches, Harmony type XPE

### Start instructions

Foot switches XPE with protective cover are ideally suited for issuing a safety "Start" instruction for potentially dangerous machines.



The protective cover over the operating pedal avoids the risk of accidental operation, either by human action or by falling objects, which could result in unintentional starting of the machine.

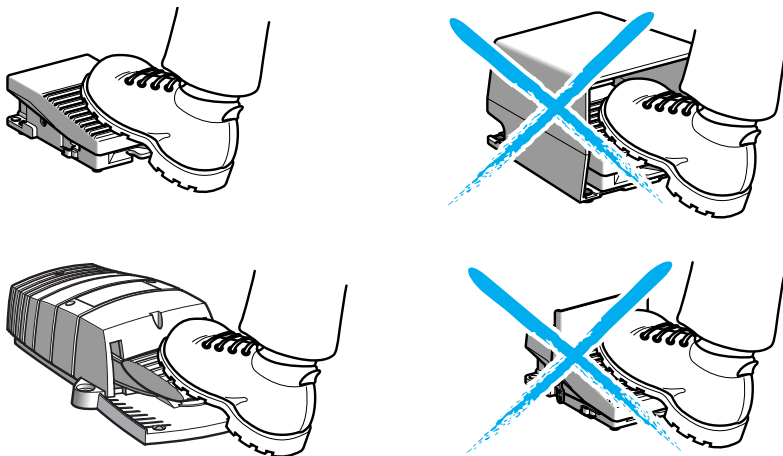
A trigger mechanism (**toe plate**) enables locking of the pedal in the rest (released) position.

Positive action is required on the toe plate **1** before the pedal **2** can be depressed to start the machine.

On releasing the pedal to stop the machine, the trigger mechanism re-engages and locks the pedal in the rest position.

### Normal stop instructions

All foot switches of the XPE range can be used for issuing a normal stop instruction to a machine.



Never use the protective cover nor the trigger mechanism for this type of application. Access to the stop control must be as unrestricted as possible and without any constraints.

For machine stop instructions, use the N/C contact(s).

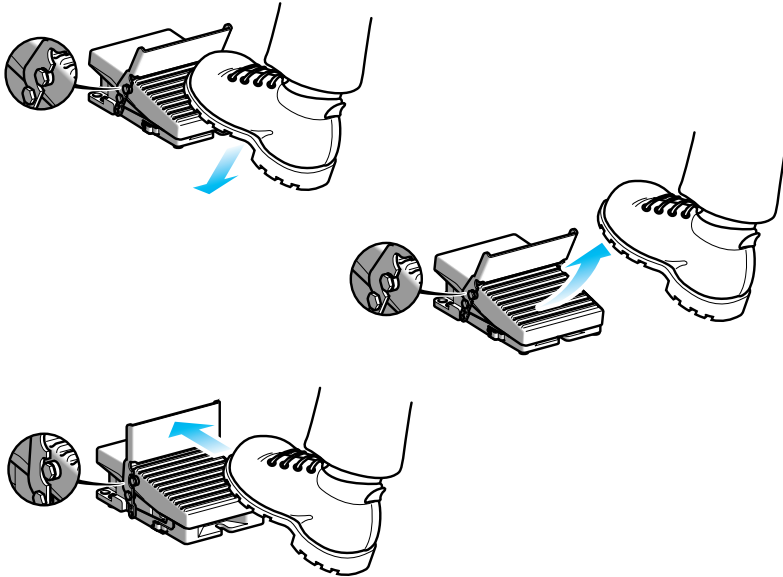


# Control and signaling units for safety applications

## Foot switches, Harmony type XPE

### Pedal latching device when depressed

Foot switches with pedal latching device are particularly suited for the control of “hold to run” machines and also, for adjustment operations.



Pressing the pedal issues the machine start instruction and, when the pedal reaches its stop, it latches in the operated position.

Removing the foot from the pedal will not stop the “machine” cycle (**hold to run**), the pedal remains latched.

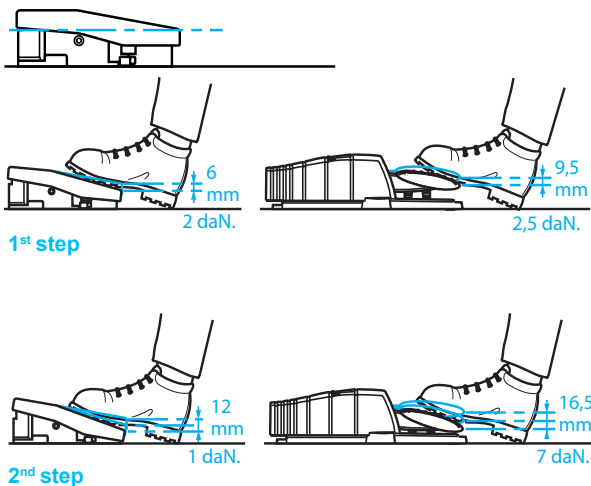
For issuing a normal stop instruction, the foot is replaced on the pedal and the toe plate operated: this returns the pedal to the rest position.

### Switches with 2 step contact operation

Foot switches featuring 2 step contact operation are ideal for applications involving 2-speed machines.

Examples:

- First speed: low (used for setting-up, adjustment or tool maintenance).
- Second speed: fast (normal machine operating speed).



The first step, at 6 mm pedal travel and light foot pressure (2 daN), actuates a N/C + N/O contact block.

The second step, at maximum pedal travel (12 mm) and required foot pressure (9 daN), actuates a second N/C + N/O contact block.

### Applications

Many types of machines are fitted with foot switches

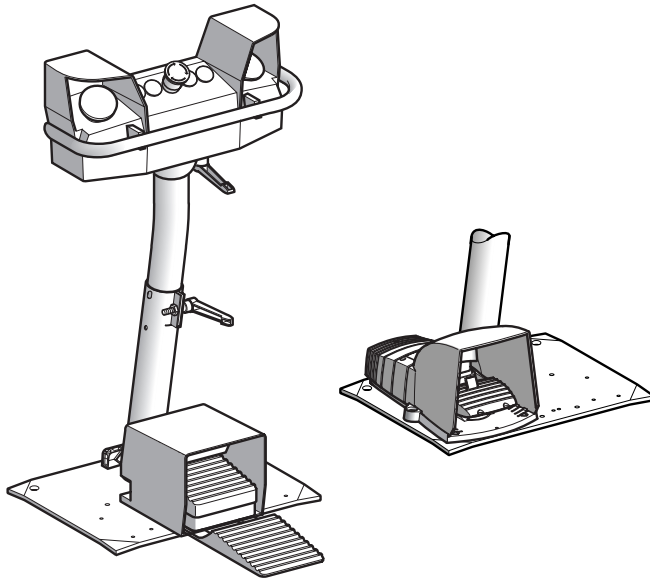
- Bending machine
- Dosing machine
- Assembly station
- Packaging machines
- Cutting presses, stamping presses
- Machine tools (numerical control, lathes, milling machines, grinders, machining centres)
- Guillotines, cutters, folders, saws
- Forging machines, rolling machines, cold metal forming machines

# Control and signaling units for safety applications

## Foot switches, Harmony type XPE

### Foot switches used in conjunction with two-hand control stations

Foot switches XPE can be mounted directly on the baseplate (without drilling additional fixing holes) of the pedestal XY2SB90 for two-hand control stations XY2SB7e.

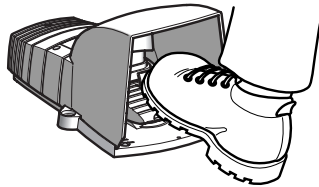


The baseplate of the two-hand control station pedestal XY2SB90 is pre-drilled with fixing holes to suit the mounting of either:

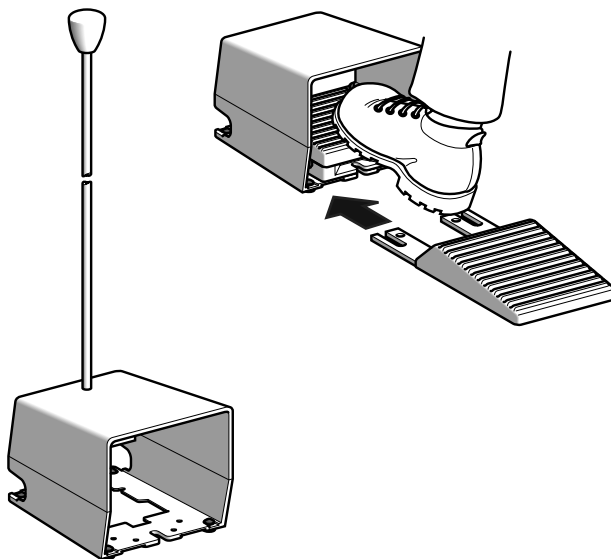
- One XPE foot switch, with or without protective cover.
- Two XPER foot switches, each with its own protective cover or fitted with a common (double) cover.

### Ergonomic

The protective cover is very strong and is sufficiently dimensioned to accommodate all types of footwear (large size, safety boots, etc.).



The foot switch is designed such that the operating pedal is close to the ground and at a comfortable angle.



Various accessories improve the working comfort for machine operators and help to avoid discomfort in the base of the spine due to unbalanced positioning of the pelvis:

- Heel rest (metal XPE).
- Hand grip for mounting on protective cover.



# Control and signaling units for safety applications

Metal foot switches, Harmony types XPEM/R



XPEM510



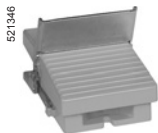
XPER5100D



XPEM310



XPER3100D



XPER810



XPEM110

### Single and double pedal foot switches with protective cover (1)

Description	Pedal	Contact operation	Color	Reference	Weight kg/lb		
<b>Metal With trigger mechanism requiring positive action to allow pedal operation</b>	Single	1 step	1 N/C + N/O	Blue	XPEM510	2.570/5.666	
	Double	1 step	2 x 1 N/C + N/O	Blue	XPEM5100D	6.070/13.382	
	Single	1 step	1 N/C + N/O	Orange	XPER510	2.570/5.666	
	Double	1 step	2 x 1 N/C + N/O	Orange	XPER5100D	6.070/13.382	
	Single	1 step	2 N/C + N/O	Blue	XPEM511	2.590/5.710	
	Double	1 step	2 x 2 N/C + N/O	Blue	XPEM5110D	6.090/13.426	
	Single	1 step	2 N/C + N/O	Orange	XPER511	2.590/5.710	
	Double	1 step	2 x 2 N/C + N/O	Orange	XPER5110D	6.090/13.426	
	Single	2 step	2 N/C + N/O	Blue	XPEM711	2.590/5.710	
				Orange	XPER711	2.590/5.710	
		Single	1 step with analog output	2 N/C + N/O	Blue	XPEM529	2.600/5.372
				Orange	XPER529	2.600/5.372	
<b>Metal Without trigger mechanism</b>	Single	1 step	1 N/C + N/O	Blue	XPEM310	2.400/5.291	
	Double	1 step	2 x 1 N/C + N/O	Blue	XPEM3100D	5.900/13.007	
	Single	1 step	1 N/C + N/O	Orange	XPER310	2.400/5.291	
	Double	1 step	2 x 1 N/C + N/O	Orange	XPER3100D	5.900/13.007	
	Single	1 step	2 N/C + N/O	Blue	XPEM311	2.420/5.335	
	Double	1 step	2 x 2 N/C + N/O	Blue	XPEM3110D	5.920/13.051	
	Single	1 step	2 N/C + N/O	Orange	XPER311	2.420/5.335	
	Double	1 step	2 x 2 N/C + N/O	Orange	XPER3110D	5.920/13.051	
	Single	1 step latching	1 N/C + N/O	Blue	XPEM410	2.400/5.291	
				Orange	XPER410	2.420/5.335	
	Single	2 step	2 N/C + N/O	Blue	XPEM611	2.420/5.335	
				Orange	XPER611	2.420/5.335	
	Single	1 step with analog output	2 N/C + N/O	Blue	XPEM329	2.420/5.335	
	Double	2 step + 1 step	2 x 1 N/C + N/O + 1 N/C + N/O	Blue	XPEM6210D	5.900/13.007	

### Foot switches without protective cover (1)

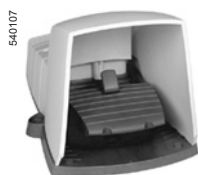
Description	Contact operation	Color	Reference	Weight kg/lb	
<b>Metal With trigger mechanism requiring positive action to allow pedal operation</b>	1 step	1 N/C + N/O	Blue	XPEM810	1.200/2.646
			Orange	XPER810	1.200/2.646
	2 N/C + N/O	Blue	XPEM811	1.220/2.690	
		Orange	XPER811	1.220/2.690	
	2 step	2 N/C + N/O	Blue	XPEM911	1.220/2.690
			Orange	XPER911	1.220/2.690
Analog output	2 N/C + N/O	Blue	XPEM929	1.220/2.690	
		Orange	XPER929	1.220/2.690	
<b>Metal Without trigger mechanism</b>	1 step	1 N/C + N/O	Blue	XPEM110 (2)	1.200/2.646
			Orange	XPER110 (2)	1.200/2.646
	2 N/C + N/O	Blue	XPEM111 (2)	1.220/2.690	
		Orange	XPER111 (2)	1.220/2.690	
	2 step	2 N/C + N/O	Blue	XPEM211 (2)	1.220/2.690
			Orange	XPER211 (2)	1.220/2.690
Analog output	2 N/C + N/O	Orange	XPER229	1.220/2.690	

(1) "TC" protective treatment as standard version. To obtain a "TH" treatment, contact our Customer Care Center.

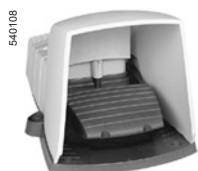
(2) To order an ATEX D version of the product (protection against dust), add EX to the end of the reference. Example: XPEM110EX.

## Control and signaling units for safety applications

Plastic foot switches, Harmony types XPEA/B/G/Y  
Accessories for XPEA/B/G/Y and XPEM/R



XPE510



XPE310



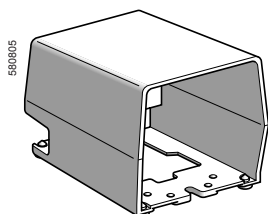
XPEG810



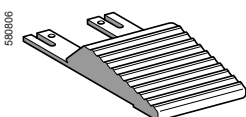
XPE110



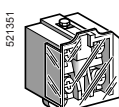
XPEA110



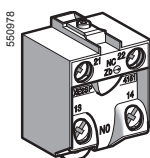
XPEZ901



XPEZ902



XE2SP4151



XE2SP4151

### Single pedal foot switches with protective cover (1)

Description	Contact operation	Housing color	Reference	Weight kg/lb
Plastic With trigger mechanism requiring positive action to allow pedal operation	1 step 1 N/C + N/O	Yellow	XPEY510 (2)	0.700/1.543
		Blue	XPEB510	0.700/1.543
		Grey	XPEG510	0.700/1.543
	2 N/C + N/O	Yellow	XPEY511 (2)	0.700/1.543
		Blue	XPEB511	0.700/1.543
		Grey	XPEG511	0.700/1.543
2 step 2 N/C + N/O	Yellow	XPEY711 (2)	0.700/1.543	
	Blue	XPEB711	0.700/1.543	
	Grey	XPEG711	0.700/1.543	
Plastic Without trigger mechanism	1 step 1 N/C + N/O	Yellow	XPEY310	0.690/1.521
		Blue	XPEB310	0.690/1.521
		Grey	XPEG310	0.690/1.521
	2 N/C + N/O	Yellow	XPEY311 (2)	0.690/1.521
		Blue	XPEB311	0.690/1.521
		Grey	XPEG311	0.690/1.521
2 step 2 N/C + N/O	Yellow	XPEY611 (2)	0.690/1.521	
	Blue	XPEB611	0.690/1.521	
	Grey	XPEG611	0.690/1.521	

### Foot switches without protective cover (1)

Description	Contact operation	Housing color	Reference	Weight kg/lb
Plastic With trigger mechanism requiring positive action to allow pedal operation	1 step 1 N/C + N/O	Grey	XPEG810	0.580/1.279
	2 step 2 N/C + N/O	Grey	XPEG911	0.580/1.279
Plastic Without trigger mechanism	1 step 1 N/C + N/O	Yellow	XPEY110 (2)	0.570/1.257
		Blue	XPEB110	0.570/1.257
		Grey	XPEG110	0.570/1.257
	2 N/C + N/O	Black	XPEA110	0.275/0.606
		Blue	XPEB111	0.570/1.257
		Grey	XPEG111	0.570/1.257
2 step 2 N/C + N/O	Black	XPEA111	0.275/0.606	
	Yellow	XPEY211 (2)	0.570/1.257	
	Blue	XPEB211	0.570/1.257	
Grey	XPEG211	0.570/1.257		

### Accessories

#### For foot switches type XPEA/B/G/Y

Description	For use with	Reference	Weight kg/lb
M20 x 1.5 cable gland (Sold in lots of 5)	Cable Ø 5...10 mm/Ø 0.20...0.39 in.	DE9RA200612	0.014/0.031
	Cable Ø 7...13 mm/Ø 0.28...0.51 in.	DE9RA201014	0.014/0.031
Contact blocks, snap action	1 or 2 step switches	XE2SP4151	0.020/0.044

#### For foot switches type XPE M/R

Single protective cover (3)	XPEM	XPEZ901	1.200/2.646
	XPER	XPEZ911	1.200/2.646
Double protective cover (3)	XPEM	XPEZ921	1.200/2.646
	XPER	XPEZ931	1.200/2.646
Hand grip for protective cover	XPEZ901 or Z911	XPEZ913	0.450/0.992
Heel rest	XPEM	XPEZ902	0.240/0.529
	XPER	XPEZ912	0.240/0.529
Trigger mechanism	XPEM or XPER	XPEZ903	0.170/0.375
Latching device	XPEM or XPER (replacement for foot switches with this feature)	XPEZ904	0.170/0.375
Cable clamp	XPEM or XPER	XPEZ905	0.010/0.022
Contact blocks Snap action	1 step switches: 1 <sup>st</sup> or 2 <sup>nd</sup> N/C + N/O	XE2SP4151	0.020/0.044
	2 step switches: 1 <sup>st</sup> N/C + N/O		
	2 step switches: 2 <sup>nd</sup> N/C + N/O	XE2SP4151B	0.020/0.044
ISO M20 adaptor (Sold in lots of 5)	XPEM or XPER	DE9RA1620	0.050/0.110

(1) "TH" protective treatment as standard version.

(2) IP 55, not UL, CSA approved.

(3) This cover allows to obtain an IP 669 protection, in conformity with standard NF C 20-010.

<b>D</b>			
DE9RA1620	9	XPER810	8
DE9RA200612	9	XPER811	8
DE9RA201014	9	XPER911	8
		XPER929	8
		XPER3100D	8
<b>X</b>		XPER3110D	8
XE2SP4151	9	XPER5100D	8
XE2SP4151B	9	XPER5110D	8
XPEA110	9	XPEY110	9
XPEA111	9	XPEY211	9
XPEB110	9	XPEY310	9
XPEB111	9	XPEY311	9
XPEB211	9	XPEY510	9
XPEB310	9	XPEY511	9
XPEB311	9	XPEY611	9
XPEB510	9	XPEY711	9
XPEB511	9	XPEZ901	9
XPEB611	9	XPEZ902	9
XPEB711	9	XPEZ903	9
XPEG110	9	XPEZ904	9
XPEG111	9	XPEZ905	9
XPEG211	9	XPEZ911	9
XPEG310	9	XPEZ912	9
XPEG311	9	XPEZ913	9
XPEG510	9	XPEZ921	9
XPEG511	9	XPEZ931	9
XPEG611	9		
XPEG711	9		
XPEG810	9		
XPEG911	9		
XPEM110	8		
XPEM111	8		
XPEM211	8		
XPEM310	8		
XPEM311	8		
XPEM329	8		
XPEM410	8		
XPEM510	8		
XPEM511	8		
XPEM529	8		
XPEM611	8		
XPEM711	8		
XPEM810	8		
XPEM811	8		
XPEM911	8		
XPEM929	8		
XPEM3100D	8		
XPEM3110D	8		
XPEM5100D	8		
XPEM5110D	8		
XPEM6210D	8		
XPER110	8		
XPER111	8		
XPER211	8		
XPER229	8		
XPER310	8		
XPER311	8		
XPER410	8		
XPER510	8		
XPER511	8		
XPER529	8		
XPER611	8		
XPER711	8		

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