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压电开关 piezoelectric switches 压电陶瓷开关 选型资料 PDF 说明书

**ROSSLARE 压电陶瓷开关 EX-17 防水按键开关 IP68 按钮开关**

无火花，无磁，防腐，可用于室内，室外。

采用先进的压电技术，无机械动作。

寿命达 2 千万次。

保护等级: IP-68 进口按钮开关

- . 安装使用简单
- . 宽电压范围 5V 到 12V DC
- . 压电技术使得保护等级达到 IP68
- . 无需外接电源，可用于干接触输入
- . 输入电流 < 1A
- . 接触电阻 <100 ohm
- . 导线 2 x 24 AWG 280mm (11.02 in) wires
- . 2 线接口，
- . 脉冲时间 >50ms

#### ENVIRONMENTAL SPECIFICATIONS

- . 工作温度 -40° C 到 70° C (-40° F 到 158° F)
- . 储存温度 -60° C 到 80° C (-76° F 到 176° F)
- . 工作湿度 0% 至 99% 湿 - 满足 IP68 (防水) 要求
- . 可以室内使用，也适用于室外使用

产品质保: 5 年

罗仕兰安全产品，三类主要产品: 入口控制, 侵入探测 和 安保巡更.

Rosslare 的 EX-17 获得了 2010 年红点产品设计大奖 Red Dot Product Design Winning Award 2010

Rosslare 的获奖产品和 Apple 苹果, Samsung 三星, BMW 宝马, Bosch, Dell, HP, Siemens 等一起陈列于红点设计博物馆的顶级设计产品中。

Existing Items

EX04 Series REL-EX0400+011 REL-EX04E0+011 (PUSH TO EXIT)

EX06 & EX16 series REL-EX0600+011 REL-EX06E0+011 (PUSH TO EXIT)

REL-EX1600+011 REL-EX1600+012 REL-EX16E0+011 (EXIT)

EX07 & EX17 Series REL-EX0700+011 REL-EX07E0+011 (PUSH TO EXIT)

REL-EX1700+011 REL-EX17E0+011 (EXIT)

MP-06 MP-16 Metal Housing for REX button mounting Metal Housing for REX button mounting compatible with EX-04/EX-06/EX-07 compatible with EX-16/EX-17

# Piezoelectric Switches



Petroleum Dispensing  
Mining Equipment  
Industrial equipment control  
Emergency call system  
Clean Room Interfaces

Elevators Panels  
Medical  
Access Control  
Marine



## Piezoelectric Switches

PX series

EX series

# Piezoelectric Switches

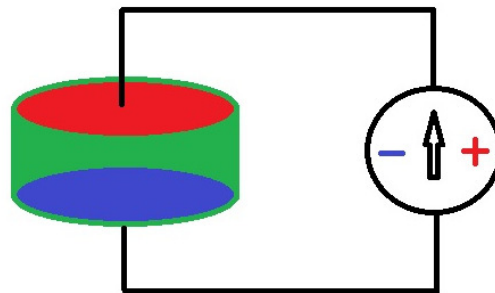


## Introduction

Rosslare's piezoelectric switches series are general purpose high performance switches suited for long-life and rugged use applications. The piezoelectric switches require no external power source to operate; are vandal, water and weather resistant and can be operated with fingers, gloves and through elastomeric overlays.

## What is Piezoelectric?

Piezoelectric switches are based on the principle of piezoelectricity. The piezoelectric effect is the ability of certain crystalline materials to convert mechanical stress into electrical signals and vice versa. The piezo switch is based on the functional principle of the piezoelectric crystal. The action of force on the piezoelectric switch causes a voltage to be induced due to a charge transfer.



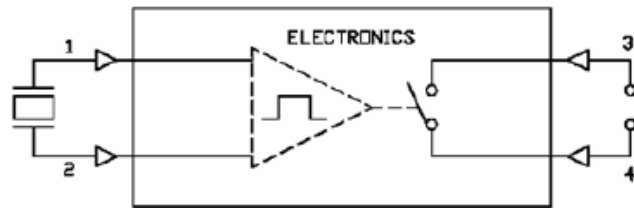
# Piezoelectric Switches



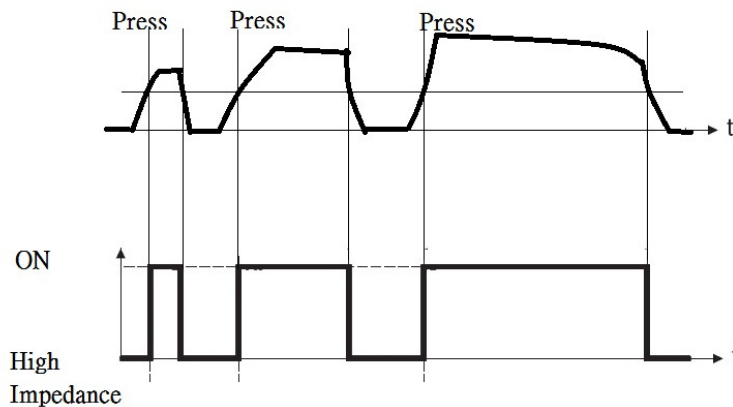
## **How PX piezo switch works?**

Pressure applied to the switch surface creates an electrical pulse. This electrical pulse is transferred to an electronic circuit, which then controls the behaviour of the switch as described below.

For the Normally Open (N.O) circuitry, the Piezo sensor is connected to terminals 1 and 2. The application circuit or device to be controlled is connected at terminals 3 and 4. The application circuit or device can be either DC or AC control circuitry. When pressure is applied to the switch, voltage difference is generated between terminal 1 and 2 resulting in the circuit being closed.



In the neutral, non-actuated position of the piezo switch (meaning no pressure is being applied to the switch), terminals 3 and 4 are in high impedance (non-conductive). When the piezo sensor is actuated, the piezo switch is no longer in a neutral position and the high resistance is eliminated, which results in terminals 3 and 4 being activated. The piezo switch returns to its neutral non-actuated state when the pressure is being applied to the switch is released.



The diagram above demonstrates the electrical behaviour of the switch when it is pressed. The duration of the signal depends on the duration of actuation.

## Piezoelectric Switches



### **Characteristics of Piezoelectric Switches**

The Piezoelectric switches are designed and developed using advanced technology:

- Waterproof, rated IP-68 (PX series), rated IP-65 (EX series)
- Works in harsh conditions  $-40^{\circ}\text{C}\sim+70^{\circ}\text{C}$  ( $-40^{\circ}\text{F}\sim+158^{\circ}\text{F}$ )
- Long-life expectancy (over a million cycles)
- No external power source required to power the switch. Supports a wide range of switch voltages
- No moving parts, maintenance free
- No polarity considerations for the wiring the switch
- SMT designed electronics for higher quality, superior performance, and reduced cost
- Meets RoHS Requirement
- ESD & EMI protection
- Piezoelectric technology can sense actuation within a solid metal enclosure
- Fully potted design prevents penetration of dirt, dust and water
- Vandal resistant
- Can be operated with fingers, gloves and through elastomeric overlays
- Heavy duty, non-magnetic, corrosion resistant for both Indoor and Outdoor use
- Non-sparking, made of aluminium alloy without moving parts, for use in spark sensitive environments
- Can be custom laser engraved, or anodize printed

### **Applications**

- Petroleum Dispensing
- Mining Equipment
- Access Control
- Medical
- Industrial equipment control
- Emergency Call Systems
- Marine
- Elevators Panels
- Clean Room Interfaces

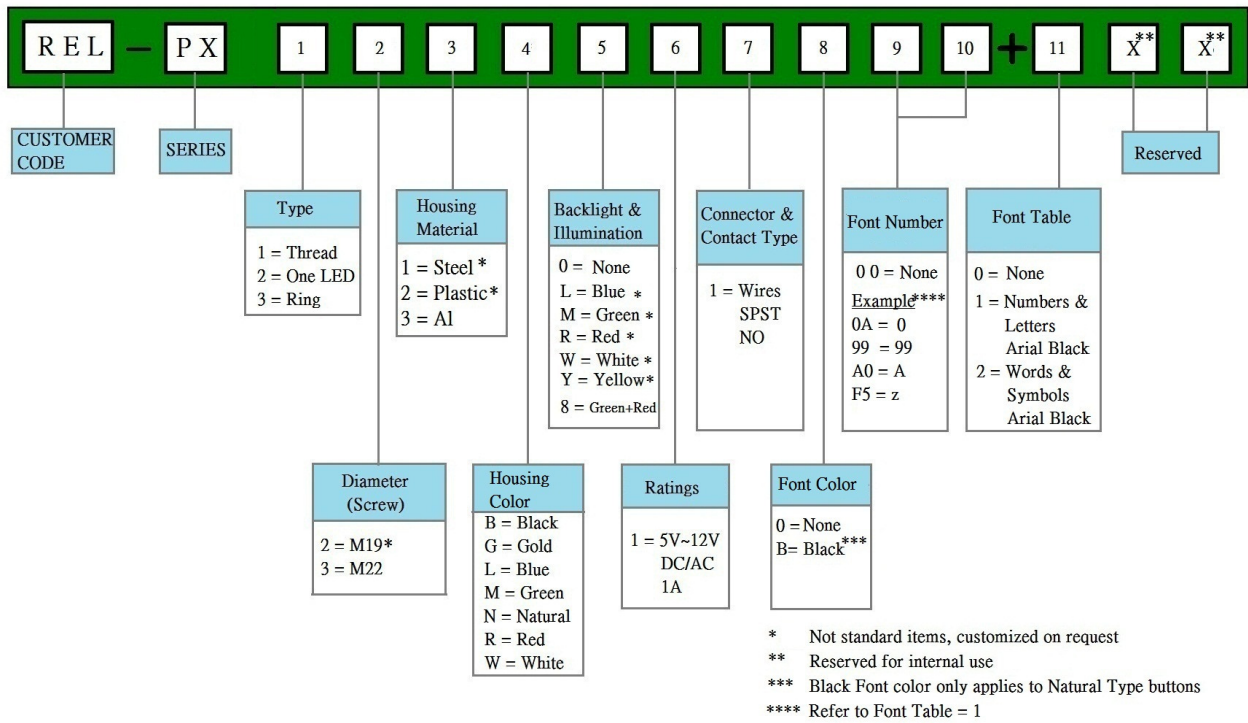
# Piezoelectric Switches



## PiezoElectric Button

Rosslare's PX family (PX-13, PX-23 & PX-33) are heavy duty, non-sparking, non-magnetic, corrosion resistant, illuminated, anti-vandal piezoelectric switches, designed for both indoor and harsh weather outdoor use.

## How to Order?



### 1. Type

There are 3 types of Piezoelectric Button for selection.



1=Thread



2=One LED



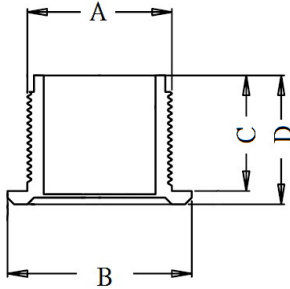
3=Ring

# Piezoelectric Switches



## 2. Diameter (Screw)

The standard screw diameter is 22mm. Other diameters may be customized on request.



(mm)	A	B	C	D
M22	22.00	28.00	17.50	19.50

## 3. Housing Material

The standard material is Aluminium. Other materials may be customized on request.

1=Steel      2=Plastic      3=Aluminium

## 4. Housing Color

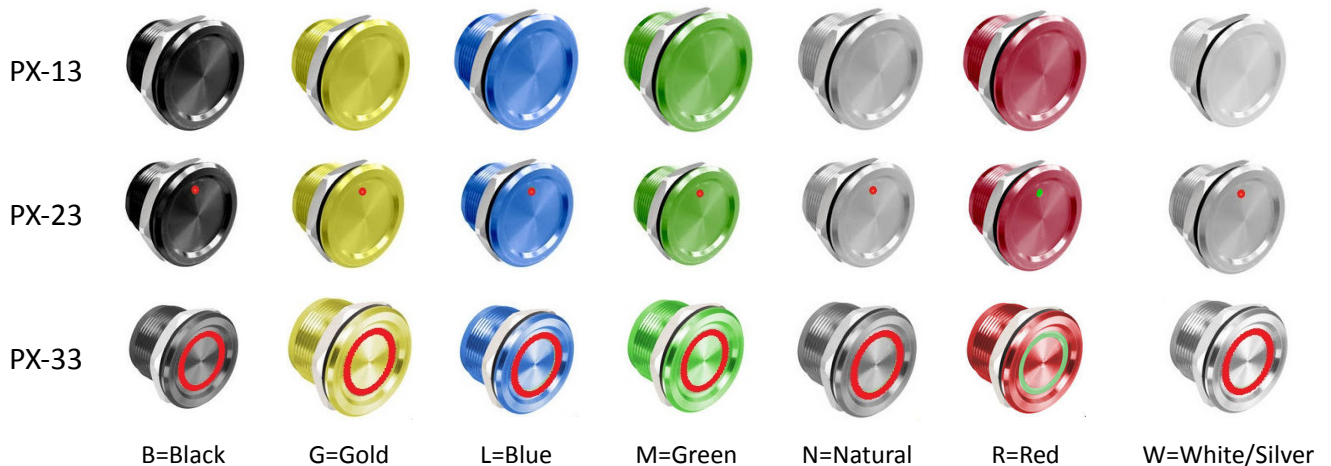
There are 7 standard colors: Black, Natural(Mat), Gold, Green, Red, Blue and Silver.

## 5. Backlight & Illumination

For PX-23 and PX-33 series, different LED colors may be selected.

0=None for PX-13 series

8=Green + Red (Bi-Color) for PX-23 & PX-33 series.



# Piezoelectric Switches



## 6. Ratings

The standard ratings is:

1= 5~12V DC/AC 1A

## 7. Connector & Contact Type

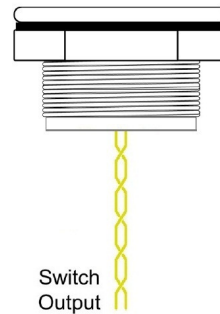
The standard connector and contact type is:

1 = Wires, SPST (Single Pole Single Throw), NO (Normally Open)

### PX-13

Wires	Function
2	Switch Output

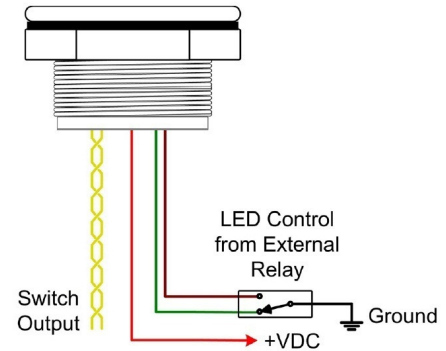
Simplest connection, no power supply and no control required



### PX-23

Wires	Function
2 X Yellow	Switch Output
Red	+Vdc input for LED Power Supply
Green	LED (Green) Control Input
Brown	LED (Red) Control Input

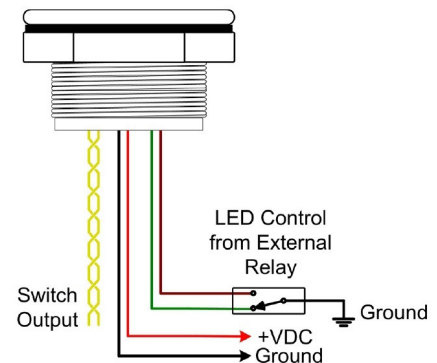
Bi-Color LED for status indication by simple control & connection



### PX-33

Wires	Function
2 X Yellow	Switch Output
Red	+Vdc input for LED Power Supply
Black	Ground
Green	LED (Green) Control Input
Brown	LED (Red) Control Input

Bi-Color Ring Illumination for status indication by simple control & connection





## Piezoelectric Switches



### 8. Font Color

0=None (No printing)

B=Black (Standard)

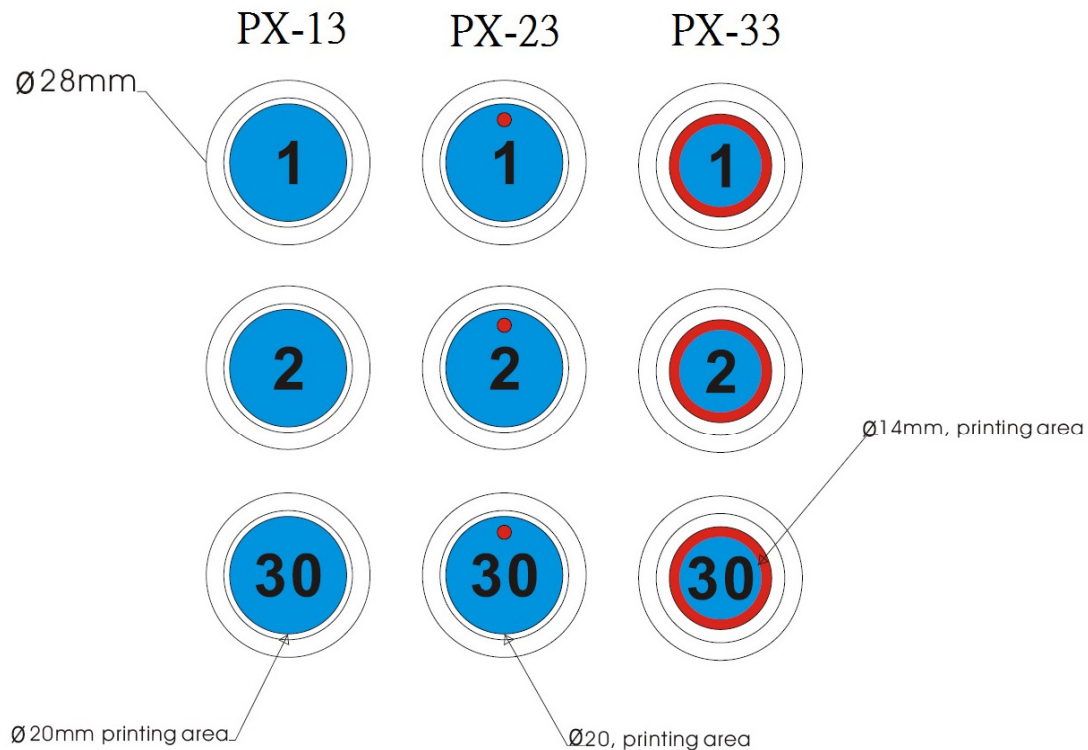
Font color only applies to **Natural Color** anodized piezoelectric buttons at the moment.

**Lettering with different fonts, languages, colors and sizes are available on request.**

**Please refer to the pricelist for the corresponding extra works.**

### Printing Area

The printing for M22 type piezoelectric buttons are shown below.



# Piezoelectric Switches



## 9. &10. Font Number

00 = None (No printing)

XX = Character code

## 11. Font Table

Standard Tables are provided for selection. The font size to be printed depends on the printing area of the switches and is not defined in the ordering number.

0=None (No printing)

1=Latin Arial Black (Numbers & Letters)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	01	02	03	04	05	06	07	08	09	0	À	Á	Â	Ã	Ä
1	10	11	12	13	14	15	16	17	18	19	1	Å	È	É	Ê	Ë
2	20	21	22	23	24	25	26	27	28	29	2	Ì	Í	Î	Ï	Ò
3	30	31	32	33	34	35	36	37	38	39	3	Ó	Ô	Õ	Ö	Ù
4	40	41	42	43	44	45	46	47	48	49	4	Ú	Û	Ü	Š	Œ
5	50	51	52	53	54	55	56	57	58	59	5	Đ	Ñ	Æ	Ç	Ø
6	60	61	62	63	64	65	66	67	68	69	6	Ý	ÿ	Ž	ß	Ɔ
7	70	71	72	73	74	75	76	77	78	79	7					
8	80	81	82	83	84	85	86	87	88	89	8	à	á	â	ã	ä
9	90	91	92	93	94	95	96	97	98	99	9	å	è	é	ê	ë
A	A	B	C	D	E	F	G	H	I	J		ì	í	î	ï	ò
B	K	L	M	N	O	P	Q	R	S	T		ó	ô	õ	ö	ù
C	U	V	W	X	Y	Z						ú	û	ü	š	œ
D	a	b	c	d	e	f	g	h	i	j		đ	ñ	æ	ç	ø
E	k	l	m	n	o	p	q	r	s	t		ý	ÿ	ž		Ɔ
F	u	v	w	x	y	z										

# Piezoelectric Switches



2=Arial Black (Words & Symbols) – to be expanded

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0																
1	<b>PUSH</b>	<b>EXIT</b>	<b>ON</b>	<b>OFF</b>	<b>IN</b>	<b>OUT</b>	<b>START</b>	<b>STOP</b>	<b>UP</b>	<b>DOWN</b>	<b>LEFT</b>	<b>RIGHT</b>	<b>CTRL</b>	<b>RETURN</b>	<b>SHIFT</b>	<b>ON/OFF</b>
2	<b>HIGH</b>	<b>LOW</b>	<b>LOCK</b>	<b>ENTER</b>	<b>BACK</b>	<b>LOCK</b>										
3																
4																
5																
6																
7																
8	<b>\$</b>	<b>€</b>	<b>¢</b>	<b>£</b>	<b>¤</b>	<b>¥</b>	<b>@</b>	<b>µ</b>	<b>§</b>							
9	<b>¼</b>	<b>½</b>	<b>¾</b>	<b>‰</b>												
A	<b>+</b>	<b>-</b>	<b>x</b>	<b>÷</b>	<b>=</b>	<b>±</b>	<b>#</b>	<b>%</b>	<b>?</b>	<b>&amp;</b>	<b>!</b>	<b>!</b>	<b>*</b>	<b>,</b>	<b>:</b>	<b>;</b>
B	<b>&lt;</b>	<b>&gt;</b>	<b>«</b>	<b>»</b>	<b>&lt;</b>	<b>&gt;</b>	<b>"</b>									
C																
D																
E																
F																

Font tables for lettering could be customized upon request.

Font size will be subjected to the available printing area.

## Piezoelectric Switches



### Cross Reference for Existing Item Code to New Item Code

Existing Item Code	Short Name	New Item Code
REL-PX13B0+011	PIEZO SWITCH THREAD BLACK	REL-PX133B011000+011
REL-PX13G0+011	PIEZO SWITCH THREAD GOLD	REL-PX133G011000+011
REL-PX13L0+011	PIEZO SWITCH THREAD BLUE	REL-PX133L011000+011
REL-PX13M0+011	PIEZO SWITCH THREAD GREEN	REL-PX133M011000+011
REL-PX13N0+011	PIEZO SWITCH THREAD NATURAL	REL-PX133N011000+011
REL-PX13R0+011	PIEZO SWITCH THREAD RED	REL-PX133R011000+011
REL-PX13W0+011	PIEZO SWITCH THREAD WHITE	REL-PX133W011000+011
REL-PX23B8+011	PIEZO SWITCH ONE LED BLK BODY	REL-PX233B811000+011
REL-PX23G8+011	PIEZO SWITCH ONE LED GOLD BODY	REL-PX233G811000+011
REL-PX23L8+011	PIEZO SWITCH ONE LED BLUE BODY	REL-PX233L811000+011
REL-PX23M8+011	PIEZO SWITCH ONE LED GRN BODY	REL-PX233M811000+011
REL-PX23N8+011	PIEZO SWITCH ONE LED NAT BODY	REL-PX233N811000+011
REL-PX23R8+011	PIEZO SWITCH ONE LED RED BODY	REL-PX233R811000+011
REL-PX23W8+011	PIEZO SWITCH ONE LED WHT BODY	REL-PX233W811000+011
REL-PX33B8+011	PIEZO SWITCH RING BLACK	REL-PX333B811000+011
REL-PX33G8+011	PIEZO SWITCH RING GOLD	REL-PX333G811000+011
REL-PX33L8+011	PIEZO SWITCH RING BLUE	REL-PX333L811000+011
REL-PX33M8+011	PIEZO SWITCH RING GREEN	REL-PX333M811000+011
REL-PX33N8+011	PIEZO SWITCH RING NATURAL	REL-PX333N811000+011
REL-PX33R8+011	PIEZO SWITCH RING RED	REL-PX333R811000+011
REL-PX33W8+011	PIEZO SWITCH RING WHITE	REL-PX333W811000+011

### System Components

The PX Piezoelectric switches are compatible with Rosslare's controllers, security systems and many third party systems.



AC-225



AC-215



L-4K

## Piezoelectric Switches







### The EX Piezoelectric REX Buttons

Rosslare's EX piezoelectric switches are designed for industrial, high-risk environment requirements and indoor applications.

**EX04** series with plastic housing provides a competitive option for reliable and cost effective piezoelectric switches for indoor use.

**EX06, EX16, EX07 & EX17** are designed for intrinsically safe indoor and outdoor applications (meeting the IP-65 standard) to control industrial equipment in various fields including: mining, oil and gas production, military installations and more.

Model	EX04	EX06	EX16	EX07	EX17
Appearance					
Material	Plastic	Metallic		Metallic	
Illumination LED	Ring (Green/Red)			Square (Green/Red)	
Power Supply	8~18 VDC	12~24 VDC/VAC			
Switching Capability	1A @ 12VDC N.O	2A DPDT		2 X 2A Form-C, N.O and N.C	
Environment	Indoor	Indoor & Outdoor (IP-65)			
Temperature	-10°C ~ 63°C 14°F~145°F	-40°C~63°C -40°F~145°F			
Humidity	10%~95%	0%~95% non-condensing			
Size	Standard Gang	Standard Gang	Mullion	Standard Gang	Mullion
Built-in-sounder	No	No	No	Yes	Yes
Button Switch Life	Over 1 Million Cycles	1 Billion Cycles			
Relay Life Expectancy	No Relay	100,000 @ 2A 30VDC 500,000 @ 1A 30VDC			
Output Time Control	None	1~60 seconds (Jumpers settings)			
Connector Type	5-wire cable	Terminal block		10-wire cable	

## Piezoelectric Switches



### Existing Items

#### EX04 Series

REL-EX0400+011  
REL-EX04E0+011 (PUSH TO EXIT)

#### EX06 & EX16 series

REL-EX0600+011  
REL-EX06E0+011 (PUSH TO EXIT)  
REL-EX1600+011  
REL-EX1600+012  
REL-EX16E0+011 (EXIT)

#### EX07 & EX17 Series

REL-EX0700+011  
REL-EX07E0+011 (PUSH TO EXIT)  
REL-EX1700+011  
REL-EX17E0+011 (EXIT)

### System Components

The EX series are compatible with all switch operated electrical devices. The unit also works with all of Rosslare's Access control units as well as all standard access control systems.



AC-F44



AC-Q42HB



AC-225

### Mounting Peripherals



MP-06

Metal Housing for REX button mounting  
compatible with EX-04/06/07



MP-16

Metal Housing for REX button mounting  
compatible with EX-16/17

## Piezoelectric Switches



### Rosslare received the Red Dot Product Design

### Winning Award 2010 for EX-17 and Biometric reader family



The red dot design award is the largest and most renowned design competition worldwide. The prestige award for high design quality, expressing innovation in form and function in an exemplary manner, was given to EX-17 and the biometric reader family on July 5th 2010 at Essen, in a special gala ceremony.

Rosslare's award-winning products are displayed at the red dot design museum among other top-class designed products from companies such as Apple, Samsung, BMW, Bosch, Dell, HP, Siemens and many more.

EX-17 and Rosslare's new Swipe fingerprint reader family (AY-B1663, AY-B3663, and AY-B4663), were chosen from among a total of 4,252 products representing designers and companies from 57 nations and have both won an award in the red dot design award competition for their outstanding and innovative design.

The EX-17 is a heavy-duty, time-controlled digital switch with non-sparking and non-magnetic qualities. Its elegantly designed, attractive case is made with architects and designers in mind. Being corrosion resistant, illuminated, and vandal-safe, the switch is suitable for both indoor and outdoor use. Following an innovative concept, it features solid-state piezoelectric switch technology that generates a dry-contact N.O. and N.C. relay pulse. This is achieved by the simple touch of a finger without any physical movement or moving parts. Among its well thought-out features are also a jumper selectable illumination status with light-dimming option as well as timed-operation and relay-toggle options. The EX-17 mounts directly to a standard US-size switchbox and is crafted to high manufacturing standards out of the finest materials under Rosslare's ISO 9000:2000 Certified Quality Standards.

[www.red-dot.de/press](http://www.red-dot.de/press)