Safety switches

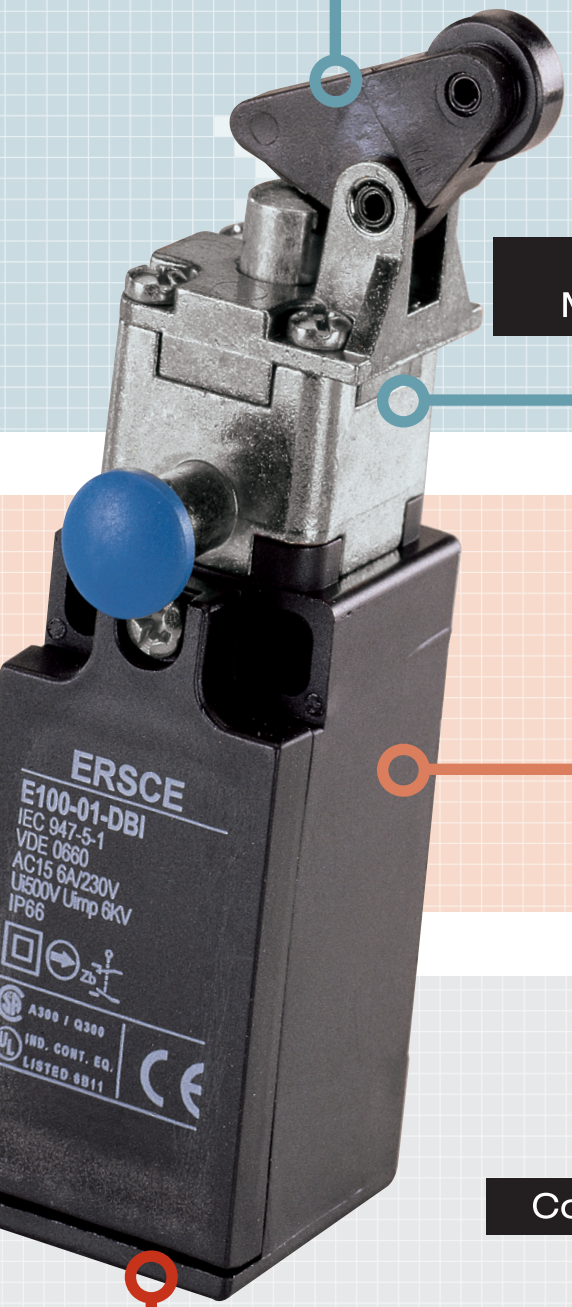
Selection diagram

Plastic or Metal actuators

RB

Plastic or Metal head

TB T S5



Bodies

Plastic

E10...I E20...I E40...I

Contact elements

01	1NO+1NC slow action
04	2NC slow action
08	2NC slow action (for pull-wire switches)

Cable entry

- Pg 13,5
- M20x1,5
- 1/2" NPT
- PG11
- M16x1,5
- M12 connector

DB

EB

IB

IB•50

FB

FB•50

FBR•50

Metal

E10…**M**

E30…**M**

E40…**M**

Product code structure

E10 | **0** | **01** | **FB** | **I** | **50**

Series

E10	1 cable entry
E20	2 cable entry
E30	3 cable entry
E40	4 cable entry

Ingresso cavi

0	PG 13,5
1	M20x1,5
2	1/2" NPT
3	PG 11
4	M16x1,5

Contact element

01	1NO+1NC slow action
04	2NC slow action
…	

Opzioni

50	With Ø50 mm roller
P	With cable gland Pg13,5
Q	With cable gland Pg11
M12	With M12 connector
R	With membrane M20x1,5

Construction material

I	Plastic body / Metal head
M	Metal body / Metal head

Actuator type

AB	Steel plunger with reset
BB	Steel roller plunger with reset
…	

Note: Please verify the effective availability of a product before ordering.

Technical data

					TYPE	E100 / E200 / E300 / E400
Maximum operating frequency					operat./hour[1]	3600
Insulation resistance				500 V DC	MΩ	100
Dielectric strenght				50/60 Hz for 1'	V AC	2500[2]
Rated insulation voltage		Ui	IEC947-5-1		V AC	500
Rated thermal current		Ithe	IEC947-5-1		A	10
Rated operating current	Category AC15	Ie	IEC947-5-1/EN60947-5-1	24V	A	10
	A300			125V	A	6
				230 V	A	6
				400 V	A	3
Contact resistance			IEC255-7 cat.3	initial value	mΩ	25
Short circuit protective devices			IEC269 (IEC947-5-1)			
			fuse type gL or gG		A	10
Rated conditionals short circuit current			IEC947-5-1		A	1000
Pollution degree			IEC947-5-1		A	3
Protection degree			EN 60529			IP66
Protection against electric shock				plastic	class	II
				metal	class	I
Vibration resistance			IEC68-2-6	mm		0,35 ± 15% (10 ÷ 55 Hz ± 1 Hz)
Shock resistance			IEC68-2-27	11ms	g	30
Mechanical life					cycles	20.000.000
Electric life			at 250V AC 6A with resistance load cosφ=1		cycles	500.000
			at 250V AC 6A with inductive load cosφ=0,4		cycles	500.000
Distance between contacts			Snap action type		mm	2x1,25
			Low action type		mm	2x2
Terminals			Type			Screw with combined notch and retractable plate (notch Ph. Size 1)
			Screw			3,5
			Protection degree			IP20
			Material			Steel class 8,8 / Galvanized
			Max screw tightening torque			120 (12,24)
			Max connecting capacity	rigid cable	mm²	2x1,5
				flexible cable	mm²	2x1,5
Terminal numbering						In accordance with EN50013
Air ambient temperature				operational	°C	-35 ÷ +85 (without formation of ice)
Relative umidity				operational		95% max

[1] One operation cycle means two movements, one to close and one to open as required by EN 60947-5.

[2] Between terminals of the same polarity; between terminals with different polarity; between live mechanical parts and ground; between live mechanical parts and non-current-carrying metal parts.

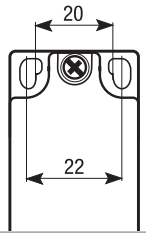
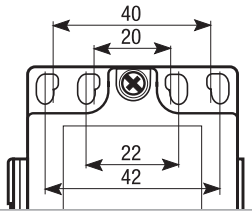
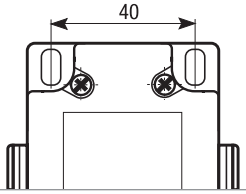
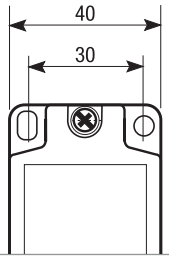
Certifications and Approvals

	c UL us LISTED	CSA	IEC EN 60947
E100	•	•	+
E200	•	•	+
E300	•	•	+
E400	•	•	+

- UL approval file E72861
- CSA approval file 026716-0-000
- • Approved
- \+ Conforms to requirements

E100-E200 E300-E400 series

- Plastic or Metal body
- Plastic* or Metal head and actuators
- IP66 protection degree
- Contact elements with positive opening of the NC contact in accordance to IEC EN 60947-5-1 and VDE 0660-200

Series	Product	Fixing holes
E100		
E200		
E300		
E400		

* On key actuated switches

Cable inputs/outputs

Series	Nr.
E100	1 on the bottom 
E200	2 on the sides 
E300	2 on the sides + 1 on the bottom 
E400	1 on the bottom 

Type		Series
Pg 13,5	 Pg13,5	Ex00..
M20x1,5	 M20x1,5	Ex01..
1/2 NPT	 1/2 NPT	Ex02..
Pg 11	 Pg11	Ex03..
M16x1,5	 M16x1,5	Ex04..
M12 connector	 M12 connector	Ex00..M12

Actuation heads

Safety switches with reset

Group AB-BB		Group CB-RB		Group DB
				
AB Plunger	**BB** Roller plunger	**CB** Plastic roller lever, side actuation	**RB** Reversible and adjustable lever with plastic roller	**DB** Plastic roller lever, vertical actuation

Group EB-IB-FB-FRB					
					
EB Straight lever with plastic roller	**IB** Bent lever with plastic roller	**IB•50** Bent lever with Ø50mm rubber roller	**FB** Variable lenght lever with plastic roller	**FB•50** Variable lenght lever with Ø50mm rubber roller	**FRB•50** Adjustable lever with Ø50mm rubber roller

Key actuation safety switches

Group S5

S5 5 ways keys actuation

Pull wire safety switches

Group T	
	
TB Pull wire with reset	**T** Pull wire without reset

Hinges operating safety switches

Group SC

SC Metal pin

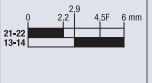
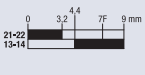
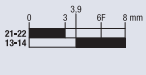
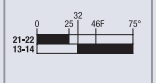
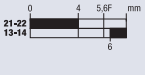
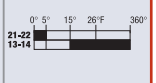
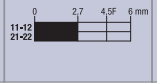
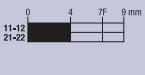
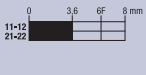
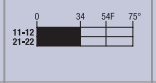
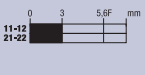
Contact elements

Protective screen

Protective natural polycarbonate screen to prevent the entry of materials and access to the test finger (IP20 – EN60529)

Mobile and fixed contacts

Ag/Ni mobile and fixed contacts galvanically separated (acc. IEC 947-5-1, EN 60204, VDE 0660, VDE 0113)

Contact unit	Actuator	Group AB-BB	Group CB-RB	Group DB	Group EB-IB-FB-FRB	Group S5	Group T	Group SC
01 1NO+1NC slow action	1NO+1NC slow action 21 13 Zb 22 14							
04 2NC slow action	2NC slow action 11 21 Y+Y 12 22							
08 2NC slow action	2NC slow action 11 21 12 22							

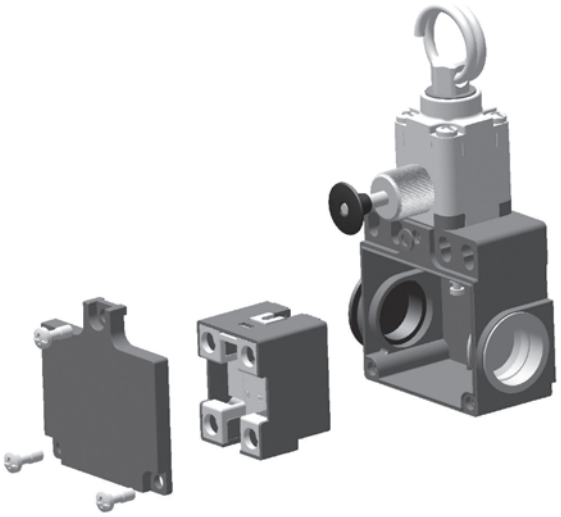
Opened contact

Closed contact

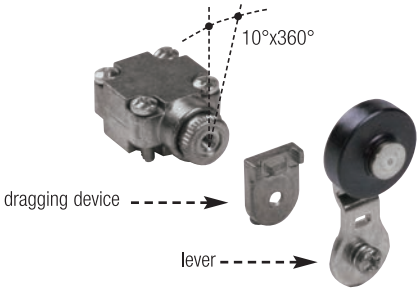
Pressure of the switch / Release of the switch

General characteristics

Safety switches are conceived for applications related to the protection of automated installations and are avaiable in 4 different product families: with reset,pull-wire,5 way key and for hinge actuation.



- thermoplastic or metal body
- IP66
- contact blocks with positive opening of the NC contact according to IEC EN 60947-5-1 e VD 0660-200



Adjustable levers

Possibility to adjust the lever in 10° steps for 360° by moving the lever and the dragging device.

Overturning levers

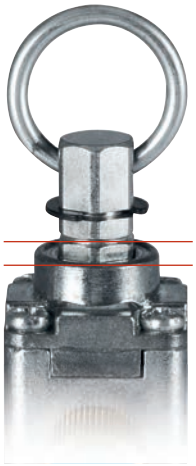
all the levers can be fastened on switches on straight or reverse side, to obtain two different work plans of the lever.

Pull wire safety switches

Pull wire safety switches

Pull wire safety switches are essential for the continuous control of a long line of machines or parts extending over a considerable length. They guarantee the safety of the operator, who is able to control the immediate stop of the machinery from any point in the operating zone when no or few automatic systems to cut off the power supply are present. This kind of actuator is available on the series **E100-E200-E400** with thermoplastic or metal body and metal head, with **IP66** protection degree.

Wire tension indicator
For the exact cable tension, check that the notch on the drive shaft is in line with the head.

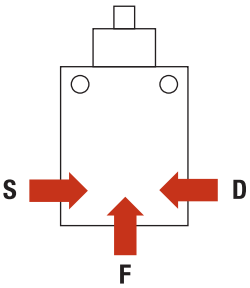


Reset button
Block reset that guarantees the locking of the NC head in the open position after a single operation.

In conformity with standards:
IEC EN 60947-5-1 • EN 60947-1 • UNI EN 1088
EN ISO 12100-1 • EN ISO 12100-2 • IEC 529
EN 60529 • VDE 0660-200 • VDE 0113 • UNI EN 13850

Applications:

Long lines of machines: conveyor belts, textile machines, printing machines, etc…



Fixing

E100	20/22 mm
E200	20/22 and 40/42 mm
E300	40 mm
E400	30 mm

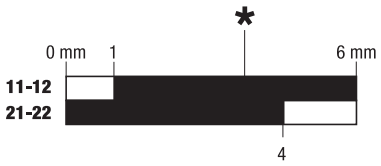
Cable entry

	F	S	D
E100	•		
E200		•	•
E300	•	•	•
E400	•		

Thread	Series part no.			
Pg 13,5	E100	E200	E300	E400…
M20x1,5	E101	E201	E301	E401…
1/2" NPT (on request)	E102	E202	E302	E402…
Pg 11 (on request)	E103			
M16x1,5 (on request)	E104			
M12 connector (on request)	E100/M12	E200/M12	E300/M12	E400/M12

Dedicated contact block

Dedicated contact block 08 with longer travel for pull-wire switches: cable vibrations will have no influence on the correct operation of the limit switch.



closed contacts
opened contacts

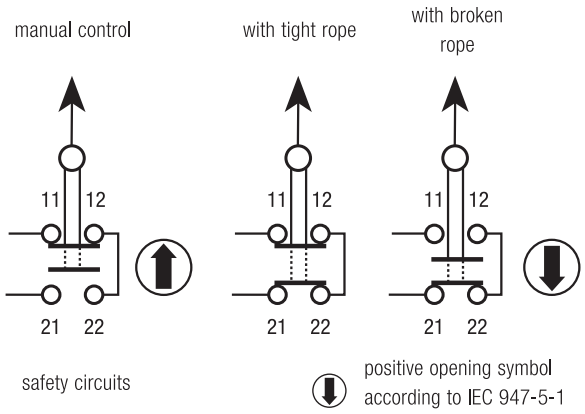
*tight rope
Tension force: 50N / final 60 N

* Installation travel: any cable vibrations will have no influence on the correct operation of the limit switch.

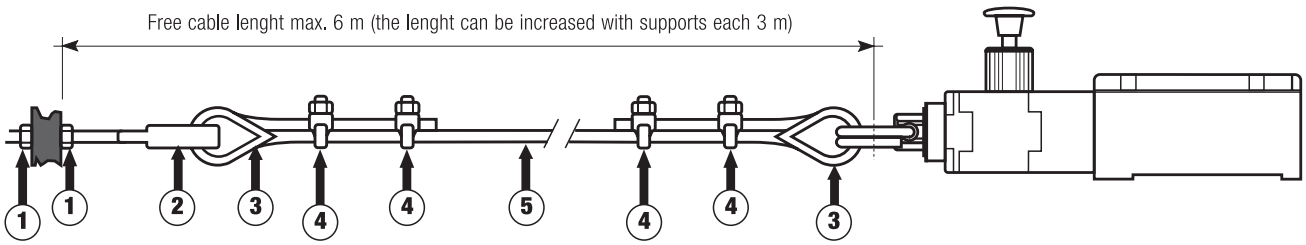
Indications for correct operation

The switch has to be fitted in such a way that the cable is sufficiently taut and closes both contacts.
For the exact cable tension, check that the notch on the drive shaft is in line with the head.

Contacts position during operation for contact block 08



NOTE: the contacts 11-12 and 21-22 have to be connected in series



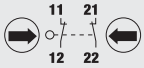
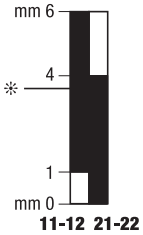
Examples of connection

Free cable lenght max. 6 m (increase the lenght with supports each 3 m).

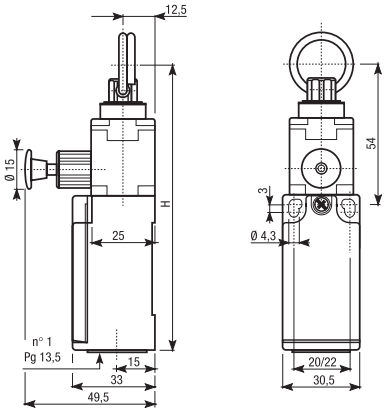
Notes

1. BM 10 DIN 439 hexagonal nut
2. part no. 005 - BM 10 DIN 439 ring with thread
3. part no. R05 - B - 5 mm DIN 6899 noose
4. part no. M05 - 5 mm DIN 1480 clamp
5. part no. F05 - PVC steel cable, Ø 5 mm

E100

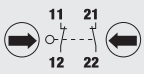
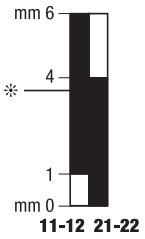
Contact element		Cable entry				Contact travel
		PG 13,5		M20 x 1,5		
		Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	
2NC slow action 	08	**E10008TBI**	**E10008TBM**	**E10108TBI**	**E10108TBM**	
Weight	kg	0,195	0,29	0,195	0,29	
Pack	pcs	1	1	1	1	
H	mm	111,5	109	111,5	109	

standard article



E200

E400

Contact element		Cable entry						Contact travel
		PG 13,5	M20 x 1,5	PG 13,5		M20 x 1,5		
		Metal head Plastic body	Metal head Plastic body	Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	
2NC slow action 	08	E20008TBI	E20108TBI	E40008TBI	E40008TBM	E40108TBI	E40108TBM	
Weight	kg	0,22		0,24	0,465	0,24	0,465	
Pack	pcs	1		1		1		

standard article