

## Overview

## Contact blocks

The position switches are ERSCE's main product, and are the result of more than 40 years of experience in industrial automation.
They are suitable for use in the most different environmental conditions, thanks to their solid construction, IP66 certified, and proven reliability over decades of fieldwork.


ERSCE position switches are available in 4 different series E100, E200, E300, E400, each characterized by different technical solutions and mounting options.
Each series comprises a metal actuator, the casing is available in PA6 thermoplastic reinforced with fiberglass (black RAL 9005) or diecast metal alloy (in this case there is a screw for earthing the switch) painted with baked epoxy powder (gray RAL 7022).

|  | E100 | E200 | E300 | E400 |
| :--- | :---: | :---: | :---: | :---: |
| Thermoplastic | $\bullet$ | $\bullet$ | $\bullet$ |  |
| Diecast metal | $\bullet$ |  | $\bullet$ | $\bullet$ |

The standard thread for cable input / output is Pg 13,5. 1/2" NPT and M20 threads are available on request.

For all series are available contact blocks with two contacts and positive opening of NC contact, snap action (00) or slow action (01).
Thanks to the careful design and to the use of the best materials, all ERSCE contact blocks are designed to offer maximum reliability, both electrical and mechanical.

Protective natural polycarbonate screen to prevent the entry of materials and access to the test finger (IP20 - EN60529)
Galvanically isolated contacts with positive opening (in accordance with IEC947-5-1, EN60204, VDE0660, VDE0113, EN292)


[^0]
## Actuators

There are several standard actuators available with direct, angular and multidirectional movement:



C
Thermoplastic roller lever, side actuation


F
Side rotary adjustable lever with plastic roller


Options on request

## Cable input / output

Position switches with thread for cable input / output M20x1,5 and 1/2 NPT are available on request.

## Contact blocks

The following contact blocks are available on request:


04


1121 $0-f--4 Y+Y$
Slow action 2NC
$05 \bigodot \begin{array}{cc}11 & 21 \\ 12 & 22\end{array}$
Snap action 2NC

## Actuators

Are available on request the following actuators:


All actuators are made of diecast metal alloy.

## Technical data

## Condition of use

| Insulation resistance |  |  | 500 V DC | $\mathrm{M} \Omega$ | 100 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Dielectric strength |  | 50/60 Hz per 1 ${ }^{\text {* }}$ |  | V AC | 2500 |
| Rated insulation voltage | Ui | IEC947-5-1 |  | V AC | 500 |
| Rated thermal current | the | IEC947-5-1 |  | A | 10 |
| Rated operating current |  | IEC947-5-1/EN60947-5-1 |  |  |  |
| Category AC15 | le |  | 24 V | A | 10 |
| A300 |  |  | 125 V | A | 6 |
|  |  |  | 230 V | A | 6 |
|  |  |  | 400 V | A | 3 |
| Category DC13 | le |  | 24 V | A | 6 |
| Q300 |  |  | 48 V | A | 4 |
|  |  |  | 120 V | A | 1 |
|  |  |  | 250 V | A | 0,4 |
| Contact resistance |  | IEC255-7 cat. 3 | initial value | $\mathrm{m} \Omega$ | 25 |
| Short circuit protective devices |  | IEC269 (IEC947-5-1) |  |  |  |
|  |  | gl or gG type fuse |  | A | 10 |
| Rated conditionals short circuit current |  | IEC947-5-1 |  | A | 1000 |
| Pollution degree |  | IEC947-5-1 |  |  | 3 |
| Protection degree |  | EN 60529 |  | IP | 66 |
| Protection against electric shock |  |  | plastic | class | 11 |
|  |  |  | metal | class | 1 |
| Vibration resistance |  | IEC68-2-6 | mm |  | 0,35 $\pm 15 \%$ |
|  |  |  |  | $(10 \div 55 \mathrm{~Hz} \pm 1 \mathrm{~Hz})$ |
| Shock resistance |  |  | IEC68-2-27 | 11 ms | g | 30 |
| Mechanical life |  |  |  | cycles | 15.000.000 |
| Electrical life |  | a 250 V AC 6A with resistance |  |  |  |
|  |  | load $\cos \varphi=1$ |  | cycles | 500.000 |
|  |  | a 250 V AC 6A with resistance |  |  |  |
|  |  | load $\cos \varphi=0,4$ |  | cycles | 500.000 |
| Distance between contacts |  | snap action type |  | mm | 2x1,25 |
|  |  | slow action type |  | mm | 2x2 |
| Terminals |  | Type |  |  | Screw with combined notch and |
|  |  |  | retactable plate |
|  |  |  | (notch Ph. Size 1) |
|  |  | Screw | M | 3,5 |
|  |  | Protection degree | IP | 20 A |
|  |  | Material |  | Steel class 8,8/ Galvanized |
|  |  | Max. screw tightening torque | cNm ( Kg cm ) | 120 (12,24) |
|  |  | Max connecting capacity | rigid cable | $\mathrm{mm}^{2}$ | 2x1,5 |
|  |  |  | flexible cable | $\mathrm{mm}^{2}$ | 2x1,5 |
|  |  | Terminal numbering |  |  | In accordance with EN50013 |
| Air ambient temperature |  |  |  | operational |  | ${ }^{\circ} \mathrm{C}$ | $-35 \div+85$ |
|  |  |  | (without formation of ice) |  |  |
| Relative humidity |  |  |  |  | operational |  | 95\% max |

Position and safety switches

## I International standards and approvals

| Country | Authority | Mark of standard | E100 | E200 | E300 | E400 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| USA / Canada | UL investigated according to CSA | $\text { UL USTED }_{1}^{1}$ | - | - | - | - |
|  |  |  |  |  |  |  |
| Canada | CSA International |  | - | - | - | - |
| Germany | Verband Deutscher Elektrotechiker | VDE $0660{ }^{3}$ | + | + | + | + |
| Switzerland | Schweizerischer Elektrotechnischer Verein | ( ${ }_{\text {S }}$ | + | + | + | + |
| Denmark | Danmarks Elektriske Materielkotroll | (D) | + | + | + | + |
| Norway | Norges Elektriske Materielkotroll | $\mathbf{N}$ | + | + | + | + |
| Sweden | Svenska Elektriske Materielkotrollanstalten | $S$ | + | + | + | + |
| Finland | Sähötarkastuskeskus | (F) | + | + | + | + |
| Austria | Österreichischer Verband für Elektrotechnik | OVE | + | + | + | + |
| Great Britain | British Standards Istitution Istitution | $\begin{array}{cc} \text { BS } & 3 \\ \text { EN } 60947 \end{array}$ | + | + | + | + |
| IEC <br> International electrical Commission |  | IEC $60947{ }^{4}$ | + | + | + | + |
| Russian Federation | GOST |  | - | - | - | - |

- Approved
+ conforms to requirements

[^1]
## Operating features



Plunger, Roller plunger, vertical travel
Actuators: A-B

Drive cam operating parameters
$V \max (\mathrm{~m} / \mathrm{s})$

| Act. A | 0,5 |
| :--- | :--- |
| Act. B | 0,5 |

Drive forces
Minimum command force 9 N

Roller plunger, side travel Actuator: B

Drive cam operating parameters

| $\varphi$ | $\vee \max (\mathrm{m} / \mathrm{s})$ |
| :---: | ---: |
| $30^{\circ}$ | 0,5 |
| $20^{\circ}$ | 1 |

Drive forces
Minimum command force 9 N
Minimum forced opening force 28 N

Operating features


Roller lever, side travel Actuator: C

Drive cam operating parameters


Drive forces
Minimum command force Minimum forced opening force 26 N

Roller lever, vertical travel Actuator: D

| Drive cam operating parameters |  |
| :--- | ---: |
| $\varphi$ | $\mathrm{V} \max (\mathrm{m} / \mathrm{s})$ |
| $30^{\circ}$ | 0,5 |
| $20^{\circ}$ | 1 |

Drive forces
Minimum command force
8 N
Minimum forced opening force
26 N

Roller lever
Actuators: E-I-F

Drive cam operating parameters

| $\varphi$ | $\vee \max (\mathrm{m} / \mathrm{s})$ |
| :---: | ---: |
| $30^{\circ}$ | 1,5 |
| $45^{\circ}$ | 1 |
| $60^{\circ}$ | 0,75 |
| $60^{\circ}-90^{\circ}$ | 0,25 |

Drive forces (E100-E200-E300)
Minimum command force
Minimum forced opening force
Drive forces (E400)
Minimum command force 25 cNm
Minimum forced opening force
45 cNm


## Steel plunger



## ISteel roller plunger



- Thermoplastic roller lever, side actuation

|  | Part no. | Type | Contact block | Circuit diagram | Contact travel | Pack. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Thermoplastic | ER800050 <br> ER800610 | $\begin{aligned} & \mathrm{E} 100-00-\mathrm{Cl} \\ & \text { E100-01-Cl } \end{aligned}$ | Snap action $1 \mathrm{NO}+1 \mathrm{NC}$ <br> Slow action $1 \mathrm{NO}+1 \mathrm{NC}$ | 00 |  | 1 |
| Metal | ER800060 <br> ER800620 | E100-00-CM <br> E100-01-CM | Snap action $1 \mathrm{NO}+1 \mathrm{NC}$ <br> Slow action $1 \mathrm{NO}+1 \mathrm{NC}$ |  |  | 1 <br>  <br> 1 |

- Thermoplastic roller lever, vertical actuation

- Side rotary lever with plastic roller


II Offset side rotary lever with plastic roller


E100 Series

## Side rotary adjustable lever with plastic roller



- Flexible rod



The E200 series is designed for maximum installation flexibility, it has two diffent fixing templates to maintain compatibility with both E100 series (fixing holes distance $20-22 \mathrm{~mm}$ ) and E300 series (fixing holes distance 40-42 mm).
E200 series provides 2 cable inputs / outputs on both sides of the switch and is available with thermoplastic casing only.


I Steel plunger


- Steel roller plunger



## | Thermoplastic roller lever, side actuation



E200 Series

- Thermoplastic roller lever, vertical actuation

- Side rotary lever with plastic roller

- Offset side rotary lever with plastic roller

|  |  | Part no. | Type | Contact block |  | Circuit diagram | Contact travel | Pack. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | ER830800 <br> ER830810 | $\begin{aligned} & \text { E200-00-II } \\ & \text { E200-01-II } \end{aligned}$ | Snap action $1 \mathrm{NO}+1 \mathrm{NC}$ <br> Slow action $1 \mathrm{NO}+1 \mathrm{NC}$ | 00 <br> 01 |  |  | 1 <br>  <br>  <br> 1 |

- Side rotary adjustable lever with plastic roller

- Flexible rod



## Steel plunger

Cort no. $\quad$ Type

## - Steel roller plunger

Cont

## - Thermoplastic roller lever, side actuation

Cont

## E300 Series

- Thermoplastic roller lever, vertical actuation

- Side rotary lever with plastic roller

- Offset side rotary lever with plastic roller

\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|}
\hline \& \& Part no. \& Type \& Contact block \& \& Circuit diagram \& \& Contact travel \& Pack. \\
\hline  \&  \& \begin{tabular}{l}
ER802320 \\
ER802590
\end{tabular} \& \[
\begin{aligned}
\& \mathrm{E} 300-00-\mathrm{IM} \\
\& \hline \text { E300-01-IM }
\end{aligned}
\] \& \begin{tabular}{l}
Snap action
\[
1 \mathrm{NO}+1 \mathrm{NC}
\] \\
Slow action \\
1NO+1NC
\end{tabular} \& \begin{tabular}{l}
00 \\
01
\end{tabular} \&  \&  \&  \& 1

1
1 <br>
\hline
\end{tabular}

Side rotary adjustable lever with plastic roller

\| Flexible rod

\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|}
\hline \& \& \& Part no. \& Type \& Contact block \& \& Circuit diagram \& Contact travel \& Pack. \\
\hline  \&  \&  \& \begin{tabular}{l}
ER802310 \\
ER833600
\end{tabular} \& \[
\begin{aligned}
\& \text { E300-00-LM } \\
\& \\
\& \text { E300-01-LM }
\end{aligned}
\] \& \begin{tabular}{l}
Snap action
1NO+1NC \\
Slow action
1NO+1NC
\end{tabular} \& 00 \&  \&  \& 1

1
1 <br>
\hline
\end{tabular}



The E400 series is the most robust of ERSCE position switches. Dimensions are in accordance with CENELEC EN 50041, two fixing holes with distance 30 mm . It is also equipped with one hole for cable input / output on the bottom of the switch. Available with thermoplastic or diecast metal alloy casing.

Casing in accordance with the


- Steel plunger

\begin{tabular}{|c|c|c|c|c|c|c|c|}
\hline \& \& Part no. \& Type \& Contact block \& Circuit diagram \& Contact travel \& Pack. \\
\hline Thermoplastic \&  \& \begin{tabular}{l}
ER817000 \\
ER817200
\end{tabular} \& E400-00-AI
E400-01-AI \& \begin{tabular}{l}
Snap action
\[
1 \mathrm{NO}+1 \mathrm{NC}
\] \\
Slow action
\[
1 \mathrm{NO}+1 \mathrm{NC}
\]
\end{tabular} \& 00 \&  \& 1

1
1 <br>

\hline Metal \&  \& | ER803200 |
| :--- |
| ER803470 | \& \[

$$
\begin{aligned}
& \text { E400-00-AM } \\
& \text { E400-01-AM }
\end{aligned}
$$

\] \& | Snap action $1 \mathrm{NO}+1 \mathrm{NC}$ |
| :--- |
| Slow action 1NO+1NC | \& 00 \&  \& | 1 |
| :--- |
|  |
|  |
| 1 | <br>

\hline
\end{tabular}

## I Steel roller plunger



- Thermoplastic roller lever, side actuation
Cont
- Thermoplastic roller lever, vertical actuation

- Side rotary lever with plastic roller

\begin{tabular}{|c|c|c|c|c|c|c|c|}
\hline \& \& Part no. \& Type \& Contact block \& Circuit diagram \& Contact travel \& Pack. \\
\hline Thermoplastic \&  \& \begin{tabular}{l}
ER817040 \\
ER818200
\end{tabular} \& \[
\begin{aligned}
\& \text { E400-00-EI } \\
\& \hline \text { E400-01-EI }
\end{aligned}
\] \& \begin{tabular}{l}
Snap action
\[
1 \mathrm{NO}+1 \mathrm{NC}
\] \\
Slow action
\[
1 \mathrm{NO}+1 \mathrm{NC}
\]
\end{tabular} \& \begin{tabular}{l}
00 \\
Zb
\end{tabular} \&  \& 1

1
1 <br>

\hline Metal \&  \& | ER803160 |
| :--- |
| ER803430 | \& \[

$$
\begin{aligned}
& \text { E400-00-EM } \\
& \hline \text { E400-01-EM }
\end{aligned}
$$

\] \& | Snap action $1 \mathrm{NO}+1 \mathrm{NC}$ |
| :--- |
| Slow action 1NO+1NC | \& 00 \&  \& | 1 |
| :--- |
|  |
|  |
| 1 | <br>

\hline
\end{tabular}

- Offset side rotary lever with plastic roller


E400 Series

## Side rotary adjustable lever with plastic roller



- Flexible rod



## Key actuated safety switches

- PA6 thermoplastic actuator, reinforced with fiberglass, color black (RAL 9005)
- Head can be rotated at $90^{\circ}$ steps.
- Fixing holes distance $20-22 \mathrm{~mm}$
- Type Z5 key included
- Adjustable key Z5-2 available as an accessory
- IP66 protection degree

Pull-wire safety switches

- Diecast metal alloy actuator
- Casing in PA6 thermoplastic reinforced with fiberglass, or diecast metal alloy painted (grey RAL 7022) with baked epoxy powder (earth screw for the switch)
- Manufactured according to EN ISO 13850
- Fixing holes distance $20-22 \mathrm{~mm}$ for E100 or 30mm for E400
- IP66 protection degree

Hinge safety switches

- Actuator with female metal shaft, lenght $24,5 \mathrm{~mm}$ ( $\varnothing 12 \mathrm{~mm}$ )
- Fixing holes distance $20-22 \mathrm{~mm}$
- One cable input/output with sub-cap
- Supplied with one screw and a plug for shaft connection
- IP66 protection degree


## Key actuated series

## - E100 5 way with "Z5" key



## Pull wire series

- E100 with EN418 block reset

|  |  | Part no. | Type | Contact block | Circuit diagram | Contact travel | Pack. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | ER809720 | E100-08-TBI | Slow action 1NO+1NC *stretch the cable untill the contact (2NC) close |  |  | 1 |

Pull wire series - Hinge series

## Pull wire series

- E400 with EN418 block reset
Cont no. Type


## Hinge series

## I Female metal shaft



## Position switch accessories

\| Contact blocks

|  | Part no. | Type | Contact block | Circuit diagram |
| :---: | :---: | :---: | :---: | :---: | :---: |

Key actuated switch accessories

- 5 way - command key mod. Z5
Pack.

I 5 way - Adjustable command key mod. Z5-2

Part no.
Type
Contact block

ER840150
Z5-2
Adjustable key

## Pull wire switch accessories

|  | Part no. | Type | Description |
| :--- | :--- | :--- | :--- |
|  | ER844600 | M05 | Clamp for $\varnothing$ D $5 \mathrm{~mm}-\mathrm{DIN} 1480$ |


[^0]:    Other contact blocks are available on request (page 139)

[^1]:    Notes:

    1) UL Approval File E728661
    2) CSA Approval File 026716-0-000
    3) It is not required to bear a symbol but switches must conform to requirements.
    4) IEC does not operate an approval scheme
