

# SUBMINIATURE MICROSWITCHES - SEALED

## V4S - 8318

- › Coil spring snap-action mechanism
- › Wire lead or cable outputs, various terminal types with symmetric or asymmetric pinning
- › Excellent resistance to harsh environments - IP67/IP69 protection
- › Ratings from 1 mA 4V $\overline{\text{DC}}$  to 10 A 250V $\sim$
- › Suitable for lateral approach from any direction with angle up to 35°
- › Operating temperature -40 °C up to +125 °C
- › Long mechanical life
- › Wide choice of actuators on 2 possible fixing positions (pre-assembled or retrofittable)



### Main specifications

|  |   | Standard<br>83186 | High current<br>83180 | Medium current<br>83183 | Dual-current<br>83181 |
|--|---|-------------------|-----------------------|-------------------------|-----------------------|
| Function   | Connections   |                   |                       |                         |                       |
| I (changeover)   | W2S (solder)  | 83186001          | 83180001              | 83183001                | 83181001              |
| I (changeover)   | W7S (QC 2.8x0.5)                                    | 83186002          | 83180002              | 83183002                | 83181002              |
| I (changeover)   | FD0 (wires, right)                                  | 83186003          | 83180003              | 83183003                | 83181003              |
| I (changeover)   | FG0 (wires, left)                                   | 83186004          | 83180004              | 83183004                | 83181004              |
| I (changeover)   | FB0 (wires, bottom)                                 | 83186005          | 83180005              | 83183005                | 83181005              |
| I (changeover)   | X1S (PCB, straight, sym)                            | 83186006          | 83180006              | ●                       | 83181006              |
| I (changeover)   | X1A (PCB, straight, asym)                           | ●                 | ●                     | ●                       | 83181007              |
| I (changeover)   | X2S (PCB, rear, sym)                                | ●                 | ●                     | ●                       | 83181008              |
| I (changeover)   | X2A (PCB, rear, asym)                               | ●                 | ●                     | ●                       | 83181009              |
| I (changeover)   | X3S (PCB, front, sym)                               | ●                 | ●                     | ●                       | 83181010              |
| I (changeover)   | X3A (PCB, front, asym)                              | ●                 | ●                     | ●                       | 83181011              |
| I (changeover)   | CD0 (cable, right)                                  | 83186012          | -                     | 83183012                | 83181012              |
| I (changeover)   | CG0 (cable, left)                                   | 83186013          | -                     | 83183013                | 83181013              |
| I (changeover)   | CB0 (cable, bottom)                                 | 83186014          | -                     | 83183014                | 83181014              |
| R (normally closed)                                      | W2S - W7S - FD0 - FG0 - FB0 - CD0** - CG0** - CB0** | 831866*           | 831806*               | 831836*                 | 831816*               |
| C (normally open)  | W2S - W7S - FD0 - FG0 - FB0 - CD0** - CG0** - CB0** | 831868*           | 831808*               | 831838*                 | 831818*               |
| Electrical characteristics                               |   |                   |                       |                         |                       |
| Rating nominal / 250 V AC (A)                            |   | 6                 | 10                    | 3                       | 6***                  |
| Rating thermal / 250 V AC (A)                            |   | 7.5               | 12.5                  | 4                       | 7.5                   |
| Mechanical characteristics                               |   |                   |                       |                         |                       |
| Maximum operating force (N)                              |   | 2.5               | 2.5                   | 2.5                     | 2.5                   |
| Min. Release force (N)                                   |   | 0.8               | 0.8                   | 0.8                     | 0.8                   |
| Maximum total travel force (N)                           |   | 4.2               | 4.2                   | 4.2                     | 4.2                   |
| Max. Allowable overtravel force (N)                      |   | 10                | 10                    | 10                      | 10                    |
| Maximum rest position (mm)                               |   | 9.3               | 9.3                   | 9.3                     | 9.3                   |
| Operating position (mm)                                  |   | 8.4 ±0.3          | 8.4 ±0.3              | 8.4 ±0.3                | 8.4 ±0.3              |
| Maximum differential travel (mm)                         |   | 0.15              | 0.15                  | 0.15                    | 0.15                  |
| Min. overtravel (mm)                                     |   | 0.6               | 0.6                   | 0.6                     | 0.6                   |
| Ambient operating temperature - terminal versions (°C)   |   | -40 → +125        | -40 → +125            | -40 → +125              | -40 → +125            |
| Ambient operating temperature - wire/cable versions (°C) |   | -40 → +105        | -40 → +105            | -40 → +105              | -40 → +105            |
| Mechanical life (operations)                             |   | 2x10 <sup>6</sup> | 2x10 <sup>6</sup>     | 2x10 <sup>6</sup>       | 2x10 <sup>6</sup>     |
| Contact gap (mm)   |   | 0.4               | 0.4                   | 0.4                     | 0.4                   |
| Weight, terminal versions (g)                            |   | 2                 | 2                     | 2                       | 2                     |

\* Contact us \*\* Except 83180

### Additional specifications

- Case: PBT GF (UL 94-V0 / GWFI 960 °C)
- Button: PBT
- Membrane: silicone rubber
- Moving blade: silver-plated beryllium copper
- Contacts: silver alloy, micro-profile  
gold alloy on silver alloy, crossbar (dual-current)
- Terminals: silver-plated brass, tinned brass
- Wire leads, Cable: copper, PVC insulated
- Levers: stainless steel or plastic, polyamide roller
- Degree of protection: IP67/IP69 (mechanism and wire/cable output)
- Proof tracking index: PTI 250
- Protection against electric shock: button and actuators have reinforced insulation for Ui 250V / Uimp 2.5kV / pollution 2
- Recommended min actuating speed: 0.01 mm/s
- Certification marks: on request /

### Product adaptations

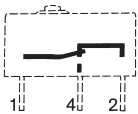


- › Specific fixings: special fastening pins, easy installation / snap-in housings
- › Special actuators: stainless steel or plastic, flexible levers, reinforced fixing, tear-off protection, inox roller...
- › Special leads and cables, leads in sleeve, full wiring with custom connector
- › Integration of resistors for specific electrical diagrams or self-diagnosis function
- › AgSnO2 contacts for very high inrush currents (lamp and capacitor loads)
- › Reduced differential travel: max 0.10 mm (SF1114)
- › Long overtravel variant (2 mm), suitable for lateral approach up to 45°, wire or cable output (8320 SF1002)
- › cURus and ENEC approved versions

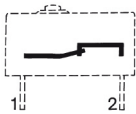
Standard product
Product made to order
● Contact us

**Principles**

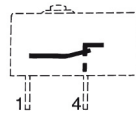
**Single break snap-action switch**  
**Changeover - SPDT (form C)**



**Normally closed - SPST-NC (form B)**

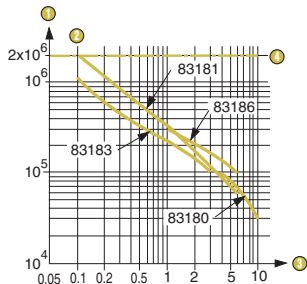


**Normally open - SPST-NO (form A)**



**Curves**

**Operating curve for 250 VAC**



**Max ratings with DC supply**

|      |                    | 83180 | 83181 | 83183 | 83186 |
|------|--------------------|-------|-------|-------|-------|
| 12 V | Resistive          | 10 A  | 6 A   | 3 A   | 6 A   |
|      | Inductive L/R 5 ms | 10 A  | 6 A   | 3 A   | 6 A   |
| 24 V | Resistive          | 10 A  | 6 A   | 3 A   | 6 A   |
|      | Inductive L/R 5 ms | 5 A   | 5 A   | 3 A   | 5 A   |

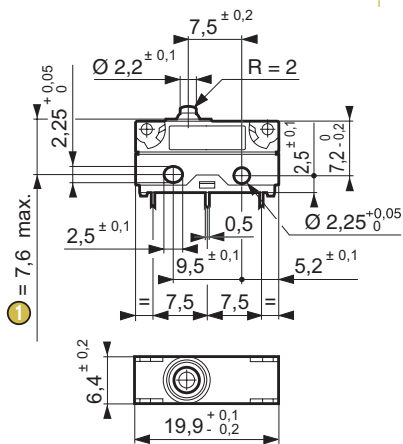
- ① Number of cycles
- ② Resistive circuit
- ③ Current in Amps
- ④ Mechanical life limit

\*\*\* Model 83181 is designed to operate equally well on low current (1 mA 4 V minimum recommended) or medium-current (6 A maximum) circuits. However, a given product should only be used to switch one type of circuit during its working life.

**Dimensions**

**Products**

**8318**  
**Symmetrical version**

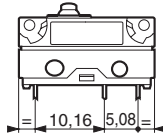


① Total travel position

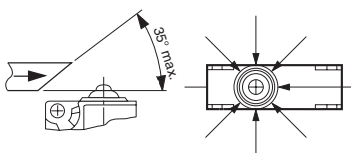
Fixing with M2 screws

Recommended tightening torques: - screw only: 0.2 N.m  
 - screw with washer: 0.3 N.m

**8318**  
**Asymmetrical version (X.A connections)**



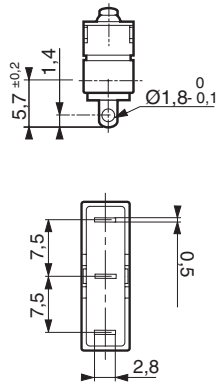
**Recommendations for lateral approach**



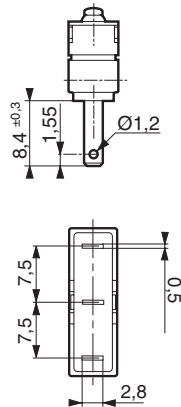
In order to reduce friction and wear, the actuating ramp shall preferably be of POM, PA, or steel, and also be as smooth as possible. As a general rule, the use of any lubricant substance is not needed nor recommended. For particular cases, please consult us.

## Connections

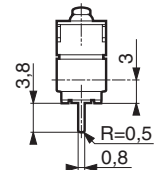
### W2S solder



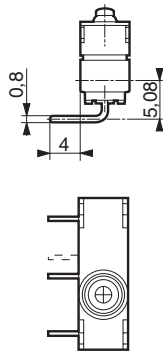
### W7S quick-connect 2.8 x 0.5



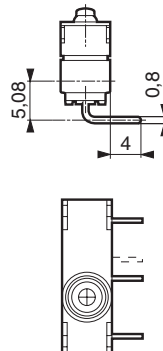
### X1A for PCB asymmetrical, straight output X1S for PCB symmetrical, straight output



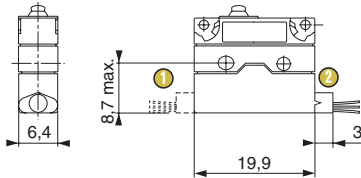
### X2A for PCB asymmetrical, rear output X2S for PCB symmetrical, rear output



### X3A for PCB asymmetrical, front output X3S for PCB symmetrical, front output

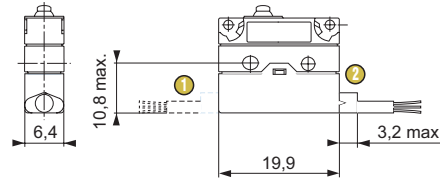


### FD0 wire output on right FG0 wire output on left



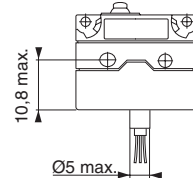
- 1 FG0
- 2 FD0

### CD0 cable output on right CG0 cable output on left



- 1 CG0
- 2 CD0

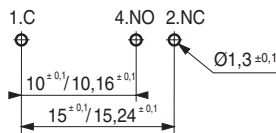
### FB0 wire output on bottom CB0 cable output on bottom



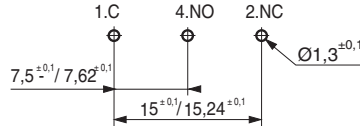
Wire/Cable characteristics: Black = Common, Grey = NC, Blue = NO ; except cable for NC or NO versions = Blue - Brown  
 Wire cross-section: 83181 / 83183 / 83186 = 0.5 mm<sup>2</sup> - 83180 = 0.75 mm<sup>2</sup>  
 Cable cross-section: 83181 / 83183 / 83186 = 3 x 0.5 mm<sup>2</sup> or 2 x 0.5 mm<sup>2</sup>  
 Standard length: 500 mm  
 Other lengths on request (length in meters: e.g. 1.5)

## Drilling

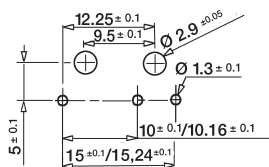
### Printed circuit board mounting Asymmetrical X1A, X2A, X3A



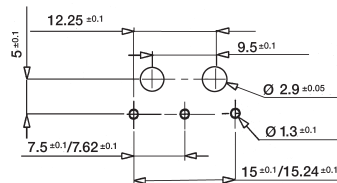
### Printed circuit board mounting Symmetrical X1S, X2S, X3S



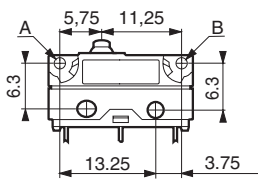
### Mounting on a printed circuit board with fixing pins Asymmetrical X2A, X3A



### Mounting on a printed circuit board with fixing pins Symmetrical X2S, X3S



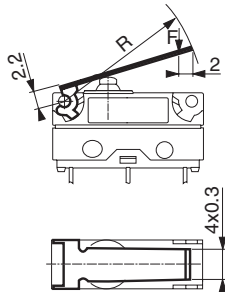
## Actuator mounting positions



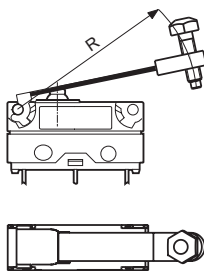
**To calculate force:** divide the switch force by the coefficient in the table  
**To calculate travel:** multiply the switch travel by the same coefficient

## Actuators

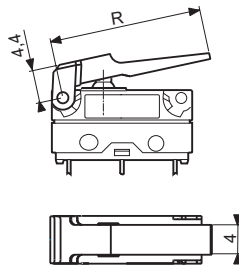
170A flat



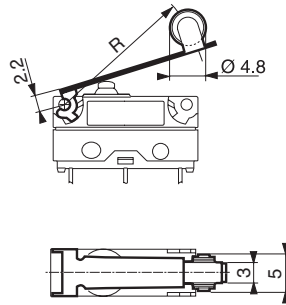
170D adjustable



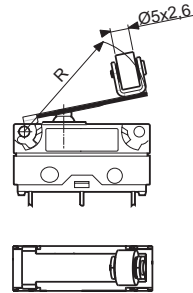
79257876 plastic



170E roller

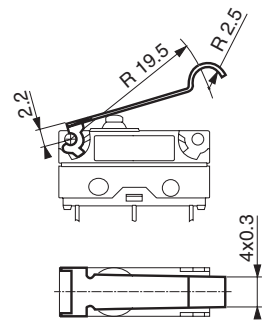


170EL transverse roller

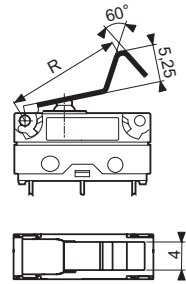


Other shapes and dimensions:  
consult us

170F dummy roller

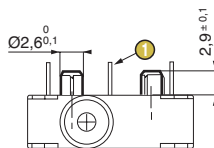


79250004 folded



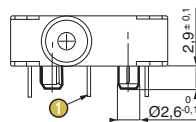
## Mounting accessories

Locating pins 79219682



① X2S-X2A connections










Locating pins 79219682



① X3S-X3A connections

Other shapes and dimensions:  
consult us

## Actuators and mounting accessories

| Part numbers for standard actuators |  | 79253327  |                | 79253326  |           | 79253328  |           | 79218454  |           | 79253329  |           |
|-------------------------------------|--|---|----------------|---|-----------|---|-----------|---|-----------|---|-----------|
| Actuators                           |  | Flat 170A<br>R18.3  |                | Flat 170A<br>R24  |           | Flat 170A<br>R41  |           | Roller 170E<br>R20  |           | Dummy roller 170F<br>R19.5  |           |
|                                     |  |  |                |  |           |   |           |  |           |  |           |
| Fixing positions                    |  | A   | B              | A   | B         | A   | B         | A   | B         | A   | B         |
| Coefficient                         |  | 3   | 1.5            | 4   | 2         | 7   | 3.5       | 3   | 1.5       | 3   | 1.5       |
| Operating position (mm)             |  | 10 ±1   | 9.4 ±0.6       | 10.8 ±1.4   | 9.8 ±0.8  | 12.1 ±2.6   | 10.5 ±1.5 | 14.7 ±1.3   | 14.2 ±0.8 | 12.6 ±1.2   | 11.9 ±0.7 |
| Part numbers for standard actuators |  | 79218491  |                | 79218493  |           | 79250004  |           | 79257876  |           |   |           |
| Actuators                           |  | Adjustable 170D<br>R26,5  |                | Transverse roller 170EL<br>R18  |           | Folded<br>R16,5   |           | Plastic (PARA GF50)<br>R20,5  |           |   |           |
|                                     |  |  |                |  |           |  |           |  |           |   |           |
| Fixing positions                    |  | A   | B              | A   | B         | A   | B         | A   | B         |   |           |
| Coefficient                         |  | 4   | 2              | 3   | 1.5       | 2.5   | 1.2       | 3   | -         |   |           |
| Operating position (mm)             |  | 13.6-18.6 ±1.8  | 12.5-17.5 ±1.1 | 16.3 ±1.2   | 15.6 ±0.8 | 15 ±1   | 13.9 ±0.6 | 10.6 ±1.1   | -         |   |           |

Except where otherwise indicated, levers are supplied unmounted. For factory mounting, specify fixing position A or B.

### V4S 8318 microswitches with referenced actuators

| Actuators | 170A R18.3 |          | 170A R24 |          | 170E R20 |          | 170F R19.5 |          | Folded R16,5 |       |          |
|-----------|------------|----------|----------|----------|----------|----------|------------|----------|--------------|-------|----------|
|           | 79253327   |          | 79253326 |          | 79218454 |          | 79253329   |          | 79250004     |       |          |
|           | Pos A      | Pos B    | Pos A    | Pos B    | Pos A    | Pos B    | Pos A      | Pos B    | Pos A        | Pos B |          |
| 83186     | I W2S      | 83186051 | 83186052 | 83186053 | 83186054 | 83186055 | 83186056   | 83186057 | 83186058     | ●     | ●        |
|           | I W7S      | 83186059 | 83186060 | 83186061 | 83186062 | 83186063 | 83186064   | 83186065 | 83186066     | ●     | ●        |
|           | I FD0      | 83186067 | 83186068 | 83186069 | 83186070 | 83186071 | 83186072   | 83186073 | 83186074     | ●     | ●        |
|           | I FG0      | ●        | ●        | ●        | ●        | 83186075 | ●          | ●        | ●            | ●     | ●        |
|           | I X1S      | ●        | 83186046 | ●        | ●        | 83186080 | 83186047   | ●        | ●            | ●     | ●        |
|           | I X2S      | ●        | ●        | ●        | ●        | ●        | ●          | ●        | ●            | ●     | ●        |
|           | I X3S      | ●        | ●        | ●        | ●        | ●        | ●          | ●        | ●            | ●     | ●        |
| 83181     | I W2S      | 83181051 | 83181052 | 83181053 | 83181054 | 83181055 | 83181056   | 83181057 | 83181058     | ●     | ●        |
|           | I W7S      | 83181059 | 83181060 | 83181061 | 83181062 | 83181063 | 83181064   | 83181065 | 83181066     | ●     | ●        |
|           | I FD0      | 83181067 | 83181068 | 83181069 | 83181070 | 83181071 | 83181072   | 83181073 | 83181074     | ●     | 83181083 |
|           | I FG0      | ●        | ●        | ●        | ●        | 83181128 | ●          | ●        | ●            | ●     | 83181082 |
|           | I X1S      | ●        | ●        | ●        | ●        | ●        | ●          | ●        | ●            | ●     | ●        |
|           | I X2S      | ●        | ●        | ●        | ●        | ●        | ●          | ●        | ●            | ●     | ●        |
|           | I X3S      | ●        | ●        | 83181080 | ●        | ●        | ●          | ●        | 83181106     | ●     | ●        |

## Installation recommendations

See "Basic technical concepts"

## How to order

Use the 8 digit part numbers when they are defined

Other cases, precise:

Type of microswitch - Function - Connection - UL/ENEC approval\* - Actuator\* - Fixing position\* - Mounting accessories\* - Adaptation\*  
\* if needed

Example: 83186 I X2S UL/ENEC 170E R20 B 79219682

Standard product

Product made to order

● Contact us

**Examples of special adaptations**



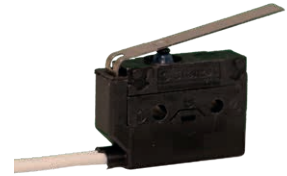
Easy installation / snap-in housing and special actuator with tear-off protection



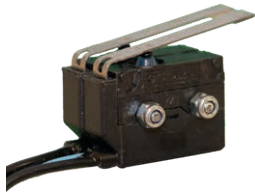
Special housing with single fastening hole on upper face, for 4 mm blind rivet or screw



Fastening pins for 2.8 max thickness and Ø 4mm holes (79253576)



Flexible lever fitted on special housing with wire or cable output



Two-pole assembly with linked levers



Custom bracket with integrated metal plungers and complete wiring with sealed connector



2 mm overtravel variant with wire lead output



Dual-lead wiring

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[6SX1-H58](#) [70500216](#) [70599106](#) [MBD5B1](#) [MBH2731](#) [73-316-0012](#) [EXD-AR20](#) [79211923](#) [79218589](#) [7AS12](#)  
[MIL30126AB6BBMD4A12XAU](#) [ML-1155](#) [ML-1376](#) [831010C3.0](#) [831090C2.EL](#) [83131904](#) [84212012](#) [8AS239](#) [8HM73-3](#) [8SX26-H33](#)  
[914CE1-6G](#) [PL-100](#) [11SM1077-H4](#) [11SM1077-H58](#) [11SM1-TN107](#) [11SM405](#) [11SM8423-H2](#) [11SX37-T](#) [11SX48-H58](#) [11SM2442-T](#)  
[11SM76-T](#) [11SM77-H58](#) [11SM77-T](#) [11SM863-T](#) [11SM866](#) [A7CN-1M-1-LEFT](#) [A831700C7.0](#) [121EN188-R](#) [1245.0120](#)