

# MINIATURE MICROSWITCHES - PREMIUM

## V3 - 83161

- › High precision flexible leaf snap-action mechanism
- › Operation without balance-point, even at extremely slow actuating speed
- › Broad range of operating forces from 0.15 N to 5 N
- › Ratings from 4 A to 20(8) A 250 V~, 10(4) A 400 V~ and 1/2 HP 125-250 V~
- › Contact gap less or greater than 3 mm (μ or full disconnection)
- › Operating temperature from -60 °C up to +150 °C - High resistance to shock and vibration
- › Mechanical life up to 50 million cycles
- › ENEC and cURus approved
- › Wide choice of actuators on 4 possible fixing positions (pre-assembled or retrofittable)



### Main specifications

| Function                                | Connections                     | Standard 831613     |            | High current 831612   |            |            |
|-----------------------------------------|---------------------------------|---------------------|------------|-----------------------|------------|------------|
|                                         |                                 | Standard            | UL         | Standard              | UL         | UL SP4186  |
| I (changeover)                          | W2                              | 83161301            | 83161348   | ●                     | 83161273   | ●          |
| I (changeover)                          | W3                              | 83161338            | 83161344   | 83161241              | 83161244   | ●          |
| I (changeover)                          | W6A5                            | 83161304            | 83161343   | ●*                    | ●*         | -          |
| I (changeover)                          | W3R5                            | 83163023            | 83163107   | ●*                    | ●*         | ●*         |
| I (changeover)                          | W5                              | 83161303            | 83161349   | ●*                    | ●*         | -          |
| I (changeover)                          | W6D8                            | 83161305            | 83161341   | ●*                    | ●*         | -          |
| I (changeover)                          | W7A5                            | 83161309            | 83161350   | -                     | -          | -          |
| I (Changeover)                          | 2W7A8                           | 83161310            | ●          | ●*                    | ●*         | -          |
| R (Normally closed)                     | W2                              | 83161316            | 83163041   | ●                     | 83161274   | ●          |
| R (Normally closed)                     | W3                              | 83161311            | 83163066   | ●                     | ●          | ●          |
| R (Normally closed)                     | W6A5                            | 83161359            | ●          | ●*                    | ●*         | -          |
| R (Normally closed)                     | W3R5 - W5 - W6D8 - W7A5 - 2W7A8 | ●                   | ●          | ●*                    | ●*         | ●*         |
| C (Normally open)                       | W2                              | 83161315            | ●          | ●                     | ●          | ●          |
| C (Normally open)                       | W3                              | 83161312            | 83161346   | ●                     | ●          | ●          |
| C (Normally open)                       | W6A5                            | 83161325            | ●          | ●*                    | ●*         | -          |
| C (Normally open)                       | W3R5 - W5 - W6D8 - W7A5 - 2W7A8 | ●                   | ●          | ●*                    | ●*         | ●*         |
| Electrical characteristics              |                                 |                     |            |                       |            |            |
| Rating nominal / 250 V AC (A)           |                                 | 16                  |            | 20                    |            |            |
| Rating thermal / 250 V AC (A)           |                                 | 20                  |            | 22                    |            |            |
| Rating ENEC/NF / 250 V AC (A)           |                                 | 16(4)               | 16(4)      | 20(8)                 | 20(8)      | 20(8)      |
| Rating UL / 125/250 V AC (A)            |                                 | -                   | 16 - 1/2HP | -                     | 15 - 1/2HP | 20 - 1/2HP |
| Mechanical characteristics              |                                 |                     |            |                       |            |            |
| Maximum operating force (N)             |                                 | 0.8                 |            | 1**                   |            |            |
| Min. Release force (N)                  |                                 | 0.2                 |            | 0.2                   |            |            |
| Maximum total travel force (N)          |                                 | 2                   |            | 2.5                   |            |            |
| Max. Allowable overtravel force (N)     |                                 | 20                  |            | 20                    |            |            |
| Maximum rest position (mm)              |                                 | 16.2                |            | 16.1                  |            |            |
| Operating position (mm)                 |                                 | 14.7±0.3            |            | 14.7±0.4              |            |            |
| Maximum differential travel (mm)        |                                 | 0.35                |            | 0.35                  |            |            |
| Min. overtravel (mm)                    |                                 | 1.2                 |            | 1.1                   |            |            |
| Ambient operating temperature (°C)      |                                 | -60 → +125          |            | -60 → +125            |            |            |
| Mechanical life for 2/3 OT (operations) |                                 | 2 x 10 <sup>7</sup> |            | 2.5 x 10 <sup>5</sup> |            |            |
| Contact gap (mm)                        |                                 | 0.4                 |            | 0.4                   |            |            |
| Weight (g)                              |                                 | 5.6                 |            | 5.6                   |            |            |

\* Please consult us    \*\* Also available with 3N operating force (831612 SP4165)

### Additional specifications

- Case: PA6 GF (UL 94-V2 / GWFI 960 °C) - Standard versions
- PBT GF (UL 94-V0 / GWFI 960 °C) - UL versions
- PET GF (UL 94-V0 / GWFI 960 °C / GWIT 775 °C) - On request
- Button: PA66
- Moving blade: silver-plated beryllium copper
- Contacts: silver alloy, micro-profile (831612: silver cadmium oxyde)
- Terminals: brass (except W2 : copper nickel)
- Levers: stainless steel or polyamide, polyamide roller
- Nuts for 161L: nickel-plated brass
- Degree of protection: IP40 (mechanism)
- Proof tracking index: PTI 250
- Protection against electric shock: button and actuators have reinforced insulation for Ui 250V / Uimp 2,5kV / pollution 2
- Min actuating speed: 0.001 mm/s
- Approvals: Standard versions: NF - ENEC
- UL versions: NF - ENEC - cURus



| High force<br>831611 |          | Low force<br>831614 |          | Very low force<br>831615 |          | Ultra low force<br>83161 5 SP 4136 |          | Wide contact gap<br>831616 |          | Func.            | Conn.  |
|----------------------|----------|---------------------|----------|--------------------------|----------|------------------------------------|----------|----------------------------|----------|------------------|--------|
| Standard             | UL       | Standard            | UL       | Standard                 | UL       | Standard                           | UL       | Standard                   | UL       |                  |        |
| 83161102             | 83161058 | 83161402            | 83161431 | 83161502                 | ●        | 83161520                           | ●        | 83161601                   | ●        | I                | W2     |
| 83161118             | 83161165 | 83161401            | ●        | 83161501                 | 83161513 | 83161519                           | 83161573 | 83161602                   | 83161636 | I                | W3     |
| 83161110             | 83161182 | 83161403            | 83161407 | 83161503                 | 83161508 | ●                                  | 83161577 | ●*                         | ●*       | I                | W6A5   |
| ●                    | ●        | ●                   | ●        | 83161516                 | 83161518 | ●                                  | 83161575 | 83161619                   | ●        | I                | W3R5   |
| 83161113             | 83161055 | ●                   | 83161408 | 83161509                 | 83161511 | ●                                  | ●        | 83161603                   | ●        | I                | W5     |
| 83161123             | ●        | ●                   | 83161429 | 83161507                 | ●        | ●                                  | ●        | ●                          | ●        | I                | W6D8   |
| 83161189             | ●        | 83161405            | ●        | ●                        | ●        | ●                                  | ●        | ●*                         | ●*       | I                | W7A5   |
| 83161059             | ●        | ●                   | ●        | ●                        | ●        | ●                                  | ●        | ●*                         | ●*       | I                | 2W7A8  |
| 83161117             | ●        | ●                   | ●        | 83161595                 | ●        | ●                                  | ●        | 83161609                   | ●        | R                | W2     |
| 83161109             | ●        | ●                   | ●        | 83161528                 | ●        | ●                                  | ●        | 83161605                   | ●        | R                | W3     |
| 83161070             | ●        | 83161424            | ●        | ●                        | ●        | ●                                  | ●        | ●*                         | ●*       | R                | W6A5   |
| ●                    | ●        | ●                   | ●        | ●                        | ●        | ●                                  | ●        | ●*                         | ●*       | R                | Others |
| 83161104             | 83161082 | ●                   | ●        | ●                        | ●        | 83161589                           | ●        | ●                          | ●        | C                | W2     |
| 83161103             | 83161188 | 83161404            | 83161412 | ●                        | ●        | ●                                  | ●        | 83161606                   | ●        | C                | W3     |
| 83161125             | 83161111 | ●                   | ●        | 83161504                 | ●        | ●                                  | ●        | ●*                         | ●*       | C                | W6A5   |
| ●                    | ●        | ●                   | ●        | ●                        | ●        | ●                                  | ●        | ●*                         | ●*       | C                | Others |
| 16                   |          | 10                  |          | 4                        |          | 4                                  |          | 12                         |          | Electrical       |        |
| 20                   |          | 12                  |          | 5                        |          | 5                                  |          | 15                         |          | Nom rating (A)   |        |
| 16(4)                |          | 10(3)               |          | 4(1)                     |          | 4(1)                               |          | 12(3)                      |          | Therm rating (A) |        |
| - 16 - 1/2HP         |          | - 6 - 1/4HP         |          | - 4 - 1/10HP             |          | - 4 - 1/10HP                       |          | - 6 - 1/3HP                |          | ENEC rating (A)  |        |
|                      |          |                     |          |                          |          |                                    |          |                            |          | UL rating (A)    |        |
| 3                    |          | 0.5                 |          | 0.25                     |          | 0.15                               |          | 5                          |          | Mechanical       |        |
| 1                    |          | 0.1                 |          | 0.05                     |          | 0.04                               |          | 0.5                        |          | OF max (N)       |        |
| 4.5                  |          | 1.5                 |          | 0.40                     |          | 0.2                                |          | 6                          |          | RF min (N)       |        |
| 20                   |          | 20                  |          | 20                       |          | 20                                 |          | 20                         |          | TTF max (N)      |        |
| 16.1                 |          | 16.2                |          | 16.3                     |          | 16.3                               |          | 16.1                       |          | AOF max (N)      |        |
| 14.7±0.4             |          | 14.7±0.4            |          | 14.7±0.4                 |          | 14.7±0.3                           |          | 14.5±0.4                   |          | RP max (mm)      |        |
| 0.35                 |          | 0.35                |          | 0.35                     |          | 0.35                               |          | 0.8                        |          | OP (mm)          |        |
| 1.1                  |          | 1.1                 |          | 1.1                      |          | 1.2                                |          | 0.9                        |          | DT max (mm)      |        |
| -60 → +125           |          | -60 → +125          |          | -40 → +125               |          | -40 → +125                         |          | -60 → +125                 |          | OT min (mm)      |        |
| 10 <sup>7</sup>      |          | 3 × 10 <sup>7</sup> |          | 5 × 10 <sup>7</sup>      |          | 5 × 10 <sup>7</sup>                |          | 5 × 10 <sup>4</sup>        |          | Temp (°C)        |        |
| 0.4                  |          | 0.4                 |          | 0.4                      |          | 0.4                                |          | 3.2                        |          | Mech. life (op)  |        |
| 5.6                  |          | 5.6                 |          | 5.6                      |          | 5.6                                |          | 5.6                        |          | Gap (mm)         |        |
|                      |          |                     |          |                          |          |                                    |          |                            |          | Weight (g)       |        |

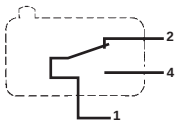
## Product adaptations



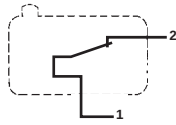
- Special levers: special shapes and lengths, flexible levers, adjustable, pinned, ....
- Special connections: angled, with 7mm spacing (RAST 7-W3R7), for PCB, ...
- High operating temperature: +150 °C
- Special contacts (for gold plated contacts: see "V3 Dual-current - 83161")
- Reduced or increased switching hysteresis: max 0.1 mm to max 0.8 mm differential travel
- Specific operating force easily achievable
- Telescopic plunger and adjustable fixing by threaded barrel: plastic version (161L accessory) or metal version (SP9603)
- Housing material complying with IEC 60335-1 for unattended appliances: GWFI 850° C / GWIT 775° C (SP9680)
- 400 V~ ENEC approved versions

## Principles

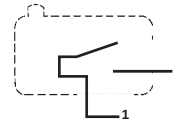
**Single break snap-action switch**  
**Changeover - SPDT (form C)**



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

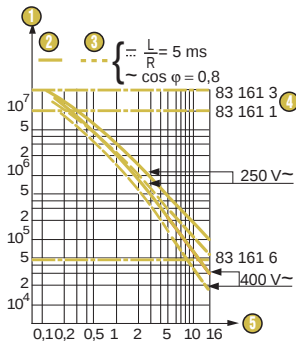


**Normally open - SPST-NO (form A)**



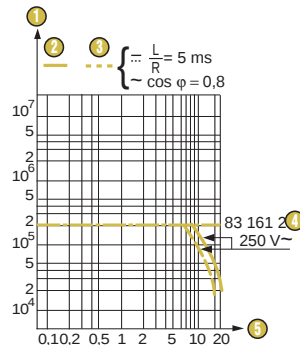
## Curves

### Operating curve for types 831611 / 831613 / 831616



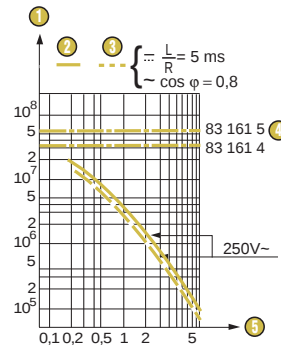
- 1 Number of cycles
- 2 Resistive circuit
- 3 Inductive circuit
- 4 Mechanical life limit
- 5 Current in Amps

### Operating curve for type 831612



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

### Operating curve for types 831614 / 831615 / 831615 SP 4136

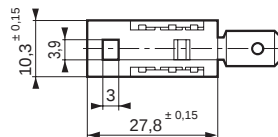
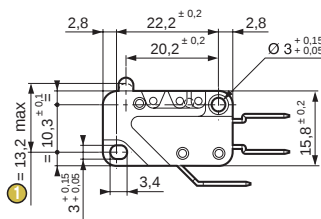


- 1 Number of cycles
- 2 Resistive circuit
- 3 Inductive circuit
- 4 Mechanical life limit
- 5 Current in Amps

## Dimensions

## Product

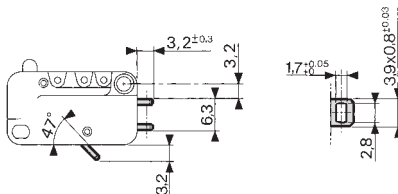
83161



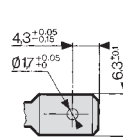
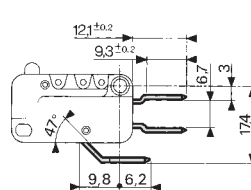
- 1 Total travel position

## Connections

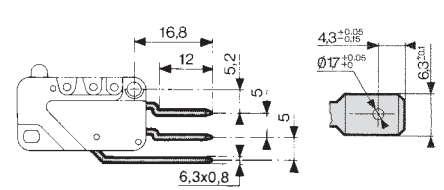
**W2 solder**



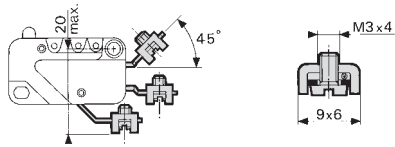
**W3 quick-connect 6.3 x 0.8**



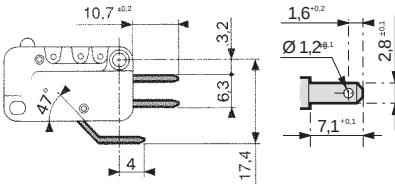
**W3R5 quick-connect 6.3 x 0.8  
for RAST 5 connector**



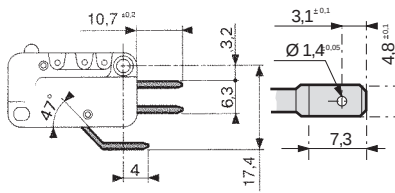
W5 screw with clamp



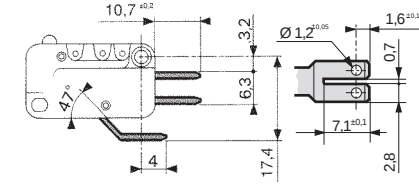
W7A5 quick-connect 2.8 x 0.5



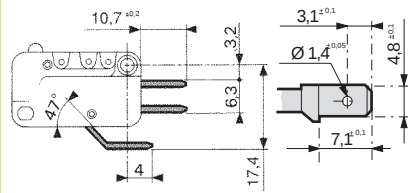
W6A5 quick-connect 4.8 x 0.5



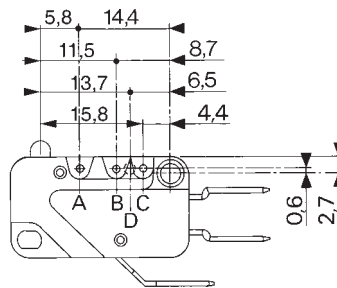
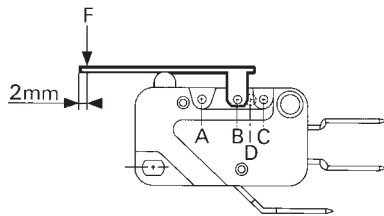
2W7A8 double quick-connect 2.8 x 0.8



W6D8 quick-connect 4.8 x 0.8



## Actuator mounting positions



### To calculate force

Divide the switch force by the coefficient given in the table.

### To calculate travel

Multiply the switch travel by the same coefficient.

### Example :

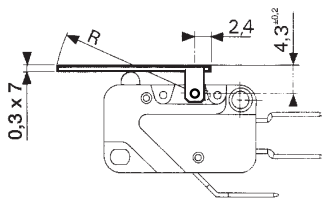
83 161 3 with lever 161 A - R 25.4 position A (coeff. 4)

Operating force:  $0.8 : 4 = 0.2 \text{ N}$

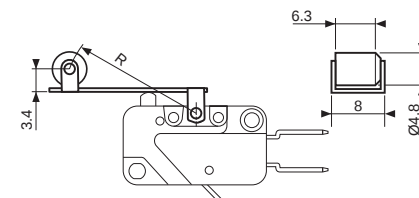
Overtravel:  $1.2 \times 4 = 4.8 \text{ mm}$

## Actuators

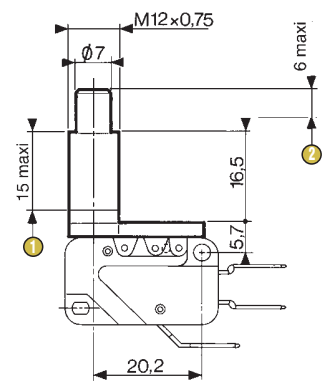
161A flat



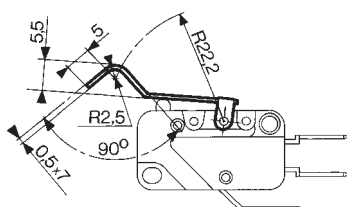
161E roller



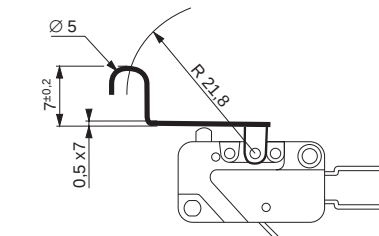
161L telescopic plunger



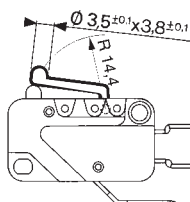
161F dummy roller



161G dummy roller



161V plastic



Other shapes and dimensions: consult us

Also available are pinned actuators mounted on position D (factory mounting), same as for 83160 series. (datasheet: SP9640)

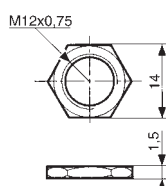
① Thread length

② Total travel

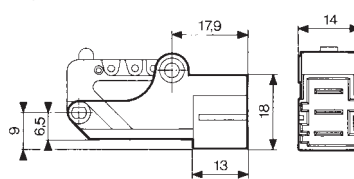
| Nut thickness | Max. torque |
|---------------|-------------|
| 1,5 mm        | 0.5 N.m     |
| 2 mm          | 0.7 N.m     |
| 2,5 mm        | 1 N.m       |

## Mounting accessories

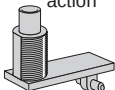
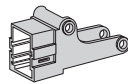
### Nut for 161L



### Housing 161J for connections W3 R5



## Actuators and mounting accessories

| Part numbers for standard actuators | 79215740                                                                            | 70507524                                                                           | 79215742                                                                              | 70507529                                                                              | 70507528                                                                              |
|-------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Actuators                           | Flat <b>161A</b> R14,2                                                              | Flat <b>161A</b> R25,4                                                             | Roller <b>161E</b> R13,6                                                              | Roller <b>161E</b> R24,1                                                              | Dummy roller <b>161F</b> R22,2                                                        |
|                                     |    |   |     |    |    |
| Fixing positions                    | A B                                                                                 | A B C                                                                              | A B                                                                                   | A B C                                                                                 | A B                                                                                   |
| Coefficient                         | 2 1                                                                                 | 4 2 1,5                                                                            | 2 1                                                                                   | 4 2 1,5                                                                               | 3 1,8                                                                                 |
| Operating position (except 831616)  | 15,2 $\pm 1$ 15,2 $\pm 0,45$                                                        | 15,2 $\pm 2,5$ 15,2 $\pm 1$ 15,2 $\pm 0,8$                                         | 20,5 $\pm 1,5$ 20,5 $\pm 0,8$                                                         | 20,5 $\pm 2,9$ 20,5 $\pm 1,5$ 20,5 $\pm 1,2$                                          | 20,4 $\pm 2$ 20,4 $\pm 0,7$                                                           |
| Operating position 831616           | 14,8 $\pm 1$ 15 $\pm 0,45$                                                          | 14,4 $\pm 2,5$ 14,8 $\pm 1$ 14,9 $\pm 0,8$                                         | 20,1 $\pm 1,5$ 20,3 $\pm 0,8$                                                         | 19,7 $\pm 2,9$ 20,1 $\pm 1,5$ 20,2 $\pm 1,2$                                          | 20,2 $\pm 2$ 20,2 $\pm 2$                                                             |
| Part numbers for standard actuators | 79218651                                                                            | 79250338                                                                           |                                                                                       |                                                                                       | 70602118                                                                              |
| Actuators                           | Dummy roller <b>161G</b> R21,8                                                      | **Telescopic plunger <b>161L</b>                                                   | Manual action                                                                         | Plastic <b>161V</b>                                                                   | Housing <b>161J</b> Nut for <b>161L</b>                                               |
|                                     |  |  |  |  |  |
| Fixing positions                    | A B                                                                                 | D                                                                                  | D                                                                                     |                                                                                       |                                                                                       |
| Coefficient                         | 3 1,8                                                                               | 1                                                                                  | 1                                                                                     |                                                                                       |                                                                                       |
| Operating position (except 831616)  | 21,7 $\pm 2$ 21,7 $\pm 0,7$                                                         | 21,5 $\pm 1$                                                                       | 18,35 $\pm 0,45$                                                                      |                                                                                       |                                                                                       |
| Operating position 831616           | 21,5 $\pm 2$ 21,5 $\pm 0,7$                                                         | 21,5 $\pm 1$                                                                       |                                                                                       |                                                                                       |                                                                                       |

Except where otherwise indicated, flat and roller levers are supplied unmounted.

For factory mounting, specify fixing position A, B or C.

\*\* For 831611, 831612, 831613, 831616 mounted in factory (supplied without nut)

### V3-83161 microswitches with referenced actuators

| Actuators |        |     | 161A R14.2 |          | 161A R25.4 |          |          | 161E R13.6 |          | 161E R24.1 |          |          | 161L     |
|-----------|--------|-----|------------|----------|------------|----------|----------|------------|----------|------------|----------|----------|----------|
|           |        |     | 79215740   |          | 70507524   |          |          | 79215742   |          | 70507529   |          |          |          |
|           |        |     | Pos A      | Pos B    | Pos A      | Pos B    | Pos C    | Pos A      | Pos B    | Pos A      | Pos B    | Pos C    | Pos D    |
| 831611    | I W2   | STD | 83161020   | 83161021 | 83161022   | 83161023 | 83161024 | 83161025   | 83161026 | 83161027   | 83161028 | 83161029 | •        |
|           |        | UL  | •          | •        | •          | •        | •        | •          | •        | •          | •        | •        | •        |
|           | I W3   | STD | 83161032   | 83161033 | 83161034   | 83161035 | 83161036 | 83161037   | 83161038 | 83161039   | 83161040 | 83161041 | 83161064 |
|           |        | UL  | •          | •        | •          | •        | •        | •          | •        | •          | •        | •        | 83161098 |
|           | I W6A5 | STD | 83161044   | 83161045 | 83161046   | 83161177 | 83161047 | 83161048   | 83161049 | 83161050   | 83161051 | 83161052 | •        |
|           |        | UL  | •          | •        | •          | •        | •        | •          | •        | •          | •        | •        | •        |
| 831613    | I W2   | STD | 83163067   | 83163068 | 83163069   | 83163015 | 83163071 | 83163072   | 83163073 | 83163074   | 83163016 | 83163075 | 83161320 |
|           |        | UL  | •          | •        | •          | •        | •        | •          | •        | •          | •        | •        | •        |
|           | I W3   | STD | 83163078   | 83163079 | 83163080   | 83163081 | 83163082 | 83163083   | 83161374 | 83163084   | 83163007 | 83163085 | 83161318 |
|           |        | UL  | •          | •        | •          | 83161328 | •        | •          | 83163221 | •          | •        | •        | 83163102 |
|           | I W6A5 | STD | 83163088   | 83163089 | 83163090   | 83163091 | 83163092 | 83163093   | 83163094 | 83161095   | 83163096 | 83163097 | •        |
|           |        | UL  | •          | •        | •          | 83161327 | •        | •          | 83163222 | •          | 83163220 | •        | 83161352 |
| 831615    | I W2   | STD | 83161529   | 83161530 | 83161531   | 83161532 | 83161533 | 83161534   | 83161535 | 83161536   | 83161537 | 83161538 | -        |
|           |        | UL  | •          | •        | •          | •        | •        | •          | •        | •          | •        | •        | -        |
|           | I W3   | STD | 83161541   | 83161542 | 83161543   | 83161544 | 83161545 | 83161546   | 83161547 | 83161548   | 83161514 | 83161549 | -        |
|           |        | UL  | •          | •        | •          | •        | •        | •          | •        | •          | •        | •        | -        |
|           | I W6A5 | STD | 83161552   | 83161553 | 83161554   | 83161556 | 83161555 | 83161556   | 83161557 | 83161558   | 83161559 | 83161560 | -        |
|           |        | UL  | •          | •        | •          | •        | •        | •          | •        | •          | •        | •        | -        |

Standard product

Product made to order



Contact us

## 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 approval\* - Actuator\* - Fixing position\* - Mounting accessories\*

\* if needed

Example: 831613 C W3R5 UL 161E R13.6 B 79250338

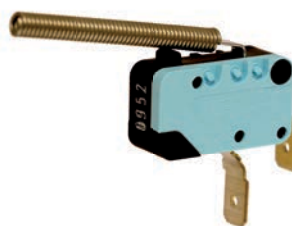
## Examples of special adaptations



Telescopic plunger and adjustable fixing . 4mm overtravel. Metal version for heavy duty (SP9603)



Door switch for industrial vehicle



Spring lever for extra-long overtravel



One-way roller lever (active on right, idle-return on left)



Angled W3 terminals



RAST 7mm - W3R7 connections



Fully specific integrable switching module with terminal block for time switch



Auxiliary contact for power switches and circuit breakers. Integrates the V3-83161 mechanism

# MINIATURE MICROSWITCHES - PREMIUM

## V3 Dual-current - 83161

- › High precision flexible leaf snap-action mechanism
- › Operation without balance-point, even at extremely slow actuating speed
- › Broad range of operating forces from 0.15 N to 3 N
- › Use from 1 mA 4 V<sub>DC</sub> to 5 A 250 V<sub>AC</sub>
- › Operating temperature from -60 °C up to +150 °C - High resistance to shock and vibration
- › Mechanical life up to 50 million cycles
- › ENEC and cURus approved
- › Wide choice of actuators on 4 possible fixing positions (pre-assembled or retrofittable)



### Main specifications

| Function                                | Connections                      | Dual-current<br>831618 |          | Dual-current<br>High force<br>831618 SP 4174 |          | Dual-current<br>Very low force<br>831619 |          | Dual-current<br>Ultra low force<br>831619 SP 4136 |          |
|-----------------------------------------|----------------------------------|------------------------|----------|----------------------------------------------|----------|------------------------------------------|----------|---------------------------------------------------|----------|
|                                         |                                  | Standard               | UL       | Standard                                     | UL       | Standard                                 | UL       | Standard                                          | UL       |
| I (Changeover)                          | W2                               | 83161801               | ●        | 83168015                                     | 83168008 | 83161928                                 | ●        | 83161901                                          | ●        |
| I (Changeover)                          | W3                               | 83161806               | 83161873 | 83161832                                     | 83161894 | 83161906                                 | ●        | 83161904                                          | 83161917 |
| I (Changeover)                          | W6A5                             | 83161812               | 83161813 | ●                                            | ●        | ●                                        | ●        | ●                                                 | 83161911 |
| I (Changeover)                          | W3R5                             | ●                      | ●        | ●                                            | ●        | ●                                        | ●        | ●                                                 | ●        |
| I (Changeover)                          | W5                               | ●                      | ●        | ●                                            | ●        | ●                                        | ●        | ●                                                 | ●        |
| I (Changeover)                          | W6D8                             | ●                      | ●        | ●                                            | ●        | ●                                        | ●        | 83161915                                          | ●        |
| I (Changeover)                          | W7A5                             | 83161803               | ●        | ●                                            | ●        | ●                                        | ●        | ●                                                 | ●        |
| I (Changeover)                          | 2W7A8                            | ●                      | ●        | ●                                            | ●        | ●                                        | ●        | ●                                                 | ●        |
| R (Normally closed)                     | W2                               | 83161807               | ●        | ●                                            | ●        | ●                                        | ●        | ●                                                 | ●        |
| R (Normally closed)                     | W3                               | 83161821               | ●        | ●                                            | ●        | 83161907                                 | ●        | 83161916                                          | ●        |
| R (Normally closed)                     | W6A5                             | ●                      | ●        | ●                                            | ●        | ●                                        | ●        | ●                                                 | ●        |
| R (Normally closed)                     | W3R5 - W5 - W6D8<br>W7A5 - 2W7A8 | ●                      | ●        | ●                                            | ●        | ●                                        | ●        | ●                                                 | ●        |
| C (Normally open)                       | W2                               | 83161818               | ●        | ●                                            | ●        | ●                                        | ●        | ●                                                 | ●        |
| C (Normally open)                       | W3                               | 83161822               | 83161827 | ●                                            | ●        | ●                                        | ●        | ●                                                 | ●        |
| C (Normally open)                       | W6A5                             | 83161826               | 83161819 | ●                                            | ●        | ●                                        | 83161908 | ●                                                 | ●        |
| C (Normally open)                       | W3R5 - W5 - W6D8<br>W7A5 - 2W7A8 | ●                      | ●        | ●                                            | ●        | ●                                        | ●        | ●                                                 | ●        |
| Electrical characteristics              |                                  | 5*                     |          | 5*                                           |          | 4*                                       |          | 4*                                                |          |
| Rating nominal / 250 V AC (A)           |                                  | 6                      |          | 6                                            |          | 5                                        |          | 5                                                 |          |
| Rating thermal / 250 V AC (A)           |                                  | 0.1(0.04)              |          | 0.1(0.04)                                    |          | 0.1(0.04)                                |          | 0.1(0.04)                                         |          |
| Rating ENEC/NF                          |                                  | - 1                    |          | - 1                                          |          | - 1                                      |          | - 1                                               |          |
| Rating UL                               |                                  | -                      |          | -                                            |          | -                                        |          | -                                                 |          |
| Mechanical characteristics              |                                  |                        |          |                                              |          |                                          |          |                                                   |          |
| Maximum operating force (N)             |                                  | 0.8                    |          | 3                                            |          | 0.25                                     |          | 0.15                                              |          |
| Min. Release force (N)                  |                                  | 0.2                    |          | 1                                            |          | 0.05                                     |          | 0.04                                              |          |
| Maximum total travel force (N)          |                                  | 2                      |          | 4.5                                          |          | 0.40                                     |          | 0.2                                               |          |
| Max. permitted overtravel force (N)     |                                  | 20                     |          | 20                                           |          | 20                                       |          | 20                                                |          |
| Maximum rest position (mm)              |                                  | 16.2                   |          | 16.1                                         |          | 16.3                                     |          | 16.3                                              |          |
| Operating position (mm)                 |                                  | 14.7±0.3               |          | 14.7±0.4                                     |          | 14.7±0.4                                 |          | 14.7±0.3                                          |          |
| Maximum differential travel (mm)        |                                  | 0.35                   |          | 0.35                                         |          | 0.35                                     |          | 0.35                                              |          |
| Min. overtravel (mm)                    |                                  | 1.2                    |          | 1.1                                          |          | 1.1                                      |          | 1.2                                               |          |
| Ambient operating temperature (°C)      |                                  | -60 → +125             |          | -60 → +125                                   |          | -40 → +125                               |          | -40 → +125                                        |          |
| Mechanical life for 2/3 OT (operations) |                                  | 2 x 10 <sup>7</sup>    |          | 10 <sup>7</sup>                              |          | 5 x 10 <sup>7</sup>                      |          | 5 x 10 <sup>7</sup>                               |          |
| Contact gap (mm)                        |                                  | 0.4                    |          | 0.4                                          |          | 0.4                                      |          | 0.4                                               |          |
| Weight (g)                              |                                  | 5.6                    |          | 5.6                                          |          | 5.6                                      |          | 5.6                                               |          |

### Additional specifications

- Case: PA6 GF (UL 94-V2 / GWFI 960 °C) - Standard versions  
PBT GF (UL 94-V0 / GWFI 960 °C) - UL versions  
PET GF (UL 94-V0 / GWFI 960 °C / GWIT 775 °C) - On request
- Button: PA66
- Moving blade: silver-plated beryllium copper
- Contacts: gold alloy on silver alloy, crossbar (dual-current)
- Terminals: brass (except W2 : copper nickel)
- Levers: stainless steel or polyamide, polyamide roller
- Nuts for 161L: nickel-plated brass

- Degree of protection: IP40 (mechanism)
- Proof tracking index: PTI 250
- Protection against electric shock: button and actuators have reinforced insulation for Ui 250V / Uimp 2,5kV / pollution 2
- Min actuating speed: 0.001 mm/s
- Approvals: Standard versions: NF - ENEC  
UL versions: NF - ENEC - cURus

## Product adaptations

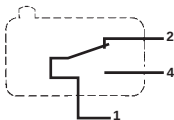


- › Special levers: special shapes and lengths, flexible levers, adjustable, pinned, ....
- › Special connections: angled, with 7mm spacing (RAST 7-W3R7), for PCB, ...
- › High operating temperature: +150 °C
- › Reduced or increased switching hysteresis: max 0.1 mm to max 0.8 mm differential travel
- › Specific operating force easily achievable
- › Telescopic plunger and adjustable fixing by threaded barrel: plastic version (161L accessory) or metal version (SP9603)
- › Housing material complying with IEC 60335-1 for unattended appliances: GWFI 850° C / GWIT 775° C (SP9680)

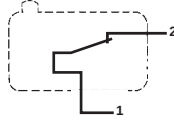
## Principles

Single break snap-action switch

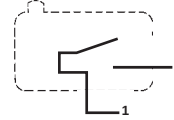
Changeover - SPDT (form C)



Normally closed - SPST-NC (form B)

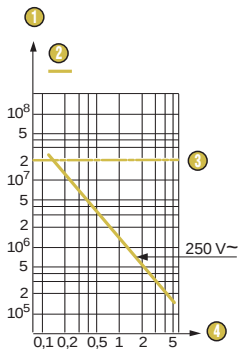


Normally open - SPST-NO (form A)



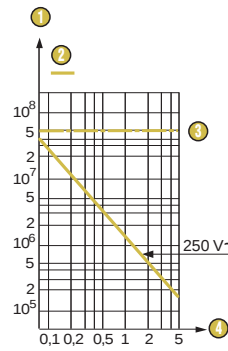
## Curves

Operating curve for type 831618 and 831618 SP 4174



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

Operating curve for types 831619 and 831619 SP 4136



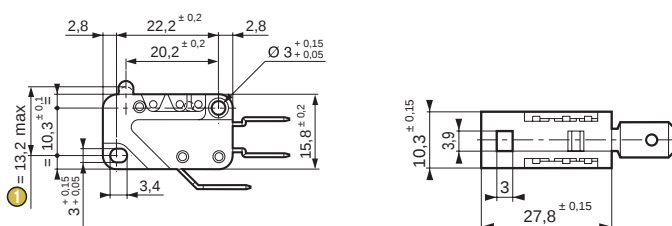
- ① Number of cycles
- ② Resistive circuit
- ③ Mechanical life limit
- ④ Current in Amps

\* These models are designed to operate equally well on low-current (1 mA 4 V minimum recommended) or medium-current (5 A maximum) circuits. However, a given product should only be used to switch one type of circuit during its working life.

## Dimensions

### Product

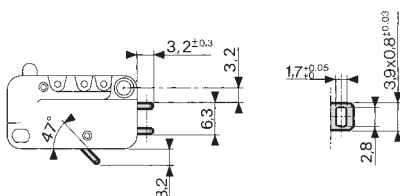
83161



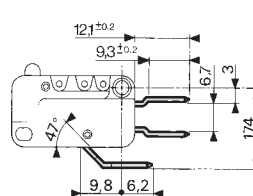
- ① Total travel position

### Connections

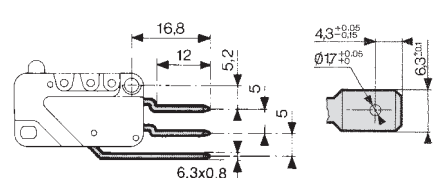
W2 solder



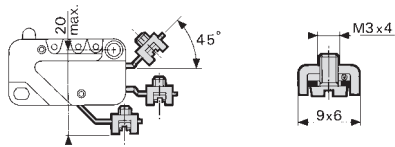
W3 quick-connect 6.3 x 0.8



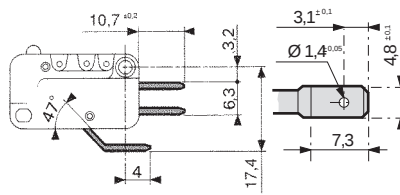
W3R5 quick-connect 6.3x0.8 for RAST 5 connector



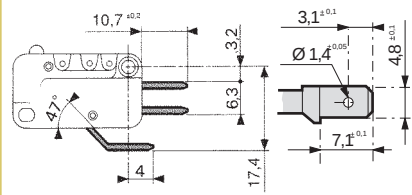
W5 screw



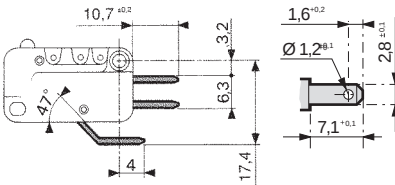
W6A5 quick-connect 4.8 x 0.5



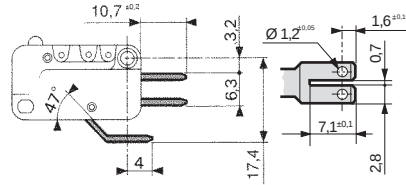
W6D8 quick-connect 4.8 x 0.8



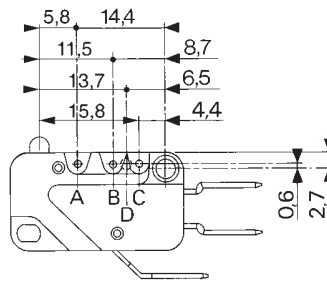
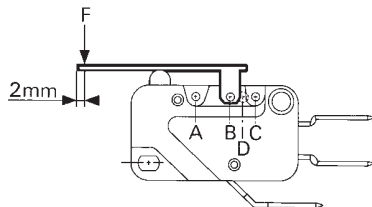
W7A5 quick-connect 2.8 x 0.5



2W7A8 double quick-connect 2.8 x 0.8



## Actuator mounting positions



### To calculate force

Divide the switch force by the coefficient given in the table.

### To calculate travel

Multiply the switch travel by the same coefficient.

### Example :

83 161 8 with lever 161 A - R 25.4 position A

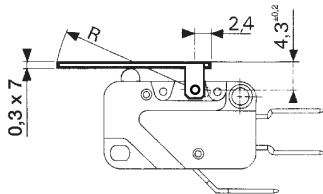
(coeff. 4)

Operating force:  $0.8 : 4 = 0.2 \text{ N}$

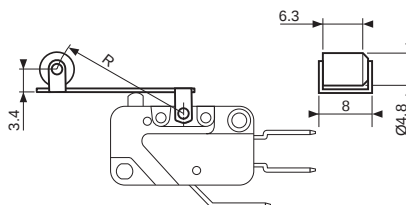
Overtravel:  $1.2 \times 4 = 4.8 \text{ mm}$

## Actuators

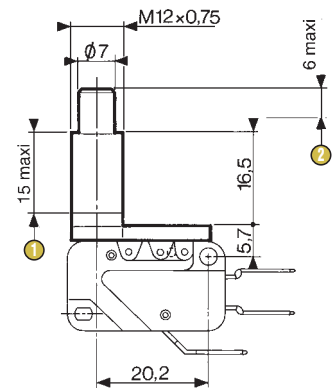
161A flat



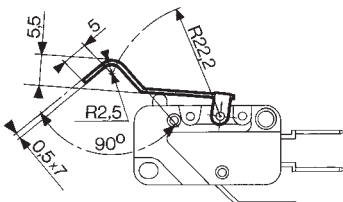
161E roller



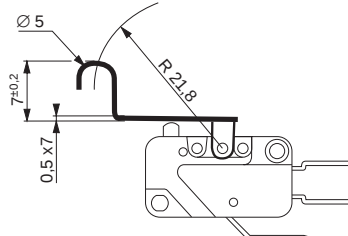
161L telescopic plunger



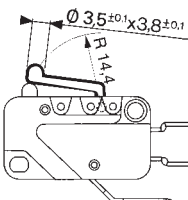
161F dummy roller



161G dummy roller



161V plastic



Other shapes and dimensions: consult us

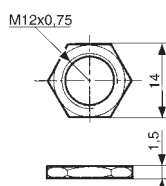
Also available are pinned actuators mounted on position D (factory mounting), same as for 83160 series. (datasheet: SP9640)

- ① Thread length
- ② Total travel

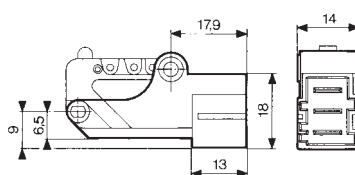
| Nut thickness | Max. torque |
|---------------|-------------|
| 1.5 mm        | 0.5 N.m     |
| 2 mm          | 0.7 N.m     |
| 2.5 mm        | 1 N.m       |

## Mounting accessories

**Nut for 161L**

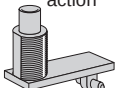
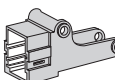


**Housing 161J for connections W3 R5**



## Actuators and mounting accessories

| Part numbers for standard actuators |                                                                                   | 79215740   |                                                                                   | 70507524 |                                                                                    | 79215742  |                                                                                     | 70507529  |                                                                                     | 70507528  |         |           |
|-------------------------------------|-----------------------------------------------------------------------------------|------------|-----------------------------------------------------------------------------------|----------|------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------|-----------|---------|-----------|
| Actuators                           | Flat <b>161A</b> R14,2                                                            |            | Flat <b>161A</b> R25,4                                                            |          | Roller <b>161E</b> R13,6                                                           |           | Roller <b>161E</b> R24,1                                                            |           | Dummy roller <b>161F</b> R22,2                                                      |           |         |           |
|                                     |  |            |  |          |  |           |  |           |  |           |         |           |
| Fixing positions                    | A                                                                                 | B          | A                                                                                 | B        | C                                                                                  | A         | B                                                                                   | A         | B                                                                                   | C         | A       | B         |
| Coefficient                         | 2                                                                                 | 1          | 4                                                                                 | 2        | 1,5                                                                                | 2         | 1                                                                                   | 4         | 2                                                                                   | 1,5       | 3       | 1,8       |
| Operating position (except 831616)  | 15,2 ±1                                                                           | 15,2 ±0,45 | 15,2 ±2,5                                                                         | 15,2 ±1  | 15,2 ±0,8                                                                          | 20,5 ±1,5 | 20,5 ±0,8                                                                           | 20,5 ±2,9 | 20,5 ±1,5                                                                           | 20,5 ±1,2 | 20,4 ±2 | 20,4 ±0,7 |
| Operating position 831616           | 14,8 ±1                                                                           | 15 ±0,45   | 14,4 ±2,5                                                                         | 14,8 ±1  | 14,9 ±0,8                                                                          | 20,1 ±1,5 | 20,3 ±0,8                                                                           | 19,7 ±2,9 | 20,1 ±1,5                                                                           | 20,2 ±1,2 | 20,2 ±2 | 20,2 ±2   |

| Part numbers for standard actuators |                                                                                     | 79218651  |                                                                                     | 79250338 |                  | 70602118                                                                              |                                                                                       |                                                                                       |
|-------------------------------------|-------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------|----------|------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Actuators                           | Dummy roller<br><b>161G</b> R21,8                                                   |           | **Telescopic<br>plunger<br><b>161L</b>                                              |          | Manual<br>action | Plastic <b>161V</b>                                                                   | Housing <b>161J</b>                                                                   | Nut for <b>161L</b>                                                                   |
|                                     |  |           |  |          |                  |  |  |  |
| Fixing positions                    | A                                                                                   | B         | D                                                                                   |          |                  | D                                                                                     |                                                                                       |                                                                                       |
| Coefficient                         | 3                                                                                   | 1,8       | 1                                                                                   |          |                  | 1                                                                                     |                                                                                       |                                                                                       |
| Operating position (except 831616)  | 21,7 ±2                                                                             | 21,7 ±0,7 | 21,5 ±1                                                                             |          |                  | 18,35 ±0,45                                                                           |                                                                                       |                                                                                       |
| Operating position 831616           | 21.5 ±2                                                                             | 21.5 ±0,7 | 21.5 ±1                                                                             |          |                  |                                                                                       |                                                                                       |                                                                                       |

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

\*\* For 831618, 831618 SP 4174 mounted in factory (supplied without nut)

### V3 Dual-current - 83161 microswitches with referenced actuators

[illegible]

## 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 approval\* - Actuator\* - Fixing position\* - Mounting accessories\*

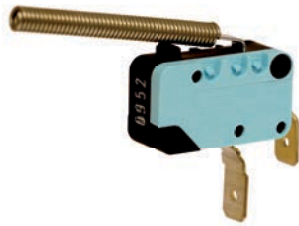
\* if needed

Example: 831618 C W6A5 UL 161L 70602118

## Examples of special adaptations



Plastic lever with no play in rest position



Spring lever for extra-long overtravel



One-way roller lever (active on right, idle-return on left)



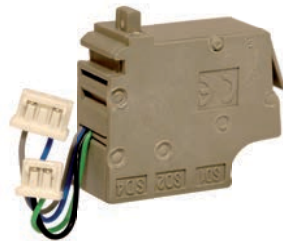
Angled W3 terminals



Telescopic plunger and adjustable fixing. 4mm overtravel.  
Metal version for heavy duty. Long barrel.



Fully specific integrable switching module with terminal block for time switch



Auxiliary contact for power switches and circuit breakers. Integrates the V3 83161 mechanism



Door switch for industrial vehicle