

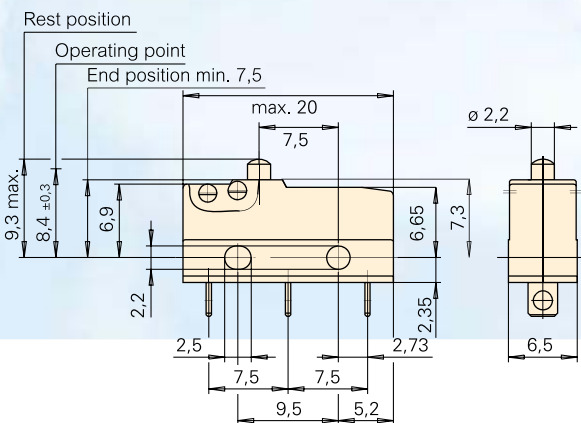
# DB subminiature switch






## Features

- Precision switch with high repeat accuracy
- Available for up to 120 °C operating temperature
- Nominal current up to 10A at 250 VAC
- Various auxiliary actuators (can also be retrofitted) two mounting positions
- Various application-specific contact materials
- Mechanical operational life up to  $15 \times 10^6$  actuations
- Wide variety of terminal types

## Dimensions in mm



## Technical specifications

|                                        |                                                                                                                                                                                                                                                                                     |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Contact configuration                  | S.P.D.T., S.P.S.T. - N.O., S.P.S.T. - N.C.                                                                                                                                                                                                                                          |
| Contact gap                            | < 3 mm ( $\mu$ )                                                                                                                                                                                                                                                                    |
| Switching voltage max.                 | 250 V AC                                                                                                                                                                                                                                                                            |
| Switched current                       | 0,1 to 10 A AC, dependig on model (see table)                                                                                                                                                                                                                                       |
| Operating force                        | 70 to 280 cN without auxiliary actuator, depending on model                                                                                                                                                                                                                         |
| Total travel                           | 1,6 mm                                                                                                                                                                                                                                                                              |
| Mechanical life                        | Min. $10 \times 10^6$ operations (see table)                                                                                                                                                                                                                                        |
| Electrical life (max. load)            | Up to $10^6$ operations (see table)                                                                                                                                                                                                                                                 |
| Ambient temperature                    | -40 to +85 °C/120 °C                                                                                                                                                                                                                                                                |
| Proof tracking index                   | PTI 175 (PTI 250 on request)                                                                                                                                                                                                                                                        |
| <b>Materials</b>                       |                                                                                                                                                                                                                                                                                     |
| Base                                   | PET (UL 94 VO)                                                                                                                                                                                                                                                                      |
| Cover                                  | PBT (UL 94 VO)                                                                                                                                                                                                                                                                      |
| Actuator                               | PBT (UL 94 VO) T120<br>POM (UL 94 HB) T85                                                                                                                                                                                                                                           |
| Contacts                               | Ag, AgNi,<br>AuAgPt (Crosspoint)                                                                                                                                                                                                                                                    |
| Terminals                              | CuZn (silver-plated)                                                                                                                                                                                                                                                                |
| Auxiliary actuator                     | Stainless steel or plastic                                                                                                                                                                                                                                                          |
| Approvals                              |    dependig on model |
| Degree of protection (switch interior) | IP50                                                                                                                                                                                                                                                                                |

For detailed information and the layout of the details described above, please do not hesitate to ask for our technical specifications and drawing.

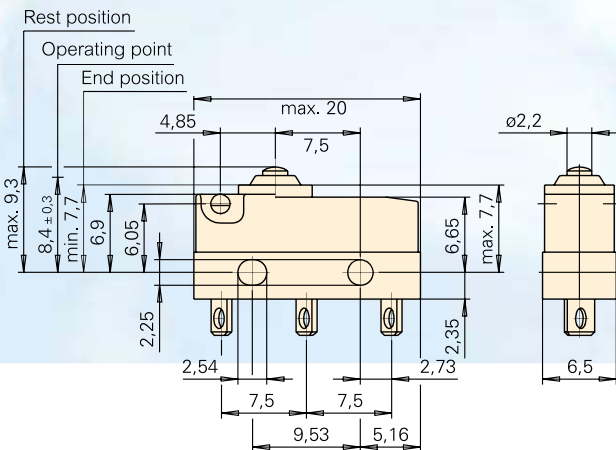
# DC subminiature switch




## Features

- Sealed switch IP6K7 protection
- Silicon-free variants available
- Models available for 120 °C operating temperature
- Nominal currents from 10 A at 250 VAC
- Various auxiliary actuators available (can also be retrofitted)
- Various application-specific contact materials
- Mechanical operating life min. 1,000,000 actuations
- Wide variety of terminal types

## Dimensions in mm



## Technical specifications

|                                        |                                                                                                             |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------|
| Contact configuration                  | S.P.D.T., S.P.S.T. - N.O., S.P.S.T. - N.C.                                                                  |
| Contact gap                            | < 3 mm ( $\mu$ )                                                                                            |
| Switching voltage max.                 | 250 V AC                                                                                                    |
| Switched current                       | 0,1 to 10 A AC (see table) depending on model                                                               |
| Operating force                        | 200 to 340 cN without auxiliary actuator depending on model                                                 |
| Total travel                           | ca. 1,6 mm                                                                                                  |
| Mechanical life                        | min. 1 x 10 <sup>6</sup> operations (see table)                                                             |
| Electrical life (max. load)            | min 10.000 operations (see table)                                                                           |
| Ambient temperature                    | -40 to +85 °C / 120 °C                                                                                      |
| Model with leads                       | -40 to +105 °C                                                                                              |
| Proof tracking index                   | PT1175, PT1250 on request                                                                                   |
| <b>Materials</b>                       |                                                                                                             |
| Housing                                | PET/PBT (UL 94V-0)                                                                                          |
| Actuator                               | POM (T85), PBT (T120)                                                                                       |
| Contacts DC1, DC2, DC4                 | AuNi                                                                                                        |
| DC3                                    | AuAgPt (Crosspoint)                                                                                         |
| Terminals                              | CuZn (silver-plated)                                                                                        |
| Auxiliary actuator                     | Stainless steel or plastic                                                                                  |
| Sealing gasket                         | SI, silicon-free alternative available                                                                      |
| Leads                                  | Cu, PVC-sheathed                                                                                            |
| Approvals                              | <br>depending on model |
| Degree of protection (switch interior) | IP6K7                                                                                                       |

For detailed information and the layout of the details described above, please do not hesitate to ask for our technical specifications and drawing.

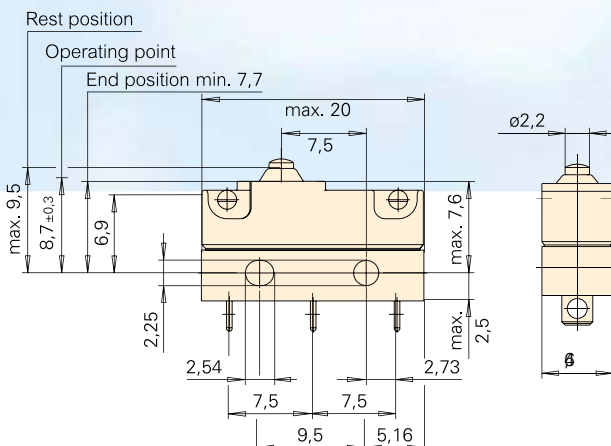
# DCJK subminiature switch



## Features

- Special variant of the DC switch for special applications
- Sealed switch protection type IP6K7
- Silicon-free version available
- Models available for 120 °C operating temperature
- Nominal currents up to 10 A at 12 VDC
- Optimal adjustment with 2 mounting positions and various auxiliary actuators, which can also be retrofitted
- Wide variety of terminal types; 3 pedestal heights
- High contact stability with various applications-specific contact materials
- 4 different switching points can be selected
- No UL/EN approval

## Dimensions in mm



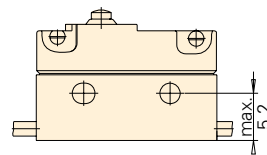
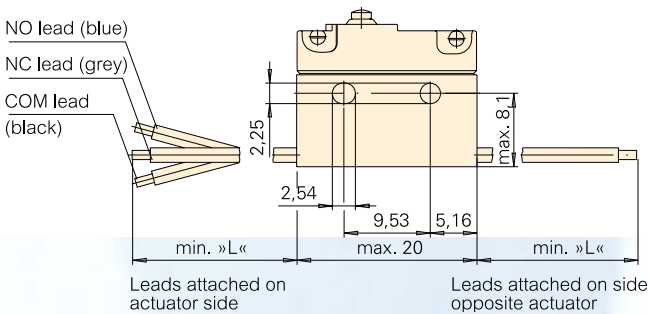
## Technical specifications

|                                        |                                                                            |
|----------------------------------------|----------------------------------------------------------------------------|
| Contact configuration                  | S.P.D.T, S.P.S.T.-N.O. or S.P.S.T.-N.C.                                    |
| Contact gap                            | < 3 mm                                                                     |
| Switching voltage (max)                | 12 V DC                                                                    |
| Switched current max.                  | 0,1 to 10 A DC                                                             |
| Operating force                        | 300 cN without auxiliary actuator depending on model                       |
| Total travel                           | up to ca. 2,0 mm                                                           |
| Mechanical life                        | > 2 x 10 <sup>6</sup> operations                                           |
| Electrical life (depending on load)    | min 100.000 operations                                                     |
| Ambient temperature                    | -40 to +85 °C / 120 °C                                                     |
| Model with leads                       | -40 to +105 °C                                                             |
| <b>Materials</b>                       |                                                                            |
| Housing                                | PET/PA                                                                     |
| Actuator                               | POM (T85), PA (T120)                                                       |
| Auxiliary actuator                     | Stainless steel or plastic                                                 |
| Sealing gasket                         | SI, silicon-free alternative available                                     |
| Terminals                              | CuZn (silver-plated)                                                       |
| Leads                                  | Cu, Isolation PVC                                                          |
| Contacts                               | AgNi; Ag;<br>AuAgPt (Crosspoint)<br>AgPd (Crosspoint)<br>AuAg (Crosspoint) |
| Degree of protection (switch interior) | IP6K7                                                                      |

For detailed information and the layout of the details described above, please do not hesitate to ask for our technical specifications and drawing.

## Switch models

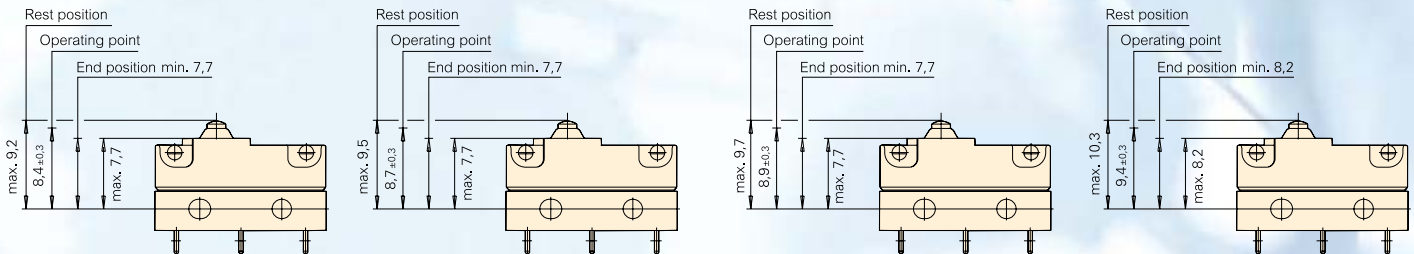
Model with leads, 8.1 mm from base to drill hole



Model with leads, 5.2 mm from base to drill hole

## Switching point options

For customizing to individual requirements, switches in the DC JK family are available with four different switching points.



## Terminal configurations

Type of terminal available off-the-shelf:

Solder terminal, straight

Connecting leads on actuator side

Connecting leads opposite actuator side

Types of connector available on request:

Welding terminal

Insulation displacement connection

Solder terminal, lateral

PCB terminal 0.8 x 0.5

PCB terminal 0.6 x 0.5

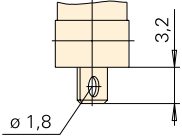
## Auxiliary actuators

Switches in the DC JK family have two mountings for attaching auxiliary actuators. This, combined with the range of actuators available in the DC switch family and various operating points, means that a wide variety of operating forces and travel combinations is feasible. To find the perfect fit for your requirements, please contact us.

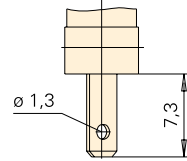
Further information and order codes on request.

## Terminals

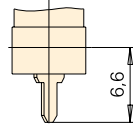
Solder terminal short  
max. 30° twisted



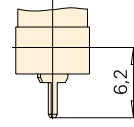
Q.C. terminal 2,8 x 0,5  
max. 30° twisted



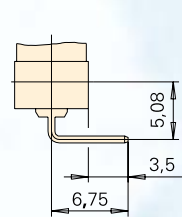
PCB terminal 1,3 x 0,5 mm  
max. 30° twisted



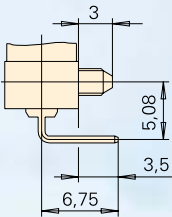
PCB terminal 0,6 x 0,5 mm  
max. 30° twisted



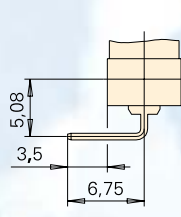
PCB terminal 0,6 x 0,5 mm  
RH-side w/o location pins



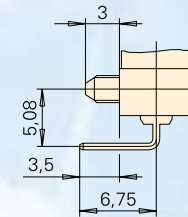
PCB terminal 0,6 x 0,5 mm  
RH-side with location pins



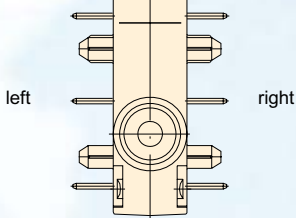
PCB terminal 0,6 x 0,5 mm  
LH-side w/o location pins



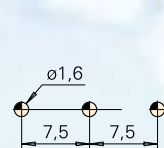
PCB terminal 0,6 x 0,5 mm  
LH-side with location pins



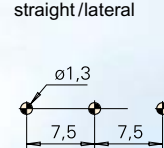
Side definition with terminals and  
location pins



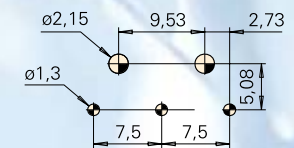
Drilling pattern for  
PCB terminals 1.3 x 0.5 mm



Drilling pattern for lateral PCB  
terminals 0.6 x 0.5 mm  
straight/lateral

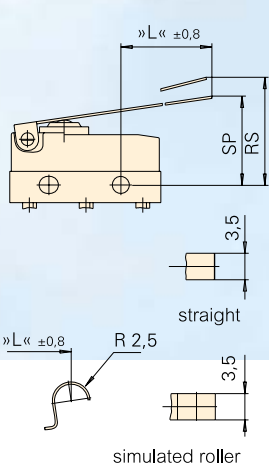


Drilling pattern for lateral PCB  
terminals 0.6 x 0.5, with location pins

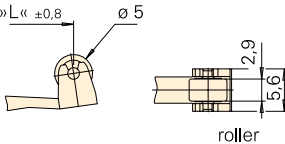
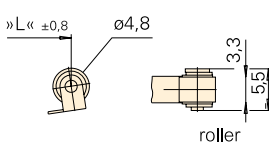
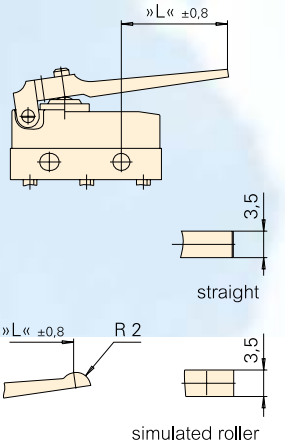


## Auxiliary actuator options

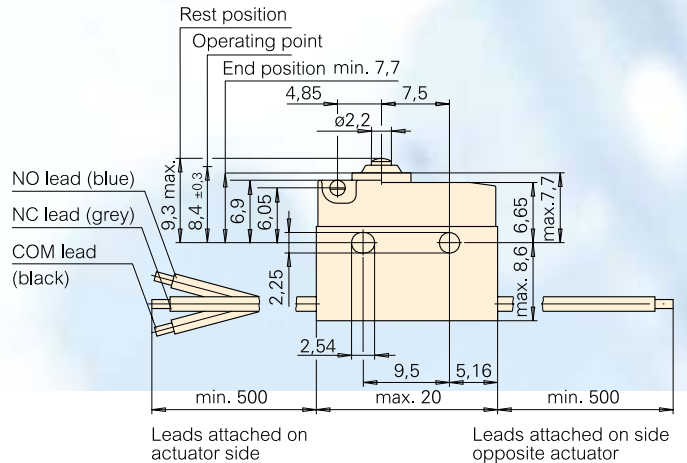
Steel auxiliary actuator



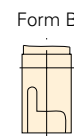
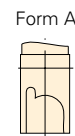
Plastic auxiliary actuator with/  
without adjusting screw



## Model with connecting leads (IP6K7)



Special model with tall pedes-  
tral available on request



## Electrical rating and operating life (2)

| Electrical rating according to<br>EN 61058 |                                          | Electrical life at rated load<br>acc. to EN<br>(operations) |         | Mechanical life     | Max. operating force (cN) | Code |
|--------------------------------------------|------------------------------------------|-------------------------------------------------------------|---------|---------------------|---------------------------|------|
| UL 1054                                    |                                          | acc. to UL                                                  |         |                     |                           |      |
| 6 A 250 V AC                               | 5 A 125–250 V AC                         | 10.000                                                      | 6.000   | 2 x 10 <sup>6</sup> | 200                       | 1    |
| 10 (1,5) A, 250 V AC                       | 10,1 A, 125–250 V AC<br>1/4 HP, 125 V AC | 10.000                                                      | 6.000   | 1 x 10 <sup>6</sup> | 340                       | 2    |
| 0,1 A, 250 V AC                            | 0,1 A 125–250 V AC                       | 50.000                                                      | 100.000 | 2 x 10 <sup>6</sup> | 200                       | 3    |
| 3 A, 250 V AC                              | 3 A, 125–250 V AC                        | 50.000                                                      | 6.000   | 2 x 10 <sup>6</sup> | 200                       | 4*   |

\* DC4 only possible as line version with line diameter 0.5 mm<sup>2</sup>

## Switching parameters

| Option                     | Type      | Max. operating force (cN) | Max. pretravel (mm) | Min. overtravel (mm) | Max. movement differential (mm) | Max. rest position (mm) | Operating point (mm) | Length of aux. actuator | Code |
|----------------------------|-----------|---------------------------|---------------------|----------------------|---------------------------------|-------------------------|----------------------|-------------------------|------|
| Without auxiliary actuator | DC1, 3, 4 | 200                       | 1,0                 | 0,6                  | 0,1                             | 9,3                     | 8,4 ± 0,3            | –                       | AA   |
|                            | DC2       | 340                       | 1,0                 | 0,6                  | 0,1                             | 9,3                     | 8,4 ± 0,3            |                         |      |

## Contact configuration (3)

| Contact configuration                             | Code |
|---------------------------------------------------|------|
| Ambient temperature 40T85                         |      |
| S.P.S.T.-N.O.                                     | E    |
| S.P.S.T.-N.C.                                     | F    |
| S.P.D.T.                                          | G    |
| Ambient temperature 40T120<br>(with leads 40T105) |      |
| S.P.S.T.-N.O.                                     | A    |
| S.P.S.T.-N.C.                                     | B    |
| S.P.D.T.                                          | C    |



## Contact rating at direct voltage

| Switching voltage | Switched current resistive load |        | Induktive load (L/R = 3 ms) |       |
|-------------------|---------------------------------|--------|-----------------------------|-------|
|                   | DC1                             | DC2    | DC1                         | DC2   |
| 12 V              | 6 A                             | 10 A   | 6 A                         | 10 A  |
| 24 V              | 3 A                             | 5 A    | 2 A                         | 4 A   |
| 60 V              | 1 A                             | 1 A    | 0,5 A                       | 0,5 A |
| 110 V             | 0,5 A                           | 0,5 A  | 0,2 A                       | 0,2 A |
| 220 V             | 0,25 A                          | 0,25 A | 0,1 A                       | 0,1 A |

## Terminals (4)

| Type of terminal with standard pedestral                  | Code  |
|-----------------------------------------------------------|-------|
| Solder terminal, short*                                   | A1    |
| PCB terminal 1,3 x 0,5 straight*                          | H1    |
| PCB terminal 0,6 x 0,5 straight*                          | K1    |
| PCB terminal 0,6 x 0,5 right-hand side**                  | K8    |
| PCB terminal 0,6 x 0,5 left-hand side**                   | K9    |
| PCB terminal 0,6 x 0,5 right-hand side***                 | K6    |
| PCB terminal 0,6 x 0,5 left-hand side***                  | K7    |
| Q.C. terminal 2,8 x 0,5 mm straight*                      | L1    |
| Leads 0,5 mm <sup>2</sup> attached to underside           | B5    |
| Leads 0,5 mm <sup>2</sup> on actuator side                | B3    |
| Leads 0,5 mm <sup>2</sup> on opposite side from actuator  | B4    |
| Leads 0,75 mm <sup>2</sup> attached to underside          | C5    |
| Leads 0,75 mm <sup>2</sup> on actuator side               | C3    |
| Leads 0,75 mm <sup>2</sup> on opposite side from actuator | C4    |
| Without Leads (Form B) on actuator side/ opposite*        | N3/N4 |
| Without Leads (Form A) on actuator side/ opposite*        | P3/P4 |
| Without Leads (no cut-out) with solder terminal*          | Q1    |

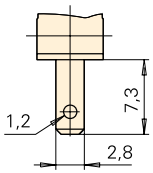
\* max. 30° twisted \*\*with location pins \*\*\*w/o location pins

## Auxiliary actuator options (5)

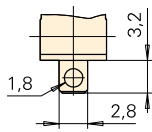
| Model                      | Length | Code |
|----------------------------|--------|------|
| Without auxiliary actuator | –      | AA   |
| Straight                   | 4,8    | LB   |
|                            | 8      | LC   |
|                            | 42     | LD   |
| Roller                     | 2,5    | RB   |
|                            | 4,7    | RC   |
|                            | 39,7   | RD   |
| Simulated roller           | 2,5    | SB   |
|                            | 4,7    | SC   |
|                            | 39,7   | SD   |
| Plastic straight           | 7      | WB   |
|                            | 14     | WC   |
| Plastic roller             | 5,2    | ZB   |
| Plastic simulated roller   | 5,6    | VB   |

## Terminals

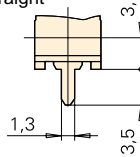
Q.C. terminal 2,8 x 0,5



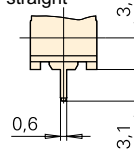
Solder terminal, short



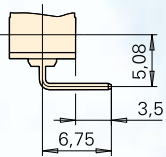
PCB terminal 1,3 x 0,5 straight



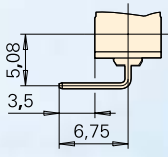
PCB terminal 0,6 x 0,5 straight



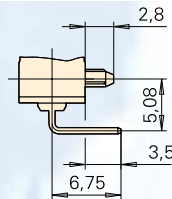
PCB terminal 0,6 x 0,5 RH-side w/o location pins



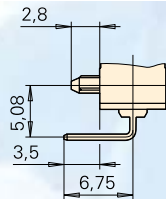
PCB terminal 0,6 x 0,5 LH-side w/o location pins



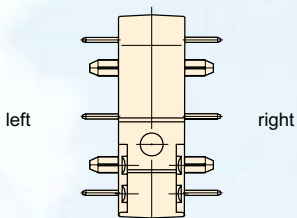
PCB terminal 0,6 x 0,5 RH-side with location pins



PCB terminal 0,6 x 0,5 LH-side with location pins

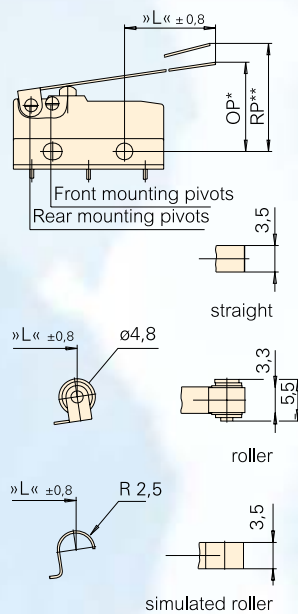


Side definition with terminals and location pins

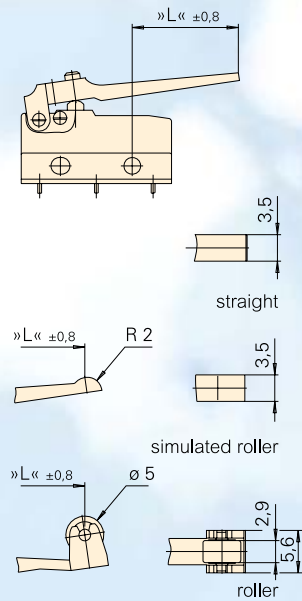


## Auxiliary actuator options

Steel auxiliary actuator



Plastic auxiliary actuator with/without adjusting screw



## Electrical rating and operating life (2)

| Electrical rating according to EN 61058                         | UL 1054                                | Electrical life at rated load for 40T85* acc. to EN (Operations) | Electrical life at rated load for 40T85* acc. to UL | Mechanical life      | Max. operating force (cN) | Code      |
|-----------------------------------------------------------------|----------------------------------------|------------------------------------------------------------------|-----------------------------------------------------|----------------------|---------------------------|-----------|
| 6A 250 V AC                                                     | 5 A 125–250 V AC                       | 10.000                                                           | 6.000                                               | 15 x 10 <sup>6</sup> | 150                       | 1         |
| 10 (1,5) A, 250 V AC                                            | 10,1 A, 125–250 AC, 1/4 HP, 125 V AC   | 10.000                                                           | 6.000                                               | 10 x 10 <sup>6</sup> | 250                       | 2         |
| 0.1 A, 250 V AC                                                 | 0,1 A 125–250 V AC                     | 50.000                                                           | 100.000                                             | 15 x 10 <sup>6</sup> | 150                       | 3         |
| 4 A, 250 V~                                                     | 4 A, 125–250 V AC                      | 50.000                                                           | 6.000                                               | 15 x 10 <sup>6</sup> | 90                        | 4         |
| 1 A, 250 V AC                                                   | 1 A, 125–250 V AC                      | 50.000                                                           | 6.000                                               | 15 x 10 <sup>6</sup> | 70                        | 5*        |
| 6 A, 250 V AC                                                   | 5 A, 125–250 V AC                      | 50.000                                                           | 6.000                                               | 15 x 10 <sup>6</sup> | 150                       | 6*        |
| 10 (1,5) A, 250 V AC                                            | 10.1 A, 125–250 V AC, 1/4 HP, 125 V AC | 50.000                                                           | 6.000                                               | 10 x 10 <sup>6</sup> | 280                       | 7*        |
| 10 (3) A, 250 V~                                                | 10.1 A, 125–250 V AC, 1/4 HP, 125 V AC | 10.000                                                           | 6.000                                               | 10 x 10 <sup>6</sup> | 280                       | L         |
| 3 A, 250 V~                                                     | 3 A, 125–250 V AC                      | 50.000                                                           | 6.000                                               | 15 x 10 <sup>6</sup> | 90                        | M         |
| 6 (2) A, 250 V~                                                 | 5 A, 125–250 V AC                      | 25.000                                                           | 6.000                                               | 15 x 10 <sup>6</sup> | 150                       | O         |
| Special models designed for very low switching loads on request |                                        |                                                                  |                                                     |                      |                           | *only T85 |

## Contact configuration (3)

| Contact configuration      | Code |
|----------------------------|------|
| Ambient temperature 40T85  | Code |
| S.P.S.T. - N.O.            | E    |
| S.P.S.T. - N.C.            | F    |
| S.P.D.T.                   | G    |
| Ambient temperature 40T120 | Code |
| S.P.S.T. - N.O.            | A    |
| S.P.S.T. - N.C.            | B    |
| S.P.D.T.                   | C    |

## Terminals (4)

| Type of terminal                             | Code |
|----------------------------------------------|------|
| Q.C. terminal 2.8 x 0.5 mm, straight         | B1   |
| Solder terminal, short                       | A1   |
| PCB terminal 1.3 x 0.5, straight             | C1   |
| PCB terminal 0.6 x 0.5, straight             | D1   |
| PCB terminal 0.6 x 0.5, right-hand side*     | D2   |
| PCB terminal 0.6 x 0.5, left-hand side*      | D3   |
| PCB terminal 0.6 x 0.5, right-hand side**    | D4   |
| PCB terminal 0.6 x 0.5, left-hand side**     | D5   |
| *with location pins ** without location pins |      |

## Auxiliary actuator options (5)

| Model                         | Mounting point | Length | Code |
|-------------------------------|----------------|--------|------|
| Without lever, spherical head | –              | –      | AA   |
|                               | –              | –      | BA   |
| Straight                      | RM rear        | 4,8    | LB   |
|                               |                | 7      | LC   |
|                               | FM front       | 42     | LD   |
|                               |                | 7      | MB   |
|                               |                | 9,4    | MC   |
| Roller                        | RM rear        | 43,5   | MD   |
|                               |                | 2,5    | RB   |
|                               |                | 4,7    | RC   |
|                               | FM front       | 39,7   | RD   |
|                               |                | 4,7    | TB   |
|                               |                | 7,1    | TC   |
|                               |                | 41,2   | TD   |
| Simulated roller              | RM rear        | 2,5    | SB   |
|                               |                | 4,7    | SC   |
|                               |                | 39,7   | SD   |
|                               | FM front       | 4,7    | UB   |
|                               |                | 7,1    | UC   |
| Plastic straight              | RM rear        | 41,2   | UD   |
|                               |                | 7      | WB   |
|                               | FM front       | 14     | WC   |
|                               |                | 9,4    | GB   |
| Plastic roller                | 16,2           | GC     |      |
|                               | RM rear        | 5,2    | ZB   |
| FM front                      | 7,3            | OB     |      |
| Plastic simulated roller      | RM rear        | 5,6    | VB   |
|                               | FM front       | 7,9    | HB   |

## Switching parameters

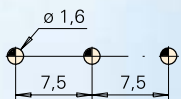
| Option                                          | Type  | Max. operating force (cN) | Max. pretravel (mm) | Min. overtravel (mm) | Max. movement differential (mm) | Max. rest position (mm) | Operating point (mm) | Length actuator (mm) $\pm 0,8$ |
|-------------------------------------------------|-------|---------------------------|---------------------|----------------------|---------------------------------|-------------------------|----------------------|--------------------------------|
| Spherical-head actuator, w/o auxiliary actuator | DB5   | 70                        | 1,0                 | 0,6                  | 0,1                             | 9,3                     | 8,4 $\pm 0,3$        | -                              |
|                                                 | DB1/O | 150                       | 1,0                 | 0,6                  | 0,1                             | 9,3                     | 8,4 $\pm 0,3$        |                                |
|                                                 | DB6   | 150                       | 1,0                 | 0,6                  | 0,15                            | 9,3                     | 8,4 $\pm 0,3$        |                                |
|                                                 | DB2   | 250                       | 1,0                 | 0,6                  | 0,1                             | 9,3                     | 8,4 $\pm 0,3$        |                                |
|                                                 | DB7   | 280                       | 1,0                 | 0,6                  | 0,15                            | 9,3                     | 8,4 $\pm 0,3$        |                                |
| Actuator with radius, w/o auxiliary actuator    | DB5   | 70                        | 1,0                 | 0,6                  | 0,1                             | 9,3                     | 8,4 $\pm 0,3$        | -                              |
|                                                 | DB1/O | 150                       | 1,0                 | 0,6                  | 0,1                             | 9,3                     | 8,4 $\pm 0,3$        |                                |
|                                                 | DB6   | 250                       | 1,0                 | 0,6                  | 0,15                            | 9,3                     | 8,4 $\pm 0,3$        |                                |
|                                                 | DB2   | 250                       | 1,0                 | 0,6                  | 0,1                             | 9,3                     | 8,4 $\pm 0,3$        |                                |
|                                                 | DB7   | 280                       | 1,0                 | 0,6                  | 0,15                            | 9,3                     | 8,4 $\pm 0,3$        |                                |

## Contact rating at direct voltage

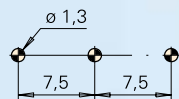
| Switching voltage | Switched current, resistive load |        | Inductive load (L/R = 3 ms) |       |
|-------------------|----------------------------------|--------|-----------------------------|-------|
|                   | DB 1                             | DB 2   | DB 1                        | DB 2  |
| 12 V              | 6 A                              | 10 A   | 6 A                         | 10 A  |
| 24 V              | 3 A                              | 5 A    | 2 A                         | 4 A   |
| 60 V              | 1 A                              | 1 A    | 0,5 A                       | 0,5 A |
| 110 V             | 0,5 A                            | 0,5 A  | 0,2 A                       | 0,2 A |
| 220 V             | 0,25 A                           | 0,25 A | 0,1 A                       | 0,1 A |

## Drilling patterns

drilling pattern for PCB terminal 1,3 x 0,5 mm



drilling pattern for PCB terminal 0,6 x 0,5 mm straight/lateral



drilling pattern for PCB terminal 0,6 x 0,5 mm lateral with location pins

