



## PCB KEY SWITCHES

|                                                           |                |
|-----------------------------------------------------------|----------------|
| <b>MICON 5 Tactile switches</b>                           | <b>4 - 3</b>   |
| MICON 5 - Tactile switches                                | 4 - 5          |
| MICON 5 - Plungers round, not illuminable                 | 4 - 10         |
| - NEW - MICON 5 - Plungers round, ring illumination       | 4 - 14         |
| MICON 5 - Plungers square, illuminable                    | 4 - 17         |
| - NEW - MICON 5 - Plungers square, spot-illumination      | 4 - 22         |
| MICON 5 - Plungers for signal indicator                   | 4 - 26         |
| <b>RACON Tactile switches</b>                             | <b>4 - 31</b>  |
| RACON 8 - Tactile switches                                | 4 - 33         |
| RACON 12 - Tactile switches                               | 4 - 39         |
| RACON 12 V - Tactile switches with vertical adapter       | 4 - 45         |
| RACON 12 i - Tactile switches                             | 4 - 47         |
| RACON 8/12 - Special accessories                          | 4 - 49         |
| RK 90 II, Key cap system for RACON 12                     | 4 - 52         |
| <b>RF Tactile switches</b>                                | <b>4 - 55</b>  |
| RF 15 - Tactile switches                                  | 4 - 58         |
| RF 15 N - Tactile switches                                | 4 - 62         |
| RF 15 R low - Tactile switches                            | 4 - 67         |
| RF 15 H - Tactile switches                                | 4 - 73         |
| RF 15 - Signal indicators                                 | 4 - 78         |
| RF 19 - Tactile switches                                  | 4 - 81         |
| RF 19 H - Tactile switches                                | 4 - 86         |
| RF 19 - Signal indicators                                 | 4 - 91         |
| RF 15/19 - Special accessories                            | 4 - 95         |
| <b>KN 19 Short-travel main switch</b>                     | <b>4 - 101</b> |
| KN 19 - Short-travel main switches                        | 4 - 103        |
| <b>RK 90 Keycaps</b>                                      | <b>4 - 105</b> |
| RK 90 - Keycaps, plastic, 9 x 9 mm                        | 4 - 109        |
| RK 90 - Keycaps, plastic 14 mm                            | 4 - 111        |
| RK 90 - Keycaps, aluminium, 14 mm                         | 4 - 115        |
| RK 90 - Special accessories                               | 4 - 118        |
| <b>RG 85 III Short-travel system</b>                      | <b>4 - 121</b> |
| RG 85 III - Pushbuttons/keys                              | 4 - 125        |
| RG 85 III - Keylock switches                              | 4 - 128        |
| RG 85 III - Signal indicator, without lens                | 4 - 131        |
| RG 85 III - Special accessories                           | 4 - 133        |
| <b>RS 76 Full-travel key switches</b>                     | <b>4 - 143</b> |
| RS 76 M - Full-travel key switches, non-illuminated       | 4 - 150        |
| RS 76 M - Full-travel key switches, illuminated           | 4 - 153        |
| RS 76 C - Full-travel key switches, non-illuminated       | 4 - 156        |
| RS 76 C - Full-travel key switches, illuminated           | 4 - 158        |
| RS 76 - Keycaps, non-illuminated                          | 4 - 161        |
| RS 76 - Keycaps, illuminated                              | 4 - 163        |
| RS 76 - Keycaps, with legend, two-shot molded/keycap sets | 4 - 166        |
| RS 76 - Special accessories                               | 4 - 168        |
| <b>Keylock / rotary switches for PCB</b>                  | <b>4 - 171</b> |
| MICROMEK - Keylock switches IP 54                         | 4 - 173        |
| EUROLOCKS - Keylock switches IP 54                        | 4 - 177        |
| Priority keylock switches IP 54                           | 4 - 179        |
| Rotary switches IP40                                      | 4 - 181        |



# PCB KEY SWITCHES

MICON 5 - TACTILE SWITCHES



## MICON 5

Tactile switches

Tactile switch range MICON 5, with clear key click and extremely reliable switching. Use under overlay or under keycaps RK 90. THT and SMT versions which can be mounted automatically. All products are RoHS compliant.

4

MICON

# PCB KEY SWITCHES

## MICON 5 - TACTILE SWITCHES

### Content

|                                                                     |                   |
|---------------------------------------------------------------------|-------------------|
| <b>MICON 5 - Tactile switches</b>                                   | <b>4 - 5</b>      |
| MICON 5 - Tactile switch, SMT Standard                              | 4 - 8             |
| MICON 5 - Tactile switch, SMT low                                   | 4 - 8             |
| MICON 5 - Tactile switch, THT Standard                              | 4 - 9             |
| <br><b>MICON 5 - Plungers round, not illuminable</b>                | <br><b>4 - 10</b> |
| MICON 5 - Plunger opaque, round, not illuminable                    | 4 - 12            |
| <br><b>MICON 5 - Plungers round, ring illumination</b>              | <br><b>4 - 14</b> |
| MICON 5 - Plunger round, ring illumination                          | 4 - 16            |
| <br><b>MICON 5 - Plungers square, illuminable</b>                   | <br><b>4 - 17</b> |
| MICON 5 - Plunger square, illuminable, 11 x 11 mm                   | 4 - 19            |
| MICON 5 - Plunger square, illuminable, 14.5 x 14.5 mm               | 4 - 19            |
| MICON 5 - Plunger square, illuminable, 18 x 18 mm                   | 4 - 20            |
| <br><b>MICON 5 - Plungers square, spot-illumination</b>             | <br><b>4 - 22</b> |
| MICON 5 - Plunger square, spot-illumination, plunger 14.5 x 14.5 mm | 4 - 24            |
| MICON 5 - Plunger square, spot-illumination, plunger 18 x 18 mm     | 4 - 24            |
| <br><b>MICON 5 - Plungers for signal indicator</b>                  | <br><b>4 - 26</b> |
| MICON 5 - Plunger for signal indicator, 1-module                    | 4 - 28            |
| MICON 5 - Plunger for signal indicator, 2-module                    | 4 - 28            |

## MICON 5 Tactile switches

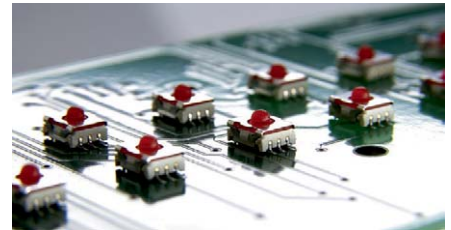
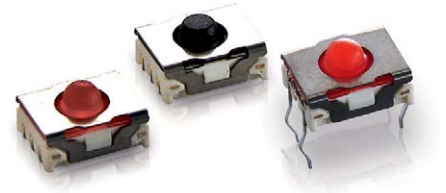
→ MICON 5 tactile switches offer an extremely high switching reliability while needing very little space. They can be arranged as single keys, in rows or key blocks.

When arranged under an overlay, MICON key switches should be combined with plungers.

The features at a glance:

- Suitable for the most common soldering methods
  - Wave soldering bath for THT versions
  - Reflow soldering for SMT version
  - Vapour phase soldering for SMT versions
  - Manual soldering
- SMT version suitable for processing with an automatic SMT assembly machines
- IMDS listed

You can download actual product information from our internet site [www.rafi.de](http://www.rafi.de) / Catalogues and Downloads



### Technical Data

#### → Dimensions

|                   |                 |
|-------------------|-----------------|
| Length of housing | 6.4 mm          |
| Width of housing  | 5.1 mm          |
| Overall height    | see order block |

#### → Mechanical design

|                     |                     |
|---------------------|---------------------|
| Mounting            | soldering           |
| Terminals           | see order block     |
| Contact system      | snap-action contact |
| Contact arrangement | 1 NO                |
| Contact materials   | Au                  |
| Illumination        | no                  |

#### → Mechanical characteristics

|                                |                 |
|--------------------------------|-----------------|
| Operating force F1 (±20%)      | see order block |
| Switching travel S2 (±0.15 mm) | see order block |

#### → Electrical characteristics

|                               |                   |
|-------------------------------|-------------------|
| Rated voltage min.            | 0.02 V            |
| Rated voltage max.            | 35 V              |
| Rated current min.            | 0.01 mA           |
| Rated current max.            | 100 mA            |
| Rated power max. (ohmic load) | 1 W               |
| Contact resistance when new   | ≤ 100 mΩ          |
| Rated voltage resistance AC   | 250 V             |
| Insulation resistance         | 10 <sup>9</sup> Ω |

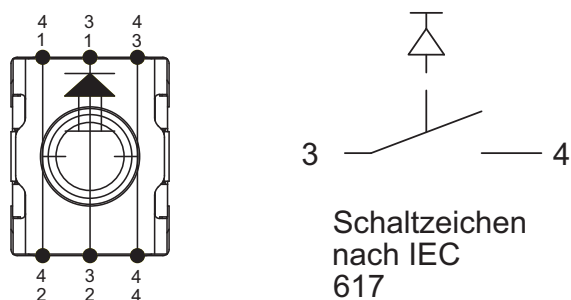
#### → Other specifications

|                                        |                              |
|----------------------------------------|------------------------------|
| Ambient temp. operating min.           | -40 °C                       |
| Ambient temp. operating max.           | +90 °C                       |
| Resistance to environment              | IEC 60068-2 -14,-30,-33, -78 |
| Operating life (test force)            | see order block              |
| Solder heat resistance / Solderability | see order block              |
| Flammability of materials              | UL 94 V1                     |
| Packing                                | see order block              |
| Produkt type                           | see order block              |
| ROHS compliant                         | yes                          |
| REACH compliant                        | yes                          |

# PCB KEY SWITCHES

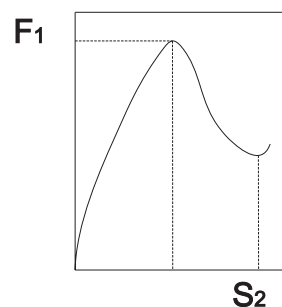
MICON 5 - TACTILE SWITCHES

## MICON 5 Circuit diagram acc. to IEC 617



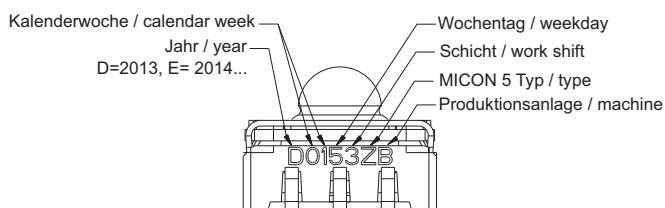
The two outer contacts must be connected.

## MICON 5 Force-travel diagram



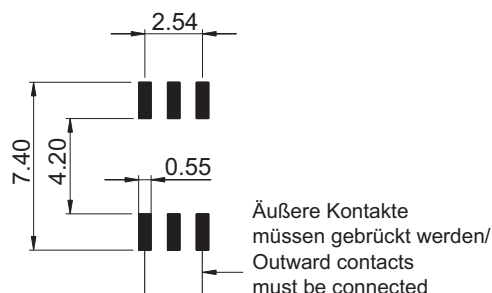
Operating force F1 and switching travel S2 see order block.

## MICON 5 Product code acc. to DIN EN ISO 9001 (EN ISO 8402)



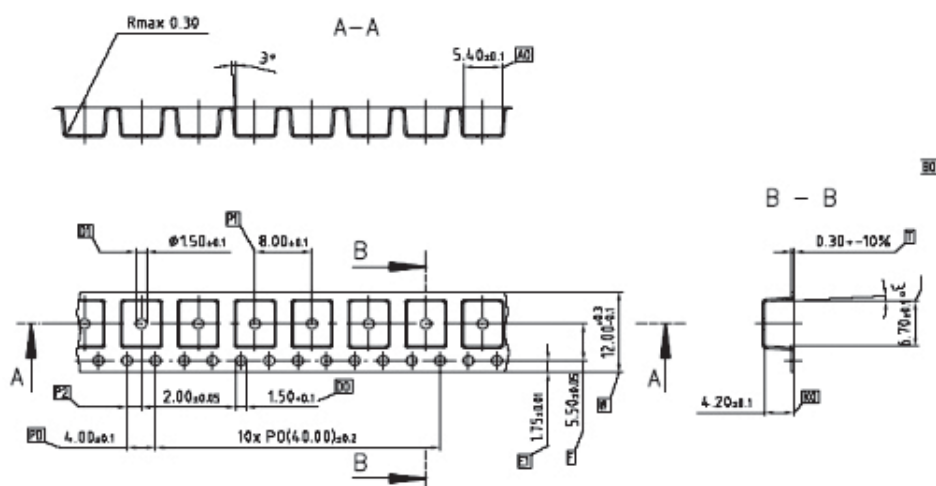
A 7-digit code is printed on the housing of the key switch. This code informs about production date, type and production shift.

## Solder pad



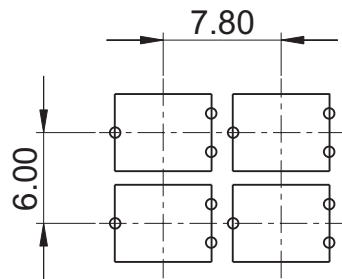
4

## MICON 5 SMT version, tape and reel

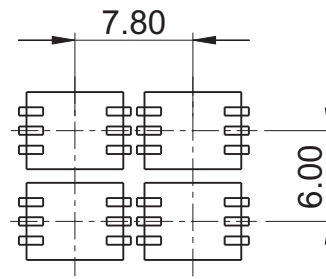


## PCB pattern, smallest grid (without plungers)

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MICON 5 THT



MICON 5 SMT

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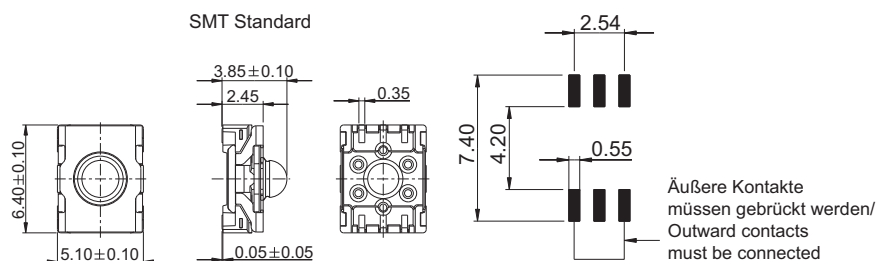
# PCB KEY SWITCHES

MICON 5 - TACTILE SWITCHES



## MICON 5 Tactile switch, SMT Standard

Technical data see page 4 - 5



| → Produkt type | Terminals | Solder heat resistance / Solderability | Operating force F1 (±20%) | Switching travel S2 (±0.15 mm) | Operating life (test force) | Order no.         |
|----------------|-----------|----------------------------------------|---------------------------|--------------------------------|-----------------------------|-------------------|
| X              | SMT       | DIN EN 60068-2-58                      | 3.0 N                     | 0.7 mm                         | 1,000,000 (4 N)             | 1.14.002.101/0000 |
| Z              | SMT       | DIN EN 60068-2-58                      | 3.6 N                     | 0.8 mm                         | 250,000 (6 N)               | 1.14.002.001/0000 |
| W              | SMT       | DIN EN 60068-2-58                      | 5.5 N                     | 0.9 mm                         | 1,000,000 (8 N)             | 1.14.002.111/0000 |
| Y              | SMT       | DIN EN 60068-2-58                      | 8.0 N                     | 1.1 mm                         | 250,000 (12 N)              | 1.14.002.011/0000 |
| J              | SMT       | DIN EN 60068-2-58                      | 1.5 N                     | 0.5 mm                         | 1,000,000 (4 N)             | 1.14.002.201/0000 |

Packing: in tape, reel with 2100 pieces  
Keycaps see RK 90

Mounting hints:

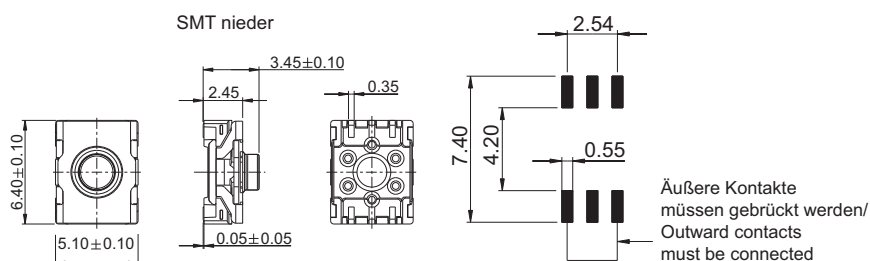
Special pipette (Siemens Siplace order no.: 348514-02), mounting with collect and place head  
Recommendation for screen printing: 150 µm stencil with 10% reduction of the pad size.

The key switch **1.14.002.201/0000** does not provide tactile and audible feedback. It is therefore generally used only as a **redundant auxiliary switch** to other MICON standard switches, if this is required for safety reasons.



## MICON 5 Tactile switch, SMT low

Technical data see page 4 - 5



| → Produkt type | Terminals | Solder heat resistance / Solderability | Operating force F1 (±20%) | Switching travel S2 (±0.15 mm) | Operating life (test force) | Order no.         |
|----------------|-----------|----------------------------------------|---------------------------|--------------------------------|-----------------------------|-------------------|
| S              | SMT       | DIN EN 60068-2-58                      | 3.0 N                     | 0.6 mm                         | 1,000,000 (4 N)             | 1.14.002.103/0000 |
| T              | SMT       | DIN EN 60068-2-58                      | 3.6 N                     | 0.7 mm                         | 250,000 (6 N)               | 1.14.002.003/0000 |

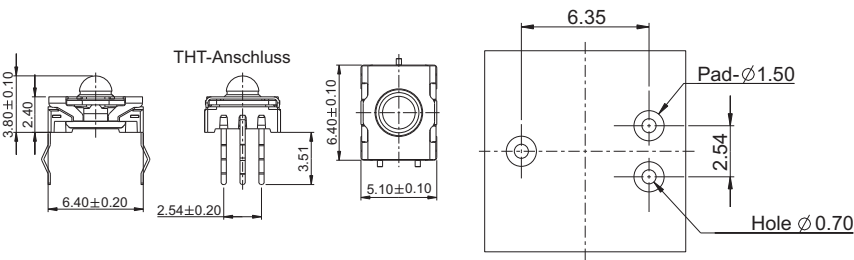
– Table (continued) –  
MICON 5 - Tactile switch, SMT low

| → Produkt type | Terminals | Solder heat resistance / Solderability | Operating force F1 (±20%) | Switching travel S2 (±0.15 mm) | Operating life (test force) | Order no.         |
|----------------|-----------|----------------------------------------|---------------------------|--------------------------------|-----------------------------|-------------------|
| L              | SMT       | DIN EN 60068-2-58                      | 5.5 N                     | 0.7 mm                         | 1,000,000 (8 N)             | 1.14.002.113/0000 |

Packing: in tape, reel with 2100 pieces  
Keycaps see RK 90  
Mounting hints:  
Special pipette (Siemens Siplace order no.: 348514-02), mounting with collect and place head  
Recommendation for screen printing: 150 µm stencil with 10% reduction of the pad size.

MICON 5  
Tactile switch, THT Standard

Technical data see page 4 - 5



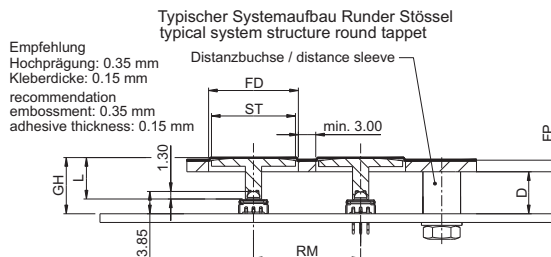
| → Produkt type | Terminals | Solder heat resistance / Solderability | Operating force F1 (±20%) | Switching travel S2 (±0.15 mm) | Operating life (test force) | Order no.         |
|----------------|-----------|----------------------------------------|---------------------------|--------------------------------|-----------------------------|-------------------|
| O              | THT       | DIN EN 60068-2-20                      | 3.0 N                     | 0.7 mm                         | 1,000,000 (4 N)             | 1.14.002.106/0000 |
| Q              | THT       | DIN EN 60068-2-20                      | 3.6 N                     | 0.8 mm                         | 250,000 (6 N)               | 1.14.002.006/0000 |
| N              | THT       | DIN EN 60068-2-20                      | 5.5 N                     | 0.9 mm                         | 1,000,000 (8 N)             | 1.14.002.116/0000 |
| P              | THT       | DIN EN 60068-2-20                      | 8.0 N                     | 1.1 mm                         | 250,000 (12 N)              | 1.14.002.016/0000 |

Packing: in tubes with 102 pieces  
Keycaps see RK 90



# MICON 5

## Plungers round, not illuminable



### → Description

A - Height of key switch: SMT type: 3.85 mm, THT type: 3.80 mm

D - Length of spacer  $D = GH - KP - FP$

FD - Front panel cut-out  $FD = ST + 1 \text{ mm}$

FP - Front panel thickness

GH - Overall height:  $GH = A + L1 + 0.05$  (SMT type),  $GH = A + L1$  (THT type)

L - Overall length of plunger

RM - Key grid

ST - Diameter of plunger

The plungers can only be combined with MICON 5 version Standard (red bubble).

### Technical Data

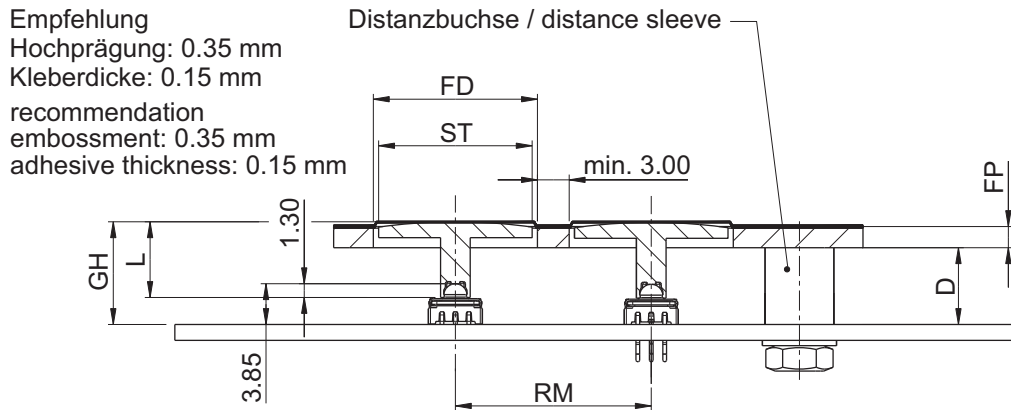
#### → General information

|                                  |                 |
|----------------------------------|-----------------|
| Plunger diameter/size ST         | see order block |
| Length of plunger L              | see order block |
| Overall height GH with embossing | see order block |
| 9.2 mm compatible                | see order block |

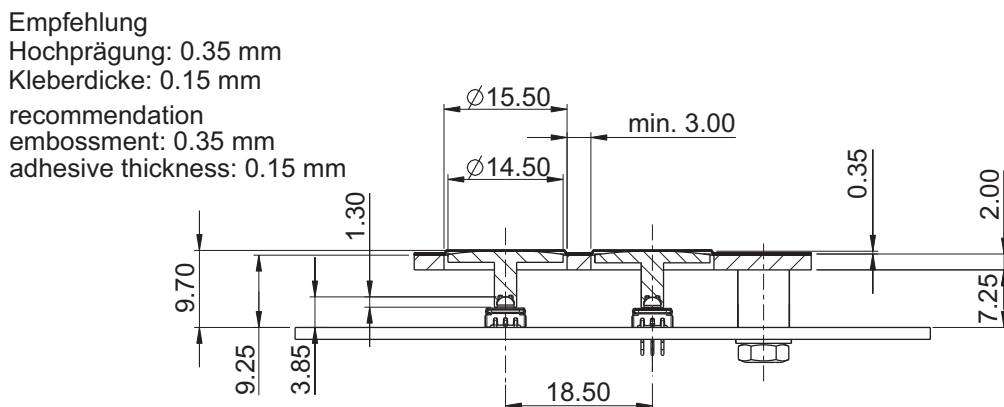
#### → Other specifications

|                 |     |
|-----------------|-----|
| ROHS compliant  | yes |
| REACH compliant | yes |

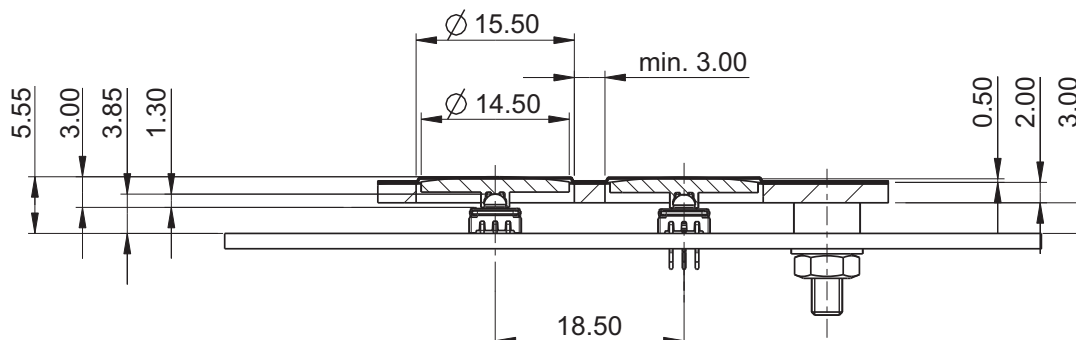
## Typical system design under overlay, round plungers, opaque, non-illuminable



## RAFI standard system design, 9.70 mm height, round plunger, opaque, non-illuminable



## Lowest system design, 5.55 mm height, round plunger, opaque, non-illuminable



# PCB KEY SWITCHES

MICON 5 - PLUNGER ROUND, NOT ILLUMINABLE



## MICON 5 Plunger opaque, round, not illuminable

Technical data see page 4 - 10

| → Plunger diameter/size ST | Length of plunger L | Overall height GH with embossing | 9.2 mm compatible | Order no.         |
|----------------------------|---------------------|----------------------------------|-------------------|-------------------|
| 6.0 mm                     | 3.00 mm             | 5.55 mm                          | -                 | 5.46.001.103/0200 |
| 6.0 mm                     | 3.45 mm             | 6.0 mm                           | -                 | 5.46.001.104/0200 |
| 6.0 mm                     | 3.95 mm             | 6.5 mm                           | -                 | 5.46.001.105/0200 |
| 6.0 mm                     | 4.45 mm             | 7.0 mm                           | -                 | 5.46.001.106/0200 |
| 6.0 mm                     | 7.15 mm             | 9,7 mm                           | yes               | 5.46.001.107/0200 |
| 6.0 mm                     | 9.95 mm             | 12,5 mm                          | -                 | 5.46.001.108/0200 |
| 8.0 mm                     | 3.00 mm             | 5.55 mm                          | -                 | 5.46.001.123/0200 |
| 8.0 mm                     | 3.45 mm             | 6.0 mm                           | -                 | 5.46.001.124/0200 |
| 8.0 mm                     | 3.95 mm             | 6.5 mm                           | -                 | 5.46.001.125/0200 |
| 8.0 mm                     | 4.45 mm             | 7.0 mm                           | -                 | 5.46.001.126/0200 |
| 8.0 mm                     | 5.50 mm             | 8.5 mm                           | -                 | 5.46.001.121/0200 |
| 8.0 mm                     | 7.15 mm             | 9,7 mm                           | yes               | 5.46.001.127/0200 |
| 8.0 mm                     | 9.95 mm             | 12,5 mm                          | -                 | 5.46.001.128/0200 |
| 8.0 mm                     | 10.30 mm            | 12.85 mm                         | -                 | 5.46.001.122/0200 |
| 11.5 mm                    | 3.00 mm             | 5.55 mm                          | -                 | 5.46.001.143/0200 |
| 11.5 mm                    | 3.45 mm             | 6.0 mm                           | -                 | 5.46.001.144/0200 |
| 11.5 mm                    | 3.95 mm             | 6.5 mm                           | -                 | 5.46.001.145/0200 |
| 11.5 mm                    | 4.45 mm             | 7.0 mm                           | -                 | 5.46.001.146/0200 |
| 11.5 mm                    | 5.50 mm             | 8.5 mm                           | -                 | 5.46.001.141/0200 |
| 11.5 mm                    | 7.15 mm             | 9,7 mm                           | yes               | 5.46.001.147/0200 |
| 11.5 mm                    | 9.95 mm             | 12,5 mm                          | -                 | 5.46.001.148/0200 |
| 11.5 mm                    | 10.30 mm            | 12.85 mm                         | -                 | 5.46.001.142/0200 |
| 14.5 mm                    | 3.00 mm             | 5.55 mm                          | -                 | 5.46.001.163/0200 |
| 14.5 mm                    | 3.45 mm             | 6.0 mm                           | -                 | 5.46.001.164/0200 |
| 14.5 mm                    | 3.95 mm             | 6.5 mm                           | -                 | 5.46.001.165/0200 |
| 14.5 mm                    | 4.45 mm             | 7.0 mm                           | -                 | 5.46.001.166/0200 |
| 14.5 mm                    | 7.15 mm             | 9,7 mm                           | yes               | 5.46.001.167/0200 |
| 14.5 mm                    | 9.95 mm             | 12,5 mm                          | -                 | 5.46.001.168/0200 |
| 19.0 mm                    | 3.00 mm             | 5.55 mm                          | -                 | 5.46.001.183/0200 |

4

MICON

# PCB KEY SWITCHES

MICON 5 - PLUNGER ROUND, NOT ILLUMINABLE

– Table (continued) –

MICON 5 - Plunger opaque, round, not illuminable

| → Plunger diameter/size ST | Length of plunger L | Overall height GH with embossing | 9.2 mm compatible | Order no.         |
|----------------------------|---------------------|----------------------------------|-------------------|-------------------|
| 19.0 mm                    | 3.45 mm             | 6.0 mm                           | -                 | 5.46.001.184/0200 |
| 19.0 mm                    | 3.95 mm             | 6.5 mm                           | -                 | 5.46.001.185/0200 |
| 19.0 mm                    | 4.45 mm             | 7.0 mm                           | -                 | 5.46.001.186/0200 |
| 19.0 mm                    | 7.15 mm             | 9,7 mm                           | yes               | 5.46.001.187/0200 |
| 19.0 mm                    | 9.95 mm             | 12,5 mm                          | -                 | 5.46.001.188/0200 |

Can only be combined with MICON 5 version Standard (red bubble)

# PCB KEY SWITCHES

MICON 5 - PLUNGER ROUND, RING ILLUMINATION



## MICON 5 Plungers round, ring illumination

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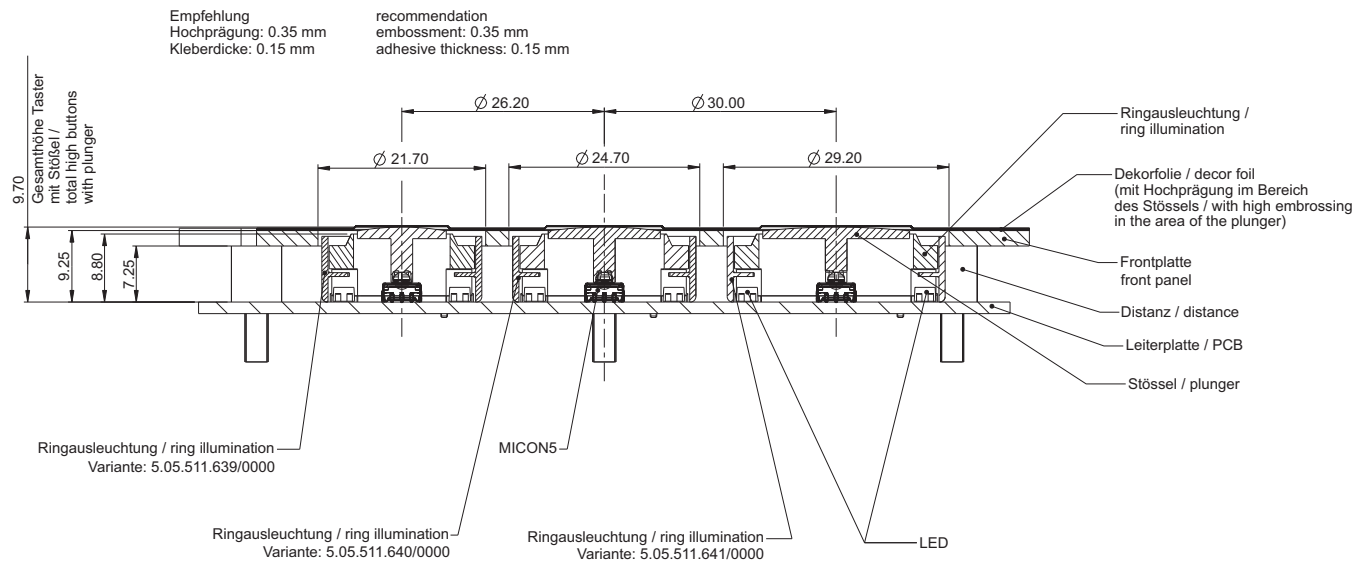


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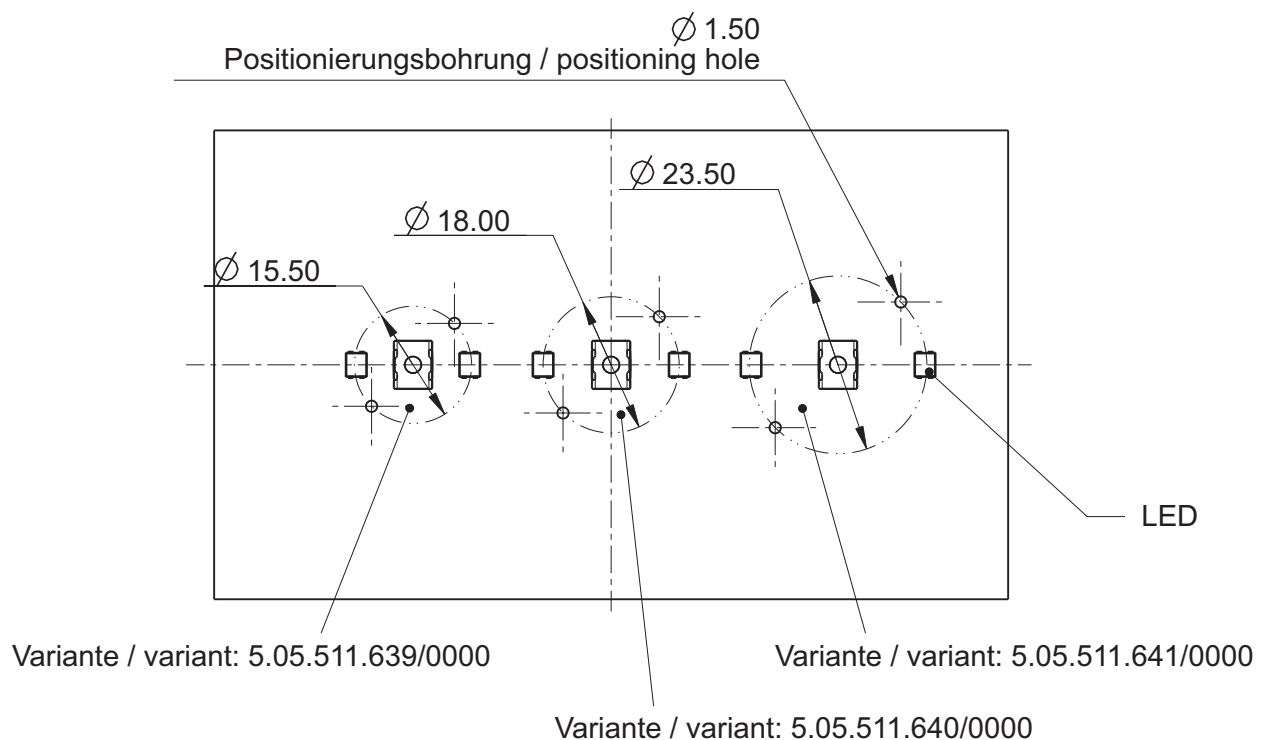
→ A MICON system design with ring illumination is only possible with the type height 9.70 mm. We recommend back printing the ring illumination area with a diffusing ink. For the actuating area, back printing with an opaque ink is recommended.

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## Typical system design with 9.70 mm height, round plunger, opaque, ring illumination



## Hole pattern of PCB



# PCB KEY SWITCHES

MICON 5 - PLUNGER ROUND, RING ILLUMINATION



## MICON 5 Plunger round, ring illumination

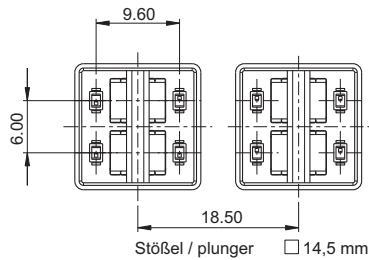


| → Plunger diameter non-illuminated | Diameter ring illumination RA | 9.2 mm compatible | Overall height GH with embossing | Order no.         |
|------------------------------------|-------------------------------|-------------------|----------------------------------|-------------------|
| 11.50 mm                           | 20.70                         | yes               | 9.70 mm                          | 5.05.511.641/0000 |
| 14.50 mm                           | 23.70                         | yes               | 9.70 mm                          | 5.05.511.640/0000 |
| 19.00 mm                           | 28.20                         | yes               | 9.70 mm                          | 5.05.511.639/0000 |

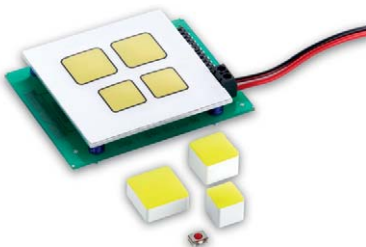
Plunger round, not illuminable is included in delivery.

# MICON 5

## Plungers square, illuminable



Pic. with 4 LED OSRAM LO M676-Q1R1-24



### → Description

- A - Height of key switch: SMT = 3.85 mm, THT = 3.80 mm
  - B - Width of plunger (11 x 11 mm, 14,5 x 14,5 mm or 18 x 18 mm)
  - D - GH - FP - 0.5 mm (= embossing height 0.35 mm + glue height 0.15 mm)
  - FD - Front panel cut-out: B + 1 mm
  - FP - Thickness of front plate
  - GH - Overall height: A + 5.75 mm
  - KS - Glue strip min. 3 mm
  - R - Grid size: FD + KS
- The plungers can only be combined with MICON 5 version Standard (red bubble).

### Technical Data

#### → General information

|                   |                 |
|-------------------|-----------------|
| Overall height GH | see order block |
| Color of lens     | see order block |

#### → Other specifications

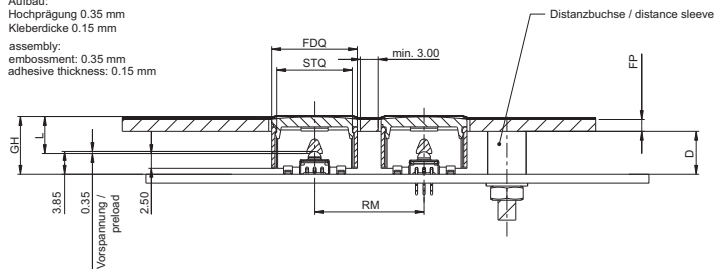
|                 |     |
|-----------------|-----|
| ROHS compliant  | yes |
| REACH compliant | yes |

# PCB KEY SWITCHES

MICON 5 - PLUNGER SQUARE, ILLUMINABLE

## Typical system design under overlay, square plungers, illuminable

Aufbau:  
Hochprägung 0.35 mm  
Kleberdicke 0.15 mm  
assembly:  
embossment: 0.35 mm  
adhesive thickness: 0.15 mm



D - Distanzlänge / distance length  $D = GH - FP - 0.5$   
(Prägehöhe / embossing height  
+ Kleberdicke / adhesive thickness)

L - Stößellänge / tappet length

STQ - Breite quadratischer Stößel / width square tappet

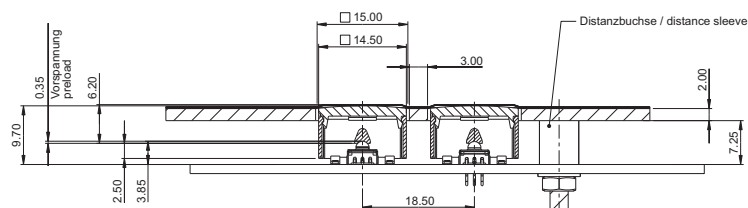
FDQ - Quadratischer Frontplattendurchbruch /  
square front panel breakthrough  $FDQ = STQ + 1\text{ mm}$

FP - Frontplattenstärke / Panel thickness

RM - Rastermaß / grid dimensions  $RM = FDQ + \text{min. } 3\text{ mm}$

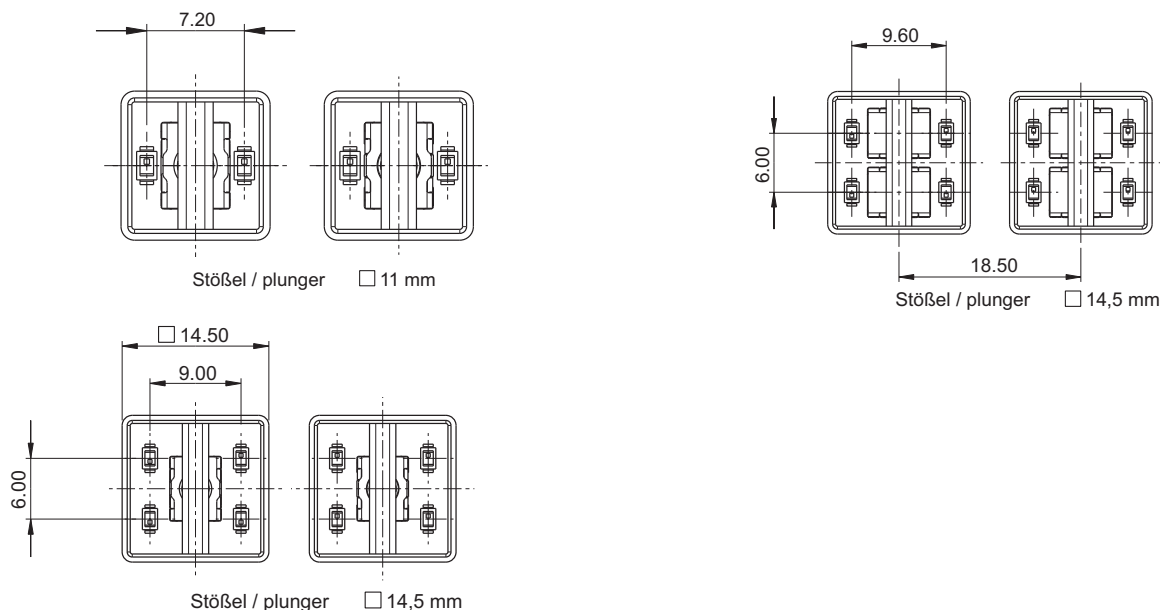
## RAFI standard system design, 9.70 mm height, square plunger, illuminable

Aufbau:  
Hochprägung 0.35 mm  
Kleberdicke 0.15 mm  
assembly:  
embossment: 0.35 mm  
adhesive thickness: 0.15 mm



## Possible arrangement of LEDs with square plunger, illuminable

View without frontpanel, overlay and lens



MICON 5

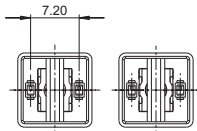
Plunger square, illuminable,

11 x 11 mm

Technical data see page 4 - 17

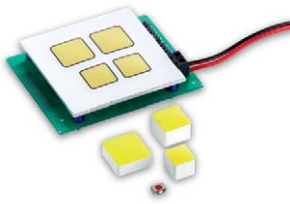


Platzierungsmöglichkeiten der LED's  
(Ansicht ohne Frontplatte, Folie und Blende)  
placement options of the LEDs  
(view without front panel, foil and lens)



Stößel / plunger    □ 11 mm

Pic. with 2 LED OSRAM LO M676-Q1R1-24



| → Overall height GH | Color of lens | Order no.         |
|---------------------|---------------|-------------------|
| 9.70 mm             | red           | 5.05.511.470/2300 |
| 12.50 mm            | red           | 5.05.511.471/2300 |
| 9.70 mm             | yellow        | 5.05.511.470/2400 |
| 12.50 mm            | yellow        | 5.05.511.471/2400 |
| 9.70 mm             | green         | 5.05.511.470/2500 |
| 12.50 mm            | green         | 5.05.511.471/2500 |
| 9.70 mm             | blue          | 5.05.511.470/2600 |
| 12.50 mm            | blue          | 5.05.511.471/2600 |
| 9.70 mm             | white         | 5.05.511.470/2200 |
| 12.50 mm            | white         | 5.05.511.471/2200 |

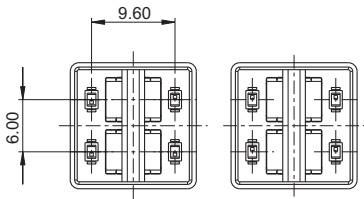
Can only be combined with MICON 5 version Standard (red bubble)

MICON 5

Plunger square, illuminable,

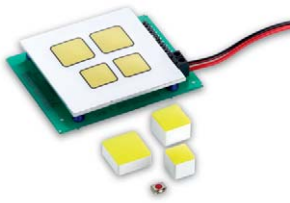
14.5 x 14.5 mm

Technical data see page 4 - 17



Stößel / plunger    □ 14,5 mm

Pic. with 4 LED OSRAM LO M676-Q1R1-24



# PCB KEY SWITCHES

MICON 5 - PLUNGER SQUARE, ILLUMINABLE

– Table (continued) –

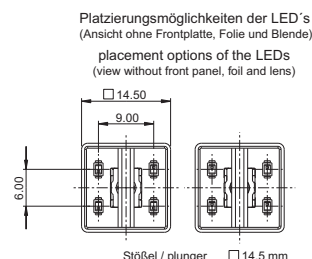
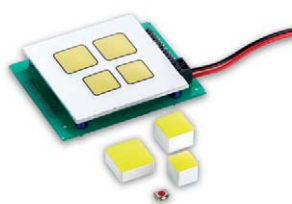
MICON 5 - Plunger square, illuminable, 14.5 x 14.5 mm

| → Overall height GH | Color of lens | Order no.         |
|---------------------|---------------|-------------------|
| 9.70 mm             | red           | 5.05.511.475/2300 |
| 12.50 mm            | red           | 5.05.511.476/2300 |
| 9.70 mm             | yellow        | 5.05.511.475/2400 |
| 12.50 mm            | yellow        | 5.05.511.476/2400 |
| 9.70 mm             | green         | 5.05.511.475/2500 |
| 12.50 mm            | green         | 5.05.511.476/2500 |
| 9.70 mm             | blue          | 5.05.511.475/2600 |
| 12.50 mm            | blue          | 5.05.511.476/2600 |
| 9.70 mm             | white         | 5.05.511.475/2200 |
| 12.50 mm            | white         | 5.05.511.476/2200 |

Can only be combined with MICON 5 version Standard (red bubble)

## MICON 5 Plunger square, illuminable, 18 x 18 mm

Technical data see page 4 - 17



| → Overall height GH | Color of lens | Order no.         |
|---------------------|---------------|-------------------|
| 9.70 mm             | red           | 5.05.511.480/2300 |
| 12.50 mm            | red           | 5.05.511.481/2300 |
| 9.70 mm             | yellow        | 5.05.511.480/2400 |
| 12.50 mm            | yellow        | 5.05.511.481/2400 |
| 9.70 mm             | green         | 5.05.511.480/2500 |
| 12.50 mm            | green         | 5.05.511.481/2500 |
| 9.70 mm             | blue          | 5.05.511.480/2600 |
| 12.50 mm            | blue          | 5.05.511.481/2600 |
| 9.70 mm             | white         | 5.05.511.480/2200 |
| 12.50 mm            | white         | 5.05.511.481/2200 |

4

MICON

– Table (continued) –

MICON 5 - Plunger square, illuminable, 18 x 18 mm

Can only be combined with MICON 5 version Standard (red bubble)



# MICON 5

## Plungers square, spot-illumination

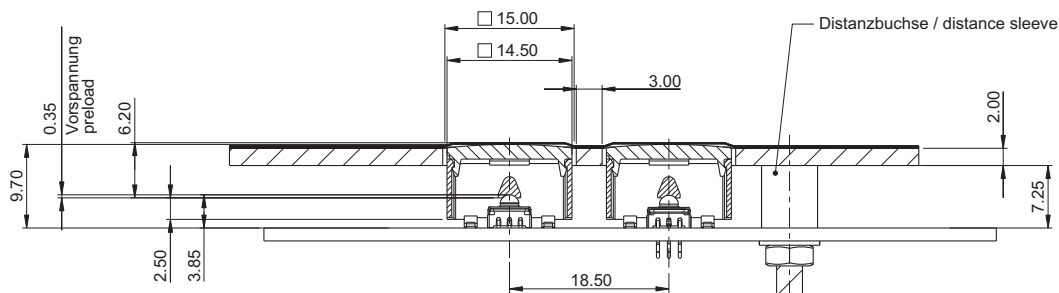


### Technical Data

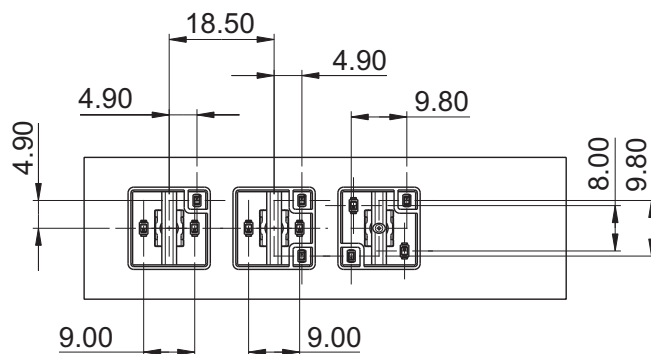
|                                  |                 |
|----------------------------------|-----------------|
| → <b>General information</b>     |                 |
| Overall height GH with embossing | 9.70 mm         |
| Color of lens                    | white           |
| Dimensions                       | see order block |
| → <b>Other specifications</b>    |                 |
| ROHS compliant                   | yes             |
| REACH compliant                  | yes             |

## RAFI standard system design, 9.70 mm height, square plunger, spot-illumination

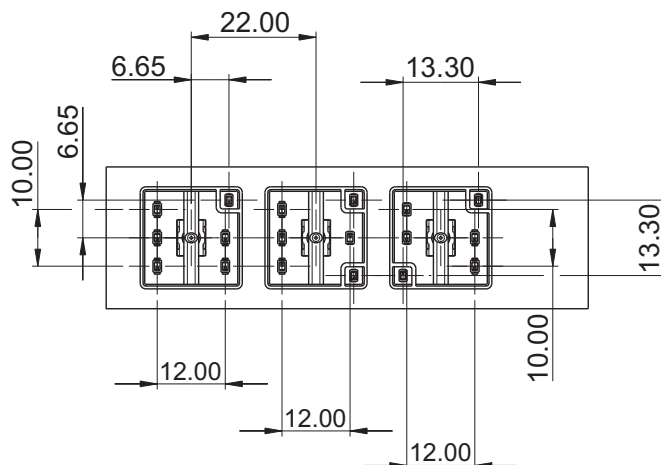
Aufbau:  
Hochprägung 0.35 mm  
Kleberdicke 0.15 mm  
assembly:  
embossment: 0.35 mm  
adhesive thickness: 0.15 mm



## Possible arrangement of LEDs with square plunger, spot illumination, 14,5 x 14,5 mm



## Possible arrangement of LEDs with square plunger, spot illumination, 18 x 18 mm



# PCB KEY SWITCHES

MICON 5 - SQUARE PLUNGERS, SPOT-ILLUMINATION



## MICON 5 Plunger square, spot-illumination, plunger 14.5 x 14.5 mm

Technical data see page 4 - 22



| → Overall height GH with embossing | Spot-illumination | Color of lens | Dimensions  | Order no.         |
|------------------------------------|-------------------|---------------|-------------|-------------------|
| 9.70 mm                            |                   | white         | 14.5 x 14.5 | 5.05.511.649/2200 |
| 9.70 mm                            |                   | white         | 14.5 x 14.5 | 5.05.511.650/2200 |
| 9.70 mm                            |                   | white         | 14.5 x 14.5 | 5.05.511.651/2200 |



## MICON 5 Plunger square, spot-illumination, plunger 18 x 18 mm

Technical data see page 4 - 22



| → Overall height GH with embossing | Spot-illumination | Color of lens | Dimensions | Order no.         |
|------------------------------------|-------------------|---------------|------------|-------------------|
| 9.70 mm                            |                   | white         | 18 x 18    | 5.05.511.658/2200 |
| 9.70 mm                            |                   | white         | 18 x 18    | 5.05.511.659/2200 |
| 9.70 mm                            |                   | white         | 18 x 18    | 5.05.511.660/2200 |

4

MICON



# GET IN TOUCH

## The uniqueness of the moment

Whenever a pushbutton or switch made by RAFI is used, the company's technology ensures that proper contact is made. For over 100 years now, we have driven innovation in human-machine communication and set standards across the globe. From operating elements and highly intelligent data entry systems to complete custom solutions from one source – all of our products are developed to meet the requirements of our long-standing customers. The results are excellent: close business relationships, innovative products and motivated employees.

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**RAFI**

# PCB KEY SWITCHES

MICON 5 - PLUNGER FOR SIGNAL INDICATOR



## MICON 5 Plungers for signal indicator

### Technical Data

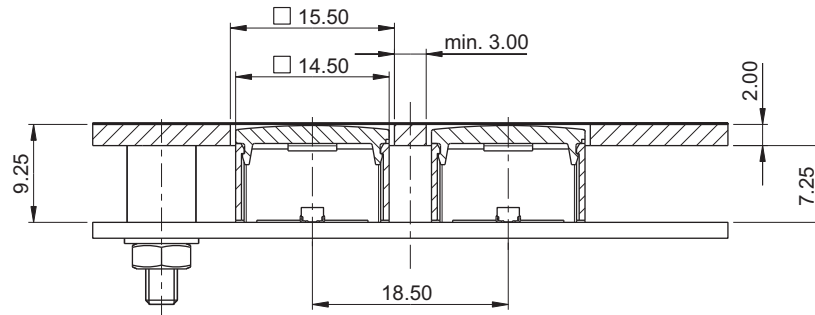
→ **General information**

|                                  |                 |
|----------------------------------|-----------------|
| Overall height GH with embossing | 9.70 mm         |
| Lens color                       | white           |
| Dimensions                       | see order block |

→ **Other specifications**

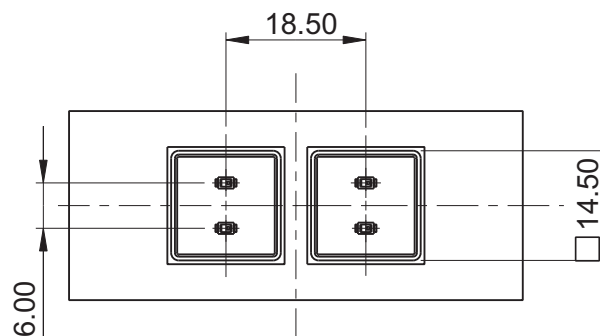
|                 |     |
|-----------------|-----|
| ROHS compliant  | yes |
| REACH compliant | yes |

## RAFI standard system design, 9.70 mm height, signal indicator



## Possible arrangement of LEDs with signal indicator

LED Platzierung mit Leuchtfeld 14.5x14.5  
LED placement with light field 14.5 x14.5



# PCB KEY SWITCHES

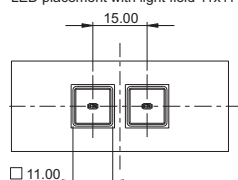
MICON 5 - PLUNGER FOR SIGNAL INDICATOR



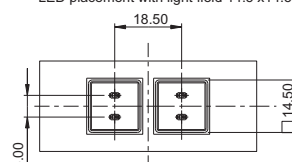
## MICON 5 Plunger for signal indicator, 1-module

Technical data see page 4 - 26

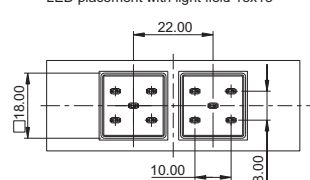
LED Platzierung mit Leuchtfeld 11x11  
LED placement with light field 11x11



LED Platzierung mit Leuchtfeld 14.5x14.5  
LED placement with light field 14.5 x14.5



LED Platzierung mit Leuchtfeld 18x18  
LED placement with light field 18x18



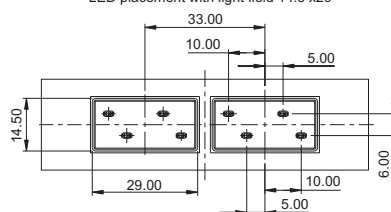
| → Overall height GH with embossing | Lens color | Dimensions     | Order no.         |
|------------------------------------|------------|----------------|-------------------|
| 9.70 mm                            | white      | 11 x 11 mm     | 5.05.005.182/2200 |
| 9.70 mm                            | white      | 14.5 x 14.5 mm | 5.05.005.175/2200 |
| 9.70 mm                            | white      | 18 x 18 mm     | 5.05.005.176/2200 |



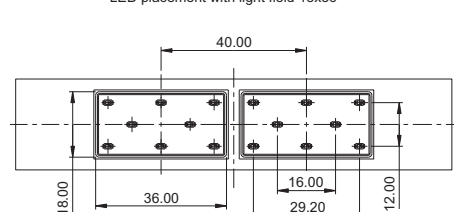
## MICON 5 Plunger for signal indicator, 2-module

Technical data see page 4 - 26

LED Platzierung mit Leuchtfeld 14.5x29  
LED placement with light field 14.5 x29



LED Platzierung mit Leuchtfeld 18x36  
LED placement with light field 18x36

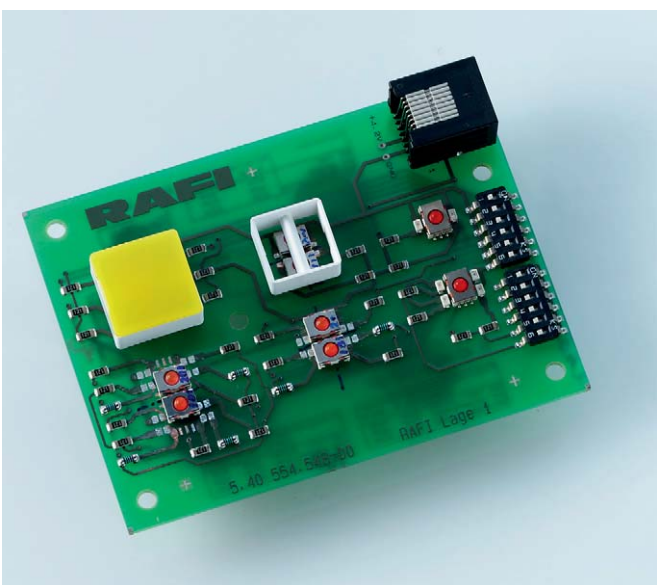


| → Overall height GH with embossing | Lens color | Dimensions   | Order no.         |
|------------------------------------|------------|--------------|-------------------|
| 9.70 mm                            | white      | 14.5 x 29 mm | 5.05.005.177/2200 |
| 9.70 mm                            | white      | 18 x 36 mm   | 5.05.005.178/2200 |

4

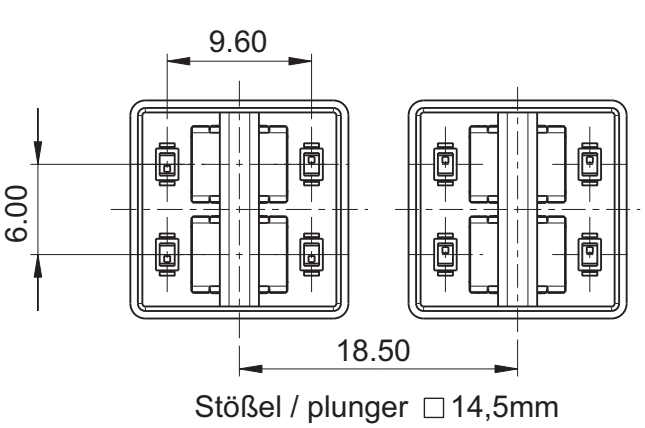
MICON

Redundant system design with illuminable plungers  
MICON 1.14.002.201, 1.5 N

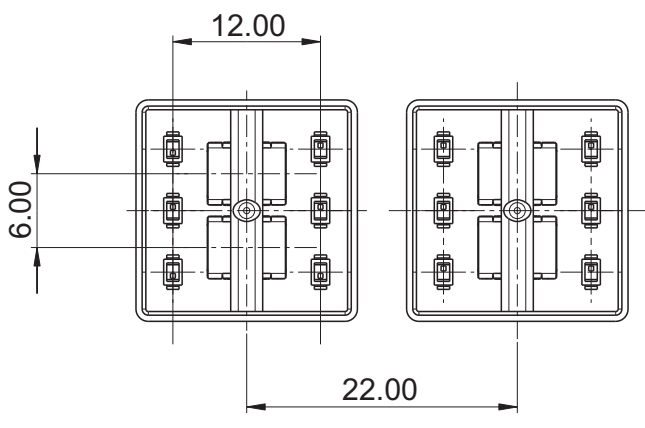


The tactile switch type **1.14.002.201/0000** is designed only for use in a **redundant system** with another SMT switch of standard height. For a redundant system design, the plunger sizes 14.5 x 14.5 mm or 18 x 18 mm must be used.

View without front panel, overlay and lens



Plunger 14,5 x 14,5 mm

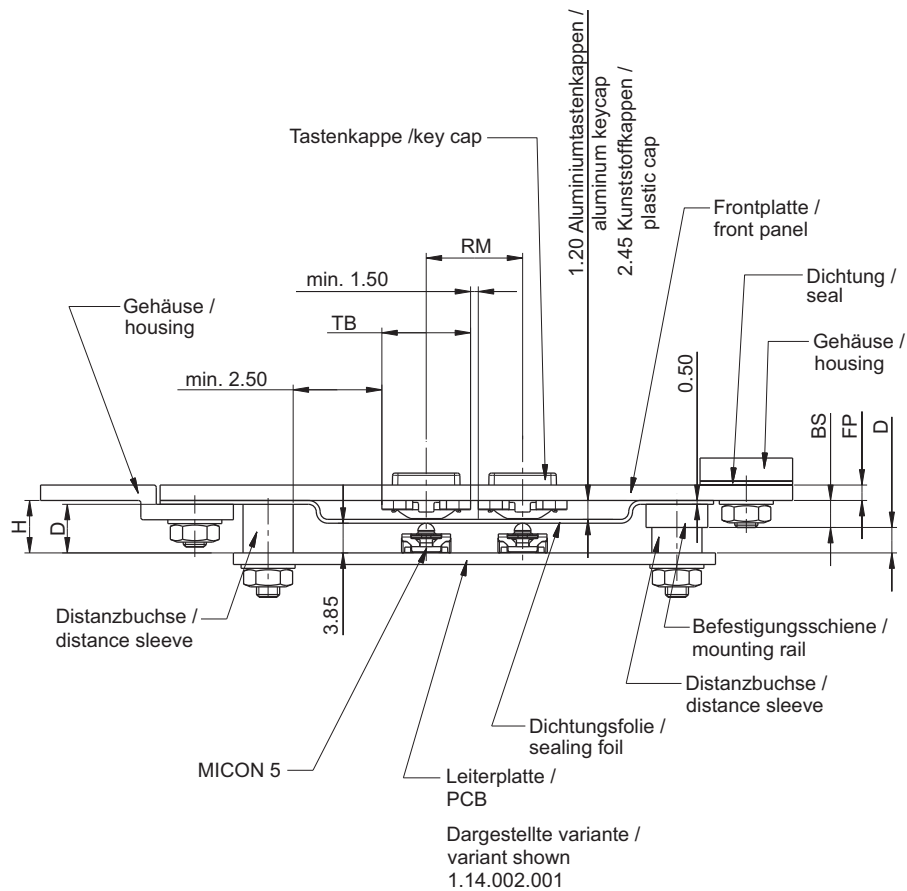


Plunger 18 x 18 mm

# PCB KEY SWITCHES

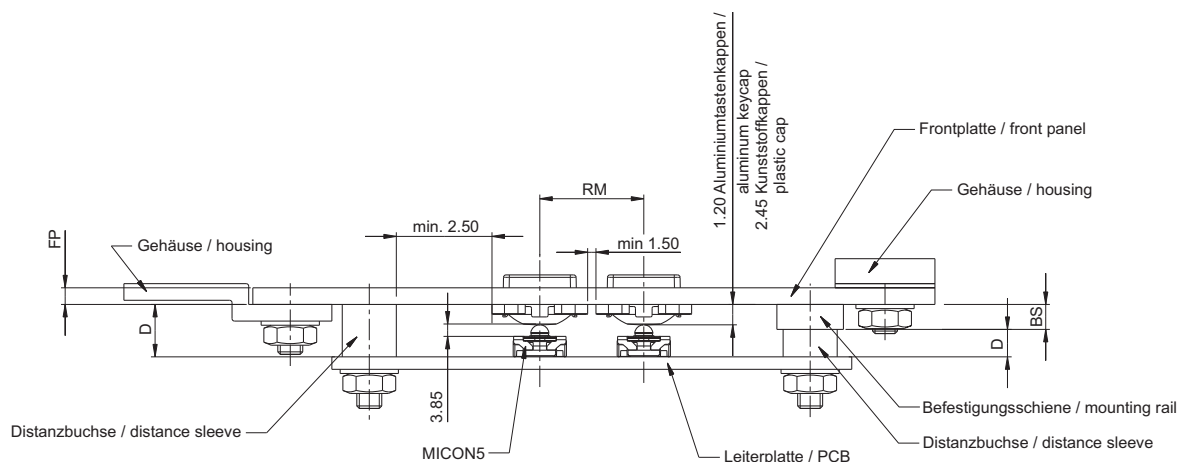
MICON 5 - PLUNGER FOR SIGNAL INDICATOR

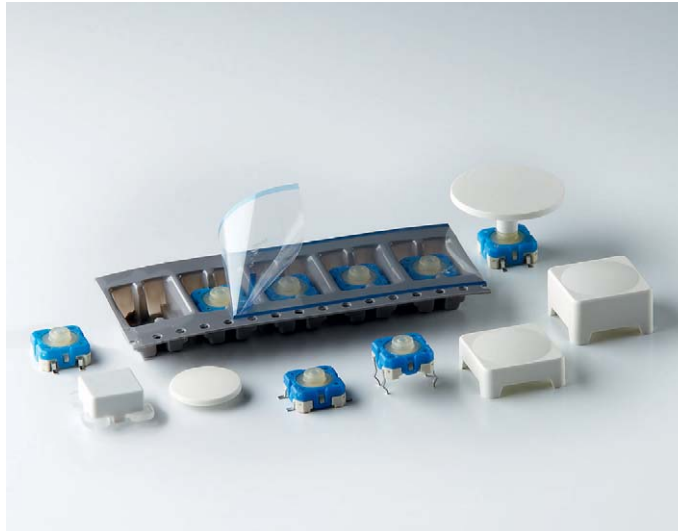
## Typical system design RK 90 degree of protection IP 65



4

## Typical system design RK 90 degree of protection IP 40





## RACON

### Tactile switches

---

RACON tactile switches distinct key click, excellent switching reliability. For use under an overlay or with RK 90 keycaps. Print and SMD versions available (suitable for automatic assembly). All products are RoHS compliant.

---

# PCB KEY SWITCHES

## RACON - TACTILE SWITCHES

---

### Content

|                                                                       |               |
|-----------------------------------------------------------------------|---------------|
| <b>RACON 8 - Tactile switches</b>                                     | <b>4 - 33</b> |
| RACON 8 - Tactile switch, THT outward                                 | 4 - 37        |
| RACON 8 - Tactile switch, THT inward                                  | 4 - 37        |
| RACON 8 - Tactile switch, SMT gullwing (Z) terminals                  | 4 - 38        |
| <b>RACON 12 - Tactile switches</b>                                    | <b>4 - 39</b> |
| RACON 12 - Tactile switch solder terminals for PCB, outward           | 4 - 43        |
| RACON 12 - Tactile switch solder terminals for PCB, inward            | 4 - 43        |
| RACON 12 - Tactile switch SMT gullwing (Z) terminals                  | 4 - 44        |
| <b>RACON 12 V - Tactile switches with vertical adapter</b>            | <b>4 - 45</b> |
| RACON 12 V - Tactile switch with vertical adapter                     | 4 - 46        |
| <b>RACON 12 i - Tactile switches</b>                                  | <b>4 - 47</b> |
| RACON 12 i - Tactile switch                                           | 4 - 48        |
| <b>RACON - Special accessories</b>                                    | <b>4 - 49</b> |
| Plunger round                                                         | 4 - 49        |
| Square plunger for membrane data entry system                         | 4 - 51        |
| <b>RK 90 II - Key cap system for RACON 12 with individual sealing</b> | <b>4 - 52</b> |
| RK 90 II - Sealing frame                                              | 4 - 53        |

## RACON 8 Tactile switches

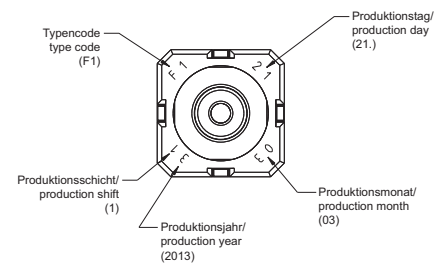
- RACON 8 tactile switches offer an extremely high switching reliability while needing very little space. They can be arranged as single keys, in rows or key blocks.

When arranged under an overlay, RACON key switches should be combined with plungers.

The features at a glance:

- Suitable for the most common soldering methods
  - Wave soldering bath for THT versions
  - Reflow soldering for SMT version
  - Vapour phase soldering for SMT versions
  - Manual soldering
- SMT version suitable for processing with an automatic SMT assembly machine
- IMDS listed

You can download actual product information from our internet site [www.rafi.de](http://www.rafi.de) / Catalogues and Downloads



### Technical Data

|                                        |                                    |
|----------------------------------------|------------------------------------|
| → <b>Dimensions</b>                    |                                    |
| Length of housing                      | 8.4 mm                             |
| Width of housing                       | 8.4 mm                             |
| Height of housing                      | see order block                    |
| → <b>Mechanical design</b>             |                                    |
| Mounting                               | soldering                          |
| Terminals                              | see order block                    |
| Contact system                         | snap-action contact                |
| Contact arrangement                    | 1 NO                               |
| Contact materials                      | Au                                 |
| Illumination                           | no                                 |
| → <b>Mechanical characteristics</b>    |                                    |
| Operating force                        | $3.3^{\pm 0.6}$ N                  |
| Switching travel                       | $0.34^{\pm 0.1}$ mm                |
| → <b>Electrical characteristics</b>    |                                    |
| Rated voltage min.                     | 0.02 V                             |
| Rated voltage max.                     | 35 V                               |
| Rated current min.                     | 0.01 mA                            |
| Rated current max.                     | 100 mA                             |
| Rated power max. (ohmic load)          | 1 W                                |
| Contact resistance when new max.       | 100 mΩ                             |
| Insulation resistance                  | $10^9 \Omega$                      |
| → <b>Other specifications</b>          |                                    |
| Ambient temp. operating min.           | -40 °C                             |
| Ambient temp. operating max.           | +90 °C                             |
| Resistance to environment              | DIN EN 60068-2 -14,-30,-33 and -78 |
| Operating life                         | 1,000,000                          |
| Solderability / Solder heat resistance | see order block                    |
| Flammability of materials              | UL 94 HB                           |
| Packing                                | see order block                    |
| Produkt type                           | see order block                    |
| ROHS compliant                         | yes                                |
| REACH compliant                        | yes                                |

# PCB KEY SWITCHES

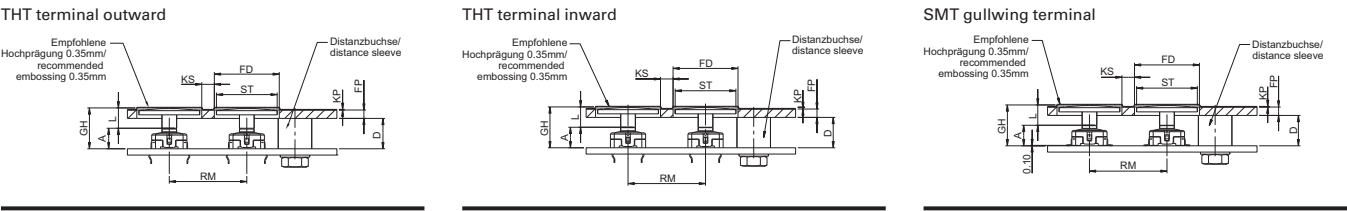
## RACON 8 - TACTILE SWITCHES

### Accessories RACON 8 - Tactile switch

| → Description                            | Photo                                                                             | Order no.         | Additional accessories see page |
|------------------------------------------|-----------------------------------------------------------------------------------|-------------------|---------------------------------|
| Spacer, round, length 6.25 mm, red       |  | 5.30.759.034/0000 | 2 - 265, 4 - 97,<br>5 - 32      |
| Plunger round                            |  | 5.46.167.311/0209 | 4 - 49                          |
| RK 90 - Keycap body, for lenses 9 x 9 mm |  | 5.55.103.265/1013 | 4 - 110                         |

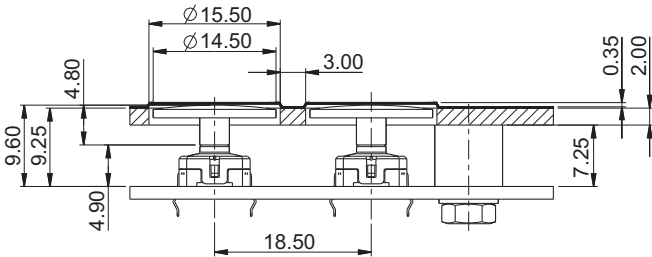
For other plungers, refer to the chapter „RACON special accessories“; for keycaps, refer to the chapter „RK 90“

## RACON 8, Typical system assembly with plunger under overlay

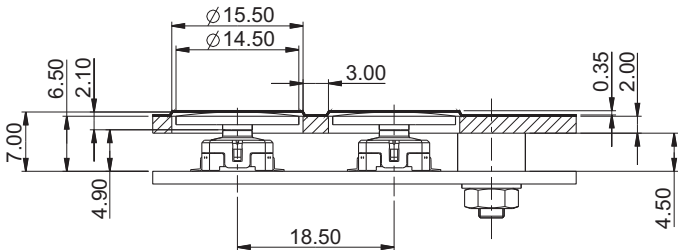


| Variable Declaration |                                              | THT terminal inward and outward | SMT terminal                  |
|----------------------|----------------------------------------------|---------------------------------|-------------------------------|
| A                    | Height of key switch                         | $A = 4.90 \pm 0.1 \text{ mm}$   |                               |
| D                    | Length of spacer $D = GH - KP - FP$          |                                 |                               |
| FD                   | Front panel cut-out $FD = ST + 1 \text{ mm}$ |                                 |                               |
| FP                   | Front panel thickness                        |                                 |                               |
| GH                   | Overall height                               | $GH = A + L$                    | $GH = A + L + 0.1 \text{ mm}$ |
| KP                   | Thickness of overlay + embossing             |                                 |                               |
| KS                   | Glue webs for overlay, min. 3 mm             |                                 |                               |
| L                    | Length of plunger                            | $L = GH - A$                    | $L = GH - A - 0.1 \text{ mm}$ |
| RM                   | Key grid                                     |                                 |                               |
| ST                   | Diameter of plunger                          |                                 |                               |

## RACON 8, Standard system assembly



## RACON 8, Lowest system assembly

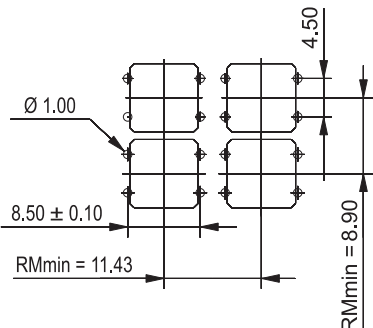


# PCB KEY SWITCHES

RACON 8 - TACTILE SWITCHES

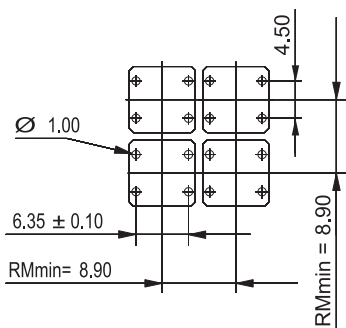
## RACON 8, PCB hole pattern, smallest grid

THT terminal outward



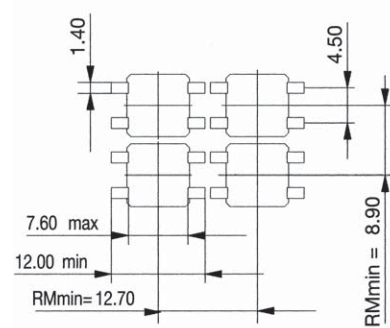
view on component side

THT terminal inward



view on component side

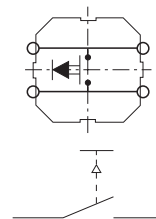
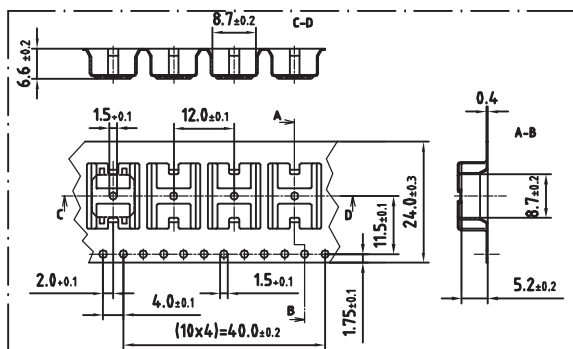
SMT gullwing terminal



view on component side

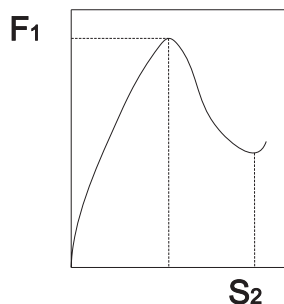
## RACON 8, SMT terminal, tape and reel

## Circuit diagram RACON 8



Switching symbols acc. to IEC 60 617 form X (twice interrupting)

## Typical force travel diagram



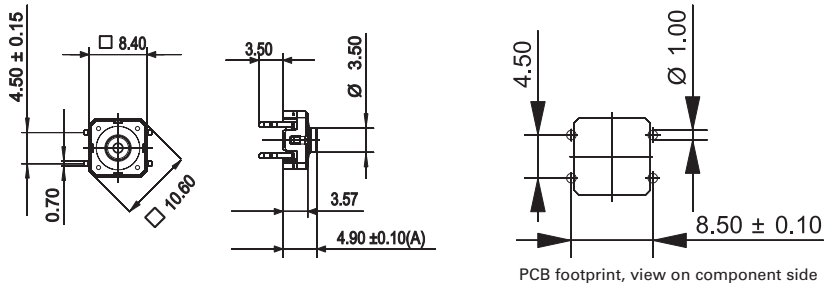
Operating force F1 and switching travel S2 see order block

4

RACON

## RACON 8 Tactile switch, THT outward

Technical data see page 4 - 33

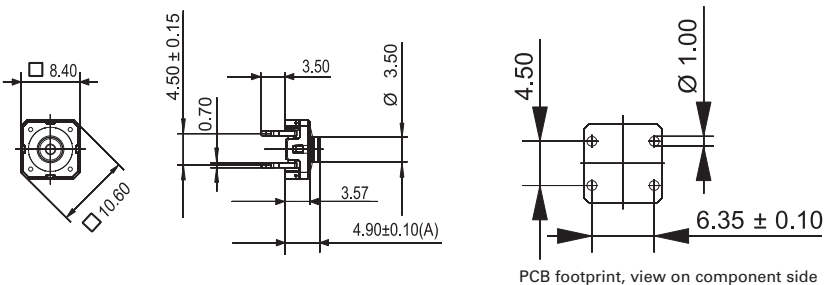


| → Produkt type | Terminals   | Operating force       | Solderability / Solder heat resistance | Packing           | Order no.         |
|----------------|-------------|-----------------------|----------------------------------------|-------------------|-------------------|
| A1             | THT outward | 3.3 <sup>±0.6</sup> N | DIN EN 60068-2-20                      | tubes à 60 pieces | 1.14.100.501/0000 |

For keycaps refer to chapter „RK 90“, plungers see „RACON special accessories“

## RACON 8 Tactile switch, THT inward

Technical data see page 4 - 33



| → Produkt type | Terminals  | Operating force       | Solderability / Solder heat resistance | Packing           | Order no.         |
|----------------|------------|-----------------------|----------------------------------------|-------------------|-------------------|
| B1             | THT inward | 3.3 <sup>±0.6</sup> N | DIN EN 60068-2-20                      | tubes à 60 pieces | 1.14.100.502/0000 |

For keycaps refer to chapter „RK 90“, plungers see „RACON special accessories“

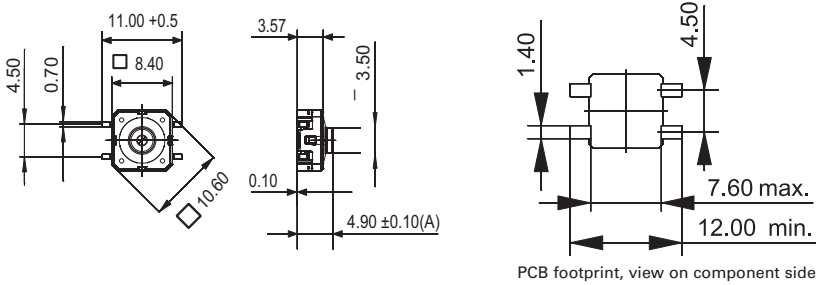
# PCB KEY SWITCHES

RACON 8 - TACTILE SWITCHES



## RACON 8 Tactile switch, SMT gullwing (Z) terminals

Technical data see page 4 - 33



| → Produkt type | Terminals                  | Operating force       | Solderability / Solder heat resistance | Packing                        | Order no.         |
|----------------|----------------------------|-----------------------|----------------------------------------|--------------------------------|-------------------|
| C1             | SMT Gullwing (Z) Anschluss | 3.3 <sup>±0.6</sup> N | DIN EN 60068-2-58                      | tape and reel<br>à 1000 pieces | 1.14.100.503/0000 |
| C2             | SMT Gullwing (Z) Anschluss | 4.8 <sup>±0.8</sup> N | DIN EN 60068-2-58                      | tape and reel<br>à 1000 pieces | 1.14.100.603/0000 |
| C4             | SMT Gullwing (Z) Anschluss | 6.3 <sup>±1.0</sup> N | DIN EN 60068-2-58                      | tape and reel<br>à 1000 pieces | 1.14.100.803/0000 |

For keycaps refer to chapter „RK 90“ plungers see „RACON special accessories“.

# RACON 12

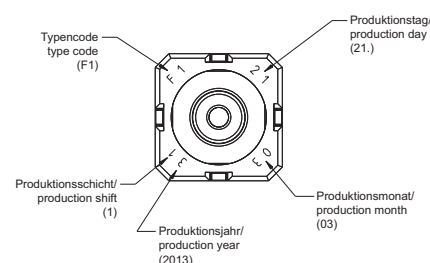
## Tactile switches

→ RACON 12 tactile switches offer an extremely high switching reliability while needing very little space. They can be arranged as single keys, in rows or key blocks.

When arranged under an overlay, RACON key switches should be combined with plungers.

The features at a glance:

- Suitable for the most common soldering methods
  - Wave soldering bath for THT versions
  - Reflow soldering for SMT versions
  - Vapour phase soldering for SMT versions
  - Manual soldering
- SMT version suitable for processing with an automatic SMT assembly machine
- IMDS listed



### Technical Data

#### → Dimensions

|                   |                 |
|-------------------|-----------------|
| Length of housing | 12 mm           |
| Width of housing  | 12 mm           |
| Overall height    | see order block |

#### → Mechanical design

|                     |                     |
|---------------------|---------------------|
| Mounting            | soldering           |
| Terminals           | see order block     |
| Contact system      | snap-action contact |
| Contact arrangement | 1 NO                |
| Contact materials   | Au                  |
| Illumination        | no                  |

#### → Mechanical characteristics

|                  |                 |
|------------------|-----------------|
| Operating force  | see order block |
| Switching travel | see order block |

#### → Electrical characteristics

|                                  |                   |
|----------------------------------|-------------------|
| Rated voltage min.               | 0.02 V            |
| Rated voltage max.               | 35 V              |
| Rated current min.               | 0.01 mA           |
| Rated current max.               | 100 mA            |
| Rated power max. (ohmic load)    | 1 W               |
| Contact resistance when new max. | 100 mΩ            |
| Insulation resistance            | 10 <sup>9</sup> Ω |

#### → Other specifications

|                                        |                                    |
|----------------------------------------|------------------------------------|
| Ambient temp. operating min.           | -40 °C                             |
| Ambient temp. operating max.           | +90 °C                             |
| Resistance to environment              | DIN EN 60068-2 -14,-30,-33 and -78 |
| Operating life                         | see order block                    |
| Solderability / Solder heat resistance | see order block                    |
| Flammability of materials              | UL 94 HB                           |
| Packing                                | see order block                    |
| Produkt code                           | see order block                    |
| ROHS compliant                         | yes                                |
| REACH compliant                        | yes                                |

# PCB KEY SWITCHES

## RACON 12 - TACTILE SWITCHES

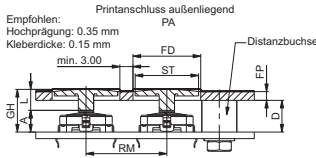
### Accessories RACON 12 - Tactile switch

| → Description                                 | Photo                                                                             | Order no.         | Additional accessories see page |
|-----------------------------------------------|-----------------------------------------------------------------------------------|-------------------|---------------------------------|
| Spacer, round, length 6.25 mm, red            |  | 5.30.759.034/0000 | 2 - 265, 4 - 97,<br>5 - 32      |
| Square plunger for membrane data entry system |  | 5.46.001.057/0209 | 4 - 51                          |
| Plunger round                                 |  | 5.46.168.050/0209 | 4 - 50                          |
| RK 90 - Keycap body, for lens 1 -module       |  | 5.55.103.030/1013 | 4 - 112                         |

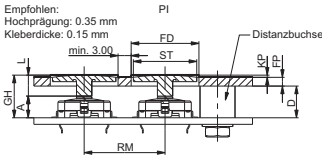
For other plungers, refer to the chapter „RACON special accessories“; for keycaps, refer to the chapter „RK 90“

## RACON 12, Typical system assembly with plunger under overlay

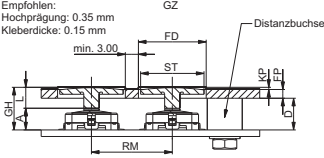
THT terminal outward



THT terminal inward



SMT gullwing terminal



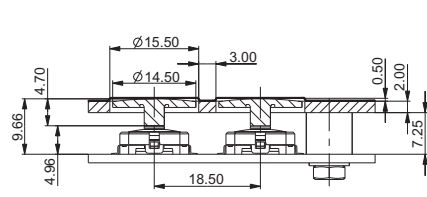
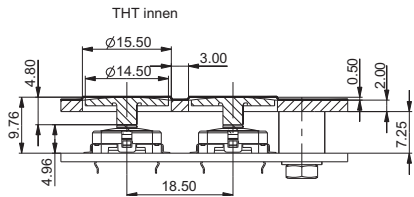
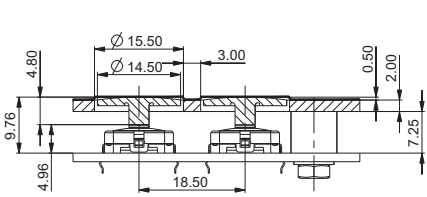
### Variable Declaration

### THT terminal inward and outward

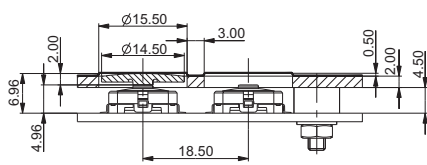
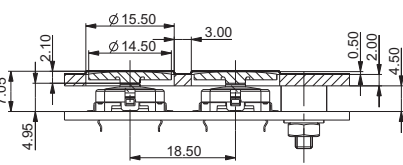
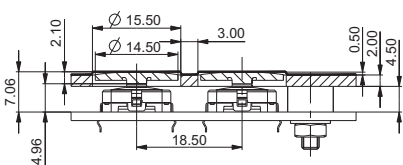
### SMT terminal

|    |                                              |                               |                               |
|----|----------------------------------------------|-------------------------------|-------------------------------|
| A  | Height of key switch                         | $A = 4.90 \pm 0.1 \text{ mm}$ |                               |
| D  | Length of spacer $D = GH - KP - FP$          |                               |                               |
| FD | Front panel cut-out $FD = ST + 1 \text{ mm}$ |                               |                               |
| FP | Front panel thickness                        |                               |                               |
| GH | Overall height                               | $GH = A + L$                  | $GH = A + L + 0.1 \text{ mm}$ |
| KP | Thickness of overlay + embossing             |                               |                               |
| L  | Length of plunger                            | $L = GH - A$                  | $L = GH - A - 0.1 \text{ mm}$ |
| RM | Key grid                                     |                               |                               |
| ST | Diameter of plunger                          |                               |                               |

## RACON 12, Standard system assembly



## RACON 12, Lowest system assembly

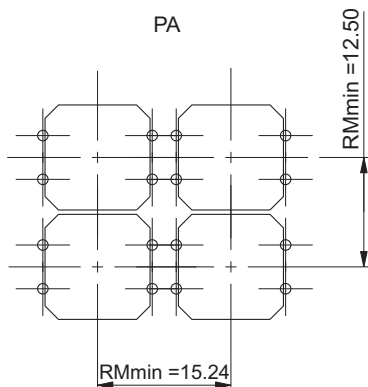


# PCB KEY SWITCHES

RACON 12 - TACTILE SWITCHES

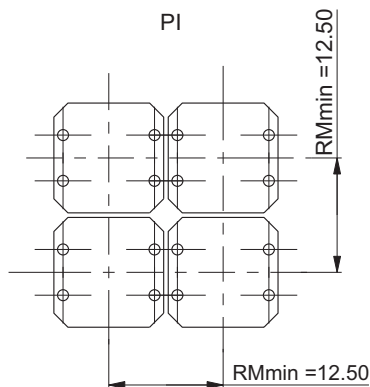
## RACON 12, PCB hole pattern, smallest grid

THT terminal outward



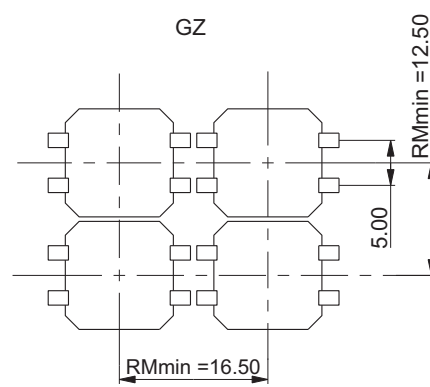
view on component side

THT terminal inward



view on component side

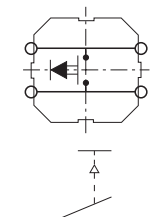
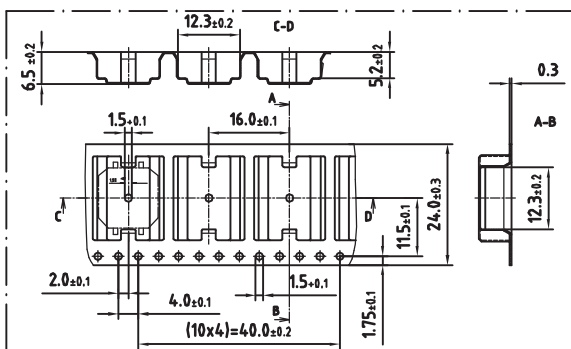
SMT gullwing terminal



view on component side

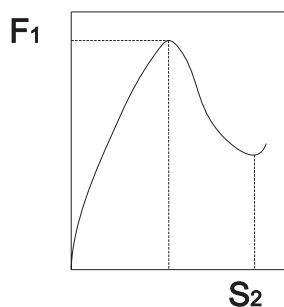
## RACON 12, SMT terminal, tape and reel

## Circuit diagram RACON 12



Switching symbols acc. to IEC 60 617 form X (twice interrupting)

## Typical force travel diagram



Operating force F<sub>1</sub> and switching travel S<sub>2</sub> see order block

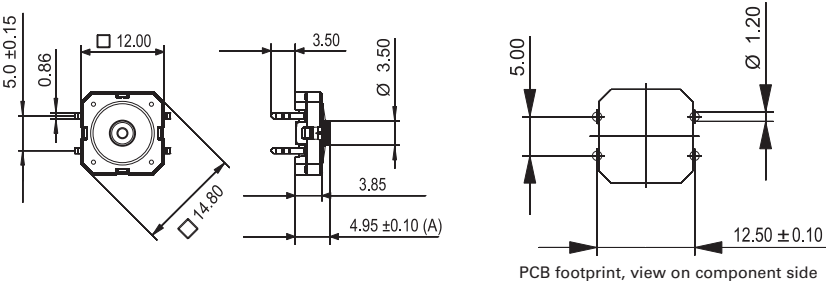
4

RACON

## RACON 12

### Tactile switch solder terminals for PCB, outward

Technical data see page 4 - 39



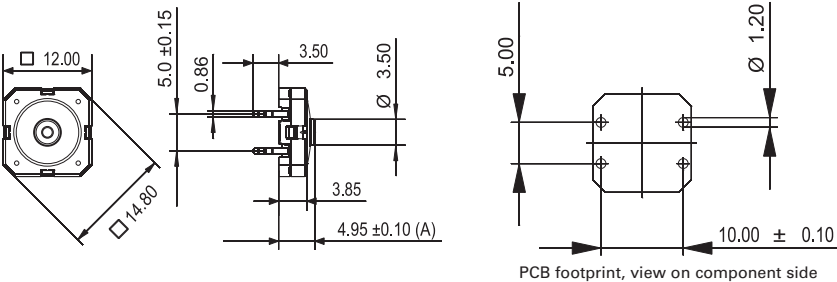
| → Produkt code | Operating force       | Switching travel        | Operating life | Solderability / Solder heat resistance | Packing           | Order no.         |
|----------------|-----------------------|-------------------------|----------------|----------------------------------------|-------------------|-------------------|
| A1             | 3.6 <sup>±0.7</sup> N | 0.61 <sup>±0.1</sup> mm | 1,000,000      | DIN EN 60068-2-20                      | tubes à 45 pieces | 1.14.001.501/0000 |

For keycaps refer to chapter „RK 90“, plungers see „RACON special accessories“.

## RACON 12

### Tactile switch solder terminals for PCB, inward

Technical data see page 4 - 39



| → Produkt code | Operating force       | Switching travel        | Operating life | Solderability / Solder heat resistance | Packing           | Order no.         |
|----------------|-----------------------|-------------------------|----------------|----------------------------------------|-------------------|-------------------|
| B1             | 3.6 <sup>±0.7</sup> N | 0.61 <sup>±0.1</sup> mm | 1,000,000      | DIN EN 60068-2-20                      | tubes à 45 pieces | 1.14.001.502/0000 |

For keycaps refer to chapter „RK 90“, plungers see „RACON special accessories“.

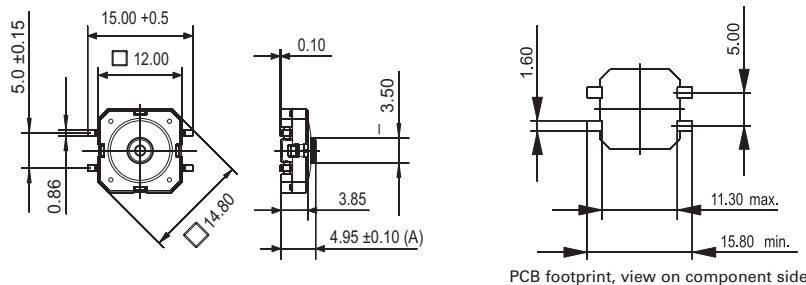
# PCB KEY SWITCHES

RACON 12 - TACTILE SWITCHES



## RACON 12 Tactile switch SMT gullwing (Z) terminals

Technical data see page 4 - 39



| → Produkt code | Operating force       | Switching travel        | Operating life | Solderability / Solder heat resistance | Packing                    | Order no.         |
|----------------|-----------------------|-------------------------|----------------|----------------------------------------|----------------------------|-------------------|
| C2             | 2.5 <sup>±0.6</sup> N | 0.55 mm                 | 1,000,000      | DIN EN 60068-2-58                      | tape and reel à 750 pieces | 1.14.001.603/0000 |
| C1             | 3.6 <sup>±0.7</sup> N | 0.61 <sup>±0.1</sup> mm | 1,000,000      | DIN EN 60068-2-58                      | tape and reel à 750 pieces | 1.14.001.503/0000 |
| C4             | 4.7 <sup>±0.8</sup> N | 0.66 mm                 | 1,000,000      | DIN EN 60068-2-58                      | tape and reel à 750 pieces | 1.14.001.803/0000 |
| ZD             | 6.8 <sup>±1.6</sup> N | 0.7 <sup>±0.1</sup> mm  | 1,000,000      | DIN EN 60068-2-58                      | tape and reel à 750 pieces | 1.14.001.916/0000 |
| ZE             | 9.7 <sup>±2.5</sup> N | 0.73 <sup>±0.1</sup> mm | 65.000         | DIN EN 60068-2-58                      | tape and reel à 750 pieces | 1.14.001.920/0000 |

For keycaps refer to chapter „RK 90“, plungers see „RACON special accessories“.

## RACON 12 V Tactile switches with vertical adapter

- The RACON 12 V version can be used, for example, for PC plug-in boards and for measurement and control engineering applications. The vertical mounting adapter (support element) absorbs the operating force so that the pressure on the soldered terminals is reduced. For this mounting arrangement, the key switch is provided with two horizontal terminals on one side.



### Technical Data

|                                        |                                          |
|----------------------------------------|------------------------------------------|
| <b>→ Dimensions</b>                    |                                          |
| Length                                 | 14.5 mm                                  |
| Width                                  | 13.6 mm                                  |
| Overall height                         | 4.95 mm                                  |
| <b>→ Mechanical design</b>             |                                          |
| Mounting                               | soldering                                |
| Terminals                              | THT                                      |
| Contact system                         | snap-action contact                      |
| Contact arrangement                    | 1 NO                                     |
| Contact materials                      | Au                                       |
| Illumination                           | no                                       |
| <b>→ Mechanical characteristics</b>    |                                          |
| Operating force                        | 3.6 <sup>±0.7</sup> N                    |
| Switching travel                       | 0.61 <sup>±0.1</sup> mm                  |
| <b>→ Electrical characteristics</b>    |                                          |
| Rated voltage min.                     | 0.02 V                                   |
| Rated voltage max.                     | 35 V                                     |
| Rated current min.                     | 0.01 mA                                  |
| Rated current max.                     | 100 mA                                   |
| Rated power max. (ohmic load)          | 1 W                                      |
| Contact resistance when new max.       | 100 mΩ                                   |
| Insulation resistance                  | 10 <sup>9</sup> Ω                        |
| <b>→ Other specifications</b>          |                                          |
| Ambient temp. operating min.           | -40 °C                                   |
| Ambient temp. operating max.           | +80 °C                                   |
| Storage temperature min.               | -50 °C                                   |
| Storage temperature max. (product)     | +85 °C                                   |
| Storage temperature max. (in tube)     | +85 °C                                   |
| Environmental resistance               | acc. to IEC 60068-2-14, -30, -33 and -78 |
| Operating life                         | 1,000,000                                |
| Solderability / solder heat resistance | DIN EN 60068-2-20                        |
| Flammability of materials              | UL 94 HB                                 |
| Packing                                | in boxes à 100 pieces                    |
| Produkt code                           | F 1                                      |
| ROHS compliant                         | yes                                      |
| REACH compliant                        | yes                                      |

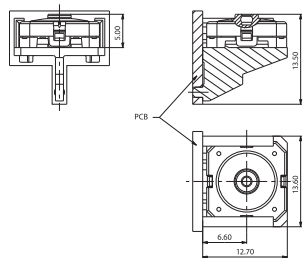
# PCB KEY SWITCHES

RACON 12 V - TACTILE SWITCHES



## RACON 12 V Tactile switch with vertical adapter

Technical data see page 4 - 45



| → Produkt code | Terminals | Contact arrangement | Packing               | Order no.         |
|----------------|-----------|---------------------|-----------------------|-------------------|
| F 1            | THT       | 1 NO                | in boxes à 100 pieces | 1.14.001.505/0000 |

Plungers for overall height of 6.5 mm may not be used.

# RACON 12 I

## Tactile switches



### → Application note

Low-profile keyboards with RACON 12 i components should be designed with a grid spacing of 15.24 mm. With this grid, frame webs remain free between the individual keys. The overlay can be glued onto these frame webs; we recommend area embossing over the keys for the overlays. If our RK 90 system design is used, we recommend the 9 x 9 mm keycaps.

### Technical Data

#### → General information

|                      |                  |
|----------------------|------------------|
| Color of lens        | see order block  |
| Recommended key grid | 15.24 x 15.24 mm |
| Key grid min.        | 12.5 x 12.5 mm   |

#### → Dimensions

|                |          |
|----------------|----------|
| Length         | 11.35 mm |
| Width          | 11.35 mm |
| Overall height | 9.7 mm   |

#### → Mechanical design

|                     |                         |
|---------------------|-------------------------|
| Mounting            | soldering               |
| Terminals           | THT                     |
| Contact system      | snap-action contact     |
| Contact arrangement | 1 NO                    |
| Contact materials   | Au                      |
| Illumination        | fully illuminated 2 LED |
| LED color           | see order block         |
| LED type            | standard 2 mm           |

#### → Mechanical characteristics

|                  |                         |
|------------------|-------------------------|
| Operating force  | 3.3 <sup>±0.6</sup> N   |
| Switching travel | 0.34 <sup>±0.1</sup> mm |

#### → Electrical characteristics

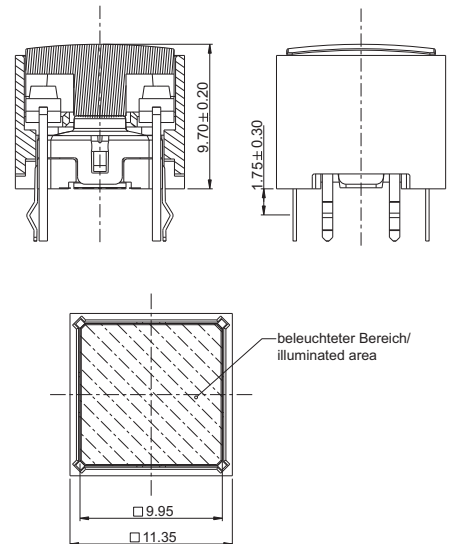
|                                  |                   |
|----------------------------------|-------------------|
| Rated voltage min.               | 0.02 V            |
| Rated voltage max.               | 35 V              |
| Rated current min.               | 0.01 mA           |
| Rated current max.               | 100 mA            |
| Rated power max. (ohmic load)    | 1 W               |
| Contact resistance when new max. | 100 mΩ            |
| Dielectric strength AC min.      | 750 V             |
| Insulation resistance            | 10 <sup>9</sup> Ω |

#### → Electrical characteristics of LED

|                                                  |                                              |
|--------------------------------------------------|----------------------------------------------|
| LED rated current max. I <sub>F</sub> at 25 °C   | red/green: 30, yellow: 50 mA                 |
| LED current reduction beginning with 50 degree C | red: 0.5 mA/degree C, yellow 0.8 mA/degree C |
| LED wavelength typ.                              | red 639, green 510-535, yellow 590           |
| LED forward voltage U <sub>F</sub> at 20 mA      | red: 1.8 V/20 mA, yellow: 1.9 V/20 mA        |
| LED breakdown voltage U <sub>R</sub> at 25 °C    | min. 5 V/0.1 mA                              |

#### → Other specifications

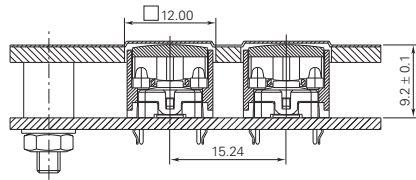
|                                        |                                          |
|----------------------------------------|------------------------------------------|
| Ambient temp. operating min.           | -40 °C                                   |
| Ambient temp. operating max.           | +80 °C                                   |
| Storage temperature min.               | see order block                          |
| Storage temperature max. (product)     | see order block                          |
| Storage temperature max. (in tube)     | see order block                          |
| Environmental resistance               | acc. to IEC 60068-2-14, -30, -33 and -78 |
| Operating life                         | 1,000,000                                |
| Solderability / solder heat resistance | DIN EN 60068-2-20                        |
| Flammability of materials              | UL 94 HB                                 |
| Packing                                | tubes à 45 pieces                        |
| ROHS compliant                         | yes                                      |
| REACH compliant                        | yes                                      |



# PCB KEY SWITCHES

RACON 12 I - TACTILE SWITCHES

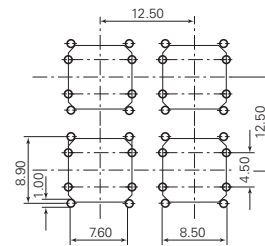
## RACON 12i Typical system assembly



view on component side

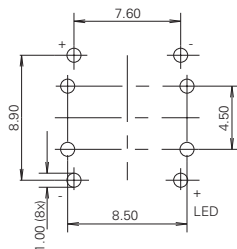
Recommended area embossing:  
0.35 mm at glue spacer thickness of 0.15 mm

## RACON 12i PCB smallest grid



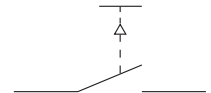
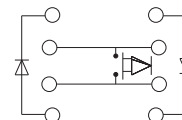
view on component side

## LED hole patterns



view on component side

## RACON 12i Circuit diagram



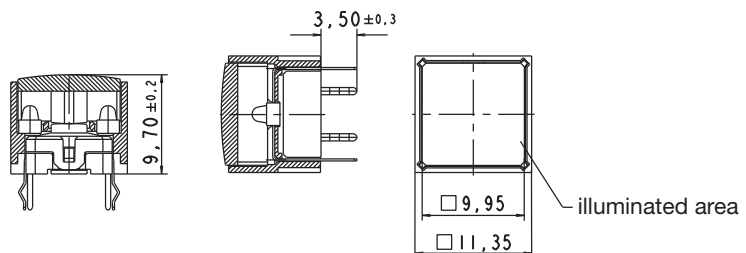
Switching symbols acc. to IEC 60 617 form X  
(twice interrupting)

4



## RACON 12 i Tactile switch

Technical data see page 4 - 47



| → Terminals | Contact arrangement | Illumination            | Color of lens | LED color | Order no.         |
|-------------|---------------------|-------------------------|---------------|-----------|-------------------|
| THT         | 1 NO                | fully illuminated 2 LED | red           | red       | 1.14.001.551/0000 |
| THT         | 1 NO                | fully illuminated 2 LED | yellow        | yellow    | 1.14.001.553/0000 |
| THT         | 1 NO                | fully illuminated 2 LED | orange        | yellow    | 1.14.001.554/0000 |
| THT         | 1 NO                | fully illuminated 2 LED | green         | green     | 1.14.001.552/0000 |

If keycaps are used we recommend RK 90 keycaps 9 x 9 mm.

# RACON

## Special accessories

→ GH = „L“ length of plunger + „A“ height of key switch (+ 0.1 mm for SMT versions)  
Front panel cut-out = size of plunger + 1 mm

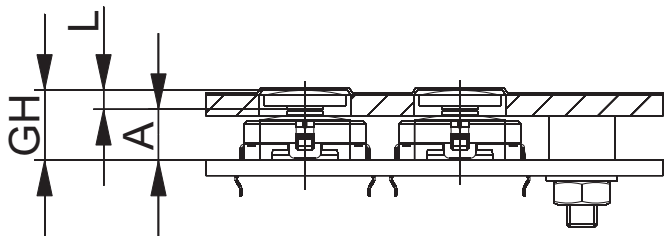
### Technical Data

|                               |                 |
|-------------------------------|-----------------|
| → <b>Dimensions</b>           |                 |
| Length of plunger L           | see order block |
| RACON version                 | see order block |
| Plunger diameter/size         | see order block |
| → <b>Other specifications</b> |                 |
| ROHS compliant                | yes             |
| REACH compliant               | yes             |



## Plunger round

Technical data see page 4 - 49



| → Plunger diameter/size | RACON version | Length of plunger L | Order no.         |
|-------------------------|---------------|---------------------|-------------------|
| 8 mm                    | RACON 8       | 1.4 mm              | 5.46.167.301/0209 |
| 8 mm                    | RACON 8       | 1.5 mm              | 5.46.167.102/0209 |
| 8 mm                    | RACON 8       | 1.6 mm              | 5.46.167.101/0209 |
| 8 mm                    | RACON 8/12    | 1.9 mm              | 5.46.167.090/0209 |
| 8 mm                    | RACON 8/12    | 2 mm                | 5.46.167.106/0209 |
| 8 mm                    | RACON 8/12    | 2.1 mm              | 5.46.167.107/0209 |
| 8 mm                    | RACON 8/12    | 4.6 mm              | 5.46.167.091/0209 |
| 8 mm                    | RACON 8/12    | 4.7 mm              | 5.46.167.311/0209 |
| 8 mm                    | RACON 8/12    | 4.8 mm              | 5.46.167.094/0209 |
| 8 mm                    | RACON 8/12    | 7.4 mm              | 5.46.167.092/0209 |
| 8 mm                    | RACON 8/12    | 7.5 mm              | 5.46.167.099/0209 |
| 8 mm                    | RACON 8/12    | 7.6 mm              | 5.46.167.096/0209 |

# PCB KEY SWITCHES

RACON 8/12 - SPECIAL ACCESSORIES

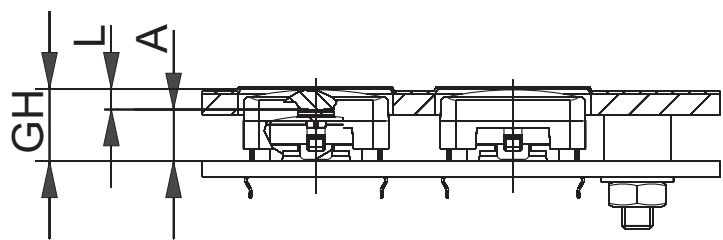
– Table (continued) –  
Plunger round

| → Plunger diameter/size | RACON version | Length of plunger L | Order no.         |
|-------------------------|---------------|---------------------|-------------------|
| 11.5 mm                 | RACON 8       | 1.4 mm              | 5.46.167.227/0209 |
| 11.5 mm                 | RACON 8       | 1.5 mm              | 5.46.167.061/0209 |
| 11.5 mm                 | RACON 8       | 1.6 mm              | 5.46.167.060/0209 |
| 11.5 mm                 | RACON 8/12    | 2 mm                | 5.46.167.067/0209 |
| 11.5 mm                 | RACON 8/12    | 2.1 mm              | 5.46.167.064/0209 |
| 11.5 mm                 | RACON 8/12    | 4.6 mm              | 5.46.167.043/0209 |
| 11.5 mm                 | RACON 8/12    | 4.7 mm              | 5.46.167.050/0209 |
| 11.5 mm                 | RACON 8/12    | 4.8 mm              | 5.46.167.047/0209 |
| 11.5 mm                 | RACON 8/12    | 7.5 mm              | 5.46.167.059/0209 |
| 11.5 mm                 | RACON 8/12    | 7.6 mm              | 5.46.167.058/0209 |
| 14.5 mm                 | RACON 8       | 1.4 mm              | 5.46.168.227/0209 |
| 14.5 mm                 | RACON 8       | 1.5 mm              | 5.46.168.061/0209 |
| 14.5 mm                 | RACON 8       | 1.6 mm              | 5.46.168.060/0209 |
| 14.5 mm                 | RACON 8/12    | 2 mm                | 5.46.168.067/0209 |
| 14.5 mm                 | RACON 8/12    | 2.1 mm              | 5.46.168.064/0209 |
| 14.5 mm                 | RACON 8/12    | 4.6 mm              | 5.46.168.043/0209 |
| 14.5 mm                 | RACON 8/12    | 4.7 mm              | 5.46.168.050/0209 |
| 14.5 mm                 | RACON 8/12    | 4.8 mm              | 5.46.168.047/0209 |
| 14.5 mm                 | RACON 8/12    | 7.4 mm              | 5.46.168.044/0209 |
| 14.5 mm                 | RACON 8/12    | 7.5 mm              | 5.46.168.059/0209 |
| 14.5 mm                 | RACON 8/12    | 7.6 mm              | 5.46.168.058/0209 |
| 19 mm                   | RACON 8       | 1.5 mm              | 5.46.169.061/0209 |
| 19 mm                   | RACON 8       | 1.6 mm              | 5.46.169.060/0209 |
| 19 mm                   | RACON 8/12    | 2 mm                | 5.46.169.067/0209 |
| 19 mm                   | RACON 8/12    | 2.1 mm              | 5.46.169.064/0209 |
| 19 mm                   | RACON 8/12    | 4.7 mm              | 5.46.169.050/0209 |
| 19 mm                   | RACON 8/12    | 4.8 mm              | 5.46.169.047/0209 |
| 19 mm                   | RACON 8/12    | 7.5 mm              | 5.46.169.059/0209 |
| 19 mm                   | RACON 8/12    | 7.6 mm              | 5.46.169.058/0209 |

Front panel cut-out = Plunger diameter + 1 mm.

Square plunger for membrane data entry system

Technical data see page 4 - 49

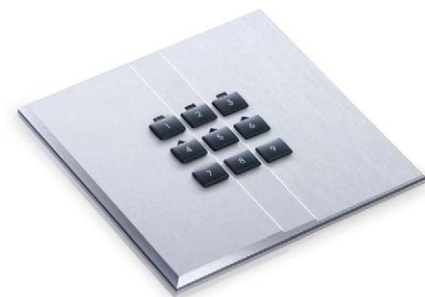


| → Plunger diameter/size | RACON version | Length of plunger L | Order no.         |
|-------------------------|---------------|---------------------|-------------------|
| 14 x 14 mm              | RACON 12 SMT  | 2 mm                | 5.46.001.057/0209 |
| 14 x 14 mm              | RACON 12 SMT  | 4.7 mm              | 5.46.001.058/0209 |
| 14 x 14 mm              | RACON 12 SMT  | 7.5 mm              | 5.46.001.059/0209 |
| 14 x 14 mm              | RACON 12THT   | 2.1 mm              | 5.46.001.064/0209 |
| 14 x 14 mm              | RACON 12THT   | 4.8 mm              | 5.46.001.060/0209 |
| 14 x 14 mm              | RACON 12THT   | 7.6 mm              | 5.46.001.063/0209 |

Front panel cut-out = 15 x 15 mm.

# PCB KEY SWITCHES

RK 90 II, KEY CAP SYSTEM FOR RACON 12



## RK 90 II Key cap system for RACON 12 with individual sealing

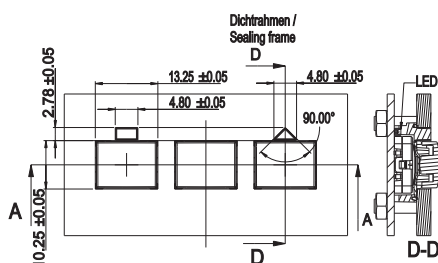
### Technical Data

#### → General information

|                          |                     |
|--------------------------|---------------------|
| Thickness of front panel | 3.00 mm             |
| Light conductor          | see order block     |
| Key grid                 | min. 16.8 x 17.5 mm |
| Degree of protection     | IP65 (DIN EN 60529) |

#### → Other specifications

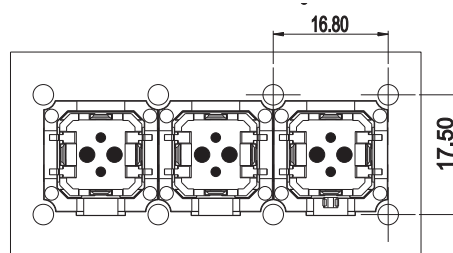
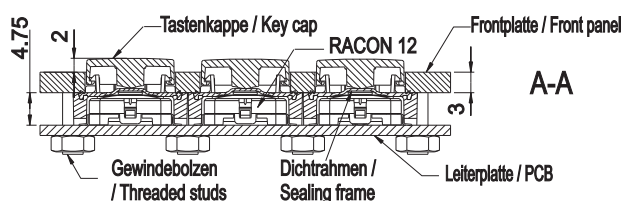
|                 |     |
|-----------------|-----|
| ROHS compliant  | yes |
| REACH compliant | yes |



The key cap system RK 90 II has been developed especially for the tactile switch RACON 12. The lenses are snapped onto the sealing frame and then set onto the RACON 12 key switches. The PCB presses this unit against the front panel, so they are sealed.

Two versions of the sealing frames are provided with light conductors, either in square or triangle form.

The lenses can be legended directly with laser. For bright letters (see picture) first white lenses are painted in dark, then the letters are cut out of the dark color with laser.



Kleinstes Raster / Minimum grid: 16.80 x 17.50

4

RACON

## RK 90 II

### Sealing frame

Technical data see page 4 - 52



Sealing frame with square light conductor



| → Thickness of front panel | Light conductor | Order no.         |
|----------------------------|-----------------|-------------------|
| 3.00 mm                    | square          | 5.05.004.901/0000 |
| 3.00 mm                    | dreieckig       | 5.05.004.902/0000 |
| 3.00 mm                    | -               | 5.05.004.903/0000 |

Legended lenses on request.

**Lenses:**

- Lens RK 90 II, white: 5.46.654.192/0200
- Lens RK 90 II, red: 5.46.654.192/0300
- Lens RK 90 II, yellow: 5.46.654.192/0400
- Lens RK 90 II, green: 5.46.654.192/0500
- Lens RK 90 II, blue: 5.46.654.192/0600
- Lens RK 90 II, grey: 5.46.654.192/0700
- Lens RK 90 II, grey (varnished): 5.46.654.192/6032
- Lens RK 90 II, iron grey (varnished): 5.46.654.192/6033





## RF

Tactile switches

RF 15 (15 x 15 mm) and RF 19 (19 x 19 mm) with distinct key click, for use under an overlay or with RK 90 keycaps. Can be fully illuminated. All products are RoHS compliant.

# PCB KEY SWITCHES

## RF - TACTILE SWITCHES

### Content

|                                                              |               |
|--------------------------------------------------------------|---------------|
| <b>RF 15 - Tactile switches</b>                              | <b>4 - 58</b> |
| RF 15 - Tactile switch, non-illuminated                      | 4 - 60        |
| RF 15 - Tactile switch, fully illuminated with 2 LED         | 4 - 60        |
| RF 15 - Tactile switch, 1 LED spot-illumination              | 4 - 61        |
| <b>RF 15 N - Tactile switches</b>                            | <b>4 - 62</b> |
| RF 15 N - Tactile switch, non-illuminated                    | 4 - 66        |
| <b>RF 15 R - Tactile switches</b>                            | <b>4 - 67</b> |
| RF 15 R - Low tactile switch, non-illuminated                | 4 - 70        |
| RF 15 R - High tactile switch, non-illuminated               | 4 - 70        |
| RF 15 R - Low tactile switch, 1 LED spot-illumination        | 4 - 71        |
| RF 15 R - High tactile switch, 1 LED spot-illumination       | 4 - 71        |
| <b>RF 15 H - Tactile switches</b>                            | <b>4 - 73</b> |
| RF 15 H - Tactile switch, non-illuminated                    | 4 - 76        |
| RF 15 H - Tactile switch, fully illuminated                  | 4 - 76        |
| <b>RF 15 - Signal indicators</b>                             | <b>4 - 78</b> |
| RF 15 - Signal indicator, fully illuminated, 1 LED           | 4 - 80        |
| <b>RF 19 - Tactile switches</b>                              | <b>4 - 81</b> |
| RF 19 - Tactile switch, non-illuminated                      | 4 - 84        |
| RF 19 - Tactile switch, fully illuminated with 2 LED         | 4 - 84        |
| RF 19 - Tactile switch, 1 LED spot-illumination              | 4 - 85        |
| <b>RF 19 H - Tactile switches</b>                            | <b>4 - 86</b> |
| RF 19 H - Tactile switch, non-illuminated                    | 4 - 89        |
| RF 19 H - Tactile switch, fully illuminated                  | 4 - 89        |
| <b>RF 19 - Signal indicators</b>                             | <b>4 - 91</b> |
| RF 19 - Signal indicator, ½ x 1-module                       | 4 - 93        |
| RF 19 - Signal indicator, ½ x 2-module                       | 4 - 93        |
| RF 19 - Signal indicator, 1 x 1-module                       | 4 - 94        |
| RF 19 - Signal indicator, 1 x 2-module                       | 4 - 94        |
| <b>RF 15/19 - Special accessories</b>                        | <b>4 - 95</b> |
| RF 15 N - Extension plunger, round head                      | 4 - 95        |
| RF 15 N - Extension plunger, round head, with recess for LED | 4 - 96        |
| RF 15 - Keycap, snap-on, for overall height 12.5 mm          | 4 - 96        |
| Spacer, round                                                | 4 - 97        |
| Spacer, triangular                                           | 4 - 98        |
| RF 15 N - LED spacer                                         | 4 - 99        |

# Specifications LED

## LED brightness classes

LEDs are subject to production-related variations in brightness over which we have no control with the manufacturers. It is therefore not possible to arrange a delivery in a specific brightness class, and deviations accordingly do not constitute grounds for complaint regarding our products. The majority of the LEDs we use are delivered from

our suppliers in selected brightness classes. In this case, the brightness class is shown on a label on the switch's rack packaging. Where the lighting is required to have a uniform brightness – for aesthetic reasons, for example – this can be achieved in the system by means of the circuitry (with a series resistance, for example).

## 3 mm LED

| (valid for 25 °C)                               | Red LED             | Green LED           | Yellow LED            |
|-------------------------------------------------|---------------------|---------------------|-----------------------|
| Max. forward current IF:                        | 30 mA               | 30 mA               | 20 mA                 |
| Current reduction from: T <sub>0</sub> = 50 °C: | approx 0.5 mA/°C    | approx 0.5 mA/°C    | approx 0.2 mA/°C      |
| Wavelength typ:                                 | 635 nm              | 565 nm              | 586 nm                |
| Forward voltage UF/IF typ:                      | 2 V/10 mA           | 2 V/10 mA           | 2 V/10 mA             |
| Reverse voltage UR/IF typ:                      | 5 V/100 µA min.     | 5 V/100 µA min.     | 5 V/100 µA min.       |
| Ambient temperature, operating:                 | - 20 °C ... + 80 °C | - 20 °C ... + 80 °C | - 20 °C ... + 80 °C   |
|                                                 | Blue LED            | White LED           | Green LED superbright |
| Max. forward current IF:                        | 20 mA               | 25 mA               | 30 mA                 |
| Current reduction from: T <sub>0</sub> = 50 °C: | approx 0.6 mA/°C    | -                   | -                     |
| Wavelength typ:                                 | 470 nm              | -                   | 510-545 nm            |
| Forward voltage UF/IF typ:                      | 2.7 V/10 mA         | 3.6 V/20 mA         | 3.5 V/20 mA           |
| Reverse voltage UR/IF typ:                      | 5V/100 µA min.      | -                   | -                     |
| Ambient temperature, operating:                 | - 20 °C ... + 80 °C | - 20 °C ... + 80 °C | -30 °C ... + 100 °C   |

## 2 mm LED (full illumination of RF 15/19)

| (valid for 25 °C)                               | Red LED              | Green LED            | Yellow LED          |
|-------------------------------------------------|----------------------|----------------------|---------------------|
| Max. forward current IF:                        | 30 mA                | 30 mA                | 50 mA               |
| Current reduction from: T <sub>0</sub> = 50 °C: | 0.5 mA/°C            | 0.5 mA/°C            | 0.8 mA/°C           |
| Light current fV/IF typ:                        | -                    | -                    | 250 mIm/20 mA       |
| Wavelength typ:                                 | 637 nm               | 569 nm               | 590 nm              |
| Forward voltage UF/IF typ:                      | 1.8 V/20 mA          | 2.1 V/10 mA          | 1.9 V/20 mA         |
| Reverse voltage UR/IF typ:                      | 5 V/100 µA min.      | 5 V/100 µA min.      | 5 V/100 µA min.     |
| Ambient temperature, operating:                 | - 55 °C ... + 100 °C | - 40 °C ... + 100 °C | -40 °C ... + 100 °C |
|                                                 | Blue LED             | Multi-color LED      |                     |
| Max. forward current IF:                        | 30 mA                | 30 mA                |                     |
| Current reduction from: T <sub>0</sub> = 50 °C: | -                    | approx 0.6 mA/°C     |                     |
| Light current fV/IF typ:                        | -                    | -                    |                     |
| Wavelength typ:                                 | 464-485 nm           | 635/565 nm           |                     |
| Forward voltage UF/IF typ:                      | 3.6 V/20 mA          | 2 V/10 mA            |                     |
| Reverse voltage UR/IF typ:                      | -                    | -                    |                     |
| Ambient temperature, operating:                 | - 20 °C ... + 80 °C  | - 20 °C ... + 80 °C  |                     |

Calculating the series resistor:

$$R_V = \frac{U_B - U_F}{I_F}$$

Rated power of series:

$$P_V = I_F^2 \times R_V$$

Example for 5 Volt:

$$R_V = \frac{5V - 2,0V}{0,02A} = 150 \Omega (= \text{standard value})$$



# RF 15

## Tactile switches

- Low-profile keyboards with RF 15 components should be designed with a 19.05 mm grid. With this grid, frame webs remain free between the individual keys. The overlay can be glued onto these frame webs; we recommend area embossing over the keys for the overlays.

### Technical Data

#### → General information

|                      |                 |
|----------------------|-----------------|
| Color of lens        | see order block |
| Recommended key grid | 19.05 mm        |

#### → Dimensions

|                |        |
|----------------|--------|
| Length         | 15 mm  |
| Width          | 15 mm  |
| Overall height | 9.7 mm |

#### → Mechanical design

|                     |                     |
|---------------------|---------------------|
| Mounting            | soldering in PCB    |
| Terminals           | THT                 |
| Contact system      | snap-action contact |
| Contact arrangement | 1 NO                |
| Contact materials   | see order block     |
| Illumination        | see order block     |
| LED color           | see order block     |
| LED type            | see order block     |

#### → Mechanical characteristics

|                      |                               |
|----------------------|-------------------------------|
| Operating force max. | 2.9 <sup>+0.6</sup> N         |
| Switching travel     | 0.5 <sup>+0.2</sup> mm        |
| Robustness max.      | with through-plated PCB 100 N |

#### → Electrical characteristics

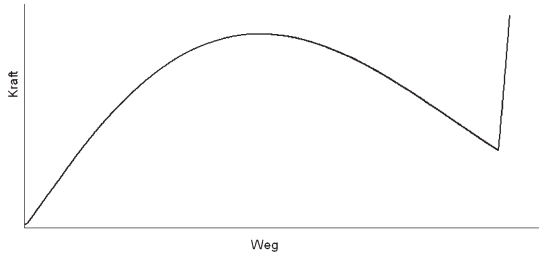
|                                  |                         |
|----------------------------------|-------------------------|
| Rated voltage min.               | Au: 0.02 V, Ag: 3 V     |
| Rated voltage max.               | 35 V                    |
| Rated current min.               | Au: 0.01 mA, Ag: 0.1 mA |
| Rated current max.               | Au: 100 mA, Ag: 250 mA  |
| Rated power max. (ohmic load)    | Au: 2 W, Ag: 12.5 W     |
| Contact resistance when new max. | 100 mΩ                  |
| Insulation resistance            | 10 <sup>9</sup> Ω       |

#### → Other specifications

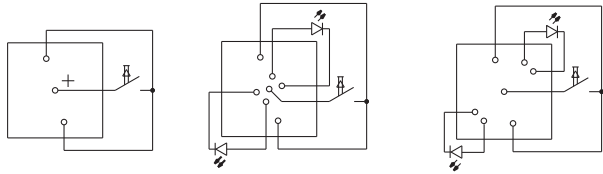
|                                        |                                          |
|----------------------------------------|------------------------------------------|
| Ambient temp. operating min.           | -25 °C                                   |
| Ambient temp. operating max.           | +70 °C                                   |
| Environmental resistance               | acc. to IEC 60068-2-14, -30, -33 and -78 |
| Operating life min. (operations)       | 1,000,000                                |
| Solderability / solder heat resistance | according to DIN EN 60068-2-20           |
| Wave soldering                         | 260 °C max.                              |
| Manual soldering                       | 350 °C / 5 sec. max.                     |
| ROHS compliant                         | yes                                      |
| REACH compliant                        | yes                                      |

Typical force travel diagram

Actuating characteristics  
Force travel diagram



Circuit diagrams RF 15

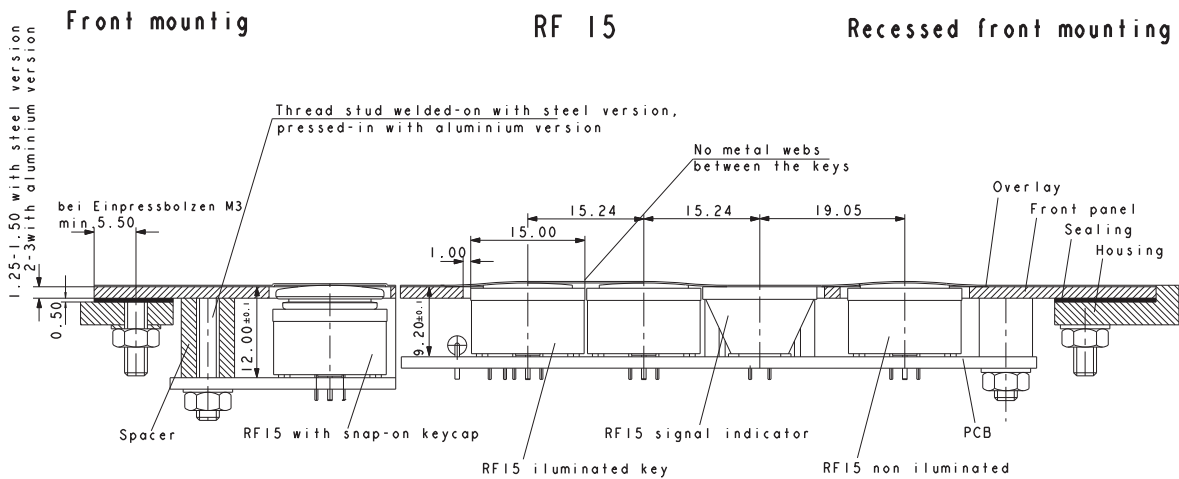


Tactile switch,  
non-illuminated

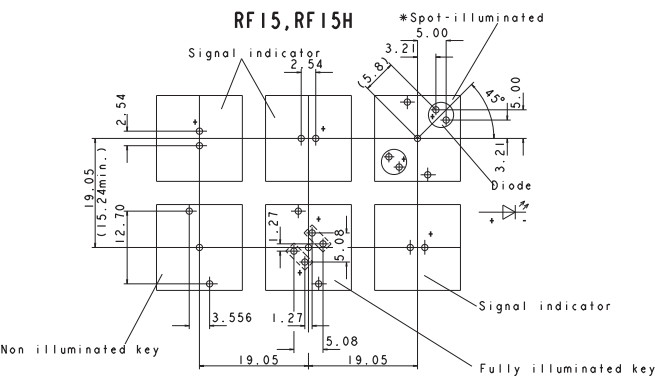
Tactile switch,  
fully-illuminated

Tactile switch,  
spot-illuminated

System assembly RF 15

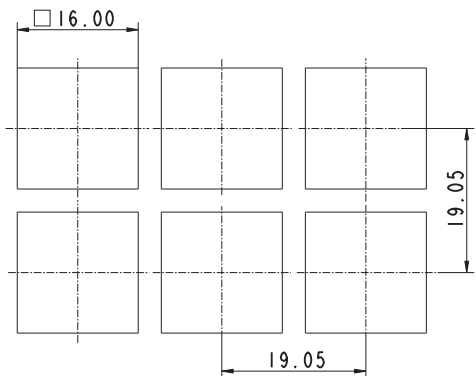


PCB hole patterns  
RF 15



View on component side, all hole diameters 1.1±0.1 mm

Hole patterns front panel  
RF 15



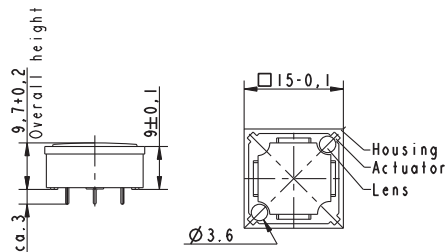
# PCB KEY SWITCHES

RF 15 - TACTILE SWITCHES



## RF 15 Tactile switch, non-illuminated

Technical data see page 4 - 58



| → Contact materials | Illumination    | Color of lens | LED color | LED type | Order no.         |
|---------------------|-----------------|---------------|-----------|----------|-------------------|
| Au                  | not illuminated | transparent   | -         | -        | 3.14.100.001/0000 |
| Ag                  | not illuminated | transparent   | -         | -        | 3.14.100.006/0000 |

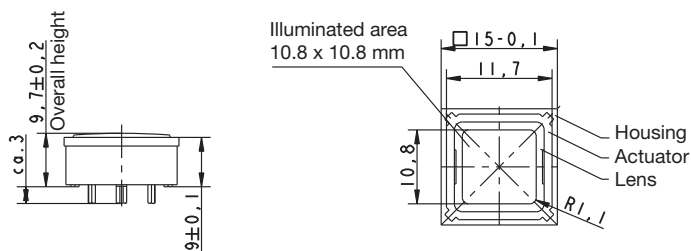
For keycaps, refer to chapter accessories and system RK 90.

If exchangeable legends are required, or if an overall height of 12.5 mm is required, a keycap can be mounted on the non-illuminated keys. The keycap legend is visible through a window in the overlay. You can change the legend by replacing the keycap.



## RF 15 Tactile switch, fully illuminated with 2 LED

Technical data see page 4 - 58



| → Contact materials | Illumination            | Color of lens | LED color | LED type | Order no.         |
|---------------------|-------------------------|---------------|-----------|----------|-------------------|
| Au                  | fully illuminated 2 LED | red           | red       | 2 mm     | 3.14.200.011/0000 |
| Au                  | fully illuminated 2 LED | yellow        | yellow    | 2 mm     | 3.14.200.013/0000 |
| Au                  | fully illuminated 2 LED | orange        | yellow    | 2 mm     | 3.14.200.014/0000 |
| Au                  | fully illuminated 2 LED | green         | green     | 2 mm     | 3.14.200.012/0000 |
| Au                  | fully illuminated 2 LED | blue          | blue      | 2 mm     | 3.14.200.015/0000 |
| Ag                  | fully illuminated 2 LED | red           | red       | 2 mm     | 3.14.200.021/0000 |
| Ag                  | fully illuminated 2 LED | yellow        | yellow    | 2 mm     | 3.14.200.023/0000 |
| Ag                  | fully illuminated 2 LED | orange        | yellow    | 2 mm     | 3.14.200.024/0000 |

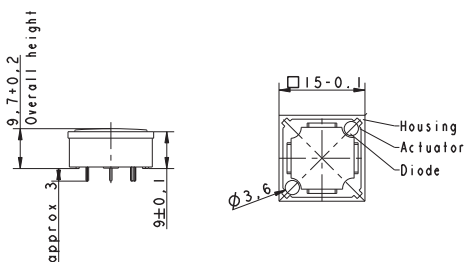
– Table (continued) –  
RF 15 - Tactile switch, fully illuminated with 2 LED

| → Contact materials | Illumination            | Color of lens | LED color | LED type | Order no.         |
|---------------------|-------------------------|---------------|-----------|----------|-------------------|
| Ag                  | fully illuminated 2 LED | green         | green     | 2 mm     | 3.14.200.022/0000 |
| Ag                  | fully illuminated 2 LED | blue          | blue      | 2 mm     | 3.14.200.025/0000 |

For keycaps, refer to RK 90 system design.  
Technical data of LED see seperate page at the beginning of this chapter.

RF 15  
Tactile switch,  
1 LED spot-illumination

Technical data see page 4 - 58



| → Contact materials | Illumination            | Color of lens | LED color | LED type | Order no.         |
|---------------------|-------------------------|---------------|-----------|----------|-------------------|
| Au                  | spot illumination 1 LED | transparent   | red       | 3 mm     | 3.14.100.031/0000 |
| Au                  | spot illumination 1 LED | transparent   | yellow    | 3 mm     | 3.14.100.033/0000 |
| Au                  | spot illumination 1 LED | transparent   | green     | 3 mm     | 3.14.100.032/0000 |
| Au                  | spot illumination 1 LED | opaque white  | blue      | 3 mm     | 3.14.100.030/0000 |
| Ag                  | spot illumination 1 LED | transparent   | red       | 3 mm     | 3.14.100.041/0000 |
| Ag                  | spot illumination 1 LED | transparent   | yellow    | 3 mm     | 3.14.100.043/0000 |
| Ag                  | spot illumination 1 LED | transparent   | green     | 3 mm     | 3.14.100.042/0000 |
| Ag                  | spot illumination 1 LED | transparent   | blue      | 3 mm     | 3.14.100.040/0000 |

Double-spot LED illumination available on request  
Technical data of LED see seperate page at the beginning of this chapter.



# RF 15 N

## Tactile switches

- The RF 15N key switch provides a minimum overall height of 6.2 mm. The overall height can be varied by extension plungers which are inserted into the cross-like notches on the actuator tops.

LEDs can only be arranged separately next to the key switches up to an overall height of 10 mm (i.e. without plunger or with small plunger).

Key switches with overall heights of 12 mm or more can be provided with a maximum of 2 LEDs which are inserted into the recesses of the key switch housing. LEDs of key switches with overall heights of 12.5 mm or more should be placed onto LED spacers in order to obtain satisfactory illumination.



### Technical Data

#### → General information

|                      |                 |
|----------------------|-----------------|
| Color of lens        | see order block |
| Recommended key grid | 19.05 mm        |

#### → Dimensions

|                |        |
|----------------|--------|
| Length         | 15 mm  |
| Width          | 15 mm  |
| Overall height | 6.2 mm |

#### → Mechanical design

|                     |                                                      |
|---------------------|------------------------------------------------------|
| Mounting            | soldering in PCB                                     |
| Terminals           | THT                                                  |
| Contact system      | snap-action contact                                  |
| Contact arrangement | 1 NO                                                 |
| Contact materials   | see order block                                      |
| Illumination        | external 3 mm LED possible if height more than 12 mm |

#### → Mechanical characteristics

|                      |                               |
|----------------------|-------------------------------|
| Operating force max. | 2.9 <sup>+0.6</sup> N         |
| Switching travel     | 0.5 <sup>+0.2</sup> mm        |
| Robustness max.      | 100 with through-plated PCB N |

#### → Electrical characteristics

|                                  |                         |
|----------------------------------|-------------------------|
| Rated voltage min.               | Au: 0.02 V, Ag: 3 V     |
| Rated voltage max.               | 35 V                    |
| Rated current min.               | Au: 0.01 mA, Ag: 0.1 mA |
| Rated current max.               | Au: 100 mA, Ag: 250 mA  |
| Rated power max. (ohmic load)    | Au: 2 W, Ag: 12.5 W     |
| Contact resistance when new max. | 100 mΩ                  |
| Insulation resistance            | 10 <sup>9</sup> Ω       |

#### → Other specifications

|                                        |                                          |
|----------------------------------------|------------------------------------------|
| Ambient temp. operating min.           | -25 °C                                   |
| Ambient temp. operating max.           | +70 °C                                   |
| Storage temperature max. (in tube)     | +50 °C                                   |
| Environmental resistance               | acc. to IEC 60068-2-14, -30, -33 and -78 |
| Operating life min. (operations)       | 1,000,000                                |
| Solderability / solder heat resistance | according to DIN EN 60068-2-20           |
| Wave soldering                         | 260 °C max.                              |
| Manual soldering                       | 350 °C / 5 sec. max.                     |
| ROHS compliant                         | yes                                      |
| REACH compliant                        | yes                                      |

Accessories RF 15 N - Tactile switch

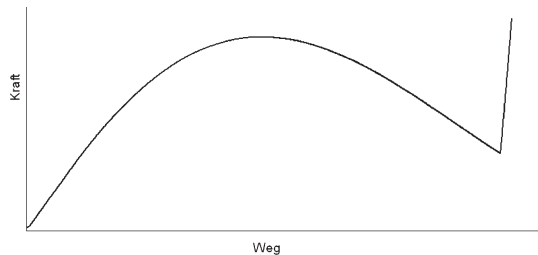
| → Description                                                                                          | Photo                                                                             | Order no.         | Additional acces-<br>sories see page |
|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------|--------------------------------------|
| RF 15 N - LED spacer Ø 5 mm, spacing length 2.2 mm, light grey, for use with overall height of 12.5 mm |  | 5.30.109.010/0756 | 4 - 99                               |
| RF 15 N - Extension plunger, Ø 10 mm, overall height 22.5 mm                                           |  | 5.46.011.028/0710 | 4 - 95                               |
| RF 15 N - Extension plunger, Ø 15 mm, overall height 22.5 mm                                           |  | 5.46.017.028/0710 | 4 - 96                               |
| RF 15 N - Extension plunger, Ø 15 mm, overall height 22.5 mm                                           |  | 5.46.017.029/0710 | -                                    |

# PCB KEY SWITCHES

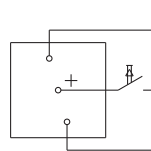
RF 15 N - TACTILE SWITCHES

## Typical force travel diagram

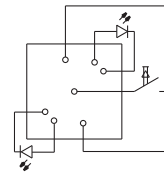
Actuating characteristics  
Force travel diagram



## Circuit diagrams RF 15 N

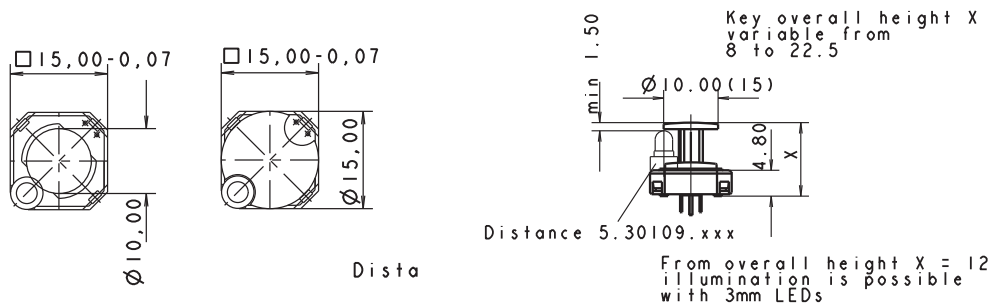


Tactile switch,  
non-illuminated



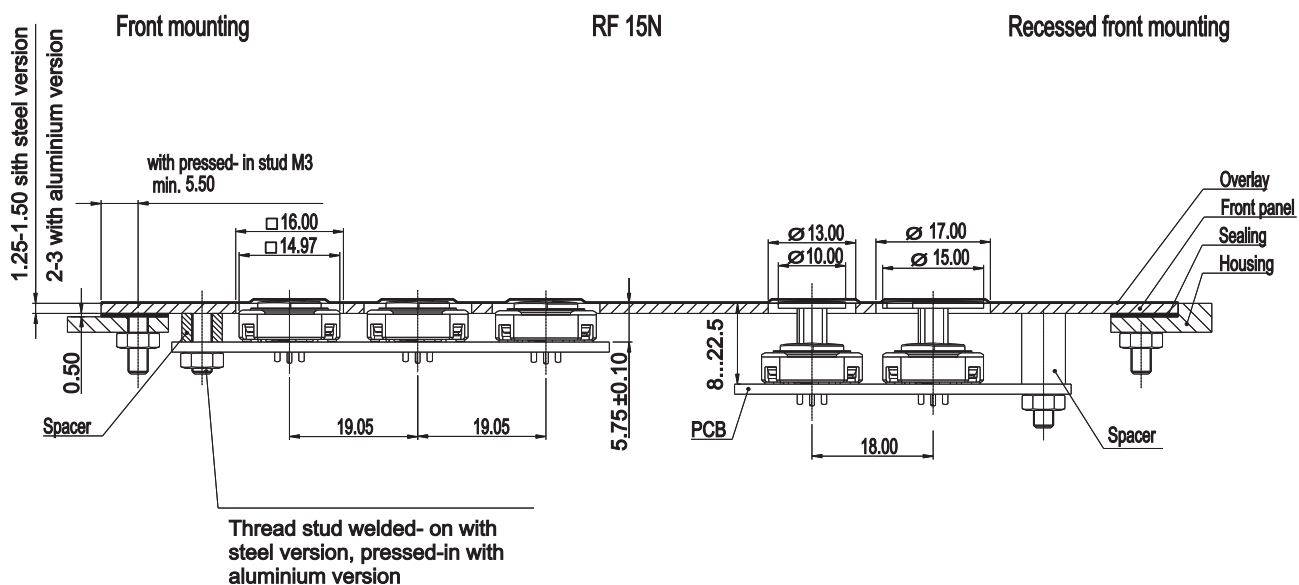
Tactile switch,  
spot-illuminated

## Dimensional drawing RF 15 N



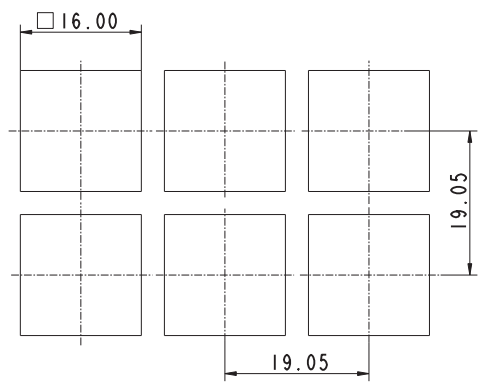
4

RF

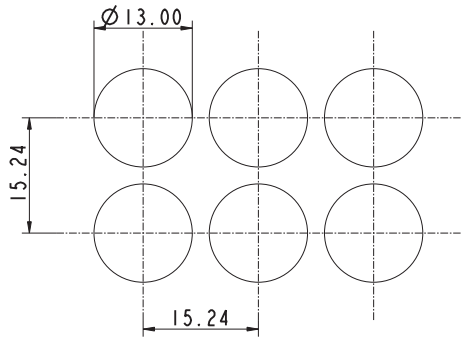


Hole patterns front panel RF 15 N

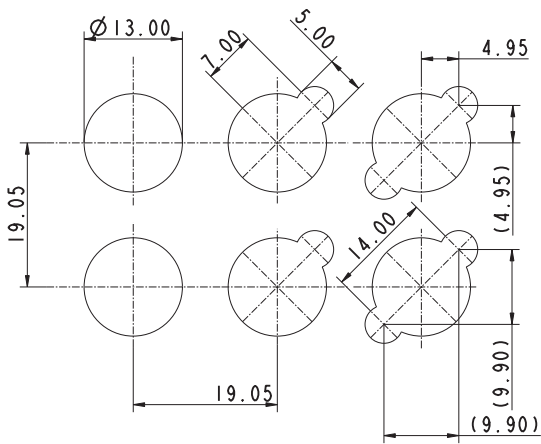
RF 15 N without plunger



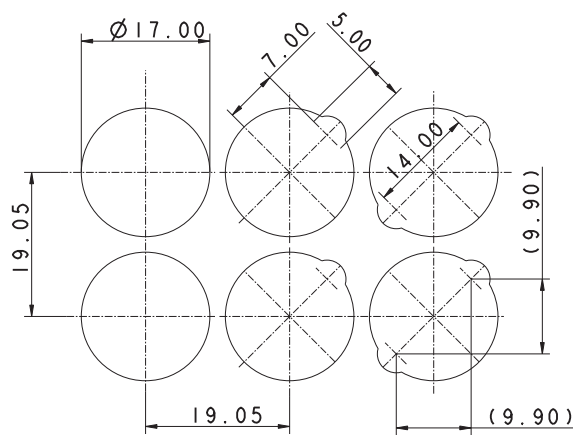
RF 15 N with plunger ø 10 mm, not illuminated



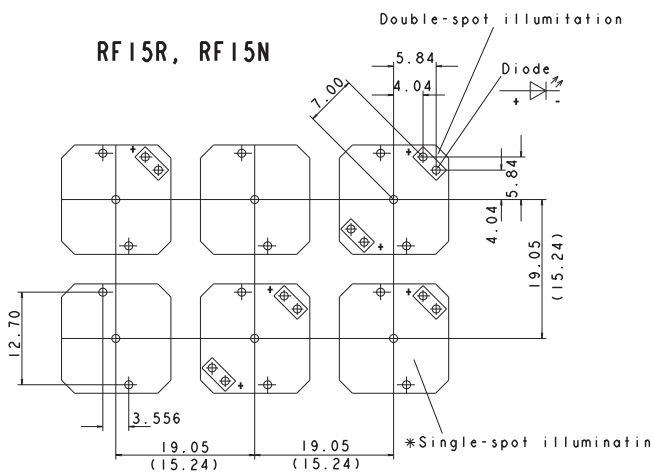
RF 15 N with plunger ø 10 mm, illuminated



RF 15 N with plunger ø 15 mm, illuminated



PCB hole patterns RF 15 N



View on component side,  
all hole diameters  $1.1 \pm 0.1$  mm  
PCB layout switch 1/400" grid

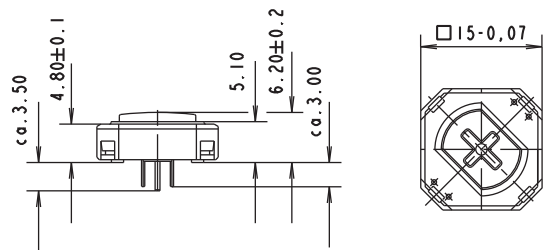
# PCB KEY SWITCHES

RF 15 N - TACTILE SWITCHES



## RF 15 N Tactile switch, non-illuminated

Technical data see page 4 - 62



| → Contact materials | Illumination                                         | Recommended key grid | Overall height | Order no.         |
|---------------------|------------------------------------------------------|----------------------|----------------|-------------------|
| Au                  | external 3 mm LED possible if height more than 12 mm | 19.05 mm             | 6.2 mm         | 3.14.100.601/0000 |
| Ag                  | external 3 mm LED possible if height more than 12 mm | 19.05 mm             | 6.2 mm         | 3.14.100.606/0000 |

For keycaps, refer to RK 90 system design.  
Double-spot LED illumination available on request.

# RF 15 R

## Tactile switches

- The round actuator of the RF 15 R key switch requires round front panel cut-outs. These make it possible to use a narrow keyboard grid of only 15.24 mm with sufficiently large frame webs between the individual keys. We recommend area embossing over the actuators for the overlay.



### Technical Data

#### → General information

|                      |          |
|----------------------|----------|
| Recommended key grid | 15.24 mm |
|----------------------|----------|

#### → Dimensions

|                |                 |
|----------------|-----------------|
| Length         | 15 mm           |
| Width          | 15 mm           |
| Overall height | see order block |

#### → Mechanical design

|                     |                     |
|---------------------|---------------------|
| Mounting            | soldering in PCB    |
| Terminals           | THT                 |
| Contact system      | snap-action contact |
| Contact arrangement | 1 NO                |
| Contact materials   | see order block     |
| Illumination        | see order block     |
| LED color           | see order block     |
| LED type            | see order block     |

#### → Mechanical characteristics

|                      |                               |
|----------------------|-------------------------------|
| Operating force max. | 2.9 <sup>+0.6</sup> N         |
| Switching travel     | 0.5 <sup>+0.2</sup> mm        |
| Robustness max.      | with through-plated PCB 100 N |

#### → Electrical characteristics

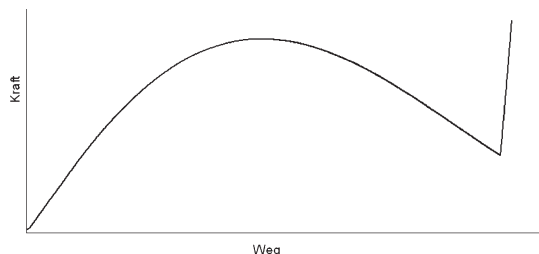
|                                  |                         |
|----------------------------------|-------------------------|
| Rated voltage min.               | Au: 0.02 V, Ag: 3 V     |
| Rated voltage max.               | 35 V                    |
| Rated current min.               | Au: 0.01 mA, Ag: 0.1 mA |
| Rated current max.               | Au: 100 mA, Ag: 250 mA  |
| Rated power max. (ohmic load)    | Au: 2 W, Ag: 12.5 W     |
| Contact resistance when new max. | 100 mΩ                  |
| Insulation resistance            | 10 <sup>9</sup> Ω       |

#### → Other specifications

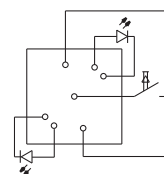
|                                        |                                          |
|----------------------------------------|------------------------------------------|
| Ambient temp. operating min.           | -25 °C                                   |
| Ambient temp. operating max.           | +70 °C                                   |
| Environmental resistance               | acc. to IEC 60068-2-14, -30, -33 and -78 |
| Operating life min. (operations)       | 1,000,000                                |
| Solderability / solder heat resistance | according to DIN EN 60068-2-20           |
| Wave soldering                         | 260 °C max.                              |
| Manual soldering                       | 350 °C / 5 sec. max.                     |
| ROHS compliant                         | yes                                      |
| REACH compliant                        | yes                                      |

## RF 15 R LOW - TACTILE SWITCHES

**Actuating characteristics**  
**Force travel diagram**



Tactile switch,  
non-illuminated



Tactile switch,  
spot-illuminated

Technical drawing illustrating the front mounting of the RF 15R indicator, showing dimensions and components.

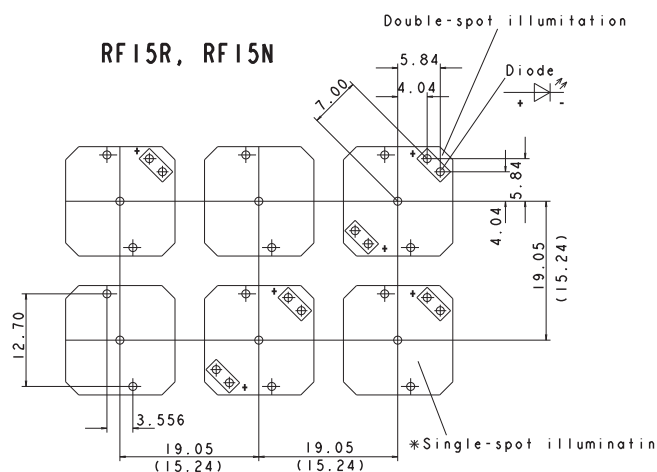
**Dimensions:**

- 1.25 - 1.5 with steel version
- 2 - 3 with aluminium version
- 0.50
- with pressed-in stud M3 min. 5.50
- 9.25  $\pm 0.10$
- 19.05
- 15.24
- 19.05
- $\varnothing 13.00$
- 12.00  $\pm 0.10$

**Components and Labels:**

- Thread stud welded-on with steel version, pressed-in with aluminium version
- RF 15R with high actuator
- RF 15R spot - illuminated
- RF 15R
- RF 15 signal indicator
- PCB
- Overlay
- Front panel
- Sealing
- Housing
- Spacer

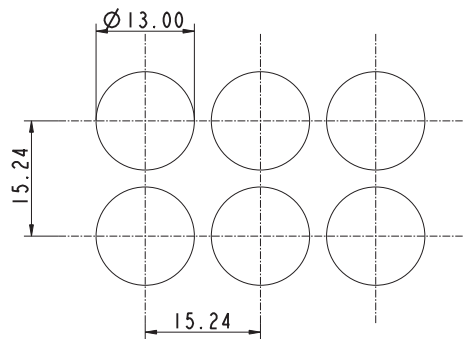
RF 15R, RF 15N



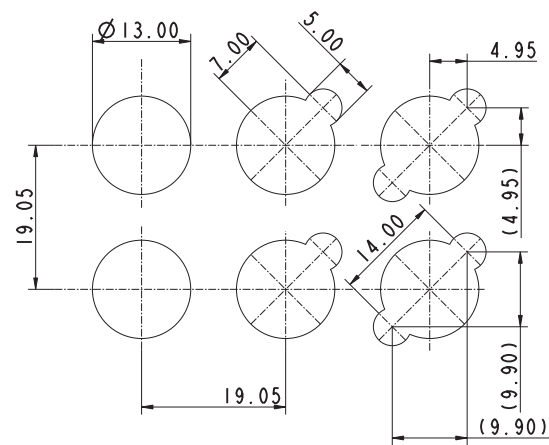
View on component side,  
all hole diameters  $1.1^{+0.1}$  mm  
PCB layout switch 1/400" grid

Hole patterns front panel RF 15 R

RF 15 R, not illuminated



RF 15 R, illuminated



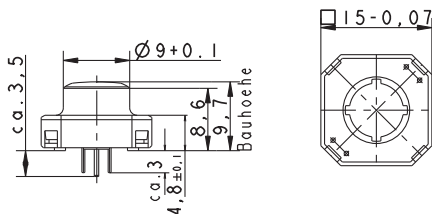
# PCB KEY SWITCHES

RF 15 R LOW - TACTILE SWITCHES



## RF 15 R Low tactile switch, non-illuminated

Technical data see page 4 - 67

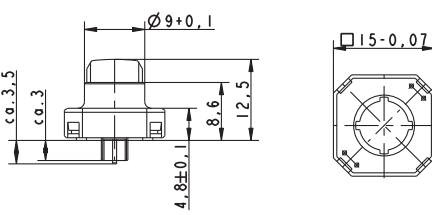


| → Contact materials | Overall height | Illumination    | LED type | LED color | Order no.         |
|---------------------|----------------|-----------------|----------|-----------|-------------------|
| Au                  | 9.7 mm         | not illuminated | -        | -         | 3.14.100.501/0000 |
| Ag                  | 9.7 mm         | not illuminated | -        | -         | 3.14.100.506/0000 |



## RF 15 R High tactile switch, non-illuminated

Technical data see page 4 - 67



| → Contact materials | Overall height | Illumination    | LED type | LED color | Order no.         |
|---------------------|----------------|-----------------|----------|-----------|-------------------|
| Au                  | 12.5 mm        | not illuminated | -        | -         | 3.14.100.801/0000 |
| Ag                  | 12.5 mm        | not illuminated | -        | -         | 3.14.100.806/0000 |

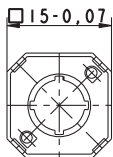
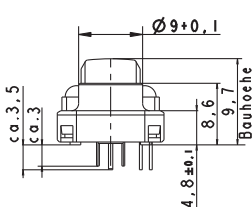
4

RF

RF 15 R

Low tactile switch,  
1 LED spot-illumination

Technical data see page 4 - 67



| → Contact materials | Overall height | Illumination            | LED type | LED color | Order no.         |
|---------------------|----------------|-------------------------|----------|-----------|-------------------|
| Au                  | 9.7 mm         | spot illumination 1 LED | 2 mm     | red       | 3.14.100.531/0000 |
| Au                  | 9.7 mm         | spot illumination 1 LED | 2 mm     | yellow    | 3.14.100.533/0000 |
| Au                  | 9.7 mm         | spot illumination 1 LED | 2 mm     | green     | 3.14.100.532/0000 |
| Ag                  | 9.7 mm         | spot illumination 1 LED | 2 mm     | red       | 3.14.100.541/0000 |
| Ag                  | 9.7 mm         | spot illumination 1 LED | 2 mm     | yellow    | 3.14.100.543/0000 |
| Ag                  | 9.7 mm         | spot illumination 1 LED | 2 mm     | green     | 3.14.100.542/0000 |

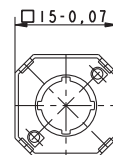
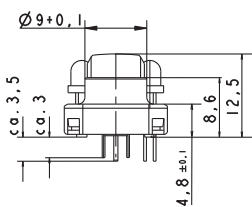
Versions with 2 LEDs available on request.

Technical data of LED see separate page at the beginning of this chapter.

RF 15 R

High tactile switch,  
1 LED spot-illumination

Technical data see page 4 - 67



| → Contact materials | Overall height | Illumination            | LED type | LED color | Order no.         |
|---------------------|----------------|-------------------------|----------|-----------|-------------------|
| Au                  | 12.5 mm        | spot illumination 1 LED | 3 mm     | red       | 3.14.100.831/0000 |
| Au                  | 12.5 mm        | spot illumination 1 LED | 3 mm     | yellow    | 3.14.100.833/0000 |
| Au                  | 12.5 mm        | spot illumination 1 LED | 3 mm     | green     | 3.14.100.832/0000 |

# PCB KEY SWITCHES

RF 15 R LOW - TACTILE SWITCHES

– Table (continued) –  
RF 15 R - High tactile switch, 1 LED spot-illumination

| → Contact materials | Overall height | Illumination            | LED type | LED color | Order no.         |
|---------------------|----------------|-------------------------|----------|-----------|-------------------|
| Au                  | 12.5 mm        | spot illumination 1 LED | 3 mm     | blue      | 3.14.100.830/0000 |

Versions with 2 LEDs available on request.  
Technical data of LED see seperate page at the beginning of the chapter.

## RF 15 H Tactile switches

### → Application notes:

The RF 15 H key has an overall height of 12.5 mm and can be fully illuminated. When designing membrane keyboards, we recommend using a key grid of at least 20 mm and a 0.13 mm overlay with area embossing over the keys.

You can use the O-ring (accessory) to block the key and use it as an indicator field or blank spaceholder.

### Technical Data

#### → General information

|                      |                 |
|----------------------|-----------------|
| Color of lens        | see order block |
| Recommended key grid | 20 mm           |

#### → Dimensions

|                |         |
|----------------|---------|
| Length         | 15 mm   |
| Width          | 15 mm   |
| Overall height | 12.5 mm |

#### → Mechanical design

|                     |                     |
|---------------------|---------------------|
| Mounting            | soldering in PCB    |
| Terminals           | THT                 |
| Contact system      | snap-action contact |
| Contact arrangement | 1 NO                |
| Contact materials   | see order block     |
| Illumination        | see order block     |
| LED color           | see order block     |
| LED type            | see order block     |

#### → Mechanical characteristics

|                      |                               |
|----------------------|-------------------------------|
| Operating force max. | 2.9 <sup>+0.6</sup> N         |
| Switching travel     | 0.5 <sup>+0.2</sup> mm        |
| Robustness max.      | with through-plated PCB 100 N |

#### → Electrical characteristics

|                                  |                         |
|----------------------------------|-------------------------|
| Rated voltage min.               | Au: 0.02 V, Ag: 3 V     |
| Rated voltage max.               | 35 V                    |
| Rated current min.               | Au: 0.01 mA, Ag: 0.1 mA |
| Rated current max.               | Au: 100 mA, Ag: 250 mA  |
| Rated power max. (ohmic load)    | Au: 2 W, Ag: 12.5 W     |
| Contact resistance when new max. | 100 mΩ                  |
| Insulation resistance            | 10 <sup>9</sup> Ω       |

#### → Other specifications

|                                        |                                          |
|----------------------------------------|------------------------------------------|
| Ambient temp. operating min.           | -25 °C                                   |
| Ambient temp. operating max.           | +70 °C                                   |
| Environmental resistance               | acc. to IEC 60068-2-14, -30, -33 and -78 |
| Operating life min. (operations)       | 1,000,000                                |
| Solderability / solder heat resistance | according to DIN EN 60068-2-20           |
| Wave soldering                         | 260 °C max.                              |
| Manual soldering                       | 350 °C / 5 sec. max.                     |
| ROHS compliant                         | yes                                      |
| REACH compliant                        | yes                                      |



# PCB KEY SWITCHES

RF 15 H - TACTILE SWITCHES

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## Accessories RF 15 H - Tactile switch

| → Description                                     | Photo                                                                             | Order no.         | Additional accessories see page |
|---------------------------------------------------|-----------------------------------------------------------------------------------|-------------------|---------------------------------|
| O-ring, black, 16.0 x 1, for blocking RF 19H keys |  | 5.30.125.007/0100 | 5 - 31                          |

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## RF 15 H - TACTILE SWITCHES

## RF

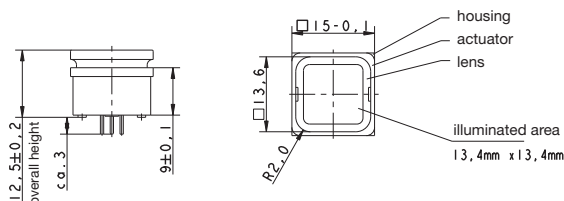
# PCB KEY SWITCHES

RF 15 H - TACTILE SWITCHES



## RF 15 H Tactile switch, non-illuminated

Technical data see page 4 - 73

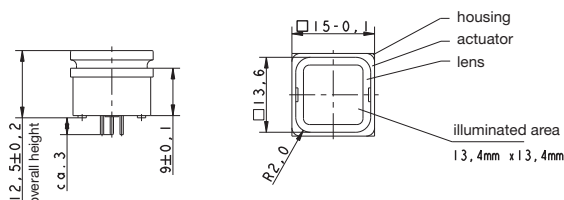


| → Contact materials | Illumination    | Color of lens | LED color | LED type | Order no.         |
|---------------------|-----------------|---------------|-----------|----------|-------------------|
| Au                  | not illuminated | white         | -         | -        | 3.14.100.702/0000 |
| Ag                  | not illuminated | white         | -         | -        | 3.14.100.707/0000 |



## RF 15 H Tactile switch, fully illuminated

Technical data see page 4 - 73



| → Contact materials | Illumination            | Color of lens | LED color          | LED type | Order no.         |
|---------------------|-------------------------|---------------|--------------------|----------|-------------------|
| Au                  | fully illuminated 2 LED | red           | red                | 2 mm     | 3.14.200.731/0000 |
| Au                  | fully illuminated 2 LED | yellow        | yellow             | 2 mm     | 3.14.200.733/0000 |
| Au                  | fully illuminated 2 LED | orange        | yellow             | 2 mm     | 3.14.200.738/0000 |
| Au                  | fully illuminated 1 LED | green         | green super bright | 3 mm     | 3.14.200.736/0000 |
| Au                  | fully illuminated 2 LED | green         | green              | 2 mm     | 3.14.200.732/0000 |
| Au                  | fully illuminated 1 LED | blue          | blue               | 3 mm     | 3.14.200.739/0000 |
| Au                  | fully illuminated 1 LED | white         | white              | 3 mm     | 3.14.200.735/0000 |
| Ag                  | fully illuminated 2 LED | red           | red                | 2 mm     | 3.14.200.741/0000 |
| Ag                  | fully illuminated 2 LED | yellow        | yellow             | 2 mm     | 3.14.200.743/0000 |
| Ag                  | fully illuminated 2 LED | orange        | yellow             | 2 mm     | 3.14.200.748/0000 |
| Ag                  | fully illuminated 1 LED | green         | green super bright | 3 mm     | 3.14.200.746/0000 |

4

RF

– Table (continued) –  
RF 15 H - Tactile switch, fully illuminated

| → Contact materials | Illumination            | Color of lens | LED color | LED type | Order no.         |
|---------------------|-------------------------|---------------|-----------|----------|-------------------|
| Ag                  | fully illuminated 2 LED | green         | green     | 2 mm     | 3.14.200.742/0000 |
| Ag                  | fully illuminated 1 LED | blue          | blue      | 3 mm     | 3.14.200.749/0000 |
| Ag                  | fully illuminated 1 LED | white         | white     | 3 mm     | 3.14.200.745/0000 |

When using the key switches with multicolor LEDs the illumination color can be varied from red to green by change of polarity. Due to the frequency of the polarity-changes the colors red, green, yellow as well as all secondary colors from these are possible.

Technical data of LED see separate page at the beginning of this chapter.



# RF 15

## Signal indicators

### Technical Data

#### → General information

|                      |                 |
|----------------------|-----------------|
| Color of lens        | see order block |
| Recommended key grid | 19.05 mm        |

#### → Dimensions

|                |         |
|----------------|---------|
| Length         | 15 mm   |
| Width          | 15 mm   |
| Overall height | 9.15 mm |

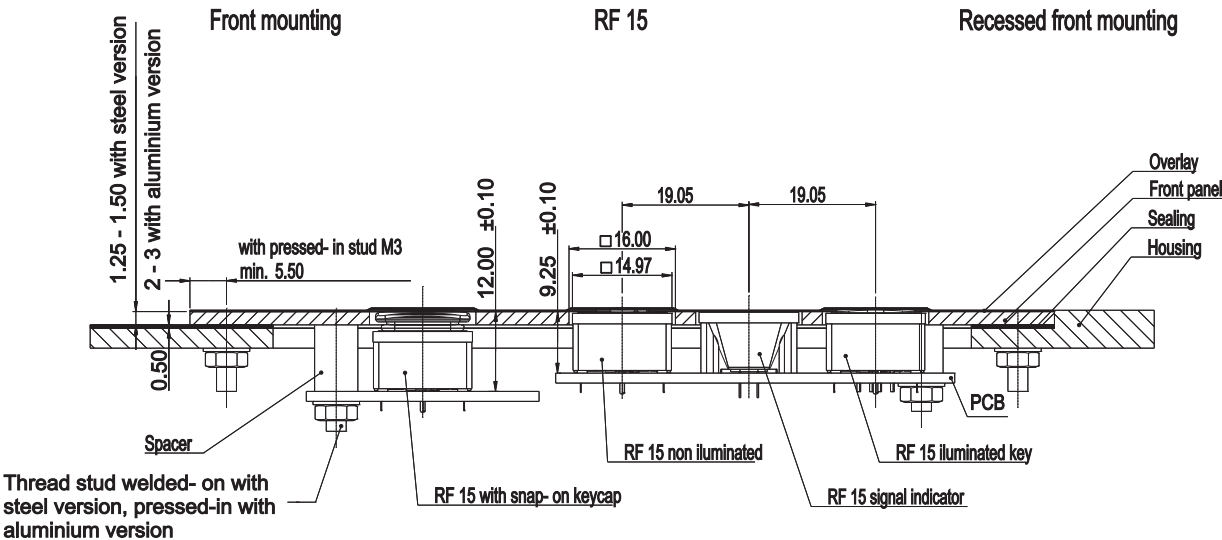
#### → Mechanical design

|              |                         |
|--------------|-------------------------|
| Mounting     | THT soldering in PCB    |
| Illumination | fully illuminated 1 LED |
| LED color    | see order block         |
| LED type     | 2 mm                    |

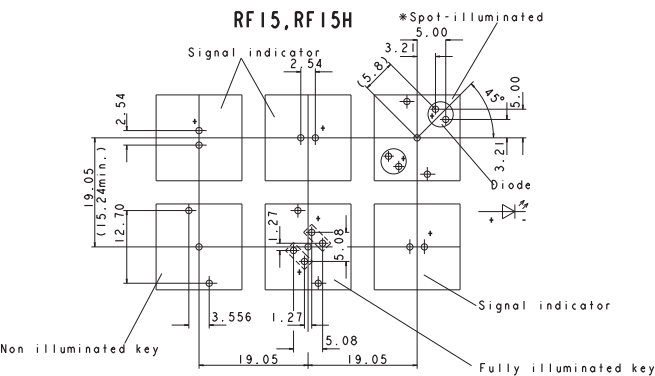
#### → Other specifications

|                                        |                                          |
|----------------------------------------|------------------------------------------|
| Ambient temp. operating min.           | -25 °C                                   |
| Ambient temp. operating max.           | +70 °C                                   |
| Environmental resistance               | acc. to IEC 60068-2-14, -30, -33 and -78 |
| Solderability / solder heat resistance | according to DIN EN 60068-2-20           |
| Wave soldering                         | 260 °C max.                              |
| Manual soldering                       | 350 °C / 5 sec. max.                     |
| ROHS compliant                         | yes                                      |
| REACH compliant                        | yes                                      |

## System assembly RF 15 signal indicator

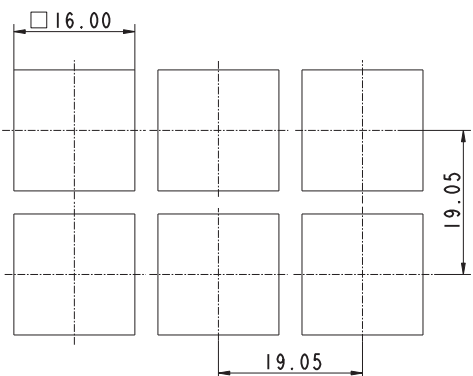


## PCB hole patterns RF 15



View on component side, all hole diameters 1.1 $\pm 0.1$  mm

## Hole patterns front panel RF 15



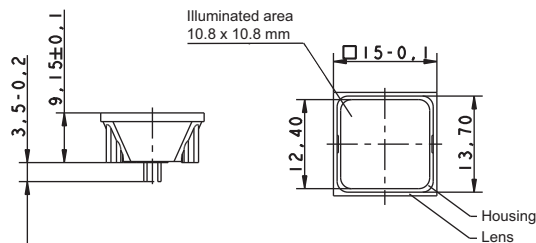
# PCB KEY SWITCHES

RF 15 - SIGNAL INDICATORS



## RF 15 Signal indicator, fully illuminated, 1 LED

Technical data see page 4 - 78



| → Overall height | Illumination            | Color of lens | LED color | LED type | Order no.         |
|------------------|-------------------------|---------------|-----------|----------|-------------------|
| 9.15 mm          | fully illuminated 1 LED | red           | red       | 2 mm     | 3.14.200.051/0000 |
| 9.15 mm          | fully illuminated 1 LED | yellow        | yellow    | 2 mm     | 3.14.200.053/0000 |
| 9.15 mm          | fully illuminated 1 LED | orange        | yellow    | 2 mm     | 3.14.200.054/0000 |
| 9.15 mm          | fully illuminated 1 LED | green         | green     | 2 mm     | 3.14.200.052/0000 |
| 9.15 mm          | fully illuminated 1 LED | blue          | blue      | 2 mm     | 3.14.200.055/0000 |

Technical data of LED see separate page at the beginning of chapter 4 PCB Key switches.

# RF 19

## Tactile switches

### → Application notes:

RF 19 keys offer a large actuation area. When designing low-profile key-boards with a grid of  $\geq 23$  mm, frame webs remain free between the individual keys.

The overlay can be glued onto these frame webs; we recommend area embossing over the keys for the overlay.



### Technical Data

#### → General information

|                      |                 |
|----------------------|-----------------|
| Color of lens        | see order block |
| Recommended key grid | 23 mm           |

#### → Dimensions

|                |          |
|----------------|----------|
| Length         | 19.05 mm |
| Width          | 19.05 mm |
| Overall height | 9.7 mm   |

#### → Mechanical design

|                     |                     |
|---------------------|---------------------|
| Mounting            | soldering in PCB    |
| Terminals           | THT                 |
| Contact system      | snap-action contact |
| Contact arrangement | 1 NO                |
| Contact materials   | see order block     |
| Illumination        | see order block     |
| LED color           | see order block     |
| LED type            | see order block     |

#### → Mechanical characteristics

|                      |                               |
|----------------------|-------------------------------|
| Operating force max. | 2.9 <sup>+0.6</sup> N         |
| Switching travel     | 0.5 <sup>+0.2</sup> mm        |
| Robustness max.      | with through-plated PCB 100 N |

#### → Electrical characteristics

|                                  |                         |
|----------------------------------|-------------------------|
| Rated voltage min.               | Au: 0.02 V, Ag: 3 V     |
| Rated voltage max.               | 35 V                    |
| Rated current min.               | Au: 0.01 mA, Ag: 0.1 mA |
| Rated current max.               | Au: 100 mA, Ag: 250 mA  |
| Rated power max. (ohmic load)    | Au: 2 W, Ag: 12.5 W     |
| Contact resistance when new max. | 100 mΩ                  |
| Insulation resistance            | 10 <sup>9</sup> Ω       |

#### → Other specifications

|                                        |                                          |
|----------------------------------------|------------------------------------------|
| Ambient temp. operating min.           | -25 °C                                   |
| Ambient temp. operating max.           | +70 °C                                   |
| Environmental resistance               | acc. to IEC 60068-2-14, -30, -33 and -78 |
| Operating life min. (operations)       | 1,000,000                                |
| Solderability / solder heat resistance | according to DIN EN 60068-2-20           |
| Wave soldering                         | 260 °C max.                              |
| Manual soldering                       | 350 °C / 5 sec. max.                     |
| ROHS compliant                         | yes                                      |
| REACH compliant                        | yes                                      |

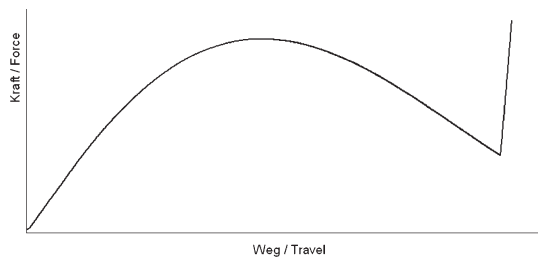


# PCB KEY SWITCHES

RF 19 - TACTILE SWITCHES

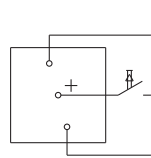
## Typical force travel diagram RF 19

Actuating characteristics  
Force travel diagram

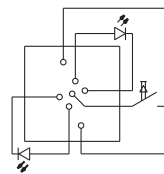


## Circuit diagrams RF 19

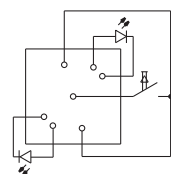
Hole patterns (view on component side)



Tactile switch,  
non-illuminated

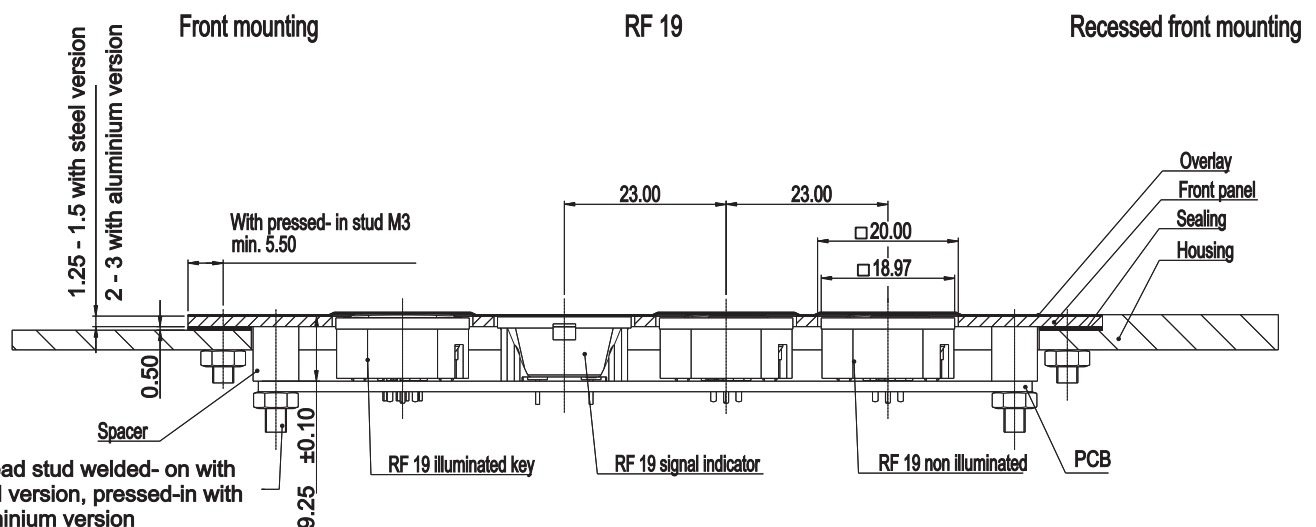


Tactile switch,  
fully-illuminated



Tactile switch,  
spot-illuminated

## System assembly RF 19

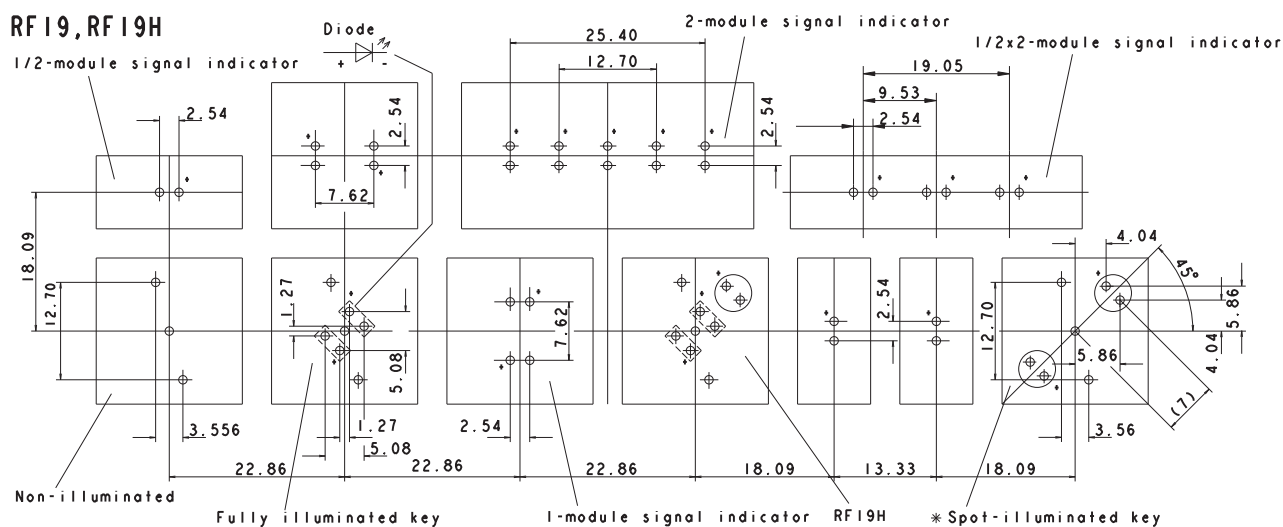


4

Thread stud welded-on with steel version, pressed-in with aluminium version

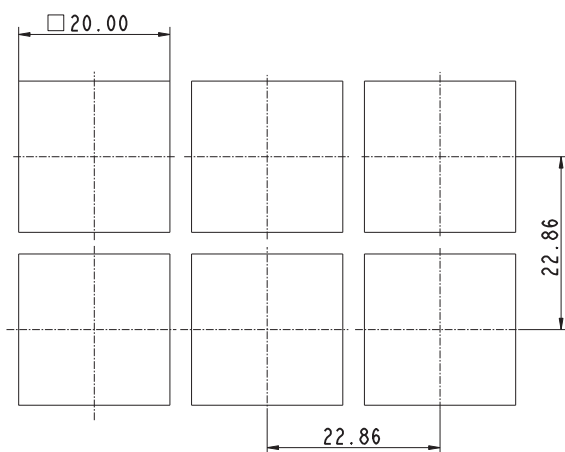
RF

## PCB hole patterns RF 19



\* The LED may be positioned either on the left-hand or right-hand side.  
Standard version: LED on left-hand side  
View on component side, all hole diameters  $1.1^{+0.1}$  mm

## Hole patterns front panel RF 19



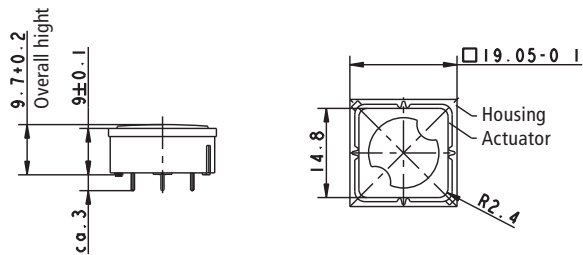
# PCB KEY SWITCHES

RF 19 - TACTILE SWITCHES



## RF 19 Tactile switch, non-illuminated

Technical data see page 4 - 81

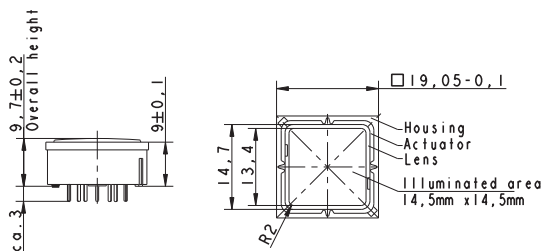


| → Contact materials | Illumination    | Color of lens | LED color | LED type | Order no.         |
|---------------------|-----------------|---------------|-----------|----------|-------------------|
| Au                  | not illuminated | transparent   | -         | -        | 3.14.001.001/0000 |
| Ag                  | not illuminated | transparent   | -         | -        | 3.14.001.006/0000 |



## RF 19 Tactile switch, fully illuminated with 2 LED

Technical data see page 4 - 81



| → Contact materials | Illumination            | Color of lens | LED color | LED type | Order no.         |
|---------------------|-------------------------|---------------|-----------|----------|-------------------|
| Au                  | fully illuminated 2 LED | red           | red       | 2 mm     | 3.14.002.011/0000 |
| Au                  | fully illuminated 2 LED | yellow        | yellow    | 2 mm     | 3.14.002.013/0000 |
| Au                  | fully illuminated 2 LED | orange        | yellow    | 2 mm     | 3.14.002.014/0000 |
| Au                  | fully illuminated 2 LED | green         | green     | 2 mm     | 3.14.002.012/0000 |
| Au                  | fully illuminated 2 LED | blue          | blue      | 2 mm     | 3.14.002.015/0000 |
| Au                  | fully illuminated 2 LED | opaque white  | green     | 2 mm     | 3.14.002.901/0000 |
| Ag                  | fully illuminated 2 LED | red           | red       | 2 mm     | 3.14.002.021/0000 |
| Ag                  | fully illuminated 2 LED | yellow        | yellow    | 2 mm     | 3.14.002.023/0000 |
| Ag                  | fully illuminated 2 LED | orange        | yellow    | 2 mm     | 3.14.002.024/0000 |
| Ag                  | fully illuminated 2 LED | green         | green     | 2 mm     | 3.14.002.022/0000 |

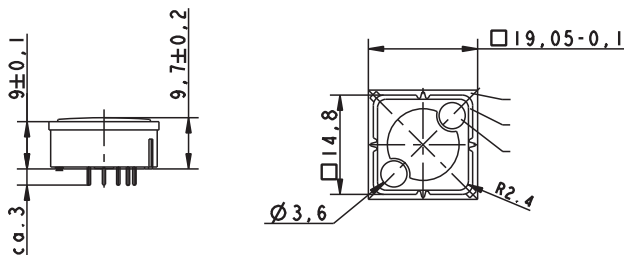
– Table (continued) –  
RF 19 - Tactile switch, fully illuminated with 2 LED

| → Contact materials | Illumination            | Color of lens | LED color | LED type | Order no.         |
|---------------------|-------------------------|---------------|-----------|----------|-------------------|
| Ag                  | fully illuminated 2 LED | blue          | blue      | 2 mm     | 3.14.002.025/0000 |
| Ag                  | fully illuminated 2 LED | white         | yellow    | 2 mm     | 3.14.002.027/0000 |
| Ag                  | fully illuminated 2 LED | white         | green     | 2 mm     | 3.14.002.026/0000 |
| Ag                  | fully illuminated 2 LED | opaque white  | green     | 2 mm     | 3.14.002.944/0000 |

Technical data of LED see separate page at the beginning of this chapter.

## RF 19 Tactile switch, 1 LED spot-illumination

Technical data see page 4 - 81



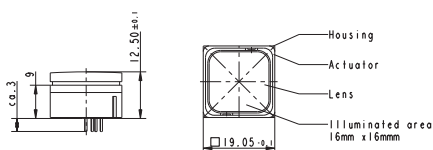
| → Contact materials | Illumination            | Color of lens | LED color | LED type | Order no.         |
|---------------------|-------------------------|---------------|-----------|----------|-------------------|
| Au                  | spot illumination 1 LED | transparent   | red       | 3 mm     | 3.14.001.031/0000 |
| Au                  | spot illumination 1 LED | transparent   | yellow    | 3 mm     | 3.14.001.033/0000 |
| Au                  | spot illumination 1 LED | transparent   | green     | 3 mm     | 3.14.001.032/0000 |
| Au                  | spot illumination 1 LED | opaque white  | blue      | 3 mm     | 3.14.001.030/0000 |
| Ag                  | spot illumination 1 LED | transparent   | red       | 3 mm     | 3.14.001.041/0000 |
| Ag                  | spot illumination 1 LED | transparent   | yellow    | 3 mm     | 3.14.001.043/0000 |
| Ag                  | spot illumination 1 LED | transparent   | green     | 3 mm     | 3.14.001.042/0000 |
| Ag                  | spot illumination 1 LED | transparent   | blue      | 3 mm     | 3.14.001.040/0000 |

Versions with 2 LEDs available on request.

Technical data of LED see separate page at the beginning of this chapter.

# PCB KEY SWITCHES

RF 19 H - TACTILE SWITCHES



## RF 19 H Tactile switches

### → Application notes:

The RF 19H key has an overall height of 12.5 mm and can be fully illuminated. When designing membrane keyboards, we recommend using a key grid of at least 24 mm and a 0.13 mm overlay with area embossing over the keys.

You can use the O-ring (accessory) to block the key and use it as an indicator field or blank spaceholder.

### Technical Data

#### → General information

|                      |                 |
|----------------------|-----------------|
| Color of lens        | see order block |
| Recommended key grid | 24 mm           |

#### → Dimensions

|                |          |
|----------------|----------|
| Length         | 19.05 mm |
| Width          | 19.05 mm |
| Overall height | 12.5 mm  |

#### → Mechanical design

|                     |                     |
|---------------------|---------------------|
| Mounting            | soldering in PCB    |
| Terminals           | THT                 |
| Contact system      | snap-action contact |
| Contact arrangement | 1 NO                |
| Contact materials   | see order block     |
| Illumination        | see order block     |
| LED color           | see order block     |
| LED type            | see order block     |

#### → Mechanical characteristics

|                      |                               |
|----------------------|-------------------------------|
| Operating force max. | 2.9 <sup>+0.6</sup> N         |
| Switching travel     | 0.5 <sup>+0.2</sup> mm        |
| Robustness max.      | with through-plated PCB 100 N |

#### → Electrical characteristics

|                                  |                         |
|----------------------------------|-------------------------|
| Rated voltage min.               | Au: 0.02 V, Ag: 3 V     |
| Rated voltage max.               | 35 V                    |
| Rated current min.               | Au: 0.01 mA, Ag: 0.1 mA |
| Rated current max.               | Au: 100 mA, Ag: 250 mA  |
| Rated power max. (ohmic load)    | Au: 2 W, Ag: 12.5 W     |
| Contact resistance when new max. | 100 mΩ                  |
| Insulation resistance            | 10 <sup>9</sup> Ω       |

#### → Other specifications

|                                        |                                          |
|----------------------------------------|------------------------------------------|
| Ambient temp. operating min.           | -25 °C                                   |
| Ambient temp. operating max.           | +70 °C                                   |
| Environmental resistance               | acc. to IEC 60068-2-14, -30, -33 and -78 |
| Operating life min. (operations)       | 1,000,000                                |
| Solderability / solder heat resistance | according to DIN EN 60068-2-20           |
| Wave soldering                         | 260 °C max.                              |
| Manual soldering                       | 350 °C / 5 sec. max.                     |
| ROHS compliant                         | yes                                      |
| REACH compliant                        | yes                                      |

Accessories RF 19 H - Tactile switch

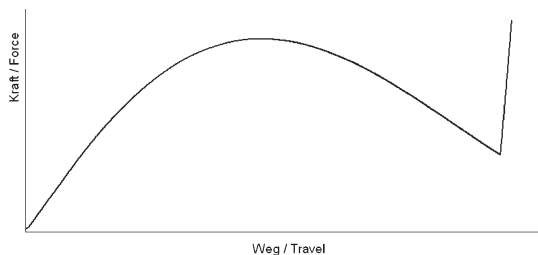
| → Description                                     | Photo                                                                             | Order no.         | Additional accessories see page |
|---------------------------------------------------|-----------------------------------------------------------------------------------|-------------------|---------------------------------|
| O-ring, black, 16.0 x 1, for blocking RF 19H keys |  | 5.30.125.007/0100 | 5 - 31                          |

# PCB KEY SWITCHES

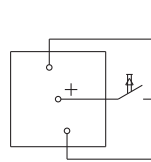
RF 19 H - TACTILE SWITCHES

## Typical force travel diagram RF 19 H

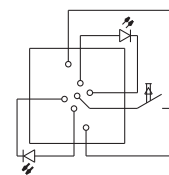
Actuating characteristics  
Force travel diagram



## Circuit diagrams RF 19 H

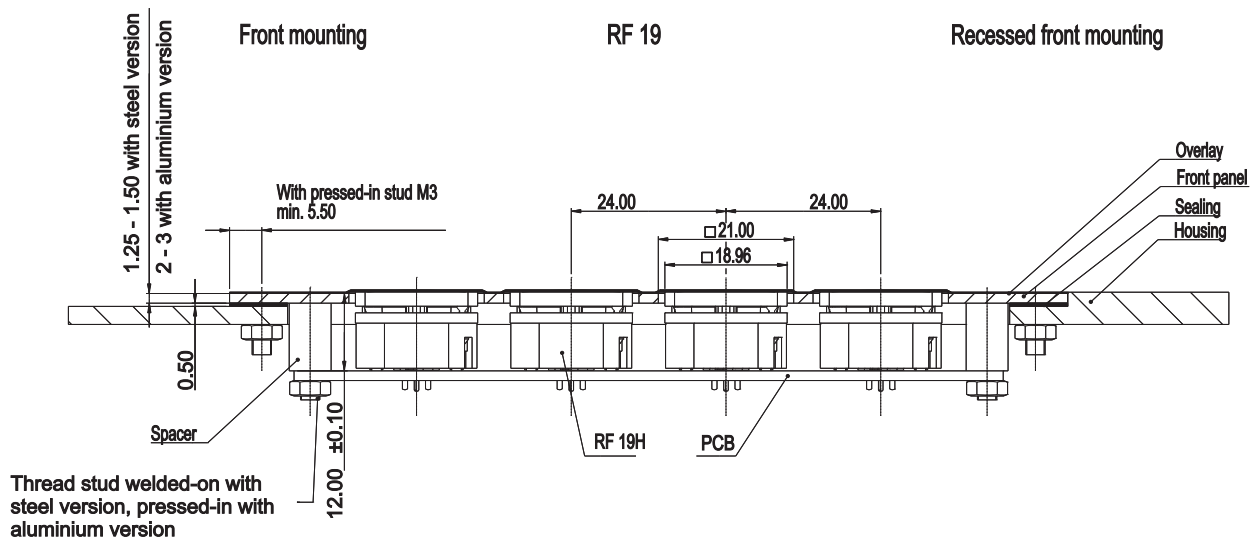


Tactile switch,  
non-illuminated

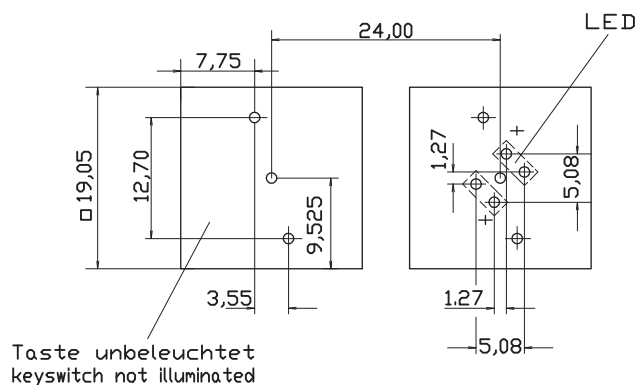


Tactile switch,  
fully-illuminated

## System assembly RF 19 H

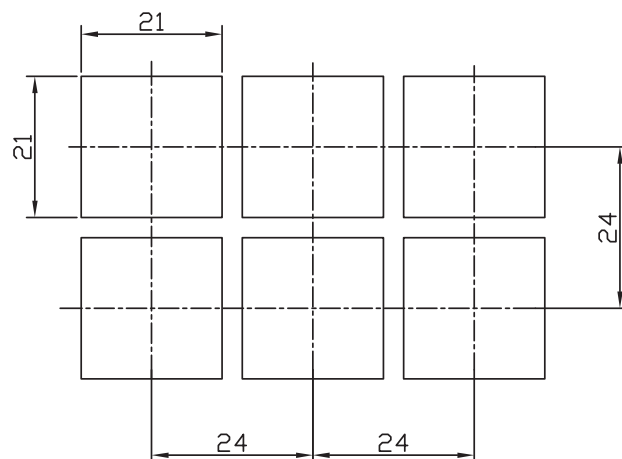


## PCB hole patterns RF 19 H



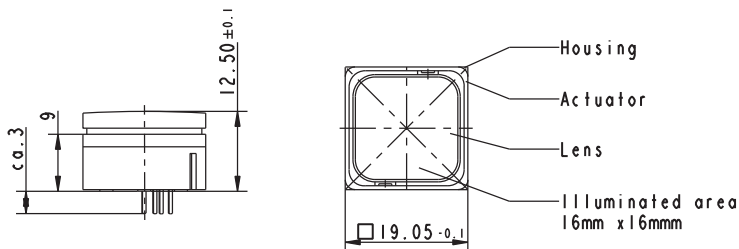
View on component side, all hole diameters  $1.1 \pm 0.1$  mm

## Hole patterns front panel RF 19 H



## RF 19 H Tactile switch, non-illuminated

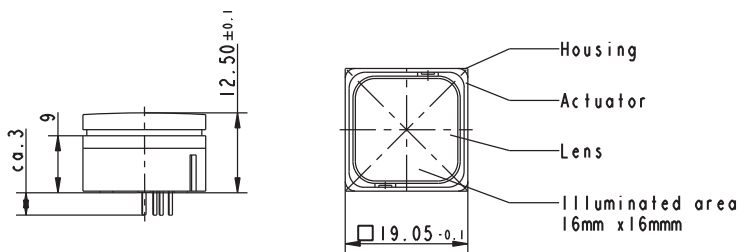
Technical data see page 4 - 86



| → Contact materials | Illumination    | Color of lens | LED color | LED type | Order no.         |
|---------------------|-----------------|---------------|-----------|----------|-------------------|
| Au                  | not illuminated | white         | -         | -        | 3.14.001.501/0000 |
| Ag                  | not illuminated | white         | -         | -        | 3.14.001.506/0000 |

## RF 19 H Tactile switch, fully illuminated

Technical data see page 4 - 86



| → Contact materials | Illumination            | Color of lens | LED color          | LED type | Order no.         |
|---------------------|-------------------------|---------------|--------------------|----------|-------------------|
| Au                  | fully illuminated 2 LED | red           | red                | 2 mm     | 3.14.002.613/0000 |
| Au                  | fully illuminated 2 LED | yellow        | yellow             | 2 mm     | 3.14.002.653/0000 |
| Au                  | fully illuminated 2 LED | orange        | yellow             | 2 mm     | 3.14.002.673/0000 |
| Au                  | fully illuminated 1 LED | green         | green super bright | 3 mm     | 3.14.002.633/0000 |
| Au                  | fully illuminated 2 LED | green         | green              | 2 mm     | 3.14.002.632/0000 |
| Au                  | fully illuminated 1 LED | blue          | blue               | 3 mm     | 3.14.002.683/0000 |
| Au                  | fully illuminated 1 LED | white         | white              | 3 mm     | 3.14.002.684/0000 |
| Ag                  | fully illuminated 2 LED | red           | red                | 2 mm     | 3.14.002.623/0000 |
| Ag                  | fully illuminated 2 LED | yellow        | yellow             | 2 mm     | 3.14.002.663/0000 |
| Ag                  | fully illuminated 2 LED | orange        | yellow             | 2 mm     | 3.14.002.678/0000 |
| Ag                  | fully illuminated 1 LED | green         | green super bright | 3 mm     | 3.14.002.643/0000 |

# PCB KEY SWITCHES

## RF 19 H - TACTILE SWITCHES

– Table (continued) –

RF 19 H - Tactile switch, fully illuminated

| → Contact materials | Illumination            | Color of lens | LED color | LED type | Order no.         |
|---------------------|-------------------------|---------------|-----------|----------|-------------------|
| Ag                  | fully illuminated 2 LED | green         | green     | 2 mm     | 3.14.002.642/0000 |
| Ag                  | fully illuminated 1 LED | blue          | blue      | 3 mm     | 3.14.002.688/0000 |
| Ag                  | fully illuminated 1 LED | white         | white     | 3 mm     | 3.14.002.689/0000 |

When using the key switches with multicolor LEDs the illumination color can be varied from red to green by change of polarity. Due to the frequency of the polarity-changes the colors red, green, yellow as well as all secondary colors from these are possible.

Technical data of LED see separate page at the beginning of this chapter.

## RF 19 Signal indicators

### Technical Data

#### → General information

|                      |                 |
|----------------------|-----------------|
| Color of lens        | see order block |
| Recommended key grid | 23/x mm         |

#### → Dimensions

|                |                 |
|----------------|-----------------|
| Length         | see order block |
| Width          | see order block |
| Overall height | 9.15 mm         |

#### → Mechanical design

|              |                      |
|--------------|----------------------|
| Mounting     | THT soldering in PCB |
| Illumination | see order block      |
| LED color    | see order block      |
| LED type     | see order block      |

#### → Other specifications

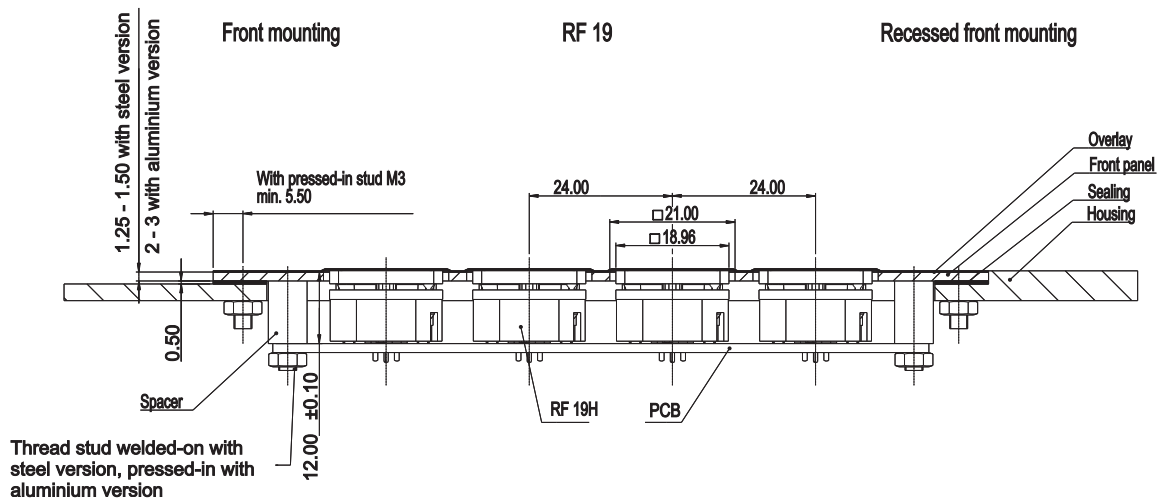
|                                        |                                          |
|----------------------------------------|------------------------------------------|
| Ambient temp. operating min.           | -25 °C                                   |
| Ambient temp. operating max.           | +70 °C                                   |
| Environmental resistance               | acc. to IEC 60068-2-14, -30, -33 and -78 |
| Solderability / solder heat resistance | according to DIN EN 60068-2-20           |
| Wave soldering                         | 260 °C max.                              |
| Manual soldering                       | 350 °C / 5 sec. max.                     |
| ROHS compliant                         | yes                                      |
| REACH compliant                        | yes                                      |



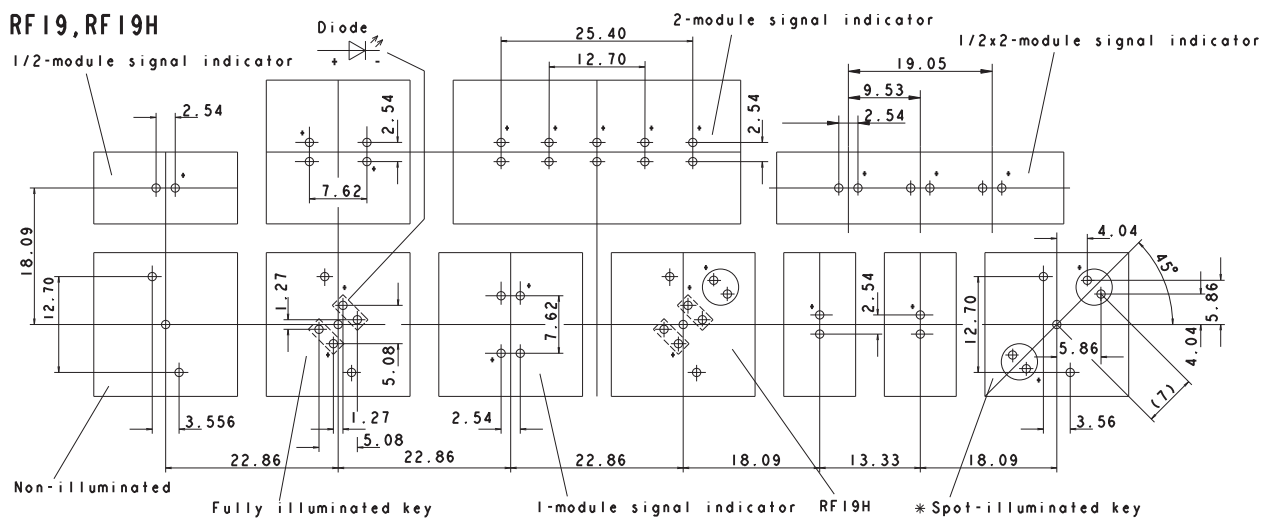
# PCB KEY SWITCHES

RF 19 - SIGNAL INDICATORS

## System assembly RF 19 signal indicator



## PCB hole pattern RF 19



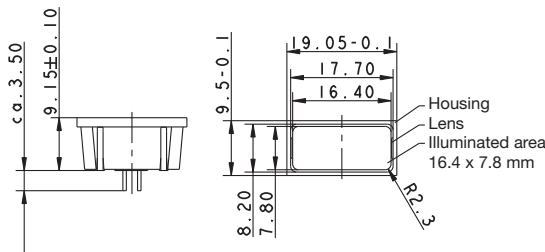
\* The LED may be positioned either on the left-hand or right-hand side.  
Standard version: LED on left-hand side  
View on component side, all hole diameters  $1.1 \pm 0.1$  mm

Hole patterns front panel = size of indicator + 1 mm

RF

## RF 19 Signal indicator, ½ x 1-module

Technical data see page 4 - 91

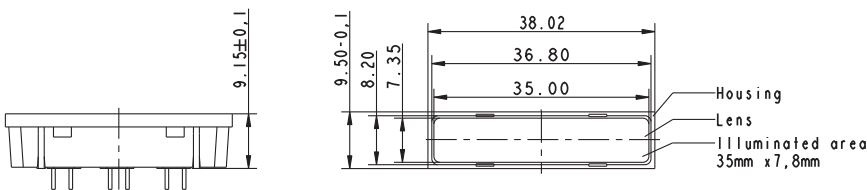


| → Illumination          | Color of lens | LED color | LED type | Order no.         |
|-------------------------|---------------|-----------|----------|-------------------|
| fully illuminated 1 LED | red           | red       | 2 mm     | 3.14.002.061/0000 |
| fully illuminated 1 LED | yellow        | yellow    | 2 mm     | 3.14.002.063/0000 |
| fully illuminated 1 LED | orange        | yellow    | 2 mm     | 3.14.002.064/0000 |
| fully illuminated 1 LED | green         | green     | 2 mm     | 3.14.002.062/0000 |

Technical data of LED see separate page at the beginning of chapter 4 PCB Key switches.

## RF 19 Signal indicator, ½ x 2-module

Technical data see page 4 - 91



| → Illumination          | Color of lens | LED color | LED type | Order no.         |
|-------------------------|---------------|-----------|----------|-------------------|
| fully illuminated 3 LED | red           | red       | 2 mm     | 3.14.002.908/0000 |
| fully illuminated 3 LED | yellow        | yellow    | 2 mm     | 3.14.002.910/0000 |
| fully illuminated 3 LED | orange        | yellow    | 2 mm     | 3.14.002.911/0000 |
| fully illuminated 3 LED | green         | green     | 2 mm     | 3.14.002.909/0000 |

Technical data of LED see separate page at the beginning of chapter 4 PCB Key switches.

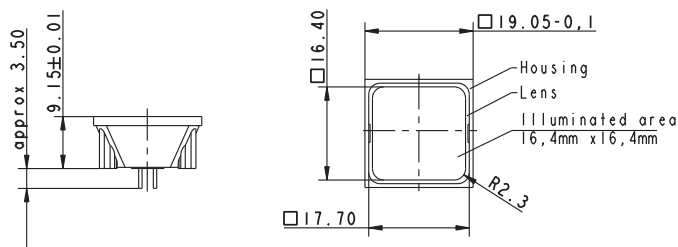
# PCB KEY SWITCHES

RF 19 - SIGNAL INDICATORS



## RF 19 Signal indicator, 1 x 1-module

Technical data see page 4 - 91



| → Illumination          | Color of lens | LED color | LED type | Order no.         |
|-------------------------|---------------|-----------|----------|-------------------|
| fully illuminated 2 LED | red           | red       | 2 mm     | 3.14.002.051/0000 |
| fully illuminated 2 LED | yellow        | yellow    | 2 mm     | 3.14.002.053/0000 |
| fully illuminated 2 LED | orange        | yellow    | 2 mm     | 3.14.002.054/0000 |
| fully illuminated 2 LED | green         | green     | 2 mm     | 3.14.002.052/0000 |
| fully illuminated 2 LED | blue          | blue      | 2 mm     | 3.14.001.659/0000 |

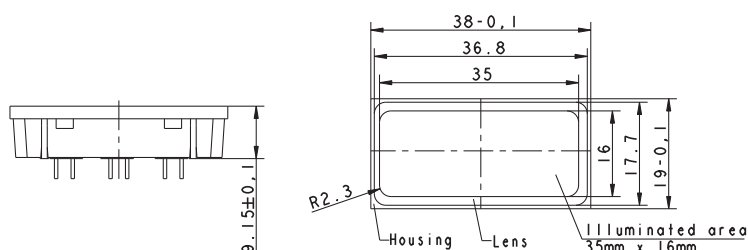
For technical data of the LED see separate page at the beginning of chapter „RF tactile switches“

Suitable for RK 90 system design, illuminated for 2-module keycap.



## RF 19 Signal indicator, 1 x 2-module

Technical data see page 4 - 91



| → Illumination          | Color of lens | LED color | LED type | Order no.         |
|-------------------------|---------------|-----------|----------|-------------------|
| fully illuminated 5 LED | red           | red       | 2 mm     | 3.14.002.071/0000 |
| fully illuminated 5 LED | yellow        | yellow    | 2 mm     | 3.14.002.073/0000 |
| fully illuminated 5 LED | orange        | yellow    | 2 mm     | 3.14.002.074/0000 |
| fully illuminated 5 LED | green         | green     | 2 mm     | 3.14.002.072/0000 |

For technical data of the LED see separate page at the beginning of chapter „RF tactile switches“

4

RF

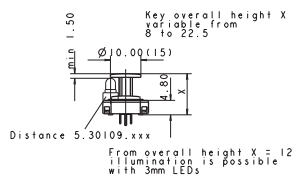
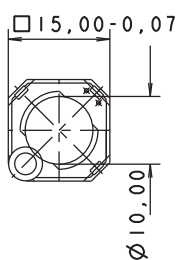
# RF 15/19

## Special accessories



### RF 15 N

#### Extension plunger, round head



| → Length | Width | Overall height | Diameter | Color | Order no.         |
|----------|-------|----------------|----------|-------|-------------------|
|          | -     | 9 mm           | 10 mm    | -     | 5.46.011.036/0710 |
|          | -     | 9.7 mm         | 10 mm    | -     | 5.46.011.030/0710 |
|          | -     | 12.5 mm        | 10 mm    | -     | 5.46.011.037/0710 |
|          | -     | 13 mm          | 10 mm    | -     | 5.46.011.038/0710 |
|          | -     | 22.5 mm        | 10 mm    | -     | 5.46.011.028/0710 |

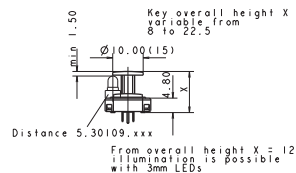
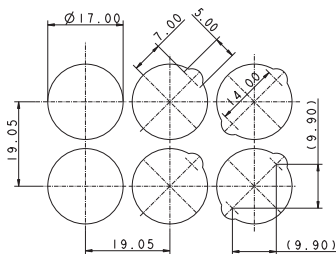
Length of plunger = Overall height - 4.25 mm.

# PCB KEY SWITCHES

RF 15/19 - SPECIAL ACCESSORIES



## RF 15 N Extension plunger, round head, with recess for LED

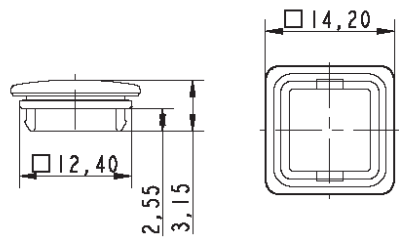


| → Length | Width | Overall height | Diameter | Color | Order no.         |
|----------|-------|----------------|----------|-------|-------------------|
|          | -     | 9 mm           | 15 mm    | -     | 5.46.017.036/0710 |
|          | -     | 9.7 mm         | 15 mm    | -     | 5.46.017.030/0710 |
|          | -     | 12.5 mm        | 15 mm    | -     | 5.46.017.037/0710 |
|          | -     | 22.5 mm        | 15 mm    | -     | 5.46.017.028/0710 |
|          | -     | 13 mm          | 15 mm    | -     | 5.46.017.038/0710 |

Length of plunger = Overall height - 4.25 mm.

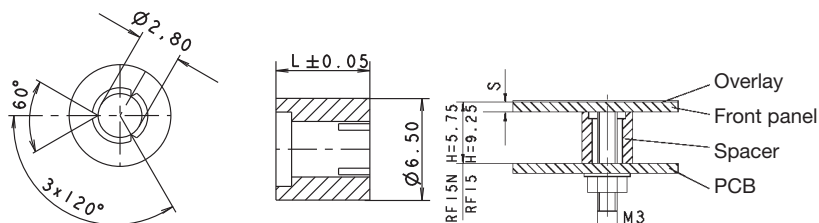


## RF 15 Keycap, snap-on, for overall height 12.5 mm



| → Length | Width   | Overall height | Diameter | Color | Order no.         |
|----------|---------|----------------|----------|-------|-------------------|
| 14.2 mm  | 14.2 mm | 12.5 mm        | -        | beige | 5.46.654.059/0227 |

## Spacer, round



| → Length L | Color                     | Order no.         |
|------------|---------------------------|-------------------|
| 3.50 mm    | blue transparent          | 5.30.759.023/0000 |
| 4.75 mm    | blue transparent          | 5.30.759.028/0000 |
| 5.25 mm    | yellow orange transparent | 5.30.759.030/0000 |
| 4.50 mm    | red                       | 5.30.759.027/0000 |
| 5.50 mm    | yellow                    | 5.30.759.031/0000 |
| 4 mm       | green                     | 5.30.759.025/0000 |
| 5.75 mm    | green                     | 5.30.759.032/0000 |
| 4.25 mm    | blue                      | 5.30.759.026/0000 |
| 6 mm       | blue                      | 5.30.759.033/0000 |
| 6.2 mm     | blue                      | 5.30.759.251/0000 |
| 5 mm       | black                     | 5.30.759.029/0000 |
| 10.00 mm   | black                     | 5.30.759.043/0104 |
| 6.25 mm    | red                       | 5.30.759.034/0000 |
| 6.50 mm    | blue transparent          | 5.30.759.035/0000 |
| 6.75 mm    | black                     | 5.30.759.036/0000 |
| 7 mm       | yellow orange transparent | 5.30.759.037/0000 |
| 7.25 mm    | yellow                    | 5.30.759.038/0000 |
| 7.50 mm    | green                     | 5.30.759.039/0000 |
| 7.75 mm    | blue                      | 5.30.759.040/0000 |
| 8 mm       | red                       | 5.30.759.041/0000 |
| 8.25 mm    | blue transparent          | 5.30.759.042/0000 |

### Required spacer length

For keyboards: Overall height of key - front panel thickness - 0.5 mm (area embossing).

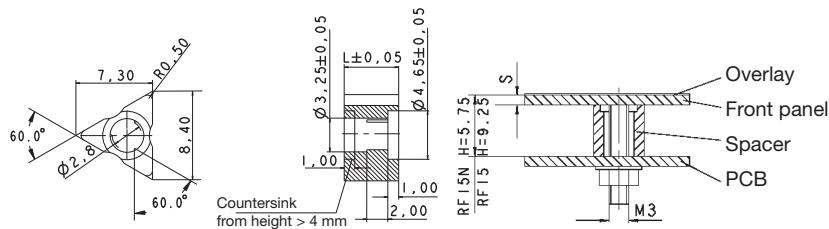
For RAFIX 22 FS: 9.25 mm - front panel thickness - thickness of overlay, if existing

# PCB KEY SWITCHES

RF 15/19 - SPECIAL ACCESSORIES



## Spacer, triangular



triangular version

| → Length L | Order no.         |
|------------|-------------------|
| 2.50 mm    | 5.30.759.094/0000 |
| 2.75 mm    | 5.30.759.095/0000 |
| 3 mm       | 5.30.759.096/0000 |
| 3.25 mm    | 5.30.759.097/0000 |
| 3.50 mm    | 5.30.759.098/0000 |
| 3.75 mm    | 5.30.759.099/0000 |
| 4 mm       | 5.30.759.100/0000 |
| 4.25 mm    | 5.30.759.101/0000 |
| 4.50 mm    | 5.30.759.102/0000 |
| 4.75 mm    | 5.30.759.103/0000 |
| 5 mm       | 5.30.759.104/0000 |
| 5.25 mm    | 5.30.759.105/0000 |
| 5.50 mm    | 5.30.759.106/0000 |
| 5.75 mm    | 5.30.759.107/0000 |
| 6 mm       | 5.30.759.108/0000 |
| 6.2 mm     | 5.30.759.253/0000 |
| 10.00 mm   | 5.30.759.124/0000 |
| 10.25 mm   | 5.30.759.125/0000 |
| 6.25 mm    | 5.30.759.109/0000 |
| 6.50 mm    | 5.30.759.110/0000 |
| 6.75 mm    | 5.30.759.111/0000 |
| 7 mm       | 5.30.759.112/0000 |
| 7.25 mm    | 5.30.759.113/0000 |
| 7.50 mm    | 5.30.759.114/0000 |
| 7.75 mm    | 5.30.759.115/0000 |
| 8 mm       | 5.30.759.116/0000 |
| 8.25 mm    | 5.30.759.117/0000 |
| 9 mm       | 5.30.759.254/0000 |

– Table (continued) –  
Spacers, triangular

Required spacer length = Overall height of key - front panel thickness - 0.5 mm (area embossing).

RF 15 N

LED spacer



| → Length | Width | Overall height | Diameter | Color      | Order no.         |
|----------|-------|----------------|----------|------------|-------------------|
| 2.2 mm   | -     | 12.5 mm        | 5 mm     | light grey | 5.30.109.010/0756 |
| 12 mm    | -     | 22.5 mm        | 5 mm     | black      | 5.30.109.019/0105 |



# PCB KEY SWITCHES

KN 19 - SHORT-TRAVEL MAIN SWITCH



## KN 19

Short-travel main switch

Short-travel main switch for use in membrane keyboards under the overlay or with RK 90 keycaps, 250V, 4A max. A cut-out in the overlay is not required!

- All products are RoHS compliant.

4

KN 19

# PCB KEY SWITCHES

KN 19 - SHORT-TRAVEL MAIN SWITCH

---

Content

|                                    |         |
|------------------------------------|---------|
| KN 19 - Short-travel main switches | 4 - 103 |
| KN 19 - Short-travel main switch   | 4 - 104 |

## KN 19

### Short-travel main switches

→ The KN 19 makes it possible to implement a power switch directly in a low-profile data entry system. This eliminates the need for extra switches on the device and additional openings in the overlay. In this way, you can achieve an optimum of safety and a consistent design.

The contact opening widths comply with the VDE standards. The KN 19 can also be employed underneath RK 90 keycaps. Other actuation functions (momentary, latching/momentary) available on request.



#### Technical Data

##### → General information

|                      |                 |
|----------------------|-----------------|
| Recommended key grid | 19.05 x 38.1 mm |
|----------------------|-----------------|

##### → Dimensions

|                |         |
|----------------|---------|
| Length         | 37.8 mm |
| Width          | 18.8 mm |
| Overall height | 9.7 mm  |

##### → Mechanical design

|                                         |                            |
|-----------------------------------------|----------------------------|
| Mounting                                | on PCB                     |
| Terminals                               | THT solder terminals       |
| Contact system                          | snap-action bridge contact |
| Contact arrangement                     | see order block            |
| Contact materials                       | Ag                         |
| Illumination                            | 1 LED (max. 3 mm) possible |
| Degree of protection                    | IP40 (DIN EN 60529)        |
| Hot wire ignition acc. to IEC 60695-2-1 | 850 °C                     |

##### → Mechanical characteristics

|                      |                          |
|----------------------|--------------------------|
| Operating force max. | 9 <sup>±3</sup> N        |
| Operating travel     | 0.55 <sup>±0.15</sup> mm |
| Robustness max.      | 100 N                    |

##### → Electrical characteristics

|                                  |       |
|----------------------------------|-------|
| Rated voltage AC min.            | 12 V  |
| Rated voltage DC min.            | 12 V  |
| Rated voltage AC max.            | 250 V |
| Rated voltage DC max.            | 50 V  |
| Ohmic load AC                    | 6 A   |
| Ohmic load DC max.               | 10 A  |
| Ohmic load DC min.               | 0.1 A |
| Contact resistance when new max. | 50 mΩ |
| Capacity input current AC max.   | 100 A |
| Rated motor current AC           | 4 A   |
| Rated filament lamp current AC   | 2.4 A |
| Bouncing time max.               | 10 ms |

##### → Other specifications

|                              |                                          |
|------------------------------|------------------------------------------|
| Ambient temp. operating min. | -25 °C                                   |
| Ambient temp. operating max. | +70 °C                                   |
| Environmental resistance     | acc. to IEC 60068-2-14, -30, -33 and -78 |
| Operating life AC            | AC 250 V: 200.000 /2A; 100.000 /6A       |
| Operating life DC            | 50,000(10 A / 50 V=)                     |
| Soldering time max.          | 3 s                                      |
| Soldering temperature max.   | 350 °C                                   |
| Flame class acc. to UL 94    | UL 94 VO                                 |
| ROHS compliant               | yes                                      |
| REACH compliant              | yes                                      |



#### Approvals



IEC 61058



UL 508, C22.2 No. 14-M91



# PCB KEY SWITCHES

KN 19 - SHORT-TRAVEL MAIN SWITCH

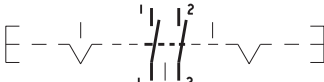
## Accessories KN 19 - Short-travel main switch

| → Description            | Photo | Order no.         | Additional accessories see page |
|--------------------------|-------|-------------------|---------------------------------|
| KN19 - Absorption rubber |       | 5.30.729.009/0000 | -                               |

## Circuit diagrams

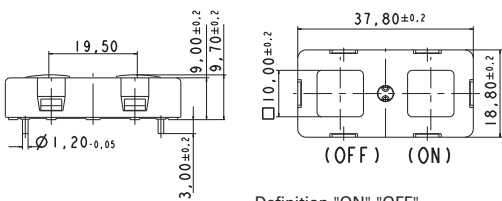


1 NC + 1 NO



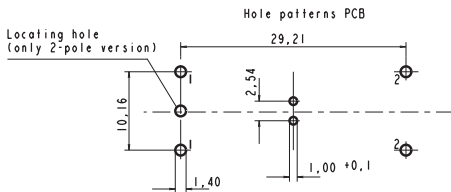
2 NC/2 NO

## Dimensional drawing



Definition "ON" "OFF"  
only valid for 2-pole version.

## PCB hole pattern



Locating hole only version 2 NO/2 NC

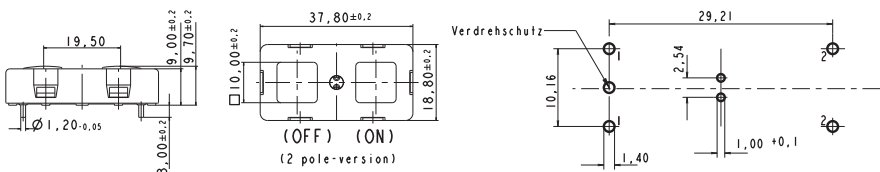
View on component side

4



## KN 19 Short-travel main switch

Technical data see page 4 - 103



PCB footprint

| → Contact arrangement | Rated voltage AC max. | Order no.         |
|-----------------------|-----------------------|-------------------|
| 1 NC + 1 NO           | 250 V                 | 1.12.000.001/0000 |
| 2 NC / 2 NO           | 250 V                 | 1.12.000.501/0000 |

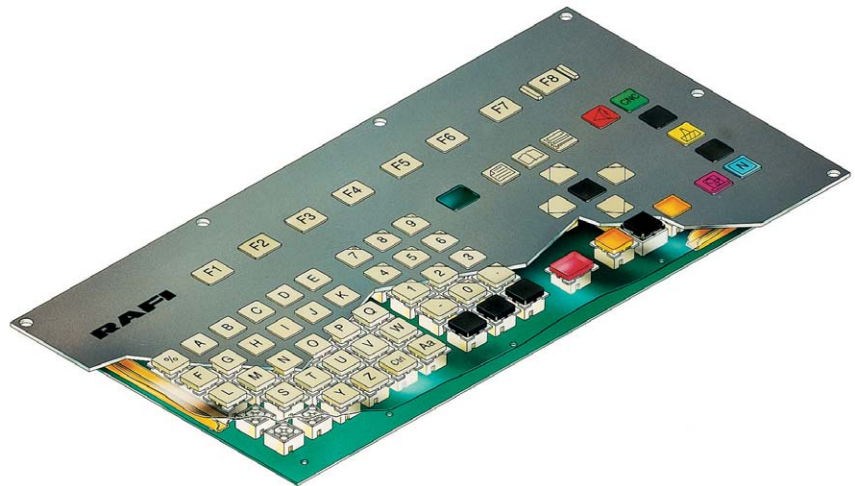
For keycaps, refer to RK 90 system design.

Positive opening NC contacts to IEC 60 947-5-1.

1-LED spot-illumination (max. 3 mm) possible.

### Accessoires:

KN19 - Absorption rubber: 5.30.729.009/0000



## RK 90

### Keycaps

#### Keycaps for RACON, RF 15 / RF 19 and KN 19 tactile switches

- You can insert a legend insert between lens and pressure pad of the transparent keycaps.
- All products are RoHS compliant.

# PCB KEY SWITCHES

## RK 90 - KEYCAPS

---

### Content

|                                                          |                |
|----------------------------------------------------------|----------------|
| <b>RK 90 - Keycaps, plastic, 9 x 9 mm</b>                | <b>4 - 109</b> |
| RK 90 - Keycap body plastic, for lenses 9 x 9 mm         | 4 - 110        |
| <b>RK 90 - Keycaps, plastic, 14 mm</b>                   | <b>4 - 111</b> |
| RK 90 - Keycap body plastic, for lenses 14 mm, 1-module  | 4 - 112        |
| RK 90 - Keycap body plastic, for lenses 1¼-module        | 4 - 112        |
| RK 90 - Keycap body plastic, for lenses 14 mm, 1½-module | 4 - 113        |
| RK 90 - Keycap body plastic, for lenses 2-module         | 4 - 114        |
| <b>RK 90 - Keycaps, aluminum, 14 mm</b>                  | <b>4 - 115</b> |
| RK 90 - Keycaps, aluminum, 14 mm, 1-module               | 4 - 116        |
| RK 90 - Keycaps, aluminum, 14 mm, 1½-module              | 4 - 116        |
| RK 90 - Keycaps, aluminum, 14 mm, 2-module               | 4 - 117        |
| <b>RK 90 - Special accessories</b>                       | <b>4 - 118</b> |
| RK 90 - Fin, to avoid inadvertent operation              | 4 - 118        |
| RK 90 - Spacer M 4                                       | 4 - 119        |
| RK 90 - Silicone foil                                    | 4 - 119        |

## Keycap system RK 90

Example with RF 15 key switches. Instead of RF 15 following key switches can be used:

- MICON 5
- RACON 8/12
- RF 15 tactile switches and signal indicators
- RF 19 tactile switches and signal indicators
- Short-travel main switch KN 19

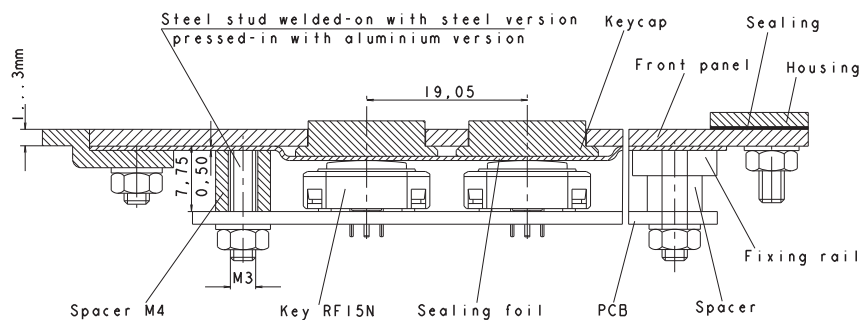
The RK 90 system was granted the prize of the Design Forum of the Hannover Fair.

**Degree of protection: IP65 according to DIN in front of the panel, with silicone sealing.**

## Installation methods

### Installation from front

### Installation from rear



### Mounting from front

Sealing foil between RK 90 keyboard and customer's front panel.

### Mounting from rear

Sealing foil is screwed to RK 90 panel with fixing rails; sealing between keyboard and customer's front panel has to be provided.

## Legending

- **Laser printing:** This labelling method is possible for opaque keycaps. The symbols are engraved in the keycaps with laser.
- When using transparent lenses, the pressure pad can be legended by printing.

As the legending is protected by the lens, it is friction-proof.

- **Engraving:** With this method the keycaps are engraved with the required symbol and then inlaid with ink.

# PCB KEY SWITCHES

RK 90 - KEYCAP SYSTEM

## Recommendations

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- **Front panel thickness:**

- **Aluminum:** 2 mm (1.5 mm min, 3 mm max.)  
(Fixing with M 3 pressed-in studs)
- **Steel:** 2 mm (3 mm max.): V2A: 1.25 mm  
(Fixing with M 3 welded-on studs)  
The keytop surface is flush with the keyboard at a panel thickness of 3.5 mm.

- **Silicone sealing:**

Material: Silicone transparent  
Type: A-SY 40-79  
Hardness: 30° shore +/- 5°  
Thickness: 0.45 +/- 0.05 mm

- **Installation:** Ensure that the keyboard slopes slightly so that any liquid can drain away between front panel and silicone sealing; if necessary, provide additional drain holes in the front panel.
- 

## Cleaning liquids

---

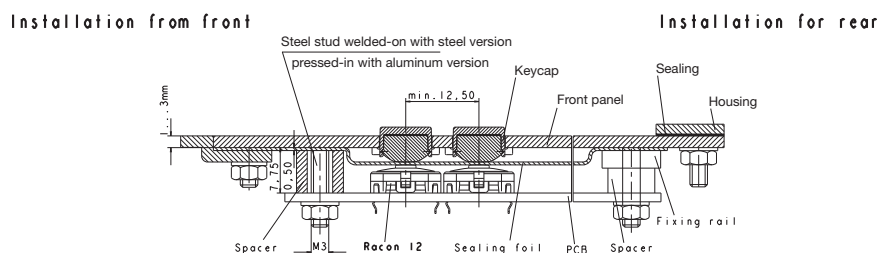
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For the cleaning of the plastic keycaps please do not use cleaning liquids based on alcohol or acid.

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# RK 90

## Keycaps, plastic, 9 x 9 mm



→ You can design especially small input fields with the small keycap 9 x 9 mm. For example, controls for measurement and laboratory equipment which do not offer much space for input fields because of their small size. RK 90 keycaps 9 x 9 mm and RACON tactile switches can be used to implement key grids of only 12.5 mm. The keycaps can be legended by laser-printing, engraving or standard printing. This keycap is our first choice in a combination with the illuminated RACON 12 i tactile switch.

**Please note:** For the cleaning of the plastic keycaps please do not use cleaning liquids based on alcohol or acid.

### Technical Data

|                                          |                     |
|------------------------------------------|---------------------|
| → <b>General information</b>             |                     |
| Color of lens                            | see order block     |
| Size                                     | 1-module            |
| Degree of protection (with silicon seal) | IP65 (DIN EN 60529) |
| Illuminability                           | see order block     |
| → <b>Dimensions</b>                      |                     |
| Dimension keycap in front of front panel | 8.85 x 8.85 mm      |
| Dimension keycap behind front panel      | 11.5 x 11.5 mm      |
| Dimension (c) hole patterns final size   | 9.00 x 9.00 mm      |
| Dimension hole patterns punched size     | 9.20 x 9.20 mm      |
| → <b>Other specifications</b>            |                     |
| ROHS compliant                           | yes                 |
| REACH compliant                          | yes                 |

Please order lens separately.

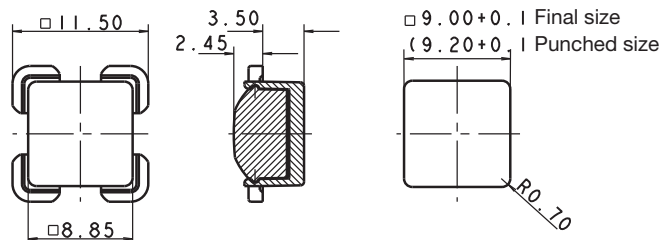
# PCB KEY SWITCHES

RK 90 - KEYCAPS, PLASTIC, 9 X 9 MM



## RK 90 Keycap body plastic, for lenses 9 x 9 mm

Technical data see page 4 - 109



| → Size   | Illuminability | Dimension keycap behind front panel | Dimension keycap in front of front panel | Dimension (c) hole patterns final size | Order no.         |
|----------|----------------|-------------------------------------|------------------------------------------|----------------------------------------|-------------------|
| 1-module | yes            | 11.5 x 11.5 mm                      | 8.85 x 8.85 mm                           | 9.00 x 9.00 mm                         | 5.55.103.265/1013 |

Laser printed opaque lenses and keycap sets on request.

Please order lenses separately.

### Lenses:

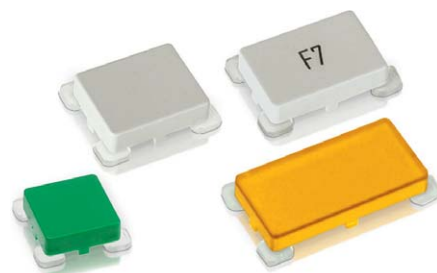
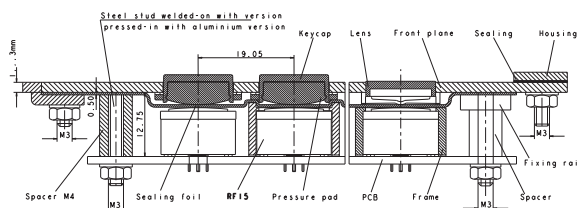
- RK 90 - Lens, 9 x 9 mm, opaque red: 5.46.651.015/0309
- RK 90 - Lens, 9 x 9 mm, opaque yellow: 5.46.651.015/0409
- RK 90 - Lens, 9 x 9 mm, opaque green: 5.46.651.015/0514
- RK 90 - Lens, 9 x 9 mm, opaque blue: 5.46.651.015/0611
- RK 90 - Lens, 9 x 9 mm, opaque light grey: 5.46.651.015/0700
- RK 90 - Lens, 9 x 9 mm, transparent colorless: 5.46.651.019/1002
- RK 90 - Lens, 9 x 9 mm, transparent red: 5.46.651.019/1307
- RK 90 - Lens, 9 x 9 mm, transparent yellow: 5.46.651.019/1403
- RK 90 - Lens, 9 x 9 mm, transparent green: 5.46.651.019/1510

## RK 90

### Keycaps, plastic, 14 mm

Installation from front

Installation from rear



- Keycap system for 19.05 mm grid. The keycaps can be legended by laser-printing, engraving or standard printing. Keycaps / sets with legends and other keycap shapes / colors available on request.
- Please note:** For the cleaning of the plastic keycaps please do not use cleaning liquids based on alcohol or acid.

#### Technical Data

→ **General information**

|                                          |                     |
|------------------------------------------|---------------------|
| Color of lens                            | see order block     |
| Size                                     | see order block     |
| Degree of protection (with silicon seal) | IP65 (DIN EN 60529) |
| Illuminability                           | yes                 |

→ **Dimensions**

|                                        |                 |
|----------------------------------------|-----------------|
| Dimension (b) in front of front panel  | see order block |
| Dimension (a) behind front panel       | see order block |
| Dimension (c) hole patterns final size | see order block |
| Dimension hole patterns punched size   | see order block |

→ **Other specifications**

|                 |     |
|-----------------|-----|
| ROHS compliant  | yes |
| REACH compliant | yes |

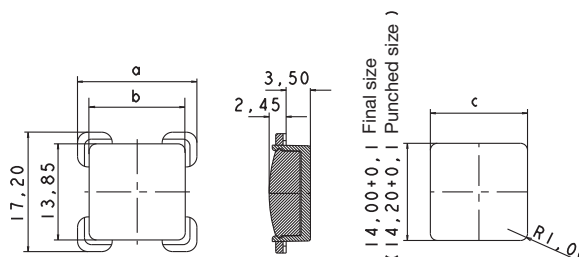
# PCB KEY SWITCHES

RK 90 - KEYCAPS, PLASTIC 14 MM



## RK 90 Keycap body plastic, for lenses 14 mm, 1-module

Technical data see page 4 - 111



| → Size   | Illuminability | Dimension (a) behind front panel | Dimension (b) in front of front panel | Dimension (c) hole patterns final size | Order no.         |
|----------|----------------|----------------------------------|---------------------------------------|----------------------------------------|-------------------|
| 1-module | yes            | 17.20 x 17.20 mm                 | 13.85 x 13.85 mm                      | 14.00 x 14.00 mm                       | 5.55.103.030/1013 |

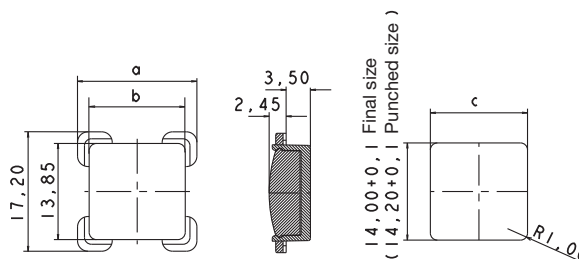
### Lenses:

RK 90 - Lens, 14 x 14 mm, 1-module, opaque red: 5.46.681.001/0309  
 RK 90 - Lens, 14 x 14 mm, 1-module, opaque yellow: 5.46.681.001/0409  
 RK 90 - Lens, 14 x 14 mm, 1-module, opaque green: 5.46.681.001/0514  
 RK 90 - Lens, 14 x 14 mm, 1-module, opaque blue: 5.46.681.001/0611  
 RK 90 - Lens, 14 x 14 mm, 1-module, opaque light grey: 5.46.681.001/0700  
 RK 90 - Lens, 14 x 14 mm, 1-module, transparent colorless: 5.46.681.021/1002  
 RK 90 - Lens, 14 x 14 mm, 1-module, transparent red: 5.46.681.021/1307  
 RK 90 - Lens, 14 x 14 mm, 1-module, transparent yellow: 5.46.681.021/1403  
 RK 90 - Lens, 14 x 14 mm, 1-module, transparent green: 5.46.681.021/1510



## RK 90 Keycap body plastic, for lenses 1 1/4-module

Technical data see page 4 - 111



| → Size       | Illuminability | Dimension (a) behind front panel | Dimension (b) in front of front panel | Dimension (c) hole patterns final size | Order no.         |
|--------------|----------------|----------------------------------|---------------------------------------|----------------------------------------|-------------------|
| 1 1/4-module | yes            | 17.20 x 20.7 mm                  | 13.85 x 17.35 mm                      | 14.00 x 17.5 mm                        | 5.55.103.031/1013 |

### Lenses:

RK 90 - Lens, 14 mm, 1.25-module, opaque red: 5.46.681.002/0309

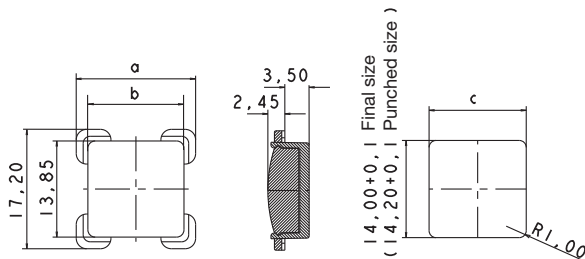
– Table (continued) –  
RK 90 - Keycap body plastic, for lenses 1¼-module

RK 90 - Lens, 14 mm, 1.25-module, opaque light grey: 5.46.681.002/0700  
RK 90 - Lens, 14 mm, 1.25-module, transparent colorless: 5.46.681.022/1002  
RK 90 - Lens, 14 mm, 1.25-module, transparent red: 5.46.681.022/1307  
RK 90 - Lens, 14 mm, 1.25-module, transparent yellow: 5.46.681.022/1403  
RK 90 - Lens, 14 mm, 1.25-module, transparent green: 5.46.681.022/1510

## RK 90

### Keycap body plastic, for lenses 14 mm, 1½-module

Technical data see page 4 - 111



| → Size    | Illuminability | Dimension (a) behind front panel | Dimension (b) in front of front panel | Dimension (c) hole patterns final size | Order no.         |
|-----------|----------------|----------------------------------|---------------------------------------|----------------------------------------|-------------------|
| 1½-module | yes            | 17.20 x 24.20 mm                 | 13.85 x 20.85 mm                      | 14.00 x 21.00 mm                       | 5.55.103.032/1013 |

**Lenses:**

RK 90 - Lens, 14 mm, 1.5-module, opaque red: 5.46.681.003/0309  
RK 90 - Lens, 14 mm, 1.5-module, opaque yellow: 5.46.681.003/0409  
RK 90 - Lens, 14 mm, 1.5-module, opaque green: 5.46.681.003/0514  
RK 90 - Lens, 14 mm, 1.5-module, opaque blue: 5.46.681.003/0611  
RK 90 - Lens, 14 mm, 1.5-module, opaque light grey: 5.46.681.003/0700  
RK 90 - Lens, 14 mm, 1.5-module, transparent colorless: 5.46.681.023/1002  
RK 90 - Lens, 14 mm, 1.5-module, transparent red: 5.46.681.023/1307  
RK 90 - Lens, 14 mm, 1.5-module, transparent yellow: 5.46.681.023/1403  
RK 90 - Lens, 14 mm, 1.5-module, transparent green: 5.46.681.023/1510

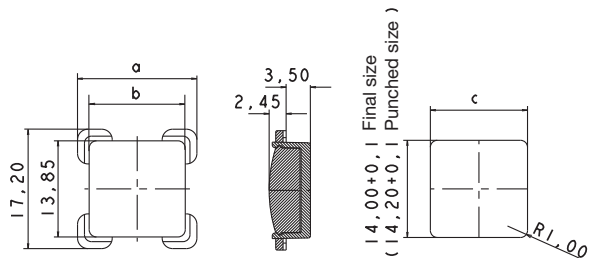
# PCB KEY SWITCHES

RK 90 - KEYCAPS, PLASTIC 14 MM



## RK 90 Keycap body plastic, for lenses 2-module

Technical data see page 4 - 111



| → | Size     | Illuminability | Dimension (a) behind front panel | Dimension (b) in front of front panel | Dimension (c) hole patterns final size | Order no.         |
|---|----------|----------------|----------------------------------|---------------------------------------|----------------------------------------|-------------------|
|   | 2-module | yes            | 17.20 x 31.20 mm                 | 13.85 x 27.85 mm                      | 14.00 x 28.00 mm                       | 5.55.103.077/1013 |

- Lenses:**  
RK 90 - Lens, 14 mm, 2-module, opaque red: 5.46.681.004/0309  
RK 90 - Lens, 14 mm, 2-module, opaque yellow: 5.46.681.004/0409  
RK 90 - Lens, 14 mm, 2-module, opaque green: 5.46.681.004/0514  
RK 90 - Lens, 14 mm, 2-module, opaque blue: 5.46.681.004/0611  
RK 90 - Lens, 14 mm, 2-module, opaque light grey: 5.46.681.004/0700  
RK 90 - Lens, 14 mm, 2-module, transparent colorless: 5.46.681.024/1002  
RK 90 - Lens, 14 mm, 2-module, transparent red: 5.46.681.024/1307  
RK 90 - Lens, 14 mm, 2-module, transparent yellow: 5.46.681.024/1403  
RK 90 - Lens, 14 mm, 2-module, transparent green: 5.46.681.024/1510

# RK 90

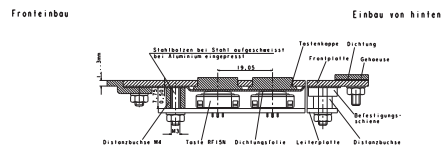
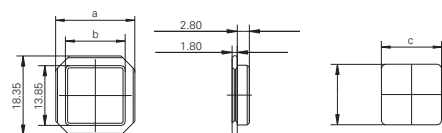
## Keycaps, aluminum, 14 mm

→ The RK 90 system design with metal keycaps is fairly safe against mechanical, thermal or chemical effects. Combined with a metal front panel, this data entry system offers maximum protection against vandalism. Tried and tested MICON 5, RACON 8/12 or RF 15/19 PCB key switches are used underneath the metal keycaps.

The keycaps can be provided with engraved, colored anodized or laser-printed legends. This means that the legend is durable and cannot be removed by mechanical or chemical means.

### Technical Data

|                                          |                             |
|------------------------------------------|-----------------------------|
| → <b>General information</b>             |                             |
| Color of lens                            | aluminum colorless anodized |
| Size                                     | see order block             |
| Degree of protection (with silicon seal) | IP65 (DIN EN 60529)         |
| → <b>Dimensions</b>                      |                             |
| Dimension (b) in front of front panel    | see order block             |
| Dimension (a) behind front panel         | see order block             |
| Dimension (c) hole patterns final size   | see order block             |
| Dimension hole patterns punched size     | see order block             |
| → <b>Other specifications</b>            |                             |
| ROHS compliant                           | yes                         |
| REACH compliant                          | yes                         |



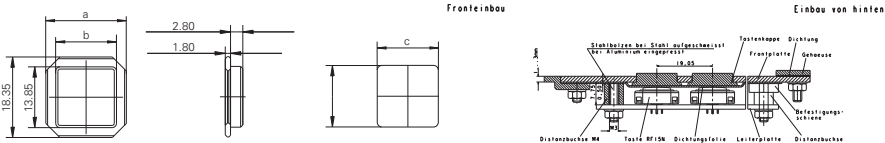
# PCB KEY SWITCHES

RK 90 - KEYCAPS, ALUMINIUM, 14 MM



## RK 90 Keycaps, aluminum, 14 mm, 1-module

Technical data see page 4 - 115

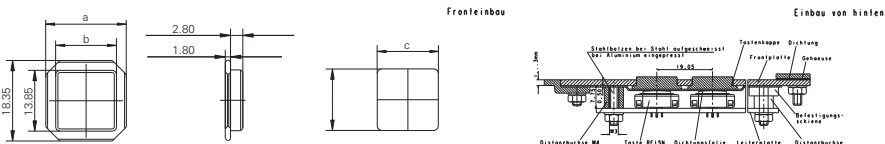


| → Size   | Color of lens               | Dimension (a) behind front panel | Dimension (b) in front of front panel | Dimension (c) hole patterns final size | Order no.         |
|----------|-----------------------------|----------------------------------|---------------------------------------|----------------------------------------|-------------------|
| 1-module | aluminum colorless anodized | 18.35 x 18.35 mm                 | 13.85 x 13.85 mm                      | 14.00 x 14.00 mm                       | 5.46.500.001/4010 |



## RK 90 Keycaps, aluminum, 14 mm, 1½-module

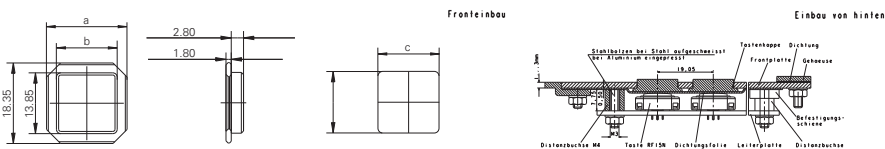
Technical data see page 4 - 115



| → Size    | Color of lens               | Dimension (a) behind front panel | Dimension (b) in front of front panel | Dimension (c) hole patterns final size | Order no.         |
|-----------|-----------------------------|----------------------------------|---------------------------------------|----------------------------------------|-------------------|
| 1½-module | aluminum colorless anodized | 18.35 x 25.35 mm                 | 13.85 x 20.85 mm                      | 14.00 x 21.00 mm                       | 5.46.500.003/4010 |

RK 90  
Keycaps, aluminum, 14 mm,  
2-module

Technical data see page 4 - 115



| → Size   | Color of lens               | Dimension (a) behind front panel | Dimension (b) in front of front panel | Dimension (c) hole patterns final size | Order no.         |
|----------|-----------------------------|----------------------------------|---------------------------------------|----------------------------------------|-------------------|
| 2-module | aluminum colorless anodized | 18.35 x 32.35 mm                 | 13.85 x 27.85 mm                      | 14.00 x 28.00 mm                       | 5.46.500.004/4010 |

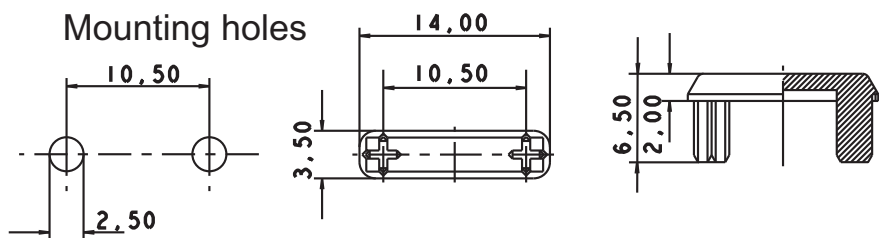
# RK 90

## Special accessories



### RK 90

#### Fin, to avoid inadvertent operation



| → Description                                              | Color             | Order no.         |
|------------------------------------------------------------|-------------------|-------------------|
| RK 90 - Fin, to avoid inadvertent operation, light grey    | opaque light grey | 5.55.103.079/0700 |
| RK 90 - Fin, to avoid inadvertent operation, charcoal grey | opaque light grey | 5.55.103.079/0152 |

RK 90  
Spacer M 4



| → Length L                                | Color | Order no.         |
|-------------------------------------------|-------|-------------------|
| 12.5 mm overall height for RF 15 mm       | -     | 5.30.764.040/0000 |
| 9.25 mm overall height, for RF 15 mm      | -     | 5.30.764.027/0000 |
| 5.5 mm overall height, for RF15 N mm      | -     | 5.30.764.010/0000 |
| 7.5 mm overall height for RACON 8/12 mm   | -     | 5.30.764.018/0000 |
| 4.25 mm overall height, for RACON 8/12 mm | -     | 5.30.764.005/0000 |

Mounting from front (1 pc. per stud)

RK 90  
Silicone foil



| → Color     | Dimensions          | Order no.         |
|-------------|---------------------|-------------------|
| transparent | 600 x 590 x 0.45 mm | 7.16.102.006/0000 |





## RG 85 III

Short-travel system

**Vandal-proof input system, ideally suited for elevator controls, info terminals, vending machines, etc.**

- Edge illumination and symbol illumination possible
- Connection: Each module individually with an 8-pin Micro-Match socket connector
- Modular fixing system with quick fasteners or single fixing
- Contact arrangement: 1 NO contact
- 35 V/250 mA max.
- Degree of protection IP65 (keylock switch IP40).
- Elevator standardm EN 81-70
- All products are RoHS compliant.

# PCB KEY SWITCHES

RG 85 III - PUSHBUTTONS/KEYS

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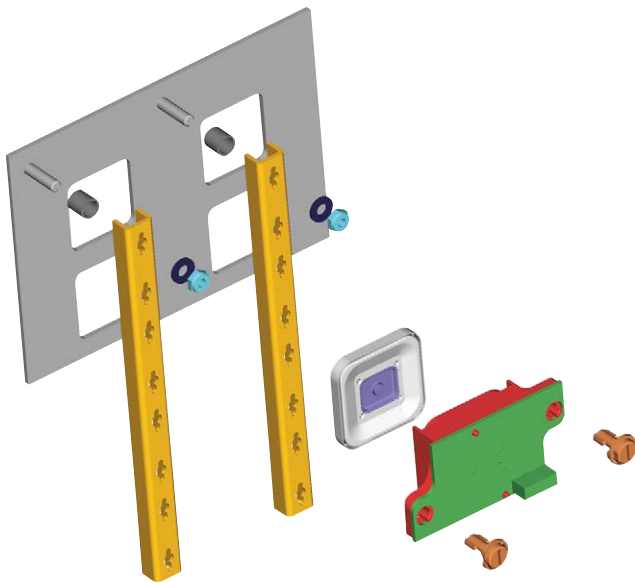
## Content

|                                                                                  |                |
|----------------------------------------------------------------------------------|----------------|
| <b>RG 85 III - Key switches</b>                                                  | <b>4 - 125</b> |
| RG 85 III - Key switch, round design, without lens                               | 4 - 126        |
| RG 85 III - Key switch, square design, without lens                              | 4 - 126        |
| <b>RG 85 III - Keylock switches</b>                                              | <b>4 - 128</b> |
| RG 85 III - Keylock switch, round design, without lens                           | 4 - 129        |
| RG 85 III - Keylock switch, square design, without lens                          | 4 - 129        |
| <b>RG 85 III - Signal indicators, without lens</b>                               | <b>4 - 131</b> |
| RG 85 III - Signal indicator, without lens                                       | 4 - 132        |
| <b>RG 85 III - Accessories</b>                                                   | <b>4 - 133</b> |
| RG 85 III - Lens for key switches, round                                         | 4 - 133        |
| RG 85 III - Lens for key switches, square                                        | 4 - 134        |
| RG 85 III - Lens for key switches, round flush, elevator standard EN 81-70       | 4 - 135        |
| RG 85 III - Lens for key switches, round protruding, elevator standard EN 81-70  | 4 - 136        |
| RG 85 III - Lens for key switches, square flush, elevator standard EN 81-70      | 4 - 137        |
| RG 85 III - Lens for key switches, square protruding, elevator standard EN 81-70 | 4 - 138        |
| RG 85 III - Lens for keylock switches, round                                     | 4 - 139        |
| RG 85 III - Lens for keylock switches, square                                    | 4 - 139        |
| RG 85 III - Lens, round, for signal indicators                                   | 4 - 140        |
| RG 85 III - Lens, square, for signal indicators                                  | 4 - 140        |
| RG 85 III - Lens, triangular, for signal indicators                              | 4 - 141        |
| Cable, 8 wire, with socket connectors on both ends                               | 4 - 141        |
| Fixing rail, length 490 mm                                                       | 4 - 142        |
| Spacer                                                                           | 4 - 142        |
| Fixing piece for mounting the elements with the rail fixing method               | 4 - 142        |

## System Features

Perfectly suited for: elevator controls, info terminals, vending machines, etc.

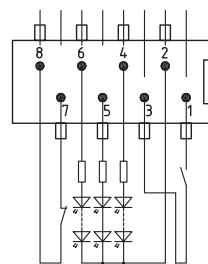
- Vandal proof construction
- Modular fixing system with quick fasteners or single fixing method using thread studs
- Connection with keyed 8-pin micro-match connector
- Degree of protection: IP40/65



## Keylock Switch Features

- Round or square design and lens shape
- Edge illumination in one or two colours with 4 LED for each colour
- Lens material: Aluminum or stainless steel with plastic inlays
- Contact arrangement: 1 NO
- Cylinder lock with pin tumblers
- Two switching positions: 0 and 90 degrees, key can be removed in any position
- Lock type 5201 – other lock types on request
- Included: 2 keys

## Micro-Match Connector Pin Assignment



1/3 NO contact

2 0V – LED

4 Edge illuminat./signal indicator  
1<sup>st</sup> colour + 24 V DC +/- 20%

5 Symbol illumination  
+ 24 V DC±20%

6 Edge illuminat./signal indicator  
2<sup>nd</sup> colour + 24 V DC +/- 20%

7/8 NC contact

## Pushbutton Features

- Round or square design and lens shape
- Edge illumination in one or two colours with 4 LED for each colour
- Additional illumination of the symbol with 2 LED
- Lens material: Aluminum or stainless steel with plastic inlays
- Switching element: short-travel key switch RF 19
  - 1 NO contact, non-illuminated
  - 1 NO contact, fully illuminated

## Signal Indicator Features

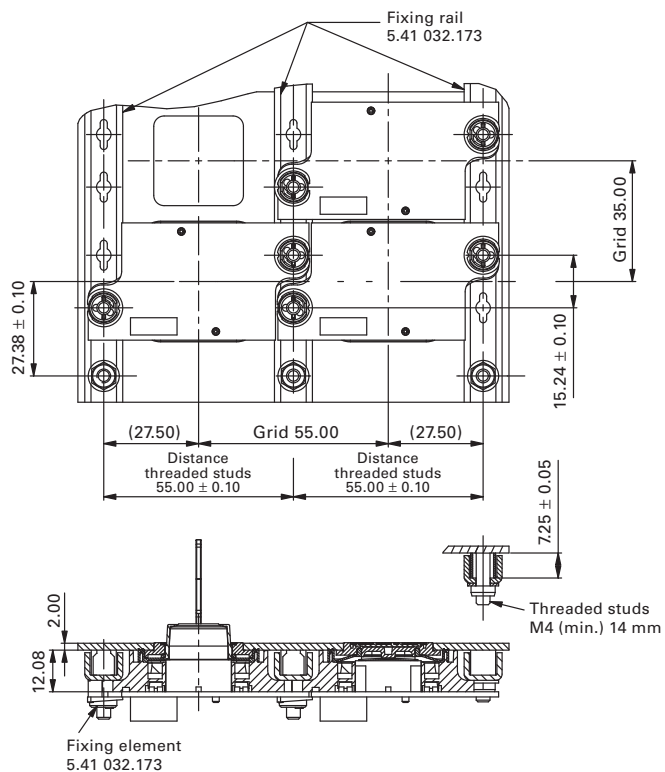
- Lens shape round, square or triangular (arrow shape)
- Lens material: Translucent plastic material
- Fully illuminated with 5 LED

# PCB KEY SWITCHES

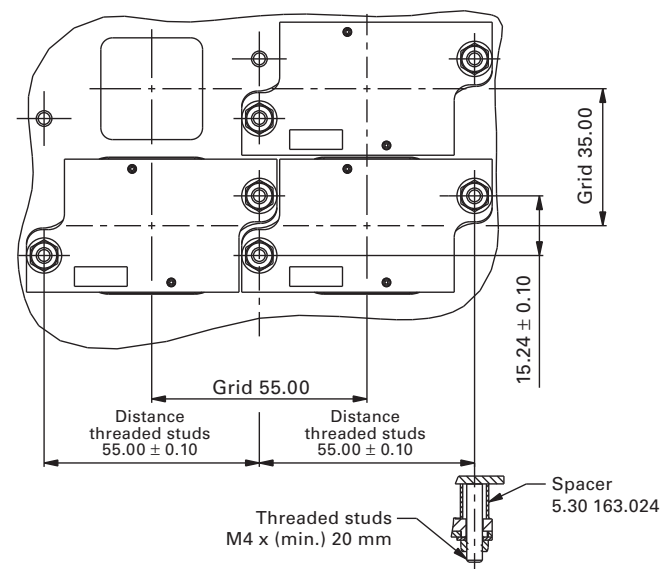
RG 85 III - PUSHBUTTONS/KEYS

## Installation plan

Rail fixing method

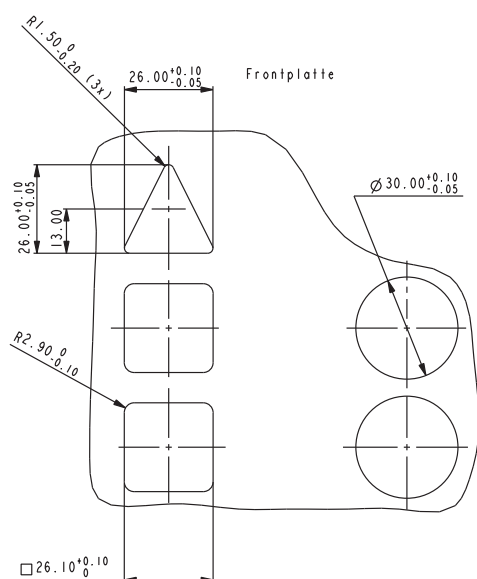


Single fixing method



4

## Front panel



## RG 85 III Key switches

### Technical Data

#### → Dimensions

|                    |            |
|--------------------|------------|
| Length             | 64 mm      |
| Mounting grid min. | 55 x 35 mm |
| Width              | 34 mm      |

#### → Mechanical design

|                     |                                     |
|---------------------|-------------------------------------|
| Version             | see order block                     |
| Mounting            | on U-rails or single mounting       |
| Terminals           | 8-pin Micro-Match® female connector |
| Contact system      | snap-action (1 NO )                 |
| Contact arrangement | see order block                     |
| Contact materials   | Ag                                  |
| Symbol illumination | see order block                     |
| Edge illumination   | see order block                     |

#### → Mechanical characteristics

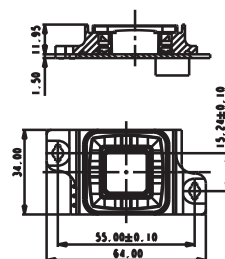
|                     |        |
|---------------------|--------|
| Operating force     | 3.5 N  |
| Operating travel    | 1 mm   |
| Switching travel NO | 1 mm   |
| Switching travel NC | 0.6 mm |

#### → Electrical characteristics

|                                      |                             |
|--------------------------------------|-----------------------------|
| Rated voltage min.                   | 3 V                         |
| Rated voltage max.                   | 35 V                        |
| Rated current min.                   | 0.1 mA                      |
| Rated current max.                   | 250 mA                      |
| Rated power max.                     | 12.5 W                      |
| Contact resistance when new max.     | 100 mΩ                      |
| Contact resistance acc. to life max. | 3 Ω                         |
| Bouncing time max.                   | 10 ms                       |
| Operating voltage for LED            | 24 <sup>+20%</sup> V        |
| Input current LED                    | per color/LED row 9 - 16 mA |

#### → Other specifications

|                                      |                                          |
|--------------------------------------|------------------------------------------|
| Ambient temp. operating min.         | -25 °C                                   |
| Ambient temp. operating max.         | +70 °C                                   |
| Storage temperature min.             | -40 °C                                   |
| Storage temperature max.             | +80 °C                                   |
| Environmental resistance             | acc. to IEC 60068-2-14, -30, -33 and -78 |
| Operating life min. (operations)     | 1,000,000                                |
| Degree of protection rail mounting   | IP40 (DIN EN 60529)                      |
| Degree of protection single mounting | IP65 (DIN EN 60529)                      |
| Flammability of materials            | according to UL 94 HB                    |
| ROHS compliant                       | yes                                      |
| REACH compliant                      | yes                                      |



### Accessories RG 85 III - Key switch

#### → Description

#### Photo

#### Order no.

#### Additional accessories see page

Cable, 8 wires, with socket connectors on both ends, length 1 m



5.03.772.261/0000

4 - 141

RG 85 III - Lenses for key switches, round, stainless steel



5.04.914.000/2000

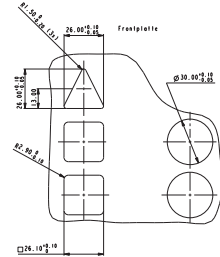
4 - 133

RG 85 III - Lenses for key switches, square, aluminum



5.04.915.100/2000

4 - 134



Please order lenses (round shape) separately.

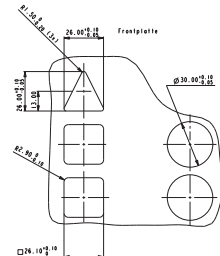
Technical drawing of the 1000W power supply unit showing side and top views with dimensions.

Side View Dimensions:

- Top flange thickness: 1.50
- Top flange height: 11.95
- Bottom flange height: 11.95
- Bottom flange thickness: 1.50
- Bottom flange height: 11.95

Top View Dimensions:

- Overall width: 64.00
- Overall height: 34.00
- Inner square width: 55.00 ± 0.10
- Inner square height: 55.00 ± 0.10
- Right side flange height: 15.24 ± 0.10

RG  
85 III

– Table (continued) –  
RG 85 III - Key switch, square design, without lens

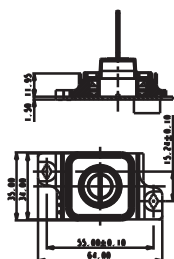
| → Contact arrangement | Edge illumination       | Symbol illumination | Version | Order no.         |
|-----------------------|-------------------------|---------------------|---------|-------------------|
| 1 NO                  | 4 LED green             | 2 LED green         | square  | 3.99.400.112/5500 |
| 1 NO                  | 4 LED blue              | 2 LED blue          | square  | 3.99.400.112/6600 |
| 1 NO                  | 4 LED white, 4 LED blue | 2 LED blue          | square  | 3.99.400.112/7600 |
| 1 NO                  | 4 LED green, 4 LED red  | 2 LED red           | square  | 3.99.400.112/8300 |

Please order lenses (square shape) separately.

# PCB KEY SWITCHES

RG 85 III - KEYLOCK SWITCHES

## RG 85 III Keylock switches



### Technical Data

#### → Dimensions

|                    |                            |
|--------------------|----------------------------|
| Length             | 64 mm                      |
| Mounting grid min. | 55 x 35 mm                 |
| Width              | 34 mm (35 mm with sealing) |

#### → Mechanical design

|                      |                                     |
|----------------------|-------------------------------------|
| Version              | see order block                     |
| Mounting             | on U-rails or single mounting       |
| Terminals            | 8-pin Micro-Match® female connector |
| Contact system       | cross contact                       |
| Contact arrangement  | 1 NO                                |
| Contact materials    | Au alloy                            |
| Symbol illumination  | none                                |
| Edge illumination    | see order block                     |
| Lock                 | cylinder lock, lock type 5201       |
| Key removal position | Pos. 0 + 1                          |

#### → Mechanical characteristics

|                     |         |
|---------------------|---------|
| Rotating angle      | 1 x 90° |
| Switching travel NO | 1 mm    |

#### → Electrical characteristics

|                                      |                             |
|--------------------------------------|-----------------------------|
| Rated voltage min.                   | 3 V                         |
| Rated voltage max.                   | 35 V                        |
| Rated current min.                   | 0.1 mA                      |
| Rated current max.                   | 100 mA                      |
| Rated power max.                     | 1 W                         |
| Contact resistance when new max.     | 100 mΩ                      |
| Contact resistance acc. to life max. | 3 Ω                         |
| Bouncing time max.                   | 10 ms                       |
| Operating voltage for LED            | 24 <sup>+20%</sup> V        |
| Input current LED                    | per color/LED row 9 - 16 mA |

#### → Other specifications

|                                      |                                          |
|--------------------------------------|------------------------------------------|
| Ambient temp. operating min.         | -25 °C                                   |
| Ambient temp. operating max.         | +70 °C                                   |
| Storage temperature min.             | -40 °C                                   |
| Storage temperature max.             | +80 °C                                   |
| Environmental resistance             | acc. to IEC 60068-2-14, -30, -33 and -78 |
| Operating life min. (operations)     | 50,000                                   |
| Degree of protection rail mounting   | IP40 (DIN EN 60529)                      |
| Degree of protection single mounting | IP65 (DIN EN 60529)                      |
| Flammability of materials            | according to UL 94 HB                    |
| ROHS compliant                       | yes                                      |
| REACH compliant                      | yes                                      |

4

### Accessories RG 85 III - Keylock switch

#### → Description

RG 85 III - Lenses for keylock switches, round, stainless steel



Order no.

5.04.914.200/2000

Additional accessories see page

4 - 139

RG 85 III - Lenses for keylock switches, square, aluminum



5.04.915.201/2000

4 - 139

RG  
85 III

Technical data see page 4 - 128



Please order lenses (round shape) separately.

RG 85 III - Lenses for keylock switches, round, stainless steel: 5.04.914.200/2000

Technical data see page 4 - 128

4

# PCB KEY SWITCHES

RG 85 III - KEYLOCK SWITCHES

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– Table (continued) –  
RG 85 III - Keylock switch, square design, without lens

---

Please order lenses (square shape) separately.

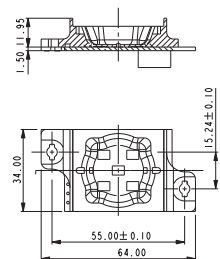
**Accessoires:**  
RG 85 III - Lenses for keylock switches, square, stainless steel: 5.04.914.201/2000

# RG 85 III

## Signal indicators, without lens

### Technical Data

|                                      |                                          |
|--------------------------------------|------------------------------------------|
| → <b>Dimensions</b>                  |                                          |
| Length                               | 64 mm                                    |
| Mounting grid min.                   | 55 x 35 mm                               |
| Width                                | 34 mm                                    |
| → <b>Mechanical design</b>           |                                          |
| Version                              | according to lens                        |
| Mounting                             | on U-rails or single mounting            |
| Terminals                            | 8-pin Micro-Match® female connector      |
| Illumination                         | see order block                          |
| → <b>Electrical characteristics</b>  |                                          |
| Operating voltage for LED            | 24 $\pm$ 20% V                           |
| Input current LED                    | depending on LED color 20 - 30 mA        |
| → <b>Other specifications</b>        |                                          |
| Ambient temp. operating min.         | -25 °C                                   |
| Ambient temp. operating max.         | +70 °C                                   |
| Storage temperature min.             | -40 °C                                   |
| Storage temperature max.             | +80 °C                                   |
| Environmental resistance             | acc. to IEC 60068-2-14, -30, -33 and -78 |
| Degree of protection rail mounting   | IP40 (DIN EN 60529)                      |
| Degree of protection single mounting | IP65 (DIN EN 60529)                      |
| Flammability of materials            | according to UL 94 HB                    |
| ROHS compliant                       | yes                                      |
| REACH compliant                      | yes                                      |



### Accessories RG 85 III - Signal indicator, without lens

| → Description                                                   | Photo | Order no.         | Additional accessories see page |
|-----------------------------------------------------------------|-------|-------------------|---------------------------------|
| Cable, 8 wires, with socket connectors on both ends, length 2 m |       | 5.03.772.262/0000 | 4 - 141                         |
| RG 85 III - Lens, square, for signal indicators                 |       | 5.04.903.009/0000 | 4 - 140                         |
| RG 85 III - Lens, round, for signal indicators                  |       | 5.04.903.010/0000 | 4 - 140                         |
| RG 85 III - Lens, triangular, for signal indicators             |       | 5.04.903.011/0000 | 4 - 141                         |

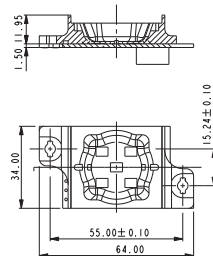
# PCB KEY SWITCHES

RG 85 III - SIGNAL INDICATOR

## RG 85 III Signal indicator, without lens



Technical data see page 4 - 131



| → Illumination         | Order no.         |
|------------------------|-------------------|
| 5 LED white            | 3.99.400.100/2000 |
| 5 LED red              | 3.99.400.100/3000 |
| 5 LED green            | 3.99.400.100/5000 |
| 5 LED green, 5 LED red | 3.99.400.100/8000 |

Please order round, square or triangular lenses separately.

# RG 85 III Accessories



## RG 85 III Lens for key switches, round



| → Version       | Form of lens | Legending color | Legending | Order no.         |
|-----------------|--------------|-----------------|-----------|-------------------|
| aluminum        | round        | -               | -         | 5.04.915.000/2000 |
| stainless steel | round        | -               | -         | 5.04.914.000/2000 |

The lenses without legending can not be engraved - other than the mentioned legends on request.

# PCB KEY SWITCHES

RG 85 III - SPECIAL ACCESSORIES

## RG 85 III Lens for key switches, square



| → Version       | Form of lens | Legending color   | Legending           | Order no.         |
|-----------------|--------------|-------------------|---------------------|-------------------|
| aluminum        | square       | -                 | -                   | 5.04.915.100/2000 |
| stainless steel | square       | -                 | -                   | 5.04.914.100/2000 |
| stainless steel | square       | opaque yellow     | symbol „bell“       | 5.04.914.124/0400 |
| stainless steel | square       | opaque black      | 1                   | 5.04.914.101/0100 |
| stainless steel | square       | opaque black      | 2                   | 5.04.914.102/0100 |
| stainless steel | square       | opaque black      | 3                   | 5.04.914.103/0100 |
| stainless steel | square       | opaque black      | 4                   | 5.04.914.104/0100 |
| stainless steel | square       | opaque black      | 5                   | 5.04.914.105/0100 |
| stainless steel | square       | opaque black      | 6                   | 5.04.914.106/0100 |
| stainless steel | square       | opaque black      | U                   | 5.04.914.121/0100 |
| stainless steel | square       | opaque black      | K                   | 5.04.914.122/0100 |
| stainless steel | square       | opaque black      | E                   | 5.04.914.123/0100 |
| stainless steel | square       | opaque black      | symbol „open door“  | 5.04.914.125/0100 |
| stainless steel | square       | opaque black      | symbol „close door“ | 5.04.914.126/0100 |
| stainless steel | square       | opaque black      | symbol „ventilator“ | 5.04.914.127/0100 |
| stainless steel | square       | opaque black      | symbol „arrow“      | 5.04.914.128/0100 |
| stainless steel | square       | translucent white | 1                   | 5.04.914.101/2000 |
| stainless steel | square       | translucent white | 2                   | 5.04.914.102/2000 |
| stainless steel | square       | translucent white | 3                   | 5.04.914.103/2000 |
| stainless steel | square       | translucent white | 4                   | 5.04.914.104/2000 |
| stainless steel | square       | translucent white | 5                   | 5.04.914.105/2000 |
| stainless steel | square       | translucent white | 6                   | 5.04.914.106/2000 |
| stainless steel | square       | translucent white | U                   | 5.04.914.121/2000 |
| stainless steel | square       | translucent white | K                   | 5.04.914.122/2000 |
| stainless steel | square       | translucent white | E                   | 5.04.914.123/2000 |
| stainless steel | square       | translucent white | symbol „open door“  | 5.04.914.125/2000 |
| stainless steel | square       | translucent white | symbol „close door“ | 5.04.914.126/2000 |
| stainless steel | square       | translucent white | symbol „ventilator“ | 5.04.914.127/2000 |
| stainless steel | square       | translucent white | symbol „arrow“      | 5.04.914.128/2000 |

4

RG  
85 III

– Table (continued) –  
RG 85 III - Lenses for key switches, square

The lenses without legending can not be engraved - other than the mentioned legends on request.

## RG 85 III Lens for key switches, round flush, elevator standard EN 81-70



| → Version       | Form of lens | Legending color   | Legending           | Order no.         |
|-----------------|--------------|-------------------|---------------------|-------------------|
| stainless steel | round        | -                 | -                   | 5.04.916.000/2000 |
| stainless steel | round        | opaque yellow     | symbol „bell“       | 5.04.916.024/1404 |
| stainless steel | round        | translucent white | 1                   | 5.04.916.001/2000 |
| stainless steel | round        | translucent white | 2                   | 5.04.916.002/2000 |
| stainless steel | round        | translucent white | 3                   | 5.04.916.003/2000 |
| stainless steel | round        | translucent white | 4                   | 5.04.916.004/2000 |
| stainless steel | round        | translucent white | 5                   | 5.04.916.005/2000 |
| stainless steel | round        | translucent white | 6                   | 5.04.916.006/2000 |
| stainless steel | round        | translucent white | U                   | 5.04.916.021/2000 |
| stainless steel | round        | translucent white | K                   | 5.04.916.022/2000 |
| stainless steel | round        | translucent white | E                   | 5.04.916.023/2000 |
| stainless steel | round        | translucent white | symbol „open door“  | 5.04.916.025/2000 |
| stainless steel | round        | translucent white | symbol „close door“ | 5.04.916.026/2000 |
| stainless steel | round        | translucent white | symbol „arrow“      | 5.04.916.033/2000 |
| stainless steel | round        | translucent white | symbol „ventilator“ | 5.04.916.034/2000 |
| stainless steel | round        | translucent white | 7                   | 5.04.916.007/2000 |
| stainless steel | round        | translucent white | 8                   | 5.04.916.008/2000 |
| stainless steel | round        | translucent white | 9                   | 5.04.916.009/2000 |
| stainless steel | round        | translucent white | 10                  | 5.04.916.010/2000 |
| stainless steel | round        | translucent white | 11                  | 5.04.916.011/2000 |
| stainless steel | round        | translucent white | 12                  | 5.04.916.012/2000 |
| stainless steel | round        | translucent white | 13                  | 5.04.916.013/2000 |
| stainless steel | round        | translucent white | 14                  | 5.04.916.014/2000 |
| stainless steel | round        | translucent white | 15                  | 5.04.916.015/2000 |

# PCB KEY SWITCHES

RG 85 III - SPECIAL ACCESSORIES

– Table (continued) –

RG 85 III - Lenses for key switches, round flush, elevator standard EN 81-70

| → Version       | Form of lens | Legending color    | Legending     | Order no.         |
|-----------------|--------------|--------------------|---------------|-------------------|
| stainless steel | round        | translucent white  | 16            | 5.04.916.016/2000 |
| stainless steel | round        | translucent white  | 17            | 5.04.916.017/2000 |
| stainless steel | round        | translucent white  | 18            | 5.04.916.018/2000 |
| stainless steel | round        | translucent white  | 19            | 5.04.916.019/2000 |
| stainless steel | round        | translucent white  | 20            | 5.04.916.020/2000 |
| stainless steel | round        | translucent white  | 0             | 5.04.916.027/2000 |
| stainless steel | round        | translucent white  | -1            | 5.04.916.028/2000 |
| stainless steel | round        | translucent white  | -2            | 5.04.916.029/2000 |
| stainless steel | round        | translucent white  | -3            | 5.04.916.030/2000 |
| stainless steel | round        | translucent white  | -4            | 5.04.916.031/2000 |
| stainless steel | round        | translucent white  | -5            | 5.04.916.032/2000 |
| stainless steel | round        | transparent yellow | symbol „bell“ | 5.04.916.024/2214 |



## RG 85 III Lens for key switches, round protruding, elevator standard EN 81-70

| → Version       | Form of lens | Legending color    | Legending     | Order no.         |
|-----------------|--------------|--------------------|---------------|-------------------|
| stainless steel | round        | opaque yellow      | symbol „bell“ | 5.04.916.224/1404 |
| stainless steel | round        | opaque black       | -             | 5.04.916.201/1501 |
| stainless steel | round        | opaque black       | 2             | 5.04.916.202/1501 |
| stainless steel | round        | opaque black       | 3             | 5.04.916.203/1501 |
| stainless steel | round        | opaque black       | E             | 5.04.916.223/1501 |
| stainless steel | round        | opaque black       | 0             | 5.04.916.227/1501 |
| stainless steel | round        | opaque black       | -1            | 5.04.916.228/1501 |
| stainless steel | round        | transparent yellow | symbol „bell“ | 5.04.916.224/2214 |

4

RG  
85 III

## RG 85 III

### Lens for key switches, square flush, elevator standard EN 81-70



| → Version       | Form of lens | Legending color   | Legending           | Order no.         |
|-----------------|--------------|-------------------|---------------------|-------------------|
| stainless steel | square       | -                 | -                   | 5.04.916.100/2000 |
| stainless steel | square       | opaque yellow     | symbol „bell“       | 5.04.916.124/1404 |
| stainless steel | square       | translucent white | 1                   | 5.04.916.101/2000 |
| stainless steel | square       | translucent white | 2                   | 5.04.916.102/2000 |
| stainless steel | square       | translucent white | 3                   | 5.04.916.103/2000 |
| stainless steel | square       | translucent white | 4                   | 5.04.916.104/2000 |
| stainless steel | square       | translucent white | 5                   | 5.04.916.105/2000 |
| stainless steel | square       | translucent white | 6                   | 5.04.916.106/2000 |
| stainless steel | square       | translucent white | U                   | 5.04.916.121/2000 |
| stainless steel | square       | translucent white | K                   | 5.04.916.122/2000 |
| stainless steel | square       | translucent white | E                   | 5.04.916.123/2000 |
| stainless steel | square       | translucent white | symbol „open door“  | 5.04.916.125/2000 |
| stainless steel | square       | translucent white | symbol „close door“ | 5.04.916.126/2000 |
| stainless steel | square       | translucent white | symbol „arrow“      | 5.04.916.133/2000 |
| stainless steel | square       | translucent white | symbol „ventilator“ | 5.04.916.134/2000 |
| stainless steel | square       | translucent white | 7                   | 5.04.916.107/2000 |
| stainless steel | square       | translucent white | 8                   | 5.04.916.108/2000 |
| stainless steel | square       | translucent white | 9                   | 5.04.916.109/2000 |
| stainless steel | square       | translucent white | 10                  | 5.04.916.110/2000 |
| stainless steel | square       | translucent white | 11                  | 5.04.916.111/2000 |
| stainless steel | square       | translucent white | 12                  | 5.04.916.112/2000 |
| stainless steel | square       | translucent white | 13                  | 5.04.916.113/2000 |
| stainless steel | square       | translucent white | 14                  | 5.04.916.114/2000 |
| stainless steel | square       | translucent white | 15                  | 5.04.916.115/2000 |
| stainless steel | square       | translucent white | 16                  | 5.04.916.116/2000 |
| stainless steel | square       | translucent white | 17                  | 5.04.916.117/2000 |
| stainless steel | square       | translucent white | 18                  | 5.04.916.118/2000 |
| stainless steel | square       | translucent white | 19                  | 5.04.916.119/2000 |
| stainless steel | square       | translucent white | 20                  | 5.04.916.120/2000 |

# PCB KEY SWITCHES

RG 85 III - SPECIAL ACCESSORIES

– Table (continued) –

RG 85 III - Lenses for key switches, square flush, elevator standard EN 81-70

| → Version       | Form of lens | Legending color    | Legending     | Order no.         |
|-----------------|--------------|--------------------|---------------|-------------------|
| stainless steel | square       | translucent white  | 0             | 5.04.916.127/2000 |
| stainless steel | square       | translucent white  | -1            | 5.04.916.128/2000 |
| stainless steel | square       | translucent white  | -2            | 5.04.916.129/2000 |
| stainless steel | square       | translucent white  | -3            | 5.04.916.130/2000 |
| stainless steel | square       | translucent white  | -4            | 5.04.916.131/2000 |
| stainless steel | square       | translucent white  | -5            | 5.04.916.132/2000 |
| stainless steel | square       | transparent yellow | symbol „bell“ | 5.04.916.124/2214 |



**RG 85 III**  
**Lens for key switches,**  
**square protruding,**  
**elevator standard EN 81-70**

4

| → Version       | Form of lens | Legending color    | Legending     | Order no.         |
|-----------------|--------------|--------------------|---------------|-------------------|
| stainless steel | square       | opaque yellow      | symbol „bell“ | 5.04.916.254/1404 |
| stainless steel | square       | opaque black       | 1             | 5.04.916.231/1501 |
| stainless steel | square       | opaque black       | 2             | 5.04.916.232/1501 |
| stainless steel | square       | opaque black       | 3             | 5.04.916.233/1501 |
| stainless steel | square       | opaque black       | E             | 5.04.916.253/1501 |
| stainless steel | square       | opaque black       | 0             | 5.04.916.257/1501 |
| stainless steel | square       | opaque black       | -1            | 5.04.916.258/1501 |
| stainless steel | square       | transparent yellow | symbol „bell“ | 5.04.916.254/2214 |

RG  
85 III

## RG 85 III

### Lens for keylock switches, round



| → Version       | Form of lens | Legending color | Legending | Order no.         |
|-----------------|--------------|-----------------|-----------|-------------------|
| aluminum        | round        | -               | -         | 5.04.915.200/2000 |
| stainless steel | round        | -               | -         | 5.04.914.200/2000 |

## RG 85 III

### Lens for keylock switches, square



| → Version       | Form of lens | Legending color | Legending | Order no.         |
|-----------------|--------------|-----------------|-----------|-------------------|
| aluminum        | square       | -               | -         | 5.04.915.201/2000 |
| stainless steel | square       | -               | -         | 5.04.914.201/2000 |

# PCB KEY SWITCHES

RG 85 III - SPECIAL ACCESSORIES



## RG 85 III Lens, round, for signal indicators

| → Version           | Form of lens | Legending color | Legending | Order no.         |
|---------------------|--------------|-----------------|-----------|-------------------|
| plastic translucent | round        | -               | -         | 5.04.903.010/0000 |



## RG 85 III Lens, square, for signal indicators

| → Version           | Form of lens | Legending color | Legending | Order no.         |
|---------------------|--------------|-----------------|-----------|-------------------|
| plastic translucent | square       | -               | -         | 5.04.903.009/0000 |

4

RG  
85 III

RG 85 III  
Lens, triangular,  
for signal indicators



| → Version           | Form of lens | Legending color | Legending | Order no.         |
|---------------------|--------------|-----------------|-----------|-------------------|
| plastic translucent | triangular   | -               | -         | 5.04.903.011/0000 |

Cable, 8 wire, with socket  
connectors on both ends



| → Version   | Order no.         |
|-------------|-------------------|
| length: 1 m | 5.03.772.261/0000 |
| length: 2 m | 5.03.772.262/0000 |

# PCB KEY SWITCHES

RG 85 III - SPECIAL ACCESSORIES

## Fixing rail, length 490 mm



| → Version      | Order no.         |
|----------------|-------------------|
| length: 490 mm | 5.41.032.173/7500 |



## Spacer

| → Version         | Order no.         |
|-------------------|-------------------|
| mounting on rails | 5.30.163.021/6000 |
| single mounting   | 5.30.163.024/6000 |



## Fixing piece for mounting the elements with the rail fixing method

| → Description                                                      | Order no.         |
|--------------------------------------------------------------------|-------------------|
| Fixing piece for mounting the elements with the rail fixing method | 5.55.104.208/0459 |

4

RG  
85 III

## RS 76 - FULL-TRAVEL KEY SWITCHES



# PCB KEY SWITCHES

## RS 76 - FULL-TRAVEL KEY SWITCHES

### Content

|                                                                     |                |
|---------------------------------------------------------------------|----------------|
| <b>RS 76 M - Full-travel key switches, not illuminable</b>          | <b>4 - 150</b> |
| RS 76 M - Full-travel key switch, not illuminable                   | 4 - 151        |
| RS 76 M - Full-travel key switch, with diode, not illuminable       | 4 - 152        |
| <b>RS 76 M - Full-travel key switches, illuminable</b>              | <b>4 - 153</b> |
| RS 76 M - Full-travel key switch, illuminable, momentary            | 4 - 154        |
| RS 76 M - Full-travel key switch, illuminable, latching             | 4 - 155        |
| RS 76 MX - Full-travel key switch, fully illuminable                | 4 - 155        |
| <b>RS 76 C - Full-travel key switches, not illuminable</b>          | <b>4 - 156</b> |
| RS 76 C - Full-travel key switch, not illuminable                   | 4 - 157        |
| <b>RS 76 C - Full-travel key switches, illuminable</b>              | <b>4 - 158</b> |
| RS 76 C - Full-travel key switch, illuminable, momentary            | 4 - 159        |
| RS 76 C - Full-travel key switch, illuminable, latching             | 4 - 160        |
| <b>RS 76 - Keycaps, not illuminable</b>                             | <b>4 - 161</b> |
| RS 76 C - Keycap, opaque                                            | 4 - 161        |
| RS 76 C - Keycap, opaque, with nail protection                      | 4 - 162        |
| RS 76 C - Keycap with legend insert                                 | 4 - 162        |
| <b>RS 76 - Keycaps, illuminable</b>                                 | <b>4 - 163</b> |
| RS 76 - Keycap with light bar                                       | 4 - 163        |
| RS 76 - Keycap, illuminable, with legend insert                     | 4 - 164        |
| RS 76 - Keycap, illuminable, with nail protection and legend insert | 4 - 164        |
| RS 76 - Keycap, illuminable, with legend insert                     | 4 - 165        |
| RS 76 MX - Keycap, fully illuminable                                | 4 - 165        |
| <b>RS 76 - Keycaps, with legend, two-shot molded/keycap sets</b>    | <b>4 - 166</b> |
| RS 76 - Keycap set, symbols A-Z                                     | 4 - 166        |
| RS 76 - Keycap set, symbols 0-9                                     | 4 - 167        |
| <b>RS 76 - Accessories</b>                                          | <b>4 - 168</b> |
| RS 76 - Cover IP40                                                  | 4 - 168        |

The RAFI full-travel key switches RS 76 are modular systems for designing individual key blocks and keyboards in the 3/4 inch (= 19.05 mm) grid.

### Definitions

#### Momentary key switches

Momentary key switches return to their initial position after being pressed (momentary action).

#### Latching key switches

Latching key switches lock when actuated and are returned to their initial position when pressed again (push-push action).

#### Keycap materials

Keycap without legend insert: ABS

Keycap with legend insert:

- Keycap body: ABS
- Lens: PC

#### Keycap, n-module

A 2-module keycap f. ex. has the twofold length of a 1-module keycap.

#### Contact principle

There are two contact principles:

- **Mechanical (M):** Cross contact (RS 76 M)  
Bridge contact  
(RS 76 M, illuminated)
- **Contactless (C):** Based on Hall-IC (RS 76 C)

#### Manual Soldering

The soldering temperature should not exceed 300 °C and the soldering time should be less than 5 seconds.

### Legending of keycaps

Keycaps can be legended by different methods:

#### Two-shot moulding

Using this method the symbol is separately manufactured from a plastic and then the appropriate keycap form is moulded round it. Advantage: The character becomes an integrated part of the keycap, thus eliminating abrasion. All RAFI keycap sets with standard legending are manufactured by this method.

Customer specific two-shot moulded keycaps on request.

#### Printing

Keycaps can be printed with a two-component ink on request. The abrasion of this kind of legending is high. This method of legending is suitable for average volumes.

#### Engraving

In this labour intensive process the keycaps are engraved with the required symbol, then inlaid with ink. Only used for small volumes.

#### Laser-printing

This method of legending can be recommended when complete keyboards are required in different keyboard layouts for which RAFI will develop the respective software. The keyboards can then be legended within a short time. This method of legending is particularly recommended for average to large volumes.

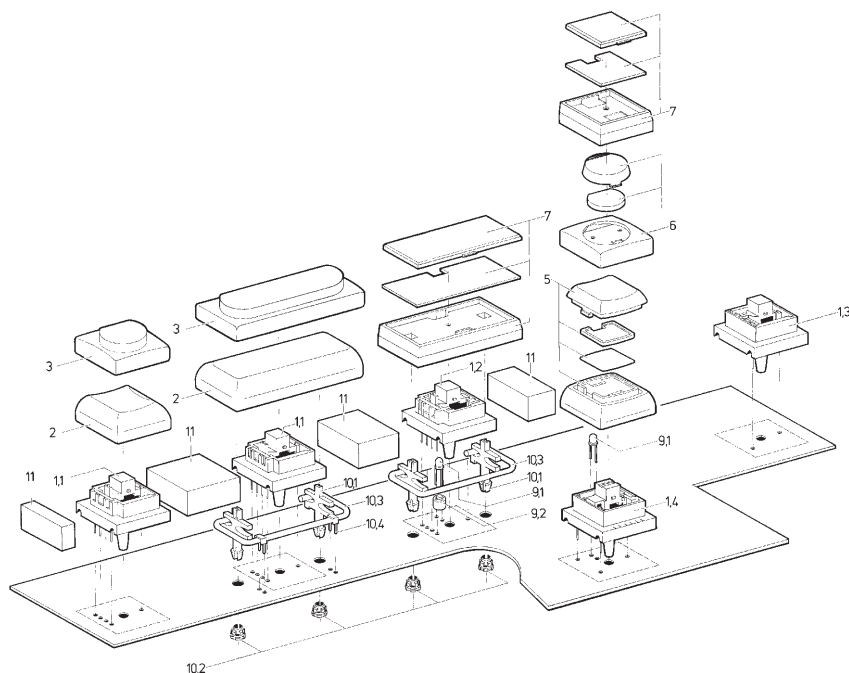
#### Legend inserts

In the case of keycaps with replaceable legend inserts it is possible to print or engrave the legend inserts. As these inserts are protected by the lens, there can be no abrasion here either.

# PCB KEY SWITCHES

RS 76 M/C - FULL-TRAVEL KEY SWITCHES

## Design



### No. Description

- 1.1 Key switch RS 76 C
- 1.2 Key switch RS 76 C with LED
- 1.3 Key switch RS 76 M
- 1.4 Key switch R 76 M with LED
- 2 Keycap, 1- resp. multi-module
- 3 Keycap with nail protection, 1- resp. multi-module
- 5 Keycap, illuminated
- 6 Keycap, illuminated
- 7 Keycap, illuminated
- 9.1 LED

- 9.2 Spacer for LED (for RS 76 C only)
- 10.1 Plunger for multi-moduel keycaps\*
- 10.2 Sleeve for multi-moduel keycaps\*
- 10.3 Metal lever for multi-module keycaps\*
- 10.4 Bearing bracket for multi-module keycaps\*
- 11 Covers

\* These parts are included as a complete packet in the delivery of keycaps  $\geq 2$ -module.

4

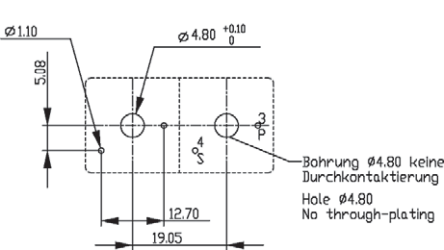
Hole pattern PCB RS 76 M/C

The hole patterns apply to the horizontal position of the keycaps only. Should they be in a vertical position, the momentary key switch must be mounted accordingly, i. e. rotated by 90°.

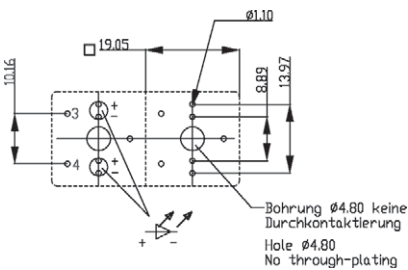
For 1 – 13/4-module keycaps (view on component side)

Momentary key switch, non-illuminated

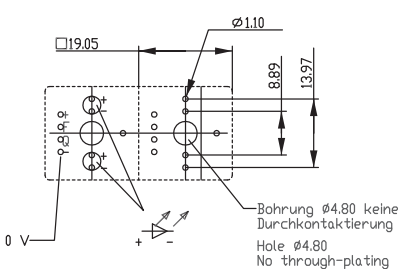
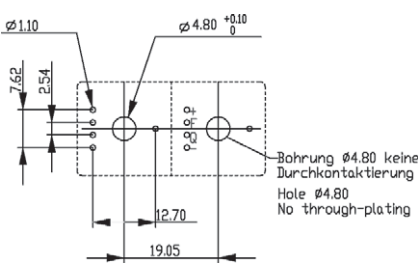
RS 76 M



Momentary key switch, non-illuminated



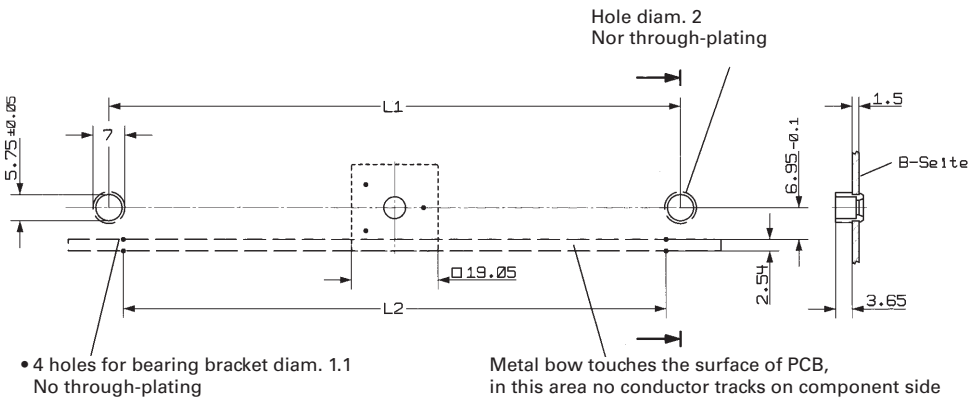
RS 76 C



For 2-, 3- and 8-module keycaps (view on component side)

Momentary key switch, non-illuminated

RS 76 M/C



| Keycap   | L 1<br>mm | L 2<br>mm |
|----------|-----------|-----------|
| 2-module | 25.40     | 22.86     |
| 3-module | 30.48     | 24.13     |
| 5-module | 68.58     | 68.58     |

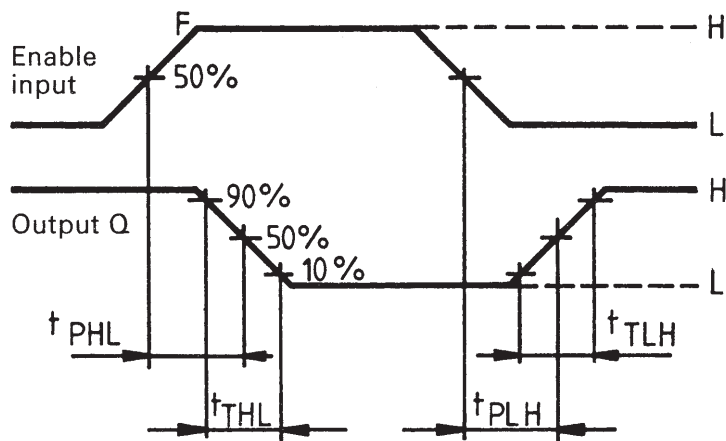
**Important note:** In the case of 2-, 3- and 8-module keycaps, additional holes must be provided for the accessories. In the case of keycaps < 2-module, neither accessories nor holes are required.

# PCB KEY SWITCHES

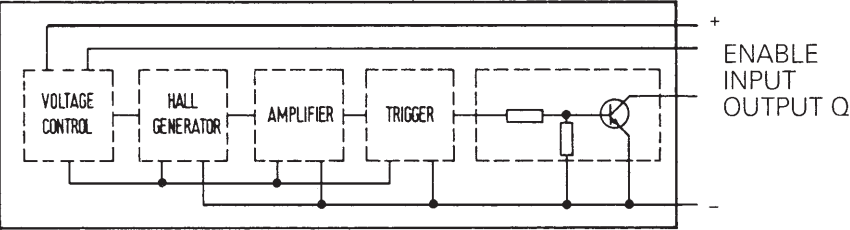
RS 76 M/C - FULL-TRAVEL KEY SWITCHES

## Specific technical data RS 76 C

| Output pulse diagram<br>Dynamic characteristics (max.) |                  | Tw = 25 °C | Tw = 50 °C | Tw = 70 °C |
|--------------------------------------------------------|------------------|------------|------------|------------|
| Turn-on delay time                                     | t <sub>PHL</sub> | 3 µs       | 7 µs       | 10 µs      |
| Turn-off delay time                                    | t <sub>PHL</sub> | 4 µs       | 5 µs       | 6 µs       |
| Fall/rise time                                         | t <sub>PHL</sub> | 2 µs       | 2,5 µs     | 3 µs       |
|                                                        | t <sub>PHL</sub> | 1 µs       | 1,5 µs     | 2,5 µs     |

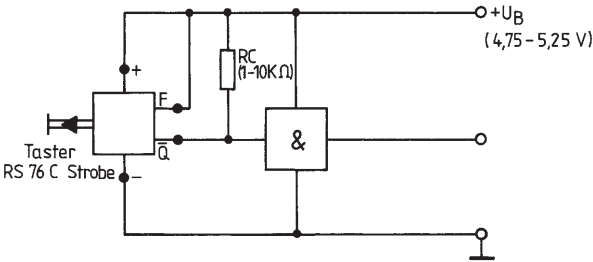


Block diagram  
Hall IC

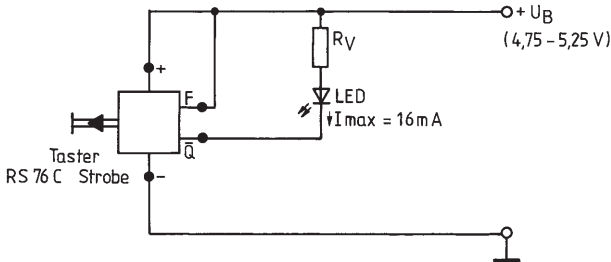


Static with Enable Input

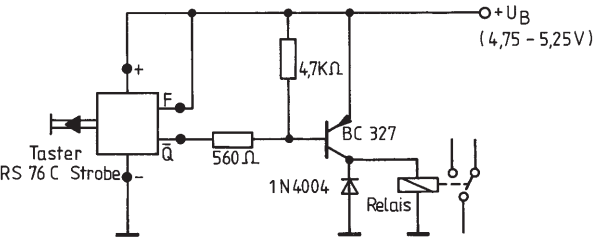
## Examples for application RS 76 C



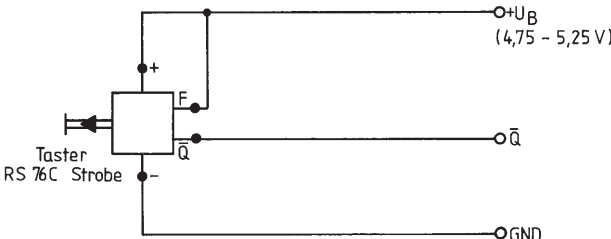
Driving of logic components



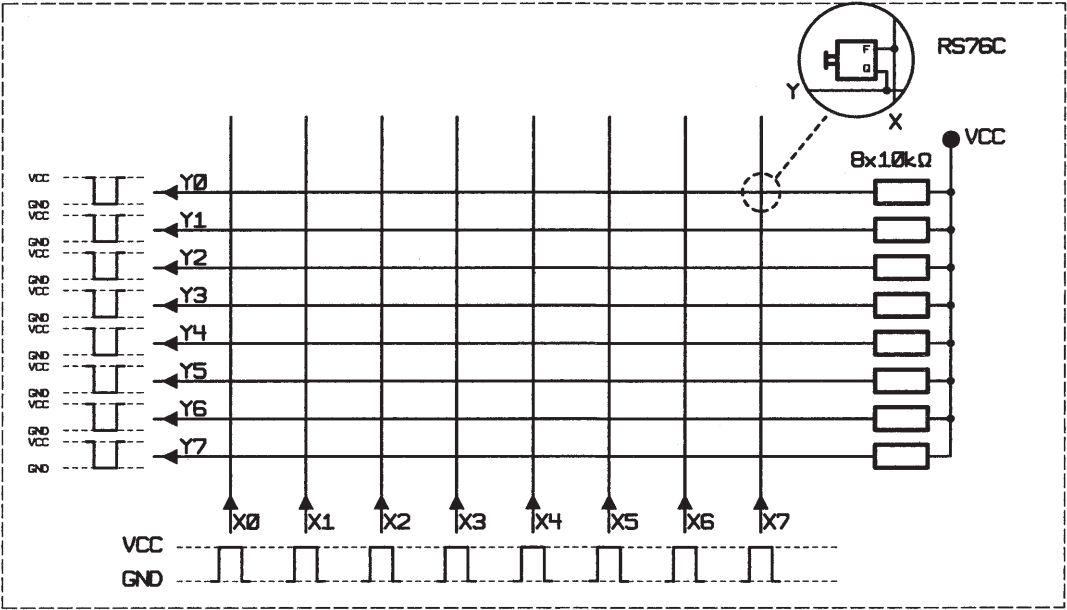
Indication of logical states



Driving of a PNP transistor



Use as static key with open collector output.  
Output transistor (NPN) is conductive when actuated.



Use in keyboards

# PCB KEY SWITCHES

RS 76 M - FULL-TRAVEL KEY SWITCHES, NON-ILLUMINATED



## RS 76 M Full-travel key switches, not illuminable

### Technical Data

|                                      |                                          |
|--------------------------------------|------------------------------------------|
| <b>→ General information</b>         |                                          |
| Recommended key grid                 | 19.05 mm                                 |
| <b>→ Mechanical design</b>           |                                          |
| Contact function                     | momentary                                |
| Mounting                             | soldering                                |
| Terminals                            | solder terminals, tin-plated             |
| Contact system                       | cross contact                            |
| Contact arrangement                  | 1 NO                                     |
| Contact materials                    | Au alloy                                 |
| Illumination                         | no                                       |
| <b>→ Mechanical characteristics</b>  |                                          |
| Operating force max.                 | see order block                          |
| Operating travel                     | 4 mm                                     |
| Switching travel                     | 1.5 - 2.8 mm                             |
| Robustness max.                      | 100 N                                    |
| <b>→ Electrical characteristics</b>  |                                          |
| Rated voltage min.                   | 2 V (with Diode 3 V)                     |
| Rated voltage max.                   | 35 V                                     |
| Rated current min.                   | 0.01 mA                                  |
| Rated current max.                   | 100 mA                                   |
| Rated power max.                     | 1 W                                      |
| Contact resistance when new max.     | 100 mΩ (ohne Diode)                      |
| Contact resistance acc. to life max. | 3 Ω (without diode)                      |
| Insulation resistance                | 10 <sup>9</sup> Ω                        |
| ESD strength max.                    | 8 kV                                     |
| Bouncing time max.                   | 5 ms                                     |
| <b>→ Other specifications</b>        |                                          |
| Ambient temp. operating min.         | -25 °C                                   |
| Ambient temp. operating max.         | +70 °C                                   |
| Storage temperature min.             | -40 °C                                   |
| Storage temperature max. (product)   | +80 °C                                   |
| Storage temperature max. (rail)      | +50 °C                                   |
| Environmental resistance             | acc. to IEC 60068-2-14, -30, -33 and -78 |
| Operating life min. (operations)     | 10 <sup>7</sup>                          |
| Degree of protection                 | IP40 (DIN EN 60529)                      |
| Flammability of materials            | UL 94 HB                                 |
| ROHS compliant                       | yes                                      |
| REACH compliant                      | yes                                      |

### Accessories RS 76 M - Full-travel key switch, not illuminable

| → Description                       | Photo | Order no. | Additional accessories see page |
|-------------------------------------|-------|-----------|---------------------------------|
| RS 76 C - Keycap with legend insert |       | -         | 4 - 162                         |
| RS 76 C - Keycap, opaque            |       | -         | 4 - 161                         |

# PCB KEY SWITCHES

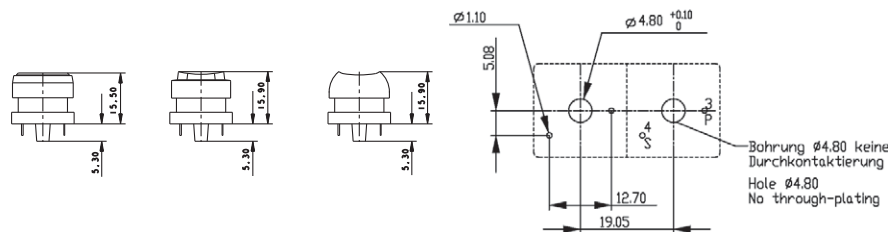
RS 76 M - FULL-TRAVEL KEY SWITCHES, NON-ILLUMINATED

– Table (continued) –  
Accessories RS 76 M - Full-travel key switch, not illuminable

| → Description                                  | Photo                                                                             | Order no. | Additional accessories see page |
|------------------------------------------------|-----------------------------------------------------------------------------------|-----------|---------------------------------|
| RS 76 C - Keycap, opaque, with nail protection |  | -         | 4 - 162                         |

## RS 76 M Full-travel key switch, not illuminable

Technical data see page 4 - 150



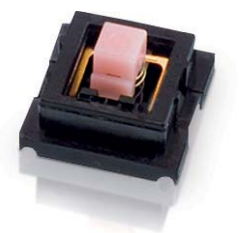
| → Contact function | Illumination | Contact arrangement | Contact materials | Operating travel | Operating force max. | Order no.         |
|--------------------|--------------|---------------------|-------------------|------------------|----------------------|-------------------|
| momentary          | no           | 1 NO                | Au alloy          | 4 mm             | 0.9 N                | 3.13.002.502/0000 |
| momentary          | no           | 1 NO                | Au alloy          | 4 mm             | 1.4 N                | 3.13.002.512/0000 |

For accessories, refer to RS 76 special accessories.

For keycaps, see keycaps for RS 76.

# PCB KEY SWITCHES

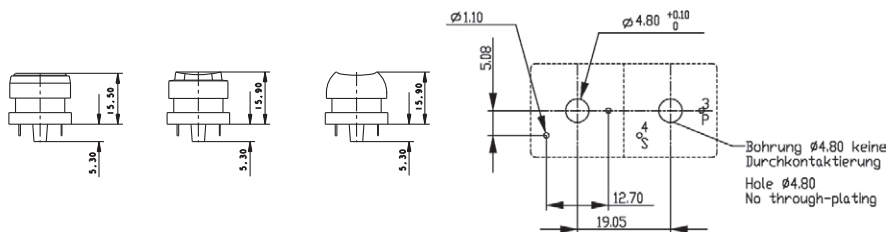
RS 76 M - FULL-TRAVEL KEY SWITCHES, NON-ILLUMINATED



## RS 76 M

### Full-travel key switch, with diode, not illuminable

Technical data see page 4 - 150



| → | Contact function | Illumination | Contact arrangement | Contact materials | Operating travel | Operating force max. | Order no.         |
|---|------------------|--------------|---------------------|-------------------|------------------|----------------------|-------------------|
|   | momentary        | no           | 1 NO                | Au alloy          | 4 mm             | 0.9 N                | 3.13.005.001/0000 |
|   | momentary        | no           | 1 NO                | Au alloy          | 4 mm             | 1.4 N                | 3.13.005.011/0000 |

For accessories, refer to RS 76 special accessories.  
 For keycaps, see keycaps for RS 76.

# RS 76 M

## Full-travel

## key switches,

## illuminable

### Technical Data

#### → General information

|                      |          |
|----------------------|----------|
| Recommended key grid | 19.05 mm |
|----------------------|----------|

#### → Mechanical design

|                     |                              |
|---------------------|------------------------------|
| Contact function    | see order block              |
| Mounting            | soldering                    |
| Terminals           | solder terminals, tin-plated |
| Contact system      | bridge contact               |
| Contact arrangement | 1 NO                         |
| Contact materials   | Au alloy                     |
| Illumination        | see order block              |

#### → Mechanical characteristics

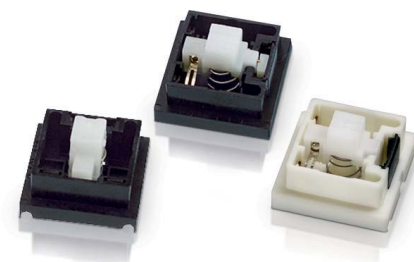
|                      |              |
|----------------------|--------------|
| Operating force max. | 1 N          |
| Operating travel     | 4 mm         |
| Switching travel     | 1.5 - 2.8 mm |
| Robustness max.      | 100 N        |

#### → Electrical characteristics

|                                      |                   |
|--------------------------------------|-------------------|
| Rated voltage min.                   | 2 V               |
| Rated voltage max.                   | 35 V              |
| Rated current min.                   | 0.01 mA           |
| Rated current max.                   | 100 mA            |
| Rated power max.                     | 1 W               |
| Contact resistance when new max.     | 200 mΩ            |
| Contact resistance acc. to life max. | 3 Ω               |
| Insulation resistance                | 10 <sup>9</sup> Ω |
| ESD strength max.                    | 8 kV              |
| Bouncing time max.                   | 10 ms             |

#### → Other specifications

|                                    |                                                     |
|------------------------------------|-----------------------------------------------------|
| Ambient temp. operating min.       | -25 °C                                              |
| Ambient temp. operating max.       | +70 °C                                              |
| Storage temperature min.           | -40 °C                                              |
| Storage temperature max. (product) | +80 °C                                              |
| Storage temperature max. (rail)    | +50 °C                                              |
| Environmental resistance           | acc. to IEC 60068-2-14, -30, -33 and -78            |
| Operating life min. (operations)   | 10 <sup>7</sup> momentary, 10 <sup>5</sup> latching |
| Degree of protection               | IP40 (DIN EN 60529)                                 |
| Flammability of materials          | UL 94 HB                                            |
| ROHS compliant                     | yes                                                 |
| REACH compliant                    | yes                                                 |



RS 76MX, with illuminated keycaps

### Accessories RS 76 M - Full-travel key switch, illuminable

#### → Description

| Description                                     | Photo | Order no. | Additional accessories see page |
|-------------------------------------------------|-------|-----------|---------------------------------|
| RS 76 - Cover IP40                              |       | -         | 4 - 168                         |
| RS 76 - Keycap with light bar                   |       | -         | 4 - 163                         |
| RS 76 - Keycap, illuminable, with legend insert |       | -         | 4 - 164                         |

# PCB KEY SWITCHES

RS 76 M - FULL-TRAVEL KEY SWITCHES, ILLUMINATED

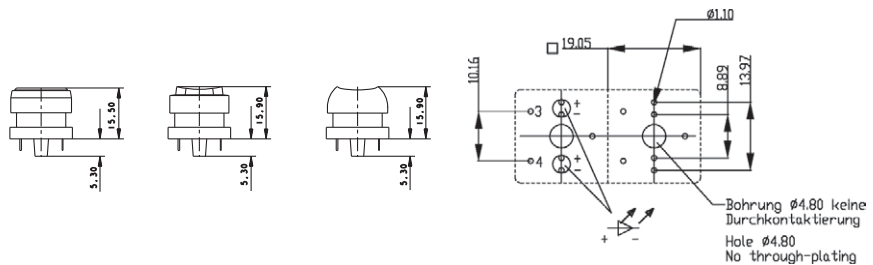
– Table (continued) –  
Accessories RS 76 M - Full-travel key switch, illuminable

| → Description                                                       | Photo                                                                             | Order no. | Additional accessories see page |
|---------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------|---------------------------------|
| RS 76 - Keycap, illuminable, with nail protection and legend insert |  | -         | 4 - 164                         |



## RS 76 M Full-travel key switch, illuminable, momentary

Technical data see page 4 - 153



| → Contact function | Contact system | Illumination                          | Recommended key grid | Order no.         |
|--------------------|----------------|---------------------------------------|----------------------|-------------------|
| momentary          | bridge contact | spot illumination possible with 3 LED | 19.05 mm             | 3.13.002.102/0000 |

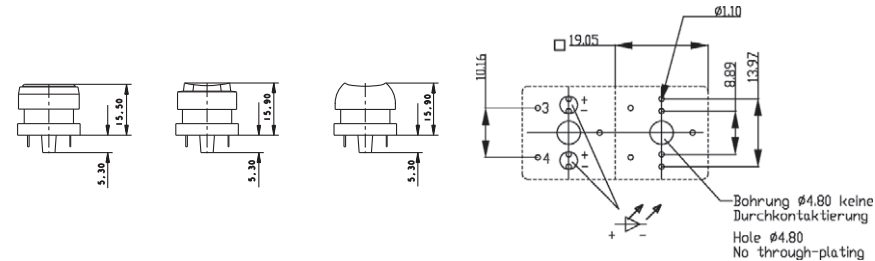
4

For accessories, refer to RS 76 special accessories.  
For keycaps, see keycaps for RS 76.  
**Accessoires:**  
THT LED 3 mm, without base: see page 2 - 263, 5 - 8

## RS 76 M

### Full-travel key switch, illuminable, latching

Technical data see page 4 - 153



| → Contact function | Contact system | Illumination                          | Recommended key grid | Order no.         |
|--------------------|----------------|---------------------------------------|----------------------|-------------------|
| latching           | bridge contact | spot illumination possible with 3 LED | 19.05 mm             | 3.13.002.022/0000 |

For accessories, refer to RS 76 special accessories.

For keycaps, see keycaps for RS 76.

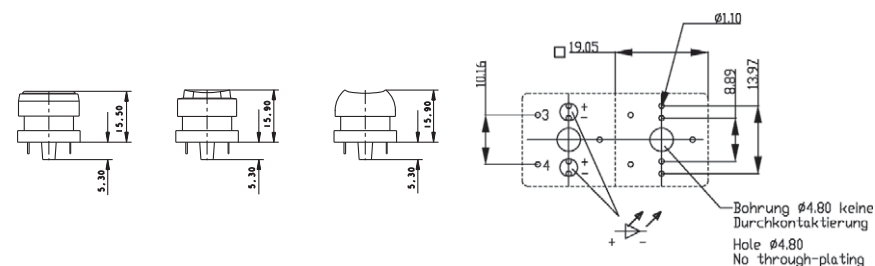
#### Accessoires:

THT LED 3 mm, without base: see page 2 - 263, 5 - 8

## RS 76 MX

### Full-travel key switch, fully illuminable

Technical data see page 4 - 153



| → Contact function | Contact system | Illumination     | Recommended key grid | Order no.         |
|--------------------|----------------|------------------|----------------------|-------------------|
| momentary          | bridge contact | 2 SMT LED needed | 19.05 mm             | 3.13.002.922/0000 |

For accessories, refer to RS 76 special accessories.

For keycaps, see keycaps for RS 76.

The SMT LEDs are soldered on the back of the printed circuit board and shine through openings in the board and key switch housing.

#### Accessoires:

RS 76 MX - Keycap, fully illuminated: 5.05.511.168/0209

RS 76 MX - Keycap, fully illuminated: 5.05.511.168/0754



# PCB KEY SWITCHES

RS 76 C - FULL-TRAVEL KEY SWITCHES, NON-ILLUMINATED



## RS 76 C Full-travel key switches, not illuminable

### Technical Data

#### → General information

|                      |          |
|----------------------|----------|
| Recommended key grid | 19.05 mm |
|----------------------|----------|

#### → Mechanical design

|                  |                              |
|------------------|------------------------------|
| Contact function | momentary                    |
| Mounting         | soldering                    |
| Terminals        | solder terminals, tin-plated |
| Contact system   | contactless with Hall-IC     |
| Illumination     | no                           |

#### → Mechanical characteristics

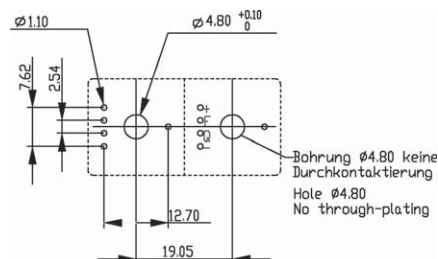
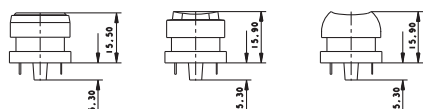
|                      |                 |
|----------------------|-----------------|
| Switching travel off | 0.8 ... 2.4 mm  |
| Operating force max. | see order block |
| Operating travel     | 4 mm            |
| Switching travel on  | 1.5 - 2.8 mm    |
| Robustness max.      | 100 N           |

#### → Electrical characteristics

|                                                 |                 |
|-------------------------------------------------|-----------------|
| Operating voltage DC                            | 4.75 ... 5.25 V |
| Supply current max. at $U_{IL} = 0 V$           | 0.5 mA          |
| Supply current max. at $U_{IH} = 5 V$           | 5 mA            |
| Input voltage (F) at $U_{IL} = 0 V$             | 0.4 V           |
| Input voltage (F) at $U_{IH} = 2.4 V$           | 5.25 V          |
| Output load current (Q) max.                    | 16 mA           |
| Output residual current (Q) max.                | 10 $\mu A$      |
| Output saturation voltage (Q) max.<br>bei 16 mA | 0.4 V           |
| ESD strength max.                               | 8 kV            |
| Output switching times (Q) at 25 °C, $t_{PHL}$  | 3 $\mu s$       |
| Output switching times (Q) at 25 °C, $t_{PLH}$  | 4 $\mu s$       |
| Output switching times (Q) at 25 °C, $t_{THL}$  | 1 $\mu s$       |
| Output switching times (Q) at 25 °C, $t_{TLH}$  | 2 $\mu s$       |

#### → Other specifications

|                                    |                                          |
|------------------------------------|------------------------------------------|
| Reliability of Hall-IC at 25 °C    | $\lambda = 2.5 \times 10^{-7} h^{-1}$    |
| Ambient temp. operating min.       | 0 °C                                     |
| Ambient temp. operating max.       | +70 °C                                   |
| Storage temperature min.           | -40 °C                                   |
| Storage temperature max. (product) | +80 °C                                   |
| Storage temperature max. (rail)    | +50 °C                                   |
| Environmental resistance           | acc. to IEC 60068-2-14, -30, -33 and -78 |
| Operating life min. (operations)   | see order block                          |
| Degree of protection               | IP40 (DIN EN 60529)                      |
| Flammability of materials          | UL 94 HB                                 |
| ROHS compliant                     | yes                                      |
| REACH compliant                    | yes                                      |



# PCB KEY SWITCHES

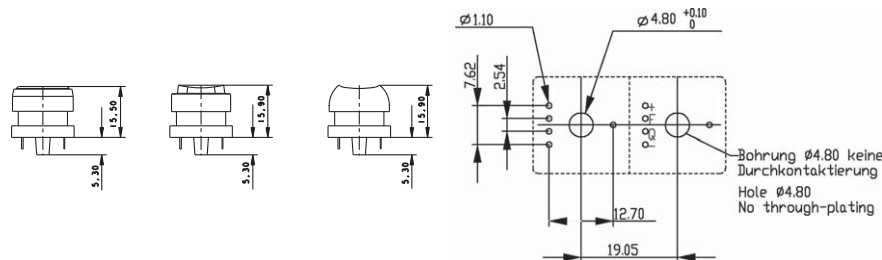
RS 76 C - FULL-TRAVEL KEY SWITCHES, NON-ILLUMINATED

## Accessories RS 76 C - Full-travel key switch, not illuminable

| → Description                                  | Photo                                                                             | Order no. | Additional accessories see page |
|------------------------------------------------|-----------------------------------------------------------------------------------|-----------|---------------------------------|
| RS 76 C - Keycap with legend insert            |  | -         | 4 - 162                         |
| RS 76 C - Keycap, opaque                       |  | -         | 4 - 161                         |
| RS 76 C - Keycap, opaque, with nail protection |  | -         | 4 - 162                         |

## RS 76 C Full-travel key switch, not illuminable

Technical data see page 4 - 156



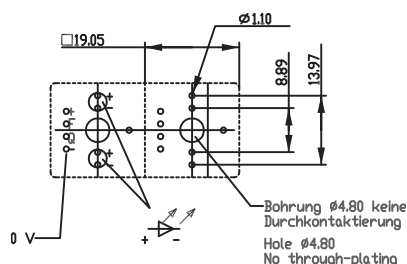
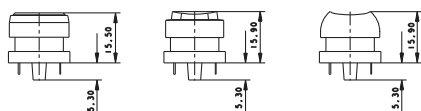
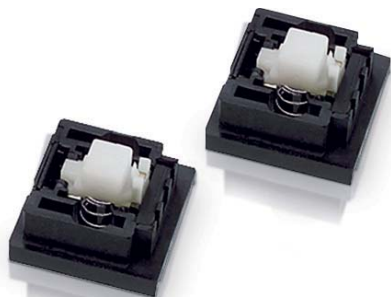
| → Contact function | Operating life min. (operations) | Illumination | Operating force max. | Operating travel | Order no.         |
|--------------------|----------------------------------|--------------|----------------------|------------------|-------------------|
| momentary          | $10^8$                           | no           | 0.7 N                | 4 mm             | 3.13.001.010/0000 |
| momentary          | $10^8$                           | no           | 1 N                  | 4 mm             | 3.13.001.210/0000 |

For accessories and keycaps, refer to RS 76. For applications, refer to the general description of RS 76.

# PCB KEY SWITCHES

RS 76 C - FULL-TRAVEL KEY SWITCHES, ILLUMINATED

## RS 76 C Full-travel key switches, illuminable



### Technical Data

#### → General information

|                      |          |
|----------------------|----------|
| Recommended key grid | 19.05 mm |
|----------------------|----------|

#### → Mechanical design

|                  |                              |
|------------------|------------------------------|
| Contact function | see order block              |
| Mounting         | soldering                    |
| Terminals        | solder terminals, tin-plated |
| Contact system   | contactless with Hall-IC     |
| Illumination     | with LED                     |
| LED color        | see order block              |

#### → Mechanical characteristics

|                      |                |
|----------------------|----------------|
| Switching travel on  | 1.5 - 2.8 mm   |
| Switching travel off | 0.8 ... 2.4 mm |
| Operating force max. | 0.7 N          |
| Operating travel     | 4 mm           |
| Robustness max.      | 100 N          |

#### → Electrical characteristics

|                                                |                 |
|------------------------------------------------|-----------------|
| Number of LED                                  | see order block |
| Operating voltage DC                           | 4.75 ... 5.25 V |
| Supply current max. at $U_{IL} = 0 V$          | 0.5 mA          |
| Supply current max. at $U_{IH} = 5 V$          | 5 mA            |
| Input voltage (F) at $U_{IL} = 0 V$            | 0.4 V           |
| Input voltage (F) at $U_{IH} = 2.4 V$          | 5.25 V          |
| Output load current (Q) max.                   | 16 mA           |
| Output residual current (Q) max.               | 10 $\mu A$      |
| Output saturation voltage (Q) max. bei 16 mA   | 0.4 V           |
| ESD strength max.                              | 8 kV            |
| Output switching times (Q) at 25 °C, $t_{PHL}$ | 3 $\mu s$       |
| Output switching times (Q) at 25 °C, $t_{PLH}$ | 4 $\mu s$       |
| Output switching times (Q) at 25 °C, $t_{THL}$ | 1 $\mu s$       |
| Output switching times (Q) at 25 °C, $t_{TLH}$ | 2 $\mu s$       |

#### → Other specifications

|                                    |                                          |
|------------------------------------|------------------------------------------|
| Reliability of Hall-IC at 25 °C    | $\lambda = 2.5 \times 10^{-7} h^{-1}$    |
| Ambient temp. operating min.       | 0 °C                                     |
| Ambient temp. operating max.       | +70 °C                                   |
| Storage temperature min.           | -40 °C                                   |
| Storage temperature max. (product) | +80 °C                                   |
| Storage temperature max. (rail)    | +50 °C                                   |
| Environmental resistance           | acc. to IEC 60068-2-14, -30, -33 and -78 |
| Operating life min. (operations)   | see order block                          |
| Degree of protection               | IP40 (DIN EN 60529)                      |
| Flammability of materials          | UL 94 HB                                 |
| ROHS compliant                     | yes                                      |
| REACH compliant                    | yes                                      |

### Accessories RS 76 C - Full-travel key switch, illuminable

#### → Description

#### Photo

#### Order no.

#### Additional accessories see page

RS 76 - Cover IP40



-

4 - 168

RS  
76

# PCB KEY SWITCHES

## RS 76 C - FULL-TRAVEL KEY SWITCHES, ILLUMINATED

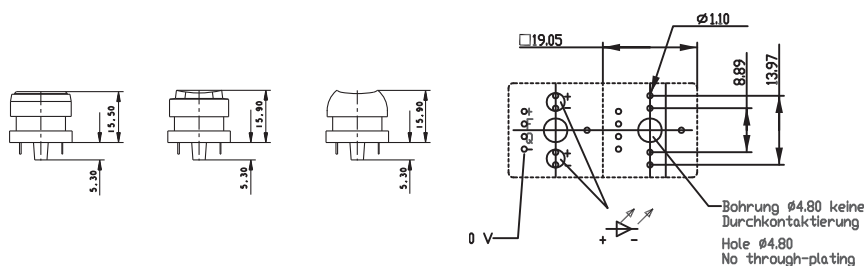
– Table (continued) –  
Accessories RS 76 C - Full-travel key switch, illuminable

| → Description                                                       | Photo                                                                             | Order no. | Additional accessories see page |
|---------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------|---------------------------------|
| RS 76 - Keycap with light bar                                       |  | -         | 4 - 163                         |
| RS 76 - Keycap, illuminable, with legend insert                     |  | -         | 4 - 164                         |
| RS 76 - Keycap, illuminable, with nail protection and legend insert |  | -         | 4 - 164                         |

## RS 76 C

### Full-travel key switch, illuminable, momentary

Technical data see page 4 - 158



| → Contact function | Operating life min. (operations) | Illumination | Operating force max. | Operating travel | Order no.         |
|--------------------|----------------------------------|--------------|----------------------|------------------|-------------------|
| momentary          | 10 <sup>8</sup>                  | with LED     | 0.7 N                | 4 mm             | 3.13.001.110/0000 |

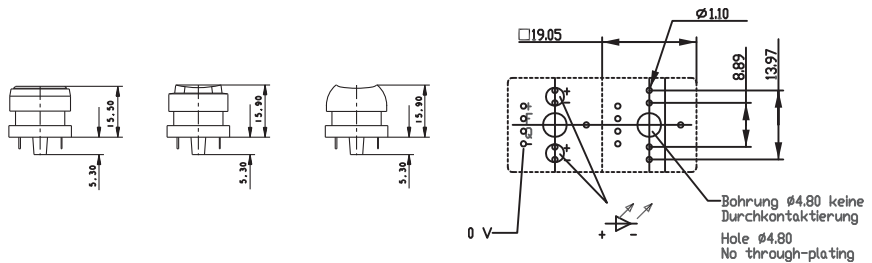
# PCB KEY SWITCHES

RS 76 C - FULL-TRAVEL KEY SWITCHES, ILLUMINATED



## RS 76 C Full-travel key switch, illuminable, latching

Technical data see page 4 - 158



| → Contact function | Operating life min. (operations) | Illumination | Operating force max. | Operating travel | Order no.         |
|--------------------|----------------------------------|--------------|----------------------|------------------|-------------------|
| latching           | 10 <sup>5</sup>                  | with LED     | 0.7 N                | 4 mm             | 3.13.001.130/0000 |

# RS 76

## Keycaps, not illuminable

Technical Data

|                               |                 |
|-------------------------------|-----------------|
| → General information         |                 |
| Form of lens                  | see order block |
| Color of keycap / legending   | see order block |
| Color of lens / legend insert | see order block |
| Illumination                  | see order block |
| Degree of protection          | see order block |
| Size of keycap                | see order block |
| → Other specifications        |                 |
| ROHS compliant                | yes             |
| REACH compliant               | yes             |



## RS 76 C

### Keycap, opaque

Technical data see page 4 - 161



Keycap, light grey



| → Size of keycap | Illumination | Color of keycap / legending | Color of lens / legend insert | Order no.         |
|------------------|--------------|-----------------------------|-------------------------------|-------------------|
| 1-module         | no           | charcoal grey/-             | -                             | 5.82.000.000/0152 |
| 1-module         | no           | light grey/-                | -                             | 5.82.000.000/0242 |

Keycap sets available in two-shot molded design.  
Other keycap sizes, e.g. 1.25-, 1.5-, 1.75-, 2-, 3-, 5- and 8-module versions available on request.

# PCB KEY SWITCHES

RS 76 - KEYCAPS, NON-ILLUMINATED



## RS 76 C Keycap, opaque, with nail protection

Technical data see page 4 - 161



opaque with nail protection charcoal grey / white

| → Size of keycap | Illumination | Color of keycap / legending | Color of lens / legend insert | Order no.         |
|------------------|--------------|-----------------------------|-------------------------------|-------------------|
| 1-module         | no           | charcoal grey/-             | -                             | 5.80.000.000/0152 |
| 1-module         | no           | light grey/-                | -                             | 5.80.000.000/0242 |

Keycap sets available in two-shot molded design.

Other keycap sizes, e.g. 1.25-, 1.5-, 1.75-, 2-, 3- and 8-module versions available on request.

4



## RS 76 C Keycap with legend insert

Technical data see page 4 - 161

| → Size of keycap | Illumination | Color of keycap / legending | Color of lens / legend insert | Order no.         |
|------------------|--------------|-----------------------------|-------------------------------|-------------------|
| 1-module         | no           | charcoal grey/-             | colorless/white               | 5.04.665.221/5520 |
| 1-module         | no           | light grey/-                | colorless/white               | 5.04.665.230/5520 |

Supplied as single parts: Mat lens, legend insert, keycap body.

Other colors on request.

RS 76

Keycaps, illuminable

Technical Data

|                               |                 |
|-------------------------------|-----------------|
| → General information         |                 |
| Form of lens                  | see order block |
| Color of keycap / legending   | see order block |
| Color of lens / legend insert | see order block |
| Illumination                  | see order block |
| Degree of protection          | see order block |
| Size of keycap                | see order block |
| → Other specifications        |                 |
| ROHS compliant                | yes             |
| REACH compliant               | yes             |



RS 76

Keycap with light bar

Technical data see page 4 - 163



| → Size of keycap | Illumination | Color of keycap / legending | Color of lens / legend insert | Order no.         |
|------------------|--------------|-----------------------------|-------------------------------|-------------------|
| 1-module         | yes          | light grey/-                | -                             | 5.82.110.000/0242 |
| 1-module         | yes          | charcoal grey/-             | -                             | 5.82.110.000/0152 |

Other colors on request.

# PCB KEY SWITCHES

RS 76 - KEYCAPS, ILLUMINATED



## RS 76 Keycap, illuminable, with legend insert

Technical data see page 4 - 163

| → Size of keycap | Illumination | Color of keycap / legending | Color of lens / legend insert | Order no.         |
|------------------|--------------|-----------------------------|-------------------------------|-------------------|
| 1-module         | yes          | charcoal grey/-             | colorless/white               | 5.04.665.521/5520 |
| 1-module         | yes          | light grey/-                | colorless/white               | 5.04.665.530/5520 |

Supplied as single parts: Mat lens, legend insert, diffuser foil, keycap body.

Other colors on request.



## RS 76 Keycap, illuminable, with nail protection and legend insert

Technical data see page 4 - 163

| → Size of keycap | Illumination | Color of keycap / legending | Color of lens / legend insert | Order no.         |
|------------------|--------------|-----------------------------|-------------------------------|-------------------|
| 1-module         | yes          | charcoal grey/-             | colorless/white               | 5.04.665.911/5520 |
| 1-module         | yes          | light grey/-                | colorless/white               | 5.04.665.920/5520 |

Supplied as single parts: Mat lens, legend insert, keycap body.

Other colors on request.

4

RS  
76

## RS 76

### Keycap, illuminable, with legend insert

Technical data see page 4 - 163



| → Size of keycap | Illumination | Color of keycap / legending | Color of lens / legend insert | Order no.         |
|------------------|--------------|-----------------------------|-------------------------------|-------------------|
| 1-module         | yes          | charcoal grey/-             | colorless/white               | 5.04.665.161/5520 |
| 1-module         | yes          | light grey/-                | colorless/white               | 5.04.665.170/5520 |

Supplied as single parts: Mat lens, legend insert, diffuser foil, keycap body.  
Other colors on request.

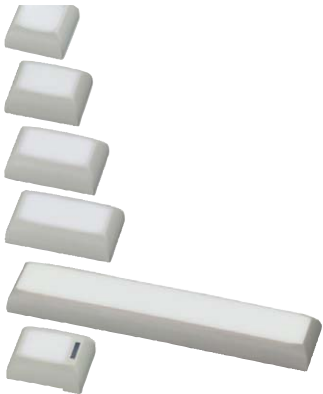
## RS 76 MX

### Keycap, fully illuminable

Technical data see page 4 - 163



RS 76MX, with illuminated keycaps



| → Size of keycap               | Illumination | Color of keycap / legending | Color of lens / legend insert | Order no.         |
|--------------------------------|--------------|-----------------------------|-------------------------------|-------------------|
| 1-module                       | yes          | white/-                     | white translucent/-           | 5.05.511.168/0209 |
| 1-module                       | yes          | light grey/-                | white translucent/-           | 5.05.511.168/0754 |
| 1¼-module                      | yes          | white/-                     | white translucent/-           | 5.05.511.169/0209 |
| 1½-module                      | yes          | white/-                     | white translucent/-           | 5.05.511.170/0209 |
| 1¾-module                      | yes          | white/-                     | white translucent/-           | 5.05.511.171/0209 |
| 1¼-module with light conductor | yes          | white/-                     | white translucent/-           | 5.05.511.173/0209 |

Laser-printed versions available on request.

# PCB KEY SWITCHES

RS 76 - KEYCAPS, WITH LEGEND, TWO-SHOT MOLDED/KEYCAP SETS



## RS 76 Keycaps, with legend, two-shot molded/ keycap sets



Mouse button, 2 x PS/2 connector

### Technical Data

→ **General information**

|                             |                 |
|-----------------------------|-----------------|
| Form of lens                | see order block |
| Color of keycap / legending | see order block |
| Symbol                      | see order block |
| Illumination                | see order block |
| Degree of protection        | see order block |
| Size of keycap              | see order block |

→ **Other specifications**

|                 |     |
|-----------------|-----|
| ROHS compliant  | yes |
| REACH compliant | yes |

4



## RS 76 Keycap set, symbols A-Z

Technical data see page 4 - 166

|   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | B | C | D | E | F | G | H | I | J | K | L | M |
| N | O | P | Q | R | S | T | U | V | W | X | Y | Z |



light beige

| → Size of keycap | Form of lens                       | Color of keycap / legending | Symbol | Order no.         |
|------------------|------------------------------------|-----------------------------|--------|-------------------|
| 1-module         | keycap opaque with nail protection | charcoal grey/white         | A-Z    | 5.00.999.500/0000 |
| 1-module         | keycap opaque with nail protection | light grey/black            | A-Z    | 5.00.999.824/0000 |
| 1-module         | keycap opaque                      | charcoal grey/white         | A-Z    | 5.00.999.525/0000 |
| 1-module         | keycap opaque                      | light grey/black            | A-Z    | 5.00.999.825/0000 |

Other symbols and colors on request.

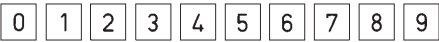
RS  
76

# PCB KEY SWITCHES

RS 76 - KEYCAPS, WITH LEGEND, TWO-SHOT MOLDED/KEYCAP SETS

## RS 76 Keycap set, symbols 0-9

Technical data see page 4 - 166



opaque with nail protection charcoal grey / white

| → Size of keycap | Form of lens                       | Color of keycap / legending | Symbol | Order no.         |
|------------------|------------------------------------|-----------------------------|--------|-------------------|
| 1-module         | keycap opaque with nail protection | charcoal grey/white         | 0-9    | 5.00.999.504/0000 |
| 1-module         | keycap opaque with nail protection | light grey/black            | 0-9    | 5.00.999.826/0000 |
| 1-module         | keycap opaque                      | charcoal grey/white         | 0-9    | 5.00.999.529/0000 |
| 1-module         | keycap opaque                      | light grey/black            | 0-9    | 5.00.999.827/0000 |

Other symbols and colors on request.

RS 76  
Accessories

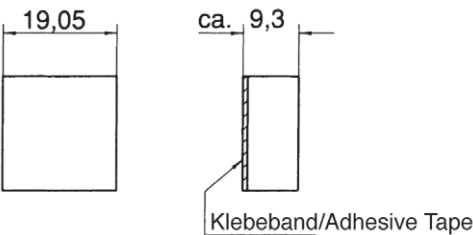


Technical Data

|                        |  |                 |
|------------------------|--|-----------------|
| → General information  |  |                 |
| Color                  |  | see order block |
| Size                   |  | see order block |
| → Other specifications |  |                 |
| ROHS compliant         |  | yes             |
| REACH compliant        |  | yes             |

RS 76  
Cover IP40

Technical data see page 4 - 168



| → Color       | Size     | Order no.         |
|---------------|----------|-------------------|
| charcoal grey | ¼-module | 5.04.520.171/0152 |
| light grey    | ¼-module | 5.04.520.171/0242 |
| light beige   | ¼-module | 5.04.520.171/0710 |
| dark grey     | ¼-module | 5.04.520.171/0801 |
| charcoal grey | ½-module | 5.04.520.172/0152 |
| light grey    | ½-module | 5.04.520.172/0242 |
| light beige   | ½-module | 5.04.520.172/0710 |
| dark grey     | ½-module | 5.04.520.172/0801 |
| charcoal grey | ¾-module | 5.04.520.173/0152 |
| light grey    | ¾-module | 5.04.520.173/0242 |
| light beige   | ¾-module | 5.04.520.173/0710 |
| dark grey     | ¾-module | 5.04.520.173/0801 |
| charcoal grey | 1-module | 5.04.520.174/0152 |

– Table (continued) –

RS 76 - Cover IP40

| → Color     | Size     | Order no.         |
|-------------|----------|-------------------|
| light grey  | 1-module | 5.04.520.174/0242 |
| light beige | 1-module | 5.04.520.174/0710 |
| dark grey   | 1-module | 5.04.520.174/0801 |

Other colors on request.





## Keylock / rotary switches

for PCB

Keylock switches for PCB mounting. Matching with the RS 76 full-travel key switches and the RF 15 and RF 19 tactile switches.

- All products are RoHS compliant.

# PCB KEY SWITCHES

MICROMECC - KEYLOCK SWITCHES

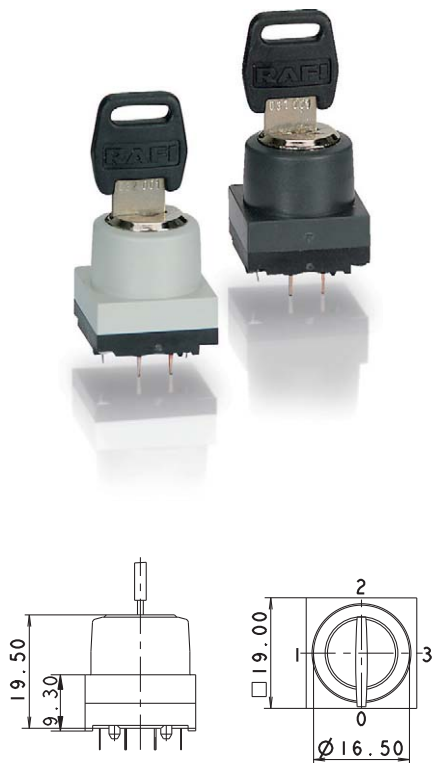
|                                           |                |
|-------------------------------------------|----------------|
| Content                                   |                |
| <b>MICROMECC - Keylock switches, IP54</b> | <b>4 - 173</b> |
| MICROMECC - Keylock switch IP54           | 4 - 176        |
| <b>EUROLOCKS - Keylock switches, IP54</b> | <b>4 - 177</b> |
| EUROLOCKS - Keylock switch IP54           | 4 - 178        |
| <b>Priority keylock switches, IP54</b>    | <b>4 - 179</b> |
| Priority keylock switch IP54              | 4 - 180        |
| <b>Rotary switches, IP40</b>              | <b>4 - 181</b> |
| Rotary switch IP40                        | 4 - 182        |

# MICROMECC

## Keylock switches, IP54

### Technical Data

|                                      |                                          |
|--------------------------------------|------------------------------------------|
| → <b>General information</b>         |                                          |
| Color                                | see order block                          |
| Form of collar                       | square                                   |
| → <b>Dimensions</b>                  |                                          |
| Length of collar                     | 19 mm                                    |
| Width of collar                      | 19 mm                                    |
| Overall height                       | 19.5 mm                                  |
| → <b>Mechanical design</b>           |                                          |
| Mounting                             | soldering                                |
| Terminals                            | tin-plated                               |
| Contact system                       | cross contact self cleaning              |
| Contact function                     | see order block                          |
| Contact materials                    | Au alloy                                 |
| Illuminability                       | no                                       |
| Lock                                 | Micromec                                 |
| Wafers                               | 5                                        |
| Lock type                            | 001                                      |
| Number of locking positions          | 500                                      |
| Main key                             | on request                               |
| Key removal position                 | see order block                          |
| → <b>Mechanical characteristics</b>  |                                          |
| Switching torque                     | 0.04 ... 0.10 Nm                         |
| Robustness max.                      | 2 Nm                                     |
| Dielectric strength AC min.          | 500 V                                    |
| Rated power max.                     | 1 W                                      |
| → <b>Electrical characteristics</b>  |                                          |
| Rated voltage                        | 2 ... 35 V                               |
| Rated current max.                   | 100 mA                                   |
| Contact resistance when new max.     | 100 mΩ                                   |
| Contact resistance acc. to life max. | 200 mΩ                                   |
| Insulation resistance                | 10 <sup>9</sup> Ω                        |
| ESD strength max.                    | 8 kV                                     |
| → <b>Other specifications</b>        |                                          |
| Rotating angle                       | see order block                          |
| Operating life                       | 10,000                                   |
| Degree of protection from front side | IP54                                     |
| Ambient temp. operating min.         | -25 °C                                   |
| Ambient temp. operating max.         | +70 °C                                   |
| Storage temperature min.             | -40 °C                                   |
| Storage temperature max.             | +80 °C                                   |
| Environmental resistance             | acc. to IEC 60068-2-14, -30, -33 and -78 |
| Flammability of materials            | UL 94 HB                                 |
| ROHS compliant                       | yes                                      |
| REACH compliant                      | yes                                      |



### Accessories MICROMECC - Keylock switch IP54

| → Description             | Photo                                                                               | Order no.         | Additional accessories see page |
|---------------------------|-------------------------------------------------------------------------------------|-------------------|---------------------------------|
| O-ring for keylock switch |  | 5.30.120.015/0100 | 5 - 31                          |

# PCB KEY SWITCHES

MICROMECC - KEYLOCK SWITCHES IP 54

– Table (continued) –

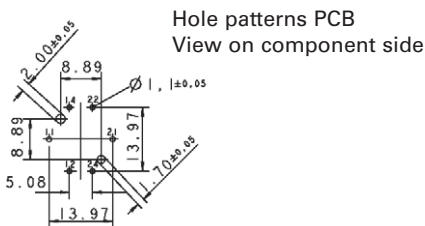
Accessories MICROMECC - Keylock switch IP54

| → Description                                                          | Photo                                                                             | Order no.         | Additional accessories see page |
|------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------|---------------------------------|
| Spare key, (delivery content 1 key)                                    |  | 5.58.007.001/0000 | -                               |
| Spare key, for double action,<br>e.g. 2 x 90° (delivery content 1 key) |  | 5.58.008.001/0000 | -                               |
| Spare key for 3 angles, f.ex. 3 x 90° degree (content 1 key)           |  | 5.58.009.001/0100 | -                               |
| Spare key for 4 angles, f.ex. 4 x 90 degrees, (content 1 key)          |  | 5.58.010.001/0100 | -                               |

## Dimensional drawing



## Circuit diagram



| Switching position | Contact function |  |
|--------------------|------------------|--|
| 0                  |                  |  |
| 1                  |                  |  |
| 2                  |                  |  |
| 3                  |                  |  |

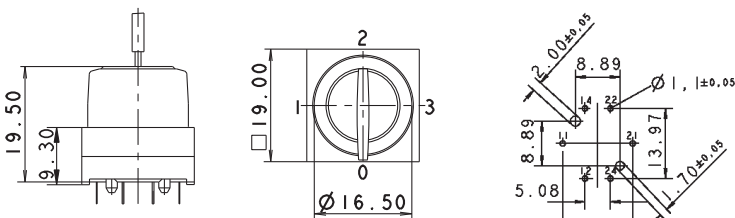
# PCB KEY SWITCHES

MICROMECC - KEYLOCK SWITCHES IP 54



## MICROMECC Keylock switch IP54

Technical data see page 4 - 173



PCB hole pattern, component side

| → Contact function | Color         | Rotating angle       | Key removal position | Order no.         |
|--------------------|---------------|----------------------|----------------------|-------------------|
| momentary          | charcoal grey | 1 x 40°              | 0                    | 3.13.026.041/0000 |
| momentary          | light grey    | 1 x 40°              | 0                    | 3.13.026.541/0000 |
| latching           | charcoal grey | 1 x 90°              | 0                    | 3.13.026.001/0000 |
| latching           | light grey    | 1 x 90°              | 0                    | 3.13.026.501/0000 |
| latching           | charcoal grey | 1 x 90°              | 0+1                  | 3.13.026.006/0000 |
| latching           | light grey    | 1 x 90°              | 0+1                  | 3.13.026.506/0000 |
| latching           | charcoal grey | 3 x 90°              | 0                    | 3.13.026.021/0000 |
| latching           | light grey    | 3 x 90°              | 0                    | 3.13.026.521/0000 |
| latching           | charcoal grey | 3 x 90°              | 0+1+2+3              | 3.13.026.026/0000 |
| latching           | light grey    | 3 x 90°              | 0+1+2+3              | 3.13.026.526/0000 |
| latching           | charcoal grey | 4 x 90° without stop | 0                    | 3.13.026.031/0000 |
| latching           | light grey    | 4 x 90° without stop | 0                    | 3.13.026.531/0000 |
| latching           | charcoal grey | 4 x 90° without stop | 0+1+2+3              | 3.13.026.036/0000 |
| latching           | light grey    | 4 x 90° without stop | 0+1+2+3              | 3.13.026.536/0000 |
| latching           | charcoal grey | 2 x 90°              | 0                    | 3.13.026.011/0000 |
| latching           | light grey    | 2 x 90°              | 0                    | 3.13.026.511/0000 |
| latching           | charcoal grey | 2 x 90°              | 0+1+2                | 3.13.026.016/0000 |
| latching           | light grey    | 2 x 90°              | 0+1+2                | 3.13.026.516/0000 |
| latching           | charcoal grey | 2 x 90°              | 0                    | 3.13.026.601/0000 |
| latching           | light grey    | 2 x 90°              | 0                    | 3.13.026.851/0000 |
| latching           | charcoal grey | 2 x 90°              | 0+1+3                | 3.13.026.606/0000 |
| latching           | light grey    | 2 x 90°              | 0+1+3                | 3.13.026.856/0000 |

2 keys included.

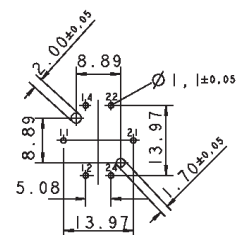
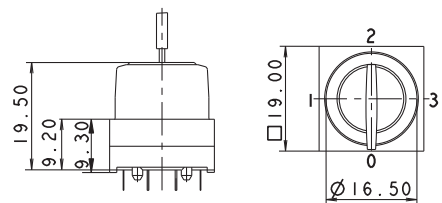
Other lock variants available on request.

# EUROLOCKS

## Keylock switches, IP54

### Technical Data

|                                      |                                          |
|--------------------------------------|------------------------------------------|
| → <b>General information</b>         |                                          |
| Color                                | see order block                          |
| Form of collar                       | square                                   |
| → <b>Dimensions</b>                  |                                          |
| Length of collar                     | 19 mm                                    |
| Width of collar                      | 19 mm                                    |
| Overall height                       | 19.5 mm                                  |
| → <b>Mechanical design</b>           |                                          |
| Mounting                             | soldering                                |
| Terminals                            | tin-plated                               |
| Contact system                       | cross contact self cleaning              |
| Contact function                     | latching                                 |
| Contact materials                    | Au alloy                                 |
| Illuminability                       | no                                       |
| Lock                                 | Eurolocks                                |
| Wafers                               | 5                                        |
| Lock type                            | 801                                      |
| Number of locking positions          | 50                                       |
| Main key                             | no                                       |
| Symmetric key                        | yes                                      |
| Key removal position                 | see order block                          |
| → <b>Mechanical characteristics</b>  |                                          |
| Switching torque                     | 0.04 ... 0.10 Nm                         |
| Robustness max.                      | 2 Nm                                     |
| Dielectric strength AC min.          | 500 V                                    |
| Rated power max.                     | 1 W                                      |
| → <b>Electrical characteristics</b>  |                                          |
| Rated voltage                        | 2 ... 35 V                               |
| Rated current max.                   | 100 mA                                   |
| Contact resistance when new max.     | 100 mΩ                                   |
| Contact resistance acc. to life max. | 200 mΩ                                   |
| Insulation resistance                | 10 <sup>9</sup> Ω                        |
| ESD strength max.                    | 8 kV                                     |
| → <b>Other specifications</b>        |                                          |
| Rotating angle                       | see order block                          |
| Operating life                       | 10,000                                   |
| Degree of protection from front side | IP54                                     |
| Ambient temp. operating min.         | -25 °C                                   |
| Ambient temp. operating max.         | +70 °C                                   |
| Storage temperature min.             | -40 °C                                   |
| Storage temperature max.             | +80 °C                                   |
| Environmental resistance             | acc. to IEC 60068-2-14, -30, -33 and -78 |
| Flammability of materials            | UL 94 HB                                 |
| ROHS compliant                       | yes                                      |
| REACH compliant                      | yes                                      |



PCB hole pattern, component side

### Accessories EUROLOCKS - Keylock switch IP54

| → Description             | Photo | Order no.         | Additional accessories see page |
|---------------------------|-------|-------------------|---------------------------------|
| O-ring for keylock switch |       | 5.30.120.015/0100 | 5 - 31                          |

# PCB KEY SWITCHES

EUROLOCKS - KEYLOCK SWITCHES IP 54

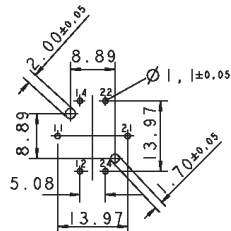
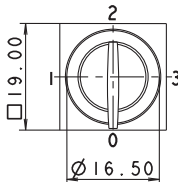
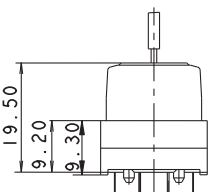
– Table (continued) –  
Accessories EUROLOCKS - Keylock switch IP54

| → Description                      | Photo                                                                             | Order no.         | Additional accessories see page |
|------------------------------------|-----------------------------------------------------------------------------------|-------------------|---------------------------------|
| Spare key (delivery content 1 key) |  | 5.58.006.801/0000 | -                               |



## EUROLOCKS Keylock switch IP54

Technical data see page 4 - 177



PCB hole pattern, component side

| → Contact function | Color         | Rotating angle | Key removal position | Order no.         |
|--------------------|---------------|----------------|----------------------|-------------------|
| latching           | charcoal grey | 1 x 90°        | 0                    | 3.13.009.001/0000 |
| latching           | light grey    | 1 x 90°        | 0                    | 3.13.009.006/0000 |
| latching           | charcoal grey | 1 x 90°        | 0+1                  | 3.13.009.031/0000 |
| latching           | light grey    | 1 x 90°        | 0+1                  | 3.13.009.036/0000 |

2 keys included.

Other lock variants available on request.

For the switching arrangement, refer to Micromec keylock switch IP54.

## PRIORITY KEYLOCK SWITCHES, IP54

- Either 2 or 3 different keys are required, depending on the angle between positions. Key 1 can switch to position 1, key 2 can switch to position 1 and 2, etc.

### Technical Data

#### → General information

|                |                 |
|----------------|-----------------|
| Color          | see order block |
| Form of collar | square          |

#### → Dimensions

|                  |         |
|------------------|---------|
| Length of collar | 19 mm   |
| Width of collar  | 19 mm   |
| Overall height   | 19.5 mm |

#### → Mechanical design

|                             |                             |
|-----------------------------|-----------------------------|
| Mounting                    | soldering                   |
| Terminals                   | tin-plated                  |
| Contact system              | cross contact self cleaning |
| Contact function            | see order block             |
| Contact materials           | Au alloy                    |
| Illuminability              | no                          |
| Lock                        | Micromec                    |
| Wafers                      | 5                           |
| Lock type                   | 001                         |
| Number of locking positions | 500                         |
| Main key                    | on request                  |
| Key removal position        | see order block             |

#### → Mechanical characteristics

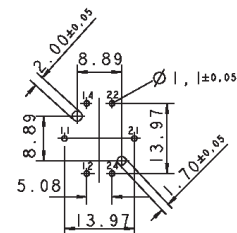
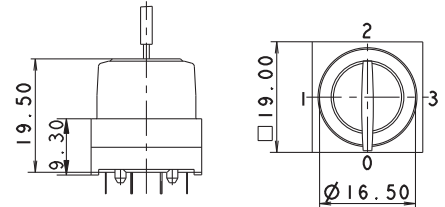
|                             |                  |
|-----------------------------|------------------|
| Switching torque            | 0.04 ... 0.10 Nm |
| Robustness max.             | 2 Nm             |
| Dielectric strength AC min. | 500 V            |
| Rated power max.            | 1 W              |

#### → Electrical characteristics

|                                      |               |
|--------------------------------------|---------------|
| Rated voltage                        | 2 ... 35 V    |
| Rated current max.                   | 100 mA        |
| Contact resistance when new max.     | 100 mΩ        |
| Contact resistance acc. to life max. | 200 mΩ        |
| Insulation resistance                | $10^9 \Omega$ |
| ESD strength max.                    | 8 kV          |

#### → Other specifications

|                                      |                                          |
|--------------------------------------|------------------------------------------|
| Rotating angle                       | see order block                          |
| Operating life                       | 10,000                                   |
| Degree of protection from front side | IP54                                     |
| Ambient temp. operating min.         | -25 °C                                   |
| Ambient temp. operating max.         | +70 °C                                   |
| Storage temperature min.             | -40 °C                                   |
| Storage temperature max.             | +80 °C                                   |
| Environmental resistance             | acc. to IEC 60068-2-14, -30, -33 and -78 |
| Flammability of materials            | UL 94 HB                                 |
| ROHS compliant                       | yes                                      |
| REACH compliant                      | yes                                      |



PCB hole pattern, component side

# PCB KEY SWITCHES

PRIORITY KEYLOCK SWITCHES IP 54

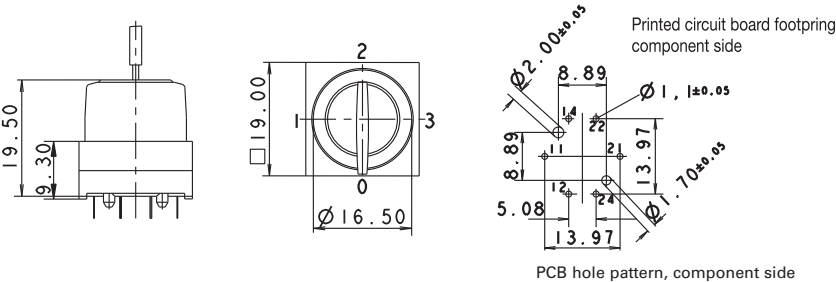
## Accessories Priority keylock switch IP54

| → Description                         | Photo                                                                             | Order no.         | Additional accessories see page |
|---------------------------------------|-----------------------------------------------------------------------------------|-------------------|---------------------------------|
| O-ring for keylock switch             |  | 5.30.120.015/0100 | 5 - 31                          |
| Set of keys for 2 x 90° type (2 keys) |  | 5.58.099.012/0000 | -                               |
| Set of keys for 3 x 90° type (3 keys) |  | 5.58.099.013/0000 | -                               |



## Priority keylock switch IP54

Technical data see page 4 - 179



| → Contact function | Color         | Rotating angle | Key removal position | Order no.         |
|--------------------|---------------|----------------|----------------------|-------------------|
| latching           | charcoal grey | 3 x 90°        | 0                    | 3.13.027.011/0000 |
| latching           | light grey    | 3 x 90°        | 0                    | 3.13.027.511/0000 |
| latching           | charcoal grey | 3 x 90°        | 0+1+2+3              | 3.13.027.016/0000 |
| latching           | light grey    | 3 x 90°        | 0+1+2+3              | 3.13.027.516/0000 |
| latching           | charcoal grey | 2 x 90°        | 0                    | 3.13.027.001/0000 |
| latching           | light grey    | 2 x 90°        | 0                    | 3.13.027.501/0000 |
| latching           | charcoal grey | 2 x 90°        | 0+1+2                | 3.13.027.006/0000 |
| latching           | light grey    | 2 x 90°        | 0+1+2                | 3.13.027.506/0000 |

2 sets of keys included.

Other lock variants available on request.

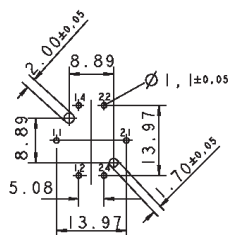
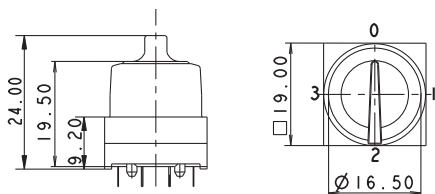
For the switching arrangement, see IP54 Micromec keylock switch.

Either 2 or 3 different keys are required, depending on the angle between positions. Key 1 can switch to position 1, key 2 can switch to position 1 and 2, etc.

# ROTARY SWITCHES, IP40

## Technical Data

|                                      |                                          |
|--------------------------------------|------------------------------------------|
| → <b>General information</b>         |                                          |
| Color                                | see order block                          |
| Form of collar                       | square                                   |
| → <b>Dimensions</b>                  |                                          |
| Length of collar                     | 19 mm                                    |
| Width of collar                      | 19 mm                                    |
| Overall height                       | 24 mm                                    |
| → <b>Mechanical design</b>           |                                          |
| Mounting                             | soldering                                |
| Terminals                            | tin-plated                               |
| Contact system                       | cross contact self cleaning              |
| Contact function                     | see order block                          |
| Contact materials                    | Au alloy                                 |
| Illuminability                       | no                                       |
| → <b>Mechanical characteristics</b>  |                                          |
| Torque against stop min.             | 0.45 Nm                                  |
| Dielectric strength AC min.          | see order block                          |
| Rated power max.                     | 1 W                                      |
| → <b>Electrical characteristics</b>  |                                          |
| Rated voltage max.                   | 35 V                                     |
| Rated current max.                   | 100 mA                                   |
| Contact resistance when new max.     | 100 mΩ                                   |
| Contact resistance acc. to life max. | 200 mΩ                                   |
| Insulation resistance                | 10 <sup>9</sup> Ω                        |
| ESD strength max.                    | 8 kV                                     |
| → <b>Other specifications</b>        |                                          |
| Rotating angle                       | see order block                          |
| Operating life                       | 50,000                                   |
| Degree of protection from front side | IP40 (DIN EN 60529)                      |
| Ambient temp. operating min.         | -25 °C                                   |
| Ambient temp. operating max.         | +70 °C                                   |
| Storage temperature min.             | -40 °C                                   |
| Storage temperature max.             | +80 °C                                   |
| Environmental resistance             | acc. to IEC 60068-2-14, -30, -33 and -78 |
| Flammability of materials            | UL 94 HB                                 |
| ROHS compliant                       | yes                                      |
| REACH compliant                      | yes                                      |



PCB hole pattern, component side

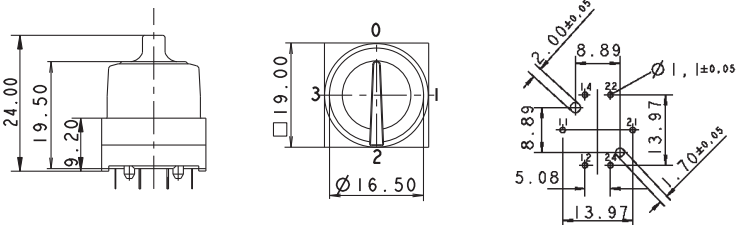
# PCB KEY SWITCHES

ROTARY SWITCHES IP40



## Rotary switch IP40

Technical data see page 4 - 181



PCB hole pattern, component side

| → Contact function | Color         | Rotating angle | Order no.         |
|--------------------|---------------|----------------|-------------------|
| latching           | charcoal grey | 1 x 90°        | 3.13.007.001/0152 |
| latching           | charcoal grey | 3 x 90°        | 3.13.007.021/0152 |
| latching           | charcoal grey | 4 x 90°        | 3.13.007.031/0152 |
| latching           | charcoal grey | 2 x 90°        | 3.13.007.011/0152 |

Other color variants available on request