



PCB Keyswitches

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PCB Keyswitches

Product Survey

Versions	Recommended Key grid	Illumination			Keyswitch height	Contacts
		Keyswitch	Signal indicator			
RACON 8 	≥ 12 mm	Non-illuminated			4.9 mm (variable plunger)	Gold
RACON 12 	≥ 15.24 mm	Non-illuminated			4.95 mm (variable plunger)	Gold
RACON 12 V 		Non-illuminated			4.95 mm (variable plunger)	Gold
RACON 12 i 	≥ 15.24 mm	Fully illuminated			9.7 mm	Gold
RF 15 	≥ 19.05 mm	Non-illuminated	Fully/spot illuminated	Fully illuminated	9.7 mm or 12.5 mm (with keycap)	Gold or Silver
RF 15 N (low profile) 	≥ 19.05 mm	Non-illuminated	Illumination by separate/integrated LED (depending on overall height)		6.2 mm 9.7 mm 12.5 mm 22.5 mm (var. plunger)	Gold or Silver
RF 15 R (round) 	≥ 15.24 mm	Non-illuminated	Spot illuminated		9.7 mm or 12.5 mm	Gold or Silver
RF 15 H (high profile) 	≥ 20 mm	Non-illuminated	Fully illuminated		12.5 mm	Gold or Silver
RF 19 	≥ 23 mm	Non-illuminated	Fully/spot illuminated	Fully illuminated	9.7 mm	Gold or Silver
RF 19, 1 NO + 1 NC 	≥ 23 mm	Non-illuminated			9.7 mm	Gold or Silver

4

Versions	Recommended Key grid	Illumination		Overall height	Contacts
		Keyswitch	Signal indicator		
RF 19 H (high profile) 	≥ 24 mm	Fully illuminated		12.5 mm	Gold or Silver
Main switch KN19 	≥ 19.05 x 38.1 mm	Non-illuminated	Spot illuminated with 1 LED	9.7 mm	Silver
RK 90 System 	≥ 12.50 mm	Depending on the type of keyswitch used: – RACON (without plunger) – RF 15/RF 15 N – RF 19 – KN 19			
RG 85 III System 	≥ 35/55 mm	Edge-illuminated and symbol illumination	Fully illuminated	14 mm	Silver
Full-Travel Keyswitch RS 76 	≥ 19.05 mm	Non-illuminated	Fully/spot illuminated	15.5/15.9 mm (with key caps)	RS 76 M: Gold RS 76 C: contactless
Keyswitches for Conductor Board 	≥ 19.05 mm	Non-illuminated		19.5 mm (without key)	Gold



Examples for Applications Standards

RF 15



CE-Conformity

The products of the Chapter "PCB Keyswitches" can – relating to the CE-conformity according to the Low-Voltage Directive 73/23/EWG – be divided into the following groups:

All products with an operating voltage $U_B > 50\text{ V}$

F. ex. Short-Travel Main Switch KN 19, for this product the Low-Voltage Directive 73/23/EWG applies.

All products with an operating voltage $U_B < 50\text{ V}$

F. ex. RACON, RF 15, RS 76, for these components no directive applies.

Single parts, accessories and illumination

No directive applies for these products.

EMC-Law

The components of this catalogue are within the meaning of the law concerning the electromagnetic conformity (= EMC-Law) "basic components as, for ex., switches, signal lamps or like" and, therefore, do not fall within the scope of the EMC-Law.

Declarations of Conformity

Declarations of conformity for all concerned products are available and can be delivered upon request. Please always state the exact order reference of the respective product.

Marking

The marking will be corresponding to the Low-Voltage Directive 73/23/EWG resp. the Directive "CE-Marking 93/68/EWG" either on the packing or on the product itself or on the shipping documents.

UL-approval

for RACON 8/12, KN 19 and Short-Travel Keyswitches RF 15/19

The Short-Travel Main Switch KN 19 and data entry systems which are built with Rafi short-travel switches according to our design proposals meet the requirements of the UL approvals for the American market.

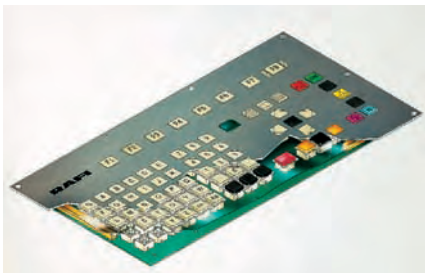
UL file no. for KN 19: E 116362

UL file no. for data entry systems: E 202520

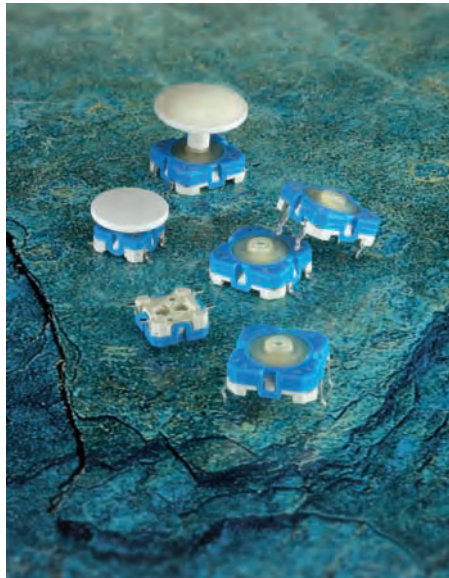
RG 85 III System



RF 15 with RK 90 System



RACON short-travel keyswitches



General data

RACON short-travel keyswitches with sealed contact system and 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).

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RACON short-travel keyswitches

RACON 8



General data

RACON 8 short-travel keyswitches 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 keyswitches should be combined with plungers.

The features at a glance:

- Suitable for the most common soldering methods
 - Wave soldering bath for print versions
 - Reflow soldering (SMD)
 - Manual soldering
- SMD version suitable for processing with an automatic SMD assembly machine. We suggest to use teflon coated pipettes for mounting.

4

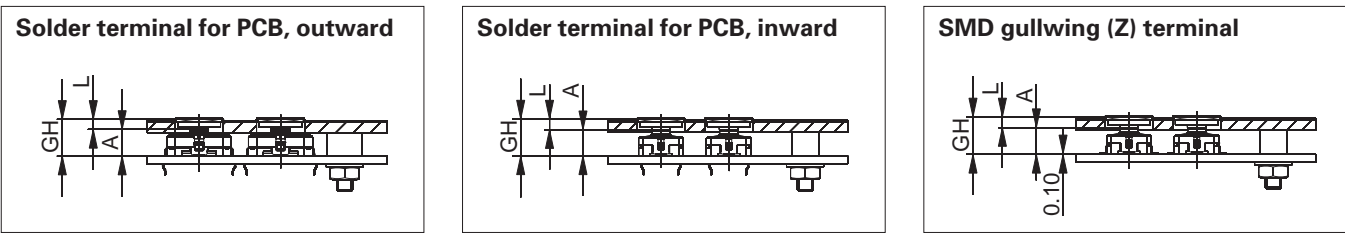
Technical data

Dimensions		Insulation resistance	10 ⁹ Ω
Length of housing	8.4 mm	Bouncing time max.	5 ms
Width of housing	8.4 mm	Other specifications	
Height of housing	4.90 ^{+0.1} mm	Ambient temp. operating min.	-40 °C
Mechanical design		Ambient temp. operating max.	+90 °C
Mounting	soldering	Resistance to constant environment	according to IEC 600 68-2-3 and 2-30
Terminals	see order block	Resistance at variable environment	according to IEC 600 68-2-14 and 2-33
Contact system	snap-action contact	Operating life at R _T = 23° C and test force = 1,5 x rated force	1000000
Contact arrangement	1 NO	Solderability / solder heat resistance PCB version	IEC 600 68-2-20
Contact materials	Au	Solderability / solder heat resistance SMD version	EN 61760-1 and DIN IEC 600-68-2-58
Illumination	no	Flammability of materials	UL 94 HB
Mechanical characteristics		Packing	see order block
Operating force	3.3 ^{+0.6} N	Produkt code	see order block
Switching travel	0.34 ^{+0.1} mm		
Electrical characteristics			
Rated voltage min.	0.02 V		
Rated voltage max.	42 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		

RACON

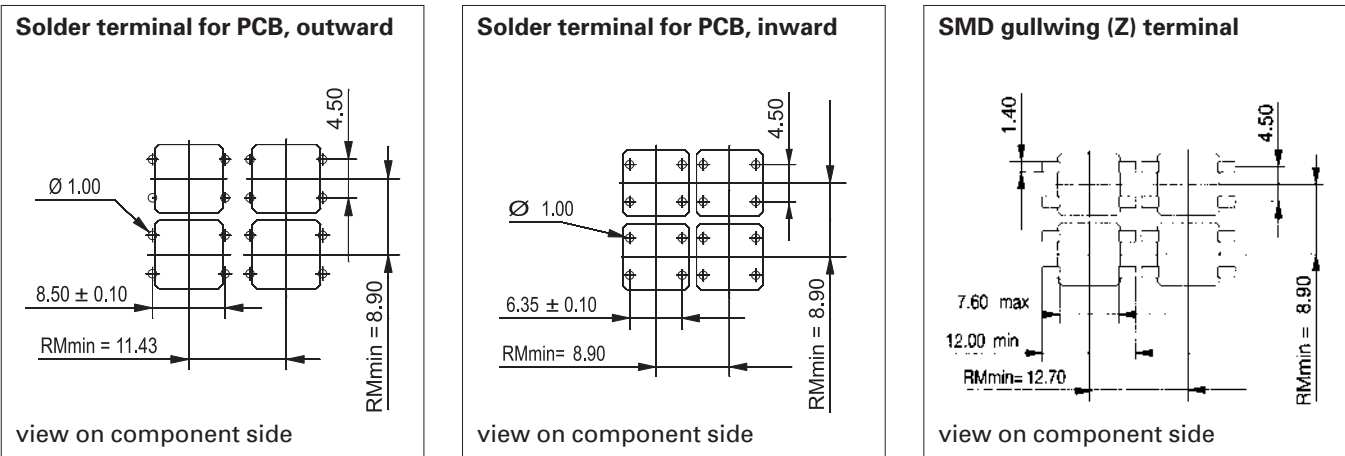
RACON short-travel keyswitches

RACON 8, Typical system assembly with plunger under overlay

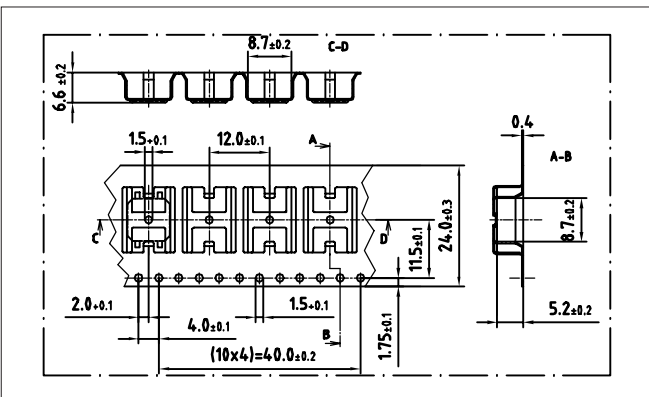


Variable	Declaration	Solder terminal outward	Solder terminal inward	SMD-terminal
A	Height of keyswitch	$A = 4.90 \pm 0.1 \text{ mm}$		
GH	Overall height	$GH = A + L$		$GH = A + L + 0.1 \text{ mm}$
L	Length of plunger	$L = GH - A$		$L = GH - A - 0.1 \text{ mm}$

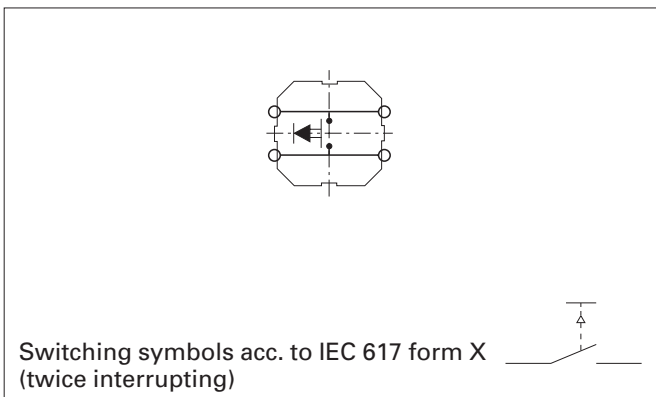
RACON 8, PCB hole pattern, smallest grid



RACON 8, SDM-terminal, tape and reel drawing



Circuit diagram RACON 8






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RACON

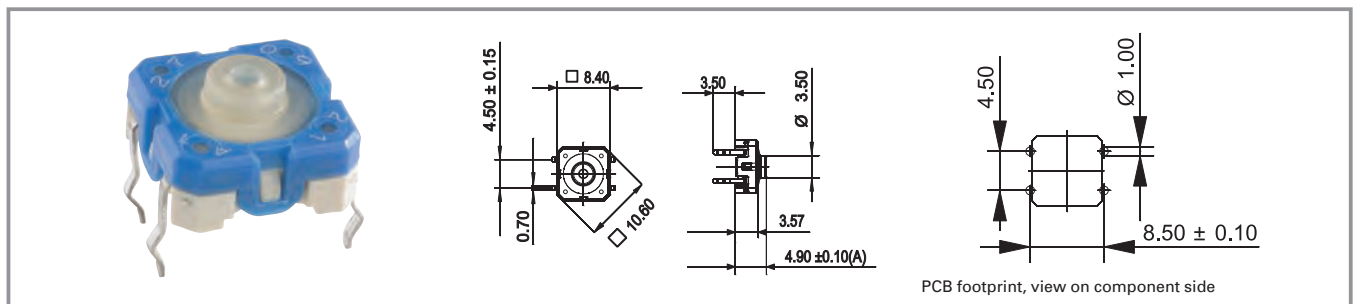
RACON short-travel keyswitches

Typical accessories RACON 8

Description	Photo	Order no.	Additional accessories see page
Spacer, round, length 6.25 mm, red		5.30.759.034/0000	4 -70
Plunger for membrane data entry system		5.46.167.311/0209	4 -21
Keycaps, plastic, 9 x 9 mm, opaque, with pressure pad		5.55.103.265/1013	4 -80

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

RACON 8, solder terminals for PCB, outward

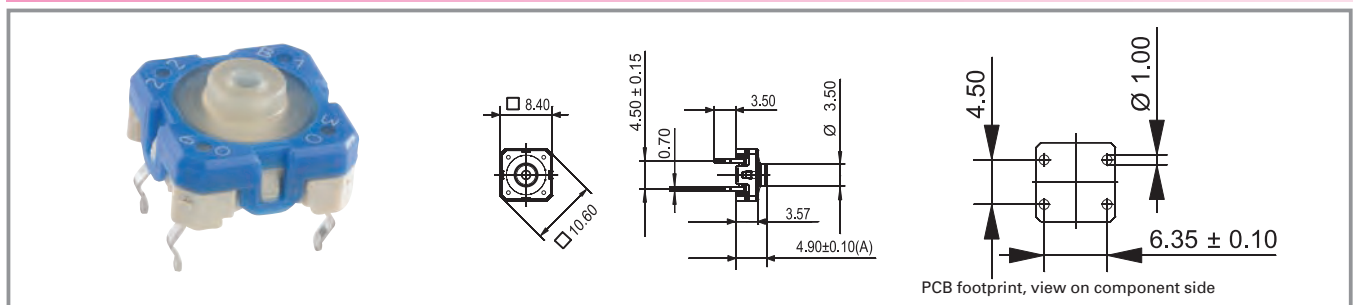


Terminals	Contact arrangement	Produkt code	Packing	Order no.
solder terminal for PCB, outward	1 NO	A1	tubes à 60 piece	1.14.100.501/0000

Technical data see page 4 - 6

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

RACON 8, solder terminals for PCB, inward



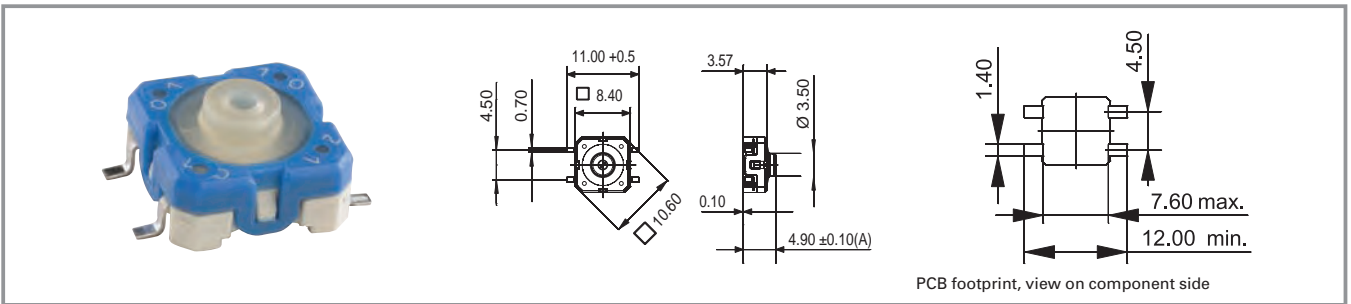
Terminals	Contact arrangement	Produkt code	Packing	Order no.
solder terminal for PCB, inward	1 NO	B1	tubes à 60 piece	1.14.100.502/0000

Technical data see page 4 - 6

For keycaps, refer to RK 90; for plungers, refer to accessories.

RACON short-travel keyswitches

RACON 8, SMD gullwing (Z) terminals



Terminals	Contact arrangement	Produkt code	Packing	Order no.
SMD Gullwing (Z) terminals	1 NO	C1	tape and reel à 1000 piece	1.14.100.503/0000

Technical data see page 4 - 6

For keycaps, refer to RK 90; for plungers, refer to accessories.

RACON short-travel keyswitches

RACON 12



General data

RACON short-travel keyswitches 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 keyswitches should be combined with plungers.

The features at a glance:

- Suitable for the most common soldering methods
 - Wave soldering bath for print versions
 - Reflow soldering (SMD)
 - Manual soldering
- SMD version suitable for processing with an automatic SMD assembly machine. We suggest to use teflon coated pipettes for mounting.

4

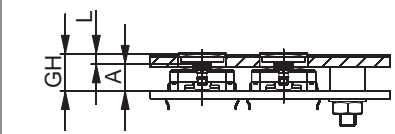
Technical data

Dimensions		Insulation resistance	10 ⁹ Ω
Length of housing	12 mm	Bouncing time max.	5 ms
Width of housing	12 mm	Other specifications	
Overall height	4.95 ^{+0.1} mm	Ambient temp. operating min.	-40 °C
Mechanical design		Ambient temp. operating max.	+90 °C
Mounting	soldering	Resistance to constant environment	according to IEC 600 68-2-3 and 2-30
Terminals	see order block	Resistance at variable environment	according to IEC 600 68-2-14 and 2-33
Contact system	snap-action contact	Operating life at R _T = 23° C and test force = 1,5 x rated force	1000000
Contact arrangement	1 NO	Solderability / solder heat resistance PCB version	IEC 600 68-2-20
Contact materials	Au	Solderability / solder heat resistance SMD version	EN 61760-1 and DIN IEC 600-68-2-58
Illumination	no	Flammability of materials	UL 94 HB
Mechanical characteristics		Packing	see order block
Operating force	3.6 ^{+0.7} N	Produkt code	see order block
Switching travel	0.61 ^{+0.1} mm		
Electrical characteristics			
Rated voltage min.	0.02 V		
Rated voltage max.	42 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		

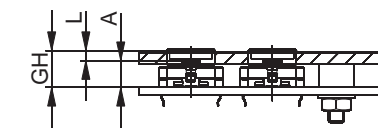
RACON short-travel keyswitches

RACON 12, Typical system assembly with plunger under overlay

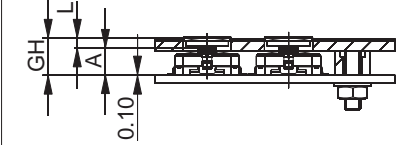
Solder terminal for PCB, outward



Solder terminal for PCB, inward



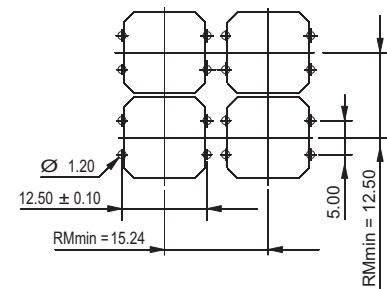
SMD gullwing (Z) terminal



Variable	Declaration	Solder terminal outward	Solder terminal inward	SMD-terminal
A	Height of keyswitch	$A = 4.95 \pm 0.1 \text{ mm}$		
GH	Overall height		$GH = A + L$	$GH = A + L + 0.1 \text{ mm}$
L	Length of plunger		$L = GH - A$	$L = GH - A - 0.1 \text{ mm}$

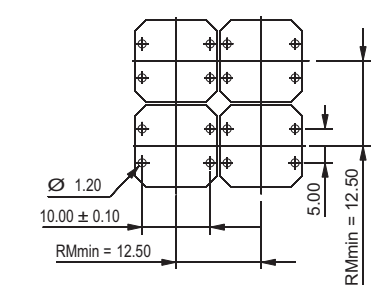
RACON 12, PCB hole pattern, smallest grid

Solder terminal for PCB, outward



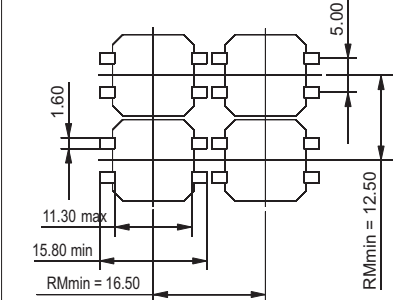
view on component side

Solder terminal for PCB, inward



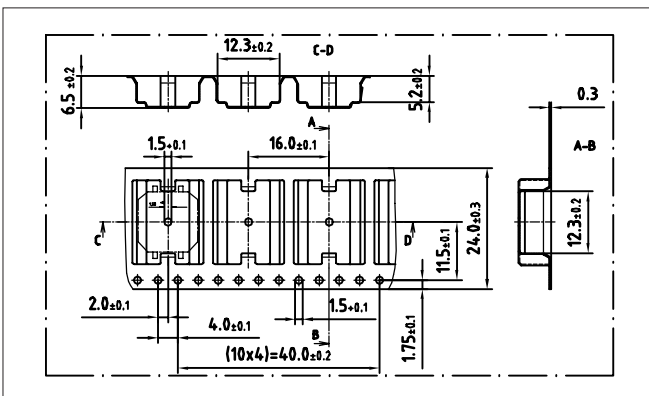
view on component side

SMD gullwing (Z) terminal

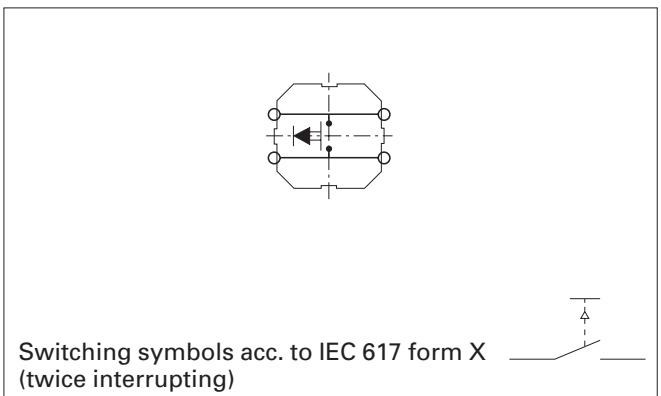


view on component side

RACON 12, SMD-terminal, tape and reel drawing



Circuit Diagram RACON 12



4

RAFON

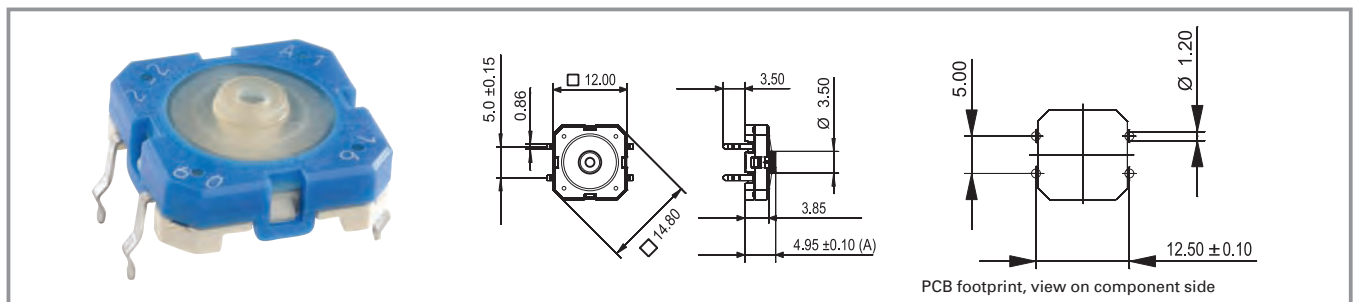
RACON short-travel keyswitches

Typical accessories RACON 12

Description	Photo	Order no.	Additional accessories see page
Spacer, round, length 6.25 mm, red		5.30.759.034/0000	4 -70
Square plunger for membrane data entry system		5.46.001.057/0209	4 -22
Plunger for membrane data entry system		5.46.168.050/0209	4 -21
Keycaps, plastic, opaque, with pressure pad		5.55.103.030/1013	4 -82

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

RACON 12, solder terminals for PCB, outward



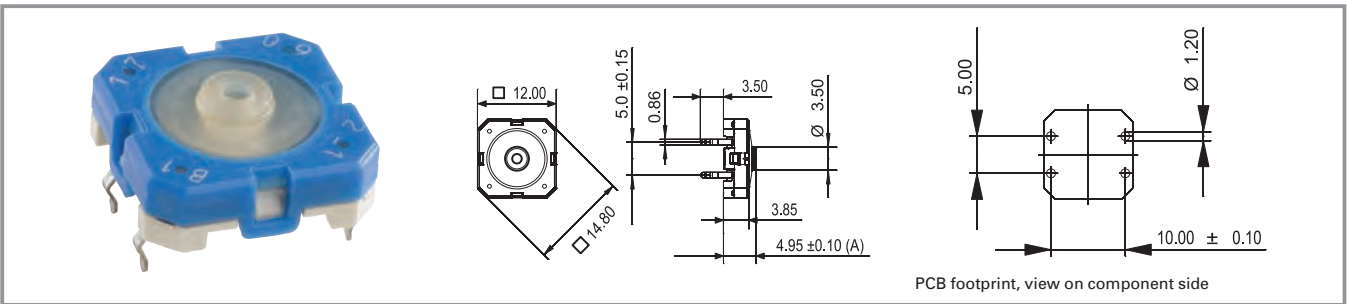
Terminals	Contact arrangement	Produkt code	Packing	Order no.
solder terminal for PCB, outward	1 NO	A1	tubes à 45 piece	1.14.001.501/0000

Technical data see page 4 - 10

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

RACON short-travel keyswitches

RACON 12, solder terminals for PCB, inward

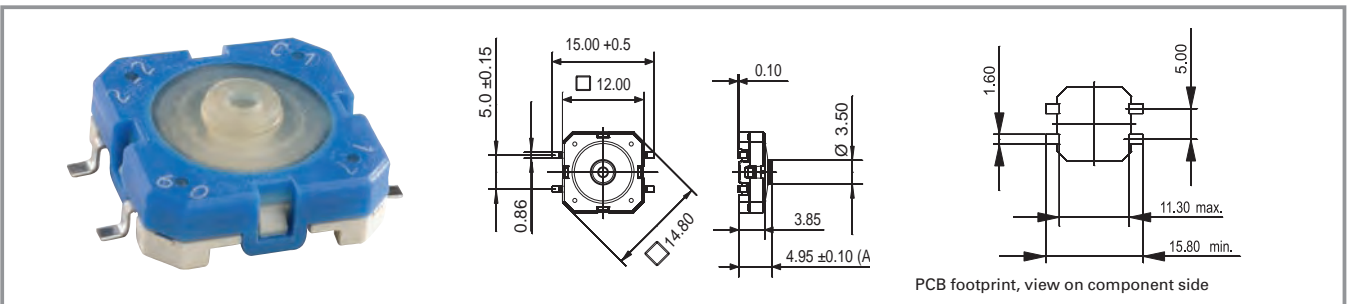


Terminals	Contact arrangement	Produkt code	Packing	Order no.
solder terminal for PCB, inward	1 NO	B1	tubes à 45 piece	1.14.001.502/0000

Technical data see page 4 - 10

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

RACON 12, SMD gullwing (Z) terminals



Terminals	Contact arrangement	Produkt code	Packing	Order no.
SMD Gullwing (Z) terminals	1 NO	C1	tape and reel à 750 piece	1.14.001.503/0000

Technical data see page 4 - 10

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

RACON short-travel keyswitches

RACON 12 V with vertical adapter



General data

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 keyswitch is provided with two horizontal terminals on one side.

Technical data

Dimensions

Length	14.5 mm
Width	13.6 mm
Overall height	4.95 mm

Mechanical design

Mounting	soldering
Terminals	PCB terminals
Contact system	snap-action contact
Contact arrangement	1 NO
Contact materials	Au
Illumination	no

Mechanical characteristics

Operating force	3.6 ^{+0.7} N
Switching travel	0.61 ^{+0.1} mm

Electrical characteristics

Rated voltage min.	0.02 V
Rated voltage max.	42 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 Ω
Bouncing time max.	5 ms

Other specifications

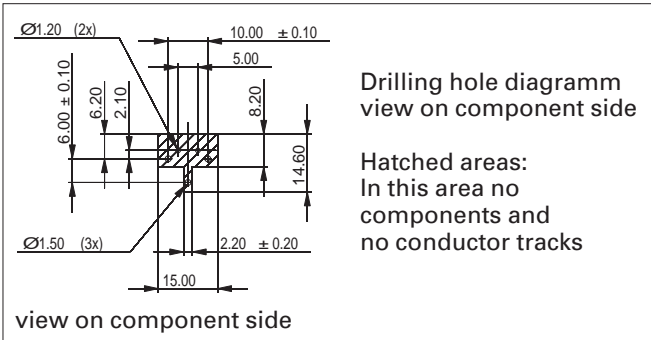
Ambient temp. operating min.	-40 °C
Ambient temp. operating max.	+80 °C
Storage temperature min.	-50 °C
Storage temperature max. (product)	+85 °C
Storage temperature max. (in tube)	+85 °C
Resistance to constant environment	according to IEC 600 68-2-3 and 2-30
Resistance at variable environment	according to IEC 600 68-2-14 and 2-33
Operating life at R _T = 23° C and test force = 1,5 x rated force	1000000
Solderability / solder heat resistance	according to IEC 600 68-2-20
Flammability of materials	UL 94 HB
Packing	in boxes à 100 piece
Produkt code	F 1

4

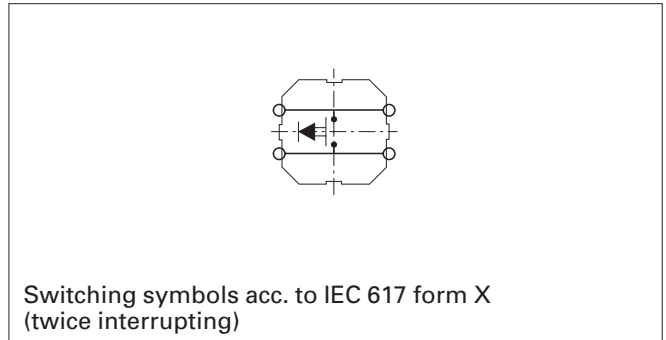
RACON

RACON short-travel keyswitches

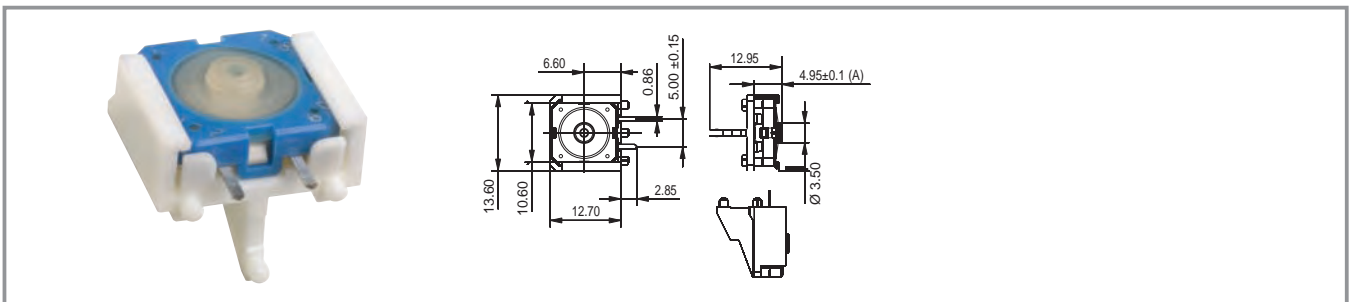
PCB footprint RACON 12V



Circuit Diagram RACON 12V



RACON 12 V with vertical adapter



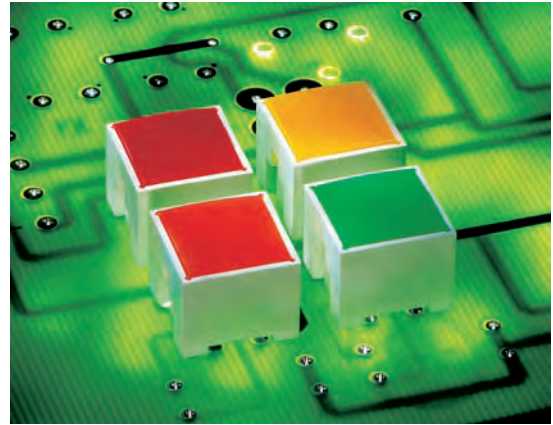
Terminals	Contact arrangement	Produkt code	Packing	Order no.
solder terminal tin-plated	1 NO	F 1	in boxes à 100 piece	1.14.001.505/0000

Technical data see page 4 - 14

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

RACON short-travel keyswitches

RACON 12 i



General data

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

Colour of lens	see order block
Recommended key grid	15.24 x 15.24 mm
Key grid max.	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	PCB terminals
Contact system	snap-action contact
Contact arrangement	1 NO
Contact materials	Au
Illumination	fully illuminated 2 LED
LED colour	see order block
LED type	standard 2 mm

Mechanical characteristics

Operating force	3.3 ^{+0.6} N
Switching travel	0.34 ^{+0.1} mm

Electrical characteristics

Rated voltage min.	0.02 V
Rated voltage max.	42 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 ⁹ Ω
Bouncing time max.	5 ms

Other specifications

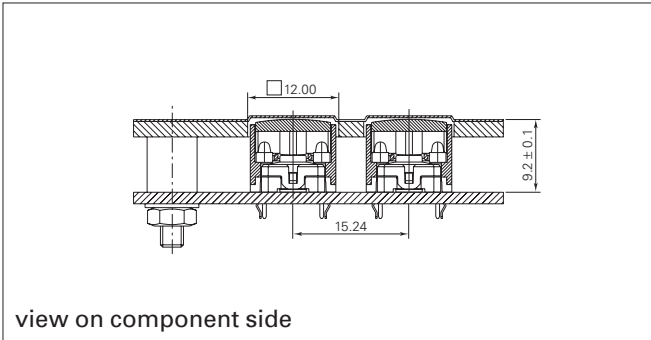
Ambient temp. operating min.	-40 °C
Ambient temp. operating max.	+80 °C
Resistance to constant environment	according to IEC 600 68-2-3 and 2-30
Resistance at variable environment	according to IEC 600 68-2-14 and 2-33
Operating life at R _T = 23° C and test force = 1,5 x rated force	1000000
Solderability / solder heat resistance	according to DIN IEC 600 68-2-20
Flammability of materials	UL 94 HB
Packing	tubes à 45 piece

Electrical characteristics of LED

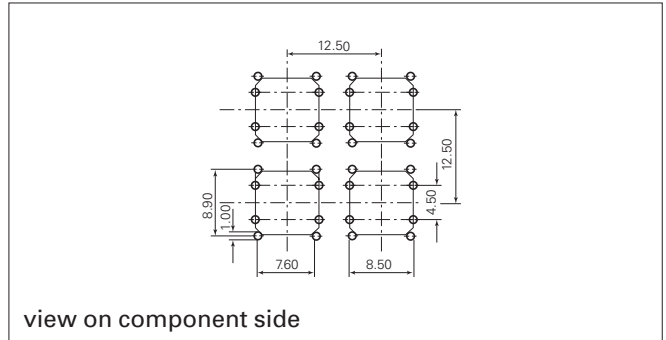
LED rated current max. I _F at 25 °C	red/green: 30, yellow: 50 mA
LED current reduction beginning with 50 degree C	red: 0.5 mA/degree C, yellow 0.8 mA/degree C
LED wavelength typ.	red 639, green 510-535, yellow 590
LED forward voltage U _F at 20 mA	red: 1.8 V/20 mA, yellow: 1.9 V/20 mA
LED breakdown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

RACON short-travel keyswitches

RACON 12i typical system assembly

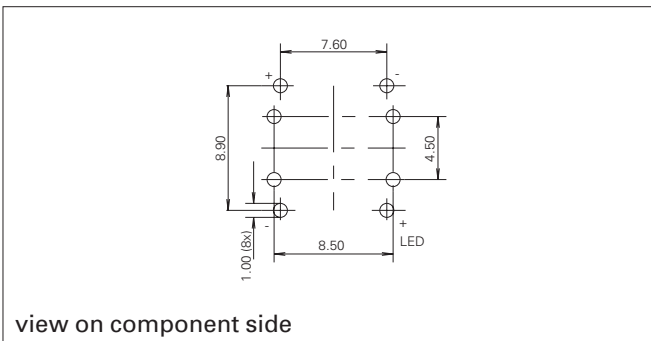


RACON 12i smallest grid

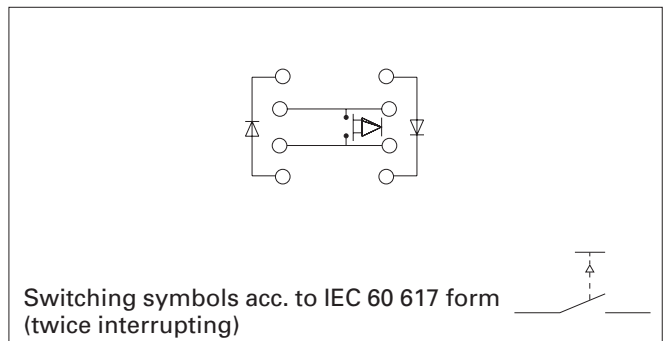


Explanation
Recommended area embossing 0.35 mm at glue spacer thickness of 0.15 mm

LED hole patterns

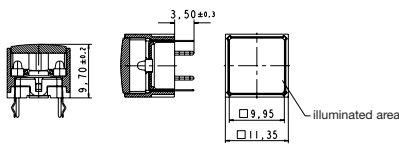


Circuit Diagram RACON 12i



RACON short-travel keyswitches

RACON 12 i, solder terminals for PCB



Terminals	Contact arrangement	Illumination	Colour of lens	LED colour	Order no.
PCB terminals	1 NO	fully illuminated 2 LED	red	red	1.14.001.551/0000
PCB terminals	1 NO	fully illuminated 2 LED	green	green	1.14.001.552/0000
PCB terminals	1 NO	fully illuminated 2 LED	yellow	yellow	1.14.001.553/0000
PCB terminals	1 NO	fully illuminated 2 LED	orange	yellow	1.14.001.554/0000

Technical data see page 4 - 16

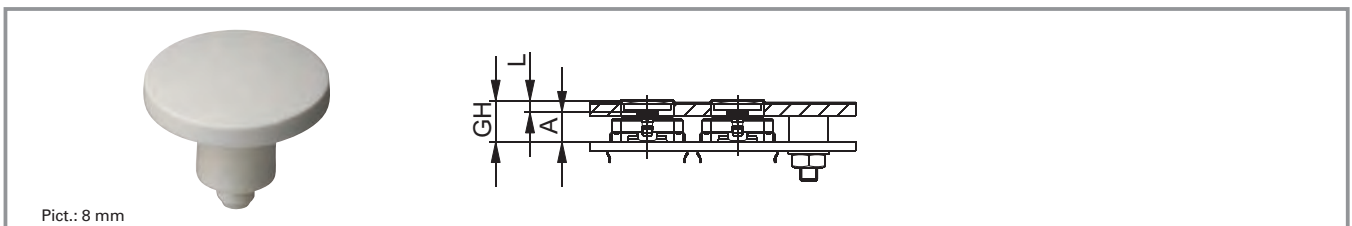
If keycaps are used we recommend RK 90 keycaps 9 x 9 mm.

RACON short-travel keyswitches

RACON special accessories



Plunger for membrane data entry system



Overall height GH	Plunger diameter/size	RACON version	Length of plunger L	Order no.
6.5 mm	8 mm	RACON 8 Pin	1.6 mm	5.46.167.101/0209
6.5 mm	8 mm	RACON 8 SMD	1.5 mm	5.46.167.102/0209
6.5 mm	11.5 mm	RACON 8 Pin	1.6 mm	5.46.167.060/0209
6.5 mm	11.5 mm	RACON 8 SMD	1.5 mm	5.46.167.061/0209
6.5 mm	14.5 mm	RACON 8 Pin	1.6 mm	5.46.168.060/0209
6.5 mm	14.5 mm	RACON 8 SMD	1.5 mm	5.46.168.061/0209
6.5 mm	19 mm	RACON 8 Pin	1.6 mm	5.46.169.060/0209
6.5 mm	19 mm	RACON 8 SMD	1.5 mm	5.46.169.061/0209
7 mm	8 mm	RACON 8/12 Pin	2.1 mm	5.46.167.107/0209
7 mm	8 mm	RACON 8/12 SMD	2 mm	5.46.167.106/0209
7 mm	11.5 mm	RACON 8/12 Pin	2.1 mm	5.46.167.064/0209
7 mm	11.5 mm	RACON 8/12 SMD	2 mm	5.46.167.067/0209
7 mm	14.5 mm	RACON 8/12 Pin	2.1 mm	5.46.168.064/0209
7 mm	14.5 mm	RACON 8/12 SMD	2 mm	5.46.168.067/0209
7 mm	19 mm	RACON 8/12 Pin	2.1 mm	5.46.169.064/0209

4

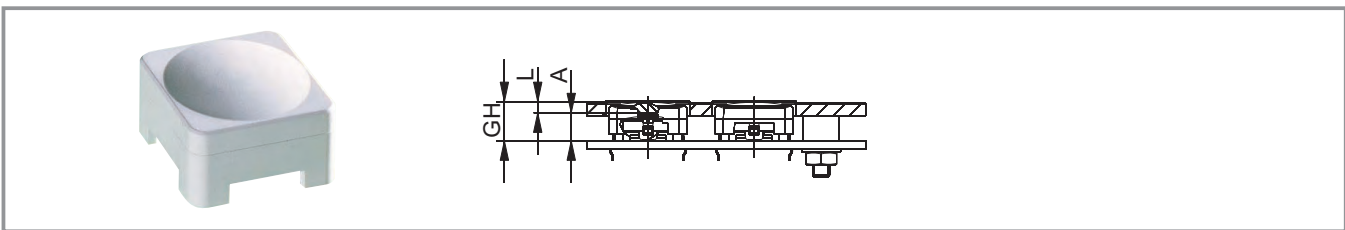
RACON

RACON short-travel keyswitches

Overall height GH	Plunger diameter/size	RACON version	Length of plunger L	Order no.
7 mm	19 mm	RACON 8/12 SMD	2 mm	5.46.169.067/0209
9.7 mm	8 mm	RACON 8/12 Pin	4.8 mm	5.46.167.094/0209
9.7 mm	8 mm	RACON 8/12 SMD	4.7 mm	5.46.167.311/0209
9.7 mm	11.5 mm	RACON 8/12 Pin	4.8 mm	5.46.167.047/0209
9.7 mm	11.5 mm	RACON 8/12 SMD	4.7 mm	5.46.167.050/0209
9.7 mm	14.5 mm	RACON 8/12 Pin	4.8 mm	5.46.168.047/0209
9.7 mm	14.5 mm	RACON 8/12 SMD	4.7 mm	5.46.168.050/0209
9.7 mm	19 mm	RACON 8/12 Pin	4.8 mm	5.46.169.047/0209
9.7 mm	19 mm	RACON 8/12 SMD	4.7 mm	5.46.169.050/0209
12.5 mm	8 mm	RACON 8/12 Pin	7.6 mm	5.46.167.096/0209
12.5 mm	8 mm	RACON 8/12 SMD	7.5 mm	5.46.167.099/0209
12.5 mm	11.5 mm	RACON 8/12 Pin	7.6 mm	5.46.167.058/0209
12.5 mm	11.5 mm	RACON 8/12 SMD	7.5 mm	5.46.167.059/0209
12.5 mm	14.5 mm	RACON 8/12 Pin	7.6 mm	5.46.168.058/0209
12.5 mm	14.5 mm	RACON 8/12 SMD	7.5 mm	5.46.168.059/0209
12.5 mm	19 mm	RACON 8/12 Pin	7.6 mm	5.46.169.058/0209
12.5 mm	19 mm	RACON 8/12 SMD	7.5 mm	5.46.169.059/0209

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

Square plunger for membrane data entry system



Overall height GH	Plunger diameter/size	RACON version	Length of plunger L	Order no.
7 mm	14 x 14 mm	RACON 12 Pin	2.1 mm	5.46.001.064/0209
9.7 mm	14 x 14 mm	RACON 12 Pin	4.8 mm	5.46.001.060/0209
12.5 mm	14 x 14 mm	RACON 12 Pin	7.6 mm	5.46.001.063/0209
7 mm	14 x 14 mm	RACON 12 SMD	2 mm	5.46.001.057/0209
9.7 mm	14 x 14 mm	RACON 12 SMD	4.7 mm	5.46.001.058/0209
12.5 mm	14 x 14 mm	RACON 12 SMD	7.5 mm	5.46.001.059/0209

Front panel cut-out = 15 x 15 mm.

RF short-travel keyswitches



General data

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.

Content

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RF short-travel keyswitches

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RF short-travel keyswitches

Specifications LED

3 mm LED

(valid for 25 °C)	Red LED	Green LED	Yellow LED
Max. forward current I _F :	30 mA	30 mA	20 mA
Current reduction from: T ₀ = 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 U _F /I _F typ:	2 V/10 mA	2 V/10 mA	2 V/10 mA
Reverse voltage U _R /I _F 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 I _F :	20 mA	25 mA	30 mA
Current reduction from: T ₀ = 50 °C:	approx 0.6 mA/°C	-	-
Wavelength typ:	470 nm	-	510-545 nm
Forward voltage U _F /I _F typ:	2.7 V/10 mA	3.6 V/20 mA	3.5 V/20 mA
Reverse voltage U _R /I _F typ:	5V/100 µA min.	-	-
Ambient temperature, operating:	- 20 °C ... + 80 °C	- 20 °C ... + 80 °C	-30 °C ... + 100 °C

2 mm LED

(valid for 25 °C)	Red LED	Green LED	Yellow LED
Max. forward current I _F :	30 mA	30 mA	50 mA
Current reduction from: T ₀ = 50 °C:	0.5 mA/°C	0.5 mA/°C	0.8 mA/°C
Light current f _v /I _F typ:	-	-	250 mIm/20 mA
Wavelength typ:	637 nm	569 nm	590 nm
Forward voltage U _F /I _F typ:	1.8 V/20 mA	2.1 V/10 mA	1.9 V/20 mA
Reverse voltage U _R /I _F 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-colour LED	
Max. forward current I _F :	30 mA	30 mA	
Current reduction from: T ₀ = 50 °C:	-	approx 0.6 mA/°C	
Light current f _v /I _F typ:	-	-	
Wavelength typ:	464-485 nm	635/565 nm	
Forward voltage U _F /I _F typ:	3.6 V/20 mA	2 V/10 mA	
Reverse voltage U _R /I _F typ:	-	-	
Ambient temperature, operating:	- 20 °C ... + 80 °C	- 20 °C ... + 80 °C	



RF

Calculating the series resistor:	Rated power of series:	Example for 5 Volt:
$R_V = \frac{U_B - U_F}{I_F}$	$P_V = I_F^2 \times R_V$	$R_V = \frac{5V - 2.0 V}{0.02 A} = 150 \Omega (= \text{standard value})$

RF short-travel keyswitches

RF 15 short-travel keyswitch



General data

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

Colour 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 into PCB
Terminals	contacts tin-plated, fix contact Ag plated
Contact system	snap-action contact
Contact arrangement	1 NO
Contact materials	Au/Ag
Illumination	spot-/fully illuminated
LED colour	see order block
LED type	see order block

Mechanical characteristics

Operating force max.	2 ... 3 N
Operating travel	0.5 ^{+0.2} mm
Switching travel	0.5 ^{+0.2} mm
Robustness min.	with through-plated PCB 100 N

Electrical characteristics

Rated voltage min.	Au: 0.02 V, Ag: 3 V
Rated voltage max.	Au: 42 V, Ag: 50 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

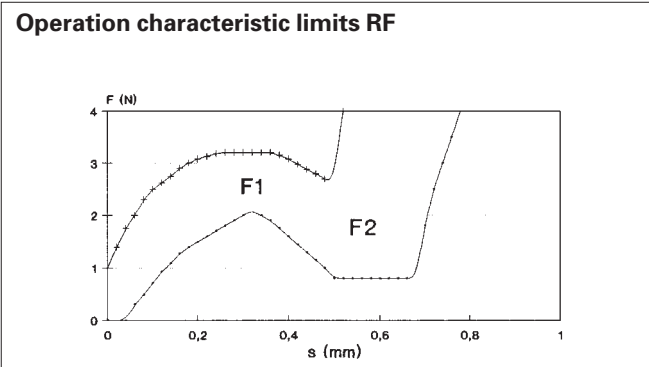
Contact resistance when new max.	100 mΩ
Contact resistance acc. to life max.	3 Ω
Insulation resistance	10 ⁹ Ω
ESD strength (underneath overlay)	15 kV
Bouncing time max.	5 ms

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. (in tube)	+50 °C
Resistance to constant environment	according to IEC 600 68-2-3 and 2-30
Resistance at variable environment	according to IEC 600 68-2-14 and 2-33
Operating life min.	1000000
Solderability	according to E DIN IEC 600 28-2-20
Wave soldering	260 °C max.
Manual soldering	350 °C / 5 sec. max.
Flammability of materials	UL 94 HB

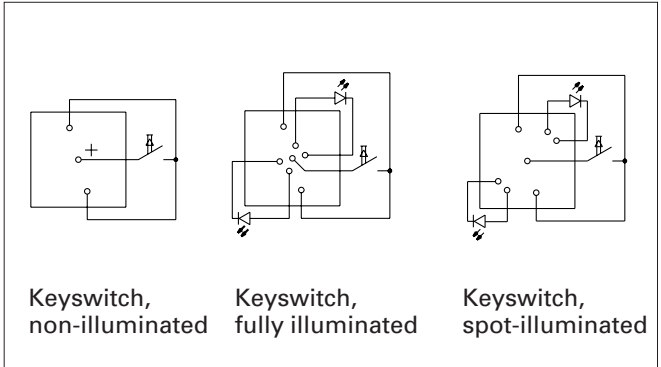
RF short-travel keyswitches

Force/Travel Diagram – Keyswitch RF 15



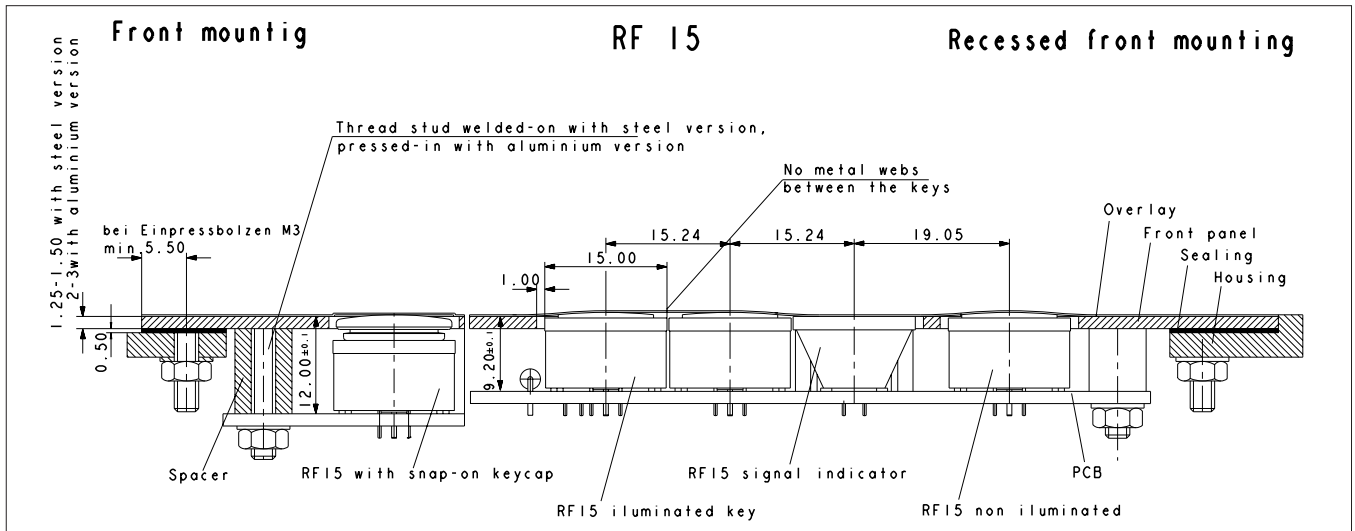
F 1 = Max. operating force
F 2 = Force at contact
F 2 is max. 55% of F 1

Circuit Diagram – Keyswitch RF 15

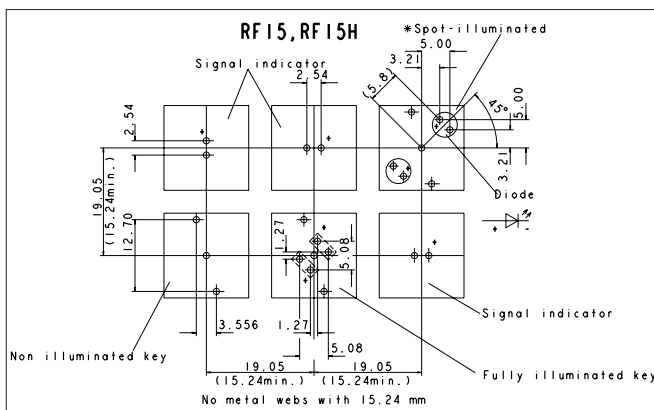


Keyswitch, non-illuminated Keyswitch, fully illuminated Keyswitch, spot-illuminated

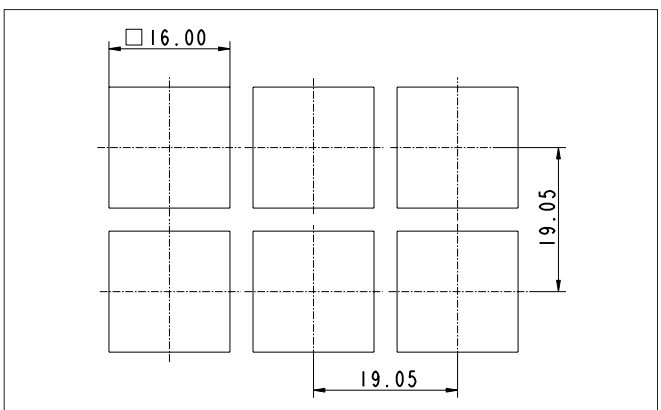
Dimensional Drawing RF 15



Hole Pattern RF 15



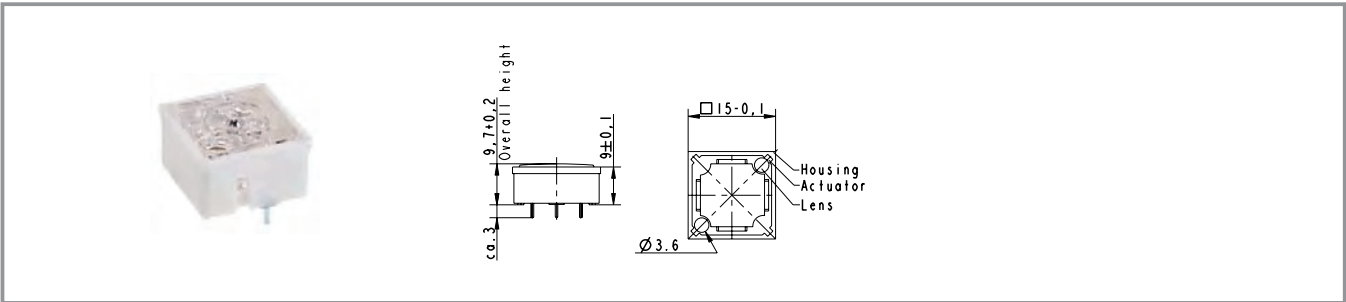
Hole Pattern – Front Panel



View on component side, all hole diameters 1,1 +/- 0,1 mm



RF 15 short-travel keyswitch, non-illuminated



Contact materials	Illumination	Colour of lens	LED colour	LED type	Order no.
Ag	not illuminated	transparent			3.14.100.006/0000
Au	not illuminated	transparent			3.14.100.001/0000

Technical data see page 4 - 26

Accessories:

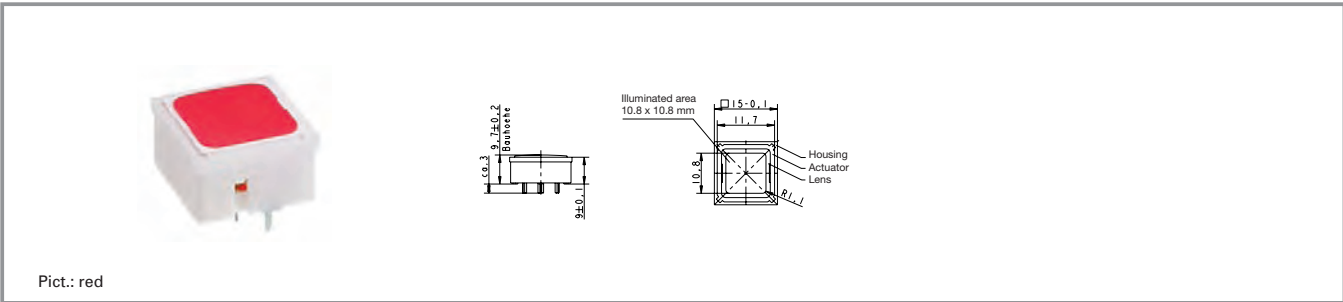
Keycap for RF 15, snap-on, for overall height 12.5 mm: 5.46.654.059/0227

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 short-travel keyswitches

RF 15 short-travel keyswitch, fully illuminated with 2 LED



Contact materials	Illumination	Colour of lens	LED colour	LED type	Order no.
Ag	fully illuminated 2 LED	red	red	2 mm	3.14.200.021/0000
Ag	fully illuminated 2 LED	green	green	2 mm	3.14.200.022/0000
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
Ag	fully illuminated 2 LED	blue	blue	2 mm	3.14.200.025/0000
Au	fully illuminated 2 LED	red	red	2 mm	3.14.200.011/0000
Au	fully illuminated 2 LED	green	green	2 mm	3.14.200.012/0000
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	blue	blue	2 mm	3.14.200.015/0000

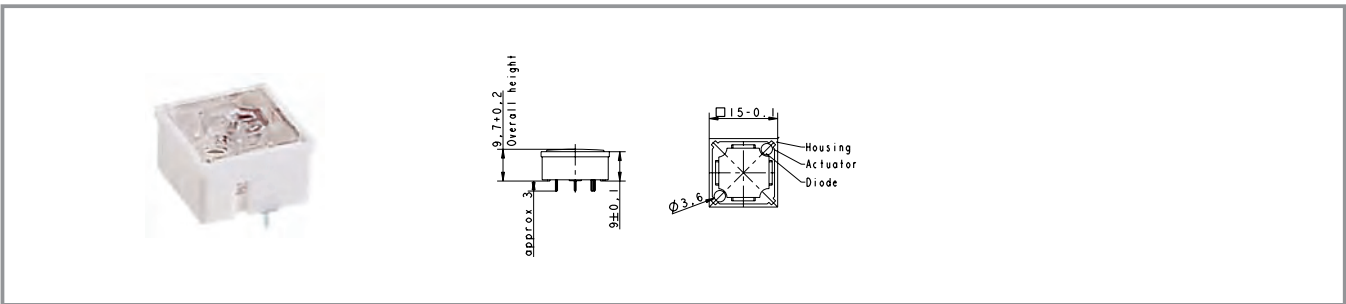
Technical data see page 4 - 26

For keycaps, refer to RK 90 system design.

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

RF short-travel keyswitches

RF 15 short-travel keyswitch, 1 LED spot-illumination



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

Technical data see page 4 - 26

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

4

RF

RF short-travel keyswitches

RF 15 N short-travel keyswitch



General data

The RF 15N keyswitch 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.

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

Keyswitches with overall heights of 12 mm or more can be provided with a maximum of 2 LED which are inserted into the recesses of the keyswitch housing. LED of keyswitches 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

Colour 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 into PCB
Terminals contacts tin-plated, fix contact Ag plated
Contact system snap-action contact
Contact arrangement 1 NO
Contact materials Au/Ag
Illumination external 3 mm LED possible if height 12 mm

Mechanical characteristics

Operating force max. 2 ... 3 N
Operating travel 0.5^{+0.2} mm
Switching travel 0.5^{+0.2} mm
Robustness min. with through-plated PCB 100 N

Electrical characteristics

Rated voltage min. Au: 0.02 V, Ag: 3 V
Rated voltage max. Au: 42 V, Ag: 50 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
Contact resistance acc. to life max. 3 Ω
Insulation resistance 10⁹ Ω
ESD strength (underneath overlay) 15 kV
Bouncing time max. 5 ms

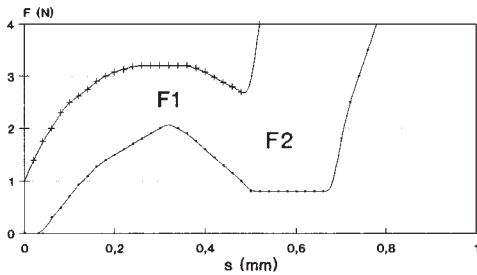
Other specifications

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. (in tube) +50 °C
Resistance to constant environment according to IEC 600 68-2-3 and 2-30
Resistance at variable environment according to IEC 600 68-2-14 and 2-33
Operating life min. 1000000
Solderability according to E DIN IEC 600 28-2-20
Wave soldering 260 °C max.
Manual soldering 350 °C / 5 sec. max.
Flammability of materials UL 94 HB

RF short-travel keyswitches

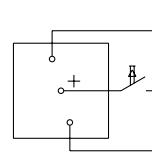
Force/Travel Diagram – Keyswitch RF 15 N

Operation characteristic limits RF

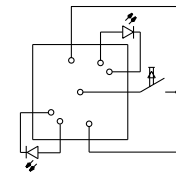


F 1 = Max. operating force
F 2 = Force at contact
F 2 is max. 55% of F 1

Circuit Diagram – Keyswitch RF 15 N

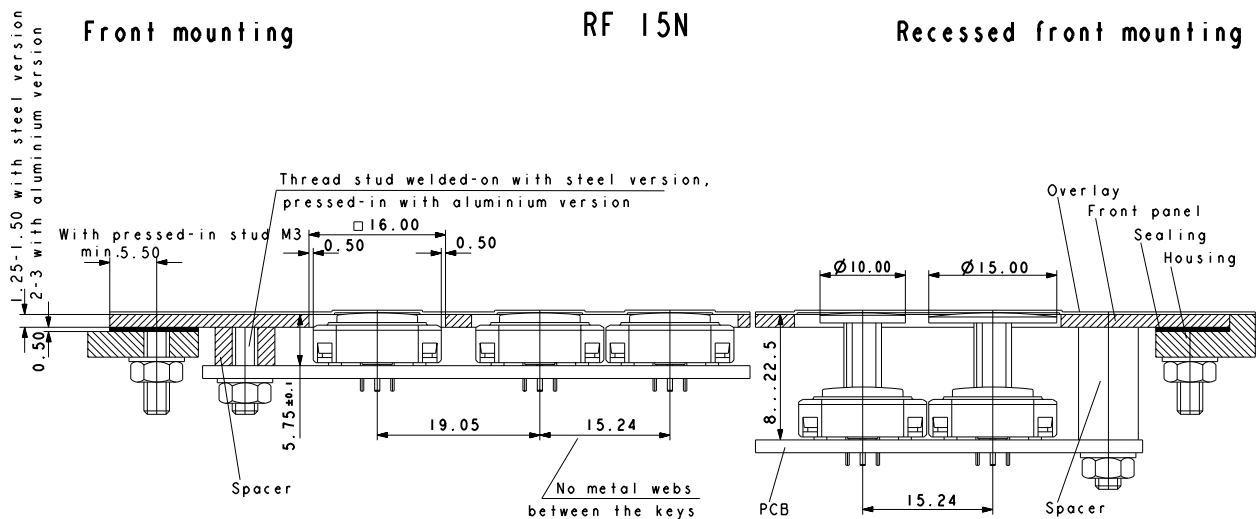
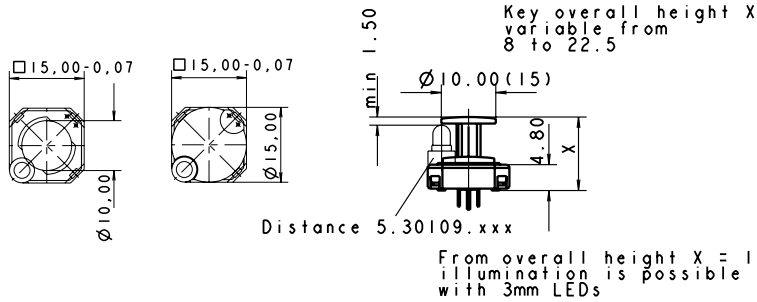


Keyswitch,
non illuminated



Keyswitch,
spot-illuminated

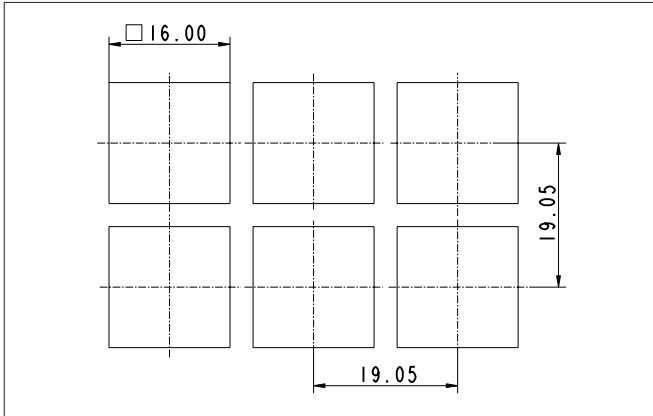
Dimensional Drawings RF 15 N



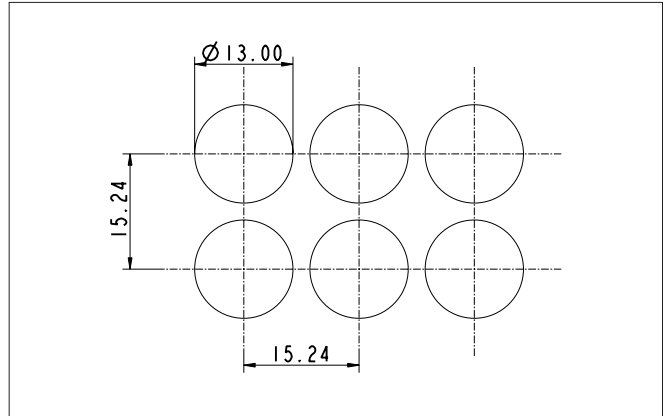
RF short-travel keyswitches

Hole Patterns – Front Panel RF 15 N

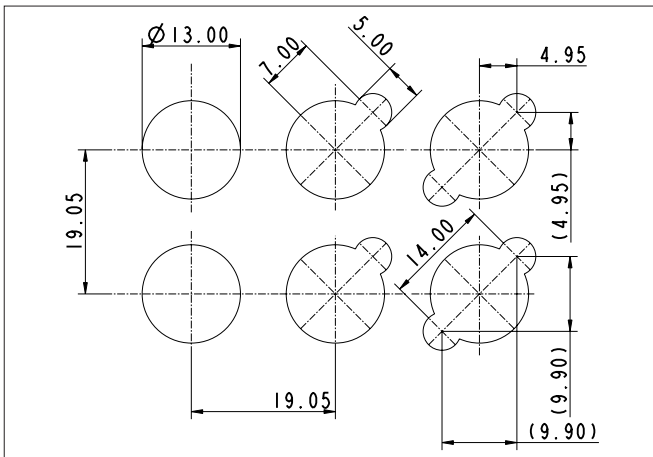
RF 15 N without plunger



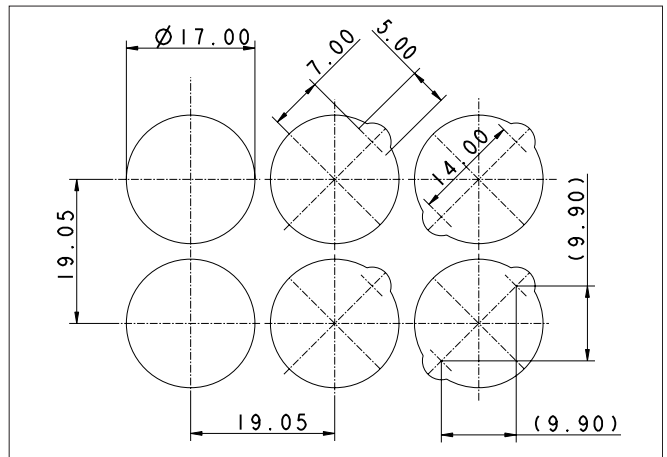
RF 15 N with plunger \varnothing 10 mm, non-illuminated



RF 15 N with plunger \varnothing 10 mm, illuminated

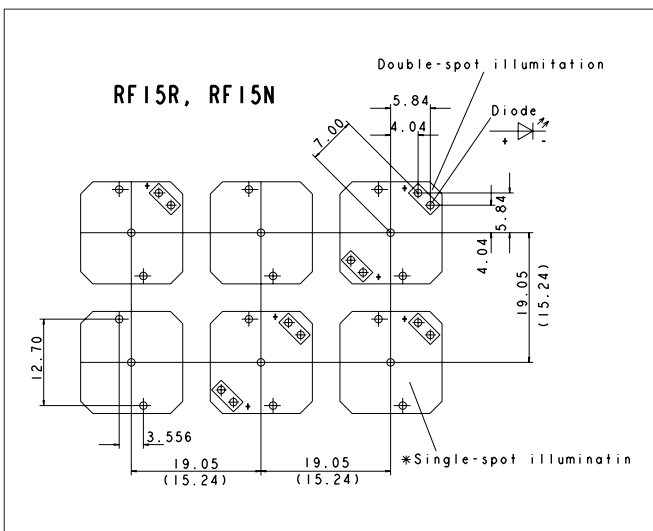


RF 15 N with plunger \varnothing 15 mm, illuminated



4

Hole Pattern RF 15 N



View on component side
All hole diameters $1.1^{+/-0.1}$ mm
PCB layout Keyswitch 1/400" grid

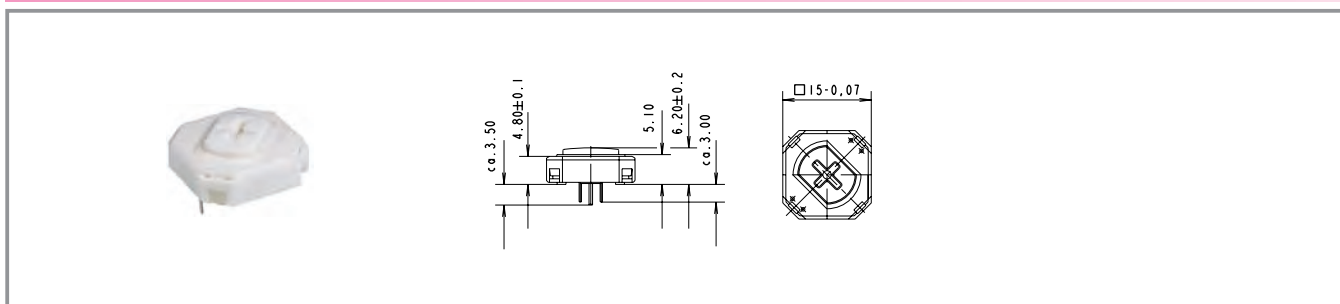
RF

RF short-travel keyswitches

Typical accessories RF 15 N short-travel keyswitch

Description	Photo	Order no.	Page
LED yellow, 3 mm		1.90.690.103/0000	
LED spacer for RF 15 N, 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 -72
Extension plunger for RF 15 N, Ø 10 mm, overall height 22.5 mm		5.46.011.028/0710	4 -68
Extension plunger for RF 15 N, Ø 15 mm, overall height 22.5 mm		5.46.017.028/0710	4 -69

RF 15 N short-travel keyswitch, non-illuminated



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

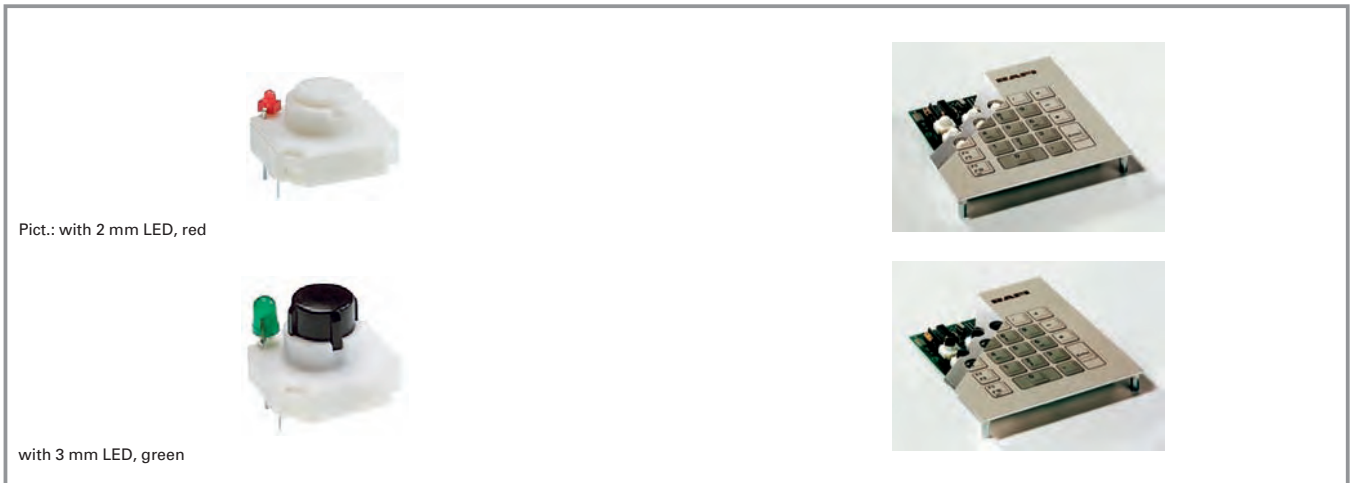
Technical data see page 4 - 32

For keycaps, refer to RK 90 system design.

Double-spot LED illumination available on request.

RF short-travel keyswitches

RF 15 R short-travel keyswitch



General data

The round actuator of the RF 15 R keyswitch 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 9.7/12.5 mm

Mechanical design

Mounting soldering into PCB
Terminals contacts tin-plated, fix contact Ag plated

Contact system snap-action contact
Contact arrangement 1 NO
Contact materials Au/Ag
Illumination spot illumination
LED colour see order block
LED type see order block

Mechanical characteristics

Operating force max. 2 ... 3 N
Operating travel 0.5^{+0.2} mm
Switching travel 0.5^{+0.2} mm
Robustness min. with through-plated PCB
100 N

Electrical characteristics

Rated voltage min. Au: 0.02 V, Ag: 3 V
Rated voltage max. Au: 42 V, Ag: 50 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

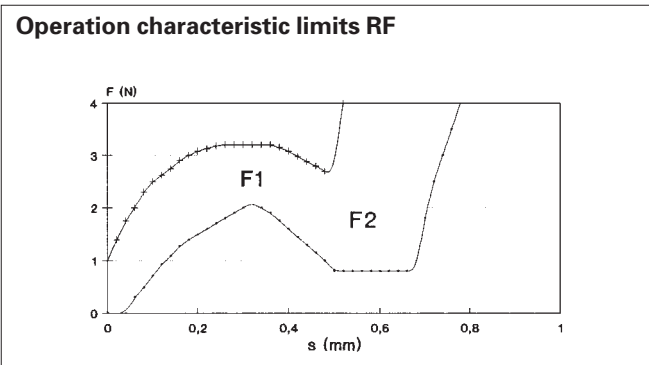
Contact resistance when new max. 100 mΩ
Contact resistance acc. to life max. 3 Ω
Insulation resistance 10⁹ Ω
ESD strength (underneath overlay) 15 kV
Bouncing time max. 5 ms

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. (in tube) +50 °C
Resistance to constant environment according to IEC 600 68-2-3 and 2-30
Resistance at variable environment according to IEC 600 68-2-14 and 2-33
Operating life min. 1000000
Solderability according to E DIN IEC 600 28-2-20
Wave soldering 260 °C max.
Manual soldering 350 °C / 5 sec. max.
Flammability of materials UL 94 HB

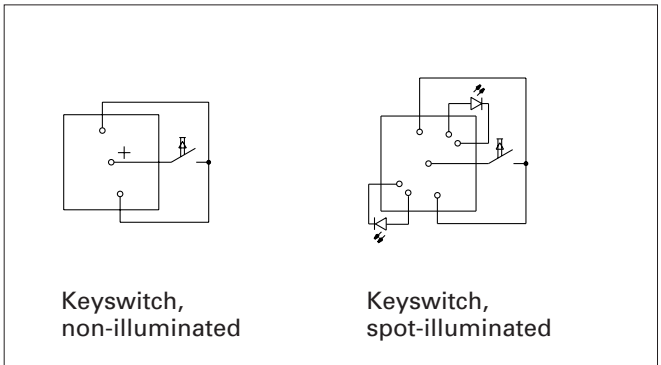
RF short-travel keyswitches

Force/Travel Diagram – Keyswitch RF 15 R

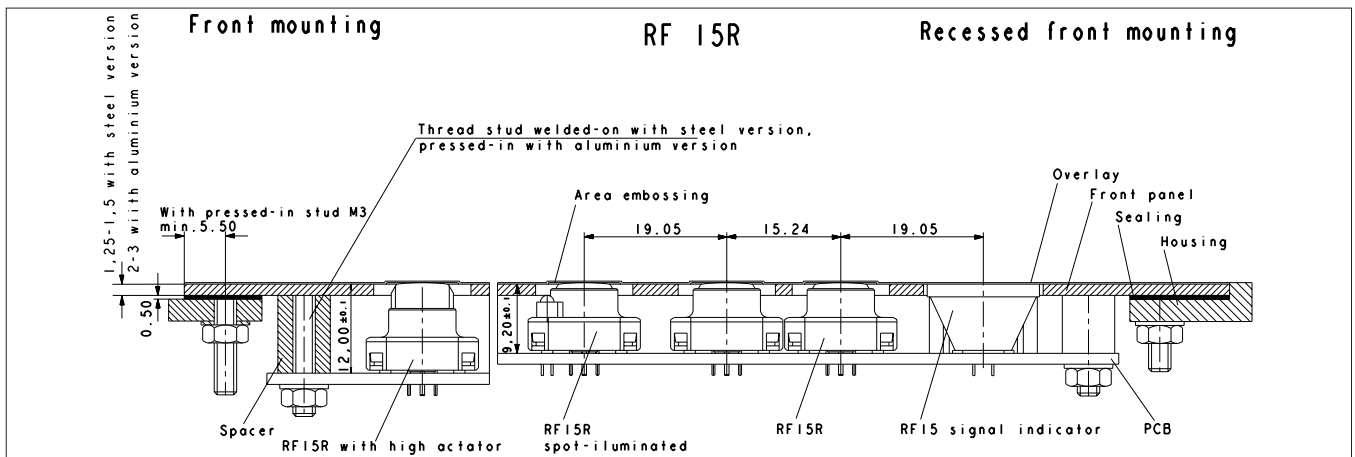


F 1 = Max. operating force
F 2 = Force at contact
F 2 is max. 55% of F 1

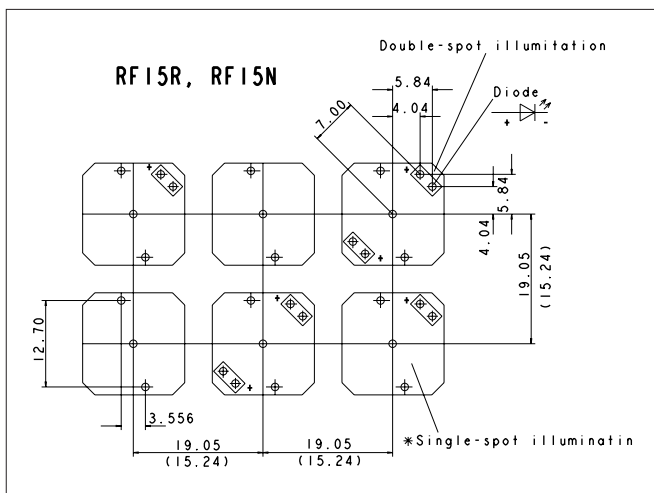
Circuit Diagram – Keyswitch RF 15 R



Dimensional Drawing RF 15 R



Hole Pattern RF 15 R

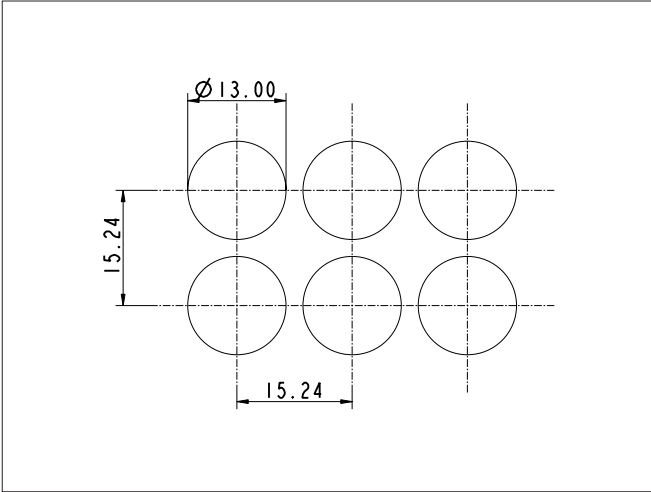


View on component side
All hole diameters 1.1 \pm 0.1 mm
PCB layout Keyswitch 1/400" grid

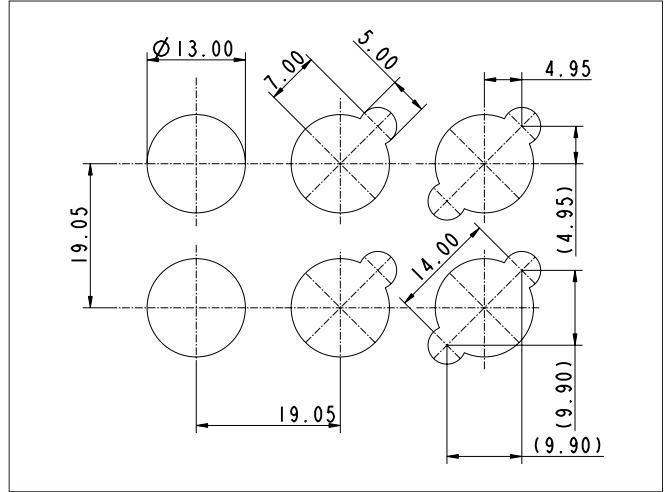


Hole Pattern – Front Panel RF 15 R

RF 15 R, non-illuminated

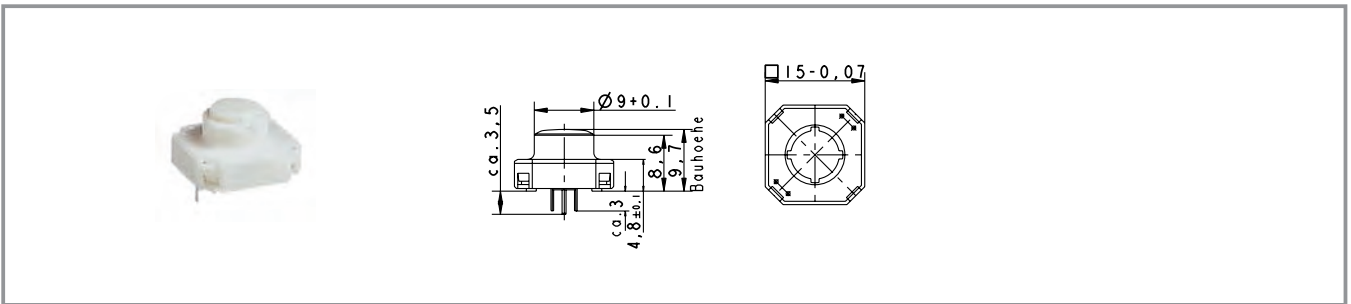


RF 15 R, illuminated



RF short-travel keyswitches

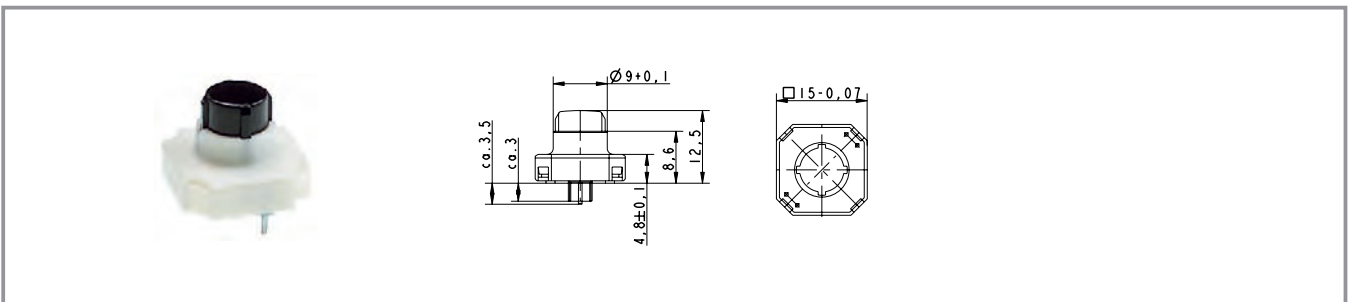
RF 15 R low short-travel keyswitch, non-illuminated



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

Technical data see page 4 - 36

RF 15 R high short-travel keyswitch, non-illuminated

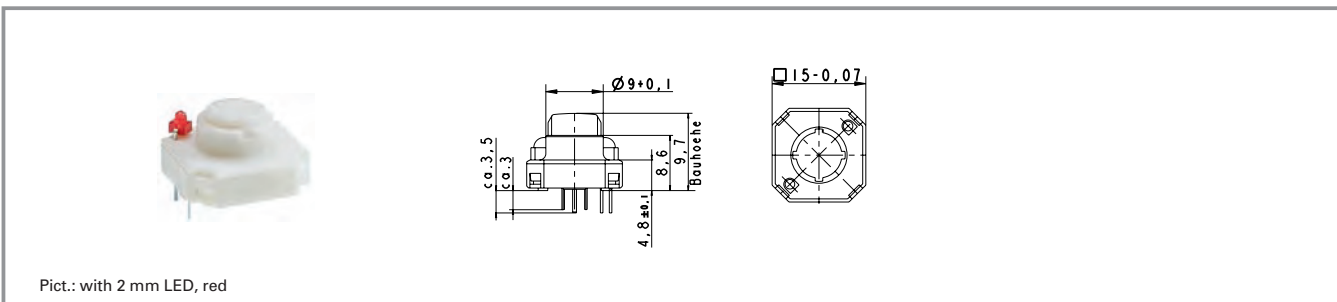


Contact materials	Overall height	Illumination	LED type	LED colour	Order no.
Au	12.5 mm	not illuminated			3.14.100.801/0000
Ag	12.5 mm	not illuminated			3.14.100.806/0000

Technical data see page 4 - 36

RF short-travel keyswitches

RF 15 R low short-travel keyswitch, 1 LED spot-illumination



Pict.: with 2 mm LED, red

Contact materials	Overall height	Illumination	LED type	LED colour	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	green	3.14.100.532/0000
Au	9.7 mm	spot illumination 1 LED	2 mm	yellow	3.14.100.533/0000
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	green	3.14.100.542/0000
Ag	9.7 mm	spot illumination 1 LED	2 mm	yellow	3.14.100.543/0000

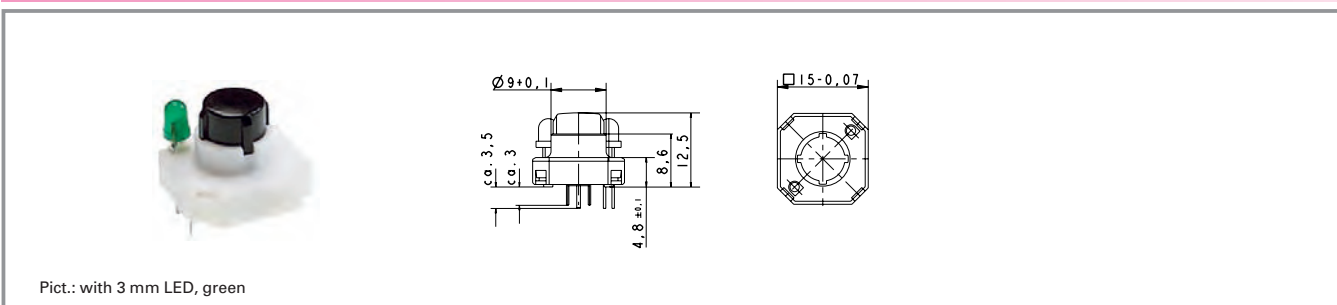
Technical data see page 4 - 36

Versions with 2 LED available on request.

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

4

RF 15 R high short-travel keyswitch, 1 LED spot-illumination



Pict.: with 3 mm LED, green

Contact materials	Overall height	Illumination	LED type	LED colour	Order no.
Au	12.5 mm	spot illumination 1 LED	3 mm	blue	3.14.100.830/0000
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	green	3.14.100.832/0000
Au	12.5 mm	spot illumination 1 LED	3 mm	yellow	3.14.100.833/0000

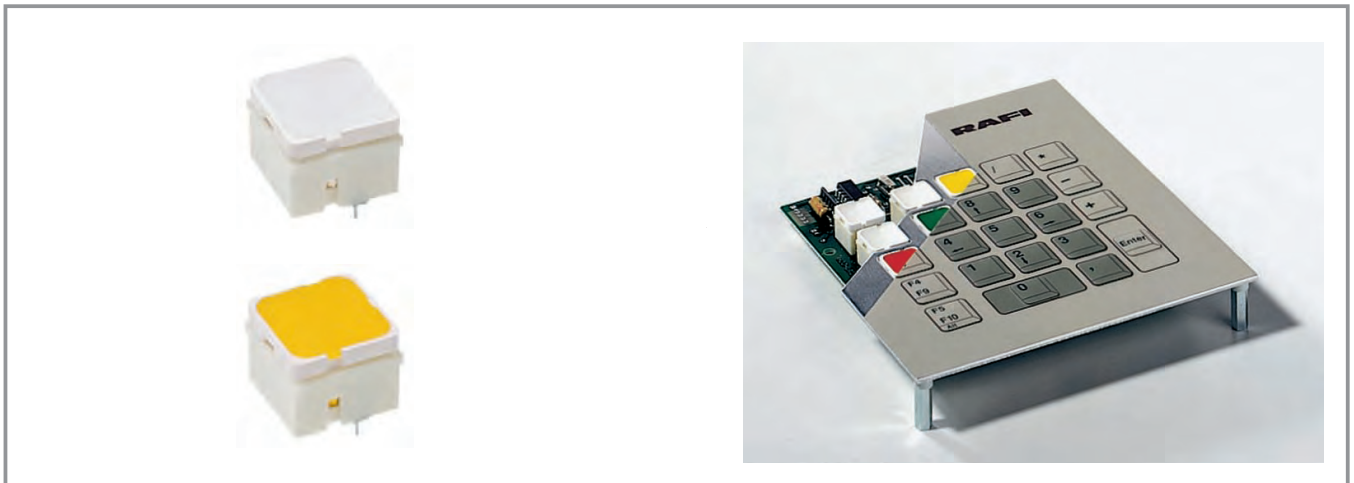
Technical data see page 4 - 36

Versions with 2 LED available on request.

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

RF short-travel keyswitches

RF 15 H short-travel keyswitch



General data

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

Colour 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 into PCB
Terminals see order block
Contact system snap-action contact
Contact arrangement 1 NO
Contact materials Au/Ag
Illumination not illuminated / fully illuminated
LED colour see order block
LED type see order block

Mechanical characteristics

Operating force max. 2 ... 3 N
Operating travel 0.5^{+0.2} mm
Switching travel 0.5^{+0.2} mm
Robustness min. with through-plated PCB
100 N

Electrical characteristics

Rated voltage min. Au: 0.02 V, Ag: 3 V
Rated voltage max. Au: 42 V, Ag: 50 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
Contact resistance acc. to life max. 3 Ω
Insulation resistance 10⁹ Ω
ESD strength (underneath overlay) 15 kV
Bouncing time max. 5 ms

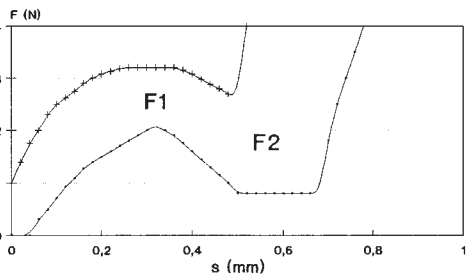
Other specifications

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. (in tube) +50 °C
Resistance to constant environment according to IEC 600 68-2-3 and 2-30
Resistance at variable environment according to IEC 600 68-2-14 and 2-33
Operating life min. 1000000
Solderability according to E DIN IEC 600 28-2-20
260 °C max.
Wave soldering 350 °C / 5 sec. max.
Manual soldering
Flammability of materials UL 94 HB

RF short-travel keyswitches

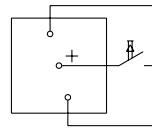
Force/Travel Diagram – Keyswitch RF 15 H

Operation characteristic limits RF

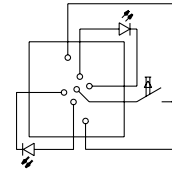


F 1 = Max. operating force
F 2 = Force at contact
F 2 is max. 55% of F 1

Circuit Diagram – Keyswitch RF 15 H

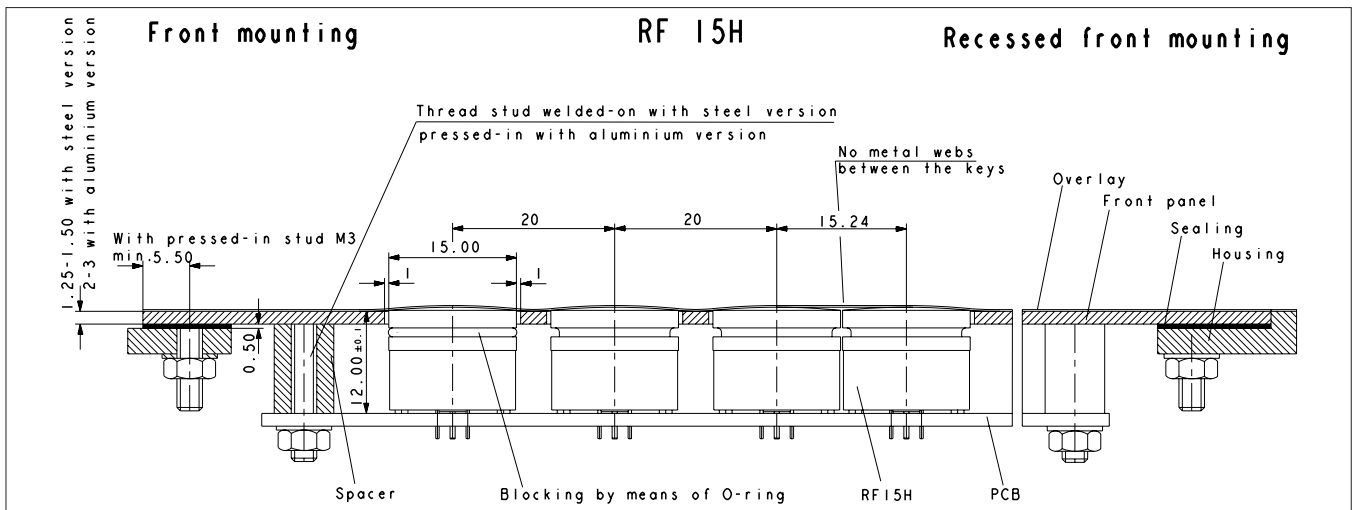


Keyswitch,
non-illuminated

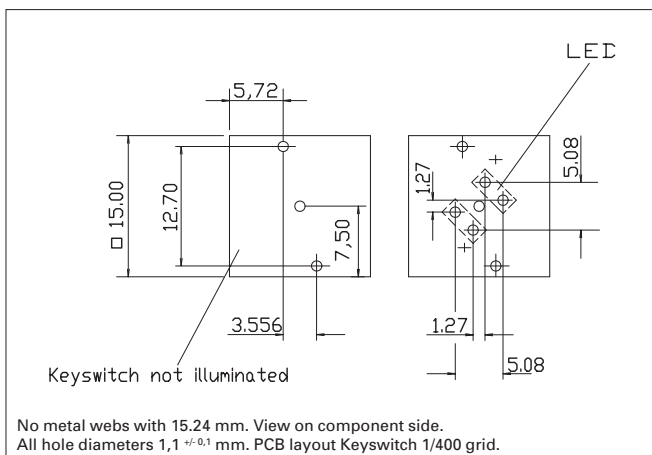


Keyswitch,
fully illuminated

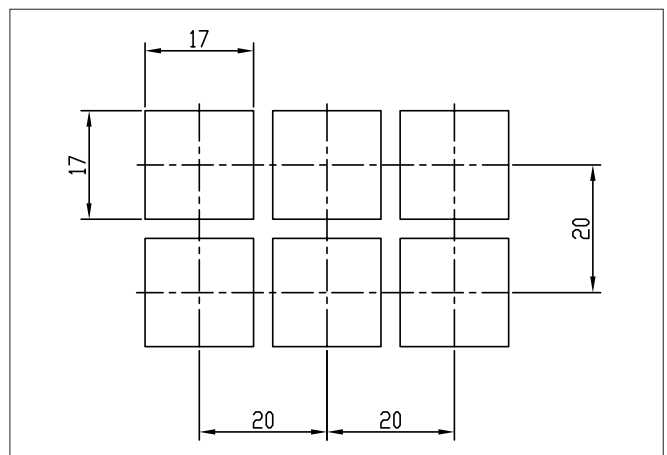
Dimensional Drawing



Hole Pattern



Hole Pattern – Front Panel



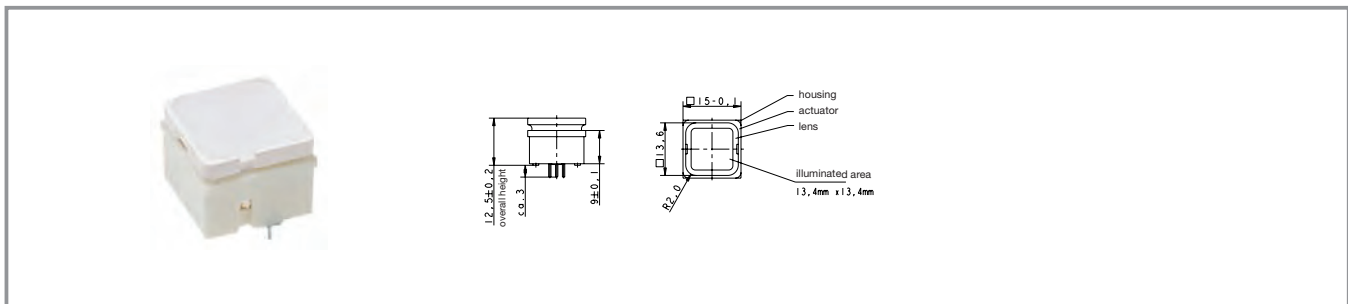
RF short-travel keyswitches



Typical accessories RF 15 H short-travel keyswitch

Description	Photo	Order no.	Additional accessories see page
O-ring, black, for blocking the operating stroke		5.30.120.009/0100	

RF 15 H short-travel keyswitch, non-illuminated

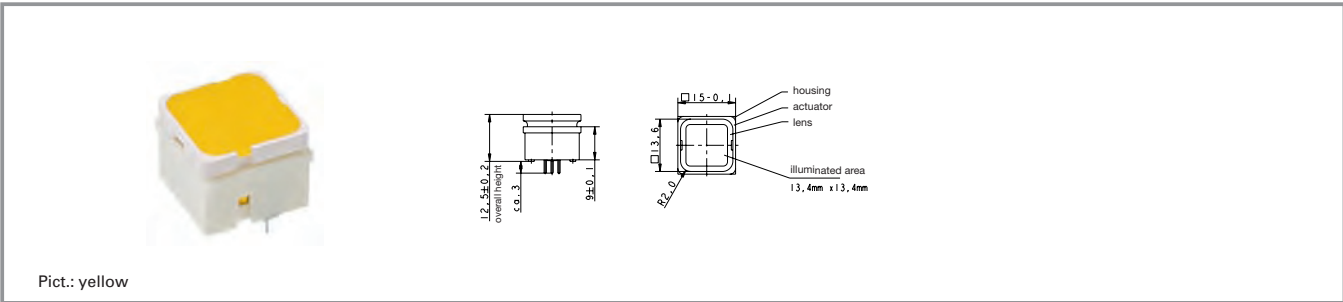


Contact materials	Illumination	Colour of lens	LED colour	LED type	Order no.
Au	not illuminated	white			3.14.100.702/0000
Ag	not illuminated	white			3.14.100.707/0000

Technical data see page 4 - 42

RF short-travel keyswitches

RF 15 H short-travel keyswitch, fully illuminated



Pict.: yellow

Contact materials	Illumination	Colour of lens	LED colour	LED type	Order no.
Au	fully illuminated 2 LED	red	red	2 mm	3.14.200.731/0000
Au	fully illuminated 2 LED	green	green	2 mm	3.14.200.732/0000
Au	fully illuminated 1 LED	green	green super bright	3 mm	3.14.200.736/0000
Au	fully illuminated 2 LED	yellow	yellow	2 mm	3.14.200.733/0000
Au	fully illuminated 1 LED	white	white	3 mm	3.14.200.735/0000
Au	fully illuminated 2 LED	orange	yellow	2 mm	3.14.200.738/0000
Au	fully illuminated 1 LED	blue	blue	3 mm	3.14.200.739/0000
Au	fully illuminated 2 LED	white	multi colour	3 mm	3.14.100.734/0000
Ag	fully illuminated 2 LED	red	red	2 mm	3.14.200.741/0000
Ag	fully illuminated 2 LED	green	green	2 mm	3.14.200.742/0000
Ag	fully illuminated 1 LED	green	green super bright	3 mm	3.14.200.746/0000
Ag	fully illuminated 2 LED	yellow	yellow	2 mm	3.14.200.743/0000
Ag	fully illuminated 1 LED	white	white	3 mm	3.14.200.745/0000
Ag	fully illuminated 2 LED	orange	yellow	2 mm	3.14.200.748/0000
Ag	fully illuminated 1 LED	blue	blue	3 mm	3.14.200.749/0000
Ag	fully illuminated 2 LED	white	multi colour	3 mm	3.14.100.744/0000

Technical data see page 4 - 42

When using the keyswitches with multicolour LED the illumination colour can be varied from red to green by change of polarity. Due to the frequency of the polarity-changes the colours red, green, yellow as well as all secondary colours from these are possible.

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



RF short-travel keyswitches

RF 15 signal indicator



Pict.: green

Technical data

General information

Colour 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 into PCB
Illumination	fully illuminated 1 LED
LED colour	see order block
LED type	2 mm

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. (in tube)

+50 °C

Resistance to constant environment

according to IEC 600 68-2-3 and 2-30

Resistance at variable environment

according to IEC 600 68-2-14 and 2-33

Solderability

according to E DIN IEC 600 28-2-20

Wave soldering

260 °C max.

Manual soldering

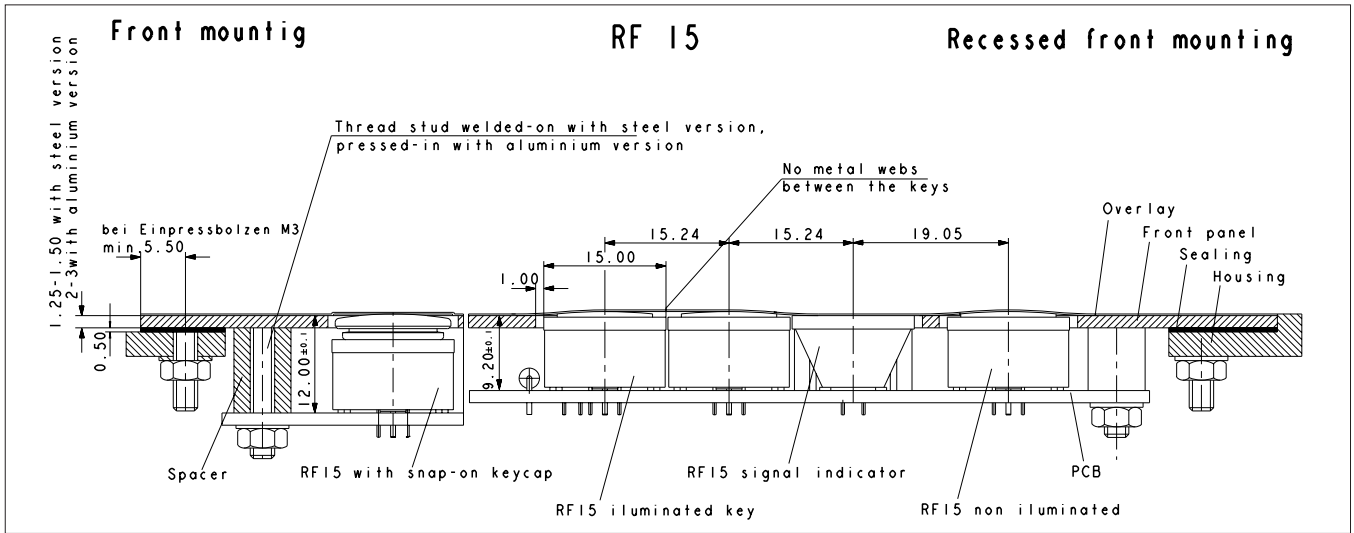
350 °C / 5 sec. max.

Flammability of materials

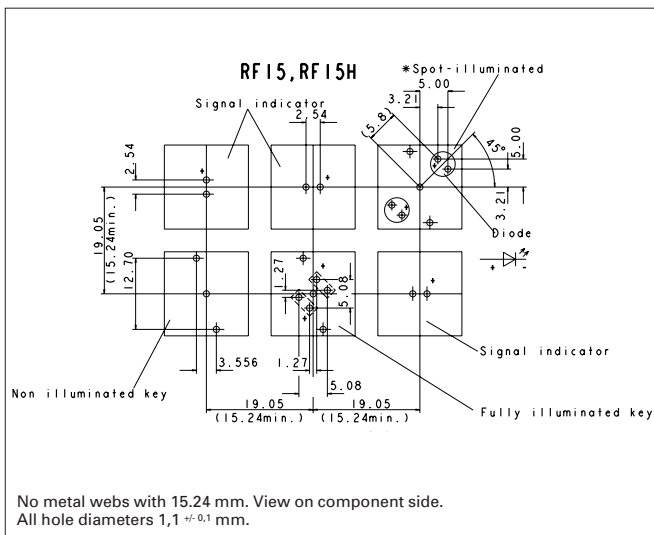
UL 94 HB

RF short-travel keyswitches

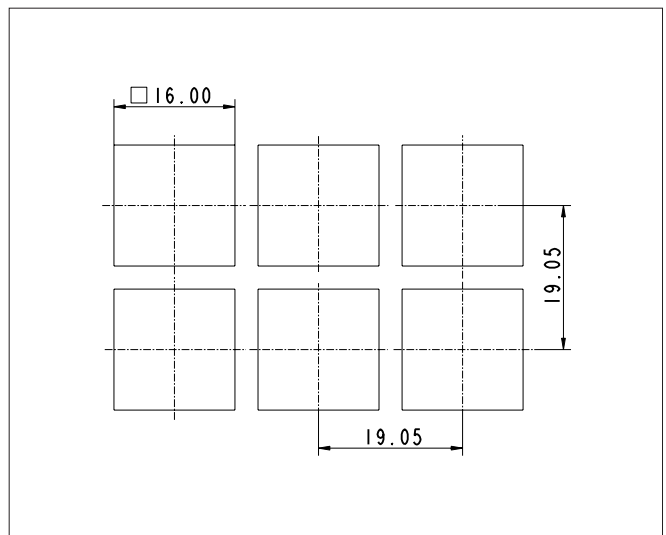
Dimensional Drawing Signal Indicator RF 15



Hole Pattern



Hole Pattern – Front Panel

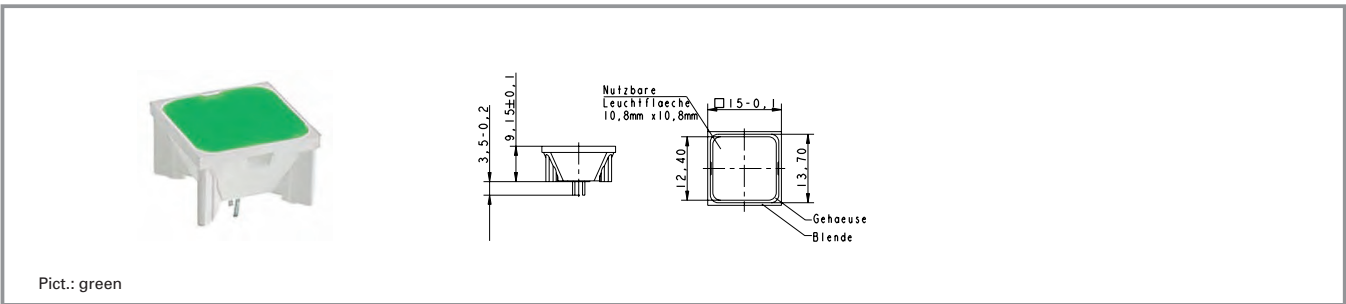


4

RF

RF short-travel keyswitches

RF 15 signal indicator, fully illuminated, 1 LED



Overall height	Illumination	Colour of lens	LED colour	LED type	Order no.
9.7 mm	fully illuminated 1 LED	red	red	2 mm	3.14.200.051/0000
9.7 mm	fully illuminated 1 LED	green	green	2 mm	3.14.200.052/0000
9.7 mm	fully illuminated 1 LED	yellow	yellow	2 mm	3.14.200.053/0000
9.7 mm	fully illuminated 1 LED	orange	yellow	2 mm	3.14.200.054/0000
9.7 mm	fully illuminated 1 LED	blue	blue	2 mm	3.14.200.055/0000

Technical data see page 4 - 46

Technical data of LED see separate page at the beginning of chapter 4 "PCB Keyswitches".

RF short-travel keyswitches

RF 19 short-travel keyswitch



General data

Application notes:

RF 19 keys offer a large actuation area. When designing low-profile keyboards with a grid of ≥ 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

Colour 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 into PCB
Terminals contacts tin-plated, fix contact Ag plated snap-action contact
Contact system 1 NO
Contact arrangement Au/Ag
Contact materials spot-/fully illuminated
Illumination see order block
LED colour see order block
LED type see order block

Mechanical characteristics

Operating force max. 2 ... 3 N
Operating travel $0.5^{+0.2}$ mm
Switching travel $0.5^{+0.2}$ mm
Robustness min. with through-plated PCB 100 N

Electrical characteristics

Rated voltage min. Au: 0.02 V, Ag: 3 V
Rated voltage max. Au: 42 V, Ag: 50 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 m Ω
Contact resistance acc. to life max. 3 Ω
Insulation resistance 10^9 Ω
ESD strength (underneath overlay) 15 kV
Bouncing time max. 5 ms

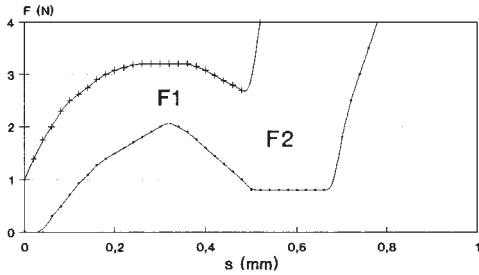
Other specifications

Ambient temp. operating min. -25 $^{\circ}\text{C}$
Ambient temp. operating max. +70 $^{\circ}\text{C}$
Storage temperature min. -40 $^{\circ}\text{C}$
Storage temperature max. (product) +80 $^{\circ}\text{C}$
Storage temperature max. (in tube) +50 $^{\circ}\text{C}$
Resistance to constant environment according to IEC 600 68-2-3 and 2-30
Resistance at variable environment according to IEC 600 68-2-14 and 2-33
Operating life min. 1000000
Solderability according to E DIN IEC 600 28-2-20 260 $^{\circ}\text{C}$ max.
Wave soldering 350 $^{\circ}\text{C}$ / 5 sec. max.
Manual soldering
Flammability of materials UL 94 HB

RF short-travel keyswitches

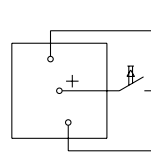
Force/Travel Diagram – Keyswitch RF 19

Operation characteristic limits RF

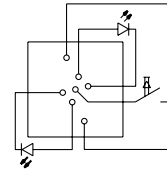


F 1 = Max. operating force
F 2 = Force at contact
F 2 is max. 55% of F 1

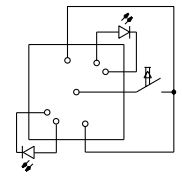
Circuit Diagram – Keyswitch RF 19



Keyswitch, non-illuminated

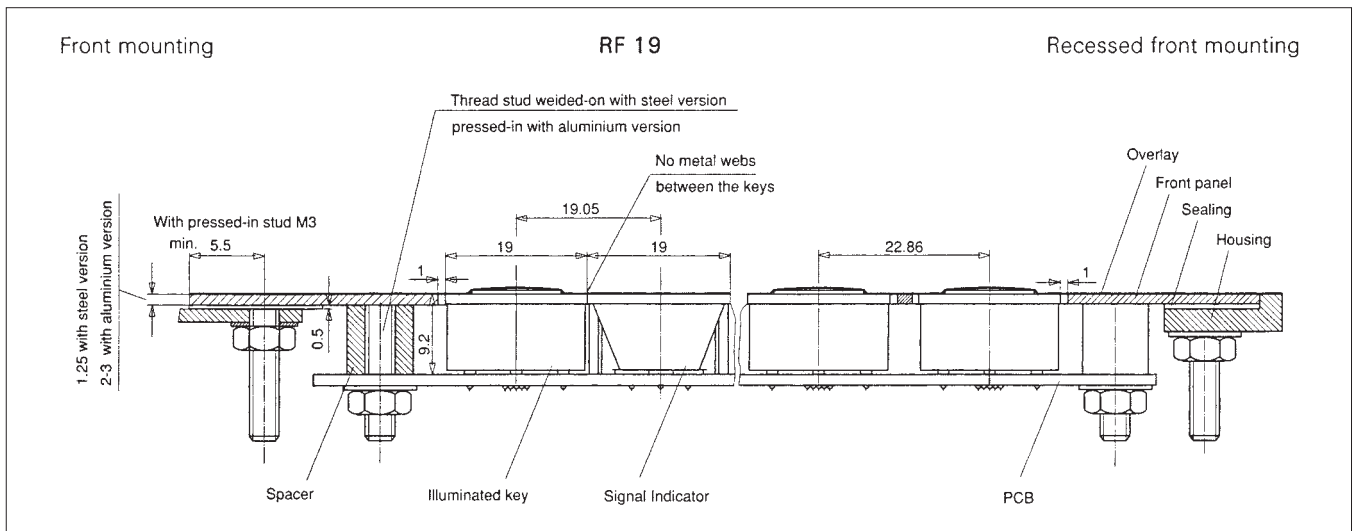


Keyswitch, fully illuminated



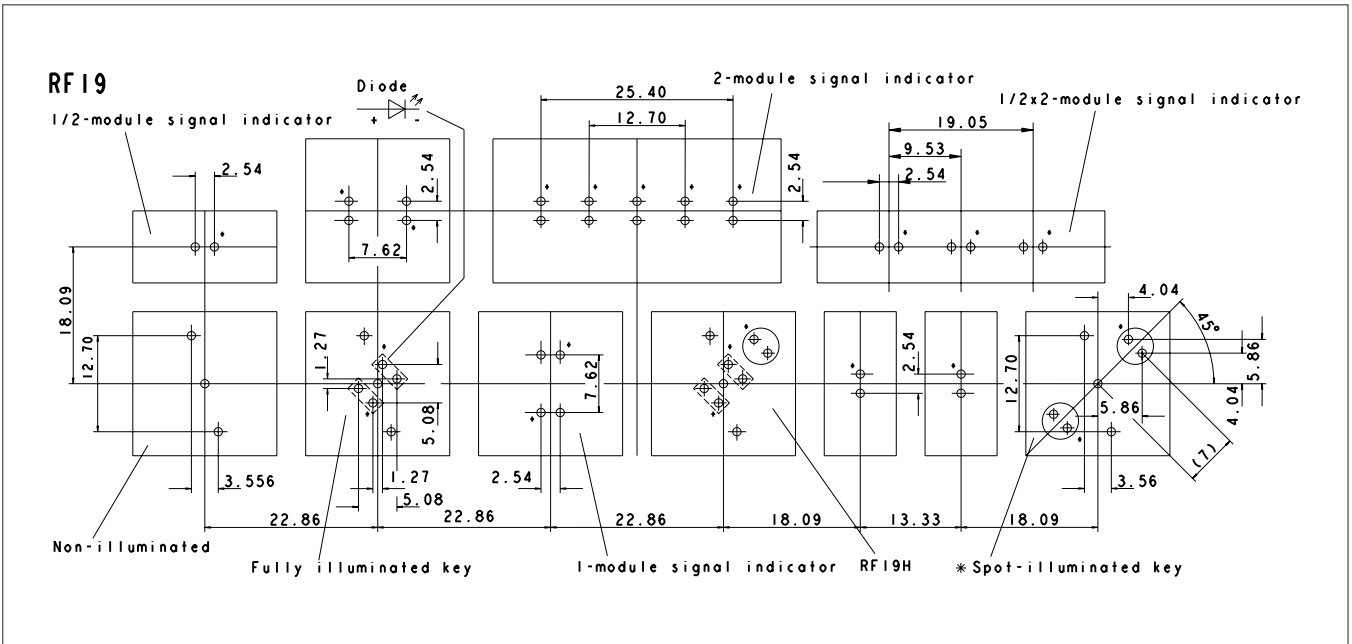
Keyswitch, spot-illuminated

Dimensional Drawing



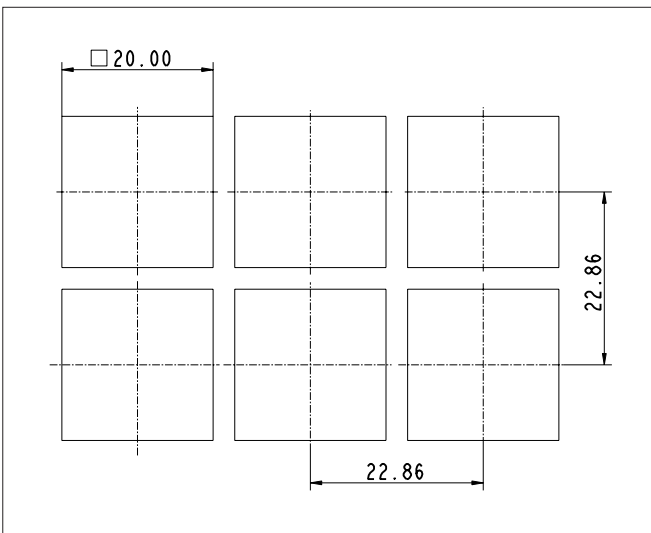
RF short-travel keyswitches

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

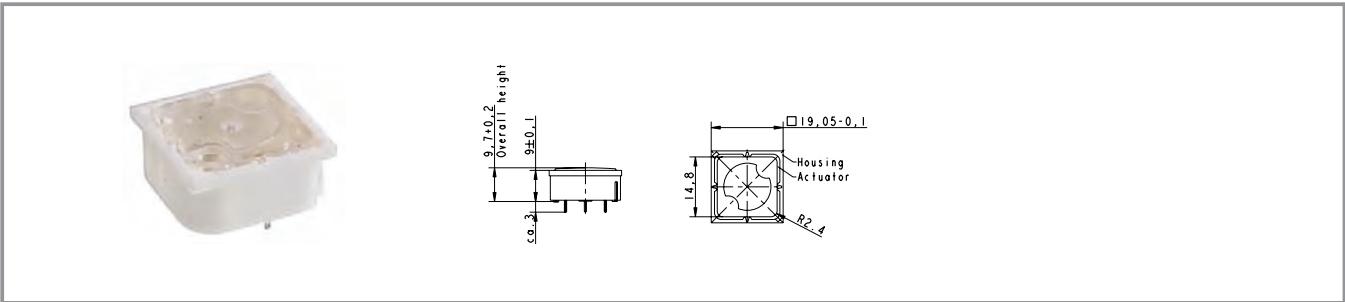
Hole Patterns – Front Panel RF 19



4

RF

RF 19 short-travel keyswitch, non-illuminated

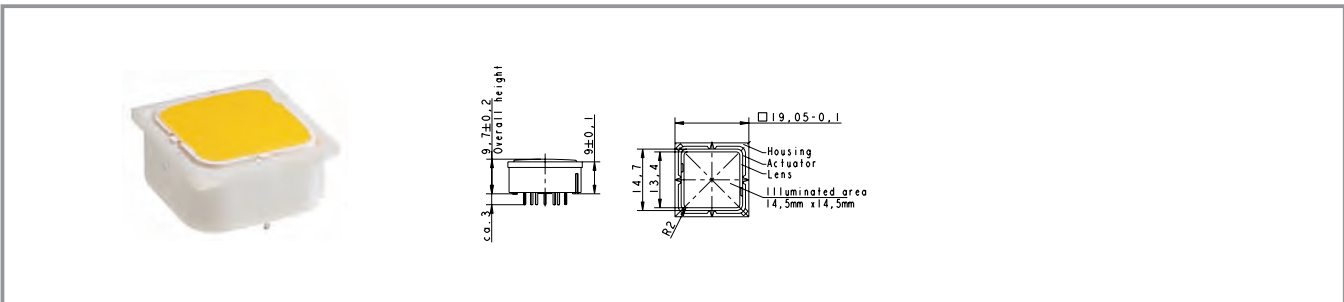


Contact materials	Illumination	Colour of lens	LED colour	LED type	Order no.
Au	not illuminated	transparent			3.14.001.001/0000
Ag	not illuminated	transparent			3.14.001.006/0000

Technical data see page 4 - 50

RF short-travel keyswitches

RF 19 short-travel keyswitch, fully illuminated with 2 LED



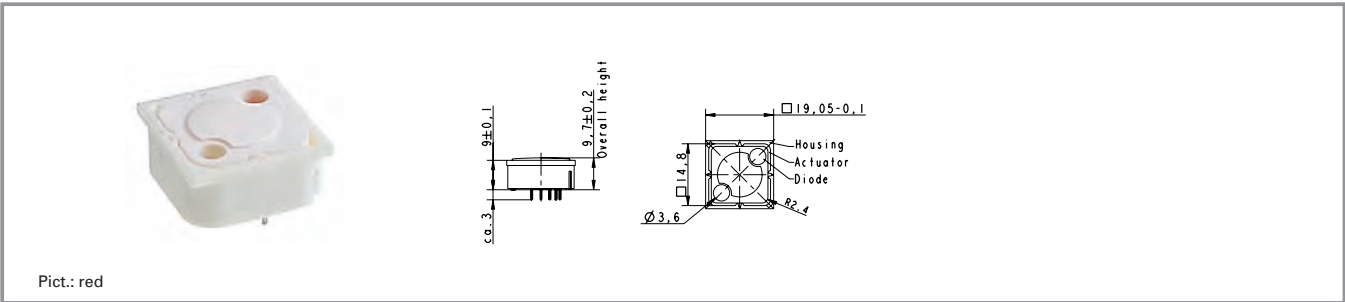
Contact materials	Illumination	Colour of lens	LED colour	LED type	Order no.
Au	fully illuminated 2 LED	red	red	2 mm	3.14.002.011/0000
Au	fully illuminated 2 LED	green	green	2 mm	3.14.002.012/0000
Au	fully illuminated 2 LED	yellow	yellow	2 mm	3.14.002.013/0000
Au	fully illuminated 2 LED	orange	yellow	2 mm	3.14.002.014/0000
Au	fully illuminated 2 LED	blue	blue	2 mm	3.14.002.015/0000
Ag	fully illuminated 2 LED	red	red	2 mm	3.14.002.021/0000
Ag	fully illuminated 2 LED	green	green	2 mm	3.14.002.022/0000
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	blue	blue	2 mm	3.14.002.025/0000

Technical data see page 4 - 50

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

RF short-travel keyswitches

RF 19 short-travel keyswitch, 1 LED spot-illumination



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

Technical data see page 4 - 50

Versions with 2 LED available on request.

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

RF short-travel keyswitches

RF 19 short-travel keyswitch, 1 NC + 1 NO



Technical data

General information

Recommended key grid 23 mm

Dimensions

Length 19.05 mm
Width 19.05 mm
Overall height 9.7 mm

Mechanical design

Mounting soldering into PCB
Terminals contacts tin-plated, fix contact Ag plated
Contact system bridge contact
Contact arrangement 1 NC + 1 NO
Contact materials Au/Ag
Illumination none

Mechanical characteristics

Operating force max. 2 ... 3 N
Operating travel 0.5^{+0.2} mm
Switching travel 0.5^{+0.2} mm
Robustness min. with through-plated PCB
100 N

Electrical characteristics

Rated voltage min. Au: 0,02 V, Ag: 3 V V
Rated voltage max. Au: 42 V, Ag: 50 V V
Rated current min. Au: 0.01 mA, Ag: 0.1 mA mA
Rated current max. Au: 100 mA, Ag: 250 mA mA
Rated power max. (ohmic load) Au: 2 W, Ag: 12.5 W

For keycaps, refer to RK 90.

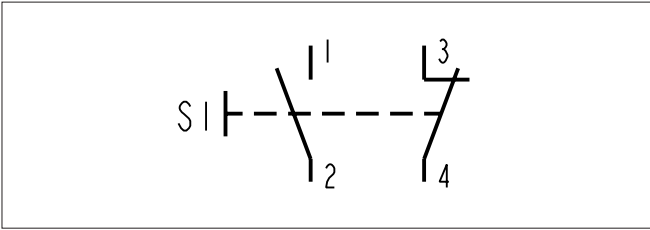
Contact resistance when new max. 100 mΩ
Contact resistance acc. to life max. 3 Ω
Insulation resistance 2 x 10⁶ Ω
ESD strength (underneath overlay) 15 kV
Bouncing time max. 5 ms

Other specifications

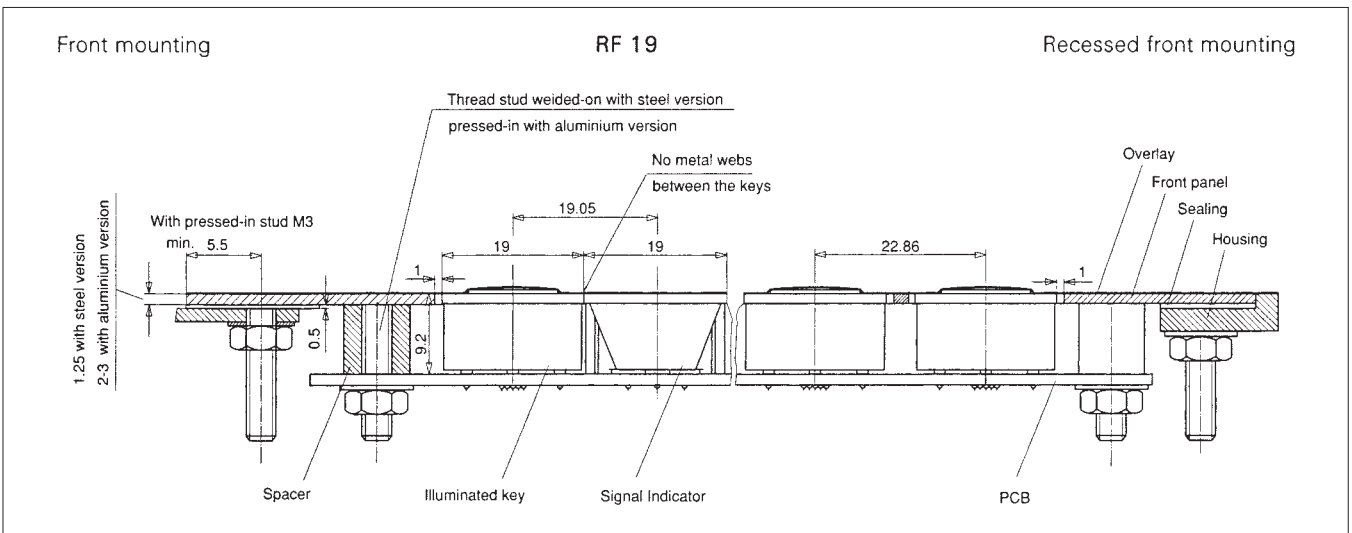
Ambient temp. operating min. -25 °C
Ambient temp. operating max. +70 °C
Storage temperature min. -40 °C
Storage temperature max. (product) +80 °C
Storage temperature max. (in tube) +50 °C
Resistance to constant environment according to IEC 600 68-2-3 and 2-30
Resistance at variable environment according to IEC 600 68-2-14 and 2-33
Operating life min. 100.000
Solderability according to E DIN IEC 600 28-2-20
Wave soldering 260 °C max.
Manual soldering 350 °C / 5 sec. max.
Flammability of materials UL 94 HB

RF short-travel keyswitches

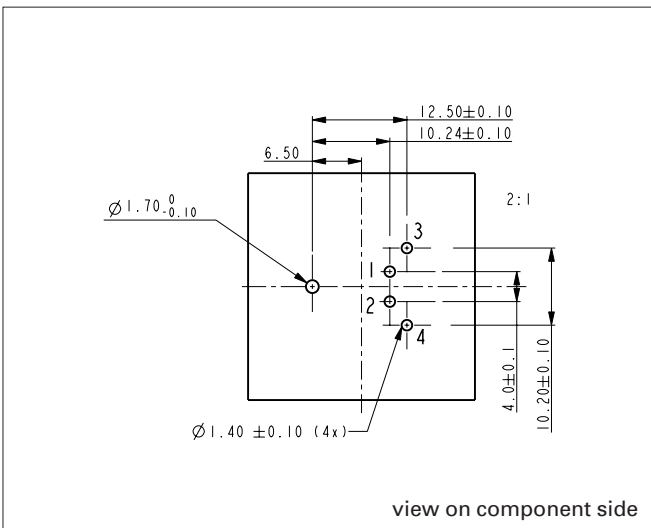
Circuit Diagram



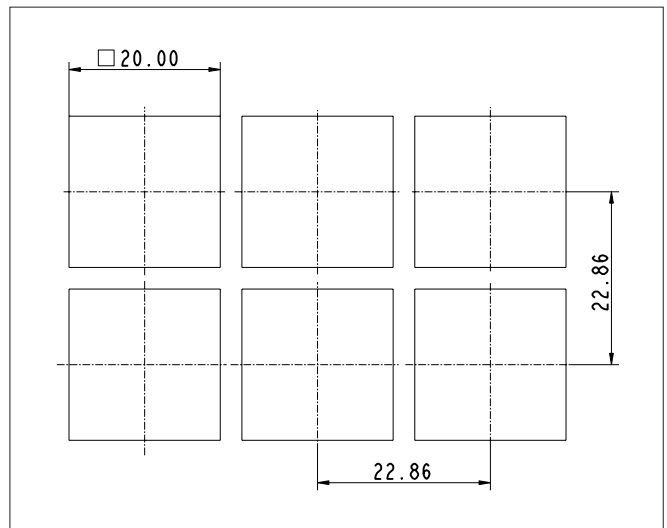
Dimensional Drawing



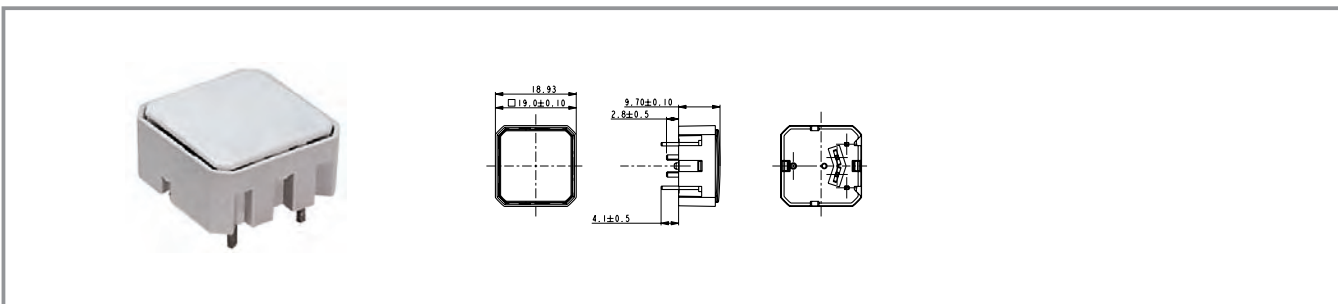
Hole Pattern



Hole Pattern – Front Panel



RF 19 short-travel keyswitch, non-illuminated



Contact materials	Contact arrangement	Illumination	Colour of lens	Order no.
Au	1 NC + 1 NO	not illuminated	opaque white	1.16.000.991/0000
Ag	1 NC + 1 NO	not illuminated	opaque white	1.16.000.990/0000

Technical data see page 4 - 56

RF short-travel keyswitches

RF 19 H short-travel keyswitch



General data

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

Colour 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 into PCB
Terminals	contacts tin-plated, fix contact Ag plated snap-action contact
Contact system	1 NO
Contact arrangement	Au/Ag
Contact materials	spot-/fully illuminated
Illumination	see order block
LED colour	see order block
LED type	see order block

Mechanical characteristics

Operating force max.	2 ... 3 N
Operating travel	0.5 ^{+0.2} mm
Switching travel	0.5 ^{+0.2} mm
Robustness min.	with through-plated PCB 100 N

Electrical characteristics

Rated voltage min.	Au: 0.02 V, Ag: 3 V
Rated voltage max.	Au: 42 V, Ag: 50 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

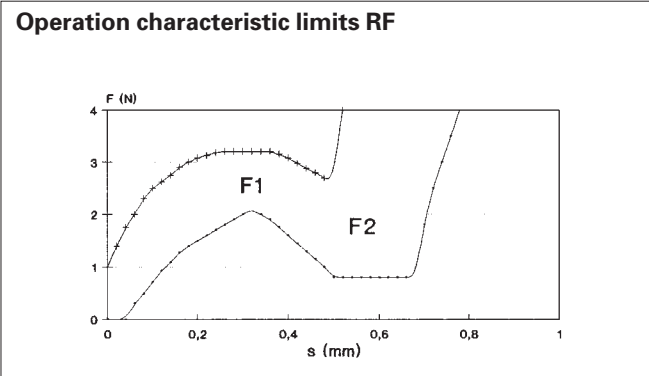
Contact resistance when new max.	100 mΩ
Contact resistance acc. to life max.	3 Ω
Insulation resistance	10 ⁹ Ω
ESD strength (underneath overlay)	15 kV
Bouncing time max.	5 ms

Other specifications

Ambient temp. operating min.	-25 °C
Ambient temp. operating max.	+70 °C
Storage temperature min. (product)	-40 °C
Storage temperature max. (in tube)	+80 °C
Resistance to constant environment	+50 °C according to IEC 600 68-2-3 and 2-30
Resistance at variable environment	according to IEC 600 68-2-14 and 2-33
Operating life min.	1000000
Solderability	according to E DIN IEC 600 28-2-20
Wave soldering	260 °C max.
Manual soldering	350 °C / 5 sec. max.
Flammability of materials	UL 94 HB

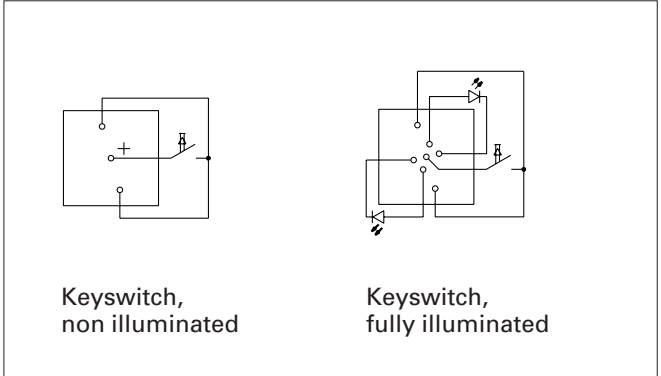
RF short-travel keyswitches

Force/Travel Diagram – Keyswitch RF 19 H

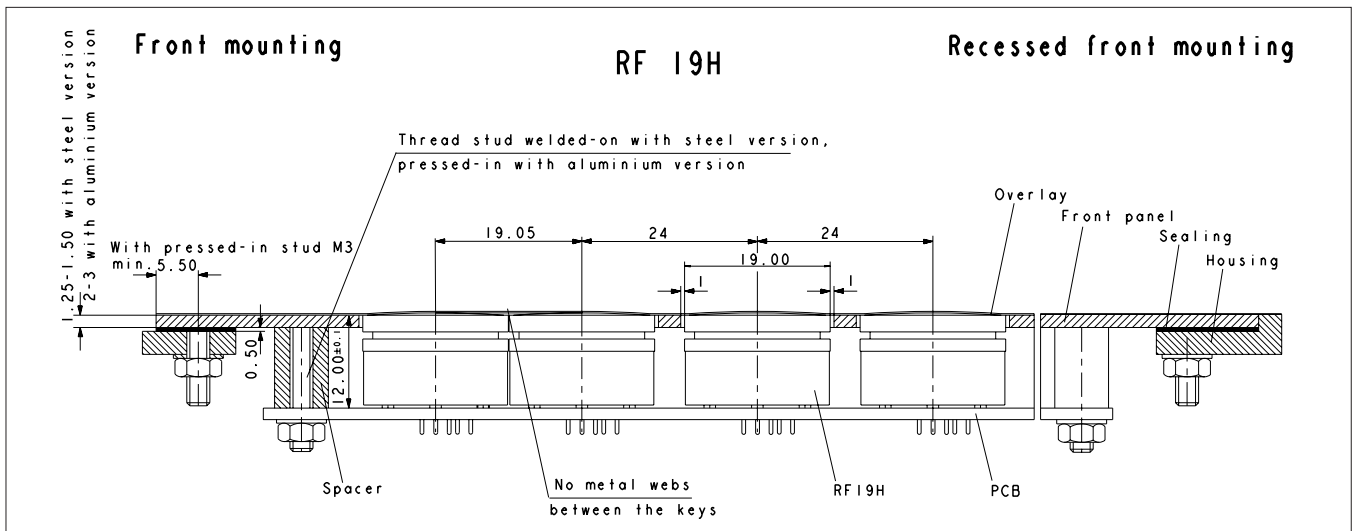


F 1 = Max. operating force
F 2 = Force at contact
F 2 is max. 55% of F 1

Circuit Diagram – Keyswitch RF 19 H



Dimensional Drawing

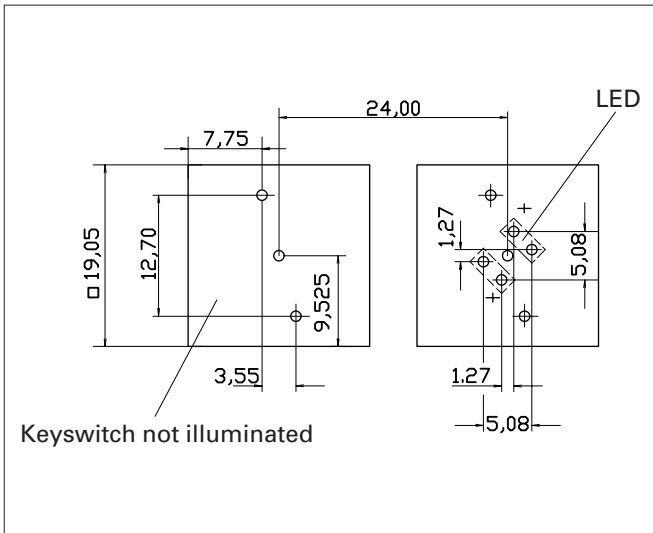


4

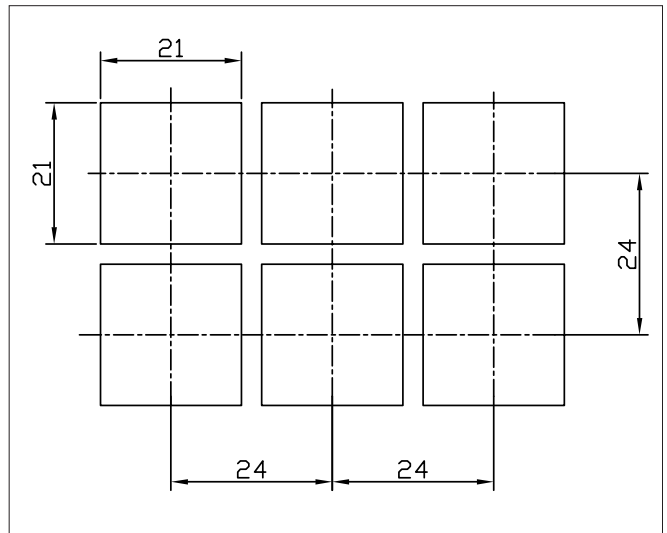
RF

RF short-travel keyswitches

Hole Pattern RF 19 H



Hole Pattern – Front Panel RF 19 H



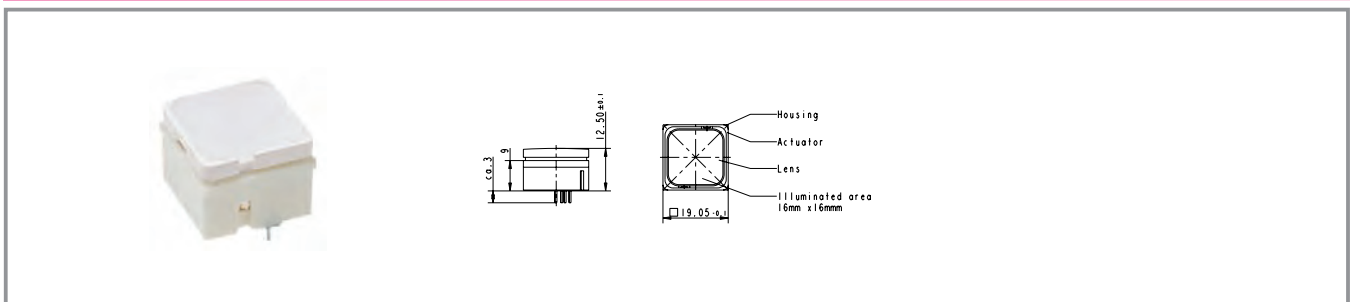
* The LED may be positioned either on the left-hand or right-hand side.
Standard version: LED on left-hand side
View on component side, all hole diameters 1.1 +/- 0.1 mm

4

Accessories RF 19 H short-travel keyswitch

Description	Photo	Order no.	Page
O-ring, black, 17.0 x 1.5, for blocking RF 19H keys		5.30.125.003/0100	5 - 27

RF 19 H keyswitch, non-illuminated



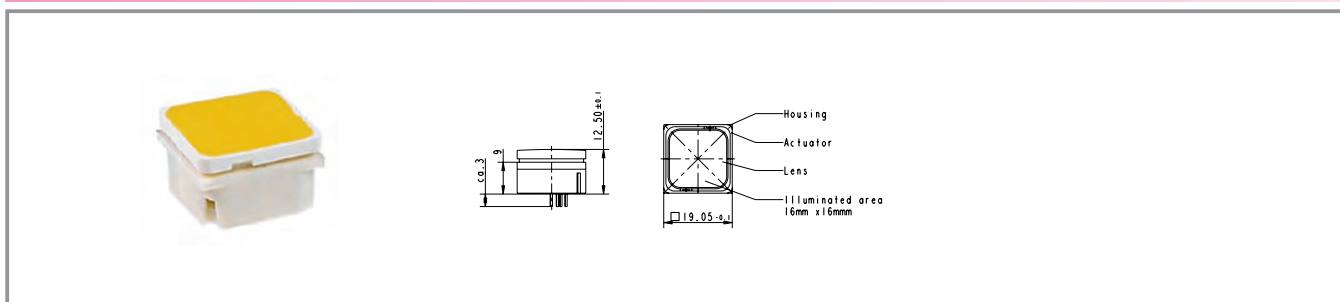
RF

Contact materials	Illumination	Colour of lens	LED colour	LED type	Order no.
Au	not illuminated	white			3.14.001.501/0000
Ag	not illuminated	white			3.14.001.506/0000

Technical data see page 4 - 60

RF short-travel keyswitches

RF 19 H short-travel keyswitch, fully illuminated



Contact materials	Illumination	Colour of lens	LED colour	LED type	Order no.
Au	fully illuminated 2 LED	red	red	2 mm	3.14.002.613/0000
Au	fully illuminated 2 LED	green	green	2 mm	3.14.002.632/0000
Au	fully illuminated 1 LED	green	green super bright	3 mm	3.14.002.633/0000
Au	fully illuminated 2 LED	yellow	yellow	2 mm	3.14.002.653/0000
Au	fully illuminated 1 LED	white	white	3 mm	3.14.002.684/0000
Au	fully illuminated 2 LED	orange	yellow	2 mm	3.14.002.673/0000
Au	fully illuminated 2 LED	white	multi colour	3 mm	3.14.001.672/0000
Au	fully illuminated 1 LED	blue	blue	3 mm	3.14.002.683/0000
Ag	fully illuminated 2 LED	red	red	2 mm	3.14.002.623/0000
Ag	fully illuminated 2 LED	green	green	2 mm	3.14.002.642/0000
Ag	fully illuminated 1 LED	green	green super bright	3 mm	3.14.002.643/0000
Ag	fully illuminated 1 LED	blue	blue super bright	3 mm	3.14.002.688/0000
Ag	fully illuminated 2 LED	yellow	yellow	2 mm	3.14.002.663/0000
Ag	fully illuminated 1 LED	white	white	3 mm	3.14.002.689/0000
Ag	fully illuminated 2 LED	orange	yellow	2 mm	3.14.002.678/0000
Ag	fully illuminated 2 LED	white	multi colour	3 mm	3.14.001.682/0000

Technical data see page 4 - 60

When using the keyswitches with multicolour LED the illumination colour can be varied from red to green by change of polarity. Due to the frequency of the polarity-changes the colours red, green, yellow as well as all secondary colours from these are possible.

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

RF short-travel keyswitches

RF 19 signal indicator



Technical data

General information

Colour 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 soldering into PCB
Illumination see order block
LED colour see order block
LED type see order block

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. (in tube) +50 °C

Resistance to constant environment according to IEC 600 68-2-3 and 2-30

Resistance at variable environment according to IEC 600 68-2-14 and 2-33

Solderability according to E DIN IEC 600 28-2-20

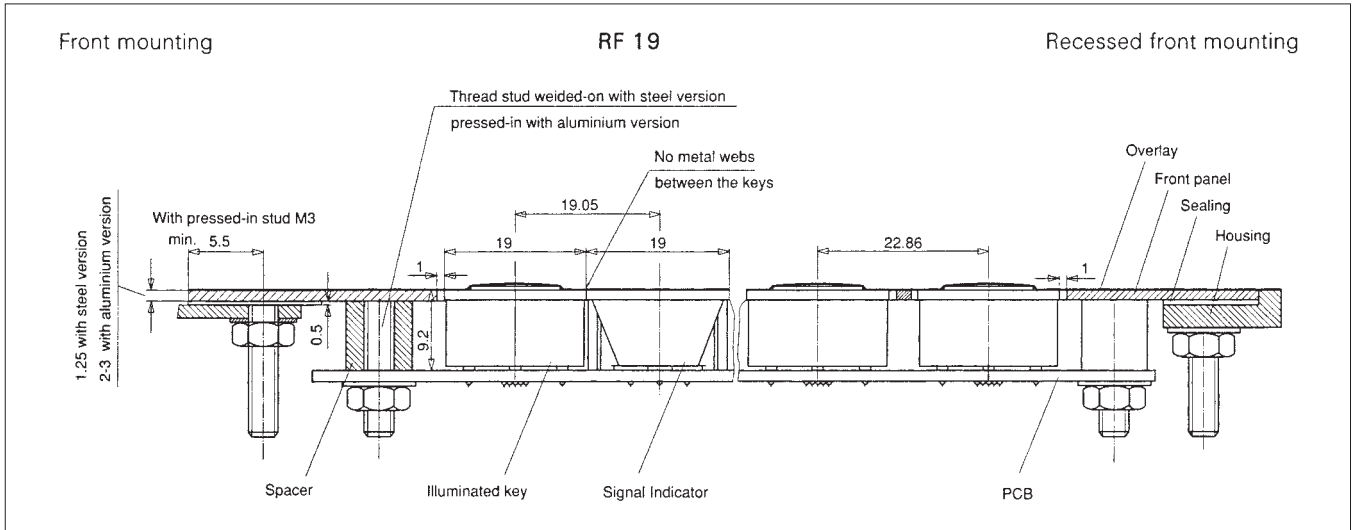
Wave soldering 260 °C max.

Manual soldering 350 °C / 5 sec. max.

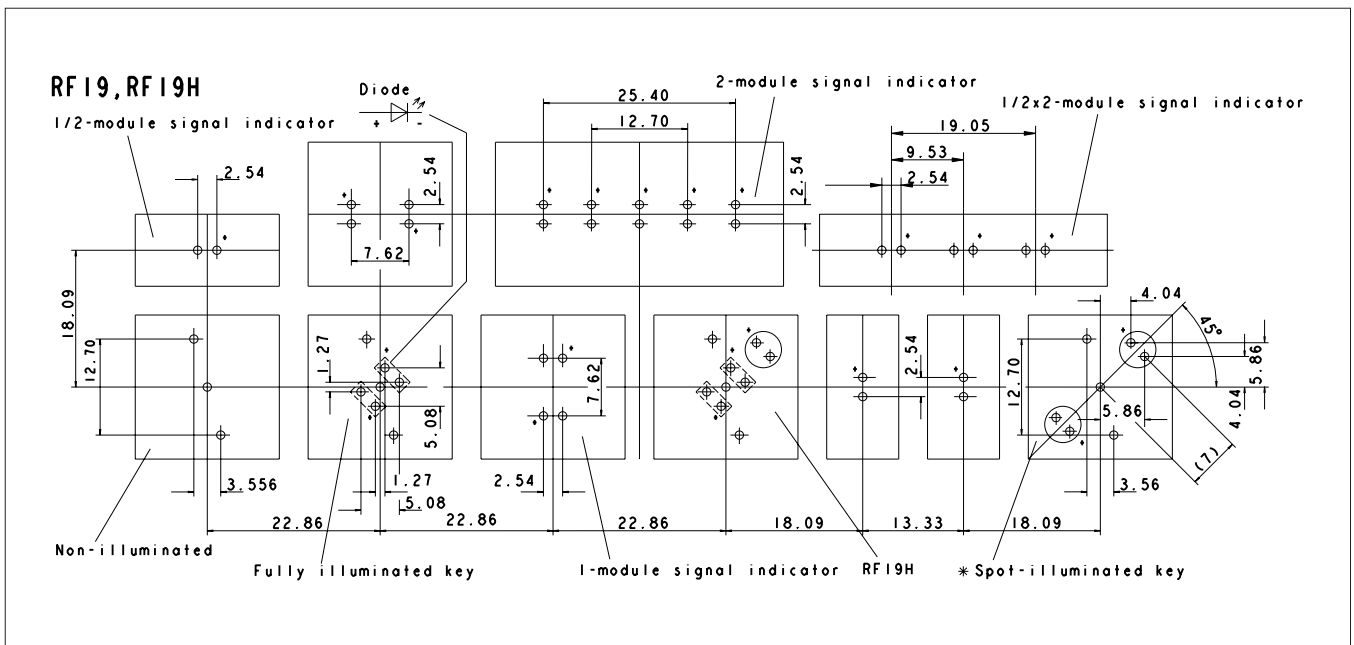
Flammability of materials UL 94 HB

RF short-travel keyswitches

Dimensional Drawing Signal Indicator RF 19



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

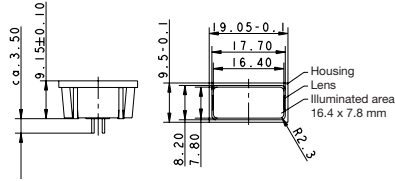
Front panel cut-out = outer keyswitch size + 1 mm

4

RF

RF short-travel keyswitches

RF 19 signal indicator, 1/2 x 1-module



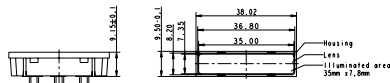
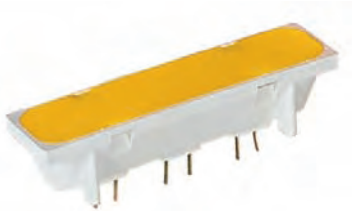
Pict.: 0.5 x 1-module, yellow

illumination	Colour of lens	LED colour	LED type	Order no.
fully illuminated 1 LED	red	red	2 mm	3.14.002.061/0000
fully illuminated 1 LED	green	green	2 mm	3.14.002.062/0000
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

Technical data see page 4 - 64

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

RF 19 signal indicator, 1/2 x 2-module



Pict.: 0,5 x 2-module, yellow

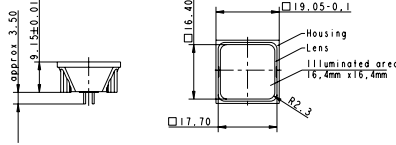
illumination	Colour of lens	LED colour	LED type	Order no.
fully illuminated 3 LED	red	red	2 mm	3.14.002.908/0000
fully illuminated 3 LED	green	green	2 mm	3.14.002.909/0000
fully illuminated 3 LED	yellow	yellow	2 mm	3.14.002.910/0000
fully illuminated 3 LED	orange	yellow	2 mm	3.14.002.911/0000

Technical data see page 4 - 64

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

RF short-travel keyswitches

RF 19 signal indicator, 1 x 1-module



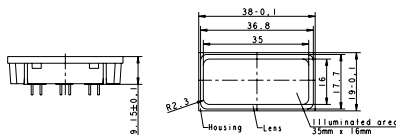
Pict.: 1 x 1-module, green

Illumination	Colour of lens	LED colour	LED type	Order no.
fully illuminated 2 LED	red	red	2 mm	3.14.002.051/0000
fully illuminated 2 LED	green	green	2 mm	3.14.002.052/0000
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	blue	blue	2 mm	3.14.001.659/0000

Technical data see page 4 - 64

For technical data of the LED see separate page at the beginning of chapter "RF short-travel keyswitches"
Suitable for RK 90 system design, illuminated for 2-module keycap.

RF 19 signal indicator, 1 x 2-module



Pict.: 1 x 2-module, red

Illumination	Colour of lens	LED colour	LED type	Order no.
fully illuminated 5 LED	red	red	2 mm	3.14.002.071/0000
fully illuminated 5 LED	green	green	2 mm	3.14.002.072/0000
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

Technical data see page 4 - 64

For technical data of the LED see separate page at the beginning of chapter "RF short-travel keyswitches"

RF short-travel keyswitches

RF special accessories



Pict.: opaque light grey

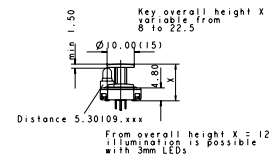
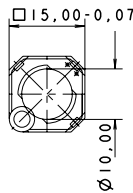


round and triangular versions

Extension plunger for RF 15 N, round head



Pict.: opaque light grey



Length	Width	Overall height	Diameter	Colour	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

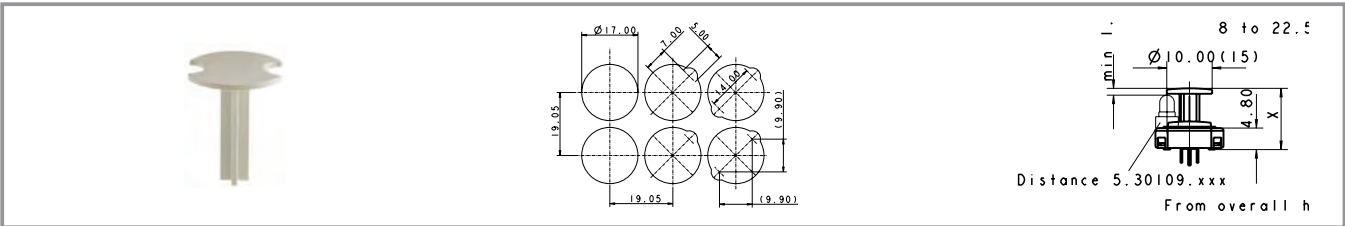
Length of plunger = Overall height - 4.25 mm.

4

RF

RF short-travel keyswitches

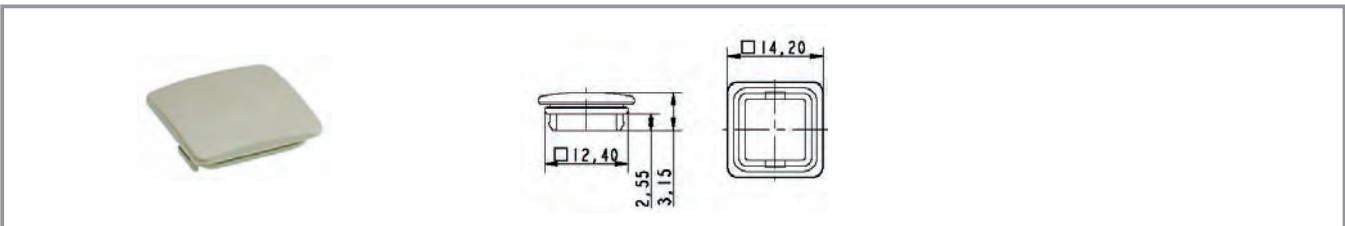
Extension plunger for RF 15 N, round head, with recess for LED



Length	Width	Overall height	Diameter	Colour	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
		13 mm	15 mm		5.46.017.038/0710
		22.5 mm	15 mm		5.46.017.028/0710

Length of plunger = Overall height - 4.25 mm.

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



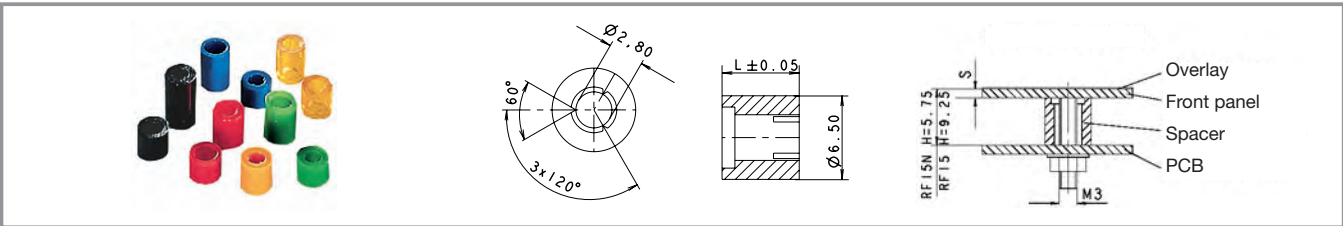
Length	Width	Overall height	Diameter	Colour	Order no.
14.2 mm	14.2 mm	12.5 mm		beige	5.46.654.059/0227

4

RF

RF short-travel keyswitches

Spacers, round



Length	Width	Overall height	Diameter	Colour	Order no.
3.50 mm				blue transparent	5.30.759.023/0000
4 mm				green	5.30.759.025/0000
4.25 mm				blue	5.30.759.026/0000
4.50 mm				red	5.30.759.027/0000
4.75 mm				blue transparent	5.30.759.028/0000
5 mm				black	5.30.759.029/0000
5.25 mm				yellow orange transparent	5.30.759.030/0000
5.50 mm				yellow	5.30.759.031/0000
5.75 mm				green	5.30.759.032/0000
6 mm				blue	5.30.759.033/0000
6.2 mm				blue	5.30.759.251/0000
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
9 mm				green	5.30.759.046/0000
10.00 mm				black	5.30.759.043/0104

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

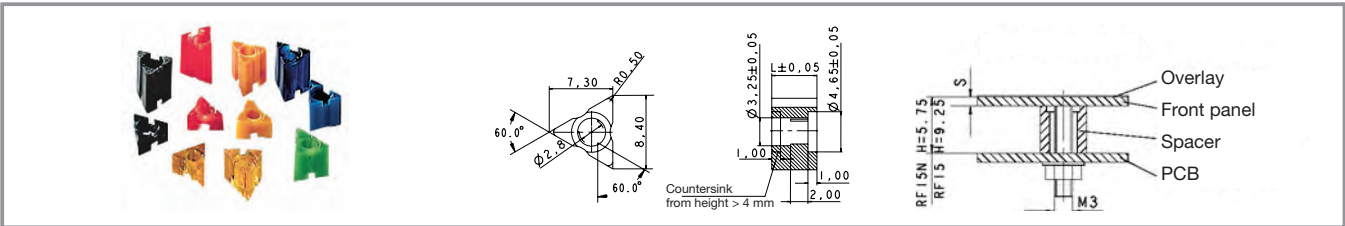
4

RF

Stock items are marked by **bold printed** order numbers.

RF short-travel keyswitches

Spacers, triangular



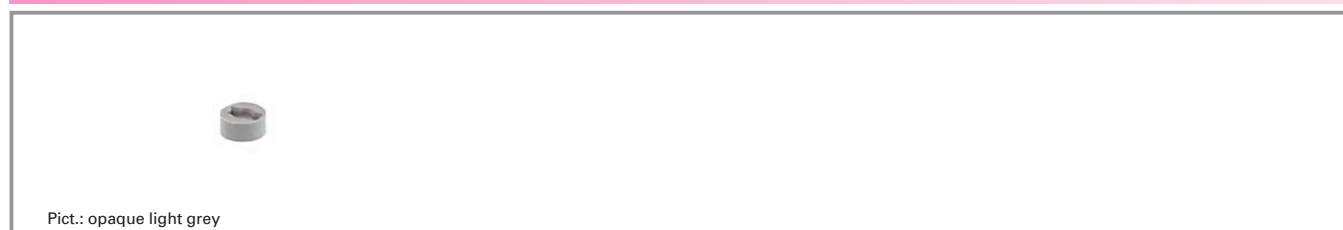
Length	Width	Overall height	Diameter	Colour	Order no.
2.50 mm				blue	5.30.759.094/0000
2.75 mm				red	5.30.759.095/0000
3 mm				blue transparent	5.30.759.096/0000
3.25 mm				black	5.30.759.097/0000
3.50 mm				yellow orange transparent	5.30.759.098/0000
3.75 mm				yellow	5.30.759.099/0000
4 mm				green	5.30.759.100/0000
4.25 mm				blue	5.30.759.101/0000
4.50 mm				red	5.30.759.102/0000
4.75 mm				blue transparent	5.30.759.103/0000
5 mm				black	5.30.759.104/0000
5.25 mm				yellow orange transparent	5.30.759.105/0000
5.50 mm				yellow	5.30.759.106/0000
5.75 mm				green	5.30.759.107/0000
6 mm				blue	5.30.759.108/0000
6.2 mm				blue	5.30.759.253/0000
6.25 mm				red	5.30.759.109/0000
6.50 mm				blue transparent	5.30.759.110/0000
6.75 mm				black	5.30.759.111/0000
7 mm				yellow orange transparent	5.30.759.112/0000
7.25 mm				yellow	5.30.759.113/0000
7.50 mm				green	5.30.759.114/0000
7.75 mm				blue	5.30.759.115/0000

RF short-travel keyswitches

Length	Width	Overall height	Diameter	Colour	Order no.
8 mm				red	5.30.759.116/0000
8.25 mm				blue transparent	5.30.759.117/0000
9 mm				blue	5.30.759.254/0000
10.00 mm				black	5.30.759.124/0000
10.25 mm				yellow orange transparent	5.30.759.125/0000

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

LED spacer for RF 15 N



Length Characteristic 1	Width Characteristic 2	Overall height	Diameter	Colour	Order no.
2.2 mm		12.5 mm	5 mm	opaque light grey	5.30.109.010/0756
12 mm		22.5 mm	5 mm	black	5.30.109.019/0105

4

RF

KN 19 short-travel main switch



General data

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!

Content

KN 19 short-travel main switch
KN 19

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KN 19 short-travel main switch

KN 19 short-travel main switch



General data

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.

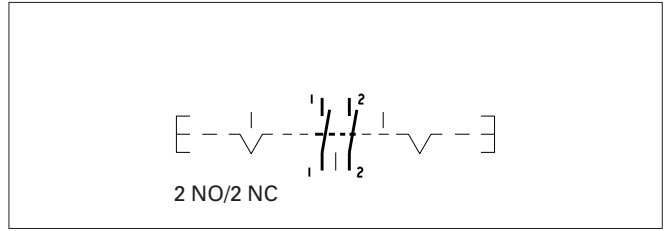
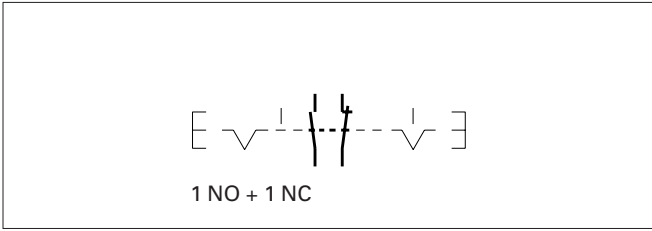
The contact opening widths comply with the VDE standards. The KN 19 can also be employed underneath RK 90 keycaps. Other actuation functions (momentary, latching/momentary) available on request.

Technical data

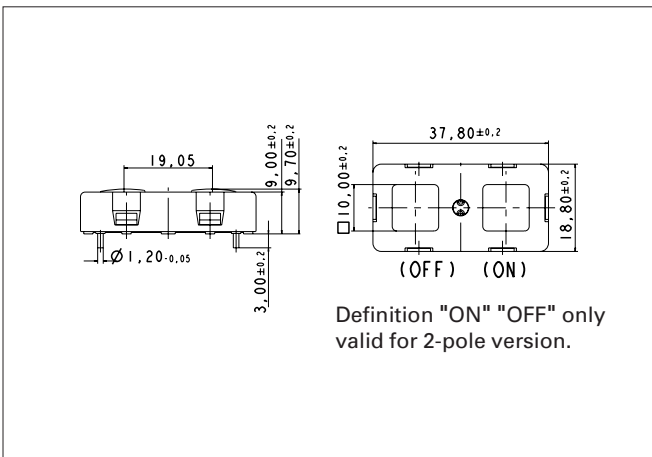
4	General information		Other specifications	
	Recommended key grid	19.05 x 38.1 mm	Contact resistance when new max.	50 mΩ
KN 19	Dimensions		Capacity input current AC max.	100 A
	Length	37.8 mm	Rated motor current AC	4 A
	Width	18.8 mm	Rated filament lamp current AC	2.4 A
	Overall height	9.7 mm	Bouncing time max.	10 ms
	Mechanical design		Other specifications	
	Mounting	on PCB	Ambient temp. operating min.	-25 °C
	Terminals	solder terminals	Ambient temp. operating max.	+70 °C
	Contact system	snap-action bridge contact	Storage temperature min.	-40 °C
	Contact arrangement	see order block	Storage temperature max.	+80 °C
	Contact materials	Ag	Resistance to constant environment	according to IEC 600 68-2-3 and 2-30
	Illumination	1 LED (max. 3 mm) possible	Resistance at variable environment	according to IEC 600 68-2-14 and 2-33
	Degree of protection	IP40	Approvals	ENEC, UL and CSA
	Hot wire ignition acc. to IEC 60695-2-1	850 °C	Acc. to norm	VDE:0630,0750; IEC:1058-1.601-1; EN:61058,60601-1
	Mechanical characteristics		Operating life AC	AC 250 V: 200000 /2A; 100000 /6A
	Operating force max.	9±3 N	Operating life DC	50000(10A/50V=)
	Operating travel	0.55±0.15 mm	Soldering time max.	3 sec.
	Robustness max.	100 N	Soldering temperature max.	350 °C
	Electrical characteristics		Defintion of flame class	UL 94 VO
	Rated voltage min. AC	12 V		
	Rated voltage min. DC	12 V		
	Rated voltage max. DC	50 V		
	Rated voltage max. AC	250 V		
	Ohmic load AC	6 A		
	Ohmic load DC min.	0.1 A		
	Ohmic load DC max.	10 A		

KN 19 short-travel main switch

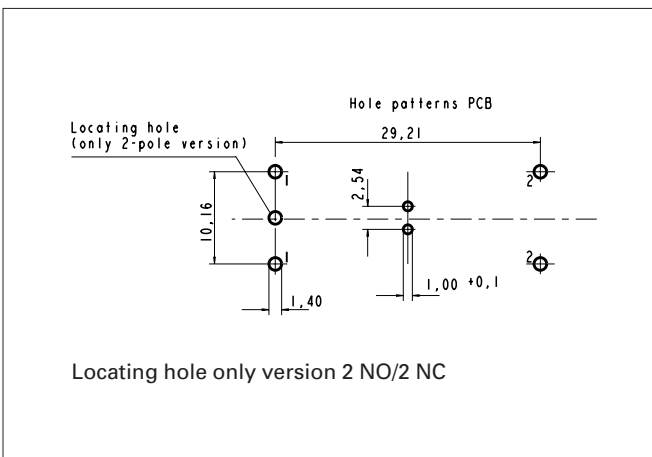
Circuit Diagram



Dimensional Drawing



Hole Pattern



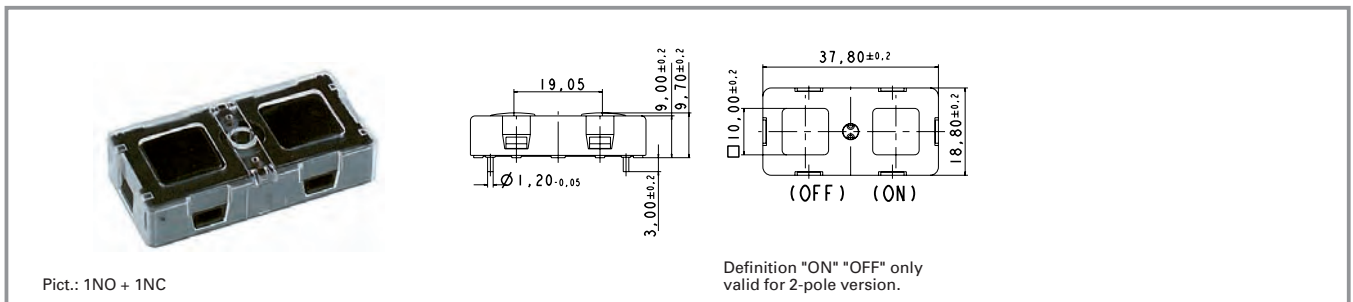
View on component side.

KN 19 short-travel main switch

Typical accessories KN 19 short-travel main switch

Description	Photo	Order no.	Additional accessories see page
Absorption rubber for KN19		5.30.729.009/0000	

KN 19



Contact arrangement	Rated voltage max. AC	Approvals	Order no.
1 NC + 1 NO	250 V	ENEC, UL and CSA	1.12.000.001/0000
2 NC / 2 NO	250 V	ENEC, UL and CSA	1.12.000.501/0000

Technical data see page 4 - 74

Accessories:

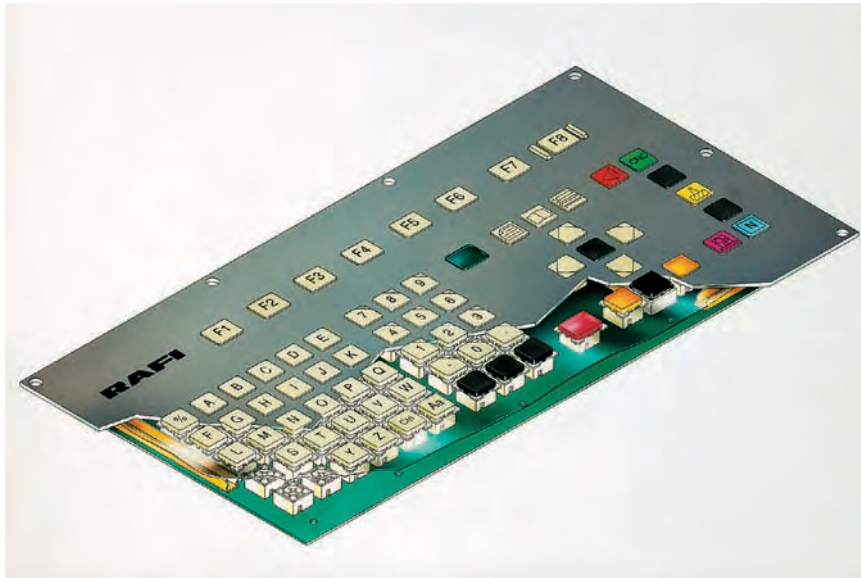
Damping disk for keycaps to be glued on: 5.70.729.009/0000

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.

4

KN
19

RK 90 keycaps



General data

Keycaps for RACON, RF 15 / RF 19 and KN 19 short-travel keyswitches

- You can insert a legend insert between lens and pressure pad of the transparent keycaps.

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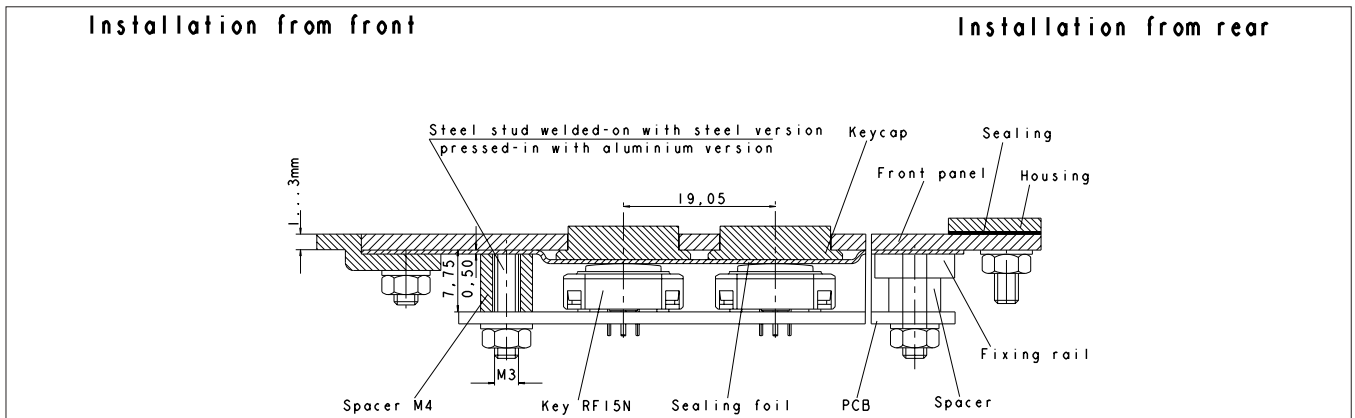
Design

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

- RACON 8/12
- RF 15 keyswitches and signal indicators
- RF 19 keyswitches 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 for good industrial design.
Degree of protection: IP65 according to DIN in front of the panel, with silicone sealing.

Installation methods



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.

Recommendations

- **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)

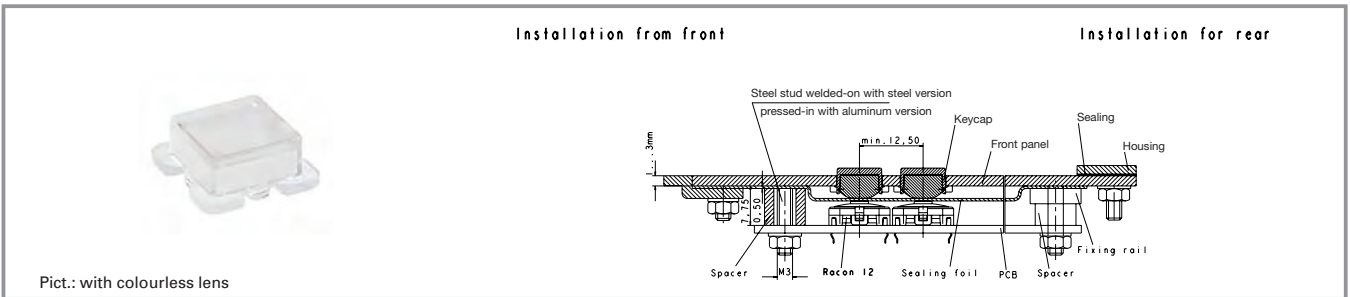
The keytop surface is flush with the keyboard at a panel thickness of 3.5 mm.

- **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.

RK 90 keycaps

RK 90 keycaps, plastic, 9 x 9 mm



General data

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 short-travel keyswitches 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 short-travel keyswitch.

Technical data

General information

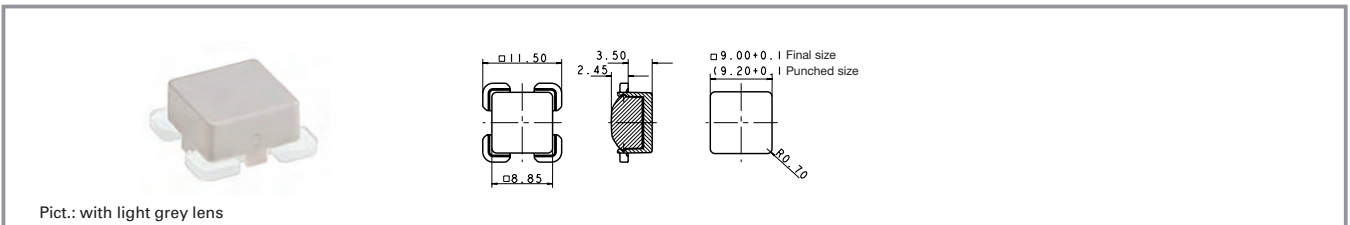
Colour of lens	see order block
Size	1-module
Degree of protection (with silicon seal)	IP65
Illuminability	see order block

Dimensions

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

4

RK 90 keycaps, plastic, 9 x 9 mm



Size	Illuminability	Dimension keycap behind front panel	Dimension keycap in front of front panel	Dimension (c) hole patterns final size	Order no. actuator	Note
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	

Technical data see page 4 - 80

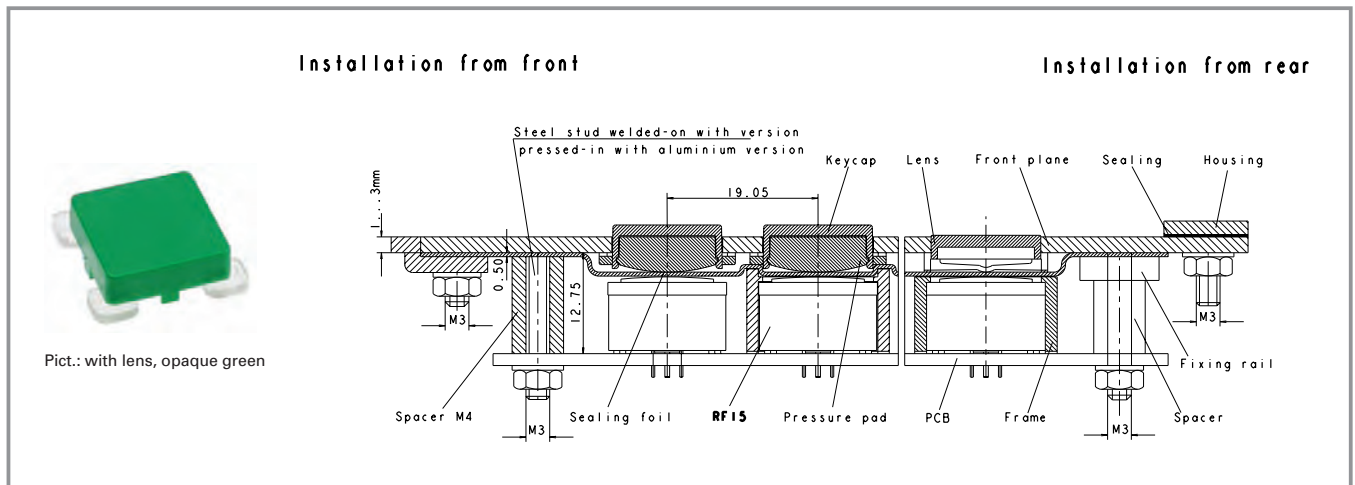
Lenses:

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

RK 90

RK 90 keycaps

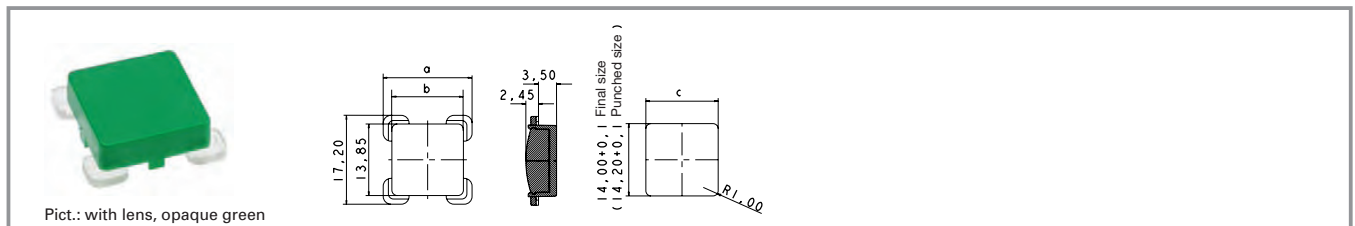
RK 90 keycaps, plastic, 14 mm



General data

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 / colours available on request.

RK 90 keycaps, plastic, 14 mm, 1-module



Size	Illuminability	Dimension (a) keycap behind front panel	Dimension (b) keycap in front of front panel	Dimension (c) hole patterns final size	Order no.	Note
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	Please include the desired lens in your order

Lenses:

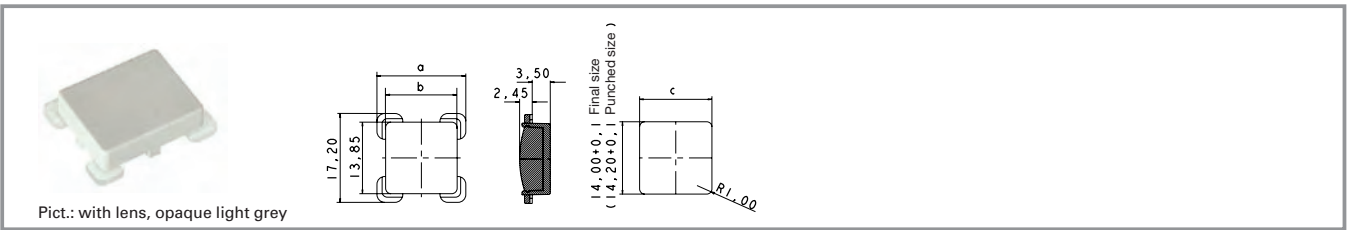
- Lens RK 90, 14 x 14 mm, 1-module, opaque red: **5.46.681.001/0309**
- Lens RK 90, 14 x 14 mm, 1-module, opaque yellow: **5.46.681.001/0409**
- Lens RK 90, 14 x 14 mm, 1-module, opaque green: **5.46.681.001/0514**
- Lens RK 90, 14 x 14 mm, 1-module, opaque blue: **5.46.681.001/0611**
- Lens RK 90, 14 x 14 mm, 1-module, opaque light grey: **5.46.681.001/0700**
- Lens RK 90, 14 x 14 mm, 1-module, transparent colourless: **5.46.681.021/1002**
- Lens RK 90, 14 x 14 mm, 1-module, transparent red: **5.46.681.021/1307**
- Lens RK 90, 14 mm, 1.5-module, transparent yellow: **5.46.681.021/1403**
- Lens RK 90, 14 x 14 mm, 1-module, transparent green: **5.46.681.021/1510**

4

RK 90

RK 90 keycaps

Keycaps, plastic, 1¹/₄-module

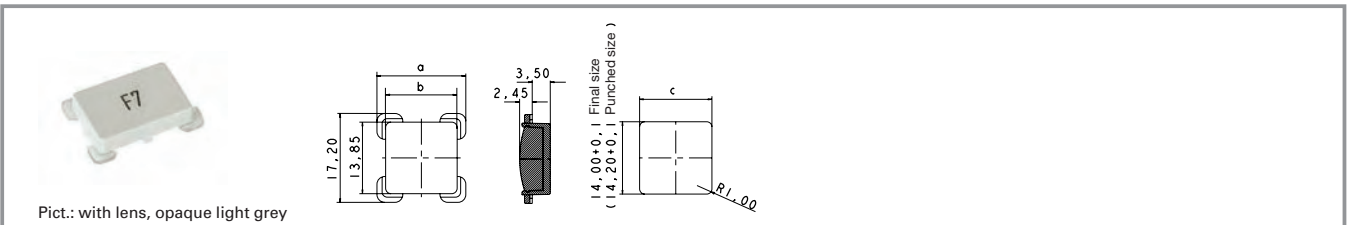


Size	Illuminability	Dimension (a) keycap behind front panel	Dimension (b) keycap in front of front panel	Dimension (c) hole patterns final size	Order no.	Note
1 1 ¹ / ₄ -module	yes	17,20 x 20,7 mm	13,85 x 17,35 mm	14,00 x 17,5 mm	5.55.103.031/1013	Please include the desired lens in your order

Lenses:

- Lens RK 90, 14 mm, 1.25-module, opaque red: **5.46.681.002/0309**
- Lens RK 90, 14 mm, 1.25-module, opaque light grey: **5.46.681.002/0700**
- Lens RK 90, 14 mm, 1.25-module, transparent colourless: **5.46.681.022/1002**
- Lens RK 90, 14 mm, 1.25-module, transparent red: **5.46.681.022/1307**
- Lens RK 90, 14 mm, 1.25-module, transparent yellow: **5.46.681.022/1403**
- Lens RK 90, 14 mm, 1.25-module, transparent green: **5.46.681.022/1510**

RK 90 keycaps, plastic, 14 mm, 1¹/₂-module



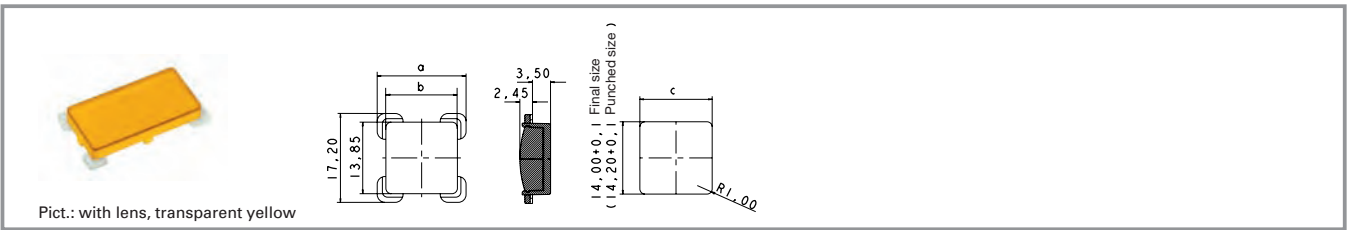
Size	Illuminability	Dimension (a) keycap behind front panel	Dimension (b) keycap in front of front panel	Dimension (c) hole patterns final size	Order no.	Note
1 ¹ / ₂ -module	yes	17,20 x 24,20 mm	13,85 x 20,85 mm	14,00 x 21,00 mm	5.55.103.032/1013	Please include the desired lens in your order

Lenses:

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

RK 90 keycaps

RK 90 keycaps, plastic, 2-module, pressure pad and lens



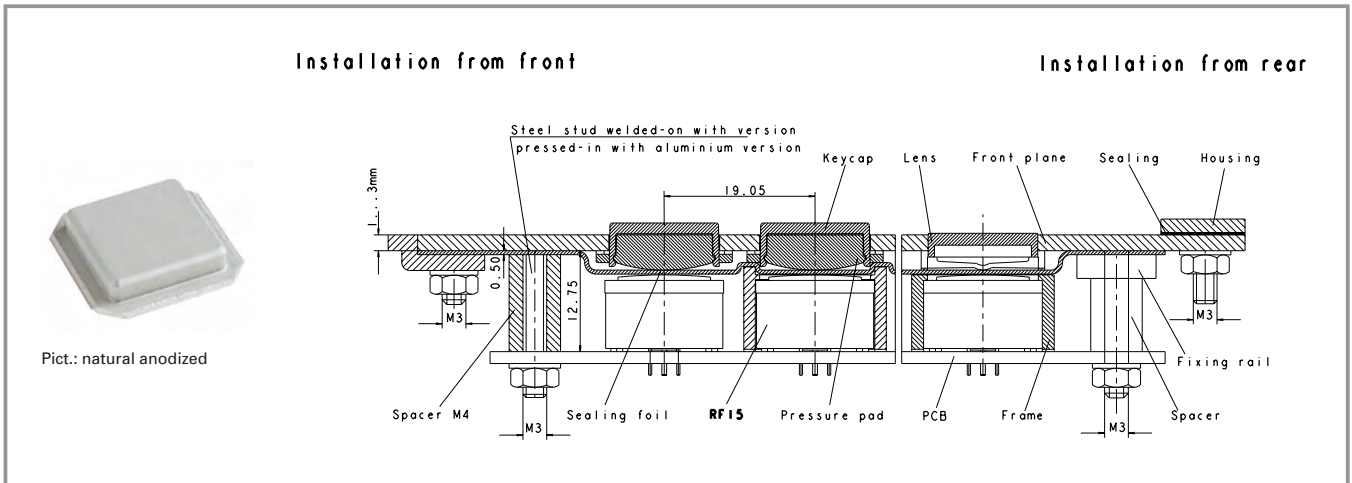
Size	Illuminability	Dimension (a) keycap behind front panel	Dimension (b) keycap in front of front panel	Dimension (c) hole patterns final size	Order no.	Note
2-module	no	17.20 x 31.20 mm	13.85 x 27.85 mm	14.00 x 28.00 mm	5.55.103.077/1013	Please include the de- sired lens in your order

Lenses:

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

RK 90 keycaps

RK 90 keycaps, aluminum, 14 mm

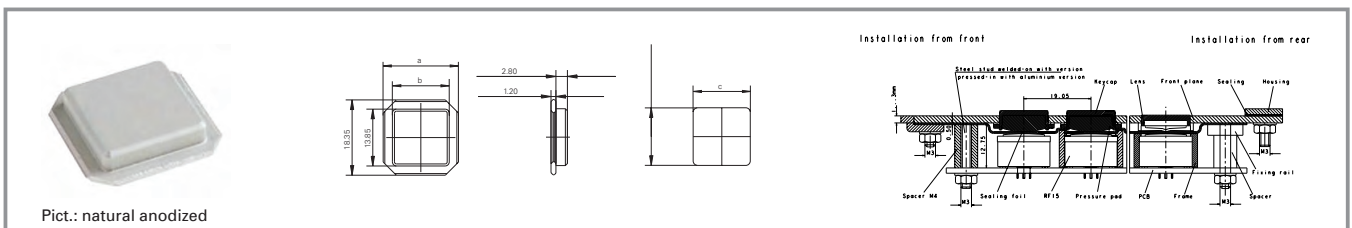


General data

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 RF 15/19 or RACON PCB keyswitches are employed underneath the metal keycaps.

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

RK 90 keycaps, aluminum, 14 mm, 1-module



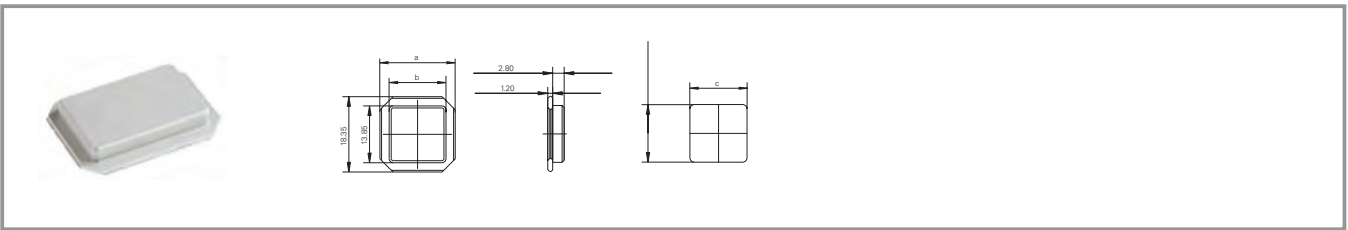
Size	Colour of lens	Dimension (a) keycap behind front panel	Dimension (b) keycap in front of front panel	Dimension (c) hole patterns final size	Order no.
1-module	aluminum colour-less anodized	18.35 x 18.35 mm	13.85 x 13.85 mm	14.00 x 14.00 mm	5.46.500.001/4010

4

RK
90

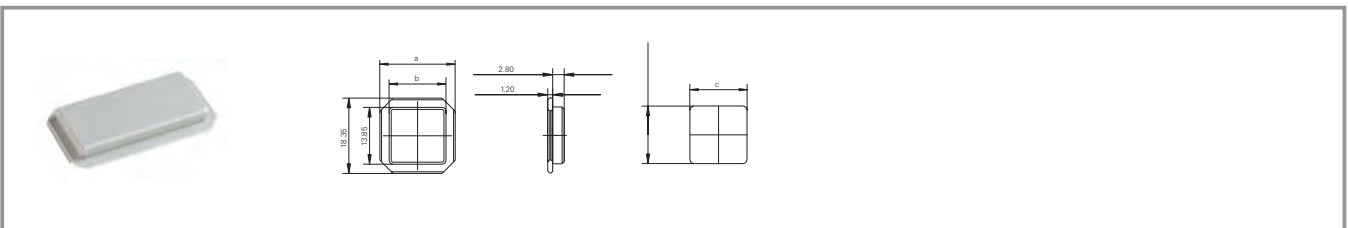
RK 90 keycaps

RK 90 keycaps, aluminum, 14 mm, 1½-module



Size	Colour of lens	Dimension (a) keycap behind front panel	Dimension (b) keycap in front of front panel	Dimension (c) hole patterns final size	Order no.
1½-module	aluminum colourless 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



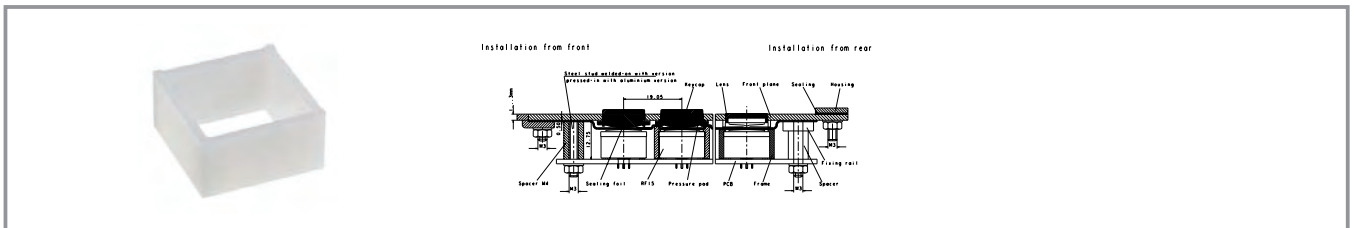
Size	Colour of lens	Dimension (a) keycap behind front panel	Dimension (b) keycap in front of front panel	Dimension (c) hole patterns final size	Order no.
2-module	aluminum colourless anodized	18.35 x 32.35 mm	13.85 x 27.85 mm	14.00 x 28.00 mm	5.46.500.004/4010

RK 90 keycaps

RK 90 special accessories



Blocking frame for RF 15, 1-module



Short text	Feature 1	Feature 2	Order no.
Blocking frame for RF 15	transparent		5.55.103.133/0214

Blocking frames can be used for blocking fitted RF 15 keys! The RK 90 keycaps cover the keyswitch in such a way that the blocked key cannot be visually distinguished from the functional keys.

4

Covers (blocking frame and lens) for RF 15, 1-module



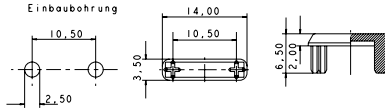
Short text	Feature 1	Feature 2	Order no.
Cover for RF 15, 1.7 mm high, 1-module, opaque light grey	opaque light grey	1-module	5.00.350.802/0700

Covers consist of blocking frames and lenses. The blocking frame is used for blocking fitted RF 15 keys. The blocked key is fitted with lenses that are flush with the front panel.

RK 90

RK 90 keycaps

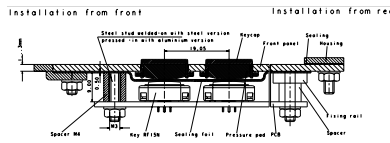
Fin, to avoid inadvertent operation



Pict.: charcoal grey

Short text	Feature 1	Feature 2	Order no.
Fin, to avoid inadvertent operation, light grey			5.55.103.079/0700
Fin, to avoid inadvertent operation, charcoal grey			5.55.103.079/0152

Spacer M 4



Short text	Feature 1	Feature 2	Order no.
Spacer M 4 for RK 90 with RF 15 keys, height 12.50 mm, mounting from front (1 pc. per stud)		12.5 mm overall height for RF 15	5.30.764.040/0000
Spacer M 4 for RK 90 with RF 15 keys, height 9.25 mm, mounting from rear (1 pc. per stud)		9.25 mm overall height, for RF 15	5.30.764.027/0000
Spacer M 4 for RK 90 with RACON 8/12 keys, height 7.50 mm, mounting from front (1 pc. per stud)		7.5 mm overall height for RACON 8/12	5.30.764.018/0000

Silicone foil 600 x 590x 0.45 mm, for RF 15, RF 15N, RACON 8/12



Short text	Feature 1	Feature 2	Order no.
Silicone foil 600 x 590x 0.45 mm, for RK 90 with RF 15, RF 15 N or RACON 8/12 keys	transparent	600 x 590 x 0.45 mm	7.16.102.006/0000

RG 85 III short-stroke system



General data

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 or 1 NC + 1 NO contact
- 50 V/250 mA max.
- Degree of protection IP 65 (keylock switch IP 40).

Content

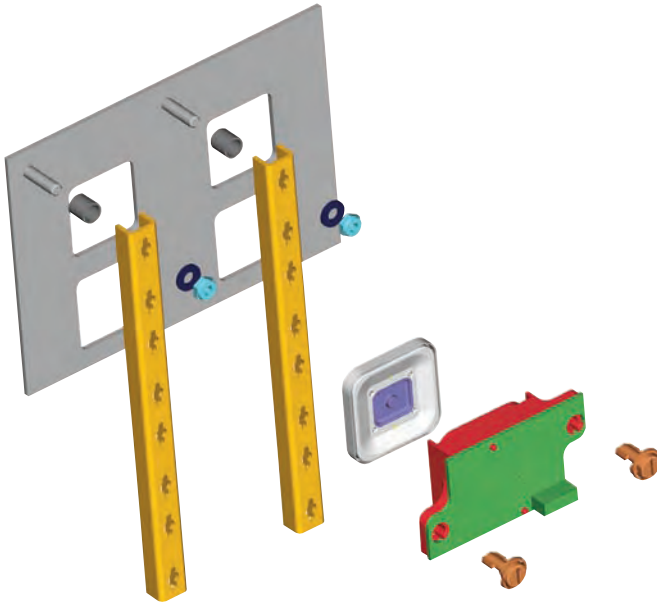
RG 85 III keyswitch	4 - 94
RG 85 III keyswitch, round design, without lens	4 - 95
RG 85 III keyswitch, square design, without lens	4 - 96
RG 85 III keylock switch	4 - 98
RG 85 III keylock switch, round design, without lens	4 - 99
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RG 85 III lenses for keyswitches, square	4 - 106
RG 85 III lenses for keylock switches, round	4 - 109
RG 85 III lenses for keylock switches, square	4 - 109
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RG 85 III lens, square, for signal indicators	4 - 110
RG 85 III lens, triangular, for signal indicators	4 - 110
Cable, 8 wires, with socket connectors on both ends	4 - 110
Fixing rail, length 490 mm	4 - 111
Spacer	4 - 111
Fixing piece for mounting the elements with the rail fixing method	4 - 111

RG 85 III short-stroke system

System Features

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

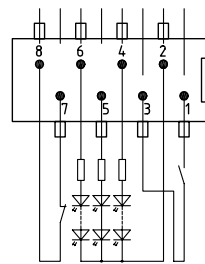
- Vandal proof construction
- Modular fixing system with quick fasteners or single fixing method using thread studs
- Connection with keyed 8-pin micro-match connector
- Degree of protection: IP40/65



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 O V – LED
- 4 Edge illuminat./signal indicator
1st colour + 24 V DC +/- 20%
- 5 Symbol illumination
+ 24 V DC +/- 20%
- 6 Edge illuminat./signal indicator
2nd colour + 24 V DC +/- 20%
- 7/8 NC contact

4

Pushbutton Features

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

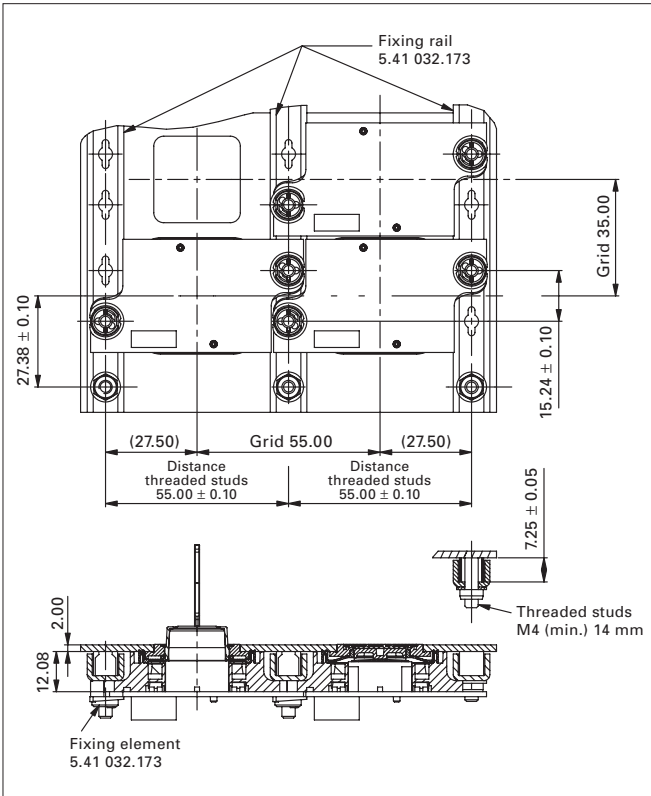
Signal Indicator Features

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

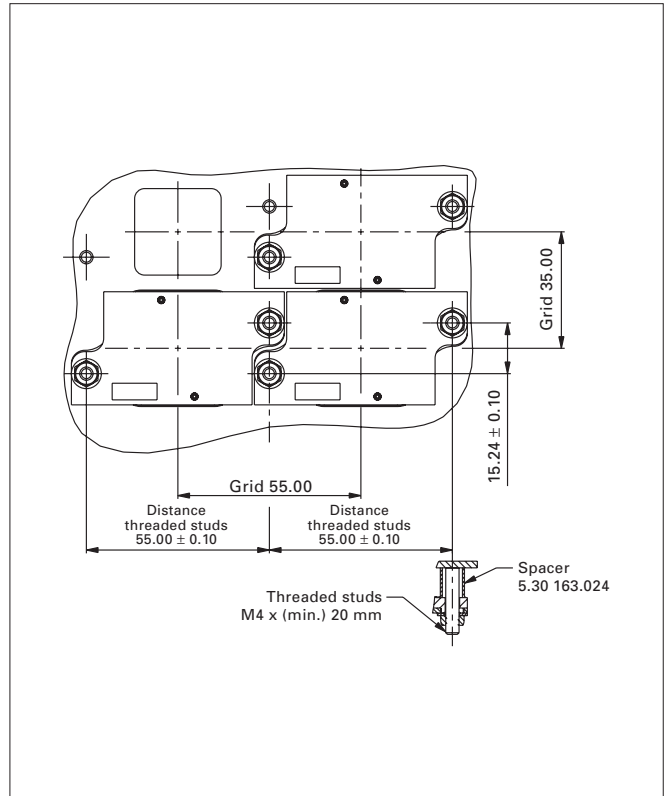
RG
85 III

Installation plan

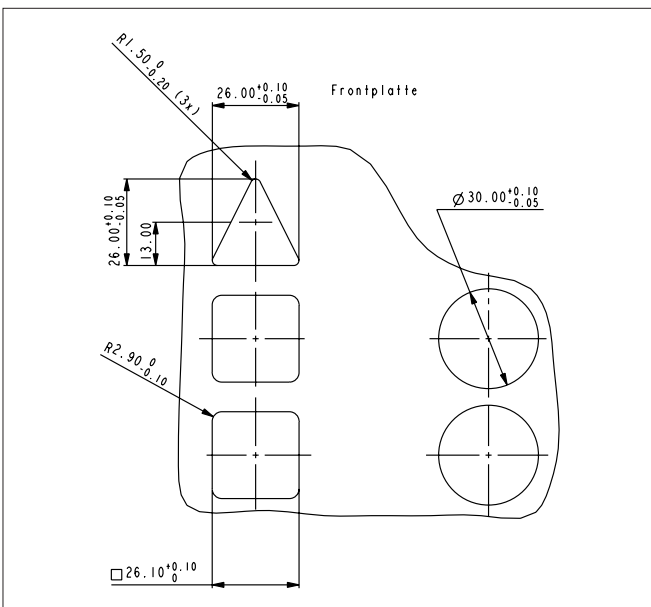
Rail fixing method



Single fixing method

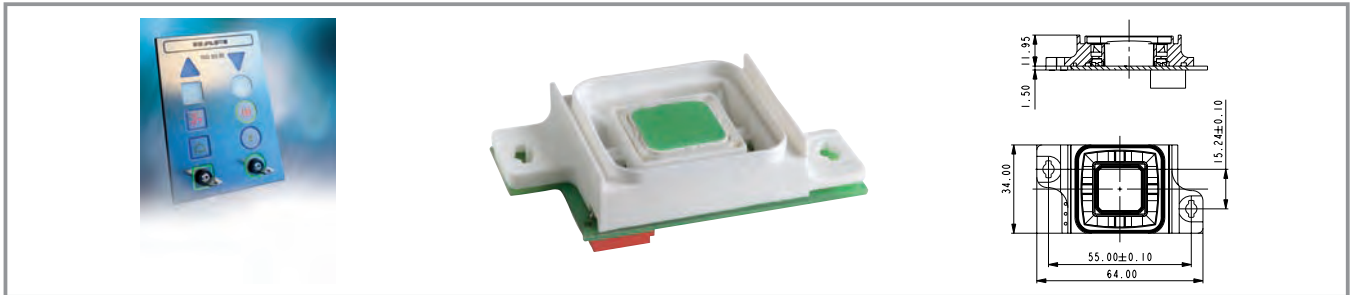


Front panel



RG 85 III short-stroke system

RG 85 III keyswitch



Technical data

Dimensions

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

Mechanical design

Version	round or square
Mounting	on U-rails or single mounting
Terminals	8-pin Micro-Match® female connector
Contact system	snap-action (1 NO) or bridge contact (1 NC + 1 NO)
Contact arrangement	see order block
Contact materials	Ag
Symbol illumination	2 LED
Edge illumination	4 LED pro colour

Mechanical characteristics

Operating force approx.	3.5 N
Operating travel approx.	1 mm
Switching travel NO	1 mm
Switching travel NC	0.6 mm

Electrical characteristics

Rated voltage min.	3 V
Rated voltage max.	50 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 LED	24 ^{+/-20%} V

Input current LED	per colour/ LED row 9 - 16 mA
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Other specifications

Ambient temp. operating min.	-25 °C
Ambient temp. operating max.	+70 °C
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C
Resistance to constant environment	IEC 600 68-2-3 and 2-30
Resistance at variable environment	IEC 600 68-2-14 and 2-33
Operating life min.	1000000
Degree of protection rail mounting	IP40
Degree of protection single mounting	IP65
Flammability of materials	according to UL 94 HB

Typical accessories RG 85 III keyswitch

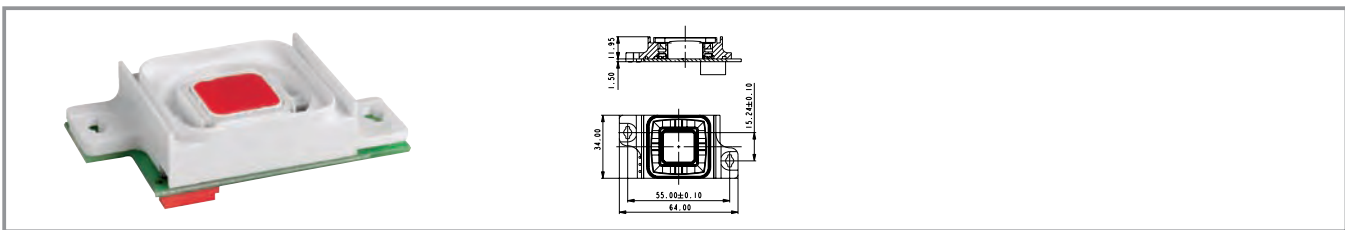
Description	Photo	Order no.	Additional accessories see page
Cable, 8 wires, with socket connectors on both ends, length 1 m		5.03.772.261/0000	4 - 110
RG 85 III lenses for keyswitches, round, stainless steel		5.04.914.000/2000	4 - 105
RG 85 III lenses for keyswitches, square, aluminum		5.04.915.100/2000	4 - 106

4

RG
85 III

RG 85 III short-stroke system

RG 85 III keyswitch, round design, without lens



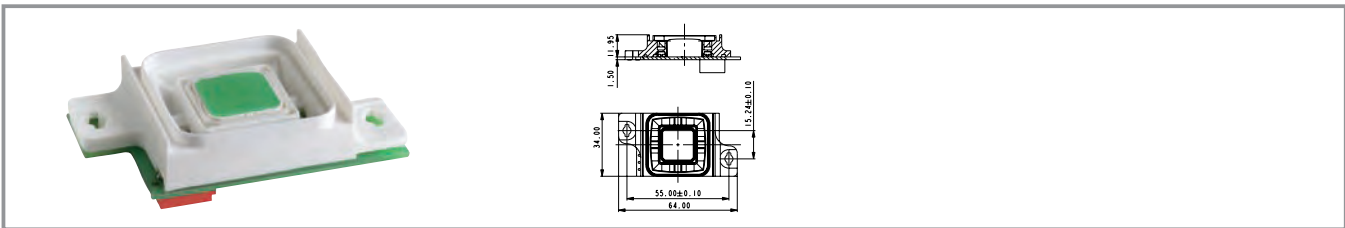
Contact arrangement	Edge illumination	Symbol illumination	Version	Order no.
1 NO	4 LED white		round	3.99.400.111/2000
1 NO	4 LED red		round	3.99.400.111/3000
1 NO	4 LED yellow		round	3.99.400.111/4000
1 NO	4 LED green		round	3.99.400.111/5000
1 NO	4 LED blue		round	3.99.400.111/6000
1 NO	4 LED white, 4 LED blue		round	3.99.400.111/7000
1 NO	4 LED green, 4 LED red		round	3.99.400.111/8000
1 NO	4 LED white	2 LED yellow	round	3.99.400.111/2400
1 NO	4 LED red	2 LED red	round	3.99.400.111/3300
1 NO	4 LED yellow	2 LED green	round	3.99.400.111/4500
1 NO	4 LED green	2 LED green	round	3.99.400.111/5500
1 NO	4 LED blue	2 LED blue	round	3.99.400.111/6600
1 NO	4 LED white, 4 LED blue	2 LED blue	round	3.99.400.111/7600
1 NO	4 LED green, 4 LED red	2 LED red	round	3.99.400.111/8300
1 NC + 1 NO	4 LED white		round	3.99.400.131/2000
1 NC + 1 NO	4 LED red		round	3.99.400.131/3000
1 NC + 1 NO	4 LED yellow		round	3.99.400.131/4000
1 NC + 1 NO	4 LED green		round	3.99.400.131/5000
1 NC + 1 NO	4 LED blue		round	3.99.400.131/6000
1 NC + 1 NO	4 LED white, 4 LED blue		round	3.99.400.131/7000
1 NC + 1 NO	4 LED green, 4 LED red		round	3.99.400.131/8000

Technical data see page 4 - 94

Please order lenses (round shape) separately.

RG 85 III short-stroke system

RG III keyswitch, square design, without lens



Contact arrangement	Edge illumination	Symbol illumination	Version	Order no.
1 NO	4 LED white		square	3.99.400.112/2000
1 NO	4 LED red		square	3.99.400.112/3000
1 NO	4 LED yellow		square	3.99.400.112/4000
1 NO	4 LED green		square	3.99.400.112/5000
1 NO	4 LED blue		square	3.99.400.112/6000
1 NO	4 LED white, 4 LED blue		square	3.99.400.112/7000
1 NO	4 LED green, 4 LED red		square	3.99.400.112/8000
1 NO	4 LED white	2 LED yellow	square	3.99.400.112/2400
1 NO	4 LED red	2 LED red	square	3.99.400.112/3300
1 NO	4 LED yellow	2 LED green	square	3.99.400.112/4500
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
1 NC + 1 NO	4 LED white		square	3.99.400.132/2000
1 NC + 1 NO	4 LED red		square	3.99.400.132/3000
1 NC + 1 NO	4 LED yellow		square	3.99.400.132/4000
1 NC + 1 NO	4 LED green		square	3.99.400.132/5000
1 NC + 1 NO	4 LED blue		square	3.99.400.132/6000
1 NC + 1 NO	4 LED white, 4 LED blue		square	3.99.400.132/7000
1 NC + 1 NO	4 LED green, 4 LED red		square	3.99.400.132/8000

Technical data see page 4 - 94

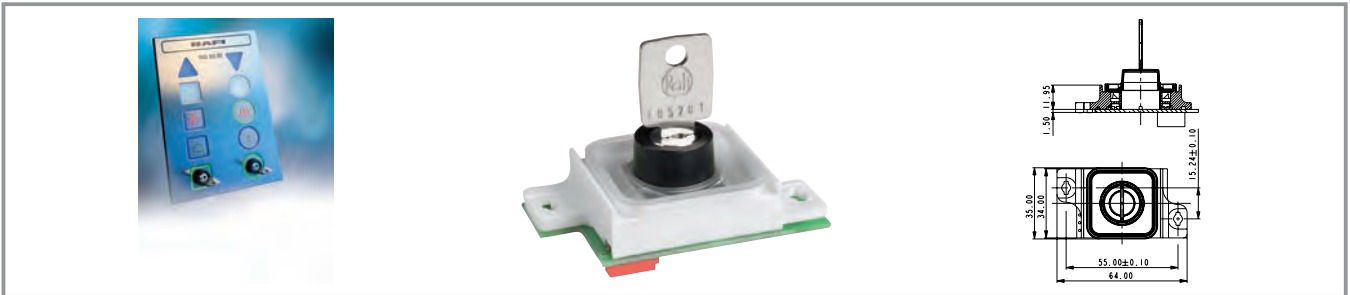
Please order lenses (square shape) separately.

4

RG
85 III

RG 85 III short-stroke system

RG 85 III keylock switch



Technical data

Dimensions

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

Mechanical design

Version	round or square
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	4 LED pro colour
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.	42 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 LED	24 ^{+/-20%} V

Input current LED	per colour/ LED row 9 - 16 mA
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Other specifications

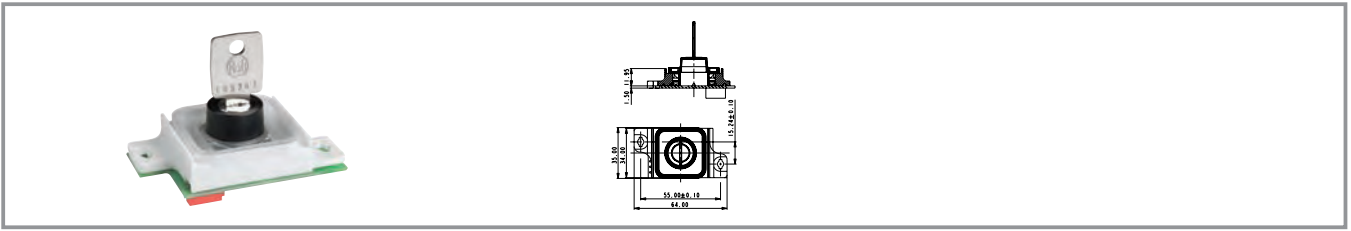
Ambient temp. operating min.	-25 °C
Ambient temp. operating max.	+70 °C
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C
Resistance to constant environment	IEC 600 68-2-3 and 2-30
Resistance at variable environment	IEC 600 68-2-14 and 2-33
Operating life min.	50000
Degree of protection rail mounting	IP40
Degree of protection single mounting	IP65
Flammability of materials	according to UL 94 HB

Typical accessories RG 85 III keylock switch

Description	Photo	Order no.	Additional accessories see page
RG 85 III lenses for keylock switches, round, stainless steel		5.04.914.200/2000	4 - 109
RG 85 III lenses for keylock switches, square, aluminum		5.04.915.201/2000	4 - 109

RG 85 III short-stroke system

RG 85 III keylock switch, round design, without lens

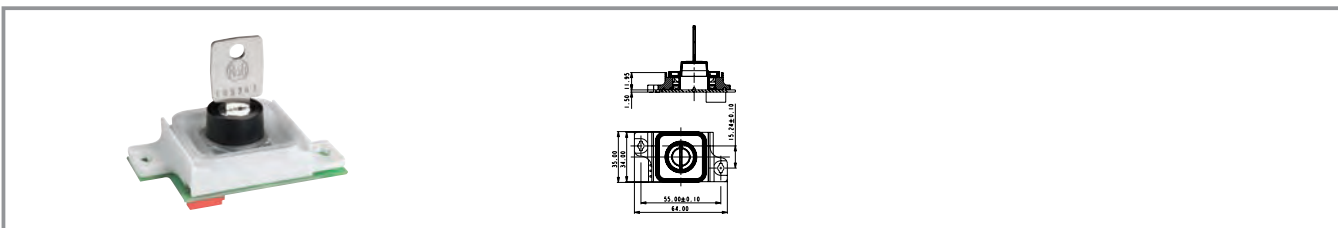


Contact arrangement	Edge illumination	Rotating angle	Version	Order no.
1 NO	4 LED white	1 x 90 °	round	3.99.400.141/2000
1 NO	4 LED red	1 x 90 °	round	3.99.400.141/3000
1 NO	4 LED yellow	1 x 90 °	round	3.99.400.141/4000
1 NO	4 LED green	1 x 90 °	round	3.99.400.141/5000
1 NO	4 LED blue	1 x 90 °	round	3.99.400.141/6000
1 NO	4 LED white, 4 LED blue	1 x 90 °	round	3.99.400.141/7000
1 NO	4 LED green, 4 LED red	1 x 90 °	round	3.99.400.141/8000

Technical data see page 4 - 98

Please order lenses (round shape) separately.

RG 85 III keylock switch, square design, without lens



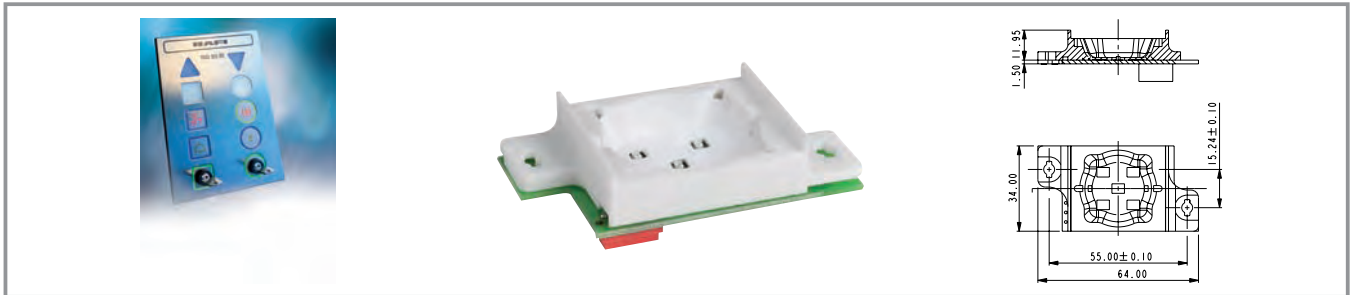
Contact arrangement	Edge illumination	Rotating angle	Version	Order no.
1 NO	4 LED white	1 x 90 °	square	3.99.400.142/2000
1 NO	4 LED red	1 x 90 °	square	3.99.400.142/3000
1 NO	4 LED yellow	1 x 90 °	square	3.99.400.142/4000
1 NO	4 LED green	1 x 90 °	square	3.99.400.142/5000
1 NO	4 LED blue	1 x 90 °	square	3.99.400.142/6000
1 NO	4 LED white, 4 LED blue	1 x 90 °	square	3.99.400.142/7000
1 NO	4 LED green, 4 LED red	1 x 90 °	square	3.99.400.142/8000

Technical data see page 4 - 98

Please order lenses (square shape) separately.

RG 85 III short-stroke system

RG 85 III signal indicator, without lens



Technical data

Dimensions

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

Mechanical design

Version	according to lens
Mounting	on U-rails or single mounting
Terminals	8-pin Micro-Match® female connector
Illumination	5 LED for one colour

Electrical characteristics

Operating voltage LED	24 ^{+/-20%} V
Input current LED	depending on LED colour 20 - 30 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
Resistance to constant environment	IEC 600 68-2-3 and 2-30
Resistance at variable environment	IEC 600 68-2-14 and 2-33
Degree of protection rail mounting	IP40
Degree of protection single mounting	IP65
Flammability of materials	according to UL 94 HB

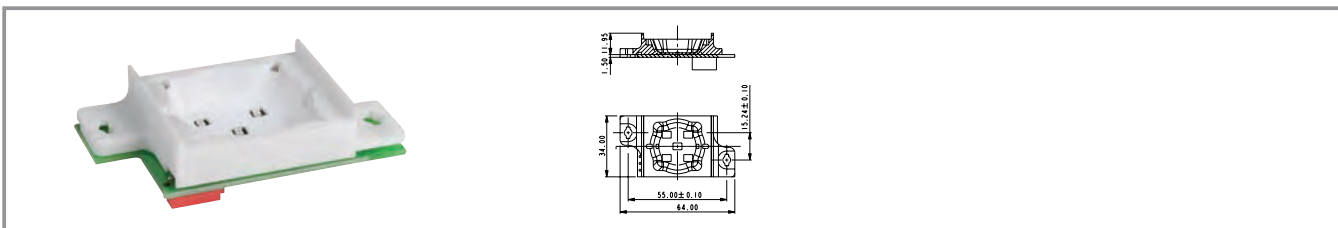
4

Typical 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 - 110
RG 85 III lens, square, for signal indicators		5.04.903.009/0000	4 - 110
RG 85 III lens, round, for signal indicators		5.04.903.010/0000	4 - 109
RG 85 III lens, triangular, for signal indicators		5.04.903.011/0000	4 - 110

RG 85 III short-stroke system

RG 85 III signal indicator, without lens



illumination	Order no.
5 LED white	3.99.400.100/2000
5 LED red	3.99.400.100/3000
5 LED yellow	3.99.400.100/4000
5 LED green	3.99.400.100/5000
5 LED blue	3.99.400.100/6000
5 LED white, 5 LED blue	3.99.400.100/7000
5 LED green, 5 LED red	3.99.400.100/8000

Technical data see page 4 - 102

Please order round, square or triangular lenses separately.

RG 85 III accessories



RG 85 III lenses for keyswitches, round



Version	Form of lens	Legending colour	Legending text	Order no.
aluminum	round			5.04.915.000/2000
aluminum	round	opaque black	1	5.04.915.001/0100
aluminum	round	translucent white	1	5.04.915.001/2000
aluminum	round	opaque black	2	5.04.915.002/0100
aluminum	round	translucent white	2	5.04.915.002/2000
aluminum	round	opaque black	3	5.04.915.003/0100
aluminum	round	translucent white	3	5.04.915.003/2000
aluminum	round	opaque black	4	5.04.915.004/0100
aluminum	round	translucent white	4	5.04.915.004/2000
aluminum	round	opaque black	5	5.04.915.005/0100
aluminum	round	translucent white	5	5.04.915.005/2000
aluminum	round	opaque black	6	5.04.915.006/0100
aluminum	round	translucent white	6	5.04.915.006/2000
aluminum	round	opaque black	U	5.04.915.021/0100
aluminum	round	translucent white	U	5.04.915.021/2000

4

RG 85 III

RG 85 III short-stroke system

Version	Form of lens	Legending colour	Legending text	Order no.
aluminum	round	opaque black	K	5.04.915.022/0100
aluminum	round	translucent white	K	5.04.915.022/2000
aluminum	round	opaque black	E	5.04.915.023/0100
aluminum	round	translucent white	E	5.04.915.023/2000
aluminum	round	opaque yellow	symbol "bell"	5.04.915.024/0400
aluminum	round	opaque black	symbol "open door"	5.04.915.025/0100
aluminum	round	translucent white	symbol "open door"	5.04.915.025/2000
aluminum	round	opaque black	symbol "close door"	5.04.915.026/0100
aluminum	round	translucent white	symbol "close door"	5.04.915.026/2000
aluminum	round	opaque black	symbol "ventilator"	5.04.915.027/0100
aluminum	round	translucent white	symbol "ventilator"	5.04.915.027/2000
aluminum	round	opaque black	symbol "arrow"	5.04.915.028/0100
aluminum	round	translucent white	symbol "arrow"	5.04.915.028/2000
stainless steel	round			5.04.914.000/2000
stainless steel	round	opaque black	1	5.04.914.001/0100
stainless steel	round	translucent white	1	5.04.914.001/2000
stainless steel	round	opaque black	2	5.04.914.002/0100
stainless steel	round	translucent white	2	5.04.914.002/2000
stainless steel	round	opaque black	3	5.04.914.003/0100
stainless steel	round	translucent white	3	5.04.914.003/2000
stainless steel	round	opaque black	4	5.04.914.004/0100
stainless steel	round	translucent white	4	5.04.914.004/2000
stainless steel	round	opaque black	5	5.04.914.005/0100
stainless steel	round	translucent white	5	5.04.914.005/2000
stainless steel	round	opaque black	6	5.04.914.006/0100
stainless steel	round	translucent white	6	5.04.914.006/2000
stainless steel	round	opaque black	U	5.04.914.021/0100
stainless steel	round	translucent white	U	5.04.914.021/2000

RG 85 III short-stroke system

Version	Form of lens	Legending colour	Legending text	Order no.
stainless steel	round	opaque black	K	5.04.914.022/0100
stainless steel	round	translucent white	K	5.04.914.022/2000
stainless steel	round	opaque black	E	5.04.914.023/0100
stainless steel	round	translucent white	E	5.04.914.023/2000
stainless steel	round	opaque yellow	symbol "bell"	5.04.914.024/0400
stainless steel	round	opaque black	symbol "open door"	5.04.914.025/0100
stainless steel	round	translucent white	symbol "open door"	5.04.914.025/2000
stainless steel	round	opaque black	symbol "close door"	5.04.914.026/0100
stainless steel	round	translucent white	symbol "close door"	5.04.914.026/2000
stainless steel	round	opaque black	symbol "ventilator"	5.04.914.027/0100
stainless steel	round	translucent white	symbol "ventilator"	5.04.914.027/2000
stainless steel	round	opaque black	symbol "arrow"	5.04.914.028/0100
stainless steel	round	translucent white	symbol "arrow"	5.04.914.028/2000

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

RG 85 III lenses for keyswitches, square



Version	Form of lens	Legending colour	Legending text	Order no.
aluminum	square			5.04.915.100/2000
aluminum	square	opaque black	1	5.04.915.101/0100
aluminum	square	translucent white	1	5.04.915.101/2000
aluminum	square	opaque black	2	5.04.915.102/0100
aluminum	square	translucent white	2	5.04.915.102/2000
aluminum	square	opaque black	3	5.04.915.103/0100
aluminum	square	translucent white	3	5.04.915.103/2000

4

RG
85 III

RG 85 III short-stroke system

Version	Form of lens	Legending colour	Legending text	Order no.
aluminum	square	opaque black	4	5.04.915.104/0100
aluminum	square	translucent white	4	5.04.915.104/2000
aluminum	square	opaque black	5	5.04.915.105/0100
aluminum	square	translucent white	5	5.04.915.105/2000
aluminum	square	opaque black	6	5.04.915.106/0100
aluminum	square	translucent white	6	5.04.915.106/2000
aluminum	square	opaque black	U	5.04.915.121/0100
aluminum	square	translucent white	U	5.04.915.121/2000
aluminum	square	opaque black	K	5.04.915.122/0100
aluminum	square	translucent white	K	5.04.915.122/2000
aluminum	square	opaque black	E	5.04.915.123/0100
aluminum	square	translucent white	E	5.04.915.123/2000
aluminum	square	opaque yellow	symbol "bell"	5.04.915.124/0400
aluminum	square	opaque black	symbol "open door"	5.04.915.125/0100
aluminum	square	translucent white	symbol "open door"	5.04.915.125/2000
aluminum	square	opaque black	symbol "close door"	5.04.915.126/0100
aluminum	square	translucent white	symbol "close door"	5.04.915.126/2000
aluminum	square	opaque black	symbol "ventilator"	5.04.915.127/0100
aluminum	square	translucent white	symbol "ventilator"	5.04.915.127/2000
aluminum	square	opaque black	symbol "arrow"	5.04.915.128/0100
aluminum	square	translucent white	symbol "arrow"	5.04.915.128/2000
stainless steel	square			5.04.914.100/2000
stainless steel	square	opaque black	1	5.04.914.101/0100
stainless steel	square	translucent white	1	5.04.914.101/2000
stainless steel	square	opaque black	2	5.04.914.102/0100
stainless steel	square	translucent white	2	5.04.914.102/2000
stainless steel	square	opaque black	3	5.04.914.103/0100
stainless steel	square	translucent white	3	5.04.914.103/2000

RG 85 III short-stroke system

Version	Form of lens	Legending colour	Legending text	Order no.
stainless steel	square	opaque black	4	5.04.914.104/0100
stainless steel	square	translucent white	4	5.04.914.104/2000
stainless steel	square	opaque black	5	5.04.914.105/0100
stainless steel	square	translucent white	5	5.04.914.105/2000
stainless steel	square	opaque black	6	5.04.914.106/0100
stainless steel	square	translucent white	6	5.04.914.106/2000
stainless steel	square	opaque black	U	5.04.914.121/0100
stainless steel	square	translucent white	U	5.04.914.121/2000
stainless steel	square	opaque black	K	5.04.914.122/0100
stainless steel	square	translucent white	K	5.04.914.122/2000
stainless steel	square	opaque black	E	5.04.914.123/0100
stainless steel	square	translucent white	E	5.04.914.123/2000
stainless steel	square	opaque yellow	symbol "bell"	5.04.914.124/0400
stainless steel	square	opaque black	symbol "open door"	5.04.914.125/0100
stainless steel	square	translucent white	symbol "open door"	5.04.914.125/2000
stainless steel	square	opaque black	symbol "close door"	5.04.914.126/0100
stainless steel	square	translucent white	symbol "close door"	5.04.914.126/2000
stainless steel	square	opaque black	symbol "ventilator"	5.04.914.127/0100
stainless steel	square	translucent white	symbol "ventilator"	5.04.914.127/2000
stainless steel	square	opaque black	symbol "arrow"	5.04.914.128/0100
stainless steel	square	translucent white	symbol "arrow"	5.04.914.128/2000

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

4

RG
85 III

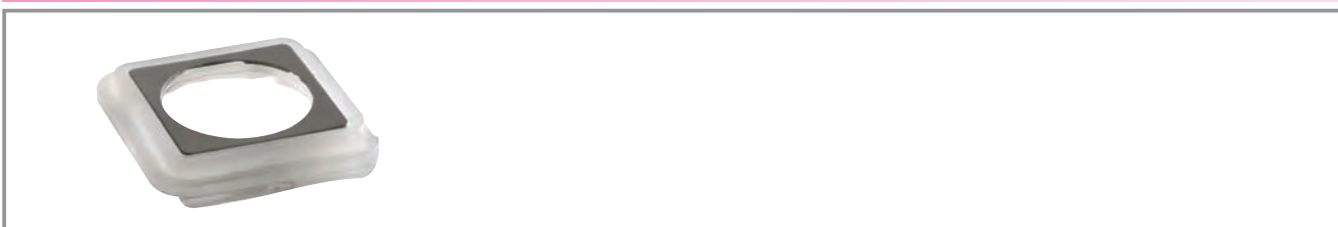
RG 85 III short-stroke system

RG 85 III lenses for keylock switches, round



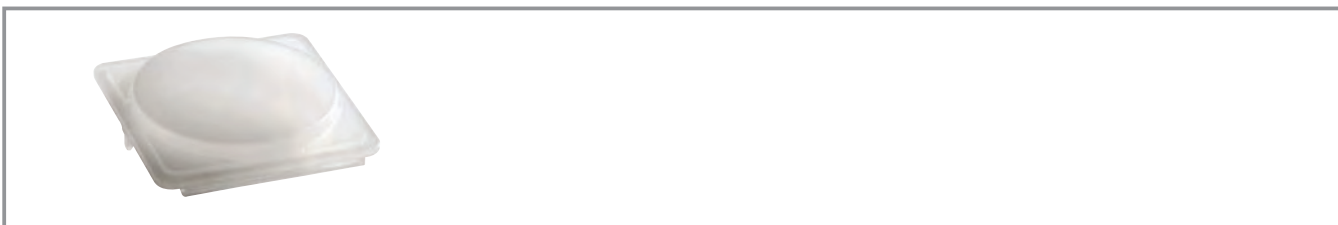
Version	Form of lens	Legending colour	Legending text	Order no.
aluminum	round			5.04.915.200/2000
stainless steel	round			5.04.914.200/2000

RG 85 III lenses for keylock switches, square



Version	Form of lens	Legending colour	Legending text	Order no.
aluminum	square			5.04.915.201/2000
stainless steel	square			5.04.914.201/2000

RG 85 III lens, round, for signal indicators



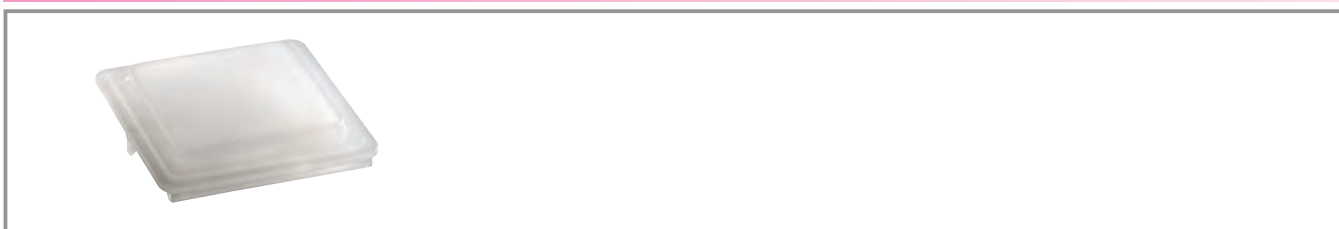
Version	Form of lens	Legending colour	Legending text	Order no.
plastic translucent	round			5.04.903.010/0000

4

RG
85 III

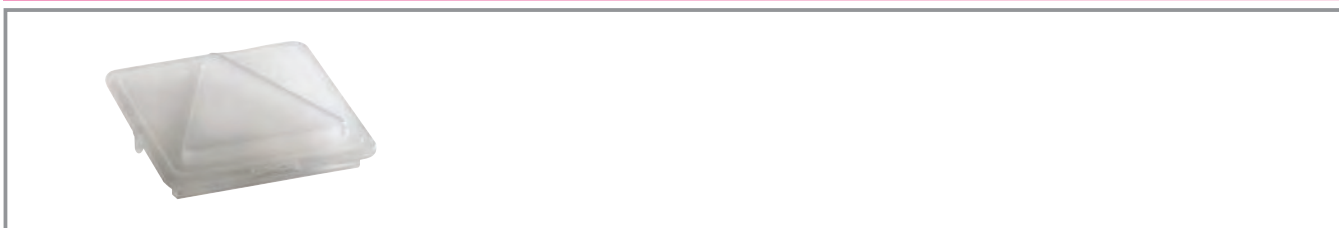
RG 85 III short-stroke system

RG 85 III lens, square, for signal indicators



Version	Form of lens	Legending colour	Legending text	Order no.
plastic translucent	square			5.04.903.009/0000

RG 85 III lens, triangular, for signal indicators



Version	Form of lens	Legending colour	Legending text	Order no.
plastic translucent	triangular			5.04.903.011/0000

4

Cable, 8 wires, with socket connectors on both ends

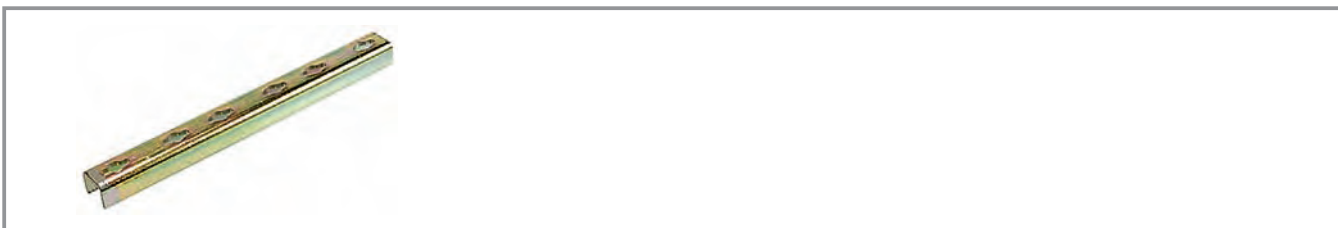


Version	Form of lens	Legending colour	Legending text	Order no.
length: 1 m				5.03.772.261/0000
length: 2 m				5.03.772.262/0000

RG
85 III

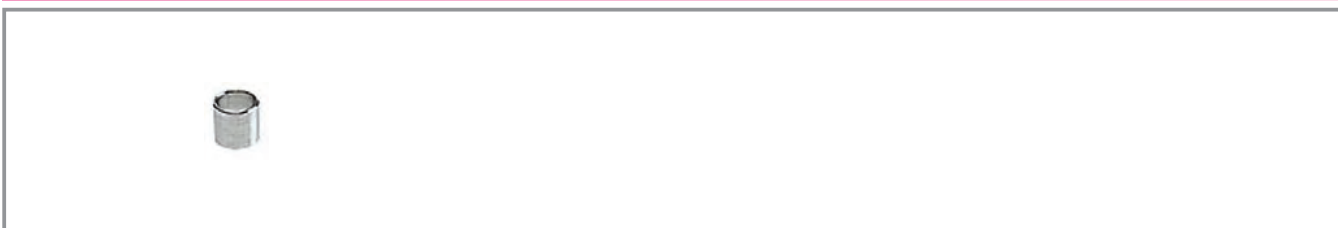
RG 85 III short-stroke system

Fixing rail, length 490 mm



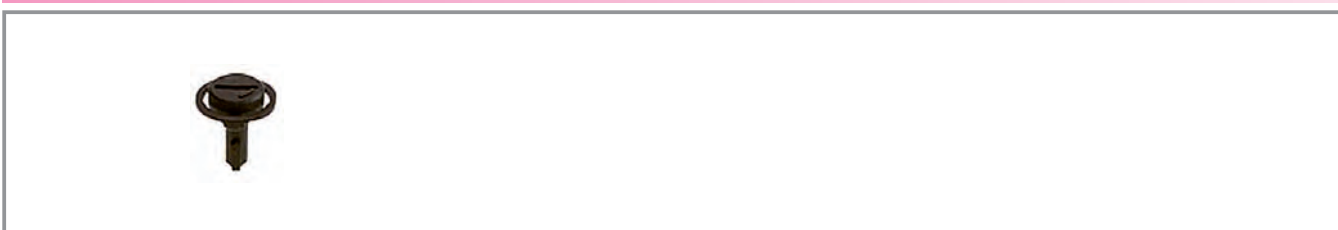
Version	Form of lens	Legending colour	Legending text	Order no.
length: 490 mm				5.41.032.173/7512

Spacer



Version	Form of lens	Legending colour	Legending text	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



Version	Form of lens	Legending colour	Legending text	Order no.
				5.55.104.208/0459

RS 76 full-travel keyswitches



General data

The RS 76 full-travel keyswitches are designed for configuring keyboards. They offer very comfortable operation with an overall height of 15.5 / 15.9 mm and a key travel of 4 mm. The modular system with a grid of 3/4" = 19.05 mm enables you to design any key block you may want.

Mechanical contact system RS 76 M

A gold alloy is used as the contact material and provides high contact reliability, low contact resistance and short bouncing time.

Solid-state contact system RS 76 C

The solid-state switch in Hall-IC technology ensures bounce-free and wear-free switching and a long operating life. Function: When pressing the keys, a permanent magnet changes its position relative to the Hall-IC and thereby generates an output signal. Their use is especially recommended in hostile environments and for heavy duty applications.

Content

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RS 76 full-travel keyswitches

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

Definitions

Momentary keyswitches

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

Latching keyswitches

Latching keyswitches 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)

Soldering

The soldering temperature should not exceed 250 °C, the soldering time not be longer than 3 seconds. All RS 76 C-keyswitches can be soldered in solder bathes. The assembled PCB should be cleaned only by using brushing machines from the soldering side of the PCB. The cleaning agent should not exceed the component side of the PCB.

All keyswitches can be flow-soldered, provided that an acid fluxer is used and that the whole unit is cleaned afterwards in de-ionised water.

Cleaning

Keyswitches should not be washed in freon or similar substances as a lubricant is used, otherwise the operating life of the keyswitches will be reduced. If complete keyboards are to be cleaned by dipping, it must be remembered that they keyboard may only be dipped in the dipping solution as far as the component side of the PCB.

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

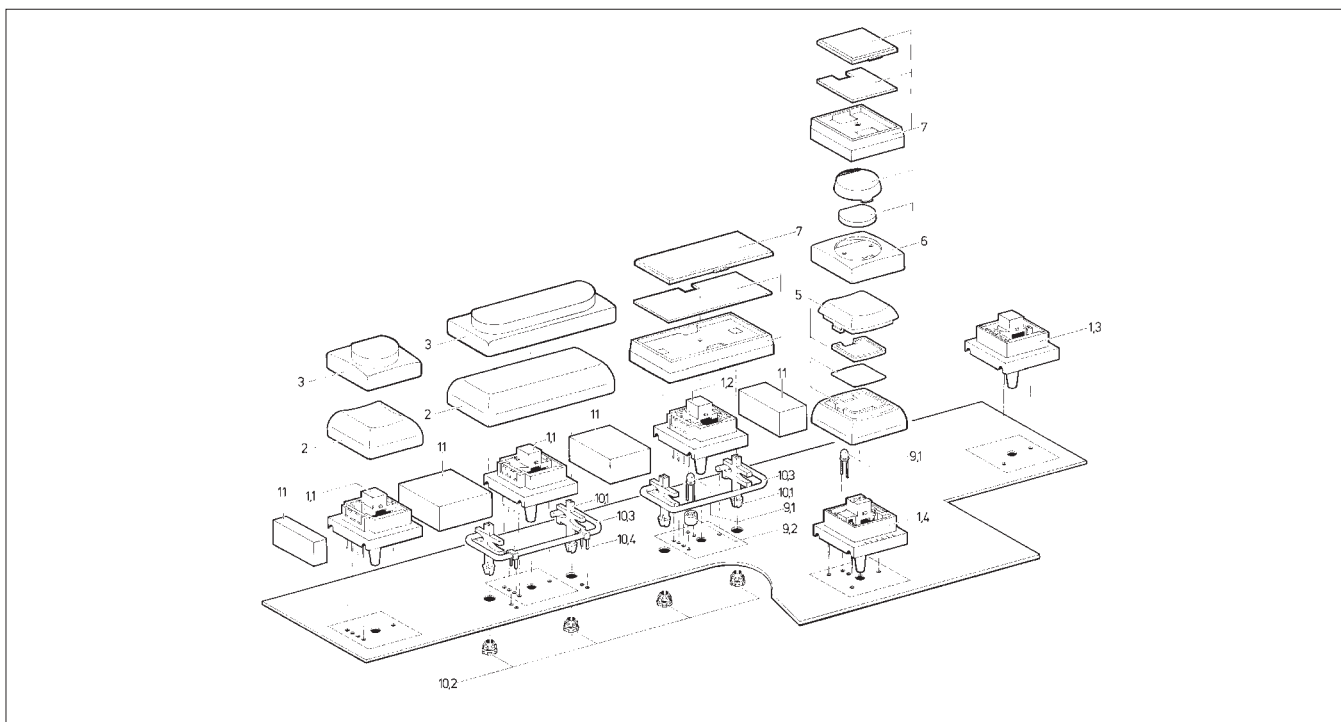
This method of legending can be recommended when complete keyboards are required in different keyboard layouts for which RAFI will develop the respective software. The keyboards can then be legended within a short time. This method of legending is particularly recommended for average to large volumes.

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.

RS 76 full-travel keyswitches

Design



No. Description

- 1.1 Keyswitch RS 76 C
- 1.2 Keyswitch RS 76 C with LED
- 1.3 Keyswitch RS 76 M
- 1.4 Keyswitch 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 ≥ 2-module.

RS 76 full-travel keyswitches

Hole Pattern PCB RS 76 M/RS 76 C

The hole patterns apply to the horizontal position of the keycaps only. Should they be in a vertical position,

the momentary keyswitch must be mounted accordingly, i.e. rotated by 90°.

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

	Momentary keyswitch, non-illuminated	Momentary keyswitch, illuminated
RS 76 M		
RS 76 C		

4

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

RS 76 M/C	
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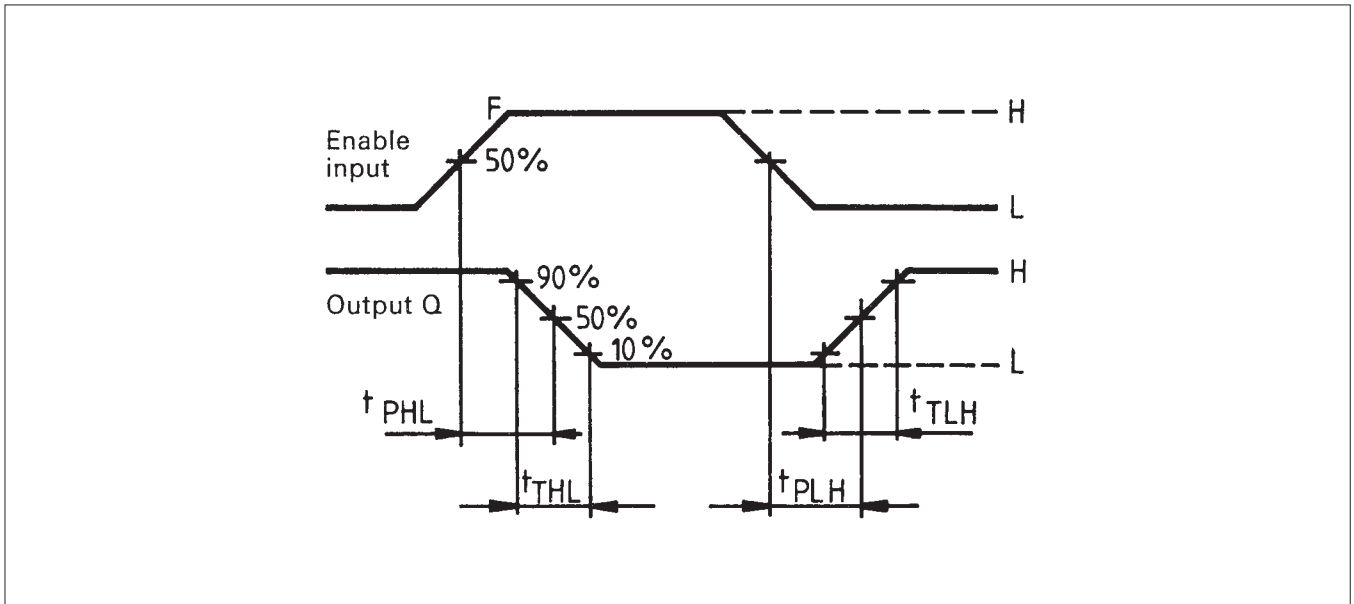
Keycap	L 1 mm	L 2 mm
2-module	25.40	22.86
3-module	30.48	24.13
5-module	68.58	68.58

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.

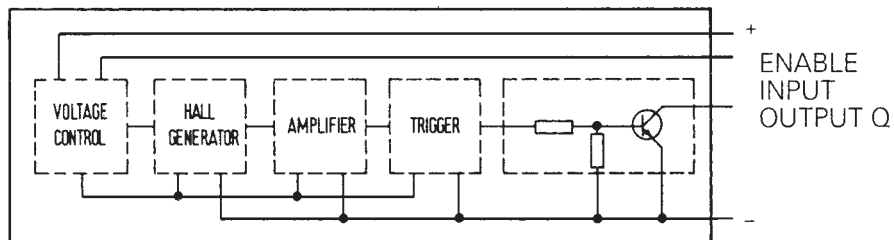
RS 76 full-travel keyswitches

Specific Technical Data RS 76 C

Output pulse diagram Dynamic characteristics (max.)		$T_w = 25\text{ }^\circ\text{C}$	$T_w = 50\text{ }^\circ\text{C}$	$T_w = 70\text{ }^\circ\text{C}$
Turn-on delay time	t_{PHL}	3 μs	7 μs	10 μs
Turn-off delay time	t_{PHL}	4 μs	5 μs	6 μs
Fall/rise time	t_{PHL}	2 μs	2,5 μs	3 μs
	t_{PHL}	1 μs	1,5 μs	2,5 μs



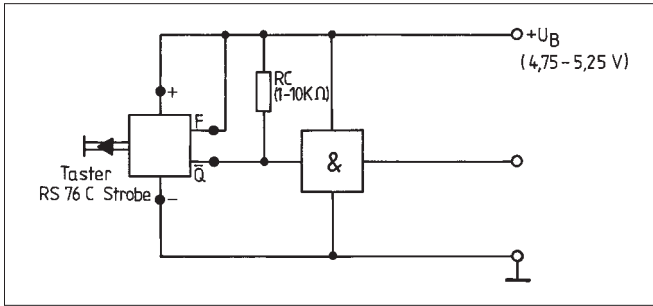
Block diagram
Hall IC



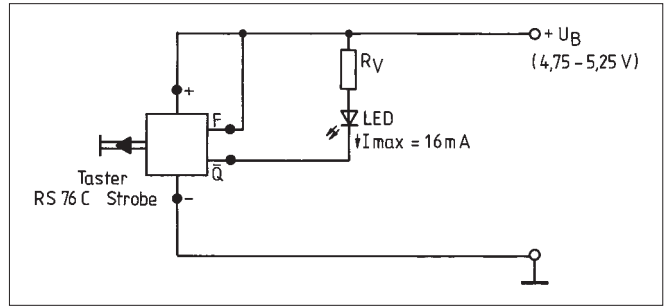
Static with Enable Input

RS 76 full-travel keyswitches

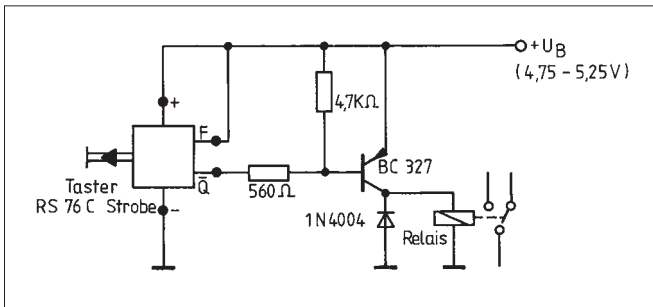
Examples for Application RS 76 C



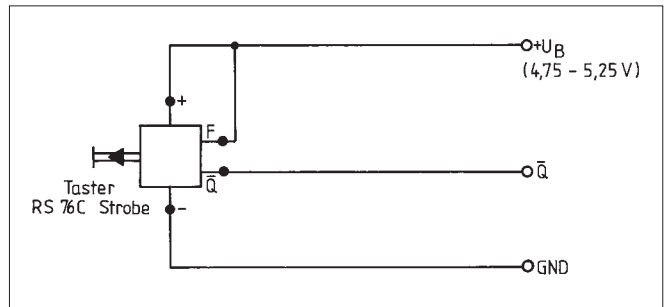
Driving of logic components



Indication of logical states

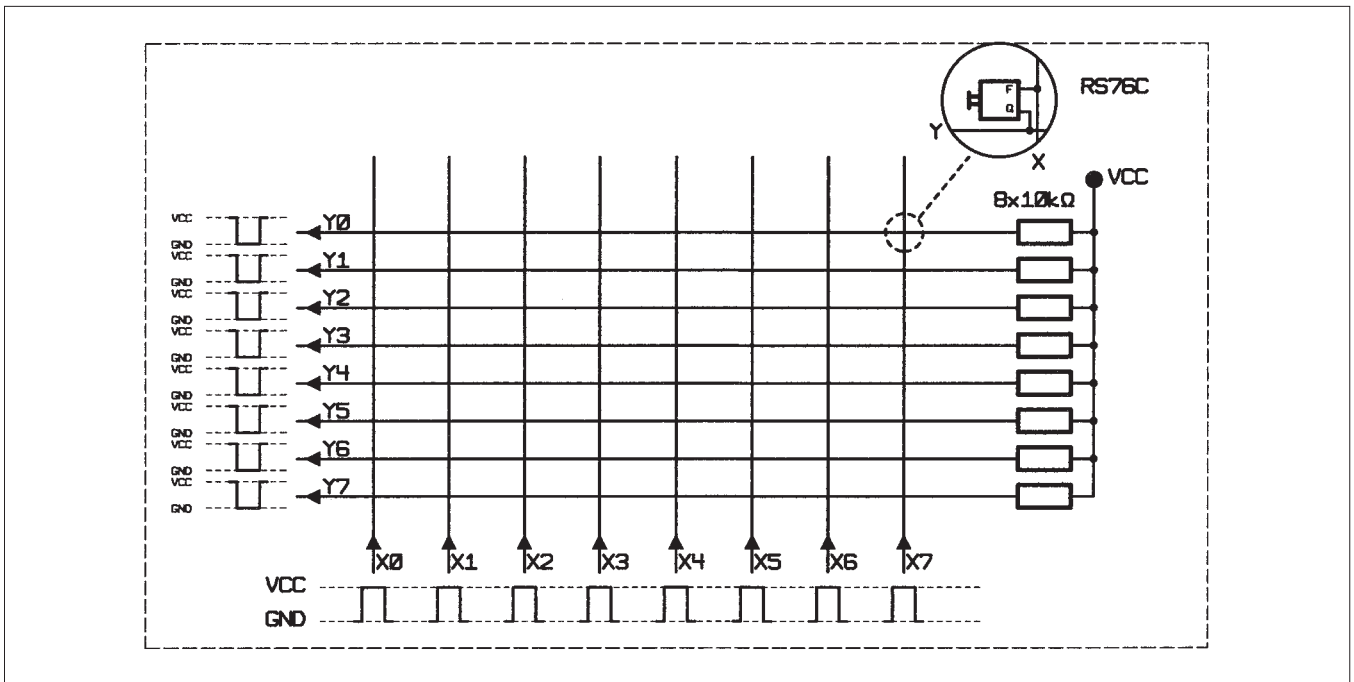


Driving of a PNP transistor



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

4



Use in keyboards

RS
76

RS 76 full-travel keyswitches

RS 76 M keyswitch, non-illuminated



Technical data

General information

Recommended key grid 19.05 mm

Mechanical design

Contact function momentary
Mounting soldering
Terminals solder terminals,
tin-plated

Contact system cross contact
Contact arrangement 1 NO
Contact materials Au alloy
Illumination no

Mechanical characteristics

Operating force max. see order block
Operating travel 4 mm
Switching travel 1.5 - 2.8 mm
Robustness min. 100 N

Electrical characteristics

Rated voltage min. 2 V (with Diode 3 V)
Rated voltage max. 42 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 (ohne Diode)
Insulation resistance 10⁹ Ω
ESD strength max. 8 kV
Bouncing time max. 5 ms

Other specifications

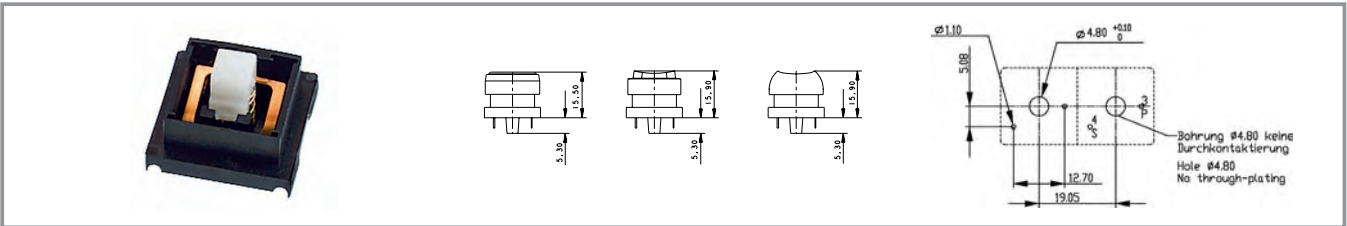
Ambient temp. operating min. -25 °C
Ambient temp. operating max. +70 °C
Storage temperature min. -40 °C
Storage temperature max. (product) +80 °C
Storage temperature max. (rail) +50 °C
Resistance to constant environment according to IEC 600 68-2-3 and 2-30
Resistance at variable environment according to IEC 600 68-2-14 and 2-33
Operating life min. 10⁷
Degree of protection IP40
Flammability of materials UL 94 HB

Typical accessories RS 76 M full-travel keyswitch, non-illuminated

Description	Photo	Order no.	Additional accessories see page
Keycap for RS 76 with legend insert		5.04.665.221/5520	4 - 131
Keycap for RS 76, opaque, with nail protection		5.80.000.000/0152	4 - 130
Keycap for RS 76, opaque		5.82.000.000/0152	4 - 130

RS 76 full-travel keyswitches

RS 76 M keyswitch, non-illuminated

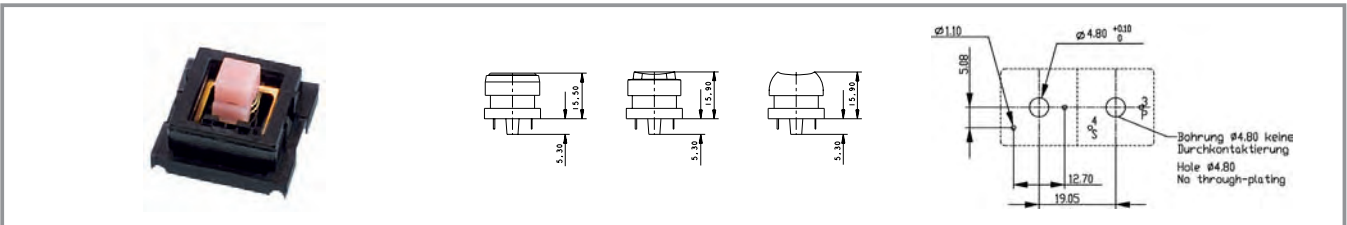


Contact function	Illumination	Contact arrangement	Contact materials	Operating travel	Operating force max.	Order no.
momentary	no	1 NO	Au alloy	4 mm	0.9 N	3.13.002.502/0000
momentary	no	1 NO	Au alloy	4 mm	1.4 N	3.13.002.512/0000

Technical data see page 4 - 120

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

RS 76 M keyswitch with diode, non-illuminated



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

Technical data see page 4 - 120

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

RS 76 full-travel keyswitches

RS 76 M keyswitch, illuminated



Pict.: RS 76M, for spot illumination

RS 76MX, for full illumination

RS 76MX, keyboard fully illuminated

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 min. 100 N

Electrical characteristics

Rated voltage min. 2 V
Rated voltage max. 42 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 10⁹ Ω
ESD strength max. 8 kV
Bouncing time max. 10 ms

Other specifications

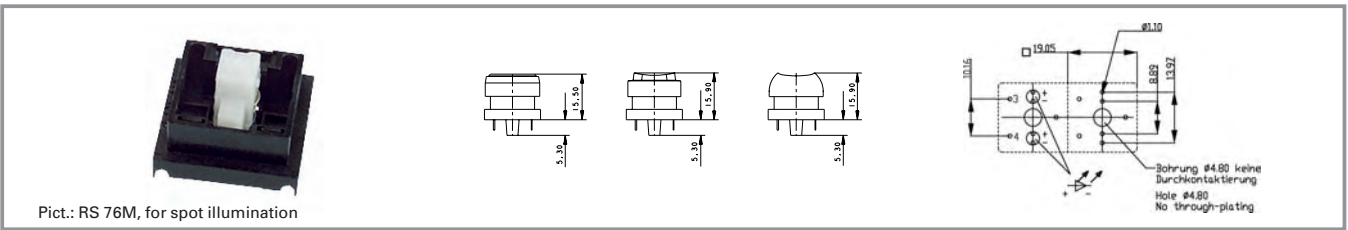
Ambient temp. operating min. -25 °C
Ambient temp. operating max. +70 °C
Storage temperature min. -40 °C
Storage temperature max. (product) +80 °C
Storage temperature max. (rail) +50 °C
Resistance to constant environment according to IEC 600 68-2-3 and 2-30
Resistance at variable environment according to IEC 600 68-2-14 and 2-33
Operating life min. 10⁷ momentary, 10⁵ latching
Degree of protection IP40
Flammability of materials UL 94 HB

Typical accessories RS 76 M keyswitch, illuminated

Description	Photo	Order no.	Additional accessories see page
Cover for RS 76 IP40, 1-module, dark grey		5.04.520.174/0152	4 - 138
Keycap for RS 76 illuminated, with legend insert		5.04.665.521/5520	4 - 132
Keycap for RS 76, illuminated, with nail protection and legend insert		5.04.665.911/5520	4 - 133
Keycap for RS 76 with light bar		5.82.110.000/0242	4 - 132

RS 76 full-travel keyswitches

RS 76 M keyswitch, illuminated, momentary



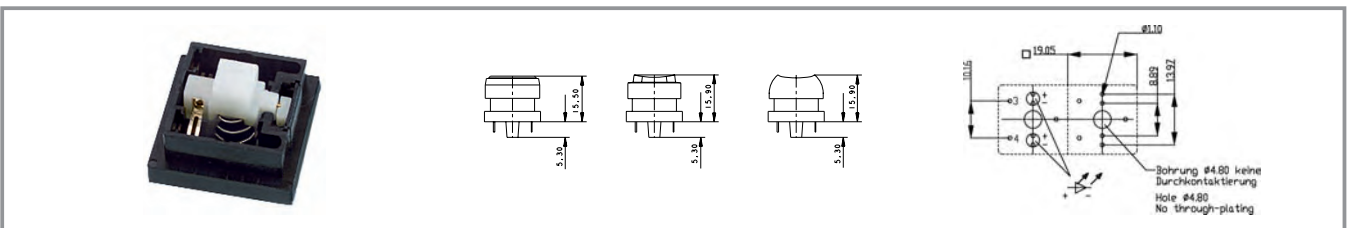
Pict.: RS 76M, for spot illumination

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

Technical data see page 4 - 122

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

RS 76 M keyswitch, illuminated, latching



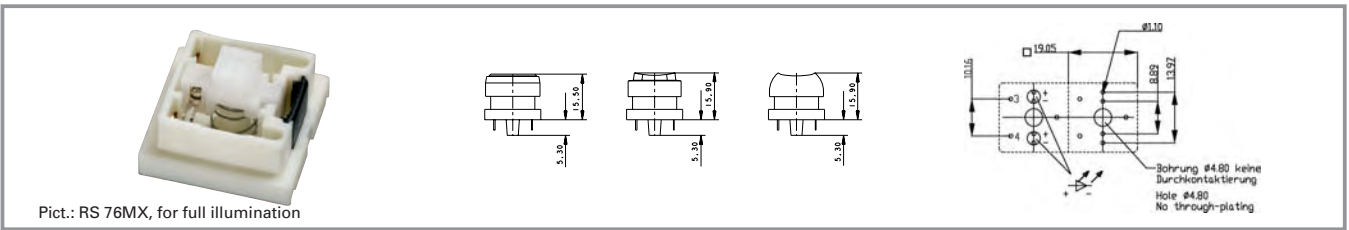
Contact function	Contact system	Illumination	Recommended key grid	Order no.
latching	bridge contact	spot illumination with 3 mm LED possible		3.13.002.022/0000

Technical data see page 4 - 122

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

RS 76 full-travel keyswitches

RS 76 MX keyswitch, fully illuminated



Pict.: RS 76MX, for full illumination

Contact function	Contact system	Illumination	Recommended key grid	Order no.
momentary	bridge contact	full illumination with 2 SMD LED possible		3.13.002.922/0000

Technical data see page 4 - 122

Accessories:

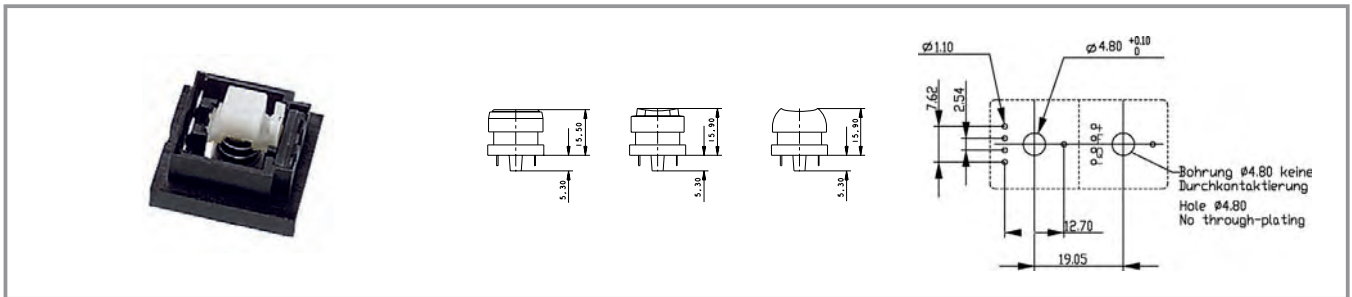
Keycap, fully illuminated, for RS 76 MX: 5.05.511.168/0209
 Keycap, fully illuminated, for RS 76 MX: 5.05.511.168/0754

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

The SMD LED are soldered on the back of the printed circuit board and shine through openings in the board and keyswitch housing.

RS 76 full-travel keyswitches

RS 76 C keyswitch, non-illuminated



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

voltage (Q) max. bei 16 mA 0.4 V
ESD strength max. 8 kV
Output switching times (Q) bei 25 °C, t_{PHL} 3 μ s
Output switching times (Q) bei 25 °C, t_{PLH} 4 μ s
Output switching times (Q) bei 25 °C, t_{THL} 1 μ s
Output switching times (Q) bei 25 °C, t_{TLH} 2 μ s

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 min. 100 N

Other specifications

Reliability of Hall-IC's at 25 °C $\lambda = 2.5 \times 10^{-7} \text{ h}^{-1}$
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
Resistance to constant environment according to IEC 600 68-2-3 and 2-30
Resistance at variable environment according to IEC 600 68-2-14 and 2-33
Operating life min.(mechanical) see order block
Degree of protection IP40
Flammability of materials UL 94 HB

Electrical characteristics

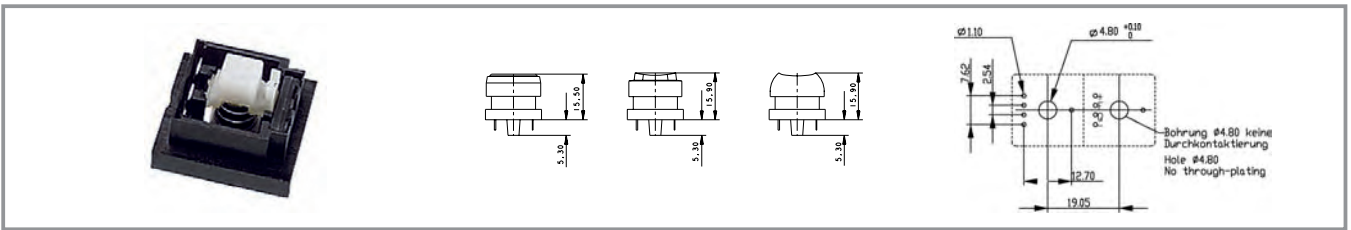
Operating voltage DC 4.75 ... 5.25 V
Supply current max. at $U_{IL} = 0 \text{ V}$ 0.5 mA
Supply current max. at $U_{IH} = 5 \text{ V}$ 5 mA
Input voltage (F) at $U_{IL} = 0 \text{ V}$ 0.4 V
Input voltage (F) at $U_{IH} = 2.4 \text{ V}$ 5.25 V
Output load current (Q) max. 16 mA
Output residual current (Q) max. 10 μ A
Output saturation

Typical accessories RS 76 C keyswitch, non-illuminated

Description	Photo	Order no.	Additional accessories see page
Keycap for RS 76 with legend insert		5.04.665.221/5520	4 - 131
Keycap for RS 76, opaque, with nail protection		5.80.000.000/0152	4 - 130
Keycap for RS 76, opaque		5.82.000.000/0152	4 - 130

RS 76 full-travel keyswitches

RS 76 C keyswitch, non-illuminated



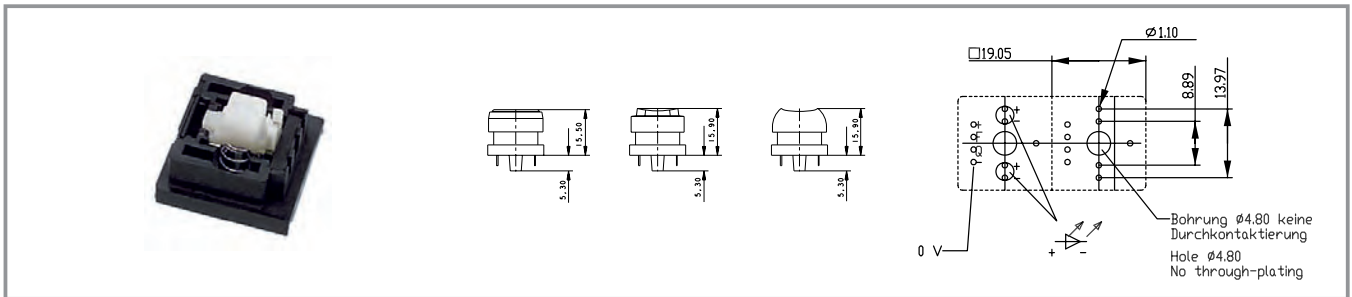
Contact function	Operating life min.(mechanical)	Illumination	Operating force max.	Operating travel	Order no.
momentary	10 ⁸	no	0.7 N	4 mm	3.13.001.010/0000
momentary	10 ⁸	no	1 N	4 mm	3.13.001.210/0000

Technical data see page 4 - 126

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

RS 76 full-travel keyswitches

RS 76 C keyswitch, illuminated



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 colour see order block

Output saturation voltage (Q) max. bei 16 mA 0.4 V
 ESD strength max. 8 kV
 Output switching times (Q) bei 25 °C, t_{PHL} 3 μ s
 Output switching times (Q) bei 25 °C, t_{PLH} 4 μ s
 Output switching times (Q) bei 25 °C, t_{THL} 1 μ s
 Output switching times (Q) bei 25 °C, t_{TLH} 2 μ s

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 min. 100 N

Other specifications

Reliability of Hall-IC's at 25 °C $\lambda = 2.5 \times 10^{-7} \text{ h}^{-1}$
 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
 Resistance to constant environment according to IEC 600 68-2-3 and 2-30
 Resistance at variable environment according to IEC 600 68-2-14 and 2-33
 Operating life min. see order block
 Degree of protection IP40
 Flammability of materials UL 94 HB

Electrical characteristics

Number of LED see order block
 Operating voltage DC 4.75 ... 5.25 V
 Supply current max. at $U_{IL} = 0 \text{ V}$ 0.5 mA
 Supply current max. at $U_{IH} = 5 \text{ V}$ 5 mA
 Input voltage (F) at $U_{IL} = 0 \text{ V}$ 0.4 V
 Input voltage (F) at $U_{IH} = 2.4 \text{ V}$ 5.25 V
 Output load current (Q) max. 16 mA
 Output residual current (Q) max. 10 μ A

Typical accessories RS 76 C keyswitch, illuminated

Description	Photo	Order no.	Additional accessories see page
Cover for RS 76 IP 40, 1-module, dark grey		5.04.520.174/0242	4 - 138
Keycap for RS 76 IP 40, illuminated, with legend insert		5.04.665.521/5520	4 - 132
Keycap for RS 76 IP 40, illuminated, with nail protection and legend insert		5.04.665.911/5520	4 - 133

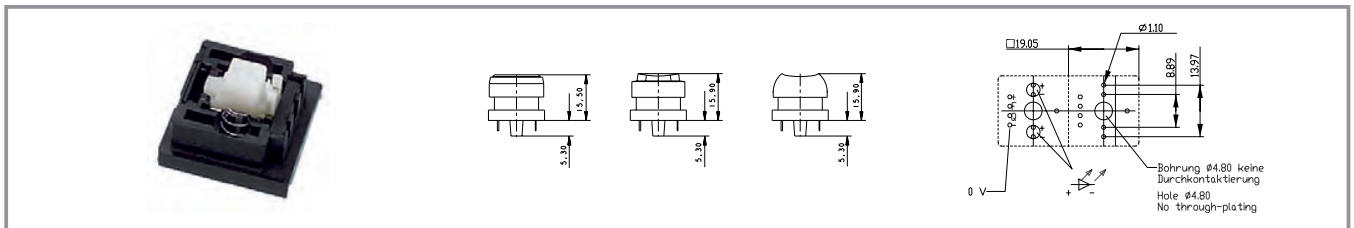
RS 76

RS 76 full-travel keyswitches

Typical accessories RS 76 C keyswitch, illuminated

Description	Photo	Order no.	Additional accessories see page
Keycap for RS 76 with light bar		5.82.110.000/0242	

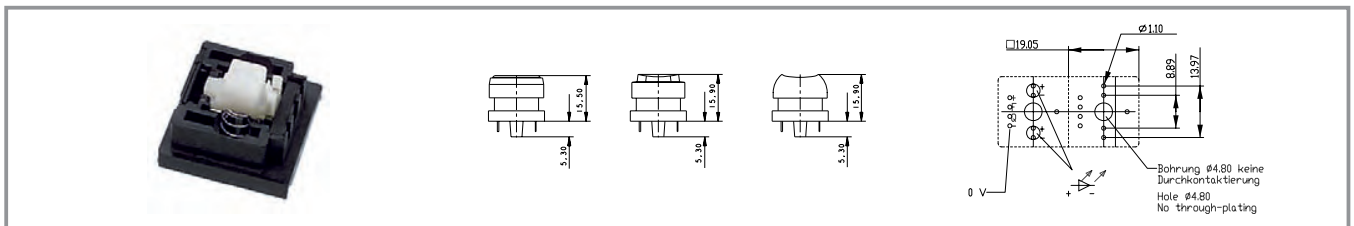
RS 76 C keyswitch, illuminated, momentary



Contact function	Operating life min.	Illumination	Operating force max.	Operating travel	Order no.
momentary	10 ⁸	with LED	0.7 N	4 mm	3.13.001.110/0000

Technical data see page 4 - 128

RS 76 C keyswitch, illuminated, latching



Contact function	Operating life min.	Illumination	Operating force max.	Operating travel	Order no.
latching	10 ⁵	with LED	0.7 N	4 mm	3.13.001.130/0000

Technical data see page 4 - 128

RS 76 full-travel keyswitches

Keycaps for RS 76, non-illuminated



Pict.: light beige



opaque with nail protection charcoal grey / white



transparent colourless

Keycap for RS 76, opaque



Pict.: dark grey



Size of keycap	Illuminable	Colour of keycap / legending	Colour 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

Technical data see page 4 - 130

Keycap sets available in two-shot moulded design.

Other colour variants and keycap sizes, e.g. 1.25-, 1.5-, 1.75-, 2-, 3-, 5- and 8-module versions available on request.

Keycap for RS 76, opaque, with nail protection



Pict.: light beige



Size of keycap	Illuminable	Colour of keycap / legending	Colour 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

Technical data see page 4 - 130

Keycap sets available in two-shot moulded design.

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

RS 76 full-travel keyswitches

Keycap for RS 76 with legend insert



Size of keycap	Illuminable	Colour of keycap / legending	Colour of lens / legend insert	Order no.
1-module	no	charcoal grey/-	colourless/white	5.04.665.221/5520
1-module	no	light grey/-	colourless/white	5.04.665.230/5520

Technical data see page 4 - 130

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

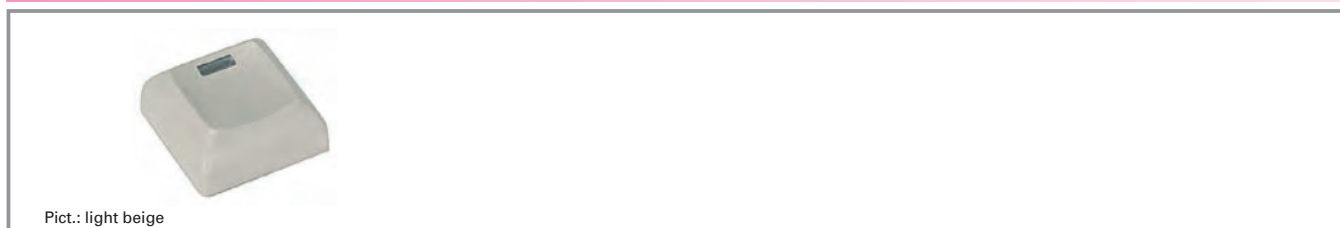
Other colours on request.

RS 76 full-travel keyswitches

Keycaps for RS 76, illuminated



Keycap for RS 76 with light bar

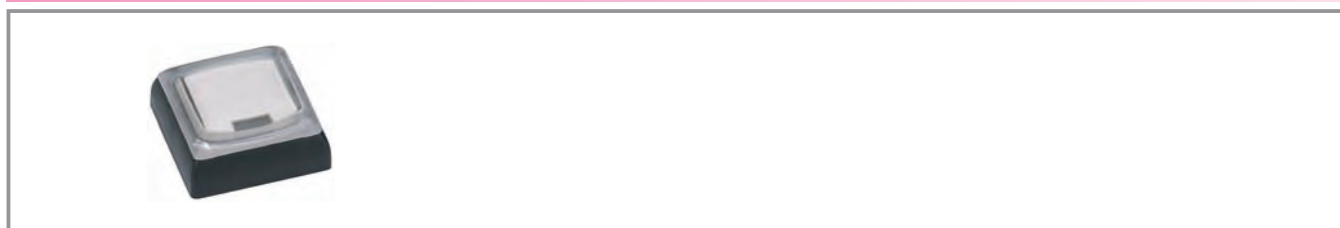


Size of keycap	Illuminable	Colour of keycap / legending	Colour of lens / legend insert	Order no.
1-module	yes	light grey/-		5.82.110.000/0242
1-module	yes	charcoal grey/-		5.82.110.000/0152

Technical data see page 4 - 132

Other colours on request.

Keycap for RS 76, illuminated, with legend insert



Size of keycap	Illuminable	Colour of keycap / legending	Colour of lens / legend insert	Order no.
1-module	yes	charcoal grey/-	colourless/white	5.04.665.521/5520
1-module	yes	light grey/-	colourless/white	5.04.665.530/5520

Technical data see page 4 - 132

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

4

RS
76

RS 76 full-travel keyswitches

Keycap for RS 76, illuminated, with nail protection and legend insert



Pict.: light grey, yellow lens

Size of keycap	Illuminable	Colour of keycap / legending	Colour of lens / legend insert	Order no.
1-module	yes	charcoal grey/-	colourless/white	5.04.665.911/5520
1-module	yes	light grey/-	colourless/white	5.04.665.920/5520

Technical data see page 4 - 132

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

Keycap for RS 76, illuminated, with legend insert



Pict.: red

Size of keycap	Illuminable	Colour of keycap / legending	Colour of lens / legend insert	Order no.
1-module	yes	charcoal grey/-	colourless/white	5.04.665.161/5520
1-module	yes	light grey/-	colourless/white	5.04.665.170/5520

Technical data see page 4 - 132

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

RS 76 full-travel keyswitches

Keycap, fully illuminated, for RS 76 MX



Size of keycap	Illuminable	Colour of keycap / legending	Colour 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
1 ¹ / ₄ -module	yes	white/-	white translucent/-	5.05.511.169/0209
1 ¹ / ₂ -module	yes	white/-	white translucent/-	5.05.511.170/0209
1 ³ / ₄ -module	yes	white/-	white translucent/-	5.05.511.171/0209
1 ¹ / ₄ -module with light conductor	yes	white/-	white translucent/-	5.05.511.173/0209
5-module	yes	light grey/-	white translucent/-	5.00.888.171/0000

Technical data see page 4 - 132

Laser-printed versions available on request.

RS 76 full-travel keyswitches

Keycaps for RS 76, with legend, two-shot moulded/keycap sets



Pict.: opaque light beige / brown



opaque light beige / brown

Keycap set for RS 76, symbols A-Z



Pict.: opaque light beige / brown

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	Colour 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

Technical data see page 4 - 136

Other symbols and colours on request.

4

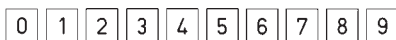
RS
76

RS 76 full-travel keyswitches

Keycap set for RS 76, symbols 0-9



Pict.: opaque light beige / brown



opaque with nail protection charcoal grey / white

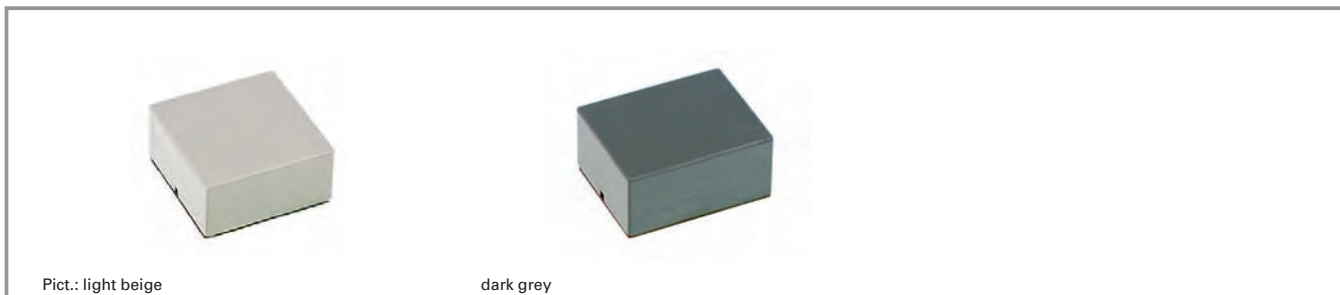
Size of keycap	Form of lens	Colour of keycap / legending	Symbol	Order no.
1-module	keycap opaque with nail protection	charcoal grey/white	0-9	5.00.999.504/0000
1-module	keycap opaque with nail protection	light grey/black	0-9	5.00.999.826/0000
1-module	keycap opaque	charcoal grey/white	0-9	5.00.999.529/0000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

Technical data see page 4 - 136

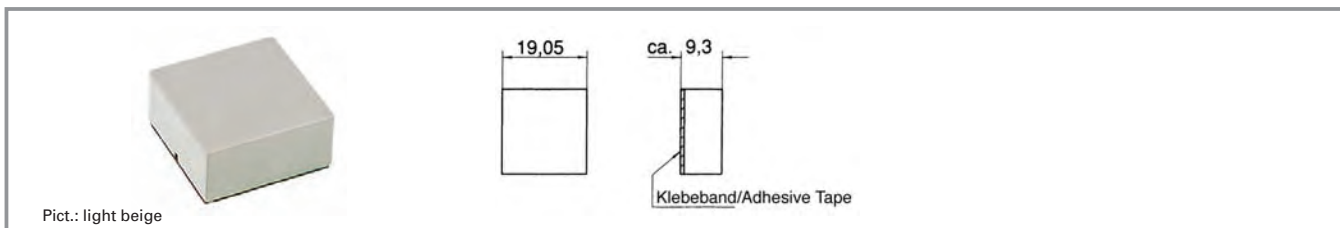
Other symbols and colours on request.

RS 76 full-travel keyswitches

RS 76 accessories



Cover for RS 76 IP40



Short text	Feature 1	Feature 2	Order no.
Cover for RS 76 IP40, 1/4-module, charcoal grey	charcoal grey	1/4-module	5.04.520.171/0152
Cover for RS 76 IP40, 1/4-module, light grey	opaque light grey	1/4-module	5.04.520.171/0242
Cover for RS 76 IP40, 1/2-module, charcoal grey	charcoal grey	1/2-module	5.04.520.172/0152
Cover for RS 76 IP40, 1/2-module, light grey	opaque light grey	1/2-module	5.04.520.172/0242
Cover for RS 76 IP40, 3/4-module, charcoal grey	charcoal grey	3/4-module	5.04.520.173/0152
Cover for RS 76 IP40, 3/4-module, light grey	opaque light grey	3/4-module	5.04.520.173/0242
Cover for RS 76 IP40, 1-module, charcoal grey	charcoal grey	1-module	5.04.520.174/0152
Cover for RS 76 IP40, 1-module, light grey	opaque light grey	1-module	5.04.520.174/0242

Other colours on request.

4

RS
76



General data

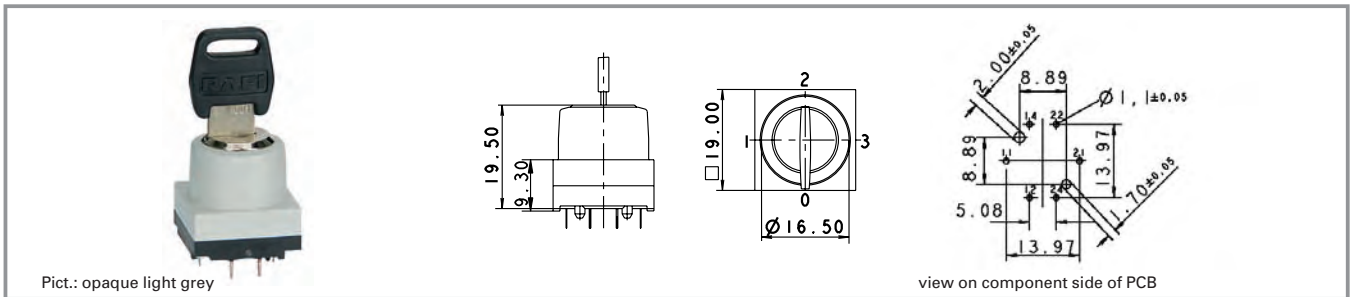
Keylock switches for PCB mounting. Matching with the RS 76 full-travel keyswitches and the RF 15 and RF 19 short-travel keyswitches.

Content

Keylock switch IP54, MICROMECC	4 - 140
Keylock switch IP54, MICROMECC	4 - 142
Keylock switch IP54, EUROLOCKS	4 - 144
Keylock switch IP54, EUROLOCKS	4 - 145
Priority keylock switch IP54	4 - 146
Priority keylock switch IP54	4 - 147
Rotary switch IP40	4 - 148
Rotary switch IP40	4 - 149

Keylock and rotary switches for PCB

Keylock switch IP54, MICROMECC



Technical data

General information

Colour	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 / arrangement	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
Symmetric key	no
Group key	on request
Key removal position	see order block
General key	on request

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 ... 42 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 Ω
ESD strength max.	8 KV

Other specifications

Rotating angle	see order block
Operating life	10000
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
Resistance to constant environment	according to IEC 600 68-2-3 and 2-30
Resistance at variable environment	according to IEC 600 68-2-14 and 2-33
Flammability	UL 94 HB

Typical accessories Keylock switch IP54, MICROMECC

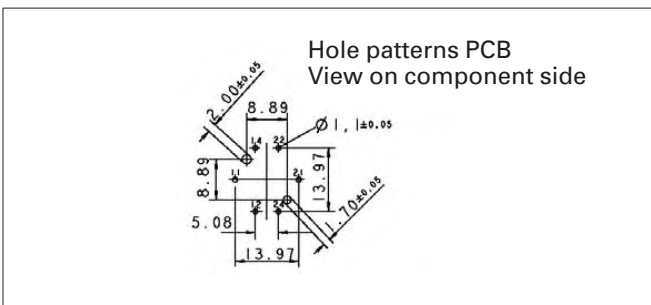
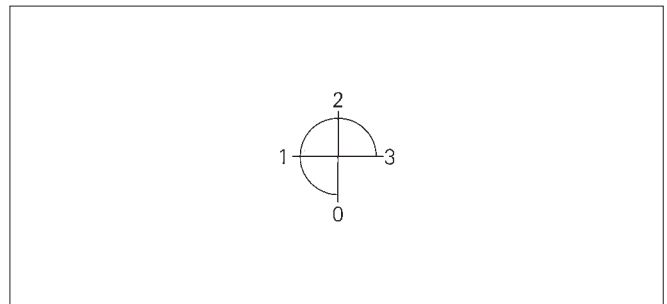
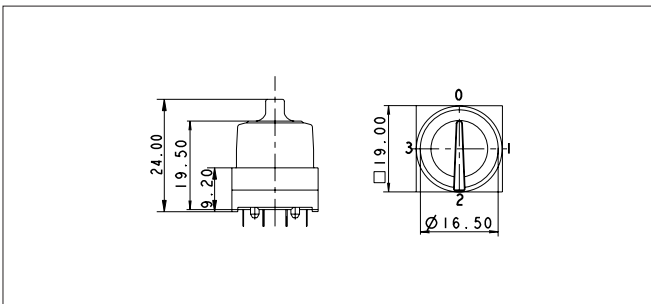
Description	Photo	Order no.	Additional accessories see page
O-ring for keylock switch		5.30.120.015/0100	5 - 25
Spare key, for single action, e.g. 1 x 90° (delivery content 1 key)		5.58.007.001/0000	

Keylock and rotary switches for PCB

Accessories Keylock switch IP54, MICROMECC

Description	Photo	Order no.	Page
Spare key for double action, e.g. 2x90° (delivery content 2 keys)		5.58.008.001/0000	
Spare key for triple action, e.g. 3x90° (delivery content 3 keys)		5.58.009.001/0100	
Spare key for quadruple action, e.g. 4x90° (delivery content 4 keys)		5.58.010.001/0100	

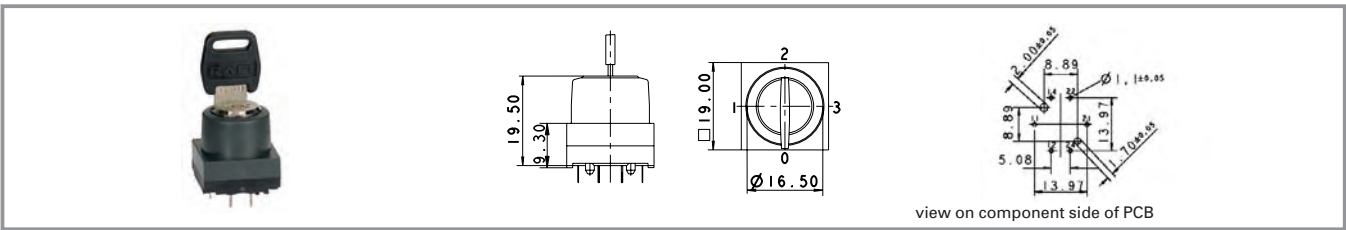
Configuration Diagram/Dimensional Drawing



Switching position	Contact function
0	
1	
2	
3	

Keylock and rotary switches for PCB

Keylock switch IP54, MICROMECC



Contact function	Colour	Rotating angle		Key removal position	Order no.
momentary	charcoal grey	1 x 40°		0	3.13.026.041/0000
momentary	opaque light grey	1 x 40°		0	3.13.026.541/0000
latching	charcoal grey	1 x 90°		0	3.13.026.001/0000
latching	opaque 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	opaque light grey	1 x 90°		0+1	3.13.026.506/0000
latching	charcoal grey	2 x 90°		0	3.13.026.011/0000
latching	opaque 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	opaque 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	opaque 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	opaque light grey	2 x 90°		0+1+3	3.13.026.856/0000
latching	charcoal grey	3 x 90°		0	3.13.026.021/0000
latching	opaque 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	opaque 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	opaque 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	opaque light grey	4 x 90° without stop		0+1+2+3	3.13.026.536/0000

4

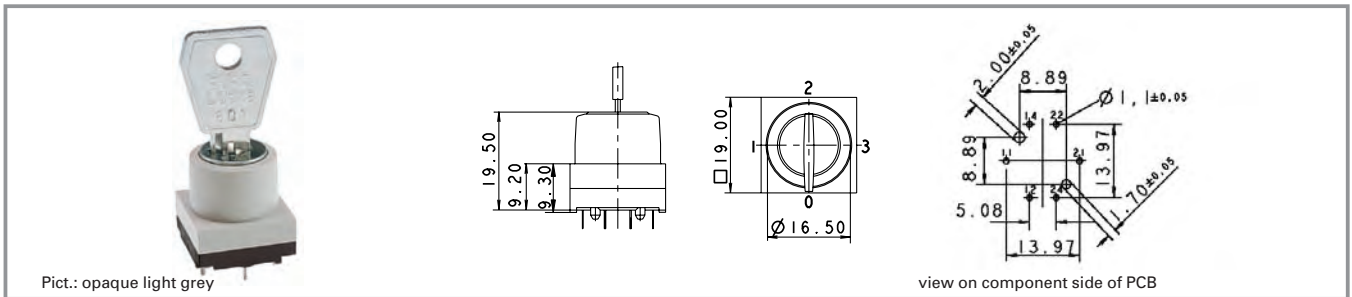
Key
Swit-
ches

Technical data see page 4 - 140

2 keys included. Other lock variants available on request.

Keylock and rotary switches for PCB

Keylock switch IP54, EUROLOCKS



Technical data

General information

Colour	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 / arrangement	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
Group key	no
Key removal position	see order block
General key	no

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 ... 42 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 Ω
ESD strength max.	8 KV

Other specifications

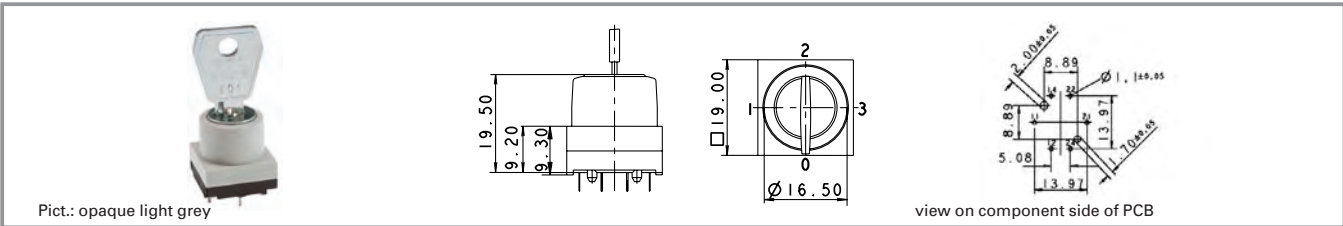
Rotating angle	see order block
Operating life	10000
Degree of protection from front side	IP54
Ambient temp. operating min.	-25 °C
Ambient temp. operating max.	+70 °C
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C
Resistance to constant environment	according to IEC 600 68-2-3 and 2-30
Resistance at variable environment	according to IEC 600 68-2-14 and 2-33
Flammability	UL 94 HB

Typical accessories Keylock switch IP54, EUROLOCKS

Description	Foto	Order no.	Additional accessories see page
O-ring for keylock switch		5.30.120.015/0100	5 - 25
Spare key (delivery content 1 key)		5.58.006.801/0000	

Keylock and rotary switches for PCB

Keylock switch IP54, EUROLOCKS



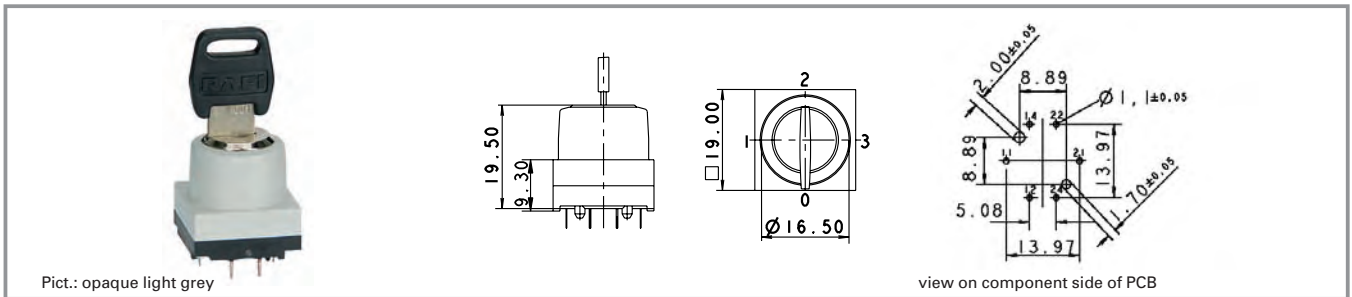
Contact function	Colour	Rotating angle	Key removal position	Order no.
latching	charcoal grey	1 x 90°	0	3.13.009.001/0000
latching	opaque light grey	1 x 90°	0	3.13.009.006/0000
latching	charcoal grey	1 x 90°	0+1	3.13.009.031/0000
latching	opaque light grey	1 x 90°	0+1	3.13.009.036/0000

Technical data see page 4 - 144

2 keys included.
Other lock variants available on request.
For the switching arrangement, refer to Micromec keylock switch IP54.

Keylock and rotary switches for PCB

Priority keylock switch IP54



Pict.: opaque light grey

view on component side of PCB

General data

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

Colour 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 / arrangement 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 yes
Symmetric key no
Group key yes
Key removal position see order block
General key yes

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 ... 42 V
Rated current max. 100 mA
Contact resistance when new max. 100 mΩ
Contact resistance acc. to life max. 200 mΩ
Insulation resistance 10⁹ Ω
ESD strength max. 8 KV



Other specifications

Rotating angle see order block
Operating life 10000
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
Resistance to constant environment according to IEC 600 68-2-3 and 2-30
Resistance at variable environment according to IEC 600 68-2-14 and 2-33
Flammability UL 94 HB

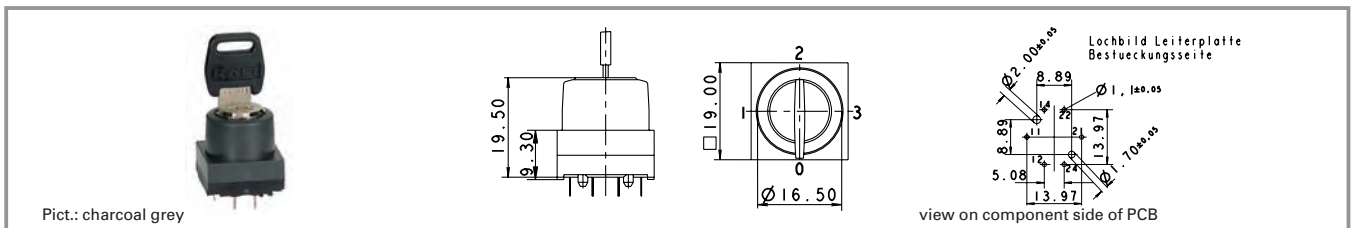
4









Keylock and rotary switches for PCB

Typical accessories Priority keylock switch IP54

Description	Photo	Order no.	Additional accessories see page
O-ring for keylock switch		5.30.120.015/0100	5 - 25
Set of keys for 2 x 90° type (delivery content 2 keys)		5.58.099.012/0000	
Set of keys for 3 x 90° type (delivery content 3 keys)		5.58.099.013/0000	

Priority keylock switch IP54



Contact function	Colour	Rotating angle	Key removal position	Order no.
latching	charcoal grey	2 x 90°	 0	3.13.027.001/0000
latching	opaque 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	opaque light grey	2 x 90°	 0+1+2	3.13.027.506/0000
latching	charcoal grey	3 x 90°	 0	3.13.027.011/0000
latching	opaque 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	opaque light grey	3 x 90°	 0+1+2+3	3.13.027.516/0000

Technical data see page 4 - 146

2 sets of keys included.

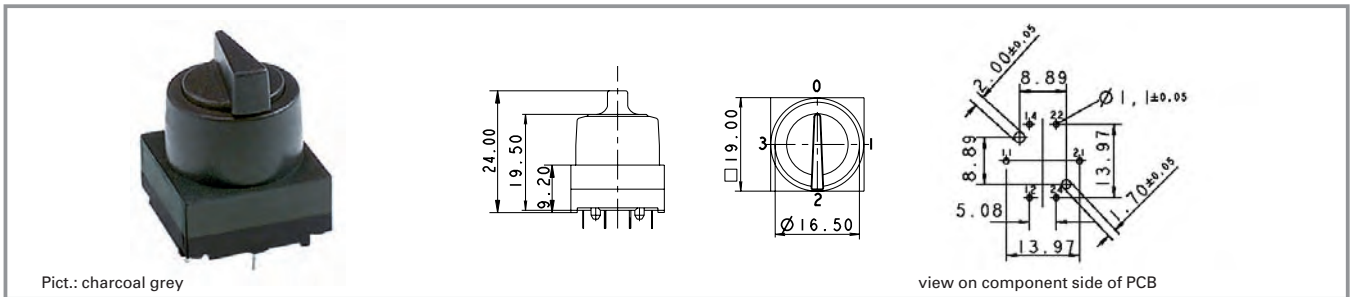
Other lock variants available on request.

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.

Keylock and rotary switches for PCB

Rotary switch IP40



Pict.: charcoal grey

view on component side of PCB

Technical data

General information

Colour	see order block
Form of collar	square

Dimensions

Length of collar	19 mm
Width of collar	19 mm
Overall height	24 mm

Mechanical design

Mounting	soldering
Terminals	tin-plated
Contact system / arrangement	cross contact self cleaning
Contact function	see order block
Contact materials	Au alloy
Illuminability	no

Mechanical characteristics

Torque against stop min.	0.45 Nm
Rated power max.	1 W

Electrical characteristics

Rated voltage max.	42 V
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Other specifications

Rotating angle	see order block
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Electrical characteristics

Rated current max.	100 mA
Contact resistance when new max.	100 mΩ
Contact resistance acc. to life max.	200 mΩ
Insulation resistance	10 ⁹ Ω

Other specifications

Operating life	50000
Degree of protection from front side	IP40
Ambient temp. operating min.	-25 °C
Ambient temp. operating max.	+70 °C
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C
Resistance to constant environment	according to IEC 600 68-2-3 and 2-30
Resistance at variable environment	according to IEC 600 68-2-14 and 2-33
Flammability	UL 94 HB

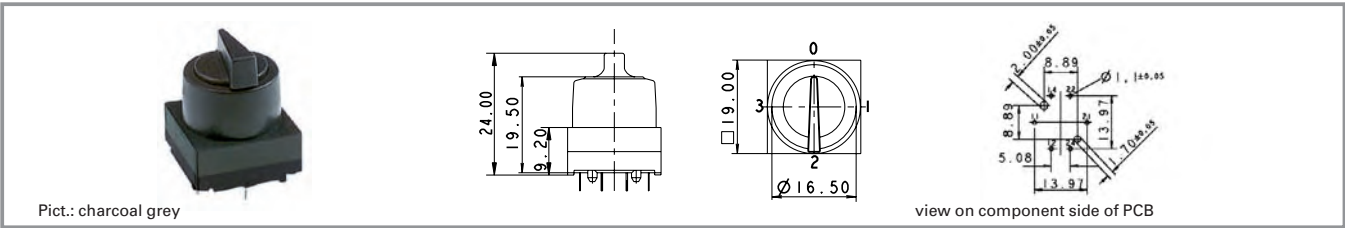
Electrical characteristics

ESD strength max.	8 KV
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Keylock and rotary switches for PCB

Rotary switch IP40



Contact function	Colour	Rotating angle		Order no.
latching	charcoal grey	1 x 90°		3.13.007.001/0000
latching	charcoal grey	2 x 90°		3.13.007.011/0000
latching	charcoal grey	3 x 90°		3.13.007.021/0000
latching	charcoal grey	4 x 90°		3.13.007.031/0000

Technical data see page 4 - 148

Other colour variants available on request
For the switching arrangement, see IP54 MICROMECC keylock switch.