NEW:
Contact blocks with quick-connect terminals

RAFIX 22 FS
The New Complete Control Component Range
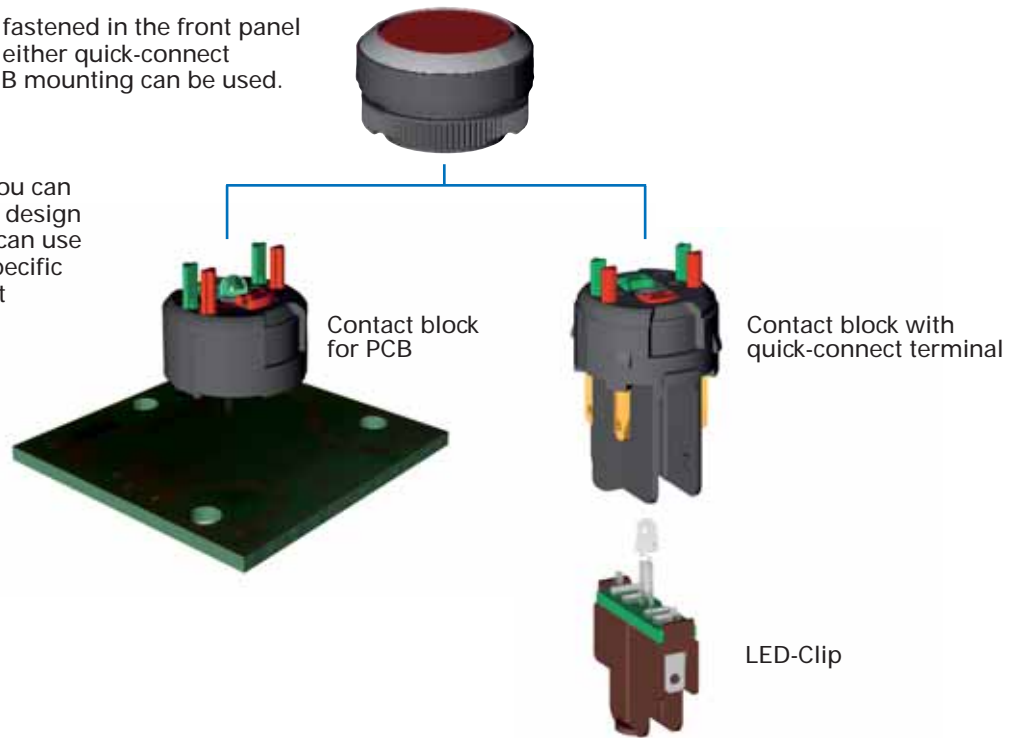
RAFI
SOLUTIONS WITH PASSION

Control component series

RAFIX 22 FS control components always consist of a combination of an actuator and a contact block or a signal indicator and a lamp socket / LED.

The large and rugged actuators are fastened in the front panel with a ring nut. Contact blocks with either quick-connect terminals or solder terminals for PCB mounting can be used.

Design
With the variable design concept, you can realise an individual and up-to-date design for your system! For example, you can use different frontrings to select your specific design or assign colours to different commands.

Contact block for PCB

Contact block with quick-connect terminal

LED-Clip

2

Actuators and indicators

The RAFIX 22 FS series offers numerous actuators with a round or square collar shape:

- **Pushbuttons**
  - Optionally illuminated and opaque
  - With flush or raised lens
  - With flush or raised front ring

- **Selector switches**
  - Angle between positions 40° / 60° / 90°
  - Latching / momentary
  - Illuminated / non-illuminated

- **Keylock switches**
  - Angle between positions 40° / 90°
  - Latching / momentary

- **Signal indicators**
  - White / yellow / green / red / blue

- **Emergency stop pushbuttons to EN 418**
  - Unlatch by turning or pulling
  - Illuminated or non-illuminated

Essential features

- Various front ring types, metallized or plastic (in different colours)
- Large actuating area with very good tactile properties
- Designed for panel cut-out 22.3 mm with locating indent to IEC 60 947
- Min. grid spacing of 30 x 30 mm is possible
- Degree of protection IP65
- Suitable for legending

RAFIX 22 FS

Contact blocks with quick-connect terminals

27 mm

System
RAFI offers contact blocks with quick-connect terminals for the tried and tested RAFIX 22 FS actuator series. The contact block snaps into the actuator with a gentle >>> *click* <<< and is thereby fitted permanently.

Concept
For those applications where designing a PCB layout is too expensive or not possible at all, a new option has been made available by complementing the series. Catch noses provided on the new contact block snap precisely into the actuator. The screw neck of the actuator is provided with indents safeguarding a reliable union.
The connection of the contact block is easily made by conventional quick-connect terminals on the rear end. A fin arranged at the centre of the contact blocks with quick-connect terminals helps to ensure good insulation. It serves as a guide for the LED-Clip at the same time.
The new contact block with quick-connect terminals makes the RAFIX 22 FS series complete and perfect. Any external control components can be integrated into the system very easily and without needing any tools and you save space, effort and material.

Essential features
- Snap-in mounting into the actuator screw neck
- Depth behind panel 27 mm
- Socket for LED-Clip

Contact blocks for PCB mounting

9,2 mm

System
The extremely low mounting depth enables you to use the control component as an integrated building block of your system solution.

Concept
You can include the RAFIX 22 FS contact blocks into your PCB layout and arrange them next to other components. The contact blocks float directly behind the actuator on the printed circuit board at a distance of only 9.2 mm behind the front panel, leaving lots and lots of space for other components. Illumination can be provided easily by simply inserting a 3 mm LED into the central hole. With the RAFIX 22 FS concept, you save *space*, *effort* and *material*.

Essential features
- Mounting on printed circuit board 9.2 mm behind the front panel (actuator floats over contact block)
- Can be combined with RAFI short-travel keyswitches RF, RACON, KN 19 and MICON 5
- Optionally illuminated by 3 mm LED

2

RAFIX
22 FS

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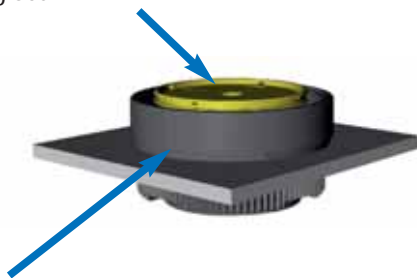
Actuators

Numerous design options for individual panels

RAFIX 22 FS is available with many options. The various front ring and lens types available offer you nearly unlimited design options for your panels.
RAFIX 22 FS is available with a round or a square collar. The square version can be arranged one collar to the next just as an integral keypad.

2

RAFIX 22 FS

O-ring seal

Cast-on collar seal

Sealed against moisture and dirt

The O-ring seals the space between the lens and the actuator. The cast-on collar seal cannot be lost or distorted during assembly.

The special membrane seal reliably prevents moisture, oil or dust from penetrating the contact block.
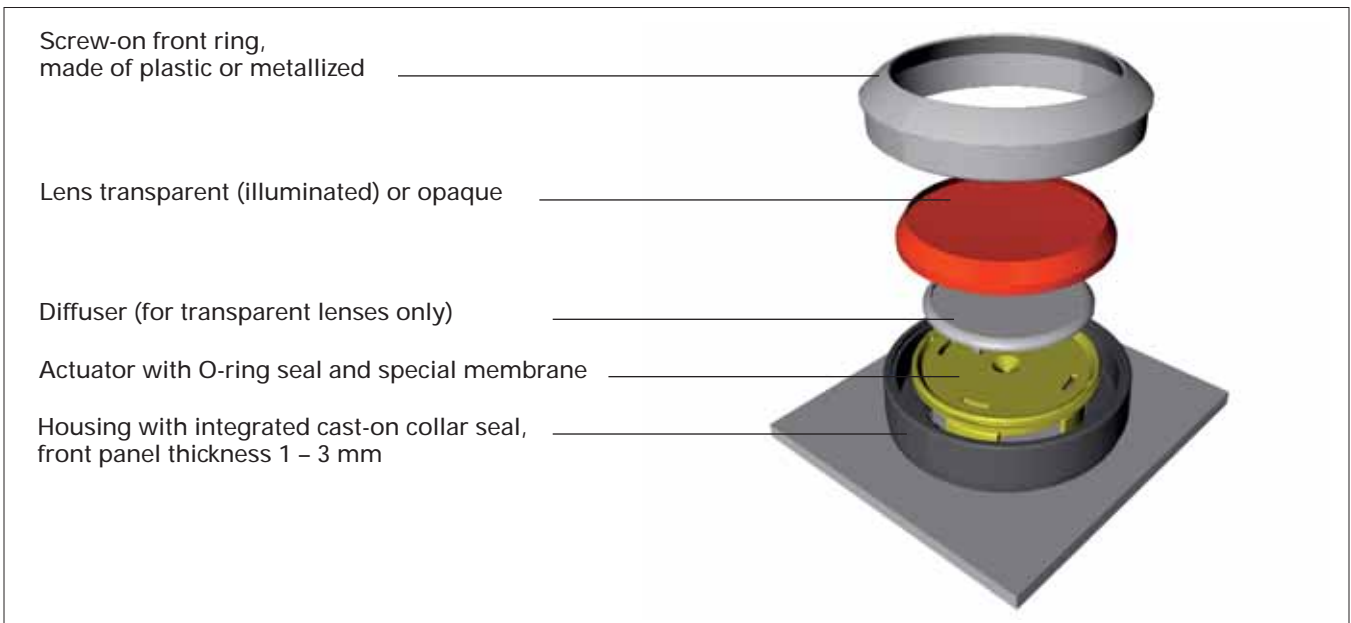In contrast with seals sliding up and down along the shaft, the special membrane seal is arranged in a fixed position on the housing. This ensures switching reliability for the full operating life (degree of protection IP 65 to DIN).

Special sealing

Single-handed assembly method

With the single-handed assembly method, the actuator is held in the mounting hole by the cast-on seal and can then be fixed by screwing on the ring nut from the rear.

RAFIX 22 FS Actuators

Screw-on front ring,
made of plastic or metallized

Lens transparent (illuminated) or opaque

Diffuser (for transparent lenses only)

Actuator with O-ring seal and special membrane

Housing with integrated cast-on collar seal,
front panel thickness 1 – 3 mm

2

The actuators and signal indicators are fastened to the front panel with a threaded ring in a 22.3 mm panel cut-out to IEC 60947. The cast-on collar seal made of thermoflex and an integrated special membrane provides a water-jet proof degree of protection IP 65 to DIN.

View on front side of front panel
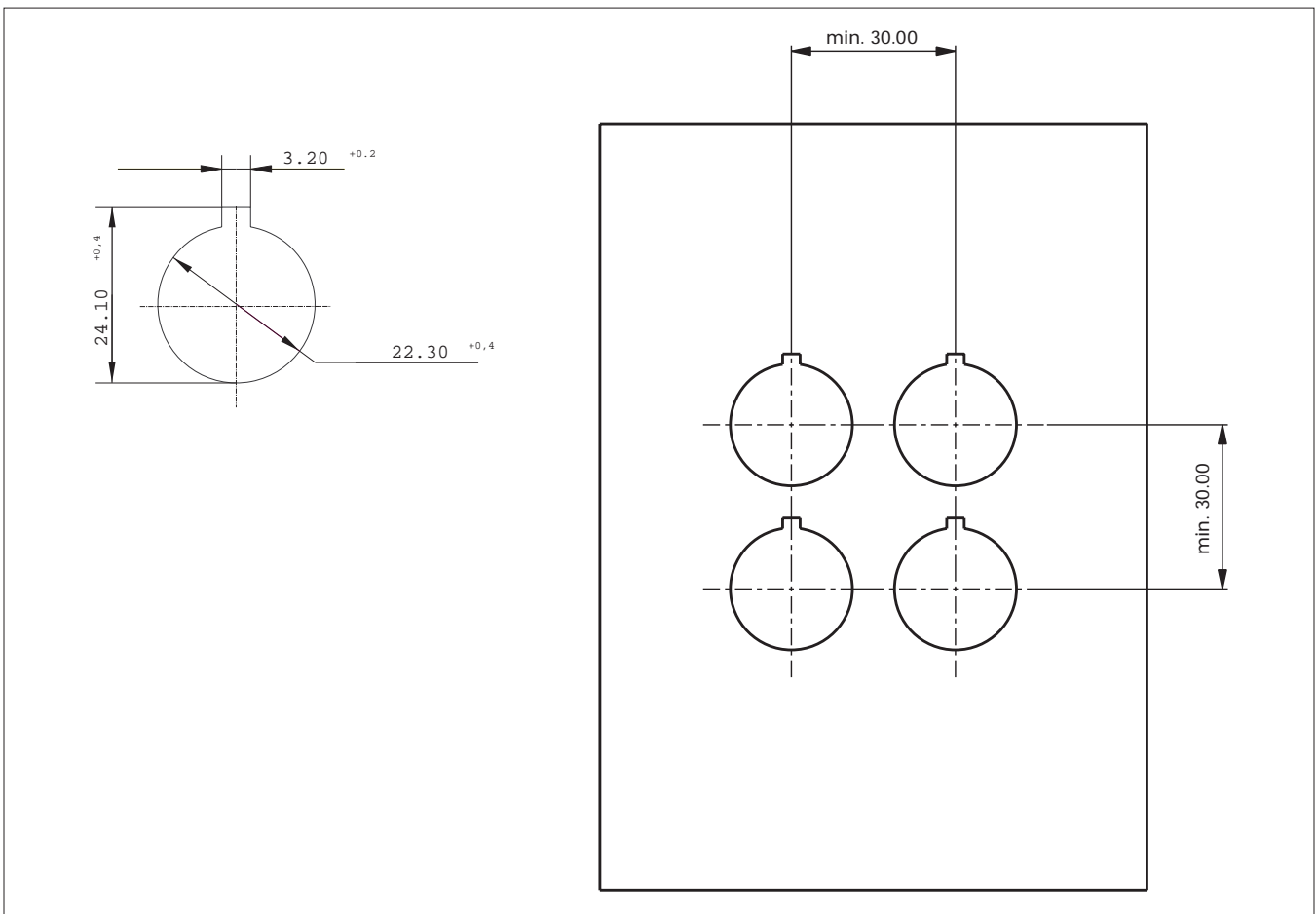
RAFIX
22 FS

min. 30.00

3.20 +0.2

24.10 +0.4

22.30 +0.4

min. 30.00

Panel cut-out to IEC 60947
All actuators are provided with a locating pip.
With a grid spacing of 30 mm, the collars of the square actuators are arranged next to each other without a space in between. We recommend to use this grid spacing also for the round collar shapes (IEC 60947).

RAFIX 22 FS pushbuttons

Pict.: green/silver-grey

Pict.: silver/blue

Panel cut-out to IEC 60947-5-1

2

RAFIX 22 FS

Technical data

General information
Form of lens	see order block
Colour of lens	see order block
Frontringfarbe	see order block
Form of collar	see order block

Einbaumaße
Length of collar	see order block
Width of collar	see order block
Overall height	see order block
Mounting hole	22.3 mm
Key grid	30 x 30 mm
Diameter of collar	see order block

Mechanical design
Mounting	ring nut
Contact function	see order block
Illuminability	yes

Mechanical characteristics
|	
Operating travel	4 mm
Robustness min.	100 N

Other specifications
Ambient temp. operating min.	-25 °C
Ambient temp. operating max.	+70 °C
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C
Operating life	1 million momentary/ 0.5 million latching
Degree of protection from front side	IP65
Resistance to constant environment	IEC 600 68-2-3 und 2-30
Resistance at variable environment	IEC 600 68-2-14 und 2-33

Typical accessories RAFIX 22 FS pushbuttons

Description	Photo	Order no.	Additional accessories see page
RAFIX 22 FS Universal contact block, 1 NC + 1NO, gold contacts, quick-connect terminals		**1.20.126.103/0000**	27
RAFIX 22 FS Universal contact block, 1 NC + 1 NO, silver contacts, quick-connect terminals		**1.20.126.303/0000**	29
RAFIX 22 FS Universal contact block, 1 NC + 1 NO, gold contacts, PCB		**1.20.126.003/0000**	32
RAFIX 22 FS Universal contact block, silver contacts, 1 NO, PCB		**1.20.126.202/0000**	34
Fixing spanner for ring nut and front ring		**5.05.800.062/0000**	36

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

Control components

RAFIX 22 FS pushbutton, flush lens, round collar
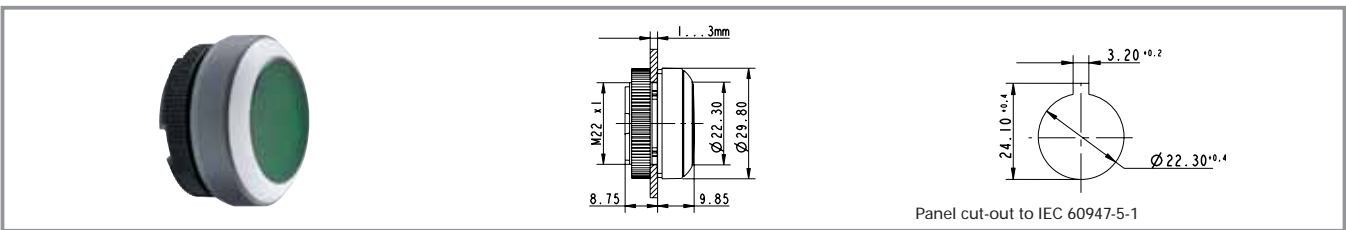
Panel cut-out to IEC 60947-5-1

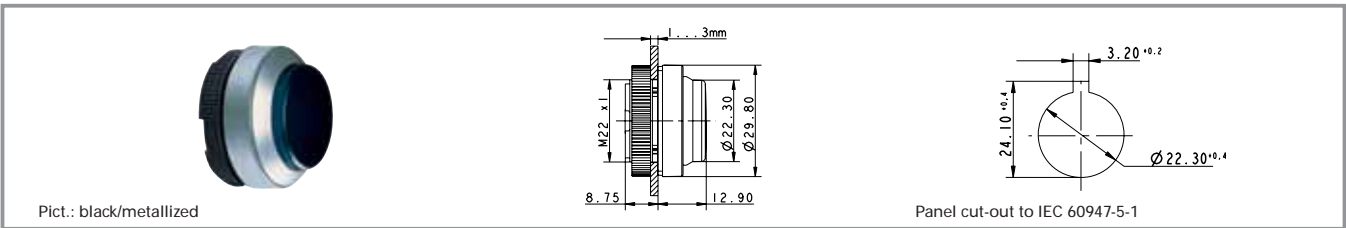| Illuminability	Colour of lens	Order no. momentary		Order no. latching	
		Plastic front ring	**Metallized front ring**	**Plastic front ring**	**Metallized front ring**
yes	transparent white	1.30.250.001/10xx	**1.30.250.021/1000**	1.30.250.011/10xx	**1.30.250.031/1000**
yes	transparent red	1.30.250.001/13xx	**1.30.250.021/1300**	1.30.250.011/13xx	**1.30.250.031/1300**
yes	transparent yellow	1.30.250.001/14xx	**1.30.250.021/1400**	1.30.250.011/14xx	**1.30.250.031/1400**
yes	transparent green	1.30.250.001/15xx	**1.30.250.021/1500**	1.30.250.011/15xx	**1.30.250.031/1500**
yes	transparent blue	1.30.250.001/16xx	**1.30.250.021/1600**	1.30.250.011/16xx	**1.30.250.031/1600**
no	opaque black	1.30.250.101/01xx	**1.30.250.121/0100**	1.30.250.111/01xx	1.30.250.131/0100
no	opaque white	1.30.250.101/02xx	**1.30.250.121/0200**	1.30.250.111/02xx	1.30.250.131/0200
no	opaque red	1.30.250.101/03xx	**1.30.250.121/0300**	1.30.250.111/03xx	1.30.250.131/0300
no	opaque yellow	1.30.250.101/04xx	**1.30.250.121/0400**	1.30.250.111/04xx	1.30.250.131/0400
no	opaque green	1.30.250.101/05xx	**1.30.250.121/0500**	1.30.250.111/05xx	1.30.250.131/0500
no	opaque blue	1.30.250.101/06xx	**1.30.250.121/0600**	1.30.250.111/06xx	1.30.250.131/0600
no	opaque slate-grey	1.30.250.101/07xx	**1.30.250.121/0700**	1.30.250.111/07xx	1.30.250.131/0700

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RAFIX
22 FS

Accessories:
Plastic frontring black with protection cap: 5.05.004.986/0100
Plastic frontring red with protection cap: 5.05.004.986/0300
Plastic frontring yellow with protection cap: 5.05.004.986/0400
Plastic frontring green with protection cap: 5.05.004.986/0500
Plastic frontring blue with protection cap: 5.05.004.986/0600
Plastic frontring slate grey with protection cap: 5.05.004.986/0700
Plastic frontring silver grey with protection cap: 5.05.004.986/0800
Legend insert without legend, only for transparent lenses: 5.70.800.000/2000

xx = Front ring colour: black = 01, red = 03, yellow = 04, green = 05, blue = 06, slate grey = 07, silver grey = 08

Order numbers **1.30.250.001/—08** and **1.30.250.011/—08** (with silver grey plastic front ring) are **stock items**.

RAFIX 22 FS pushbutton, protruding lens, round collar

Pict.: black/metallized

Panel cut-out to IEC 60947-5-1

Illuminability	Colour of lens	Order no. momentary		Order no. momentary	
		Plastic front ring	**Metallized front ring**	**Plastic front ring**	**Metallized front ring**
yes	transparent white	1.30.250.201/10xx	**1.30.250.221/1000**	1.30.250.211/10xx	**1.30.250.231/1000**
yes	transparent red	1.30.250.201/13xx	**1.30.250.221/1300**	1.30.250.211/13xx	**1.30.250.231/1300**
yes	transparent yellow	1.30.250.201/14xx	**1.30.250.221/1400**	1.30.250.211/14xx	**1.30.250.231/1400**
yes	transparent green	1.30.250.201/15xx	**1.30.250.221/1500**	1.30.250.211/15xx	**1.30.250.231/1500**
yes	transparent blue	1.30.250.201/16xx	**1.30.250.221/1600**	1.30.250.211/16xx	**1.30.250.231/1600**
no	opaque black	1.30.250.301/01xx	1.30.250.321/0100	1.30.250.311/01xx	1.30.250.331/0100
no	opaque white	1.30.250.301/02xx	1.30.250.321/0200	1.30.250.311/02xx	1.30.250.331/0200
no	opaque red	1.30.250.301/03xx	1.30.250.321/0300	1.30.250.311/03xx	1.30.250.331/0300
no	opaque yellow	1.30.250.301/04xx	1.30.250.321/0400	1.30.250.311/04xx	1.30.250.331/0400
no	opaque green	1.30.250.301/05xx	1.30.250.321/0500	1.30.250.311/05xx	1.30.250.331/0500
no	opaque blue	1.30.250.301/06xx	1.30.250.321/0600	1.30.250.311/06xx	1.30.250.331/0600
no	opaque slate-grey	1.30.250.301/07xx	1.30.250.321/0700	1.30.250.311/07xx	1.30.250.331/0700

Technical data see page 6

Accessories:
Legend insert without legend, only for transparent versioons: **5.70.802.000/2000**
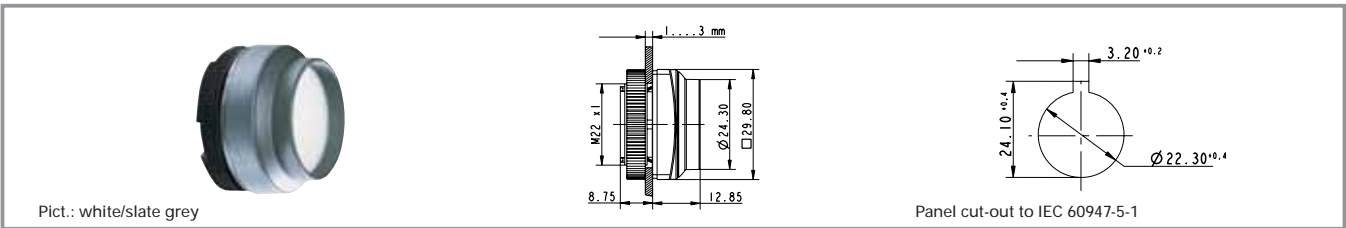
xx = Front ring colour: black = 01, red = 03, yellow = 04, green = 05, blue = 06, slate grey = 07, silver grey = 08

Order numbers **1.30.250.201/—08** and **1.30.250.211/—08** (with silver grey plastic front ring) are **stock items**.

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

Control components

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RAFIX
22 FS

RAFIX 22 FS pushbutton, protruding front ring, round collar

Pict.: white/slate grey

Panel cut-out to IEC 60947-5-1

Illuminability	Colour of lens	Order no. momentary		Order no. latching	
		Plastic front ring	**Metallized front ring**	**Plastic front ring**	**Metallized front ring**
yes	transparent white	1.30.250.401/10xx	1.30.250.421/1000	-	-
yes	transparent red	1.30.250.401/13xx	1.30.250.421/1300	-	-
yes	transparent yellow	1.30.250.401/14xx	1.30.250.421/1400	-	-
yes	transparent green	1.30.250.401/15xx	1.30.250.421/1500	-	-
yes	transparent blue	1.30.250.401/16xx	1.30.250.421/1600	-	-
no	opaque black	1.30.250.501/01xx	1.30.250.521/0100	-	-
no	opaque white	1.30.250.501/02xx	1.30.250.521/0200	-	-
no	opaque red	1.30.250.501/03xx	1.30.250.521/0300	-	-
no	opaque yellow	1.30.250.501/04xx	1.30.250.521/0400	-	-
no	opaque green	1.30.250.501/05xx	1.30.250.521/0500	-	-
no	opaque blue	1.30.250.501/06xx	1.30.250.521/0600	-	-
no	opaque slate-grey	1.30.250.501/07xx	1.30.250.521/0700	-	-

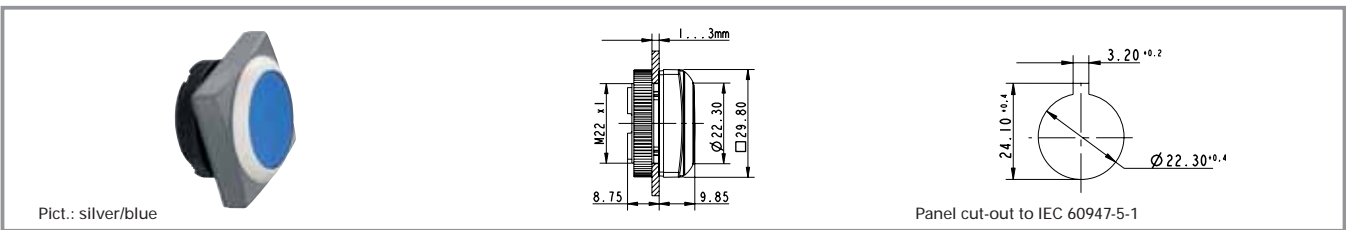Technical data see page 6

Accessories:
Legend insert without legend, only for transparent versions: 5.70.800.000/2000

xx = Front ring colour: black = 01, red = 03, yellow = 04, green = 05, blue = 06, slate grey = 07, silver grey = 08

2

RAFIX
22 FS

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

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RAFIX 22 FS

RAFIX 22 FS pushbutton, flush lens, square collar

Pict.: silver/blue

Panel cut-out to IEC 60947-5-1

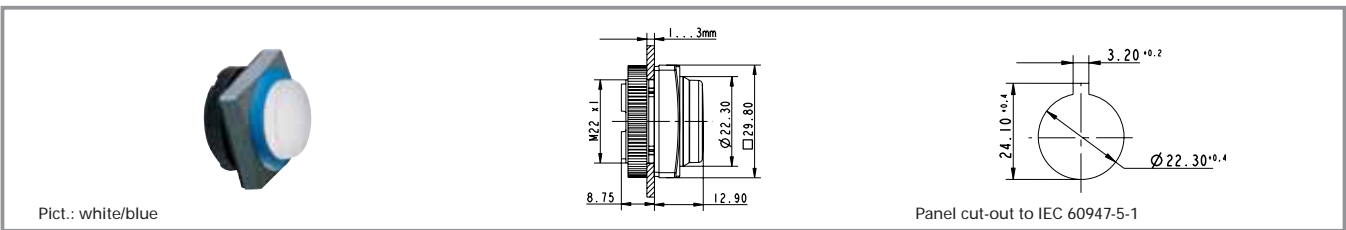| Illuminability	Colour of lens	Order no. momentary		Order no. latching	
		Plastic front ring	Metallized front ring	Plastic front ring	Metallized front ring
yes	transparent white	1.30.250.051/10xx	**1.30.250.071/1000**	1.30.250.061/10xx	**1.30.250.081/1000**
yes	transparent red	1.30.250.051/13xx	**1.30.250.071/1300**	1.30.250.061/13xx	**1.30.250.081/1300**
yes	transparent yellow	1.30.250.051/14xx	**1.30.250.071/1400**	1.30.250.061/14xx	**1.30.250.081/1400**
yes	transparent green	1.30.250.051/15xx	**1.30.250.071/1500**	1.30.250.061/15xx	**1.30.250.081/1500**
yes	transparent blue	1.30.250.051/16xx	**1.30.250.071/1600**	1.30.250.061/16xx	**1.30.250.081/1600**
no	opaque black	1.30.250.151/01xx	**1.30.250.171/0100**	1.30.250.161/01xx	1.30.250.181/0100
no	opaque white	1.30.250.151/02xx	**1.30.250.171/0200**	1.30.250.161/02xx	1.30.250.181/0200
no	opaque red	1.30.250.151/03xx	**1.30.250.171/0300**	1.30.250.161/03xx	1.30.250.181/0300
no	opaque yellow	1.30.250.151/04xx	**1.30.250.171/0400**	1.30.250.161/04xx	1.30.250.181/0400
no	opaque green	1.30.250.151/05xx	**1.30.250.171/0500**	1.30.250.161/05xx	1.30.250.181/0500
no	opaque blue	1.30.250.151/06xx	**1.30.250.171/0600**	1.30.250.161/06xx	1.30.250.181/0600
no	opaque slate-grey	1.30.250.151/07xx	**1.30.250.171/0700**	1.30.250.161/07xx	1.30.250.181/0700

Technical date see page 6

Accessories:
Plastic frontring black with protection cap: 5.05.004.986/0100
Plastic frontring red with protection cap: 5.05.004.986/0300
Plastic frontring yellow with protection cap: 5.05.004.986/0400
Plastic frontring green with protection cap: 5.05.004.986/0500
Plastic frontring blue with protection cap: 5.05.004.986/0600
Plastic frontring slate grey with protection cap: 5.05.004.986/0700
Plastic frontring silver grey with protection cap: 5.05.004.986/0800
Legend insert without legend, only for transparent versions: 5.70.800.000/2000

xx = Front ring colour: black = 01, red = 03, yellow = 04, green = 05, blue = 06, slate grey = 07, silver grey = 08

Order numbers **1.30.250.051/—08** and **1.30.250.061/—08** (with silver grey plastic front ring) are **stock items**.

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

RAFIX 22 FS pushbutton, protruding lens, square collar

Pict.: white/blue

Panel cut-out to IEC 60947-5-1

Illuminability	Colour of lens	Order no. momentary		Order no. latching	
		Plastic front ring	Metallized front ring	Plastic front ring	Metallized front ring
yes	transparent white	1.30.250.251/10xx	**1.30.250.271/1000**	1.30.250.261/10xx	**1.30.250.281/1000**
yes	transparent red	1.30.250.251/13xx	**1.30.250.271/1300**	1.30.250.261/13xx	**1.30.250.281/1300**
yes	transparent yellow	1.30.250.251/14xx	**1.30.250.271/1400**	1.30.250.261/14xx	**1.30.250.281/1400**
yes	transparent green	1.30.250.251/15xx	**1.30.250.271/1500**	1.30.250.261/15xx	**1.30.250.281/1500**
yes	transparent blue	1.30.250.251/16xx	**1.30.250.271/1600**	1.30.250.261/16xx	**1.30.250.281/1600**
no	opaque black	1.30.250.351/01xx	1.30.250.371/0100	1.30.250.361/01xx	1.30.250.381/0100
no	opaque white	1.30.250.351/02xx	1.30.250.371/0200	1.30.250.361/02xx	1.30.250.381/0200
no	opaque red	1.30.250.351/03xx	1.30.250.371/0300	1.30.250.361/03xx	1.30.250.381/0300
no	opaque yellow	1.30.250.351/04xx	1.30.250.371/0400	1.30.250.361/04xx	1.30.250.381/0400
no	opaque green	1.30.250.351/05xx	1.30.250.371/0500	1.30.250.361/05xx	1.30.250.381/0500
no	opaque blue	1.30.250.351/06xx	1.30.250.371/0600	1.30.250.361/06xx	1.30.250.381/0600
no	opaque slate-grey	1.30.250.351/07xx	1.30.250.371/0700	1.30.250.361/07xx	1.30.250.381/0700

2

RAFIX
22 FS

Technical data see page 6

Accessories:
Legend insert without legend, only for transparent versions: **5.70.802.000/2000**

xx = Front ring colour: black = 01, red = 03, yellow = 04, green = 05, blue = 06, slate grey = 07, silver grey = 08

Order numbers **1.30.250.251/—08** and **1.30.250.261/—08** (with silver grey plastic front ring) are **stock items**.
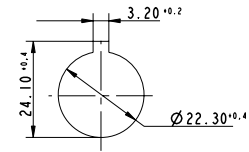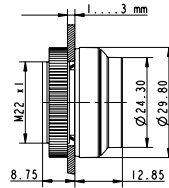
RAFIX 22 FS pushbutton, protruding front ring

Pict.: green/metallized

Panel cut-out to IEC 60947-5-1

Illuminability	Colour of lens	Order no. momentary		Order no. latching	
		Plastic front ring	**Metallized front ring**	**Plastic front ring**	**Metallized front ring**
yes	transparent white	1.30.250.451/10xx	1.30.250.471/1000	-	-
yes	transparent red	1.30.250.451/13xx	1.30.250.471/1300	-	-
yes	transparent yellow	1.30.250.451/14xx	1.30.250.471/1400	-	-
yes	transparent green	1.30.250.451/15xx	1.30.250.471/1500	-	-
yes	transparent blue	1.30.250.451/16xx	1.30.250.471/1600	-	-
no	opaque black	1.30.250.551/01xx	1.30.250.571/0100	-	-
no	opaque white	1.30.250.551/02xx	1.30.250.571/0200	-	-
no	opaque red	1.30.250.551/03xx	1.30.250.571/0300	-	-
no	opaque yellow	1.30.250.551/04xx	1.30.250.571/0400	-	-
no	opaque green	1.30.250.551/05xx	1.30.250.571/0500	-	-
no	opaque blue	1.30.250.551/06xx	1.30.250.571/0600	-	-
no	opaque slate-grey	1.30.250.551/07xx	1.30.250.571/0700	-	-

Technical date see page 6

Accessories:
Legend insert without legend, only for transparent versions: 5.70.800.000/2000

xx = Front ring colour: black = 01, red = 03, yellow = 04, green = 05, blue = 06, slate grey = 07, silver grey = 08

Stock items are marked
by bold printed order numbers.

Control components

RAFI
SOLUTIONS WITH PASSION

RAFIX 22 FS selector switches

Pict.: Front ring, silver grey, illuminated

Pict.: Front ring, metallized, non-illuminated

Panel cut-out to IEC 60947-5-1

3.20 +0.2
24.10 +0.4
Ø 22.30 +0.4

2

General data

The illuminated selector switches are provided with translucent handle markings. These are opaque on the non-illuminated versions.

Technical data

General information

Actuator	handle
Marking of handle	translucent/opaque white
Colour of front ring	see order block
Form of collar	see order block

Dimensions

Length of collar	see order block
Width of collar	see order block
Overall height	22.24 mm
Mounting hole	22.3 mm
Key grid	30 x 30 mm
Diameter of collar	see order block

Mechanical design

Mounting	ring nut
Contact function	see order block
Illuminability	yes
Rotating angle	see order block

Mechanical characteristics

Torque max.	1.5 Nm

Other specifications

Operating life	0.5 million momentary/ 0.5 million latching
Degree of protection from front side	IP65
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

RAFIX
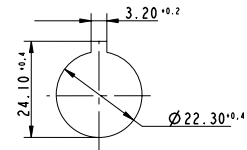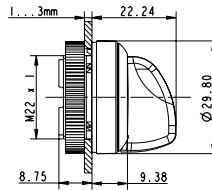22 FS

Typical accessories RAFIX 22 FS selector switches

Description	Photo	Order no.	Additional accessories see page
RAFIX 22 FS Universal contact block, 1 NC + 1 NO, gold contacts, quick-connect terminals		**1.20.126.002/0000**	27
RAFIX 22 FS Universal contact block, 1 NC + 1 NO, silver contacts, quick-connect terminals		**1.20.126.201/0000**	29
RAFIX 22 FS Universal contact block, gold contacts, 1 NO, PCB		**1.20.126.002/0000**	32
RAFIX 22 FS Universal contact block, silver contacts, 1 NC, PBC		**1.20.126.201/0000**	34

For additional accessories, refer to the chapter "Special accessories".

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

RAFIX 22 FS selector switch, round collar

Pict.: Front ring, silver grey, illuminated

Panel cut-out to IEC 60947-5-1

Illuminability	Contact function	Rotating angle	Rotating angle	Order no.	
				Plastic front ring	Metallized front ring
yes	momentary	1 x 40°		1.30.252.001/22xx	**1.30.252.002/2200**
yes	momentary	2 x 40°		1.30.252.026/22xx	**1.30.252.027/2200**
yes	latching	1 x 90°, form L		1.30.252.101/22xx	**1.30.252.102/2200**
yes	latching	2 x 90°		1.30.252.126/22xx	1.30.252.127/2200
yes	latching	1 x 90°, form V		1.30.252.201/22xx	**1.30.252.202/2200**
yes	latching	2 x 60°		1.30.252.301/22xx	**1.30.252.302/2200**
no	momentary	1 x 40°		1.30.252.501/02xx	**1.30.252.502/0200**
no	momentary	2 x 40°		1.30.252.526/02xx	**1.30.252.527/0200**
no	latching	1 x 90°, form L		1.30.252.601/02xx	**1.30.252.602/0200**
no	latching	2 x 90°		1.30.252.626/02xx	1.30.252.627/0200
no	latching	1 x 90°, form V		1.30.252.701/02xx	**1.30.252.702/0200**
no	latching	2 x 60°		1.30.252.801/02xx	**1.30.252.802/0200**

Technical date see page 13

xx = Front ring colour: black = 01, red = 03, yellow = 04, green = 05, blue = 06, slate grey = 07, silver grey = 08

Other contact functions and handle marking colours available on request.

For coloured illumination of the handle marking please use coloured LED (see page 39).

The following selector switches with silver grey plastic front ring are stock items:
Illuminated: **1.30.242.001/2208**, **1.30.242.026/2208**, **1.30.242.101/2208**, **1.30.242.201/2208**, **1.30.242.301/2208**
Non-illuminated: **1.30.242.501/0208**, **1.30.242.526/0208**, **1.30.242.601/0208**, **1.30.242.701/0208**, **1.30.242.801/0208**

Stock items are marked
by bold printed order numbers.

Control components

RAFIX 22 FS selector switch, square collar
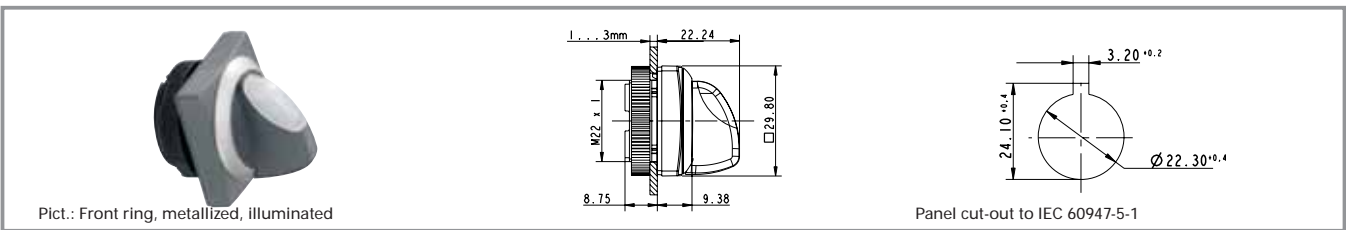
Pict.: Front ring, metallized, illuminated

Panel cut-out to IEC 60947-5-1

Illuminability	Contact function	Rotating angle	Rotating angle	Order no.	
				Plastic front ring	Metallized front ring
yes	momentary	1 x 40°		1.30.252.051/22xx	**1.30.252.052/2200**
yes	momentary	2 x 40°		1.30.252.076/22xx	**1.30.252.077/2200**
yes	latching	1 x 90°, form L		1.30.252.151/22xx	**1.30.252.152/2200**
yes	latching	2 x 90°		1.30.252.176/22xx	1.30.252.177/2200
yes	latching	1 x 90°, Form V		1.30.252.251/22xx	**1.30.252.252/2200**
yes	latching	2 x 60°		1.30.252.351/22xx	**1.30.252.352/2200**
no	momentary	1 x 40°		1.30.252.551/02xx	**1.30.252.552/0200**
no	momentary	2 x 40°		1.30.252.576/02xx	**1.30.252.577/0200**
no	latching	1 x 90°, form L		1.30.252.651/02xx	**1.30.252.652/0200**
no	latching	2 x 90°		1.30.252.676/02xx	1.30.252.677/0200
no	latching	1 x 90°, form V		1.30.252.751/02xx	**1.30.252.752/0200**
no	latching	2 x 60°		1.30.252.851/02xx	**1.30.252.852/0200**

Technical data see page 13

xx = Front ring colour: black = 01, red = 03, yellow = 04, green = 05, blue = 06, slate grey = 07, silver grey = 08

Other contact functions and handle marking colours available on request.

For coloured illumination of the handle marking please use coloured LED (see page 39).

The following selector switches with silver grey plastic front ring are stock items:
Illuminated: **1.30.252.051/2205**, **1.30.252.076/2208**, **1.30.252.151/2208**, **1.30.252.251/2208**, **1.30.252.351/2208**
Non-illuminated: **1.30.252.551/0208**, **1.30.252.576/0208**, **1.30.252.651/0208**, **1.30.252.751/0208**, **1.30.252.851/0208**

2

RAFIX
22 FS

2

RAFIX 22 FS keylock switch

Pict.: Front ring blue

Pict.: Front ring red

Panel cut-out to IEC 60947-5-1

Technical data

General information

Colout of front ring	see order block
Form of collar	see order block

Dimensions

Length of collar	see order block
Width of collar	see order block
Overall height	44.1 mm
Mounting hole	22.3 mm
Key grid	30 x 30 mm
Diameter of collar	see order block

Mechanical design

Mounting	ring nut
Lock	Micromec
Contact function	see order block
Illuminability	no
Wafers	5
Lock type	001
Number of locking positions	500
Main key	no
Symmetric key	no
Rotating angle	see order block
Key removal position	see order block

Mechanical characteristics

Torque max.	1.3 Nm

Other specifications

|	
Operating life	0.3 million momentary / 50000 latching
Degree of protection from front side	IP65
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
ESD-strength lock / contact	15 kV
ESD-strength key/ front panel	15 kV

Typical accessories RAFIX 22 FS keylock switch

Description	Photo	Order no.	Additional accessories see page
RAFIX 22 FS Universal contact block, 1 NC + 1 NO, gold contacts, quick-connect terminals		**1.20.126.103/0000**	27
RAFIX 22 FS Universal contact block, 1 NC + 1 NO, silver contacts, quick-connect terminals		**1.20.126.303/0000**	29
RAFIX 22 FS Universal contact block, 1 NC, gold contacts, PCB		**1.20.126.001/0000**	32
RAFIX 22 FS Universal contact block, 1 NC + 1 NO, silver contacts		**1.20.126.203/0000**	34
Spare key, for single action, e.g. 1 x 90° (delivery content 1 key)		5.58.007.001/0000	
Spare key, for double action, e.g. 2 x 90° (delivery content 2 keys)		5.58.008.001/0000	

For additional accessories, refer to the chapter "Special accessories".

Control components

RAFIX 22 FS keylock switch, round collar
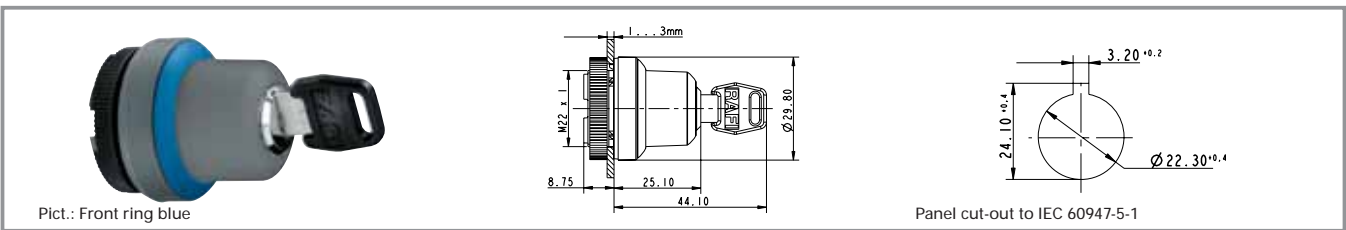
Pict.: Front ring blue

Panel cut-out to IEC 60947-5-1

Contact function	Rotating angle	Key removal position	Rotating angle	Order no.	
				Plastic front ring	**Metallized front ring**
momentary	1 x 40°	0		1.30.255.001/xxxx	**1.30.255.002/0000**
momentary	2 x 40°	0		1.30.255.101/xxxx	1.30.255.102/0000
latching	1 x 90°, form L	0		1.30.255.201/xxxx	**1.30.255.202/0000**
latching	1 x 90°, form L	0+1		1.30.255.221/xxxx	**1.30.255.222/0000**
latching	1 x 90°, form V	0		1.30.255.301/xxxx	**1.30.255.302/0000**
latching	1 x 90°, form V	0+1		1.30.255.321/xxxx	**1.30.255.322/0000**
latching	2 x 90°	0		1.30.255.401/xxxx	1.30.255.402/0000
latching	2 x 90°	0+1+2		1.30.255.431/xxxx	**1.30.255.432/0000**

xxxx = Front ring colour: black = 0100, red = 0300, yellow = 0400, green = 0500, blue = 0600, slate grey = 0700, silver grey = 0800
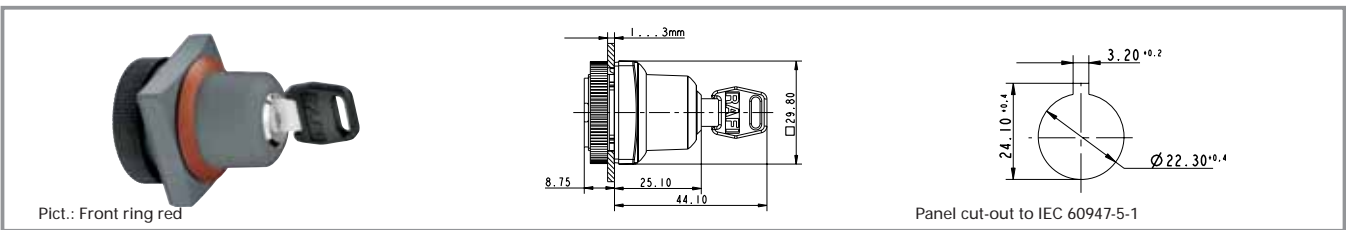
Other lock variants available on request.
Included: 2 keys.

The following keylock switches with silver grey plastic front ring are stock items: **1.30.255.001/0800**, **1.30.255.201/0800**, **1.30.255.221/0800**, **1.30.255.301/0800**, **1.30.255.321/0800**, **1.30.255.431/0800**

2

RAFIX
22 FS

RAFIX 22 FS keylock switch, square collar

Pict.: Front ring red

Panel cut-out to IEC 60947-5-1

Contact function	Rotating angle	Key removal position	Rotating angle	Order no.	
				Plastic front ring	Metallized front ring
momentary	1 x 40°	0		1.30.255.051/xxxx	**1.30.255.052/0000**
momentary	2 x 40°	0		1.30.255.151/xxxx	1.30.255.152/0000
latching	1 x 90°, form L	0		1.30.255.251/xxxx	**1.30.255.252/0000**
latching	1 x 90°, form L	0+1		1.30.255.271/xxxx	**1.30.255.272/0000**
latching	1 x 90°, form V	0		1.30.255.351/xxxx	**1.30.255.352/0000**
latching	1 x 90°, form V	0+1		1.30.255.371/xxxx	**1.30.255.372/0000**
latching	2 x 90°	0		1.30.255.451/xxxx	1.30.255.452/0000
latching	2 x 90°	0+1+2		1.30.255.481/xxxx	**1.30.255.482/0000**

Technical data see page 16

xxxx = Front ring colour: black = 0100, red = 0300, yellow = 0400, green = 0500, blue = 0600, slate grey = 0700, silver grey = 0800

Other lock variants available on request.
Included: 2 keys.

The following keylock switches with silver grey plastic front ring are stock items: **1.30.255.051/0800**, **1.30.255.251/0800**, **1.30.255.271/0800**, **1.30.255.351/0800**, **1.30.255.371/0800**, **1.30.255.481/0800**

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

Control components

19

RAFIX 22 FS emergency stop pushbutton

illuminated area

Pict.: non-illuminated   Pict.: illuminated   Panel cut-out to IEC 60947-5-1

3.20 +0.2

24.10 +0.4   Ø 22.30 +0.4

2

General data

The emergency stop pushbuttons comply with IEC 60 204, IEC 60 073, IEC 60 947 and VDE 0113 Part 1.
They are designed dupe-proof according to EN 418 with a positive mechanical movement sequence. A certain operating force must be exerted at the action point in order to prevent inadvertent operation. The pushbutton latches when pressed. The special shape of the actuator prevents the emergency stop pushbutton from being blocked. This means that the emergency stop process - once initiated - cannot be impeded by any jamming objects.
Use only in combination with "emergency stop" contact blocks.

Technical data

RAFIX 22 FS

General information		**Other specifications**	
Form of lens	conical mushroom form	Ambient temp. operating min.	-25 °C
Colour of lens	red	Ambient temp. operating max.	+70 °C
Form of collar	round	Approvals acc. to IEC	60947-5-x, 60204, 60073, 601058
Dimensions		Approvals, other	pending: UL 508, CSA, cURus (UL + CSA)
Mushroom Diameter	30 mm	Robustness	according to
Overall height	33,2 mm		IEC 600 68-2-3 and 2-30
Mounting hole	22,3 mm	Operating life	50000
Key grid	30 x 30 mm	Degree of protection	
Diameter of collar	see order block	from front side	IP65
Mechanical design		Storage temperature min.	-40 °C
Mounting	ring nut	Storage temperature max.	+80 °C
Contact function	latching	Resistance to constant	
Illuminability	see order block	environment	IEC 600 68-2-3 and 2-30
Reset	see order block	Resistance at variable	
Mechanical characteristics		environment	IEC 600 68-2-14 and 2-33
Robustness min.	100 N		

Typical accessories RAFIX 22 FS emergency stop pushbutton

Description	Photo	Order no.	Additional acces-sories see page
RAFIX 22 FS Emergency stop contact block, 1 NC, gold contacts, quick-connect terminals		**1.20.126.501/0000**	27
RAFIX 22 FS Emergency stop contact block, 1 NC, silver contacts, quick-connect terminals		**1.20.126.701/0000**	29
RAFIX 22 FS Emergency stop contact block, 2 NC, gold contacts, PCB		**1.20.126.404/0000**	32
RAFIX 22 FS Emergency stop contact block, 1 NC, silver contacts, PCB		**1.20.126.601/0000**	34

Control components

Typical accessories RAFIX 22 FS emergency stop pushbutton
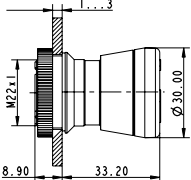
Description	Photo	Order no.	Additional accessories see page
Fixing spanner for ring nut and front ring		**5.05.800.062/0000**	36
Emergency stop label, yellow, round 60 mm, PVC adhesive, without legend		**5.76.204.100/0400**	
Emergency stop label, yellow, round 60 mm, PVC adhesive, with legend "NOT-AUS"		**5.76.204.101/0400**	
Emergency stop label, yellow, round 60 mm, PVC adhesive, with legend "ARRET D'URGENCE"		5.76.204.102/0400	
Emergency stop label, yellow, round 60 mm, PVC adhesive, with legend "EMERGENCY-STOP"		**5.76.204.103/0400**	
Emergency stop label, yellow 36 x 64 mm, PVC adhesive, without legend		5.76.205.011/0400	

2

RAFIX 22 FS emergency stop pushbutton, non-illuminated, dupe-proof to EN 418, non-blocking

Pict.: non-illuminated

Panel cut-out to IEC 60947-5-1

RAFIX 22 FS

Reset	Illuminability	Approvals acc. to IEC	Order no.
by clockwise rotation	no	60947-5-x, 60204, 60073, 601058	**1.30.253.501/0300**

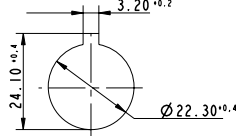## RAFIX 22 FS emergency stop pushbutton, illuminated, dupe-proof to EN 418, non-blocking

Pict.: illuminated

Panel cut-out to IEC 60947-5-1

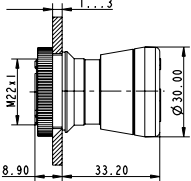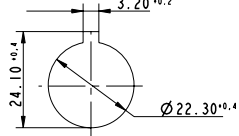| Reset	Illuminability	Approvals acc. to IEC	Order no.
by clockwise rotation	yes	60947-5-x, 60204, 60073, 601058	**1.30.253.001/0300**

RAFIX 22 FS signal indicator

Pict.: yellow   Pict.: red   Panel cut-out to IEC 60947-5-1

2

Technical data

General information
Form of lens   flat lens
Colour of lens   see order block
Form of collar   see order block

Dimensions
Length of collar   see order block
Width of collar   see order block
Overall high   9.7 mm
Mounting depth   9.2 mm
Mounting hole   22.3 mm
Key grid   30 x 30 mm
Diameter of collar   see order block

Mechanical design
Mounting   ring nut
Illuminability   yes

Mechanical characteristics
Robustness min.   100 N

Other specifications
Degree of protection
from front side   IP65
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

Typical accessories RAFIX 22 FS signal indicator

Description	Photo	Order no.	Additional accessories see page
3 mm LED superbright red		1.90.690.269/0000	39
Fixing spanner for ring nut and front ring		**5.05.800.062/0000**	36
LED base for signal indicators, height 5 mm		**5.30.109.020/0756**	39
RAFIX 22 FS, socket for LED-Clip		5.55.104.419/0700	38

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

Control comonents

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RAFIX 22 FS signal indicator, round collar

Pict.: yellow

Panel cut-out to IEC 60947-5-1
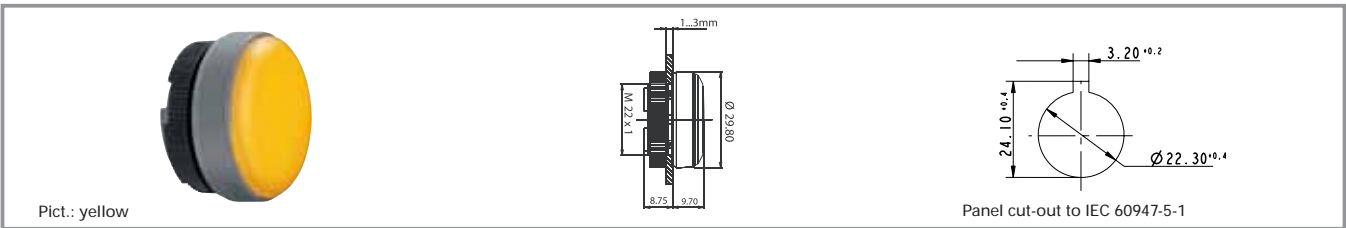
Form of collar	Colour of lens	Order no.
round	transparent colourless	**1.74.506.001/1000**
round	transparent red	**1.74.506.001/1300**
round	transparent yellow	**1.74.506.001/1400**
round	transparent green	**1.74.506.001/1500**
round	transparent blue	**1.74.506.001/1600**

Accessories:
Legend insert, blank, use only for transparent lenses: 5.70.806.000/2000

2

RAFIX 22 FS signal indicator, square collar

Pict.: red

Panel cut-out to IEC 60947-5-1
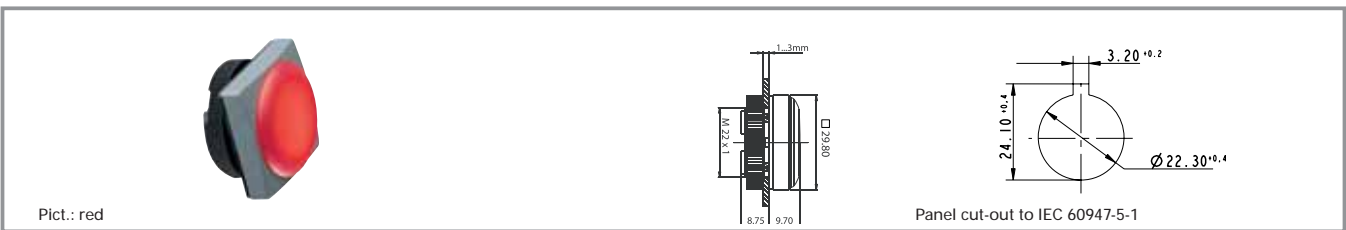
Form of collar	Colour of lens	Order no.
square	transparent colourless	**1.74.506.051/1000**
square	transparent red	**1.74.506.051/1300**
square	transparent yellow	**1.74.506.051/1400**
square	transparent green	**1.74.506.051/1500**
square	transparent blue	**1.74.506.051/1600**

Accessories:
Legend insert, blank, use only for transparent lenses: 5.70.806.000/2000

Contact blocks with quick-connect terminals

2

System

RAFI offers contact blocks with quick-connect terminals for the tried and tested RAFIX 22 FS actuators.
The contact block snaps into the actuator with a gentle >>>click<<< and is thereby fitted permanently.

Concept

For those applications where designing a PCB layout is too expensive or not possible at all, a new option has been made available by complementing the series. Catch noses provided on the new contact block snap precisely into the actuator. The screw neck of the actuator is provided with indents safeguarding a reliable union.

The contacts of the contact block are easily connected by conventional quick-connect terminals on the rear end. A fin arranged at the centre of the contact block with quick-connect terminals helps to ensure good insulation. It serves as a guide for the additional LED-Clip at the same time if illumination is desired.

The new contact blocks with quick-connect terminals makes the RAFIX 22 FS series complete and perfect. Any external control components can be integrated into the system *very easily* and *without needing any tools* and you save space, effort and material.

RAFIX 22 FS

Design

Matching all RAFIX 22 FS actuators

Panel cut-out to IEC 60947:
22.3 mm with locating indent

Ring nut fixing

RAFIX 22 FS contact blocks
- Quick-connect/solder terminals
- 2.8 x 0.8 mm with soldering lugs
- Gold / silver contacts

Plug-in LED-Clip (24 V)
for illuminated actuators
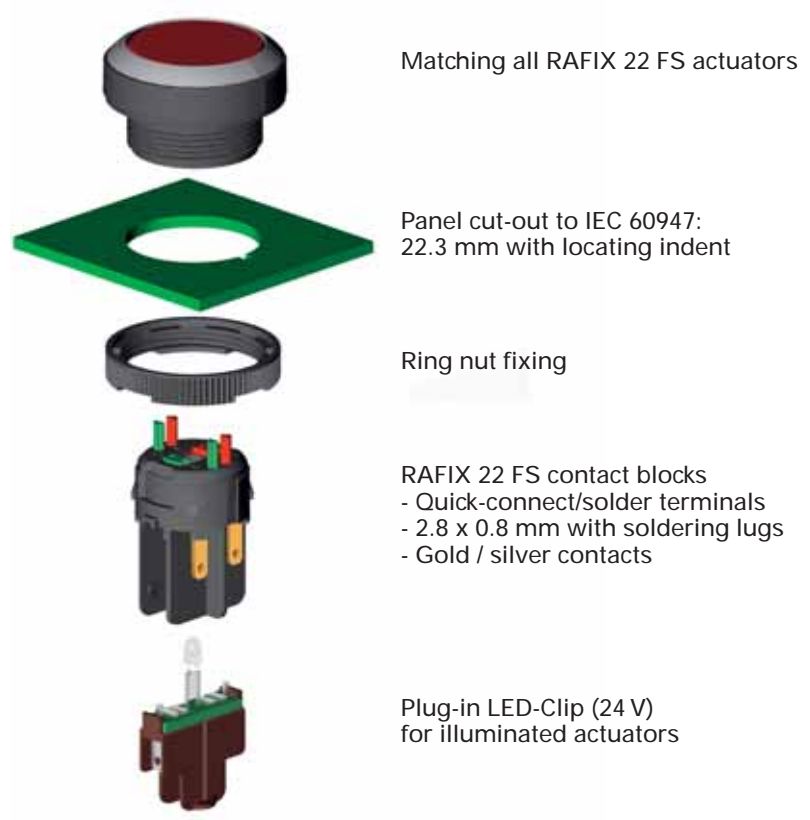
Reliable assembly method

29.80

9.90

27.00

25.70
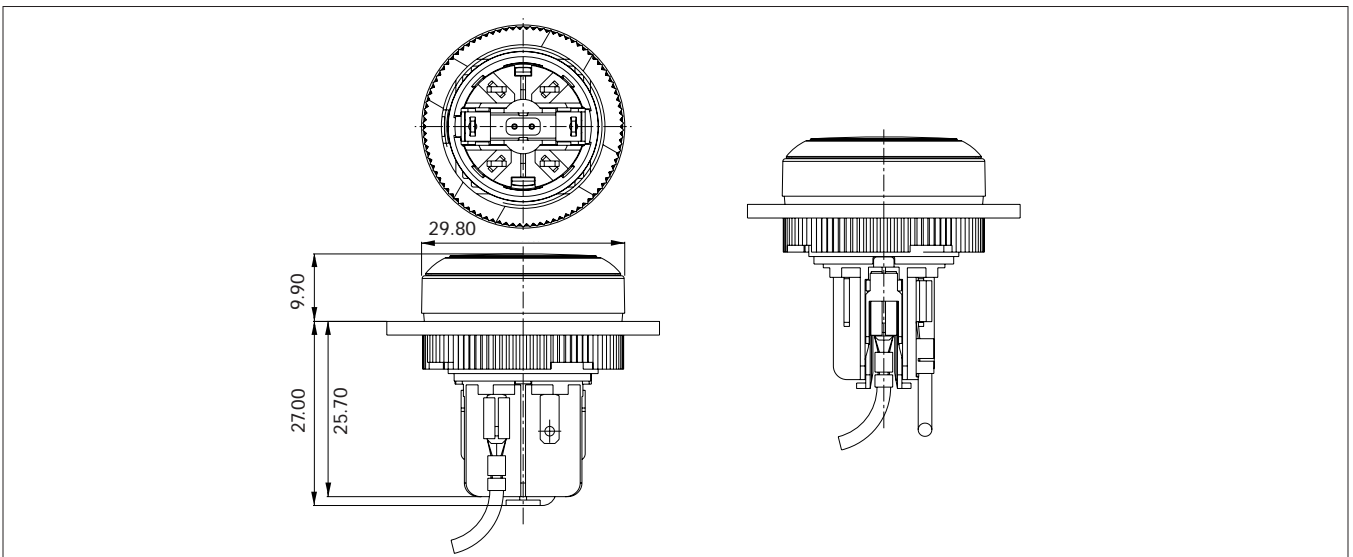
Essential features

- Depth behind panel only 27 mm including LED-Clip and cable lugs

- Quick-connect/solder terminals 2.8 x 0.8 mm

- The contact block engages permanently with the actuator only at the time of final assembly

- Compatible with all RAFIX 22 FS actuators: Pushbuttons, selector switches, keylock switches, emergency stop buttons and signal indicators, with all advantages this series offers:
  - Large actuating and indicating areas
  - Round or square collar shape
  - Panel cut-out to IEC 60947: 22.3 mm with locating indent
  - Degree of protection IP 65 (water-jet proof)

- Protection against contact for quick-connect terminals and cable lugs: Short-circuit proof even when the connection cables are under tensile strain

- Gold contacts for 100% reliable switching of low voltage (min. 5 V / 1 mA) or

- Silver contacts (max. 250 V/4 A) for mains voltage

- Contact arrangements: 1 NC, 1 NO, 2 NC, 2 NO, 1 NC + 1 NO

- Illumination with replaceable superbright LED-Clips in various LED colours, with quick-connect terminals 2.8 x 0.8 mm

- Actuators / contact blocks, signal indicators / lamp sockets and LED-Clips are stocked separately and only assembled at final assembly. This ensures utmost flexibility and most economic stockkeeping for this product range.

RAFIX 22 FS, Contact blocks with quick-connect terminals, gold contacts

Pict.: Universal, Au-contact, 2 NC

Pict.: Emergency stop, Au-contact, 1 NC + 1 NO

2

General data

The contact blocks are inserted into the actuators and latch there permanently. Emergency stop pushbuttons require special contact blocks which you can recognise by the plungers being in the interior. In addition, the emergency stop contact blocks and actuators feature two assembly guides which prevent rotation during assembly. We recommend to choose the LED colour in the same colour as the lens of the actuator in order to ensure satisfactory illumination.

Technical data

RAFIX 22 FS

General information
Lamp	LED-Clip

Dimensions
Diameter	17.3 mm
Recommended key grid	30 mm
Mounting depth	27 mm

Mechanical design
Mounting	soldering in PCB
Contact system	bridgecontact self cleaning
Contact materials	Au
Contact arrangement	see order block
NC contact forcibly actuated acc. to IEC 947-5-1	yes
Terminals	quick-connect/solder terminals 2.8 x 0.8 mm
Robustness	100 N

Electrice characteristics acc. to IEC 60947, AC-15, DC-13
Operating voltage min.	5 V
Operating current min.	1 mA
Rated power max.	250 mW

Other specifications
Operating life	1 million at 10 mA/24 V DC
Switching reliability at 24V/5mA DC	10×10^{-6}
Approvals acc. to IEC	60947-5-1/-5, 60204, 60073
Approvals, other	cURus (UL + CSA)
Ambient temp. operating min.	-25 °C
Ambient temp. operating max.	+70 °C
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C
Colour of plunger	see order block
Robustness	acc. to IEC 60947-5-5 (TÜV)
Shock resistance acc. to IEC 600 68-2-27	15 g bei 11 ms amplitude half sinusoidal
Resistance to vibrations acc. to IEC 600 68-2-6	5 g at 10 ... 500 Hz
Resistance to constant environment	IEC 600 68-2-3 und 2-30
Restistance at variable environment	IEC 600 68-2-14 und 2-33
Salt spray	IEC 600 68-2-11
Colour of housing	grey

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Typical accessories RAFIX 22 FS contact blocks

Discription	Photo	Order no.	Additional accessories see page
LED-Clip, LED red		5.05.511.359/0300	38
LED-Clip, LED blue		5.05.511.359/0600	38
LED-Clip, LED green		5.05.511.359/0500	38
LED-Clip, LED white		5.05.511.359/0200	38
LED-Clip, LED yellow		5.05.511.359/0400	38

For additional accessories, refer to the chapter "RAFIX 22 FS special accessories".

2

RAFIX 22 FS contact blocks with quick-connect terminals

Pict.: Universal, Au-contact, 2 NC	Pict.: Universal, Au-contact, 2 NO	Pict.: Universal, Au-contact, 1 NC + 1 NO	Pict.: Emergency stop, Au-contact, 2 NC

RAFIX 22 FS

Contact arrangement	Type	Colour of housing	Colour of plunger	Order no.
1 NC	Universal	grey	red	**1.20.126.101/0000**
1 NO	Universal	grey	green	**1.20.126.102/0000**
1 NC + 1 NO	Universal	grey	red and green	**1.20.126.103/0000**
2 NC	Universal	grey	red	**1.20.126.104/0000**
2 NO	Universal	grey	green	**1.20.126.105/0000**
1 NC	Emergency stop	grey	red	**1.20.126.501/0000**
1 NC + 1 NO	Emergency stop	grey	yellow	**1.20.126.503/0000**
2 NC	Emergency stop	grey	red	**1.20.126.504/0000**

Caution: Emergency stop contact blocks can only be used with emergency stop pushbuttons. Universal contact blocks are not suitable for emergency stop pushbuttons.

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

NEW

RAFI
SOLUTIONS WITH PASSION

RAFIX 22 FS contact blocks with silver contacts

Pict.: Universal, Ag-contact, 2 NC

Pict.: Emergency stop, Ag-contact, 1 NC + 1 NO

2

General data

The contact blocks are inserted into the actuators and latch there permanently. Emergency stop pushbuttons require special contact blocks which you can recognise by the plungers being in the interior. In addition, the emergency stop contact blocks and actuators feature two assembly guides which prevent rotation during assembly. We recommend to choose the LED colour in the same colour as the lens of the actuator in order to ensure satisfactory illumination.

Technical data

RAFIX 22 FS

General information	
Lamp	LED-Clip

Dimensions	
Diameter	17.3 mm
Recommended key grid	30 mm
Mounting depth	27 mm

Mechanical design	
Mounting	soldering in PCB Betätigungselement
Contact system	bridgecontact self cleaning
Contact materials	Ag
Contact arrangement	see order block
NC contact forcibly actuated acc. to IEC 60947-5-1	yes
Terminals	quick-connect/solder terminals 2.8 x 0.8 mm
Robustness	100 N

Electrice characteristics acc. to IEC 60947, AC-15, DC-13

Rated insulation voltage	
AC/DC	250 V
Rated peak voltage	2,500 V
Rated operating current I_E, AC15 B300	3 A/120 V; 1,5 A/240 V; Ithe: 5 A
Rated operating current I_E, DC13 Q300	550 mA/120 V; 270 mA/240 V; Ithe: 2,5 A

Other specifications	
Operating life at 250V / 1A	1,000,000
Operating life at 250V / 2A	100,000
Operating life at 250V / 4A	30,000

Switching reliability at 24V/5mA DC	10×10^{-6}
Ambient temp. operating min.	-25 °C
Ambient temp. operating max.	+70 °C
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C
Colour of plunger	see order block
Approvals acc. to IEC	60947-5-1/-5, 60204, 60073
Approvals, other pending:	cURus (UL + CSA)
Marine approvals	on request
Robustness	acc. to IEC 60947-5-5 (TÜV)
Shock resistance acc. to IEC 600 68-2-27	15 g at 11 ms, amplitude half sinusoidal
Resistance to vibrations acc. to IEC 600 68-2-6	5 g bei 0 ... 500 Hz
Konstantklimafestigkeit	IEC 600 68-2-3 und 2-30
Wechselklimafestigkeit	IEC 600 68-2-14 und 2-33
Salznebel	IEC 600 68-2-11
Flame class acc. to UL 94	V 0
Hot wire ignition acc. to IEC 695-2-1	yes
Colour of housing	black

NEW

RAFI
SOLUTIONS WITH PASSION

Typical accessories RAFIX 22 FS contact blocks

Bezeichnung	Photo	Order no.	Additional acces-sories see page
LED-Clip, LED red		5.05.511.359/0300	38
LED-Clip, LED blue		5.05.511.359/0600	38
LED-Clip, LED green		5.05.511.359/0500	38
LED-Clip, LED white		5.05.511.359/0200	38
LED-Clip, LED yellow		5.05.511.359/0400	38

For additional accessories, refer to the chapter "RAFIX 22 FS special accessories".

2

RAFIX 22 FS contact blocks with quick-connect terminals, silver contacts
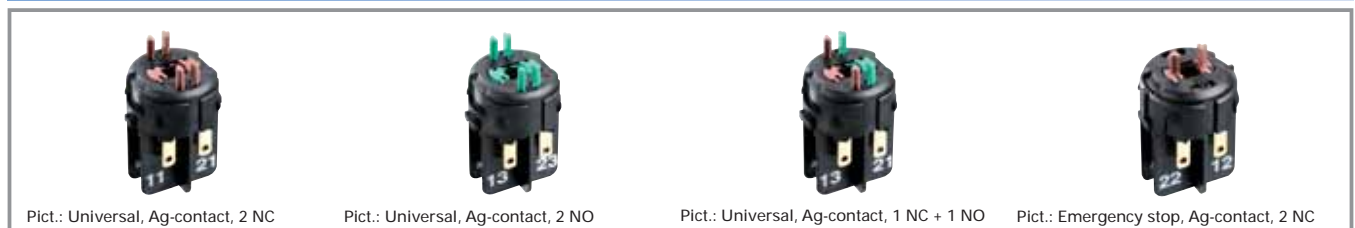
Pict.: Universal, Ag-contact, 2 NC   Pict.: Universal, Ag-contact, 2 NO   Pict.: Universal, Ag-contact, 1 NC + 1 NO   Pict.: Emergency stop, Ag-contact, 2 NC

RAFIX
22 FS

Contact arrangement	Type	Colour of housing	Colour of plunger	Order no.
1 NC	Universal	black	red	**1.20.126.301/0000**
1 NO	Universal	black	green	**1.20.126.302/0000**
1 NC + 1 NO	Universal	black	red and green	**1.20.126.303/0000**
2 NC	Universal	black	red	**1.20.126.304/0000**
2 NO	Universal	black	green	**1.20.126.305/0000**
1 NC	Emercency stop	black	red	**1.20.126.701/0000**
1 NC + 1 NO	Emercency stop	black	yellow	**1.20.126.703/0000**
2 NC	Emercency stop	black	red	**1.20.126.704/0000**

Caution: Emergency stop contact blocks can only be used with emergency stop pushbuttons. Universal contact blocks are not suitable for emergency stop pushbuttons.

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

RAFI
SOLUTIONS WITH PASSION

PCB version

Combined with short-travel keys

The actuators of the RAFIX 22FS system are suited for integration into low-profile data entry systems. The small mounting depth and the PCB solder terminals make it possible to combine the contact blocks with RAFI short-travel keys MICON 5, RACON 8 an 12, RF 15 and RF 19 as well as KN 19 on one and the same printed circuit board.

Illumination

RAFIX 22 FS pushbuttons, selector switches and emergency stop buttons are also available as illuminated versions. For illumination, we recommend to use the superbright 3 mm LED in the colour matching the lens. The LED are fitted into the contact block and soldered together with it. The signal indicators are als illuminated with superbright LED soldered directly onto the printed circuit board. In order to ensure full illumination, the LED must be mounted on a base. Bases are available as accessories.

The contact blocks are soldered onto the printed circuit board. Illumination of the actuator is provided by a 3 mm LED inserted into the base of the contact block and soldered to the printed circuit board together with the contact block.

The printed circuit board is fastened to the front panel with bolts, with the contact blocks sliding almost completely into the actuators. In this way an extremely low profile is achieved. Additional advantages: Individual wiring is made unnecessary and there is no more need for a cut-out in the printed circuit board in the control component areas.

RAFIX 22 FS

Screw-on front ring,
made of plastic or metallized

Lens
transparent (illuminated) or opaque

Diffuser
(for transparent lenses only)

Actuator with O-ring seal and
special membrane

Housing with integrated cast-on
collar seal, front panel thickness 1 – 3 mm

Threaded ring

3 mm LED

Contact block
(optionally with LED installed):
• 1NC, 1NO, 2NC, 1NC + 1NO, 2NO
 (colour-coded plungers:
 NC = red, NO = green)
• Gold contacts (grey housing)
 or silver contacts (black housing)
• Locating pip for correct assembly

Printed circuit board

9,2 mm

RAFIX 22 FS PCB version

RAFI
SOLUTIONS WITH PASSION

Ø 30,00

33,00

9,20 ±0,10

1,00 ... 3,00

Front panel top edge

PCB top edge

Ø 29,80

9,85

**RAFIX 22FS
emergency stop**

**RAFIX 22FS
pushbutton**

**RF 19
short-travel key**

Front panel

Spacer

Printed circuit board

Captive nut

Stud

View on front side of front panel

3.20 +0.2

24.10 +0.4

22.30 +0,4

min. 30.00

min. 30.00

Panel cut-out to IEC 60947
All actuators are provided with a locating pip. With a grid spacing of 30 mm, the collars of the square actuators are arranged next to each other without a space in between. We recommend to use this grid spacing also for the round collar shapes (IEC 60947).

Assembly indication
The mismatch of actuators and contact blocks must be in a range of ø 0.2 mm.

Please note:
The placements of the contact blocks on the PCB are always conform to the placements of the actuators on the front panel. The drawings beside are showing upright locating pips of the actuators. If the actuators shall be rotated, the contact blocks have to be rotated similarly.

**Hole patterns
PCB, view on
component side**

Low voltage illuminated
Actuator position ⊕ Ø 0.2

Ø1.60
Ø1.30

Ø1.00

Ø1.60

7.80

2.54
10.80
13.00
Ø27.50

NO contacts
(on version with 2 NC's, NC contacts)

Locating pip 2*

LED anode

Öffnerkontakte
(bei Version mit 2 Schließern,Schließer-Kontakte)

Locating pip 1*

LED cathode

Restricted area -
no other components
on the PCB allowed

* For better distinction the locating pip 2 has a bigger
diameter than pip 1. In order to ease the mounting,
the positions are additionally marked on the upper
side of the housing.

RAFI
SOLUTIONS WITH PASSION

2

RAFIX 22 FS contact blocks with gold contacts

Pict.: Universal contact block, 1 NC + 1 NO, gold contacts   Pict.: Emergency stop contact block, gold contacts, 2 NC

RAFIX
22 FS

General data

Illumination information:
The contact blocks are suitable for use with illuminated actuators: Insert the desired LED into the integrated LED base and subsequently solder it together with the contact block.
We strongly recommend using superbright LED since this ensures homogeneous illumination.

Technical data

General information		Approvals acc. to IEC	60947-5-x, 60204, 60073, 601058
Lamp	LED	Approvals, other	pending: UL 508, CSA, cURus (UL + CSA)
Dimensions		Ambient temp. operating min.	-25 °C
Diameter	17.3 mm	Ambient temp. operating max.	+70 °C
Recommended key grid	30 mm	Storage temperature min.	-40 °C
Mounting depth	9.2 mm	Storage temperature max.	+80
		Colour of plunger	see order block
Mechanical design		Robustness	acc. to IEC 60947-5-5 (TÜV)
Mounting	soldering in PCB		
Contact system	bridgecontact self cleaning	Shock resistance acc. to IEC 600 68-2-27	50 g at 11 ms, amplitude half sinusoidal
Contact materials	Au		
Contact arrangement	see order block		
NC contact forcibly actuated acc. to IEC 60947-5-1	yes	Resistance to vibrations acc. to IEC 600 68-2-6	5 g at 10 ... 500 Hz
Terminals	solder terminal with locating lug	Resistance to constant environment	IEC 600 68-2-3 and 2-30
Robustness	100 N	Resistance at variable environment	IEC 600 68-2-14 and 2-33
Electrice characteristics acc. to IEC 60947, AC-15, DC-13		Salt spray	IEC 600 68-2-11
Operating voltage min.	5 V	Solderability / solder heat resistance	IEC 600 68-2-20
Operating current min.	1 mA	Solder techniques	wave solder bath / manual soldering
Rated power max.	250 mW	Type	see order block
Other specifications		Colour of housing	grey
Operating life	1 million at 10 mA/ 24 V DC		
Switching reliability at 24V/5mA DC	10×10^{-6}		

Typical accessories RAFIX 22 FS contact blocks with gold contacts

Discription	Photo	Order no.	Additional accessories see page
3 mm LED superbright yellow		1.90.690.267/0000	39

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

Control components

RAFI
SOLUTIONS WITH PASSION

Typical accessories RAFIX 22 FS contact blocks with gold contacts

Discription	Photo	Order no.	Additional accessories see page
3 mm LED superbright red		1.90.690.269/0000	39
3 mm LED superbright blue		1.90.690.282/0000	39
3 mm LED superbright green		1.90.690.285/0000	39
3 mm LED superbright white		1.90.690.295/0000	39

For additional accessories, refer to the chapter "RAFIX 22 FS special accessories".

RAFIX 22 FS PCB version contact block with gold contacts

Pict.: Universal contact block, 1 NC + 1 NO, gold contacts   Pict.: Emergency stop contact block, 2 NC, gold contacts

Contact arrangement	Type	Colour of housing	Colour of plunger	Order no.
1 NC	Universal	grey	red	**1.20.126.001/0000**
1 NO	Universal	grey	green	**1.20.126.002/0000**
1 NC + 1 NO	Universal	grey	red and green	**1.20.126.003/0000**
2 NC	Universal	grey	red	**1.20.126.004/0000**
2 NO	Universal	grey	green	**1.20.126.005/0000**
1 NC	Emergency stop	grey	red	**1.20.126.401/0000**
1 NC + 1 NO	Emergency stop	grey	yellow	**1.20.126.403/0000**
2 NC	Emergency stop	grey	red	**1.20.126.404/0000**

Caution: Emergency stop contact blocks can only be used with emergency stop pushbuttons. Universal contact blocks are not suitable for emergency stop pushbuttons.

2

RAFIX
22 FS

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

RAFIX 22 FS PCB version contact blocks with silver contacts

Pict.: Ag-contacts, Universal, 1 NO + 1 NC   Pict.: Silver contacts, Universal, 1 NC

2

General data

Illumination information:
The contact blocks are suitable for use with illuminated actuators: Insert the desired LED into the integrated LED base and subsequently solder it together with the contact block.
We strongly recommend using superbright LED since this ensures homogeneous illumination.

Technical data

General information
Lamp	LED

Dimensions
Diameter	17.3 mm
Recommended key grid	30 mm
Mounting depth	9.2 mm

Mechanical design
Mounting	soldering in PCB
Contact system	bridgecontact self cleaning
Contact materials	Ag
Contact arrangement	see order block
NC contact forcibly actuated acc. to IEC 60947-5-1	yes
Terminals	solder terminal with locating lug
Robustness	100 N

Electrice characteristics acc. to IEC 60947, AC-15, DC-13
Rated insulation voltage AC/DC	250 V
Rated peak voltage	2500 V
Rated operating current I_E , AC15 B300	3 A/120 V; 1.5 A/240 V; Ithe: 5 A
Rated operating current I_E , DC13 Q300	550 mA/120 V; 270 mA/240 V; Ithe: 2.5 A

Other specifications
Operating life at 250V / 1A	1000000
Operating life at 250V / 2A	100000
Operating life at 250V / 4A	30000

Switching reliability at 24V/5mA DC	10×10^{-6}
Ambient temp. operating min.	-25 °C
Ambient temp. operating max.	+70 °C
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C
Colour of plunger	see order block
Approvals acc. to IEC	60947-5-x, 60204, 60073, 601058
Approvals, other	pending: UL 508, CSA, cURus (UL + CSA)
Marine approvals	on request
Robustness	acc. to IEC 60947-5-5 (TÜV)
Shock resistance acc. to IEC 600 68-2-27	50 g at 11 ms, amplitude half sinusoidal
Resistance to vibrations acc. to IEC 600 68-2-6	5 g at 10 ... 500 Hz
Resistance to constant environment	IEC 600 68-2-3 and 2-30
Resistance at variable environment	IEC 600 68-2-14 and 2-33
Salt spray	IEC 600 68-2-11
Solderability / solder heat resistance	IEC 600 68-2-20
Solder techniques	wave solder bath / manual soldering
Flame class acc. to UL 94	V 0
Hot wire ignition acc. to IEC 60695-2-1	yes
Type	see order block
Colour of housing	black

Typical accessories RAFIX 22 FS contact blocks with silver contacts

Description	Photo	Order no.	Additional accessories see page
3 mm LED superbright yellow		1.90.690.267/0000	39
3 mm LED superbright red		1.90.690.269/0000	39
3 mm LED superbright blue		1.90.690.282/0000	39
3 mm LED superbright green		1.90.690.285/0000	39
3 mm LED superbright white		1.90.690.295/0000	39

For additional accessories, refer to the chapter "RAFIX 22 FS special accessories".

2

RAFIX 22 FS PCB version contact blocks with silver contacts

Pict.: Silver contacts, universal type, 1 NO   Pict.: Ag-contact, Emergency stop, 1 NO   Pict.: Ag-contact, Universal, 1 NO + 1 NC

RAFIX
22 FS

Contact arrangement	Type	Colour of housing	Colour of plunger	Order no.
1 NC	Universal	black	red	**1.20.126.201/0000**
1 NO	Universal	black	green	**1.20.126.202/0000**
1 NC + 1 NO	Universal	black	red and green	**1.20.126.203/0000**
2 NC	Universal	black	red	**1.20.126.204/0000**
2 NO	Universal	black	green	**1.20.126.205/0000**
1 NC	Emergency stop	black	red	**1.20.126.601/0000**
1 NC + 1 NO	Emergency stop	black	yellow	**1.20.126.603/0000**
2 NC	Emergency stop	black	red	**1.20.126.604/0000**

Caution: Emergency stop contact blocks can only be used with emergency stop pushbuttons. Universal contact blocks are not suitable for emergency stop pushbuttons.

2

RAFIX 22 FS, accessories

Fixing spanner for ring nut and front ring

Short text	Feature 1	Feature 2	Order no.
Fixing spanner for ring nut and front ring			**5.05.800.062/0000**

Blanking cap

Pict.: square   Pict.: round, high

Short text	Feature 1	Feature 2	Order no.
Blanking cap IP65, ring nut, square			**5.05.800.068/0000**
Blanking cap IP65, ring nut, round			**5.05.800.067/0000**
Blanking cap IP65, ring nut, square, high version can be used for covering mounted PCB contact blocks			**5.05.200.025/0000**
Blanking cap IP65, ring nut, round, high version can be used for covering mounted PCB contact blocks			**5.05.200.026/0000**

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

Control components

RAFI
SOLUTIONS WITH PASSION

Ring nut

Pict.: black

Short text	Feature 1	Feature 2	Order no.
Ring nut (spare part)			5.24.279.014/0100

Plastic frontring protection cap

Pict.: slate-grey

| Short text	Front ring colour	Feature 2	Order no.
Plastic frontring black protection cap	black		5.05.004.986/0100
Plastic frontring red protection cap	red		5.05.004.986/0300
Plastic frontring yellow protection cap	yellow		5.05.004.986/0400
Plastic frontring green protection cap	green		5.05.004.986/0500
Plastic frontring blue protection cap	blue		5.05.004.986/0600
Plastic frontring slate grey protection cap	slate-grey		5.05.004.986/0700
Plastic frontring silver grey protection cap	silver-grey		5.05.004.986/0800

Potentiometer drive

Short text	Feature 1	Feature 2	Order no.
For potentiometers with 6 mm shaft diameter and 50 mm shaft length. Potentiometer not included.			**1.30.258.001/0700**

2

RAFIX
22 FS

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

NEW

RAFI
SOLUTIONS WITH PASSION

LED Clip

2

Colour of LED	Feature 1	Feature 2	Order no.
LED-Clip, LED red, 24 V DC			**5.05.511.359/0300**
LED-Clip, LED yellow, 24 V DC			**5.05.511.359/0400**
LED-Clip, LED green, 24 V DC			**5.05.511.359/0500**
LED-Clip, LED blue, 24 V DC			**5.05.511.359/0600**
LED-Clip, LED white, 24 V DC			**5.05.511.359/0200**

Socket for LED-Clip

Pict.: with mounted LED-Clip
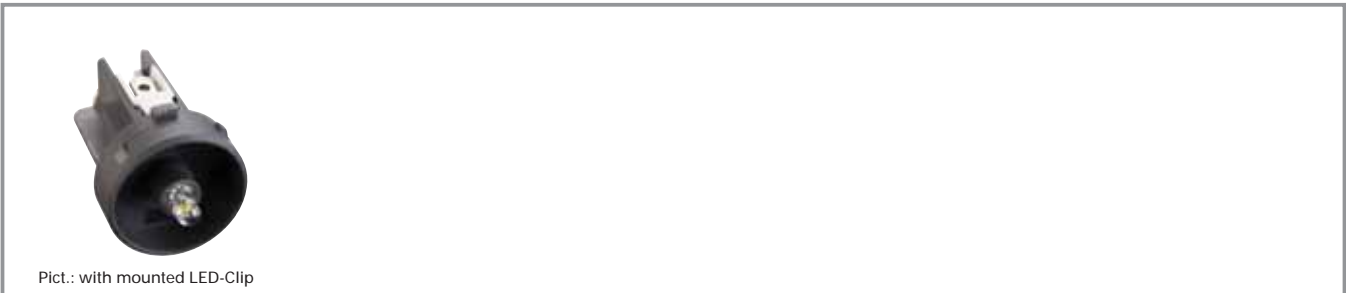
Short text	Feature 1	Feature 2	Order no.
Housing to click in signal indicators, with socket for LED-Clip			**5.55.104.419/0700**

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

Control components

LED base for signal indicators

Short text	Feature 1	Feature 2	Order no.
LED base for signal indicators, height 5 mm			**5.30.109.020/0756**

LED 3 mm, without base

Socket	Colour	Forward voltage typ. U_F at I_F	Max. current, I_F	Light intensity	Accessories	Order no.
without socket	yellow	1,9 V/20 mA V	50 mA			1.90.690.267/0000
without socket	red	1,9 V/20 mA V	50 mA			1.90.690.269/0000
without socket	blue	3,6 V/20 mA V	30 mA			1.90.690.282/0000
without socket	green	3,5 V/20 mA V	30 mA			1.90.690.285/0000
without socket	white	3,6 V/20 mA V	30 mA			1.90.690.295/0000

Processing information for 1.90.690.267/0000 und 1.90.690.269/0000
The qualifications for the higher soldering temperatures on lead free soldering processes are as follows:
Temperature stability according J-STD 020 C for reflow soldering 245°C and for wave soldering 245°C/10s.

2

RAFIX
22 FS