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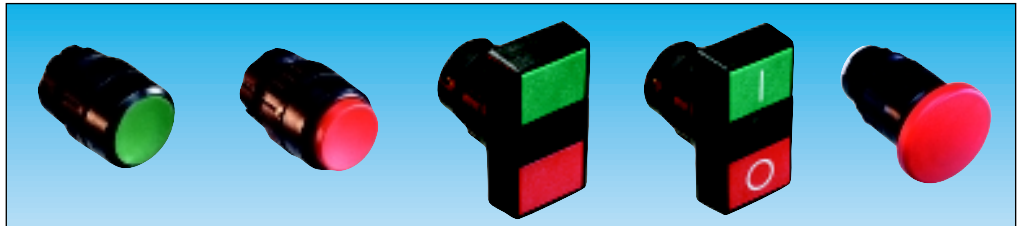
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# Pilot devices, Ø 22 mm

## Ordering table

### Pushbuttons Non-illuminated

Black plastic bezel



Type	K P1-10■ 100 R100□	K P3-10■ 102 R100□	K PD1-11B 130 R1006	K PD2-11B 131 R1006	K PM1-10R 124 R1001
Order Code 1SFA 616 ... ..					

#### Holder with contact blocks included

NO NC



	Pushbutton Momentary Flush button	Pushbutton Momentary Extended button	Double pushbutton Upper button: No text Lower button: No text	Double pushbutton Upper button: I Lower button: O	Mushroom pushbutton Red mushroom Momentary
	Type	Type	Type	Type	Type
1 -	K P1-10■ K CBH-10	K P3-10■ K CBH-10	-	-	K PM1-10R K CBH-10
- 1	K P1-10■ K CBH-01	K P3-10■ K CBH-01	-	-	K PM1-10R K CBH-01
1 1	K P1-10■ K CBH-11	K P3-10■ K CBH-11	K PD1-11B K CBH-11	K PD2-11B K CBH-11	K PM1-10R K CBH-11
2 -	K P1-10■ K CBH-20	K P3-10■ K CBH-20	K PD1-11B K CBH-20	K PD2-11B K CBH-20	K PM1-10R K CBH-20
- 2	K P1-10■ K CBH-02	K P3-10■ K CBH-02	K PD1-11B K CBH-02	K PD2-11B K CBH-02	K PM1-10R K CBH-02

**Note :** For bezel in chrome plastic or metal please contact your nearest sales office.

#### Colour

#### Colour code

Colour	Type	Order Code 1SFA 616... ..
Red ●	R	.... 1
Green ●	G	.... 2
Yellow ●	Y	.... 3
Blue ●	L	.... 4
White ○	W	.... 5
Black ●	B	.... 6
Clear <sup>1)</sup> ○	C	.... 8

<sup>1)</sup> For use with text cap.

When ordering use Type or Order Code

# Pilot devices, Ø 22 mm

## Ordering table

### Pushbuttons Illuminated

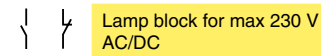
Black plastic bezel



Type	K P1-11	K P3-11	K PD1-11C	K PD2-11C	K PM1-11R
Order Code 1SFA 616 ... ..	100 R110	102 R110	130 R1108	131 R1108	124 R1101

#### Holder with contact blocks and lamp block included

NO NC



1 -	
- 1	
1 1	
2 -	
- 2	

Pushbutton Momentary Flush button	Pushbutton Momentary Extended button	Double pushbutton Upper button: No text Lower button: No text Lens colour: Clear	Double pushbutton Upper button: I Lower button: O Lens colour: Clear	Mushroom pushbutton Red mushroom Momentary
Type	Type	Type	Type	Type
K P1-11 K CBH-101	K P3-11 K CBH-101	-	-	K PM1-11R K CBH-101
K P1-11 K CBH-011	K P3-11 K CBH-011	-	-	K PM1-11R K CBH-011
K P1-11 K CBH-111	K P3-11 K CBH-111	K PD1-11C K CBH-111	K PD2-11C K CBH-111	K PM1-11R K CBH-111
K P1-11 K CBH-201	K P3-11 K CBH-201	K PD1-11C K CBH-201	K PD2-11C K CBH-201	K PM1-11R K CBH-201
K P1-11 K CBH-021	K P3-11 K CBH-021	K PD1-11C K CBH-021	K PD2-11C K CBH-021	K PM1-11R K CBH-021

Note : For bezel in chrome plastic or metal please contact your nearest sales office.

#### Colour

#### Colour code

Colour	Type	Order Code 1SFA 616... ..
Red	R	.... 1
Green	G	.... 2
Yellow	Y	.... 3
Blue	L	.... 4
White	W	.... 5
Clear	C	.... 8

When ordering use Type or Order Code

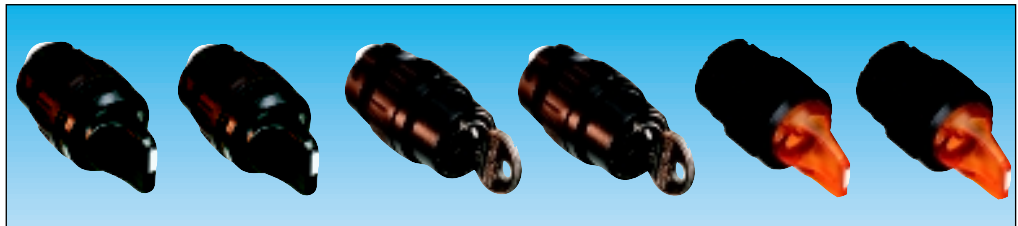
# Pilot devices, Ø 22 mm








## Ordering table

### Selector switches






#### Maintained

Black plastic bezel



Type Order Code 1SFA 616 ... ..	Non-illuminated				Illuminated	
	Two-position	Three-position	Key-operated		Two-position	Three-position
<b>Holder with contact blocks (and lamp block) included</b>  For illuminated a lamp block for max 230 V AC/DC is also included.	Short handle Black Type 	Short handle Black Type 	Two-position Key removable in both positions Type 	Three-position Key removable in all positions Type 	Short handle Type 	Short handle Type 
	K 2SS1-10B 200 R1006 K CBH-10	K 3SS1-10B 210 R1006 K CBH-10	-	-	K 2SS1-11■ 200 R110 □ K CBH-101	K 3SS1-11■ 210 R110 □ K CBH-101
	K 2SS1-10B K CBH-01	K 3SS1-10B K CBH-01	-	-	K 2SS1-11■ K CBH-011	K 3SS1-11■ K CBH-011
	K 2SS1-10B K CBH-11	K 3SS1-10B K CBH-11	K 2SSK1-10■ K CBH-11	K 3SSK1-10■ K CBH-11	K 2SS1-11■ K CBH-111	K 3SS1-11■ K CBH-111
	K 2SS1-10B K CBH-20	K 3SS1-10B K CBH-20	K 2SSK1-10■ K CBH-20	K 3SSK1-10■ K CBH-20	K 2SS1-11■ K CBH-201	K 3SS1-11■ K CBH-201
	K 2SS1-10B K CBH-02	K 3SS1-10B K CBH-02	K 2SSK1-10■ K CBH-02	K 3SSK1-10■ K CBH-02	K 2SS1-11■ K CBH-021	K 3SS1-11■ K CBH-021

Note : For bezel in chrome plastic or metal please contact your nearest sales office.

Colour	Colour code	Type	Order Code 1SFA 616... ..
Red 	R	■	200 R110□ 210 R110□
Green 	G	■	
Yellow 	Y	■	
Blue 	L	■	
Clear 	C	■	

#### Key code codes

#### Type/Order Code

Key code ■

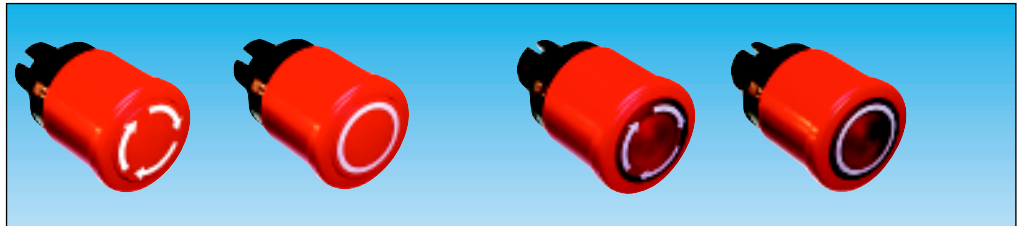
71	1
72	2
73	3

When ordering use Type or Order Code

# Pilot devices, Ø 22 mm

## Ordering table

### Emergency stop pushbutton 40 mm



Type Order Code 1SFA 616 ... ..	Non-illuminated		Illuminated	
	Twist release	Pull release	Twist release	Pull release
	<b>K PMT3-10R</b> 510 R1001	<b>K PMP3-10R</b> 511 R1001	<b>K PMT3-11R</b> 510 R1101	<b>K PMP3-11R</b> 511 R1101
<b>Safety holder <sup>1)</sup> with contact blocks (and lamp block) included</b>	Red mushroom	Red mushroom	Red mushroom	Red mushroom
	<b>Type</b> <b>K PMT3-10R</b> <b>K CBHS-10</b>	<b>Type</b> <b>K PMP3-10R</b> <b>K CBHS-10</b>	<b>Type</b> <b>K PMT3-11R</b> <b>K CBHS-101</b>	<b>Type</b> <b>K PMP3-11R</b> <b>K CBHS-101</b>
	<b>K PMT3-10R</b> <b>K CBHS-01</b>	<b>K PMP3-10R</b> <b>K CBHS-01</b>	<b>K PMT3-11R</b> <b>K CBHS-011</b>	<b>K PMP3-11R</b> <b>K CBHS-011</b>
	<b>K PMT3-10R</b> <b>K CBHS-11</b>	<b>K PMP3-10R</b> <b>K CBHS-11</b>	<b>K PMT3-11R</b> <b>K CBHS-111</b>	<b>K PMP3-11R</b> <b>K CBHS-111</b>
	<b>K PMT3-10R</b> <b>K CBHS-20</b>	<b>K PMP3-10R</b> <b>K CBHS-20</b>	<b>K PMT3-11R</b> <b>K CBHS-201</b>	<b>K PMP3-11R</b> <b>K CBHS-201</b>
	<b>K PMT3-10R</b> <b>K CBHS-02</b>	<b>K PMP3-10R</b> <b>K CBHS-02</b>	<b>K PMT3-11R</b> <b>K CBHS-021</b>	<b>K PMP3-11R</b> <b>K CBHS-021</b>

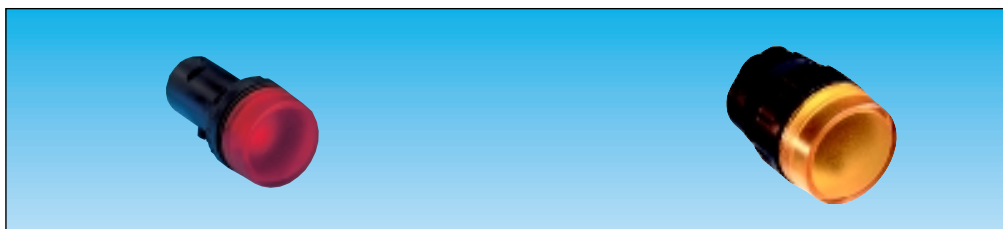
1) The safety holder can only be used

When ordering use Type or Order Code

# Pilot devices, Ø 22 mm

## Ordering table

### Pilot lights



Order Code 1SFA 616 ... ..	Type	K L2-100■ 402 R100□	K L1-100■ 400 R100□
<b>Included lamp block with holder:</b>		<b>Pilot light All-in-one</b> Direct supply max 240 V, 3 W Use filament bulb for best light	<b>Pilot light head</b>
 direct supply		Type $\overset{X1}{\circlearrowleft} \overset{X2}{\circlearrowright}$	Type
 115 V AC		<b>K L2-100■</b> -	<b>K L1-100■</b> K CBH-001
 230 V AC		-	<b>K L1-100■</b> K CBH-002
		-	<b>K L1-100■</b> K CBH-003

Colour	Colour code	Type	Order Code
			1SFA 616... ..
		<b>K L1-100■</b>	<b>400 R100□</b>
		<b>K L2-100■</b>	<b>402 R100□</b>
		■	
Red	<b>R</b>	...	<b>1</b>
Green	<b>G</b>	...	<b>2</b>
Yellow	<b>Y</b>	...	<b>3</b>
Blue	<b>L</b>	...	<b>4</b>
White	<b>W</b>	...	<b>5</b>
Clear	<b>C</b>	...	<b>8</b>

When ordering use Type or Order Code



# Buzzer, Potentiometer, Ø 22 mm

## Ordering table

### Buzzer



Type	K B1-40■■■	K B1-41■■■
Order Code 1SFA 616 ... ..	401 R40□□	400 R41□□
	Continuous tone	Pulsating tone
	Type	Type

**Buzzer**  
 Black. Frequency: Approx. 2400 Hz.  
 Loudness: Min 80 dB (A)/10 cm,

Supply voltage	Type	Order Code
	K B1-40■■■	1SFA 616 401 R40□□
	K B1-41■■■	1SFA 616 401 R41□□
	■■■	□□
24 V AC/DC	10	10
115 V AC/DC	30	30
230 V AC	40	40

### Potentiometer



Type	K T1-1B	-	-
Order Code 1SFA 616 ... ..	410 R1006	410 R1056	410 R1106

<b>Type</b>	<b>Actuator</b> for potentiometer For shaft diameter 6 - 6.35 mm. Min. shaft length 20 mm. Black handle integrated pos. indication and white marking	<b>Type</b>	<b>Potentiometer, 5 kΩ</b> including actuator	<b>Type</b>	<b>Potentiometer, 10 kΩ</b> including actuator
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Front cap:  
Black plastic

<b>K T-1B</b>	-	-
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**Note :** For bezel in chrome plastic or metal please contact your nearest sales office.

When ordering use Type or Order Code

# Pilot devices, Ø 22 mm – Accessories

## Ordering table



Description	Order Code	Weight, kg
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### Filament bulbs

Type of current: AC/DC. A lamp changing tool is required for changing bulb.

Rated voltage, V	Rated current, mA	Rated output, W	Luminance mcd	Service life, h	Order Code	Weight, kg
6	200	1.2	350	10 000	<b>5911 086-11</b>	0.002
12	100	1.2	230	10 000	<b>5911 086-12</b>	0.002
24	50	1.2	280	10 000	<b>5911 086-13</b>	0.002
30	40	1.2	250	10 000	<b>5911 086- 4</b>	0.002
48	42	2	500	6 000	<b>5911 086- 5</b>	0.002
60	20	1.2	190	5 000	<b>5911 086-14</b>	0.002
110	18	2	250	7 500	<b>5911 086- 7</b>	0.002
130	15	2	120	7 500	<b>5911 086-15</b>	0.002

### LED

With one diode chip mounted on a BA 9s base. A lamp changing tool is required for changing bulb.

Choose the same colour for the LED and the lamp cap or else use a clear lamp cap.

For white light use white LED with clear lamp cap.

At DC the lamp base have to be connected to cathode (-) and the bottom contact to anode (+).

Rated voltage, V	Rated current, mA	Colour	Wave-length, nM	Luminance mcd	Order Code	Weight, kg
Type of current: (AC)/DC <sup>1)</sup> Service life >50 000 hours.						
24	15	Red	630	250	<b>1SFA 616 921 R2021</b>	0.005
24	15	Green	525	800	<b>1SFA 616 921 R2022</b>	0.005
24	15	Yellow	592	250	<b>1SFA 616 921 R2023</b>	0.005
24	15	Blue	470	400	<b>1SFA 616 921 R2024</b>	0.005
24	15	White	x=0.31 x=0.32	500	<b>1SFA 616 921 R2025</b>	0.005

<sup>1)</sup> At AC the luminance is decreased with 30 % and there is also a slight flickering

Description	Order Code	Weight, kg
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### Mounting tool

Used for tightening the nut of the attachment device in confined spaces.

**1SFA 616 920 R8015** 0.100

### Membrane of silicone

Of transparent, heat and cold resistant silicon rubber.

Does not harden at low temperature. Gives IP 67 degree of protection. When membrane is used, remove the gasket.

For operator with:

Flush button	<b>1SFA 616 920 R8052</b>	0.002
Extended button	<b>1SFA 616 920 R8002</b>	0.002
Double pushbutton	<b>SK 616 503-4</b>	0.002

### Protective ring

To prevent inadvertent operation.

Not together with legend plate holder.

**SK 615 512-1** 0.002

### Protective cover

For flush button. To prevent inadvertent operation.

Not together with legend plate holder.

**1SFA 616 920 R8010**

### 30 mm adaptor

For use when fitting the 22 mm pushbutton range in 30 mm mounting holes. (1.5–4 mm panels)

*Note: Can not be used with emergency stop button*

Black plastic	<b>1SFA 616 920R8003</b>	0.012
Metal	<b>1SFA 616 920R8004</b>	0.037

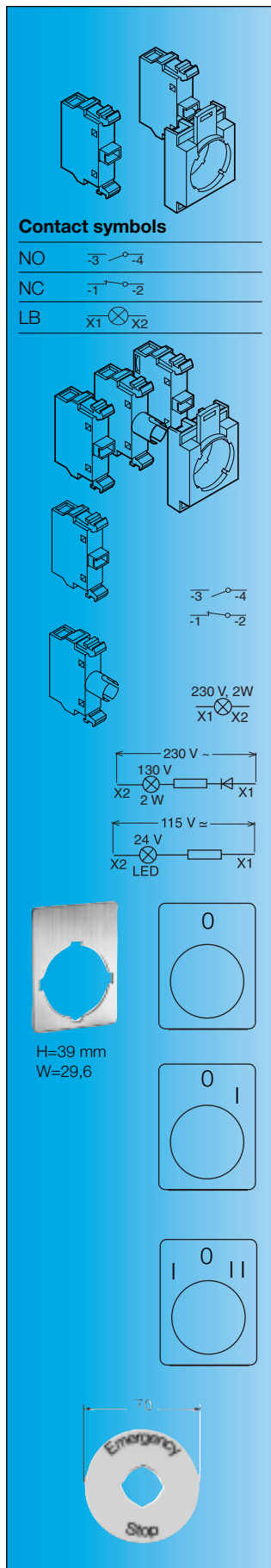
### Lamp changing tool

For LED and for bulbs

**6880 311-1** 0.005

# Pilot devices, Ø 22 mm – Accessories

## Ordering table



Max number of blocks in holder	Included blocks	Type	Order Code	Weight, kg
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### Contact blocks and lamp blocks with holder for front mounting

#### For non-illuminated operators

3	1 NC	<b>K CBH-01</b>	<b>1SFA 616 600 R1110</b>	0.019
3	1 NO	<b>K CBH-10</b>	<b>1SFA 616 600 R1101</b>	0.019
3	2 NC	<b>K CBH-02</b>	<b>1SFA 616 600 R1120</b>	0.032
3	2 NO	<b>K CBH-20</b>	<b>1SFA 616 600 R1102</b>	0.032
3	3 NC	<b>K CBH-03</b>	<b>1SFA 616 600 R1130</b>	0.045
3	3 NO	<b>K CBH-30</b>	<b>1SFA 616 600 R1103</b>	0.045
3	1 NC + 1 NO	<b>K CBH-11</b>	<b>1SFA 616 600 R1111</b>	0.032
3	2 NC + 1 NO	<b>K CBH-12</b>	<b>1SFA 616 600 R1121</b>	0.045
3	1 NC + 2 NO	<b>K CBH-21</b>	<b>1SFA 616 600 R1112</b>	0.045

#### For illuminated operators

3	1 NC + 1 LB	<b>K CBH-011</b>	<b>1SFA 616 600 R1210</b>	0.034
3	1 NO + 1 LB	<b>K CBH-101</b>	<b>1SFA 616 600 R1201</b>	0.034
3	1 NC + 1 NO + 1 LB	<b>K CBH-111</b>	<b>1SFA 616 600 R1211</b>	0.047
3	2 NC + 1 LB	<b>K CBH-021</b>	<b>1SFA 616 600 R1220</b>	0.047
3	2 NO + 1 LB	<b>K CBH-201</b>	<b>1SFA 616 600 R1202</b>	0.047

### Single contact blocks for front mounting

-	1 NO	<b>K CB-10</b>	<b>SK 616 001-A</b>	0.013
-	1 NC	<b>K CB-01</b>	<b>SK 616 001-B</b>	0.013

### Single lamp blocks for front mounting, BA 9s base

For 2 W, max. 230 V AC and DC bulb, neon bulb or LED.	<b>K LB-1</b>	<b>SK 616 003-A</b>	0.015
230 V AC supply voltage. For 130 V bulb max. 2 W.	<b>K LB-3</b>	<b>SK 616 003-C</b>	0.020
115 V AC and DC supply voltage. For 24 V LED	<b>K LB-4</b>	<b>SK 616 003-G</b>	0.017

### Legend plates

#### Engraved fixed plates with symbol/text

Symbol/text	Legend plate material	Order Code	Weight, kg
<b>For pushbutton</b>			
O	Silver-grey aluminium	<b>SK 615 550-61</b>	0.002
Start	Silver-grey aluminium	<b>SK 615 550-44</b>	0.002
Stop	Silver-grey aluminium	<b>SK 615 552-31</b>	0.002

Symbol/text	Legend plate material	Order Code	Weight, kg
<b>For two-position selector switch</b>			
O I	Silver-grey aluminium	<b>SK 615 550-75</b>	0.002
Stop Start	Silver-grey aluminium	<b>SK 615 552-55</b>	0.002

Symbol/text	Legend plate material	Order Code	Weight, kg
<b>For three-position selector switch</b>			
I O II	Silver-grey aluminium	<b>SK 615 550-81</b>	0.002
Hand O Auto	Silver-grey aluminium	<b>SK 615 550-80</b>	0.002
Slow Off Fast	Silver-grey aluminium	<b>SK 615 552-60</b>	0.002

Black text	Legend plate material	Order Code	Weight, kg
<b>For emergency stop pushbutton</b>			
Emergency Stop	Yellow aluminium plate	<b>SK 615 546-2</b>	0.010
ARRET D'URGENCE	Yellow aluminium plate	<b>SK 615 546-4</b>	0.010

When ordering use Type or Order Code

# Pilot devices, Ø 22 mm – Assembled stations

## Ordering table



### Non-metallic enclosures

Included contact blocks				Order Code	Weight, kg
NC	Legend plate text	Button/cap colour			

#### 1-seat Grey top/black bottom

One pushbutton. Momentary

1	I	Green		<b>1SFA 616 811 R1001</b>	0.045
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Included contact blocks				Order Code	Weight, kg
NC	Legend plate text	Button/cap colour			

#### 1-seat Yellow top/black bottom

40 mm emergency stop button. Twist release

2	–	Red		<b>1SFA 616 821 R1005</b>	0.089
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Included contact blocks				Order Code	Weight, kg
NC	NO	Legend plate text	Button/cap colour		
		Left	Right	Left	Right

#### 2-seat Grey top/black bottom

Two pushbuttons. Momentary.

1	1	O	I	Red	Green	<b>1SFA 616 812 R1001</b>	0.079
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Included contact blocks				Order Code	Weight, kg		
NC	NO	Legend plate text	Button/cap colour				
		Left	Centre	Right	Left	Centre	Right

#### 3-seat Grey top/black bottom

Two pushbuttons. Momentary. Pilot light in centre position

1	1	O	I	I	Red	Clear	Green	<b>1SFA 616 813 R1001</b>	0.116
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### Metallic enclosures

Included contact blocks				Order Code	Weight, kg
NO	Legend plate text	Button/cap colour			

#### 1-seat Grey

One pushbutton. Momentary. Degree of protection IP 66.

1	I	Green		<b>1SFA 616 831 R1001</b>	0.042
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Included contact blocks				Order Code	Weight, kg
NC	Legend plate text	Button/cap colour			

#### 1-seat Grey

40 mm emergency stop button. Maintained. Pull release. Degree of protection IP 54.

1	Emergency stop	Red		<b>1SFA 616 831 R1018</b>	0.045
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# Pilot devices, Ø 22 mm

## Technical data

### Standards

IEC 73, 529, 947-5-1, 947-5-5  
 EN 50 013, 60 947-5-1  
 VDE 0660 part 2  
 UL 508  
 CSA C22.2 No. 14  
 For detail information please contact ABB

### Degrees of protection

#### Operators

Pushbutton with flush or extended button	IP 66
Mushroom pushbutton, momentary	IP 66
Emergency stop pushbutton	IP 66
Double pushbutton	IP 54
Selector switch	IP 66
Key operated selector switch	IP 54
Pilot light	IP 66
Signal Beacons	IP 65

#### Electrical functions

Contact block and lamp block	IP 20
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#### Enclosures

Polycarbonate enclosures (Non-metallic) Marked with >PC-GF10< for recycling	IP 65
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### Temperature

Ambient temperature during operation	-25 to +70 °C
<i>Exception: All pilot devices with 2 W continuously lit filament bulb</i>	-25 to +40 °C
Storage temperature	-30 to +85 °C

### Contact blocks

Mechanical endurance 10 million operations

Self cleaning contacts of silver, NC contact has forced breaking.  
 At voltages and currents below 24 V and 5.6 mA two contact blocks in parallel are recommended. As an alternative, gold plated contacts are recommended.

#### Ratings as per UL/CSA, NEMA A 600, Q600

Rated insulation voltage	600 V
Rated thermal current	10 A
Rated operational current at	6 A
120 V	3 A
240 V	1.5 A
480 V	1.2 A
600 V	

#### Ratings as per IEC 947-5-1

Rated insulation voltage, $U_i$	690 V	
Rated thermal current, $I_{th}$	10 A	
Rated operational current, $I_e$		
utilisation category AC 15, at	120 V	8 A
	230 V	6 A
	400 V	4 A
	690 V	2 A
Rated operational current, $I_e$		
utilisation category DC 13, at	24 V	5 A
	125 V	1.1 A
	250 V	0.55 A

Contact resistance 25 milliohm

#### Max. number of contact blocks per operator <sup>1)</sup>

Pushbutton	6
Double pushbutton, selector switch and key operated selector switch, emergency stop pushbutton	4

<sup>1)</sup>The contact blocks can be stacked in max. two levels.

#### Short circuit protection

Max. fuse at 1 kA	16 A ordinary 10 A delayed
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### Lamp blocks

#### Ratings as per IEC 947-5-1

Rated insulation voltage	230 V
Base	BA 9s
Max. permissible power	2 W

#### Service life of filament bulb

It is generally true to say that bulbs for lower voltages give more light and withstand vibrations better than bulbs for higher voltages.

### Drilling plan for pushbuttons, switches and pilot lights

