GET IN TOUCH WITH OUR COMPONENTS

Electromechanical Components

x

RAFI

PRODUCT OVERVIEW

ELECTROMECHANICAL COMPONENTS

PUSHBUTTONS

	 LUMOTAST FK	 LUMOTAST 25	 LUMOTAST 75	 Keylock switches	 Other pushbuttons	 RAFIX 16/ RAFIX 16 F
Panel cut-out	Ø 16.2 mm	Ø 16.2 mm	Ø 16.2 mm	Ø 16.2 mm	Ø 9.1/20.3 mm	Ø 16.2 mm □ 23.1 mm Ø 22.3 mm
Contacts	1 NO	1 NO	1 NC + 1 NO 2 NC + 2 NO	1 to 4 NO	1 NC, 1 NO, 1 NC + 1 NO, 2 NO	1 NC, 1 NO, 1 NC + 1 NO, 2 NC, 2 NO
Contact material	Au	Au	Ag	Au	Ag	Ag / Au
Voltage max./min.	35 V / 0.02 V	35 V / 0.02 V	250 V	35 V	250 V / 0.02 V	250 V / 0.02 V
Current max./min.	100 mA / 0.1 mA	100 mA / 0.1 mA	4 A	100 mA	16 A / 0.1 mA	6 A / 1 mA
Current max./min.	Ribbon cable with connector, PCB plug-in socket	Ribbon cable with connector, PCB plug-in socket	Solder	PCB	Solder, screw, quick connect	Quick-connect, screw, PCB, plug-in socket
Degree of protection	IP 65	IP 65	IP 40 / 65	IP 65	IP 40	IP 65
Terminals	Bi-Pin T1 /T1 1¼	Bi-Pin T1 /T1 1¼	T 4.5	–	BA 9s	W 2 x 4.6d
Lamp socket	Filament lamp, LED	Filament lamp, LED	Filament lamp, LED	–	Filament lamp, LED	Filament lamp, LED
Collar shape	○□▭	□	○□▭	○▭	○	○□
Variants	Illuminated pushbutton, signal lamp	Illuminated pushbutton, EMERGENCY STOP button, keylock switch, selector switch, signal lamp	Illuminated pushbutton, signal lamp, keylock switch	Keylock switch, priority keylock switch	Pushbutton, illuminated pushbutton	Pushbutton, stop button, EMERGENCY STOP button, keylock switch, selector switch, toggle switch, potentiometer drive, signal-ling unit, signal indicator

CONTROL COMPONENTS				SIGNAL LAMPS	
					
RAFIX 22 FS+	**RAFIX 22 FSR**	**RAFIX 30 FS+**	**RAFIX 22 QR**	**Integrated LED**	**Integrated neon lamp**
Ø 22.3 mm	Ø 22.3 mm	Ø 30.5 mm	Ø 22.3 mm	Ø 5–30 mm	Ø 7–14 mm
1 NC, 1 NO, 1 NC + 1 NO, 2 NC, 2 NO	1 NC, 1 NO, 1 NC + 1 NO, 2 NC, 2 NO	1 NC, 1 NO, 1 NC + 1 NO, 2 NC, 2 NO	1 NC, 1 NO, up to 6 NC, 6 NO	–	–
Ag / Au	Ag / Au	Ag / Au	Ag / Au	–	–
250 V / 0.02 V	250 V / 0.02 V	250 V / 0.02 V	500 V / 0.02 V	28 V	230 V
4 A / 1 mA	4 A / 1 mA	4 A / 1 mA	10 A / 1 mA	0.25 – 1 W	–
PCB, quick-connect (QC)	PCB, quick-connect (QC)	PCB, quick-connect (QC)	Screw, cage clamp, quick-connect	Solder, quick-connect	Solder, quick-connect
IP 65	IP 65 / 69 K	IP 65	IP 65	IP 40	IP 40
–	–	–	BA 9s	None	None
LED, clip	LED, clip	LED, clip	Filament lamp, neon lamp, LED	LED	Neon lamp
○□	○	○	○□	○△	○□↑
Pushbutton, EMERGENCY STOP button, signal indicator, keylock switch, selector switch, potentiometer drive, USB feed-through	Pushbutton, EMERGENCY STOP button, signal indicator, keylock switch, selector switch, USB feedthrough	Pushbutton, signal indicator, keylock switch, selector switch, USB feed-through	Pushbutton, mushroom actuator, EMERGENCY STOP button, twin push-button, signal indica-tor, keylock switch, selector switch, potentiometer drive, signalling unit		

PRODUCT OVERVIEW

ELECTROMECHANICAL COMPONENTS

SHORT-TRAVEL KEYSWITCHES






	MICON 5	RACON 8	RACON 12	RF 15/15 H	RF 15 R	RF 15 N
Grid min.	6 x 8 mm	12 mm	15,24 mm	19,05 mm	15,24 mm	15,24 mm
Overall height, min.	3.85 mm, variable	5 mm, variable	5 mm, variable	9.7 / 12.5 mm	9.7 / 12.5 mm	6.2 mm, variable
Contacts	1 NO	1 NO	1 NO	1 NO	1 NO	1 NO
Contact material	Au	Au	Au	Ag / Au	Ag / Au	Ag / Au
Rated voltage	0.02…35 V	0.02…35 V	0.02…35 V	0.02…50 V	0.02…50 V	0.02…50 V
Rated current	0,01…100 mA	0,01…100 mA	0,01…100 mA	0,01…250 mA	0,01…250 mA	0,01…250 mA
Operating travel	0.7 … 1.1 mm	0.34 mm	0.61 mm	0.5 mm	0.5 mm	0.5 mm
Operating force	3.0 … 8.0 N	3.3 ... 6.3 N	3.6 … 9.7 N	2 - 3 N	2 - 3 N	2 - 3 N
Terminals	PCB SMT & THT	PCB SMT & THT	PCB SMT & THT	PCB THT	PCB THT	PCB THT
Illumination	Separate LED	separate LED	separate LED	Full / spot	Full / spot	Full / spot
Operating life min.	250,000 / 1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Special features	Variable height by use of plungers, different operating forces	Variable height by use of plungers, different operating forces	Variable height by use of plungers, 90° vertical adapter, different operating forces	Variable height by use of plungers, 1-module indicator field		Variable height by use of plungers

				FULL-TRAVEL KEYSWITCHES		KEYLOCK SWITCHES
						
RF 19/19 H	**KN 19**	**RK 90/II**	**RG 85 III**	**RS 76 M**	**RS 76 C**	**Keylock switches**
23 mm	19,05 x 38,1 mm	12,5 / 19,05 mm	35 mm	19.05 mm	19.05 mm	19.05 mm
9.7 / 12.5 mm	9.7 mm		12.08 mm	15.5 mm	15.5 mm	40 mm
1 NO	1 NC + 1 NO/ 2 NC / 2 NO		1 NO	1 NO	1 NO	1 NO – 4 NO
Ag / Au	Ag		Ag	Au	Contactless	Au
0.02…50 V	12…250 V		3…50 V	2…35 V	4.75…5.25 V	2…35 V
0,01…250 mA	6 A		0,1…250 mA	0.01…100 mA	–	0.01…100 mA
0.5 mm	0.5 mm		1 mm	4 mm	4 mm	1...4 x 90° rotating angle
2 - 3 N	9 ± 3 N		3.5 - 4.5 N	0.9...1.4 N	0.7...1 N	–
PCB THT	PCB THT		8-pin Micro Match connector	PCB THT	PCB THT	PCB THT
Full / spot	Spot	Full	Edge and symbol	Full / spot	Spotl	–
1,000,000	50,000 – 200,000		1,000,000	10,000,000	100,000,000	10,000
Indicator fields 1/2-, 1- and 2-module	Mains switch under overlay or keycaps	Plastic or aluminium surface, compatible with MICON, RACON, RF and KN 19	Vandal-proof	Fully illuminable keycaps (RS 76 MX)	Very soft stroke, extremely long operating life	Degree of protection IP 54, priority keylock switch

NEW PRODUCTS IN THE CATALOGUE

ELECTROMECHANICAL COMPONENTS

LUMOTAST 22

E-Stop pushbuttons, 22.3 mm

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RAFIX 22 FS+

Pushbuttons FLEXLAB

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RAFIX 22 FS+

Keylock switches compact

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RAFIX 22 FS+

Emergency stop pushbuttons compact

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RAFIX 22 FSR

Pushbuttons

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RAFIX 22 FSR

Selector switches

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RAFIX 22 FSR

Keylock switches

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RAFIX 22 FSR

Emergency stop pushbuttons

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RAFIX 22 FSR

Signal indicators

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RAFIX 30 FS+

Pushbuttons

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RAFIX 30 FS+

Pushbuttons FLEXLAB

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RAFIX 30 FS+

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RAFIX 30 FS+

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RAFIX 30 FS+

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RAFIX 30 FS+

USB feedthroughs

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RAFIX FS

Short-travel adapters

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MICON 5

Plungers round, ring illumination

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MICON 5

Plungers square, spot-illumination

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HOW TO USE THE CATALOGUE

ELECTROMECHANICAL COMPONENTS

Latest online version as the basis for your order
Since this catalogue is published in paper format only at certain intervals, it is not as up-to-date as our website. For this reason, we recommend using the datasheets on our website when ordering standard products.
You can always find the latest information on our products here: http://www.shop.rafi.de

Creation of individual datasheets in PDF format
You can create PDF datasheets in our online catalogue at http://www.shop.rafi.de. Find the product you want using the search tool or by entering the order number and then click on the "Create datasheet" link.

3D data and 2D drawings
For many of our products, we can provide 3D models in the *.stp file format. For older products, we usually still have dimensional drawings in dxf format. This data can be found in our online catalogue where the individual products are specified: http://www.shop.rafi.de

Correction sheets for the printed catalogue
We provide correction sheets on our home page if we discover errors after the catalogue has been printed. Alternatively, you can download the individual (corrected) chapters of this catalogue in PDF format at x/Downloads.

Availability
We always strive to satisfy the needs of our customers. However, it is necessary to mention that our production is contingent on the availability and delivery of the appropriate base materials. Such issues, in addition to changing legislation, can result in modification or discontinuation of our products.

Specifications
The specifications, depictions and other information about our products are merely the results of individual technical inspections. The conditions are derived from the pertinent standards. These inspections should be considered to be independent of one another and they cannot be used to infer possible interactions, especially also in terms of the applicable usage category, installation situation and/or environmental conditions. If you need an evaluation of your application, we will be happy to prepare an offer on request.

Subject to change
We, the RAFI Group, reserve the right to deviate from the specifications in this catalogue, especially in terms of the technical and exterior designs, colours and materials from which the products are manufactured. Excluded from this provision are the basic core functions of our products, on which our customers rely.

Information about our products (e.g. weights, dimensions, practical values, capacity, tolerances and specifications) as well as the depictions (e.g. drawings, CAD data and figures), both in printed and in electronic format, is authoritative only as an approximation unless usability for the express and contractually stipulated purpose requires precise conformity. Such information and depictions do not represent guaranteed quality features but are non-binding descriptions or indicators of the product characteristics. Deviations which are customary in the trade and deviations which are required by law or represent technical improvements, as well as the substitution of components with equivalent parts (form/fit/function), are permissible insofar as they do not impair the usability for the express and contractually stipulated purpose. This applies in particular to spare parts and subsequent orders.

RoHS conformity
The products in this catalogue are RoHS-compliant (RoHS = Restriction of Hazardous Substances).
The components are qualified for lead-free soldering processes. See the glossary for more details.

Terms and conditions
Our current terms and conditions (sales) can be found at x/AGBs.

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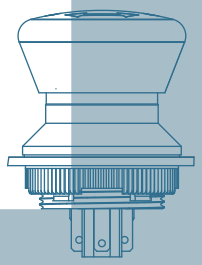

PUSHBUTTONS

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	LUMOTAST FK - Signal lamps	1 - 11
	LUMOTAST 25	**1 - 15**
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- NEW -	LUMOTAST 22 - E-Stop, mounting hole diameter 22.3 mm	1 - 87

Concepts

1. Momentary pushbuttons are switching elements which are used for making or breaking contact while they are being pressed.
2. Latching pushbutton are used for making or breaking contact until they are returned to their initial position by being pressed again.
3. Illuminated pushbuttons have the same functions as described for (1) and (2) and feature an additional lamp socket for accomodating a filament, neon lamp or LED.
4. Legending can ce effected using kabel holders, legend inserts, by engraving or hot stamping. Grooved transparent lenses are not suitable for legending.

CE-Conformity

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

Emergency-stop components with an operating voltage < 50 V
F. ex. LUMOTAST 25 emergency-stop. For this pushbutton the Machine Directive 89/392/EWG applies.

All products with an operating voltage > 50 V
For these elements the Low-Voltage Directive 72/23/EWG applies.

All products with an operating voltage < 50 V
For these products no directive applies.

Single parts, accessories and illumination
For these products no directiveapplies.

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

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.

LUMOTAST FK

LUMOTAST FK - Illuminated pushbutton range

- Illuminable pushbuttons and signal lamps with lamp socket T 1/T 1¼.
- Mounting hole diameter 16.2 mm
- 35 V / 100 mA max.
- Degree of protection: IP65 acc. to DIN EN 60529
- Low profile
- Keyed socket connector and flat ribbon cable in insulation displacement (IDC) technology or PCB plug-in socket
- Time-saving click fixing method: Insert pushbutton into front panel and press pushbutton once to fix it.
- All products are RoHS compliant.

PUSHBUTTONS

LUMOTAST FK

Content

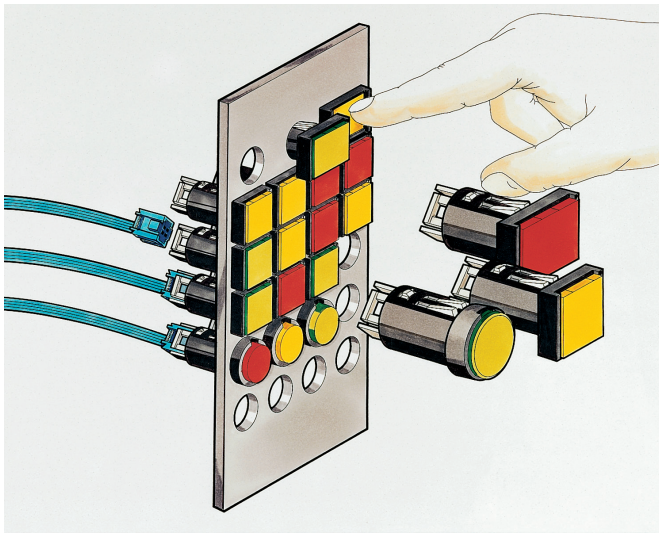
LUMOTAST FK Illuminated pushbuttons **1 - 7**
LUMOTAST FK Illuminated pushbutton, round collar 1 - 8
LUMOTAST FK Illuminated pushbutton, square collar 1 - 9
LUMOTAST FK Illuminated pushbutton, rectangular collar 1 - 10

LUMOTAST FK Signal lamps **1 - 11**
LUMOTAST FK Signal lamp, round collar 1 - 12
LUMOTAST FK Signal lamp, square collar 1 - 13
LUMOTAST FK Signal lamp, rectangular collar 1 - 13

Series LUMOTAST FK

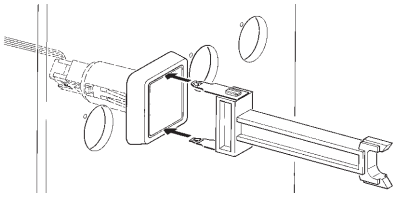
16.2 mm mounting hole diameter

Mounting

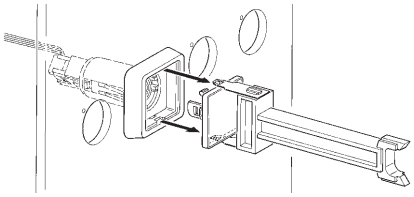


① pushbutton as supplied
② Insert pushbutton into panel cut-out
③ Press once to fit
④ Attach connector with flat-ribbon cable

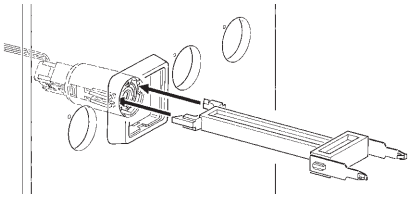
Disassembly from front side



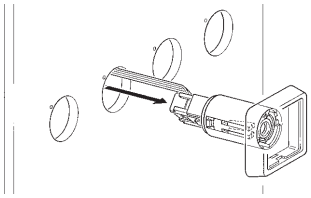
1. Grip body/lens



2. Pull out body/lens



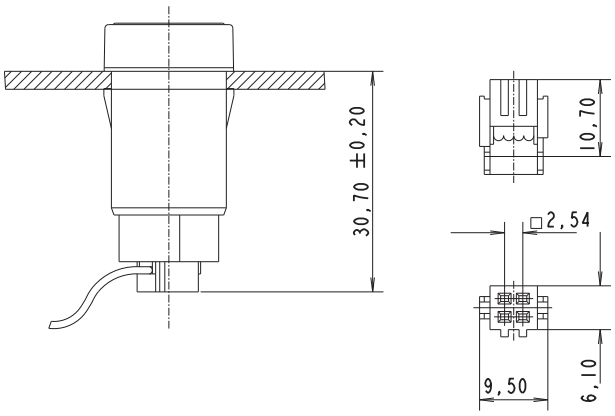
3. Release click lever



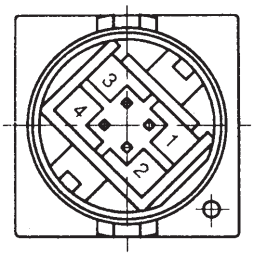
4. Pull out pushbutton/signal lamp with cable

Dimensional drawing

With quick connector and flat-ribbon cable

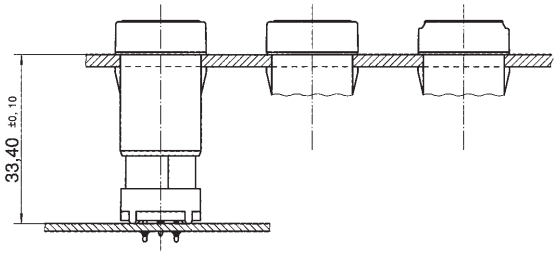


Connection diagram (PCB top view)

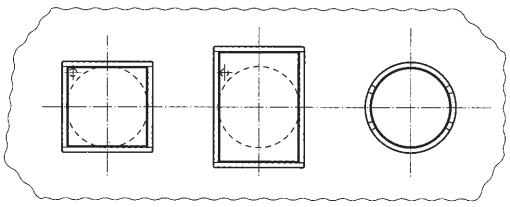


1 + 4 = pushbutton connection, 2 + 3 = lamp connection
If LED is used: connection 3 = cathode

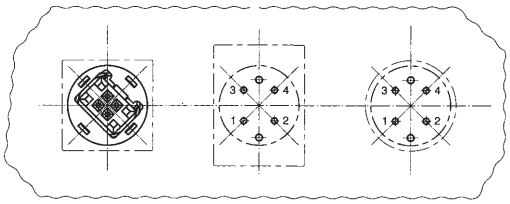
With plug-in socket



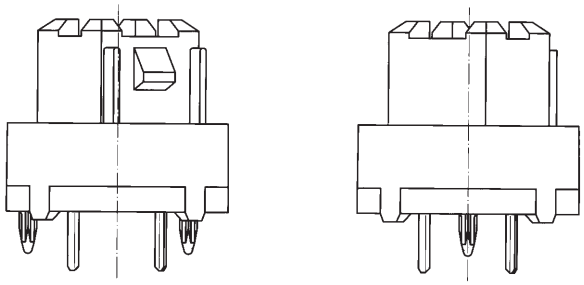
Front panel top view

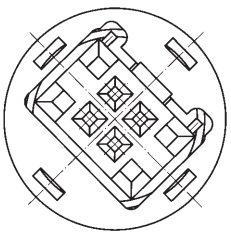


PCB top view

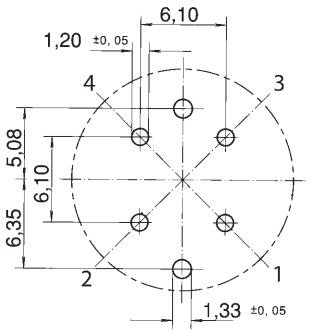


Plug-in socket for PCB

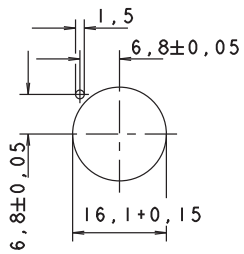




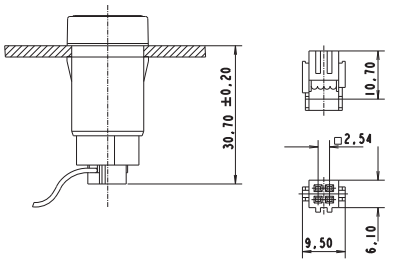
PCB hole diagram
Sight on component side



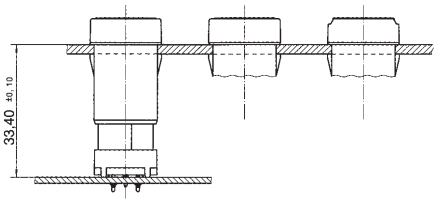
LUMOTAST FK Illuminated pushbuttons



Panel cut-out



with socket connector



with plug-in socket for PCB

Technical Data

→ General information	
Actuator	flat lens
Color of lens	see order block
Form of collar	see order block
→ Dimensions	
Length of collar	see order block
Width of collar	see order block
Diameter of collar	see order block
Overall height	6.6 mm
Mounting depth with connector	30.7 mm
Mounting depth with plug-in socket	33.4 mm
Mounting hole	16.2 mm
→ Mechanical design	
Mounting	click quick connection
Terminals	pin connector 4-pole / plug-in socket
Contact system	snap-action contact
Contact function	momentary
Contact arrangement	1 NO
Contact materials	Au
Illumination	yes
Lamp socket	Bi-Pin T1 /T1¼
→ Mechanical characteristics	
Operating force max.	6 N
Operating travel	3 mm
Switching travel	1.9 mm
Robustness max.	100 N
→ Electrical characteristics	
Rated voltage AC/DC max.	35 V
Rated voltage AC/DC min.	0.02 V
Rated current AC/DC max.	100 mA
Rated current AC/DC min.	0.01 mA
Contact resistance acc. to life max.	300 mΩ
Contact resistance when new max.	100 mΩ
Bouncing time max.	5 ms
→ Other specifications	
Operating life (operations)	1,000,000
Degree of protection from front side	IP65 (DIN EN 60529)
Operation temperature min.	-25 °C
Ambient temp. operating max. without lamp /LED	+70 °C
Ambient temp. operating max. with lamp /LED	+55 °C
Storage temperature min.	-40 °C

– Technical data (continued) –
LUMOTAST FK - Illuminated pushbutton

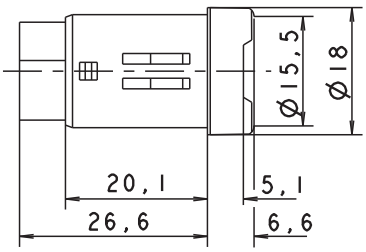
Storage temperature max.	+80 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Weight	6 g
ROHS compliant	yes
REACH compliant	yes

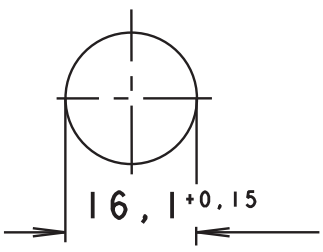
Accessories LUMOTAST FK - Illuminated pushbutton

→ Description	Photo	Order no.	Additional accessories see page
Socket Bi-PinT 1, LED		-	5 - 6
Socket Bi-PinT 1, LED superbright		-	5 - 6
Plug-in socket for PCB		5.00.645.036/0000	5 - 28
Cable (flat ribbon cable 10 cm with socket connector and male quick connector, AMP 4-pin)		5.03.771.306/0000	5 - 29
Disassembly tool for LUMOTAST FK		5.05.800.041/0000	5 - 27
Flat ribbon cable, 4-wire, 1 m long		5.37.700.124/0000	5 - 28
Socket connector, 4-pin		5.92.025.368/0000	5 - 28

LUMOTAST FK
Illuminated pushbutton, round collar

Technical data see page 1 - 7





Panel cut-out

→ Contact function	Contact arrangement	Order no.	Note
momentary	1 NO	1.15.114.936/0000	Please include the desired lens in your order.

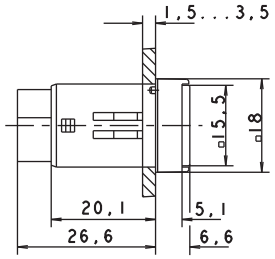
Note when using LEDs: A notch on the lamp socket identifies the cathode side (-).

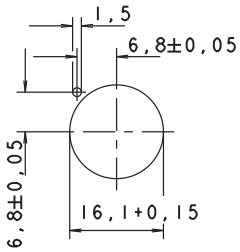
– Table (continued) –
LUMOTAST FK - Illuminated pushbutton, round collar

Lenses:
Lens, round, transparent colorless: 5.49.075.016/1002
Lens, round, transparent red: 5.49.075.016/1306
Lens, round, transparent yellow: 5.49.075.016/1403
Lens, round, transparent green: 5.49.075.016/1505
Lens, round, transparent blue: 5.49.075.016/1607

LUMOTAST FK
Illuminated pushbutton, square collar

Technical data see page 1 - 7





Panel cut-out

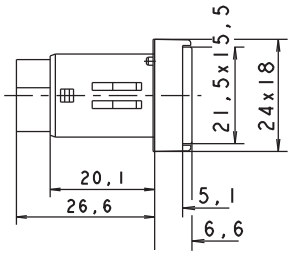
→	Contact function	Contact arrangement	Order no.	Note
	momentary	1 NO	1.15.114.906/0000	Please include the desired lens in your order.

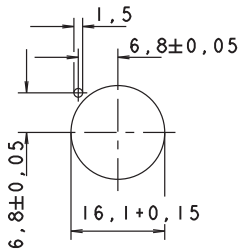
Note when using LEDs: A notch on the lamp socket identifies the cathode side (-).

Lenses:
Lens, square, transparent colorless: 5.49.075.015/1002
Lens, square, transparent red: 5.49.075.015/1306
Lens, square, transparent yellow: 5.49.075.015/1403
Lens, square, transparent green: 5.49.075.015/1505
Lens, square, transparent blue: 5.49.075.015/1607

LUMOTAST FK
Illuminated pushbutton, rectangular collar

Technical data see page 1 - 7





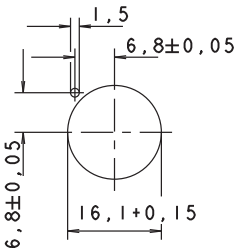
Panel cut-out

→	Contact function	Contact arrangement	Order no.	Note
	momentary	1 NO	1.15.114.966/0000	Please include the desired lens in your order.

Note when using LEDs: A notch on the lamp socket identifies the cathode side (-).

Lenses:
Lens, rectangular, transparent colorless: 5.49.075.017/1002
Lens, rectangular, transparent red: 5.49.075.017/1306
Lens, rectangular, transparent yellow: 5.49.075.017/1403
Lens, rectangular, transparent green: 5.49.075.017/1505
Lens, rectangular, transparent blue: 5.49.075.017/1607

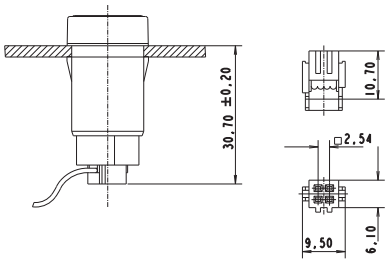
LUMOTAST FK Signal lamps



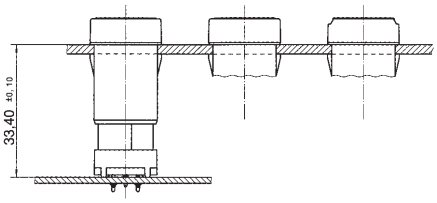
Panel cut-out

Technical Data

→ General information	
Form of lens	flat lens
Color 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 height	see order block
Mounting depth with connector	30.7 mm
Mounting depth with plug-in socket	33.4 mm
Mounting hole	16.2 mm
→ Mechanical design	
Mounting	click quick connection
Terminals	pin connector 4-pole / plug-in socket
Lamp socket	Bi-Pin T1 /T1¼
Lamp	filament lamp / LED
→ Electrical characteristics	
Voltage limit max.	24 V
Power limit max.	0.7 W
→ Other specifications	
Degree of protection from front side	IP65 (DIN EN 60529)
Weight	5 g
Operation temperature min.	-25 °C
Ambient temp. operating max.	+55 °C
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
ROHS compliant	yes
REACH compliant	yes



with socket connector



with plug-in socket for PCB

Accessories LUMOTAST FK - Signal lamp

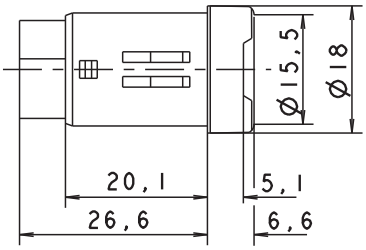
→ Description	Photo	Order no.	Additional accessories see page
Socket Bi-Pin T 1, LED		-	5 - 6
Socket Bi-Pin T 1, LED superbright		-	5 - 6
Plug-in socket for PCB		5.00.645.036/0000	5 - 28

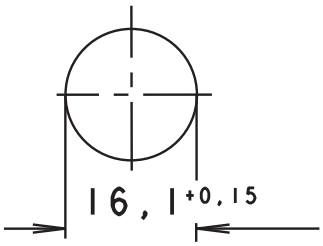
– Table (continued) –
Accessories LUMOTAST FK - Signal lamp

→	Description	Photo	Order no.	Additional accessories see page
	Cable (flat ribbon cable 10 cm with socket connector and male quick connector, AMP 4-pin)		5.03.771.306/0000	5 - 29
	Disassembly tool for LUMOTAST FK		5.05.800.041/0000	5 - 27
	Flat ribbon cable, 4-wire, 1 m long		5.37.700.124/0000	5 - 28
	Socket connector, 4-pin		5.92.025.368/0000	5 - 28

LUMOTAST FK
Signal lamp, round collar

Technical data see page 1 - 11





Panel cut-out

→	Power limit max.	Voltage limit max.	Lamp socket	Order no.	Note
	0.7 W	24 V	Bi-Pin T1 /T1¼	1.65.121.936/0000	Please include the desired lens in your order.

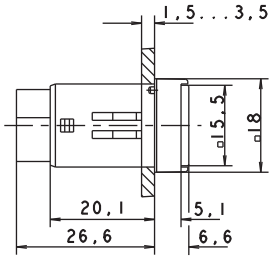
Do not press in lens in disassembled condition.

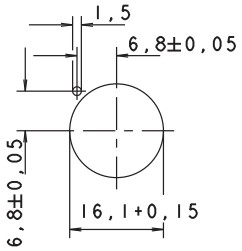
Note when using LEDs: A notch on the lamp socket identifies the cathode side (-).

Lenses:
Lens, round, transparent colorless: 5.49.075.016/1002
Lens, round, transparent red: 5.49.075.016/1306
Lens, round, transparent yellow: 5.49.075.016/1403
Lens, round, transparent green: 5.49.075.016/1505
Lens, round, transparent blue: 5.49.075.016/1607

LUMOTAST FK
Signal lamp, square collar

Technical data see page 1 - 11





Panel cut-out

→	Power limit max.	Voltage limit max.	Lamp socket	Order no.	Note
	0.7 W	24 V	Bi-Pin T1 /T1¼	1.65.121.906/0000	Please include the desired lens in your order.

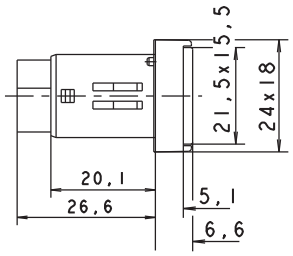
Do not press in lens in disassembled condition.

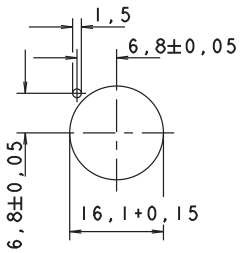
Note when using LEDs: A notch on the lamp socket identifies the cathode side (-).

Lenses:
Lens, square, transparent colorless: 5.49.075.015/1002
Lens, square, transparent red: 5.49.075.015/1306
Lens, square, transparent yellow: 5.49.075.015/1403
Lens, square, transparent green: 5.49.075.015/1505
Lens, square, transparent blue: 5.49.075.015/1607

LUMOTAST FK
Signal lamp, rectangular collar

Technical data see page 1 - 11





Panel cut-out

→	Power limit max.	Voltage limit max.	Lamp socket	Order no.	Note
	0.7 W	24 V	Bi-Pin T1 /T1¼	1.65.121.966/0000	Please include the desired lens in your order.

Do not press in lens in disassembled condition.

Note when using LEDs: A notch on the lamp socket identifies the cathode side (-).

Lenses:
Lens, rectangular, transparent colorless: 5.49.075.017/1002

– Table (continued) –
LUMOTAST FK - Signal lamp, rectangular collar

Lens, rectangular, transparent red: 5.49.075.017/1306
Lens, rectangular, transparent yellow: 5.49.075.017/1403
Lens, rectangular, transparent green: 5.49.075.017/1505
Lens, rectangular, transparent blue: 5.49.075.017/1607

LUMOTAST 25

LUMOTAST 25 - Pushbutton range

- Illuminable pushbuttons and signal lamps.
- Mounting hole diameter: 16.2 mm
- 35 V / 100 mA max.
- Degree of protection: IP65 acc. to DIN EN 60529
- Low profile
- Lamp socket Bi-Pin T 1 for LEDs and filament lamps
- Keyed socket connector and flat ribbon cable or PCB plug-in socket
- Ring nut or click fixing method.
- All products are RoHS compliant.

PUSHBUTTONS

LUMOTAST 25

1

LUMO 25

Content

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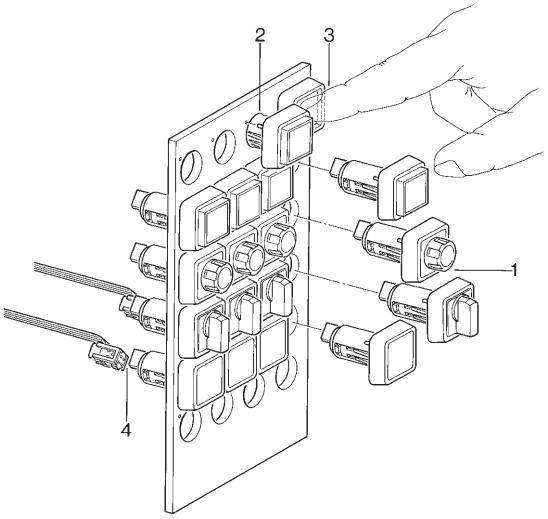
Series LUMOTAST 25

16.2 mm mounting hole diameter

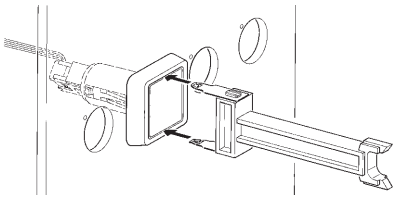
Mounting of Click-Version



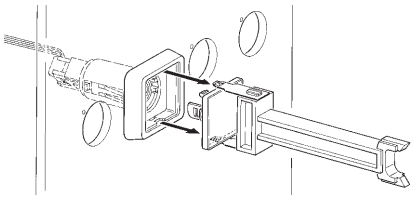
① As delivered
② Insert pushbutton in hole
③ Actuate once
④ Insert connector with flat-ribbon cable

Disassembly Click-Version from Front Side

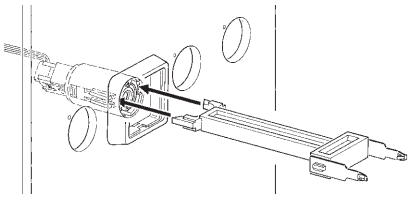
Click-Version from front (only for pushbuttons and signal lamps with special tool for dismounting)



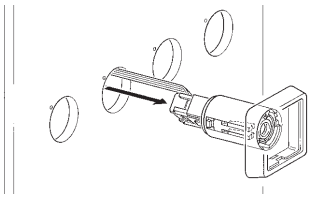
1. Grip body/lens



2. Pull out body/lens



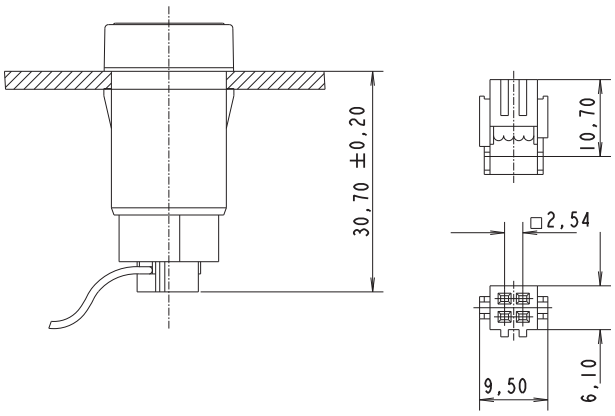
3. Release click lever



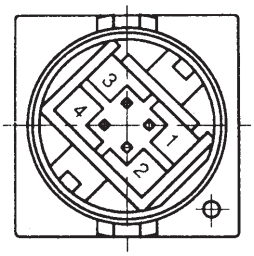
4. Pull out pushbutton/signal lamp with cable

Dimensional drawing

With quick connector and flat-ribbon cable

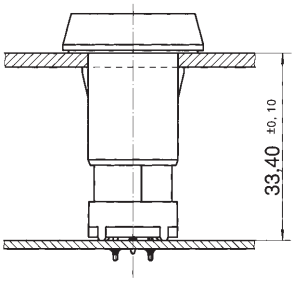


Connection diagram (PCB top view)

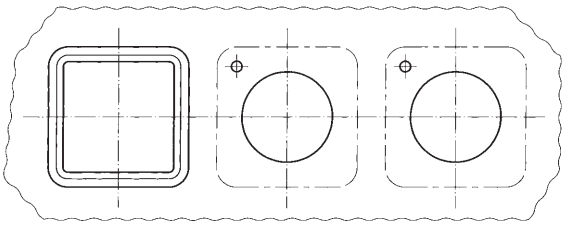


1 + 4 = pushbutton connection, 2 + 3 = lamp connection
If LED is used: connection 3 = cathode

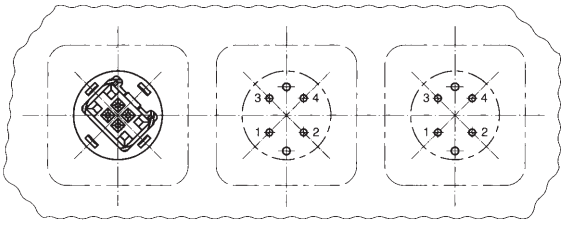
With plug-in socket



Front panel top view

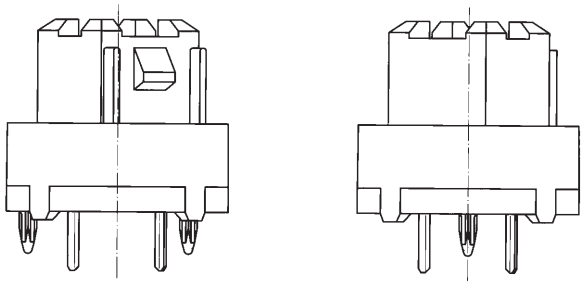


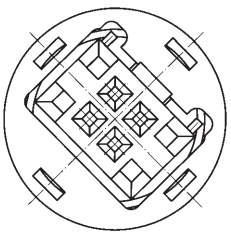
PCB top view



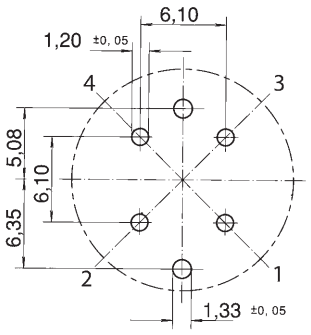
1+4 contact connection
2+3 lamp connection

Plug-in socket for PCB

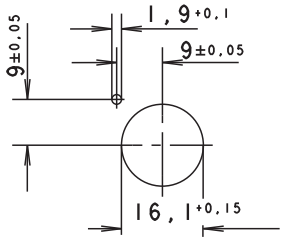




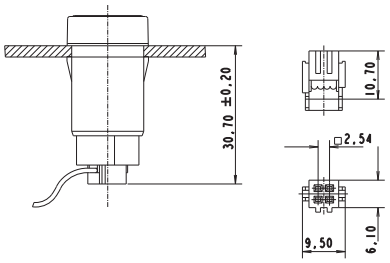
PCB hole diagram
Sight on component side



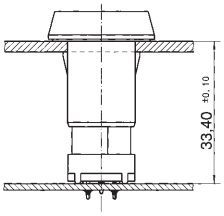
LUMOTAST 25 Illuminated pushbuttons



Panel cut-out



with socket connector



with PCB plug-in socket

Technical Data

→ General information	
Form of lens	see order block
Color of lens	see order block
Form of collar	square
→ Dimensions	
Length of collar	25 mm
Width of collar	25 mm
Overall height	7.1 mm
Mounting depth with connector	30.7 mm
Mounting depth with plug-in socket	33.4 mm
Mounting hole	16.2 mm
→ Mechanical design	
Mounting	see order block
Terminals	pin connector 4-pole / plug-in socket
Contact system	snap-action contact
Contact function	momentary
Contact arrangement	1 NO
Contact materials	Au
Illumination	yes
Lamp socket	Bi-Pin T1 /T1¼
→ Mechanical characteristics	
Operating force max.	6 N
Operating travel	3 mm
Switching travel	2 mm
Robustness max.	100 N
→ Electrical characteristics	
Rated voltage AC/DC max.	35 V
Rated voltage AC/DC min.	0.02 V
Rated current AC/DC max.	100 mA
Rated current AC/DC min.	0.01 mA
Contact resistance acc. to life max.	100 mΩ
Bouncing time max.	5 ms
→ Other specifications	
Operating life (operations)	1,000,000
Degree of protection from front side	IP65 (DIN EN 60529)
Ambient temp. operating max. without lamp /LED	-25 °C
Ambient temp. operating max. without lamp /LED	+70 °C
Ambient temp. operating min. with lamp /LED	-25 °C
Ambient temp. operating max. with lamp /LED	+55 °C

– Technical data (continued) –
LUMOTAST 25 - Illuminated pushbutton

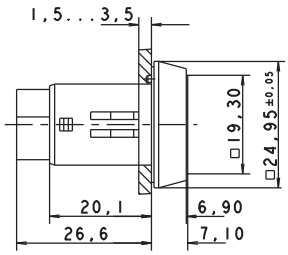
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Weight	7 g
ROHS compliant	yes
REACH compliant	yes

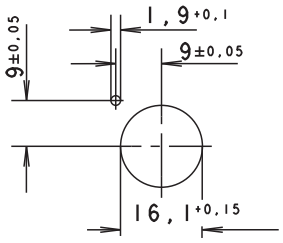
Accessories LUMOTAST 25 - Illuminated pushbutton

→ Description	Photo	Order no.	Additional accessories see page
Socket Bi-PinT 1, LED		-	5 - 6
Socket Bi-PinT 1, LED superbright		-	5 - 6
Plug-in socket for PCB		5.00.645.036/0000	5 - 28
Cable (flat ribbon cable 10 cm with socket connector and male quick connector, AMP 4-pin)		5.03.771.306/0000	5 - 29
Disassembly tool for LUMOTAST 25, RAFIX 16		5.05.800.042/0000	5 - 27
Blanking cap complete with sealing disc and ring nut, square		5.05.800.049/0100	2 - 83, 5 - 23
Label holder, flush, for square collar		5.07.620.004/0000	2 - 80
Flat ribbon cable, 4-wire, 1 m long		5.37.700.124/0000	5 - 28
Fixing spanner M 15, M 16		5.58.002.019/0105	5 - 25
Legend insert, blank, use only for transparent lenses		5.70.635.000/2000	-
Legend label 23 x 16 for label holder, without legend		5.73.111.000/0000	-
Socket connector, 4-pin		5.92.025.368/0000	5 - 28

LUMOTAST 25
Illuminated pushbutton with flush lens, „Click“ quick-assembly feature

Technical data see page 1 - 19





Panel cut-out

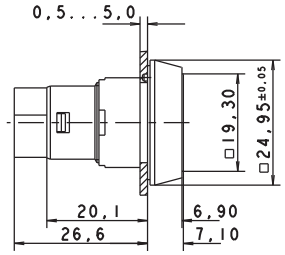
→	Contact function	Contact arrangement	Order no.	Note
	momentary	1 NO	1.15.150.506/0000	Please include the desired lens in your order.

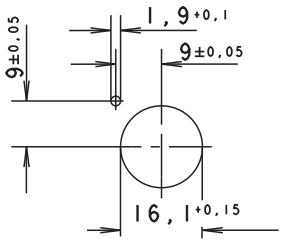
Note when using LEDs: A notch on the lamp socket identifies the cathode side (-).

Lenses:
Lens, square, transparent colorless: 5.49.077.011/1002
Lens, square, transparent red: 5.49.077.011/1306
Lens, square, transparent yellow: 5.49.077.011/1403
Lens, square, transparent green: 5.49.077.011/1505
Lens, square, transparent blue: 5.49.077.011/1607

LUMOTAST 25
Illuminated pushbutton with flush lens, ring nut fixing

Technical data see page 1 - 19





Panel cut-out

→	Contact function	Contact arrangement	Order no.	Note
	momentary	1 NO	1.15.150.556/0000	Please include the desired lens in your order.

Note when using LEDs: A notch on the lamp socket identifies the cathode side (-).

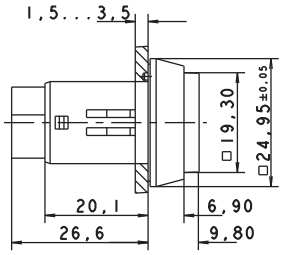
Lenses:
Lens, square, transparent colorless: 5.49.077.011/1002

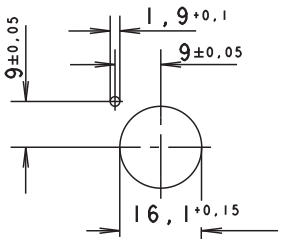
– Table (continued) –
LUMOTAST 25 - Illuminated pushbutton with flush lens, ring nut fixing

Lens, square, transparent red: 5.49.077.011/1306
Lens, square, transparent yellow: 5.49.077.011/1403
Lens, square, transparent green: 5.49.077.011/1505
Lens, square, transparent blue: 5.49.077.011/1607

LUMOTAST 25
Illuminated pushbutton with protruding lens, „Click“ quick-assembly feature

Technical data see page 1 - 19





Panel cut-out

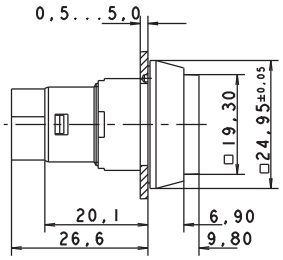
→	Contact function	Contact arrangement	Order no.	Note
	momentary	1 NO	1.15.150.606/0000	Please include the desired lens in your order.

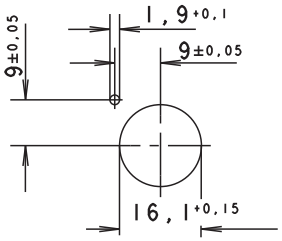
Note when using LEDs: A notch on the lamp socket identifies the cathode side (-).

Lenses:
Lens, square, transparent colorless: 5.49.077.012/1002
Lens, square, transparent red: 5.49.077.012/1306
Lens, square, transparent yellow: 5.49.077.012/1403
Lens, square, transparent green: 5.49.077.012/1505
Lens, square, transparent blue: 5.49.077.012/1607

LUMOTAST 25
Illuminated pushbutton with protruding lens, ring nut fixing

Technical data see page 1 - 19



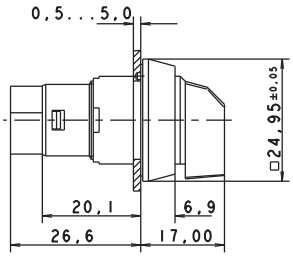


Panel cut-out

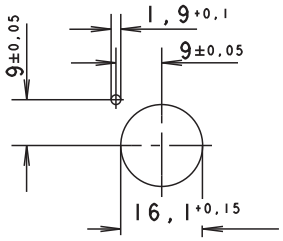
→	Contact function	Contact arrangement	Order no.	Note
	momentary	1 NO	1.15.150.656/0000	Please include the desired lens in your order.

Note when using LEDs: A notch on the lamp socket identifies the cathode side (-).

Lenses:
Lens, square, transparent colorless: 5.49.077.012/1002
Lens, square, transparent red: 5.49.077.012/1306
Lens, square, transparent yellow: 5.49.077.012/1403
Lens, square, transparent green: 5.49.077.012/1505
Lens, square, transparent blue: 5.49.077.012/1607



LUMOTAST 25
Selector switches



Panel cut-out

Technical Data

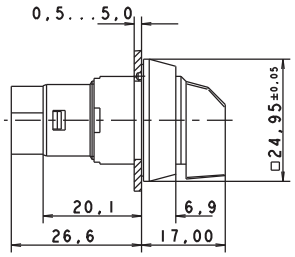
→ General information	
Actuator	handle
Color of handle	black opaque
Form of collar	square
→ Dimensions	
Length of collar	25 mm
Width of collar	25 mm
Overall height	17 mm
Mounting depth with connector	30.7 mm
Mounting depth with plug-in socket	33.4 mm
Mounting hole	16.2 mm
→ Mechanical design	
Mounting	see order block
Terminals	pin connector 4-pole / plug-in socket
Contact system	snap-action contact
Contact function	see order block
Contact arrangement	1 NO
Contact materials	Au
Illumination	no
→ Mechanical characteristics	
Operating force min.	0.03 Nm
Rotating angle	see order block
Operating force max.	1.5 N
→ Electrical characteristics	
Rated voltage AC/DC max.	35 V
Rated voltage AC/DC min.	0.02 V
Rated current AC/DC max.	100 mA
Rated current AC/DC min.	0.01 mA
Contact resistance acc. to life max.	100 mΩ
Bouncing time max.	5 ms
→ Other specifications	
Operating life (operations)	500,000
Degree of protection from front side	IP65 (DIN EN 60529)
Operation temperature min.	-25 °C
Ambient temp. operating max.	+70 °C
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Weight	8 g
ROHS compliant	yes
REACH compliant	yes

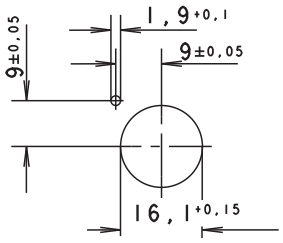
Accessories LUMOTAST 25 - Selector switch

→	Description	Photo	Order no.	Additional accessories see page
	Plug-in socket for PCB		5.00.645.036/0000	5 - 28
	Cable (flat ribbon cable 10 cm with socket connector and male quick connector, AMP 4-pin)		5.03.771.306/0000	5 - 29
	Blanking cap complete with sealing disc and ring nut, square		5.05.800.049/0100	2 - 83, 5 - 23
	Label holder, flush, for square collar		5.07.620.004/0000	2 - 80
	Flat ribbon cable, 4-wire, 1 m long		5.37.700.124/0000	5 - 28
	Fixing spanner M 15, M 16		5.58.002.019/0105	5 - 25
	Socket connector, 4-pin		5.92.025.368/0000	5 - 28

LUMOTAST 25
Selector switch, ring nut fixing

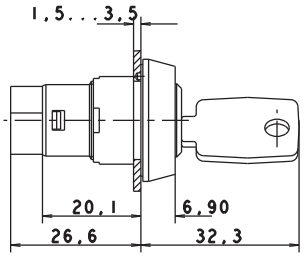
Technical data see page 1 - 24



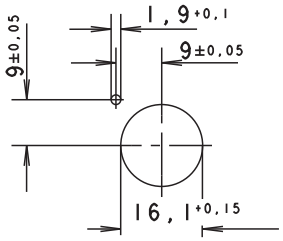


Panel cut-out

→	Contact arrangement	Contact function	Rotating angle		Actuator	Order no.
	1 NO	latching	right, 1 x 90°		handle	1.15.153.106/0100



LUMOTAST 25
Keylock switches



Panel cut-out

→ The locking systems we use are created according to DIN EN 1303 by leading lock manufacturers. They are are open, mechanical systems that require occasional maintenance of the machinery or plant operator depending on environmental conditions.

Technical Data

→ General information	
Color of lens	black opaque
Form of collar	square
→ Dimensions	
Length of collar	25 mm
Width of collar	25 mm
Overall height	32.3 mm
Mounting depth with connector	30.7 mm
Mounting depth with plug-in socket	33.4 mm
Mounting hole	16.2 mm
→ Mechanical design	
Mounting	ring nut
Terminals	pin connector 4-pol./ plug-in socket
Contact system	snap-action contact
Contact function	latching
Contact arrangement	1 NO
Contact materials	Au
Illumination	no
Lamp socket	no
Lock	cylinder lock
Wafers	8 pins
Lock type	5201
Number of locking positions	10,000
Main key	yes
Symmetric key	yes
Key removal position	see order block
→ Mechanical characteristics	
Operating force max.	1.5 N
Rotating angle	90°
→ Electrical characteristics	
Rated voltage AC/DC max.	35 V
Rated voltage AC/DC min.	0.02 V
Rated current AC/DC max.	100 mA
Rated current AC/DC min.	0.01 mA
Contact resistance acc. to life max.	100 mΩ
Bouncing time max.	5 ms
→ Other specifications	
Operating life (operations)	50,000
Degree of protection from front side	IP65 (DIN EN 60529)
Operation temperature min.	-25 °C

– Technical data (continued) –
LUMOTAST 25 - Keylock switch

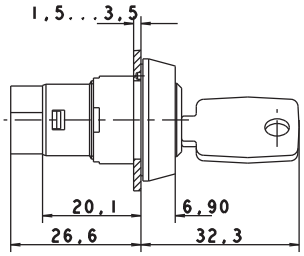
Ambient temp. operating max.	+70 °C
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Weight	20 g
ROHS compliant	yes
REACH compliant	yes

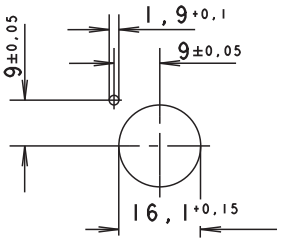
Accessories LUMOTAST 25 - Keylock switch

→ Description	Photo	Order no.	Additional accessories see page
Plug-in socket for PCB		5.00.645.036/0000	5 - 28
Cable (flat ribbon cable 10 cm with socket connector and male quick connector, AMP 4-pin)		5.03.771.306/0000	5 - 29
Blanking cap complete with sealing disc and ring nut, square		5.05.800.049/0100	2 - 83, 5 - 23
Label holder, flush, for square collar		5.07.620.004/0000	2 - 80
Flat ribbon cable, 4-wire, 1 m long		5.37.700.124/0000	5 - 28
Fixing spanner M 15, M 16		5.58.002.019/0105	5 - 25
Spare key set (2 keys)		5.58.015.201/0000	-
Legend label 23 x 16 for label holder, without legend		5.73.111.000/0000	-
Socket connector, 4-pin		5.92.025.368/0000	5 - 28

LUMOTAST 25
Keylock switch

Technical data see page 1 - 26



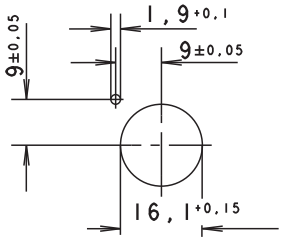


Panel cut-out

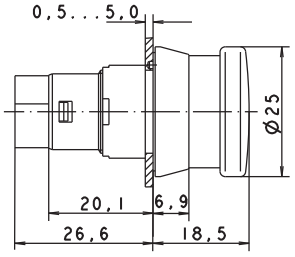
→ Contact arrangement	Contact function	Rotating angle		Key removal position	Color of lens	Order no.
1 NO	latching	90°	0 1	0	black opaque	1.15.156.001/0000
1 NO	latching	90°	0 1	0 + 1	black opaque	1.15.156.011/0000

Included: 2 keys.

LUMOTAST 25 Emergency stop pushbuttons



Panel cut-out



→ Original manual see „Appendix“

Technical Data

→ General information	
Color of lens	opaque red
Form of collar	square
Color of collar	see order block
→ Dimensions	
Length of collar	25 mm
Width of collar	25 mm
Overall height	18.5 mm
Mounting depth with connector	30.7 mm
Mounting depth with plug-in socket	33.4 mm
Mounting hole	16.2 mm
→ Mechanical design	
Mounting	ring nut
Terminals	pin connector 4-pole / plug-in socket
Contact system	snap-action contact
Contact function	latching
Contact arrangement	2 NC (forcibly actuated)
Contact materials	Au
Illumination	no
Reset	by pulling
→ Mechanical characteristics	
Operating force max.	10 N
Operating travel	2.6 mm
Switching travel	2 mm
Robustness max.	100 N
→ Electrical characteristics	
Rated voltage AC/DC max.	25 V
Rated voltage AC/DC min.	0.02 V
Rated current AC/DC max.	100 mA (1A short-circuit current)
Rated current AC/DC min.	0.01 mA
Contact resistance acc. to life max.	100 mΩ
Bouncing time max.	10 ms
→ Other specifications	
Operating life (operations)	15,000
Degree of protection from front side	IP65 (DIN EN 60529)
Operation temperature min.	-25 °C
Ambient temp. operating max.	+70 °C
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78

Approvals

IEC 60947-5-x

UL 9ZX6

– Technical data (continued) –
LUMOTAST 25 - Emergency stop pushbutton

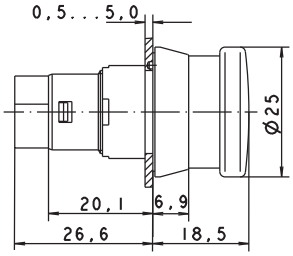
Weight	9 g
ROHS compliant	yes
REACH compliant	yes

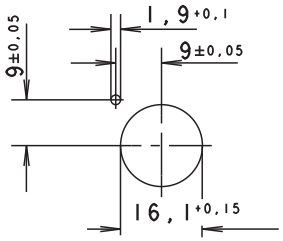
Accessories LUMOTAST 25 - Emergency stop pushbutton

→ Description	Photo	Order no.	Additional accessories see page
Plug-in socket for PCB		5.00.645.036/0000	5 - 28
Cable (flat ribbon cable 10 cm with socket connector and male quick connector, AMP 4-pin)		5.03.771.306/0000	5 - 29
Blanking cap complete with sealing disc and ring nut, square		5.05.800.049/0100	2 - 83, 5 - 23
Label holder, flush, for square collar		5.07.620.004/0000	2 - 80
Flat ribbon cable, 4-wire, 1 m long		5.37.700.124/0000	5 - 28
Fixing spanner M 15, M 16		5.58.002.019/0105	5 - 25
Legend label 23 x 16 for label holder, without legend		5.73.111.000/0000	-
Adhesive label yellow, round 16.1 / 60 mm, without legend		5.76.204.425/0400	-
Adhesive label yellow, round 16.1 / 60 mm, with legend „Not-Aus“		5.76.204.426/0400	-
Adhesive label yellow, round 16.1 / 60 mm, with legend „ARRET-D‘URGENCE“		5.76.204.427/0400	-
Adhesive label yellow, round 16.1 / 60 mm, with legend „EMERGENCY-STOP“		5.76.204.428/0400	-
Adhesive label yellow, round 16.1 / 60 mm, with legend „ARRESTO-D‘EMERGENZA“		5.76.204.429/0400	-
Socket connector, 4-pin		5.92.025.368/0000	5 - 28

LUMOTAST 25
Emergency stop pushbutton, ring nut fixing

Technical data see page 1 - 29



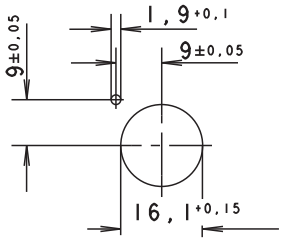


Panel cut-out

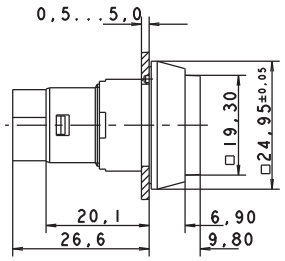
→ Contact function	Contact arrangement	Color of collar	Order no.
latching	2 NC (forcibly actuated)	yellow	1.15.154.016/0301
latching	2 NC (forcibly actuated)	black	1.15.154.006/0301

Original operating instructions see appendix.

LUMOTAST 25
Signal lamps



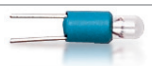
Panel cut-out



Technical Data

→ General information	
Form of lens	square
Color of lens	see order block
→ Dimensions	
Length of collar	25 mm
Width of collar	25 mm
Overall height	9.8 mm
Mounting depth with connector	30.7 mm
Mounting depth with plug-in socket	33.4 mm
Mounting hole	16.2 mm
→ Mechanical design	
Mounting	see order block
Terminals	pin connector 4-pole / plug-in socket
Lamp socket	Bi-Pin T1 /T1¼
Lamp	filament lamp / LED
→ Electrical characteristics	
Voltage limit max.	24 V
Power limit max.	0.7 W
→ Other specifications	
Degree of protection from front side	IP65 (DIN EN 60529)
Weight	7 g
Operation temperature min.	-25 °C
Ambient temp. operating max.	+70 °C
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
ROHS compliant	yes
REACH compliant	yes

Accessories LUMOTAST 25 - Signal lamp

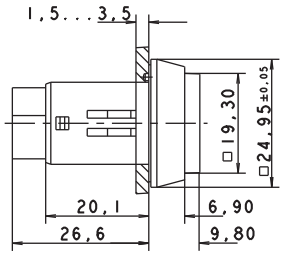
→ Description	Photo	Order no.	Additional accessories see page
Socket Bi-Pin T 1, LED		-	5 - 6
Socket Bi-Pin T 1, LED superbright		-	5 - 6
Plug-in socket for PCB		5.00.645.036/0000	5 - 28

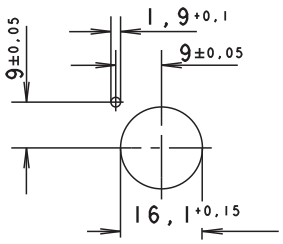
– Table (continued) –
Accessories LUMOTAST 25 - Signal lamp

→ Description	Photo	Order no.	Additional accessories see page
Cable (flat ribbon cable 10 cm with socket connector and male quick connector, AMP 4-pin)		5.03.771.306/0000	5 - 29
Disassembly tool for LUMOTAST 25, RAFIX 16		5.05.800.042/0000	5 - 27
Blanking cap complete with sealing disc and ring nut, square		5.05.800.049/0100	2 - 83, 5 - 23
Label holder, flush, for square collar		5.07.620.004/0000	2 - 80
Flat ribbon cable, 4-wire, 1 m long		5.37.700.124/0000	5 - 28
Fixing spanner M 15, M 16		5.58.002.019/0105	5 - 25
Legend insert, blank, use only for transparent lenses		5.70.635.000/2000	-
Legend label 23 x 16 for label holder, without legend		5.73.111.000/0000	-
Socket connector, 4-pin		5.92.025.368/0000	5 - 28

LUMOTAST 25
Signal lamp, 24 V, „Click“ quick-assembly feature

Technical data see page 1 - 32





Panel cut-out

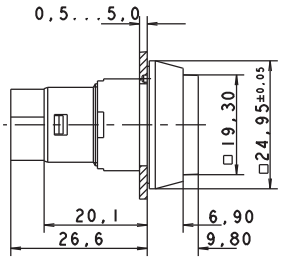
→ Voltage limit max.	Power limit max.	Lamp socket	Order no.	Note
24 V	0.7 W	Bi-Pin T1 /T1¼	1.65.122.906/0000	Please include the desired lens in your order.

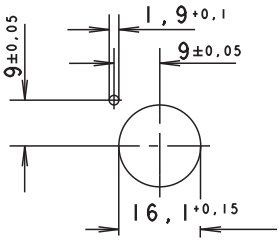
Do not press in lens in disassembled condition.
Please note when using a LED: A notch on the lamp identifies the cathode side (-).

Lenses:
Lens, square, transparent colorless: 5.49.077.014/1002
Lens, square, transparent red: 5.49.077.014/1306
Lens, square, transparent yellow: 5.49.077.014/1403
Lens, square, transparent green: 5.49.077.014/1505
Lens, square, transparent blue: 5.49.077.014/1607

LUMOTAST 25
Signal lamp, 24 V, ring nut fixing

Technical data see page 1 - 32





Panel cut-out

→ Voltage limit max.	Power limit max.	Lamp socket	Order no.	Note
24 V	0.7 W	Bi-Pin T1 /T1¼	1.65.122.956/0000	Please include the desired lens in your order.

Please note when using LED: A notch on the lamp socket identifies the cathode side (-).

Lenses:
Lens, square, transparent colorless: 5.49.077.014/1002
Lens, square, transparent red: 5.49.077.014/1306
Lens, square, transparent yellow: 5.49.077.014/1403
Lens, square, transparent green: 5.49.077.014/1505
Lens, square, transparent blue: 5.49.077.014/1607

LUMOTAST 75 IP40

LUMOTAST 75 IP40 - Pushbutton range

Illuminated pushbuttons, signal lamps and keylock switches
- Mounting hole diameter 16.2 mm
- Degree of protection IP40 acc. DIN EN 60529
- Solder terminals for the following wire cross-sections:
  - Installed 0.5 mm^2 max.
  - Factory terminated 0.35 mm^2 max.
- 250 V/4 A max.
- 2 NC + 2 NO max.
- Lamp socket T 4.5
- Illumination: LED / filament lamp
- All products are RoHS compliant.

PUSHBUTTONS

LUMOTAST 75 IP40

Content

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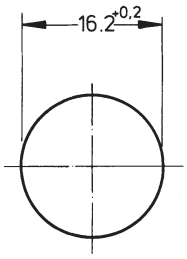
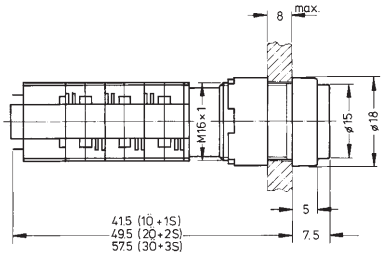
LUMOTAST 75 IP40 Illuminated pushbuttons



Mounting hole



Technical Data

→ General information	
Form of lens	see order block
Form of collar	see order block
Color of collar	see order block
→ Dimensions	
Length of collar	see order block
Width of collar	see order block
Diameter of collar	see order block
Overall height	7.5 mm
Mounting depth	41.5/49.5/57.5 mm
Mounting hole	16.2 mm
→ Mechanical design	
Mounting	ring nut
Terminals	solder terminals
Contact system	snap-action bridge contact
Contact function	see order block
Contact arrangement	see order block
Contact materials	Ag
Illumination	LED
Lamp socket	T 4.5
→ Mechanical characteristics	
Operating force max.	3 ... 6.5 N
Operating travel	2.7 mm
Switching travel NC	1.6 mm
Switching travel NO	0.9 mm
Robustness max.	100 N
→ Electrical characteristics	
Rated voltage AC max.	250 V
Rated voltage DC max.	230 V
Rated voltage AC/DC min.	12 V
Rated current AC max.	4 A
Rated current DC max.	0.2 A
Rated current AC/DC min.	5 mA
Contact resistance acc. to life max.	200 mΩ
Protection class	II
ESD-strength min.	14 kV
→ Other specifications	
Operating life, at 250 V/2 A (operations)	200,000 (momentary)
Operating life, at 250 V/4 A (operations)	60,000 (momentary), 10,000 (latching)
Degree of protection from front side	IP40 (DIN EN 60529)
Operation temperature min.	-25 °C
Ambient temp. operating max. without lamp /LED	+70 °C

Approvals

ENEC 25T70 without lamp, 25T55 with lamp

UL 508

C22.2 No. 14-M91

– Technical data (continued) –
LUMOTAST 75 IP40 - Illuminated pushbutton

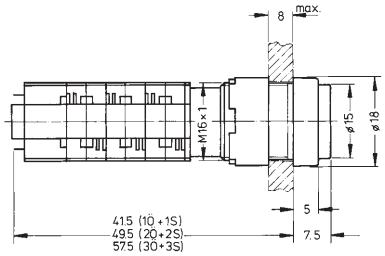
Ambient temp. operating max. with lamp /LED	+55 °C
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Flame class acc. to UL 94	V 1
Hot wire ignition acc. to IEC 60695-2-1	yes
ROHS compliant	yes
REACH compliant	yes

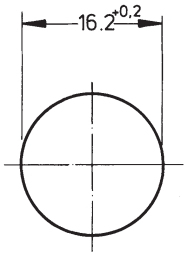
Accessories LUMOTAST 75 IP40 - Illuminated pushbutton

→ Description	Photo	Order no.	Additional accessories see page
Socket T 4.5, LED		-	5 - 7
Socket T 4.5, LED superbright		-	5 - 7
Lamp extractor for lamp diameter 4 mm		1.90.900.002/0000	5 - 26
Lamp extractor for lamp diameter 5-6 mm		1.90.900.004/0000	5 - 26
Blanking cap, black, to cover spare holes, dimensions 18 x 18 mm		5.52.006.020/0103	5 - 22
Blanking cap, black, to cover spare holes, dimensions 18 x 24 mm		5.52.006.021/0100	5 - 22
Blanking cap, black, to cover spare holes, round 18 mm		5.52.006.022/0100	5 - 22
Fixing spanner M 15, M 16		5.58.002.019/0105	5 - 25

LUMOTAST 75 IP40
Illuminated pushbutton, protruding lens, round collar

Technical data see page 1 - 37





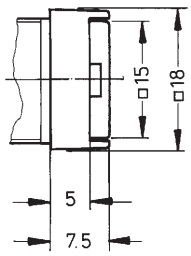
Mounting hole

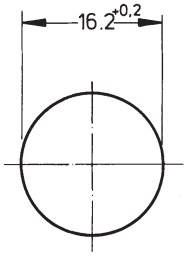
→	Contact arrangement	Contact function	Color of collar	Order no.	Note
	1 NC + 1 NO	momentary	black	1.15.108.451/0000	Please include the desired lens and diffuser in your order.
	1 NC + 1 NO	latching	black	1.15.108.551/0000	Please include the desired lens and diffuser in your order.
	2 NC + 2 NO	momentary	black	1.15.108.452/0000	Please include the desired lens and diffuser in your order.
	2 NC + 2 NO	latching	black	1.15.108.552/0000	Please include the desired lens and diffuser in your order.

Lenses:
Lens, round, transparent colorless, for LED: 5.49.257.011/1002
Lens, round, transparent red, for LED: 5.49.257.011/1301
Lens, round, transparent yellow, for LED: 5.49.257.011/1402
Lens, round, transparent green, for LED: 5.49.257.011/1503
Diffuser, round, for LED, without legend: 5.72.050.000/0214

LUMOTAST 75 IP40
Illuminated pushbutton, flush lens, square collar

Technical data see page 1 - 37





Mounting hole

→	Contact arrangement	Contact function	Color of collar	Order no.	Note
	1 NC + 1 NO	momentary	black	1.15.108.251/0000	Please include the desired lens and diffuser in your order.
	1 NC + 1 NO	latching	black	1.15.108.351/0000	Please include the desired lens and diffuser in your order.

– Table (continued) –
LUMOTAST 75 IP40 - Illuminated pushbutton, flush lens, square collar

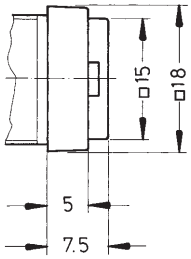
→	Contact arrangement	Contact function	Color of collar	Order no.	Note
	2 NC + 2 NO	momentary	black	1.15.108.252/0000	Please include the desired lens and diffuser in your order.
	2 NC + 2 NO	latching	black	1.15.108.352/0000	Please include the desired lens and diffuser in your order.

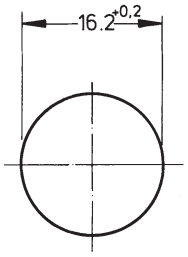
Lenses:
Lens, square, transparent colorless, for LED: 5.49.275.036/1002
Lens, square, transparent red, for LED: 5.49.275.036/1301
Lens, square, transparent yellow, for LED: 5.49.275.036/1402
Lens, square, transparent green, for LED: 5.49.275.036/1503
Diffuser, square, for LED, without legend: 5.73.013.000/0214

Accessoires:
LUMOTAST 75 IP40 - Protective cap for 18 x 18 collar: 5.05.800.030/0000
LUMOTAST 75 IP40 - Sealing cap for protection class IP 65, for 18 x 18 collar: 5.05.200.009/0000

LUMOTAST 75 IP40
Illuminated pushbutton, protruding lens, square collar

Technical data see page 1 - 37





Mounting hole

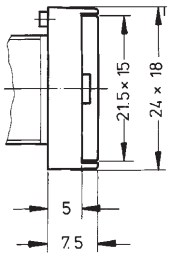
→	Contact arrangement	Contact function	Color of collar	Order no.	Note
	1 NC + 1 NO	momentary	black	1.15.108.256/0000	Please include the desired lens and diffuser in your order.
	1 NC + 1 NO	latching	black	1.15.108.356/0000	Please include the desired lens and diffuser in your order.
	2 NC + 2 NO	momentary	black	1.15.108.257/0000	Please include the desired lens and diffuser in your order.
	2 NC + 2 NO	latching	black	1.15.108.357/0000	Please include the desired lens and diffuser in your order.

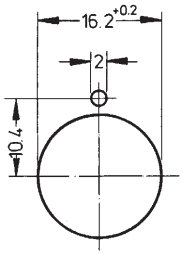
Lenses:
Lens, square, transparent colorless, for LED: 5.49.275.036/1002
Lens, square, transparent red, for LED: 5.49.275.036/1301
Lens, square, transparent yellow, for LED: 5.49.275.036/1402
Lens, square, transparent green, for LED: 5.49.275.036/1503
Diffuser, square, for LED, without legend: 5.73.013.000/0214

Accessoires:
LUMOTAST 75 IP40 - Protective cap for 18 x 18 collar: 5.05.800.030/0000
LUMOTAST 75 IP40 - Sealing cap for protection class IP 65, for 18 x 18 collar: 5.05.200.009/0000

LUMOTAST 75 IP40
Illuminated pushbutton, flush lens, rectangular collar

Technical data see page 1 - 37





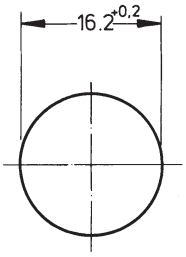
Panel cut-out

→ Contact arrangement	Contact function	Color of collar	Order no.	Note
1 NC + 1 NO	momentary	black	1.15.108.051/0000	Please include the desired lens and diffuser in your order.
1 NC + 1 NO	latching	black	1.15.108.151/0000	Please include the desired lens and diffuser in your order.
2 NC + 2 NO	momentary	black	1.15.108.052/0000	Please include the desired lens and diffuser in your order.
2 NC + 2 NO	latching	black	1.15.108.152/0000	Please include the desired lens and diffuser in your order.

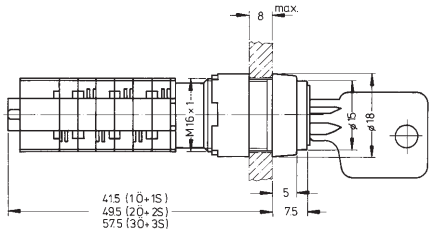
Lenses:
Lens, rectangular, transparent colorless, for LED: 5.49.275.032/1002
Lens, rectangular, transparent red, for LED: 5.49.275.032/1301
Lens, rectangular, transparent yellow, for LED: 5.49.275.032/1402
Lens, rectangular, transparent green, for LED: 5.49.275.032/1503
Diffuser, rectangular, for LED, without legend: 5.73.012.000/0214

Accessoires:
LUMOTAST 75 IP40 - Protective cap for 18 x 24 collar: 5.05.800.027/0000
LUMOTAST 75 IP40 -Sealing cap for protection class IP65, for 18 x 24 collar: 5.05.200.008/0000

LUMOTAST 75 IP40 Keylock switches



Mounting hole



→ The locking systems we use are created according to DIN EN 1303 by leading lock manufacturers. They are are open, mechanical systems that require occasional maintenance of the machinery or plant operator depending on environmental conditions.

Technical Data

→ General information	
Form of lens	see order block
Color of collar	see order block
Form of collar	see order block
→ Dimensions	
Length of collar	see order block
Diameter of collar	see order block
Width of collar	see order block
Overall height (without key)	7.5 mm
Mounting depth	see order block
Mounting hole	16.2 mm
→ Mechanical design	
Mounting	ring nut
Terminals	solder terminals
Contact system	snap-action bridge contact
Contact function	see order block
Contact arrangement	see order block
Contact materials	Ag
Illumination	no
Lock	cylinder lock
Wafers	4 pins
Lock type	1D 21
Number of locking positions	45
Main key	no
Symmetric key	no
Key removal position	see order block
→ Mechanical characteristics	
Rotating angle	see order block
→ Electrical characteristics	
Rated voltage AC max.	250 V
Rated voltage DC max.	230 V
Rated voltage AC/DC min.	12 V
Rated current AC max.	4 A
Rated current DC max.	0,2 A
Rated current AC/DC min.	5 mA
Contact resistance acc. to life max.	200 mΩ
ESD-strength min.	14 kV
→ Other specifications	
Operating life, at 250 V/2 A (operations)	50,000 (momentary)
Operating life, at 250 V/4 A (operations)	50,000 (momentary)
Degree of protection from front side	IP40 (DIN EN 60529)

Approvals

ENEC 25T70 | UL 508 | C22.2 No. 14-M91

– Technical data (continued) –
LUMOTAST 75 IP40 - Keylock switch

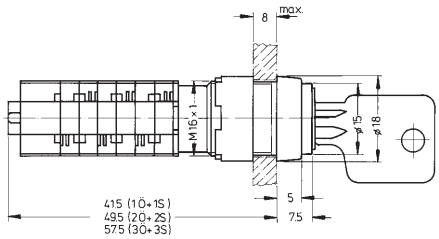
Operation temperature min.	-25 °C
Ambient temp. operating max.	+70 °C
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Weight	35 g
Flame class acc. to UL 94	V 1
Hot wire ignition acc. to IEC 60695-2-1	yes
ROHS compliant	yes
REACH compliant	yes

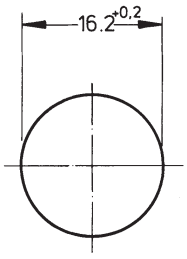
Accessories LUMOTAST 75 IP40 - Keylock switch

→ Description	Photo	Order no.	Additional accessories see page
Blanking cap, black, to cover spare holes, dimensions 18 x 24 mm		5.52.006.021/0100	5 - 22
Blanking cap, black, to cover spare holes, round 18 mm		5.52.006.022/0100	5 - 22
Fixing spanner M 15, M 16		5.58.002.019/0105	5 - 25
Keylock switch cap		5.58.002.030/0000	-
LUMOTAST 75 - Spare key (1 piece)		5.58.004.721/0000	-

LUMOTAST 75 IP40
Keylock switch, round collar

Technical data see page 1 - 42





Mounting hole

→ Contact arrangement	Contact function	Rotating angle		Key removal position	Color of collar	Order no.
1 NC + 1 NO	momentary	45°		0	black	1.15.108.941/0000
1 NC + 1 NO	latching	90°		0	black	1.15.108.851/0000

– Table (continued) –
LUMOTAST 75 IP40 - Keylock switch, round collar

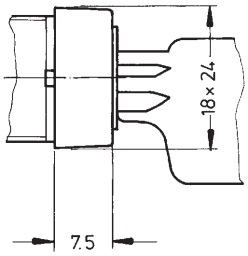
→ Contact arrangement	Contact function	Rotating angle		Key removal position	Color of collar	Order no.
1 NC + 1 NO	latching	90°	0 1	0+1	black	1.15.108.911/0000
2 NC + 2 NO	latching	90°	0 1	0	black	1.15.108.852/0000
2 NC + 2 NO	latching	90°	0 1	0+1	black	1.15.108.912/0000

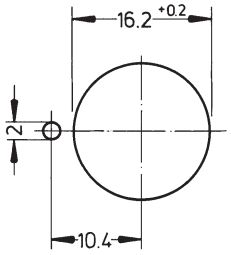
Included: 2 keys.

Other lock variants and contact arrangements available on request.

LUMOTAST 75 IP40
Keylock switch, rectangular collar

Technical data see page 1 - 42





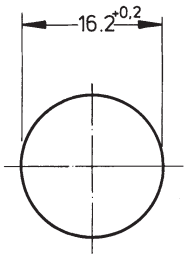
Panel cut-out

→ Contact arrangement	Contact function	Rotating angle		Key removal position	Color of collar	Order no.
1 NC + 1 NO	momentary	45°	0	0	black	1.15.108.661/0100
1 NC + 1 NO	latching	90°	0 1	0	black	1.15.108.571/0100
1 NC + 1 NO	latching	90°	0 1	0+1	black	1.15.108.631/0100
2 NC + 2 NO	latching	90°	0 1	0	black	1.15.108.572/0100
2 NC + 2 NO	latching	90°	0 1	0+1	black	1.15.108.632/0100

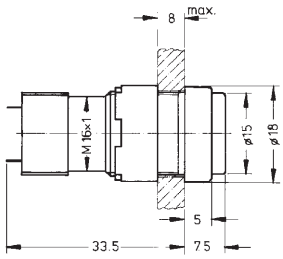
Included: 2 keys.

Other lock variants and contact arrangements available on request.

LUMOTAST 75 IP40 Signal lamps with lamp socket T 4.5



Mounting hole



Technical Data

→ General information	
Form of lens	see order block
Form of collar	see order block
Color of collar	see order block
→ Dimensions	
Length of collar	see order block
Width of collar	see order block
Diameter of collar	see order block
Overall height	7.5 mm
Mounting depth	33.5 mm
Mounting hole	16.2 mm
→ Mechanical design	
Mounting	ring nut
Terminals	solder terminals
Lamp socket	T 4.5
Illumination	LED / filament lamp
→ Electrical characteristics	
Voltage limit max.	35 V
Power limit max.	1.2 W
→ Other specifications	
Degree of protection from front side	IP40 (DIN EN 60529)
Weight	5 g
Operation temperature min.	-25 °C
Ambient temp. operating max.	+55 °C
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
ROHS compliant	yes
REACH compliant	yes

Approvals

IEC 61058 UL 508 C22.2 No. 14-M91

Accessories LUMOTAST 75 IP40 - Signal lamp with lamp socket T 4.5

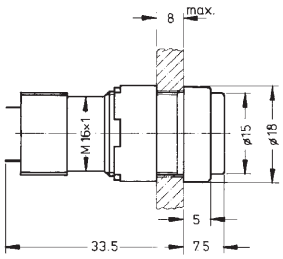
→ Description	Photo	Order no.	Additional accessories see page
Socket T 4.5, LED		-	5 - 7
Socket T 4.5, LED superbright		-	5 - 7

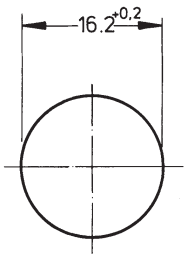
– Table (continued) –
Accessories LUMOTAST 75 IP40 - Signal lamp with lamp socket T 4.5

→	Description	Photo	Order no.	Additional accessories see page
	Blanking cap, black, to cover spare holes, dimensions 18 x 18 mm		5.52.006.020/0103	5 - 22
	Blanking cap, black, to cover spare holes, dimensions 18 x 24 mm		5.52.006.021/0100	5 - 22
	Blanking cap, black, to cover spare holes, round 18 mm		5.52.006.022/0100	5 - 22
	Fixing spanner M 15, M 16		5.58.002.019/0105	5 - 25

LUMOTAST 75 IP40
Signal lamp with lamp socket T 4.5, round collar, protruding lens

Technical data see page 1 - 45





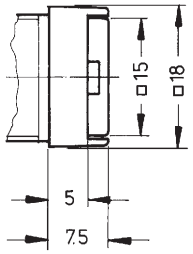
Mounting hole

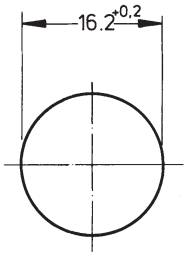
→	Voltage limit max.	Power limit max.	Lamp socket	Color of collar	Order no.	Note
	35 V	1.2 W	T 4.5	black	1.65.111.071/0000	Please include the desired lens and diffuser in your order.

Lenses:
Lens, round, transparent colorless, for LED: 5.49.257.011/1002
Lens, round, transparent red, for LED: 5.49.257.011/1301
Lens, round, transparent yellow, for LED: 5.49.257.011/1402
Lens, round, transparent green, for LED: 5.49.257.011/1503
Diffuser, round, for LED, without legend: 5.72.050.000/0214

LUMOTAST 75 IP40
Signal lamp, square collar, flush lens

Technical data see page 1 - 45





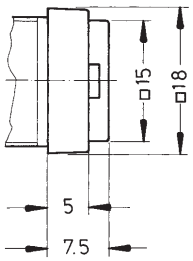
Mounting hole

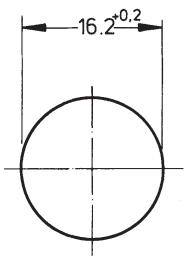
→	Voltage limit max.	Power limit max.	Lamp socket	Color of collar	Order no.	Note
	35 V	1.2 W	T 4.5	black	1.65.111.061/0000	Please include the desired lens and diffuser in your order.

Lenses:
Lens, square, transparent colorless, for LED: 5.49.275.036/1002
Lens, square, transparent red, for LED: 5.49.275.036/1301
Lens, square, transparent yellow, for LED: 5.49.275.036/1402
Lens, square, transparent green, for LED: 5.49.275.036/1503
Diffuser, square, for LED, without legend: 5.73.013.000/0214

LUMOTAST 75 IP40
Signal lamp, square collar, protruding lens

Technical data see page 1 - 45





Mounting hole

→	Voltage limit max.	Power limit max.	Lamp socket	Color of collar	Order no.	Note
	35 V	1.2 W	T 4.5	black	1.65.111.081/0000	Please include the desired lens and diffuser in your order.

Lenses:
Lens, square, transparent colorless, for LED: 5.49.275.036/1002
Lens, square, transparent red, for LED: 5.49.275.036/1301
Lens, square, transparent yellow, for LED: 5.49.275.036/1402
Lens, square, transparent green, for LED: 5.49.275.036/1503

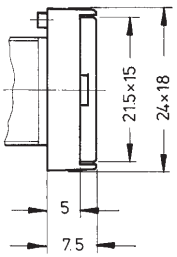
– Table (continued) –
LUMOTAST 75 IP40 - Signal lamp, square collar, protruding lens

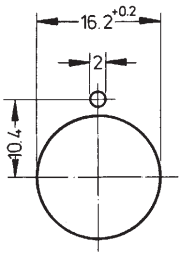
Diffuser, square, for LED, without legend: 5.73.013.000/0214

Accessoires:
LUMOTAST 75 IP40 - Sealing cap for protection class IP 65, for 18 x 18 collar: 5.05.200.009/0000

LUMOTAST 75 IP40
Signal lamp, rectangular collar, flush lens

Technical data see page 1 - 45





Panel cut-out

→	Voltage limit max.	Power limit max.	Lamp socket	Color of collar	Order no.	Note
	35 V	1.2 W	T 4.5	black	1.65.111.051/0000	Please include the desired lens and diffuser in your order.

Lenses:
Lens, rectangular, transparent colorless, for LED: 5.49.275.032/1002
Lens, rectangular, transparent red, for LED: 5.49.275.032/1301
Lens, rectangular, transparent yellow, for LED: 5.49.275.032/1402
Lens, rectangular, transparent green, for LED: 5.49.275.032/1503
Diffuser, rectangular, for LED, without legend: 5.73.012.000/0214

Accessoires:
LUMOTAST 75 IP40 -Sealing cap for protection class IP65, for 18 x 24 collar: 5.05.200.008/0000

LUMOTAST 75 IP65

LUMOTAST 75 IP65 - Pushbutton range
Illuminated pushbuttons and signal lamps with lamp socket T 4.5
- Mounting hole diameter 16.2 mm
- Degree of protection IP65 acc. to DIN EN 60529
- Solder terminals for the following wire cross-sections:
  - Installed 0.5 mm^2 max.
  - Factory terminated 0.35 mm^2 max.
- 250 V/4 A max.
- 2 NC + 2 NO max.
- Illumination: LED / filament lamp
- All products are RoHS compliant.

PUSHBUTTONS

LUMOTAST 75 IP65

Content

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LUMOTAST 75 IP65 Illuminated pushbutton, protruding lens, round collar 1 - 53
LUMOTAST 75 IP65 Illuminated pushbutton, flush lens, square collar 1 - 54
LUMOTAST 75 IP65 Illuminated pushbutton, protruding lens, square collar 1 - 55
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LUMOTAST 75 IP65 Signal lamp, protruding lens, round collar 1 - 59
LUMOTAST 75 IP65 Signal lamp, flush lens, rectangular collar 1 - 59
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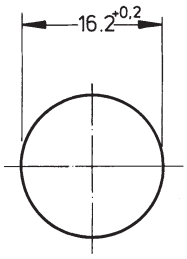
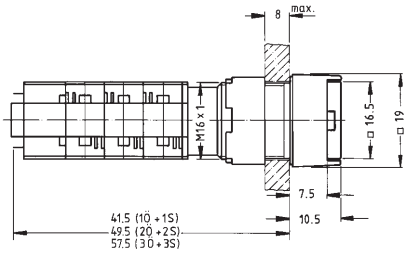
LUMOTAST 75 IP65 Illuminated pushbuttons



Mounting hole



Technical Data

→ General information	
Form of lens	see order block
Color of lens	see order block
Form of collar	see order block
Color of collar	black
→ Dimensions	
Length of collar	see order block
Diameter of collar	see order block
Width of collar	see order block
Overall height	10.5 mm
Mounting depth	see order block
Mounting hole	16.2 mm
→ Mechanical design	
Mounting	ring nut
Terminals	solder terminals
Contact system	snap-action bridge contact
Contact function	see order block
Contact arrangement	see order block
Contact materials	Ag
Illumination	LED / filament lamp
Lamp socket	T 4.5
→ Mechanical characteristics	
Operating force	3 ... 6.5 N
Operating travel	2.5 mm
Switching travel NC	1.8 mm
Switching travel NO	0.9 mm
Robustness max.	100 N
→ Electrical characteristics	
Rated voltage AC max.	250 V
Rated voltage DC max.	230 V
Rated voltage AC/DC min.	12 V
Rated current AC max.	4 A
Rated current DC max.	0.2 A
Rated current AC/DC min.	5 mA
Contact resistance acc. to life max.	200 mΩ
Protection class	II
ESD-strength min.	14 kV
→ Other specifications	
Operating life, at 250 V/2 A (operations)	200,000 (momentary), 50,000 (latching)
Operating life, at 250 V/4 A (operations)	60,000 (momentary)
Degree of protection from front side	IP65 (DIN EN 60529)
Operation temperature min.	-25 °C

Approvals

ENEC 25T70 without lamp, 25T55 with lamp

UL 508

C22.2 No. 14-M91

– Technical data (continued) –
LUMOTAST 75 IP65 - Illuminated pushbutton

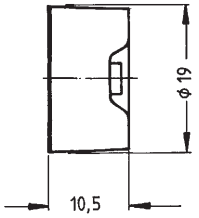
Ambient temp. operating max. without lamp /LED	+70 °C
Ambient temp. operating max. with lamp /LED	+55 °C
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Weight	15 g
Flame class acc. to UL 94	V 0
Hot wire ignition acc. to IEC 60695-2-1	yes
ROHS compliant	yes
REACH compliant	yes

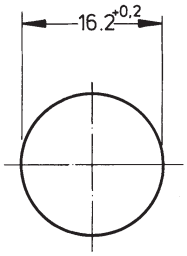
Accessories LUMOTAST 75 IP65 - Illuminated pushbutton

→ Description	Photo	Order no.	Additional accessories see page
Socket T 4.5, LED		-	5 - 7
Socket T 4.5, LED superbright		-	5 - 7
Lamp extractor for lamp diameter 4 mm		1.90.900.002/0000	5 - 26
Lamp extractor for lamp diameter 5-6 mm		1.90.900.004/0000	5 - 26
Blanking cap, black, to cover spare holes, dimensions 18 x 18 mm		5.52.006.020/0103	5 - 22
Blanking cap, black, to cover spare holes, dimensions 18 x 24 mm		5.52.006.021/0100	5 - 22
Blanking cap, black, to cover spare holes, round 18 mm		5.52.006.022/0100	5 - 22
Fixing spanner M 15, M 16		5.58.002.019/0105	5 - 25

LUMOTAST 75 IP65 Illuminated pushbutton, flush lens, round collar

Technical data see page 1 - 51





Mounting hole

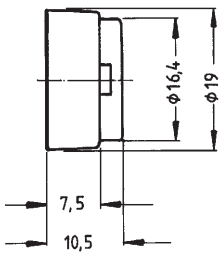
→	Contact arrangement	Contact function	Color of collar	Order no.	Note
	1 NC + 1 NO	momentary	black	1.15.108.481/0000	Please include the desired lens in your order.
	1 NC + 1 NO	latching	black	1.15.108.981/0000	Please include the desired lens in your order.
	2 NC + 2 NO	momentary	black	1.15.108.482/0000	Please include the desired lens in your order.
	2 NC + 2 NO	latching	black	1.15.108.982/0000	Please include the desired lens in your order.

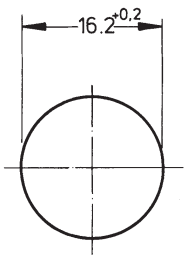
Lenses:
Lens, round, transparent colorless, for LED: 5.49.259.013/1002
Lens, round, transparent red, for LED: 5.49.259.013/1301
Lens, round, transparent yellow, for LED: 5.49.259.013/1402
Lens, round, transparent green, for LED: 5.49.259.013/1503

Accessoires:
Legend insert, round, without legend: 5.70.059.000/2000

LUMOTAST 75 IP65 Illuminated pushbutton, protruding lens, round collar

Technical data see page 1 - 51





Mounting hole

→	Contact arrangement	Contact function	Color of collar	Order no.	Note
	1 NC + 1 NO	momentary	black	1.15.108.476/0000	Please include the desired lens in your order.

– Table (continued) –
LUMOTAST 75 IP65 - Illuminated pushbutton, protruding lens, round collar

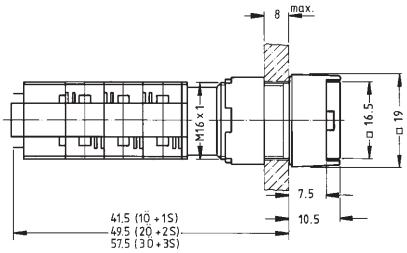
→	Contact arrangement	Contact function	Color of collar	Order no.	Note
	1 NC + 1 NO	latching	black	1.15.108.976/0000	Please include the desired lens in your order.
	2 NC + 2 NO	momentary	black	1.15.108.477/0000	Please include the desired lens in your order.
	2 NC + 2 NO	latching	black	1.15.108.977/0000	Please include the desired lens in your order.

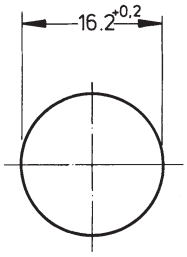
Lenses:
Lens, round, transparent colorless, for LED: 5.49.259.013/1002
Lens, round, transparent red, for LED: 5.49.259.013/1301
Lens, round, transparent yellow, for LED: 5.49.259.013/1402
Lens, round, transparent green, for LED: 5.49.259.013/1503

Accessoires:
Legend insert, round, without legend: 5.70.059.000/2000

LUMOTAST 75 IP65
Illuminated pushbutton, flush lens, square collar

Technical data see page 1 - 51





Mounting hole

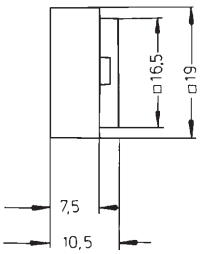
→	Contact arrangement	Contact function	Color of collar	Order no.	Note
	1 NC + 1 NO	momentary	black	1.15.108.276/0000	Please include the desired lens in your order.
	1 NC + 1 NO	latching	black	1.15.108.376/0000	Please include the desired lens in your order.
	2 NC + 2 NO	momentary	black	1.15.108.277/0000	Please include the desired lens in your order.
	2 NC + 2 NO	latching	black	1.15.108.377/0000	Please include the desired lens in your order.

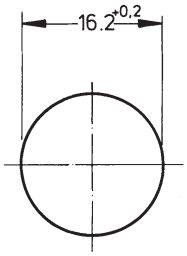
Lenses:
Lens, square, transparent colorless, for LED: 5.49.277.052/1002
Lens, square, transparent red, for LED: 5.49.277.052/1301
Lens, square, transparent yellow, for LED: 5.49.277.052/1402
Lens, square, transparent green, for LED: 5.49.277.052/1503

Accessoires:
Legend insert, square, without legend: 5.70.629.000/2000

LUMOTAST 75 IP65
Illuminated pushbutton, protruding lens, square collar

Technical data see page 1 - 51





Mounting hole

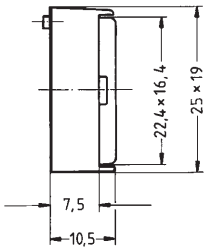
→	Contact arrangement	Contact function	Color of collar	Order no.	Note
	1 NC + 1 NO	momentary	black	1.15.108.281/0000	Please include the desired lens in your order.
	1 NC + 1 NO	latching	black	1.15.108.381/0000	Please include the desired lens in your order.
	2 NC + 2 NO	momentary	black	1.15.108.282/0000	Please include the desired lens in your order.
	2 NC + 2 NO	latching	black	1.15.108.382/0000	Please include the desired lens in your order.

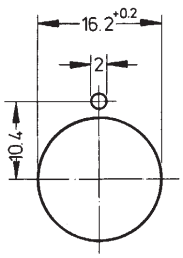
Lenses:
Lens, square, transparent colorless, for LED: 5.49.277.052/1002
Lens, square, transparent red, for LED: 5.49.277.052/1301
Lens, square, transparent yellow, for LED: 5.49.277.052/1402
Lens, square, transparent green, for LED: 5.49.277.052/1503

Accessoires:
Legend insert, square, without legend: 5.70.629.000/2000

LUMOTAST 75 IP65
Illuminated pushbutton, flush lens, rectangular collar

Technical data see page 1 - 51





Panel cut-out

→	Contact arrangement	Contact function	Color of collar	Order no.	Note
	1 NC + 1 NO	momentary	black	1.15.108.076/0000	Please include the desired lens in your order.

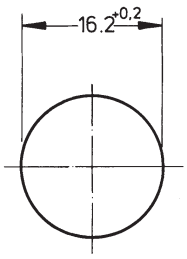
– Table (continued) –
LUMOTAST 75 IP65 - Illuminated pushbutton, flush lens, rectangular collar

→	Contact arrangement	Contact function	Color of collar	Order no.	Note
	1 NC + 1 NO	latching	black	1.15.108.176/0000	Please include the desired lens in your order.
	2 NC + 2 NO	momentary	black	1.15.108.077/0000	Please include the desired lens in your order.
	2 NC + 2 NO	latching	black	1.15.108.177/0000	Please include the desired lens in your order.

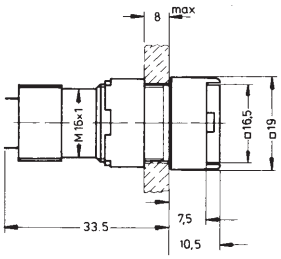
Lenses:
Lens, rectangular, transparent colorless, for LED: 5.49.277.058/1002
Lens, rectangular, transparent red, for LED: 5.49.277.058/1301
Lens, rectangular, transparent yellow, for LED: 5.49.277.058/1402
Lens, rectangular, transparent green, for LED: 5.49.277.058/1503

Accessoires:
Legend insert, rectangular without legend: 5.70.630.000/2000

LUMOTAST 75 IP65 Signal lamps



Mounting hole



Technical Data

→ General information	
Form of lens	see order block
Form of collar	see order block
Diameter of collar	see order block
→ Dimensions	
Length of collar	see order block
Width of collar	see order block
Overall height	10.5 mm
Mounting depth	33.5 mm
Mounting hole	16.2 mm
→ Mechanical design	
Mounting	ring nut
Terminals	solder terminals
Lamp socket	T 4.5
Lamp	LED / filament lamp
→ Electrical characteristics	
Voltage limit max.	35 V
Power limit max.	1.2 W
→ Other specifications	
Degree of protection from front side	IP65 (DIN EN 60529)
Weight	5 g
Operation temperature min.	-25 °C
Ambient temp. operating max.	+55 °C
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
ROHS compliant	yes
REACH compliant	yes

Approvals

IEC 61058　　UL 508　　C22.2 No. 14-M91

Accessories LUMOTAST 75 IP65 - Signal lamp

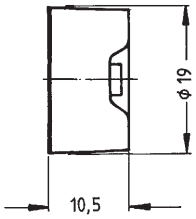
→ Description	Photo	Order no.	Additional accessories see page
Socket T 4.5, LED		-	5 - 7
Socket T 4.5, LED superbright		-	5 - 7
Lamp extractor for lamp diameter 4 mm		1.90.900.002/0000	5 - 26

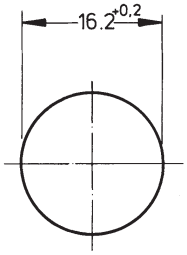
– Table (continued) –
Accessories LUMOTAST 75 IP65 - Signal lamp

→	Description	Photo	Order no.	Additional accessories see page
	Lamp extractor for lamp diameter 5-6 mm		1.90.900.004/0000	5 - 26
	Blanking cap, black, to cover spare holes, dimensions 18 x 18 mm		5.52.006.020/0103	5 - 22
	Blanking cap, black, to cover spare holes, dimensions 18 x 24 mm		5.52.006.021/0100	5 - 22
	Blanking cap, black, to cover spare holes, round 18 mm		5.52.006.022/0100	5 - 22
	Fixing spanner M 15, M 16		5.58.002.019/0105	5 - 25

LUMOTAST 75 IP65
Signal lamp, flush lens, round collar

Technical data see page 1 - 57





Mounting hole

→	Voltage limit max.	Power limit max.	Lamp socket	Form of collar	Order no.	Note
	35 V	1.2 W	T 4.5	round	1.65.111.096/0000	Please include the desired lens in your order.

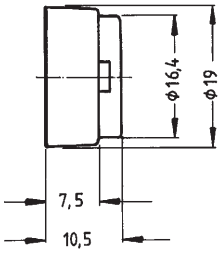
For assembly, press the lens as far as possible.

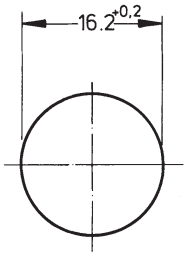
Lenses:
Lens, round, transparent colorless, for LED: 5.49.259.013/1002
Lens, round, transparent red, for LED: 5.49.259.013/1301
Lens, round, transparent yellow, for LED: 5.49.259.013/1402
Lens, round, transparent green, for LED: 5.49.259.013/1503

Accessoires:
Legend insert, round, without legend: 5.70.059.000/2000

LUMOTAST 75 IP65
Signal lamp, protruding lens, round collar

Technical data see page 1 - 57





Mounting hole

→	Voltage limit max.	Power limit max.	Lamp socket	Form of collar	Order no.	Note
	35 V	1.2 W	T 4.5	round	1.65.111.076/0000	Please include the desired lens in your order.

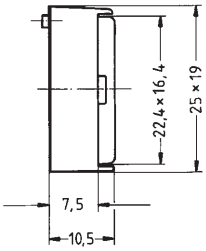
For assembly, press the lens as far as possible.

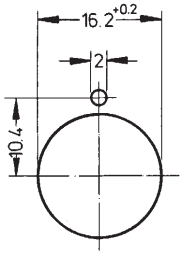
Lenses:
Lens, round, transparent colorless, for LED: 5.49.259.013/1002
Lens, round, transparent red, for LED: 5.49.259.013/1301
Lens, round, transparent yellow, for LED: 5.49.259.013/1402
Lens, round, transparent green, for LED: 5.49.259.013/1503

Accessoires:
Legend insert, round, without legend: 5.70.059.000/2000

LUMOTAST 75 IP65
Signal lamp, flush lens, rectangular collar

Technical data see page 1 - 57





Panel cut-out

→	Voltage limit max.	Power limit max.	Lamp socket	Form of collar	Order no.	Note
	35 V	1.2 W	T 4.5	rectangular	1.65.111.056/0000	Please include the desired lens in your order.

For assembly, press the lens as far as possible.

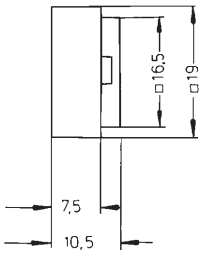
– Table (continued) –
LUMOTAST 75 IP65 - Signal lamp, flush lens, rectangular collar

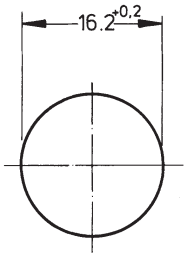
Lenses:
Lens, rectangular, transparent colorless, for LED: 5.49.277.058/1002
Lens, rectangular, transparent red, for LED: 5.49.277.058/1301
Lens, rectangular, transparent yellow, for LED: 5.49.277.058/1402
Lens, rectangular, transparent green, for LED: 5.49.277.058/1503

Accessoires:
Legend insert, rectangular without legend: 5.70.630.000/2000

LUMOTAST 75 IP65
Signal lamp, protruding lens, square collar

Technical data see page 1 - 57





Mounting hole

→	Voltage limit max.	Power limit max.	Lamp socket	Form of collar	Order no.	Note
	35 V	1.2 W	T 4.5	square	1.65.111.086/0000	Please include the desired lens in your order.

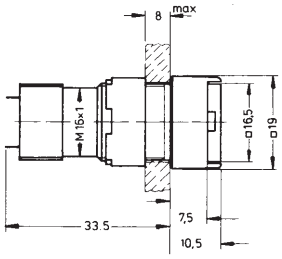
For assembly, press the lens as far as possible.

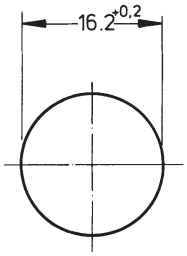
Lenses:
Lens, square, transparent colorless, for LED: 5.49.277.052/1002
Lens, square, transparent red, for LED: 5.49.277.052/1301
Lens, square, transparent yellow, for LED: 5.49.277.052/1402
Lens, square, transparent green, for LED: 5.49.277.052/1503

Accessoires:
Legend insert, square, without legend: 5.70.629.000/2000

LUMOTAST 75 IP65
Signal lamp, flush lens, square collar

Technical data see page 1 - 57





Mounting hole

→	Voltage limit max.	Power limit max.	Lamp socket	Form of collar	Order no.	Note
	35 V	1.2 W	T 4.5	square	1.65.111.066/0000	Please include the desired lens in your order.

For assembly, press the lens as far as possible.

Lenses:
Lens, square, transparent colorless, for LED: 5.49.277.052/1002
Lens, square, transparent red, for LED: 5.49.277.052/1301
Lens, square, transparent yellow, for LED: 5.49.277.052/1402
Lens, square, transparent green, for LED: 5.49.277.052/1503

Accessoires:
Legend insert, square, without legend: 5.70.629.000/2000

Other keylock switches

Keylock switch for a mounting hole diameter of 16.2 mm
- 35 V max.
- 100 mA
- Design matches with LUMOTAST FK and LUMOTAST 75 IP40.
- All products are RoHS compliant.

PUSHBUTTONS

OTHER KEYLOCK SWITCHES

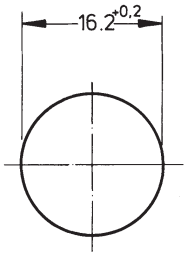
1

Key Swit-ches

Content

Keylock switches	**1 - 65**
Keylock switch round collar	1 - 66
Keylock switch rectangular collar	1 - 67
Priority keylock switches	**1 - 68**
Priority keylock switch round collar	1 - 69
Priority keylock switch rectangular collar	1 - 70
Keylock switch PCB plug-in socket	1 - 71

KEYLOCK SWITCHES

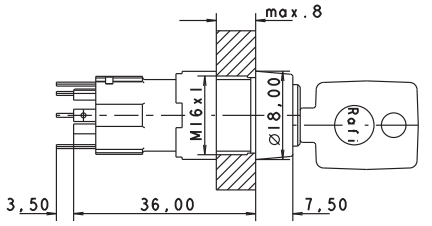


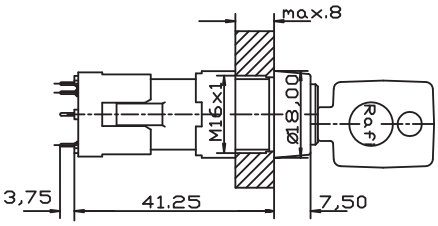
Mounting hole

→ The locking systems we use are created according to DIN EN 1303 by leading lock manufacturers. They are are open, mechanical systems that require occasional maintenance of the machinery or plant operator depending on environmental conditions.

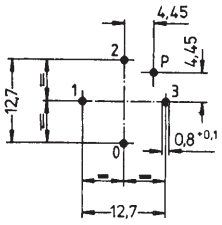
Technical Data

→ General information	
Form of collar	see order block
→ Dimensions	
Length of collar	see order block
Diameter of collar	see order block
Width of collar	see order block
Overall height	7.5 mm
Mounting depth	39.5 mm; with plug-in socket 41.25 mm
Mounting hole	16.2 mm
→ Mechanical design	
Mounting	ring nut
Terminals	solder terminals
Contact system	sliding contact, self cleaning
Contact function	latching
Contact arrangement	1 NO at every switching position
Contact materials	Au alloy
Illumination	no
→ Mechanical design of lock	
Lock	cylinder lock with pin tumblers
Wafers	5 pins
Lock type	5001
Number of locking positions	10,000
Main key	on request
Symmetric key	on request
Key removal position	see order block
→ Mechanical characteristics	
Operating force min.	0.035 Nm
Operating force max.	1.8 Nm
→ Electrical characteristics	
Rated voltage AC/DC max.	35 V
Rated voltage AC/DC min.	5 V
Rated current AC/DC max.	100 mA
Rated current AC/DC min.	5 mA
ESD strength max.	12 kV
Insulation resistance	6 x 10^8 Ω
Contact resistance max.	200 mΩ
→ Other specifications	
Operating life (operations)	50,000
Degree of protection from front side	IP65 (DIN EN 60529)
Operation temperature min.	-25 °C
Ambient temp. operating max.	+70 °C
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C

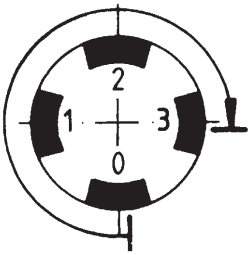




with plug-in socket



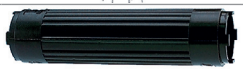
PCB hole pattern, sight on component side



– Technical data (continued) –
Keylock switch

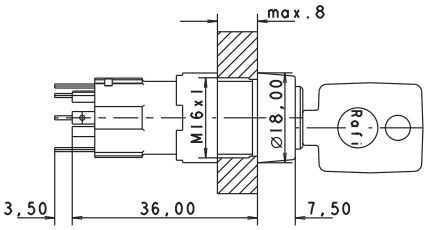
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Soldering temperature max.	350 °C
Soldering time max.	3 s
Weight	29 g
Rotating angle	see order block
ROHS compliant	yes
REACH compliant	yes

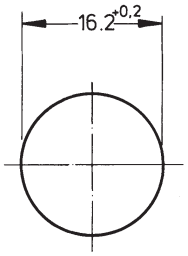
Accessories Keylock switch

→	Description	Photo	Order no.	Additional accessories see page
	Plug-in socket for PCB mounting		5.05.510.298/0000	1 - 71
	Fixing spanner M 15, M 16		5.58.002.019/0105	5 - 25
	Spare key (1 piece)		5.58.011.001/0000	-

Keylock switch round collar

Technical data see page 1 - 65





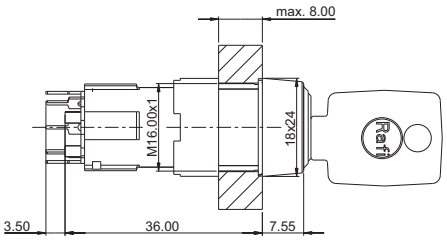
Mounting hole

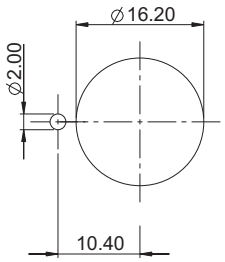
→	Contact arrangement	Contact function	Rotating angle		Key removal position	Order no.
	1 NO at every switching position	latching	1 x 90°		0+1	1.10.118.612/0000
	1 NO at every switching position	latching	3 x 90°		0+1+2+3	1.10.118.814/0000
	1 NO at every switching position	latching	2 x 90°		0	1.10.118.513/0000
	1 NO at every switching position	latching	2 x 90°		0+1+2	1.10.118.713/0000

Included: 2 keys.

Keylock switch rectangular collar

Technical data see page 1 - 65



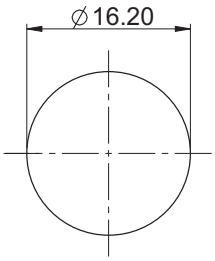


Panel cut-out

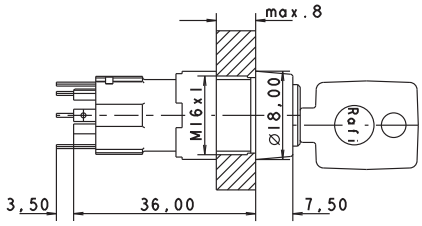
→ Contact arrangement	Contact function	Rotating angle		Key removal position	Order no.
1 NO at every switching position	latching	1 x 90°		0+1	1.10.118.212/0000
1 NO at every switching position	latching	3 x 90°		0+1+2+3	1.10.118.414/0000
1 NO at every switching position	latching	2 x 90°		0+1+2	1.10.118.313/0000

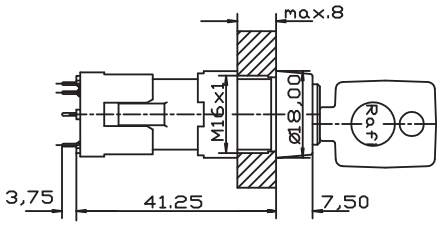
Included: 2 keys.

PRIORITY KEYLOCK SWITCHES

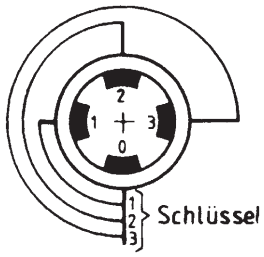


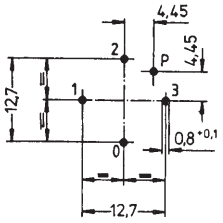
Panel cut-out





with plug-in socket





PCB hole pattern, sight on component side

→ The locking systems used in our switches are produced in accordance with DIN EN 1303 by leading lock manufacturers. The locking systems in key switches are open mechanical systems, which require occasional maintenance of the machinery or plant operator, according to the ambient conditions.

Technical Data

→ General information	
Form of collar	see order block
→ Dimensions	
Length of collar	see order block
Diameter of collar	see order block
Width of collar	see order block
Overall height	7.5 mm
Mounting depth	39.5 mm; with plug-in socket 41.25 mm
Mounting hole	16.2 mm
→ Mechanical design	
Mounting	ring nut
Terminals	solder terminals
Contact system	sliding contact, self cleaning
Contact function	latching
Contact arrangement	1 NO at every switching position
Contact materials	Au alloy
Illumination	no
→ Mechanical design of lock	
Lock	cylinder lock with pin tumblers
Wafers	5 pins
Lock type	5001
Number of locking positions	10,000
Main key	yes
Symmetric key	yes
Key removal position	see order block
→ Mechanical characteristics	
Operating force min.	0.035 Nm
Operating force max.	1.8 Nm
→ Electrical characteristics	
Rated voltage AC/DC max.	35 V
Rated voltage AC/DC min.	5 V
Rated current AC/DC max.	100 mA
Rated current AC/DC min.	5 mA
ESD strength max.	12 kV
Insulation resistance	$6 \times 10^8\ \Omega$
Contact resistance max.	200 mΩ
→ Other specifications	

– Technical data (continued) –
Priority keylock switch

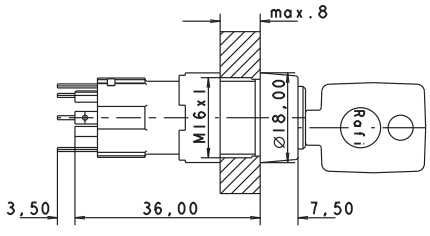
Operating life (operations)	50,000
Degree of protection from front side	IP65 (DIN EN 60529)
Operation temperature min.	-25 °C
Ambient temp. operating max.	+70 °C
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Soldering temperature max.	350 °C
Soldering time max.	3 s
Weight	29 g
Rotating angle	see order block
ROHS compliant	yes
REACH compliant	yes

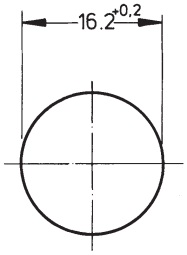
Accessories Priority keylock switch

→ Description	Photo	Order no.	Additional accessories see page
Plug-in socket for PCB mounting		5.05.510.298/0000	1 - 71
Fixing spanner M 15, M 16		5.58.002.019/0105	5 - 25
Set of spare keys (4 keys) for 3 x 90° type		5.58.099.010/0000	-
Set of spare keys (2 keys) for 2 x 90° type		5.58.099.011/0000	-

Priority keylock switch round collar

Technical data see page 1 - 68





Mounting hole

→ Contact arrangement	Contact function	Rotating angle		Key removal position	Order no.
1 NO at every switching position	latching	3 x 90°		0	1.10.119.617/0000
1 NO at every switching position	latching	3 x 90°		0+1+2+3	1.10.119.967/0000

– Table (continued) –
Priority keylock switch - round collar

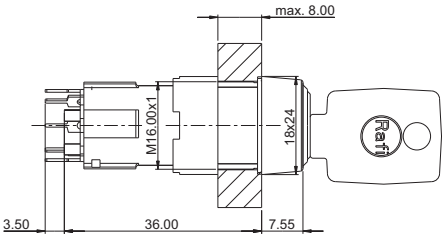
→	Contact arrangement	Contact function	Rotating angle		Key removal position	Order no.
	1 NO at every switching position	latching	2 x 90°		0	1.10.119.611/0000

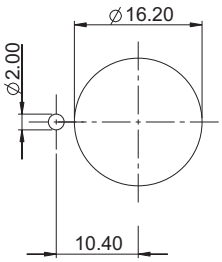
Included with 2 x 90° type: 2 keys; with 3 x 90° type: 3 keys.

Key 1 switches to lock position 1, key 2 switches to lock positions 1 and 2, etc...

Priority keylock switch rectangular collar

Technical data see page 1 - 68





Panel cut-out

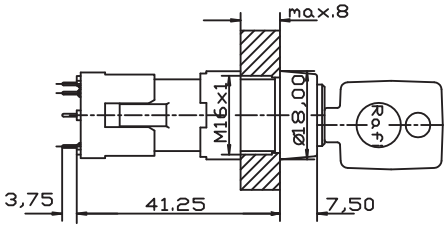
→	Contact arrangement	Contact function	Rotating angle		Key removal position	Order no.
	1 NO at every switching position	latching	3 x 90°		0	1.10.119.117/0000
	1 NO at every switching position	latching	3 x 90°		0+1+2+3	1.10.119.467/0000
	1 NO at every switching position	latching	2 x 90°		0	1.10.119.111/0000

Included with 2 x 90° type: 2 keys; with 3 x 90° type: 3 keys.

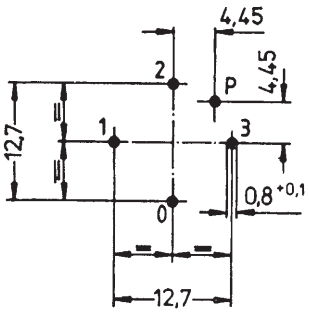
Key 1 switches to lock position 1, key 2 switches to lock positions 1 and 2, etc...

Keylock switch
PCB plug-in socket

Technical data see page 1 - 68



with plug-in socket



PCB hole pattern, sight on component side

→ Description	Order no.
Plug-in socket for PCB mounting	5.05.510.298/0000

Other pushbuttons

- Various pushbuttons for mounting hole diameters from 9.1 mm to 22.3 mm.
- All products are RoHS compliant.

PUSHBUTTONS

OTHER PUSHBUTTONS

1

Other Pushb.

Content

Pushbuttons non-illuminated 9.1 mm, 24 V / 100 mA **1 - 75**
Pushbutton non-illuminated mounting hole diameter 9.1 mm, 24 V / 100 mA 1 - 76

Pushbuttons 9.1 mm, 24 V / 0.5 A **1 - 77**
Pushbutton mounting hole diameter 9.1 mm, 24 V / 0.5 A 1 - 78

Pushbuttons non-illuminated 15.2 mm, 250 V / 0.7 A **1 - 79**
Pushbutton non-illuminated mounting hole diameter 15.2 mm 1 - 80

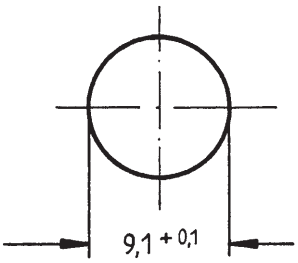
Pushbuttons non-illuminated 16.2 mm, 250 V / 2 A **1 - 81**
Pushbutton non-illuminated mounting hole diameter 16.2 mm, 250 V / 2 A 1 - 82

Pushbuttons non-illuminated 18.2 mm, 250 V / 2 A **1 - 83**
Pushbutton non-illuminated mounting hole diameter 18.2 mm, 250 V / 2 A 1 - 84

Pushbuttons illuminable 20.3 mm, 250 V / 2 A **1 - 85**
Pushbutton with lamp socket BA9s (MBC/MCC), mounting hole diameter 20.3 mm, 250 V / 2 A 1 - 86

LUMOTAST 22 E-Stop pushbuttons, 22.3 mm **1 - 87**
LUMOTAST 22 E-Stop 1 - 88

PUSHBUTTONS NON-ILLUMINATED 9.1 mm, 24 V / 100 mA



Panel cut-out

Technical Data

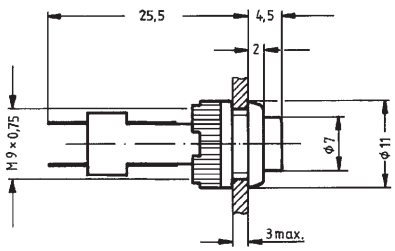
→ General information	
Form of lens	protruding lens
Color of lens	see order block
Form of collar	round
→ Dimensions	
Diameter of collar	11 mm
Overall height	4.5 mm
Mounting depth	25.5 mm
Mounting hole	9.1 mm
→ Mechanical design	
Mounting	ring nut
Terminals	solder terminals
Contact system	bridge contact
Contact function	momentary
Contact arrangement	1 NO
Contact materials	Ag
Illumination	no
Lamp socket	no
→ Mechanical characteristics	
Operating force max.	7 N
Operating travel	2 mm
Switching travel NO	1.3 mm
Robustness max.	100 N
→ Electrical characteristics	
Rated voltage AC max.	24 V
Rated voltage DC max.	24 V
Rated current max.	0.1 A
Contact resistance max.	200 mΩ
→ Other specifications	
Operating life (operations)	40,000
Degree of protection from front side	IP40 (DIN EN 60529)
Operation temperature min.	-25 °C
Ambient temp. operating max.	+70 °C
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Weight	2 g
Soldering time max.	3 s
Soldering temperature max.	350 °C
ROHS compliant	yes
REACH compliant	yes

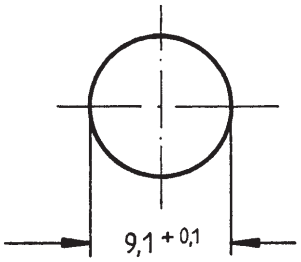
Accessories Pushbutton non-illuminated - 9.1 mm, 24 V / 100 mA

→ Description	Photo	Order no.	Additional accessories see page
Fixing spanner M 9, M 10		5.58.002.025/0105	5 - 25

Pushbutton non-illuminated mounting hole diameter 9.1 mm, 24 V / 100 mA

Technical data see page 1 - 75





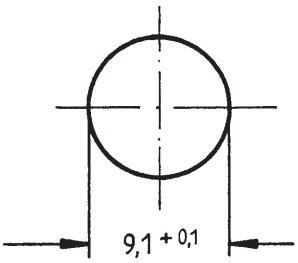
Panel cut-out

→ Contact arrangement	Contact function	Color of lens	Order no.
1 NO	momentary	opaque red	1.10.107.011/0301
1 NO	momentary	opaque yellow	1.10.107.011/0404
1 NO	momentary	opaque green	1.10.107.011/0507
1 NO	momentary	opaque white	1.10.107.011/0205
1 NO	momentary	opaque black	1.10.107.011/0104

PUSHBUTTONS 9.1 mm, 24 V / 0.5 A

Technical Data

→ General information	
Form of lens	protruding lens
Color of lens	see order block
Form of collar	round
→ Dimensions	
Diameter of collar	11 mm
Overall height	7 mm
Mounting depth	25 mm
Mounting hole	9.1 mm
→ Mechanical design	
Mounting	ring nut
Terminals	solder terminals
Contact system	bridge contact
Contact function	momentary
Contact arrangement	1 NC + 1 NO
Contact materials	Au
Illumination	see order block
Lamp socket	no
→ Mechanical characteristics	
Operating force max.	5 N
Operating travel	1.5 mm
Switching travel NC	0.5 mm
Switching travel NO	1 mm
Robustness max.	100 N
→ Electrical characteristics	
Rated voltage AC/DC max.	24 V
Rated voltage DC max.	24 V
Rated current max.	0.5 A
Contact resistance when new max.	50 mΩ
Contact resistance acc. to life max.	300 mΩ
Bouncing time max.	10 ms
Lamp voltage	see order block
→ Other specifications	
Operating life key switch	200,000
Degree of protection from front side	IP40 (DIN EN 60529)
Operation temperature min.	-25 °C
Ambient temp. operating max.	+70 °C, LED +55 °C
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Soldering temperature max.	350 °C
Soldering time max.	3 s
Weight	3 g
LED operating voltage	see order block
LED forward current	see order block
LED forward voltage	see order block
LED reverse voltage	see order block
LED reverse current	see order block
LED power dissipation	see order block
LED series resistor 5-7 V	see order block
LED series resistor 12-14 V	see order block
LED series resistor 24-28 V	see order block
ROHS compliant	yes
REACH compliant	yes



Panel cut-out

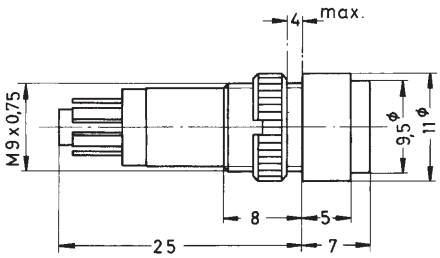
Other Pushb.

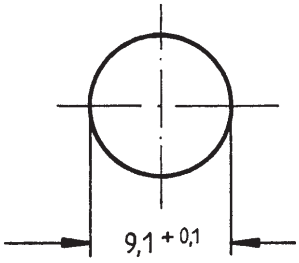
Accessories Pushbutton - 9.1 mm, 24 V / 0.5 A

→ Description	Photo	Order no.	Additional accessories see page
Fixing spanner M 9, M 10		5.58.002.025/0105	5 - 25

Pushbutton mounting hole diameter 9.1 mm, 24 V / 0.5 A

Technical data see page 1 - 77





Panel cut-out

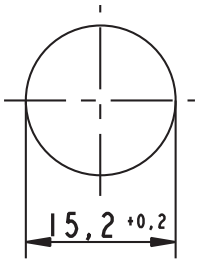
→ Contact arrangement	Contact function	Illumination	Color of lens	Order no.
1 NC + 1 NO	momentary	no	opaque red	1.15.106.301/0313
1 NC + 1 NO	momentary	no	opaque yellow	1.15.106.301/0410
1 NC + 1 NO	momentary	no	opaque green	1.15.106.301/0518
1 NC + 1 NO	momentary	no	opaque white	1.15.106.301/0214
1 NC + 1 NO	momentary	no	opaque black	1.15.106.301/0104
1 NC + 1 NO	momentary	LED super bright red	transparent red	1.15.106.501/1300
1 NC + 1 NO	momentary	LED super bright yellow	transparent yellow	1.15.106.503/1400
1 NC + 1 NO	momentary	LED super bright green	transparent green	1.15.106.502/1500
1 NC + 1 NO	momentary	LED super bright blue	transparent blue	1.15.106.504/1600
1 NC + 1 NO	momentary	LED superbright white	transparent white	1.15.106.505/1000

Recommended values for external series resistor for LED
- 5 - 7 V = 270 Ω, 0.25 W
- 12 - 14 V = 680 Ω, 0.5 W
- 24 - 28 V = 1500 Ω, 1 W

LED forward current: max. 10 mA at T = 25° C
LED forward voltage: 2V at 10 mA
LED reverse voltage: 5 V
LED reverse current: 0,1 mA
LED power dissipation: max. 120 mW at T = 50° C

Contact arangement: 1-2 = NC, 3-4 = NO, X1-X2 = LED. Please note: connect plus with the LED anode, which is marked with a color point.

PUSHBUTTONS NON-ILLUMINATED 15.2 mm, 250 V / 0.7 A



Panel cut-out

Technical Data

→ General information	
Form of lens	protruding lens
Color of lens	see order block
Form of collar	round
→ Dimensions	
Diameter of collar	19 mm
Overall height	8.2 mm
Mounting depth	21.5 mm
Mounting hole	15.2 mm
→ Mechanical design	
Mounting	ring nut
Terminals	see order block
Contact system	bridge contact
Contact function	momentary
Contact arrangement	see order block
Contact materials	Ag
Illumination	no
Lamp socket	no
→ Mechanical characteristics	
Operating force max.	7.5 N
Operating travel	3 mm
Switching travel NC	1.2 mm
Switching travel NO	2.0 mm
Robustness max.	100 N
→ Electrical characteristics	
Rated voltage AC max.	250 V
Rated current max.	0.7 A
Contact resistance when new max.	50 mΩ
Contact resistance acc. to life max.	300 mΩ
→ Other specifications	
Operating life (operations)	25,000
Degree of protection from front side	IP40 acc. to DIN EN 60529 (IP65 with sealing cap)
Operation temperature min.	-25 °C
Ambient temp. operating max.	+85 °C
Storage temperature min.	-40 °C
Storage temperature max.	+90 °C
Environmental resistance	acc. to IEC 60068-2-14, -30, -33 and -78
Weight	7 g
Flame class acc. to UL 94	V 0
Hot wire ignition acc. to IEC 60695-2-1	yes
ROHS compliant	yes
REACH compliant	yes

Approvals

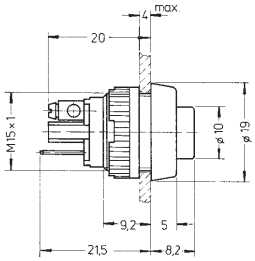
ENEC 25T85

Accessories Pushbutton non-illuminated - 15.2 mm, 250 V / 0.7 A

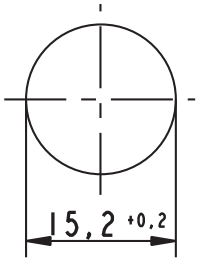
→ Description	Photo	Order no.	Additional accessories see page
Sealing cap, transparent, for protection acc. to IP65		5.52.008.115/0000	-
Fixing spanner M 15, M 16		5.58.002.019/0105	5 - 25

Pushbutton non-illuminated mounting hole diameter 15.2 mm

Technical data see page 1 - 79



screw terminals

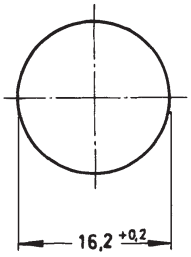


Panel cut-out

→ Contact arrangement	Contact function	Color of lens	Terminals	Order no.
1 NO	momentary	opaque red	screw terminals	1.10.001.001/0301
1 NO	momentary	opaque red	solder/quick connector 6.3x0.8 / 2x 2.8x0.8mm	1.10.001.011/0301
1 NO	momentary	opaque green	screw terminals	1.10.001.001/0507
1 NO	momentary	opaque green	solder/quick connector 6.3x0.8 / 2x 2.8x0.8mm	1.10.001.011/0507
1 NO	momentary	opaque white	screw terminals	1.10.001.001/0205
1 NO	momentary	opaque white	solder/quick connector 6.3x0.8 / 2x 2.8x0.8mm	1.10.001.011/0205
1 NO	momentary	opaque black	screw terminals	1.10.001.001/0104
1 NO	momentary	opaque black	solder/quick connector 6.3x0.8 / 2x 2.8x0.8mm	1.10.001.011/0104
1 NC	momentary	opaque red	screw terminals	1.10.001.151/0301
1 NC	momentary	opaque red	solder/quick connector 6.3x0.8 / 2x 2.8x0.8mm	1.10.001.161/0301
1 NC	momentary	opaque black	screw terminals	1.10.001.151/0104
1 NC	momentary	opaque black	solder/quick connector 6.3x0.8 / 2x 2.8x0.8mm	1.10.001.161/0104

Quick-connector 6.3 x 0.8 mm. The connector is splitted and also usable for two connectors 2.8 x 0.8 mm.

PUSHBUTTONS NON-ILLUMINATED 16.2 mm, 250 V / 2 A



Panel cut-out

Technical Data

→ General information	
Form of lens	protruding lens
Color of lens	see order block
Form of collar	round
→ Dimensions	
Diameter of collar	20 mm
Overall height	9 mm
Mounting depth	41 mm
Mounting hole	16.2 mm
→ Mechanical design	
Mounting	ring nut
Terminals	screw terminals
Contact system	bridge contact
Contact function	momentary
Contact arrangement	see order block
Contact materials	Ag
Illumination	no
Lamp socket	no
→ Mechanical characteristics	
Operating force max.	7.5 N
Operating travel	4.3 mm
Switching travel NC	1.3 mm
Switching travel NO	2.2 mm
Robustness max.	100 N
→ Electrical characteristics	
Rated voltage AC max.	250 V
Rated current max.	2 A
Contact resistance when new max.	100 mΩ
→ Other specifications	
Operating life (operations)	150,000
Degree of protection from front side	IP40 acc. to DIN EN 60529 (IP65 with sealing cap)
Operation temperature min.	-25 °C
Ambient temp. operating max.	+85 °C
Storage temperature min.	-40 °C
Storage temperature max.	+90 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Weight	11 g
Flame class acc. to UL 94	V 0
Hot wire ignition acc. to IEC 60695-2-1	yes
ROHS compliant	yes
REACH compliant	yes

Approvals

Accessories Pushbutton non-illuminated - 16.2 mm, 250 V / 2 A

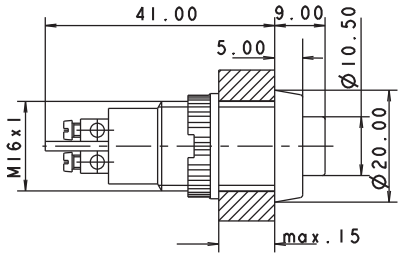
→ Description	Photo	Order no.	Additional accessories see page
Sealing cap, black, for protection acc. to IP65		5.52.008.101/0100	-

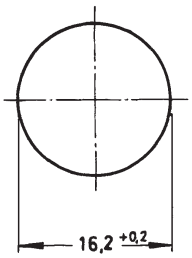
– Table (continued) –
Accessories Pushbutton non-illuminated - 16.2 mm, 250 V / 2 A

→ Description	Photo	Order no.	Additional accessories see page
Sealing cap, red, for protection acc. to IP65		5.52.008.101/0300	-
Protective sleeve for terminals		5.52.011.026/0100	-
Protection against contact to VBG 4		5.55.101.715/0200	5 - 31
Fixing spanner M 15, M 16		5.58.002.019/0105	5 - 25

Pushbutton non-illuminated mounting hole diameter 16.2 mm, 250 V / 2 A

Technical data see page 1 - 81

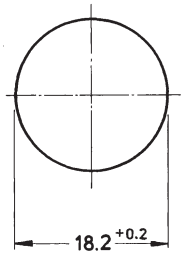




Panel cut-out

→ Contact arrangement	Contact function	Color of lens	Order no.
1 NO	momentary	opaque red	1.10.102.001/0301
1 NO	momentary	opaque green	1.10.102.001/0507
1 NO	momentary	opaque white	1.10.102.001/0205
1 NO	momentary	opaque black	1.10.102.001/0104
1 NC	momentary	opaque red	1.10.102.011/0301
1 NC	momentary	opaque black	1.10.102.011/0104

PUSHBUTTONS NON-ILLUMINATED 18.2 mm, 250 V / 2 A



Mounting hole

Technical Data

→ General information	
Form of lens	protruding lens
Color of lens	see order block
Form of collar	round
→ Dimensions	
Diameter of collar	22 mm
Overall height	10.5 mm
Mounting depth	34 mm
Mounting hole	18.2 mm
→ Mechanical design	
Mounting	ring nut
Terminals	see order block
Contact system	sliding bridge contact
Contact function	momentary
Contact arrangement	see order block
Contact materials	Ag
Illumination	no
Lamp socket	no
→ Mechanical characteristics	
Operating force max.	9.5 N
Operating travel	5 mm
Switching travel NC	2.1 mm
Switching travel NO	3.7 mm
Robustness max.	100 N
→ Electrical characteristics	
Rated voltage AC max.	250 V
Rated current max.	2 A
Contact resistance acc. to life max.	200 mΩ
→ Other specifications	
Operating life (operations)	50,000
Degree of protection from front side	IP40 acc. to DIN EN 60529 (IP65 with sealing cap)
Operation temperature min.	-25 °C
Ambient temp. operating max.	+85 °C
Storage temperature min.	-40 °C
Storage temperature max.	+90 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Weight	14 g
Flame class acc. to UL 94	V 0
Hot wire ignition acc. to IEC 60695-2-1	yes
ROHS compliant	yes
REACH compliant	yes

Approvals

Accessories Pushbutton non-illuminated - 18.2 mm, 250 V / 2 A

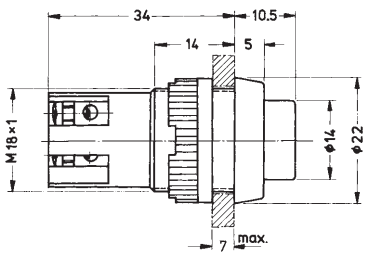
→ Description	Photo	Order no.	Additional accessories see page
Neoprene sealing cap, black, for protection acc. to IP65		5.52.008.061/0100	-

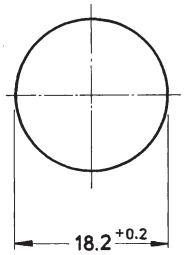
– Table (continued) –
Accessories Pushbutton non-illuminated - 18.2 mm, 250 V / 2 A

→ Description	Photo	Order no.	Additional accessories see page
Silicone sealing cap, for protection acc. to IP65		5.52.008.065/0000	-
Protective sleeve for terminals		5.52.011.028/0100	-
Fixing spanner M 18, M 19		5.58.002.017/0105	5 - 25

Pushbutton non-illuminated mounting hole diameter 18.2 mm, 250 V / 2 A

Technical data see page 1 - 83





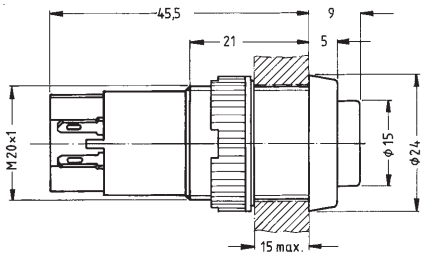
Mounting hole

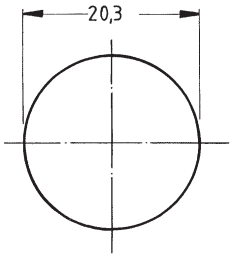
→ Contact arrangement	Color of lens	Order no.
2 NO	opaque red	1.01.102.001/0301
2 NO	opaque green	1.01.102.001/0507
2 NO	opaque black	1.01.102.001/0104
1 NC + 1 NO	opaque red	1.01.102.011/0301
1 NC + 1 NO	opaque green	1.01.102.011/0507
1 NC + 1 NO	opaque white	1.01.102.011/0205
1 NC + 1 NO	opaque black	1.01.102.011/0104

PUSHBUTTONS ILLUMINABLE 20.3 mm, 250 V / 2 A

Technical Data

→ General information	
Form of lens	protruding lens
Color of lens	see order block
Form of collar	round
→ Dimensions	
Diameter of collar	24 mm
Overall height	9 mm
Mounting depth	45.5 mm
Mounting hole	20.3 mm
→ Mechanical design	
Mounting	ring nut
Terminals	solder/quick connect terminals 2.8 x 0.8 mm
Contact system	bridge contact
Contact function	momentary
Contact arrangement	see order block
Contact materials	Ag
Illumination	yes
Lamp socket	BA 9 s
→ Mechanical characteristics	
Operating force max.	10 N
Operating travel	3.6 mm
Switching travel NC	0.8 mm
Switching travel NO	2.9 mm
Robustness max.	100 N
→ Electrical characteristics	
Rated voltage AC max.	250 V
Rated current max.	2 A
Contact resistance acc. to life max.	200 mΩ
→ Other specifications	
Operating life (operations)	100,000
Degree of protection from front side	IP40 acc. to DIN EN 60529 (IP65 with sealing cap)
Operation temperature min.	-25 °C
Ambient temp. operating max.	+85 °C
Storage temperature min.	-40 °C
Storage temperature max.	+90 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Weight	18 g
Flame class acc. to UL 94	V 0
Hot wire ignition acc. to IEC 60695-2-1	yes
ROHS compliant	yes
REACH compliant	yes





Mounting hole

Approvals

PUSHBUTTONS

PUSHBUTTON ILLUMINABLE - MOUNTING HOLE DIAMETER 20.3 MM, BA9S

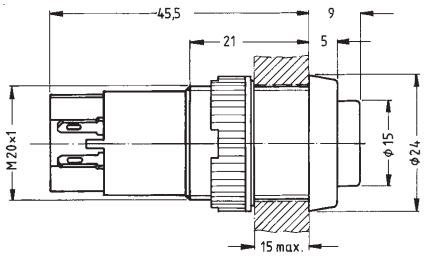
Accessories Pushbutton illuminable - 20.3 mm, 250 V / 2 A

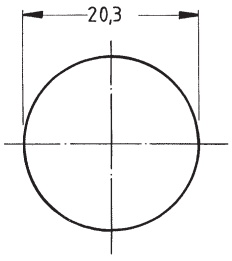
→ Description	Photo	Order no.	Additional accessories see page
LED BA 9s (MBC/MCC) superbright, red, 24 V		1.90.690.341/0000	5 - 8
LED BA 9s (MBC/MCC) superbright, green, 24 V		1.90.690.342/0000	5 - 8
LED BA 9s (MBC/MCC) superbright, yellow, 24 V		1.90.690.343/0000	5 - 8
LED BA 9s (MBC/MCC) superbright, blue, 24 V		1.90.690.344/0000	5 - 8
LED BA 9s (MBC/MCC) superbright, white, 24 V		1.90.690.345/0000	5 - 8
Silicone sealing cap, for protection acc. to IP65		5.52.008.065/0000	-
Protective sleeve for terminals		5.52.011.030/0100	-
Fixing spanner M 20, M 22, for ring nut		5.58.002.018/0105	5 - 25

Other Pushb.

Pushbutton with lamp socket BA9s (MBC/MCC), mounting hole diameter 20.3 mm, 250 V / 2 A

Technical data see page 1 - 85





Mounting hole

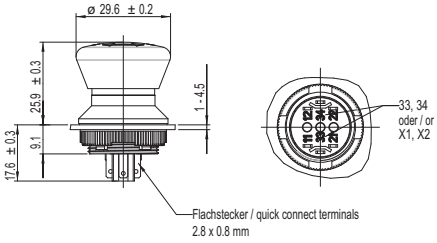
→ Contact arrangement	Contact function	Order no.	Note
1 NO	momentary	1.15.112.101/0000	Please include the desired lens in your order.
1 NC + 1 NO	momentary	1.15.112.121/0000	Please include the desired lens in your order.

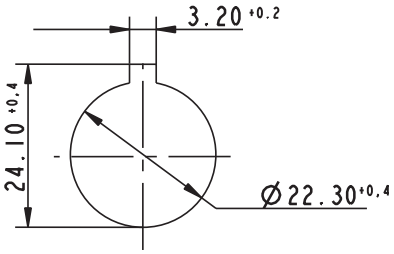
Lenses:
Lens, transparent colorless: 5.49.205.008/1002
Lens, transparent red: 5.49.205.008/1303
Lens, transparent yellow: 5.49.205.008/1402
Lens, transparent green: 5.49.205.008/1502

LUMOTAST 22 E-STOP PUSH-BUTTONS, 22.3 MM

→ 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.
Original manual see „Appendix"





Panel cut-out to IEC 60947-5-1

Technical Data

→ General information	
Form of lens	conical mushroom form
Color of lens	red
Form of collar	round
→ Dimensions	
Mushroom Diameter	30 mm
Overall height	25.9 mm
Mounting depth	17.6 mm
Mounting hole	22.3 mm
→ Mechanical design	
Mounting	ring nut
Terminals	quick connector 2.8 x 0.8 mm, solderable
Torque for nut ring	1.9 Nm
Contact function	latching
Contact arrangement	see order block
Illuminability	see order block
Reset	by rotation
→ Mechanical characteristics	
Robustness max.	100 N
→ Electrical characteristics acc. to IEC/EN 60947-5-1 (VDE 0660 Part 200)	
Application category	AC15/DC13
Rated insulation voltage U_i	250V (AC/DC)
Rated operating voltage U_e	250V AC, 240V DC
{Term. Dauerstrom}	2.5A (AC/DC)
→ Other specifications	
Ambient temp. operating min.	-25 °C
Ambient temp. operating max.	+70 °C
Robustness	acc. to IEC 600 68-2-3 und 2-30
Operating life (operations) / B10	15,000
Degree of protection from front side	IP65 (DIN EN 60529)
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Salt spray	IEC 600 68-2-11
Solder techniques	manual soldering, lead-free
Soldering temperature max.	350 °C
Soldering time max.	5 s
ROHS compliant	yes
REACH compliant	yes

Approvals

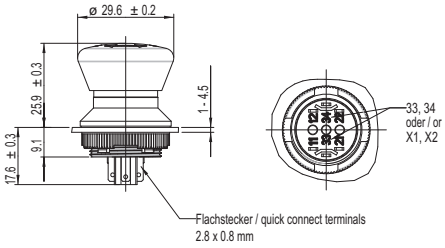
Other Pushb.

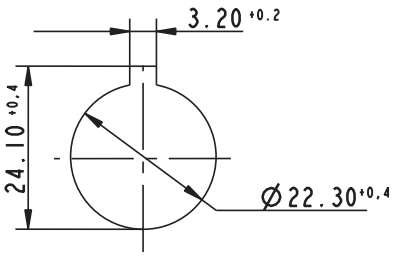
Accessories LUMOTAST 22 E-Stop, 22.3 mm

→ Description	Photo	Order no.	Additional accessories see page
Fixing spanner for ring nut		5.05.800.062/0000	2 - 145, 2 - 261, 5 - 25

LUMOTAST 22 E-Stop

Technical data see page 1 - 87

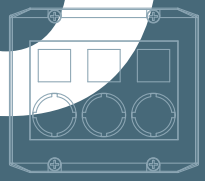




Panel cut-out to IEC 60947-5-1

→ Contact arrangement	Illuminability	Degree of protection from front side	Order no.
2 NC + 1 NO	no	IP65 (DIN EN 60529)	1.15.105.021/0000
2 NC	arrows with 2 LED	IP65 (DIN EN 60529)	1.15.105.011/0000
2 NC	no	IP65 (DIN EN 60529)	1.15.105.001/0000

5



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General information

When selecting lamps, the button/lens color of the device should be taken into account.

transparent colors	Suitable for		
	Filament lamps	Neon lamps	LED
colorless	limited	good	good
red	good	good	good
yellow	good	good	good
green	good	limited	limited
blue	limited	limited	good

transparent = clear, grooved on inside for better light diffusion
translucent = translucent but not clear

Operating life specifications of lamps refer to AC operation. For DC operation, these values are reduced by approximately 40%. (Operating life specifications: when not mounted).

Neon lamps: rated current tolerance +/- 30%

We recommend to combine colored lenses with the coresponding LED colors in order to achieve a really intensive color.
On the other hand, when combining e. g. a white LED with a colored lens, this will produce a dim color.

LED Protective Diode
LED may be damaged when anode and cathode are connected in a wrong way. An integrated protective diode protects the LED against wrong polarization.

LED brightness classes

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

The majority of the LEDs we use are delivered from our suppliers in selected brightness classes. In this case, the brightness class is shown on a label on the switch's rack packaging.

Where the lighting is required to have a uniform brightness – for aesthetic reasons, for example – this can be achieved in the system by means of the circuitry (with a series resistance, for example).

CE-Conformity

Illumination like lamps and LED displays are exchangeable, overall available as merchandise and not steadily connected with the network – thus, the Low-voltage Directive 73/23/EWG does not apply.

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

Declarations of Conformity
Declarations of conformity for lamps are not available.

Accessories

Luminous elements

Luminous elements

ACCESSORIES

ACCESSORIES - LUMINOUS ELEMENTS

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LED

Socket W 2 x 4.6d, LED superbright

→	Socket	Color	Forward voltage typ. U_F at I_F	Max. current, I_F	Light intensity	Order no.
	W 2 x 4.6d	red	24	12 mA	70 mcd	1.90.690.361/0000
	W 2 x 4.6d	yellow	24	12 mA	80 mcd	1.90.690.363/0000
	W 2 x 4.6d	green	24	12 mA	600 mcd	1.90.690.362/0000
	W 2 x 4.6d	blue	24	12 mA	300 mcd	1.90.690.364/0000
	W 2 x 4.6d	white	24	12 mA	400 mcd	1.90.690.365/0000

All LEDs are provided with a protective diode. Operating temperature - 30 °C ... + 65 °C.

For more intensive colors, please combine colored lenses with suitable LED colors.

Accessoires:
Lamp extractor for lamp diameter 5 mm: 1.90.900.003/0000

Socket Bi-Pin T 1, LED

→ Socket	Color	Forward voltage typ. U_F at I_F	Max. current, I_F	Light intensity	Order no.
Bi-Pin T 1	red	2	10 mA	26-52 mcd	1.90.691.026/0000
Bi-Pin T 1	yellow	2	10 mA	26-52 mcd	1.90.691.028/0000
Bi-Pin T 1	green	2	10 mA	9-33 mcd	1.90.691.027/0000

Voltage U_B: External resistor: $R_V = (U_B - U_F):I_F$
A suitable series resistor must be fitted externally.
Recommended resistor ratings:
- for 5 - 7 V = 270 Ω 0.25 W
- for 12 - 14 V = 680 Ω 0.50 W
- for 24 - 28 V = 1500 Ω 1.00 W

Forward voltage U_F: 2 V (3 V max.)
Reverse voltage U_R: 5 V
Reverse current I_R: 100 µA.
Forward current: 10 mA
Operating temperature:-20°C ... +60°C
Storage temperature:-30°C ... +80°C
Operating life: 100,000 h at T_U = 25°C)

Accessoires:
Lamp extractor for lamp diameter 4 mm: 1.90.900.001/0000

Socket Bi-Pin T 1, LED superbright

→ Socket	Color	Forward voltage typ. U_F at I_F	Max. current, I_F	Light intensity	Order no.
Bi-Pin T 1	red	24	11 mA	70 mcd	1.90.690.351/0000
Bi-Pin T 1	yellow	24	11 mA	80 mcd	1.90.690.353/0000
Bi-Pin T 1	green	24	11 mA	600 mcd	1.90.690.352/0000
Bi-Pin T 1	blue	24	11 mA	300 mcd	1.90.690.354/0000
Bi-Pin T 1	white	24	11 mA	400 mcd	1.90.690.355/0000

All LEDs are provided with a protective diode. Operating temperature - 30 °C ... + 65 °C.

For more intensive colors, please combine colored lenses with suitable LED colors.

Accessoires:
Lamp extractor for lamp diameter 4 mm: 1.90.900.001/0000

Socket T 4.5, LED

→ Socket	Color	Forward voltage typ. U_F at I_F	Max. current, I_F	Light intensity	Order no.
T 4.5	red	2 - 3 V	10 mA	26-52 mcd	1.90.692.001/0000
T 4.5	yellow	2 - 3 V	10 mA	26-52 mcd	1.90.692.003/0000
T 4.5	green	2 - 3 V	10 mA	9-33 mcd	1.90.692.002/0000

Voltage U_B: External resistor: $R_V = (U_B - U_F):I_F$
A suitable series resistor must be fitted externally.
Recommended resistor ratings:
- for 5 - 7 V = 270 Ω 0.25 W
- for 12 - 14 V = 680 Ω 0.50 W
- for 24 - 28 V = 1500 Ω 1.00 W

Forward voltage U_F: 2 V (3 V max.)
Reverse voltage U_R: 5 V
Reverse current I_R: 100 µA.
Forward current: 10 mA
Operating temperature: -20°C ... +60°C
Storage temperature: -30°C ... +80°C
Operating life: 100,000 h at T_U = 25°C)

Socket T 4.5, LED superbright

→ Socket	Color	Forward voltage typ. U_F at I_F	Max. current, I_F	Light intensity	Order no.
T 4.5	red	24	13 mA	90 mcd	1.90.690.331/0000
T 4.5	yellow	24	13 mA	100 mcd	1.90.690.333/0000
T 4.5	green	24	13 mA	700 mcd	1.90.690.332/0000
T 4.5	blue	24	13 mA	380 mcd	1.90.690.334/0000
T 4.5	white	24	13 mA	500 mcd	1.90.690.335/0000

All LEDs are provided with a protective diode. Operating temperature - 30 °C ... + 65 °C.

For more intensive colors, please combine colored lenses with suitable LED colors.

Accessoires:
Lamp extractor for lamp diameter 5-6 mm: 1.90.900.004/0000

Socket BA 9s (MBC/MCC), LED superbright

→ Socket	Color	Forward voltage typ. U_F at I_F	Max. current, I_F	Light intensity	Order no.
BA 9 s	red	24	15 mA	250 mcd	1.90.690.341/0000
BA 9 s	yellow	24	15 mA	250 mcd	1.90.690.343/0000
BA 9 s	green	24	15 mA	1000 mcd	1.90.690.342/0000
BA 9 s	blue	24	15 mA	450 mcd	1.90.690.344/0000
BA 9 s	white	24	15 mA	600 mcd	1.90.690.345/0000

All LEDs are provided with a protective diode. Operating temperature - 30 °C ... + 65 °C.

For more intensive colors, please combine colored lenses with suitable LED colors.

Accessoires:
Lamp extractor for lamp diameter 11 mm: 1.90.900.007/0000

THT LED 3 mm, without base

→ Color	Forward voltage typ. U_F at I_F	Max. current, I_F	Order no.
red	1.6 V / 1 mA	30 mA	1.90.690.228/0000
red	1.9 V / 20 mA	50 mA	1.90.690.269/0000
yellow	1.9 V / 20 mA	50 mA	1.90.690.267/0000
green	3.2 V / 20 mA	35 mA	1.90.690.684/0000
blue	3.6 V / 20 mA	30 mA	1.90.690.282/0000
white	3.6 V / 20 mA	30 mA	1.90.690.295/0000

FILAMENT/ NEON LAMPS

Wedge base W 2 x 4.6d, filament lamp, DIN 49846

→	Rated voltage	Rated current	Rated power	Diameter max.	Length	Medium operating life AC	Order no.
	12 V	0.08 A	1.2 W	5 mm	20 mm	15,000 h	1.90.120.012/0000
	24 - 30 V	0.04 A	1 W	5 mm	20 mm	1000 h	1.90.120.005/0000
	24 V	0.04 A	1.2 W	5 mm	20 mm	7000 h	1.90.120.011/0000
	48 V	0.025 A	1.2 W	5 mm	19 mm	2500 h	1.90.120.010/0000
	60 V	0.02 A	1.2 W	5 mm	19 mm	3300 h	1.90.120.009/0000

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about 40%.
The lamps up to 30 V are provided with glass sockets, the other ones with plastic sockets.

Accessoires:
Lamp extractor for lamp diameter 5 mm: 1.90.900.003/0000

Bi-Pin T 1 base, filament lamp

→	Rated voltage	Rated current	Rated power	Diameter max.	Length	Medium operating life AC	Order no.
	24 - 28 V	0.016 A	0.4 - 0.56 W	-	-	5000 h	1.90.180.473/0000

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about 40%.

Accessoires:
Lamp extractor for lamp diameter 4 mm: 1.90.900.001/0000

Bi-Pin T ¼ base, filament lamp

→	Rated voltage	Rated current	Rated power	Diameter max.	Length	Medium operating life AC	Order no.
	12 V	0.06 A	0.72 W	4.3 mm	10.5 mm	10,000 h	1.90.180.474/0000
	28 V	0.03 A	0.84 W	4.3 mm	10.5 mm	5000 h	1.90.180.475/0000

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about 40%.

Accessoires:
Lamp extractor for lamp diameter 4 mm: 1.90.900.002/0000

T 4.5 base, filament lamp

→	Rated voltage	Rated current	Rated power	Diameter max.	Length	Medium operating life AC	Order no.
	12 V	0.04 A	0.48 W	4.2 mm	16.5 mm	10,000 h	1.90.100.022/0000

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about 40%.

Accessoires:
Lamp extractor for lamp diameter 4 mm: 1.90.900.002/0000

T 4.6 base, filament lamp

→	Rated voltage	Rated current	Rated power	Diameter max.	Length	Medium operating life AC	Order no.
	12 V	0.04 A	0.3 W	4 mm	22 mm	5000 h	1.90.100.012/0000
	24 V	0.02 A	0.5 W	4 mm	22 mm	5000 h	1.90.100.013/0000

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about 40%.

Accessoires:
Lamp extractor for lamp diameter 4 mm: 1.90.900.002/0000

BA 9s base (MBC/MCC), filament lamp, shape G, DIN 72601

→	Rated voltage	Rated current	Rated power	Diameter max.	Length	Medium operating life AC	Order no.
	12 - 15 V	0.12 A	1.2 W	9 mm	24 mm	10,000 h	1.90.060.003/0000
	24 - 30 V	0.04 A	1.2 W	9 mm	24 mm	7000 h	1.90.060.014/0000

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about 40%.

Accessoires:
Lamp extractor for lamp diameter 10.4 mm: 1.90.900.006/0000

BA 9s base (MBC/MCC), filament lamp, shape A, DIN 49851

→	Rated voltage	Rated current	Rated power	Diameter max.	Length	Medium operating life AC	Order no.
	12 - 15 V	0.166 A	2 W	11 mm	29 mm	10,000 h	1.90.060.132/0000
	24 - 30 V	0.083 A	2 W	11 mm	29 mm	10,000 h	1.90.060.133/0000
	110 - 130 V	0.018 A	2 W	11 mm	30 mm	25,000 h	1.90.060.137/0000

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about 40%.

Accessoires:
Lamp extractor for lamp diameter 11 mm: 1.90.900.007/0000

BA 9s base (MBC/MCC), neon lamp

→	Rated voltage	Rated current	Rated power	Diameter max.	Length	Medium operating life AC	Order no.
	220 AC V	0.0015 - 0.0018 A	-	10 mm	24 mm	1500 h	1.90.560.002/0000

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about 40%.

Accessoires:
Lamp extractor for lamp diameter 11 mm: 1.90.900.007/0000

BA 9s base (MBC/MCC), neon lamp, DIN 49850

→	Rated voltage	Rated current	Rated power	Diameter max.	Length	Medium operating life AC	Order no.
	AC 220 V	0.0015 - 0.0018 A	-	10 mm	28 mm	-	1.90.560.102/0000

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about 40%.

Accessoires:
Lamp extractor for lamp diameter 11 mm: 1.90.900.007/0000

BA 15d base, filament lamp, DIN 49850

→	Rated voltage	Rated current	Rated power	Diameter max.	Length	Medium operating life AC	Order no.
	12 - 15 V	0.12 A	2 W	15.2/12.5 mm	31 mm	1000 h	1.90.070.003/0000
	24 - 30 V	0.08 A	2 W	15.2/12.5 mm	31 mm	1000 h	1.90.070.004/0000

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about 40%.

Accessoires:
Lamp extractor for lamp diameter 14 mm: 1.90.900.008/0000

BA 15d base, filament lamp, DIN 49852

→	Rated voltage	Rated current	Rated power	Diameter max.	Length	Medium operating life AC	Order no.
	24 - 30 V	0.165 A	4 W	17 mm	57 mm	2000 h	1.90.070.105/0000

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about 40%.

Accessoires:
Lamp extractor for lamp diameter 16-17 mm: 1.90.900.009/0000

BA 15d base, filament lamp

→	Rated voltage	Rated current	Rated power	Diameter max.	Length	Medium operating life AC	Order no.
	24 V	0.2 A	5 W	16 mm	36 mm	2000 h	1.90.070.053/0000

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about 40%.

Accessoires:
Lamp extractor for lamp diameter 16-17 mm: 1.90.900.009/0000

E 10 (MES) base, filament lamp

→	Rated voltage	Rated current	Rated power	Diameter max.	Length	Medium operating life AC	Order no.
	24 - 30 V	0.083 A	2 W	11 mm	29 mm	1000 h	1.90.010.033/0000
	110 - 130 V	0.018 A	2 W	11 mm	30 mm	1000 h	1.90.010.037/0000

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about 40%.

Accessoires:
Lamp extractor for lamp diameter 11 mm: 1.90.900.007/0000

E 10 (MES) base, neon lamp

→	Rated voltage	Rated current	Rated power	Diameter max.	Length	Medium operating life AC	Order no.
	220 AC V	0.0015 - 0.0018 A	-	10.4 mm	28 mm	-	1.90.510.012/0000

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about 40%.

Accessoires:
Lamp extractor for lamp diameter 10.4 mm: 1.90.900.006/0000

E 14 base, shape B, filament lamp, DIN 49850

→	Rated voltage	Rated current	Rated power	Diameter max.	Length	Medium operating life AC	Order no.
	24 - 30 V	0.083 A	2 W	14/12.5 mm	31 mm	1000 h	1.90.020.033/0000

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about 40%.

Accessoires:
Lamp extractor for lamp diameter 14 mm: 1.90.900.008/0000

E 14 base, filament lamp shape A, DIN 49852

→	Rated voltage	Rated current	Rated power	Diameter max.	Length	Medium operating life AC	Order no.
	24 - 30 V	0.165 A	4 W	17 mm	57 mm	1000 h	1.90.020.105/0000
	220 - 260 V	0.023 A	5 W	17 mm	57 mm	1000 h	1.90.020.115/0000

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about 40%.

Accessoires:
Lamp extractor for lamp diameter 16-17 mm: 1.90.900.009/0000

E 14 base, filament lamp

→	Rated voltage	Rated current	Rated power	Diameter max.	Length	Medium operating life AC	Order no.
	220 - 260 V	0.02 - 0.03 A	5 - 7 W	16 mm	36 mm	1000 h	1.90.020.061/0000

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about 40%.

Accessoires:
Lamp extractor for lamp diameter 16-17 mm: 1.90.900.009/0000

E 14 base, neon lamp, shape B

→	Rated voltage	Rated current	Rated power	Diameter max.	Length	Medium operating life AC	Order no.
	220 AC V	0.0014 - 0.0026 A	-	14.1/11.5 mm	31 mm	-	1.90.520.002/0000

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about 40%.

Accessoires:
Lamp extractor for lamp diameter 14 mm: 1.90.900.008/0000

Tubular lamp, S 8.5 base, filament lamp, shape L, DIN 72601

→	Rated voltage	Rated current	Rated power	Diameter max.	Length	Medium operating life AC	Order no.
	24 V	-	3 W	11.5 mm	39 mm	200 h	1.90.111.003/0000

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about 40%.

Tubular lamp, S 8.5 base, filament lamp, shape K, DIN 72601

→	Rated voltage	Rated current	Rated power	Diameter max.	Length	Medium operating life AC	Order no.
	24 V	-	5 W	15.5 mm	44 mm	200 h	1.90.111.103/0000

Ratings and operating life specifications generally refer to the lower rated voltage value. Operating life specifications of lamps refer to AC operation. With DC operation, these are reduced by about 40%.

Other accessories

Other accessories

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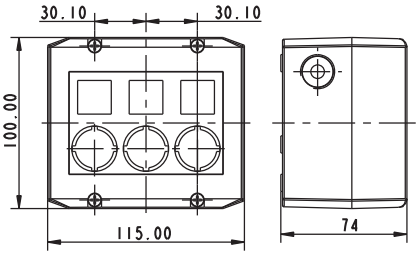
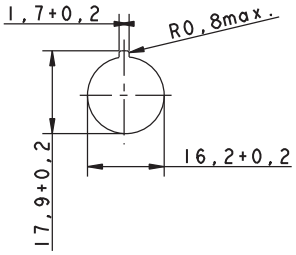
ACCESSORIES

RAFIX
Insulating housing, Ø 16.2 mm





Panel cut-out

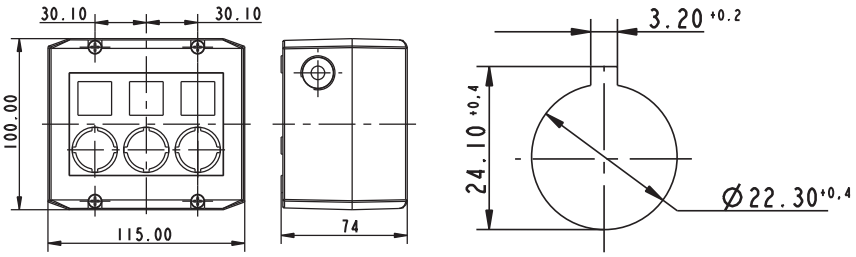
→	Description	Number of cut-outs	Ø	Dimensions	Order no.
	RAFIX - Insulating housing, Ø 16.2 mm, IP65, 1-module, light grey/dark grey	1	16,2 mm	100x55x74 mm	1.20.810.001/0000
	RAFIX - Insulating housing, Ø 16.2 mm, IP65, 1-module, yellow/yellow	1	16,2 mm	100x55x74 mm	1.20.810.002/0000
	RAFIX - Insulating housing, Ø 16.2 mm, IP65, 2-module, light grey/dark grey	2	16,2 mm	100x115x74 mm	1.20.820.001/0000
	RAFIX - Insulating housing, Ø 16.2 mm, IP65, 3-module, light grey/dark grey	3	16,2 mm	100x115x74 mm	1.20.830.001/0000
	RAFIX - Insulating housing, Ø 16.2 mm, IP65, 4-module, light grey/dark grey	4	16,2 mm	100x145x74 mm	1.20.840.001/0000

- Attractive plastic housing to accommodate up to 4 control components
- 2 cable entries prepared: 1-,2-,3-part: M20x1.5, 4-part: M25x1.5
- Degree of protection IP65 to DIN EN 60529
- All grey housings with overlay, legending possible with legend inserts
- Wall mounting with 2 screws through housing bottom prepared
- Dimensions (feature 1) x 100 mm x 74 mm
- Accessories: 50 pre-perforated legend inserts on a DIN A4 sheet
- Housings with other features, e.g. RAFIX 16F, on request.

– Table (continued) –
RAFIX - Insulating housing, Ø 16.2 mm

Accessoires:
Label sheet for housing (50 foil legend inserts): 5.40.451.283/0000

RAFIX
Insulating housing IP65, Ø 22.3 mm



Panel cut-out to IEC 60947-5-1

→	Description	Number of cut-outs	Ø	Dimensions	Order no.
	RAFIX - Insulating housing, Ø 22.3 mm, IP65, 1-module, light grey/dark grey	1	22,3 mm	100x55x74 mm	1.20.810.201/0000
	RAFIX - Insulating housing, Ø 22.3 mm, IP65, 1-module, yellow/yellow	1	22,3 mm	100x55x74 mm	1.20.810.202/0000
	RAFIX - Insulating housing, Ø 22.3 mm, IP65, 2-module, light grey/dark grey	2	22,3 mm	100x115x74 mm	1.20.820.201/0000
	RAFIX - Insulating housing, Ø 22.3 mm, IP65, 3-module, light grey/dark grey	3	22,3 mm	100x115x74 mm	1.20.830.201/0000
	RAFIX - Insulating housing, Ø 22.3 mm, IP65, 4-module, light grey/dark grey	4	22,3 mm	100x145x74 mm	1.20.840.201/0000

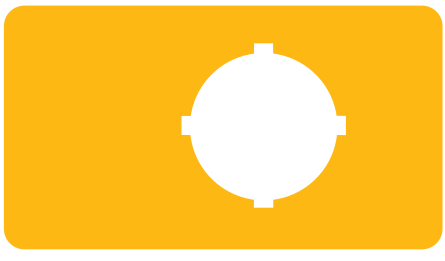
- Plastic housing to accommodate up to 4 control components
- 2 cable entries prepared: 1-,2-,3-part: M20x1.5, 4-part: M25x1.5
- Degree of protection IP65 to DIN EN 60529
- All grey housings with overlay, legending possible with legend inserts
- Wall mounting with 2 screws through housing bottom prepared
- Dimensions: (feature 1) x 100 mm x 74 mm
- Accessories: 50 pre-perforated legend inserts on a DIN A4 sheet

Accessoires:
Label sheet for housing (50 foil legend inserts): 5.40.451.283/0000

Emergency stop label, PVC adhesive, Ø 16.3 mm

→	Dimensions	inside Ø	Label	Order no.
	Ø 40 mm	16.3 mm	„NOT-HALT, EMERGENCY STOP, ARRET D´URGENCE, EMERGENZA"	5.76.204.114/0400
	Ø 40 mm	16.3 mm	4 x „NOT-HALT"	5.76.204.116/0400
	Ø 40 mm	16.3 mm	4 x „NOT-AUS"	5.76.204.118/0400
	Ø 40 mm	16.3 mm	4 x „EMERGENCY STOP"	5.76.204.120/0400
	Ø 60 mm	16.3 mm	-	5.76.204.400/0400
	Ø 60 mm	16.3 mm	1 x „NOT-AUS"	5.76.204.401/0400
	Ø 60 mm	16.3 mm	1 x „EMERGENCY STOP"	5.76.204.403/0400
	Ø 60 mm	16.3 mm	„NOT-HALT, EMERGENCY STOP, ARRET D´URGENCE, EMERGENZA"	5.76.204.106/0400
	Ø 60 mm	16.3 mm	4 x „NOT-HALT"	5.76.204.108/0400
	Ø 60 mm	16.3 mm	4 x „NOT-AUS"	5.76.204.110/0400
	Ø 60 mm	16.3 mm	4 x „EMERGENCY STOP"	5.76.204.112/0400

Emergency stop label, Ø 22.3 mm



→	Dimensions	inside Ø	Label	Order no.
	36 x 64 mm	22.3 mm	-	5.76.205.011/0400
	Ø 40 mm	22.3 mm	„NOT-HALT, EMERGENCY STOP, ARRET D´URGENCE, EMERGENZA"	5.76.204.115/0400
	Ø 40 mm	22.3 mm	4 x „NOT-HALT"	5.76.204.117/0400

– Table (continued) –
Emergency stop label, Ø 22.3 mm

→ Dimensions	inside Ø	Label	Order no.
Ø 40 mm	22.3 mm	4 x „NOT-AUS"	5.76.204.119/0400
Ø 40 mm	22.3 mm	4 x „EMERGENCY STOP"	5.76.204.121/0400
Ø 60 mm	22.3 mm	1 x „NOT-AUS"	5.76.207.001/0400
Ø 60 mm	22.3 mm	„EMERGENCY-STOP / ARRET D'URGENCE"	5.76.207.002/0400
Ø 60 mm	22.3 mm	1 x „NOT-AUS"	5.76.204.101/0400
Ø 60 mm	22.3 mm	1 x „ARRET D´URGENCE"	5.76.204.102/0400
Ø 60 mm	22.3 mm	1 x „EMERGENCY STOP"	5.76.204.103/0400
Ø 60 mm	22.3 mm	„NOT-HALT, EMERGENCY STOP, ARRET D´URGENCE, EMERGENZA"	5.76.204.107/0400
Ø 60 mm	22.3 mm	4 x „NOT-HALT"	5.76.204.109/0400
Ø 60 mm	22.3 mm	4 x „NOT-AUS"	5.76.204.111/0400
Ø 60 mm	22.3 mm	4 x „EMERGENCY STOP"	5.76.204.113/0400

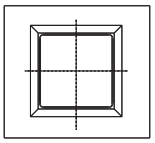
LUMOTAST 75 IP40/65
Blanking cap, black, Ø 16.2 mm

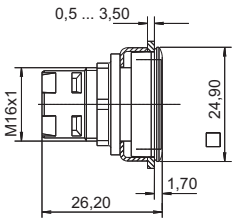
→ Installation dimensions	Dimenions	Color	Order no.
Ø 16,2 mm	18 x 18	black	5.52.006.020/0103
Ø 16,2 mm	18 x 24	black	5.52.006.021/0100
Ø 16,2 mm	Ø 18	black	5.52.006.022/0100

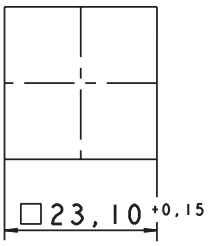
RAFIX 16
Blanking cap with sealing and threaded ring, Ø 16.2 mm

→ Description	Order no.
Blanking cap complete with sealing disc and ring nut, square	5.05.800.049/0100
Blanking cap complete with sealing disc and ring nut, round	5.05.800.050/0100
Blanking cap complete with sealing disc and ring nut, square, alignable without gaps	5.05.800.051/0100

RAFIX 16 F
Blanking cap





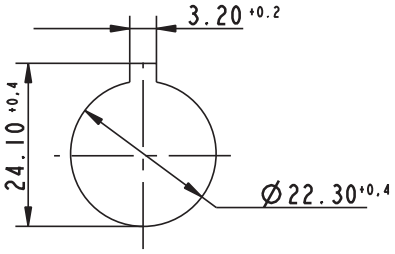


Panel cut-out

→ Installation dimensions	Dimenions	Color	Order no.
23,1 x 23,1 mm	24,9 x24,9	black	5.05.800.063/0000

RAFIX 22 QR
Blanking cap, Ø 22.3 mm

round blanking cap

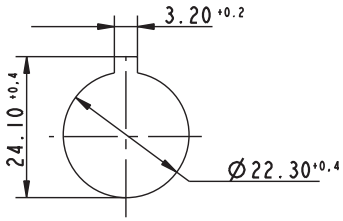


Panel cut-out to IEC 60947-5-1

→ Description	Order no.
Blanking cap IP65, ring nut, square, slate grey	5.05.800.065/0000
Blanking cap IP65, ring nut, round, slate grey	5.05.800.064/0000

Protection acc. to DIN EN 60529

RAFIX 22 FS
Blanking cap, Ø 22.3 mm



Panel cut-out to IEC 60947-5-1

round, high version

square blanking cap

→ Description	Form	Overall height	Order no.
Blanking cap IP65, ring nut, round, slate gery, flat	round	flush	5.05.800.067/0000
Blanking cap IP65, ring nut, round, high version, can be used for covering mounted PCB contact blocks.	round	high	5.05.200.025/0000
Blanking cap IP65, ring nut, square, slate grey, flat	square	flush	5.05.800.068/0000
Blanking cap IP65, ring nut, square, high version, can be used for covering mounted PCB contact blocks.	square	high	5.05.200.026/0000

Fixing spanner

→ Fitting for	Order no.
M 8	5.58.002.027/7705
M 9, M 10	5.58.002.025/0105
M 11, M 13	5.58.002.026/0105
M 15, M 16	5.58.002.019/0105
M 18, M 19	5.58.002.017/0105
M 20, M 22	5.58.002.018/0105
M 25, M 30	5.58.002.020/0105

Fixing spanner for ring nut and front ring

→ Description	Fitting for	Order no.
Fixing spanner for ring nut	RAFIX 22 QR/FS	5.05.800.062/0000

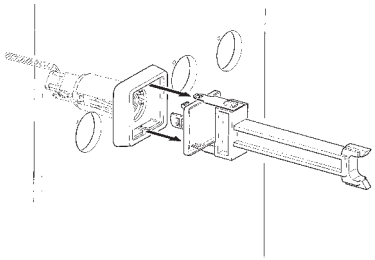
Fixing spanner for hexagon nut

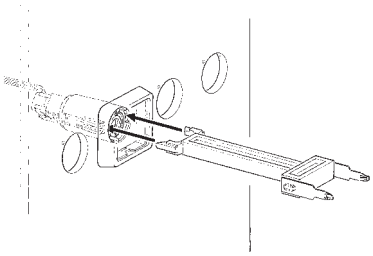
→ Fitting for	Order no.
RAFIX 16	5.58.002.034/0000

Lamp extractor

→ Lamp diameter	Order no.
4 mm	1.90.900.001/0000
4 mm	1.90.900.002/0000
5 mm	1.90.900.003/0000
5 - 6 mm	1.90.900.004/0000
7 mm	1.90.900.005/0000
10.4 mm	1.90.900.006/0000
11 mm	1.90.900.007/0000
14 mm	1.90.900.008/0000
16-17 mm	1.90.900.009/0000

Disassembly tool





→ Fitting for	Order no.
LUMOTAST FK	5.05.800.041/0000
LUMOTAST 25, RAFIX 16	5.05.800.042/0000

Female quick-connect terminal DIN 46340-B 2.8-1-MS

→ Description	Order no.
Female quick-connect terminal DIN 46340-B 2.8-1-MS	5.37.540.024/8622

With latching detent for mating with a multipole connector.

Plug distributor

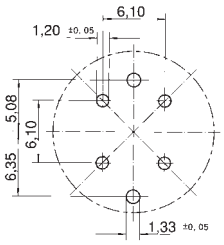
→ Description	Order no.
Plug distributor	5.37.540.029/6000

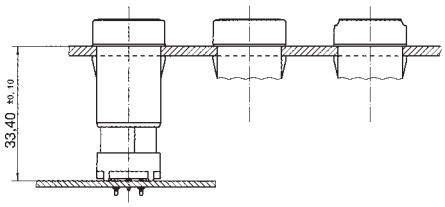
For mounting on the quick-connect terminals of contact blocks. The double number of contacts facilitates loop-through.

LUMOTAST FK/25
Flat ribbon cable, 4-wire, length 1 m

→ Description	Order no.
Flat ribbon cable, 4-wire, 1 m long	5.37.700.124/0000

LUMOTAST FK/25
Plug-in socket for PCB





with plug-in socket for PCB

→ Description	Order no.
Plug-in socket for PCB	5.00.645.036/0000

LUMOTAST FK/25
Socket connector, 4-pin

→ Description	Order no.
Socket connector, 4-pin	5.92.025.368/0000

LUMOTAST FK/25
Flat ribbon cable, 10 cm, with socket connector and AMP 4-pin male quick connector

→ Description	Order no.
Cable (flat ribbon cable 10 cm with socket connector and male quick connector, AMP 4-pin)	5.03.771.306/0000

LUMOTAST 75 IP40
Protective cap

→ Description	Order no.
LUMOTAST 75 IP40 - Protective cap for 18 x 24 collar	5.05.800.027/0000
LUMOTAST 75 IP40 - Protective cap for 18 x 18 collar	5.05.800.030/0000

LUMOTAST 75 IP40
Sealing cap for protection class IP 65

→	Description	Order no.
	LUMOTAST 75 IP40 -Sealing cap for protection class IP65, for 18 x 24 collar	5.05.200.008/0000
	LUMOTAST 75 IP40 - Sealing cap for protection class IP 65, for 18 x 18 collar	5.05.200.009/0000

Signal lamp Ø 22.3 mm
Sealing ring for IP 65

→	Description	Order no.
	Sealing ring for IP65	5.30.075.010/0100

O-ring

→ Description	Order no.
O-ring, black, for blocking the operating stroke	5.30.120.009/0100
O-ring for keylock switch	5.30.120.015/0100
O-ring, black, 17.0 x 1.5, for blocking RF 19H keys	5.30.125.003/0100
O-ring, black, 16.0 x 1, for blocking RF 19H keys	5.30.125.007/0100

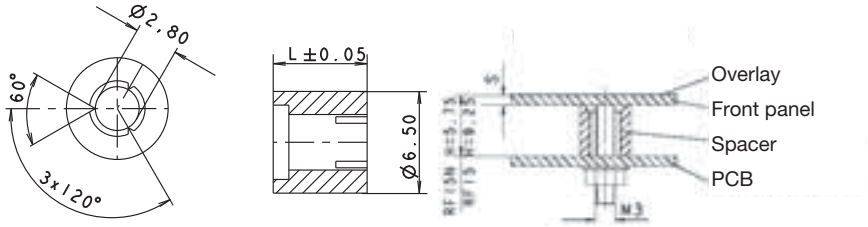
Pushbuttons 16.2 mm
Protection against contact

→ Description	Order no.
Protection against contact to VBG 4	5.55.101.715/0200

Signal lamps
Protection against contact

→ Description	Order no.
Protection against contact to VBG 4	5.50.240.063/0209
Protection against contact to VBG 5	5.50.240.065/0200

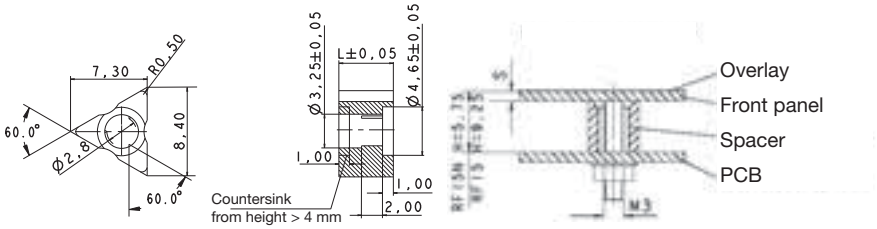
Spacers, round



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

Required spacer length
For keyboards: Overall height of key - front panel thickness - 0.5 mm (area embossing).
For RAFIX 22 FS: 9.25 mm - front panel thickness -thickness of overlay, if existing

Spacers, triangular



triangular version

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

– Table (continued) –
Spacers, triangular

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

RK 90
Spacer M 4

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

Mounting from front (1 pc. per stud)

6

APPENDIX

Glossary 6 - 1

Reference number guide 6 - 20

GET IN TOUCH GLOSSARY

1	16.2 mm	Mounting hole acc. to IEC 60947-5-1
2	22.3 mm	Mounting hole acc. to IEC 60947-5-1
	2-Shot molding	Using this procedure the symbol is separately molded. Then the appropriate keycap form is molded around it. Advantage: The character becomes an integrated part of the keycap, thus eliminating abrasion.
3	30.5 mm	Mounting hole acc. to IEC 60947-5-1
9	9.2 mm	A RAFI-specific mounting dimension. With a mounting depth of 9.2 mm behind the front panel surface, the printed circuit board can be installed and carry RAFI components such as MICON 5, RACON 8, RACON 12, KN 19, RF 15, RF 19 and RAFIX 22 FS contact blocks.
	9.7 mm	Overall height (with plunger if applicable) for RAFI short-travel keyswitches MICON 5, RACON 8, RACON 12, KN 19, RF 15, RF 19 for use under an overlay.
A	Actuator	The component which is pressed by the operator. Actuators are always located on the surface of a machine.
	Ambient temperature	Minimum and maximum permissible temperature (°C) in the environment of the component.
	Assembly without tools	An assembly process performed without any auxiliary items.
	AWG – American Wire Gauge	A unit of measurement for thickness and diameter of solid and stranded wires.
B	Barred area	The area around a PCB component where no other components are allowed.
	Blanking cap	Used to cover mounting holes without function.
	Blister reel	A deep-drawn endless packaging type with a transparent cover strip used for automatic feeding of components to automatic SMT assembly machines.
	Breakdown voltage	The voltage (V, kV) that is necessary to cause current to flow through an insulator.
	Buzzers	A signalling unit generating an acoustic signal (piezo type).
C	Cage clamp terminal	A static contact for connecting a wire (by a self-locking spring) to integrate components into circuits.
	CCC	The China Compulsory Certificate (CCC) is required in China for various product groups, especially for electrical products. Products that are subject to certification may not be imported into China and sold there without the CCC mark.
	CE marking	A quality mark for devices complying with the European Low-Voltage Directive. The CE mark means that the device marked complies with all relevant requirements and standards. See also the glossary table on pages 6-12.
	Change-over contact	Mechanically interconnected normally-open (NO) contact and normally-closed (NC) contact with a common potential.
	Click fixing method	For mounting pushbuttons from the front (LUMOTAST FK, LUMOTAST 25).
	Collar	The housing of an actuator.
	Collar shape	May exist in different designs; common collar shapes are round or square.
	Color coding to IEC/ EN 60073, IEC 60204 (VDE 0113, Part 1)	Red – Emergency (Warning of a potential hazard -> Immediate intervention required) Yellow – Abnormal condition (critical condition) Green – Normal condition (indicates safe operating conditions) Blue – Mandatory (action required) White – No special meaning Grey – No special meaning Black – No special meaning (see also table on pages 6-10ff.)
	Contact block	Contact element for opening or closing a circuit. Contact blocks may contain several different potential-free contact chambers.

GLOSSARY

ELECTROMECHANICAL COMPONENTS

C	Contact block product marketing	See table in glossary on pages 6-13.
	Contact chamber	The enclosed space around a switching contact.
	Contact resistance	The resistance between closed contacts (constriction resistance, surface contamination resistance, etc.).
	Contacts	Contacts are distinguished according to static and separable contacts. Static contacts include temporary or permanent connections (screw connections, solder connections, etc.). Separable contacts are referred to as switching contacts in circuits.
	Control component	Components designed to input commands on a machine. Control components have a modular design. They are made from actuators and contact blocks, and therefore offer maximum flexibility with regard to the selection of the suitable input components.
	Conventional thermal current Ith EN IEC 60947-5-1	The maximum current (A) that a switching device can conduct without thermal overload for at least 8 hours.
	Creepage distance EN IEC 60947-1, IEC EN 61058	Describes the shortest distance (mm) between two conductive parts on the surface of an insulating material.
	CSA	Canadian Standards Association
	CSA "NRTL/C"	Approval label for Canada and the U.S.A., tested by CSA acc. to CSA C 22.2 14-M91 and UL 508.
	CURus	Approval label for the U.S.A. and Canada, tested by UL acc. to UL 508 and CSA C22.2 14-M91.
D	Declaration of conformity	Declarations of conformity are available upon request for all products. Please specify the accurate order numbers of the specific products in your inquiry.
	Degree of contamination DIN EN 60947-1	A measure for the quantity of conductive or hygroscopic dust, gas or salt and the relative humidity which may cause a reduction of the dielectric strength of a switching device. The degree of contamination is described with four different levels for the definition of the ambient conditions. Degree of contamination 2: Domestic appliances, Degree of contamination 3: Industry, Degree of contamination 4: Outdoor use
	Degree of protection	See table in glossary on pages 6-14.
	Diffuser lens	A lens diffusing a light signal into many directions. Diffusers are used with signal lamps for visual indication from a distance and are not suitable for legending.
	Double gap	A contact type with two switching contact breaking points.
	Dupe-proof	A feature of emergency stop switches according to EN 60947-5-5. Dupe-proof means that the initiation of a component cannot be cancelled as soon as a certain point is reached when operated by an accumulated force.
E	Electric arc	A self-sustaining discharge phenomenon between two electrodes.
	Electrical operating life	The number of operations of a component at a defined electrical load.
	EMC	EMC = Electromagnetic compatibility The components listed in this catalogue are "elementary components such as switches, signal lamps, etc." according to the electromagnetic compatibility (EMC) legislation and are therefore not subject to the EMC legislation.
	Emergency stop	Emergency stop switches (EN 60947-5-5) are safety-relevant actuators with a mechanical latching function. Emergency stop switches can be used for the emergency stop function of a machine or device to IEC EN 13850 and operate according to different stop categories (depending on the safety application). The following criteria apply according to the EC Machinery Directive: - An emergency stop switch must be ready to use at any time. - One actuation must result in immediate disconnection (shutdown). - Resetting an emergency stop switch must not initiate restarting. -The switching device must latch when pressed. -There must be unambiguous identification (red/yellow). The original operating instructions can be found on pages 6-16f.

E	ENEC approval	European approval mark for device switches according to IEC 61058-1. This European approval replaces all national approval marks in Europe, such as VDE, SEV, ÖVE, DEMKO, SEMKO, NEMKO, FEMKO and KEMA. Many RAFI products have already obtained approval according to the new approval procedure while others are under preparation. Explanation of the ENEC ratings – Example: 25T85 (70) means: - Lower temperature: - 25°C – Upper temperature: + 85°C (without lamp) – Upper temperature: + 70°C (with lamp).
	Engraving	This labour-intensive procedure involves engraving the desired symbol into the keycap and coloring it. Suitable only for small quantities.
	ESD strength	The dielectric strength (kV) of a component with static charge.
	Extension plunger	An accessory for short-travel keyswitches used for adapting the actuating area to obtain different widths and heights.
F	Filament lamp	A lamp the light of which is generated by a hot filament wire. The wire is enclosed in a vacuum in order to prevent it from burning.
	Fixing nut	Used for fixing the device in the front panel.
	Fixing spanner	Assembly tool for optimum component assembly.
	Flammability class	Specifies the flammability of a product. For details, see table in glossary on pages 6-12.
	Front ring	Design element of RAFIX 22 FS+ and RAFIX 22 QR control components.
	Full-travel keyswitch	An electromechanical keyswitch with a travel from 1 to 5 mm optimised for quick data input.
G	Glow wire test to IEC 60695-2	The test temperature of 850°C means that these products can be used in devices designed for unattended continuous operation.
	Gold contact	Contacts used for switching low currents and voltages (signal level).
	Grid spacing	Defines the distance to the next adjacent component of the same type.
	Gullwing terminals	Solder terminals bent towards the outside, used for SMT components.
H	Hall technology	The Hall effect occurs in a current-carrying conductor located within a magnetic field, where an electrical field builds up which is perpendicular to the direction of current and to the magnetic field and which compensates the Lorentz force acting on the electrons. The Hall effect can be utilised for switching and positioning purposes. The switching method of the RS 76C is based on this technology.
	Handle	The part of a selector switch used for turning and operating the switch.
	Hot stamping	Often referred to as foil stamping, transmits preprint pictures by pressure and heat to be decorated plastic.
	Housings alignable without gaps	Control components with a housing collar suitable for aligning without gaps make it possible to design an operating panel without gaps between the components. There is no clearance between the housings of the various actuators. This prevents accumulation of dirt.
I	IEC 60947-5-1	Low-voltage switchgear and controlgear. Part 5-1: Control circuit devices and switching elements, electromechanical control circuit devices, DIN EN 60947-5-1, VDE 0660, Part 200.
	IEC 60947-5-5	Low-voltage switchgear and controlgear. Part 5-5: Control circuit devices and switching elements, electrical emergency stop device with mechanical latching function, DIN EN 60947-5-5, VDE 0660, Part 210.
	IEC 60204-1	Electrical equipment of machines. Part 1: General requirements: DIN EN 60204-1, VDE 0113, Part 1.
	IEC 60529	Degrees of protection by housings: DIN EN 60529, VDE 0470, Part 1.
	IEC 61058-1	Device switches. Part 1: General requirements: DIN EN 61058-1, VDE 0630, Part 1.
	Illuminated pushbutton	A pushbutton which can be illuminated for visual signal indication.
	Illumination	Used for visual signal indication with illuminated pushbuttons, indicator lights, signal lamps, pushbuttons, etc. The illumination can be implemented with various luminous elements mounted either in sockets or permanently.

GLOSSARY

ELECTROMECHANICAL COMPONENTS

I	Indicator light	A signal lamp indicating a status by lighting up or going out.
	Indicators	Components designed for giving a signal to the operator.
	Insulation resistance IEC 60093	The resistance (kΩ, MΩ) between different poles of an electromechanical contact and live parts.
J	J-lead	Solder terminals bent towards the inside, used for SMT components.
	JEDEC	Abbreviation of Joint Electron Device Engineering Council. The JEDEC Solid State Technology Association (in short, JEDEC) is a US organisation for the standardisation of semiconductors. One of its fields of activity is the definition of binding standards for soldering (example: JEDEC 20D soldering standard with RoHS conformity).
K	Keycap	Visible actuating area of a key which is removable, legendable, opaque, translucent or transparent.
	Keylock switch	A switching element provided with a priority function, where the key is used as the actuator. For its keylock switches, RAFI only uses key cylinders from reputed keylock system manufacturers. Keylock switches are open mechanical systems that can require operator maintenance depending on the ambient conditions. Refer to the supplier instructions for details on their care.
	Keyswitch	A signal-generating switching unit closing (or opening) a circuit when operated. The circuit opens (or closes, respectively) again after operation.
	KN 19	Short-travel main switch for low-profile data entry systems, overall height of RAFI KN 19: 9.2 mm
L	Label holder	Legend label modules which can be mounted separately for control components of the RAFIX 16 and RAFIX 22 QR series.
	Lamp	A luminous element with artificial light used for illumination.
	Lamp socket	An element which can accommodate a standard luminous element with a specific base.
	Laser engraving	A recommended legending technique for use when complete keyboards are needed with different layouts, for example. RAFI has various legends available for this purpose. The keyboards can then be prepared as required on a short-term basis. This type of legending is also suitable for medium to large quantities.
	Latching	The contact remains in the switching position when operated once.
	Latching function	The contact remains in the switching position when operated once.
	LED	A light emitting diode used, for example, for indicating a signal status. LEDs can be operated either with direct current (DC) or with alternating current (AC).
	LED clip	A special LED-type luminous element for RAFIX 22 FS control components that can be used with contact blocks with quick-connect terminals.
	Legending	Required to identify the effects of the specific input or output signal. Legending technologies used by RAFI: - Engraving - Hot stamping - Pad printing - 2-Shot moulding - Laser engraving - etc.
	Legend insert	When using keycaps with an exchangeable legend insert (e.g. RAFIX 22 FLEX-LAB), it is possible to print or engrave the legend insert. Since the inserts have a cover to protect them, they do not wear off.
	Lens	The part of a pushbutton which an operator touches directly. Lenses are provided with different colors to identify the effect of pressing the pushbutton.
	Locating pip	A projection provided for locating an actuator. Panel cut-outs complying with IEC 60 947-5-1 are provided with the matching groove, or indent.
	Luminous element	A term designating electric components emitting light.
	LUMOTAST	A brand name for RAFI pushbutton series that have been offered as mono-elements for more than 35 years. The current LUMOTAST series include: LUMOTAST FK, LUMOTAST 22, LUMOTAST 25, LUMOTAST 75

L	LUMOTAST FK	An illuminated pushbutton and signal lamp product series suitable for mounting from the front and provided with a flat ribbon cable connection.
	LUMOTAST 22	An emergency stop device suitable for mounting from the front.
	LUMOTAST 25	An illuminated pushbutton and signal lamp product series suitable for mounting from the front, with a collar size of 25 x 25 mm and provided with a flat ribbon cable connection.
	LUMOTAST 75	An illuminated pushbutton and signal lamp product series suitable for mounting from the front for applications up to 250 V.
M	Make/break arc	An arc caused when making and breaking a contact, having a detrimental effect on the electrical operating life.
	Make current	The current flowing immediately after initial power-on and which may be a multiple of the rated current flowing later.
	Marking	Marking is made in accordance with the Low-Voltage Directive 72/33/EEC or the CE Marking Directive 93/68/EEC in the shipping documents, on the packaging or on the product itself.
	Materials	See “Plastic materials”.
	Mechanical operating life	Number of mechanical operations of a component.
	Momentary contact function	Signal transfer only when actuated – Circuit is closed or open as long as the actuation persists.
	Mono-element	Complete element consisting of actuator and contact block.
	Mounting depth	The space required for RAFI components behind the front panel. The mounting depth always includes the front panel thickness, which may vary.
	Mounting hole	A round or square cut-out in the front panel used for installing RAFI components. Mounting holes may be standardised, e.g. according to EN 60 947-5-1.
	Mushroom head	The actuating area of a mushroom pushbutton.
	Mushroom pushbutton	A pushbutton with an enlarged actuating area.
N	Neon lamp	A lamp the light of which is generated by electrical discharge effects in thinned gas. Such lamps offer the advantages of low heat loss, a long operating life and excellent shock resistance.
	Normally-closed contact (NC)	A contact breaking (opening) a circuit when operated (normally closed).
	Normally-open contact (NO)	A contact closing a circuit when actuated (normally open).
O	Opaque	Non-transparent material structure used, for example, with colored lenses of pushbuttons (see also “Transparent” and “Translucent”).
	Operating force	The force (N) which must be exerted on an actuator in order to be able to initiate the intended function.
	Operating point	The position in the switching process where the contact closes or opens.
	Operating temperature	Admissible ambient temperature range during operation.
	Operating torque	The force to be applied to input a command with a selector switch or keylock switch.
	Operating travel	The travel of a pushbutton, mushroom pushbutton, emergency stop button, etc. required for command input.
	Operations according to EN IEC 61058-1	Refers to the complete cycle of a logical change of state until back in the initial position.

GLOSSARY

ELECTROMECHANICAL COMPONENTS

P	Pad printing	Keycaps can be printed using two-component ink on special request. This type of legending is not very wear-resistant. The technique is suitable for medium quantities.
	Panel mounting sockets	Sockets for accommodating filament lamps and LEDs provided with a base.
	Plastic material	Housings, keycaps and lenses are exclusively made of thermoplastic or thermosetting plastic materials with excellent electrical characteristics, high impact resistance and high temperature resistance. We do not use any cadmium for surface protection of contact and connection elements and we only use cadmium-free plastic materials and asbestos-free filling materials. Cadmium-containing and cadmium-free plastics have the same technical characteristics, and equivalent quality is confirmed by the manufacturers. One limitation of plastic is the consistency of hue, where in some cases it can be noticed by visual inspection. However, in general the difference can only be detected by measuring equipment.
	Positive opening operation according to EN IEC 60947-5-1, Annex K	Describes the mechanical movement of a normally-closed contact which guarantees that the contact opens when the actuator is in the corresponding open position.
	Potentiometer drive	An actuator of control components used for operating a potentiometer.
	Previous products	In this catalogue, we present the current RAFI product range. Many articles from previous product ranges are still available. Please contact your usual RAFI distribution partners.
	Priority keylock switch	Offers various functions/switching positions with different keys.
	Protection class IEC 61058-1	Protection class 1: With protective ground terminal, Protection class 2: With protective insulation (double-insulated), Protection class 3: Protective extra low voltage
	Pushbutton	Pushbuttons are actuators operated by pressing. Pushbuttons may have a momentary or latching switch function.
Q	Quick-connect terminals	A static contact for connecting a wire (with a quick-connect blade terminal for cable lugs) to integrate components into circuits.
R	RACON 8	RAFI short-travel keyswitch in square design with an edge length of 8 mm and sealed gold contact system.
	RACON 12	RAFI short-travel keyswitch in square design with an edge length of 12 mm and sealed gold contact system.
	RAFIX	The brand name of the RAFI control component series. The RAFIX brand is more than 40 years old. The current RAFIX generation includes the following series: RAFIX 16, RAFIX 16 F, RAFIX 22 FS+, RAFIX 22 QR, RAFIX 30 FS, RAFIX FSR
	RAFIX 16	A complete control component series designed for a mounting hole diameter of 16.2 mm.
	RAFIX 16 F	A design-oriented control component series with a very low profile.
	RAFIX 22 FS+	A control component series designed for a mounting hole diameter of 22.3 mm. Special characteristics of this series are: – Low mounting depth – Easy assembly – Compatibility with short-travel keyswitches
	RAFIX FSR	A control component series for rugged applications, based on RAFIX FS technology.
	RAFIX 22 QR	A complete control component series designed for a mounting hole diameter of 22.2 mm.
	RAFIX 30 FS+	A control component series for flat mounting with a mounting hole diameter of 30 mm and based on RAFIX FS technology.
	Rated operating voltage (Ue) IEC 60947-1	The voltage that together with the rated operating current determines how the device can be used.
	Rated operating current (Ie) IEC 60947-1	The amperage (A) a switching device may conduct, taking the rated operating voltage, the operating time, the usage category and the ambient temperature into account.

R	Rated uninterrupted current (Ithe) IEC 60947-1	The amperage (A) a device may conduct in continuous duty (for weeks, months, years).
	Rated insulation voltage (Ui) IEC 60947-1	The voltage (V, kV) to which insulation tests and creepage distances refer. The maximum rated operating voltage must not be higher than the rated insulation voltage.
	Rated impulse withstand voltage (Ui) IEC 60947-1	A measure for the strength of the interior of a switching device to withstand rated impulse surge voltages (kV).
	REACH – Registration, Evaluation, Authorisation and Restriction of Chemicals	An EU regulation for the registration, evaluation, authorisation and restriction of chemicals.
	Recommended color coding to EN 60 204-1	See table in glossary on pages 6-10ff.
	Reflow soldering	Reflow soldering is a soldering process for SMT components. A solder paste placed onto the printed circuit board or conductive film is molten by heat (infrared, vapour phase, laser or radiant heater) and subsequently hardened by cooling down to form a rigid connection with the component.
	Resistance to climatic conditions	Maximum admissible temperature and humidity range.
	RF 15	RAFI short-travel keyswitch series of square design with an edge length of 15 mm provided with gold or silver contacts and many different integrated illumination options.
	RF 19	RAFI short-travel keyswitch series of square design with an edge length of 19 mm provided with gold or silver contacts and many different integrated illumination options.
	RG 85 III	A modular short-travel system for elevator control, info terminals, vending machines, etc. The RG 85 III product series comprises pushbuttons, signal indicators and keylock switches.
	RK90	Standard keycap system for use with RAFI short-travel keyswitches.
	RoHS – Restriction of Hazardous Substances	An EU regulation for the restriction of the use of certain materials in electrical and electronic devices.
	Rotary switch	A rotary switch is a special panel mounting pushbutton used for setting logical states by mechanical rotation. Different logical states are realized with specific rotating angles assigned.
	RS 74	RAFI full-travel keyswitch series with an operating travel of 2.5 mm.
	RS 76	RAFI full-travel keyswitch series with an operating travel of 4 mm.
S	Screw terminal	A static contact for connecting a wire (with a screw) to integrate components into circuits.
	Selector switch	Actuators used for selecting a certain condition. Selector switches are operated by turning and offer an unambiguous switching position indication.
	Selector switch with long handle	A selector switch with a larger handle which is used, for example, if operation is necessary wearing gloves.
	Short-travel keyswitch	An electromechanical keyswitch with a maximum travel of 1 mm providing a distinct tactile feedback for the complete operating behaviour.
	Shock resistance	Describes the ability of a switching device to withstand pulse-like impact movements without effect on the operating status and without suffering mechanical damage.
	Signal indicator	Colored indicating element for visual indication of machine states on control components.
	Signal lamps	Components indicating process states on machines by means of a visual signal.

GLOSSARY

ELECTROMECHANICAL COMPONENTS

S	Silver contacts (Ag contacts)	Silver or silver/nickel alloy contacts are usually used for switching power levels >/= 1 W and voltages >/= 12 V.
	Single-handed assembly	The actuator inserted at assembly is kept in the panel cut-out by the cast-on seal. This makes it possible to pre-install all actuators from the front, even if minor vibrations occur. Subsequently you can complete mounting by tightening the ring nut without having to hold the components with your hand.
	SMT (Surface Mounted Technology)	SMT devices are provided with a soldering contact pad. They are soldered directly onto the surface of a printed circuit board.
	Solder heat resistance	Definition of the maximum admissible soldering time and temperature when soldering components with solder terminals. THT: IEC 600 68-2-2; SMT: IEC 600 68-2-58
	Solder terminals (etc.) IEC 61058-1	Contact points on a component used for connection to a printed circuit board by soldering.
	Spacer	Used to obtain a defined distance between the front panel and the printed circuit board (e.g. 9.2 mm – Front panel thickness = Spacer height).
	Spark distance EN IEC 60947-1, EN IEC 61058-1	The shortest distance (mm) in air between two conductive parts.
	Special sealing	A special wear-resistant seal used in some pushbuttons.
	Standard	A rule with a generally accepted binding nature.
	Storage temperature	Admissible temperature range (°C) for storing a device.
	Switch	This term is often used as a generic term for electrical switching components. In contrast with pushbuttons, switches latch when operated once. To unlatch them, they must be operated again.
	Switching capacity	A parameter specifying the rated operating currents (Ie) as a function of the rated operating voltage (Ue).
	Switching contact	The purpose of switching contacts is to switch on circuits, conduct currents, switch off circuits and ensure insulation when circuits are open.
	Switching device	General term used for single components for opening or closing circuits.
T	Tactility	Tactile feedback.
	Terminals	Specifies the way a switch is connected to a circuit or device to switch. Available types are screw terminals, solder terminals, PCB mounting pins, stranded wires, wire-wrap terminals, and a large selection of male and female connectors. Terminals are static contacts for connecting RAFI components with wires, conductor tracks, etc. Static contacts can be designed as removable contacts (screw, quick-connect, cage clamp terminals, etc.) or permanent contacts (solder, welding contacts, etc.).
	Tightening torque (Nm)	A measure for the torsional effect of a force (N) acting on a rotary object.
	Toggle switch	Actuator indicating the switching status by the lever position.
	Tool	An auxiliary item used for assembly.
	Tolerances	Our specifications sometimes contain information on tolerances. Any tolerances that are not specified are in conformance with DIN ISO 2768 m-k.
	THT (Through Hole Technology)	Through hole technology involves inserting the components through the PCB holes and joining them with special THT soldering processes (wave soldering, manual soldering).
	Torque (Nm)	A measure for the force (N) acting on a rotary object.
	Translucent	Light-permeable material structure for diffuse (sometimes colored) illumination of a large area.
	Transparent	Light-permeable material structure, sometimes with color mixed in, used for example in lenses.
	Twin pushbutton	Two separate pushbuttons on one switching unit.

U	UL	Underwriters Laboratories (US approval organisation).
	Units of measurement	All dimensions in this catalogue are given in mm. For conversion tables for various units of measurement, see glossary on pages 6-13.
	Usage categories to IEC 60947-5-1 [120 – 230 V]:	Alternating current [AC]: AC-12 Control of resistive loads and solid-state loads with isolation by optocouplers AC-13 Control of solid-state loads with transformer isolation AC-14 Control of small electromagnetic loads (< 72 VA) AC-15 Control of electromagnetic loads (> 72 VA) Direct current [DC]: DC-12 Control of resistive loads and solid-state loads with isolation by optocouplers DC-13 Control of electromagnetic loads DC-14 Control of electromagnetic loads having economy resistors in circuit
V	VDE	Verband Deutscher Elektrotechniker (VDE) – Association for Electrical, Electronic and Information Technologies (German approval organisation).
W	Wave soldering	Process for lead-free and lead-involving soldering standardised in E DIN EN 60068-2-20.

Recommended color coding acc. to EN 60 204-1 (see also IEC 600 73 color coding)

1. Colors
Pushbutton actuators must be marked with colors in accordance with table 1.

Colors for START/ON actuators should be WHITE, GREY or BLACK, preferably WHITE. GREEN is also permitted. RED must not be used.

RED must be used for actuators provided for stopping in an emergency situation and for switching off in an emergency situation. Colors for STOP/OFF actuators should be BLACK, GREY or WHITE, preferably BLACK. GREEN must not be used. RED is also permitted, however, it is recommended to avoid RED in the vicinity of components provided for emergency actions.

WHITE, GREY or BLACK are the preferred colors for pushbutton actuators with alternating START/ON and STOP/OFF function. RED, YELLOW or GREEN must not be used.
WHITE, GREY or BLACK are the preferred colors for pushbutton actuators initiating a function while being pressed and stopping the function when released (e.g. inching operations). RED, YELLOW or GREEN must not be used.

Resetting pushbuttons must be BLUE, WHITE, GREY or BLACK. In those cases where they also perform a STOP/OFF function, the preferred colors are WHITE, GREY or BLACK, with BLACK being the first choice. GREEN must not be used.

Table 1: Colors for pushbutton actuators and their meanings

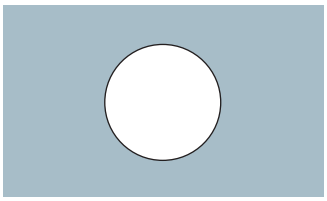
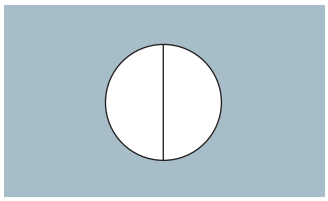
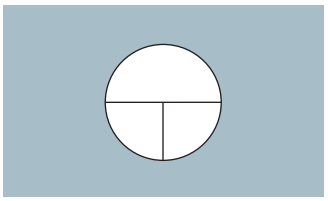
COLOR	MEANING	DESCRIPTION	EXAMPLES OF APPLICATION
RED	Emergency situation	Actuate in a dangerous or emergency situation	Emergency stop. Initiate emergency functions
YELLOW	Abnormal condition	Actuate if an abnormal condition occurs	Intervention to suppress an abnormal condition. Intervention to resume an interrupted automatic sequence
GREEN	Normal condition	Actuate to initiate normal conditions	START/ON
BLUE	Mandatory action	Actuate in a situation which requires a mandatory action	Resetting function
WHITE	No special meaning defined	General initiation of functions except emergency stop (see note below)	START/ON (preferred) STOP/OFF
GREY			START/ON STOP/OFF
BLACK			START/ON STOP/OFF (preferred)

NOTE: If an additional coding feature (e.g. shape, position, surface finish) is used for marking pushbutton actuators, the same colors – WHITE, GREY or BLACK – may also be used to identify different functions (e.g. WHITE for START/ON and STOP/OFF actuators).

Recommended color coding acc. to EN 60 204-1

2. Symbolic marking

It is recommended to mark pushbuttons with the following symbols near the actuator or – preferably – directly on the actuator in addition to the functional identification described:

START or ON	STOP or OFF	Pushbuttons with alternating START/STOP and ON/OFF function	Pushbuttons with START or ON function while being pressed and with STOP or OFF function when being released (i.e. inching).
60417-IEC-5007	60417-IEC-5008	60417-IEC-5010	60417-IEC-5011
			

3. Indicator lights and indicators

Applications
Indicator lights and indicators are used to provide the following information:
· Indication: To draw the operator's attention to a specific circumstance or to indicate that a specific action should be performed. The usual colors used for this type of application are RED, YELLOW, GREEN or BLUE.
· Confirmation: To confirm a command or condition, or to confirm the end of a change operation or transition time. Usually, BLUE and WHITE are used for this type of application; GREEN is permitted in some cases.

Colors
Indicator lights must have the color coding according to table 3 unless otherwise agreed between the supplier and the purchaser. Other meanings deviating therefrom (refer to IEC 60073) may be assigned based on one of the following criteria:
– Safety of persons and environment
– Condition of the electrical equipment

Table 2: Colors of indicator lights and their meanings relating to the machine status

COLOR	MEANING	DESCRIPTION	OPERATOR ACTION
RED	Emergency situation	Dangerous condition	Immediate action to respond to a dangerous condition (e.g. by pressing emergency stop)
YELLOW	Abnormal condition	Abnormal condition; anticipated critical condition	Monitoring and/or intervention (e.g. by restoring the intended function)
GREEN	Normal condition	Normal condition	Optional
BLUE	Mandatory action	Indication of a condition requiring operator intervention	Mandatory action
WHITE	Neutral	Other conditions; may be used if there is uncertainty about the appropriateness of RED, YELLOW, GREEN or BLUE	Monitor

CE conformity

The CE conformity information for the individual products is specified in the general information section of each chapter. With regard to CE conformity, the products listed in this catalogue can be subdivided into the following groups based on the Low-Voltage Directive 73/23/EEC:

Emergency stop components with an operating voltage > 50 V
For example, RAFIX 16, 22 QR. These products are subject to the Low-Voltage Directive 73/23/EEC and the Machinery Directive 89/392/EEC.

Emergency stop components with an operating voltage < 50 V
For example, LUMOTAST 25 and RAFIX 16 with gold contacts. These products are subject to the Machinery Directive 89/392/EEC.

All other products with an operating voltage > 50 V
For example, LUMOTAST 75 pushbuttons, signal lamps. These products are subject to the Low-Voltage Directive 73/23/EEC.

All other products with an operating voltage < 50 V
For example, RACON, LUMOTAST 25, signal lamps with LED. These products are not subject to any European directive.

Single parts, accessories and luminous elements
These products are not subject to any European directive.

Flammability rating to UL 94

Flammability
The flammability class specifications refer only to insulating materials which are in direct contact with electrically conductive parts. The flammability of the material with the lowest rating is specified.

Flammability class acc. to		Self-extinguishing after . . . seconds in vertical burning test	Possibility of dripping material igniting other objects	Maximum smoldering time
UL	IEC/VDE			
V 0	FV 0	Less than 5 seconds	No	30 seconds
V 1	FV 1	Less than 25 seconds	No	30 seconds
V 2	FV 2	Less than 25 seconds	Possible	60 seconds
HB	FH	Burn rate (horizontal burning test with the following values): Wall thickness up to 3 mm = 3 inches/minute, max.; wall thickness over 3 mm = 1.5 inches/minute, max.		

Units of measurement

All the dimensions in the dimensional drawings in this catalogue are given in mm. All temperature values are given in degrees Celsius. A conversion table for the most common units of measurement is provided below for your convenience:

Conversion table:

mm	x 0.0394	= inches
grams	x 0.0353	= ounces
Newton	x 0.224	= pounds
Newton	x 3.59	= ounces
°Celsius	x 1.8 + 32	= °Fahrenheit

Contact block identification data

Example: RAFIX 22 QR 1.20.124.xxx/5.00.100.1xx

Rated values to IEC 61058-1

10/100(6)[3.6] 250 ~ 7,5 (4) 400 ~ 5E4 25T70

Explanation of data from left to right, current-related data first

10 or 7.5
10 A ohmic load at 250 V, 7.5 A ohmic load at 400 V

100
100 A capacitive peak input current (tested at 250 V) (descending E-function to rated current)

(6) or (4)
6 A motor rated current at 250 V, 4 A motor rated current at 400 V. The test specimen makes 6 times the motor rated current, 36 A or 24 A, cos phi = 0.6, ≙ 9000 or 9600 VA throughout the full durability test.

[3.6]
3.6 A filament lamp rated current = 36 A peak input current (tested at 250 V)

250 AC or 400 AC
Rated voltages and mains type, ≅ AC

5E4
50,000 operations (no. of test cycles) ≙ 5 x 10^4

25T70
-25°C lower operating temperature and +70°C upper operating temperature
The first 25,000 operations were tested at +70°C, the remaining 25,000 operations at -25°C in all of the tests.

CURus ratings

A 600, 10 A/250 Vac

A 600
Thermal continuous test current 10 A
Max. permitted load in VA:
Max. 7,200 VA make, 720 VA break

Max. make values:	Max. break values:
60 A/120 V	6 A/120 V
30 A/240 V	3 A/240 V
15 A/480 V	1.5 A/480 V
12 A/600 V	1.2 A/600 V

10 A/250 Vac
Ohmic AC load

Rated values to IEC 60947-5-1

U 400 V AC12 10 A, AC 15 6 A/250 V
DC13 Q 300

U 400 V
Rated insulation voltage for use in devices designed for continuous duty and degree of contamination 3

AC12 10 A
10 A ohmic load and semiconductor load

AC15 6 A/250 V
Controlling electromagnetic loads
Max. 60 A cos phi = 0.3 at 250 V AC make,
6 A cos phi = 0.3 at 250 V AC break

DC13 Q 300
Controlling solenoids (DC)
Maximum thermal continuous current 2.5 A
Max. 0.55 A at 120 V – make and break
Max. 0.27 A at 250 V – make and break

International Protection (IP) degrees of protection

Three different standards are used to classify protection against contact and impermeability of products in industrial applications.

In addition to the American NEMA Code, the degree of protection for products and devices is indicated worldwide using the IP Code (as defined in ISO 20653 or DIN EN 60529). The IP Code is also accepted in the countries of North America and has prevailed worldwide over the NEMA standard despite the lack of correlation.

In the IP Code, the specified degree of protection refers to the part of the device located on the front panel (of a housing). In RAFI components, the electrical terminals are located behind the front panel and are thus not subject to any special protection requirements unless they are provided with special protection means such as cable sleeves, insulating sleeves or similar elements during assembly.

ISO 20653, "Road vehicles; degrees of protection (IP Code); protection against ingress of foreign objects, water and contact", and DIN EN 60529, "Degrees of protection provided by enclosures (IP Code)", are both applicable and differ only slightly.

The IP Code consists of two digits.

The 1st digit relates to protection against contact and ingress of foreign objects.

1st digit

ISO 20653 Digit	DIN EN 60529 Digit		Protection against contact	Protection against ingress of foreign objects
0	0		No protection	No protection
1	1		Protected against contact with the back of the hand	Protected against solid foreign objects (diameter 50 mm and greater)
2	2		Protected against contact with a finger	Protected against solid foreign objects (diameter 12.0 mm and greater)
3	3		Protected against contact with a tool	Protected against solid foreign objects (diameter 2.5 mm and greater)
4	4		Protected against contact with a wire	Protected against solid foreign objects (diameter 1.0 mm and greater)
5K	5		Protected against contact with a wire	Dust-protected
6K	6		Protected against contact with a wire	Dust-proof

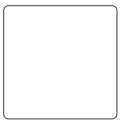
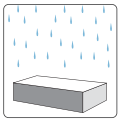
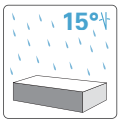
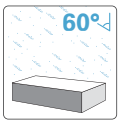
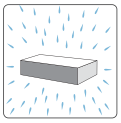
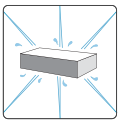
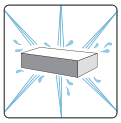
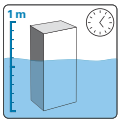
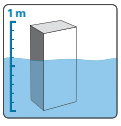
The 2nd digit relates to protection against ingress of water.

The values increase sequentially in the range from IPx0 to IPx6. In other words, during a qualification test, the lower code values for a given degree of protection are also deemed to have passed. (Example: IPx4 tested: IPx3, IPx2, IPx1, IPx0 also passed.)
For the IPx7, IPx8 and IPx9K degree of protection definitions, fundamentally different conditions apply so that these values can only be specified in a restricted manner as supplementary values.
During a test of the degree of protection, only new parts are checked according to the standard definition without simulating other influences typical for the application. For testing of the second digit, only the medium of water without any additives is applicable.

Other media encountered in the various applications such as oils, bases and water with additives might need to be tested separately in some cases. According to ISO 20653, the test is deemed to be passed if adequate separation from hazardous parts is maintained during testing with an access probe (digit 1) or if any water that might have penetrated does not damage the functioning and insulation of the product (digit 2).

In addition to selective determination of the mechanical and electrical characteristics of products under diverse environmental conditions, the RAFI test laboratory can also perform complete qualification testing. Thanks to the company's many years of experience and its expertise, RAFI can thus provide verified characteristics for the performance of its products.

2nd digit

ISO 20653 Digit	DIN EN 60529 Digit		Logic	Protection against ingress of water
0	0		Increasing	No protection
1	1		Increasing	Protection against dripping water, vertical
2	2		Increasing	Protection against dripping water if housing is inclined by up to 15°
3	3		Increasing	Protection against spray water up to 60° relative to vertical line
4	4		Increasing	Protection against splashing water from all sides
5	5		Increasing	Protection against water jets from any angle
6	6		Increasing	Protection against powerful water jets
7	7		Supplementary	Protection against temporary submersion
8	8		Supplementary	Protection against continuous submersion
9K			Supplementary	Protection against ingress of water during high-pressure/steam-jet cleaning, specifically for road vehicles

LUMOTAST, RAFIX 16, RAFIX 22 FS+, RAFIX 22 QR

Betriebsanleitung Not-Halt-Befehlsgeräte (Original) | **Operating Instructions EMERGENCY STOP Control Units (Translation of the source text)** | **Mode d'emploi auxiliaires de commande d'ARRÊT D'URGENCE (Traduction original)**

(D) 1. Sicherheitshinweise

- ⚠ - Vor Inbetriebnahme bitte Betriebsanleitung sorgfältig lesen.
- ⚠ - Not-Halt-Befehlsgeräte erfüllen eine Personenschutzfunktion. Unsachgemäßer Einbau, sachwidrige Anwendung oder Manipulationen können zu schweren Verletzungen von Personen führen!
- ⚠ - Not-Halt-Befehlsgeräte dürfen nicht umgangen, entfernt oder auf andere Weise unwirksam gemacht werden!
- ⚠ - Vor Beginn der Installation Anlage und Gerät spannungsfrei schalten!
- ⚠ - Vor Erstinbetriebnahme der Maschine oder Anlage Not-Halt-Befehlsgerät durch Testbetätigung auf korrekte Montage und Funktion überprüfen.
- ⚠ - Not-Halt-Befehlsgeräte mit sichtbaren Beschädigungen sind unverzüglich auszutauschen.
- ⚠ - Not-Halt-Funktion darf nicht als Ersatz für Schutzmaßnahmen oder andere Sicherheitsfunktionen verwendet werden.
- ⚠ - Not-Halt-Funktion darf die Wirksamkeit von Schutzeinchtungen oder von Einrichtungen mit anderen Sicherheitsfunktionen nicht beeinträchtigen.

(GB) 1. Safety instructions

- Please read the operating instructions carefully prior to use.
- EMERGENCY STOP control units are designed to protect persons. Inappropriate installation, improper use or inadmissible manipulation may result in severe injuries!
- EMERGENCY STOP control units must never be bypassed, removed or disabled in any other way!
- Disconnect the power supply to the machinery and device prior to installation!
- Operate the EMERGENCY STOP control unit to test and verify proper installation and function prior to initial start-up of the machine or line.
- An EMERGENCY STOP control unit with an obvious defect must be replaced immediately.

(F) 1. Consignes de sécurité

- Il faut soigneusement lire le mode d'emploi avant la mise en service.
- Les auxiliaires de commande d'ARRÊT D'URGENCE remplissent une fonction de protection personnelle. Un montage inapproprié, une application contre-indiquée ou une manipulation peuvent causer des blessures corporelles graves !
- Il est interdit de ponter, d'enlever ou de rendre inopérants les auxiliaires de commande d'ARRÊT D'URGENCE !
- Avant d'entamer l'installation il faut mettre l'installation et l'appareil hors tension !
- Avant la première mise en service de la machine ou de l'installation, contrôler l'auxiliaire de commande d'ARRÊT D'URGENCE quant au montage et à un fonctionnement corrects.
- Les auxiliaires de commande d'ARRÊT D'URGENCE présentant des dommages visibles sont à remplacer sans tarder.

(D) 2. Allgemeine Beschreibung und bestimmungsgemäße Verwendung

Not-Halt-Befehlsgeräte sind elektromechanische Schaltgeräte zum Schutz von Personen. Sie dienen der schnellen Abschaltung um Maschinen, Fahrzeuge und Anlagen in einen sicheren Zustand zu bringen, um Gefahren und Schäden für Mensch und Maschine zu vermeiden oder zu verringern.

Für die Inbetriebnahme, den Einsatz und technischen Überprüfungen gelten im speziellen folgende Vorschriften:

- Die Maschinenrichtlinie 2006/42/EG
- Die Sicherheitsvorschriften sowie
- Die Unfallverhütungsvorschriften / Sicherheitsregeln

Hersteller und Benutzer von Maschinen, an denen Not-Halt-Befehlsgeräte eingesetzt werden, tragen die Verantwortung für die Beachtung der Betriebsanleitung, wie auch für die Einhaltung der für sie geltenden Sicherheitsvorschriften und -regeln.

Für den Einbau und Betrieb von Not-Halt-Befehlsgeräten müssen zur bestimmungsgemäßen Verwendung folgende Anforderungen beachtet werden:

- EN 60947-5-1:2010
- EN 60947-5-5:2010
- EN ISO 13849-1:2008
- EN ISO 13849-2:2008
- EN ISO 13850:2008

(GB) 2. General description and intended use

EMERGENCY STOP control units are electromechanical switching devices designed to protect persons. They are used for instant disconnection to achieve a safe status of machines, vehicles or other equipment in order to avoid or reduce risks or damage to man and machine.

The following standards and regulations apply to their start-up, use and technical inspections, without limitation:

- Machinery Directive 2006/42/EC
- Safety standards
- Accident prevention regulations / rules for safety

Manufacturers and users of machines provided with EMERGENCY STOP control units are responsible for ensuring that the operating instructions are observed and the applicable safety standards and rules complied with.

The following standards govern installation and operation of EMERGENCY STOP control units in accordance with their intended use:

- EN 60947-5-1:2010
- EN 60947-5-5:2010
- EN ISO 13849-1:2008
- EN ISO 13849-2:2008
- EN ISO 13850:2008

(F) 2. Description générale et application conforme aux prescriptions

Les auxiliaires de commande d'ARRÊT D'URGENCE sont des appareils de commutation électromécaniques pour protéger des personnes. Ils servent à couper rapidement les machines, les véhicules et les installations, à les amener dans un état de sécurité fiable pour éviter ou diminuer les risques de dommages corporels et de dégâts matériels.

Pour la mise en service, l'utilisation et les contrôles techniques, il faut respecter les prescriptions suivantes:

- La directive sur les machines selon la norme 2006/42/EG
- Les règlements de sécurité ainsi que
- Les instructions sur la prévention des accidents / règlements de sécurité

C'est aux fabricants et utilisateurs de machines où des auxiliaires de commande d'ARRÊT D'URGENCE sont utilisés, qu'incombe la responsabilité du respect du mode d'emploi ainsi que des prescriptions et règlements de sécurité en vigueur.

Pour le montage et l'exploitation des auxiliaires de commande d'ARRÊT D'URGENCE, il faut respecter les exigences suivantes pour garantir une utilisation conforme aux dispositions :

- EN 60947-5-1:2010
- EN 60947-5-5:2010
- EN ISO 13849-1:2008
- EN ISO 13849-2:2008
- EN ISO 13850:2008

(D) 3. Produktbeschreibung

Aufbau: Die Not-Halt-Befehlsgeräte bestehen aus einer Kombination von Betätigern mit einem oder mehreren Schaltelementen. Die Not-Halt-Befehlsgeräte gibt es als Einbauversion oder in einem Gehäuse verbaut.

Die Betätigung erfolgt durch Drücken, die Entriegelung erfolgt je nach Variante entweder durch:

- Drehbewegung in beide Richtungen nach links oder nach rechts
- Ziehen entgegen der Betätigungsrichtung

(GB) 3. Product description

Design: An EMERGENCY STOP button is an assembly of actuator combined with one or more contact blocks. EMERGENCY STOP buttons are available either as a panel mounting version or installed in a separate housing.

They are operated by pressing. Unlatching is done by one of two methods:

- Turning in either direction
- Pulling against the direction of operation

(F) 3. Description de produit

Structure: Les boutons-poussoirs d'ARRÊT D'URGENCE sont composés d'une combinaison d'actionneurs ou de plusieurs éléments de commutation. Les boutons-poussoirs d'ARRÊT D'URGENCE sont disponibles en version intégrable ou installés dans un boîtier.

L'actionnement s'effectue par appui sur ces derniers. Selon la variante, le déverrouillage s'effectue soit par:

- Un mouvement de rotation dans les deux directions, soit vers la gauche, soit à droite
- Soit en tirant dans la direction opposée de la direction d'actionnement

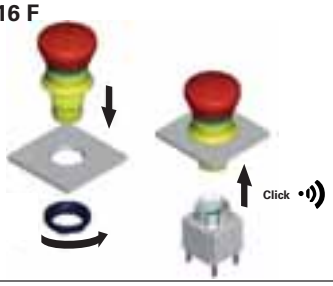
Produkt Product Produit	Einbau Ø mm Mounting Ø mm Montage Ø mm	Betätiger Actuator Actionneur	Schaltelement Contact block Elément de commutation
LUMOTAST 22	Ø 22,3	1.15.105.001/0000 1.15.105.011/0000 1.15.105.021/0000 1.15.105.031/0000	integriert / incl.
LUMOTAST 25	Ø 16,2	1.15.154.006/0301 1.15.154.016/0301	integriert / incl.
RAFIX 16	Ø 16,2	1.30.074.821/0000 1.30.074.281/0300 1.30.074.501/0304 1.30.074.101/0301 1.30.074.521/0304 1.30.074.121/0301	1.20.123.xxx 1.20.130.0xx
RAFIX 16 F	□23,1	1.30.094.001/0300	
	Ø 22,3	1.30.094.011/0300	
RAFIX 22 QR	Ø 22,3	1.30.243.501/0300 1.30.243.601/0300 1.30.243.701/0300 1.30.243.702/0300 1.30.243.703/0300 1.30.243.001/0300 1.30.243.901/0300	5.00.100.xxx 1.20.124.xxx 1.20.125.xxx 1.20.128.xxx 1.20.129.0xx
RAFIX 22 FS+	Ø 22,3	1.30.273.001/0000 1.30.273.001/2200 1.30.273.001/2300 1.30.273.101/0000 1.30.273.101/2200 1.30.273.101/2300 1.30.273.501/0300 1.30.273.502/0300 1.30.273.601/0300 1.30.273.602/0300	1.20.126.4xx 1.20.126.5xx 1.20.126.6xx 1.20.126.7xx
E-Box	Ø 22,3	1.20.810.306/0000 1.20.810.350/0000 1.20.810.390/0000	integriert / incl.

(D) **Tabelle 3.1** Weitere technische Daten sind dem Katalog zu entnehmen.
(GB) **Table 3.1** For additional technical data, please refer to the catalogue.
(F) **Tableau 3.1** Pour les autres caractéristiques techniques, voir catalogue.

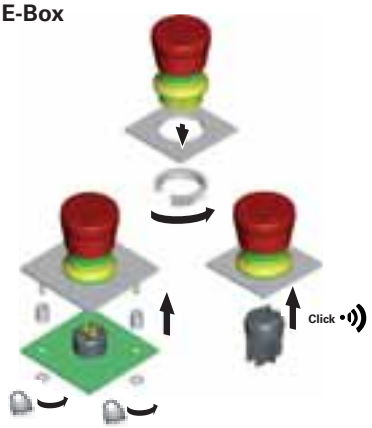
4. (D) Montage (GB) Assembly (F) Montage

LUMOTAST 25/ LUMOTAST 22

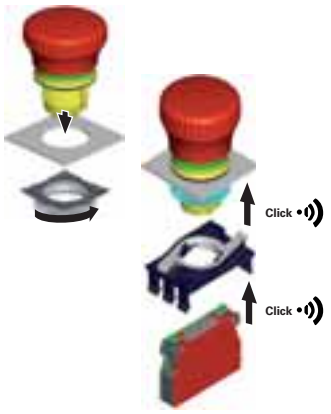
RAFIX 16 / RAFIX 16 F



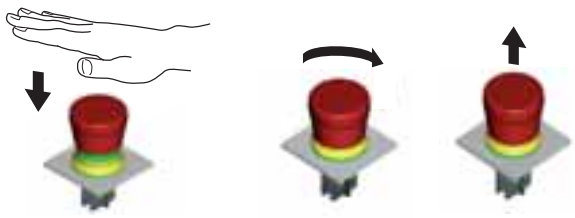
RAFIX 22 FS+ / E-Box



RAFIX 22 QR



5. (D) Betrieb (GB) Operation (F) Mise en service



(D) **6. Wartung und Instandsetzung**

Es wird empfohlen, das Not-Halt-Befehlsgerät regelmäßig, mindestens aber ein Mal pro Jahr von einer autorisierten Person zu Testzwecken auszulösen und auf ordnungsgemäße Funktion zu überprüfen, regelmäßig auf sichtbare Beschädigungen zu untersuchen und gegebenenfalls sofort auszutauschen.

(GB) **6. Maintenance and repair**

It is recommended to have the EMERGENCY STOP control unit tripped for testing and verified for proper function by an authorised person on a regular basis, however, at least once a year. Inspect it regularly for obvious damage and replace it immediately if necessary.

(F) **6. Entretien et réparation**

Il est recommandé d'enclencher de temps en temps l'auxiliaire de commande d'ARRÊT D'URGENCE pour le tester et de le faire contrôler régulièrement, au moins une fois par an, par une personne autorisée. Il faut contrôler régulièrement s'il n'y a pas d'endommagements visibles et si nécessaire les remplacer tout de suite.

(D) **EG-Konformitätserklärung**

Aussteller Name/Anschrift: RAFI GmbH & Co. KG, 88276 Berg, Ravensburger Str. 128-134
Bevollmächter: T. Beil, RAFI GmbH, 88276 Berg, Ravensburger Str. 128-134
Produktbezeichnung: Not-Halt-Befehlsgerät
Typbezeichnung: siehe Tab. 3.1
Die bezeichneten Geräte erfüllen folgende Richtlinien:

(GB) **EC Statement of Conformity**

Issuer name/address: RAFI GmbH & Co. KG, D-88276 Berg, Ravensburger Str. 128-134
Authorized person: T. Beil, RAFI GmbH, D-88276 Berg, Ravensburger Str. 128-134
Product designation: EMERGENCY STOP control unit
Type designation: see table 3.1
The devices referred to comply with the following Directives:

(F) **Déclarations de conformité CE**

Nom/adresse du délivreur : RAFI GmbH & Co. KG, D-88276 Berg, Ravensburger Str. 128-134
Mandataire : T. Beil, RAFI GmbH, D-88276 Berg, Ravensburger Str. 128-134
Désignation du produit : Auxiliaire de commande ARRÊT D'URGENCE
Désignation du type : voir tab. 3.1
Les appareils désignés répondent aux exigences des directives suivantes:

Richtlinie Directive Directive	vom dated du	angewandte Norm standard applied norme harmonisée	für valid for pour
2006/95/EG	12.12.2006	DIN EN 60947-5-1:2010 DIN EN 60947-5-5:2005	Schaltelemente, Betätiger Contact blocks, actuators Eléments de commutation, actionneurs
2006/42/EG	17.05.2006	DIN EN 60947-5-5:2005 DIN EN ISO 13850:2008	Schaltelement, Betätiger Contact blocks, actuators Eléments de commutation, actionneurs

Berg, 03.12.2010

09/2012
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