

Safety in System  
Protection for man and machine

# COMMAND AND SIGNALLING DEVICES PRODUCT INFORMATION



# INTRODUCTION



**Heinz and Philip Schmersal,**  
Managing Directors of the Schmersal Group

## **New solutions to improve production efficiency and machine safety**

### **Safety in system – Protection for man and machine**

Often, it is unavoidable that people have to intervene with the workings of a machine. When this is done, the safety of the operator is imperative. This demands the responsibility of the machine operator, which is also required by the world's standards and guidelines for machine safety.

The Schmersal Group has concentrated for many years on safety at work with our products and solutions; today we can offer the industry the world's largest range of safety switchgear and systems for the protection of man and machine.

Under the guiding principle "Safety with system – protection for man and machine" we develop and produce products that carry the system concept and can be optimally integrated into the work processes. Because we are convinced that safety does not contradict higher productivity.

In our fields of activity we have a leading position due to our expertise, our innovative power and our comprehensive range of products. With this we follow a central theme: Together with you, we want to make the world safer. Talk to us – we look forward to working with you.

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## Web shop

Already familiar with our new web shop?  
Here you will find all details and data  
on our products which you can order  
directly online:

[products.schmersal.com](https://products.schmersal.com)

# HISTORY

## MILESTONES 1945 – 2024



Schmersal Brazil 1974



Schmersal China 2013



Startup of the new central warehouse in 2013

1945	The brothers Kurt Andreas Schmersal and Ernst Schmersal <b>form</b> the company in Wuppertal.
1974	<b>ACE Schmersal</b> is formed in Boituva, Brazil.
1982	<b>Generational change:</b> Heinz and Stefan Schmersal take over the company from their fathers.
1997	<b>ELAN Schaltelemente GmbH &amp; Co. KG</b> based in Wettenberg is acquired.
1999	The production facility <b>Schmersal Industrial Switchgear Co. Ltd</b> (SISS) is formed in Shanghai, China.
2007	Philip Schmersal joins the <b>third generation of the</b> Schmersal Group.
2008	Schmersal takes over <b>Safety Control GmbH</b> based in Mühldorf/Inn.
2013	<b>Böhnke + Partner Steuerungssysteme GmbH</b> is acquired. <b>Schmersal India</b> becomes a production facility. Startup of the new <b>European central warehouse</b> in Wuppertal.
2016	The Schmersal Group is establishing its own business area for services under the name <b>tec.nicum</b> .
2017	Schmersal founds an independent <b>subsidiary</b> in Japan.
2019	Schmersal establishes <b>new branches</b> in Bangkok (Thailand) and Dubai (UAE).
2023	Foundation of a new company: <b>DICEO Group GmbH</b> . The DICEO Group GmbH is a consortium of two partners, the Schmersal Group and the management consultancy compreneur AG. Foundation of <b>Schmersal Middle East Industrial Equipment Trading LLC</b> in Riyadh. Schmersal opens new production facility in <b>Indianapolis, USA</b> .
2024	Schmersal founds <b>tec.nicum – Solutions &amp; Services GmbH</b> as a new subsidiary

# SCHMERSAL WORLDWIDE



- |   |  |  |
|---|--|--|
| <ul style="list-style-type: none"> <li>■ Germany, Wuppertal</li> <li>■ Germany, Wetzlar</li> <li>■ Germany, Mühlrad</li> <li>■ Germany, Bergisch Gladbach</li> <li>■ Brazil, Boituva</li> <li>■ China, Shanghai</li> <li>■ India, Pune</li> <li>■ USA, Indianapolis</li> </ul>  | <ul style="list-style-type: none"> <li>■ Thailand, Bangkok</li> <li>■ Turkey, Istanbul</li> <li>■ United Arab Emirates, Sharjah</li> <li>■ United Kingdom, Malvern, Worcestershire</li> <li>■ USA, Valhalla NY</li> <li>■ Vietnam, Ho Chi Minh City</li> </ul>   | <ul style="list-style-type: none"> <li>■ El Salvador, San Salvador</li> <li>■ Greece, Athens</li> <li>■ Guatemala, Guatemala City</li> <li>■ Hungary, Győr</li> <li>■ Iceland, Reykjavik</li> <li>■ Indonesia, Jakarta</li> <li>■ Israel, Petach Tikva</li> <li>■ Lithuania, Minsk</li> <li>■ Macedonia, Skopje</li> <li>■ Mexico, Mexico City</li> <li>■ New Zealand, Christchurch</li> <li>■ Paraguay, Minga Guazú</li> <li>■ Peru, Lima</li> <li>■ Romania, Sibiu</li> <li>■ Serbia, Belgrade</li> <li>■ Singapore, Singapore</li> <li>■ Slovenia, Ljubljana</li> <li>■ South Africa, Johannesburg</li> <li>■ South Korea, Seoul</li> <li>■ Taiwan, Taichung</li> <li>■ Ukraine, Kiev</li> <li>■ Uruguay, Montevideo</li> <li>■ Venezuela, Caracas</li> </ul> |
| <ul style="list-style-type: none"> <li>■ Austria, Vienna</li> <li>■ Belgium, Aarschot</li> <li>■ Canada, Orangeville</li> <li>■ Denmark, Hvidovre</li> <li>■ Finland, Vantaa</li> <li>■ France, Seyssins</li> <li>■ Italy, Borgosatollo</li> <li>■ Japan, Yokohama</li> <li>■ Netherlands, Harderwijk</li> <li>■ Norway, Oslo</li> <li>■ Poland, Warsaw</li> <li>■ Portugal, Lisbon</li> <li>■ South Korea, Gwacheon</li> <li>■ Spain, Barcelona</li> <li>■ Sweden, Västra Frölunda</li> <li>■ Switzerland, Arni</li> </ul> | <ul style="list-style-type: none"> <li>■ Argentina, Buenos Aires</li> <li>■ Australia, Brisbane</li> <li>■ Baltic States, Kaunas</li> <li>■ Bolivia, Santa Cruz de la Sierra</li> <li>■ Bosnia and Herzegovina, Sarajevo</li> <li>■ Bulgaria, Ruse City</li> <li>■ Chile, Santiago</li> <li>■ Colombia, Medellín</li> <li>■ Croatia, Zagreb</li> <li>■ Czech Republic, Prague</li> <li>■ Ecuador, Quito</li> </ul> |  |

**With its own affiliates in around 25 countries and capable sales and service partners in 45 more countries, the Schmersal Group has operations worldwide.**

We started quite early with the internationalisation of sales, consultancy and production. This is also one of the reasons that we are a favoured global partner for machinery and plant construction and also an approved partner for many medium sized engineering companies with local presence. Wherever there are machines that work with Schmersal safety switches, the nearest branch or representative is not far away.

# SCHMERSAL WORLDWIDE OFFICES IN GERMANY



## WUPPERTAL

### K.A. Schmersal GmbH & Co. KG

- Founded in 1945
- Around 750 employees

#### Focal points

- Headquarters of the Schmersal Group
- Development and manufacture of switchgears and switching systems for safety, automation and lift engineering
- Accredited test laboratory
- Central research and development
- Logistics centre for European markets



## WETTENBERG

### K.A. Schmersal GmbH & Co. KG

- Founded in 1952 (1997)
- Around 150 employees

#### Focal points

- Development and manufacture of switchgears for operation and monitoring, safety-related relay modules and controls as well as switchgears for explosion protection



## MÜHLDORF / INN

### Safety Control GmbH

- Founded in 1994 (2008)
- Around 30 employees

#### Focal points

- Development and manufacture of optical electronic components for safety and automation engineering



## BERGISCH GLADBACH

### Böhnke + Partner GmbH Steuerungssysteme

- Founded in 1991 (2013)
- Around 80 employees

#### Focal points

- Development and manufacture of components, controls and remote diagnostic systems for the lift industry

( ) = inclusion in the Schmersal Group

# SCHMERSAL WORLDWIDE INTERNATIONAL OFFICES

## BOITUVA / BRAZIL

### ACE Schmersal

- Founded in 1974
- Around 530 employees

### Focal points

- Development and manufacture of electromechanical and electronic switchgears
- Customer-specific control systems for the North and South American market



## SHANGHAI / CHINA

### Schmersal Industrial Switchgear Co. Ltd

- Founded in 1999
- Around 170 employees

### Focal points

- Development and manufacture of switchgears for safety, automation and lift engineering



## PUNE / INDIA

### Schmersal India Private Limited

- Founded in 2013
- Around 140 employees

### Focal points

- Development and manufacture of switchgears for safety, automation and lift engineering



## INDIANAPOLIS / USA

### Schmersal, Inc.

- Founded in 2023
- Around 30 employees

### Focal points

- Logistics center for US market
- Development and manufacture of customer-specific assemblies for safety, automation and elevators



# COMMAND AND SIGNALLING DEVICES

## DESCRIPTION

### COMMAND AND SIGNALLING DEVICES

Command and signalling devices makes communication possible between human beings and machines. People expect high levels of reliability from them. Intuitive operation is desirable not just from an ergonomic point of view, but also with regards to safety at work.

The type of machine and the environmental conditions mean that the demands made of command and signalling devices are very different. Consequently, there is a wide range of different designs available. In addition to classic command devices and indicator lights for installation on operator panels, pull-wire switches, foot switches, cross-switches and buttons as well as two-hand controls and enabling devices, for example are in common use.






As an all-rounder in the field of HMI components and systems, the Schmersal Group offers a range of products for (virtually) all areas of application. These include command and signalling device series that have been developed for dedicated use in hygiene-sensitive areas (Series H) as well as for extremely harsh ambient conditions (Series R).

All our series are distinguished by their very high levels of quality and their long service lives. They are of modular structure, which means you can adapt them in an optimum way to meet the exact requirements of your own individual application.

With contact systems too, users have different choices (see page 92: Contact and lighting elements). Apart from this, assembly housings are available for all four series. If desired, command and signalling devices are supplied pre-assembled or ready-to-connect to operating systems with housings (see page 110: Enclosure for surface mounting).





	E programme	E.V programme	H programme	R programme	A programme
<b>Area of application</b>	Difficult operating conditions	Difficult operating conditions	Food and hygiene applications	Heavy-duty applications	Industrial applications
<b>Emergency stop push buttons</b>	 Page 12	 Page 28	 Page 44	 Page 64	 Page 80
<b>Indicator lights</b>	 Page 14	 Page 30	 Page 46	 Page 66	 Page 82
<b>Push buttons</b>	 Page 16	 Page 32	 Page 48	 Page 68	 Page 84
<b>Illuminated pushbuttons</b>	 Page 16	 Page 32	 Page 48	 Page 68	 Page 84
<b>Mushroom head impact buttons/ Mushroom push buttons</b>	 Page 18	 Page 34	 Page 51	 Page 70	 Page 86
<b>Selector switches / buttons</b>	 Page 20	 Page 36	 Page 54	 Page 72	 Page 88
<b>Key-operated selector switches/ buttons</b>	 Page 22	 Page 38	—	 Page 74	 Page 90
<b>Step selector switches</b>	 Page 24	 Page 40	 Page 60	 Page 76	—
<b>Potentiometer drives</b>	 Page 24	 Page 40	 Page 60	 Page 76	—
<b>Main switches</b>	—	—	 Page 56	—	—

# COMMAND AND SIGNALLING DEVICES E PROGRAMME

## AREA OF APPLICATION

The Series E.V command and signalling devices for 22.3 mm installation boreholes have been developed as universal operator input and display elements for all mechanical engineering, plant construction and automotive applications. They are generally integrated in the control panels or enclosures of machines and are in use all over the world.

The separate H and R product portfolios are available for applications that make particular demands of either hygiene or the toughness of the command and signalling devices.

## DESIGN AND OPERATING PRINCIPLE

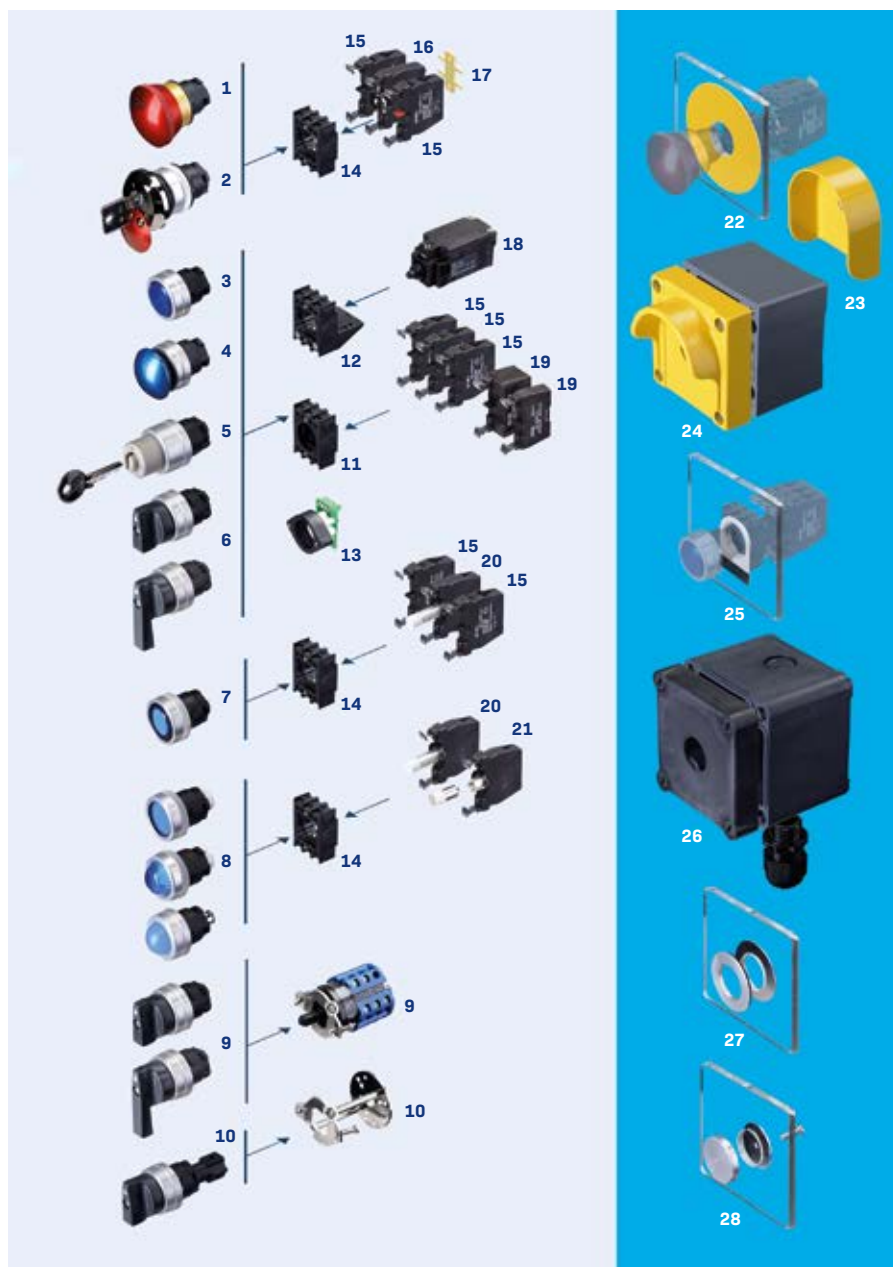
The command and signalling devices of Series E are each designed with an operating button and an EF contact system. Both parts are simply joined by catch springs. This principle ensures fast assembly on the front panel of the control panel and a permanent connection between the head and the contact system. When doing this, the modular principle of this range makes it possible to increase flexibility and to adapt the Human Machine Interface to individual requirements in an optimum way.

The control heads of Series E are made from anodised aluminium, with the collars being glass. The seals on the front of the devices complies with degree of protection IP65.

Users can choose between a vast range of different variants. The product portfolio includes amongst other things, push buttons, mushroom head impact buttons, illuminated control push buttons and indicator lights, selector switches and selection buttons as well as key selector switches and key selection buttons.

In the E range, the mushroom head impact buttons are particularly important. They are used all over the world in mechanical engineering and plant construction and stand out due to their extremely robust design. On vibrating machines or with frequent shock loading, these EMERGENCY STOP buttons function reliably and thus increases the machines' productivity and extend their service lives. If the EMERGENCY STOP button fails, the safety system shuts down the machine, this rarely happens with E range switchgears with an external snap-action mechanism.

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# COMMAND AND SIGNALLING DEVICES – E PROGRAMME

## EMERGENCY STOP CONTROL DEVICES



■ EDRR40RT



■ EDRZ40RT



■ EDRRS40RT

### Key Features

<b>General description</b>	Emergency stop command device – with twist and pull-to-unlatch mechanism	Emergency stop command device – with pull-to-unlatch mechanism	Emergency stop command device – with key unlatching mechanism
<b>Area of application</b>	Applications under difficult operating conditions	Applications under difficult operating conditions	Applications under difficult operating conditions
<b>Mounting-Ø</b>	22.3 mm	22.3 mm	22.3 mm
<b>Housing material</b>			
<b>Material of operating element</b>	Aluminium	Aluminium	Chrome-plated brass
<b>Material front ring</b>	Aluminium	Aluminium	Aluminium

### Technical features

<b>Mechanical data</b>			
<b>Color</b>	■	■	■
<b>Design</b>	Round	round	Round
<b>Front plate thickness</b>	1 ... 6 mm	1 ... 6 mm	1 ... 6 mm
<b>Unlocking type</b>	Twist and pull-to-unlatch mechanism	Pull-to-unlatch mechanism	Key reset
<b>Snap-action mechanism</b>			
<b>Integrated</b>	–	■	–
<b>Externally via additional module</b>	■	–	■
<b>Assembly</b>			
<b>Mounting flange included in delivery</b>	■	■	■
<b>Mounting position</b>	Arbitrarily	Arbitrarily	Arbitrarily
<b>Ambient conditions</b>			
<b>Ambient temperatures</b>	–25 °C ... +75 °C	–25 °C ... +75 °C	–25 °C ... +75 °C
<b>Degree of protection</b>	IP65	IP65	IP65

### Safety classification

<b>Standards</b>	IEC 60947-5-1, IEC 60947-5-5, IEC 60947-1, EN ISO 13850	IEC 60947-5-1, IEC 60947-5-5, IEC 60947-1, EN ISO 13850	IEC 60947-5-1, IEC 60947-5-5, IEC 60947-1, EN ISO 13850
<b>Mechanical life</b>	100,000 operations	100,000 operations	100,000 operations
<b>Certificates</b>	cULus	cULus	cULus
<b>Notice</b>	cULus in conjunction with the corresponding contact elements only		

# COMMAND AND SIGNALLING DEVICES – E PROGRAMME

## EMERGENCY STOP CONTROL DEVICES

Type	Unlocking	Snap-action mechanism	A	B	C	Type	Material number
Emergency stop command devices	Pull-to-unlatch mechanism	Integrated	29	22.3	38.5	EDRZ40 RT	101177107
	Twist and pull-to-unlatch mechanism	External with spring element EFR *	29	22.3	38.5	EDRR40 RT	101021009
					49	EDRR50 RT	101021015
Release by key (cover red)	External with spring element EFR.EDRRS *	29	22.3	37.5	EDRRS40 RT	101025432	

\* Spring element EFR or EFR.EDRRS must be ordered separately!

All dimensions in mm.

### Key

A	Height	Height of command device in front of the front panel
B	Mounting-Ø	Installation diameter for the command device head
C	Key Ø	Width of the command device head

# COMMAND AND SIGNALLING DEVICES – E PROGRAMME

## INDICATOR LIGHTS



■ EML / EMLH



■ EME

### Key Features

<b>General description</b>	Illuminated signal for BA9s	Illuminated signal with integrated LED
<b>Area of application</b>	Applications under difficult operating conditions	Applications under difficult operating conditions
<b>Mounting-Ø</b>	22.3 mm	22.3 mm
<b>Housing material</b>		
<b>Material of operating element</b>	Glass	Plastic
<b>Material front ring</b>	Aluminium	Aluminium

### Technical features

<b>Mechanical data</b>		
<b>Color</b>		
<b>Design</b>	Round with flat or high glass	Round with flat or high glass
<b>Front plate thickness</b>	1 ... 6 mm	1 ... 6 mm
<b>Integrated LED 24 VAC/DC *</b>	–	■
<b>Assembly</b>		
<b>Mounting flange included in delivery</b>	■	■
<b>Mounting position</b>	Arbitrarily	Arbitrarily
<b>Ambient conditions</b>		
<b>Ambient temperatures</b>	–25 °C ... +75 °C	–25 °C ... +40 °C
<b>Degree of protection</b>	IP65	IP65

### Safety classification

<b>Standards</b>	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1
<b>Mechanical life</b>	–	–
<b>Certificates</b>	cULus	cULus
<b>Notice</b>	cULus in conjunction with the corresponding contact elements only	

\* A voltage sensor, e.g. an ELE is also needed for driving. You can find the voltage sensors from page 92

# COMMAND AND SIGNALLING DEVICES – E PROGRAMME

## INDICATOR LIGHTS

Type	Illuminant	Collar	A	B	C	Type
Indicator lights	Without integrated illuminant	Flat collar	14	22.3	29.5	EML ①
		High collar	20	22.3	29.5	EMLH ①
LED indicator light	With integrated illuminant	High collar	20	22.3	29.5	EME ①

① Abbreviations of colours: ■ SW ■ GB ■ RT ■ GN □ WS ■ BL

You append the abbreviations of the colours to the type designation.

For details of possible colour combinations, refer to the technical data on the previous page.

All dimensions in mm.

### Key

A	Height	Height of command device in front of the front panel
B	Mounting-Ø	Installation diameter for the command device head
C	Key Ø	Width of the command device head



EML GN



EMLH RT



EME GB

# COMMAND AND SIGNALLING DEVICES – E PROGRAMME

## PUSHBUTTONS AND ILLUMINATED PUSHBUTTONS



■ EDT



■ EDL

### Key Features

General description	Push buttons	Illuminated pushbutton
Area of application	Applications under difficult operating conditions	Applications under difficult operating conditions
Mounting-Ø	22.3 mm	22.3 mm
Housing material		
Material of operating element	Aluminium	Glass
Material front ring	Aluminium	Aluminium

### Technical features

Mechanical data		
Color		
Design	Round	Round
Front plate thickness	1 ... 6 mm	1 ... 6 mm
Assembly		
Mounting flange included in delivery	■	■
Mounting position	Arbitrarily	Arbitrarily
Ambient conditions		
Ambient temperatures	-25 °C ... +75 °C	-25 °C ... +75 °C
Degree of protection	IP65	IP65

### Safety classification

Standards	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1
Mechanical life	1,000,000 operations	1,000,000 operations
Certificates	cULus	cULus
Notice	cULus in conjunction with the corresponding contact elements only	



# COMMAND AND SIGNALLING DEVICES – E PROGRAMME

## PUSHBUTTONS AND ILLUMINATED PUSHBUTTONS

Type	Description	A	B	C	Type	
Push buttons	Included in standard version	Included in standard version	14	22.3	29.5	<b>EDT</b> ①
		6 mm edge to prevent unwanted activation	20	22.3	29.5	<b>EDTH</b> ①
	With membrane	Included in standard version	14	22.3	29.5	<b>EDM</b> ①
		6 mm edge to prevent unwanted activation	20	22.3	29.5	<b>EDMH</b> ①
	With latching	Included in standard version	14	22.3	29.5	<b>EDTR</b> ①
Illuminated pushbuttons	Included in standard version	Included in standard version	14	22.3	29.5	<b>EDL</b> ①
		6 mm edge to prevent unwanted activation	20	22.3	29.5	<b>EDLH</b> ①
	With membrane	Included in standard version	14	22.3	29.5	<b>EDLM</b> ①
		6 mm edge to prevent unwanted activation	20	22.3	29.5	<b>EDLMH</b> ①
	With latching	Included in standard version	14	22.3	29.5	<b>EDLR</b> ①

① Abbreviations of colours: ■ SW ■ GB ■ RT ■ GN ■ WS ■ BL

You append the abbreviations of the colours to the type designation.

For details of possible colour combinations, refer to the technical data on the previous page.

All dimensions in mm.

### Key

A	Height	Height of command device in front of the front panel
B	Mounting-Ø	Installation diameter for the command device head
C	Key Ø	Width of the command device head



EDM RT



EDT2 GB



EDLMH BL



EDL GN

# COMMAND AND SIGNALLING DEVICES – E PROGRAMME

## MUSHROOM HEAD IMPACT BUTTONS



■ EDP



■ EDR



■ EDRS40

### Key Features

<b>General description</b>	Mushroom button without latching function	Mushroom button with latching function	Mushroom button with latching function and release by key
<b>Area of application</b>	Applications under difficult operating conditions	Applications under difficult operating conditions	Applications under difficult operating conditions
<b>Mounting-Ø</b>	22.3 mm	22.3 mm	22.3 mm
<b>Housing material</b>			
<b>Material of operating element</b>	Aluminium	Aluminium	Chrome-plated brass
<b>Material front ring</b>	Aluminium	Aluminium	Aluminium

### Technical features

<b>Mechanical data</b>			
<b>Color</b>			
<b>Design</b>	Round	round	Round
<b>Front plate thickness</b>	1 ... 6 mm	1 ... 6 mm	1 ... 6 mm
<b>With latching</b>	–	■	■
<b>Assembly</b>			
<b>Mounting flange included in delivery</b>	■	■	■
<b>Mounting position</b>	Arbitrarily	Arbitrarily	Arbitrarily
<b>Ambient conditions</b>			
<b>Ambient temperatures</b>	–25 °C ... +75 °C	–25 °C ... +75 °C	–25 °C ... +75 °C
<b>Degree of protection</b>	IP65	IP65	IP65

### Safety classification

<b>Standards</b>	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1
<b>Mechanical life</b>	1,000,000 operations	100,000 operations	100,000 operations
<b>Certificates</b>	cULus	cULus	cULus
<b>Notice</b>	cULus in conjunction with the corresponding contact elements only		

# COMMAND AND SIGNALLING DEVICES – E PROGRAMME

## MUSHROOM HEAD IMPACT BUTTONS

Type	Description	Key	A	B	C	Type
Mushroom head impact buttons	Mushroom button	Mushroom-shaped	27.5	22.3	32	EDP ①
			27.5	22.3	37	EDP40 ①
			27.5	22.3	55	EDP55 ①
	Mushroom button with latching function	Mushroom-shaped	27.5	22.3	35	EDP35 ①
			29	22.3	38.5	EDR40 ①
			27.5	22.3	35	EDR35 ①
		Key reset	29	22.3	38	EDRS40 ①

① Abbreviations of colours: ■ SW ■ GB ■ RT ■ GN □ WS ■ BL

You append the abbreviations of the colours to the type designation.

For details of possible colour combinations, refer to the technical data on the previous page.

All dimensions in mm.

### Key

A	Height	Height of command device in front of the front panel
B	Mounting-Ø	Installation diameter for the command device head
C	Key Ø	Width of the command device head



EDP SW



EDR35 GN



EDRS40 RT

# COMMAND AND SIGNALLING DEVICES – E PROGRAMME

## MAINTAINED SELECTOR SWITCHES AND SPRING RETURN SELECTOR SWITCHES



■ EWS / EWT



■ EWS .1 / EWT .1

### Key Features

<b>General description</b>	Selector switch/button with short toggle	Selector switch/button with long toggle
<b>Area of application</b>	Applications under difficult operating conditions	Applications under difficult operating conditions
<b>Mounting-Ø</b>	22.3 mm	22.3 mm
<b>Toggle length</b>	28 mm	45 mm
<b>Housing material</b>		
<b>Material of operating element</b>	Plastic	Plastic
<b>Material front ring</b>	Aluminium	Aluminium

### Technical features

<b>Mechanical data</b>		
<b>Color</b>	■	■
<b>Design</b>	Round	Round
<b>Front plate thickness</b>	1 ... 6 mm	1 ... 6 mm
<b>Maintained switching positions</b>	2 ... 3 positions	2 ... 3 positions
<b>Assembly</b>		
<b>Mounting flange included in delivery</b>	■	■
<b>Mounting position</b>	Arbitrarily	Arbitrarily
<b>Ambient conditions</b>		
<b>Ambient temperatures</b>	0 °C ... +75 °C	0 °C ... +75 °C
<b>Degree of protection</b>	IP65	IP65

### Safety classification

<b>Standards</b>	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1
<b>Mechanical life</b>	300,000 operations	300,000 operations
<b>Certificates</b>	cULus	cULus
<b>Notice</b>	cULus in conjunction with the corresponding contact elements only	

# COMMAND AND SIGNALLING DEVICES – E PROGRAMME

## MAINTAINED SELECTOR SWITCHES AND SPRING RETURN SELECTOR SWITCHES

Type	Maintained and momentary positions	Positions	Actuator	A	B	C	Type designation
Selector switches	2 maintained positions		Short toggle	28	22.3	29.5	EWS21
			Long toggle				EWS21.1
	3 maintained positions		Short toggle	28	22.3	29.5	EWS32
			Long toggle				EWS32.1
Spring-return rotary selector switches	1 momentary position and automatic return to the zero position		Short toggle	28	22.3	29.5	EWT21
			Long toggle				EWT21.1
	1 momentary position each to the right and left of the zero position		Short toggle	28	22.3	29.5	EWT32
			Long toggle				EWT32.1
Maintained spring-return rotary selector switches	Maintained position to left and momentary position to right		Short toggle	28	22.3	29.5	EWTS32
			Long toggle				EWTS32.1
	Maintained position on right and momentary position on left		Short toggle	6	22.3	36	EWTS321
			Long toggle				EWTS321.1

### ① Toggle length:

If you want a long toggle, append a "1" to the type designation.

All dimensions in mm.

### Key

A	Height	Height of command device in front of the front panel
B	Mounting- $\varnothing$	Installation diameter for the command device head
C	Key $\varnothing$	Width of the command device head

# COMMAND AND SIGNALLING DEVICES – E PROGRAMME

## KEY SELECTOR SWITCHES, BUTTONS AND TOUCH CONTACT SWITCHES



■ ESS



■ EST

### Key Features

<b>General description</b>	Key selector switch	Key-operated selector switch
<b>Area of application</b>	Applications under difficult operating conditions	Applications under difficult operating conditions
<b>Mounting-Ø</b>	22.3 mm	22.3 mm
<b>Housing material</b>		
<b>Material of operating element</b>	Aluminium	Aluminium
<b>Material front ring</b>	Aluminium	Aluminium

### Technical features

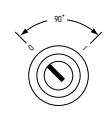
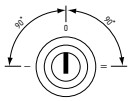

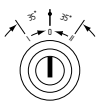
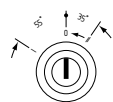
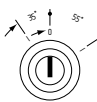
<b>Mechanical data</b>		
<b>Color</b>	Metal (silver)	Metal (silver)
<b>Design</b>	Round	Round
<b>Front plate thickness</b>	1 ... 6 mm	1 ... 6 mm
<b>Maintained switching positions</b>	2 or 3 positions	2 or 3 positions
<b>Assembly</b>		
<b>Mounting flange included in delivery</b>	■	■
<b>Mounting position</b>	Arbitrarily	Arbitrarily
<b>Ambient conditions</b>		
<b>Ambient temperatures</b>	0 °C ... +75 °C	0 °C ... +75 °C
<b>Degree of protection</b>	IP65	IP65

### Safety classification

<b>Standards</b>	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1
<b>Mechanical life</b>	100,000 operations	100,000 operations
<b>Certificates</b>	cULus	cULus
<b>Notice</b>	cULus in conjunction with the corresponding contact elements only	

# COMMAND AND SIGNALLING DEVICES – E PROGRAMME

## KEY SELECTOR SWITCHES, BUTTONS AND TOUCH CONTACT SWITCHES

Type	Maintained and momentary positions	Key positions	Key-withdrawal position	A	B	C	Type designation
Key-operated selector switches	2 maintained positions		0	33	22.3	29.5	ESS21S1
			I				ESS21S2
			0 + I				ESS21S12
	3 maintained positions		I	33	22.3	29.5	ESS32S1
0	ESS32S2						
II	ESS32S3						
I + 0 + II	ESS32S123						
Key-operated selector buttons	1 momentary position with automatic return to the zero position		0	33	22.3	29.5	EST21S1
	2 momentary positions on the right and left with automatic return to the zero position		0	33	22.3	29.5	EST32S2
Key-operated selector switch pushbuttons	3 positions: momentary position 35° actuating angle and maintained position 55° actuating angle (zero position in middle, key position at top)		I	33	22.3	29.5	ESTS32S1
			0				ESTS32S2
			0				ESTS321S2
			II				ESTS321S3

All dimensions in mm.

### Key

- A Height Height of command device in front of the front panel without key
- B Mounting-Ø Installation diameter for the command device head
- C Key Ø Width of the command device head

# COMMAND AND SIGNALLING DEVICES – E PROGRAMME

## SPECIAL DEVICES



■ EWSE..K



■ EDAN6

### Key Features

<b>General description</b>	Step selector switch	Potentiometer drive
<b>Area of application</b>	Applications under difficult operating conditions	Applications under difficult operating conditions
<b>Mounting-Ø</b>	22.3 mm	22.3 mm
<b>Housing material</b>		
<b>Material of operating element</b>	Plastic	Plastic
<b>Material front ring</b>	Aluminium	Aluminium

### Technical features

<b>Electrical data</b>		
<b>Cam-operated switch</b>	Kraus & Naimer Series CA10	–
<b>Contacts</b>	One NO contact per stage	–
<b>Insulation voltage <math>U_i</math></b>	690 V	–
<b>Utilisation category AC-15</b>	220 V ... 240 V / 5 A, 380 V ... 440 V / 4 A	–
<b>Rated impulse withstand voltage. <math>U_{imp}</math></b>	6 kV	–
<b>Rated continuous current <math>I_{the}</math></b>	20 A	–
<b>Fuse rating</b>	gG 25 A	–
<b>Cable section</b>	max. $2 \times 2.5 \text{ mm}^2$ *	–
<b>Mechanical data</b>		
<b>Color</b>		
<b>Operating element</b>	■	■
<b>Front ring</b>	Silver	Silver
<b>Front plate thickness</b>	1 ... 6 mm	1 ... 6 mm
<b>Maintained switching positions</b>	3 ... 12 positions	Infinite
<b>Assembly</b>		
<b>Integrated mounting plate</b>	■	■
<b>Mounting position</b>	Arbitrarily	Arbitrarily
<b>Ambient conditions</b>		
<b>Ambient temperatures</b>	0 °C ... +60 °C	0 °C ... +75 °C
<b>Degree of protection (device head)</b>	IP65	IP65

### Safety classification

<b>Standards</b>	IEC 60947-3	–
<b>Mechanical life</b>	Load-dependent	–
<b>Certificates</b>	cULus, CCC	–

\* Use copper conductors only



# COMMAND AND SIGNALLING DEVICES – E PROGRAMME

## SPECIAL DEVICES

Type	Circuit diagram and connecting terminals	Switching angle	L	LE	A	B	C	Type designation
Cam switching design step switches with latching mechanism, 1-pole no zero position		60°	40.7	60	28	22.3	29.5	EWSE3K
		60°	40.7	60	28	22.3	29.5	EWSE4K
		60°	50.2	69.5	28	22.3	29.5	EWSE5K
		60°	50.2	69.5	28	22.3	29.5	EWSE6K
		45°	59.7	78	28	22.3	29.5	EWSE7K
		45°	59.7	78	28	22.3	29.5	EWSE8K
		30°	69.2	87.5	28	22.3	29.5	EWSE9K
		30°	69.2	87.5	28	22.3	29.5	EWSE10K
		30°	78.7	97	28	22.3	29.5	EWSE11K
		30°	78.7	97	28	22.3	29.5	EWSE12K

Type	Description	LE	A	B	C	Type designation
Potentiometer drive	for 6 mm shaft Ø, shaft length 30 ... 40 mm	63	28	22.3	29.5	EDAN 6

All dimensions in mm.

### Key

A	Height	Height of command device in front of the front panel
B	Mounting-Ø	Installation diameter for the command device head
C	Key Ø	Width of the command device head
L	Length	Length of step switch block
LE	Installation depth	Length between command device head and bottom edge of switch when mounted

# COMMAND AND SIGNALLING DEVICES

## E.V PROGRAMME

### AREA OF APPLICATION

The Series E.V command and signalling devices for 30.5 mm installation boreholes have been developed as universal operator input and display elements for all mechanical engineering, plant construction and automotive applications. They are generally integrated in the control panels or enclosures of machines and are in use all over the world.

The separate H and R product portfolios are available for applications that make particular demands of either hygiene or the toughness of the command and signalling devices.

### DESIGN AND WAY OF FUNCTIONING

The command and signalling devices of Series E are each designed with an operating button and an EF contact system. Both parts are simply joined by catch springs. This principle ensures fast assembly on the front panel of the control panel and a permanent connection between the head and the contact system. When doing this, the modular principle of this range makes it possible to increase flexibility and to adapt the Human Machine Interface to individual requirements in an optimum way.

The control heads of Series E.V are made from anodised aluminium, with the collars being glass. The seals on the front of the devices comply with degree of protection IP65.

Users can choose between a vast range of different variants. The product portfolio includes amongst other things, push buttons, mushroom head impact buttons, illuminated control push buttons and indicator lights, selector switches and selection buttons as well as key selector switches and key selection buttons.

In the E.V range, the mushroom head impact buttons are particularly important. They are used all over the world in mechanical engineering and plant construction and stand out due to their extremely robust design. On vibrating machines or with frequent shock loading, these EMERGENCY STOP buttons function reliably and thus increases the machines' productivity and extend their service lives. If the EMERGENCY STOP button fails, the safety system shuts down the machine, this rarely happens with E.V range switchgears with an external snap-action mechanism.

Product overview		Page
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# COMMAND AND SIGNALLING DEVICES – E.V PROGRAMME

## EMERGENCY STOP CONTROL DEVICES



■ EDRR40.VH



■ EDRZ40.VH



■ EDRRS40.VH

### Key Features

<b>General description</b>	Emergency stop command device – with twist and pull-to-unlatch mechanism	Emergency stop command device – with pull-to-unlatch mechanism	Emergency stop command device – with key unlatching mechanism
<b>Area of application</b>	Applications under difficult operating conditions	Applications under difficult operating conditions	Applications under difficult operating conditions
<b>Mounting-Ø</b>	30.5 mm	30.5 mm	30.5 mm
<b>Housing material</b>			
<b>Material of operating element</b>	Aluminium	Aluminium	Chrome-plated brass
<b>Material front ring</b>	Aluminium	Aluminium	Aluminium

### Technical features

<b>Mechanical data</b>			
<b>Color</b>	■	■	■
<b>Design</b>	Round	Round	Round
<b>Front plate thickness</b>	1 ... 6 mm	1 ... 6 mm	1 ... 6 mm
<b>Unlocking type</b>	Twist and pull-to-unlatch mechanism	Pull-to-unlatch mechanism	Key reset
<b>Snap-action mechanism</b>			
<b>Integrated</b>	–	■	–
<b>Externally via additional module</b>	■	–	■
<b>Assembly</b>			
<b>Mounting flange included in delivery</b>	■	■	■
<b>Mounting position</b>	Arbitrarily	Arbitrarily	Arbitrarily
<b>Ambient conditions</b>			
<b>Ambient temperatures</b>	–25 °C ... +75 °C	–25 °C ... +75 °C	–25 °C ... +75 °C
<b>Degree of protection</b>	IP65	IP65	IP65

### Safety classification

<b>Standards</b>	IEC 60947-5-1, IEC 60947-5-5, IEC 60947-1, EN ISO 13850	IEC 60947-5-1, IEC 60947-5-5, IEC 60947-1, EN ISO 13850	IEC 60947-5-1, IEC 60947-5-5, IEC 60947-1, EN ISO 13850
<b>Mechanical life</b>	100,000 operations	100,000 operations	100,000 operations
<b>Certificates</b>	cULus	cULus	cULus
<b>Notice</b>	cULus in conjunction with the corresponding contact elements only		

# COMMAND AND SIGNALLING DEVICES – E.V PROGRAMME

## EMERGENCY STOP CONTROL DEVICES

Type	Unlocking	Snap-action mechanism	A	B	C	Type	Material number
Emergency stop command devices	Pull-to-unlatch mechanism	Integrated	29	30.5	38.5	EDRZ40.VHRT	101182360
	Twist and pull-to-unlatch mechanism	External with spring element EFR *			38.5	EDRR40.VHRT	101024290
					49	EDRR50.VHRT	101024299
	Release by key (cover red)	External with spring element EFR.EDRRS *			37.5	EDRRS40.VHRT	101025435

\* Spring element EFR or EFR.EDRRS must be ordered separately!

All dimensions in mm.

### Key

A	Height	Height of command device in front of the front panel
B	Mounting-Ø	Installation diameter for the command device head
C	Key Ø	Width of the command device head

# COMMAND AND SIGNALLING DEVICES – E.V PROGRAMME

## INDICATOR LIGHTS



■ EML.V / EMLH.V



■ EME.V

### Key Features

<b>General description</b>	Illuminated signal for BA9s	Illuminated signal with integrated LED
<b>Area of application</b>	Applications under difficult operating conditions	Applications under difficult operating conditions
<b>Mounting-Ø</b>	30.5 mm	30.5 mm
<b>Housing material</b>		
<b>Material of operating element</b>	Glass	Plastic
<b>Material front ring</b>	Aluminium	Aluminium

### Technical features

<b>Mechanical data</b>		
<b>Color</b>		
<b>Design</b>	Round with flat or high glass	Round with flat or high glass
<b>Front plate thickness</b>	1 ... 6 mm	1 ... 6 mm
<b>Integrated LED 24 VAC/DC *</b>	–	■
<b>Assembly</b>		
<b>Mounting flange included in delivery</b>	■	■
<b>Mounting position</b>	Arbitrarily	Arbitrarily
<b>Ambient conditions</b>		
<b>Ambient temperatures</b>	–25 °C ... +75 °C	–25 °C ... +40 °C
<b>Degree of protection</b>	IP65	IP65

### Safety classification

<b>Standards</b>	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1
<b>Mechanical life</b>	–	–
<b>Certificates</b>	cULus	cULus
<b>Notice</b>	cULus in conjunction with the corresponding contact elements only	

\* A voltage sensor, e.g. an ELE is also needed for driving. You can find the voltage sensors from page 92

# COMMAND AND SIGNALLING DEVICES – E.V PROGRAMME

## INDICATOR LIGHTS

Type	Illuminant	Collar	A	B	C	Type
Indicator lights	Without integrated illuminant	Flat collar	2.5	30.5	34.5	EML.V ①
		High collar				EMLH.V ①
LED indicator light	With integrated illuminant	High collar				E.ME.V ①

① Abbreviations of colours: ■ SW ■ GB ■ RT ■ GN □ WS ■ BL

You append the abbreviations of the colours to the type designation.

For details of possible colour combinations, refer to the technical data on the previous page.

All dimensions in mm.

### Key

A	Height	Height of command device in front of the front panel
B	Mounting-Ø	Installation diameter for the command device head
C	Key Ø	Width of the command device head



EMLHV.GB



EML.VGN



EME.VBL



EME.VRT

# COMMAND AND SIGNALLING DEVICES – E.V PROGRAMME

## PUSHBUTTONS AND ILLUMINATED PUSHBUTTONS



■ EDT.V



■ EDL.V

### Key Features

General description	Push buttons	Illuminated pushbutton
Area of application	Applications under difficult operating conditions	Applications under difficult operating conditions
Mounting-Ø	30.5 mm	30.5 mm
Housing material		
Material of operating element	Aluminium	Glass
Material front ring	Aluminium	Aluminium

### Technical features

Mechanical data		
Color		
Design	Round	Round
Front plate thickness	1 ... 6 mm	1 ... 6 mm
Assembly		
Mounting flange included in delivery	■	■
Mounting position	Arbitrarily	Arbitrarily
Ambient conditions		
Ambient temperatures	-25 °C ... +75 °C	-25 °C ... +75 °C
Degree of protection	IP65	IP65

### Safety classification

Standards	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1
Mechanical life	1,000,000 operations	1,000,000 operations
Certificates	cULus	cULus
Notice	cULus in conjunction with the corresponding contact elements only	



# COMMAND AND SIGNALLING DEVICES – E.V PROGRAMME

## PUSHBUTTONS AND ILLUMINATED PUSHBUTTONS

Type	Description		A	B	C	Type
Push buttons	Included in standard version	Included in standard version	2.5	30.5	34.6	<b>EDT.V</b> ①
	With latching	Included in standard version	2.5	30.5	34.5	<b>EDTR</b> ①V
Illuminated pushbuttons	Included in standard version	Included in standard version	2.5	30.5	34.5	<b>EDL.V</b> ①
	With latching	Included in standard version	2.5	30.5	34.5	<b>EDLR</b> ①V

① **Abbreviations of colours:** ■ SW ■ GB ■ RT ■ GN □ WS ■ BL  
 You append the abbreviations of the colours to the type designation.  
 For details of possible colour combinations, refer to the technical data on the previous page.

All dimensions in mm.

### Key

- A Height                      Height of command device in front of the front panel
- B Mounting-Ø                Installation diameter for the command device head
- C Key Ø                        Width of the command device head



# COMMAND AND SIGNALLING DEVICES – E.V PROGRAMME

## MUSHROOM HEAD IMPACT BUTTONS



### Key Features

<b>General description</b>	Mushroom button without latching function	Mushroom button with latching function	Mushroom button with latching function and release by key
<b>Area of application</b>	Applications under difficult operating conditions	Applications under difficult operating conditions	Applications under difficult operating conditions
<b>Mounting-Ø</b>	30.5 mm	30.5 mm	30.5 mm
<b>Housing material</b>			
<b>Material of operating element</b>	Aluminium	Aluminium	Chrome-plated brass
<b>Material front ring</b>	Aluminium	Aluminium	Aluminium

### Technical features

<b>Mechanical data</b>			
<b>Color</b>			
<b>Design</b>	Round	round	Round
<b>Front plate thickness</b>	1 ... 6 mm	1 ... 6 mm	1 ... 6 mm
<b>With latching</b>	–	■	■
<b>Assembly</b>			
<b>Mounting flange included in delivery</b>	■	■	■
<b>Mounting position</b>	Arbitrarily	Arbitrarily	Arbitrarily
<b>Ambient conditions</b>			
<b>Ambient temperatures</b>	–25 °C ... +75 °C	–25 °C ... +75 °C	–25 °C ... +75 °C
<b>Degree of protection</b>	IP65	IP65	IP65

### Safety classification

<b>Standards</b>	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1
<b>Mechanical life</b>	1,000,000 operations	100,000 operations	100,000 operations
<b>Certificates</b>	cULus	cULus	cULus
<b>Notice</b>	cULus in conjunction with the corresponding contact elements only		

# COMMAND AND SIGNALLING DEVICES – E.V PROGRAMME

## MUSHROOM HEAD IMPACT BUTTONS

Type	Description	Key	A	B	C	Type
Mushroom head impact buttons	Mushroom head impact button	Mushroom-shaped	19	30.5	37	EDP40.V ①
			19	30.5	55	EDP55.V ①
	Mushroom head impact button with latching function	Mushroom-shaped	19	30.5	35	EDR35.V ①
			19	30.5	38.5	EDR40.V ①
		Key reset	19	30.5	38	EDRS40.V ①

① Abbreviations of colours: ■ SW ■ GB ■ RT ■ GN □ WS ■ BL

You append the abbreviations of the colours to the type designation.

For details of possible colour combinations, refer to the technical data on the previous page.

All dimensions in mm.

### Key

A	Height	Height of command device in front of the front panel
B	Mounting-Ø	Installation diameter for the command device head
C	Key Ø	Width of the command device head



EDP.VGB



EDRS40.VRT

# COMMAND AND SIGNALLING DEVICES – E.V PROGRAMME

## MAINTAINED SELECTOR SWITCHES AND SPRING RETURN SELECTOR SWITCHES



■ EWS.V / EWT.V



■ EWS.1V / EWT.1V



■ EWS DB / EWT DB

### Key Features

<b>General description</b>	Selector switch/button with short toggle	Selector switch/button with long toggle	Selector switch/key button with rectangular activator
<b>Area of application</b>	Applications under difficult operating conditions	Applications under difficult operating conditions	Applications under difficult operating conditions
<b>Mounting-Ø</b>	30.5 mm	30.5 mm	30.5 mm
<b>Toggle length</b>	28 mm	45 mm	–
<b>Housing material</b>			
<b>Material of operating element</b>	Plastic	Plastic	Metal film
<b>Material front ring</b>	Aluminium	Aluminium	Aluminium

### Technical features











<b>Mechanical data</b>			
<b>Color</b>	■	■	Metal (silver)
<b>Design</b>	Round	Round	Round
<b>Front plate thickness</b>	1 ... 6 mm	1 ... 6 mm	1.5 ... 14 mm
<b>Maintained switching positions</b>	2 ... 3 positions	2 ... 3 positions	2 ... 3 positions
<b>Assembly</b>			
<b>Mounting flange included in delivery</b>	■	■	–
<b>Mounting position</b>	Arbitrarily	Arbitrarily	Arbitrarily
<b>Ambient conditions</b>			
<b>Ambient temperatures</b>	0 °C ... +75 °C	0 °C ... +75 °C	–40 °C ... +80 °C
<b>Degree of protection</b>	IP65	IP65	IP65

### Safety classification

<b>Standards</b>	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1
<b>Mechanical life</b>	300,000 operations	300,000 operations	300,000 operations
<b>Certificates</b>	cULus	cULus	cULus
<b>Notice</b>	cULus in conjunction with the corresponding contact elements only		

# COMMAND AND SIGNALLING DEVICES – E.V PROGRAMME

## MAINTAINED SELECTOR SWITCHES AND SPRING RETURN SELECTOR SWITCHES

Type	Maintained and momentary positions	Positions	Actuator	A	B	C	Type designation
Selector switches	2 maintained positions		Short toggle	22	30.5	29.5	EWS21.V
			Long knob				EWS21.1.V
			Rectangular actuator	6	30.5	36	EWS21DB EWS21ÖBB
	3 maintained positions		Short toggle	22	30.5	29.5	EWS32.V
			Long knob				EWS32.1.V
			Rectangular actuator	6	30.5	36	EWS32DB EWS32ÖBB
Spring-return rotary selector switches	1 momentary position with automatic return to the zero position		Short toggle	22	30.5	29.5	EWT21.V
			Long knob				EWT21.1.V
			Rectangular actuator	6	30.5	36	EWT21DB EWT21ÖBB
	1 momentary position each to the right and left of the zero position		Short toggle	22	30.5	29.5	EWT32.V
			Long knob				EWT32.1.V
			Rectangular actuator	6	30.5	36	EWT32DB EWT32ÖBB
Maintained spring-return rotary selector switches	Maintained position to left and momentary position to right		Short toggle	22	30.5	29.5	EWTS32.V
			Long knob				EWTS32.1.V
	Maintained position on right and momentary position on left		Short toggle	22	30.5	36	EWTS321.V
			Long knob				EWTS321.1.V

① **Toggle length:**

If you want a long toggle, append a "1" to the type designation.

All dimensions in mm.

**Key**

- A Height                      Height of command device in front of the front panel
- B Mounting-Ø                Installation diameter for the command device head
- C Key Ø                        Width of the command device head

# COMMAND AND SIGNALLING DEVICES – E.V PROGRAMME

## KEY SELECTOR SWITCHES, BUTTONS AND TOUCH CONTACT SWITCHES



■ ESS



■ EST

### Key Features

<b>General description</b>	Key Selector Switch	Key-operated selector switch
<b>Area of application</b>	Applications under difficult operating conditions	Applications under difficult operating conditions
<b>Mounting-Ø</b>	30.5 mm	30.5 mm
<b>Housing material</b>		
<b>Material of operating element</b>	Aluminium	Aluminium
<b>Material front ring</b>	Aluminium	Aluminium

### Technical features

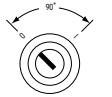
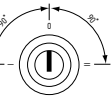

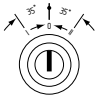
<b>Mechanical data</b>		
<b>Color</b>	Metal (silver)	Metal (silver)
<b>Design</b>	Round	Round
<b>Front plate thickness</b>	1 ... 6 mm	1 ... 6 mm
<b>Maintained switching positions</b>	2 or 3 positions	2 or 3 positions
<b>Assembly</b>		
<b>Mounting flange included in delivery</b>	■	■
<b>Mounting position</b>	Arbitrarily	Arbitrarily
<b>Ambient conditions</b>		
<b>Ambient temperatures</b>	0 °C ... +75 °C	0 °C ... +75 °C
<b>Degree of protection</b>	IP65	IP65

### Safety classification

<b>Standards</b>	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1
<b>Mechanical life</b>	100,000 operations	100,000 operations
<b>Certificates</b>	cULus	cULus
<b>Notice</b>	cULus in conjunction with the corresponding contact elements only	

# COMMAND AND SIGNALLING DEVICES – E.V PROGRAMME

## KEY SELECTOR SWITCHES, BUTTONS AND TOUCH CONTACT SWITCHES

Type	Maintained and momentary positions	Key positions	Key-withdrawal position	A	B	C	Type designation
Key-operated selector switches	2 maintained positions		0	33	30.5	34.5	ESS21S1.V
			I				ESS21S2.V
			0 + I				ESS21S12.V
	3 maintained positions		I	33	30.5	34.5	ESS32S1.V
			0				ESS32S2.V
			II				ESS32S3.V
			I + 0 + II				ESS32S123.V
	Key-operated selector buttons	1 momentary position and automatic return to the zero position		0	33	30.5	34.5
2 momentary positions on the right and left with automatic return to the zero position			0	33	30.5	34.5	EST32S2.V

All dimensions in mm.

### Key

A	Height	Height of command device in front of the front panel without key
B	Mounting-Ø	Installation diameter for the command device head
C	Key Ø	Width of the command device head

# COMMAND AND SIGNALLING DEVICES – E.V PROGRAMME

## SPECIAL DEVICES



■ WSE..K



■ DAN6

### Key Features

<b>General description</b>	Step selector switch	Potentiometer drive
<b>Area of application</b>	Applications under difficult operating conditions	Applications under difficult operating conditions
<b>Mounting-Ø</b>	30.5 mm	30.5 mm
<b>Housing material</b>		
<b>Material of operating element</b>	Plastic	Plastic
<b>Material front ring</b>	Aluminium	Aluminium

### Technical features

<b>Electrical data</b>		
<b>Cam-operated switch</b>	Kraus & Naimer Series CA10	–
<b>Contacts</b>	One NO contact per stage	–
<b>Insulation voltage <math>U_i</math></b>	690 V	–
<b>Utilisation category AC-15</b>	220 V ... 240 V / 5 A, 380 V ... 440 V / 4 A	–
<b>Rated impulse withstand voltage. <math>U_{imp}</math></b>	6 kV	–
<b>Rated continuous current <math>I_{the}</math></b>	20 A	–
<b>Fuse rating</b>	gG 25 A	–
<b>Cable section</b>	max. $2 \times 2.5 \text{ mm}^2$ *	–
<b>Mechanical data</b>		
<b>Color</b>		
<b>Operating element</b>	■	■
<b>Front ring</b>	Silver	Silver
<b>Front plate thickness</b>	1 ... 6 mm	1 ... 6 mm
<b>Maintained switching positions</b>	3 ... 12 positions	Infinite
<b>Assembly</b>		
<b>Integrated mounting plate</b>	■	■
<b>Mounting position</b>	Arbitrarily	Arbitrarily
<b>Ambient conditions</b>		
<b>Ambient temperatures</b>	0 °C ... +60 °C	0 °C ... +75 °C
<b>Degree of protection (device head)</b>	IP65	IP65

### Safety classification

<b>Standards</b>	IEC 60947-3	–
<b>Mechanical life</b>	Load-dependent	–
<b>Certificates</b>	cULus, CCC	–

\* Use copper conductors only



# COMMAND AND SIGNALLING DEVICES – E.V PROGRAMME

## SPECIAL DEVICES

Type	Circuit diagram and connecting terminals	Switching angle	L	LE	A	B	C	Type designation
Cam switching design step switches with latching mechanism, 1-pole no zero position		60°	40.7	60	22	30.5	29.5	WSE3K
		60°	40.7	60	22	30.5	29.5	WSE4K
		60°	50.2	69.5	22	30.5	29.5	WSE5K
		60°	50.2	69.5	22	30.5	29.5	WSE6K
		45°	59.7	78	22	30.5	29.5	WSE7K
		45°	59.7	78	22	30.5	29.5	WSE8K
		30°	69.2	87.5	22	30.5	29.5	WSE9K
		30°	69.2	87.5	22	30.5	29.5	WSE10K
		30°	78.7	97	22	30.5	29.5	WSE11K
		30°	78.7	97	22	30.5	29.5	WSE12K

Type	Description	LE	A	B	C	Type designation
Potentiometer drive	for 6 mm shaft Ø, shaft length 30 ... 40 mm	63	28	30.5	29.5	DAN 6

All dimensions in mm.

### Key

A	Height	Height of command device in front of the front panel
B	Mounting-Ø	Installation diameter for the command device head
C	Key Ø	Width of the command device head
L	Length	Length of step switch block
LE	Installation depth	Length between command device head and bottom edge of switch when mounted

# COMMAND AND SIGNALLING DEVICES

## H PROGRAMME

### AREA OF APPLICATION

With the H series, Schmersal presents a complete programme of new command and signalling devices for hygiene-sensitive applications - especially for food processing.

The characteristic features of the command and signalling devices in this programme include gap-free transitions between sealing elements and surfaces and the absence of protruding parts. The devices are easy to clean and are so well sealed that they can withstand regular cleaning, e.g. with high-pressure cleaners or aggressive cleaning agents.

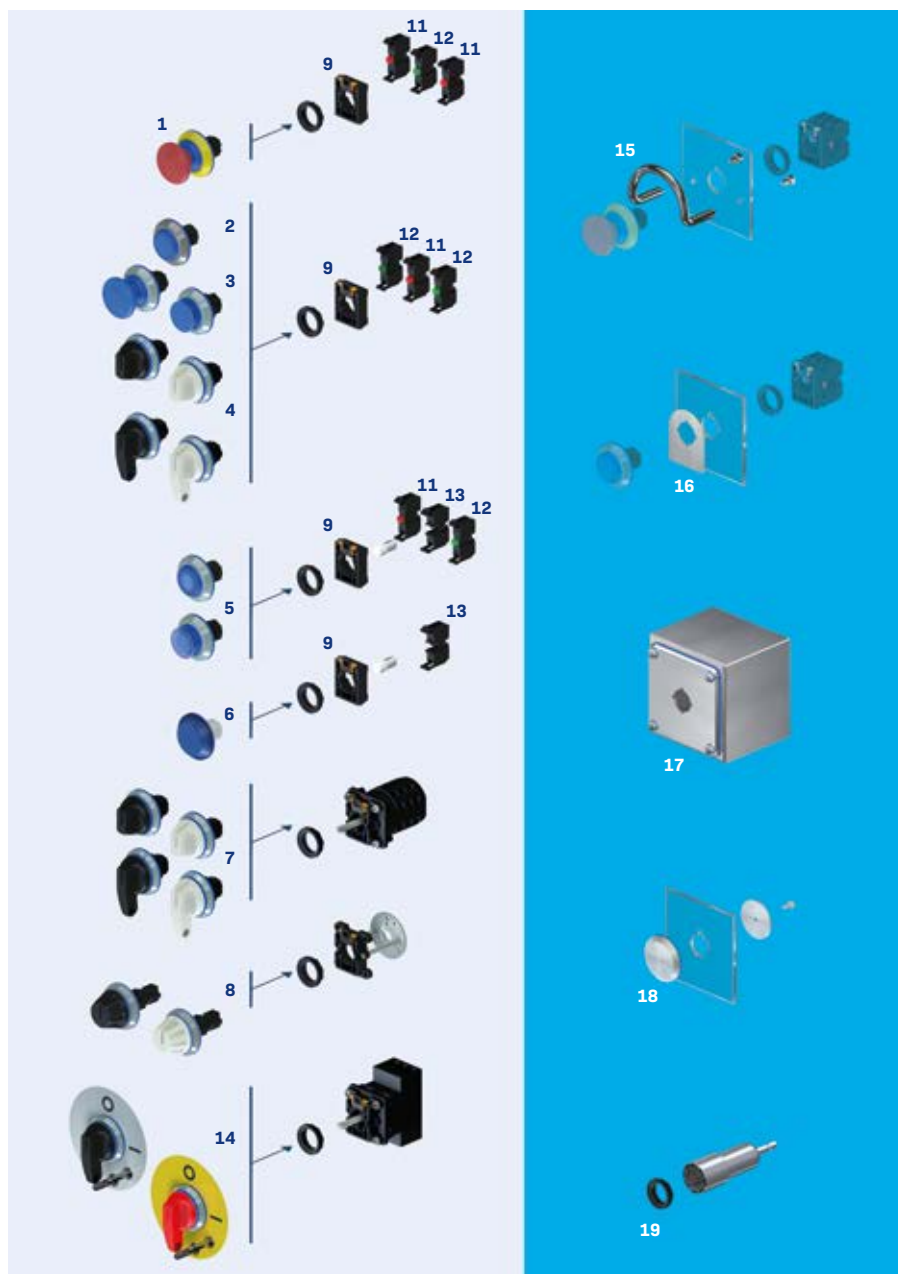
The new series fulfils the requirements of DIN EN ISO 14159 ("Safety of machinery – Hygiene requirements for the design of machinery") and the new version of EN 1672-2 ("Food processing machinery – General principles for design"). This standard specifies very precise requirements for the hygienic design of all operating elements on the human-machine interface (HMI) of food processing machines. Another regulation that formulates requirements for the selection of materials for this area of application was also taken into account.

### DESIGN AND OPERATING PRINCIPLE

The new H program not only meets the requirements of the standards and the "Hygienic Design" construction principle, but also has a fully modular structure. Thanks to snap-on contact carriers and individual contacts that can be combined – even in piggyback mode – this concept firstly enables very simple and quick installation, secondly a high degree of flexibility and thirdly it provides the prerequisite for pre-wiring.

There is a total of 147 different devices to choose from, including 26 mushroom pushbuttons, 24 selector switches with two or three positions and four potentiometer rotary switches. The designer of a food machine is therefore free to choose which type of operating elements of the H programme to use for the design of the HMI. With its variety of different hygiene-compliant switchgear, the H program is unique on the market. In addition – and this is also new – the designer can order the control and signalling devices with individual laser marking, e.g. as an OEM version with a logo.

Product overview		Page
1	Emergency stop	44
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# COMMAND AND SIGNALLING DEVICES – H PROGRAMME

## EMERGENCY STOP CONTROL DEVICES



■ HDRZ40

### Key Features

<b>General description</b>	Emergency stop command device with pull-to-unlatch mechanism by integrated snap-action mechanism
<b>Area of application</b>	Food and hygiene applications
<b>Mounting-Ø</b>	22.3 mm
<b>Housing material</b>	
<b>Material of operating element</b>	Plastic
<b>Material front ring</b>	Plastic

### Technical features

<b>Mechanical data</b>	
<b>Colour of the operating element</b>	
<b>Colour of sealing membranes</b>	
<b>Design</b>	Round
<b>Front plate thickness</b>	1.5 ... 6 mm
<b>Unlocking type</b>	Pull-to-unlatch mechanism
<b>Snap-action mechanism</b>	
<b>Integrated</b>	–
<b>Externally via additional module</b>	■
<b>Assembly</b>	
<b>Mounting flange included in delivery</b>	■
<b>Mounting position</b>	Arbitrarily
<b>Ambient conditions</b>	
<b>Ambient temperatures</b>	–25 °C ... +80 °C
<b>Degree of protection</b>	IP67 / IP69K

### Safety classification

<b>Standards</b>	IEC 60947-5-1, IEC 60947-5-5, IEC 60947-1, EN ISO 13850
<b>Mechanical life</b>	100,000 operations
<b>Certificates</b>	BG, UL, CCC (under preparation)

## COMMAND AND SIGNALLING DEVICES – H PROGRAMME

### EMERGENCY STOP CONTROL DEVICES

Type	Unlocking	Operators	Bellows	Front ring	A	B	C	Type designation	Material number
<b>Emergency stop command device</b>	Pull-to-unlatch mechanism	red	blue	yellow	38	22.3	40	<b>HDRZ40-BL-RT-GB</b>	<b>103037906</b>

All dimensions in mm.

#### Key

A	Height	Height of command device in front of the front panel
B	Mounting-Ø	Installation diameter for the command device head
C	Key Ø	Width of the command device head

# COMMAND AND SIGNALLING DEVICES – H PROGRAMME

## INDICATOR LIGHTS



■ HML

### Key Features

<b>General description</b>	LED indicator light for LED illuminants
<b>Area of application</b>	Food and hygiene applications
<b>Mounting-Ø</b>	22.3 mm
<b>Housing material</b>	
<b>Material of operating element</b>	Plastic
<b>Material front ring</b>	ABS, chrome-plated

### Technical features

<b>Mechanical data</b>	
<b>Colour of the operating element</b>	
<b>Colour of seal</b>	
<b>Design</b>	All-round illuminated collar
<b>Front plate thickness</b>	1.5 ... 6 mm
<b>Integrated LED 24 V</b>	–
<b>Assembly</b>	
<b>Mounting flange included in delivery</b>	
<b>Mounting position</b>	Arbitrarily
<b>Ambient conditions</b>	
<b>Ambient temperatures</b>	–25 °C ... +80 °C
<b>Degree of protection</b>	IP67 / IP69K

### Safety classification

<b>Standards</b>	IEC 60947-5-1, IEC 60947-1
<b>Mechanical life</b>	–
<b>Certificates</b>	BG, UL, CCC (under preparation)

\* A voltage sensor CLP001 is also needed for driving. You can find the voltage sensors from page 99

## COMMAND AND SIGNALLING DEVICES – H PROGRAMME

### INDICATOR LIGHTS

Type	Operators	Bellows	A	B	C	Type	Material number
Indicator lights	blue	blue	10	22.3	45	HML-BL-BL	103039525
	yellow					HML-BL-GB	103039526
	green					HML-BL-GN	103039522
	red					HML-BL-RT	103039524
	white					HML-BL-WS	103039523

All dimensions in mm.

#### Key

A	Height	Height of command device in front of the front panel
B	Mounting-Ø	Installation diameter for the command device head
C	Key Ø	Width of the command device head

# COMMAND AND SIGNALLING DEVICES – H PROGRAMME

## PUSHBUTTONS AND ILLUMINATED PUSHBUTTONS



■ HDT



■ HDL

### Key Features

General description	Push buttons	Illuminated pushbutton
Area of application	Food and hygiene applications	Food and hygiene applications
Mounting-Ø	22.3 mm	22.3 mm
Housing material		
Material of operating element	Plastic	Plastic
Material front ring	Stainless steel	Stainless steel

### Technical features

Mechanical data		
Colour of the operating element		
Colour of seal		
Design	Round	Round
Front plate thickness	1.5 ... 6 mm	1.5 ... 6 mm
Assembly		
Mounting flange included in delivery		
Mounting position	Arbitrarily	Arbitrarily
Ambient conditions		
Ambient temperatures	-25 °C ... +80 °C	-25 °C ... +80 °C
Degree of protection	IP67 / IP69K	IP67 / IP69K

### Safety classification

Standards	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1
Mechanical life	1,000,000 operations	1,000,000 operations
Certificates	BG, UL, CCC (under preparation)	BG, UL, CCC (under preparation)



# COMMAND AND SIGNALLING DEVICES – H PROGRAMME

## PUSHBUTTONS AND ILLUMINATED PUSHBUTTONS

Type	Operators	Bellows	A	B	C	Type	Material number
Push buttons	blue	blue	13	22.3	22	HDT-BL-BL	103039534
	yellow					HDT-BL-GB	103039533
	green					HDT-BL-GN	103039530
	red					HDT-BL-RT	103039535
	black					HDT-BL-SW	103039532
	white					HDT-BL-WS	103039536
Illuminated pushbutton	blue	blue	13	22.3	22	HDL-BL-BL	103039540
	yellow					HDL-BL-GB	103039541
	green					HDL-BL-GN	103039537
	red					HDL-BL-RT	103039539
	white					HDL-BL-WS	103039538

All dimensions in mm.

### Key

A	Height	Height of command device in front of the front panel
B	Mounting-Ø	Installation diameter for the command device head
C	Key Ø	Width of the command device head

# COMMAND AND SIGNALLING DEVICES – H PROGRAMME

## MUSHROOM HEAD IMPACT BUTTONS



■ HDTP30



■ HDTP40

### Key Features

<b>General description</b>	Mushroom head impact button	Mushroom head impact button
<b>Area of application</b>	Food and hygiene applications	Food and hygiene applications
<b>Mounting-Ø</b>	22.3 mm	22.3 mm
<b>Housing material</b>		
<b>Material of operating element</b>	Plastic	Plastic
<b>Material front ring</b>	Stainless steel	Stainless steel

### Technical features

<b>Mechanical data</b>		
<b>Colour of the operating element</b>		
<b>Colour of sealing membranes</b>		
<b>Design</b>	Round	round
<b>Front plate thickness</b>	1.5 ... 6 mm	1.5 ... 6 mm
<b>With latching</b>	-	-
<b>Assembly</b>		
<b>Mounting flange included in delivery</b>		
<b>Mounting position</b>	Arbitrarily	Arbitrarily
<b>Ambient conditions</b>		
<b>Ambient temperatures</b>	-25 °C ... +80 °C	-25 °C ... +80 °C
<b>Degree of protection</b>	IP67 / IP69K	IP67 / IP69K

### Safety classification

<b>Standards</b>	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1
<b>Mechanical life</b>	1,000,000 operations	1,000,000 operations
<b>Certificates</b>	BG, UL, CCC (under preparation)	BG, UL, CCC (under preparation)



■ HDLP30



■ HDRZ40

Mushroom head impact button,  
illuminated

Emergency stop command device  
with pull-to-unlatch mechanism  
by integrated snap-action  
mechanism

Food and hygiene applications  
22.3 mm

Food and hygiene applications  
22.3 mm

Plastic

Plastic

Stainless steel

Stainless steel



round

Round

1.5 ... 6 mm

1.5 ... 6 mm

-

-



Arbitrarily

Arbitrarily

-25 °C ... +80 °C

-25 °C ... +80 °C

IP67 / IP69K

IP67 / IP69K

IEC 60947-5-1,  
IEC 60947-1

IEC 60947-5-1,  
IEC 60947-1,

1,000,000 operations

100,000 operations

BG, UL, CCC (under preparation)

BG, UL, CCC (under preparation)

# COMMAND AND SIGNALLING DEVICES – H PROGRAMME

## MUSHROOM HEAD IMPACT BUTTONS

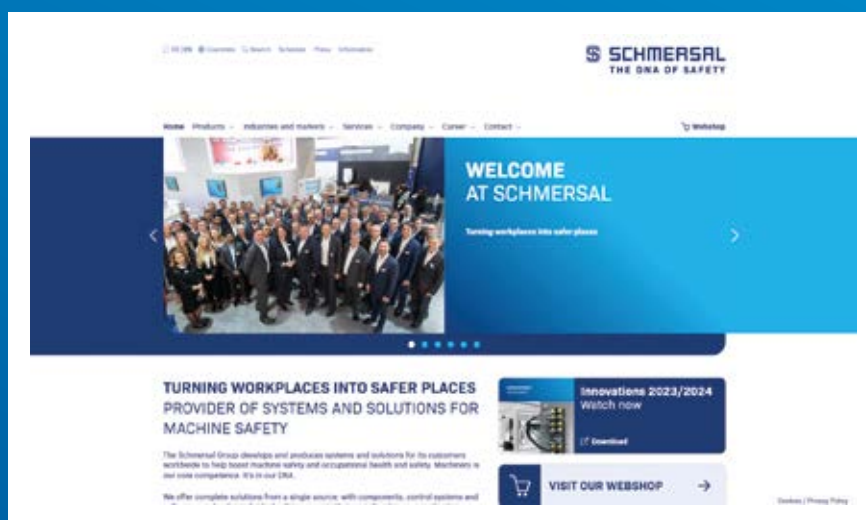
Type	Operators	Bellows	A	B	C	Type	Material number					
Mushroom head impact buttons	blue	blue	22	22.3	30	HDTP30-BL-BL	103039553					
	yellow					HDTP30-BL-GB	103039552					
	green					HDTP30-BL-GN	103039549					
	red					HDTP30-BL-RT	103043738					
	black					HDTP30-BL-SW	103039551					
	white					HDTP30-BL-WS	103039554					
	blue		38		40	HDTP40-BL-BL	103039547					
	yellow					HDTP40-BL-GB	103039545					
	green					HDTP40-BL-GN	103039542					
	red					HDTP40-BL-RT	103043737					
	black					HDTP40-BL-SW	103039544					
	white					HDTP40-BL-WS	103039548					
	Mushroom head impact buttons, illuminated					blue	blue	22	22.3	30	HDLP30-BL-BL	103039558
						yellow					HDLP30-BL-GB	103039559
green		HDLP30-BL-GN	103039555									
red		HDLP30-BL-RT	103039557									
white		HDLP30-BL-WS	103039556									
Mushroom head impact buttons with latching function	blue	blue	38	22.3	40	HDRZ40-BL-BL	103039518					
	yellow					HDRZ40-BL-GB	103039517					
	green					HDRZ40-BL-GN	103039514					
	red					HDRZ40-BL-RT	103044256					
	black					HDRZ40-BL-SW	103039516					
	white					HDRZ40-BL-WS	103039519					

All dimensions in mm.

### Key

A	Height	Height of command device in front of the front panel
B	Mounting-Ø	Installation diameter for the command device head
C	Key Ø	Width of the command device head

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# COMMAND AND SIGNALLING DEVICES – H PROGRAMME

## MAINTAINED SELECTOR SWITCHES AND SPRING RETURN SELECTOR SWITCHES



■ HWS / HWT



■ HWS.1 / HWT.1

### Key Features

<b>General description</b>	Selector switch/ spring-return selector switch with short toggle	Step selector switch with long toggle
<b>Area of application</b>	Food and hygiene applications	Food and hygiene applications
<b>Mounting-Ø</b>	22.3 mm	22.3 mm
<b>Toggle length</b>	26 mm	52.5 mm
<b>Housing material</b>		
<b>Material of operating element</b>	Plastic	Plastic
<b>Material front ring</b>	Stainless steel	Stainless steel

### Technical features







<b>Mechanical data</b>		
<b>Colour of the operating element</b>		
<b>Colour of seal</b>		
<b>Design</b>	Round	Round
<b>Front plate thickness</b>	1.5 ... 6 mm	1.5 ... 6 mm
<b>Assembly</b>		
<b>Mounting flange included in delivery</b>		
<b>Mounting position</b>	Arbitrarily	Arbitrarily
<b>Ambient conditions</b>		
<b>Ambient temperatures</b>	0 °C ... +80 °C	0 °C ... +80 °C
<b>Degree of protection</b>	IP67 / IP69K	IP67 / IP69K

### Safety classification

<b>Standards</b>	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1
<b>Mechanical life</b>	300,000 operations	300,000 operations
<b>Certificates</b>	BG, UL, CCC (under preparation)	BG, UL, CCC (under preparation)

# COMMAND AND SIGNALLING DEVICES – H PROGRAMME

## MAINTAINED SELECTOR SWITCHES AND SPRING RETURN SELECTOR SWITCHES

Type	Maintained and momentary positions	Positions	A	B	C	Type designation						
<b>Selector switches</b>	2 maintained positions		31	22.3	45	<b>HWS21</b> <sup>①</sup> - <b>BL</b> - <sup>②</sup>						
	3 maintained positions					<b>HWS32</b> <sup>①</sup> - <b>BL</b> - <sup>②</sup>						
<b>Spring-return rotary selector switches</b>	1 momentary position with automatic return to the zero position					31	22.3	45	<b>HWT21</b> <sup>①</sup> - <b>BL</b> - <sup>②</sup>			
	1 momentary position each to the right and left of the zero position								<b>HWT32</b> <sup>①</sup> - <b>BL</b> - <sup>②</sup>			
<b>Maintained spring-return rotary selector switches</b>	1 momentary position on the right and 2 maintained positions								31	22.3	45	<b>HWST32</b> <sup>①</sup> - <b>BL</b> - <sup>②</sup>
	1 momentary position on the left and 2 maintained positions											<b>HWTS32</b> <sup>①</sup> - <b>BL</b> - <sup>②</sup>

All dimensions in mm.

### Ordering code

#### ① Toggle length:

Without Short toggle  
.1 Long toggle

#### ② Colour of toggle

SW Black  
WS White

### Key

A Height Height of command device in front of the front panel  
B Mounting- $\varnothing$  Installation diameter for the command device head  
C Key  $\varnothing$  Width of the command device head

# COMMAND AND SIGNALLING DEVICES – H PROGRAMME

## MAIN SWITCHES



■ HHS16



■ HHS40

### Key Features

General description	Main switches 16A	Main switches 40A
Area of application	Food and hygiene applications	Food and hygiene applications
Mounting	Ø 22.3 mm	110 × 110 mm or Ø 22.3 mm
Housing material		
Material of operating element	Plastic	Plastic
Material front ring	Stainless steel	Stainless steel

### Other versions are available

Emergency stop design	■	■
-----------------------	---	---

### Technical features

Mechanical data		
Colour of the operating element		
Colour of seal		
Design	Round	Square
Front plate thickness	1 ... 6 mm	1 ... 6 mm
Maintained switching positions	2 positions	2 positions
Assembly		
Mounting flange included in delivery	–	–
Integrated mounting plate	■	■
Mounting position	Arbitrarily	Arbitrarily
Ambient temperatures		
Pushbutton	0 °C ... +80 °C	0 °C ... +80 °C
Contact element, open	–25 °C ... +50 °C	–25 °C ... +50 °C
Contact element, enclosed	–25 °C ... +40 °C	–25 °C ... +40 °C
Degree of protection	IP67 / IP69K	IP67 / IP69K

### Safety classification

Standards	IEC EN 60947, IEC EN 60204	IEC EN 60947, IEC EN 60204
Mechanical life	1,000,000 operations	100,000 operations
Certificates	BG, UL, CCC (under preparation)	BG, UL, CCC (under preparation)





■ HHS63



■ HHS125

Main switches 63A

Food and hygiene applications

110 × 110 mm  
or Ø 22.3 mm

Plastic

Stainless steel

Main switches 125A

Food and hygiene applications

110 × 110 mm  
or Ø 22.3 mm

Plastic

Stainless steel



Square

1 ... 6 mm

2 positions

–



Arbitrarily

0 °C ... +80 °C

–25 °C ... +50 °C

–25 °C ... +40 °C

IP67 / IP69K



Square

1 ... 6 mm

2 positions

–



Arbitrarily

0 °C ... +80 °C

–25 °C ... +50 °C

–25 °C ... +40 °C

IP67 / IP69K

IEC EN 60947,  
IEC EN 60204

100,000 operations

BG, UL, CCC (under preparation)

IEC EN 60947,  
IEC EN 60204

25,000 operations

BG, UL, CCC (under preparation)

# COMMAND AND SIGNALLING DEVICES – H PROGRAMME

## MAIN SWITCHES

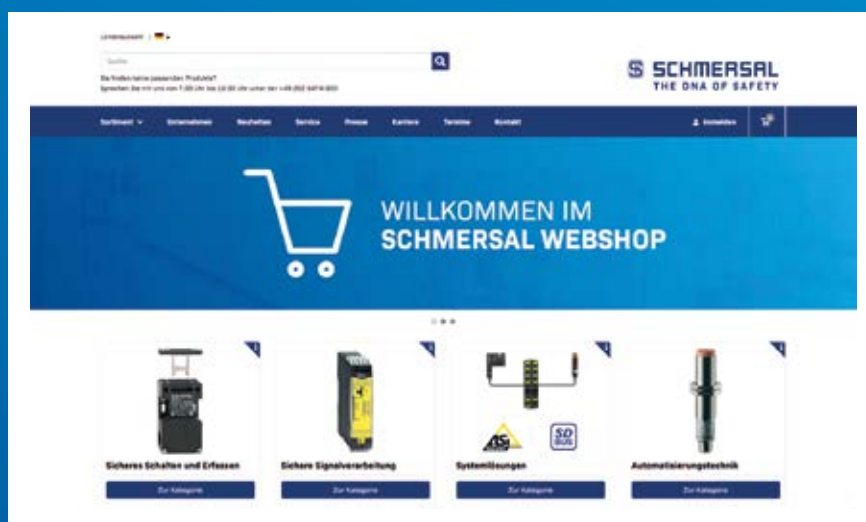
Type	Description		A	B	C	Type designation	Material number	
Main switches	16 A, 2-pole	Included in standard version	With black grip	32	22.3	70 × 80	HHS16-BL-SW-2-POL	103044285
			With black grip + mounting plate	37	-	110 × 110	HHS16-BL-SW-2-POL-MP	103044286
		Emergency stop	With red grip + yellow background	32	22.3	70 × 80	HHSNH16-BL-RT-2-POL	103044289
			With red grip, yellow background + mounting plate	37	-	110 × 110	HHSNH16-BL-RT-2-POL-MP	103044290
	16 A, 4-pole	Included in standard version	With black grip	32	22.3	70 × 80	HHS16-BL-SW-4-POL	103044287
			With black grip + mounting plate	37	-	110 × 110	HHS16-BL-SW-4-POL-MP	103044288
		Emergency stop	With red grip + yellow background	32	22.3	70 × 80	HHSNH16-BL-RT-4-POL	103044291
			With red grip, yellow background + mounting plate	37	-	110 × 110	HHSNH16-BL-RT-2-POL-MP	103044290
	40 A, 3-pole	Included in standard version	With black grip	32	22.3	Ø 100	HHS40-BL-SW	103044293
			With black grip + mounting plate	37	-	110 × 110	HHS40-BL-SW-MP	103044294
		Emergency stop	With red grip + yellow background	32	22.3	Ø 100	HHSNH40-BL-RT	103044295
			With red grip, yellow background + mounting plate	37	-	110 × 110	HHSNH40-BL-RT-MP	103044296
	63 A, 3-pole	Included in standard version	With black grip	32	22.3	Ø 100	HHS63-BL-SW	103044297
			With black grip + mounting plate	37	-	110 × 110	HHS63-BL-SW-MP	103044298
		Emergency stop	With red grip + yellow background	32	22.3	Ø 100	HHSNH63-BL-RT	103044299
			With red grip, yellow background + mounting plate	37	-	110 × 110	HHSNH63-BL-RT-MP	103044300
	125 A, 3-pole	Included in standard version	With black grip	32	22.3	Ø 100	HHS125-BL-SW	103044301
			With black grip + mounting plate	37	-	110 × 110	HHS125-BL-SW-MP	103044302
		Emergency stop	With red grip + yellow background	32	22.3	Ø 100	HHSNH125-BL-RT	103044303
			With red grip, yellow background + mounting plate	37	-	110 × 110	HHSNH125-BL-RT-MP	103044304

All dimensions in mm.

### Key

A	Height	Height of command device in front of the front panel
B	Mounting-Ø	Installation diameter for the command device head
C	Panel size	Dimensions of panel (if present)

# UP-TO-DATE WITHOUT FAIL ONLINE PRODUCT CATALOGUE



FOR DETAILED INFORMATION, CHECK OUT  
[PRODUCTS.SCHMERSAL.COM](https://products.schmersal.com)

# COMMAND AND SIGNALLING DEVICES – H PROGRAMME

## SPECIAL DEVICES



■ HWSE



■ HDAN6

### Key Features

<b>General description</b>	Step selector switch	Potentiometer drive
<b>Area of application</b>	Food, hygiene and outdoor applications	Food, hygiene and outdoor applications
<b>Mounting-Ø</b>	22.3 mm	22.3 mm
<b>Housing material</b>		
<b>Material of operating element</b>	Plastic	Plastic
<b>Material front ring</b>	Stainless steel	Stainless steel

### Technical features

<b>Electrical data</b>		
<b>Cam-operated switch</b>	Sälzer cam switch, M200 product series, M220 series	–
<b>Contacts</b>	One NO contact per stage	–
<b>Insulation voltage <math>U_i</math></b>	690 V	–
<b>Operating current <math>I_o</math>, AC-21A</b>	20 A	–
<b>Rated impulse withstand voltage. <math>U_{imp}</math></b>	4 kV	–
<b>Rated continuous current <math>I_{the}</math></b>	20 A	–
<b>Fuse rating</b>	20 A gL	–
<b>Cable section</b>	max. 2.5 mm <sup>2</sup> *	–
<b>Mechanical data</b>		
<b>Color</b>		
<b>Operating element</b>	<input type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/>
<b>Front ring</b>	Silver	Silver
<b>Front plate thickness</b>	1.5 ... 6 mm	1.5 ... 6 mm
<b>Maintained switching positions</b>	2 ... 12 positions	Infinite
<b>Assembly</b>		
<b>Integrated mounting plate</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Mounting position</b>	Arbitrarily	Arbitrarily
<b>Ambient conditions</b>		
<b>Ambient temperatures of the device head</b>	0 °C ... +80 °C	0 °C ... +80 °C
<b>Degree of protection (device head)</b>	IP67 / IP69K	IP67 / IP69K

### Safety classification

<b>Standards</b>	EN 60947, EN 60204, ANSI/UL 60947-1, ANSI/UL 60947-4-1	–
<b>Mechanical life</b>	Load-dependent	–
<b>Certificates</b>	BG, cULus, CCC (under preparation)	BG, cULus, CCC (under preparation)

\* Use copper conductors only

# COMMAND AND SIGNALLING DEVICES – H PROGRAMME

## SPECIAL DEVICES

Type	Circuit diagram and connecting terminals	Switching angle	L	LE	A	B	C	Type designation
Cam switching design step switches with latching mechanism, 1-pole no zero position		60°	40.7	60	31	22.3	45	HWSE3①-BL-②
		60°	40.7	60	31	22.3	45	HWSE4①-BL-②
		60°	50.2	69.5	31	22.3	45	HWSE5①-BL-②
		60°	50.2	69.5	31	22.3	45	HWSE6①-BL-②
		45°	59.7	78	31	22.3	45	HWSE7①-BL-②
		45°	59.7	78	31	22.3	45	HWSE8①-BL-②
		30°	69.2	87.5	31	22.3	45	HWSE9①-BL-②
		30°	69.2	87.5	31	22.3	45	HWSE10①-BL-②
		30°	78.7	97	31	22.3	45	HWSE11①-BL-②
		30°	78.7	97	31	22.3	45	HWSE12①-BL-②

Type	Description	LE	A	B	C	Type designation
Potentiometer drive	for 6 mm shaft Ø, shaft length 30 ... 40 mm, control unit black	63	31	22.3	45	HDAN6-BL-SW-③
	for 6 mm shaft Ø, shaft length 30 ... 40 mm, control unit white					HDAN6-BL-WS-③

### Key

A	Height	Height of command device in front of the front panel
B	Mounting-Ø	Installation diameter for the command device head
C	Key Ø	Width of the command device head
L	Length	Length of step switch block
LE	Installation depth	Length between command device head and bottom edge of switch when mounted

### Ordering code

- ① **Switching stages:**  
 2 2 switching stages  
 ...  
 12 12 switching stages
- ② **Colour of toggle**  
 SW black  
 WS white
- ③ **End stop:**  
 250 End stop at 250°

# COMMAND AND SIGNALLING DEVICES

## R PROGRAMME

### AREA OF APPLICATION

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When designing control panels on machines that will be working under particularly harsh conditions, it is advisable to use the R product portfolio.

The "R" stands for "robust", which represents a main feature of this switchgear.

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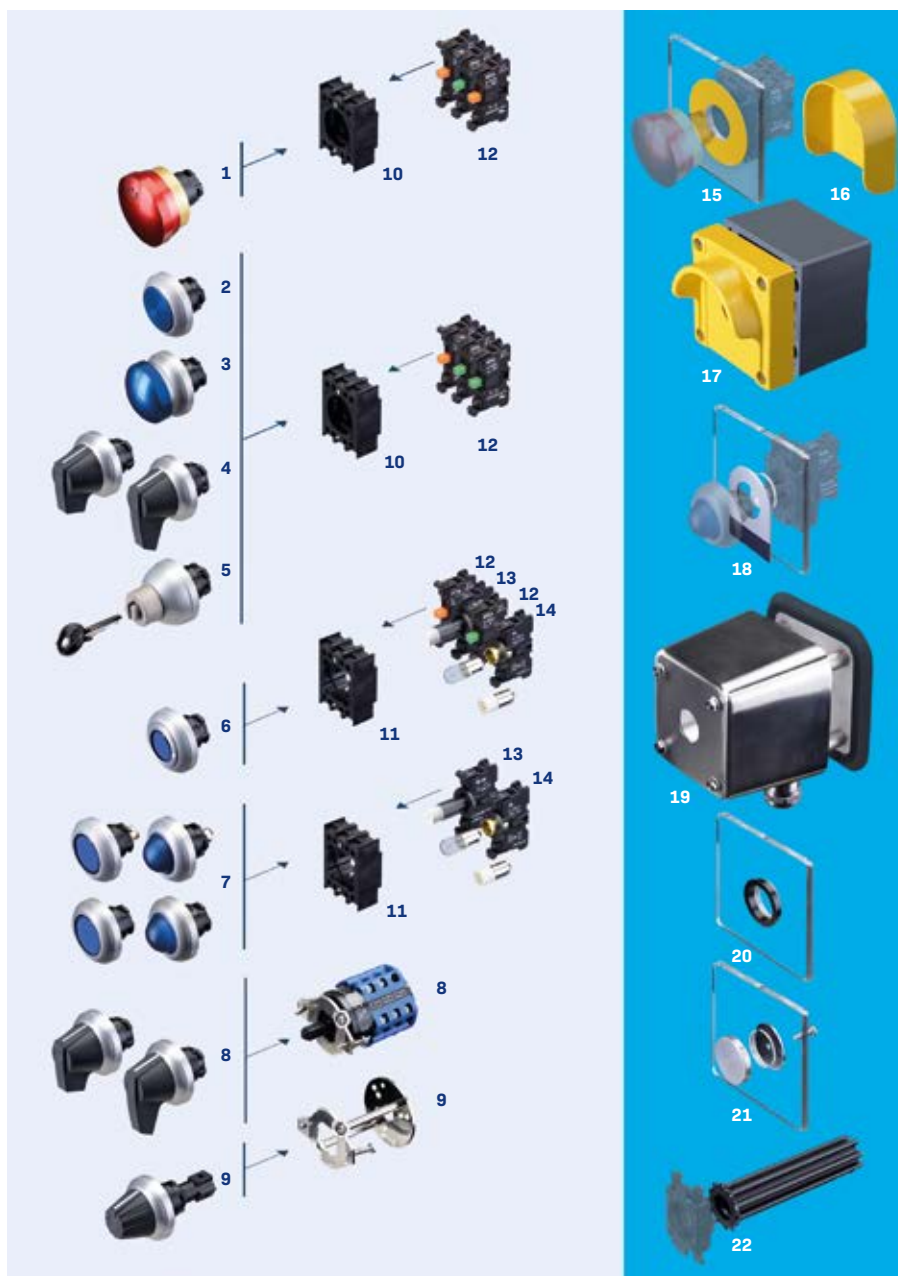
### DESIGN AND OPERATING PRINCIPLE

Both the mechanical systems and the electrical components are of heavy-duty design. The R series is resistant to mechanical loading and you can also operate it easily when wearing gloves. The use of an adapter ring makes it possible to easily mount series R devices in a 30.5 mm installation diameter without needing additional sealing on the front panel of the machine to seal the installation hole..

The contact system (see page 102) that Schmersal developed has also been designed for a long service life under heavy loading. In the same way as with the E and H product portfolios, users can choose from a wide range of different command devices and indicator lights.

If desired, we can supply command devices pre-wired and pre-assembled in the enclosure. An ATEX-compliant version of the R series is also available.

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# COMMAND AND SIGNALLING DEVICES – R PROGRAMME

## EMERGENCY STOP CONTROL DEVICES



■ RDRZ45RT

### Key Features

<b>General description</b>	Emergency stop command device with pull-to-unlatch mechanism
<b>Area of application</b>	Heavy-duty applications
<b>Mounting-Ø</b>	22.3 mm
<b>Housing material</b>	
<b>Material of operating element</b>	Aluminium
<b>Material front ring</b>	Aluminium

### Other versions are available

<b>ATEX design</b>	■
--------------------	---

### Technical features

<b>Mechanical data</b>	
<b>Colour of the operating element</b>	■
<b>Design</b>	Round
<b>Front plate thickness</b>	1 ... 6 mm
<b>Unlocking type</b>	Pull-to-unlatch mechanism
<b>Snap-action mechanism</b>	
<b>Integrated</b>	■
<b>Externally via additional module</b>	–
<b>Assembly</b>	
<b>Mounting flange included in delivery</b>	■
<b>Mounting position</b>	Arbitrarily
<b>Ambient conditions</b>	
<b>Ambient temperatures</b>	–25 °C ... +75 °C
<b>Degree of protection</b>	IP65

### Safety classification

<b>Standards</b>	IEC 60947-5-1, IEC 60947-5-5, IEC 60947-1, EN ISO 13850
<b>Mechanical life</b>	100,000 operations
<b>Certificates</b>	cULus
<b>Notice</b>	cULus in conjunction with the corresponding contact elements only



## COMMAND AND SIGNALLING DEVICES – R PROGRAMME

### EMERGENCY STOP CONTROL DEVICES

Type	Unlocking	Snap-action mechanism	A	B	C	Type	Material number
Emergency stop command device	Pull-to-unlatch mechanism	Integrated	27.5	22.3	45	RDRZ45RT	101193576

All dimensions in mm.

#### Key

A	Height	Height of command device in front of the front panel
B	Mounting-Ø	Installation diameter for the command device head
C	Key Ø	Width of the command device head

# COMMAND AND SIGNALLING DEVICES – R PROGRAMME

## INDICATOR LIGHTS



■ RMLF/RMLH



■ RMEF/RMEH

### Key Features

<b>General description</b>	Illuminated signal for BA9s	Illuminated signal with integrated LED
<b>Area of application</b>	Heavy-duty applications	Heavy-duty applications
<b>Mounting-Ø</b>	22.3 mm	22.3 mm
<b>Housing material</b>		
<b>Material of operating element</b>	Glass / plastic	Glass / plastic
<b>Material front ring</b>	Aluminium	Aluminium

### Other versions are available

<b>ATEX design</b>	■	–
--------------------	---	---

### Technical features

<b>Mechanical data</b>		
<b>Color</b>	■ ■ ■ ■ ■	■ ■ ■ ■ ■
<b>Design</b>	Round with flat or high glass	Round with flat or high glass
<b>Front plate thickness</b>	1 ... 6 mm	1 ... 6 mm
<b>Integrated LED 24 VAC/DC *</b>	–	■
<b>Assembly</b>		
<b>Mounting flange included in delivery</b>	■	■
<b>Mounting position</b>	Arbitrarily	Arbitrarily
<b>Ambient conditions</b>		
<b>Ambient temperatures</b>	–25 °C ... +75 °C	–25 °C ... +40 °C
<b>Degree of protection</b>	IP65	IP65

### Safety classification

<b>Standards</b>	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1
<b>Mechanical life</b>	–	–
<b>Certificates</b>	cULus	cULus
<b>Notice</b>	cULus in conjunction with the corresponding contact elements only	

\* A voltage sensor, e.g. an RE is also needed for driving. You can find the voltage sensors from page 102

# COMMAND AND SIGNALLING DEVICES – R PROGRAMME

## INDICATOR LIGHTS

Type	Description		A	B	C	Type
Indicator lights	Without integrated illuminant	Flat collar	11	22.3	39.5	<b>RML</b> ①
		High collar	21.5	22.3	39.5	<b>RMLH</b> ①
LED indicator light	With integrated illuminant	Flat collar	11	22.3	39.5	<b>RMEF</b> ①
		High collar	21.5	22.3	39.5	<b>RMEH</b> ①

① **Abbreviations of colours:** ■ BK ■ GB ■ RD ■ GN □ WH ■ BL ■ GR

You append the abbreviations of the colours to the type designation.

For details of possible colour combinations, refer to the technical data on the previous page.

All dimensions in mm.

### Key

A	Height	Height of command device in front of the front panel
B	Mounting-Ø	Installation diameter for the command device head
C	Key Ø	Width of the command device head

# COMMAND AND SIGNALLING DEVICES – R PROGRAMME

## PUSHBUTTONS AND ILLUMINATED PUSHBUTTONS



■ RDT



■ RDL

### Key Features

<b>General description</b>	Push buttons	Illuminated pushbutton
<b>Area of application</b>	Heavy-duty applications	Heavy-duty applications
<b>Mounting-Ø</b>	22.3 mm	22.3 mm
<b>Housing material</b>		
<b>Material of operating element</b>	Aluminium	Glass
<b>Material front ring</b>	Aluminium	Aluminium

### Other versions are available

<b>ATEX design</b>	■	■
--------------------	---	---

### Technical features

<b>Mechanical data</b>		
<b>Color</b>	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■
<b>Design</b>	Round	Round
<b>Front plate thickness</b>	1 ... 6 mm	1 ... 6 mm
<b>Assembly</b>		
<b>Mounting flange included in delivery</b>	■	■
<b>Mounting position</b>	Arbitrarily	Arbitrarily
<b>Ambient conditions</b>		
<b>Ambient temperatures</b>	-25 °C ... +75 °C	-25 °C ... +75 °C
<b>Degree of protection</b>	IP65	IP65

### Safety classification

<b>Standards</b>	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1
<b>Mechanical life</b>	1,000,000 operations	1,000,000 operations
<b>Certificates</b>	cULus	cULus
<b>Notice</b>	cULus in conjunction with the corresponding contact elements only	

# COMMAND AND SIGNALLING DEVICES – R PROGRAMME

## PUSHBUTTONS AND ILLUMINATED PUSHBUTTONS

Type	Description	A	B	C	Type
Push buttons	Included in standard version	11	22.3	39.5	<b>RDT</b> ①
	With membrane	11	22.3	39.5	<b>RDM</b> ①
Illuminated pushbuttons	Included in standard version	11	22.3	39.5	<b>RDL</b> ①
	With membrane	11	22.3	39.5	<b>RDLM</b> ①

① **Abbreviations of colours:**  BK  GB  RD  GN  WH  BL  GR

You append the abbreviations of the colours to the type designation.

For details of possible colour combinations, refer to the technical data on the previous page.

All dimensions in mm.

### Key

A	Height	Height of command device in front of the front panel
B	Mounting-Ø	Installation diameter for the command device head
C	Key Ø	Width of the command device head

# COMMAND AND SIGNALLING DEVICES – R PROGRAMME

## MUSHROOM HEAD IMPACT BUTTONS



■ RDP40



■ RDRZ45

### Key Features

<b>General description</b>	Mushroom button without latching function	Mushroom button with latching function
<b>Area of application</b>	Heavy-duty applications	Heavy-duty applications
<b>Mounting-Ø</b>	22.3 mm	22.3 mm
<b>Housing material</b>		
<b>Material of operating element</b>	Aluminium	Aluminium
<b>Material front ring</b>	Aluminium	Aluminium

### Other versions are available

<b>ATEX design</b>	■	■
--------------------	---	---

### Technical features

<b>Mechanical data</b>		
<b>Color</b>		
<b>Design</b>	Round	Round
<b>Front plate thickness</b>	1 ... 6 mm	1 ... 6 mm
<b>With latching</b>	–	■
<b>Assembly</b>		
<b>Mounting flange included in delivery</b>	■	■
<b>Mounting position</b>	Arbitrarily	Arbitrarily
<b>Ambient conditions</b>		
<b>Ambient temperatures</b>	–25 °C ... +75 °C	–25 °C ... +75 °C
<b>Degree of protection</b>	IP65	IP65

### Safety classification

<b>Standards</b>	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1
<b>Mechanical life</b>	1,000,000 operations	100,000 operations
<b>Certificates</b>	cULus	cULus
<b>Notice</b>	cULus in conjunction with the corresponding contact elements only	

# COMMAND AND SIGNALLING DEVICES – R PROGRAMME

## MUSHROOM HEAD IMPACT BUTTONS

Type	Description		A	B	C	Type
<b>Mushroom head impact buttons</b>	without latching	Mushroom-shaped	27	22.3	39.5	<b>RDP40</b> ①
	with latching	Mushroom-shaped	27	22.3	45	<b>RDRZ45</b> ①

① **Abbreviations of colours:** ■ SW ■ GB ■ RT ■ GN □ WS ■ BL

You append the abbreviations of the colours to the type designation.

For details of possible colour combinations, refer to the technical data on the previous page.

All dimensions in mm.

### Key

A	Height	Height of command device in front of the front panel
B	Mounting-Ø	Installation diameter for the command device head
C	Key Ø	Width of the command device head

# COMMAND AND SIGNALLING DEVICES – R PROGRAMME

## MAINTAINED SELECTOR SWITCHES AND SPRING RETURN SELECTOR SWITCHES



■ RWS / RWT



■ RWS .1 / RWT .1

### Key Features

<b>General description</b>	Selector switches/spring-return selector switches with short toggle	Selector switches/spring-return selector switches with long toggle
<b>Area of application</b>	Heavy-duty applications	Heavy-duty applications
<b>Mounting-Ø</b>	22.3 mm	22.3 mm
<b>Toggle length</b>	40 mm	49 mm
<b>Housing material</b>		
<b>Material of operating element</b>	Plastic	Plastic
<b>Material front ring</b>	Aluminium	Aluminium

### Other versions are available

<b>ATEX design</b>	■	■
--------------------	---	---

### Technical features

<b>Mechanical data</b>		
<b>Color</b>	■	■
<b>Design</b>	Round	Round
<b>Front plate thickness</b>	1 ... 6 mm	1 ... 6 mm
<b>Maintained switching positions</b>	2 ... 3 positions	2 ... 3 positions
<b>Assembly</b>		
<b>Mounting flange included in delivery</b>	■	■
<b>Mounting position</b>	Arbitrarily	Arbitrarily
<b>Ambient conditions</b>		
<b>Ambient temperatures</b>	0 °C ... +75 °C	0 °C ... +75 °C
<b>Degree of protection</b>	IP65	IP65







### Safety classification

<b>Standards</b>	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1
<b>Mechanical life</b>	300,000 operations	300,000 operations
<b>Certificates</b>	cULus	cULus
<b>Notice</b>	cULus in conjunction with the corresponding contact elements only	



# COMMAND AND SIGNALLING DEVICES – R PROGRAMME

## MAINTAINED SELECTOR SWITCHES AND SPRING RETURN SELECTOR SWITCHES

Type	Maintained and momentary positions	Positions	Actuator	A	B	C	Type designation
<b>Selector switches</b>	2 maintained positions		Short toggle	32	22.3	39.5	<b>RWS21</b>
			Long toggle	32	22.3	39.5	<b>RWS21.1</b>
	3 maintained positions		Short toggle	32	22.3	39.5	<b>RWS32</b>
			Long toggle	32	22.3	39.5	<b>RWS32.1</b>
<b>Spring-return rotary selector switches</b>	1 momentary position with automatic return to the zero position		short toggle	32	22.3	39.5	<b>RWT21</b>
			Long toggle	32	22.3	39.5	<b>RWT21.1</b>
	1 momentary position each to the right and left of the zero position		Short toggle	32	22.3	39.5	<b>RWT32</b>
			Long toggle	32	22.3	39.5	<b>RWT32.1</b>
<b>Maintained spring-return rotary selector switches</b>	1 momentary position on the right and 2 maintained positions		Short toggle	32	22.3	39.5	<b>RWTS32</b>
			Long toggle	32	22.3	39.5	<b>RWTS32.1</b>
	1 momentary position on the left and 2 maintained positions		Short toggle	32	22.3	39.5	<b>RWTS321</b>
			Long toggle	32	22.3	39.5	<b>RWTS321.1</b>

### ① Toggle length:

If you want a long toggle, append a "1" to the type designation.

All dimensions in mm.

### Key

A	Height	Height of command device in front of the front panel
B	Mounting-Ø	Installation diameter for the command device head
C	Key Ø	Width of the command device head

# COMMAND AND SIGNALLING DEVICES – R PROGRAMME

## KEY SELECTOR SWITCHES, BUTTONS AND TOUCH CONTACT SWITCHES



■ RSS



■ RST

### Key Features

<b>General description</b>	Key-selector switch	Key-operated selector switch
<b>Area of application</b>	Heavy-duty applications	Heavy-duty applications
<b>Mounting-Ø</b>	22.3 mm	22.3 mm
<b>Housing material</b>		
<b>Material of operating element</b>	Aluminium	Aluminium
<b>Material front ring</b>	Aluminium	Aluminium

### Other versions are available

<b>ATEX design</b>	-	-
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### Technical features

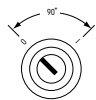
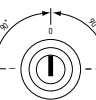

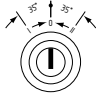

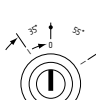
<b>Mechanical data</b>		
<b>Color</b>	Metal (silver)	Metal (silver)
<b>Design</b>	Round	Round
<b>Front plate thickness</b>	1 ... 6 mm	1 ... 6 mm
<b>Maintained switching positions</b>	2 or 3 positions	2 or 3 positions
<b>Assembly</b>		
<b>Mounting flange included in delivery</b>	■	■
<b>Mounting position</b>	Arbitrarily	Arbitrarily
<b>Ambient conditions</b>		
<b>Ambient temperatures</b>	0 °C ... +75 °C	0 °C ... +75 °C
<b>Degree of protection</b>	IP65	IP65

### Safety classification

<b>Standards</b>	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1
<b>Mechanical life</b>	100,000 operations	100,000 operations
<b>Certificates</b>	cULus	cULus
<b>Notice</b>	cULus in conjunction with the corresponding contact elements only	

# COMMAND AND SIGNALLING DEVICES – R PROGRAMME

## KEY SELECTOR SWITCHES, BUTTONS AND TOUCH CONTACT SWITCHES

Type	Maintained and momentary positions	Positions	Key-withdrawal position	A	B	C	Type designation
Key-operated selector switches	2 maintained positions		0	31.5	22.3	39.5	RSS21S1
			I	31.5	22.3	39.5	RSS21S2
			0 + I	31.5	22.3	39.5	RSS21S12
	3 maintained positions		I	31.5	22.3	39.5	RSS32S1
			0	31.5	22.3	39.5	RSS32S2
			II	31.5	22.3	39.5	RSS32S3
I + 0 + II			31.5	22.3	39.5	RSS32S123	
Key-operated selector buttons	1 momentary position with automatic return to the zero position		0	31.5	22.3	39.5	RST21S1
	2 momentary positions on the right and left with automatic return to the zero position		0	31.5	22.3	39.5	RST32S2
Key-operated selector switch pushbuttons	3 positions: momentary position 35° actuating angle and maintained position 55° actuating angle (zero position in middle, key position at top)		I	31.5	22.3	39.5	RSST32S1
			0	31.5	22.3	39.5	RSTS32S2
			0	31.5	22.3	39.5	RSTS321S2
			II	31.5	22.3	39.5	RSTS32S3

All dimensions in mm.

### Key

- A Height Height of command device in front of the front panel without key
- B Mounting-Ø Installation diameter for the command device head
- C Key Ø Width of the command device head

# COMMAND AND SIGNALLING DEVICES – R PROGRAMME

## SPECIAL DEVICES



■ RWSE..K



■ RDAN6

### Key Features

<b>General description</b>	Step selector switch	Potentiometer drive
<b>Area of application</b>	Heavy-duty applications	Heavy-duty applications
<b>Mounting-Ø</b>	22.3 mm	22.3 mm
<b>Housing material</b>		
<b>Material of operating element</b>	Plastic	Plastic
<b>Material front ring</b>	Aluminium	Aluminium

### Other versions are available

<b>ATEX design</b>	-	-
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### Technical features

<b>Electrical data</b>		
<b>Cam-operated switch</b>	Kraus & Naimer Series CA10	-
<b>Contacts</b>	One NO contact per stage	-
<b>Insulation voltage <math>U_i</math></b>	690 V	-
<b>Utilisation category AC-15</b>	220 V ... 240 V / 5 A, 380 V ... 440 V / 4 A	-
<b>Rated impulse withstand voltage. <math>U_{imp}</math></b>	6 kV	-
<b>Rated continuous current <math>I_{the}</math></b>	20 A	-
<b>Fuse rating</b>	gG 25 A	-
<b>Cable section</b>	max. $2 \times 2.5 \text{ mm}^2$ *	-
<b>Mechanical data</b>		
<b>Color</b>		
<b>Operating element</b>	■	■
<b>Front ring</b>	Silver	Silver
<b>Front plate thickness</b>	1 ... 6 mm	1 ... 6 mm
<b>Maintained switching positions</b>	3 ... 12 positions	Infinite
<b>Assembly</b>		
<b>Integrated mounting plate</b>	■	■
<b>Mounting position</b>	Arbitrarily	Arbitrarily
<b>Ambient conditions</b>		
<b>Ambient temperatures</b>	0 °C ... +60 °C	0 °C ... +75 °C
<b>Degree of protection (device head)</b>	IP65	IP65

### Safety classification

<b>Standards</b>	IEC 60947-3	-
<b>Mechanical life</b>	Load-dependent	-
<b>Certificates</b>	cULus, CCC	-

\* Use copper conductors only.

# COMMAND AND SIGNALLING DEVICES – R PROGRAMME

## SPECIAL DEVICES

Type	Circuit diagram and connecting terminals	Switching angle	L	LE	A	B	C	Type designation	Material number
Cam switching design step switches with latching mechanism, 1-pole no zero position		60°	40.7	60	32	22.3	54	<b>RWSE3K.1</b>	<b>101195857</b>
		60°	40.7	60	32	22.3	54	<b>RWSE4K.1</b>	<b>101195858</b>
		60°	50.2	69.5	32	22.3	54	<b>RWSE5K.1</b>	<b>101195859</b>
		60°	50.2	69.5	32	22.3	54	<b>RWSE6K.1</b>	<b>101195860</b>
		45°	59.7	78	32	22.3	54	<b>RWSE7K.1</b>	<b>101195861</b>
		45°	59.7	78	32	22.3	54	<b>RWSE8K.1</b>	<b>101195862</b>
		30°	69.2	87.5	32	22.3	54	<b>RWSE9K.1</b>	<b>101195863</b>
		30°	69.2	87.5	32	22.3	54	<b>RWSE10K.1</b>	<b>101195864</b>
		30°	78.7	97	32	22.3	54	<b>RWSE11K.1</b>	<b>101195865</b>
		30°	78.7	97	32	22.3	54	<b>RWSE12K.1</b>	<b>101195866</b>
<b>Type</b>	<b>Description</b>			<b>LE</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>Type designation</b>	
<b>Potentiometer drive</b>	for 6 mm shaft Ø, shaft length 30 ... 40 mm			63	31	22.3	39.5	<b>RDAN6</b>	

All dimensions in mm.

### Key

A	Height	Height of command device in front of the front panel
B	Mounting-Ø	Installation diameter for the command device head
C	Key Ø	Width of the command device head
L	Length	Length of step switch block
LE	Installation depth	Length between command device head and bottom edge of switch when mounted

# COMMAND AND SIGNALLING DEVICES

## A PROGRAMME

### RANGE AVANTGARDE

If you consider the exceptional design and follow the definition "direction (in art, science and politics), that stands aggressively for new ideas", this helps to understand the reason for the name, and you certainly realise that the name AVANTGARDE for this command and signalling device is certainly the right one.

Control panels and command panels receive a special outfit with these devices, they are highlighted and their frequent wallflower existence has been removed.

#### **Technical advantages**

However, the special features of the AVANTGARDE programme are not limited to the design. Additionally there are a range of constructive and functional benefits, some ergonomic, some functional, which highlight and emphasise the exclusiveness of the design.

Included here for example is an installation depth of less than 40 mm behind the front plate, a push button stroke of only 3.5 mm, also a flexible and installation friendly element system.

With the AVANTGARDE program, all commercially available device types are offered with the design of a modern command and signalling device program, which includes illuminated selector switches and switches in different colours. The devices comply with all relevant norms and reach the degree of protection IP65.

### DESIGN AND OPERATING PRINCIPLE

#### **Push button with patented shape (DE 197 30 680 C 1)**

The special form of the button and in connection with an actuating stroke of only 3.5 mm and a lower actuating force in comparison to many other devices, allow an ergonomic and tireless actuation of the push buttons, illuminated push buttons and similar. Also long finger nails are not a problem or better still are protected (keyword: "fingernail safe").

#### **Time saving device installation.**

The installation of the device requires an installation height of only 22.3 mm using coupling nuts, snap-contact elements and minimal time.

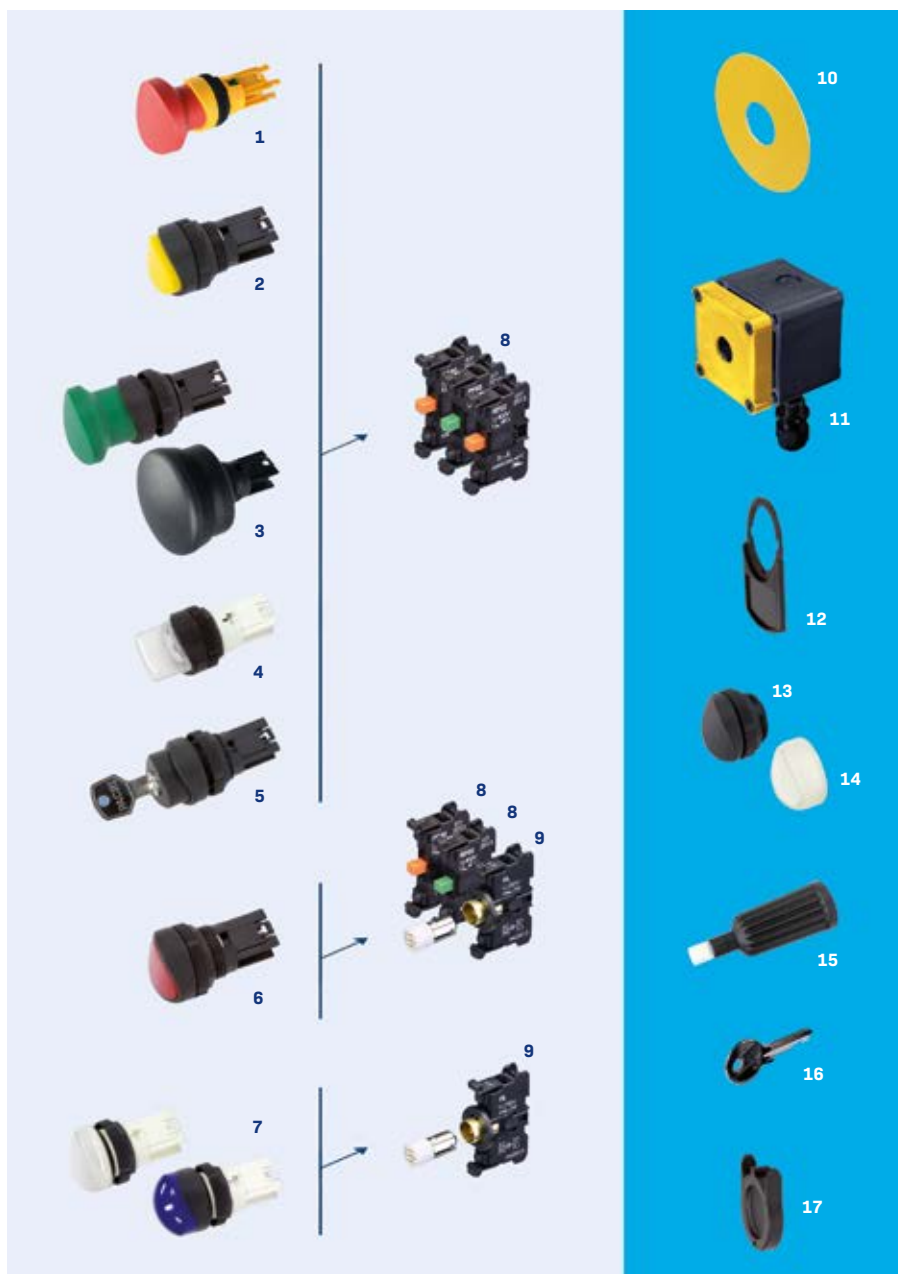
#### **Modular element system**

Equipping: Up to a maximum of 5 contacts, with illuminated devices up to a maximum of 4 contact elements and with emergency stop devices up to a maximum of 3 contact elements using the safety plate to secure the contacts. Both NC and NO contact elements are available with screw clamps.

#### **Low installation depth**

Installation compatibility even with limited space behind the front plate. Installation depth with a maximum of three elements: < 40 mm. Can be installed in many commercially available command boxes (recommended overall depth: min. 57 mm).

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# COMMAND AND SIGNALLING DEVICES – A PROGRAMME

## EMERGENCY STOP CONTROL DEVICES



■ ADRR40


### Key Features

<b>General description</b>	Emergency stop command device
<b>Area of application</b>	Industrial applications
<b>Mounting-Ø</b>	22.3 mm
<b>Housing material</b>	
<b>Material of operating element</b>	Plastic
<b>Material front ring</b>	Plastic

### Other versions are available

<b>Mounted in housing</b>	MBKAC311YE-ADRR40RT-2NC
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### Technical features

<b>Mechanical data</b>	
<b>Color</b>	
<b>Design</b>	Round
<b>Front plate thickness</b>	1 ... 6 mm
<b>Unlocking type</b>	Pull-to-unlatch mechanism
<b>Snap-action mechanism</b>	
<b>Integrated</b>	■
<b>Externally via additional module</b>	-
<b>Assembly</b>	
<b>Connection:</b>	Knurled nut, central mounting
<b>Mounting position</b>	Arbitrarily
<b>Ambient conditions</b>	
<b>Ambient temperatures</b>	-25 °C ... +60 °C
<b>Degree of protection</b>	IP65

### Safety classification

<b>Standards</b>	IEC 60947-5-1, IEC 60947-5-5, IEC 60947-1, EN ISO 13850
<b>B<sub>100</sub> NC contact</b>	100,000 operations
<b>Certificates</b>	cULus
<b>Notice</b>	cULus in conjunction with the corresponding contact elements only



# COMMAND AND SIGNALLING DEVICES – A PROGRAMME

## EMERGENCY STOP CONTROL DEVICES

Type	Unlocking	Snap-action mechanism	A	B	C	Type	Material number
<b>Emergency stop command devices</b>	Pull-to-unlatch mechanism	Integrated	38	22.3	40	<b>ADRR40RT</b>	<b>101030271</b>
<b>EMERGENCY STOP complete housing</b>	Pull-to-unlatch mechanism	Integrated	93	–	40	<b>MBKAC311YE-ADRR40RT-2NC</b>	<b>103009572</b>
<b>EMERGENCY STOP complete housing</b>	Pull-to-unlatch mechanism	Integrated	93	–	40	<b>MBKAC311YE-ADRR40RT-2NC-1NO</b>	<b>103011887</b>

All dimensions in mm.

### Key

A	Height	Height of command device in front of the front panel
B	Mounting-Ø	Installation diameter for the command device head
C	Key Ø	Width of the command device head

### EMERGENCY STOP complete housing



# COMMAND AND SIGNALLING DEVICES – A PROGRAMME

## INDICATOR LIGHTS



■ AML



■ AMLH

### Key Features

<b>General description</b>	Flatter indicator light	Higher indicator light
<b>Area of application</b>	Industrial applications	Industrial applications
<b>Mounting-Ø</b>	22.3 mm	22.3 mm
<b>Housing material</b>		
<b>Material of operating element</b>	Plastic	Plastic
<b>Material front ring</b>	Plastic	Plastic

### Other versions are available

<b>With symbols</b>	-	-
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### Technical features

<b>Mechanical data</b>		
<b>Color</b>		
<b>Design</b>	Round	Round
<b>Front plate thickness</b>	1 ... 6 mm	1 ... 6 mm
<b>Illumination *</b>	■	■
<b>Assembly</b>		
<b>Connection:</b>	Knurled nut, central mounting	Knurled nut, central mounting
<b>Mounting position</b>	Arbitrarily	Arbitrarily
<b>Ambient conditions</b>		
<b>Ambient temperatures</b>	-25 °C ... +60 °C	-25 °C ... +60 °C
<b>Degree of protection</b>	IP65	IP65

### Safety classification

<b>Standards</b>	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1
<b>Mechanical life</b>	-	-
<b>Certificates</b>	cULus	cULus
<b>Notice</b>	cULus in conjunction with the corresponding contact elements only	

\* A CLP001 voltage sensor and a Ba9s LED are also required.

# COMMAND AND SIGNALLING DEVICES – A PROGRAMME

## INDICATOR LIGHTS

Type	Illuminant	Collar	A	B	C	Type	Material number
Indicator lights	Without integrated illuminant	Flat collar	10.3	22.3	29	AMLGB	101031181
			10.3	22.3	29	AMLRT	101031180
			10.3	22.3	29	AMLGN	101031182
			10.3	22.3	29	AMLWS	101031179
			10.3	22.3	29	AMLBL	101031183
		High collar	13.8	22.3	29	AMLHGB	101031573
			13.8	22.3	29	AMLHRT	101031572
			13.8	22.3	29	AMLHGN	101031574
			13.8	22.3	29	AMLHWS	101031571
			13.8	22.3	29	AMLHBL	101031575

**Abbreviations of colours:** ■ SW ■ GB ■ RT ■ GN □ WS ■ BL

You append the abbreviations of the colours to the type designation.

For details of possible colour combinations, refer to the technical data on the previous page.

All dimensions in mm.

### Key

A	Height	Height of command device in front of the front panel
B	Mounting-Ø	Installation diameter for the command device head
C	Key Ø	Width of the command device head

# COMMAND AND SIGNALLING DEVICES – A PROGRAMME

## PUSHBUTTONS AND ILLUMINATED PUSHBUTTONS



### Key Features

<b>General description</b>	Pushbutton	Double pushbutton	Illuminated pushbutton
<b>Area of application</b>	Industrial applications	Industrial applications	Industrial applications
<b>Mounting-Ø</b>	22.3 mm	22.3 mm	22.3 mm
<b>Housing material</b>			
<b>Material of operating element</b>	Plastic	Plastic	Plastic
<b>Material front ring</b>	Plastic	Plastic	Plastic

### Other versions are available

<b>With high edge</b>	On request	–	On request
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### Technical features

<b>Mechanical data</b>			
<b>Color</b>			
<b>Design</b>	Round	round	Round
<b>Front plate thickness</b>	1 ... 6 mm	1 ... 6 mm	1 ... 6 mm
<b>Illumination *</b>	–	optionally in the middle	
<b>Assembly</b>			
<b>Connection:</b>	Knurled nut, central mounting	Knurled nut, central mounting	Knurled nut, central mounting
<b>Mounting position</b>	Arbitrarily	Arbitrarily	Arbitrarily
<b>Ambient conditions</b>			
<b>Ambient temperatures</b>	–25 °C ... +60 °C	–25 °C ... +60 °C	–25 °C ... +60 °C
<b>Degree of protection</b>	IP65	IP65	IP65

### Safety classification

<b>Standards</b>	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1
<b>Mechanical lifetime</b>	1,000,000 operations	1,000,000 operations	1,000,000 operations
<b>Certificates</b>	cULus	cULus	cULus
<b>Notice</b>	cULus in conjunction with the corresponding contact elements only		

\* A CLP001 voltage sensor and a Ba9s LED are also required.

# COMMAND AND SIGNALLING DEVICES – A PROGRAMME

## PUSHBUTTONS AND ILLUMINATED PUSHBUTTONS

Type	Description		A	B	C	Type	Material number
Pushbuttons	Included in standard version	Included in standard version	10.3	22.3	29	ADTSW	101031584
			10.3	22.3	29	ADTGB	101031593
			10.3	22.3	29	ADTRT	101031592
			10.3	22.3	29	ADTGN	101031594
			10.3	22.3	29	ADTWS	101031591
		With high button	10.3	22.3	29	ADTBL	101031595
			13.3	22.3	29	ADT3SW	101031585
			13.3	22.3	29	ADT3GB	101031588
			13.3	22.3	29	ADT3RT	101031587
			13.3	22.3	29	ADT3GN	101031589
Illuminated pushbuttons	Included in standard version	Included in standard version	10.3	22.3	29	ADLGB	101031176
			10.3	22.3	29	ADLRT	101031175
			10.3	22.3	29	ADLGN	101031177
			10.3	22.3	29	ADLWS	101031174
			10.3	22.3	29	ADLBL	101031178
		With high button	13.3	22.3	29	ADL3GB	101031713
			13.3	22.3	29	ADL3RT	101031712
			13.3	22.3	29	ADL3GN	101031714
			13.3	22.3	29	ADL3WS	101031711
			13.3	22.3	29	ADL3BL	101031715
Double pushbuttons	2 button surfaces	With illumination	10.3	22.3	29 × 57	ADDT-GN-RT-G24	103010797
		Without illumination	10.3	22.3	29 × 57	ADDT-GN-RT	103010798
			10.3	22.3	29 × 57	ADDT-SW-SW	103010799

**Abbreviations of colours:** ■ SW ■ GB ■ RT ■ GN □ WS ■ BL

You append the abbreviations of the colours to the type designation.

For details of possible colour combinations, refer to the technical data on the previous page.

All dimensions in mm.

### Key

A	Height	Height of command device in front of the front panel
B	Mounting-Ø	Installation diameter for the command device head
C	Key Ø	Width of the command device head

# COMMAND AND SIGNALLING DEVICES – A PROGRAMME

## MUSHROOM HEAD IMPACT BUTTONS



■ ADP



■ ADP 55.3

### Key Features

<b>General description</b>	Mushroom button without latching function	Mushroom button without latching function
<b>Special features</b>	–	Actuating force 7 N
<b>Area of application</b>	Industrial applications	Industrial applications
<b>Mounting-Ø</b>	22.3 mm	22.3 mm
<b>Housing material</b>	Plastic	Plastic
<b>Material of operating element</b>	Plastic	Plastic
<b>Material front ring</b>	Plastic	Plastic

### Other versions are available

<b>With symbols</b>	■	■
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### Technical features

<b>Mechanical data</b>		
<b>Color</b>		
<b>Design</b>	Round	Round
<b>Front plate thickness</b>	1 ... 6 mm	1 ... 6 mm
<b>With latching</b>	–	–
<b>Assembly</b>		
<b>Connection:</b>	Knurled nut, central mounting	Knurled nut, central mounting
<b>Mounting position</b>	Arbitrarily	Arbitrarily
<b>Ambient conditions</b>		
<b>Ambient temperatures</b>	–25 °C ... +60 °C	–25 °C ... +60 °C
<b>Degree of protection</b>	IP65	IP65

### Safety classification

<b>Standards</b>	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1
<b>Mechanical life</b>	1,000,000 operations	1,000,000 operations
<b>Certificates</b>	cULus	cULus
<b>Notice</b>	cULus in conjunction with the corresponding contact elements only	

# COMMAND AND SIGNALLING DEVICES – A PROGRAMME

## MUSHROOM HEAD IMPACT BUTTONS

Type	Key	Actuating force	A	B	C	Type	Material number
Mushroom buttons without latching function	Palm form	approx. 9 N	31.3	22.3	33	ADPSW	101031583
			31.3	22.3	33	ADPRT	101031596
			31.3	22.3	33	ADPGN	101031597
	Flatter wider mushroom	approx. 7 N	36	22.3	55	ADP55.3SW/O.F	101054131
		approx. 10.5 N	36	22.3	55	ADP55.3SW	101054132

**Abbreviations of colours:** ■ SW ■ GB ■ RT ■ GN □ WS ■ BL

You append the abbreviations of the colours to the type designation.

For details of possible colour combinations, refer to the technical data on the previous page.

All dimensions in mm.

### Key

A	Height	Height of command device in front of the front panel
B	Mounting-Ø	Installation diameter for the command device head
C	Key Ø	Width of the command device head

# COMMAND AND SIGNALLING DEVICES – A PROGRAMME

## SELECTOR SWITCHES / BUTTONS



■ AWS / AWT



■ AWSL / AWTL

### Key Features

<b>General description</b>	Selector switch/key button	Illuminated selector switch / button
<b>Area of application</b>	Industrial applications	Industrial applications
<b>Mounting-Ø</b>	22.3 mm	22.3 mm
<b>Housing material</b>		
<b>Material of operating element</b>	Plastic	Plastic
<b>Material front ring</b>	Plastic	Plastic

### Other versions are available

<b>With long toggle</b>	■	–
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### Technical features

<b>Mechanical data</b>		
<b>Color</b>		
<b>Design</b>	Round	Round
<b>Front plate thickness</b>	1 ... 6 mm	1 ... 6 mm
<b>Illumination *</b>	–	■
<b>Switch position</b>	2 ... 3 positions	2 ... 3 positions
<b>Assembly</b>		
<b>Connection:</b>	Knurled nut, central mounting	Knurled nut, central mounting
<b>Mounting position</b>	Arbitrarily	Arbitrarily
<b>Ambient conditions</b>		
<b>Ambient temperatures</b>	–25 °C ... +60 °C	–25 °C ... +60 °C
<b>Degree of protection</b>	IP65	IP65

### Safety classification



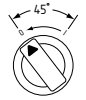

<b>Standards</b>	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1
<b>Mechanical life</b>	100,000 operations	100,000 operations
<b>Certificates</b>	cULus	cULus
<b>Notice</b>	cULus in conjunction with the corresponding contact elements only	

\* A CLP001 voltage sensor and a Ba9s LED are still required for driving.



# COMMAND AND SIGNALLING DEVICES – A PROGRAMME

## SELECTOR SWITCHES / BUTTONS

Type	Maintained and momentary positions	Switching angle	Actuator	A	B	C	Type designation
Selector switch	2 maintained positions		Short toggle	25.8	22.3	29	<b>AWS21</b> ①
			Long knob	25.8	22.3	40	<b>AWS21.1</b> ①
			Illuminated short toggle	25.8	22.3	29	<b>AWSL21</b> ①
	3 maintained positions		Short toggle	25.8	22.3	29	<b>AWS32</b> ①
			Long knob	25.8	22.3	40	<b>AWS32.1</b> ①
			Illuminated short toggle	25.8	22.3	29	<b>AWSL32</b> ①
Selector buttons	2 sensing positions		Short toggle	25.8	22.3	29	<b>AWT21</b> ①
			Long knob	25.8	22.3	40	<b>AWT21.1</b> ①
			Illuminated short toggle	25.8	22.3	29	<b>AWTL21</b> ①
	3 sensing positions		Short toggle	25.8	22.3	29	<b>AWT32</b> ①
			Long knob	25.8	22.3	40	<b>AWT32.1</b> ①
			Illuminated short toggle	25.8	22.3	29	<b>AWTL32</b> ①

① **Abbreviations of colours:** ■ SW ■ GB ■ RT ■ GN □ WS ■ BL  
 You append the abbreviations of the colours to the type designation.  
 For details of possible colour combinations, refer to the technical data on the previous page.

All dimensions in mm.

### Key

- A Height                      Height of command device in front of the front panel
- B Mounting-Ø                Installation diameter for the command device head
- C Key Ø                        Width of the command device head

# COMMAND AND SIGNALLING DEVICES – A PROGRAMME

## KEY-SELECTOR SWITCHES



■ ASS

### Key Features

<b>General description</b>	Key selector switch
<b>Area of application</b>	Industrial applications
<b>Mounting-Ø</b>	22.3 mm
<b>Housing material</b>	
<b>Material of operating element</b>	Plastic
<b>Material front ring</b>	Plastic

### Other versions are available

<b>Other closure possibilities</b>	On request
<b>Other removal positions</b>	On request

### Technical features


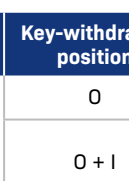
<b>Mechanical data</b>	
<b>Color</b>	■
<b>Design</b>	Round
<b>Front plate thickness</b>	1 ... 6 mm
<b>Maintained switching positions</b>	2 ... 3 positions
<b>Assembly</b>	
<b>Connection:</b>	Knurled nut, central mounting
<b>Mounting position</b>	Arbitrarily
<b>Ambient conditions</b>	
<b>Ambient temperatures</b>	-25 °C ... +60 °C
<b>Degree of protection</b>	IP65

### Safety classification

<b>Standards</b>	IEC 60947-5-1, IEC 60947-1
<b>Mechanical life</b>	100,000 operations
<b>Certificates</b>	cULus
<b>Notice</b>	cULus in conjunction with the corresponding contact elements only

# COMMAND AND SIGNALLING DEVICES – A PROGRAMME

## KEY-SELECTOR SWITCHES

Type	Maintained positions	Key positions	Key-withdrawal position	A	B	C	Type designation	Material number
Key-operated selector switches	2 maintained positions		0	50	22.3	29	ASS21S1	101192840
			0 + I	50	22.3	29	ASS21S12	101031173
	3 maintained positions		0	50	22.3	29	ASS32S2	103001868
			I + 0 + II	50	22.3	29	ASS32S123	101031598

All dimensions in mm.

### Key

A	Height	Height of command device in front of the front panel with key
B	Mounting-Ø	Installation diameter for the command device head
C	Key Ø	Width of the command device head

# COMMAND AND SIGNALLING DEVICES CONTACT AND LIGHT TERMINAL BLOCKS

## AREA OF APPLICATION

The Schmersal Group has developed its own contact systems for series E, H and R command and signalling devices, which guarantee exceptional contacting even under the harshest ambient conditions.

The command and signalling devices from the AVANTGARDE range are specially designed for the needs of industrial applications. The devices can be mounted quickly and efficiently using a knurled nut. A contact carrier is integrated directly on the command device so that the contact elements can be pushed on and engaged on the command device easily without an additional mounting flange. Also the contact elements are easy to install with a screwdriver or to remove with the removing tool. This reduces expensive installation time to a minimum.

## DESIGN AND OPERATING PRINCIPLE

All the elements of the **EF system** have a special low-voltage-capable and self-cleaning four-way contact bridge system. This is a twin contact bridge that works in-parallel as well as crosswise. In this way, the fixed contact and the moveable contact bridge always achieve several contacts. This ensures high levels of contact reliability that is enhanced by the shape of the fixed contacts. Apart from this, the contacts have a self-cleaning function that removes oxide and dirt particles before they are deposited and are able to affect operation of the switchgear.

The EF contact system can be supplied in three terminations:

- Screw terminals
- Cage clamp
- Blade terminal

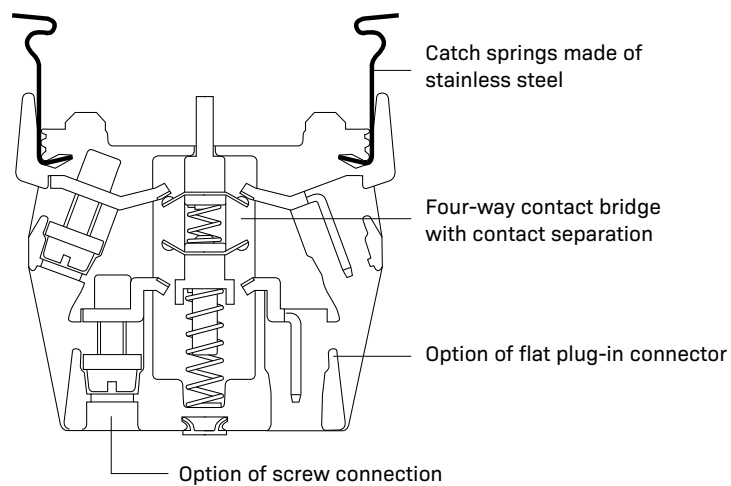
The **RF contact system** is used with series R command devices. Installation is particularly user-friendly as the RF contact system's mounting flange comprises of two parts and allows users to pre-mount the contact elements, while the other part is used for fastening the device head and subsequent attachment of the contact carrier. With this contact system, users have a free choice of contacts, since the contact elements can be mounted on two levels.

The **contact element of the type CLP** is specially designed for a time-saving device installation. Thanks to the recessed guide rails, they are connected directly to the command device without a contact carrier or similar. Thanks to the omission of an attachment or mounting flange, a very low installation depth of under 40 mm is also achieved (emergency stop 47 mm).

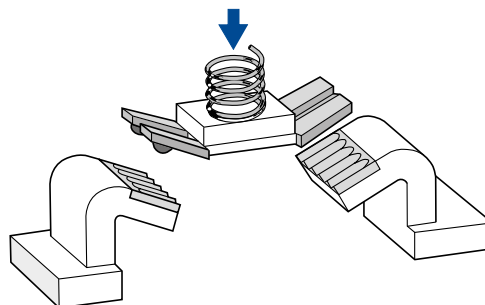
Also the CLP contact system is a modular contact system, that due to the doubling of the contacts can accept up to five contact elements (different with emergency stop). This offers the machine and plant manufacturer the possibility to decide how many NO or NC contacts are to be used and installed. This modular contact system also contributes to a reduction in costs. Emergency stop command devices can accept up to three contact elements. These are secured against popping off with an additional safety plate.

## EF CONTACT ELEMENTS

Principle design of EF contact elements



## FOUR-WAY CONTACT BRIDGE



The electrical way of working of the contact elements is based on the Elan four-way contact. This is a twin contact bridge that works in-parallel as well as crosswise. The high contact reliability that is provided due to several contactings by the fixed contact and the moveable contact bridge is enhanced for industrial practice by the fixed contacts being angled and embossed several times. The self-cleaning feature of the contacts reliably removes any oxide or dirt particles that may be produced due to operation at extra-low voltages.

# CONTACT AND LIGHT TERMINAL BLOCKS

## TECHNICAL DATA – RANGE EF



■ EF

### Key Features

<b>General description</b>	Contact elements
<b>Can be used with</b>	E programme

### Other versions are available

<b>ATEX design</b>	–
--------------------	---

### Technical features

<b>Design</b>	EF
<b>Material</b>	
<b>Material of the housings</b>	Plastic, glass-fibre-reinforced, self-extinguishing
<b>Material of the contacts</b>	Fine-silver, phosphor bronze or brass carrier
<b>Utilisation category AC-15; DC-13</b>	250 V / 8 A; 24 V / 5 A
<b>Suitability for low voltages</b>	> 5 VDC / 3.2 mA
<b>Rated insulation voltage <math>U_i</math></b>	400 V
<b>Rated impulse withstand voltage. <math>U_{imp}</math></b>	4 kV
<b>Thermal test current <math>I_{the}</math></b>	10 A
<b>Max. fuse rating</b>	gG 10 A
<b>Switching frequency</b>	1200 s/h
<b>Mechanical lifetime</b>	10,000,000 operations
<b>Resistance to shock</b>	30 g / 18 ms, no bouncing
<b>Resistance to vibration</b>	> 20 g / 10 ... 150 Hz *
<b>Ambient temperature</b>	-25 °C ... +60 °C
<b>Termination</b>	
<b>Screw terminals</b>	Yes
<b>Flat plug-in connector</b>	Yes
<b>Cage clamp connection</b>	Yes
<b>Cable section</b>	
<b>Solid wire</b>	2 × (0.5 ... 2.5 mm <sup>2</sup> )
<b>Stranded wire</b>	2 × (0.5 ... 1.5 mm <sup>2</sup> )
<b>Blade terminal</b>	6.3 mm × 0.8 mm / 2 × 2.8 mm × 0.8 mm
<b>Degree of protection terminals ** / switch rooms</b>	IP20 / IP40

### Safety classification

<b>Standards</b>	IEC 60947-5-1, IEC 60947-1
<b>B<sub>100</sub></b>	100,000 operations
<b>Certificates</b>	cULus, CCC ***

- \* For actuating heads with higher mass, appropriately lower  
 \*\* With plug-in connectors, depends on the connector plug used  
 \*\*\* Except for cage clamp connections



■ EL / ELE

■ ELDE

Light terminal block with Ba9S base  
E programme

Light terminal block with LED  
E programme

-

-

EL

EL

Plastic, glass-fibre-reinforced, self-extinguishing

Plastic, glass-fibre-reinforced, self-extinguishing

-

-

-

-

-

-

-

-

Appropriate to the respective version

Appropriate to the respective version

-

-

-

-

-25 °C ... +60 °C

-25 °C ... +60 °C

Yes

Yes

Depending on the version

No

Depending on the version

No

2 × (0.5 ... 2.5 mm<sup>2</sup>)

2 × (0.5 ... 2.5 mm<sup>2</sup>)

2 × (0.5 ... 1.5 mm<sup>2</sup>)

2 × (0.5 ... 1.5 mm<sup>2</sup>)

6.3 mm × 0.8 mm /

6.3 mm × 0.8 mm /

2 × 2.8 mm × 0.8 mm

2 × 2.8 mm × 0.8 mm

IP20 / -

IP20 / -

IEC 60947-5-1,  
IEC 60947-1

IEC 60947-5-1,  
IEC 60947-1

-

-

cULus, CCC \*\*\*

cULus, CCC \*\*\*

# CONTACT AND LIGHTING ELEMENTS

## TYPE EF AND EL

Device head	Mounting flange EFM/ELM		
	Position 2	Position 3	Position 1
Emergency stop command device	Contact element EF	Spring element EFR	Contact element EF
Pushbutton	Contact element EF	Contact element EF	Contact element EF
Mushroom head impact button			
Selector switch/key button			
Key-operated selector switch/button			

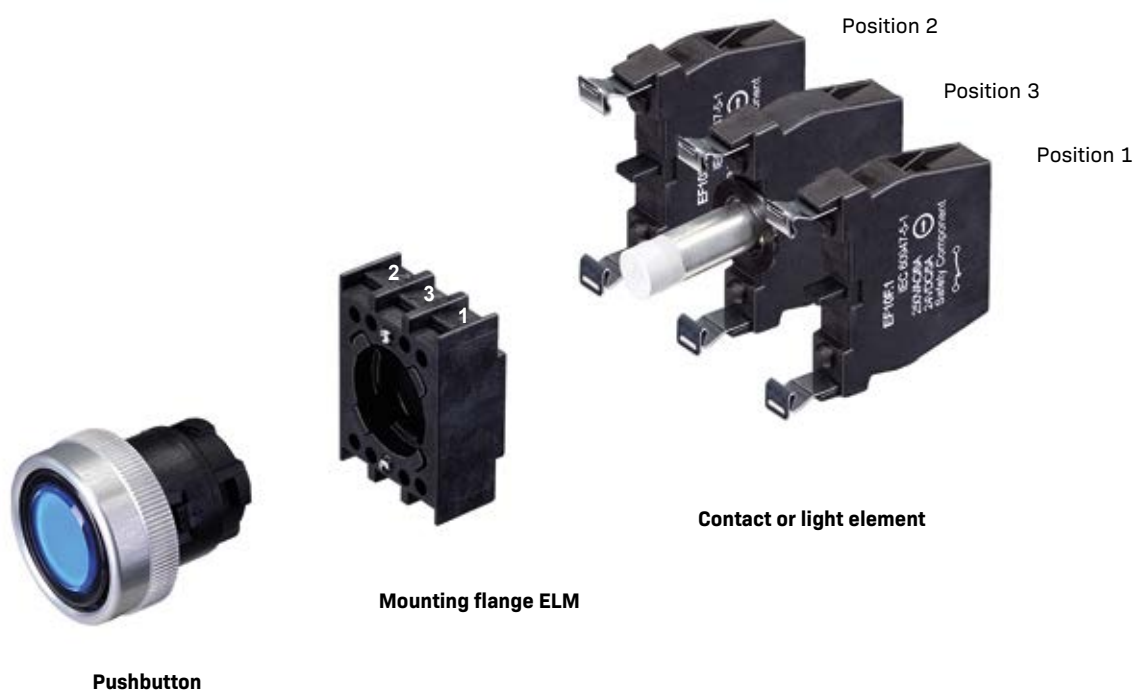
Device head	Mounting flange ELM		
	Position 2	Position 3	Position 1
Illuminated pushbutton	Contact element EF	Light terminal block EL...	Contact element EF
Indicator lights	-	Light terminal block EL...	-

### Design

A command and signalling device consists of an actuator, a mounting flange and a contact or light element (in the case of EMERGENCY STOP devices, possibly using a spring element).

### Assembly example

This example shows an illuminated push button with ELM mounting flange, 2 EF... contact elements and an EL... lighting element





# CONTACT AND LIGHT TERMINAL BLOCKS

## TYPE EF AND EL

Type	Application	Function	Switch travel diagram	Position	Wiring configuration according to DIN 50005	Screw terminals	Flat plug-in connector	WAGO-Cage clamp	
Contact element	Emergency stop	2 NC		1	11-12/21-22	EF220.1	EF220F.1	-	
				2	31-32/41-42	EF220.2	EF220F.2	-	
		1 NC / 1 NO		1	11-12/23-24	EF303.1	EF303F.1	-	
				2	31-32/43-44	EF303.2	EF303F.2	-	
	Included in standard version	1 NC			1	11-12	EF10.1	EF10F.1	EFK10.1
					2	21-22	EF10.2	EF10F.2	EFK10.2
					3	31-32	EF10.3	EF10F.3	EFK10.3
		1 NO			1	13-14	EF03.1	EF03F.1	EFK03.1
					2	23-24	EF03.2	EF03F.2	EFK03.2
					3	33-34	EF03.3	EF03F.3	EFK03.3
		2 NO			1	13-14/23-24	EF033.1	EF033F.1	EFK033.1
					2	33-34/43-44	EF033.2	EF033F.2	EFK033.2
					3	53-54/63-64	EF033.3	EF033F.3	-
		1 NC / 1 NO			1	11-12/23-24	EF103.1	EF103F.1	EF103.1
			2	31-32/43-44	EF103.2	EF103F.2	EF103.2		
			3	51-52/63-64	EF103.3	EF103F.3	-		

Type	Illuminant	Function	Diagram	Position	Description	Screw terminals	Flat plug-in connector	WAGO-Cage clamp
Light terminal block	Ba9S socket *	Lighting element / voltage sensor for lamps + acoustic signal		3	Included in standard version	EL	ELF	-
				3	with transformer	ELT	ELTF	-
				3	with series resistor	ELV	ELVF	-
		Lighting element / voltage sensor for LED		3	24 VAC/DC	ELE	-	ELEK
				3	48 VAC/DC primary ... 24 V secondary	ELE 48	-	-
				3	115 ... 230 VAC primary 24 V secondary	ELE 230	-	-
	Integrated LED	Light element with integrated LED		3	LED red	ELDE.N RT 24	-	ELDEK RT
				3	LED yellow	ELDE.N GB 24	-	ELDEK GB
				3	LED green	ELDE.N GN 24	-	ELDEK GN
				3	LED blue	ELDE.N BL 24	-	ELDEK BL
3				LED white	ELDE.N WS 24	-	ELDEK WS	
Integrated LED	Light element with integrated LED's		3	LED red, green, yellow	ELDE.N-RD-GN-YE-24VDC	-	-	

Type	Application	Function	Position	Description	Screw terminals	Flat plug-in connector	WAGO-Cage clamp
EFR.EDRRS or EFR	Emergency stop	Snap-action mechanism with latching	3	Spring element	-	-	-

\* Illuminant not included in delivery!

# CONTACT AND LIGHT TERMINAL BLOCKS

## TECHNICAL DATA – RANGE AF



■ CLP001

### Key Features

<b>General description</b>	Light terminal block
<b>Can be used with</b>	H programme

### Technical features

<b>Design</b>	CLP
<b>Material</b>	
<b>Material of the housings</b>	Plastic, self-extinguishing
<b>Material of the contacts</b>	
<b>Utilisation category AC-15; DC-13</b>	
<b>Rated insulation voltage <math>U_i</math></b>	
<b>Rated impulse withstand voltage. <math>U_{imp}</math></b>	
<b>Thermal test current <math>I_{the}</math></b>	
<b>Max. fuse rating</b>	Appropriate to the respective version
<b>Switching frequency</b>	
<b>Mechanical life</b>	
<b>Resistance to shock</b>	30 g / 18 ms
<b>Resistant to vibration</b>	
<b>Ambient temperature</b>	-25 °C ... +60 °C
<b>Termination</b>	
<b>Screw connection</b>	■
<b>Cable section</b>	
<b>Solid wire</b>	2 × 1.5 mm <sup>2</sup>
<b>Stranded wire</b>	2 × 1.5 mm <sup>2</sup>
<b>Degree of protection terminals ** / switch rooms</b>	IP20 / IP40

### Safety classification

<b>Standards</b>	IEC 60947-5-1, IEC 60947-1
<b>B<sub>1,00</sub></b>	
<b>Certificates</b>	cULus

\* For actuating heads with higher mass, appropriately lower  
 \*\* With plug-in connectors, depends on the connector plug used



■ CLP101



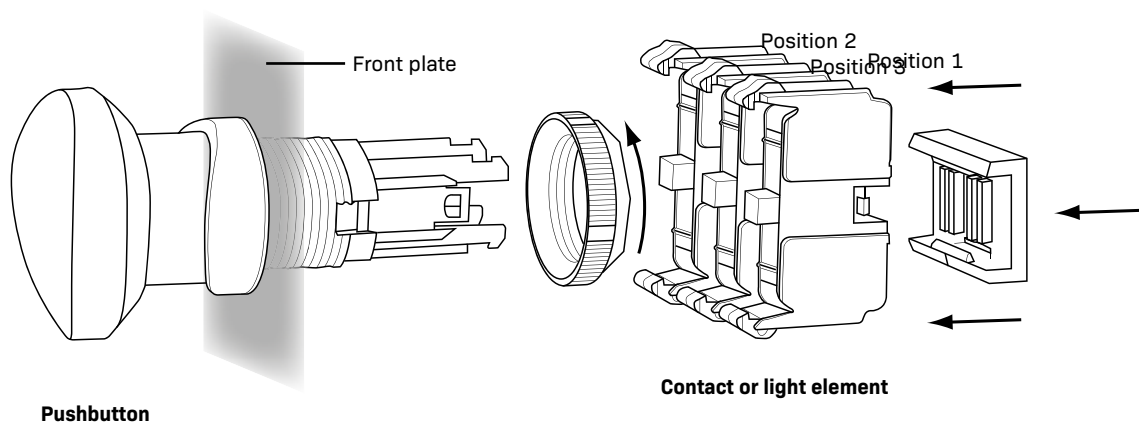
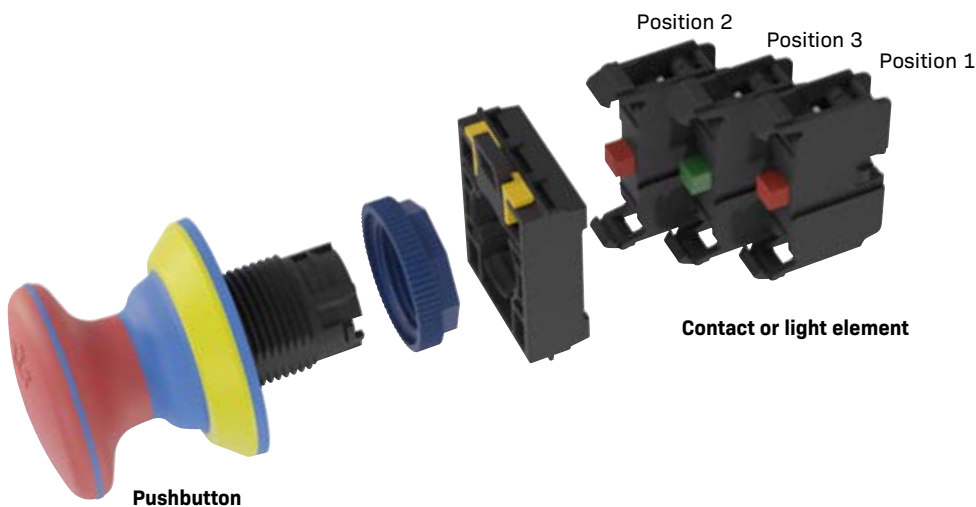
■ CLP110

Contact element H programme	Contact element H programme
CLP	CLP
Plastic, self-extinguishing Carrier made from fine silver, Phosphor bronze or brass	Plastic, self-extinguishing Carrier made from fine silver, Phosphor bronze or brass
250 V / 6 A; 24 V / 3 A	250 V / 6 A; 24 V / 3 A
500 V	500 V
2.5 kV	2.5 kV
6 A	6 A
gG 6 A	gG 6 A
1,200 s/h	1,200 s/h
5,000,000 operations	5,000,000 operations
30 g / 18 ms	30 g / 18 ms
20 g / 10 ... 150 Hz *	20 g / 10 ... 150 Hz *
-25 °C ... +60 °C	-25 °C ... +60 °C
■	■
2 × 0.5 ... 1.5 mm <sup>2</sup>	2 × 0.5 ... 1.5 mm <sup>2</sup>
2 × 0.5 ... 1.5 mm <sup>2</sup>	2 × 0.5 ... 1.5 mm <sup>2</sup>
IP20 / IP40	IP20 / IP40
IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1
100,000 operations cULus	100,000 operations cULus

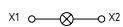
# CONTACT AND LIGHT TERMINAL BLOCKS TYPE CLP

Pushbutton	Position 1	Position 3	Position 2
Emergency stop command device			
Pushbutton	Contact element CLP101 or CLP110	Contact element CLP101 or CLP110	Contact element CLP101 or CLP110
Mushroom head impact button			
Selector switch/key button			
Illuminated pushbutton	Contact element CLP101 or CLP110	Light element CLP001	Contact element CLP101 or CLP110
Indicator lights	-	Light element CLP001	-

## Assembly example



## CONTACT AND LIGHT TERMINAL BLOCKS TYPE CLP

Type	Application	Function	Position	Connector	Plunger colour	Contact labelling	Type designation	Material number
Contact element	Standard and emergency stop	1 NC	1, 2 and 3	Screw connection	red	1, 2	CLP101	103040378
		1 NO	1, 2 and 3	Screw connection	green	3, 4	CLP110	103040379
Type	Illuminant	Diagram	Position	Connector	Contact labelling	Type designation	Material number	
Light terminal block	Without *		3	Screw connection	X1 - X2	CLP001	103040380	

\* The right lamp with the size Ba9S has to be ordered separately.

\* Illuminant not included in delivery!

# CONTACT AND LIGHT TERMINAL BLOCKS

## TECHNICAL DATA – RANGE RF



RF

### Key Features

<b>General description</b>	Contact element
<b>Can be used with</b>	R programme

### Other versions are available

<b>ATEX design</b>	■
--------------------	---

### Technical features

<b>Design</b>	RF
<b>Material</b>	
<b>Material of the housings</b>	PA GV self-extinguishing, hardly flammable
<b>Material of the contacts</b>	Fine-silver, phosphor bronze or brass carrier
<b>Utilisation category AC-15; DC-13</b>	250 V / 6 A; 24 V / 3 A
<b>Suitability for low voltages</b>	>5VDC / 1 mA
<b>Rated insulation voltage <math>U_i</math></b>	400 V
<b>Rated impulse withstand voltage. <math>U_{imp}</math></b>	4 kV
<b>Thermal test current <math>I_{the}</math></b>	6 A
<b>Max. fuse rating</b>	gG 6 A
<b>Switching frequency</b>	1200 s/h
<b>Mechanical life</b>	10,000,000 operations
<b>Resistance to shock</b>	30 g/18 ms, no bouncing
<b>Resistance to vibration</b>	> 20 g / 10 ... 150 Hz *
<b>Ambient temperature</b>	-25 °C ... +60 °C
<b>Termination</b>	
<b>Screw terminals</b>	Yes
<b>Flat plug-in connector</b>	No
<b>Cage clamp connection</b>	No
<b>Cable section</b>	
<b>Solid wire</b>	2 × 0.5 ... 2.5 mm <sup>2</sup>
<b>Stranded wire</b>	2 × 0.5 ... 1.5 mm <sup>2</sup>
<b>Blade terminal</b>	–
<b>Degree of protection terminals / switch rooms</b>	IP20 / IP40

### Safety classification

<b>Standards</b>	IEC 60947-5-1, IEC 60947-1
<b><math>B_{100}</math></b>	100,000 operations
<b>Certificates</b>	cULus

\* For actuating heads with higher mass, appropriately lower



■ RL



■ RLDE

■ RL	■ RLDE
Light terminal block with Ba9S base R programme	Light terminal block with LED R programme
-	■
RL	RL
PA GV self-extinguishing, hardly flammable	PA GV self-extinguishing, hardly flammable
-	-
-	-
-	-
-	-
-	-
Appropriate to the respective version	Appropriate to the respective version
-	-
-	-
-	-
-25 °C ... +60 °C	-25 °C ... +60 °C
Yes	Yes
No	No
No	No
2 × 0.5 ... 2.5 mm <sup>2</sup>	2 × 0.5 ... 2.5 mm <sup>2</sup>
2 × 0.5 ... 1.5 mm <sup>2</sup>	2 × 0.5 ... 1.5 mm <sup>2</sup>
-	-
IP20 / -	IP20 / -
IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1
-	-
cULus	cULus

# CONTACT AND LIGHTING ELEMENTS

## TYPE RF AND RL

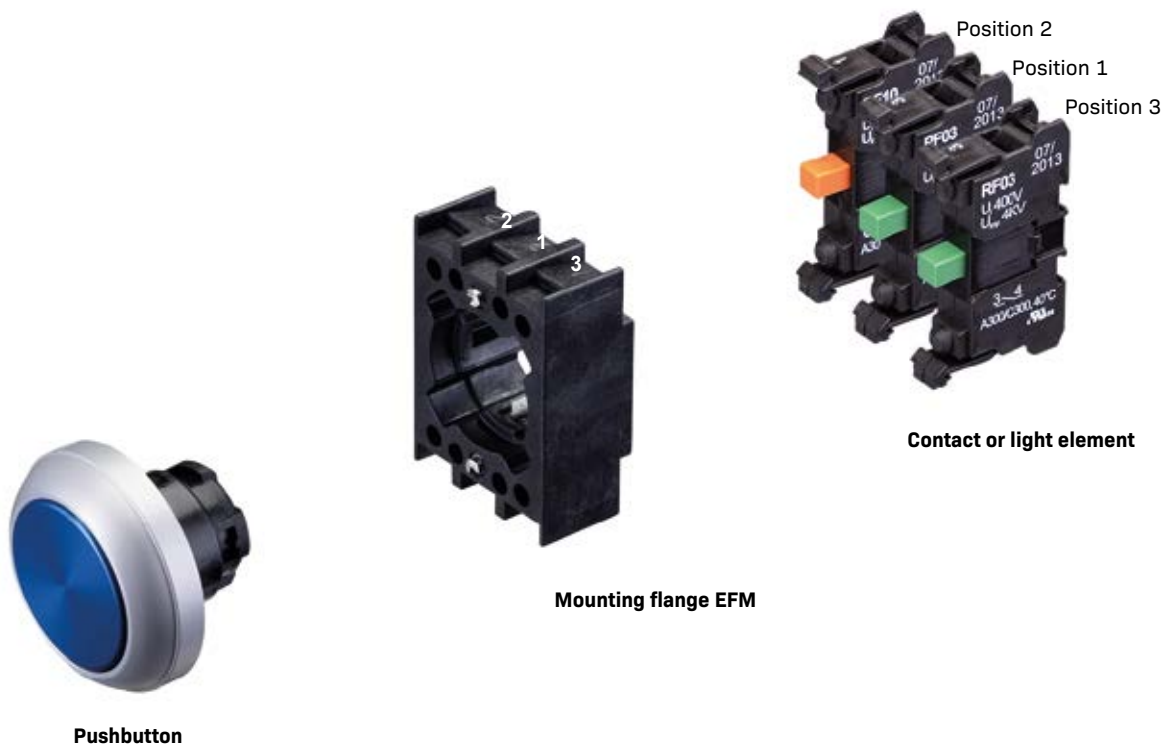
Pushbutton	Mounting flange EFM/ELM		
	Position 2	Position 1	Position 3
Emergency stop command device	Contact element RF...	Contact element RF...	Contact element RF...
Pushbutton			
Mushroom head impact button			
Selector switch/key button			
Key-operated selector switch/button	Contact element RF...	Light terminal block RL...	Contact element RF...
Illuminated pushbutton			
Indicator lights	-	Light terminal block RL...	-

### Design

A command or signalling device consists of the assemblies "device head with mounting flange" and "contact or lighting element" (in the case of emergency stop devices, plus spring element if necessary).

### Assembly example



This example shows a pushbutton with mounting flange ELM and three contact elements RF...

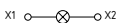
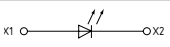




## CONTACT AND LIGHTING ELEMENTS

### TYPE RF AND RL

Type	Application	Function	Switch travel diagram	Position	Connector	Plunger colour	Contact labelling	Type designation
Contact element	Standard and emergency stop	1 NC		1, 2 and 3	Screw connection	Red	1, 2	<b>RF10</b>
							11, 12	<b>RF10.1</b>
		1 NO		1, 2 and 3	Screw connection	Green	3, 4	<b>RF03</b>
							13, 14	<b>RF03.1</b>

Type	Illuminant	Diagram	Position	Connector	Contact labelling	Type designation
Light terminal block	Ba9S socket *		1	Screw terminals	X1-X2	<b>RL</b>
	Integrated LED		1	Screw terminals	X1-X2	<b>RLDEWS24</b>

\* Illuminant not included in delivery!

## COMMAND AND SIGNALLING DEVICES ACCESSORIES

Type	Description	Type	Recommended for product portfolio			
			E	H	R	A
Emergency stop label	Installation Ø for 22.3 mm, 53 mm external Ø	MDP-8	■		■	
	Mounting-Ø for 22.3 mm, external Ø 53 mm, plastic	MDP-8.2				■
	Installation Ø for 22.3 mm, 100 mm external Ø	MDP-6	■		■	
	Installation Ø for 30.5 mm, 53 mm external Ø	DPF-9	■		■	
	Installation Ø for 30.5 mm, 100 mm external Ø	DPF-7	■		■	
	External Ø 70 mm, V4A version, colour yellow, self-adhesive, no labelling	NDP-70	■		■	
	External Ø 65 mm plastic – as adhesive foil	NDP-65	■	■	■	
Protective collar	Emergency stop protective collar, installation Ø for 22.3 mm Bedienteil-Ø 38,5 mm	EDRR-1 SET	■			
	Emergency stop protective collar, installation Ø for 22.3 mm operating element Ø 49 mm	EDRR-2 SET	■		■	
	Emergency stop protective collar, installation Ø for 30.5 mm operating element Ø 38.5 mm	EDRR-1.1 SET	■			
	Emergency stop protective collar, installation Ø for 30.5 mm operating element Ø 49 mm	EDRR-2.1 SET	■		■	
Blanking plug	Blanking plug, installation Ø 22.3 mm	MBN	■			
	Blanking plug, installation Ø 30.5 mm	BN	■		■	
	Blanking plug, installation Ø 22.3 mm	ABN				■
	Blanking plug, stainless steel, mounting diameter 22.3 mm	HB-BL		■		
Dust shield cap	Dust shield cap for lamps and push buttons	AMT				■
Identification plate	Identification plate	HZSO/V4A		■		
	Identification label, small	RZSO			■	
	Identification label, medium	RZSO1			■	
	Identification label, large	RZSO2			■	
	Identification label, aluminium	MZSO	■			
	Identification label, plastic	KZSO	■			
	Identification label, 30.5 mm, small	ZSO2	■			
	Identification label, 30.5 mm, large	ZSO	■			
	Identification label, 30.5 mm, large	ZSNO	■			
	Identification plate	AZSO				■
Adapter ring	Adapter ring with gasket for using Ø 22 mm operating buttons to 30.5 mm drilled holes	RUE			■	
	Adapter ring with gasket for using Ø 22 mm operating buttons to 30.5 mm drilled holes	MUE	■			
Spare key	Spare key for key selector switch	SDS1/SDS2	■		■	
	Spare key for key selector switch	A-S				■
Mounting flange	Mounting flange	EFM	■			
	Mounting flange	ELM	■			
	Mounting flange for position switch	EFMH	■			
	Mounting flange	RLM			■	
	Driver for contact elements	R-F			■	
	Mounting flange	SMF		■		
	Mounting flange for special devices	SMF-SG		■		
Mounting tool	Mounting tool for mounting flange	RMW			■	
	Mounting tool for central nut	HMW		■		
	Installation tool for knurled nut	A-14				■
Disassembly tool	Removal tool for contact elements	A-DW				■
Multi LED	Multi LED white Ba9S, 24 VDC	LE24/9WS	■		■	■
	Multi LED white Ba9S, 230 VDC	LE230/9WS	■		■	
Lamp	Lamp 24V/1.9W	L24/9	■		■	

## COMMAND AND SIGNALLING DEVICES ACCESSORIES

<p><b>Emergency stop label</b></p>  <ul style="list-style-type: none"> <li>■ NDP-70</li> <li>■ Material V4A</li> <li>■ Yellow powder-coated</li> </ul>	<p><b>Emergency stop label</b></p>  <ul style="list-style-type: none"> <li>■ MDP-8.2</li> <li>■ EMERGENCY STOP Sign Plastic</li> </ul>	<p><b>EMERGENCY STOP protective collar</b></p>  <ul style="list-style-type: none"> <li>■ EDRR-1 SET</li> <li>■ Aluminium die-cast</li> <li>■ Yellow powder-coated</li> </ul>
<p><b>Blanking plug</b></p>  <ul style="list-style-type: none"> <li>■ ABN</li> <li>■ Plastic</li> <li>■ For installation diameter 22.3 mm</li> </ul>	<p><b>Blanking plug</b></p>  <ul style="list-style-type: none"> <li>■ HB-BL</li> <li>■ Stainless steel</li> <li>■ For installation diameter 22.3 mm</li> </ul>	<p><b>Dust shield cap</b></p>  <ul style="list-style-type: none"> <li>■ AMT</li> <li>■ Dust shield cap for lamps and push buttons</li> </ul>

# COMMAND AND SIGNALLING DEVICES ACCESSORIES

Identification plate	Identification label	Identification label
 <ul style="list-style-type: none"> <li>■ RZSO2</li> <li>■ Aluminium plate with black anodised labelling area</li> <li>■ Depending on version, 1 to 3 lines can be written</li> </ul>	 <ul style="list-style-type: none"> <li>■ HZSO...</li> <li>■ Stainless-steel plate V4A</li> <li>■ Depending on version, 1 to 2 lines can be written</li> </ul>	 <ul style="list-style-type: none"> <li>■ MZSO</li> <li>■ Aluminium plate with black anodised labelling area</li> </ul>
Identification plate	Adapter ring	Replacement key
 <ul style="list-style-type: none"> <li>■ AZSO</li> <li>■ Aluminium plate with black anodised labelling area</li> <li>■ Depending on version, 1 to 2 lines can be written</li> </ul>	 <ul style="list-style-type: none"> <li>■ RUE</li> <li>■ Plastic</li> <li>■ Adapter ring from installation diameter of 30.5 mm to 22.3 mm</li> </ul>	 <ul style="list-style-type: none"> <li>■ SDS1/SDS2 and A-S</li> <li>■ Spare key for key selector switch with EKM locking</li> <li>■ Note: You must state the locking number too</li> </ul>
Mounting flange	Mounting flange	Mounting flange
 <ul style="list-style-type: none"> <li>■ ELM</li> <li>■ Mounting flange for E product portfolio illuminated pushbuttons</li> </ul>	 <ul style="list-style-type: none"> <li>■ EFM</li> <li>■ Mounting flange for E product portfolio pushbuttons</li> </ul>	 <ul style="list-style-type: none"> <li>■ EX-RLM</li> <li>■ Mounting flange for EX-R product portfolio with contact carrier and driver</li> </ul>

# COMMAND AND SIGNALLING DEVICES ACCESSORIES

Mounting flange	Mounting flange	Mounting flange
 <ul style="list-style-type: none"> <li>■ SMF</li> <li>■ Standard mounting flange for H product portfolio</li> </ul>	 <ul style="list-style-type: none"> <li>■ SMF-SG</li> <li>■ Mounting flange for special devices for H product portfolio</li> </ul>	 <ul style="list-style-type: none"> <li>■ EFMH</li> <li>■ Mounting flange for E product portfolio position switch PS116</li> <li>■ Depending on the version, with position switch included in delivery too</li> </ul>
Position switch	Mounting tool	Mounting tool
 <ul style="list-style-type: none"> <li>■ PS116-...-S200</li> <li>■ Thermoplastic enclosure</li> <li>■ Symmetrical casing</li> <li>■ Degree of protection IP66, IP67</li> <li>■ Connector plug M12 or cable</li> </ul>	 <ul style="list-style-type: none"> <li>■ RMW</li> <li>■ Mounting tool for EX-R product portfolio mounting flange</li> </ul>	 <ul style="list-style-type: none"> <li>■ HMW</li> <li>■ Mounting tool with bit holder for H product portfolio</li> </ul>
Mounting tool	Disassembly tool	Multi LED
 <ul style="list-style-type: none"> <li>■ A-14</li> <li>■ Installation tool for knurled nut</li> </ul>	 <ul style="list-style-type: none"> <li>■ A-DW</li> <li>■ Removal tool for contact elements</li> </ul>	 <ul style="list-style-type: none"> <li>■ LE24/9WS</li> <li>■ LED white</li> <li>■ For Ba9S socket</li> <li>■ 24 VAC/DC</li> <li>■ Also available as 230V version</li> </ul>

# COMMAND AND SIGNALLING DEVICES ASSEMBLY HOUSING

## ENCLOSURE MBGAC/MBGHAC

The aluminium housings of the MBGAC series enjoy universal application owing to their simple and functional design. They offer the user a high level of sturdiness and a sealing concept that has proven its worth over many years. A special emergency stop enclosure MBGHAC with an integrated protective collar is available in this range and has been coordinated exactly with the emergency stop command devices of product portfolios E and R. This protects the emergency stop from being actuated accidentally and has the advantage for the plant owner of reducing undesirable downtimes.

## ENCLOSURE MBK

MBK enclosures are manufactured from a very high-quality plastic. This makes it possible for the user to use the housings under extreme conditions, such as temperatures from  $-40^{\circ}\text{C}$  to  $+100^{\circ}\text{C}$ . Furthermore, very few chemicals are capable of causing damage to this plastic. These housings have the glass fibre reinforced plastic to thank for their extreme sturdiness. Users have two knock-out drilled holes available for M20 cable glands to route cables in.

## ENCLOSURE KG

The KG-series features ABS plastic housings for simple applications that do not require the highest level of sturdiness. The cable outlets are already mounted on these enclosures, which means that plant manufacturers only need to mount the command devices.

## ENCLOSURE NBG/EBG/EX-EBG

Series NBG / EBG / EX-EBG assembly housings are made of high-quality stainless steel using a special deep-drawing process; they have been specially developed for hygiene and heavy-duty applications. The special ribbed gasket that surrounds the base of the enclosure on which the enclosure cover is forged, makes it possible to implement the particularly high IP 69K degree of protection. The EX-EBG enclosures have an additional integrated reinforcement panel that exceeds the extreme requirements for explosion protection.

## ENCLOSURE NBGLC

The assembly housings in the NBGLC series have been developed in accordance with the requirements of DIN EN 1672-2 for hygiene-sensitive areas. The housings consist of a welded base box and a solid housing cover. The sealing elements are specially designed in blue for the hygiene sector.

**MBGHAC**

- Housing material, alloy
- For emergency stop with protective collar

**MBGAC**

- Housing material, alloy

**MBK**

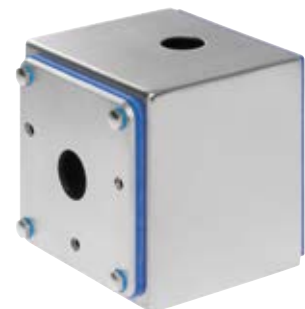
- Housing material, plastic

**KG**

- Housing material, plastic

**NBG/EBG/EX-EBG**

- Housing material, stainless steel

**NBGLC**

- Housing material, stainless steel

# COMMAND AND SIGNALLING DEVICES

## ASSEMBLY HOUSING

Type	Description	Housing material	Number of drilled holes	Middle spacing of drilled holes (mm)	Length of enclosure (mm)	
<b>MBGAC / MBGHAC</b>	Assembly housing for emergency stop	Alloy	1	–	100	
			1	–	100	
	Assembly housing		1	–	100	
			2	40	160	
			3	40	200	
			4	40	245	
			5	40	305	
			6	40	305	
			2	50	160	
			3	50	200	
			4	50	245	
			5	50	305	
			0	–	100	
			0	–	160	
			0	–	200	
			0	–	245	
			0	–	305	
<b>MBK</b>	Assembly housing	Plastic	1	40	85	
	Assembly housing for emergency stop		1	40	85	
<b>KG</b>	Assembly housing	Plastic	1	40	82	
			2	40	120	
			3	40	160	
			2	40	120	
			3	40	160	
<b>NBG/EBG</b>	Assembly housing	Stainless steel	1	–	110	
			0	–	154	
			0	–	324	
			2	60	154	
			3	60	154	
			4	60	324	
			5	60	324	
	Assembly housing for emergency stop		5	65 / 55 / 55 / 55	324	
			3	54 / 50	154	
			3	54 / 50	154	
Assembly housing	1	–	110			
	3	60	154			
	5	60	324			
<b>EX-EBG</b>	Assembly housing	Stainless steel	1	–	110	
			3	60	154	
			5	60	324	
<b>NBGLC</b>	Assembly housing	Stainless steel	1	–	100	
			1	–	100	
			2	65	195	
			2	65	195	
			3	60	195	
			3	60	195	
			4	60	315	
			4	60	315	
			5	60	315	
			5	60	315	
			Assembly housing for protective collar mounting	1	–	100
				2	65	195
	2			65	195	
	3			60	195	
	3			60	195	
	4			60	315	
	4			60	315	



Width of enclosure (mm)	Height of enclosure (mm)	Drilled hole for cable gland	Type	Recommended command device range		
				E programme	N programme	R programme
100	80	M20	MBGHAC311YE	■		■
100	80	M20	MBGAC311YE	■		■
100	80	M20	MBGAC311	■		■
100	80	M20	MBGAC422	■		■
100	80	M20	MBGAC433	■		■
100	80	M25	MBGAC444	■		■
100	80	M25	MBGAC455	■		■
100	80	M25	MBGAC466	■		■
100	80	M20	MBGAC532	■		■
100	80	M20	MBGAC543	■		■
100	80	M25	MBGAC554	■		■
100	80	M25	MBGAC565	■		■
100	80	-	MBGAC310	■		■
100	80	-	MBGAC420	■		■
100	80	-	MBGAC430	■		■
100	80	-	MBGAC440	■		■
100	80	-	MBGAC450	■		■
85	84	M20	MBK311	■		■
85	84	M20	MBK311GB	■		■
80	85	M20	KG411-A	■		Suitable only to a limited extent
80	85	M20	KG422-A	■		
80	85	M20	KG433-B	■		
80	85	M20	KG432-A	■		
80	85	M20	KG443-A	■		
110	88	M20	NBG311	■		
110	88	M20	NBG630		■	
110	88	2x M20	NBG660		■	
110	88	M20	NBG632/NM		■	
110	88	M20	NBG633		■	
110	88	2x M20	NBG664/NM		■	
110	88	2x M20	NBG665		■	
110	88	2x M20	NBG665/65.55		■	
110	88	M20	NBG633/54.50/NSK		■	
110	88	M20	NBG633/54.50		■	
110	88	M20	EBG311.0	■	■	■
110	88	M20	EBG633.0	■	■	■
110	88	M20	EBG665.0	■	■	■
110	88	M20	EX-EBG311.0			■
110	88	M25	EX-EBG633.0			■
110	88	2x M25	EX-EBG665.0			■
100	94	M20	NBGLC11.1		■	
100	94	M20	NBGLC11.3		■	
100	94	M20	NBGLC32.1		■	
100	94	M20	NBGLC32.3		■	
100	94	M20	NBGLC33.1		■	
100	94	M20	NBGLC33.3		■	
100	94	M20	NBGLC54.1		■	
100	94	M20	NBGLC54.3		■	
100	94	M20	NBGLC55.1		■	
100	94	M20	NBGLC55.3		■	
100	94	M20	NBGLC11.1/NSK		■	
100	94	M20	NBGLC32.1/NSK		■	
100	94	M20	NBGLC32.3/NSK		■	
100	94	M20	NBGLC33.1/NSK		■	
100	94	M20	NBGLC33.3/NSK		■	
100	94	M20	NBGLC54.1/NSK		■	
100	94	M20	NBGLC54.3/NSK		■	

# DOOR INTERLOCK SYSTEM SYSTEM OVERVIEW

## Control panel BDF40

Control panel with or without emergency stop

## Connection cover

## Safety switchgear

Solenoid interlock AZM40 or  
safety sensor RSS260

## Connector cover

## Door handle DHS-U1

Door handle with handle surface that  
can be illuminated in colour and button caps,  
also with coloured illumination



## 1. Door handle



**DHS-U1**  
Handle

## 2. Switchgear



**AZM40**  
Solenoid interlock



**RSS260**  
Safety Sensor

## 3. Control panel



**BDF40**  
Control panel with or without emergency stop

## 4. Accessories



### Accessories

Emergency release, connector covers, lockout tag, emergency-stop protective collars

# DOOR INTERLOCK SYSTEM DESCRIPTION

## DOOR HANDLE DHS-U1

The innovative DHS-U1 door handle combines the functions of a robust door handle with the signalling of various machine statuses via large-scale illumination of the handle. The RGB technology used makes it possible to illuminate the handle in seven different colours.

A pushbutton is also available, which can be individually adapted to customer requirements using the coloured pushbutton cover caps supplied. The pushbutton can, for example, fulfil the tasks of a reset function or a request to open the safety guard.





#### Handle colours

The coloured illumination of the door handle surface indicates the current status of the machine on the door handle itself.

The colours white, yellow, green, light blue, blue, violet and red can indicate up to seven different machine statuses.



#### Button colours

Button caps can be simply clipped onto the illuminated pushbuttons of the DHS-U1 to provide colour signalling.

This allows the illuminated pushbutton to be adapted to individual requirements and even be used for acknowledgement of machine statuses.



#### Unilluminated door handle

The DHS-U1 version without electrical connection complements the range. This allows for uniform machine design whilst also taking cost aspects into consideration. It is available for doors that do not require an additional safety switch or signalling.

# DOOR INTERLOCK SYSTEM

## TECHNICAL DATA



■ DHS-U1

### Key Features

- Machine status directly recognisable on the door handle
- Optimised for the AZM40 solenoid interlock and the RSS260 safety sensor
- Ergonomic door handle for left or right hinged safety guard




### Technical features

<b>Electrical characteristics</b>	
<b>Operating voltage</b>	24 VDC
<b>Operating current</b>	< 150 mA
<b>Operating current illuminated pushbutton LED</b>	30 mA
<b>Mechanical data</b>	
<b>Housing material</b>	
<b>Handle</b>	Glass-fibre reinforced thermoplastic
<b>Cover</b>	translucent PMMA
<b>Holder</b>	Glass-fibre reinforced thermoplastic
<b>Dimensions (W × H × D)</b>	40 × 202 × 83 mm
<b>Termination</b>	Connecting cable with connector M12, 5-pole, 0.25 m Connecting cable with connector M12, 8-pole, 0.25 m Connecting cable, 5-core, 5 m Connecting cable, 8-core, 5 m
<b>Mechanical lifetime</b>	
<b>Illuminated pushbutton / pushbutton</b>	1,000,000 operations
<b>Contact configuration</b>	
<b>Illuminated pushbutton / pushbutton</b>	1 NO contact
<b>Ambient conditions</b>	
<b>Ambient temperature</b>	
<b>with electrical connection and illuminated handle</b>	-25 °C ... +45 °C
<b>with electrical connection and unilluminated handle</b>	-25 °C ... +65 °C
<b>without electrical connection</b>	-40 °C ... +75 °C
<b>Degree of protection</b>	
<b>with operating element</b>	IP66, IP67
<b>without operating element</b>	IP66, IP67, IP69

## DOOR INTERLOCK SYSTEM PREFERRED TYPES

DHS-U1 without electrical connection	Termination				Door handle		with illuminated pushbutton	without operating element	Type	Material number
	Connecting cable with connector M12		Pre-wired cable		unilluminated	illuminated				
	5-pole, 0.25 m	8-pole, 0.25 m	5-core, 5 m	8-core, 5 m						
■					■			■	DHS-U1-BKWH	103053675
	■				■		■		DHS-U1-BKWH-LST5-0.25-LT	103053676
			■		■		■		DHS-U1-BKWH-L5-5.00-LT	103053688
	■					■		■	DHS-U1-BKWH-LST5-0.25-RGB	103053691
			■			■		■	DHS-U1-BKWH-L5-5.00-RGB	103053692
		■				■	■		DHS-U1-BKWH-LST8-0.25-RGB-LT	103053677
				■		■	■		DHS-U1-BKWH-L8-5.00-RGB-LT	103053689

## SYSTEM COMPONENTS

AZM40	RSS260	BDF40
 <ul style="list-style-type: none"> <li>■ Solenoid interlock</li> <li>■ For more information, visit <a href="https://products.schmersal.com">products.schmersal.com</a></li> </ul>	 <ul style="list-style-type: none"> <li>■ Safety sensor</li> <li>■ For more information, visit <a href="https://products.schmersal.com">products.schmersal.com</a></li> </ul>	 <ul style="list-style-type: none"> <li>■ Control panel</li> <li>■ For more information, visit <a href="https://products.schmersal.com">products.schmersal.com</a></li> </ul>

# CONTROL PANELS DESCRIPTION

## AREA OF APPLICATION

Ergonomic operation of the main machine functions at the human-machine interface is a key factor in safety. The control units should be mounted as close as possible to the safety doors so that operators have an overview of the process. BDF Series control units meet this requirement. This series has been designed for mounting onto the commercially available aluminium profile systems of machine enclosures and you can quickly attach them and integrate them in the ambient structure.

## DESIGN AND OPERATING PRINCIPLE BDF40

The BDF40 control panel is characterised by its modern and slim design. It is available in two versions, with or without emergency stop function.

Freely configurable coloured button caps for illuminated pushbuttons or pushbuttons and the combination with the AZM40 solenoid interlock and the DHS-U1 door system also offer maximum flexibility.

Alternatively, it can also be installed as a stand-alone control panel. The 12-pin M12 connector allows quick and error-free installation.

## DESIGN AND OPERATING PRINCIPLE BDF100/BDF200

The range is based on a high-quality design with slim-line housing (only 40 mm) made from impact-resistant plastic. Two designs are available to accommodate one or four command devices or indicator lights.

Users can choose from a large product portfolio of illuminated control push buttons, selector switches and selector buttons, LED illuminated indicators, key-operated switches and standards-compliant Emergency-Stop command devices. Positioning of the pushbuttons on the control panel is also freely selectable. Labelling fields allow you to label the functions individually.

This makes it possible for machine builders to use the BDF range to represent the most common operator functions like Emergency Stop, ON / OFF, Forwards / Backwards, Operating Mode Selection, display of operating status conditions or error messages, etc. All the command devices and indicator lights have been developed for industrial applications and have been tried and tested in other series of the command device product portfolio.

The system also includes a mounting plate to combine the control panel with a solenoid interlock and an ergonomic door handle.

In addition to the standard version for parallel wiring, versions with different communications interfaces are also available such as the AS interface Safety at Work (AS-i SaW) or the serial diagnostic interface (SD) and for use on the secure field box SFB.

An overview of the combination options for the command and signalling devices as well as the preferred types of the AS-i, SD and FB versions can be found on page 132.





## SAMPLE APPLICATION



The photo shows a combination with the BDF200 and an AZM201 solenoid interlock, including a B30 door-handle actuator with the mounting plate as an elegant safety door solution. This positive connection between the BDF200 control panel and the AZM201 solenoid interlock offers machine operators a whole new level of convenience.

# CONTROL PANELS

## TECHNICAL DATA – BDF40



■ BDF40



■ BDF40-NH

### Key Features

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>▪ Up to four buttons</li> <li>▪ Slimline design to match the AZM40 solenoid interlock and the DHS-U1 door handle system</li> <li>▪ Flexibility thanks to pushbutton cover caps in 12 colours</li> <li>▪ Generous open spaces for easy labelling</li> <li>▪ Quick and error-free installation thanks to M12 connector</li> </ul> | <ul style="list-style-type: none"> <li>▪ With emergency stop and up to three buttons</li> <li>▪ Optionally with EMERGENCY STOP protective collar</li> <li>▪ Slimline design to match the AZM40 solenoid interlock and the DHS-U1 door handle system</li> <li>▪ Flexibility thanks to pushbutton cover caps in 12 colours</li> <li>▪ Generous open spaces for easy labelling</li> <li>▪ Quick and error-free installation thanks to M12 connector</li> </ul> |
|--|---|

### Technical features


<b>Electrical characteristics</b>		
<b>Operating voltage</b>	24 VDC	24 VDC
<b>Operating current</b>	100 mA	100 mA
<b>Power consumption LED</b>	10 mA	10 mA
<b>Mechanical data</b>		
<b>Housing material</b>	glass-fibre reinforced thermoplastic, self-extinguishing	glass-fibre reinforced thermoplastic, self-extinguishing
<b>Dimensions (W × H × D)</b>	40 x 217 x 25 mm	40 x 217 x 44 mm
<b>Termination</b>	Connector plug M12, 12-pole	Connector plug M12, 12-pole
<b>Mechanical lifetime</b>		
<b>Emergency stop</b>	–	50,000 operations
<b>Illuminated pushbutton / pushbutton</b>	1,000,000 operations	1,000,000 operations
<b>Ambient conditions</b>		
<b>Ambient temperature</b>	–25 °C ... +65 °C	–25 °C ... +65 °C
<b>Degree of protection</b>	IP65	IP65

### Safety classification emergency stop




<b>Standards</b>	–	EN ISO 13849-1
<b>B<sub>100</sub> NC contact</b>	–	100,000
<b>Certificates</b>	cULus	cULus

To get detailed information about the products and certificates, visit [products.schmersal.com](https://products.schmersal.com).

## CONTROL PANELS PREFERRED TYPES – BDF40

Series	Fitting At pos. 1	Pos. 2	Pos. 3	Pos. 4	Type	Material number
<b>BDF40</b> 	NH	LT	LT	LT	<b>BDF40-ST-10-NH-LT-LT-LT</b>	<b>103052203</b>
	LT	LT	LT	LT	<b>BDF40-ST-10-LT-LT-LT-LT</b>	<b>103052204</b>
	LM	LT	LT	LT	<b>BDF40-ST-10-LM-LT-LT-LT</b>	<b>on request</b>
	LT	LT	LT	LM	<b>BDF40-ST-10-LT-LT-LT-LM</b>	<b>on request</b>
	NH	LM	LT	LT	<b>BDF40-ST-10-NH-LM-LT-LT</b>	<b>on request</b>
	NH	LT	LT	LM	<b>BDF40-ST-10-NH-LT-LT-LM</b>	<b>on request</b>
	LM	LT	LT	LM	<b>BDF40-ST-10-LM-LT-LT-LM</b>	<b>on request</b>

## SYSTEM COMPONENTS – BDF40

AZM40	DHS-U1	SRB-E-402ST
 <ul style="list-style-type: none"> <li>■ Solenoid interlock</li> <li>■ For more information, visit <a href="https://products.schmersal.com">products.schmersal.com</a></li> </ul>	 <ul style="list-style-type: none"> <li>■ Door handle</li> <li>■ For more information, visit <a href="https://products.schmersal.com">products.schmersal.com</a></li> </ul>	 <ul style="list-style-type: none"> <li>■ 2x function STOP 0</li> <li>■ 2x 1- or 2-channel control</li> <li>■ 2x start button / autostart</li> <li>■ 2 safety contacts</li> <li>■ 2 safety outputs</li> <li>■ For more information, visit <a href="https://products.schmersal.com">products.schmersal.com</a></li> </ul>

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# ACCESSORIES

## BDF40 AND DHS

<p><b>MS-BDF40-NHK</b></p>  <ul style="list-style-type: none"> <li>■ Emergency stop protective collar</li> <li>■ Protection against unintentional actuation</li> <li>■ Easy to install</li> </ul>	<p><b>MS-BDF40</b></p>  <ul style="list-style-type: none"> <li>■ Tamper-proofing cover</li> </ul>	<p><b>Connection cover AZM40/BDF40</b></p>  <ul style="list-style-type: none"> <li>■ AZM40 hinged on the left: <b>MS-AZM40-BDF40-L</b></li> <li>■ AZM40 hinged on the right: <b>MS-AZM40-BDF40-R</b></li> </ul>	
<p><b>ACC-DHS-U1-INS</b>      <b>103055437</b></p>  <ul style="list-style-type: none"> <li>■ Actuator insert without integrated actuator</li> </ul>	<p><b>ACC-DHS-U1-INS-U-2</b>      <b>103055438</b></p>  <ul style="list-style-type: none"> <li>■ Actuator insert, incl. RST actuator</li> </ul>	<p><b>BDF40-DHS-PBC-DT</b></p>  <ul style="list-style-type: none"> <li>■ Pushbutton caps</li> <li>■ Adaptation to individual requirements by simply clipping on</li> <li>■ Refer to the table for the ordering suffix</li> </ul>	
<p><b>BDF40-DHS-PBC-LT</b></p>  <ul style="list-style-type: none"> <li>■ Illuminated pushbutton caps</li> <li>■ Adaptation to individual requirements by simply clipping on</li> <li>■ Refer to the table for the ordering suffix</li> </ul>	<p><b>Ordering suffix of the cover caps</b></p> <p>Pushbutton caps, 1 piece per colour:</p> <p>Pushbutton caps, five of each:</p> <ul style="list-style-type: none"> <li>▪ black</li> <li>▪ blue</li> <li>▪ green</li> <li>▪ red</li> <li>▪ white</li> <li>▪ yellow</li> </ul> <p>Illuminated pushbutton caps, 1 piece per colour:</p> <p>Illuminated pushbutton caps, five of each:</p> <ul style="list-style-type: none"> <li>▪ blue</li> <li>▪ green</li> <li>▪ red</li> <li>▪ white</li> <li>▪ yellow</li> </ul>	<p><b>Type</b></p> <p><b>BDF40-DHS-PBC-DT</b></p> <p><b>BDF40-DHS-PBC-DT-BK</b> <b>BDF40-DHS-PBC-DT-BU</b> <b>BDF40-DHS-PBC-DT-GN</b> <b>BDF40-DHS-PBC-DT-RD</b> <b>BDF40-DHS-PBC-DT-WH</b> <b>BDF40-DHS-PBC-DT-YE</b></p> <p><b>BDF40-DHS-PBC-LT</b></p> <p><b>BDF40-DHS-PBC-LT-BU</b> <b>BDF40-DHS-PBC-LT-GN</b> <b>BDF40-DHS-PBC-LT-RD</b> <b>BDF40-DHS-PBC-LT-WH</b> <b>BDF40-DHS-PBC-LT-YE</b></p>	<p><b>Material number</b></p> <p><b>103051694</b></p> <p><b>103052432</b> <b>103052430</b> <b>103052429</b> <b>103052427</b> <b>103052431</b> <b>103052428</b></p> <p><b>103051229</b></p> <p><b>103052436</b> <b>103052435</b> <b>103052433</b> <b>103052437</b> <b>103052434</b></p>

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# CONTROL PANELS

## TECHNICAL DATA



■ BDF100...-NH



■ BDF100...

### Key Features

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>Control panel with emergency stop</li> <li>Emergency stop function with and without protective collar</li> <li>Slim, shock-resistant thermoplastic enclosure</li> <li>For mounting on commercially available aluminium profile systems</li> </ul> | <ul style="list-style-type: none"> <li>Control panel with one control element</li> <li>Slim, shock-resistant thermoplastic enclosure</li> <li>For mounting on commercially available aluminium profile systems</li> <li>Large product portfolio of operating and lighting elements</li> </ul> |
|--|---|

### Other versions

AS-i SaW	–	–
SD-Interface	–	–

### Technical features

<b>Electrical characteristics</b>		
Max. switching capacity U/I	24 VAC / 2 A; 24 VDC / 1 A	24 VAC / 2 A; 24 VDC / 1 A
Switching of low voltages	5 V / 1 mA	5 V / 1 mA
<b>Circuit versions</b>		
Emergency stop	2 NC contact/1 NO contact	–
Command devices	–	1 NO /1 NC; 2 NO
Emergency stop with indicator lamp	2 NC contact/1 NO contact	–
Command devices with indicator lamp	–	1 NO /1 NC; 2 NO
<b>Mechanical data</b>		
Housing material	Glass-fibre reinforced thermoplastic, self-extinguishing	Glass-fibre reinforced thermoplastic, self-extinguishing
<b>Dimensions (W × H × D)</b>		
With protective collar	40 × 99 × 69 mm	–
Without protective collar	40 × 99 × 49 mm	40 × 99 × 49 mm
Termination	Connector plug M12, 8-pole	Connector plug M12, 8-pole
<b>Ambient conditions</b>		
Ambient temperature	–25 °C ... +65 °C	–25 °C ... +65 °C
Degree of protection	IP65	IP65

### Safety classification

Standards	EN ISO 13849-1	EN ISO 13849-1
B <sub>10D</sub> NC contact	100,000	100,000
Certificates	cULus	cULus

To get detailed information about the products and certificates, visit [products.schmersal.com](http://products.schmersal.com).



■ BDF200-NH-...



■ BDF200...



■ BDF200-NH-...-2920



■ BDF200-...-2920

- Control panel with emergency stop and 3 control elements
- Emergency stop function with and without protective collar
- Slim, shock-resistant thermoplastic enclosure
- For mounting on commercially available aluminium profile systems
- Large product portfolio of operating and lighting elements

- Control panel with 4 control elements
- Slim, shock-resistant thermoplastic enclosure
- For mounting on commercially available aluminium profile systems
- Large product portfolio of operating and lighting elements

- Connector plug M12, 12-pole
- Control panel with emergency stop and 3 control elements
- Emergency stop function with and without protective collar
- Slim, shock-resistant thermoplastic enclosure
- For mounting on commercially available aluminium profile systems
- Large product portfolio of operating and lighting elements

- Connector plug M12, 12-pole
- Control panel with 4 control elements
- Slim, shock-resistant thermoplastic enclosure
- For mounting on commercially available aluminium profile systems
- Large product portfolio of operating and lighting elements




■	-	-	-
■	-	-	-

24 VAC / 2 A; 24 VDC / 1 A 5 V / 1 mA	24 VAC / 2 A; 24 VDC / 1 A 5 V / 1 mA	24 VAC / 1.5 A; 24 VDC / 1 A 5 V / 1 mA	24 VAC / 1.5 A; 24 VDC / 1 A 5 V / 1 mA
2 NC contact/1 NO contact 1 NC /1 NO; 2 NO 2 NC contact 1 NO	- 1 NC /1 NO; 2 NO - 1 NO	2 NC contact 1 NC contact/1 NO contact - -	- 1 NC contact/1 NO contact - -
Glass-fibre reinforced thermoplastic, self-extinguishing	Glass-fibre reinforced thermoplastic, self-extinguishing	Glass-fibre reinforced thermoplastic, self-extinguishing	Glass-fibre reinforced thermoplastic, self-extinguishing
40 × 220 × 69 mm 40 × 220 × 49 mm M20 cable gland with plug-in terminals	- 40 × 220 × 49 mm M20 cable gland with plug-in terminals	40 × 220 × 69 mm 40 × 220 × 49 mm Connector plug M12, 12-pole	- 40 × 220 × 49 mm Connector plug M12, 12-pole
-25 °C ... +65 °C IP65	-25 °C ... +65 °C IP65	-25 °C ... +65 °C IP65	-25 °C ... +65 °C IP65





EN ISO 13849-1 100,000 cULus	EN ISO 13849-1 100,000 cULus	EN ISO 13849-1 100,000 cULus	EN ISO 13849-1 100,000 cULus
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# CONTROL PANELS

## OPERATING ELEMENTS – BDF100 AND BDF200

Emergency stop pushbutton NH	Emergency stop pushbutton NHK	Pushbutton DT..
 <ul style="list-style-type: none"> <li>■ Mushroom-shaped plastic button, Ø 30 mm</li> <li>■ Without protective collar: ordering suffix NH</li> <li>■ Pull to reset</li> <li>■ 1 NO contact / 2 NC contacts</li> </ul>	 <ul style="list-style-type: none"> <li>■ Mushroom-shaped plastic button, Ø 30 mm</li> <li>■ With protective collar: ordering suffix NHK</li> <li>■ Pull to reset</li> <li>■ 1 NO contact / 2 NC contacts</li> </ul>	 <ul style="list-style-type: none"> <li>■ With concave button, button surface 19 × 19 mm</li> <li>■ 2 NO contacts or 1 NO contact / 1 NC contact</li> <li>■ Printing is possible on request</li> <li>■ Refer to the table below for the ordering suffix</li> </ul>

Indicator lights LM..	Mushroom pushbutton PT..	Illuminated pushbutton LT..
 <ul style="list-style-type: none"> <li>■ Illuminated surface 19 × 19 mm</li> <li>■ Lamp replacement at the front</li> <li>■ Printing is possible on request</li> <li>■ Refer to the table below for the ordering suffix</li> </ul>	 <ul style="list-style-type: none"> <li>■ Button surface 25 × 25 with rounded edges</li> <li>■ Without latching</li> <li>■ 2 NO contacts or 1 NO contact / 1 NC contact</li> <li>■ Printing is possible on request</li> <li>■ Refer to the table below for the ordering suffix</li> </ul>	 <ul style="list-style-type: none"> <li>■ With concave button, button surface 19 × 19 mm</li> <li>■ 2 NO contacts or 1 NO contact / 1 NC contact</li> <li>■ Lamp replacement at the front</li> <li>■ Printing is possible on request</li> <li>■ Refer to the table below for the ordering suffix</li> </ul>

Ordering suffix	yellow	red	green	blue	black	white
 Mushroom pushbutton PT..	PTYE	PTRD	PTGN	PTBU	PTBK	PTWH
 Pushbutton DT..	DTYE	DTRD	DTGN	DTBU	DTBK	DTWH
 Illuminated pushbutton LT..	LYE	LTRD	LTGN	LTBU	/	LTWH
 Indicator light LM..	LMYE	LMRD	LMGN	LMBU	/	LMWH

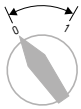
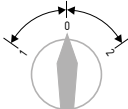

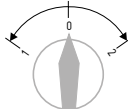
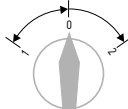



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# CONTROL PANELS

## OPERATING ELEMENTS – BDF100 AND BDF200

Maintained selector switches / spring-return selector switches	Maintained selector switches / spring-return selector switches	Key-operated selector switches/buttons
 <ul style="list-style-type: none"> <li>■ Version with standard toggle, anthracite</li> <li>■ Refer to the table below for the ordering suffix</li> </ul>	 <ul style="list-style-type: none"> <li>■ Version with long toggle, anthracite</li> <li>■ Refer to the table below for the ordering suffix</li> </ul>	 <ul style="list-style-type: none"> <li>■ Version with high-quality cylinder lock; therefore, IP65 in this case too</li> <li>■ Key can be removed in all positions</li> <li>■ Refer to the table below for the ordering suffix</li> </ul>


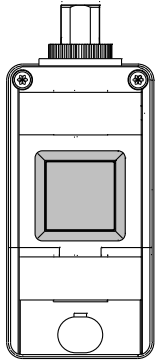



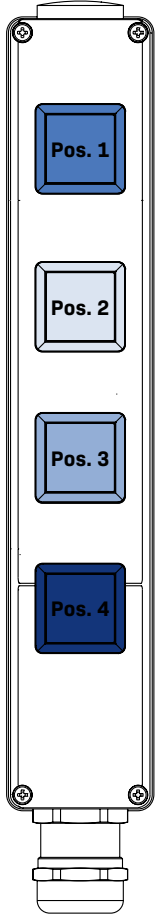





Ordering suffix	Maintained selector switch	Maintained selector switch	Spring-return selector switch	Spring-return selector switch	Selector switch
					
	1 latched position	2 latched positions to the left/right of the zero position	1 momentary position and automatic return to the zero position	2 touch positions to the left/right of the zero position and automatic return to the zero position	1 momentary position on the right and automatic return to the zero position and 1 maintained position to the left of the zero position
	2 NO or 1 NO / 1 NC	1 NO per position or 1 NC (position 1) / 1 NO (position 2)	2 NO or 1 NO / 1 NC	1 NO per position or 1 NC (position 1) / 1 NO (position 2)	1 NO per position or 1 NC (position 1) / 1 NO (position 2)
 Standard toggle	<b>WS20</b>	<b>WS30 *</b>	<b>WT20</b>	<b>WT30 *</b>	<b>WTS30 *</b>
 Long toggle	<b>WS21</b>	<b>WS31 *</b>	<b>WT21</b>	<b>WT31 *</b>	<b>WTS31 *</b>
 Key-operated switch	<b>SWS20</b>		<b>SWT20</b>		

\* not for -2920 version .



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# CONTROL PANELS

## COMBINATION OPTIONS – BDF100 AND BDF200

Control elements		BDF100 with	BDF200				Control panels
			At pos. 1	At pos. 2	At pos. 3	At pos. 4	
	NH	•	•				<b>BDF100</b> 
	NHK	•	•				
	PT..		•	•	•	•	
	DT..	•	•	•	•	•	<b>BDF200</b> 
	LT..	•	•	•	•	•	
	LM..		•	•	•	•	
	SW.20	•		•	•		
	W..0	•		•	•		
	W..1	•		•	•		

# CONTROL PANELS PREFERRED TYPES<sup>1)</sup> AND ACCESSORIES – BDF100 AND BDF200

Series	Fitting At pos. 1	Pos. 2	Pos. 3	Pos. 4	Indicator lamp	Type	Material number
<b>BDF100</b> 	NH	---	---	---	red	<b>BDF100-NH-G-ST</b>	<b>101215862</b>
	NHK	---	---	---		<b>BDF100-NHK-G-ST</b>	<b>101211974</b>
	LTBU	---	---	---	---	<b>BDF100-11-LTBU-ST</b>	<b>101216402</b>
	LTGN	---	---	---		<b>BDF100-11-LTGN-ST</b>	<b>101216247</b>
	SWS20	---	---	---		<b>BDF100-11-SWS20-ST</b>	<b>101217193</b>
	WS20	---	---	---	green	<b>BDF100-11-WS20-G/GN-ST</b>	<b>103001068</b>
	LTBU	---	---	---	---	<b>BDF100-20-LTBU-ST</b>	<b>101217770</b>
	LTGN	---	---	---		<b>BDF100-20-LTGN-ST</b>	<b>101217217</b>
<b>BDF200</b> 	NH	LT	LT	LT	red	<b>BDF200-NH-10-LT-LT-LT-G24-2875<sup>1)</sup></b>	<b>103007781</b>
		LT	LT	LT	---	<b>BDF200-NH-11-LT-LT-LT-2875<sup>1)</sup></b>	<b>103007782</b>
		LT	LT	LT		<b>BDF200-NH-11-LT-LT-LT-2875/2920<sup>1)2)</sup></b>	<b>103015461</b>
		LT	LT	LT		<b>BDF200-NH-20-LT-LT-LT-2875<sup>1)</sup></b>	<b>103007783</b>
		SWS20	LT	LT	<b>BDF200-NH-11-SWS20-LT-LT-2875<sup>1)</sup></b>	<b>103007789</b>	
		SWS20	LT	LT	<b>BDF200-NH-20-SWS20-LT-LT-2875<sup>1)</sup></b>	<b>103007790</b>	
	NHK	LT	LT	LT	red	<b>BDF200-NHK-10-LT-LT-LT-G24-2875<sup>1)</sup></b>	<b>103007784</b>
		LT	LT	LT	---	<b>BDF200-NHK-11-LT-LT-LT-2875<sup>1)</sup></b>	<b>103007785</b>
		LT	LT	LT		<b>BDF200-NHK-11-LT-LT-LT-2875/2920<sup>1)2)</sup></b>	<b>103026143</b>
		LT	LT	LT		<b>BDF200-NHK-20-LT-LT-LT-2875<sup>1)</sup></b>	<b>103007786</b>
		SWS20	LT	LT	<b>BDF200-NHK-11-SWS20-LT-LT-2875<sup>1)</sup></b>	<b>103007791</b>	
		SWS20	LT	LT	<b>BDF200-NHK-20-SWS20-LT-LT-2875<sup>1)</sup></b>	<b>103007792</b>	
	LT	LT	LT	LT	---	<b>BDF200-LT-11-LT-LT-LT-2875<sup>1)</sup></b>	<b>103007787</b>
		LT	LT	LT		<b>BDF200-LT-11-LT-LT-LT-2875/2977<sup>1)2)</sup></b>	<b>103025115</b>
		LT	LT	LT		<b>BDF200-LT-20-LT-LT-LT-2875<sup>1)</sup></b>	<b>103007788</b>

<sup>1)</sup> Type designation -2875: the coloured button caps are included in the scope of delivery as an accessory pack for customers to mount themselves.


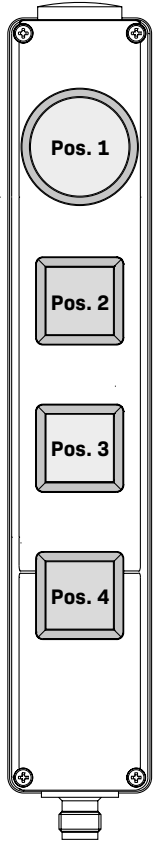








<sup>2)</sup> with connector plug M12, 12 pole

AZM201	MP BDF 200	101214126	SRB-E-402ST
 <ul style="list-style-type: none"> <li>Can be combined with the AZM201 solenoid interlock</li> <li>For more information, visit <a href="http://products.schmersal.com">products.schmersal.com</a></li> </ul>	 <ul style="list-style-type: none"> <li>Mounting plate for combination of AZM201 solenoid interlock with -B30 actuator and BDF200 control panel</li> </ul>	 <ul style="list-style-type: none"> <li>2x function STOP 0</li> <li>2x 1- or 2-channel control</li> <li>2x start button / autostart</li> <li>2 safety contacts</li> <li>2 safety outputs</li> <li>For more information, visit <a href="http://products.schmersal.com">products.schmersal.com</a></li> </ul>	

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# CONTROL PANELS

## COMBINATION OPTIONS AS-I, SD, FB

Control elements		BDF200-AS / SD / FB				Control panels
		At pos. 1	At pos. 2	At pos. 3	At pos. 4	
	NH	•				
	NHK	•				
	PT..		•	•	•	
	DT..		•	•	•	
	LT..		•	•	•	
	LM..		•	•	•	
	SW.20		•	•		
	W..0		•	•		
	W..1		•	•		

## CONTROL PANELS

### PREFERRED TYPES AS-I, SD, FB



Series	Fitting At pos. 1	Pos. 2	Pos. 3	Pos. 4	Indicator lamp	Type designation	Material number
<b>Variant: AS-Interface</b>							
NH	LT	LT	LT	LT	red/green	<b>BDF200-ST1-AS-NH-LT-LT-LT-G24-2875</b> <sup>1)</sup>	<b>103012552</b>
	LMRD	LTWH	LTBU	LTBU	---	<b>BDF200-ST1-AS-NH-LMRD-LTWH-LTBU</b>	<b>101214617</b>
	LTRD	LTGN	LTBU	LTBU	---	<b>BDF200-ST1-AS-NH-LTRD-LTGN-LTBU</b>	<b>103003704</b>
	WS20	LTWH	LTGN	LTGN	---	<b>BDF200-ST1-AS-NH-WS20-LTWH-LTGN</b>	<b>103013250</b>
	LTGN	LTYE	LTWH	LTWH	red/green	<b>BDF200-ST1-AS-NH-LTGN-LTYE-LTWH-G24</b>	<b>103005880</b>
NHK	LMRD	LTWH	LTBU	LTBU	---	<b>BDF200-ST1-AS-NHK-LMRD-LTWH-LTBU</b>	<b>101215387</b>
	LTRD	LTWH	LTBU	LTBU	---	<b>BDF200-ST1-AS-NHK-LTRD-LTWH-LTBU</b>	<b>103000961</b>
	LTBU	LTYE	LTGN	LTGN	red/green	<b>BDF200-ST1-AS-NHK-LTBU-LTYE-LTGN-G24</b>	<b>103013865</b>
	WS20	LTWH	LTGN	LTGN	---	<b>BDF200-ST1-AS-NHK-WS20-LTWH-LTGN</b>	<b>103013250</b>
	SWS20	LTWH	LTBU	LTBU	red/green	<b>BDF200-ST1-AS-NHK-SWS20-LTWH-LT-BU-G24</b>	<b>101214618</b>
<b>Variant: SD interface</b>							
NH	LT	LT	LT	LT	---	<b>BDF200-SD-NH-LT-LT-LT-2875</b> <sup>1)</sup>	<b>103015446</b>
NHK	LT	LT	LT	LT	---	<b>BDF200-SD-NHK-LT-LT-LT-2875</b> <sup>1)</sup>	<b>103025848</b>
	SWS20	WS30	LTWH	LTWH	red/green	<b>BDF200-SD-NHK-SWS20-WS30-LTWH-G24</b>	<b>103015448</b>
<b>Variant: FB interface</b>							
NH	LT	LT	LT	LT	---	<b>BDF200-FB-NH-LT-LT-LT-2875</b> <sup>1)</sup>	<b>103015447</b>
NHK	WS20	LTBU	LTBU	LTBU	red/green	<b>BDF200-FB-NHK-WS20-LTBU-LTBU-G24</b>	<b>103025654</b>
	SWS20	WS30	LTBU	LTBU	red/green	<b>BDF200-FB-NHK-SWS20-WS30-LTBU-G24</b>	<b>103015449</b>

<sup>1)</sup> Type designation -2875: the coloured button caps are included in the scope of delivery as an accessory pack for customers to mount themselves.

# TWO-HAND CONTROL PANELS

## DESCRIPTION

### AREA OF APPLICATION

The job of two-hand controls or two-hand control panels is to ensure that the machine operators hands are located on the control panel when they issue the control signal for a hazardous movement. This prevents operators from reaching into the danger area after starting the machine or process.

The main areas of application for two-hand controls are presses and stamping units in the metal processing or powder metallurgy industries as well as similar machines and systems that involve manual insertion and removal operations. These include printing and paper processing machines, rubber and plastics processing machines, machines involved in the chemical industry and assembly plants.

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### DESIGN AND OPERATING PRINCIPLE

Two-hand control panels are designed as such so the operators need both hands at the same time to start a hazardous movement. This forces operators to keep their hands in the same place which means that they cannot reach into the danger zone while the system is carrying out the hazardous movement.

All Schmersal Group two-hand control panels are fitted with an Emergency Stop button that complies with EN ISO 13850. Apart from this, there are guard hoods over the operating elements, which prevent people from circumventing the protection function using their hands, elbows, stomach, hips, thighs or knees, for example. It is also not possible to operate from the back of the control panels.



The devices comply with the requirements of EN ISO 13851, which, amongst other things, specifies the spacing of the controls. Users can choose between different versions that differ, amongst other things, by virtue of the material of the enclosure (plastic and die-cast aluminium). In the central part of the folding enclosure, it is possible to mount up to eight additional command and signalling devices.

Accessories include, amongst other things, various stand versions. Combined with the PROTECT SRB 201 ZH safety-monitoring module, it is possible to integrate two-hand control panels into the machine controller.

## WIDE SELECTION OF MOUNTING POSTS

You can find appropriate mounting posts and other accessories on page 140 and in our online catalogue at [products.schmersal.com](https://products.schmersal.com).



# TWO-HAND CONTROL PANELS

## TECHNICAL DATA



SEP K02



SEP G05

### Key Features

- Plastic enclosure
- Control panel with 8 additional drilled holes that you can knock out if required
- 2-piece enclosure for simple and favourable assembly

- Aluminium die cast enclosure
- Control panel suitable for mounting a minimum of 8 additional command and signalling devices
- Easy assembly thanks to 2-piece folding enclosure
- Ergonomic operation due to wrist support
- Terminal strips and relay assembly possible in the interior

### Technical features

General description	Two-hand control panel	Two-hand control panel
<b>Mechanical data</b>		
<b>Housing material</b>	Plastic	Die-cast aluminium
<b>Color</b>	RAL 7035 (tinted)	RAL 7035 (powder-coated)
<b>Dimensions (L x W x H)</b>	469 x 137 x 185 mm	494 x 160 x 184 mm
<b>Possible fastening</b>		
<b>On mounting post</b>	Yes	Yes
<b>Directly on the machine or wall</b>	Yes	Yes
<b>Command positions</b>		
<b>Number of drilled holes</b>	3	3
<b>Optional possible command positions</b>	8	8
<b>Ø of drilled hole</b>	22.3 mm	22.3 mm
<b>Electrical data</b>	Depends on the pre-mounted command device	Depends on the pre-mounted command device
<b>Ambient conditions</b>		
<b>Degree of protection</b>	IP65	IP65

### Safety classification

<b>Standards</b>	IEC 60947-5-1, IEC 60947-1, IEC 60947-5-5, EN ISO 13850, EN ISO 13851	IEC 60947-5-1, IEC 60947-1, IEC 60947-5-5, EN ISO 13850, EN ISO 13851
<b>Certificates</b>	-	-

You can also find appropriate mounting posts, command devices and other accessories in our online catalogue at [products.schmersal.com](https://products.schmersal.com).





## SEP09

- Aluminium enclosure
- For separate assembly of the controls for two-hand control
- Specify on user side spacing according to EN ISO 13851

Two-hand control

Aluminium

RAL 7035 (powder-coated)

155 × 150 × 160 mm  
(per operating element)

No

Yes

1 per operating element

–

22.3 mm








Depends on the  
pre-mounted command device

IP54

IEC 60947-5-1,  
IEC 60947-1,  
EN ISO 13851







–

## TWO-HAND CONTROL PANELS PREFERRED TYPES <sup>1)</sup>

Range	Enclosure	Description	Controls	Head Ø	Contacts	
SEPK02	Plastic	2-piece enclosure with 8 additional drilled holes that you can knock out if required	ADP55.3SW		55 mm	1 NO / 1 NC
			ADP55.3SW/O.F			
			Empty enclosure			
SEPG05	Metal film	2-part enclosure suitable for mounting a minimum of 8 additional command and signalling devices	EDP42SW		42 mm	1 NO / 1 NC
			EDP55SW		55 mm	1 NO / 1 NC
			ADP55.3SW		55 mm	1 NO / 1 NC
			Empty enclosure			
SEP09	Metal film	For separate assembly of the controls for two-hand control with detachable aluminium cover on the bottom	EDP55SW		55 mm	1 NO / 1 NC
			EDP42SW		42 mm	1 NO / 1 NC
			Empty enclosure			

<sup>1)</sup> The preferred types designate the choice of devices with faster delivery times.

For the technical data of the command devices, visit [products.schmersal.com](https://products.schmersal.com).

Emergency stop		Head Ø	Contacts	Type	Material number
ADRR40RT		40 mm	1 NO / 1 NC	SEPK02.0.4.0.22/95	101027371
				SEPK02.0.4.0.22/95.E2	101211126
				SEPK02.0.L.22	101027369
EDRR40RT		40 mm	1 NO / 1 NC	SEPG05.3.3.0.22/95	101172764
EDRR50RT		50 mm	1 NO / 1 NC	SEPG05.3.2.0.22/95	101172762
EDRR40RT		40 mm	1 NO / 1 NC	SEPG05.3.4.0.22/95	101172765
EDRR50RT		50 mm	1 NO / 1 NC	SEPG05.3.1.0.22/95	101172760
EDRR40RT		40 mm	1 NO / 1 NC	SEPG05.3.4.0.22/95.E1	101210845
				SEPG05.3.L.22	101172767
-		-	-	SEP09.0.1.0.22/95	101022849
-		-	-	SEP09.0.3.0.22/95	101022851
				SEP09.0.L.22	101022856

## TWO-HAND CONTROL PANELS MOUNTING POST

STPLC1	101024774	STP 02.1.1	101022865	STP 02.4.1	101022867
 <ul style="list-style-type: none"> <li>■ Welded structure with base-fastening tapped holes</li> <li>■ Without height adjustment, without distance ring</li> <li>■ Can be combined with SEP ... control panel for use as a two-hand foot operating station</li> </ul>		 <ul style="list-style-type: none"> <li>■ Welded structure with base-fastening tapped holes</li> <li>■ With height adjustment</li> <li>■ Without distance ring</li> </ul>		 <ul style="list-style-type: none"> <li>■ Welded structure with base-fastening tapped holes</li> <li>■ With height adjustment</li> <li>■ With distance ring</li> </ul>	

## RECOMMENDED EVALUATIONS

SRB-E-201ST	SRB-E-402ST	
 <ul style="list-style-type: none"> <li>■ Monitoring two-hand control panels to EN ISO 13851</li> <li>■ Function STOP 0</li> <li>■ 1- or 2-channel control</li> <li>■ Start button / autostart</li> <li>■ 2 safety outputs 5.5 A</li> <li>■ 1 signalling output</li> <li>■ For more information, visit <a href="http://products.schmersal.com">products.schmersal.com</a></li> </ul>	 <ul style="list-style-type: none"> <li>■ Monitoring two-hand control panels to EN ISO 13851</li> <li>■ 2x function STOP 0</li> <li>■ 2x 1- or 2-channel control</li> <li>■ 2x start button / autostart</li> <li>■ 2 safety contacts</li> <li>■ 2 safety outputs</li> <li>■ For more information, visit <a href="http://products.schmersal.com">products.schmersal.com</a></li> </ul>	

For detailed information on selection, visit [products.schmersal.com](http://products.schmersal.com).

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Schmersal Group

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Thanks to its worldwide consultancy network, tec.nicum services are available around the globe. tec.nicum provides customers with competent, product- and manufacturer-neutral advice and supports them in the safety-related design of their machines.

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**tec.nicum engineering**  
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# MAINTAINED JOYSTICK SWITCHES AND SPRING-RETURN JOYSTICK SWITCHES

## DESCRIPTION – RANGE MK/WK

### AREA OF APPLICATION

Extremely robust, compact, versatile and functional: These properties make MK/WK series joystick buttons and switches highly suitable for use on machinery and plants in the food-processing and process technology industries.

Furthermore, they are suitable for especially harsh industrial applications, including outdoor usage. Compared with multifunctional command systems, such as those used on the control units for cranes and automated guided vehicles (AGV), they need considerably less installation space.

### DESIGN AND OPERATING PRINCIPLE

Users can choose between three designs:

- Maintained joystick switch, reset by touch and spring force
- Spring-return joystick switch, reset by spring force
- Maintained and spring-return joystick switch, reset by touch and spring force

All the designs are available with up to four switch positions/actuating directions.

This means that the joystick switches and buttons make the HMI easier: It is possible to actuate different machine functions with a single, compact piece of robust switchgear.

The joystick switches and buttons are available in a wide range of different contact variants with up to eight galvanically isolated contacts as well as in protection classes IP65, IP67 and IP69K. We can also supply versions for outdoor applications that are suitable for temperatures of -25 °C to +80 °C. If you want protection from accidental actuation from the zero position, it is possible to fit the operating devices with a mechanical lock.

The contact system in series MK and WK works on the tried and tested four-way contact ("H bridge") principle that is extremely shock- and jolt-resistant.



## OPERATING PRINCIPLE

### Spring-return joystick switch

Spring-return switching position (touch position)  
Reset by spring force



### Joystick switch

Maintained switching positions (latched position)  
Reset by touch and spring force



### Maintained/spring-return joystick switch

Switching position spring-return and maintained  
Reset by touch and spring force



### Locking sleeve

All devices are available with an additional mechanical lock as a protection against accidental shifts out of the home position. The holding force of the lock is approx. 100 N for devices with an installation diameter of 22.3 mm and approx. 200 N for devices with an installation diameter of 30.5 mm.



# MAINTAINED JOYSTICK SWITCHES AND SPRING-RETURN JOYSTICK SWITCHES TECHNICAL DATA – RANGE MK/WK



■ MKT



■ MKS

## Key Features

- Mounting hole  $\varnothing$  22,3 mm
- Spring-return joystick switch

- Mounting hole  $\varnothing$  22,3 mm
- Maintained joystick switch

## Technical features

Mechanical data		
Length of actuator	77 mm	77 mm
Material of the front ring	Al anodised	Al anodised
Mounting ramp edge	Knurled nut	Knurled nut
Mounting hole	22.3 mm	22.3 mm
Installation depth	Depending on contact type	Depending on contact type
Front plate thickness	1.5 mm ... 6 mm	1.5 mm ... 6 mm
Spacing	80 × 80 mm	80 × 80 mm
Actuating force	approx. 11 N	approx. 11 N
Momentary position	To left and right of zero position	–
Latching position	–	To left and right of zero position
Resistance to shock	30 g/18 ms, no bouncing	30 g/18 ms, no bouncing
Resistance to vibration	> 20 g/10 ... 150 Hz	> 20 g/10 ... 150 Hz
Switching frequency	1,200 s/h	1,200 s/h
Switching principle	Creep circuit element	Creep circuit element
Execution of the electrical Connection	Screw terminals	Screw connection
Cable section	0.5 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>	0.5 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Electrical data		
Rated impulse withstand voltage $U_{imp}$	4 kV	4 kV
Rated insulation voltage $U_i$	400 V	400 V
Thermal test current $I_{the}$	10 A	10 A
Max. fuse rating	10 A gG	10 A gG
Utilisation category	AC-15: 250 VAC/8 A; DC-13: 24 VDC/5 A	AC-15: 250 VAC/8 A; DC-13: 24 VDC/5 A
Ambient conditions		
Ambient temperature	–25 °C ... +80 °C	–25 °C ... +80 °C
Degree of protection	IP65 / IP67	IP65 / IP67

## Safety classification

Standards	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1
Mechanical lifetime	1,000,000	1,000,000
$B_{100}$ value	100,000	100,000





■ WKT



■ WKS

- Mounting hole Ø 30.5 mm
- Spring-return joystick switch

- Mounting hole Ø 30.5 mm
- Maintained joystick switch

90 mm	90 mm
Al anodised	Al anodised
Mounting flange	Mounting flange
30.5 mm	30.5 mm
Depending on contact type	Depending on contact type
1.5 mm ... 10 mm	1.5 mm ... 10 mm
80 × 80 mm	80 × 80 mm
approx. 11 N	approx. 11 N
To left and right of zero position	-
-	To left and right of zero position
30 g/18 ms, no bouncing	30 g/18 ms, no bouncing
> 20 g/10 ... 150 Hz	> 20 g/10 ... 150 Hz
1,200 s/h	1,200 s/h
Creep circuit element	Creep circuit element
Screw connection	Screw terminals
0.5 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>	0.5 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
4 kV	4 kV
400 V	400 V
10 A	10 A
10 A gG	10 A gG
AC-15: 250 VAC/8 A; DC-13: 24 VDC/5 A	AC-15: 250 VAC/8 A; DC-13: 24 VDC/5 A
-25 °C ... +80 °C	-25 °C ... +80 °C
IP65 / IP67	IP65 / IP67
IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1
1,000,000	1,000,000
100,000	100,000

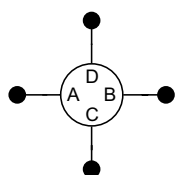
# MAINTAINED JOYSTICK SWITCHES AND SPRING-RETURN JOYSTICK SWITCHES

## SELECTION AID – RANGE MK/WK

### 1ST STEP: SELECTION OF THE DEVICE DESIGN

Contact options				Spring-return joystick switch			
Position	Position	Position	Position	Range MKT Mounting-Ø 22.3 mm		Range WKT Mounting-Ø 30.5 mm	
A	B	C	D	without locking sleeve	with locking sleeve	without locking sleeve	with locking sleeve

Choice of device



1 NO	1 NO			MKTA32	MKTA321	WKTA32	WKTA321
1 NC	1 NC			MKTA32/401	MKTA321/401	WKTA32/401	WKTA321/401
2 NO	2 NO			MKTB32	MKTB321	WKTB32	WKTB321
1 NC/1 NO	1 NC/1 NO			MKTB32/1x401	MKTB321/1x401	WKTB32/1x401	WKTB321/1x401
2 NO	2 NO			MKTC32	MKTC321	WKTC32	WKTC321
1 NO	1 NO	1 NO		MKTC42	MKTC421	WKTC42	WKTC421
1 NO	1 NO	1 NO	1 NO	MKTC52	MKTC521	WKTC52	WKTC521
1 NC	1 NC	1 NC	1 NC	MKTC52/2x401	MKTC521/2x401	WKTC52/2x401	WKTC521/2x401
4 NO	4 NO			MKTE32	MKTE321	WKTE32	WKTE321
4 NC	4 NC			MKTE32/404	MKTE321/404	WKTE32/404	WKTE321/404
4 NC	4 NC			MKTE32/800	MKTE321/800	WKTE32/800	WKTE321/800
2 NO	2 NO	2 NO	2 NO	MKTE52	MKTE521	WKTE52	WKTE521
1 NC/1 NO	1 NC/1 NO	2 NO	2 NO	MKTE52/206	MKTE521/206	WKTE52/206	WKTE521/206
2 NC	2 NO	2 NO	2 NO	MKTE52/206.1	MKTE521/206.1	WKTE52/206.1	WKTE521/206.1
1 NC/1 NO	1 NC/1 NO	1 NC/1 NO	1 NC/1 NO	MKTE52/2x401	MKTE521/2x401	WKTE52/2x401	WKTE521/2x401

### 2ND STEP: SELECTION OF THE BELLOWS

Included in standard version	/WKT-19.4	/WKT-19.3	/WKT-26
------------------------------	-----------	-----------	---------

Bellows

Description	Rubber bellows	Rubber bellows, suitable for outdoor usage	Silicone bellows, UV-resistant up to -40°C	Silicone bellows, UV-resistant up to -40°C thick-walled / tear-proof IP69K
<b>Material thickness</b>	approx. 1 mm			approx. 2 mm
<b>Material features</b>	tear-proof		partly tear-proof	tear-proof
<b>Degree of protection (frontside)</b>	IP65 / IP67			IP67 / IP69K
<b>Ambient temperature</b>	-25 ... +80 °C		-40 ... +80 °C	
<b>Mechanical lifetime</b>	1,000,000	500,000	300,000	500,000
<b>Notes</b>	-	-	-	Only usable in combination with spring-return joystick switches without locking sleeve
<b>Material resistance</b>	Rubber		Silicone	
- UV/ozone	not suitable	suitable	particularly suitable	
- Outdoor usage	not suitable	suitable	particularly suitable	
- Fuel, oil	partly suitable		not suitable	
- Solvents	partly suitable		partly suitable	
- Acids	partly suitable		not suitable	
- Chemicals	not suitable		partly suitable	

**Optional bellows**

To order, the order code of the bellows is added to the order code of the switch.

Maintained joystick switch				Maintained/spring-return joystick switch	
Range MKS Mounting-Ø 22.3 mm		Range WKS Mounting-Ø 30.5 mm		Range WKTS Mounting-Ø 30.5 mm	
without locking sleeve	with locking sleeve	without locking sleeve	with locking sleeve	without locking sleeve	with locking sleeve
MKSA32	MKSA321	WKSA32	WKSA321	WKTSA32 <sup>1)</sup>	WKTSA321 <sup>1)</sup>
MKSA32/401	MKSA321/401	WKSA32/401	WKSA321/401		
MKSB32	MKSB321	WKSB32	WKSB321		
MKSB32/1x401	MKSB321/1x401	WKSB32/1x401	WKSB321/1x401		
MKSC32	MKSC321	WKSC32	WKSC321		
MKSC42	MKSC421	WKSC42	WKSC421		
MKSC52	MKSC521	WKSC52	WKSC521	WKTSC52 <sup>2)</sup>	WKTSC521 <sup>2)</sup>
MKSC52/2x401	MKSC521/2x401	WKSC52/2x401	WKSC521/2x401		
MKSE32	MKSE321	WKSE32	WKSE321		
MKSE32/404	MKSE321/404	WKSE32/404	WKSE321/404		
MKSE32/800	MKSE321/800	WKSE32/800	WKSE321/800		
MKSE52	MKSE521	WKSE52	WKSE521		
MKSE52/206	MKSE521/206	WKSE52/206	WKSE521/206		
MKSE52/206.1	MKSE521/206.1	WKSE52/206.1	WKSE521/206.1		
MKSE52/2x401	MKSE521/2x401	WKSE52/2x401	WKSE521/2x401		

<sup>1)</sup> Position A spring-return (touch position) and Position B maintained (latched position)  
<sup>2)</sup> Position C/D spring-return (touch position) and Position A/B maintained (latched position)

### 3RD STEP: YOUR PRODUCT

#### Type

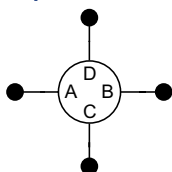
#### Ordering example

Mounting hole 22.3 mm	M			
Spring-return joystick switch	KT			
Contacts 4 NO contacts Position A 4 NO contacts Position B		E32		
With locking sleeve			1	
Bellows suitable for outdoor usage				/WKT-19.4
	<b>MKTE321/WKT-19.4</b>			

# MAINTAINED JOYSTICK SWITCHES AND SPRING-RETURN JOYSTICK SWITCHES PREFERRED TYPES<sup>1)</sup> – RANGE MK/WK

Mounting-Ø	Type	With locking sleeve	Installation depth	Contact options				Type	Material number
				Position A	Position B	Position C	Position D		
22.3 mm	Maintained joystick switch	-	70 mm	1 NO	1 NO	-	-	MKSA32	101005813
		■						MKSA321	101005816
		-	104 mm	2 NO	2 NO	-	-	MKSB32	101203907
		■						MKSB321/WKT-19.3	101191939
		-	70 mm	1 NO	1 NO	1 NO	1 NO	MKSC32	101005817
		■						MKSC321	101005818
		-						MKSC52	101005821
		■	MKSC521	101005822					
		-	112 mm	2 NO	2 NO	2 NO	2 NO	MKSE52/WKT-19.4	101190916
	■	MKSE521						101005826	
	Spring-return joystick switch	-	70 mm	1 NO	1 NO	-	-	MKTA32	101005827
		■						MKTA321	101005829
		-	104 mm	2 NO	2 NO	-	-	MKTB32	101005828
		■						MKTB321	101194681
		-	70 mm	1 NO	1 NO	1 NO	1 NO	MKTC32	101005832
		■						MKTC321	101005835
		-						MKTC52	101005837
		■	MKTC521	101005844					
-		112 mm	4 NO	4 NO	-	-	MKTE321	101190067	
■	MKTE52						101005842		
-	2 NO	2 NO	2 NO	2 NO	2 NO	MKTE521	101005845		
■									
30.5 mm	Maintained joystick switch	-	57 mm	1 NO	1 NO	-	-	WKSA32	101019540
		■						WKSA321	101019545
		-						WKSC32	101019465
		■	WKSC321	101019493					
		-	91 mm	2 NO	2 NO	2 NO	2 NO	WKSC52	101019467
		■						WKSC521	101019473
	-	91 mm	2 NO	2 NO	2 NO	2 NO	WKSE52	101019489	
	■						WKSE521	101019492	
	Spring-return joystick switch	-	57 mm	1 NO	1 NO	-	-	WKTA32	101007593
		■						WKTA321	101019509
		-	91 mm	2 NO	2 NO	-	-	WKTB32	101019514
		■						WKTB321	101019539
		-	57 mm	1 NO	1 NO	1 NO	1 NO	WKTC32	101007594
		■						WKTC321	101007595
		-						WKTC52	101007597
		■	WKTC521	101019447					
		-	91 mm	2 NO	2 NO	2 NO	2 NO	WKTE52	101019461
		■						WKTE521	101019464

Schematic representation of positions A-D



<sup>1)</sup> Preferred types are devices with faster delivery times.  
To see a wide range of other types, visit [products.schmersal.com](https://products.schmersal.com).

# MAINTAINED JOYSTICK SWITCHES AND SPRING-RETURN JOYSTICK SWITCHES DIMENSIONS – RANGE MK/WK

Range MK... Mounting-Ø 22.3 mm		2 contacts	4 contacts	4 contacts	8 contacts
without locking sleeve		MKTA32...	MKTB32...	MKTC32...	MKTE32...
		MKSA32...	MKSB32...	MKSC32...	MKSE32...
				MKTC42...	MKTE52...
				MKSC42...	MKSE52...
				MKTC52...	
		MKSC52...			
with locking sleeve		MKTA321...	MKTB321...	MKTC321...	MKTE321...
		MKSA321...	MKSB321...	MKSC321...	MKSE321...
				MKTC421...	MKTE521...
				MKSC421...	MKSE521...
				MKTC521...	
		MKSC521...			

MP = Mounting plate (series MK... thickness max. 6 mm)

Range WK... Mounting-Ø 30.5 mm		2 contacts	4 contacts	4 contacts	8 contacts
without locking sleeve		WKTA32...	WKTB32...	WKTC32...	WKTE32...
		WKSA32...	WKS32...	WKSC32...	WKSE32...
		WKTA321...	WKTB321...	WKTC321...	WKTE321...
		WKSA321...	WKS321...	WKSC321...	WKSE321...
		WKTA321...	WKTB321...	WKTC321...	WKTE321...
with locking sleeve		WKTA321...	WKTB321...	WKTC321...	WKTE321...
		WKSA321...	WKS321...	WKSC321...	WKSE321...
		WKTA321...	WKTB321...	WKTC321...	WKTE321...
		WKSA321...	WKS321...	WKSC321...	WKSE321...
		WKTA321...	WKTB321...	WKTC321...	WKTE321...
		WKTC421...	WKTE521...		
		WKSC421...	WKSE521...		
		WKTC521...			
		WKSC521...			
		WKTC521...			
		WKSC521...			

MP = Mounting plate (series WK... thickness max. 10 mm)

# MAINTAINED JOYSTICK SWITCHES AND SPRING-RETURN JOYSTICK SWITCHES DESCRIPTION – NK/RK RANGE

## AREA OF APPLICATION

The joystick switches of the RK/NK series are distinguished in particular by fast installation with central nut attachment and connection with M12 connector. The M12 connector is not just fast to install but it also prevents devices from being connected incorrectly.

The RK series is ideally suited for use in outside areas thanks to the special sealing boot and the new sealing concept. The silicon sealing boot is very capable even with high UV radiation.

The joystick switches of the NK series follow the principles of "hygienic design" thanks to their tried-and-tested construction without corners and edges and are particularly suitable for hygienic applications.

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## DESIGN AND OPERATING PRINCIPLE

The use of food-safe and largely chemically resistant materials ensures that daily cleaning with aggressive cleaning agents has little effect on the appliances.

The new sealing concept with up to three barriers prevents the ingress of fluid even if the sealing boot should become damaged. This provides enough time to renew the defective boot assembly without causing any damage to the machine during cleaning from the ingress of fluid.



## OPERATING PRINCIPLE

**Spring-return joystick switch**  
Spring-return switching position (touch position).  
Reset by spring force

**Joystick switch**  
Maintained switching positions (latched position).  
Reset by touch and spring force

**Maintained/spring-return joystick switch**  
Maintained and spring-return switching positions.  
Reset by touch and spring force



# MAINTAINED JOYSTICK SWITCHES AND SPRING-RETURN JOYSTICK SWITCHES TECHNICAL DATA – RANGE NK/RK



■ NK



■ RK

## Key Features

- Mounting hole  $\varnothing$  22,3 mm
- Up to 6 mm front plate thickness
- Suitable for food processing industry

- Mounting hole  $\varnothing$  22,3 mm
- Up to 6 mm front plate thickness
- For rough ambient conditions

## Technical features

Mechanical data		
Length of actuator	85 mm	85 mm
Material of the front ring	Thermoplastic	Thermoplastic
Mounting ramp edge	central nut SW41	central nut SW41
Mounting hole	22.3 mm + 0.4 mm	22.3 mm + 0.4 mm
Mounting depth	30 mm	30 mm
Mounting position	Arbitrarily	Arbitrarily
Front plate thickness	1.5 mm ... 6 mm	1.5 mm ... 6 mm
Spacing	90 × 90 mm	90 × 90 mm
Actuating force	approx. 11 N	approx. 11 N
Resistance to shock	30 g / 11 ms	30 g / 11 ms
Continuous shock	10 g / 16 ms	10 g / 16 ms
Switching frequency	1,200/h	1,200/h
Switching principle	Reed contacts, non-contact principle	Reed contacts, non-contact principle
Switching capacity	max. 7.2 W	max. 7.2 W
Contacts per switch direction	Up to 2 NC contacts	Up to 2 NC contacts
Execution of the electrical connection	Connector M12, 5 or 8 pole	Connector M12, 5 or 8 pole
Cable section		
Electrical data		
Rated impulse withstand voltage $U_{imp}$	0.5 kV	0.5 kV
Rated insulation voltage $U_i$	30 V	30 V
Rated operating voltage $U_e$	max. 30 VDC	max. 30 VDC
Operating current $I_e$	max. 0.3 A	max. 0.3 A
Max. fuse rating	0.5 A FF	0.5 A FF
Utilisation category	DC-12	DC-12
Ambient conditions		
Ambient temperature	-40 °C ... +80 °C	-40 °C ... +80 °C
Degree of protection (frontside)	IP65, IP67, IP69	IP65, IP67, IP69
Degree of protection of contact chamber	IP67	IP67



## Safety classification

Standards	IEC 60947-1, IEC 60947-5-1	IEC 60947-1, IEC 60947-5-1
Mechanical lifetime	1,000,000 operations	1,000,000 operations

To get detailed information about the products, visit [products.schmersal.com](http://products.schmersal.com)



## MAINTAINED JOYSTICK SWITCHES AND SPRING-RETURN JOYSTICK SWITCHES PREFERRED TYPES

	Range	Switch position	Termination	Additional sealing element	Type designation	Material number
	NK	2 switch positions with 1 NO contact each	1 connector, M12, 8 pole	■	NK-T-21-1ST8-2	103012433
		4 switch positions with 1 NO contact each	1 connector, M12, 8 pole	■	NK-T-41-1ST8-2	103012431
		2 switch positions with 2 NO contacts each	2 connectors, M12, 8 pole	■	NK-T-22-2ST8-2	103012434
		4 switch positions with 2 NO contacts each	2 connectors, M12, 8 pole	■	NK-T-42-2ST8-2	103012432
	RK	2 switch positions with 1 NO contact each	1 connector, M12, 8 pole	■	RK-T-21-1ST8-2	103012429
		4 switch positions with 1 NO contact each	1 connector, M12, 8 pole	■	RK-T-41-1ST8-2	103012427
		2 switch positions with 2 NO contacts each	2 connectors, M12, 8 pole	■	RK-T-22-2ST8-2	103012430
		4 switch positions with 2 NO contacts each	2 connectors, M12, 8 pole	■	RK-T-42-2ST8-2	103012428

# ENABLING SWITCHES

## DESCRIPTION

### AREA OF APPLICATION

When carrying out set-up, refitting or service work on plant or machinery, it can be beneficial to partially or completely deactivate guard systems. Typically, this includes setting up a machine (set-up mode) and monitoring machining procedures (process monitoring).

One example: The operator of a machine tool is able to check format settings better and program movements more exactly if the safety door is open. The better view of the process makes operation more convenient and reduces set-up and refitting times.

Special safety measures are needed for this case and similar ones; these measures are referred to as special operating modes and are specified in the machine directive and in some type C standards.

The measures that are required in this case include enabling devices that operators must actuate to start up the respective machine functions. In many cases, this is a slowed-down machine movement. The effect of the guard system is only partially or entirely suspended for the time in which the operator presses the enabling device.

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### DESIGN AND OPERATING PRINCIPLE

Operators must put the enabling device into the centre position and hold it in this position. As soon as they release the button or press it all the way down, the system interrupts the control command on a safety-related basis.

Series ZSD5 and ZSD6 enabling devices are of ergonomic design; with series ZSD6, an additional pushbutton is integrated in the device head. Operators can select the optimum position to the machine or the process; the connection to the machine controller is guaranteed by a signal line.

Both series are suitable for robot applications in accordance with ANSI standards. There are of course suitable safety relay modules available for signal evaluation.



## PERMISSIBLE SPEEDS IN ENABLING MODE

It is controversial and standards deal differently with the question of what "reduced" speeds are justifiable in enabling mode to comply with the further condition of the machine directive (see Machine Directive Appendix I, Clause 1.2.5) that the operation of dangerous functions is only possible under minor risk conditions (= reduced speed, reduced power, step mode, etc.)

Consideration should be given to specific C-standard specifications for the individual application.

Otherwise, it is advisable to differentiate between crushing and shearing hazards on the one hand and "just" collision hazards on the other. In this connection, people frequently quote values of 33 mm/sec. (2 m/min.) max. in the case of crushing and shearing hazards and 250 mm/sec. (15 m/min.) max. in the case of collision hazards.<sup>1)</sup> MRL 2006/42/EG, however, "permits" higher values if absolutely technically necessary and execution is integrated into a considered and coherent safety concept.<sup>2) 3)</sup>

A reduction in speed (performance, movement etc.) can be controlled either via the operating controller or via a safety-related controller or monitoring system, e.g. Safety Limited Speed (SLS) and the like as per EN/IEC 61800-5-2.

In this case too, we refer you to the "responsible standards": to some extent, it is adequate to use just enabling devices for minor risks with a safe controller or monitoring system only being required above and beyond this, to some extent there is, however, a general requirement for "enabling devices + e.g. SLS".

Technology is developing in the direction of "+ e.g. "SLS" (i.e. "safe controllers or monitoring systems"). Drives and drive controllers with integrated safety functions of this kind are being found far more frequently on the market. Where these possibilities cannot be implemented owing to reasons of technology and/or costs, consideration should be given to whether pressing the enabling device from stage 2 to stage 3 leads to an acceptably safe operating condition for the user or not, while also taking account of the machine's reaction time (delay from signalling to stationary or uncritical speed) as well as an additional human response time, such as 1 second.

<sup>1)</sup> You can find an overview of the maximum speeds that there are for manual intervention on running machines in the IFA Manual (loose leaf collection – Lfg. 2/11 – XII/2011 – Clause 330 216).

<sup>2)</sup> See Machine Directive Appendix I, Clause 1.2.5: If these four conditions cannot be fulfilled simultaneously, the ... operating mode selector must activate other protective measures designed and constructed to ensure a safe intervention zone.

<sup>3)</sup> See also the "Fachbereich AKTUELL: Prozessbeobachtung in der Fertigung" of the DGUV's Woodworking and Metalworking Division.

# ENABLING SWITCHES

## TECHNICAL DATA



■ ZSD5CC



■ ZSD6CC

### Key Features

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>• 3-stage grip switch OFF-ON-OFF</li> <li>• Contacts do not close on resetting from stage 3 → stage 1</li> </ul> | <ul style="list-style-type: none"> <li>• 3-stage grip switch OFF-ON-OFF</li> <li>• Contacts do not close on resetting from stage 3 → stage 1</li> <li>• With additional pushbutton</li> </ul> |
|---|---|

### Technical features

Mechanical data		
Housing material	Plastic, thermoplastic, self-extinguishing	Plastic, thermoplastic, self-extinguishing
Additional pushbutton in device head	No	YES
Number of NO contacts	2	3
Of which automatic openers (stages 2-3)	2	2
Number of NC contacts	1	1
Switching frequency	max. 1200/h	max. 1200/h
Cable section	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Termination	Cage clamps	Cage clamps
Electrical data		
Rated operating voltage U <sub>e</sub>	250 V	250 V
Operating current I <sub>e</sub>	2.5 A	2.5 A
Utilisation category		
NO contacts		
- Ohmic load (AC-12)	30 V: -; 125 V: 3,0 A; 250 V: 1,5 A	30 V: -; 125 V: 3,0 A; 250 V: 1,5 A
- Inductive load (AC-15)	30 V: -; 125 V: 1,5 A; 250 V: 0,75 A	30 V: -; 125 V: 1,5 A; 250 V: 0,75 A
- Ohmic load (DC-12)	30 V: 2,0 A; 125 V: 0,4 A; 250 V: 0,2 A	30 V: 2,0 A; 125 V: 0,4 A; 250 V: 0,2 A
- Inductive load (DC-13)	30 V: 1,0 A; 125 V: 0,22 A; 250 V: 0,1 A	30 V: 1,0 A; 125 V: 0,22 A; 250 V: 0,1 A
- Contact configuration	2 NO	2 NO
Auxiliary contacts		
- Ohmic load (AC-12)	30 V: -; 125 V: 2,0 A; 250 V: 1,0 A	30 V: -; 125 V: 2,0 A; 250 V: 1,0 A
- Inductive load (AC-15)	30 V: -; 125 V: 1,0 A; 250 V: 0,75 A	30 V: -; 125 V: 1,0 A; 250 V: 0,75 A
- Ohmic load (DC-12)	30 V: 2,0 A; 125 V: 0,4 A; 250 V: 0,2 A	30 V: 2,0 A; 125 V: 0,4 A; 250 V: 0,2 A
- Inductive load (DC-13)	30 V: 2,3 A; 125 V: 0,22 A; 250 V: 0,1 A	30 V: 2,3 A; 125 V: 0,22 A; 250 V: 0,1 A
- Contact configuration	1 NC	1 NC
Additional push-button		
- Ohmic load (AC-12)	-	30 V: -; 125 V: 0,5 A; 250 V: -
- Inductive load (AC-15)	-	30 V: -; 125 V: 0,3 A; 250 V: -
- Ohmic load (DC-12)	-	30 V: 1,0 A; 125 V: 0,2 A; 250 V: -
- Inductive load (DC-13)	-	30 V: 0,7 A; 125 V: 0,1 A; 250 V: -
Ambient conditions		
Ambient temperature	-10 °C ... +60 °C	-10 °C ... +60 °C
Degree of protection	IP66	IP66

### Safety classification

Standards	EN 60947-5-1, EN 60947-5-8, EN ISO 13849-1
Mechanical lifetime	Stage 1-2-1: min. 1,000,000; Stage 1-2-3-1: min. 100,000
B <sub>10D</sub> value	100,000
Certificates	TÜV, cULus

# ENABLING SWITCHES

## ORDERING DETAILS AND RECOMMENDED EVALUATIONS

Type	Description	Pre-wired cable	Type	Material number
Enabling switches	3-stage grip switch	without	ZSD5CC	103043703
		5 m	ZSD5CC-5M	103043683
	3-stage grip switch with additional pushbutton in device head	without	ZSD6CC	103043704
		5 m	ZSD6CC-5M	103043685
Accessories	Mounting angle made of metal		ZSD-H	101163725

## RECOMMENDED EVALUATIONS

PROTECT-SELECT	SRB-E-301ST	SRB-E-201LC
		
<ul style="list-style-type: none"> <li>■ Evaluation of enabling devices</li> <li>■ STOP 0 or STOP 1, depending on the setting values in the application program</li> <li>■ For further information please visit <a href="http://products.schmersal.com">products.schmersal.com</a></li> </ul>	<ul style="list-style-type: none"> <li>■ Function STOP 0</li> <li>■ 1- or 2-channel control</li> <li>■ Start button / autostart</li> <li>■ 3 safe relay outputs 6 A</li> <li>■ 1 signalling output</li> <li>■ For further information please visit <a href="http://products.schmersal.com">products.schmersal.com</a></li> </ul>	<ul style="list-style-type: none"> <li>■ Function STOP 0</li> <li>■ 1- or 2-channel control</li> <li>■ Start button / autostart</li> <li>■ 2 safety outputs 2 A</li> <li>■ 1 signalling output</li> <li>■ For further information please visit <a href="http://products.schmersal.com">products.schmersal.com</a></li> </ul>

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# THE SCHMERSAL GROUP

## PROTECTION FOR MAN AND MACHINE

In the demanding field of machine safety, the owner-managed Schmersal Group is one of the international market leaders. The company, which was founded in 1945, has a workforce of about 2,000 people and seven manufacturing sites on three continents along with its own companies and sales partners in more than 60 nations.

Customers of the Schmersal Group include “Global Players” in mechanical engineering and plant manufacturing and operators of machinery. They benefit from the company’s extensive expertise as a provider of systems and solutions for machine safety. In addition, Schmersal specialises in various areas including intralogistics, foodstuff production, the packaging industry, machine tool industry, lift switchgear, heavy industry and the automotive industry.

A major contribution to the systems and solutions offered by the Schmersal Group is made by tec.nicum with its comprehensive range of services: Certified Functional Safety Engineers advise machinery manufacturers and machinery operators in all aspects relating to machinery and occupational safety – and do so with product and manufacturer neutrality. Furthermore, they design and realise complex solutions for safety around the world in close collaboration with the clients.



### SAFETY PRODUCTS

- Safety switches and sensors, solenoid interlocks
- Safety controllers and safety relay modules, safety bus systems
- Optoelectronic and tactile safety devices
- Automation technology: position switches, proximity switches

### SAFETY SYSTEMS

- Complete solutions for safeguarding hazard areas
- Individual parametrisation and programming of safety controllers
- Tailor-made safety technology – be it for individual machines or a complex production line
- Industry-specific safety solutions

### SAFETY SERVICES

- tec.nicum academy – Seminars and training
- tec.nicum consulting – Consultancy services
- tec.nicum engineering – Design and technical planning
- tec.nicum integration – Execution and installation
- tec.nicum digitalisation – Software solutions and new digital technologies
- tec.nicum outsourcing – Complete solutions



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