Safety in System Protection for man and machine

COMMAND AND SIGNALLING DEVICES PRODUCT INFORMATION





INTRODUCTION



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 🖳

Here you will find all details and data on our products which you can order directly online:

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

SCHMERSAL WORLDWIDE



- Germany, Wuppertal
- Germany, Wettenberg
- Germany, Mühldorf
- Germany, Bergisch Gladbach
- Brazil, Boituva
- China, Shanghai
- India, Pune
- USA, Indianapolis
- Austria, Vienna
- Belgium, Aarschot
- Canada, Orangeville
- Denmark, Hvidovre
- Finland, Vantaa
- France, Seyssins
- Italy, Borgosatollo Japan, Yokohama
- Netherlands, Harderwijk
- Norway, Oslo Poland, Warsaw
- Portugal, Lisbon
- South Korea, Gwacheon
- Spain, Barcelona
- Sweden, Västra Frölunda
- Switzerland, Arni

- Thailand, Bangkok
- Turkey, Istanbul
- United Arab Emirates,
- Shariah
- United Kingdom,
- Malvern, Worcestershire Iceland, Reykjavik
- USA, Valhalla NY
- Vietnam, Ho Chi Minh
- City
- Argentina,
- **Buenos** Aires
- Australia, Brisbane
- Baltic States, Kaunas
- Bolivia, Santa Cruz
- de la Sierra
- Bosnia and
- Herzegovina, Sarajevo
- Bulgaria, Ruse City
- Chile, Santiago
- Colombia, Medellín
 - Croatia, Zagreb
 - Czech Republic,
- Prague
- Ecuador, Quito

- El Salvador, San Salvador Greece. Athens

 - Guatemala,
 - Guatemala City
- Hungary, Györ
- Indonesia, Jakarta
- Israel, Petach Tikva
- Lithuania, Minsk
- Macedonia, Skopje Mexico, Mexico City
- New Zealand. Christchurch
- Paraguay, Minga Guazú
- Peru, Lima
- Romania, Sibiu
- Serbia, Belgrade
- Singapore, Singapore
- Slovenia, Ljubljana
- South Africa, Johannesburg
- South Korea, Seoul Taiwan, Taichung
- Ukraine, Kiev
- Uruguay, Montevideo
- Venezuela, Caracas

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



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



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
Area of application	Difficult operating conditions	Difficult operating conditions	Food and hygiene applications	Heavy-duty applications	Industrial applications
Emergency stop push buttons	Page 12	Page 28	Page 44	Page 64	Page 80
Indicator lights	Page	Page	Page	Page	Page
	14	30	46	66	82
Push buttons	Page	Page	Page	Page	Page
	16	32	48	68	84
Illuminated	Page	Page	Page	Page	Page
pushbuttons	16	32	48	68	84
Mushroom head impact buttons/ Mushroom push buttons	Page 18	Page 34	Page 51	Page 70	Page 86
Selector switches /	Page	Page	Page	Page	Page
buttons	20	36	54	72	88
Key-operated selector switches/ buttons	Page 22	Page 38		Page 74	Page 90
Step selector	Page	Page	Page	Page	
switches	24	40	60	76	
Potentiometer	Page	Page	Page	Page	
drives	24	40	60	76	
Main switches			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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	Mushroom head impact button/	10
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5	button	22
6	Selector switch/key button	20
7	Illuminated pushbutton	16
8	Indicator light	14
9	Step selector switch	24
10	Potentiometer drive	24
11	Mounting flange EFM	108
12	Mounting flange EFMH	109
13	Short-stroke key element	_
14	Mounting flange ELM	108
15	Contact element EF	96
16	Spring element EFR	96
17	Securing plate	_
18	Position switch	_
19	Contact element EFK	_
20	Light terminal block ELDE	96
21	Light terminal block EL	96
22	Emergency stop label	106
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24	EMERGENCY STOP enclosure	110
25	Identification label	106
20	Plastic enclosure	110
20	for surface mounting	110
27	Adapter ring	108
28	Blanking plug	108



COMMAND AND SIGNALLING DEVICES – E PROGRAMME EMERGENCY STOP CONTROL DEVICES

				Ŷ
		■ EDRR40RT	■ EDRZ40RT	■ EDRRS40RT
Key Fe	eatures			
	General description	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
	Area of application	Applications under difficult operating conditions	Applications under difficult operating conditions	Applications under difficult operating conditions
	Mounting-Ø	22.3 mm	22.3 mm	22.3 mm
	Housing material			
	Material of operating element	Aluminium	Aluminium	Chrome-plated brass
	Material front ring	Aluminium	Aluminium	Aluminium
Techni	ical features			
	Mechanical data			
	Color			
	Design	Round	round	Round
	Front plate thickness	1 6 mm	1 6 mm	1 6 mm
	Unlocking type	Twist and pull-to- unlatch mechanism	Pull-to-unlatch mechanism	Key reset
	Snap-action mechanism			
	Integrated	-		-
	Externally via additional module	•	-	•
	Assembly			
	Mounting flange included in delivery	•		•
	Mounting position	Arbitrarily	Arbitrarily	Arbitrarily
	Ambient conditions			
	Ambient temperatures	−25 °C +75 °C	−25 °C +75 °C	−25 °C +75 °C
	Degree of protection	IP65	IP65	IP65
Safety	classification			
	Standards	IEC 60947-5-1,	IEC 60947-5-1,	IEC 60947-5-1,
		IEC 60947-5-5, IEC 60947-1, EN ISO 13850	IEC 60947-5-5, IEC 60947-1, EN ISO 13850	IEC 60947-5-5, IEC 60947-1, EN ISO 13850

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	EN ISO 13850	EN ISO 13850	EN ISO 13850
Mechanical life	100,000 operations	100,000 operations	100,000 operations
Certificates	cULus	cULus	cULus
Notice	cULus in conjunction with the corresponding contact elements only		

COMMAND AND SIGNALLING DEVICES – E PROGRAMME EMERGENCY STOP CONTROL DEVICES

Туре	Unlocking	Snap-action mechanism	Α	В	C	Туре	Material number
Emorgonov	Pull-to-unlatch mechanism	Integrated	29	22.3	38.5	EDRZ40 RT	101177107
stop	Twist and pull-to-	External with	20	<u></u>	38.5	EDRR40 RT	101021009
command	unlatch mechanism	spring element EFR *	29	22.3	49	EDRR50 RT	101021015
devices	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
- B Mounting-Ø
- Key Ø С
- Height of command device in front of the front panel
- Installation diameter for the command device head
- Width of the command device head

COMMAND AND SIGNALLING DEVICES - E PROGRAMME INDICATOR LIGHTS

	EML / EMLH	■ EME
Key Features		
General description	Illuminated signal for BA9s	Illuminated signal with integrated LED
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	Glass	Plastic
Material front ring	Aluminium	Aluminium
Technical features		
Mechanical data		
Color		
Design	Round with flat or high glass	Round with flat or high glass
Front plate thickness	1 6 mm	1 6 mm
Integrated LED 24 VAC/DC *	-	
Assembly		
Mounting flange included in delivery	-	
Mounting position	Arbitrarily	Arbitrarily
Ambient conditions		
Ambient temperatures	−25 °C +75 °C	−25 °C +40 °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	-	-
Certificates	cULus	cULus
Notice	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

Туре	Illuminant	Collar	А	В	С	Туре
Indiactor lighta	Without integrated	Flat collar	14	22.3	29.5	EML ①
indicator lights	illuminant	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 B Mounting-Ø
- Height of command device in front of the front panel Installation diameter for the command device head
- C Key Ø Wi
- Width of the command device head





EML GN

EMLH RT

EME GB

COMMAND AND SIGNALLING DEVICES – E PROGRAMME PUSHBUTTONS AND ILLUMINATED PUSHBUTTONS

Mechanical life

Certificates

Notice

		= EDT	■ EDL
Key Fe	eatures		
	Conoral description	Puch buttons	Illuminated pushbutton
	Area of application	Applications under difficult	Applications under difficult
		operating conditions	operating conditions
	Mounting-Ø	22.3 mm	22.3 mm
	Housing material		
	Material of operating element	Aluminium	Glass
	Material front ring	Aluminium	Aluminium
Techn	ical features		
	Machania data		
	Mechanical data		
	Design	Round	Round
	Accomply	т 6 mm	I 6 mm
	Assembly Mounting flange included in delivery	-	-
	Mounting nange included in derivery	 Arbitrarily	_ Δrbitrarily
	Ambient conditions	Abituity	Abidiany
	Ambient temperatures	−25 °C +75 °C	−25 °C +75 °C
	Degree of protection	IP65	IP65
Safat	alassification	1	
Jarety	Classification		
	Standards	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1

1,000,000 operations

cULus

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1,000,000 operations

cULus

cULus in conjunction with the corresponding contact elements only

COMMAND AND SIGNALLING DEVICES – E PROGRAMME PUSHBUTTONS AND ILLUMINATED PUSHBUTTONS

Туре	Description		А	В	C	Туре
Push buttons	Included in standard	Included in standard version	14	22.3	29.5	EDT ①
	version	6 mm edge to prevent unwanted activation	20	22.3	29.5	EDTH ①
		Included in standard version	14	22.3	29.5	EDM ①
	With membrane	6 mm edge to prevent unwanted activation	20	22.3	29.5	EDMH ①
	With latching	Included in standard version	14	22.3	29.5	EDTR ①
	Included in standard version	Included in standard version	14	22.3	29.5	EDL ①
		6 mm edge to prevent unwanted activation	20	22.3	29.5	EDLH ①
Illuminated		Included in standard version	14	22.3	29.5	EDLM ①
pusnbuttons	With membrane	6 mm edge to prevent unwanted activation	20	22.3	29.5	EDLMH ①
	With latching	Included in standard version	14	22.3	29.5	EDLR 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

	9	_	*
	■ EDP	■ EDR	■ EDRS40
Key Features			
General description	Mushroom button without latching function	Mushroom button with latching function	Mushroom button with latching function and release by key
Area of application	Applications under difficult operating conditions	Applications under difficult operating conditions	Applications under difficult operating conditions
Mounting-Ø	22.3 mm	22.3 mm	22.3 mm
Housing material			
Material of operating element	Aluminium	Aluminium	Chrome-plated brass
Material front ring	Aluminium	Aluminium	Aluminium
Technical features Mechanical data			
Color			
Design	Round	round	Round
Front plate thickness	1 6 mm	1 6 mm	1 6 mm
With latching	-		
Assembly			
Mounting flange included in delivery			
Mounting position	Arbitrarily	Arbitrarily	Arbitrarily
Ambient conditions			
Ambient temperatures	−25 °C +75 °C	−25 °C +75 °C	−25 °C +75 °C
Degree of protection	IP65	IP65	IP65
Safety classification			
Standards	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1
Mechanical life	1,000,000 operations	100,000 operations	100,000 operations
Certificates	cULus	cULus	cULus

cULus in conjunction with the corresponding contact elements only

Notice

COMMAND AND SIGNALLING DEVICES – E PROGRAMME MUSHROOM HEAD IMPACT BUTTONS

Туре	Description	Кеу	А	В	С	Туре
	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 head		Flat key	27.5	22.3	35	EDP35 ①
input sutons	Mushroom button with latching function	Mushroom-shaped	29	22.3	38.5	EDR40 ①
		Flat key	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

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COMMAND AND SIGNALLING DEVICES – E PROGRAMME MAINTAINED SELECTOR SWITCHES AND SPRING RETURN SELECTOR SWITCHES

	EWS / EWT	EWS .1 / EWT .1
Key Features		
General description	Selector switch/button with short toggle	Selector switch/button with long toggle
Area of application	Applications under difficult operating conditions	Applications under difficult operating conditions
Mounting-Ø	22.3 mm	22.3 mm
Toggle length	28 mm	45 mm
Housing material		
Material of operating element	Plastic	Plastic
Material front ring	Aluminium	Aluminium
Technical features		
Mechanical data		
Color		
Design	Round	Round
Front plate thickness	1 6 mm	1 6 mm
Maintained switching positions	2 3 positions	2 3 positions
Assembly		
Mounting flange included in delivery	1 C C C C C C C C C C C C C C C C C C C	
Mounting position	Arbitrarily	Arbitrarily
Ambient conditions		
Ambient temperatures	0 °C +75 °C	0 °C +75 °C
Degree of protection	IP65	IP65
Safety classification		
Standards	IEC 60947-5-1,	IEC 60947-5-1.

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

-

COMMAND AND SIGNALLING DEVICES – E PROGRAMME MAINTAINED SELECTOR SWITCHES AND SPRING RETURN SELECTOR SWITCHES

Туре	Maintained and momentary positions	Positions	Actuator	A	В	C	Type designation
Solostor switches	2 maintained positions	70°	Short toggle	20	<u></u>	29.5	EWS21
			Long toggle	20	22.5		EWS21.1
Selector switches	2 maintained positions		Short toggle	20	00.0	29.5	EWS32
	3 maintained positions		Long toggle	28	22.3		EWS32.1
Spring-return	1 momentary position and	55'	Short toggle	28	22.3	29.5	EWT21
	zero position		Long toggle				EWT21.1
switches	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 position to left and		Short toggle	28	22.3	00 F	EWTS32
Maintained spring-return rotary selector switches	momentary position to right		Long toggle			29.5	EWTS32.1
	Maintained position on right	35 - 8.	Short toggle	6	22.3	00	EWTS321
	and momentary position on left		Long toggle			36	EWTS321.1

1 Toggle length:

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

All dimensions in mm.

Key

- AHeightHeight of command device in front of the front panelBMounting-ØInstallation diameter for the command device head
- C Key Ø Width of the command
- U Rey D
- Width of the command device head

COMMAND AND SIGNALLING DEVICES – E PROGRAMME KEY SELECTOR SWITCHES, BUTTONS AND TOUCH CONTACT SWITCHES

	ESS	EST		
Key Features				
General description	Key selector switch	Applications under difficult		
Area of application	operating conditions	operating conditions		
Mounting-Ø	22.3 mm	22.3 mm		
Housing material				
Material of operating element	Aluminium	Aluminium		
Material front ring	Aluminium	Aluminium		
Technical features				
Mechanical data				
Color	Metal (silver)	Metal (silver)		
Design	Round	Round		
Front plate thickness	1 6 mm	1 6 mm		
Maintained switching positions	2 or 3 positions	2 or 3 positions		
Assembly				
Mounting flange included in delivery				
Mounting position	Arbitrarily	Arbitrarily		
Ambient conditions				
Ambient temperatures	0 °C +75 °C	0 °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	100,000 operations	100,000 operations			
Certificates	cULus	cULus			
Notice	cULus in conjunction with the corresponding contact elements only				

COMMAND AND SIGNALLING DEVICES – E PROGRAMME KEY SELECTOR SWITCHES, BUTTONS AND TOUCH CONTACT SWITCHES

Туре	Maintained and momentary positions	Key positions	Key-withdrawal position	Α	В	C	Type designation
		30'	0			29.5	ESS21S1
	2 maintained positions		Ι	33	22.3		ESS21S2
Kev-operated			0 + I				ESS21S12
selector			Ι				ESS32S1
switches	2 maintained positions		0	22	22.2	20.5	ESS32S2
	S maintaineu positions		II	33	22.3	29.5	ESS32S3
			I + O + 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
		A state	0				ESTS321S2
			II				ESTS321S3

All dimensions in mm.

Key

Height of command device in front of the front panel without key

- A Height B Mounting-Ø
- C Key Ø

Installation diameter for the command device head

Ø Width of the command device head

COMMAND AND SIGNALLING DEVICES - E PROGRAMME SPECIAL DEVICES





	EWSEK	EDAN6
eatures		
Concerci description	Ctop coloctor owitch	Detentiometer drive
General description	Step selector switch	Potentionneter drive
Area of application	operating conditions	operating conditions
Mounting-Ø	22.3 mm	22.3 mm
Housing material		
Material of operating element	Plastic	Plastic
Material front ring	Aluminium	Aluminium
nical features		
Electrical data		
Cam-operated switch	Kraus & Naimer Series CA10	_
Contacts	One NO contact per stage	_
Insulation voltage U _i	690 V	_
Utilisation category AC-15	220 V 240 V / 5 A, 380 V 440 V / 4 A	-
Rated impulse withstand voltage. U	6 kV	_
Rated continuous current las	20 A	_
Fuse rating	qG 25 A	_
Cable section	$max_{2} \times 2.5 \text{ mm}^{2} \text{ *}$	_
Mechanical data		
Color		
Operating element		
Front ring	Silver	Silver
Front plate thickness	1 6 mm	1 6 mm
Maintained switching positions	3 12 positions	Infinite
Assembly		
Integrated mounting plate		
Mounting position	Arbitrarily	Arbitrarily
Ambient conditions		
Ambient temperatures	0 °C +60 °C	0 °C +75 °C
Degree of protection (device head)	IP65	IP65

Safety classification

Standards	IEC 60947-3	-
Mechanical life	Load-dependent	-
Certificates	cULus, CCC	-

* Use copper conductors only

COMMAND AND SIGNALLING DEVICES - E PROGRAMME SPECIAL DEVICES

Туре	Circuit diagram and connecting terminals	Switching angle	L	LE	A	В	С	Type designation
	³ o o ⁵ 100022	60°	40.7	60	28	22.3	29.5	EWSE3K
	⁵ 0 0 ⁷ 10-12 03	60°	40.7	60	28	22.3	29.5	EWSE4K
	⁵ 0 0 ⁹ 10-12 0 ³ 07	60°	50.2	69.5	28	22.3	29.5	EWSE5K
	$rac{5}{0}$ o^{9} $rac{1}{0}$ $rac{2}{0}$ $rac{3}{7}$	60°	50.2	69.5	28	22.3	29.5	EWSE6K
Cam switching design step switches	⁹ 0 ¹³ 10-12 0 ³ 0 7 11	45°	59.7	78	28	22.3	29.5	EWSE7K
with latching mechanism, 1-pole no zero position	$\begin{bmatrix} 5 & 0 & 0^{13} \\ 10 & 2 & 0^{3} \\ 5 & 0 & 7 \end{bmatrix}$	45°	59.7	78	28	22.3	29.5	EWSE8K
	⁹ ¹³ ¹⁷ ⁵ ⁰ ⁰ ⁰ ²¹ ¹⁰ ² ⁰³ ² ⁰⁷	30°	69.2	87.5	28	22.3	29.5	EWSE9K
	9 ⁸ 17 50 ° ° 2 ²¹ 10 − 2 2 ° 07 2 ° 07 2 ° 07 2 ° 07	30°	69.2	87.5	28	22.3	29.5	EWSE10K
	9 ⁸ 17 50 ° ° 2 ²¹ 10 − 12 ° ° 7 10 € ° 11	30°	78.7	97	28	22.3	29.5	EWSE11K
	9 13 17 5 0 0 0 21 10 12 0 0 23 0 0 0 2 9 0 0 0 7	30°	78.7	97	28	22.3	29.5	EWSE12K
Туре	Description			LE	A	В	С	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

- , Height Mounting-Ø A Height Height of command device in front of the front panel В
 - Installation diameter for the command device head
- С 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.

S SCHMERSAL

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COMMAND AND SIGNALLING DEVICES – E.V PROGRAMME EMERGENCY STOP CONTROL DEVICES

Key Fe		EDRR40.VH	EDRZ40.VH	EDRRS40.VH
Key Fe	atures			
	General description	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
	Area of application	Applications under difficult operating conditions	Applications under difficult operating conditions	Applications under difficult operating conditions
	Mounting-Ø	30.5 mm	30.5 mm	30.5 mm
	Housing material			
	Material of operating element	Aluminium	Aluminium	Chrome-plated brass
	Material front ring	Aluminium	Aluminium	Aluminium
Techn	ical features			
	Mechanical data		_	_
	Color			
	Design	Round	Round	Round
	Front plate thickness	1 6 mm	1 6 mm	1 6 mm
	Unlocking type	Twist and pull-to- unlatch mechanism	Pull-to-unlatch mechanism	Key reset
	Snap-action mechanism			
	Integrated	-		-
	Externally via additional module	•	-	•
	Assembly			
	Mounting flange included in delivery	• • • • • • • • • • • • • • • • • • •	■ A -1-1111	A de 16 con et l.
	Mounting position	Arbitrarily	Arbitrarily	Arbitrarily
	Ambient conditions			
	Amplent temperatures		-23 0 +/ 5 0	-23 0 +/ 3 0
	Degree of protection	1202	IPOS	IPOS
Safety	classification			
	Standards	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
	Mechanical life	100,000 operations	100,000 operations	100,000 operations
	Certificates	cULus	cULus	cULus

 $\ensuremath{\mathsf{cULus}}$ in conjunction with the corresponding contact elements only

Notice

COMMAND AND SIGNALLING DEVICES – E.V PROGRAMME EMERGENCY STOP CONTROL DEVICES

Туре	Unlocking	Snap-action mechanism	A	В	С	Туре	Material number
Emergency stop command devices	Pull-to-unlatch mechanism	Integrated			38.5	EDRZ40.VHRT	101182360
	Twist and pull-to-unlatch	nlatch External with spring element EFR *			38.5	EDRR40.VHRT	101024290
	mechanism spring		29	30.5	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 B Mounting-Ø
- Height of command device in front of the front panel
- C Key Ø
- Installation diameter for the command device head Width of the command device head

COMMAND AND SIGNALLING DEVICES – E.V PROGRAMME INDICATOR LIGHTS

		e
	EML.V / EMLH.V	■ EME.V
Key Features		
General description	Illuminated signal for BA9s	Illuminated signal with integrated LED
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	Glass	Plastic
Material front ring	Aluminium	Aluminium
Technical features		
Mechanical data		
Color		
Design	Round with flat or high glass	Round with flat or high glass
Front plate thickness	1 6 mm	1 6 mm
Integrated LED 24 VAC/DC *	-	•
Assembly		
Mounting flange included in delivery	-	-
Mounting position	Arbitrarily	Arbitrarily
Ambient conditions		
Ambient temperatures	−25 °C +75 °C	−25 °C +40 °C
Degree of protection	IP65	IP65
Safety classification		
	1	1

Standards	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1
Mechanical life	-	-
Certificates	cULus	cULus
Notice	cULus in conjunction with the cor	responding 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

Туре	Illuminant	Collar	А	В	С	Туре
Indiantan linkta	Without integrated	Flat collar	2.5		34.5	EML.V ①
indicator lights	illuminant	High collar		30.5		EMLH.V ①
LED indicator light	With integrated illuminant	High collar				EME.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 B Mounting-Ø
- Height of command device in front of the front panel Installation diameter for the command device head
- C Key Ø
- Width of the command device head

e





EME.VBL



EME.VRT

EML.VGN

COMMAND AND SIGNALLING DEVICES – E.V PROGRAMME PUSHBUTTONS AND ILLUMINATED PUSHBUTTONS

	■ EDT.V	■ EDL.V
Key Features		
Constal description	Buch 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

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

Туре	Description		А	В	C	Туре
Push buttons	Included in standard version	Included in standard version	2.5	30.5	34.6	EDT.V ①
	With latching	Included in standard version	2.5	30.5	34.5	EDTR ^① V
Illuminated	Included in standard version	Included in standard version	2.5	30.5	34.5	EDL.V ①
pushbuttons	With latching	Included in standard version	2.5	30.5	34.5	EDLR①V

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 C Key Ø
- Installation diameter for the command device head
- Key Ø Width of the command device head









EDT.VSW

EDT.VGB

EDL.VWS

EDL.VGN

COMMAND AND SIGNALLING DEVICES – E.V PROGRAMME MUSHROOM HEAD IMPACT BUTTONS



Technical features

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

Safety classification

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

COMMAND AND SIGNALLING DEVICES – E.V PROGRAMME MUSHROOM HEAD IMPACT BUTTONS

Туре	Description	Кеу	A	В	С	Туре
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.

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 Installation diameter for the command device head
- B Mounting-Ø Ins C Key Ø Wi
 - 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 Fe	eatures			
	General description	Selector switch/button with short toggle	Selector switch/button with long toggle	Selector switch/ key button with rectangular activator
	Area of application	Applications under difficult operating conditions	Applications under difficult operating conditions	Applications under difficult operating conditions
	Mounting-Ø	30.5 mm	30.5 mm	30.5 mm
	Toggle length	28 mm	45 mm	-
	Housing material			
	Material of operating element	Plastic	Plastic	Metal film
	Material front ring	Aluminium	Aluminium	Aluminium
Techn	ical features			
	Mechanical data			
	Color			Metal (silver)

Color			Metal (silver)
Design	Round	Round	Round
Front plate thickness	1 6 mm	1 6 mm	1.5 14 mm
Maintained switching positions	2 3 positions	2 3 positions	2 3 positions
Assembly			
Mounting flange included in delivery	•	•	_
Mounting flange included in delivery Mounting position	Arbitrarily	Arbitrarily	– Arbitrarily
Mounting flange included in delivery Mounting position Ambient conditions	Arbitrarily	Arbitrarily	– Arbitrarily
Mounting flange included in delivery Mounting position Ambient conditions Ambient temperatures	Arbitrarily 0 °C +75 °C	Arbitrarily 0 °C +75 °C	– Arbitrarily –40 °C +80 °C

Safety classification

Standards	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1	
Mechanical life	300,000 operations	300,000 operations	300,000 operations	
Certificates	cULus	cULus	cULus	
Notice	cULus in conjunction with the corresponding contact elements only			
COMMAND AND SIGNALLING DEVICES - E.V PROGRAMME MAINTAINED SELECTOR SWITCHES AND SPRING RETURN SELECTOR SWITCHES

Туре	Maintained and momentary positions	Positions	Actuator	A	В	С	Type designation
		70'	Short toggle	22	00 5	20.5	EWS21.V
	2 maintained positions		Long knob	22	30.5	29.5	EWS21.1.V
	2 maintained positions	70*	Rectangular actuator	6	00 F		EWS21DB
Solootor owitchoo		.		o	30.5	30	EWS21ÖBB
Selector switches		<	Short toggle	22	20 F	00 F	EWS32.V
	2 maintained positions		Long knob	22	30.5	29.5	EW\$32.1V
	S maintaineu positions	55* 55*	55° Rectangular	e	20 E	26	EWS32DB
		actuator 6	D	30.5	30	EWS32ÖBB	
		× 55°	Short toggle	22	22 30.5	29.5	EWT21.V
	1 momentary position		Long knob	22			EWT21.1V
	to the zero position	55*	S5* Rectangular actuator	6	20.5	36	EWT21DB
Spring-return		D		0	30.5		EWT21ÖBB
switches		×35 + 35 - ×	Short toggle		20 E	20.5	EWT32.V
	1 momentary position		Long knob	22	00.0	29.0	EWT32.1V
	of the zero position	35* 35*	Rectangular	6	00 F		EWT32DB
		L. L	actuator 6 3	30.5	30	EWT32ÖBB	
	Maintained position to	ined position to	22	20 F	20 F	EWTS32.V	
Maintained spring-return	position to right		Long knob	22	30.5	29.5	EWT\$32.1.V
rotary selector switches	Maintained position on	35 - 33.	Short toggle	22	20.5	26	EWTS321.V
	position on left		Long knob	22	30.5	30	EWTS321.1V

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 Width of the command device head
- C Key Ø
- S SCHMERSAL

COMMAND AND SIGNALLING DEVICES – E.V PROGRAMME KEY SELECTOR SWITCHES, BUTTONS AND TOUCH CONTACT SWITCHES

Key Features	- 200	- 201		
General description	Key Selector Switch	Key-operated selector switch		
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	Aluminium		
Material front ring	Aluminium	Aluminium		
Technical features				
Mechanical data				
Color	Metal (silver)	Metal (silver)		
Design	Round	Round		
Front plate thickness	1 6 mm	1 6 mm		
Maintained switching positions	2 or 3 positions	2 or 3 positions		
Assembly				
Mounting flange included in delivery	-	-		
Mounting position	Arbitrarily	Arbitrarily		
Ambient conditions				
Ambient temperatures	0 °C +75 °C	0 °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	100,000 operations	100,000 operations			
Certificates	cULus	cULus			
Notice	cULus in conjunction with the corresponding contact elements only				

COMMAND AND SIGNALLING DEVICES – E.V PROGRAMME KEY SELECTOR SWITCHES, BUTTONS AND TOUCH CONTACT SWITCHES

Туре	Maintained and momentary positions	Key positions	Key-withdrawal position	A	В	С	Type designation
		90*	0				ESS21S1.V
	2 maintained positions		I	33	30.5	34.5	ESS21S2.V
Kev-operated			0 + 1				ESS21S12.V
selector		-1-	I				ESS32S1.V
switches	itches		0	33	30.5	04 F	ESS32S2.V
	3 maintained positions		II			34.5	ESS32S3.V
			I + O + II				ESS32S123.V
Key-operated	1 momentary position and automatic return to the zero position		0	33	30.5	34.5	EST21S1.V
buttons	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 В
 - Mounting-Ø
- C Key Ø
- Height of command device in front of the front panel without key Installation diameter for the command device head Width of the command device head

COMMAND AND SIGNALLING DEVICES - E.V PROGRAMME SPECIAL DEVICES





	■ WSEK	DAN6		
Features				
General description	Step selector switch	Potentiometer drive		
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	Plastic	Plastic		
Material front ring	Aluminium	Aluminium		
nical features				
Electrical data				
Cam-operated switch	Kraus & Naimer Series CA10	-		
Contacts	One NO contact per stage	-		
Insulation voltage U _i	690 V	-		
Utilisation category AC-15	220 V 240 V / 5 A, 380 V 440 V / 4 A	-		
Rated impulse withstand voltage. U _{imp}	6 kV	-		
Rated continuous current Ithe	20 A	-		
Fuse rating	gG 25 A	_		
Cable section	max. 2 × 2.5 mm ² *	_		
Mechanical data				
Color				
Operating element				
Front ring	Silver	Silver		
Front plate thickness	1 6 mm	1 6 mm		
Maintained switching positions	3 12 positions	Infinite		
Assembly				
Integrated mounting plate		-		
Mounting position	Arbitrarily	Arbitrarily		
Ambient conditions				
Ambient temperatures	0 °C +60 °C	0 °C +75 °C		
Degree of protection (device head)	IP65	IP65		

Safety classification

Standard	s	IEC 60947-3	_
Mechani	cal life	Load-dependent	_
Certifica	tes	cULus, CCC	_

* Use copper conductors only

COMMAND AND SIGNALLING DEVICES - E.V PROGRAMME SPECIAL DEVICES

Туре	Circuit diagram and connecting terminals	Switching angle	L	LE	A	В	С	Type designation
	³ o o ⁵ 100022	60°	40.7	60	22	30.5	29.5	WSE3K
	⁵ 0 0 ⁷ 10-12 03	60°	40.7	60	22	30.5	29.5	WSE4K
	⁵ 0 0 ⁹ 10-12 0 ³ 07	60°	50.2	69.5	22	30.5	29.5	WSE5K
	⁵ ο ο ⁹ 10	60°	50.2	69.5	22	30.5	29.5	WSE6K
Cam switching design step switches	⁹ 50 0 0 ¹³ 10 2 03 0 11 0 7 11 0 7	45°	59.7	78	22	30.5	29.5	WSE7K
with latching mechanism, 1-pole no zero position	$\begin{bmatrix} 5 & 0 & 0^{13} \\ 10 & 2 & 0^{3} \\ 5 & 0 & 7 \end{bmatrix}$	45°	59.7	78	22	30.5	29.5	WSE8K
	⁹ ¹³ ¹⁷ ⁵ ⁰ ⁰ ⁰ ²¹ ¹⁰ ² ⁰³ ² ⁰⁷	30°	69.2	87.5	22	30.5	29.5	WSE9K
	9 ¹³ 17 5 0 0 21 10 2 0 7 2 0 7 6 11	30°	69.2	87.5	22	30.5	29.5	WSE10K
	$\begin{array}{c} 9 & 13 & 17 \\ 5 & 0 & 0 & 21 \\ 10 & 0 & 0 & 21 \\ 10 & 0 & 0 & 0 \\ & 10 & 0 & 0 & 21 \\ & 10 & 0 & 0 & 0 \\ & 10 & 0 &$	30°	78.7	97	22	30.5	29.5	WSE11K
	$\begin{bmatrix} 9 & 13 & 17 \\ 5 & 0 & 0 & 71 \\ 10 & 12 & 0 & 7 \\ 23 & 0 & 0 & 7 \\ 10 & 0 & 0 & 0 \\ 10 &$	30°	78.7	97	22	30.5	29.5	WSE12K
Туре	Description			LE	Α	В	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

- Height Mounting-Ø A Height Height of command device in front of the front panel
- В Installation diameter for the command device head
- С 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.

Pro	duct overview	Page
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COMMAND AND SIGNALLING DEVICES – H PROGRAMME EMERGENCY STOP CONTROL DEVICES



100,000 operations

BG, UL, CCC (under preparation)

	■ HDRZ40
Key Features	
General description	Emergency stop command device with pull-to-unlatch mechanism by integrated snap-action mechanism
Area of application	Food and hygiene applications
Mounting-Ø	22.3 mm
Housing material	
Material of operating element	Plastic
Material front ring	Plastic
Technical features	
Mechanical data	
Colour of the operating element	
Colour of sealing membranes	
Design	Round
Front plate thickness	1.5 6 mm
Unlocking type	Pull-to-unlatch mechanism
Snap-action mechanism	
Integrated	-
Externally via additional module	-
Assembly	
Mounting flange included in delivery	•
Mounting position	Arbitrarily
Ambient conditions	05.00
Ambient temperatures	-25 °C +80 °C
Degree of protection	IP67 / IP69K
Safety classification	
Standards	IEC 60947-5-1, IEC 60947-5-5, IEC 60947-1, EN ISO 13850

Mechanical life

Certificates

COMMAND AND SIGNALLING DEVICES – H PROGRAMME EMERGENCY STOP CONTROL DEVICES

Туре	Unlocking	Operators	Bellows	Front ring	A	В	С	Type designation	Material number
Emergency stop command device	Pull-to-unlatch mechanism	red	blue	yellow	38	22.3	40	HDRZ40-BL-RT-GB	103037906

All dimensions in mm.

Key

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

COMMAND AND SIGNALLING DEVICES - H PROGRAMME INDICATOR LIGHTS

Features	= HML
General description	LED indicator light for LED illuminants
Area of application	Ecod and bygiene applications
Mounting-0	22.3 mm
Housing material	
Material of operating element	Plastic
Material front ring	ABS, chrome-plated
hnical features	
Mechanical data	
Colour of the operating element	
Colour of seal	
Design	All-round illuminated collar
Front plate thickness	1.5 6 mm
Integrated LED 24 V	_
Assembly	
Mounting flange included in delivery	
Mounting position	Arbitrarily
Ambient conditions	
Ambient temperatures	−25 °C +80 °C
Degree of protection	IP67 / IP69K
fety classification	
Standards	IEC 60947-5-1, IEC 60947-1
Mechanical life	-
Certificates	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

Туре	Operators	Bellows	А	В	С	Туре	Material number
Indicator lights	blue	blue	10	22.3		HML-BL-BL	103039525
	yellow					HML-BL-GB	103039526
	green				45	HML-BL-GN	103039522
	red					HML-BL-RT	103039524
	white					HML-BL-WS	103039523

All dimensions in mm.

Key

- A Height
- B Mounting-Ø I
 - Installation diameter for the command device head

Height of command device in front of the front panel

- 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 huttons	Illuminated nushbutton
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	I	
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

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

All dimensions in mm.

Key

- A Height
- B Mounting-Ø
- C Key Ø

Height of command device in front of the front panel Installation diameter for the command device head Width of the command device head

COMMAND AND SIGNALLING DEVICES – H PROGRAMME MUSHROOM HEAD IMPACT BUTTONS

	■ HDTP30	■ HDTP40
Key Features		
General description	Mushroom head impact button	Mushroom head impact button
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 sealing membranes		
Design	Round	round
Front plate thickness	1.5 6 mm	1.5 6 mm
With latching	-	_
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)

■ 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	Food and hygiene applications		
22.3 mm	22.3 mm		
Plaatia	Pleatie		
Plasuc Stainless steel	Stainless steel		
round	Round		
1.5 6 mm	1.5 6 mm		
-	-		
	•		
Arbitrarily	Arbitrarily		
1007 / 1009K	1007 / 1009K		
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

Туре	Operators	Bellows	Α	В	C	Туре	Material number
	blue		22			HDTP30-BL-BL	103039553
	yellow					HDTP30-BL-GB	103039552
	green	_			30	HDTP30-BL-GN	103039549
	red	_			50	HDTP30-BL-RT	103043738
	black					HDTP30-BL-SW	103039551
Mushroom head	white					HDTP30-BL-WS	103039554
impact buttons	blue					HDTP40-BL-BL	103039547
	yellow		38		40	HDTP40-BL-GB	103039545
	green	-				HDTP40-BL-GN	103039542
	red					HDTP40-BL-RT	103043737
	black					HDTP40-BL-SW	103039544
	white	blue		22.3		HDTP40-BL-WS	103039548
	blue					HDLP30-BL-BL	103039558
Mushroom head	yellow		22			HDLP30-BL-GB	103039559
impact buttons,	green			30	30	HDLP30-BL-GN	103039555
illuminated	red					HDLP30-BL-RT	103039557
	white					HDLP30-BL-WS	103039556
	blue					HDRZ40-BL-BL	103039518
	yellow					HDRZ40-BL-GB	103039517
Mushroom head	green		20		40	HDRZ40-BL-GN	103039514
latching function	red		38		40	HDRZ40-BL-RT	103044256
-	black					HDRZ40-BL-SW	103039516
	white					HDRZ40-BL-WS	103039519

All dimensions in mm.

Key

А	Height
В	Mounting-Ø

C Key Ø

Height of command device in front of the front panel Installation diameter for the command device head

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COMMAND AND SIGNALLING DEVICES – H PROGRAMME

MAINTAINED SELECTOR SWITCHES AND SPRING RETURN SELECTOR SWITCHES

	L HWS / HWT	L HWS 1 / HWT 1
Key Features	- 1143 / 1141	- 1110.17 1111.1
General description	Selector switch/ spring-return selector switch with short toggle	Step selector switch with long toggle
Area of application	Food and hygiene applications	Food and hygiene applications
Mounting-Ø	22.3 mm	22.3 mm
Toggle length	26 mm	52.5 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		2.0 0
Mounting flange included in delivery		
Mounting position	Arbitrarily	Arbitrarily
Ambient conditions		-
Ambient temperatures	0 °C +80 °C	0 °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	300,000 operations	300,000 operations
Certificates	BG, UL, CCC (under preparation)	BG, UL, CCC (under preparation)

COMMAND AND SIGNALLING DEVICES – H PROGRAMME

MAINTAINED SELECTOR SWITCHES AND SPRING RETURN SELECTOR SWITCHES

Туре	Maintained and momentary positions	Positions	A	В	С	Type designation
	2 maintained positions					HWS21①-BL-②
Selector switches	3 maintained positions					HWS32①-BL-②
Spring-return rotary	1 momentary position with automatic return to the zero position		31 22.3	45	HWT21(1)-BL-@	
selector switches	1 momentary position each to the right a nd left of the zero position			22.0	45	HWT32①-BL-②
Maintained	1 momentary position on the right and 2 maintained positions					HWST32①-BL-②
selector switches	1 momentary position on the left and 2 maintained positions					HWTS32①-BL-②

All dimensions in mm.

Ordering code

Toggle length: Without Short toggle .1 Long toggle Colour of toggle SW Black

White

SW WS

Key

- A Height
- B Mounting-Ø
- C Key Ø

Height of command device in front of the front panel Installation diameter for the command device head Width of the command device head

COMMAND AND SIGNALLING DEVICES - H PROGRAMME MAIN SWITCHES

		■ HHS16	■ HHS40
Key Fe	eatures		
	General description	Main switches 16A	Main switches 40A
	Area of application	Food and hygiene applications	Food and hygiene applications
	Mounting	22.3 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 ston design	-	-
Techn	ical 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°08+ 3°0	0°08+ 3°0
	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		
	Oton doudo		
	Stanudius	IEC EN 60204	IEC EN 60204

1,000,000 operations

100,000 operations

BG, UL, CCC (under preparation) BG, UL, CCC (under preparation)

Mechanical life

Certificates

■ HHS63	■ HHS125
Main switches 63A	Main switches 125A
Food and hygiene applications	Food and hygiene applications
110 × 110 mm	110 × 110 mm
or Ø 22.3 mm	or Ø 22.3 mm
Plastic	Plastic
Stainless steel	Stainless steel
•	•
Square	Square
1 6 mm	1 6 mm
2 positions	2 positions
-	_
	-
Arbitrarily	Arbitrarily
0 °C +80 °C	0 °C +80 °C
−25 °C +50 °C	−25 °C +50 °C
−25 °C +40 °C	−25 °C +40 °C
IP67 / IP69K	IP67 / IP69K

IEC EN 60947,	IEC EN 60947,
IEC EN 60204	IEC EN 60204
100,000 operations	25,000 operations
BG, UL, CCC (under preparation)	BG, UL, CCC (under preparation)

COMMAND AND SIGNALLING DEVICES - H PROGRAMME MAIN SWITCHES

Туре	Descript	Description		A	В	C	Type designation	Material number
		Included in	With black grip	32	22.3	70 × 80	HHS16-BL-SW-2-POL	103044285
	16 4	standard version	With black grip + mounting plate	37	-	110×110	HHS16-BL-SW-2-POL-MP	103044286
	2-pole		With red grip + yellow background	32	22.3	70 × 80	HHSNH16-BL-RT-2-POL	103044289
		Emergency stop	With red grip, yellow background + mounting plate	37	-	110 × 110	HHSNH16-BL-RT-2-POL-MP	103044290
		Included in	With black grip	32	22.3	70 × 80	HHS16-BL-SW-4-POL	103044287
	16 4	standard version	With black grip + mounting plate	37	-	110×110	HHS16-BL-SW-4-POL-MP	103044288
	4-pole		With red grip + yellow background	32	22.3	70 × 80	HHSNH16-BL-RT-4-POL	103044291
		Emergency stop	With red grip, yellow background + mounting plate	37	-	110 × 110	HHSNH16-BL-RT-2-POL-MP	103044290
		Included in standard version	With black grip	32	22.3	Ø 100	HHS40-BL-SW	103044293
Main	40.4		With black grip + mounting plate	37	-	110×110	HHS40-BL-SW-MP	103044294
switches	3-pole	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
	Included in		With black grip	32	22.3	Ø 100	HHS63-BL-SW	103044297
	62 4	standard version	With black grip + mounting plate	37	-	110×110	HHS63-BL-SW-MP	103044298
	3-pole	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
		Included in	With black grip	32	22.3	Ø 100	HHS125-BL-SW	103044301
	105 4	standard version	With black grip + mounting plate	37	-	110×110	HHS125-BL-SW-MP	103044302
	3-pole		With red grip + yellow background	32	22.3	Ø 100	HHSNH125-BL-RT	103044303
	Emergency stor		With red grip, yellow background + mounting plate	37	-	110 × 110	HHSNH125-BL-RT-MP	103044304

All dimensions in mm.

Key

A	. H	leig	ht		
---	-----	------	----	--	--

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

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COMMAND AND SIGNALLING DEVICES - H PROGRAMME SPECIAL DEVICES





	■ HWSE	■ HDAN6
y Features		
General description	Step selector switch	Potentiometer drive
Area of application	Food, hygiene and outdoor applications	Food, hygiene and outdoor applications
Mounting-Ø	22.3 mm	22.3 mm
Housing material		
Material of operating element	Plastic	Plastic
Material front ring	Stainless steel	Stainless steel
ical features		
Electrical data		
Electrical data		
Cam-operated switch	Saizer cam switch, M200 product series, M220 series	-
Contacts	One NO contact per stage	_
Insulation voltage U _i	690 V	-
Operating current I., AC-21A	20 A	_
Rated impulse withstand voltage. Uimp	4 kV	_
Rated continuous current I _{the}	20 A	_
Fuse rating	20 A gL	_
Cable section	max. 2.5 mm ² *	-
Mechanical data		
Color		
Operating element		
Front ring	Silver	Silver
Front plate thickness	1.5 6 mm	1.5 6 mm
Maintained switching positions	2 12 positions	Infinite
Assembly		
Integrated mounting plate		
Mounting position	Arbitrarily	Arbitrarily
Ambient conditions	-	-
Ambient temperatures of the device head	0 °C +80 °C	0 °C +80 °C
Degree of protection (device head)	IP67 / IP69K	IP67 / IP69K

Safety classification

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

* Use copper conductors only

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COMMAND AND SIGNALLING DEVICES - H PROGRAMME SPECIAL DEVICES

Туре	Circuit diagram and connecting terminals	Switching angle	L	LE	A	В	C	Type designation
	³ 0 0 ⁵ 1000	60°	40.7	60	31	22.3	45	HWSE31)-BL-2
	⁵ 0 0 ⁷ 10-12 03	60°	40.7	60	31	22.3	45	HWSE41)-BL-2
	⁵ 0 0 ⁹ 10 0 ³ 0 ₇	60°	50.2	69.5	31	22.3	45	HWSE5①-BL-②
	$rac{5}{10}$ $rac{9}{10}$ $rac{3}{10}$ rac	60°	50.2	69.5	31	22.3	45	HWSE61)-BL-2
Cam switching design	50 ° 0 ^B 10 0 0 10 0 10 0 10 0 10 0 10 0 10 0 1	45°	59.7	78	31	22.3	45	HWSE71)-BL-2
latching mechanism, 1-pole no zero position	$\begin{array}{cccc} & & & & \\ & & 5_{0} & & 0^{12} \\ & & 1_{0} & & & 0^{2} \\ & & & g_{0} & & & 0^{2} \\ & & & & g_{0} & & & 0^{2} \end{array}$	45°	59.7	78	31	22.3	45	HWSE81-BL-2
	⁹ ¹⁹ ^π ⁷¹ ¹⁰ ² ⁰³ ⁷¹ ¹⁰ ² ⁰³	30°	69.2	87.5	31	22.3	45	HWSE91-BL-2
	°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°	30°	69.2	87.5	31	22.3	45	HWSE10①-BL-②
	⁹ ¹⁰ ¹⁰ ¹⁰ ¹⁰ ¹⁰ ¹⁰	30°	78.7	97	31	22.3	45	HWSE11①-BL-②
	9 ⁹ ¹³ 7 50 ⁰ ⁰ ⁰ ³¹ 10 ¹⁰ ²³ ⁰ ⁰ ³¹ 23 ⁰ ⁰ ² ⁰ ¹⁰	30°	78.7	97	31	22.3	45	HWSE12①-BL-②
Type	Description			LE	Δ	в	С	Type designation
.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	for 6 mm shaft Ø shaft length 30 40 mm control unit black					5		HDAN6-BL-SW-(3)
Potentiometer drive	for 6 mm shaft Ø, shaft length 30 40 mm, control unit black			63	31	22.3	45	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								

Key ØWidth of the command deviceLengthLength of step switch block

 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	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.
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.

Pro	duct overview	Page
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3	Mushroom head impact button/ Mushroom push button	70
4	Selector switch/key button	72
5	Key-operated selector switch/ button	74
6	Illuminated pushbutton	68
7	Indicator light	66
8	Step selector switch	76
9	Potentiometer drive	76
10	Mounting flange EFM	108
11	Mounting flange ELM	108
12	Contact element RF	102
13	Light terminal block RLDE	102
14	Light terminal block RL	102
15	Emergency stop label	106
16	Emergency stop protective collar	106
17	EMERGENCY STOP enclosure for surface mounting	110
18	Identification label	106
19	Stainless steel enclosure for surface mounting	110
20	Adapter ring	108
21	Blanking plug	107
22	Mounting tool	109



COMMAND AND SIGNALLING DEVICES – R PROGRAMME EMERGENCY STOP CONTROL DEVICES



	■ RDRZ45RT				
Key Features					
General description	Emergency stop command device with pull-to-unlatch mechanism				
Area of application	Heavy-duty applications				
Mounting-Ø	22.3 mm				
Housing material					
Material of operating element	Aluminium				
Material front ring	Aluminium				
Other versions are available					
ATEX design					
Technical features					
Mechanical data					
Colour of the operating element					
Design	Round				
Front plate thickness	1 6 mm				
Unlocking type	Pull-to-unlatch mechanism				
Snap-action mechanism					
Integrated	-				
Externally via additional module	-				
Assembly					
Mounting flange included in delivery	-				
Mounting position	Arbitrarily				
Ambient conditions					
Ambient temperatures	−25 °C +75 °C				
Degree of protection	IP65				
Safety classification					
Standards	IEC 60947-5-1, IEC 60947-5-5, IEC 60947-1, EN ISO 13850				
Mechanical life	100,000 operations				
Certificates	cULus				
Notice	cULus in conjunction with the corresponding contact elements only				



COMMAND AND SIGNALLING DEVICES - R PROGRAMME EMERGENCY STOP CONTROL DEVICES

Туре	Unlocking	Snap-action mechanism	A	В	С	Туре	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

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

COMMAND AND SIGNALLING DEVICES - R PROGRAMME INDICATOR LIGHTS

Key Features	·	·
-		
General description	Illuminated signal for BA9s	Illuminated signal with integrated LED
Area of application	Heavy-duty applications	Heavy-duty applications
Mounting-Ø	22.3 mm	22.3 mm
Housing material		
Material of operating element	Glass / plastic	Glass / plastic
Material front ring	Aluminium	Aluminium
Other versions are available		
ATEX design	•	-
Technical features Mechanical data		
Color		
Design	Round with flat or high glass	Round with flat or high glass
Front plate thickness	1 6 mm	1 6 mm
Integrated LED 24 VAC/DC *	_	
Assembly		
Mounting flange included in delivery	-	
Mounting position	Arbitrarily	Arbitrarily
Ambient conditions		
Ambient temperatures	−25 °C +75 °C	−25 °C +40 °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	-	-
Certificates	cULus	cULus
Notice	cULus in conjunction with the corr	responding 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

Туре	Description		А	В	C	Туре
Indicator lights	Without integrated illuminant	Flat collar	11	22.3	39.5	RML ①
		High collar	21.5	22.3	39.5	RMLH ①
LED indicator light	With integrated illuminant	Flat collar	11	22.3	39.5	RMEF ①
		High collar	21.5	22.3	39.5	RMEH ①

① Abbreviations of colours: BK GB RD GN WH GR 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
- B Mounting-Ø

C Key Ø

Height of command device in front of the front panel Installation diameter for the command device head

Width of the command device head

COMMAND AND SIGNALLING DEVICES – R PROGRAMME PUSHBUTTONS AND ILLUMINATED PUSHBUTTONS

	■ RDT	■ RDL	
Key Features			
General description	Push buttons	Illuminated pushbutton	
Area of application	Heavy-duty applications	Heavy-duty applications	
Mounting-Ø	22.3 mm	22.3 mm	
Housing material			
Material of operating element	Aluminium	Glass	
Material front ring	Aluminium	Aluminium	
Other versions are available			
	_	_	
A I EX design	•	•	
Technical features			
Mechanical data			
Color			
Design	Round	Round	
Front plate thickness	1 6 mm	1 6 mm	
Assembly	2 0	2	
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		1	
,			
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	cIII us	

cULus in conjunction with the corresponding contact elements only

Notice

COMMAND AND SIGNALLING DEVICES – R PROGRAMME PUSHBUTTONS AND ILLUMINATED PUSHBUTTONS

Туре	Description	Α	В	С	Туре
Puch huttons	Included in standard version	11	22.3	39.5	RDT ①
Push buttons	With membrane	11	22.3	39.5	RDM ①
Illuminated pushbuttons	Included in standard version	11	22.3	39.5	RDL ①
	With membrane	11	22.3	39.5	RDLM 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 B Mounting-Ø
- Height of command device in front of the front panel 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

Kay Faaturas	■ RDP40	■ RDRZ45
General description	Mushroom button without latching function	Mushroom button with latching function
Area of application	Heavy-duty applications	Heavy-duty applications
Mounting-Ø	22.3 mm	22.3 mm
Housing material		
Material of operating element	Aluminium	Aluminium
Material front ring	Aluminium	Aluminium
Other versions are available		
	_	-
Technical features		
Mechanical data		
Desim		
Design Front plate thickness	Round	
With latching		1
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	100,000 operations
Certificates	cULus	cULus

cULus in conjunction with the corresponding contact elements only

Notice

COMMAND AND SIGNALLING DEVICES – R PROGRAMME MUSHROOM HEAD IMPACT BUTTONS

Туре	Description		А	В	С	Туре
Mushroom	without latching	Mushroom-shaped	27	22.3	39.5	RDP40 1)
head impact buttons	with latching	Mushroom-shaped	27	22.3	45	RDRZ45 ①

① Abbreviations of colours: SW GB 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
- B Mounting-Ø

Height of command device in front of the front panel 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		
General description	Selector switches/spring-return selector switches with short toggle	Selector switches/spring-return selector switches with long toggle
Area of application	Heavy-duty applications	Heavy-duty applications
Mounting-Ø	22.3 mm	22.3 mm
Toggle length	40 mm	49 mm
Housing material		
Material of operating element	Plastic	Plastic
Material front ring	Aluminium	Aluminium
Other versions are available		
ATEX design Technical features	-	•
Mechanical data	_	
Color		
Design	Round	Round
Front plate thickness	1 6 mm	1 6 mm
Maintained switching positions	2 3 positions	2 3 positions
Assembly		
Mounting flange included in delivery	A ubiture with a	A selections with a
Mounting position	Arbitrarily	Arbitrarily
Ambient conditions	0.00 + 75.00	0.90 175.90
Amblent temperatures		
Degree of protection	1605	IF05
Safety classification		
Standards	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1

Standards	IEC 60947-5-1, IEC 60947-5-1,		
	IEC 60947-1	IEC 60947-1	
Mechanical life	300,000 operations	300,000 operations	
Certificates	cULus cULus		
Notice	cULus in conjunction with the corresponding contact elements only		
COMMAND AND SIGNALLING DEVICES - R PROGRAMME

MAINTAINED SELECTOR SWITCHES AND SPRING RETURN SELECTOR SWITCHES

Туре	Maintained and momentary positions	Positions	Actuator	A	В	C	Type designation
	2 maintained positions	70.	Short toggle	32	22.3	39.5	RWS21
Selector switches			Long toggle	32	22.3	39.5	RWS21.1
	2 maintained assitions		Short toggle	32	22.3	39.5	RWS32
	3 maintained positions		Long toggle	32	22.3	39.5	C Type designation 9.5 RWS21 9.5 RWS21.1 9.5 RWS21.1 9.5 RWS32 9.5 RWS32.1 9.5 RWT21 9.5 RWT21.1 9.5 RWT32 9.5 RWT32.1 9.5 RWT32.1 9.5 RWTS32.1 9.5 RWTS32.1 9.5 RWTS32.1
	1 momentary position with automatic	× 55°	short toggle	32	22.3	39.5	RWT21
Spring- return rotary	return to the zero position		Long toggle	32	22.3	39.5	RWT21.1
selector switches	1 momentary position each to the	× 35 + 35-	Short toggle	32	22.3	39.5	RWT32
	right and left of the zero position		Long toggle	32	22.3	39.5	RWT32.1
	1 momentary position on the right and	×55	Short toggle	32	22.3	39.5	RWTS32
Maintained spring- return rotary selector switches	2 maintained positions		Long toggle	32	22.3	39.5	RWTS32.1
	1 momentary position on the left and	× * * *	Short toggle	32	22.3	39.5	RWTS321
	2 maintained positions		Long toggle	32	22.3	39.5	RWTS321.1

① Toggle length:

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

All dimensions in mm.

Key

А	Height	Height of command device in front of the front panel
Р	Mounting (1	Installation diamater for the command dovice head

- В Mounting-Ø Installation diameter for the sec Width of the command device head Installation diameter for the command device head
- C Key Ø

COMMAND AND SIGNALLING DEVICES – R PROGRAMME KEY SELECTOR SWITCHES, BUTTONS AND TOUCH CONTACT SWITCHES

	■ RSS	■ RST		
Key Features				
General description	Key-selector switch	Key-operated selector switch		
Area of application	Heavy-duty applications	Heavy-duty applications		
Mounting-Ø	22.3 mm	22.3 mm		
Housing material				
Material of operating element	Aluminium	Aluminium		
Material front ring	Aluminium	Aluminium		
Other versions are available				
ATEX design	-	-		
Technical features				
Mechanical data				
Color	Metal (silver)	Metal (silver)		
Design	Round	Round		
Front plate thickness	1 6 mm	1 6 mm		
Maintained switching positions	2 or 3 positions	2 or 3 positions		
Assembly				
Mounting flange included in delivery	-			
Mounting position	Arbitrarily	Arbitrarily		
Ambient conditions				
Ambient temperatures	0 °C +75 °C	0 °C +75 °C		
Degree of protection	IP65	IP65		
Safety classification				
Standards	IEC 60947-5-1	IEC 60947-5-1		

Stanuarus	IEC 00947-5-1,	IEC 00947-5-1,			
	IEC 60947-1	IEC 60947-1			
Mechanical life	100,000 operations	100,000 operations			
Certificates	cULus	cULus			
Notice	cULus in conjunction with the corresponding contact elements				

COMMAND AND SIGNALLING DEVICES - R PROGRAMME KEY SELECTOR SWITCHES, BUTTONS AND TOUCH CONTACT SWITCHES

Туре	Maintained and momentary positions	Positions	Key-withdrawal position	Α	В	С	Type designation			
		90"	0	31.5	22.3	39.5	RSS21S1			
	2 maintained positions		I	31.5	22.3	39.5	Type designationRSS21S1RSS21S2RSS21S12RSS32S1RSS32S3RSS32S123RSS32S123RST21S1RST32S2RST32S1RST32S1RST32S1RST32S1RST32S1RST32S2RST32S1RST32S1RST32S2RST32S1RST32S2RST32S2RST32S1			
Kev-onerated			0 + 1	31.5	22.3	39.5	RSS21S12			
selector		-	I	31.5	22.3	39.5	RSS32S1			
switches	2 maintained positions		0	31.5	22.3	39.5	RSS32S2			
	S maintaineu positions	<u> </u>	II	31.5	22.3	39.5 RSS32S3 39.5 RSS32S123				
			I + O + 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	RSTS32S2			
Key-operated selector switch pushbuttons			I	31.5	22.3	39.5	RSST32S1			
	3 positions: momentary position 35° actuating angle and maintained		0	31.5	22.3	39.5	RSTS32S2			
	(zero position in middle, key position at top)	× * * *	0	31.5	22.3	39.5	RSTS321S2			
			II	31.5	22.3	39.5	RSTS32S3			

All dimensions in mm.

Key

- Height of command device in front of the front panel without key
- A Height B Mounting-Ø
- C Key Ø

Installation diameter for the command device head Width of the command device head

COMMAND AND SIGNALLING DEVICES - R PROGRAMME SPECIAL DEVICES





	■ RWSEK	RDAN6
Features		
General description	Step selector switch	Potentiometer drive
Area of application	Heavy-duty applications	Heavy-duty applications
Mounting-Ø	22.3 mm	22.3 mm
Housing material		
Material of operating element	Plastic	Plastic
Material front ring	Aluminium	Aluminium
er versions are available		
ATEX design	-	-
nical features		
Electrical data		
Cam-operated switch	Kraus & Naimer Series CA10	_
Contacts	One NO contact per stage	-
Insulation voltage U _i	690 V	_
Utilisation category AC-15	220 V 240 V / 5 A, 380 V 440 V / 4 A	-
Rated impulse withstand voltage. U _{imp}	6 kV	-
Rated continuous current Ithe	20 A	-
Fuse rating	gG 25 A	-
Cable section	max. 2 × 2.5 mm ² *	-
Mechanical data		
Color		
Operating element		
Front ring	Silver	Silver
Front plate thickness	1 6 mm	1 6 mm
Maintained switching positions	3 12 positions	Infinite
Assembly	•	
Integrated mounting plate		
Mounting position	Arbitrarily	Arbitrarily
Ambient conditions		,
Ambient temperatures	0 °C +60 °C	0 °C +75 °C
Degree of protection (device head)	IP65	IP65
	1	

Standards	IEC 60947-3	-
Mechanical life	Load-dependent	-
Certificates	cULus, CCC	-

* Use copper conductors only.

COMMAND AND SIGNALLING DEVICES - R PROGRAMME SPECIAL DEVICES

Туре	Circuit diagram and connecting terminals	Switching angle	L	LE	A	В	C	Type designation	Material number
	³ 0 0 ⁵ 10-02	60°	40.7	60	32	22.3	54	RWSE3K.1	101195857
	⁵ 0 0 ⁷ 10	60°	40.7	60	32	22.3	54	RWSE4K.1	101195858
	$10 \qquad 10 \qquad$	60°	50.2	69.5	32	22.3	54	RWSE5K.1	101195859
	$rac{1}{10}$ rac	60°	50.2	69.5	32	22.3	54	RWSE6K.1	101195860
Cam switching design step switches	$5 \circ \overset{9}{} \circ \overset{0}{} \circ \overset{1}{} \overset{0}{} \overset{0}{}$	45°	59.7	78	32	22.3	54	RWSE7K.1	101195861
with latching mechanism, 1-pole no zero position	50 0 0 ⁹ 10 0 50 0 ² 0 ³ π ² 0 ₇	45°	59.7	78	32	22.3	54	RWSE8K.1	101195862
	⁹ ¹³ ¹⁷ ⁵ 0 ⁰ ⁰ ²¹ ¹⁰ ² 0 ³ ² 0 ⁷	30°	69.2	87.5	32	22.3	54	RWSE9K.1	101195863
		30°	69.2	87.5	32	22.3	54	RWSE102K.1	101195864
	$ \begin{array}{c} 9 & 13 & 17 \\ 5 & 0 & 0 & 21 \\ 10 & 12 & 03 \\ 10 & 12 & 07 \\ 19 & 0 & 11 \end{array} $	30°	78.7	97	32	22.3	54	RWSE11K.1	101195865
	$\begin{array}{c} 9 & 13 & 17 \\ 5 & 0 & 0 & 21 \\ 10 & 0 & 0 & 2 \\ 23 & 0 & 0 & 2 \\ 7 & 0 & 0 & 7 \\ 7 & 0 & 0 & 0 \\ 7 & 0 $	30°	78.7	97	32	22.3	54	RWSE12K.1	101195866
Туре	Description			LE	Α	В	C	Type desig <u>nat</u> i	on
Potentiometer drive	for 6 mm shaft Ø, shaf	t length 30	. 40 mm	63	31	22.3	39.5	RDAN6	

All dimensions in mm.

Key

- А Height
- В Mounting-Ø
- С Key Ø
- Length L
- Height of command device in front of the front panel Installation diameter for the command device head
- Width of the command device head

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.

Pro	duct overview	Page
1	Emergency stop	80
2	Pushbutton	84
3	Mushroom head impact button/ Mushroom pushbutton	86
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6	Illuminated pushbutton	84
7	Indicator light	82
8	Contact element	99
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10	Emergency stop label	106
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12	Identification label	106
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16	Replacement key	108
17	Removal tool	109



COMMAND AND SIGNALLING DEVICES – A PROGRAMME EMERGENCY STOP CONTROL DEVICES



	■ ADRR40				
Key Features					
General description	Emergency stop command device				
Area of application	Industrial applications				
Mounting-Ø	22.3 mm				
Housing material					
Material of operating element	Plastic				
Material front ring	Plastic				
Other versions are available					
Mounted in housing	MBKAC311YE-ADRR40RT-2NC				
Technical features					
Machanical data					
Color					
Design	Round				
Front plate thickness	1 6 mm				
Unlocking type	Pull-to-unlatch mechanism				
Snap-action mechanism					
Integrated					
Externally via additional module	-				
Assembly					
Connection:	Knurled nut, central mounting				
Mounting position	Arbitrarily				
Ambient conditions					
Ambient temperatures	−25 °C +60 °C				
Degree of protection	IP65				
Safety classification					

Standards	IEC 60947-5-1,
	IEC 60947-5-5,
	IEC 60947-1,
	EN ISO 13850
B _{10D} NC contact	100,000 operations
Certificates	cULus
Notice	cULus in conjunction with the corresponding contact elements only



COMMAND AND SIGNALLING DEVICES – A PROGRAMME EMERGENCY STOP CONTROL DEVICES

Туре	Unlocking	Snap-action mechanism	A	В	С	Туре	Material number
Emergency stop command devices	Pull-to-unlatch mechanism	Integrated	38	22.3	40	ADRR40RT	101030271
EMERGENCY STOP complete housing	Pull-to-unlatch mechanism	Integrated	93	-	40	MBKAC311YE- Adrr40rt-2NC	103009572
EMERGENCY STOP complete housing	Pull-to-unlatch mechanism	Integrated	93	-	40	MBKAC311YE- Adrr40rt-2nc-1no	103011887

All dimensions in mm.

Key

C Key Ø

А	Height	Height of command device in front of the front panel
В	Mounting-Ø	Installation diameter for the command device head

- e command device head
- Width of the command device head

EMERGENCY STOP complete housing



COMMAND AND SIGNALLING DEVICES - A PROGRAMME INDICATOR LIGHTS

	■ AML	■ AMLH
Key Features		
General description	Elatter indicator light	Higher indicator light
Area of application		Industrial applications
Mounting-Ø	22.3 mm	22.3 mm
Housing material		
Material of operating element	Plastic	Plastic
Material front ring	Plastic	Plastic
Other versions are available		
With symbols	-	-
Technical features		
Mechanical data		
Color		
Design	Round	Round
Front plate thickness	1 6 mm	1 6 mm
Illumination *		
Assembly		
Connection:	Knurled nut, central mounting	Knurled nut, central mounting
Mounting position	Arbitrarily	Arbitrarily
Ambient conditions		
Ambient temperatures	−25 °C +60 °C	−25 °C +60 °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	_	_
Certificates	cULus	cULus
Notice	cULus in conjunction with the cor	responding contact elements only

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

COMMAND AND SIGNALLING DEVICES – A PROGRAMME INDICATOR LIGHTS

Туре	Illuminant	Collar	А	В	С	Туре	Material number
		Flat collar	10.3	22.3	29	AMLGB	101031181
			10.3	22.3	29	AMLRT	101031180
			10.3	22.3	29	AMLGN	101031182
	Without integrated illuminant		10.3	22.3	29	AMLWS	101031179
Indiantan Kabta			10.3	22.3	29	AMLBL	101031183
indicator lights		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 Mounting-Ø Installation diameter for the command device head
- В Key Ø С
- Width of the command device head

S SCHMERSAL

COMMAND AND SIGNALLING DEVICES – A PROGRAMME PUSHBUTTONS AND ILLUMINATED PUSHBUTTONS

		■ ADT	■ ADDT	■ ADL
Key Fe	eatures			
	General description	Pushbutton	Double pushbutton	Illuminated pushbutton
	Area of application	Industrial applications	Industrial applications	Industrial applications
	Mounting-Ø	22.3 mm	22.3 mm	22.3 mm
	Housing material			
	Material of operating element	Plastic	Plastic	Plastic
	Material front ring	Plastic	Plastic	Plastic
Other	versions are available			
	With high edge	On request	-	On request
Techni	ical features			
	Mechanical data			
	Color			
	Design	Round	round	Round
	Front plate thickness	1 6 mm	1 6 mm	1 6 mm
	Illumination *	-	optionally in the middle	-
	Assembly			
	Connection:	Knurled nut, central mounting	Knurled nut, central mounting	Knurled nut, central mounting
	Mounting position	Arbitrarily	Arbitrarily	Arbitrarily
	Ambient conditions			
	Ambient temperatures	−25 °C +60 °C	−25 °C +60 °C	−25 °C +60 °C
	Degree of protection	IP65	IP65	IP65
Safety	classification			
	Standards	IEC 60947-5-1	IEC 60947-5-1	IFC 60947-5-1
		IEC 60947-1	IEC 60947-1	IEC 60947-1
	Mechanical lifetime	1,000,000 operations	1,000,000 operations	1,000,000 operations
	Certificates	cULus	cULus	cULus
	Notice	cULus in conjunction	with the corresponding (contact elements only

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

Туре	Description		A	В	С	Туре	Material number
	ĺ		10.3	22.3	29	ADTSW	101031584
			10.3	22.3	29	ADTGB	101031593
		Included in	10.3	22.3	29	ADTRT	101031592
		standard version	10.3	22.3	29	ADTGN	101031594
			10.3	22.3	29	ADTWS	101031591
Duckhuttene	Included in		10.3	22.3	29	ADTBL	101031595
Pushbuttons	standard version		13.3	22.3	29	ADT3SW	101031585
			13.3	22.3	29	ADT3GB	101031588
			13.3	22.3	29	ADT3RT	101031587
		with high button	13.3	22.3	29	ADT3GN	101031589
			13.3	22.3	29	ADT3WS	101031586
			13.3	22.3	29	ADT3BL	101031590
	Included in	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
Illuminated			10.3	22.3	29	ADLBL	101031178
pushbuttons	standard version		13.3	22.3	29	ADL3GB	101031713
			13.3	22.3	29	ADL3RT	101031712
		With high button	13.3	22.3	29	ADL3GN	101031714
			13.3	22.3	29	ADL3WS	101031711
			13.3	22.3	29	ADL3BL	101031715
		With illumination	10.3	22.3	29 × 57	ADDT-GN-RT-G24	103010797
Double pushbuttons	2 button surfaces	Without	10.3	22.3	29 × 57	ADDT-GN-RT	103010798
Pacingations		illumination	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

C Key Ø

A Height

Height of command device in front of the front panel B Mounting-Ø

Installation diameter for the command device head

- Width of the command device head
- S SCHMERSAL

COMMAND AND SIGNALLING DEVICES – A PROGRAMME MUSHROOM HEAD IMPACT BUTTONS

	■ ADP	■ ADP 55.3
Key Features		
General description	Mushroom button without latching function	Mushroom button without latching function
Special features	-	Actuating force 7 N
Area of application	Industrial applications	Industrial applications
Mounting-Ø	22.3 mm	22.3 mm
Housing material		
Material of operating element	Plastic	Plastic
Material front ring	Plastic	Plastic
Other versions are available		
With symbols	•	-
Technical features		
Mechanical data		
Color		
Design	Round	Round
Front plate thickness	1 6 mm	1 6 mm
With latching	-	-
Assembly		
Connection:	Knurled nut, central mounting	Knurled nut, central mounting
Mounting position	Arbitrarily	Arbitrarily
Ambient conditions		
Ambient temperatures	−25 °C +60 °C	−25 °C +60 °C
Degree of protection	IP65	IP65
Safety classification	1	1
Standards		
Stanudrus	IEC 60947-5-1, IFC 60947-1	IEC 60947-5-1,
Mechanical life	1 000 000 operations	1,000,000 operations

cULus

cULus in conjunction with the corresponding contact elements only

cULus

Certificates

Notice

COMMAND AND SIGNALLING DEVICES - A PROGRAMME MUSHROOM HEAD IMPACT BUTTONS

Туре	Кеу	Actuating force	A	В	С	Туре	Material number
	Palm form	approx. 9 N	31.3	22.3	33	ADPSW	101031583
Mushroom			31.3	22.3	33	ADPRT	101031596
buttons without			31.3	22.3	33	ADPGN	101031597
latching function	Flatter wider mushroom	approx. 7 N	36	22.3	55	ADP55.3SW/0.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 B Mounting-Ø
 - Mounting-Ø Installatio

Height of command device in front of the front panel 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

Key F	eatures		
	General description	Selector switch/key button	Illuminated selector switch / button
	Area of application	Industrial applications	Industrial applications
	Mounting-Ø	22.3 mm	22.3 mm
	Housing material		
	Material of operating element	Plastic	Plastic
	Material front ring	Plastic	Plastic
Other	versions are available		
	With long toggle	-	_
		_	
Techn	ical features		
	Mechanical data		
	Design	Round	Round
	Front plate thickness	1 6 mm	16mm
	Illumination *		
	Assembly		
	Connection:	Knurled nut, central mounting	Knurled nut, central mounting
	Mounting position	Arbitrarily	Arbitrarily
	Ambient conditions		
	Ambient temperatures	−25 °C +60 °C	−25 °C +60 °C
	Degree of protection	IP65	IP65
Safety	classification		
Juioty			
	Standards	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1
	Mechanical life	100,000 operations	100,000 operations
	Certificates	cULus	cULus
	Notice	cULus in conjunction with the corr	responding 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

Туре	Maintained and momentary positions	Switching angle	Actuator	A	В	С	Type designation
		45°	Short toggle	25.8	22.3	29	AWS21 ①
	2 maintained	(A Constant of the second sec	Long knob	25.8	22.3	40	AWS21.1 ①
Coloctor owitch			Illuminated short toggle	25.8	22.3	29	AWSL21 (1)
Selector Switch	3 maintained positions		Short toggle	25.8	22.3	29	AWS32 ①
			Long knob	25.8	22.3	40	AWS32.1 ①
			Illuminated short toggle	25.8	22.3	29	AWSL32 1)
	2 sensing positions	45°	Short toggle	25.8	22.3	29	AWT21 ①
			Long knob	25.8	22.3	40	AWT21.1 ①
			Illuminated short toggle	25.8	22.3	29	AWTL21 1
Selector buttons			Short toggle	25.8	22.3	29	AWT32 ①
	3 sensing		Long knob	25.8	22.3	40	AWT32.1 ①
	positions		Illuminated short toggle	25.8	22.3	29	AWTL32 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	
General description	Key selector switch
Area of annlication	
Mounting-0	22.3 mm
Housing material	
Material of operating element	Plastic
Material front ring	Plastic
Other versions are available	
	1
Other closure possibilities	On request
Other removal positions	On request
Technical features	
Mechanical data	
Color	
Design	Round
Front plate thickness	1 6 mm
Maintained switching positions	2 3 positions
Assembly	
Connection:	Knurled nut,
	central mounting
Mounting position	Arbitrarily
Ambient conditions	
Ambient temperatures	−25 °C +60 °C
Degree of protection	IP65
Safety classification	
• • • • • • • • • • • • • • • • • • • •	

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

COMMAND AND SIGNALLING DEVICES – A PROGRAMME KEY-SELECTOR SWITCHES

Туре	Maintained positions	Key positions	Key-withdrawal position	A	В	C	Type designation	Material number
	2 maintained positions	45	0	50	22.3	29	ASS21S1	101192840
Key-operated			0 + I	50	22.3	29	ASS21S12	101031173
switches	3 maintained positions		0	50	22.3	29	ASS32S2	103001868
			I + O + II	50	22.3	29	ASS32S123	101031598

All dimensions in mm.

Key

A	Height	Heig

- B Mounting-Ø
- C Key Ø
- Height of command device in front of the front panel with key
- 2 Installation diameter for the command device head
- 2 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

against popping off with an additional safety plate.

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

SCHMERSAL

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	
General description	Contact elements
Can be used with	E programme
Other versions are available	
ATEX design	-
Technical features	
Desian	FE
Material	
Material of the housings	Plastic, glass-fibre-reinforced, self-extinguishing
Material of the contacts	Fine-silver, phosphor bronze or brass carrier
Utilisation category AC-15: DC-13	250 V / 8 A: 24 V / 5 A
Suitability for low voltages	> 5 VDC / 3.2 mA
Rated insulation voltage U	400 V
Rated impulse withstand voltage. Uimp	4 kV
Thermal test current I _{the}	10 A
Max. fuse rating	gG 10 A
Switching frequency	1200 s/h
Mechanical lifetime	10,000,000 operations
Resistance to shock	30 g/18 ms, no bouncing
Resistance to vibration	> 20 g / 10 150 Hz *
Ambient temperature	−25 °C +60 °C
Termination	
Screw terminals	Yes
Flat plug-in connector	Yes
Cage clamp connection	Yes
Cable section	
Solid wire	2 × (0.5 2.5 mm²)
Stranded wire	2 × (0.5 1.5 mm²)
Blade terminal	6.3 mm × 0.8 mm / 2 × 2.8 mm × 0.8 mm
Degree of protection terminals ** / switch rooms	IP20 / IP40

Safety classification

Standards	IEC 60947-5-1, IEC 60947-1
B _{10D}	100,000 operations
Certificates	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

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EL / ELE	■ ELDE
	1
Light terminal block with Ba9S base	Light terminal block with LED
E programme	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
$2 \times (0.5 \dots 2.5 \text{ mm}^2)$	2 × (0.5 2.5 mm ⁻)
2 × (0.5 1.5 mm)	2 × (0.5 1.5 mm ⁻)
0.3 (1)(1) × 0.8 (1)(1) / 2 × 2 8 mm × 0.8 mm	0.3 mm × 0.8 mm
IP20 / -	IP20 / -
11 20 /	
IEC 60947-5-1.	IEC 60947-5-1.
IEC 60947-1	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			
Mushroom head impact button	Contact clamast FF	Contact clamast CC				
Selector switch/key button	Contact element Er	Contact element Er				
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

Mounting flange ELM





Pushbutton

CONTACT AND LIGHT TERMINAL BLOCKS TYPE EF AND EL

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

Туре	Illuminant	Function	Diagram	Position	Description	Screw terminals	Flat plug-in connector	WAGO- Cage clamp
		Lighting	X1 0	3	Included in standard version	EL	ELF	-
		voltage sensor	X1 0 X2	3	with transformer	ELT	ELTF	-
Light terminal block	Ba9S	for lamps + acoustic signal	x1 6 6 x2	3	with series resistor	ELV	ELVF	-
	socket *	Lighting element / voltage sensor for LED	x1 0	3	24 VAC/DC	ELE	-	ELEK
			X1 0	3	48 VAC/DC primary 24 V secondary	ELE 48	-	-
			x1 o11 • ▶ •	3	115 230 VAC primary 24 V secondary	ELE 230	-	-
		Light element with integrated LED		3	LED red	ELDE.N RT 24	-	ELDEK RT
				3	LED yellow	ELDE.N GB 24	-	ELDEK GB
	Integrated LED		x1 0	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	(GND) X4	3	LED red, green, yellow	ELDE.N-RD-GN- YE-24VDC	-	-

Туре	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



Yey Features	
General description	Light terminal block
Can be used with	H programme
echnical features	
Design	CLP
Material	
Material of the housings	Plastic, self-extinguishing
Material of the contacts	
Utilisation category AC-15; DC-13	
Rated insulation voltage U _i	
Rated impulse withstand voltage. U _{imp}	
Thermal test current I _{the}	
Max. fuse rating	Appropriate to the respective version
Switching frequency	
Mechanical life	
Resistance to shock	30 g / 18 ms
Resistant to vibration	
Ambient temperature	−25 °C +60 °C
Termination	
Screw connection	•
Cable section	
Solid wire	$2 \times 1.5 \text{ mm}^2$
Stranded wire	2 × 1.5 mm²
Degree of protection terminals ** / switch rooms	IP20 / IP40
Safety classification	

Standards	IEC 60947-5-1, IEC 60947-1
B _{10D}	
Certificates	cULus

* For actuating heads with higher mass, appropriately lower

** With plug-in connectors, depends on the connector plug used



■ CLP101

Contact element H programme

■ CLP110

Contact element H programme

CLP	CLP
Plastic, self-extinguishing	Plastic, self-extinguishing
Carrier made from fine silver, Phosphor bronze or brass	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
	•
$2 \times 0.5 \dots 1.5 \text{ mm}^2$	$2 \times 0.5 \dots 1.5 \text{ mm}^2$
$2 \times 0.5 \dots 1.5 \text{ mm}^2$	$2 \times 0.5 \dots 1.5 \text{ mm}^2$
IP20 / IP40	IP20 / IP40

IEC 60947-5-1,	IEC 60947-5-1,
IEC 60947-1	IEC 60947-1
100,000 operations	100,000 operations
cULus	cULus

CONTACT AND LIGHT TERMINAL BLOCKS TYPE CLP

Pushbutton	Position 1	Position 3	Position 2	
Emergency stop command device				
Pushbutton	Contact element	Contact element	Contact element CLP101 or CLP110	
Mushroom head impact button	CLP101 or CLP110	CLP101 or CLP110		
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

X1 0-0 X2

Туре	Application	Function	1 I	Position	Connector		Plunger colour	Contact labelling	Type designation	Material number
0 - to to to to to	Standard and	1 NC	:	1, 2 and 3	Screw conr	nection	red	1, 2	CLP101	103040378
Contact element	stop	1 NO	-	1, 2 and 3	Screw conr	ection	green	3, 4	CLP110	103040379
Туре	Illuminant	D)iagran	n	Position	Connect	tor	Contact labelling	Type designation	Material number

Screw connection

X1 - X2

CLP001

103040380

3

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

Without *

Light terminal block

* Illuminant not included in delivery!



CONTACT AND LIGHT TERMINAL BLOCKS TECHNICAL DATA – RANGE RF



	■ RF
Key Features	
Constal description	Contract alamant
Con be used with	
can be used with	R programme
Other versions are available	
ATEX design	
Technical features	
Design	DE
Design	RF
Material of the housings	DA CV calf auting vicining handly flammable
Material of the contacts	Fine silver sheether bronze er brees servier
Material of the contacts	Fine-sliver, prosphor bronze or brass carrier
Oursation category AC-15; DC-13	250 V / 6 A; 24 V / 3 A
Suitability for low voltages	>5VDC / I MA
Rated insulation voltage 0	400 V
Rated impulse withstand voltage. U _{imp}	4 KV
Inermal test current I _{the}	6 A
Max. tuse rating	gu b A 1000 - (h
Switching frequency	1200 \$/R
Mechanical me	
Resistance to snock	30 g/18 ms,
Besistance to vibration	
Ambient temperature	-25 °C +60 °C
Termination	23 0 100 0
Screw terminals	Vac
Elat plug-in connector	No
Cage clamp connection	No
Cable section	
Solid wire	$2 \times 0.5 - 2.5 \text{ mm}^2$
Stranded wire	$2 \times 0.5 \dots 1.5 \text{ mm}^2$
Blade terminal	_
Degree of protection terminals /	IP20 / IP40
switch rooms	
Safety classification	

Standards	IEC 60947-5-1, IEC 60947-1
B _{10D}	100,000 operations
Certificates	cULus

* For actuating heads with higher mass, appropriately lower

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■ RL	= RLDE
Light terminal block with Ba9S base	Light terminal block with LED
R programme	R programme
-	•
RL	RL
DA CV colf opting visibing bordly flormable	DA CV colf outing uiching 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 ²	2 × 0.5 2.5 mm ²
2 × 0.5 1.5 mm²	2 × 0.5 … 1.5 mm²
-	-
IP20 / -	1450 / -

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

CONTACT AND LIGHTING ELEMENTS TYPE RF AND RL

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



Pushbutton

Mounting flange EFM

CONTACT AND LIGHTING ELEMENTS TYPE RF AND RL

Туре	Application	Function	Switch travel diagram	Position	Connector	Plunger colour	Contact labelling	Type designation
	Standard	1 NC		1.0 and 0	Screw	Ped	1, 2	RF10
Contact	and	TNC		1, 2 and 5	connection	Reu	11, 12	RF10.1
element	emergency	1 NO 🗆		1, 2 and 3	Screw connection	Green	3, 4	RF03
	stop						13, 14	RF03.1
Туре	Illuminant	Diagram		Position	Conn	lector	Contact labelling	Type designation
Light terminal	Ba9S socket *	X1 0		1	Screw terminals		X1-X2	RL
block	Integrated LED	x1 0		1	Screw terminals		X1-X2	RLDEWS24

* Illuminant not included in delivery!

COMMAND AND SIGNALLING DEVICES ACCESSORIES

Туре	Description	Туре	Recommended for product portfolio				
			Е	н	R	А	
	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					
Emergency stop label	Installation Ø for 30.5 mm, 53 mm external Ø	DPF-9					
Emergency stop label Protective collar Blanking plug Dust shield cap	Installation Ø for 30.5 mm, 100 mm external Ø	DPF-7					
	External Ø 70 mm, V4A version, colour yellow,	NDP-70			-		
	self-adhesive, no labelling		-		-		
	External Ø 65 mm plastic – as adhesive foil	NDP-65	•	-			
	Bedienteil-Ø 38.5 mm	EDRR-1 SET					
Protoctive coller	Emergency stop protective collar, installation Ø for 22.3 mm operating element Ø 49 mm						
Protective collar	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, installation Ø 22.3 mm	MBN	•				
Blanking plug	External Ø 70 mm, V4A version, colour yellow, self-adhesive, no labelling External Ø 65 mm plastic – as adhesive foil Emergency stop protective collar, installation Ø for 22.3 mm Bedienteil-Ø 38,5 mm Emergency stop protective collar, installation Ø for 22.3 mm Operating element Ø 49 mm Emergency stop protective collar, installation Ø for 30.5 mm Operating element Ø 38.5 mm Emergency stop protective collar, installation Ø for 30.5 mm Operating element Ø 49 mm Blanking plug, installation Ø 22.3 mm Blanking plug, stainless steel, mounting diameter 22.3 mm Blanking plug, stainless steel, mounting diameter 22.3 mm Blanking plug, istallation Ø 22.3 mm Identification plate Identification plate Identification plate Identification label, small Identification label, large Identification label, 30.5 mm, large Identification label, 30.5 mm, large Identification label, 30.5 mm drilled holes	BN	-				
Dialiking plug		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	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	ZS02					
	Identification label, 30.5 mm, large	ZS0					
	Identification label, 30.5 mm, large	ZSNO					
	Identification plate	AZSO					
	Adapter ring with gasket for using	RUF			-		
Adapter ring	Ø 22 mm operating buttons to 30.5 mm drilled holes				-		
	Ø 22 mm operating buttons to 30.5 mm drilled holes	MUE	•				
	Spare key for key selector switch	SDS1/SDS2					
Spare key	Spare key for key selector switch	A-S					
	Mounting flange	EFM					
	Mounting flange	ELM					
	Mounting flange for position switch	EFMH					
Mounting flange	Mounting flange	RLM					
	Driver for contact elements	R-F					
	Mounting flange	SMF					
	Mounting flange for special devices	SMF-SG					
	Mounting tool for mounting flange	RMW					
Mounting tool	Mounting tool for central nut	нмw					
U • •	Installation tool for knurled nut	A-14					
Disassembly tool	Removal tool for contact elements	A-DW					
	Multi LED white Ba9S, 24 VDC	LE24/9WS					
Multi LED	Multi LED white Ba9S. 230 VAC	LE230/9WS	-				
Lamp	Lamp 24V/1.9W	L24/9					

COMMAND AND SIGNALLING DEVICES ACCESSORIES



COMMAND AND SIGNALLING DEVICES ACCESSORIES


COMMAND AND SIGNALLING DEVICES ACCESSORIES

Mounting flange	Mounting flange	Mounting flange
• SME	SME-SG	E EFMH
 Standard mounting flange for H product portfolio 	 Mounting flange for special devices for H product portfolio 	 Nounting flange for E product portfolio position switch PS116 Depending on the version, with position switch included in delivery too
Position switch	Mounting tool	Mounting tool
 PS116S200 Thermonlastic enclosure 	RMW Mounting tool for EX-R product portfolio	 HMW Mounting tool with hit holder for
 Symmetrical casing Degree of protection IP66, IP67 Connector plug M12 or cable 	mounting flange	H product portfolio
Mounting tool	Disassembly tool	Multi LED
		10100 E
 A-14 Installation tool for knurled nut 	 A-DW Removal tool for contact elements 	 LE24/9WS LED white For Ba9S socket 24 VAC/DC Also available as 230V version

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° C to $+100^{\circ}$ 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 needs 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.

MBGHACMBGACMBKImage: WBGACImage: WBGAC</t





Housing material, plastic

NBG/EBG/EX-EBG



Housing material, stainless steel

NBGLC



Housing material, stainless steel

COMMAND AND SIGNALLING DEVICES ASSEMBLY HOUSING

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

Width of enclosure	Height of enclosure	Drilled hole for	Tura	Recomme	nded command d	levice range
(mm)	(mm)	cable gland	Туре	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			
80	85	M20	KG422-A	•		
80	85	M20	KG433-B			Suitable only to a
80	85	M20	KG432-A			limited extent
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	NEGLC11.1			
100	94	M20	NBGLC11.3			
100	94	M20	NBGLC32.1			
100	94	M20	NBGLC32.3			
100	94	M20	NBGLC33.1			
100	94		NDGLC33.3			
100	94 04		NBOLC34.1 NBCI C54 2			
100	54 Q/	M20	NB0L034.3		-	
100	94 Q/	M20	NBGI 055 3		-	
100	94	M20	NBGI C11.1/NSK		-	
100	94	M20	NBGI C32.1/NSK		-	
100	94	M20	NBGI C32.3/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





1. Door handle

2. Switchgear



DHS-U1 Handle



AZM40 Solenoid interlock



RSS260 Safety Sensor





BDF40 Control panel with or without emergency stop









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

		0
		DHS-U1
Key F	eatures	
		 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
Techn	ical features	
	Electrical characteristics	
	Operating voltage	24 VDC
	Operating current	< 150 mA
	Operating current illuminated	30 mA
	pushbutton LED	
	Mechanical data	
	Handle	Glass-fibre reinforced thermoplastic
	Cover	translucent PMMA
	Holder	Glass-fibre reinforced
		thermoplastic
	Dimensions (W × H × D)	40 × 202 × 83 mm
	Termination	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
	Mechanical lifetime	
	Illuminated pushbutton / pushbutton	1,000,000 operations
	Contact configuration	
	Illuminated pushbutton / pushbutton	1 NU contact
	Ambient temperature	
	with electrical connection and illuminated handle	−25 °C +45 °C
	with electrical connection and unilluminated handle	−25 °C +65 °C
	without electrical connection	−40 °C +75 °C
	Degree of protection	
	with operating element	IP66, IP67
	without operating element	IP66, IP67, IP69

DOOR INTERLOCK SYSTEM PREFERRED TYPES

	Termina	tion			Door handle	Door handle				
	Connect cable wi connect	ting ith or M12	Pre-wir	ed cable						
DHS-U1 without electrical connection	5-pole, 0.25 m	8-pole, 0.25 m	5-core, 5 m	8-core, 5 m	unilluminated	illuminated	with illuminated pushbutton	without operating element	Туре	Material number
									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



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	The BDF40 control panel is characterised by its modern and slim design. It is available in two versions, with or without emergency stop function.
BDF40	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	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.
BDF100/BDF200	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

<i></i>	■ BDF40	■ BDF40-NH
Key Features		
Technical features	 Up to four buttons Slimline design to match the AZM40 solenoid interlock and the DHS-U1 door handle system Flexibility thanks to pushbutton cover caps in 12 colours Generous open spaces for easy labelling Quick and error-free installation thanks to M12 connector 	 With emergency stop and up to three buttons Optionally with EMERGENCY STOP protective collar Slimline design to match the AZM40 solenoid interlock and the DHS-U1 door handle system Flexibility thanks to pushbutton cover caps in 12 colours Generous open spaces for easy labelling Quick and error-free installation thanks to M12 connector
	1	1
Electrical characteristics		
Operating voltage	24 VDC	24 VDC
Operating current	100 mA	100 mA
Power consumption LED	10 mA	10 mA
Mechanical data		
Housing material	glass-fibre reinforced thermoplastic, self-extinguishing	glass-fibre reinforced thermoplastic, self-extinguishing
Dimensions (W × H × D)	40 x 217 x 25 mm	40 x 217 x 44 mm
Termination	Connector plug M12, 12-pole	Connector plug M12, 12-pole
Mechanical lifetime		
Emergency stop	-	50,000 operations
Illuminated pushbutton / pushbutton	1,000,000 operations	1,000,000 operations
Ambient conditions		
Ambient temperature	−25 °C +65 °C	−25 °C +65 °C
Degree of protection	IP65	IP65

Safety classification emergency stop

Standards	_	EN ISO 13849-1
B _{10D} NC contact	_	100,000
Certificates	cULus	cULus

To get detailed information about the products and certificates, visit **products.schmersal.com**.



CONTROL PANELS PREFERRED TYPES – BDF40

Series	Fitting				Туре	Material
	At pos. 1	Pos. 2	Pos. 3	Pos. 4		number
BDF40	NH	LT	LT	LT	BDF40-ST-10-NH-LT-LT-LT	103052203
	LT	LT	LT	LT	BDF40-ST-10-LT-LT-LT-LT	103052204
	LM	LT	LT	LT	BDF40-ST-10-LM-LT-LT-LT	on request
	LT	LT	LT	LM	BDF40-ST-10-LT-LT-LM	on request
2	NH	LM	LT	LT	BDF40-ST-10-NH-LM-LT-LT	on request
I	NH	LT	LT	LM	BDF40-ST-10-NH-LT-LT-LM	on request
-	LM	LT	LT	LM	BDF40-ST-10-LM-LT-LT-LM	on request

SYSTEM COMPONENTS - BDF40



To see a wide range of other types, visit products.schmersal.com.

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ACCESSORIES BDF40 AND DHS

MS-BDF40-NHK	MS-BDF40	Connection cover AZM40/BDF40		
 Emergency stop protective collar Protection against unintentional actuation Easy to install 	Tamper-proofing cover	 AZM40 hinged on the le MS-AZM40-BDF40-L AZM40 hinged on the rig MS-AZM40-BDF40-R 	ft: ght:	
ACC-DHS-U1-INS 103055437	ACC-DHS-U1-INS-U-2 103055438	BDF40-DHS-PBC-DT		
Actuator insert without integrated actuator	 Actuator insert, incl. RST actuator 	 Pushbutton caps Adaptation to individual simply clipping on Refer to the table for the 	requirements by e ordering suffix	
BDF40-DHS-PBC-LT	Ordering suffix of the cover caps	Туре	Material number	
	Pushbutton caps, 1 piece per colour:	BDF40-DHS-PBC-NT	103051694	
	Pushbutton caps, five of each: • black • blue • green • red • white • yellow	BDF40-DHS-PBC-DT-BK BDF40-DHS-PBC-DT-BU BDF40-DHS-PBC-DT-GN BDF40-DHS-PBC-DT-RD BDF40-DHS-PBC-DT-WH BDF40-DHS-PBC-DT-YE	103052432 103052430 103052429 103052427 103052431 103052428	
 Illuminated pushbutton caps Adaptation to individual requirements by simply clipping on Refer to the table for the ordering suffix 	Illuminated pushbutton caps, 1 piece per colour: Illuminated pushbutton caps, five of each: • blue • green • red • white • yellow	BDF40-DHS-PBC-LT BDF40-DHS-PBC-LT-BU BDF40-DHS-PBC-LT-GN BDF40-DHS-PBC-LT-RD BDF40-DHS-PBC-LT-WH BDF40-DHS-PBC-LT-YE	103051229 103052436 103052435 103052433 103052437 103052434	

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CONTROL PANELS TECHNICAL DATA

	i	
Kan Frankrige	■ BDF100NH	■ BDF100
Key Features		
	 Control panel with emergency stop Emergency stop function with and without protective collar Slim, shock-resistant thermoplastic enclosure For mounting on commercially available aluminium profile systems 	 Control panel with one control element Slim, shock-resistant thermoplastic enclosure For mounting on commercially available aluminium profile systems Large product portfolio of operating and lighting elements
Other versions		
AS-i SaW	_	_
SD-Interface	_	-
Technical features		
Electrical characteristics		
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
Circuit versions		
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
Mechanical data		
Housing material	Glass-fibre reinforced thermoplastic, self-extinguishing	Glass-fibre reinforced thermoplastic, self-extinguishing
Dimensions (W × H × D)		
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
Ambient conditions		
Ambient temperature	−25 °C +65 °C	−25 °C +65 °C
Degree of protection	IP65	IP65
Safety classification		
Standards	EN ISO 13840-1	EN ISO 13840-1
B ₁₀₀ NC contact	100.000	100.000

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Certificates

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■ BDF200-NH	■ BDF200	■ BDF200-NH2920	■ BDF2002920
 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	24 VAC / 2 A;	24 VAC / 1.5 A;	24 VAC / 1.5 A;
· · , - · ·	24 VDC / I A	24 VDC / 1 A	24 VDC / IA
5 V / 1 mA	5 V / 1 mA	5 V / 1 mA	5 V / 1 mA
5 V / 1 mA	5 V / 1 mA	5 V / 1 mA	5 V / 1 mA
5 V / 1 mA 2 NC contact/1 NO contact 1 NC /1 NO: 2 NO	- 1 NC /1 NO: 2 NO	24 VDC / 1 A 5 V / 1 mA 2 NC contact 1 NC contact/1 NO contact	5 V / 1 mA
5 V / 1 mA 2 NC contact/1 NO contact 1 NC /1 NO; 2 NO 2 NC contact	24 VDC / 1 A 5 V / 1 mA _ 1 NC /1 NO; 2 NO _	24 VBC / 1 A 5 V / 1 mA 2 NC contact 1 NC contact/1 NO contact	5 V / 1 mA - 1 NC contact/1 NO contact
5 V / 1 mA 2 NC contact/1 NO contact 1 NC /1 NO; 2 NO 2 NC contact 1 NO	24 VDC / 1 A 5 V / 1 mA _ 1 NC /1 NO; 2 NO _ 1 NO	24 VDC / 1 A 5 V / 1 mA 2 NC contact 1 NC contact/1 NO contact –	5 V / 1 mA - 1 NC contact/1 NO contact - -
5 V / 1 mA 2 NC contact/1 NO contact 1 NC /1 NO; 2 NO 2 NC contact 1 NO Glass-fibre reinforced thermoplastic, self-extinguishing	5 V / 1 mA - 1 NC /1 NO; 2 NO - 1 NO Glass-fibre reinforced thermoplastic, self-extinguishing	24 VBC / 1 A 5 V / 1 mA 2 NC contact 1 NC contact/1 NO contact - - Glass-fibre reinforced thermoplastic, self-extinguishing	Glass-fibre reinforced thermoplastic, self-extinguishing
5 V / 1 mA 2 NC contact/1 NO contact 1 NC /1 NO; 2 NO 2 NC contact 1 NO Glass-fibre reinforced thermoplastic, self-extinguishing	5 V / 1 mA 5 V / 1 mA - 1 NC /1 NO; 2 NO - 1 NO Glass-fibre reinforced thermoplastic, self-extinguishing	24 VDC / 1 A 5 V / 1 mA 2 NC contact 1 NC contact/1 NO contact - - Glass-fibre reinforced thermoplastic, self-extinguishing	1 NC contact/1 NO contact
5 V / 1 mA 2 NC contact/1 NO contact 1 NC /1 NO; 2 NO 2 NC contact 1 NO Glass-fibre reinforced thermoplastic, self-extinguishing 40 × 220 × 69 mm 40 × 220 × 49 mm	- 1 NC /1 NO; 2 NO - 1 NO Glass-fibre reinforced thermoplastic, self-extinguishing	S V / 1 mA 5 V / 1 mA 2 NC contact 1 NC contact/1 NO contact - - Glass-fibre reinforced thermoplastic, self-extinguishing 40 × 220 × 69 mm 40 × 220 × 49 mm	- 1 NC contact/1 NO contact - 1 NC contact/1 NO contact - Glass-fibre reinforced thermoplastic, self-extinguishing
5 V / 1 mA 2 NC contact/1 NO contact 1 NC /1 NO; 2 NO 2 NC contact 1 NO Glass-fibre reinforced thermoplastic, self-extinguishing 40 × 220 × 69 mm 40 × 220 × 49 mm M20 cable gland	- 1 NC /1 NO; 2 NO - 1 NC /1 NO; 2 NO - 1 NO Glass-fibre reinforced thermoplastic, self-extinguishing - 40 × 220 × 49 mm M20 cable gland	5 V / 1 mA 2 NC contact 1 NC contact/1 NO contact - Glass-fibre reinforced thermoplastic, self-extinguishing 40 × 220 × 69 mm 40 × 220 × 49 mm Connector plug M12, 12-pole	- - - 1 NC contact/1 NO contact - - Glass-fibre reinforced thermoplastic, self-extinguishing - 40 × 220 × 49 mm Connector plug M12, 12-pole
5 V / 1 mA 2 NC contact/1 NO contact 1 NC /1 NO; 2 NO 2 NC contact 1 NO Glass-fibre reinforced thermoplastic, self-extinguishing 40 × 220 × 69 mm 40 × 220 × 49 mm M20 cable gland with plug-in terminals	- 1 NC /1 NO; 2 NO - 1 NC /1 NO; 2 NO - 1 NO Glass-fibre reinforced thermoplastic, self-extinguishing - 40 × 220 × 49 mm M20 cable gland with plug-in terminals	24 VBC / 1 A 5 V / 1 mA 2 NC contact 1 NC contact/1 NO contact - - Glass-fibre reinforced thermoplastic, self-extinguishing 40 × 220 × 69 mm 40 × 220 × 49 mm Connector plug M12, 12-pole	- 1 NC contact/1 NO contact - Glass-fibre reinforced thermoplastic, self-extinguishing - 40 × 220 × 49 mm Connector plug M12, 12-pole
5 V / 1 mA 2 NC contact/1 NO contact 1 NC /1 NO; 2 NO 2 NC contact 1 NO Glass-fibre reinforced thermoplastic, self-extinguishing 40 × 220 × 69 mm 40 × 220 × 49 mm M20 cable gland with plug-in terminals	- 1 NC /1 NO; 2 NO - 1 NC /1 NO; 2 NO - 1 NO Glass-fibre reinforced thermoplastic, self-extinguishing - 40 × 220 × 49 mm M20 cable gland with plug-in terminals	S V / 1 mA 5 V / 1 mA 2 NC contact 1 NC contact/1 NO contact - - Glass-fibre reinforced thermoplastic, self-extinguishing 40 × 220 × 69 mm 40 × 220 × 49 mm Connector plug M12, 12-pole	
5 V / 1 mA 2 NC contact/1 NO contact 1 NC /1 NO; 2 NO 2 NC contact 1 NO Glass-fibre reinforced thermoplastic, self-extinguishing 40 × 220 × 69 mm 40 × 220 × 69 mm M20 cable gland with plug-in terminals -25 °C +65 °C	- 1 NC /1 NO; 2 NO - 1 NC /1 NO; 2 NO - 1 NO Glass-fibre reinforced thermoplastic, self-extinguishing - 40 × 220 × 49 mm M20 cable gland with plug-in terminals -25 °C +65 °C	S V / 1 mA 5 V / 1 mA 2 NC contact 1 NC contact/1 NO contact - - Glass-fibre reinforced thermoplastic, self-extinguishing 40 × 220 × 69 mm 40 × 220 × 69 mm Connector plug M12, 12-pole -25 °C +65 °C	- 40 × 220 × 49 mm Connector plug M12, 12-pole
5 V / 1 mA 2 NC contact/1 NO contact 1 NC /1 NO; 2 NO 2 NC contact 1 NO Glass-fibre reinforced thermoplastic, self-extinguishing 40 × 220 × 69 mm 40 × 220 × 49 mm M20 cable gland with plug-in terminals -25 °C +65 °C IP65	- 1 NC /1 NO; 2 NO - 1 NC /1 NO; 2 NO - 1 NO Glass-fibre reinforced thermoplastic, self-extinguishing - 40 × 220 × 49 mm M20 cable gland with plug-in terminals -25 °C +65 °C IP65	S V / 1 mA 5 V / 1 mA 2 NC contact 1 NC contact/1 NO contact - - Glass-fibre reinforced thermoplastic, self-extinguishing 40 × 220 × 69 mm 40 × 220 × 69 mm Connector plug M12, 12-pole -25 °C +65 °C IP65	- 1 NC contact/1 NO contact
5 V / 1 mA 2 NC contact/1 NO contact 1 NC /1 NO; 2 NO 2 NC contact 1 NO Glass-fibre reinforced thermoplastic, self-extinguishing 40 × 220 × 69 mm 40 × 220 × 69 mm M20 cable gland with plug-in terminals -25 °C +65 °C IP65	- 1 NC /1 NO; 2 NO - 1 NC /1 NO; 2 NO - 1 NO Glass-fibre reinforced thermoplastic, self-extinguishing - 40 × 220 × 49 mm M20 cable gland with plug-in terminals -25 °C +65 °C IP65	5 V / 1 mA 5 V / 1 mA 2 NC contact 1 NC contact/1 NO contact - - Glass-fibre reinforced thermoplastic, self-extinguishing 40 × 220 × 69 mm 40 × 220 × 49 mm Connector plug M12, 12-pole -25 °C +65 °C IP65	- 1 NC contact/1 NO contact - 1 NC contact/1 NO contact Glass-fibre reinforced thermoplastic, self-extinguishing - 40 × 220 × 49 mm Connector plug M12, 12-pole -25 °C +65 °C IP65

EN ISO 13849-1	EN ISO 13849-1	EN ISO 13849-1	EN ISO 13849-1
100,000	100,000	100,000	100,000
cULus	cULus	cULus	cULus

CONTROL PANELS OPERATING ELEMENTS – BDF100 AND BDF200

Emergency stop pushbutton NH	Emergency sto	p pushbutton NH	IK	Pushbutton DT			
			B				
 Mushroom-shaped plastic button, Ø 30 mm Without protective collar: ordering suffix NH Pull to reset 1 NO contact / 2 NC contacts 	 Mushroom-sl With protective Pull to reset 1 NO contact 	naped plastic bu ve collar: orderir / 2 NC contacts	tton, Ø 30 mm ng suffix NHK	 With concave button, button surface 19 × 19 m 2 NO contacts or 1 NO contact / 1 NC conta Printing is possible on request Refer to the table below for the ordering suff 			
Indicator lights LM	Mushroom pus	hbutton PT		Illuminated pus	shbutton LT		
 Illuminated surface 19 × 19 mm Lamp replacement at the front Printing is possible on request Refer to the table below for the ordering suffix 	 Button surface Without latch 2 NO contacts Printing is po Refer to the tag 	ee 25 × 25 with r ing s or 1 NO contac sable below for the	rounded edges t / 1 NC contact t e ordering suffix	 With concave 2 NO contact Lamp replace Printing is po Refer to the to 	button, button sur s or 1 N0 contac ement at the fror ossible on reques able below for the	face 19 × 19 mm t / 1 NC contact tt e ordering suffix	
Ordering suffix	yellow	red	green	blue	black	white	
Mushroom pushbutton PT	РТҮЕ	PTRD	PTGN	PTBU	РТВК	PTWH	
Pushbutton DT	DTYE	DTRD	DTGN	DTBU	DTBK	DTWH	
Illuminated pushbutton LT	LTYE	LTRD	LTGN	LTBU		LTWH	
Indicator light LM	LMYE	LMRD	LMGN	LMBU		LMWH	

For detailed information on selection, visit products.schmersal.com.

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CONTROL PANELS OPERATING ELEMENTS - BDF100 AND BDF200

Maintained selector sw spring-return selector s	vitches / switches	Maintained selector sw spring-return selector	vitches / switches	Key-operated selector switches/buttons		
				Eisary		
 Version with standard toggle, anthracite Refer to the table below for the ordering suffix 		 Version with long tog Refer to the table below 	gle, anthracite ow for the ordering suffix	 Version with high-quality cylinder lock; therefore, IP65 in this case too Key can be removed in all positions Refer to the table below for the ordering suffix 		
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	WS20	WS30 *	WT20	WT30 *	WTS30 *	
Long toggle	WS21	WS31 *	WT21	WT31 *	WTS31 *	
Key- operated switch	SWS20		SWT20			

* not for -2920 version .

For detailed information on selection, visit products.schmersal.com.

CONTROL PANELS COMBINATION OPTIONS – BDF100 AND BDF200

Control elements	3	BDF100	BDF200				Control panels
		with	At pos. 1	At pos. 2	At pos. 3	At pos. 4	
e	NH	•	•				BDF100
	NHK	•	•				
	РТ		•	•	•	•	
	DT	•	•	•	•	•	BDF200
	LT	•	•	•	•	•	Pos. 1
	LM		•	•	•	•	Pos. 2
	SW.20	•		•	•		Pos. 3
	W0	•		•	•		
	W1	•		•	•		

CONTROL PANELS PREFERRED TYPES¹⁾ AND ACCESSORIES – BDF100 AND BDF200

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

¹⁾ Type designation -2875: the coloured button caps are included in the scope of delivery as an accessory pack for customers to mount themselves. ²⁾ with connector plug M12, 12 pole

AZM201



- Can be combined with the AZM201 solenoid interlock
- For more information, visit products.schmersal.com

MP BDF 200



 Mounting plate for combination of AZM201 solenoid interlock with
 B30 actuator and BDF200 control panel

101214126 SRB-E-402ST



- 2x function STOP 0
- 2x 1- or 2-channel control
- 2x start button / autostart
- 2 safety contacts
- 2 safety outputs
- For more information, visit

products.schmersal.com

To see a wide range of other types, visit products.schmersal.com.

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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	4	•					
NF	łK	•					
рт	ī		•	•	•		
та	r		•	•	•	Pos. 1	
💶 цт.			•	•	•	Pos. 2	
	Л		•	•	•	Pos. 3	
SV	V.20		•	•			
.	0		•	•			
w.	1		•	•			

CONTROL PANELS PREFERRED TYPES AS-I, SD, FB

Series	Fitting				Indicator	Туре	Material			
	At pos. 1	Pos. 2	Pos. 3	Pos. 4	lamp	designation	number			
	Variant: AS-In	terface								
		LT	LT	LT	red/green	BDF200-ST1-AS-NH-LT-LT-LT-G24-2875 ¹⁾	103012552			
		LMRD	LTWH	LTBU		BDF200-ST1-AS-NH-LMRD-LTWH-LTBU	101214617			
	NH	LTRD	LTGN	LTBU		BDF200-ST1-AS-NH-LTRD-LTGN-LTBU	103003704			
		WS20	LTWH	LTGN		BDF200-ST1-AS-NH-WS20-LTWH-LTGN	103013250			
2		LTGN	LTYE	LTWH	red/green	BDF200-ST1-AS-NH-LTGN-LTYE-LTWH-G24	103005880			
	LMR LTRE NHK LTBL	LMRD	LTWH	LTBU		BDF200-ST1-AS-NHK-LMRD-LTWH-LTBU	101215387			
1		LTRD	LTWH	LTBU		BDF200-ST1-AS-NHK-LTRD-LTWH-LTBU	103000961			
		LTBU	LTYE	LTGN	red/green	BDF200-ST1-AS-NHK-LTBU-LTYE-LTGN-G24	103013865			
1		WS20	LTWH	LTGN		BDF200-ST1-AS-NHK-WS20-LTWH-LTGN	103013250			
		SWS20	LTWH	LTBU	red/green	BDF200-ST1-AS-NHK-SWS20-LTWH-LT-BU-G24	101214618			
	Variant: SD interface									
	NH	LT	LT	LT		BDF200-SD-NH-LT-LT-LT-2875 1)	103015446			
•		LT	LT	LT		BDF200-SD-NHK-LT-LT-LT-2875 ¹⁾	103025848			
		SWS20	WS30	LTWH	red/green	BDF200-SD-NHK-SWS20-WS30-LTWH-G24	103015448			
	Variant: FB in	terface								
	NH	LT	LT	LT		BDF200-FB-NH-LT-LT-LT-2875 1)	103015447			
	NUUZ	WS20	LTBU	LTBU	red/green	BDF200-FB-NHK-WS20-LTBU-LTBU-G24	103025654			
		SWS20	WS30	LTBU	red/green	BDF200-FB-NHK-SWS20-WS30-LTBU-G24	103015449			

¹⁾ 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.			
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**.





TWO-HAND CONTROL PANELS TECHNICAL DATA



Certificates

You can also find appropriate mounting posts, command devices and other accessories in our online catalogue at **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

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TWO-HAND CONTROL PANELS PREFERRED TYPES ¹⁾

Range		Enclosure	Description	Controls	Head Ø	Contacts
SEPK02			ADP55.3SW	FF mm	1 NO / 1 NC	
	Plastic	2-piece enclosure with 8 additional drilled holes that you can knock out if required	ADP55.3SW/0.F	55 1111		
				Empty enclosure		
SEPG05			EDP42SW	42 mm	1 NO / 1 NC	
		Metal film	2-part enclosure suitable for mounting a minimum of 8 additional command and signalling devices	EDP55SW	55 mm	1 NO / 1 NC
				ADP55.3SW	55 mm	1 NO / 1 NC
				Empty enclosure		
		Metal film	For separate assembly of the controls Im for two-hand control with detachable aluminium cover on the bottom	EDP55SW	55 mm	1 NO / 1 NC
SEP09				EDP42SW	42 mm	1 NO / 1 NC
				Empty enclosure		

¹⁾ The preferred types designate the choice of devices with faster delivery times.

For the technical data of the command devices, visit **products.schmersal.com**.

Emergency stop	Head Ø	Contacts	Туре	Material number
	40 mm	1 NO (1 NO	SEPK02.0.4.0.22/95	101027371
	40 mm	INO/INC	SEPK02.0.4.0.22/95.E2	101211126
			SEPK02.0.L.22	101027369
EDRR4ORT	40 mm	1 NO / 1 NC	SEPG05.3.3.0.22/95	101172764
EDRR5ORT	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
EDRR5ORT	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



RECOMMENDED EVALUATIONS



For detailed information on selection, visit products.schmersal.com.





Your partner for machine safety and workplace protection

In the Schmersal Group, tec.nicum is the department for services relating to machine and industrial safety.

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.

The range of services offered by tec.nicum comprises six segments:



tec.nicum academy Knowledge transfer



tec.nicum consulting Consultancy



tec.nicum engineering Technical planning

tec.nicum integration Execution and implementation



Software solutions and new digital technologies

tec.nicum digitalisation



tec.nicum outsourcing Complete solutions



For detailed information, check out www.tecnicum.com

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





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 Ø 22,3 mm Spring-return joystick switch 	 Mounting hole Ø 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,	30 g/18 ms,
	no bouncing	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 mm² 2.5 mm²	0.5 mm² 2.5 mm²
Electrical data		4104
Rated impulse withstand voltage U _{imp}	4 KV	4 KV
Rated insulation voltage U _i	400 V	400 V
I nermal test current I _{the}		10 A = 0
Max. Tuse rating		
	DC-13: 24 VDC/5 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
Standards	IEC 60947-5-1, IEC 60947-1	IEC 60947-5-1, IEC 60947-1
Mechanical lifetime	1,000,000	1,000,000
B _{10D} value	100,000	100,000

To get detailed information about the products, visit products.schmersal.com

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Mounting hole Ø 30.5 mm
Spring-return 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 mm² 2.5 mm²	0.5 mm² 2.5 mm²
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

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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	tion Position Mounting-0 22.3 mm Mounting-0		Range MKT Mounting-Ø 22.3 mm without locking with locking		e WKT Ø 30.5 mm with locking
Obaiaa of device	A	В	C	D	sleeve	sleeve	sleeve	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
●(A _ B)●	1 NC/1 NO	1 NC/1 NO			MKTB32/1x401	MKTB321/1x401	WKTB32/1x401	WKTB321/1x401
	2 NO	2 NO			MKTC32	MKTC321	WKTC32	WKTC321
\bullet	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 NO			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	
Bello	ws					
	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	
	Material thickness		approx. 1 mm		approx. 2 mm	
	Material features	tear-	proof	partly tear-proof	tear-proof	
	Degree of protection (frontside)		IP65 / IP67		IP67 / IP69K	
	Ambient temperature	-25	+80 °C	-40.	+80 °C	
	Mechanical lifetime	1,000,000	500,000	300,000	500,000	
	Notes	-	-	-	Only usable in combination with spring-return joystick switches without locking sleeve	
	Material resistance	Rut	ober	Silicone		
	- UV/ozone	not suitable	suitable	particula	arly suitable	
	- Outdoor usage	not suitable	suitable	particula	arly suitable	
	- Fuel, oil	partly s	suitable	not s	suitable	
	- Solvents	partly s	suitable	partly suitable		
	- Acids	partly s	suitable	nots	suitable	
	- Chemicals	not su	uitable	partly	v suitable	

Optional bellows

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

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	Maintained jo	Maintaine return joys	d/spring- tick switch			
Range Mounting-	e MKS Ø 22.3 mm	Rang Mounting-	e WKS 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	WKTSA321)	WKTSA321 ¹⁾	
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 ²⁾	WKTSC521 ²⁾	
MKSC52/2x401	MKSC521/2x401	WKSC52/2x401	WKSC521/2x401			
MKSE32	MKSE321	WKSE32	WKSE321	¹⁾ Position A	spring-return	
MKSE32/404	MKSE321/404	WKSE32/404	WKSE321/404	(touch pos	sition) and	
MKSE32/800	MKSE321/800	WKSE32/800	WKSE321/800	Position B maintained (latched position) ²⁾ Position C/D spring-return		
MKSE52	MKSE521	WKSE52	WKSE521			
MKSE52/206	MKSE521/206	WKSE52/206	WKSE521/206	(touch position) and Position A/B maintained (latched position)		
MKSE52/206.1	MKSE521/206.1	WKSE52/206.1	WKSE521/206.1			
MKSE52/2x401	MKSE521/2x401	WKSE52/2x401	WKSE521/2x401			

3RD STEP: YOUR PRODUCT

Type Ordering example

Mounting hole 22.3 mm	М				
Spring-return joystick switch		κт			
Contacts 4 NO contacts Position A 4 NO contacts Position B			E32		
With locking sleeve				1	
Bellows suitable for outdoor usage					/WKT-19.4
	M	K T	E32	1/	WKT-19.4

MAINTAINED JOYSTICK SWITCHES AND SPRING-RETURN JOYSTICK SWITCHES PREFERRED TYPES¹⁾ – RANGE MK/WK

Mounting-Ø	Туре	With	Installation	Contact opti	ons			Туре	Material	
		locking sleeve	depth	Position A	Position B	Position C	Position D		number	
		-	70	1.10	1.110			MKSA32	101005813	
			70 mm	INU	INU	-	-	MKSA321	101005816	
		-	101					MKSB32	101203907	
			104 mm					MKSB321/WKT-19.3	101191939	
	Maintained	-		2 NU	2 NU	-	-	MKSC32	101005817	
	JOYSTICK		70					MKSC321	101005818	
	Switch	-	70 mm	1.10	1.110	1.110	1.110	MKSC52	101005821	
			1	INU	INU	INU	INU	MKSC521	101005822	
		-	110	0.110	0.110	0.110	0.110	MKSE52/WKT-19.4	101190916	
			112 mm	2 NU	2 NU	2 NU	2 NU	MKSE521	101005826	
22.3 mm		-	70	1 10	1 110			MKTA32	101005827	
			70 mm	INU	INU	-	-	MKTA321	101005829	
		-	104 mm					МКТВ32	101005828	
			104 mm	0.10	0.110			MKTB321	101194681	
	Spring-return	-		2 NU	2 NU	-	-	МКТС32	101005832	
	joystick switch	•	70					MKTC321	101005835	
		-	70 mm	1 NO	1 NO	1 NO	1 10	MKTC52	101005837	
			-	INU	INU	INU	INU	MKTC521	101005844	
				4 NO	4 NO	-	-	MKTE321	101190067	
	-		-	112 mm	2 NO	2 10	2 NO	2 10	MKTE52	101005842
]	2 110	2 10	2 110	2 110	MKTE521	101005845	
		-		1 NO	1 NO			WKSA32	101019540	
				INU	TINO			WKSA321	101019545	
		-	F7 mm	2 NO	2 NO			WKSC32	101019465	
	Maintained		57 11111	2 110	2 10	-	_	WKSC321	101019493	
	switch	_]	1 NO	1 NO	1 NO	1 NO	WKSC52	101019467	
				TINO	INO	INO	TNO	WKSC521	101019473	
		_	01 mm	2 NO	2 NO	2 NO	2 NO	WKSE52	101019489	
			91 11111	2 110	2 110	2 110	2 110	WKSE521	101019492	
30 5 mm		-	57 mm	1 NO	1 NO	_	_	WKTA32	101007593	
55.5 mm			57 1111	110	110			WKTA321	101019509	
		-	91 mm					WKTB32	101019514	
	Caring return	-	011111	2 NO	2 NO	_	_	WKTB321	101019539	
	opring-return							WKTC32	101007594	
	switch	-	57 mm					WKTC321	101007595	
		-		1 NO	1 NO	1 NO	1 NO	WKTC52	101007597	
		-		- 110				WKTC521	101019447	
		-	91 mm	2 NO	2 NO	2 NO	2 NO	WKTE52	101019461	
		9T [[][]]		2 110		2 110	WKTE521	101019464		

Schematic representation of positions A-D



¹⁾ Preferred types are devices with faster delivery times.

To see a wide range of other types, visit **products.schmersal.com.**

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

Ran Moi	ge MK unting-Ø 22.3 mm	2 contacts 4 contacts		4 contacts	8 contacts
		9 xeur du cu	HP max 6	MP max. 6	MP max. 6 MP max. 6
A	Ø 35	MKTA32	MKTB32	МКТС32	MKTE32
sleev		MKSA32	MKSB32	MKSC32	MKSE32
ng s				MKTC42	MKTE52
ocki				MKSC42	MKSE52
t	£			MKTC52	
itho	1			MKSC52	
3					
ve	<u>Ø 35</u>	MKTA321	MKTB321	MKTC321	MKTE321
slee		MKSA321	MKSB321	MKSC321	MKSE321
ing				MKTC421	MKTE521
ocki			MKSC421	MKSE521	
ith I				MKTC521	
3	1			MKSC521	

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

Ran Mou	ge WK unting-Ø 30.5 mm	2 contacts	4 contacts	4 contacts	8 contacts
é	Ø <u>38</u>	WKTA32	WKTB32	WKTC32	WKTE32
leev		WKSA32	WKSB32	WKSC32	WKSE32
ng s		WKTSA32		WKTC42	WKTE52
ocki	6 8			WKSC42	WKSE52
ut le	TXE			WKTC52	
itho	£			WKSC52	
3	t			WKTSC52	
	Ø 38	WKTA321	WKTB321	WKTC321	WKTE321
eve		WKSA321	WKSB321	WKSC321	WKSE321
g sle		WKTSA321		WKTC421	WKTE521
king				WKSC421	WKSE521
	Tan and a second			WKTC521	
with a second se	£			WKSC521	
	+			WKTSC521	

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.
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.

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OPERATING PRINCIPLE

Spring-return joystick switch Spring-return switching position (touch position).

Reset by spring force





Joystick switch

Maintained switching

Reset by touch and

spring force

positions (latched position).

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

Key Features	NK	■ RK
	 Mounting hole Ø 22,3mm Up to 6 mm front plate thickness Suitable for food processing industry 	 Mounting hole Ø 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	30 V	30 V
Rated operating voltage Ue	max. 30 VDC	max. 30 VDC
Operating current I _e	max. 0.3 A	max. U.3 A
Max. fuse rating	0.5 A FF	U.5 A FF
Utilisation category	DC-12	DC-12
Ambient conditions	40.00 100.00	
Anorea of protection (fronteide)		
Degree of protection of contact chamber	IP67	IP67
Safety classification		11 07
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

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MAINTAINED JOYSTICK SWITCHES AND SPRING-RETURN JOYSTICK SWITCHES PREFERRED TYPES

	Range	Switch position	Termination	Additional sealing element	Type designation	Material number
		2 switch positions with 1 NO contact each	1 connector, M12, 8 pole	•	NK-T-21-1ST8-2	103012433
1	NIZ	4 switch positions with 1 NO contact each	1 connector, M12, 8 pole		NK-T-41-1ST8-2	103012431
-	INK	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
		2 switch positions with 1 NO contact each	1 connector, M12, 8 pole		RK-T-21-1ST8-2	103012429
1	DK	4 switch positions with 1 NO contact each	1 connector, M12, 8 pole	•	RK-T-41-1ST8-2	103012427
-	ĸĸ	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.
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. ¹⁾ MRL 2006/42/EG, however, "permits" higher values if absolutely technically necessary and execution is integrated into a considered and coherent safety concept. ^{2) 3)}

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.

- ¹⁾ 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).
- ²⁾ 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.
- ³⁾ See also the "Fachbereich AKTUELL: Prozessbeobachtung in der Fertigung" of the DGUV's Woodworking and Metalworking Division.

ENABLING SWITCHES TECHNICAL DATA

		■ ZSD5CC	■ ZSD6CC
Key Fea	atures		
Technie	cal features	 3-stage grip switch OFF-ON-OFF Contacts do not close on resetting from stage 3 → stage 1 	 3-stage grip switch OFF-ON-OFF Contacts do not close on resetting from stage 3 → stage 1 With additional pushbutton
	Machaniael data	1	
	Mechanical data	Diantia thermoplastic	Diastia thermoniastia
	Housing material	self-extinguishing	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 mm² 1.5 mm²	0.2 mm ² 1.5 mm ²
	Termination	Cage clamps	Cage clamps
	Electrical data		
	Rated operating voltage Ue	250 V	250 V
	Operating current le	2.5 A	2.5 A
	Utilisation category NO contacts - Ohmic load (AC-12) - Inductive load (AC-15) - Ohmic load (DC-12) - Inductive load (DC-13) - Contact configuration	30 V: -; 125 V: 3,0 A; 250 V: 1,5 A 30 V: -; 125 V: 1,5 A; 250 V: 0,75 A 30 V: 2,0 A; 125 V: 0,4 A; 250 V: 0,2 A 30 V: 1,0 A; 125 V: 0,22 A; 250 V: 0,1 A 2 NO	30 V: -; 125 V: 3,0 A; 250 V: 1,5 A 30 V: -; 125 V: 1,5 A; 250 V: 0,75 A 30 V: 2,0 A; 125 V: 0,4 A; 250 V: 0,2 A 30 V: 1,0 A; 125 V: 0,22 A; 250 V: 0,1 A 2 NO
	Auxiliary contacts - Ohmic load (AC-12) - Inductive load (AC-15) - Ohmic load (DC-12) - Inductive load (DC-13) - Contact configuration	30 V: -; 125 V: 2,0 A; 250 V: 1,0 A 30 V: -; 125 V: 1.0 A; 250 V: 0.75 A 30 V: 2,0 A; 125 V: 0,4 A; 250 V: 0,2 A 30 V: 2.3 A; 125 V: 0.22 A; 250 V: 0.1 A 1 NC	30 V: -; 125 V: 2,0 A; 250 V: 1,0 A 30 V: -; 125 V: 1.0 A; 250 V: 0.75 A 30 V: 2,0 A; 125 V: 0,4 A; 250 V: 0,2 A 30 V: 2.3 A; 125 V: 0.22 A; 250 V: 0.1 A 1 NC
	Additional push-button - Ohmic load (AC-12) - Inductive load (AC-15) - Ohmic load (DC-12) - Inductive load (DC-13) Ambient conditions	-	30 V: -; 125 V: 0.5 A; 250 V: - 30 V: -; 125 V: 0.3 A; 250 V: - 30 V: 1,0 A; 125 V: 0,2 A; 250 V: - 30 V: 0,7 A; 125 V: 0,1 A; 250 V: -
	Ambient conditions	-10 °C ±60 °C	-10 °C +60 °C
	Degree of protection	IFOO	IFOO

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 _{10D} value	100,000	
Certificates	TÜV, cULus	

ENABLING SWITCHES ORDERING DETAILS AND RECOMMENDED EVALUATIONS

Туре	Description	Pre-wired cable	Туре	Material number
	3-stage grip switch	without	ZSD5CC	103043703
Fuchling owitches		5 m	ZSD5CC-5M	103043683
Enabling switches	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
 Evaluation of enabling devices STOP 0 or STOP 1, depending on the setting values in the application program For further information please visit products.schmersal.com 	 Function STOP 0 1- or 2-channel control Start button / autostart 3 safe relay outputs 6 A 1 signalling output For further information please visit products.schmersal.com 	 Function STOP 0 1- or 2-channel control Start button / autostart 2 safety outputs 2 A 1 signalling output For further information please visit products.schmersal.com

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