








About this catalog

The *Hand-held Pendant Stations/ Handwheels* catalog provides you with an overview of our HBA and HBL series hand-held pendant stations as well as of our series HK and HW handwheels.

Due to their precision, their ergonomic design and their robustness, these switches are the right choice for numerous applications. You will find the technical data after the product overview.

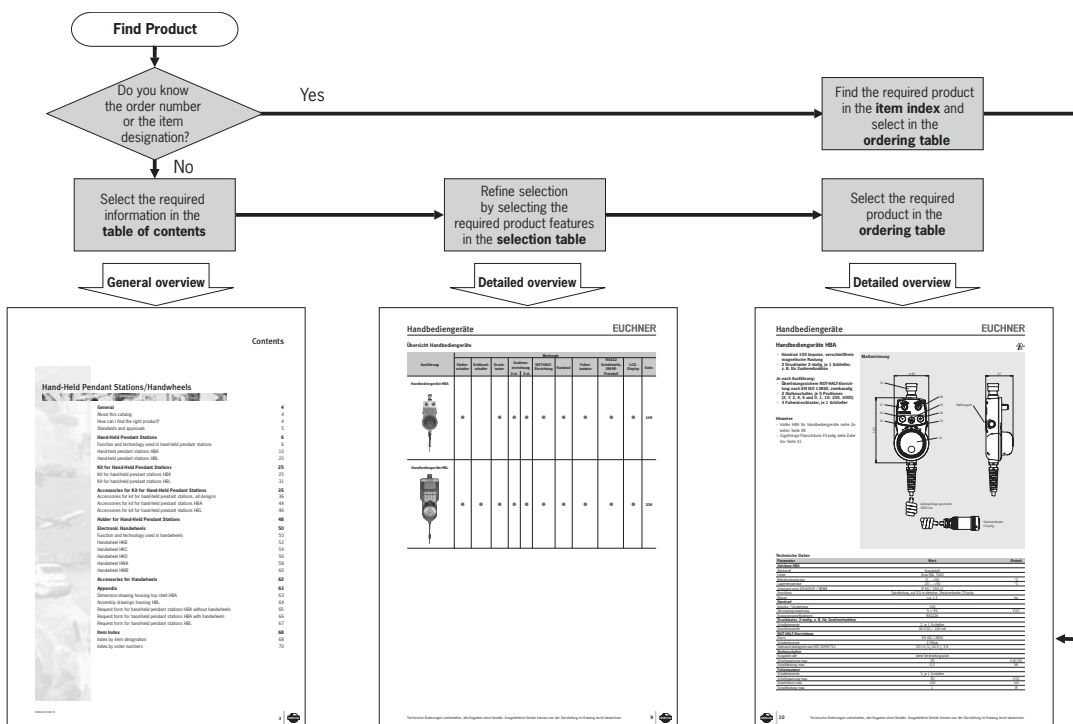
You will find the following series and accessories in this catalog:

Hand-Held Pendant Stations / Handwheels										
Hand-Held Pendant Stations					Handwheels					
Complete Devices		Kit	Accessories	Holder	Handwheels with Magnetic Detent Mechanism			Handwheels with Mechanical Detent Mechanism		Accessories
HBA	HBL				HKB	HKC	HKD	HWA	HWB	
										
see page 10	see page 20	see page 25	see page 35	see page 48	see page 52	see page 54	see page 56	see page 58	see page 60	see page 62

How can I find the right product?

There are two ways you can find the right product:

- 1 If you know the order number or the item designation, look for the product directly in the item index (see page 68 or page 70).
- 2 If you have specific requirements, refine the selection step-by-step with the aid of the table of contents and the selection tables.



## Standards and approvals

### Standards

Hand-held pendant stations must comply with the requirements of the EMC directive 2004/108/EEC. The EMC directive has been implemented in national law in the EU member states and, as a result, is binding for all manufacturers. Detailed requirements on EMC are defined in EN 61000 (Electromagnetic compatibility (EMC)) part 6-2 and 6-4. If the requirements of this standard are met, conformity with the applicable laws and therefore with the EMC directive is assumed. EUCHNER hand-held pendant stations comply with the relevant standards and therefore help you to comply with the requirements during the design of your machinery.

### Approvals

Many of the hand-held pendant stations given in this catalog are listed by Underwriters Laboratories (UL). The approval symbols on the individual pages of the catalog indicate which devices are approved.

This is the UL approval symbol:



Products with this symbol are approved by Underwriters Laboratories (UL, Canada and USA)

## Function and technology used in hand-held pendant stations

The most important machine functions can be monitored, e.g. axis selection and axis movement can be controlled decentrally using hand-held pendant stations. The freedom of movement of the machine operator is increased and the operator can monitor and control processes without being tied to a fixed control panel.

In addition to the control function, hand-held pendant stations can also have a safety function. For this purpose the hand-held pendant stations are equipped with emergency stop buttons and enabling switches.

### Hand-held pendant stations with enabling function

Hand-held pendant stations with enabling function are essentially similar to classic enabling switches.

Enabling switches are manually operated control devices that, together with other control switches, enable commands related to potentially hazardous conditions to be run, as long as the enabling switches are actuated continuously. These switches are used wherever personnel must work directly in the danger area on machines and systems. This is necessary, e.g. during setting up, programming, testing or servicing work. As per annex 1 of the Machinery directive, the protective action of movable safety guards can be disabled in these operating modes. The Machinery directive places the condition that these operating modes must be secured using a lockable device (e.g. key-operated switch) and machine operation is only allowed to be triggered by a second, separate action. To enable the operator in the danger area of a machine to trigger a machine movement, an enabling device should also be actuated.

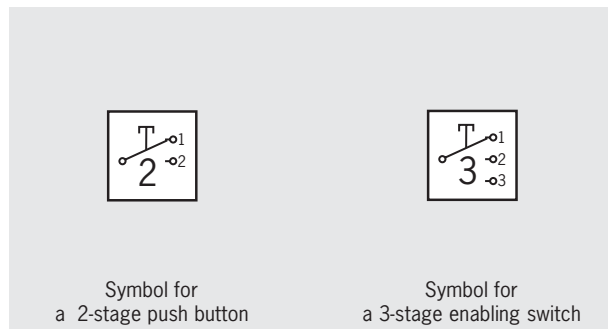
The operator must also be able to stop the machine movement using the enabling device. This task is performed by the enabling switch. Every person who is in the hazardous area must carry an enabling device so that suitable action can be taken in case of danger.

### Two-stage pushbutton or three-stage enabling switch?

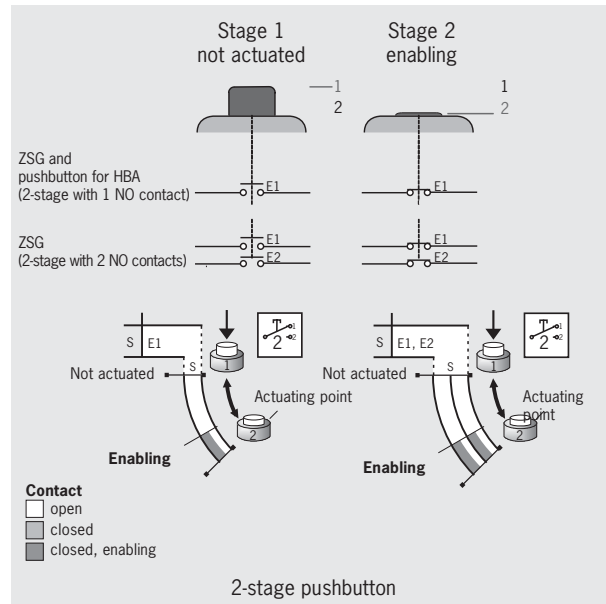
The operator can only start a machine movement if he/she actuates the enabling device and keeps it in the actuated position. The movement is stopped again when the switch is released. This two-stage function (OFF-ON) is provided by all pushbuttons and all three-stage enabling switches. However, experience shows that the operator often clenches the enabling device in an emergency.

In this case a three-stage enabling switch is better and is specifically requested in many C standards. This switch has three switch positions (OFF-ON-OFF) and, if the operator clenches the switch, it is actuated beyond the enabling position (middle position) and the machine is shut down as a result.

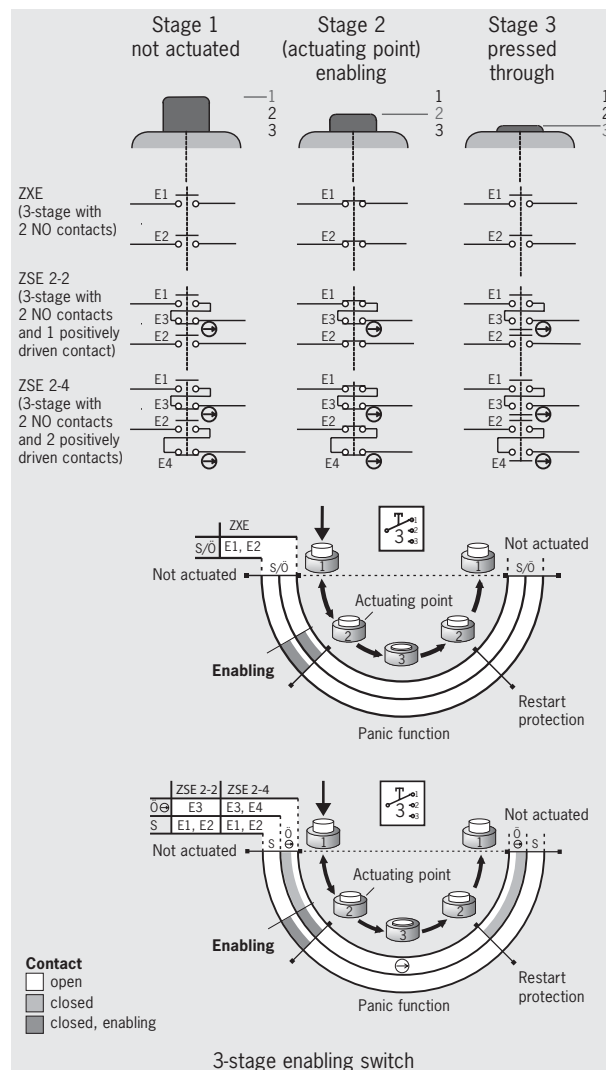
If a 2-stage pushbutton is used, it must also be ensured that, in an emergency, the operator is in a position to activate an emergency stop device in close proximity (VDI 2853). To identify the type of enabling device in the catalog, the following symbols are used:



### Function sequence for two-stage pushbutton



### Function sequence for three-stage enabling switch



As can be clearly seen in the figure, the enabling function can only be achieved at stage 2. This function is provided by the closing of the normally open contacts (NO = E1 and E2).

If the button is released, that is back from stage 2 to stage 1, the normally open contacts are opened again. The 2-stage pushbuttons and the 3-stage enabling switches are identical in this function.

If, in this example, the button on a 3-stage enabling switch is pressed past the actuating point (stage 2) in panic (to stage 3), then not only the normally open contacts (NO) are reset, but at the series ZSE also the safe positively driven contacts (NC  $\ominus$ ) are opened additionally.

The patented switch system ensures that the enabling function does not become active at stage 2 on the resetting of the pushbutton from stage 3 to stage 1. In this example the enable can only be given if normally open and normally closed contacts are closed at the same time. This situation is only possible on actuation from stage 1 to stage 2. In the other direction, from stage 3 to stage 1, stage 2 is skipped and unintentional restarting prevented.

Once the pushbutton has reached stage 1, the function sequence can be started again.

Due to its design, the switch unit also provides a wear-free, constant actuating point (stage 2).

## Ergonomic housing

To make the operation of machines even easier and safer for the user, EUCHNER is the first manufacturer of hand-held pendant stations to have designed the housing taking into account ergonomic aspects. This means the HBL and HBA housings have been developed such that they fit optimally in the hand. Well-known manufacturers of machine tools and controllers all over the world are already using EUCHNER hand-held pendant stations. The wide product range extends from standard housings to custom-built hand-held pendant stations, e.g. with LCD displays, membrane keypads and serial communication ports.



## Custom hand-held pendant stations

Customized hand-held pendant stations based on the standard devices can also be produced in small quantities. In order to use these ergonomically designed housings for the various requirements, EUCHNER offers the option of customized solutions. In the Appendix you will find forms which can be used to describe your requirements. We will be pleased to draw up a quotation based on your requirements.

## Kits for hand-held pendant stations

To enable you to use ergonomically designed housings even for small quantities, e. g. prototypes or special versions, EUCHNER provides kits for hand-held pendant stations. As a result, you can assemble a hand-held pendant station in a user-friendly housing to suit your requirements.

## Explanation of symbols and notation

Symbols and specific notation related to the switches or the contact element are used time and again in the catalog.

The following example is intended to explain these aspects:

► Notation 1 NC  $\ominus$  + 1 NO

Explanation:



Normally closed contacts are termed *NC*, normally open contacts *NO*.

The number indicates how many contacts are available. The symbol  $\ominus$  after the *NC* defines that the *NC* contact is a positively driven contact.

This switch therefore has one *NC* contact and one *NO* contact; the *NC* contact is a positively driven contact.



## Overview of hand-held pendant stations

Version	Features										
	Selector switch	Key-operated switch	Push-button	Enabling device		EMERGENCY STOP device	Hand-wheel	Membrane keypad	RS422 interface, 3964R protocol	LCD display	Page
	2-st.	3-st.									
<b>Hand-held pendant stations HBA</b> 	●		●	●	●	●	●	●	●	●	10ff
<b>Hand-held pendant stations HBL</b> 	●	●	●	●	●	●	●	●	●	●	20ff



## Hand-held pendant stations HBA

- ▶ Handwheel 100 pulses, wear-free magnetic detent
- ▶ 2 pushbuttons, 2-stage, 1 NO contact each, e.g. for enabling function

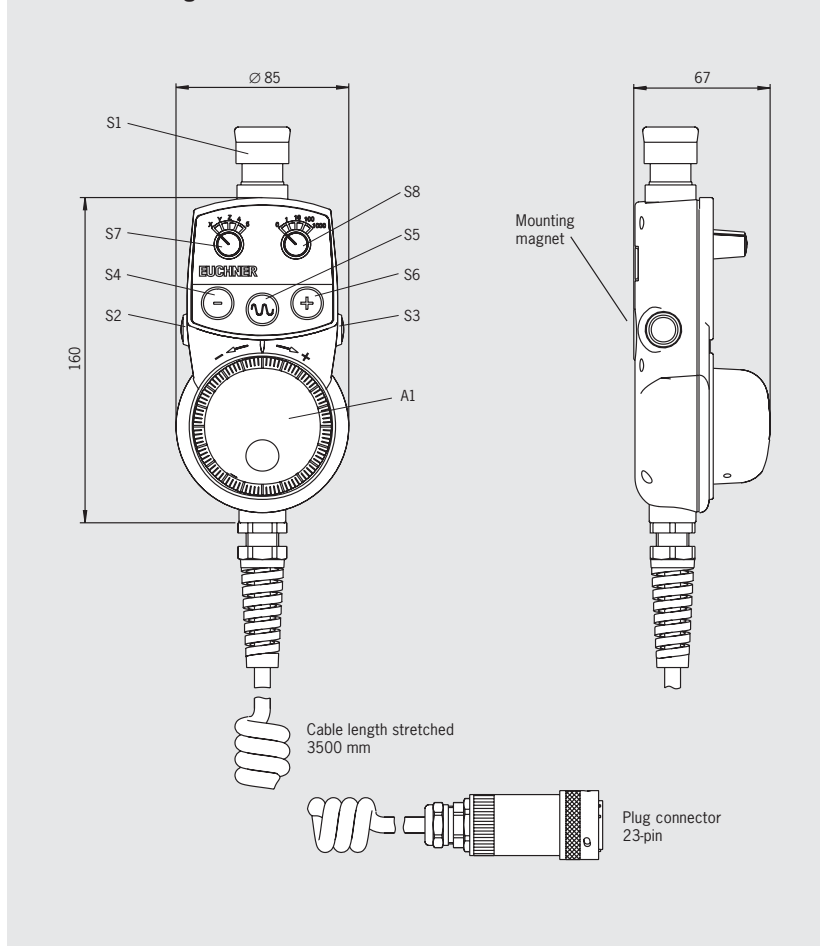
### Depending on version:

- ▶ Tamper-proof EMERGENCY STOP device according to EN ISO 13850, dual-channel
- ▶ 2 selector switches, 5 positions each (X, Y, Z, 4, 5 and 0, 1, 10, 100, 1000)
- ▶ 3 membrane pushbuttons, 1 NO contact each

### Notes

- ▶ For holder HBA for hand-held pendant stations, see Accessories page 48
- ▶ For related 23-pin flange socket, see Accessories page 41





Dimension drawing



## Technical data

Parameter	Value	Unit
<b>Housing HBA</b>		
Material	Plastic	
Color	Gray RAL 7040	
Operating temperature	0 ... +50	°C
Storage temperature	-20 ... +50	°C
Degree of protection according to EN 60529 / NEMA	IP 65 / 250-12	
Connection	Coiled cable, expandable to 3.5 m, 23-pin plug connector	
Weight	Approx. 1.3	kg
<b>Handwheel</b>		
Pulses / revolution	100	
Power supply	5 ± 5%	V DC
Output specifications	RS422A	
<b>Pushbutton, 2-stage, e.g. for enabling function</b>		
Switching elements	2, 1 NO contact each	
Connection ratings	30 V DC / 100 mA	
<b>EMERGENCY STOP device</b>		
Standard	EN ISO 13850	
Switching elements	2 NC contacts	
Utilization category to IEC 60947-5-1	DC-13, U <sub>e</sub> 24 V, I <sub>e</sub> 3 A	
<b>Selector switch</b>		
Output code	See wiring diagram	
Switching voltage max.	25	V AC/DC
Switching capacity max.	0.2	VA
<b>Membrane keypad</b>		
Switching elements	3, 1 NO contact each	
Switching voltage max.	30	V DC
Switching current max.	100	mA
Breaking capacity max.	1	W

## Ordering table

Version/item	Features					Order No.
	2 selector switches 5 positions each S7, S8	3 membrane pushbuttons 1 NO contact each S4, S5, S6	2 pushbuttons 2-stage S2, S3	EMERGENCY STOP device S1	Handwheel 100 pulses A1	
HBA - 079 828 			●		●	079 828
HBA - 079 826 	●		●	●	●	079 826
HBA - 072 936 		●	●	●	●	072 936
HBA - 079 827 	●	●	●	●	●	079 827

## Wiring diagram

S8: Increment selection  
Selector switch right  
5 positions

S8	DCBA	
1	0000	0
2	0001	1
3	0011	10
4	0010	100
5	0110	1000

S7: Axle selection  
Selector switch left  
5 positions

S7	DCBA	
1	0000	X
2	0001	Y
3	0011	Z
4	0010	4
5	0110	5

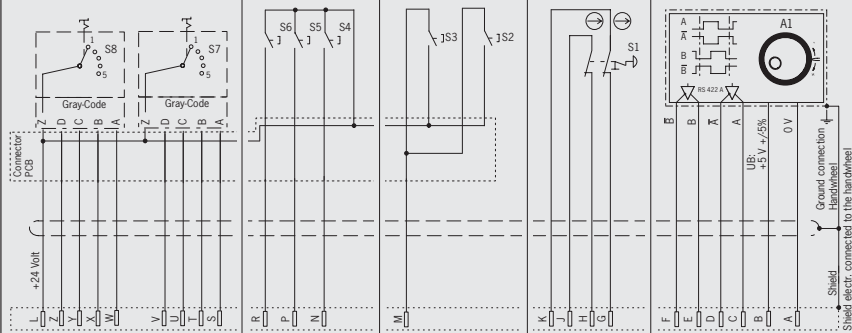
S4: Push button left  
S5: Push button middle  
S6: Push button right

S2 (left) + S3 (right):  
Pushbutton 2-stage  
e.g. for  
enabling function \*



S1: Emergency Stop

A1: Handwheel



\* Travel diagram  
see page 6

## Hand-held pendant stations HBA



- ▶ Handwheel 100 pulses, wear-free magnetic detent
- ▶ 1 enabling switches, 3-stage, 2 NO contacts each

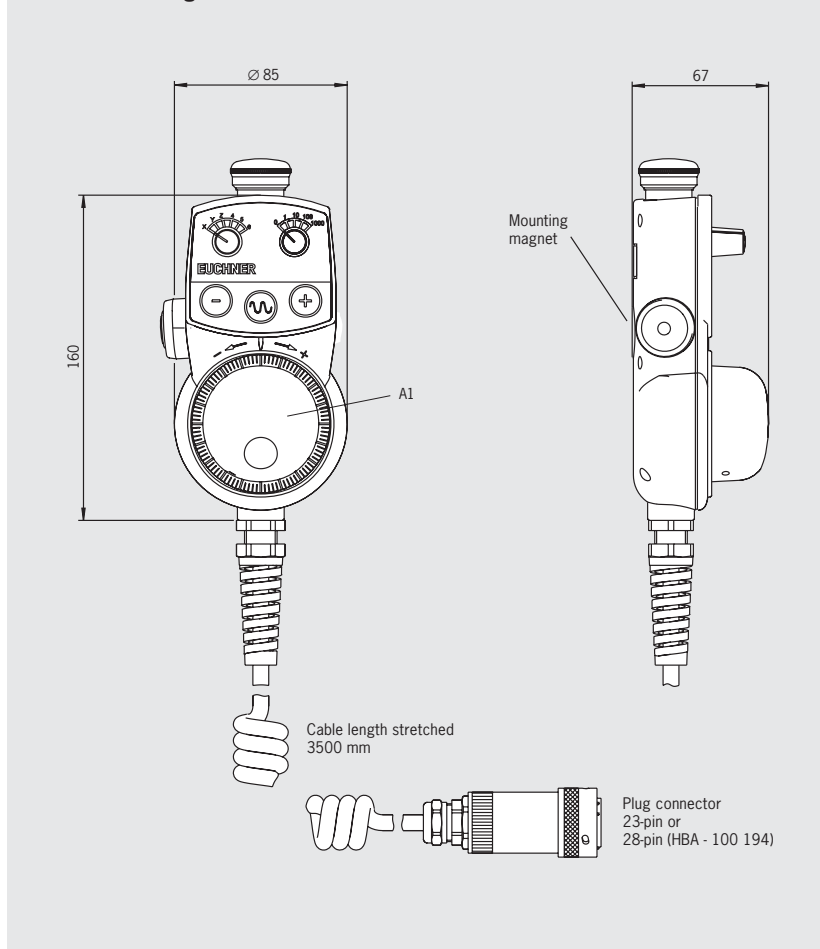
### Depending on version:

- ▶ Tamper-proof EMERGENCY STOP device according to EN ISO 13850, dual-channel
- ▶ 1 selector switch with 6 positions (X, Y, Z, 4, 5 6)
- ▶ 1 selector switch with 5 positions (0, 1, 10, 100, 1000)
- ▶ 3 membrane pushbuttons, 1 NO contact each

### Notes

- ▶ For holder HBA for hand-held pendant stations, see Accessories page 48
- ▶ For related 23-pin flange socket, see Accessories page 41
- ▶ For related 28-pin flange socket, see Accessories page 41





Dimension drawing



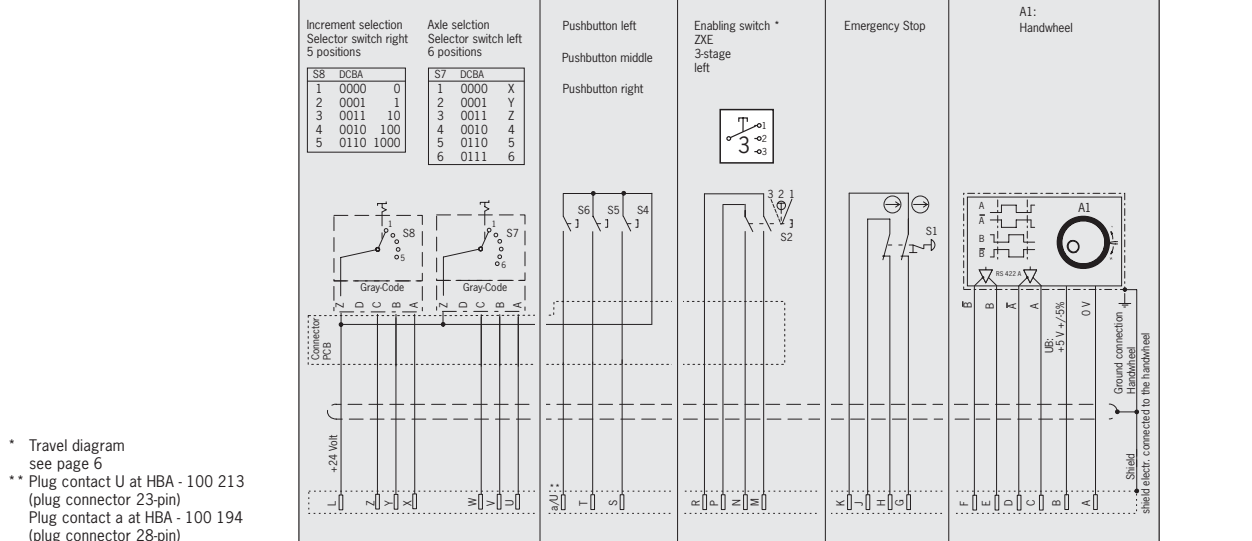
### Technical data

Parameter	Value	Unit
<b>Housing HBA</b>		
Material	Plastic	
Color	Gray RAL 7040	
Operating temperature	0 ... +50	°C
Storage temperature	-20 ... +50	°C
Degree of protection according to EN 60529 / NEMA	IP 65 / 250-12	
Connection	Coiled cable, expandable to 3.5 m, 23-pin or 28-pin (HBA - 100 194) plug connector	
Weight	Approx. 1.3	kg
<b>Handwheel</b>		
Pulses / revolution	100	
Power supply	5 ± 5%	V DC
Output specifications	RS422A	
<b>Enabling switch ZXE, 3-stage</b>		
Switching elements	2 NO contacts	
Utilization category to IEC 60947-5-1	DC-13, U <sub>e</sub> 24 V, I <sub>e</sub> 0.1 A	
<b>EMERGENCY STOP device</b>		
Standard	EN ISO 13850	
Switching elements	2 NC contacts	
Utilization category to IEC 60947-5-1	DC-13, U <sub>e</sub> 24 V, I <sub>e</sub> 3 A	
<b>Selector switch</b>		
Output code	See wiring diagram	
Switching voltage max.	25	V AC/DC
Switching capacity max.	0.2	VA
<b>Membrane keypad</b>		
Switching elements	3, 1 NO contact each	
Switching voltage max.	30	V DC
Switching current max.	100	mA
Breaking capacity max.	1	W

## Ordering table

Version/item	Features					Order No.
	2 selector switches 5 and 6 positions	3 membrane pushbuttons 1 NO contact each	1 enabling switch ZXE 3-stage	EMERGENCY stop device	Handwheel 100 pulses	
HBA - 100 186 			●		●	100 186
HBA - 100 212 	●		●	●	●	100 212
HBA - 100 213 		●	●	●	●	100 213
HBA - 100 194 	●	●	●	●	●	100 194

## Wiring diagram





## Hand-held pendant stations HBA

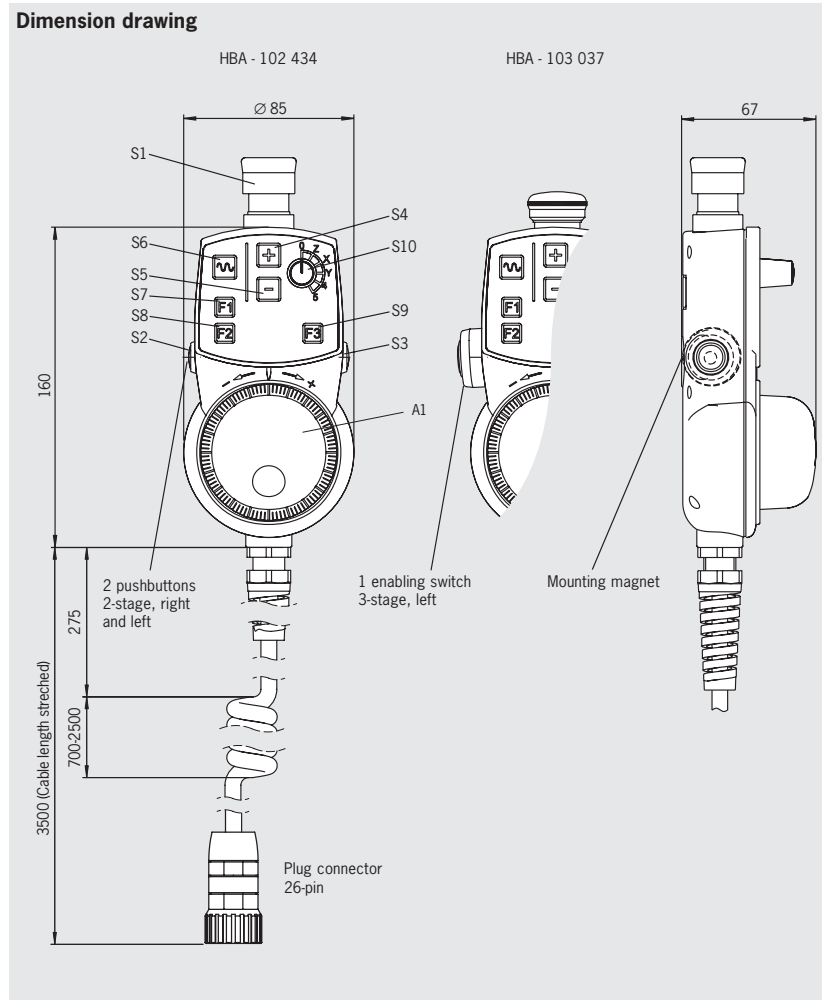
- ▶ Handwheel 100 pulses, wear-free magnetic detent
- ▶ Tamper-proof EMERGENCY STOP device according to EN ISO 13850, dual-channel
- ▶ 1 selector switch, 6 positions (0, Z, X, Y, 4, 5)
- ▶ 6 membrane pushbuttons, 1 NO contact each

### Depending on version:

- ▶ 2 pushbuttons, 2-stage, 1 NO contact each, e.g. for enabling function
- ▶ 1 enabling switch, 3-stage, 2 NO contacts

### Notes



- ▶ For holder HBA for hand-held pendant stations, see Accessories page 48
- ▶ For related connection kit comprising 26-pin flange socket and short-circuit plug, see Accessories page 44
- ▶ Function compatible with Siemens MINI BHG



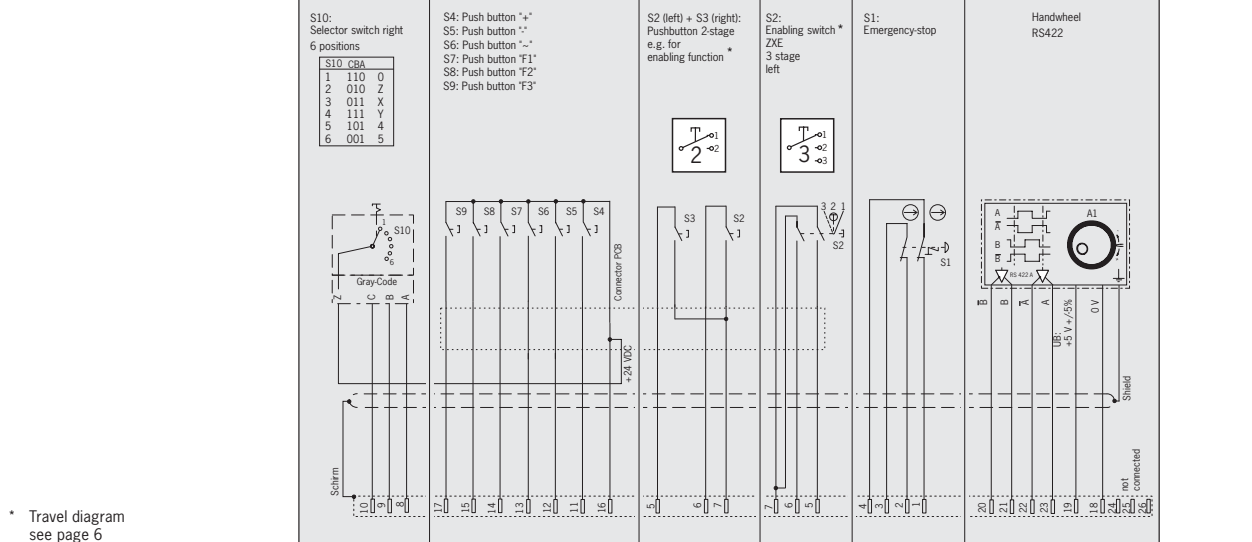
### Technical data

Parameter	Value	Unit
<b>Housing HBA</b>		
Material	Plastic	
Color	Gray RAL 7040	
Operating temperature	0 ... +50	°C
Storage temperature	-20 ... +50	°C
Degree of protection according to EN 60529 / NEMA	IP 65 / 250-12	
Connection	Coiled cable, expandable to 3.5 m, 26-pin plug connector	
Weight	Approx. 1.3	kg
<b>Handwheel</b>		
Pulses / revolution	100	
Power supply	5 ± 5%	V DC
Output specifications	RS422A	
<b>EMERGENCY STOP device</b>		
Standard	EN ISO 13850	
Switching elements	2 NC contacts	
Utilization category to IEC 60947-5-1	DC-13, U <sub>e</sub> 24 V, I <sub>e</sub> 3 A	
<b>Selector switch</b>		
Output code	See wiring diagram	
Switching voltage max.	25	V AC/DC
Switching capacity max.	0.2	VA
<b>Membrane keypad</b>		
Switching elements	6, 1 NO contact each	
Switching voltage max.	30	V DC
Switching current max.	100	mA
Breaking capacity max.	1	W
<b>Pushbutton, 2-stage, e.g. for enabling function</b>		
Switching elements	2, 1 NO contact each	
Connection ratings	30 V DC / 100 mA	
<b>Enabling switch ZXE, 3-stage</b>		
Switching elements	1, 2 NO contacts	
Utilization category to IEC 60947-5-1	DC-13, U <sub>e</sub> 24 V, I <sub>e</sub> 0.1 A	

## Ordering table

Version/item	Features						Order No.
	1 selector switch 6 positions S10	6 membrane pushbuttons 1 NO contact each S4, S5, S6, S7, S8, S9	2 pushbuttons 2-stage S2, S3	1 enabling switch ZXE 3-stage S2	EMERGENCY STOP device S1	Handwheel 100 pulses A1	
 HBA - 102 434	●	●	●		●	●	102 434
 HBA - 103 037	●	●		●	●	●	103 037

## Wiring diagram



## Hand-held pendant stations HBA

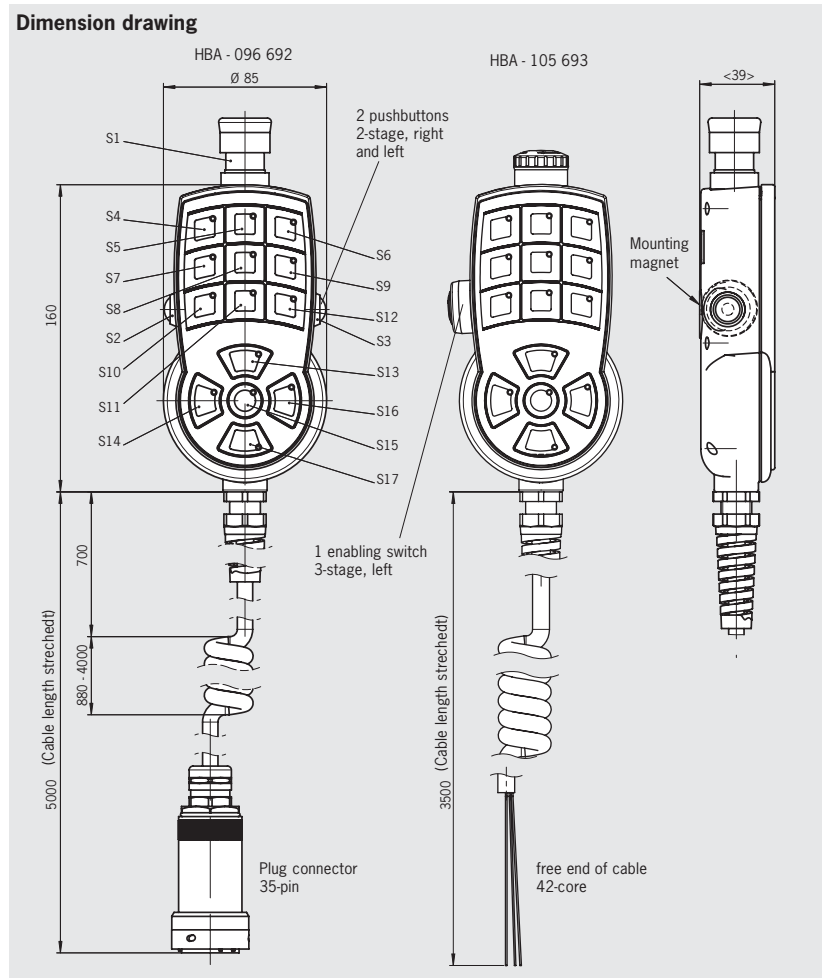
- ▶ Membrane keypad can be labeled as required using slide-in strips
- ▶ Tamper-proof EMERGENCY STOP device according to EN ISO 13850, dual-channel
- ▶ LEDs white, color customer-specific using colored keypad membrane

### Depending on version:

- ▶ 2 pushbuttons, 2-stage, 1 NO contact each, e.g. for enabling function
- ▶ 1 enabling switch, 3-stage, 2 NO contacts
- ▶ Coiled cable expandable to 5 m, 35-pin plug connector
- ▶ Coiled cable expandable to 3.5 m, 42-core free cable end

### Hinweise


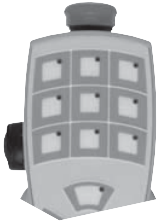
- ▶ For holder HBA for hand-held pendant stations, see Accessories page 48
- ▶ For related 35-pin flange socket, see Accessories page 41
- ▶ For template for slide-in strips see [www.euchner.de](http://www.euchner.de) (Operating Instructions)



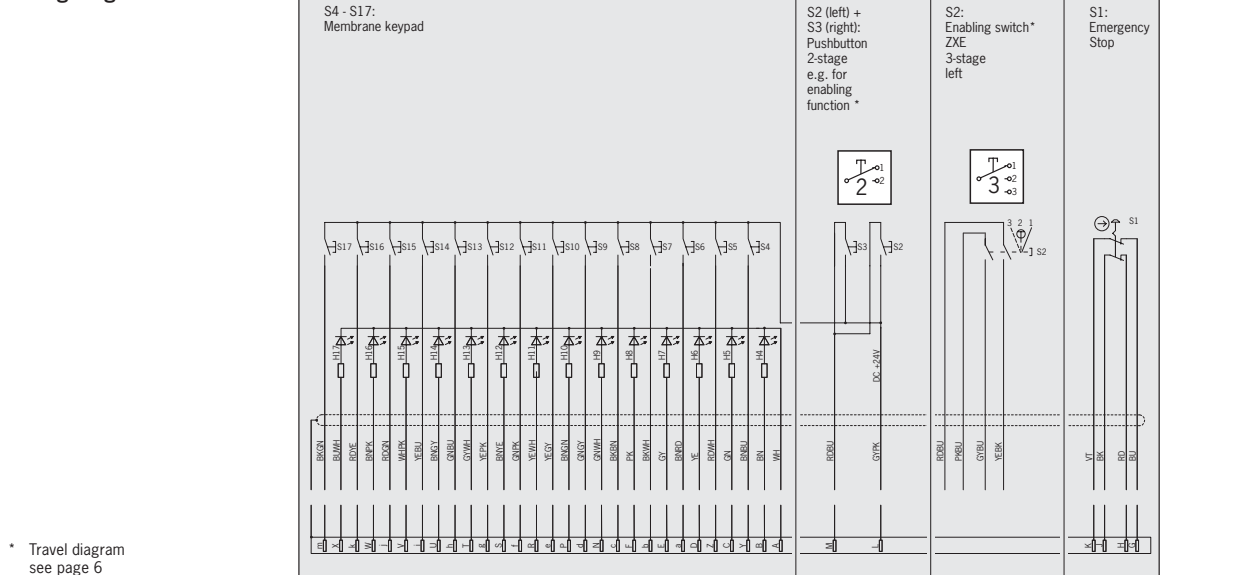
### Technical data

Parameter	Value	Unit
<b>Housing HBA</b>		
Material	Plastic	
Color	Gray RAL 7040	
Operating temperature	0 ... +50	°C
Storage temperature	-20 ... +50	°C
Degree of protection according to EN 60529 / NEMA	IP 65 / 250-12	
Connection	Coiled cable, expandable to 5 m, 35-pin plug connector Coiled cable, expandable to 3.5 m, 42-core free cable end	
Weight	Approx. 1.3	kg
<b>EMERGENCY STOP device</b>		
Standard	EN ISO 13850	
Switching elements	2 NC contacts	
Utilization category to IEC 60947-5-1	DC-13, $U_e$ 24 V, $I_e$ 3 A	
<b>Membrane keypad</b>		
Switching elements	14, 1 NO contact each	
Switching voltage max.	30	V DC
Switching current max.	100	mA
Breaking capacity max.	1	W
<b>Pushbutton, 2-stage, e.g. for enabling function</b>		
Switching elements	2, 1 NO contact each	
Switching voltage max.	30	V DC
Switching current max.	100	mA
<b>Enabling switch ZXE, 3-stage</b>		
Switching elements	1, 2 NO contacts	
Utilization category to IEC 60947-5-1	DC-13, $U_e$ 24 V, $I_e$ 0.1 A	

## Ordering table

Version/item	Merkmale				Order No.
	Membrane keypad S4 - S17	Pushbutton 2-stage S2, S3	Enabling switch ZXE, 3-stage S2	EMERGENCY STOP device S1	
HBA - 096 692 	●	●		●	096 692
HBA - 105 693 	●		●	●	105 693

## Wiring diagram



## Hand-held pendant stations HBAS



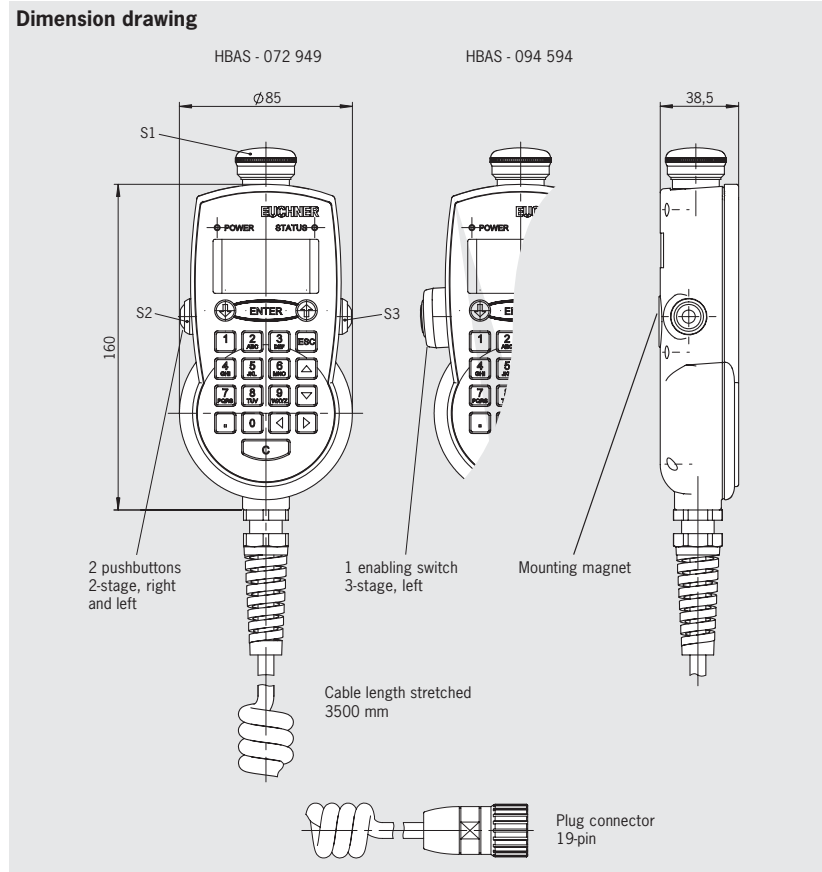
- ▶ Programmable pulse generator
- ▶ Tamper-proof EMERGENCY STOP device according to EN ISO 13850, dual-channel
- ▶ Membrane keypad with 20 keys and 2 LEDs
- ▶ LCD display with LED background lighting, switchable 4-line/8-column or 8-line/16-column
- ▶ RS422 interface, 3964R protocol

### Depending on version:

- ▶ 2 pushbuttons, 2-stage, 1 NO contact each, e.g. for enabling function
- ▶ 1 enabling switch, 3-stage, 2 NO contacts

### Notes



- ▶ For holder HBA for hand-held pendant stations, see Accessories page 48
- ▶ For related 19-pin flange plug, see Accessories page 44
- ▶ ActiveX module available for integrating the user's application (for MS Windows®-based user programs with ActiveX support)



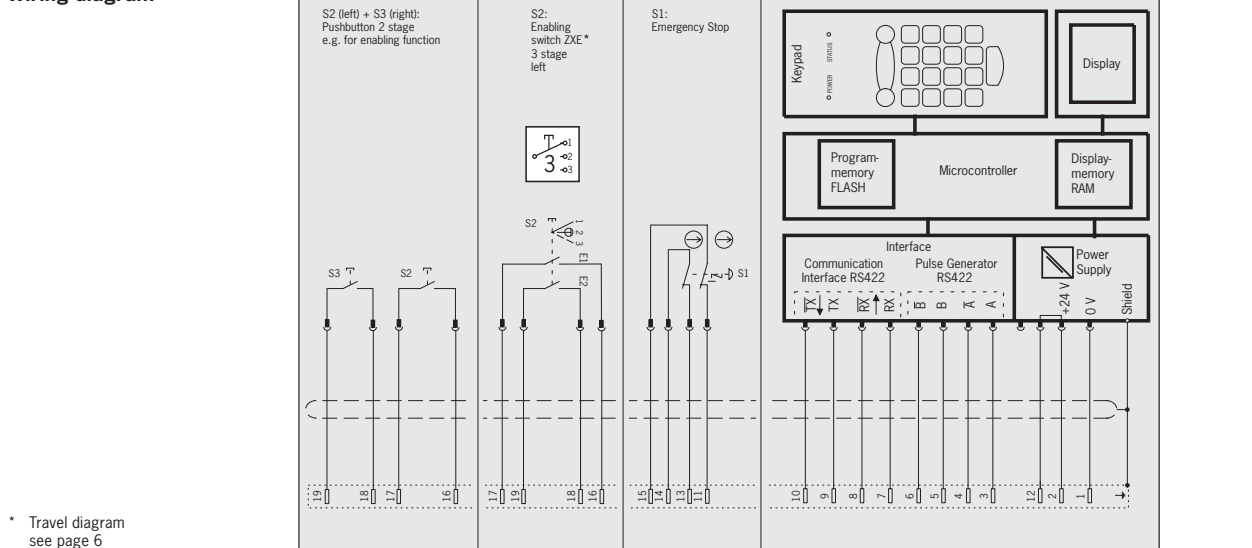
### Technical data

Parameters	Value	Unit
<b>Housing HBA</b>		
Material	Plastic	
Color	Gray RAL 7040	
Operating temperature	0 ... +50	°C
Storage temperature	-20 ... +50	°C
Degree of protection according to EN 60529 / NEMA	IP 65 / 250-12	
Connection	Coiled cable, expandable to 3.5 m, 19-pin plug connector	
Weight	Approx. 0.85	kg
<b>Pulse generator</b>		
Pulses	Programmable	
Output specifications	RS422A	
<b>EMERGENCY STOP device</b>		
Standard	EN ISO 13850	
Switching elements	2 NC contacts	
Utilization category to IEC 60947-5-1	DC-13, U <sub>e</sub> 24 V, I <sub>e</sub> 3 A	A
<b>Communications interface</b>		
Type	Serial, RS422A (4-wire)	
Data format	8 data bits + 1 parity bit (even), 1 stop bit	
Transfer speed	9600 or 19200 baud, automatic detection	
Transfer protocol	3964R	
<b>Electrical connection</b>		
Power supply	24 ± 20%	V DC
Operating current, max.	100	mA
<b>Pushbutton, 2-stage, e.g. for enabling function</b>		
Switching elements	2, 1 NO contact each	
Switching voltage max.	30	V DC
Switching current max.	100	mA
<b>Enabling switch ZXE, 3-stage</b>		
Switching elements	1, 2 NO contacts	
Utilization category to IEC 60947-5-1	DC-13, U <sub>e</sub> 24 V, I <sub>e</sub> 0.1 A	

## Ordering table

Version/item	Features				Order No.
	2 pushbuttons 2-stage S2, S3	1 enabling switch ZXE, 3-stage S2	EMERGENCY STOP device S1	Programmable pulse generator, membrane keypad, display, RS422 interface, 3964R protocol	
 HBAS - 072 949	●		●	●	<b>072 949</b>
 HBAS - 094 594		●	●	●	<b>094 594</b>

## Wiring diagram



ActiveX module  
 Software for integration into user software that supports ActiveX  
 Manual ActiveX module  
 Detailed documentation on use of the software

**093 011**  
**093 013**

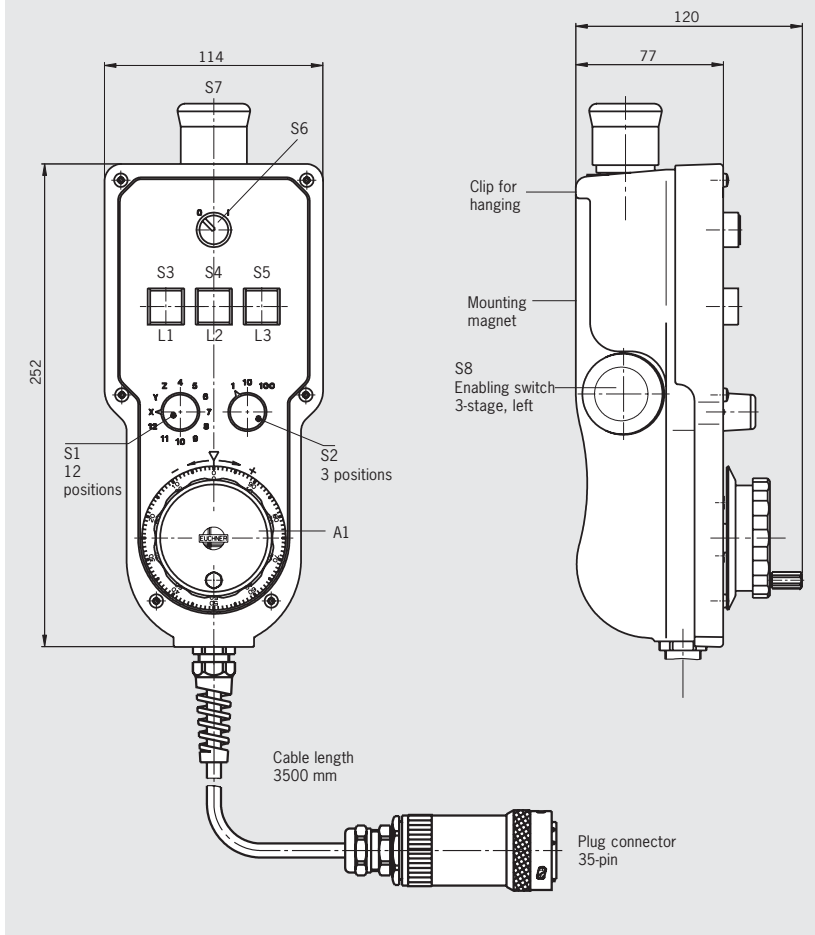
## Hand-held pendant station HBL - 097 339



- ▶ Handwheel 100 pulses
- ▶ Tamper-proof EMERGENCY STOP device according to EN ISO 13850, dual-channel
- ▶ Enabling switch 3-stage
- ▶ 3 illuminated pushbuttons, can be individually labeled
- ▶ 2 selector switches
- ▶ Key-operated switch



Dimension drawing



### Notes

- ▶ For holder HBL for hand-held pendant stations, see Accessories page 48
- ▶ For related 35-pin flange socket, see connection components page 48

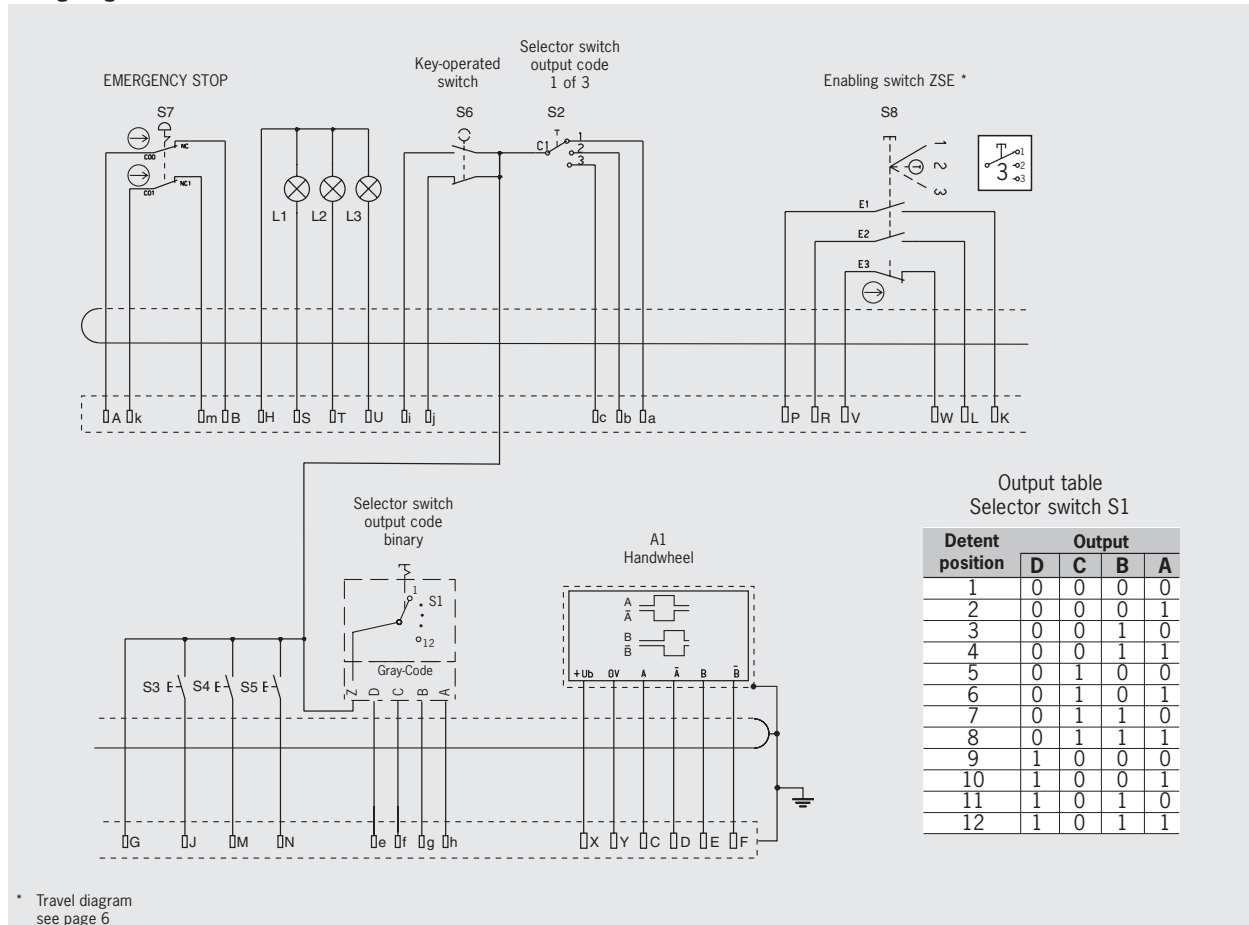
### Technical data

Parameters	Value	Unit
<b>Housing HBL</b>		
Material	Plastic	
Color	Blue-gray RAL 7031	
Ambient temperature	0 ... +55	°C
Degree of protection according to EN 60529	IP 65	
Connection	Cable 3.5 m, 35-pin plug	
Weight	Approx. 2.1	kg
<b>EMERGENCY STOP device</b>		
Standard	EN ISO 13850	
Switching elements	2 NC contacts	
Utilization category to IEC 60947-5-1	DC-13 U <sub>e</sub> 24 V I <sub>e</sub> 2.75 A	
<b>Handwheel HKD</b>		
Pulses per revolution	100	
Power supply	5 ± 5%	V DC
Output circuit	RS 422 A	
Output signals	See page 67	
<b>Enabling switch ZSE, 3-stage</b>		
Switching elements	2 NO contacts, 1 positively driven contact	
Utilization category to IEC 60947-5-1	AC-15 U <sub>e</sub> 24 V I <sub>e</sub> 4 A DC-13 U <sub>e</sub> 24 V I <sub>e</sub> 3 A	
<b>Buttons</b>		
Switching elements	3, 1 NO contact each	
Switching voltage max.	30	V DC
Switching current max.	100	mA
LED	I = 21 mA / U = 24 V DC	
<b>Selector switch</b>		
Switching voltage max.	30	V DC
Switching current max.	100	mA
Breaking capacity max.	2	W
<b>Key-operated switch</b>		
Switching voltage max.	30	V AC/DC
Switching current max.	250	mA

## Ordering table

Item	Order No.
Hand-held pendant station HBL - 097 339 with: <ul style="list-style-type: none"> <li>▶ Handwheel 100 pulses</li> <li>▶ Tamper-proof emergency stop device according to EN ISO 13850, dual-channel</li> <li>▶ Enabling switch ZSE 3-stage, 2 NO contacts, 1 positively driven contact</li> <li>▶ 3 illuminated pushbuttons, 1 NO contact each</li> <li>▶ 2 selector switches, 12 positions and 3 positions</li> <li>▶ Key-operated rotary switch, 1 NO contacts, 1 NC contact</li> </ul>	<b>097 339</b>

## Wiring diagram



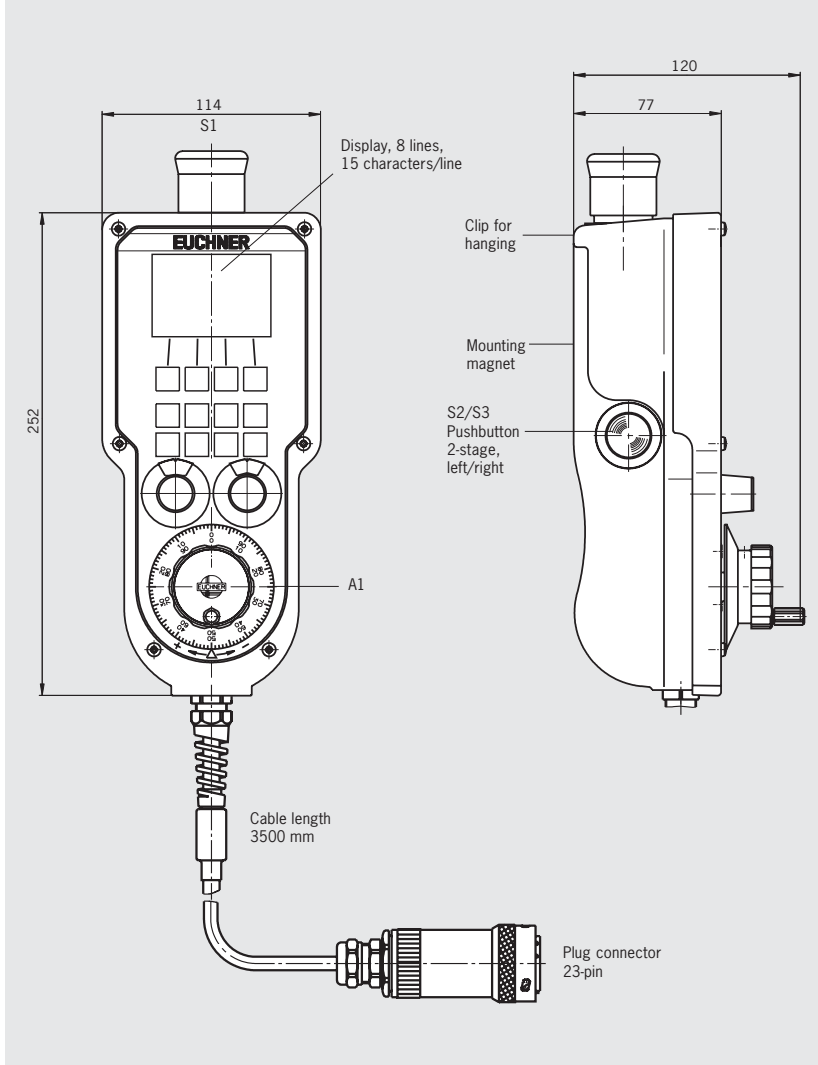
## Hand-held pendant station HBL5 - 072 725



- ▶ Handwheel 100 pulses
- ▶ Tamper-proof EMERGENCY STOP device according to EN ISO 13850, dual-channel
- ▶ 2 pushbuttons 2-stage, e.g. for enabling function
- ▶ 12 illuminated buttons
- ▶ Buttons can be designed as required using slide-in film
- ▶ 2 selector switches
- ▶ LCD display (text mode)
- ▶ RS422 interface, 3964R protocol



Dimension drawing



### Notes

- ▶ For holder HBL for hand-held pendant stations, see Accessories page 48
- ▶ For related 23-pin flange socket, see connection components page 41
- ▶ ActiveX module available for integrating the user's application (for MS Windows®-based user programs with ActiveX support)

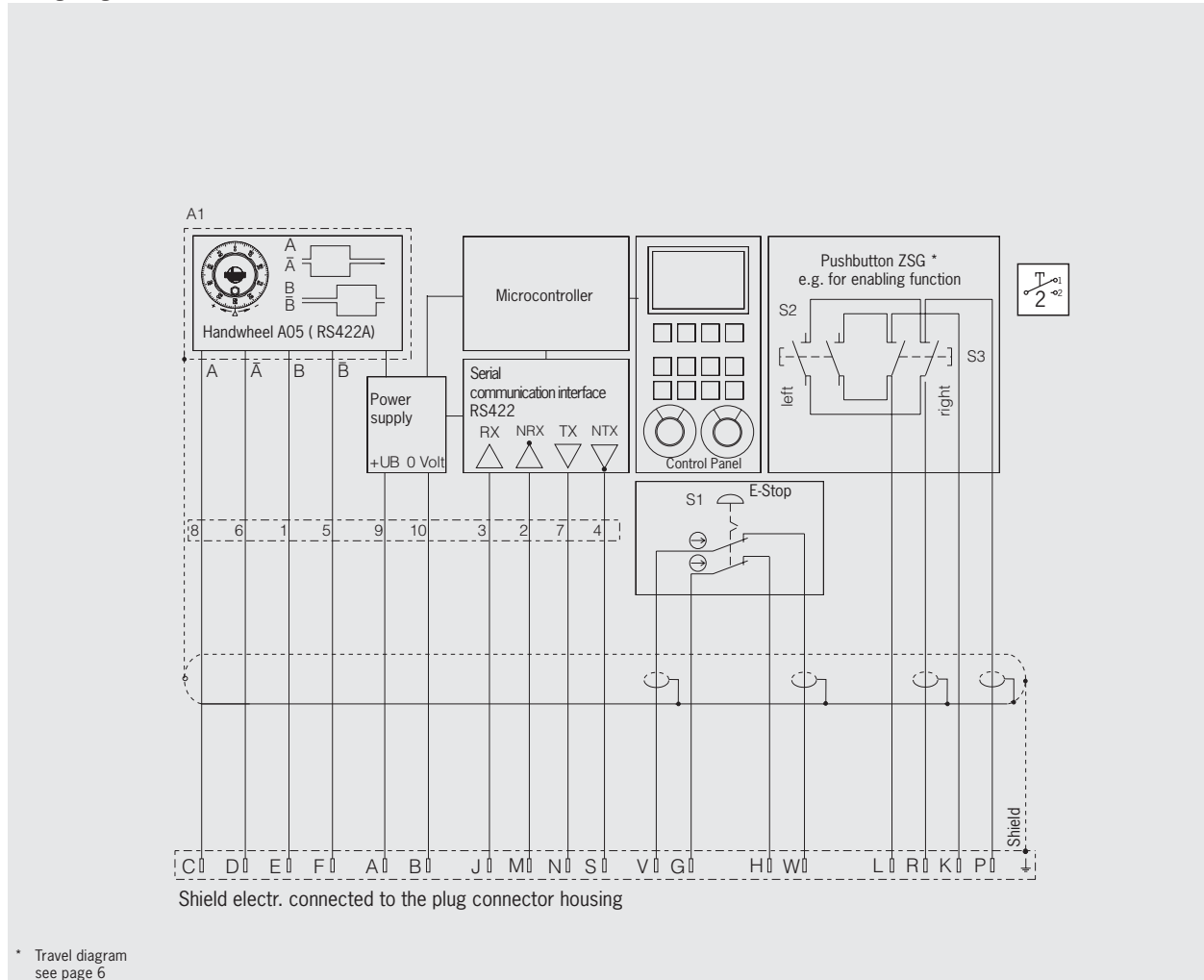
### Technical data

Parameters	Value	Unit
<b>Housing HBL</b>		
Material	Plastic	
Color	Blue-gray RAL 7031	
Operating temperature	0 ... +50	°C
Degree of protection according to EN 60529	IP 65	
Connection	Cable 3.5 m, 23-pin plug	
Weight	2.2	kg
<b>EMERGENCY STOP device</b>		
Standard	EN ISO 13850	
Switching elements	2 NC contacts	
Utilization category to IEC 60947-5-1	DC-13 U <sub>e</sub> 24 V I <sub>e</sub> 2.75 A	
<b>Handwheel HKD</b>		
Pulses per revolution	100	
Output circuit	RS 422 A	
Output signals	See page 67	
<b>Pushbutton ZSG, 2-stage, e.g. for enabling function</b>		
Switching elements	2, 2 NO contacts each	
Utilization category to IEC 60947-5-1	AC-15 U <sub>e</sub> 24 V I <sub>e</sub> 4 A DC-13 U <sub>e</sub> 24 V I <sub>e</sub> 3 A	
<b>Interface</b>		
Type	RS 422	
Data format	8 data bits, even parity, 1 or 2 stop bits	
Transfer speed	9600 or 19200 (setting using DIL switches)	baud
Transfer protocol	3964 R	
<b>Electrical connection</b>		
Power supply	24 ±20%	V DC
Operating current, max.	200	mA

## Ordering table

Item	Order No.
Hand-held pendant station HBLS - 072 725 with:	
▶ Handwheel 100 pulses	
▶ Tamper-proof emergency stop device according to EN ISO 13850, dual-channel	
▶ 2 pushbuttons ZSG 2-stage, 2 NO contacts each, e.g. for enabling function	
▶ 12 illuminated buttons	
▶ 2 selector switches, 12 positions each	
	<b>072 725</b>

## Wiring diagram



ActiveX module	<b>067 176</b>
Software for integration into user software that supports ActiveX	
Manual ActiveX module	<b>067 178</b>
Detailed documentation on use of the software	



## Kit for hand-held pendant stations HBA

The kit is designed to match individual customer specifications. Thanks to its modular configuration, you can construct prototypes and special versions in line with your requirements.

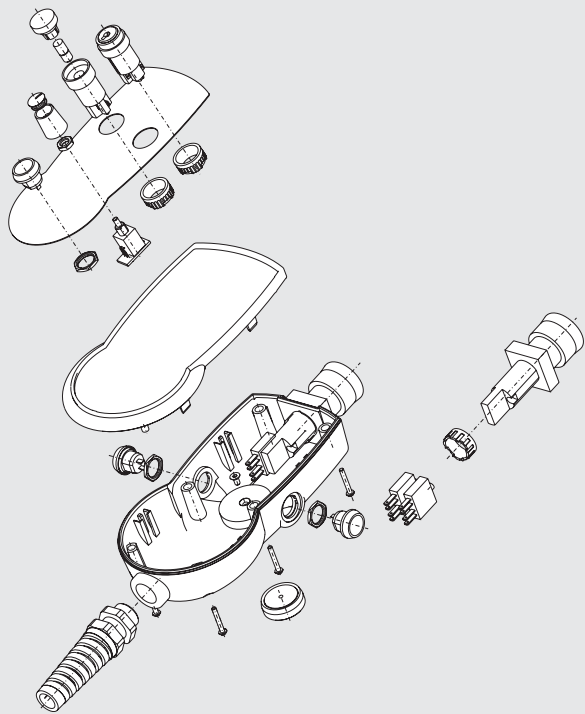
Aluminum front plates are available in silver or black anodized to match the housings.

Customer-specific functionality can be achieved by using the components supplied in the kit (pushbuttons, selector switches, key-operated rotary switches, etc).

For connection to the control system, cables with different numbers of cores, plug connectors and the relevant flange sockets are available.

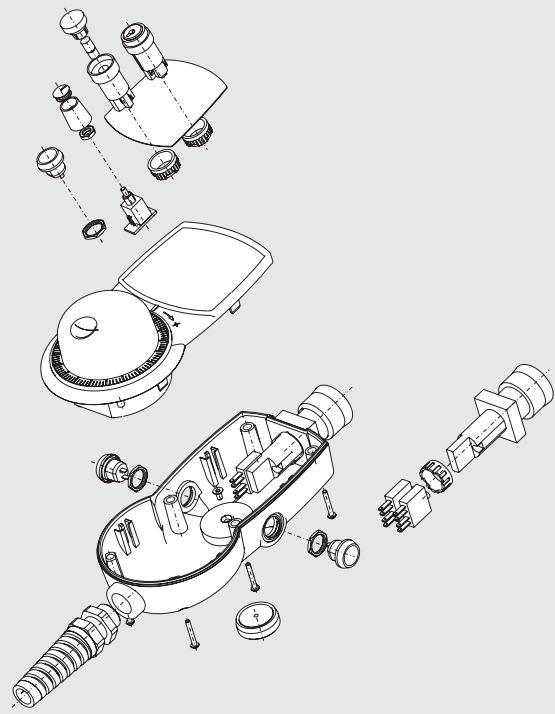
### Kit HBA without handwheel

The designs without handwheel have a cable gland and mounting magnet. In addition to the basic housing HBA, other identical designs with the option of fitting an EMERGENCY STOP and 2-stage pushbuttons or 3-stage enabling switches are available.



### Kit HBA with handwheel

The designs with handwheels, some with 2-stage pushbuttons or 3-stage enabling switches, differ in the output stages on the handwheels and are adapted to various control systems.



## Housing HBA without handwheel

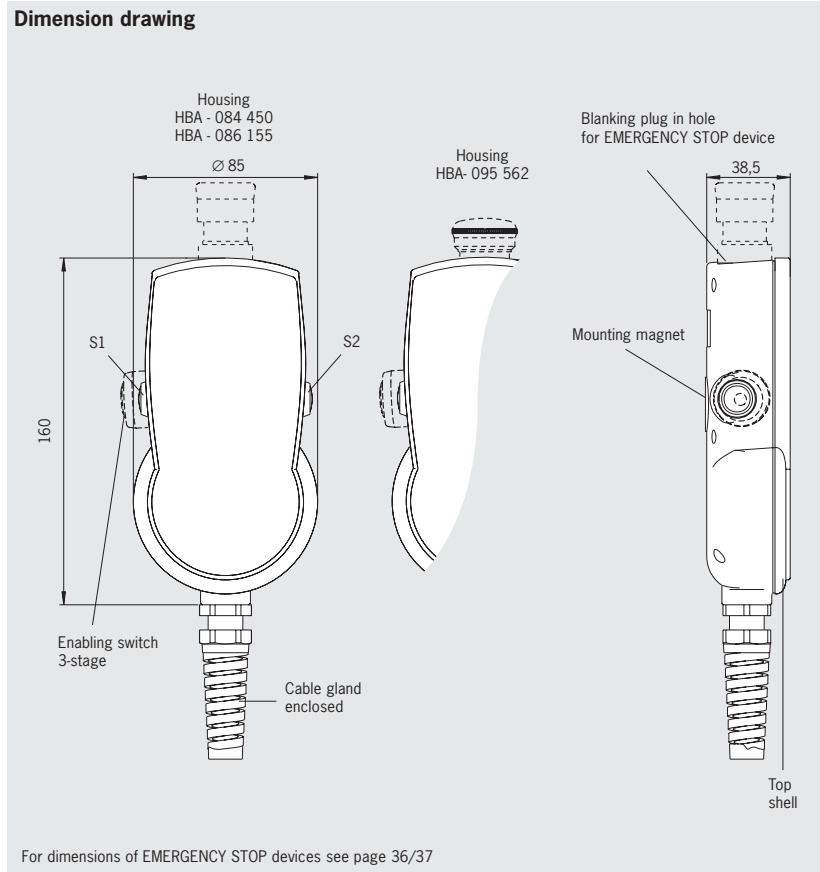
- ▶ Cable gland for cable diameter 5-10 mm
- ▶ Rubber-coated mounting magnet on the rear of housing
- ▶ 6 fixing points for printed circuit board in top shell

### Depending on version:

- ▶ Hole for EMERGENCY STOP device (sealed with blanking plug)
- ▶ 2 pushbuttons, 2-stage, 1 NO contact each, e.g. for enabling function
- ▶ 1 enabling switch, 3-stage, 2 NO contacts

### Notes



- ▶ Matching front plate, see page 30
- ▶ Matching EMERGENCY STOP device (rotary or pull release) see page 36/37
- ▶ **Attention:** housing HBA - 095 562 only suitable for EMERGENCY STOP device with rotary release.
- ▶ Depending on version with two 2-stage pushbuttons or one 3-stage enabling switch.



### Technical data

Parameter	Value	Unit
<b>Housing HBA</b>		
Material	Plastic	
Color	Gray RAL 7040	
Operating temperature	0 ... +50	°C
Storage temperature	-20 ... +50	°C
Degree of protection according to EN 60529 / NEMA	IP 65 / 250-12	
Weight	0.3	kg
<b>Pushbutton, 2-stage, e.g. for enabling function</b>		
Switching elements	2, 1 NO contact each	
Connection ratings	DC 30 V / 100 mA	
<b>Enabling switch ZXE, 3-stage</b>		
Switching elements	2 NO contacts	
Utilization category to IEC 60947-5-1	DC-13, U <sub>e</sub> 24 V, I <sub>e</sub> 0.1 A	

## Ordering table

Version/item	Features			Order No.
	Hole for EMERGENCY STOP device	2 pushbuttons*, 2-stage, 1 NO contact each e.g. for enabling function S1, S2	1 enabling switch ZXE***, 3-stage, 2 NO contacts S1	
Housing HBA - 084 445 (without hole, without enabling switch)				<b>084 445</b>
Housing HBA - 084 450	● for EMERGENCY STOP with pull release			<b>084 450</b>
Housing HBA - 086 155	● for EMERGENCY STOP with pull release	●		<b>086 155</b>
Housing HBA - 095 562	● for EMERGENCY STOP with rotary release		●	<b>095 562</b>
				

\* Travel diagram  
see page 6

\* Travel diagram  
see page 45

## Housing HBA with handwheel

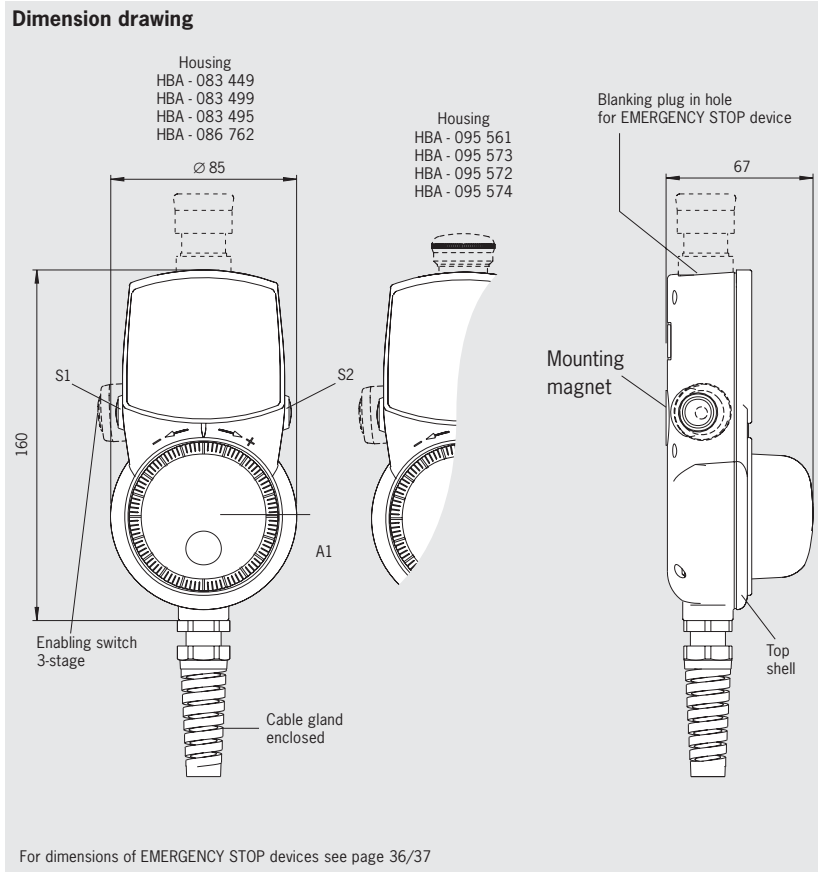
- ▶ **Handwheel 100 pulses, wear-free magnetic detent**
- ▶ **Hole for EMERGENCY STOP device** (sealed with blank plug)
- ▶ **Cable gland for cable diameter 5-10 mm**
- ▶ **Rubber-coated mounting magnet on the rear of housing**
- ▶ **6 fixing points for printed circuit board in top shell**

### Depending on version:

- ▶ **2 pushbuttons, 2-stage, 1 NO contact each, e.g. for enabling function**
- ▶ **1 enabling switch, 3-stage, 2 NO contacts**
- ▶ **Various handwheel output stages**

### Notes

- ▶ Matching front plate, see page 36
- ▶ Matching EMERGENCY STOP device (rotary or pull release) see page 36/37
- ▶ **Warning:**  
Housing HBA - 095 561, HBA - 095 573, HBA - 095 572 and HBA - 095 574 only suitable for EMERGENCY STOP device with rotary release.
- ▶ Depending on version with two 2-stage pushbuttons or one 3-stage enabling switch.

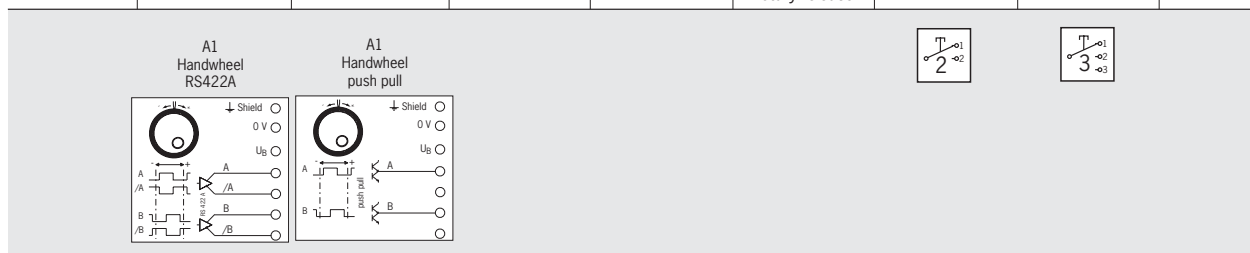


## Technical data

Parameter	Value	Unit
<b>Housing HBA</b>		
Material	Plastic	
Color	Gray RAL 7040	
Operating temperature	0 ... +50	°C
Storage temperature	-20 ... +50	°C
Degree of protection according to EN 60529 /NEMA	IP 65 / 250-12	
Weight	0.3	kg
<b>Pushbutton, 2-stage, e.g. for enabling function</b>		
Switching elements	2, 1 NO contact each	
Utilization category to IEC 60947-5-1	30 V AC / 0.4 A; 30 V DC / 0.1 A	
<b>Enabling switch ZXE, 3-stage</b>		
Switching elements	1, 2 NO contacts	
Utilization category to IEC 60947-5-1	DC-13, U <sub>e</sub> 24 V, I <sub>e</sub> 0.1 A	
<b>Handwheel RS422A (U<sub>B</sub> = 5 V DC)</b>		
Pulses / revolution	100	
Power supply	5 ± 5%	V DC
Output specifications	RS422A	
<b>Handwheel push-pull 5 V (U<sub>B</sub> = 5 V DC)</b>		
Pulses / revolution	100	
Power supply	5 ± 5%	V DC
Output circuit	5 V push-pull	
Output voltage / output current	HIGH, min. 4.0 V at 0 mA / 3.4 V at 5 mA / 3.0 V at 20 mA LOW, max. 1.3 V at 15 mA	
<b>Handwheel push-pull 5 V (U<sub>B</sub> = 10...30 V DC)</b>		
Pulses / revolution	25	
Power supply	10 ... 30	V DC
Output circuit	5 V push-pull	
Output voltage / output current	HIGH, min. 4.9 V at 0 mA / 3.9 V at 5 mA / 3.6 V at 20 mA LOW, max. 1.3 V at 15 mA	
<b>Handwheel push-pull 24 V (U<sub>B</sub> = 10...30 V DC)</b>		
Pulses / revolution	100	
Power supply	10 ... 30	V DC
Output circuit	Push-pull 24 V	
Output voltage / output current	HIGH, min. U <sub>B</sub> - 3 V at 20 mA LOW, max. 3 V at 20 mA	

## Ordering table / wiring diagram

Version/ item	Features							Order No.
	Handwheel				Hole for EMERGENCY STOP	2 push- buttons* 2-stage, 1 NO contact each S1, S2	1 enabling switch ZXE**, 3-stage 2 NO contacts S1	
	Output circuit		Power supply U <sub>B</sub>	Pulses per revolution				
RS422	Push-pull U <sub>A</sub>							
Housing HBA - 083 449	●		5 V DC	100	● for EMERGENCY STOP with pull release	●		<b>083 449</b>
Housing HBA - 095 561	●		5 V DC	100	● for EMERGENCY STOP with rotary release		●	<b>095 561</b>
Housing HBA - 083 499		● 5 V	10 ... 30 V DC	25	● for EMERGENCY STOP with pull release	●		<b>083 499</b>
Housing HBA - 095 573		● 5 V	10 ... 30 V DC	25	● for EMERGENCY STOP with rotary release		●	<b>095 573</b>
Housing HBA - 083 495		● U <sub>B</sub> - 3 V	10 ... 30 V DC	100	● for EMERGENCY STOP with pull release	●		<b>083 495</b>
Housing HBA - 095 572		● U <sub>B</sub> - 3 V	10 ... 30 V DC	100	● for EMERGENCY STOP with rotary release		●	<b>095 572</b>
Housing HBA - 086 762		● 5 V	5 V DC	100	● for EMERGENCY STOP with pull release	●		<b>086 762</b>
Housing HBA - 095 574		● 5 V	5 V DC	100	● for EMERGENCY STOP with rotary release		●	<b>095 574</b>

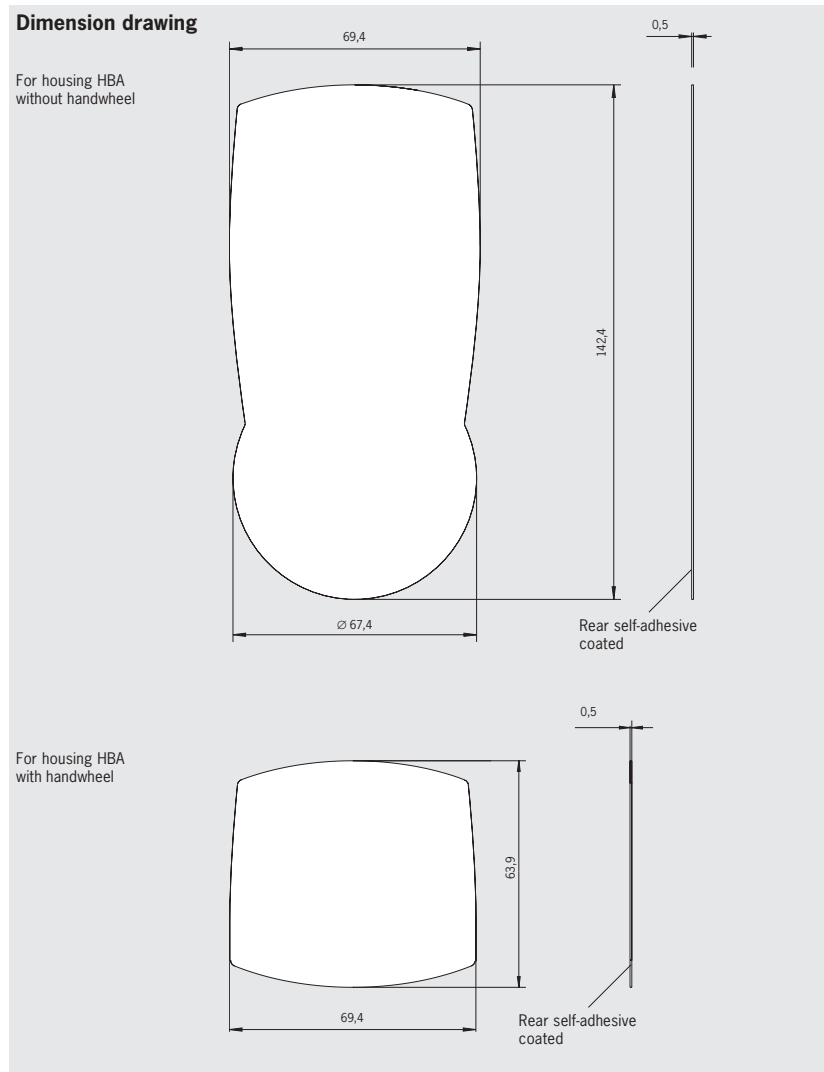


- \* Travel diagram  
see page 6
- \* Travel diagram  
see page 45

## Front plates for housing HBA with and without handwheel

### Notes

- Matches housing HBA (see page 26 and page 28)



### Technical data

	Material
Front plate	Electrically anodized aluminum, black or silver Self-adhesive coating on rear

### Ordering table

Item	Order No.
Front plate for housing HBA without handwheel, silver anodized	<b>084 395</b>
Front plate for housing HBA without handwheel, black anodized	<b>084 396</b>
Front plate for housing HBA with handwheel, silver anodized	<b>083 635</b>
Front plate for housing HBA with handwheel, black anodized	<b>083 636</b>

The kit is designed to match individual customer specifications.

The housings differ in the integrated safety element:

- ▶ Housing without holes and without safety-related components
- ▶ Housing with dual-channel enabling device on both sides and hole for EMERGENCY STOP
- ▶ Housing with 3-stage enabling switch (1 positively driven contact, 2 NO contacts) without EMERGENCY STOP
- ▶ Housing with 3-stage enabling switch (2 positively driven contacts, 2 NO contacts) with hole for EMERGENCY STOP

Various versions of front plate are available:

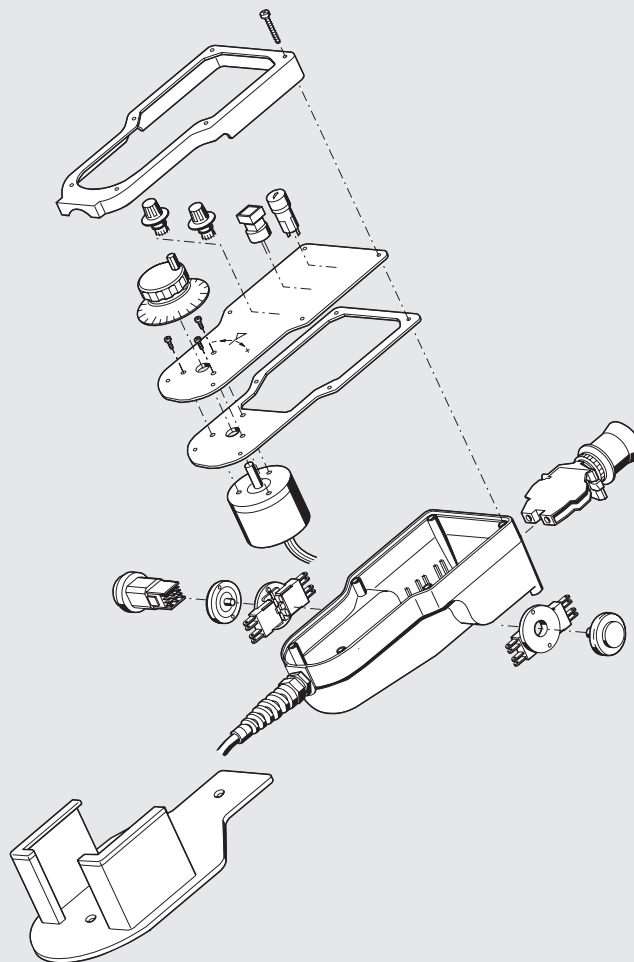
- ▶ Front plate for applications with handwheel
- ▶ Front plate for applications without handwheel

With the related seal, degree of protection IP 65 is achieved.

Customer-specific functionality can be created by using the components supplied as accessories (pushbuttons, selector switches, key-operated rotary switches) and/or other components.

For connection to the control system, cables with or without plug connectors and with different numbers of cores and the relevant flange sockets are also available as accessories.

## Kit for hand-held pendant stations HBL



## Housing HBL

- ▶ Rubber-coated mounting magnet on the rear of housing
- ▶ Hanging clip
- ▶ 6 screws for front plate fastening
- ▶ Cover frame for front plate
- ▶ Fixing points for fitting printed circuit board

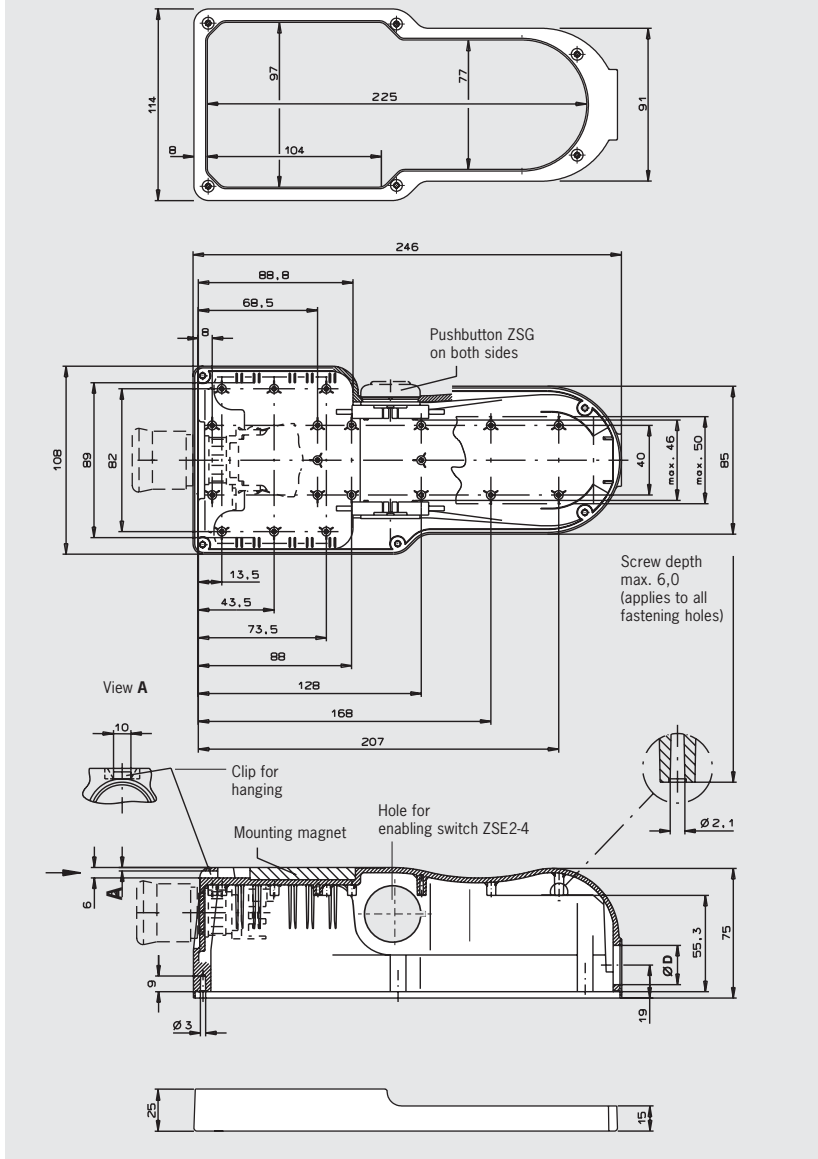
### Depending on version:

- ▶ Fastening nuts for cable gland Pg 11 or Pg 13.5
- ▶ Hole for EMERGENCY STOP device
- ▶ 2 pushbuttons ZSG 2-stage, 2 NO contacts each, e.g. for enabling function
- ▶ Hole on left for enabling switch ZSE

### Notes

- ▶ For EMERGENCY STOP devices see page 36/37 and 46
- ▶ For enabling switches ZSE see page 47
- ▶ For cable glands see page 43
- ▶ For assembly drawing see page 64
- ▶ Pg 11 for cable diameter 5 ... 10 mm
- ▶ Pg 13.5 for cable diameter 6 ... 12 mm

Dimension drawing



## Technical data

Parameter	Value	Unit
<b>Housing HBL</b>		
Material	Plastic	
Color	Blue-gray RAL 7031	
Ambient temperature	0 ... +55	°C
Degree of protection according to EN 60529 / NEMA	IP 65 / 250-12	
<b>Pushbutton ZSG, 2-stage, e.g. for enabling function</b>		
Switching elements	2, 2 NO contacts each	
Utilization category to IEC 947-5-1	AC-15 U <sub>e</sub> 24 V I <sub>e</sub> 4 A	
	DC-13 U <sub>e</sub> 24 V I <sub>e</sub> 3 A	

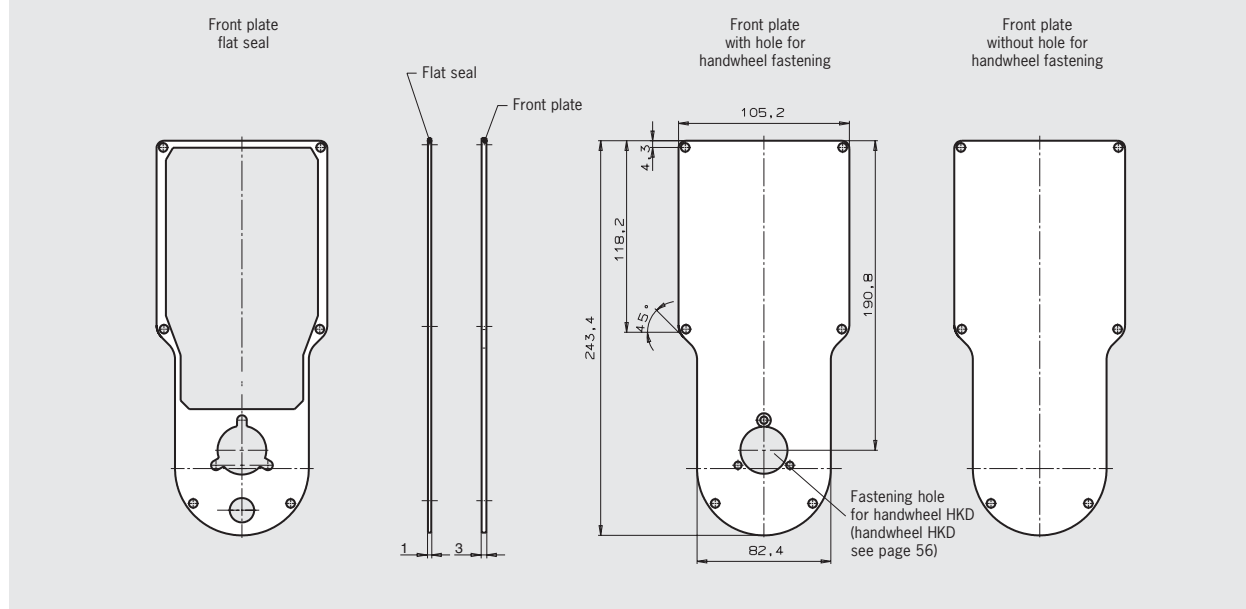
## Ordering table / wiring diagram

Version	Features					Order No.	
	Fastening nut for cable gland		Hole for EMERGENCY STOP *	Hole for enabling switch ZSE2-2 C1692 3-stage 2 NO + 1 NC → (enabling switch page 47)	Hole for enabling switch ZSE2-4 C1943 3-stage 2 NO + 2 NC → (enabling switch page 47)		2 enabling switches ZSG 2-stage 2 NO contacts each e.g. for enabling function
	Pg 11	Pg 13.5					
Housing HBL - 073 098	●					073 098	
Housing HBL - 072 630		●				072 630	
Housing HBL - 073 113	●		●			073 113	
Housing HBL - 072 631		●	●			072 631	
Housing HBL - 073 109	●			●		073 109	
Housing HBL - 072 632		●		●		072 632	
Housing HBL - 072 983	●		●		●	072 983	
Housing HBL - 083 484		●	●		●	083 484	

\* Blanking plug Ø 22 supplied for hole for EMERGENCY STOP device

## Front plate for housing HBL

### Dimension drawing



### Technical data

Material	
Front plate	Electrically anodized aluminum, black
Seal	NBR, self-adhesive on one side

### Ordering table

Item	Order No.
HBL front plate, with seal	073 138
HBL front plate, with hole for handwheel HKD and seal	073 139
Front seal for HBL front plate	072 641

## Overview of accessories for kits for hand-held pendant stations

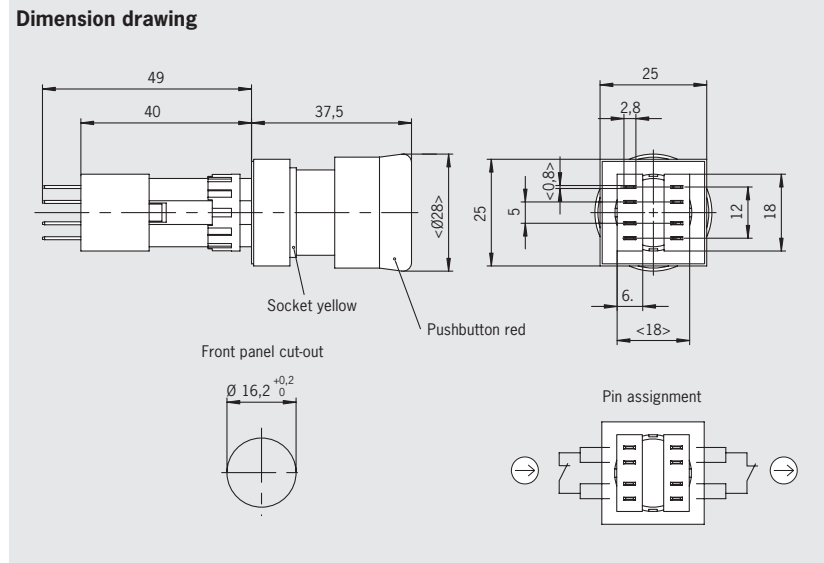
Accessories for kit	Accessories							Page
	EMERGENCY STOP device	Pushbutton	Key-operated switch	Selector switch	Enabling switch 3-stage	Plug connector	Connection cables	
Suitable for all designs		●						37
			●					38
				●				39
						●		41
Hand-held pendant stations HBA							●	42
	●							36
Hand-held pendant stations HBL						●		44
					●			45
Hand-held pendant stations HBL	●							46
					●			47

## EMERGENCY STOP devices according to EN ISO 13850

- ▶ With pull release
- ▶ EMERGENCY STOP device for housing HBA without enabling switch ZXE 3-stage

### Notes

- ▶ The EMERGENCY STOP device engages when actuated by pressing, unlocks when pulled, and is overload-proof
- ▶ Do not use for housing HBA with 3-stage enabling switch ZXE



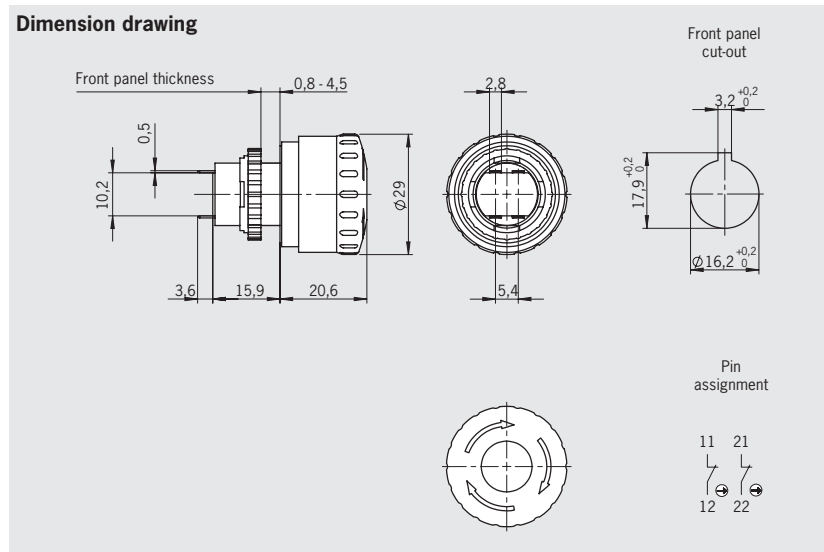
### Technical data

Parameter	Value	Unit
<b>Actuating element</b>		
Color of actuating button	Red	
Color of bottom shell	Yellow	
Switching elements	2, one positively driven contact each	
Degree of protection	IP 65	
Utilization category to IEC 947-5-1	DC-13 U <sub>e</sub> 24 V I <sub>e</sub> 3 A	

- ▶ With rotary release
- ▶ EMERGENCY STOP device for housing HBA
- ▶ Bottom shell yellow

### Notes

- ▶ The EMERGENCY STOP device engages when actuated by pressing, unlocks when rotated, and is overload-proof



### Technical data

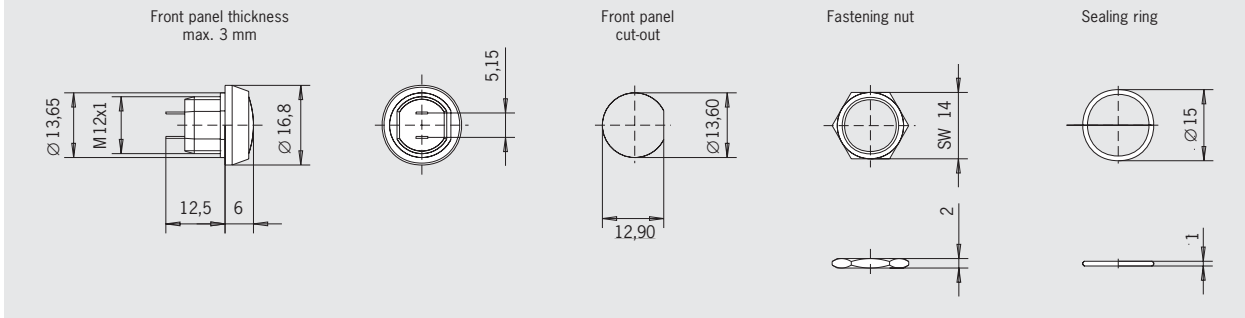
Parameter	Value	Unit
<b>Actuating element</b>		
Color of actuating button	Red	
Color of bottom shell	Black	
Switching elements	1, 2 positively driven contacts	
Degree of protection	IP 65	
Connection ratings	30 V DC / 3 A	

### Ordering table

Item	Order No.
EMERGENCY STOP device (pull release) with 2 switching elements, 1 positively driven contact each	<b>096 298</b>
EMERGENCY STOP device (rotary release), bottom shell yellow, 2 positively driven contacts	<b>106 435</b>
Blanking plug for fastening hole for EMERGENCY STOP device	<b>083 653</b>

## Pushbutton

### Dimension drawing



### Technical data

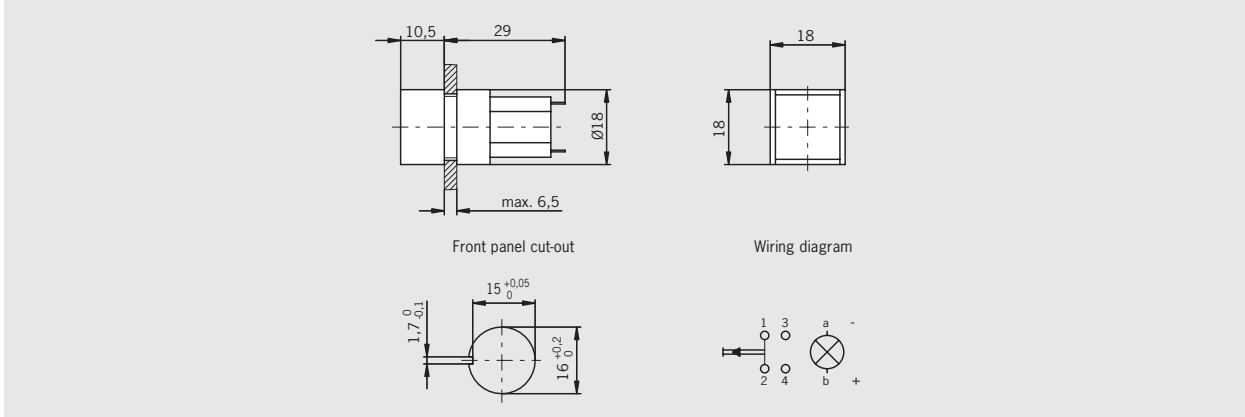
Parameter	Value	Unit
Ambient temperature	-25 ... +70	°C
Front degree of protection (integrated in front plate)	IP 67	
Switching principle	Button, snap-action switching element	
Switching elements	1 NO contact	
Switching voltage	30	V DC
Switching current max.	0,1	A
Connection type	Soldered connection	

### Ordering table

Item	Order No.
Pushbutton, black button	083 640
Pushbutton, red button	086 753
Pushbutton, green button	086 754
Pushbutton, blue button	086 757
Pushbutton, white button	086 755
Pushbutton, yellow button	086 756

## Illuminated pushbutton (can be individually labeled)

### Dimension drawing



### Technical data

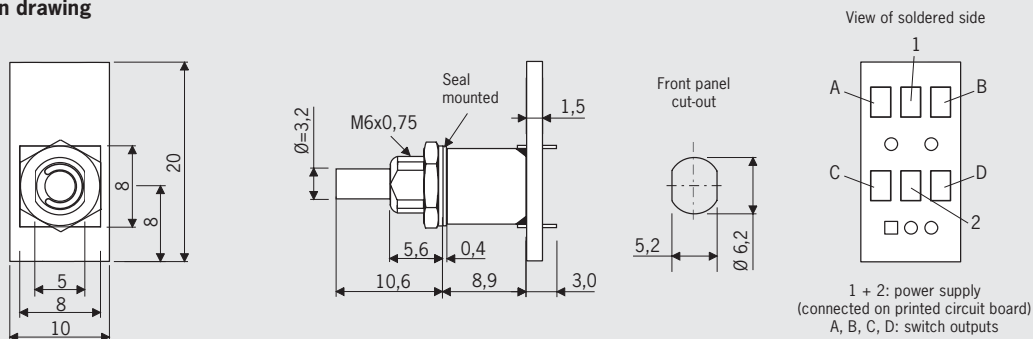
Parameter	Value	Unit
Ambient temperature	-25 ... +55	°C
Front degree of protection (integrated in front plate)	IP 65	
Switching principle	Button, snap-action switching element	
Switching elements	1 NC contact, 1 NO contact	
Switching current max.	100	mA
Switching voltage max.	30	V AC/DC
LED	24 V / 14 mA	
Connection type	Soldered connection	

### Ordering table

Item	Order No.
Illuminated pushbutton, can be individually labeled	074 991

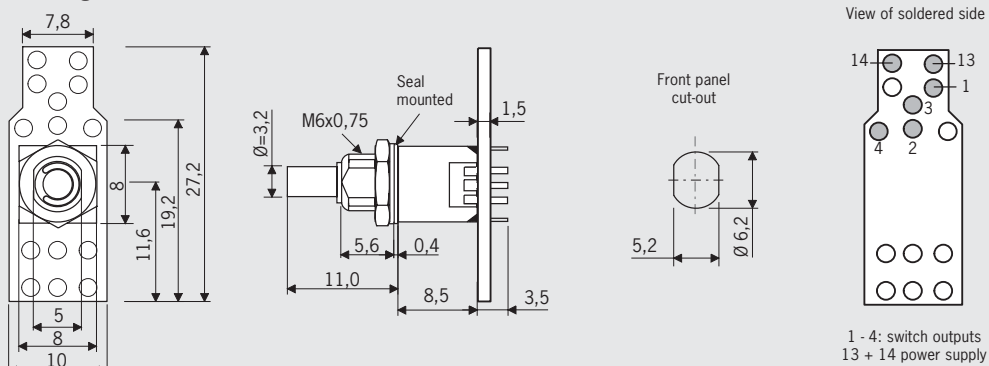
## Gray code selector switch

### Dimension drawing



## Selector switch 1 of X

### Dimension drawing

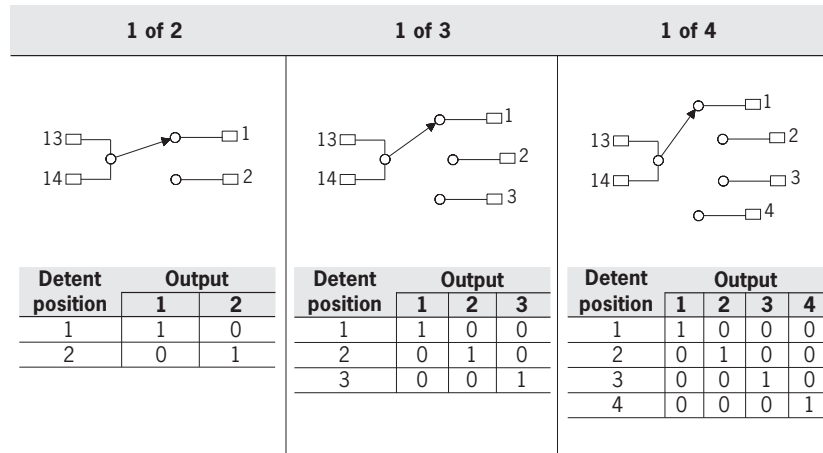


### Code table, switch with Gray code

Detent position	Output			
	D	C	B	A
1	0	0	0	0
2	0	0	0	1
3	0	0	1	1
4	0	0	1	0
5	0	1	1	0
6	0	1	1	1
7	0	1	0	1
8	0	1	0	0
9	1	1	0	0
10	1	1	0	1
11	1	1	1	1
12	1	1	1	0
13	1	0	1	0
14	1	0	1	1
15	1	0	0	1
16	1	0	0	0

Connections A - D: switch outputs  
Connections 1 - 3: power supply

### Circuit diagrams switch 1 of X

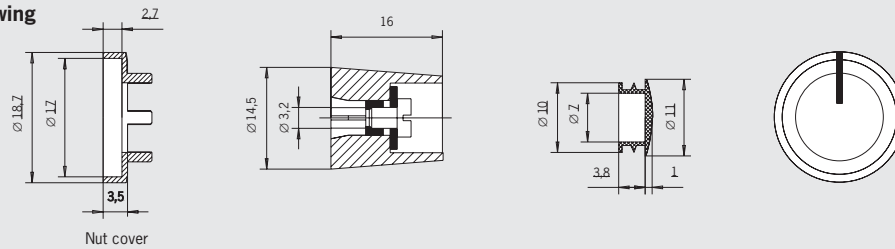


### Technical data

Parameter	Value	Unit
Front degree of protection (integrated in front plate)	IP 67	
Single-hole bushing mounting	M6 x 0.75	
Detent positions	2, 3, 4, 5, 6, 7, 8, 12 or 16 depending on item	
Detent angle	Gray code 22.5° / 1 of X: 30°	
Output code	1 of 2, 1 of 3, 1 of 4 or Gray code depending on item	
Breaking capacity max.	0.2	VA
Switching voltage max.	25	V AC/DC
Connection type	Soldered connection on printed circuit board	
Maximum soldering time.	≤ 5 (at t ≤ 260 °C)	s

## Rotary knob

Dimension drawing



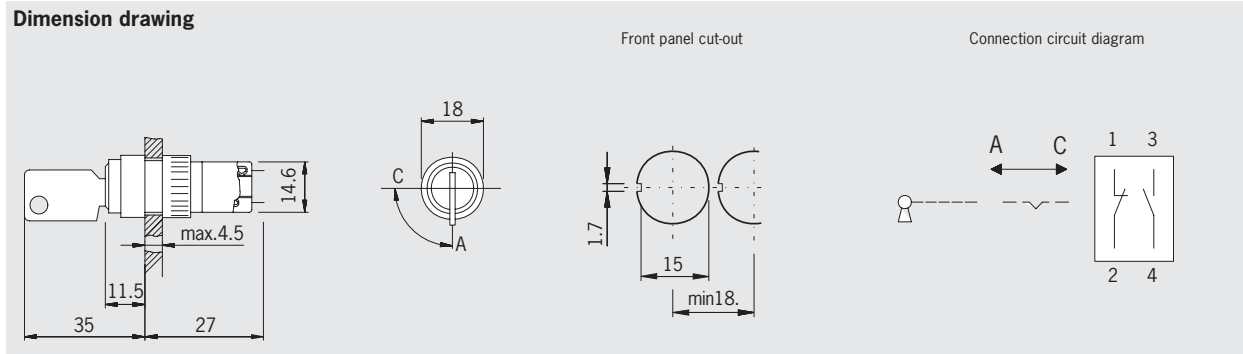
### Ordering table

Item	Detent angle	Order No.
Selector switch, 2 detent positions, 1 of 2, break-before-make <sup>1)</sup>	30°	<b>097 026</b>
Selector switch, 3 detent positions, 1 of 3, break-before-make <sup>1)</sup>	30°	<b>097 027</b>
Selector switch, 4 detent positions, 1 of 4, break-before-make <sup>1)</sup>	30°	<b>097 028</b>
Selector switch, 5 detent positions, Gray code, make-before-break <sup>2)</sup>	22.5°	<b>097 029</b>
Selector switch, 6 detent positions, Gray code, make-before-break <sup>2)</sup>	22.5°	<b>097 030</b>
Selector switch, 7 detent positions, Gray code, make-before-break <sup>2)</sup>	22.5°	<b>097 031</b>
Selector switch, 8 detent positions, Gray code, make-before-break <sup>2)</sup>	22.5°	<b>097 032</b>
Selector switch, 12 detent positions, Gray code, make-before-break <sup>2)</sup>	22.5°	<b>097 033</b>
Selector switch, 16 detent positions, Gray code, make-before-break <sup>2)</sup>	22.5°	<b>097 034</b>
Rotary knob, matt black with a marking, collet fastening for shaft 3.2 mm	-	<b>097 141</b>

1) Break-before-make: all outputs are open between the switch positions.

2) Make-before-break: the related outputs are connected between the switch positions.

## Key-operated switch



### Technical data

Parameter	Value	Unit
Ambient temperature	-25 ... +55	°C
Front degree of protection (integrated in front plate) / NEMA	IP 65 / 250-12	
Switching principle	Snap-action switching element	
Switching element	1 NC contact, 1 NO contact	
Switching voltage max.	30	V AC/DC
Switching current max.	250	mA
Connection type	Soldered connection	

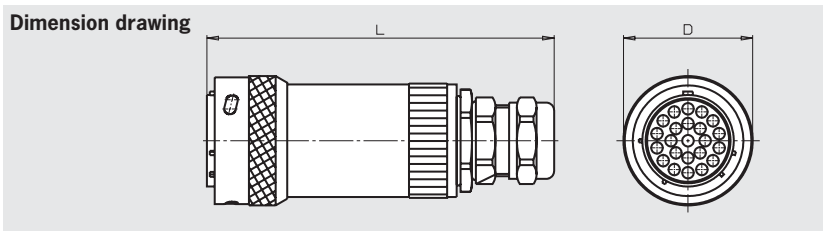
### Ordering table

Item	Order No.
Key-operated switch	083 639

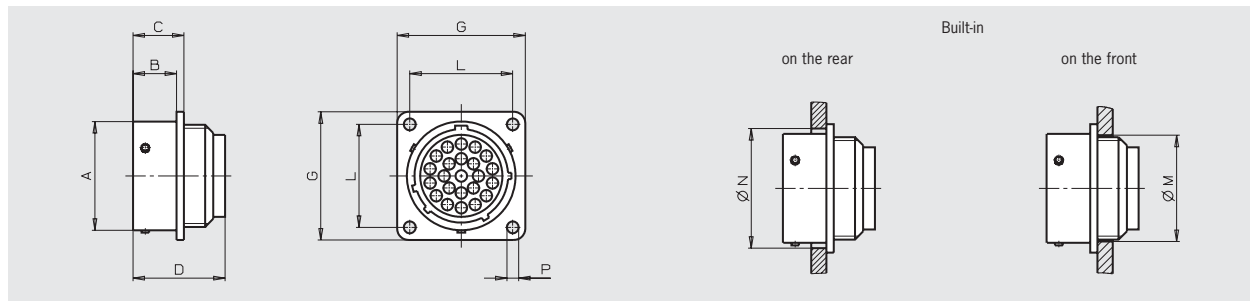
## Plug connectors

Number of pins	D	L	Cable-Ø
35	40.2	103	8.0 - 12.0
28	37.2	97	8.0 - 12.0
23	33.9	91	6.0 - 10.0
12	27.5	81	5.5 - 9.5

Dimension drawing



## Flange sockets

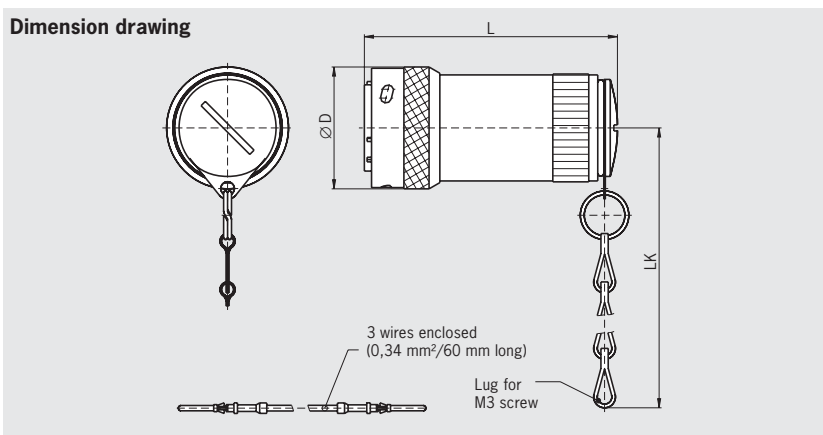


Number of pins	A	B <sub>max</sub>	C <sub>max</sub>	D <sub>max</sub>	G <sub>max</sub>	L	M	N	P
35	34.9	14.6	17.3	25.7	39.9	31.8	34.1	37.7	3.1
28	31.7	14.6	17.3	25.7	36.8	29.4	30.9	34.5	3.1
23	28.5	11.4	13.3	24.1	33.6	27	27.8	31.3	3.1
12	22.2	11.4	13.3	24.1	28.8	22.9	21.4	25	3.1

## Short-circuit plugs

Number of pins	D	L	LK
35	40.2	84	255
28	37.2	78	255
23	33.9	72	252
12	27.5	59.4	251

Dimension drawing



## Technical data

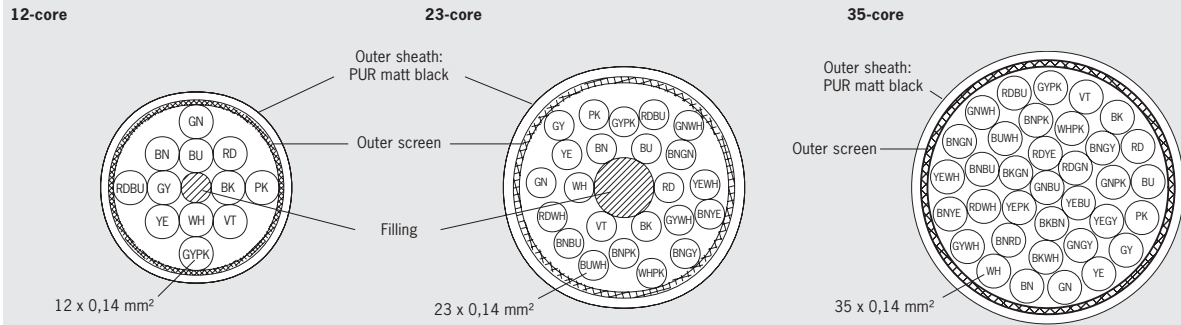
Parameter	Value	Unit
<b>Connecting plug/Flange socket</b>		
Housing material	Metal	
Number of pins	12 / 23 / 28 / 35	
Degree of protection according to EN 60529 (inserted) / NEMA	IP 65 / 250-12	
Contact material	Gold-plated	

## Ordering table

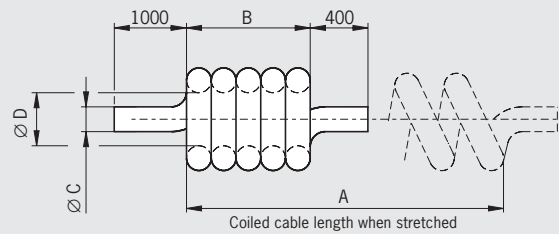
Item	Order No.
Plug connector, 35-pin with pin contacts	<b>074 395</b>
Plug connector, 28-pin with pin contacts	<b>074 394</b>
Plug connector, 23-pin with pin contacts	<b>074 393</b>
Plug connector, 12-pin with pin contacts	<b>086 748</b>
Flange socket, 35-pin with socket contacts	<b>074 386</b>
Flange socket, 28-pin with socket contacts	<b>074 385</b>
Flange socket, 23-pin with socket contacts	<b>074 384</b>
Flange socket, 12-pin with socket contacts	<b>086 749</b>
Short-circuit plug with chain, 35-pin	<b>083 459</b>
Short-circuit plug with chain, 28-pin	<b>083 458</b>
Short-circuit plug with chain, 23-pin	<b>083 457</b>
Short-circuit plug with chain, 12-pin	<b>087 802</b>

## Cable, coiled and straight

### View of cable cross-section



### Dimensions of coiled design



### Technical data

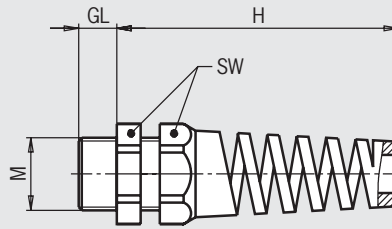
Parameter	Value	Unit	
Cable resistance	≤ 145	Ω/km	
Test voltage core / core	1.0	kV <sub>eff</sub>	
Test voltage core / screen	1.0	kV <sub>eff</sub>	
Insulation resistance	12-core and 23-core 35-core	≥ 200 ≥ 20	MΩ
Operating temperature	-10 ... +70	°C	
Bending radius	once several times	≥ 10 x cable diameter ≥ 15 x cable diameter	

### Ordering table

Item	Cable length [mm]	A [mm]	B [mm]	Ø C [mm]	Ø D [mm]	Order No.
Cable, 12-core, coiled	3900	Approx. 2500	550 ± 20	6 ± 0.3	8 ± 2	086 721
Cable, 12-core, coiled	5400	Approx. 4000	880 ± 20	6 ± 0.3	8 ± 2	086 722
Cable, 12-core, straight	3500	-	-	-	-	087 379
Cable, 12-core, straight	5000	-	-	-	-	087 380
Cable, 12-core, straight	10000	-	-	-	-	087 381
Cable, 23-core, coiled	3900	Approx. 2500	550 ± 20	7.5 ± 0.3	10 ± 2	087 408
Cable, 23-core, coiled	5400	Approx. 4000	880 ± 20	7.5 ± 0.3	10 ± 2	087 409
Cable, 23-core, straight	3500	-	-	-	-	087 382
Cable, 23-core, straight	5000	-	-	-	-	087 383
Cable, 23-core, straight	10000	-	-	-	-	087 384
Cable, 35-core, coiled	3900	Approx. 2500	550 ± 20	8 ± 0.5	10 ± 2	097 190
Cable, 35-core, coiled	5400	Approx. 4000	880 ± 20	8 ± 0.5	10 ± 2	097 191
Cable, 35-core, straight	3500	-	-	-	-	097 189
Cable, 35-core, straight	5000	-	-	-	-	097 188
Cable, 35-core, straight	10000	-	-	-	-	097 187

## Cable gland with anti-kink spiral

Dimension drawing



Thread M	Use	Cable diameter	SW	GL	H
M16x1.5	Kit HBA	5 - 10	22	8	71
Pg 11	Kit HBL	5 - 10	22	11	71
Pg 13.5	Kit HBL	6 - 12	24	12.5	81

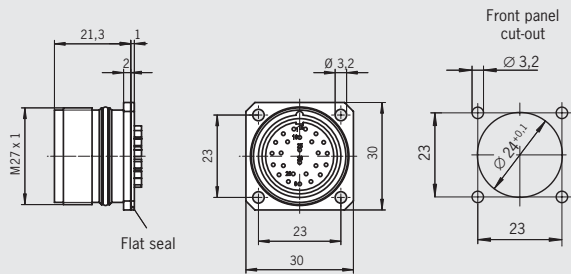
### Ordering table

Item	Order No.
Cable gland M16x1.5 with anti-kink spiral, color black	<b>083 641</b>
Cable gland Pg 11, with anti-kink spiral and fastening nut, color black	<b>073 982</b>
Cable gland Pg 13.5, with anti-kink spiral and fastening nut, color black	<b>073 983</b>

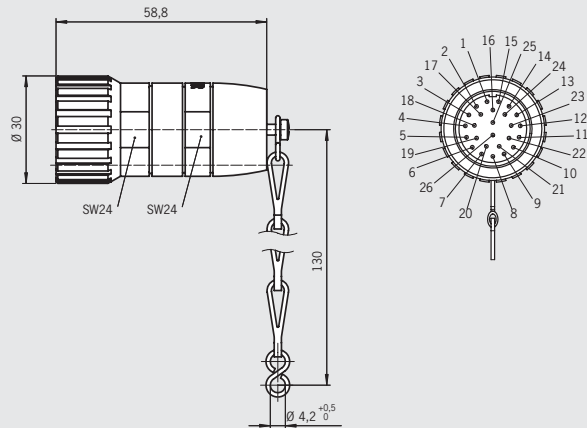
## Connection kit

for design HBA - 102 434 and HBA - 103 037, comprising flange socket 26-pin and short-circuit plug

### Flange socket 26-pin



### Short-circuit plug 26-pin for flange socket 26-pin (Pin 1 bridged with pin 4 and pin 2 with pin 3)



### Technical data

Parameter	Value
<b>Flange socket</b>	
Housing material	Metal
Number of pins	26
Degree of protection according to EN 60529 (inserted)	IP 67
Contact material	Copper alloy
<b>Short-circuit plug</b>	
Housing material	Metal
Number of pins	26
Degree of protection according to EN 60529 (inserted)	IP 67
Contact material	Copper alloy

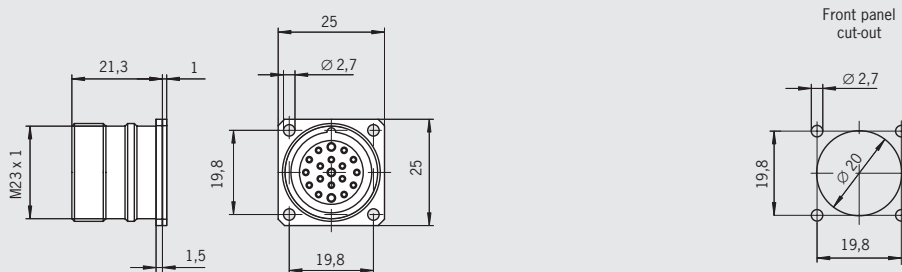
### Ordering table

Item	Order No.
Flange socket and short-circuit plug	<b>103 042</b>

## Flange plug

for design HBAS - 072 949 and HBAS - 094 594

### Flange plug, 19-pin with socket contacts



### Technical data

Parameter	Value
Housing material	Metal
Number of pins	19
Degree of protection according to EN 60529 (inserted)	IP 65
Contact material	Copper alloy
Connection type	Soldered connection

### Ordering table

Item	Order No.
Flange plug, 19-pin with socket contacts	<b>092 374</b>

## Enabling switch ZXE-091336, 3-stage, 2 NO contacts

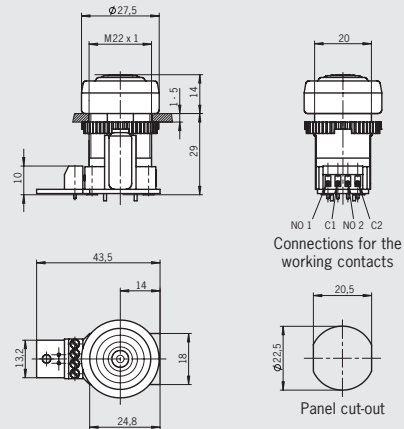
### Notes

- ▶ Enabling switch ZXE-091336 for use in housing HBA - 095 562 (see page 26)

### Switching elements

- ▶ **2202** 2 NO contacts

### Dimension drawing



## Enabling switch ZXE-104833 with a click, 3-stage, 2 NO contacts

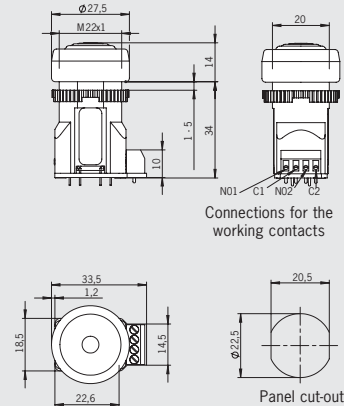
### Notes

- ▶ Enabling switch ZXE-104833 for use in housing HBA - 095 562 (see page 34)
- ▶ A clicking sounds when changing from stage 1 to stage 2 and when the button is released back from stage 2 to stage 1.

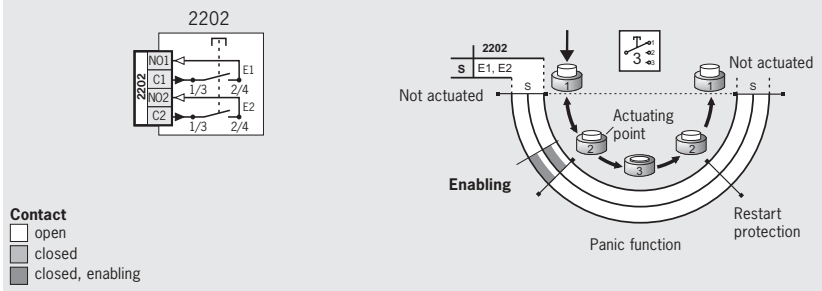
### Switching elements

- ▶ **2202** 2 NO contacts

### Dimension drawing



### Wiring diagram/function sequence ZXE



### Technical data

Parameter	Value	Unit
Housing material	Polyamide, black	
Material protective cap	CR (neoprene), black	
Degree of protection to IEC 529	IP 65 on front	
Ambient temperature	- 5 ... + 60	°C
Switching principle	Slow-action contact element	
Utilization category to IEC 947-5-1	DC-13 $U_e$ 24 V $I_e$ 0.1 A	
Weight	ca. 0.03	kg

### Ordering table

Item	Feature	Contact elements	Switch type	Order No.
ZXE-091336	-	2 NO contacts	Dual-channel	<b>091 336</b>
ZXE-104833	Clicking noise with actuation	2 NO contacts	Dual-channel	<b>104 833</b>

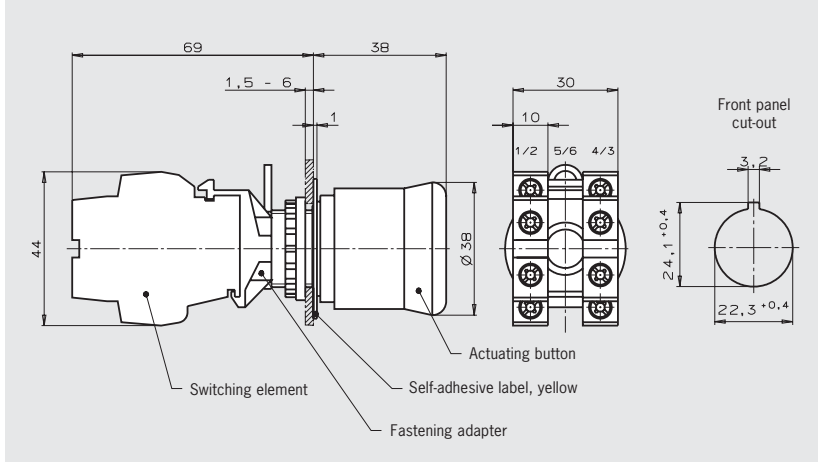
## EMERGENCY STOP device, 22 mm with pull release according to EN ISO 13850

### Notes

- ▶ The EMERGENCY STOP device engages when actuated by pressing, unlocks when pulled, and is overload-proof
- ▶ Use only for following housings:  
HBL - 072 631

HBL - 072 983  
HBL - 073 113  
HBL - 083 484

### Dimension drawing



### Technical data

Parameter	Value	Unit
Color of actuating button	Red	
Color self-adhesive label	Yellow	
Switching element	2 NC contacts	
Utilization category to IEC 947-5-1	DC-13 U <sub>e</sub> 24 V I <sub>e</sub> 2.75 A	

### Ordering table

Item	Order No.
EMERGENCY STOP device, complete with switching elements (2 x NC contacts), 1 pull release	<b>073 985</b>
Blanking plug for fastening hole for EMERGENCY STOP device	<b>059 622</b>

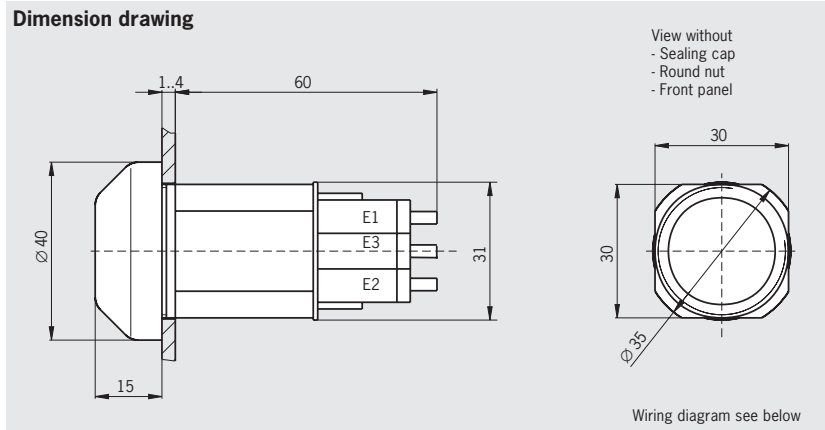
## Enabling switch ZSE2-2, 3-stage, 1 positively driven contact

### Notes

- ▶ Enabling switch ZSE2-2 C1692 for use in housing HBL - 073 109 and HBL - 072 632 (see page 32)

### Switching elements

- ▶ **210** 2 NO contacts + 1 NC contact ⊖



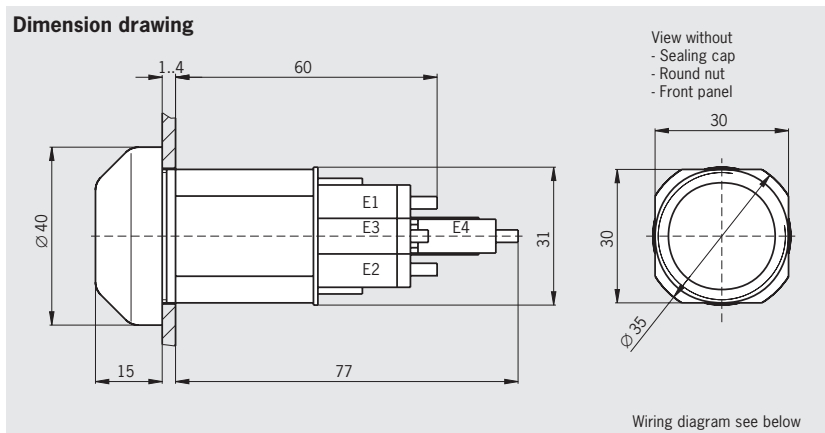
## Enabling switch ZSE2-4, 3-stage, 2 positively driven contacts

### Notes

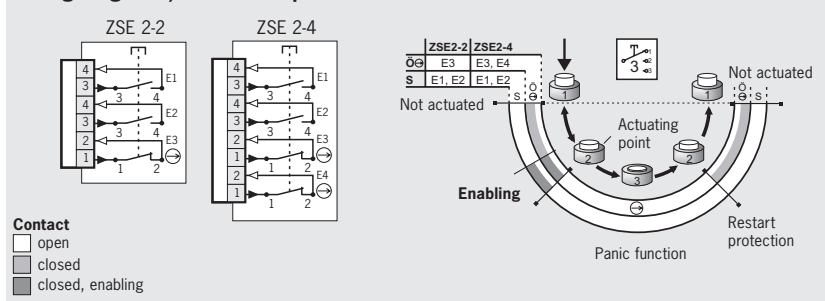
- ▶ Enabling switch ZSE2-4 C1943 for use in housing HBL - 072 983 and HBL - 083 484 (see page 32)

### Switching elements

- ▶ **220** 2 NO contacts + 2 NC contacts ⊖



### Wiring diagrams/function sequence ZSE 2-2 and ZSE 2-4



### Technical data

Parameter	Value	Unit
Housing material	Plastic	
Fastening hole	∅ 30.5 <sup>+0.5</sup>	mm
Degree of protection according to IEC 529	IP65 on front	
Ambient temperature	- 5 ... + 60	°C
Switching principle	Slow-action contact element	
Utilization category to IEC 947-5-1	AC-15 U <sub>e</sub> 24 V I <sub>e</sub> 4 A DC-13 U <sub>e</sub> 24 V I <sub>e</sub> 3 A	
Weight	Approx. 0.1	kg

### Ordering table

Item	Contact elements	Switch type	Order No.
ZSE2-2 C 1692	2 NO contacts + 1 positively driven contact	Single-channel	<b>070 752</b>
ZSE2-4 C 1943	2 NO contacts + 2 positively driven contacts	Dual-channel	<b>083 477</b>

## Holder HBA

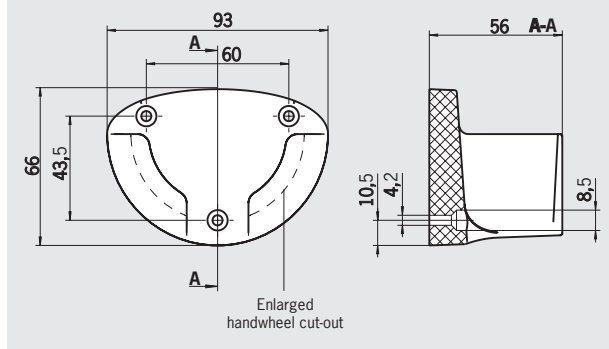
### Technical data

Parameter	Value	Unit
Housing material	Plastic	
Fixing system	Screws	
Ambient temperature	-5 to +60	°C
Weight	Approx. 0.1	kg

### Ordering table

Item	Order No.
Holder HBA	<b>072 828</b>
Holder HBA gray	<b>072 828</b>
Holder HBA black	<b>100 221</b>
Holder HBA gray, enlarged handwheel cut-out	<b>072 935</b>
Holder HBA black, enlarged handwheel cut-out	<b>109 979</b>

### Dimension drawing



## Holder HBL

### Technical data

Parameter	Value	Unit
Housing material	Plastic	
Fixing system	Screws	
Ambient temperature	-5 to +60	°C
Weight	Approx. 0.1	kg

### Ordering table

Designation	Order No.
Holder HBL	<b>084 397</b>

### Dimension drawing

