

Hand-Held Pendant Stations/ Handwheels



More than safety.



EUCHNER

More than safety.



Emil Euchner, the company's founder and inventor of the multiple limit switch, circa 1928.



Around the world – the Swabian specialists in motion sequence control for mechanical and systems engineering.

EUCHNER's history began in 1940 with the establishment of an engineering office by Emil Euchner. Since that time, EUCHNER has been involved in the design and development of switchgear for controlling a wide variety of motion sequences in mechanical and systems engineering. In 1953, Emil Euchner founded EUCHNER + Co., a milestone in the company's history. In 1952, he developed the first multiple limit switch – to this day a symbol of the enterprising spirit of this family-owned company.

Automation – Safety – ManMachine

Today, our products range from electromechanical and electronic components to complex system solutions. With this wide range of products we can provide the necessary technologies to offer the right solution for special requirements – regardless of whether these relate to reliable and precise positioning or to components and systems for safety engineering in the automation sector.

EUCHNER products are sold through a world-wide sales network of competent partners. With our closeness to the customer and the guarantee of reliable solutions throughout the globe, we enjoy the confidence of customers all over the world.

Quality, reliability, precision

Quality, reliability and precision are the hallmarks of our corporate philosophy. They represent concepts and values to which we feel totally committed.

At EUCHNER, quality means that all our employees take personal responsibility for the company as a whole and, in particular, for their own field of work. This individual commitment to perfection results in products which are ideally tailored to the customers' needs and the requirements of the market. After all: our customers and their needs are the focus of all our efforts. Through efficient and effective use of resources, the promotion of personal initiative and courage in finding unusual solutions to the benefit of our customers, we ensure a high level of customer satisfaction. We familiarize ourselves with their needs, requirements and products and we learn from the experiences of our customers' own customers.

EUCHNER – More than safety.



Quality – made by EUCHNER

Hand-Held Pendant Stations/Handwheels














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About this catalog

The *Hand-held Pendant Stations/ Handwheels* catalog provides you with an overview of our HBA, HBE 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.

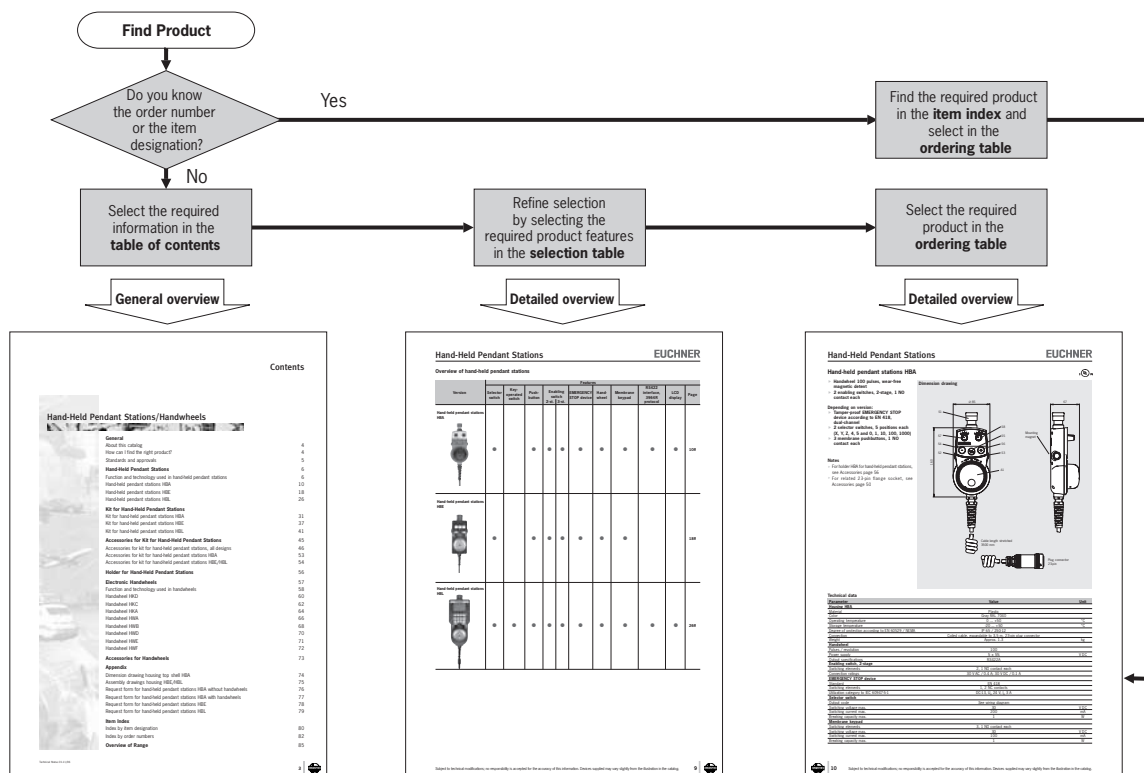
You will find the following series and accessories in this catalog:

Hand-Held Pendant Stations / Handwheels														
Hand-Held Pendant Stations						Handwheels						Accessories		
Complete Devices			Kit	Accessories	Holder	Handwheels with Magnetic Detent Mechanism			Handwheels with Mechanical Detent Mechanism					
HBA	HBE	HBL				HKD	HKC	HKA	HWA	HWB	HWD	HWE	HWF	
														
see page 10	see page 18	see page 26	see page 31	see page 45	see page 56	see page 60	see page 62	see page 64	see page 66	see page 68	see page 70	see page 71	see page 72	see page 73

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 80 or page 82).
- 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 89/336/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.

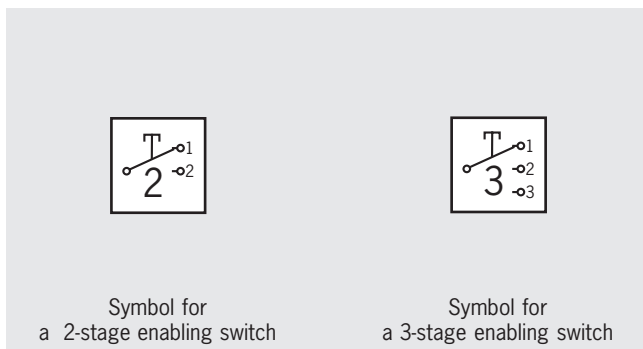
The operator must also be able to stop the machine movement using the enabling device. This task is performed by the enabling switch. Every person who is in the hazardous area must carry an enabling device so that suitable action can be taken in case of danger.

Two-stage or three-stage enabling switch?

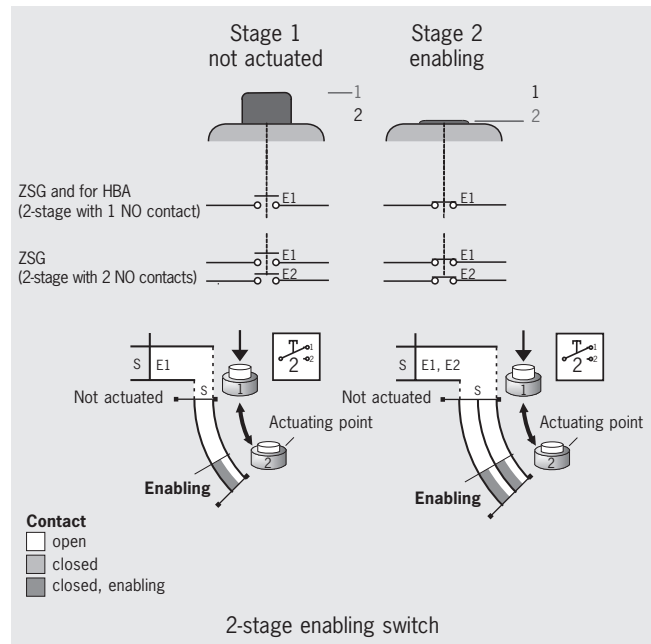
The operator can only start a machine movement if he/she actuates the enabling switch and keeps the switch in the actuated position. The movement is stopped again when the switch is released. This two-stage function (OFF-ON) is provided by all enabling switches. However, experience shows that the operator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

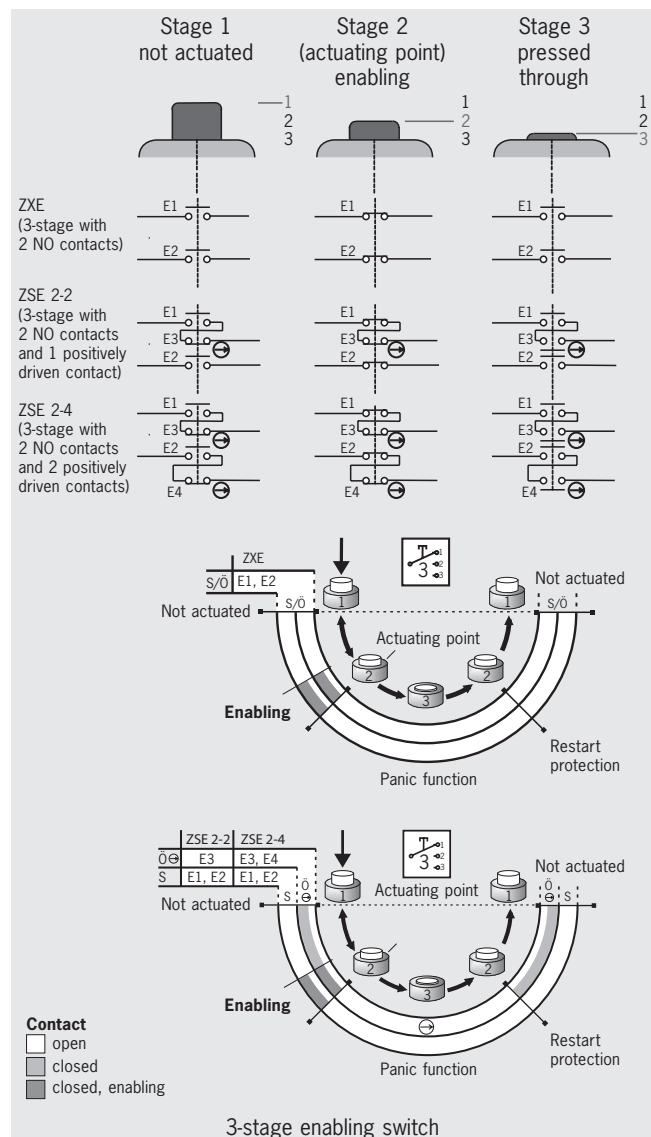
If a 2-stage enabling switch is used, it must also be ensured that, in an emergency, the operator is in a position to activate an emergency stop device in close proximity (VDI 2853). To identify the type of enabling switch in the catalog, the following symbols are used:



Function sequence for two-stage enabling switch



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 and 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 also the safe positively driven contacts (NC \ominus) are opened.

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 positively driven 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, HBE 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 switch		EMERGENCY STOP device	Hand-wheel	Membrane keypad	RS422 interface, 3964R protocol	LCD display	Page
				2-st.	3-st.						
Hand-held pendant stations HBA 	●		●	●	●	●	●	●	●	●	10ff
Hand-held pendant stations HBE 	●		●	●	●	●	●	●			18ff
Hand-held pendant stations HBL 	●	●	●	●	●	●	●	●	●	●	26ff

Hand-held pendant stations HBA



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

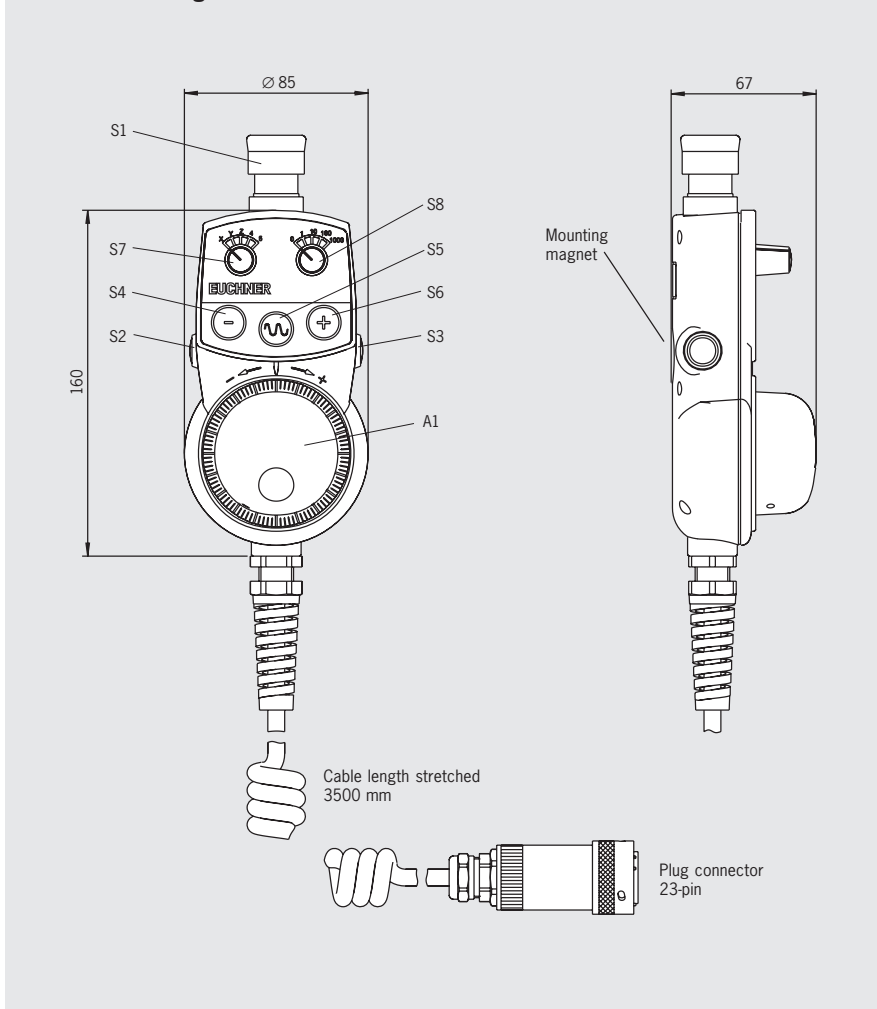
Depending on version:

- ▶ Tamper-proof EMERGENCY STOP device according to EN 418, 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 56
- ▶ For related 23-pin flange socket, see Accessories page 50





Dimension drawing



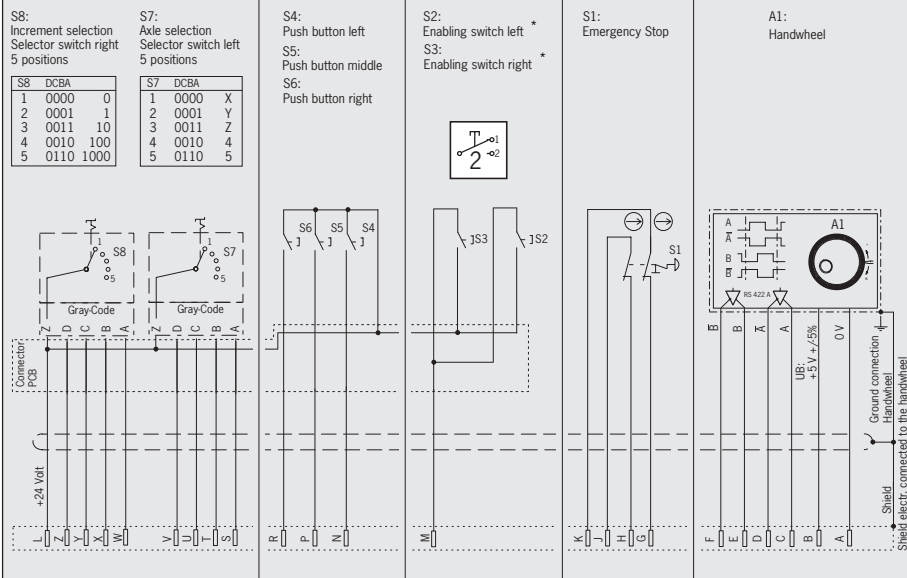
Technical data

Parameter	Value	Unit
Housing HBA		
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
Handwheel		
Pulses / revolution	100	
Power supply	5 ± 5%	V DC
Output specifications	RS422A	
Enabling switch, 2-stage		
Switching elements	2, 1 NO contact each	
Connection ratings	30 V AC / 0.4 A; 30 V DC / 0.1 A	
EMERGENCY STOP device		
Standard	EN 418	
Switching elements	1, 2 NC contacts	
Utilization category to IEC 60947-5-1	DC-13, U _e 24 V, I _e 3 A	
Selector switch		
Output code	See wiring diagram	
Switching voltage max.	30	V DC
Switching current max.	200	mA
Breaking capacity max.	1	W
Membrane keypad		
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 enabling switches 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



Hand-held pendant stations HBA



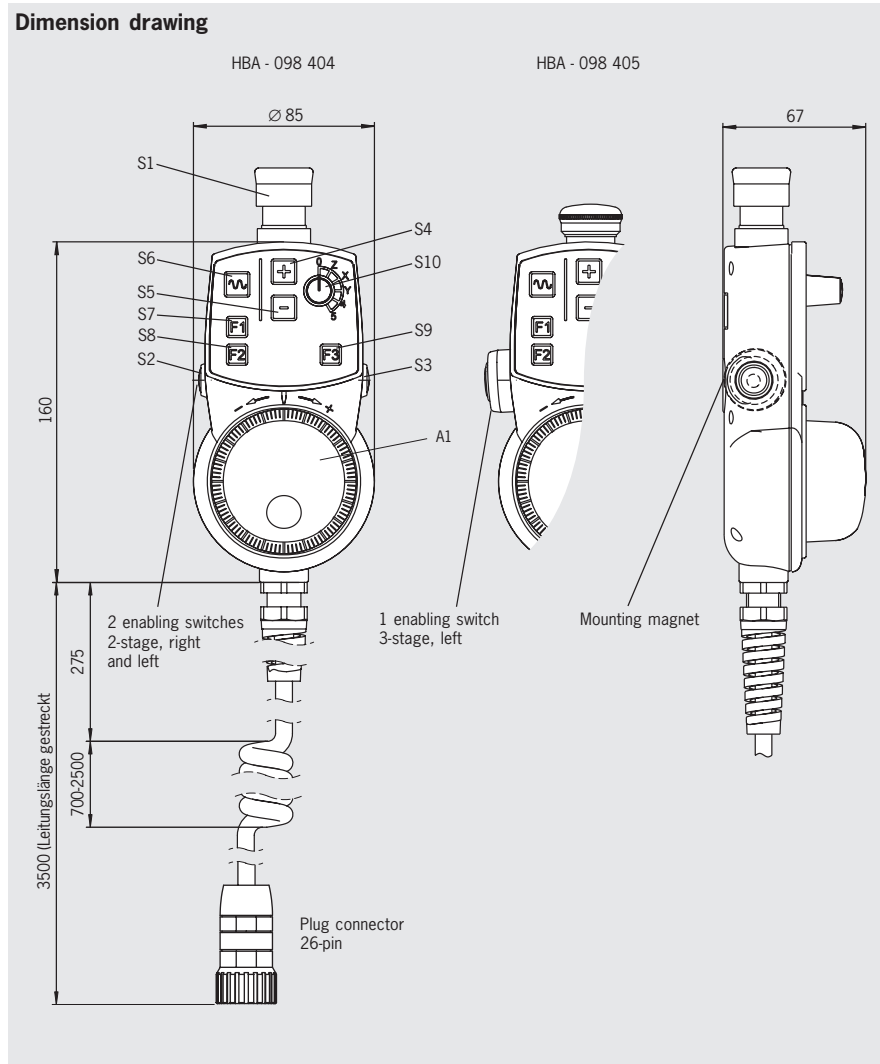
- ▶ Handwheel 100 pulses, wear-free magnetic detent
- ▶ Tamper-proof EMERGENCY STOP device according to EN 418, dual-channel
- ▶ 1 selector switch, 6 positions (O, Z, X, Y, 4, 5)
- ▶ 6 membrane pushbuttons, 1 NO contact each

Depending on version:

- ▶ 2 enabling switches, 2-stage, 1 NO contact each
- ▶ 1 enabling switch, 3-stage, 2 NO contacts

Notes



- ▶ For holder HBA for hand-held pendant stations, see Accessories page 56
- ▶ For related connection kit comprising 26-pin flange socket and short-circuit plug, see Accessories page 53
- ▶ Function compatible with Siemens MINI BHG



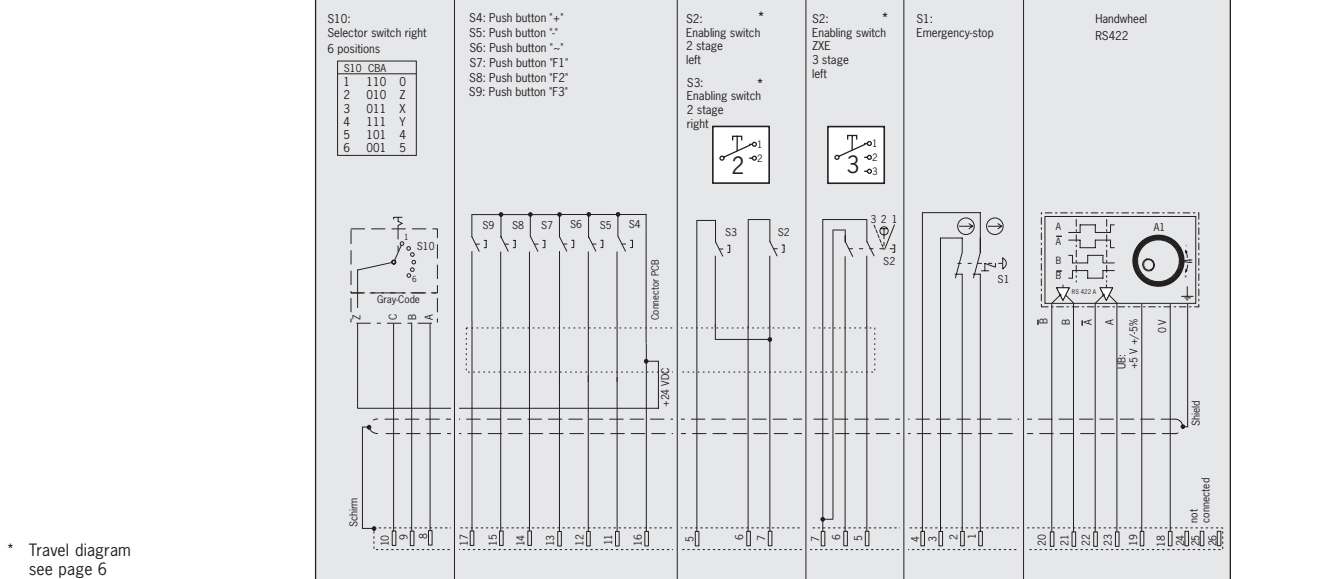
Technical data

Parameter	Value	Unit
Housing HBA		
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, 24-pin plug connector	
Weight	Approx. 1.3	kg
Handwheel		
Pulses / revolution	100	
Power supply	5 ± 5%	V DC
Output specifications	RS422A	
EMERGENCY STOP device		
Standard	EN 418	
Switching elements	1, 2 NC contacts	
Utilization category to IEC 60947-5-1	DC-13, U _e 24 V, I _e 3 A	
Selector switch		
Output code	See wiring diagram	
Switching voltage max.	25	V DC
Switching current max.	50	mA
Breaking capacity max.	0.4	W
Membrane keypad		
Switching elements	6, 1 NO contact each	
Switching voltage max.	30	V DC
Switching current max.	100	mA
Breaking capacity max.	1	W
Enabling switch, 2-stage		
Switching elements	2, 1 NO contact each	
Connection ratings	30 V AC / 0.4 A; 30 V DC / 0.1 A	
Enabling switch ZXE, 3-stage		
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	Features						Order No.
	1 selector switch 6 positions	6 membrane pushbuttons 1 NO contact each	2 enabling switches 2-stage S2, S3	1 enabling switch ZXE 3-stage S2	EMERGENCY STOP device S1	Handwheel 100 pulses A1	
	S10	S4, S5, S6, S7, S8, S9			S1	A1	
HBA - 098 404 	●	●	●		●	●	098 404
HBA - 098 405 	●	●		●	●	●	098 405

Wiring diagram

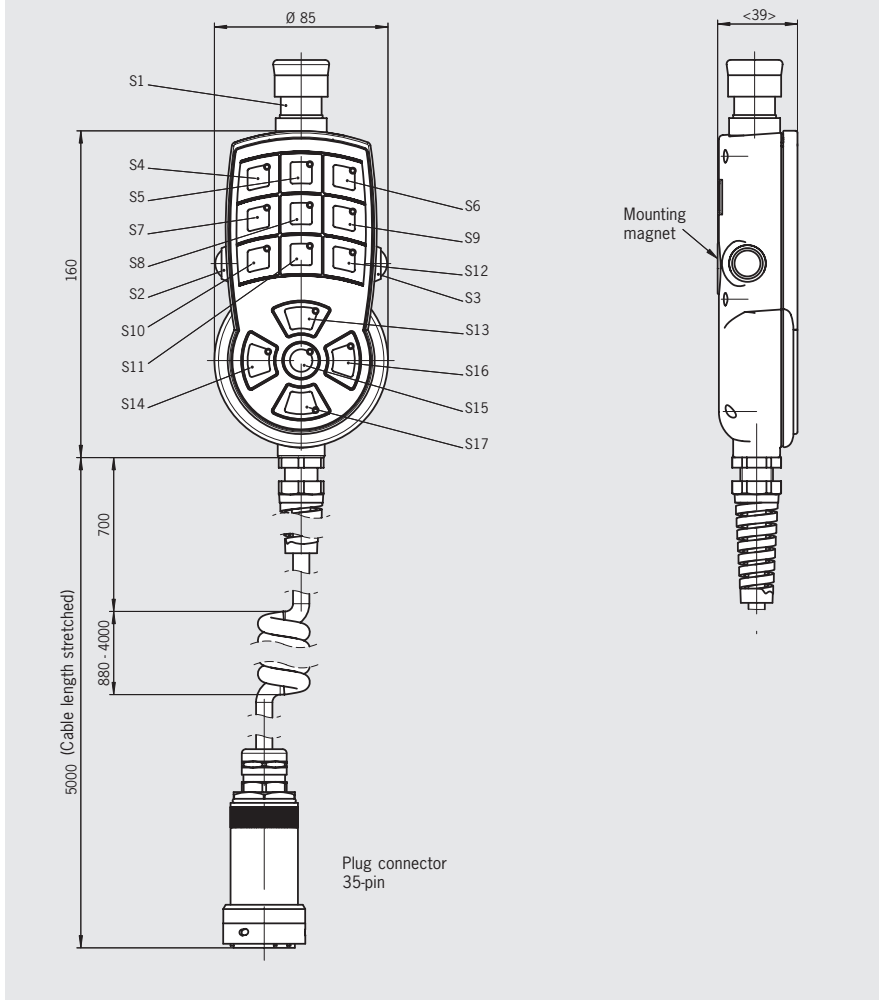


Hand-held pendant station HBA - 096 692

- ▶ Membrane keypad can be labeled as required using slide-in strips
- ▶ Tamper-proof EMERGENCY STOP device according to EN 418, dual-channel
- ▶ 2 enabling switches, 2-stage, 1 NO contact each
- ▶ LEDs white, color customer-specific using colored keypad membrane



Dimension drawing



Notes

- ▶ For holder HBA for hand-held pendant stations, see Accessories page 56
- ▶ For related 35-pin flange socket, see connection components page 50
- ▶ For template for slide-in strips see www.euchner.de

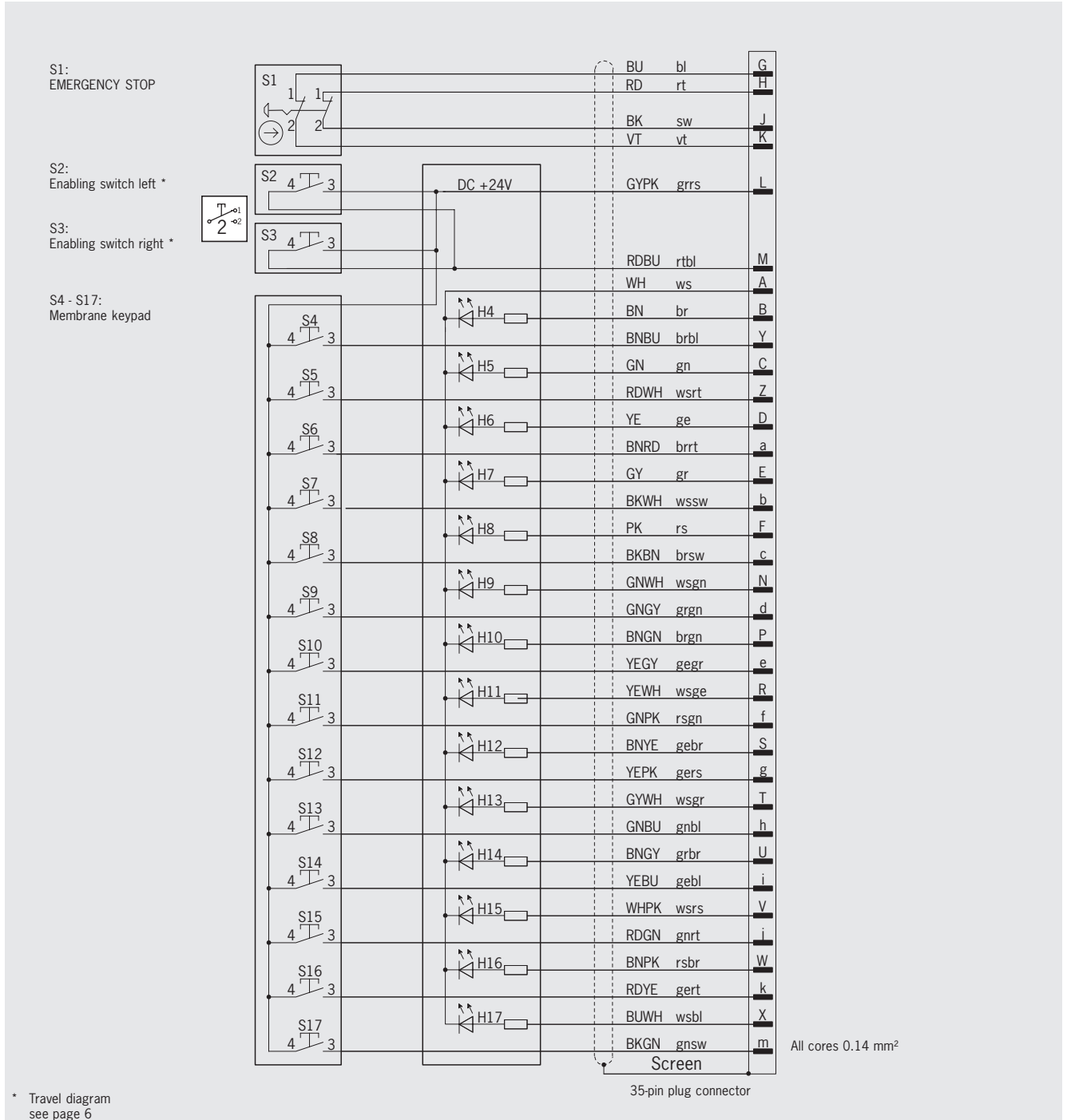
Technical data

Parameter	Value	Unit
Housing HBA		
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, 24-pin plug connector	
Weight	Approx. 1.3	kg
EMERGENCY STOP device		
Standard	EN 418	
Switching elements	2 NC contacts	
Utilization category to IEC 60947-5-1	DC-13, U _e 24 V, I _e 3 A	
Membrane keypad		
Switching elements	14, 1 NO contact each	
Switching voltage max.	30	V DC
Switching current max.	100	mA
Breaking capacity max.	1	W
Enabling switch, 2-stage		
Switching elements	2, 1 NO contact each	
Connection ratings	30 V AC / 0.4 A; 30 V DC / 0.1 A	

Ordering table

Item	Order No.
Hand-held pendant station HBA - 096 692 with:	
▶ Membrane keypad that can be labeled as required	
▶ Tamper-proof EMERGENCY STOP device according to EN 418, dual-channel	
▶ 2 enabling switches, 2-stage, 1 NO contact each	096 692
▶ LEDs white, color customer-specific using colored keypad membrane	

Wiring diagram



* Travel diagram see page 6

Hand-held pendant stations HBAS



- ▶ Programmable pulse generator
- ▶ Tamper-proof EMERGENCY STOP device according to EN 418, 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

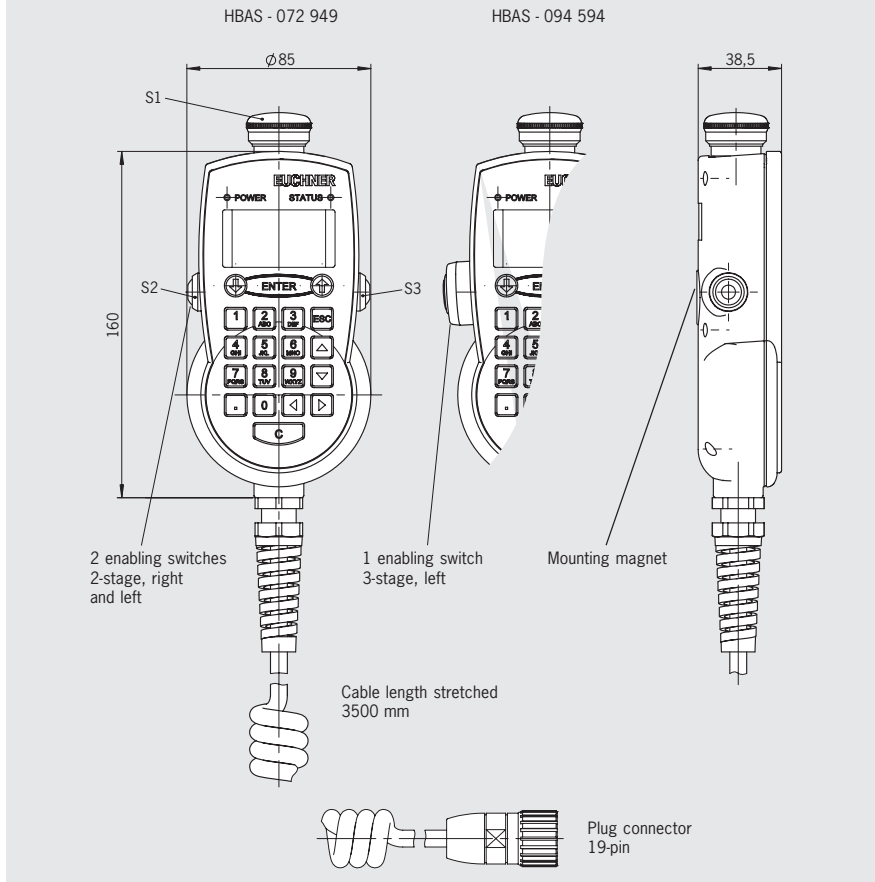
Depending on version:

- ▶ 2 enabling switches, 2-stage, 1 NO contact each
- ▶ 1 enabling switch, 3-stage, 2 NO contacts

Notes

- ▶ For holder HBA for hand-held pendant stations, see Accessories page 56
- ▶ For related 19-pin flange socket, see Accessories page 53
- ▶ ActiveX modules available for integrating the user's application (for MS Windows®-based user programs with ActiveX support)

Dimension drawing





Technical data

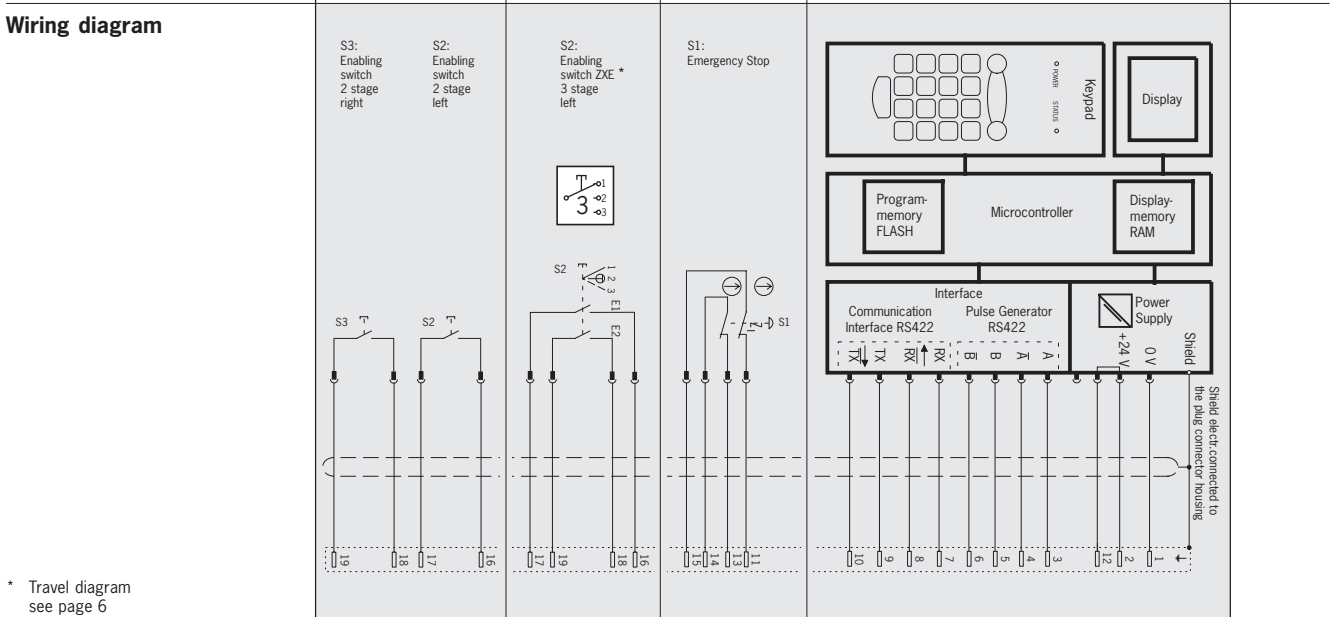
Parameters	Value	Unit
Housing HBA		
Material	Plastic	
Color	Gray RAL 7040	
Operating temperature	0 ... +50	°C
Storage temperature	-20 ... +50	°C
Degree of protection according to EN 60529 / NEMA	IP 65 / 250-12	
Connection	Coiled cable, expandable to 3.5 m, 19-pin plug connector	
Weight	Approx. 0.85	kg
Pulse generator		
Pulses	Programmable	
Output specifications	RS422A	
EMERGENCY STOP device		
Standard	EN 418	
Switching elements	1, 2 NC contacts	
Utilization category to IEC 60947-5-1	DC-13, U _e 24 V, I _e 3 A	A
Communications interface		
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	
Electrical connection		
Power supply	24 ± 20%	V DC
Operating current, max.	100	mA
Enabling switch, 2-stage		
Switching elements	2, 1 NO contact each	
Switching voltage max.	30	V DC
Switching current max.	0.1	A
Enabling switch ZXE, 3-stage		
Switching elements	1, 2 NO contacts	
Utilization category to IEC 60947-5-1	DC-13, U _e 24 V, I _e 0.1 A	

1) Approval pending

Ordering table

Version/item	Features				Order No.
	2 enabling switches 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 	●		●	●	072 949
HBAS - 094 594 		●	●	●	094 594

Wiring diagram



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

093 011

093 013

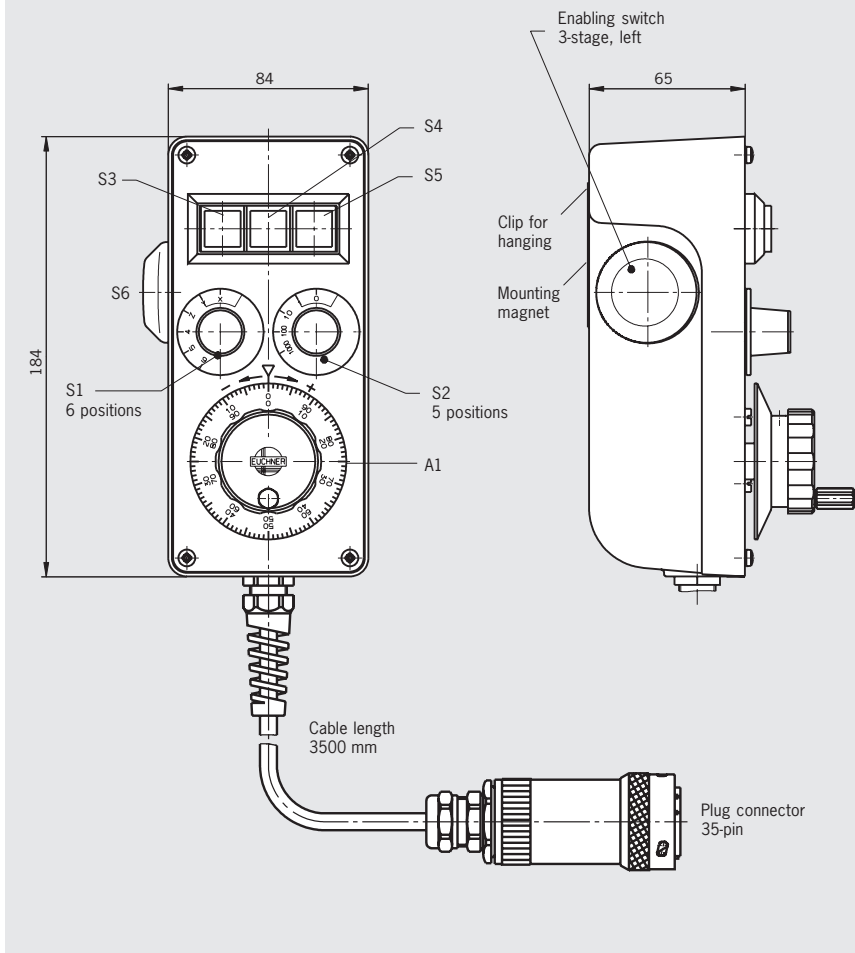
Hand-held pendant station HBE - 097 335



- ▶ Handwheel 100 pulses
- ▶ Enabling switch 3-stage
- ▶ Row of three buttons, illuminated, can be individually labeled
- ▶ 2 selector switches



Dimension drawing



Notes

- ▶ For holder HBE for hand-held pendant stations, see Accessories page 56
- ▶ For related 35-pin flange socket, see connection components page 50

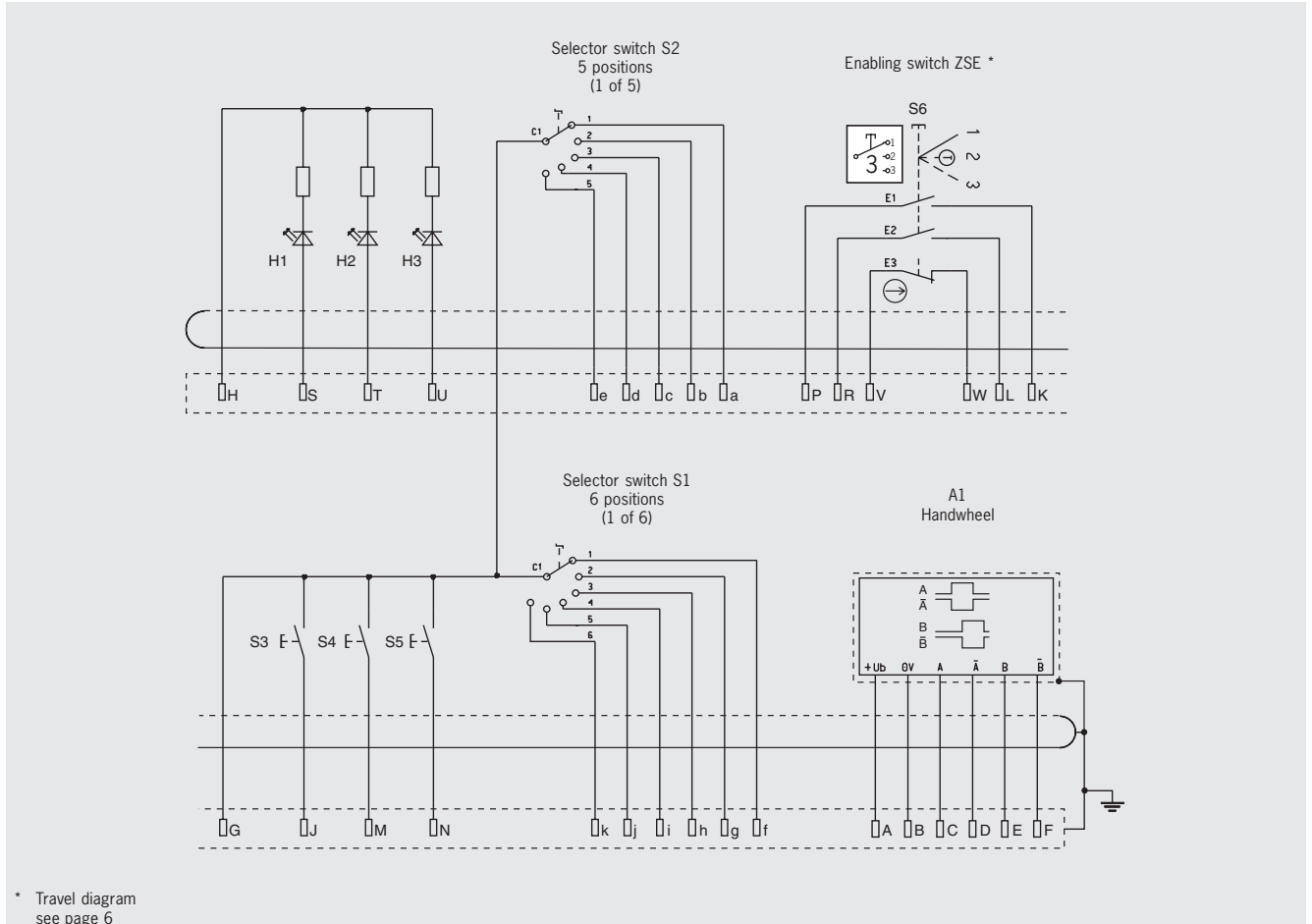
Technical data

Parameter	Value	Unit
Housing HBE		
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. 1.8	kg
Handwheel HKD		
Pulses per revolution	100	
Power supply	5 ± 5%	V DC
Output circuit	RS 422 A	
Output signals with clockwise rotation	See page 57	
Enabling switch ZSE, 3-stage		
Switching elements	1, 2 NO contacts, 1 positively driven contact	
Utilization category to IEC 947-5-1	AC-15 U _e 24 V I _e 4 A DC-13 U _e 24 V I _e 3 A	
Buttons		
Switching elements	3, 1 NO contact each	
Switching voltage max.	30	V DC
Switching current max.	100	mA
Breaking capacity max.	1	W
LED	I = 4.7 mA / U = 24 V DC / R _v = 4.7 kΩ	
Selector switch		
Switching voltage max.	30	V DC
Switching current max.	100	mA
Breaking capacity max.	2	W

Ordering table

Item	Order No.
Hand-held pendant station HBE - 097 335 with:	
▶ Handwheel 100 pulses	
▶ Enabling switch ZSE 3-stage, 2 NO contacts, 1 positively driven contact	
▶ Row of three pushbuttons, illuminated, 1 NO contact each	097 335
▶ 2 selector switches, 6 positions (X, Y, Z, 4, 5, 6) and 5 positions (0, 1, 10, 100, 1000)	

Wiring diagram



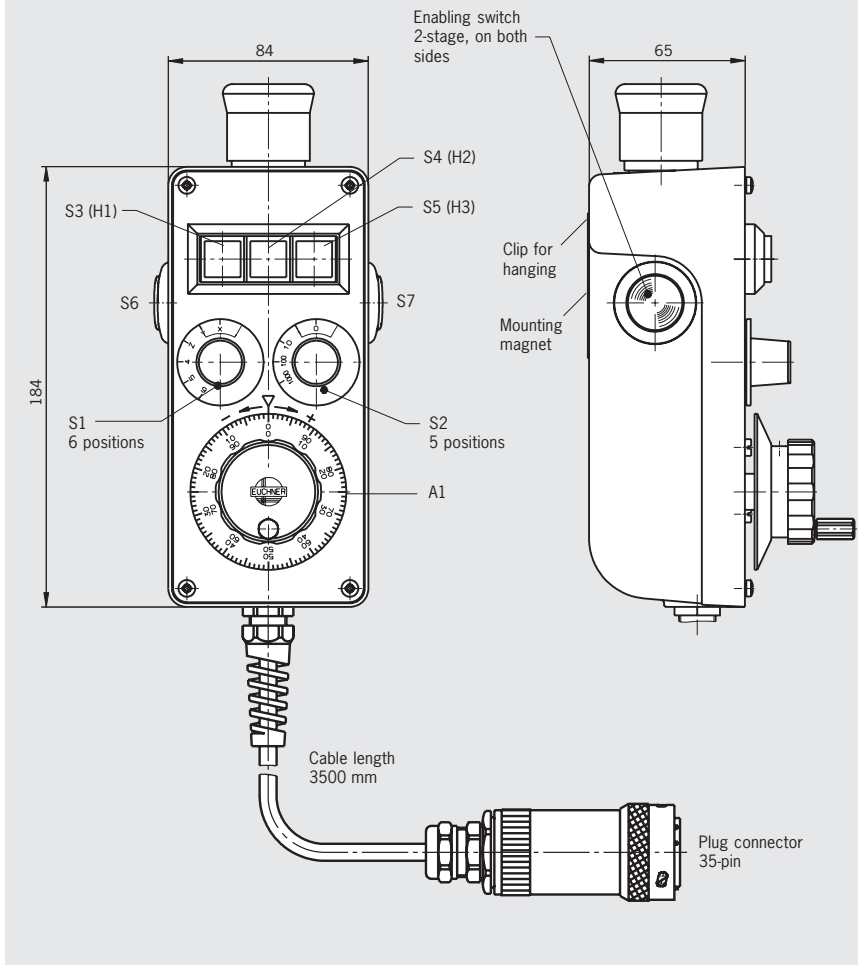
Hand-held pendant station HBE - 097 336



- ▶ Handwheel 100 pulses
- ▶ Tamper-proof EMERGENCY STOP device according to EN 418, dual-channel
- ▶ 2 enabling switches 2-stage
- ▶ Row of three pushbuttons, illuminated, can be individually labeled
- ▶ 2 selector switches



Dimension drawing



Notes

- ▶ For holder HBE for hand-held pendant stations, see Accessories page 56
- ▶ For related 35-pin flange socket, see connection components page 50

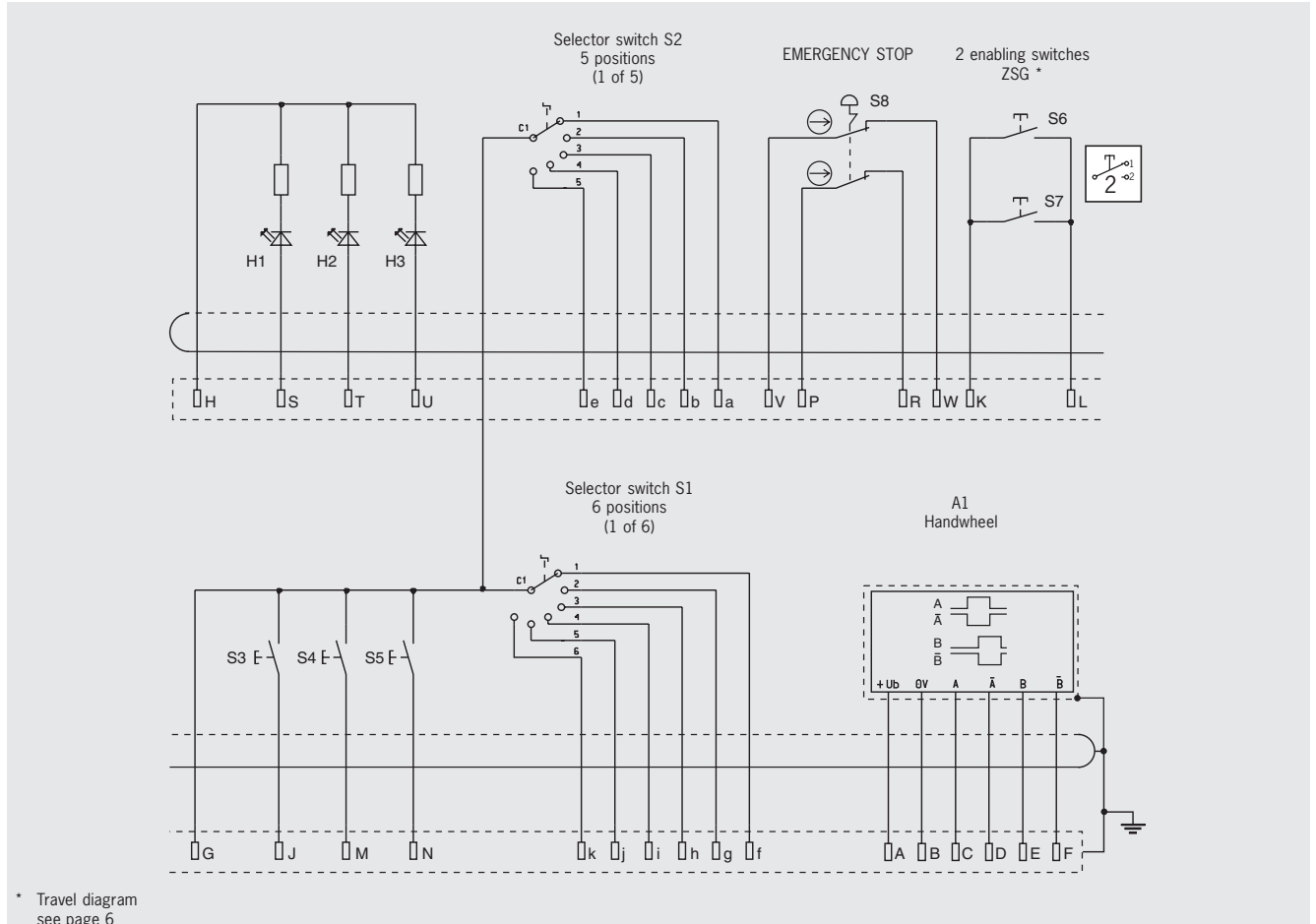
Technical data

Parameters	Value	Unit
Housing HBE		
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. 1.8	kg
Handwheel HKD		
Pulses per revolution	100	
Power supply	5 ± 5%	V DC
Output circuit	RS 422 A	
Output signals with clockwise rotation	See page 57	
EMERGENCY STOP device		
Standard	EN 418	
Switching elements	1, 2 NC contacts	
Utilization category to IEC 60947-5-1	DC-13, U _e 24 V, I _e 2.75 A	
Enabling switch ZSG, 2-stage		
Switching elements	2, 1 NO contact each	
Utilization category to IEC 947-5-1	AC-15 U _e 24 V I _e 4 A DC-13 U _e 24 V I _e 3 A	
Buttons		
Switching elements	3, 1 NO contact each	
Switching voltage max.	30	V DC
Switching current max.	100	mA
Breaking capacity max.	1	W
LED	I = 4.7 mA / U = 24 V DC / R _v = 4.7 kW	
Selector switch		
Switching voltage max.	30	V DC
Switching current max.	100	mA
Breaking capacity max.	2	W

Ordering table

Item	Order No.
Hand-held pendant station HBE - 097 336 with: <ul style="list-style-type: none"> ▶ Handwheel 100 pulses ▶ Tamper-proof emergency stop device according to EN 418, dual-channel ▶ 2 enabling switches ZSG 2-stage, 1 NO contact each ▶ Row of three buttons, illuminated, 1 NO contact each ▶ 2 selector switches, 6 positions (X, Y, Z, 4, 5, 6) and 5 positions (0, 1, 10, 100, 1000) 	097 336

Wiring diagram



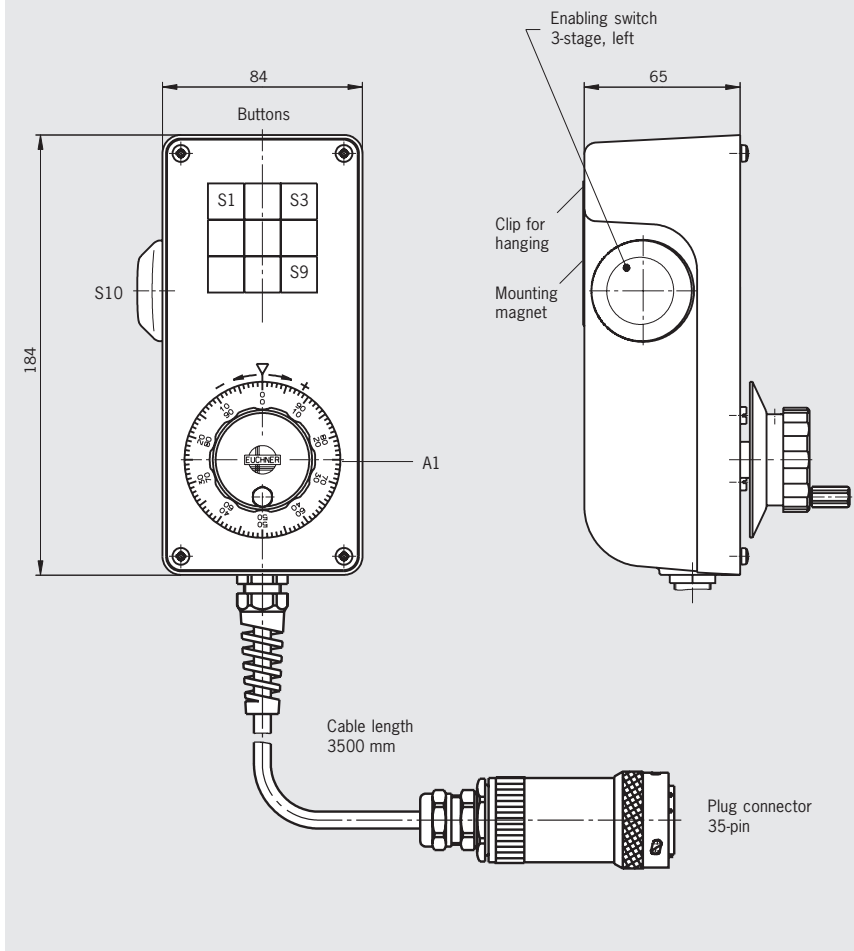
Hand-held pendant station HBE - 097 337



- ▶ Handwheel 100 pulses
- ▶ Enabling switch 3-stage
- ▶ 9 illuminated buttons
- ▶ Buttons can be designed as required using slide-in film



Dimension drawing



Notes

- ▶ For holder HBE for hand-held pendant stations, see Accessories page 56
- ▶ For related 35-pin flange socket, see connection components page 50

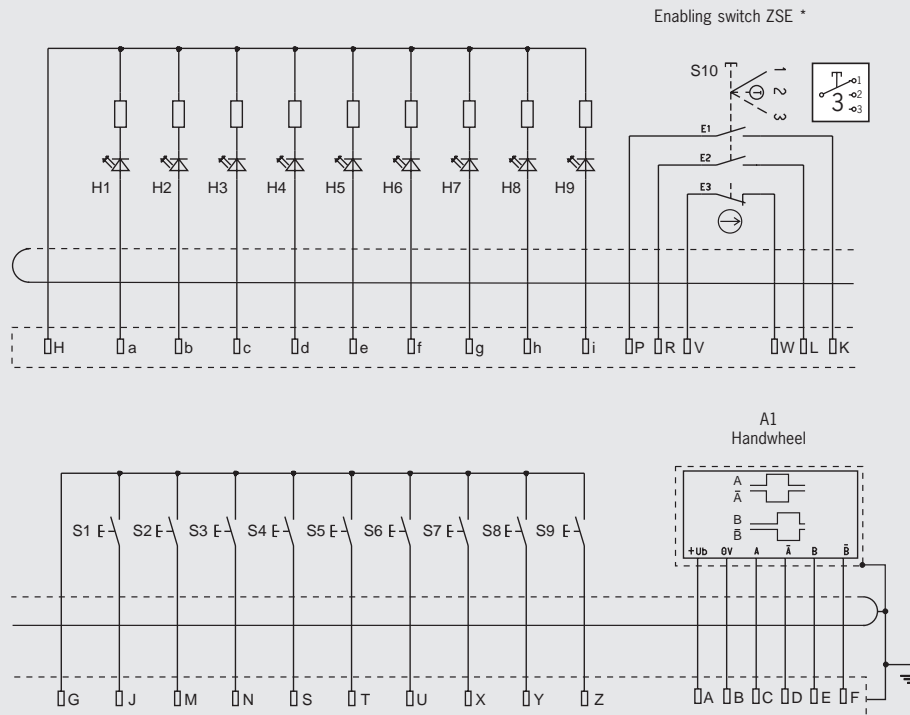
Technical data

Parameters	Value	Unit
Housing HBE		
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. 1.8	kg
Handwheel HKD		
Pulses per revolution	100	
Power supply	5 ± 5%	V DC
Output circuit	RS 422 A	
Output signals	See page 57	
Enabling switch ZSE, 3-stage		
Switching elements	1, 2 NO contacts, 1 positively driven contact	
Utilization category to IEC 947-5-1	AC-15 U _e 24 V I _e 4 A	
	DC-13 U _e 24 V I _e 3 A	
Buttons		
Switching elements	9, 1 NO contact each	
Switching voltage max.	30	V DC
Switching current max.	100	mA
Breaking capacity max.	2	W
LED	I = 14.5 mA / U = 24 V DC / R _v = 1.4 kW	

Ordering table

Item	Order No.
Hand-held pendant station HBE - 097 337 with:	
▶ Handwheel 100 pulses	
▶ Enabling switch ZSE 3-stage, 2 NO contacts, 1 positively driven contact	097 337
▶ 9 illuminated buttons, 1 NO contact each	

Wiring diagram



* Travel diagram
see page 6

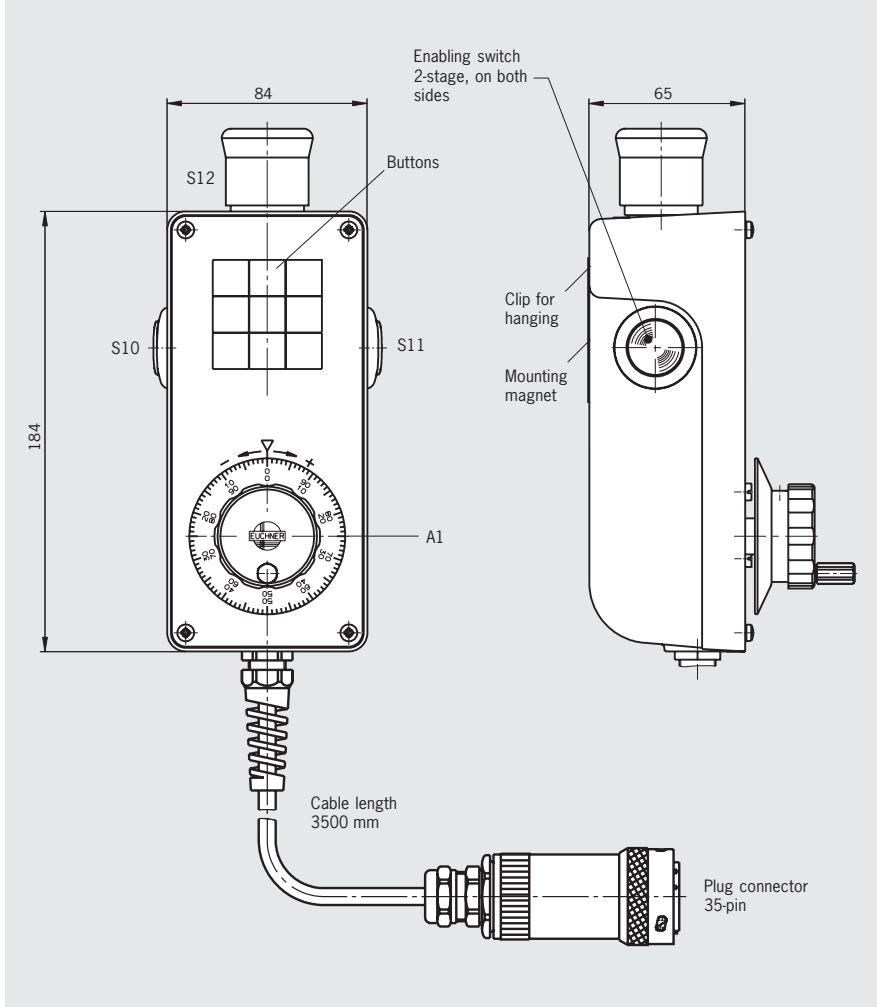
Hand-held pendant station HBE - 097 338



- ▶ Handwheel 100 pulses
- ▶ Tamper-proof EMERGENCY STOP device according to EN 418, dual-channel
- ▶ 2 enabling switches 2-stage
- ▶ 9 illuminated buttons
- ▶ Buttons can be designed as required using slide-in film



Dimension drawing



Notes

- ▶ For holder HBE for hand-held pendant stations, see Accessories page 56
- ▶ For related 35-pin flange socket, see connection components page 50

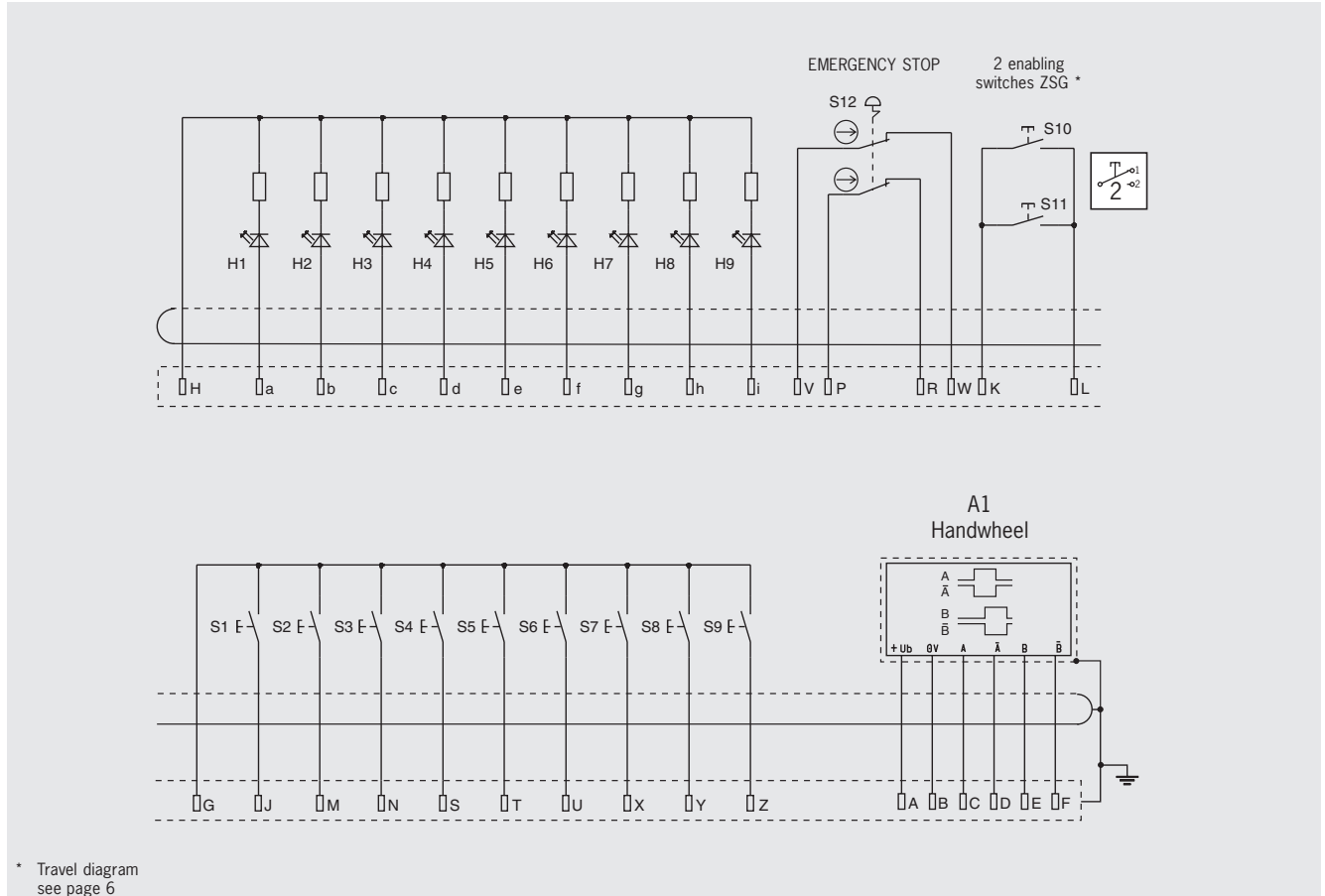
Technical data

Parameters	Value	Unit
Housing HBE		
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. 1.8	kg
Handwheel HKD		
Pulses per revolution	100	
Power supply	5 ± 5%	V DC
Output circuit	RS 422 A	
Output signals	See page 57	
EMERGENCY STOP device		
Standard	EN 418	
Switching elements	1, 2 NC contacts	
Utilization category to IEC 60947-5-1	DC-13, U _e 24 V, I _e 2.75 A	
Enabling switch ZSG, 2-stage		
Switching elements	2, 1 NO contact each	
Utilization category to IEC 947-5-1	AC-15 U _e 24 V I _e 4 A DC-13 U _e 24 V I _e 3 A	
Buttons		
Switching elements	9, 1 NO contact each	
Switching voltage max.	30	V DC
Switching current max.	100	mA
Breaking capacity max.	2	W
LED	I = 14.5 mA / U = 24 V DC / R _v = 1.4 kW	

Ordering table

Item	Order No.
Hand-held pendant station HBE - 097 338 with:	
▶ Handwheel 100 pulses	
▶ Tamper-proof emergency stop device according to EN 418, dual-channel	
▶ 2 enabling switches ZSG 2-stage, 1 NO contact each	
▶ 9 illuminated buttons, 1 NO contact each	
	097 338

Wiring diagram



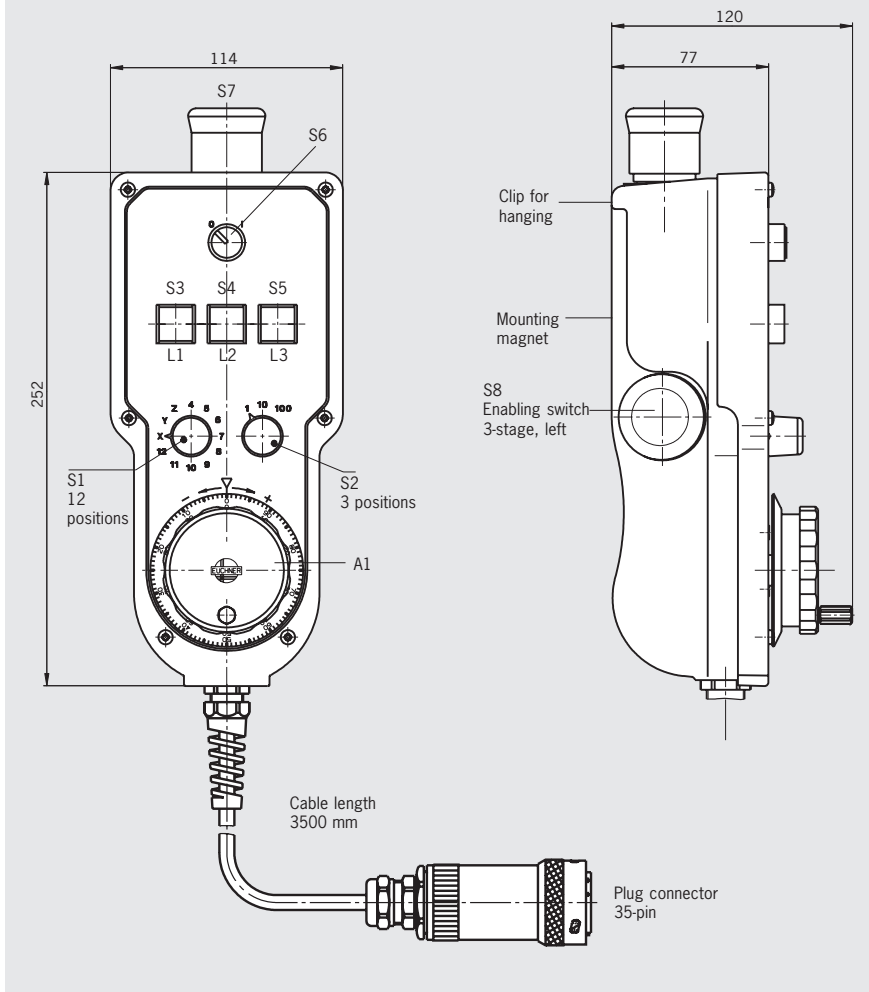
Hand-held pendant station HBL - 097 339



- ▶ Handwheel 100 pulses
- ▶ Tamper-proof EMERGENCY STOP device according to EN 418, 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 56
- ▶ For related 35-pin flange socket, see connection components page 50

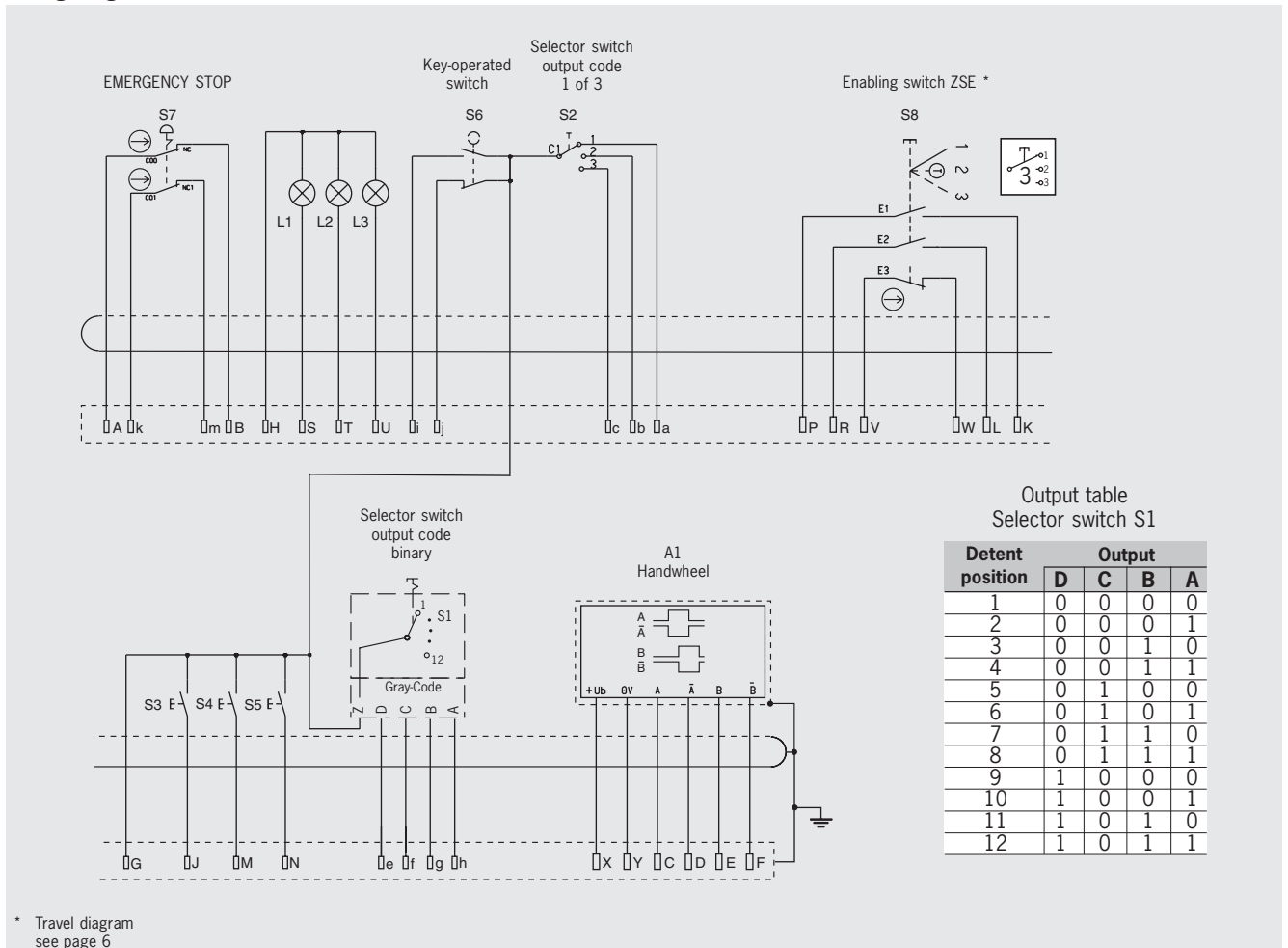
Technical data

Parameters	Value	Unit
Housing HBL		
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
EMERGENCY STOP device		
Standard	EN 418	
Switching elements	1, 2 NC contacts	
Utilization category to IEC 947-5-1	DC-13 U_e 24 V I_e 2.75 A	
Handwheel HKD		
Pulses per revolution	100	
Power supply	$5 \pm 5\%$	V DC
Output circuit	RS 422 A	
Output signals	See page 57	
Enabling switch ZSE, 3-stage		
Switching elements	1, 2 NO contacts, 1 positively driven contact	
Utilization category to IEC 947-5-1	AC-15 U_e 24 V I_e 4 A DC-13 U_e 24 V I_e 3 A	
Buttons		
Switching elements	3, 1 NO contact each	
Switching voltage max.	30	V DC
Switching current max.	200	mA
Incandescent lamp	$I = 21 \text{ mA} / U = 24 \text{ V DC}$	
Selector switch		
Switching voltage max.	30	V DC
Switching current max.	100	mA
Breaking capacity max.	2	W
Key-operated switch		
Switching voltage max.	30	V DC
Switching current max.	250	mA

Ordering table

Item	Order No.
Hand-held pendant station HBL - 097 339 with:	
▶ Handwheel 100 pulses	
▶ Tamper-proof emergency stop device according to EN 418, dual-channel	
▶ Enabling switch ZSE 3-stage, 2 NO contacts, 1 positively driven contact	097 339
▶ 3 illuminated pushbuttons, 1 NO contact each	
▶ 2 selector switches, 12 positions and 3 positions	
▶ Key-operated rotary switch, 1 NO contacts, 1 NC contact	

Wiring diagram



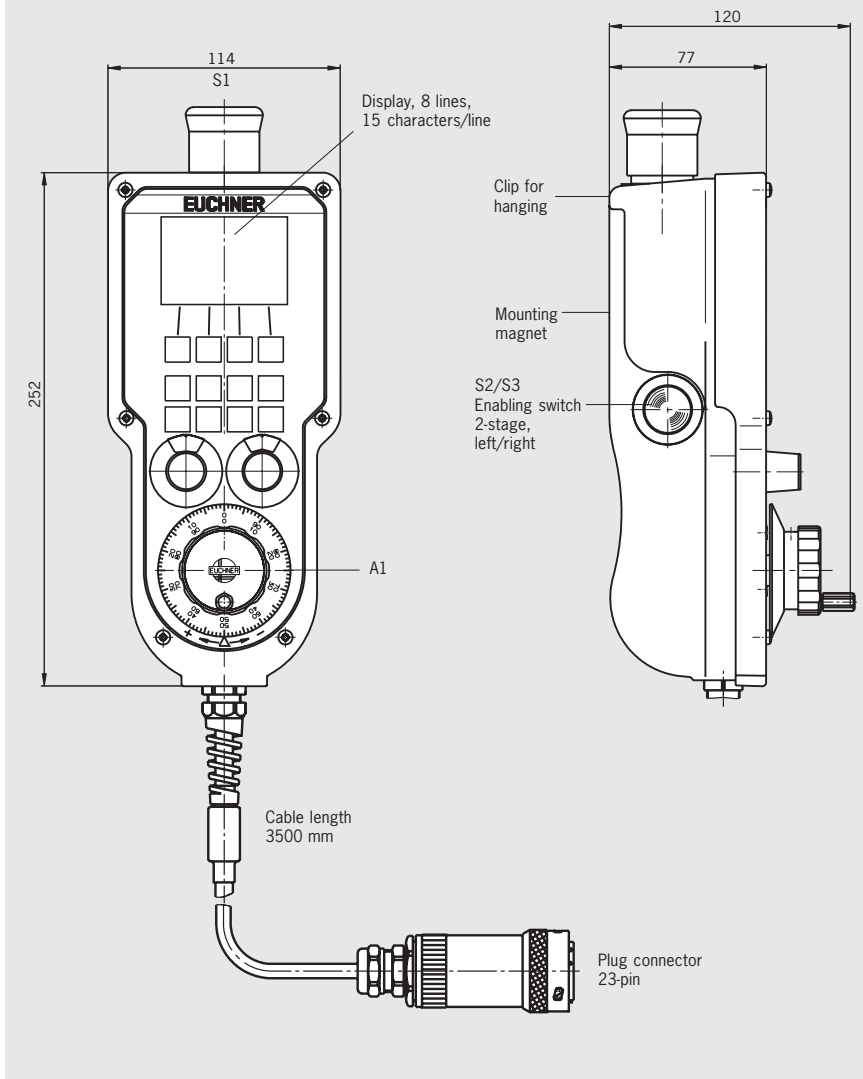
Hand-held pendant station HBL5 - 072 725



- ▶ Handwheel 100 pulses
- ▶ Tamper-proof EMERGENCY STOP device according to EN 418, dual-channel
- ▶ 2 enabling switches 2-stage
- ▶ 12 illuminated buttons
- ▶ Buttons can be designed as required using slide-in film
- ▶ 2 selector switches
- ▶ High resolution LCD display (text mode)
- ▶ RS422 interface, 3964R protocol



Dimension drawing



Notes

- ▶ For holder HBL for hand-held pendant stations, see Accessories page 56
- ▶ For related 23-pin flange socket, see connection components page 50
- ▶ ActiveX modules available for integrating the user's application (for MS Windows®-based user programs with ActiveX support)

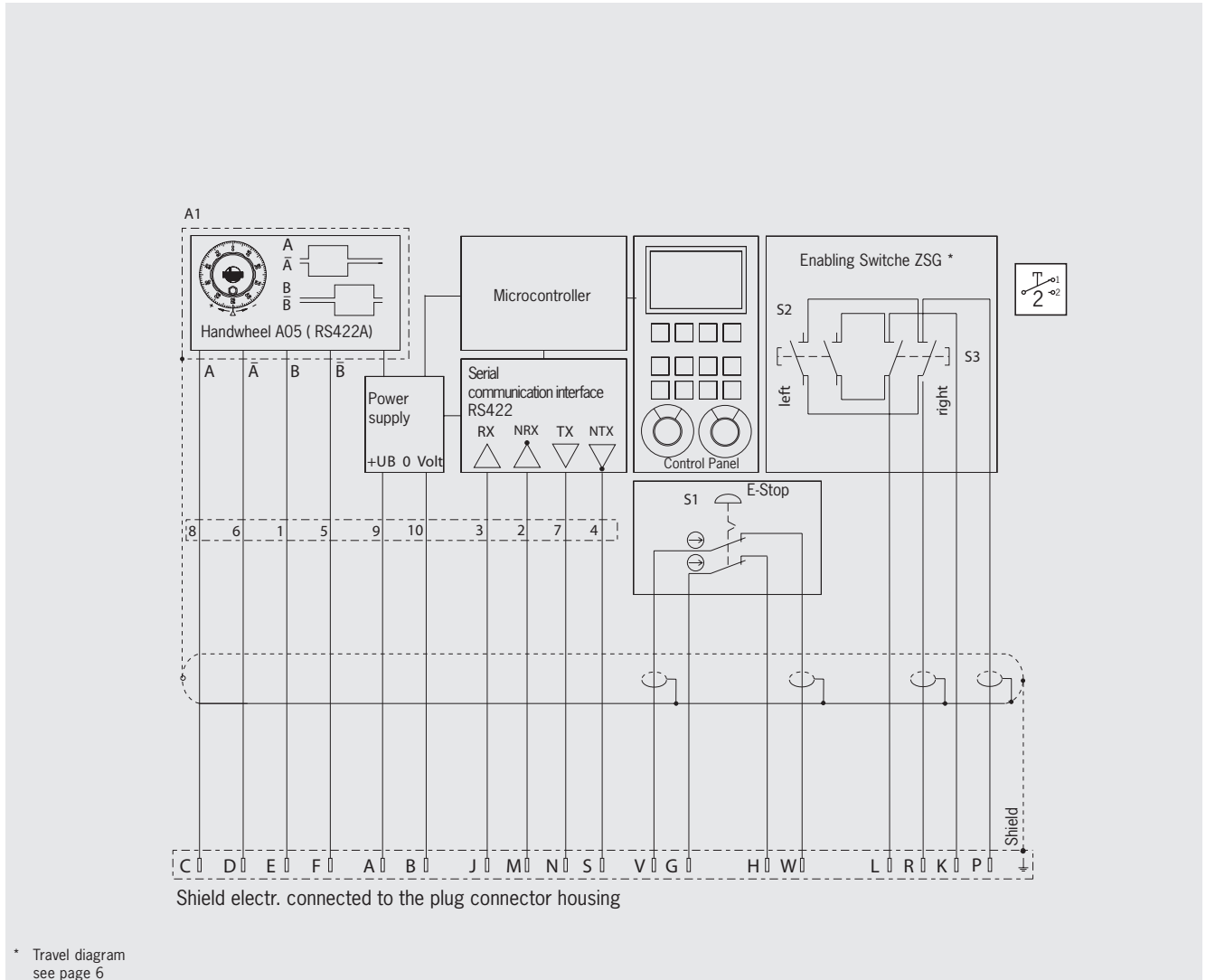
Technical data

Parameters	Value	Unit
Housing HBL		
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
EMERGENCY STOP device		
Standard	EN 418	
Switching elements	1, 2 NC contacts	
Utilization category to IEC 947-5-1	DC-13 U _e 24 V I _e 2.75 A	
Handwheel HKD		
Pulses per revolution	100	
Output circuit	RS 422 A	
Output signals	See page 57	
Enabling switch ZSG, 2-stage		
Switching elements	2, 2 NO contacts each	
Utilization category to IEC 947-5-1	AC-15 U _e 24 V I _e 4 A DC-13 U _e 24 V I _e 3 A	
Interface		
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	
Electrical connection		
Power supply	24 ±20%	V DC
Operating current, max.	200	mA

Ordering table

Item	Order No.
Hand-held pendant station HBL5 - 072 725 with:	
▶ Handwheel 100 pulses	
▶ Tamper-proof emergency stop device according to EN 418, dual-channel	
▶ 2 enabling switches ZSG 2-stage, 2 NO contacts each	
▶ 12 illuminated buttons	
▶ 2 selector switches, 12 positions each	
	072 725

Wiring diagram



ActiveX modules	067 176
Software for integration into user software that supports ActiveX	
Manual ActiveX modules	
Detailed documentation on use of the software	067 178

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.

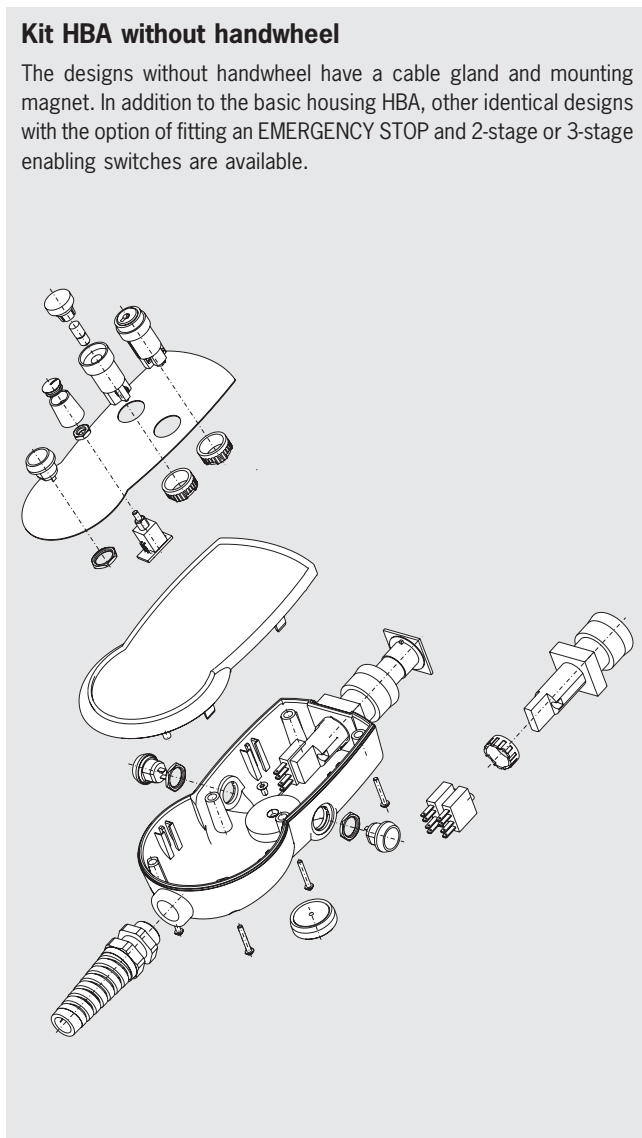
Aluminum front plates are available in silver or black anodized to match the housings.

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.

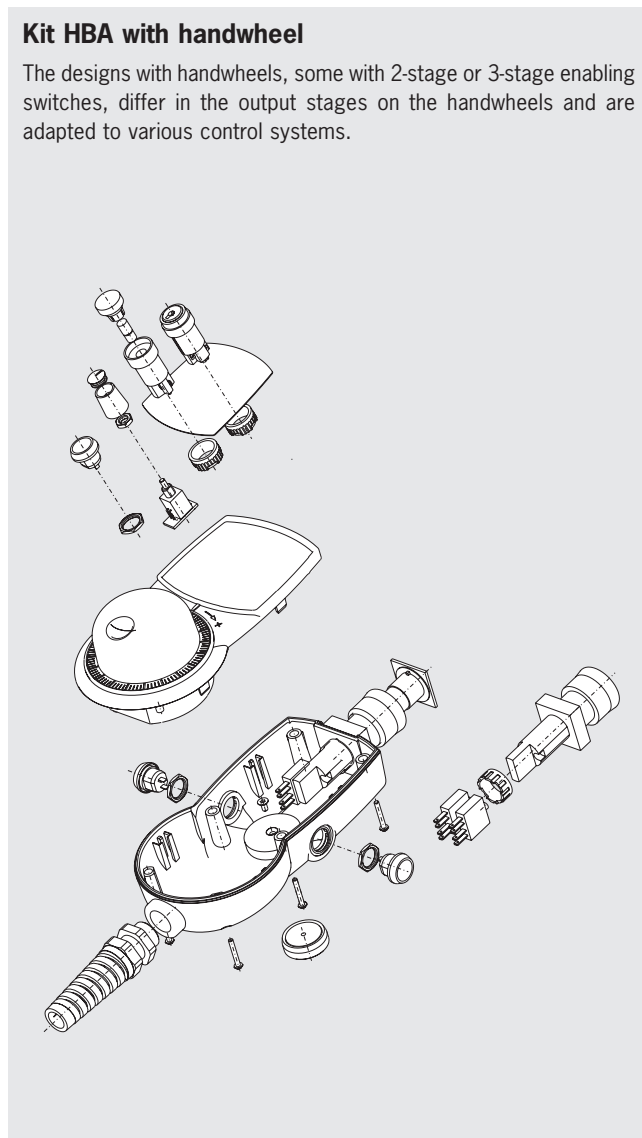
Kit HBA without handwheel

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 or 3-stage enabling switches are available.



Kit HBA with handwheel

The designs with handwheels, some with 2-stage 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

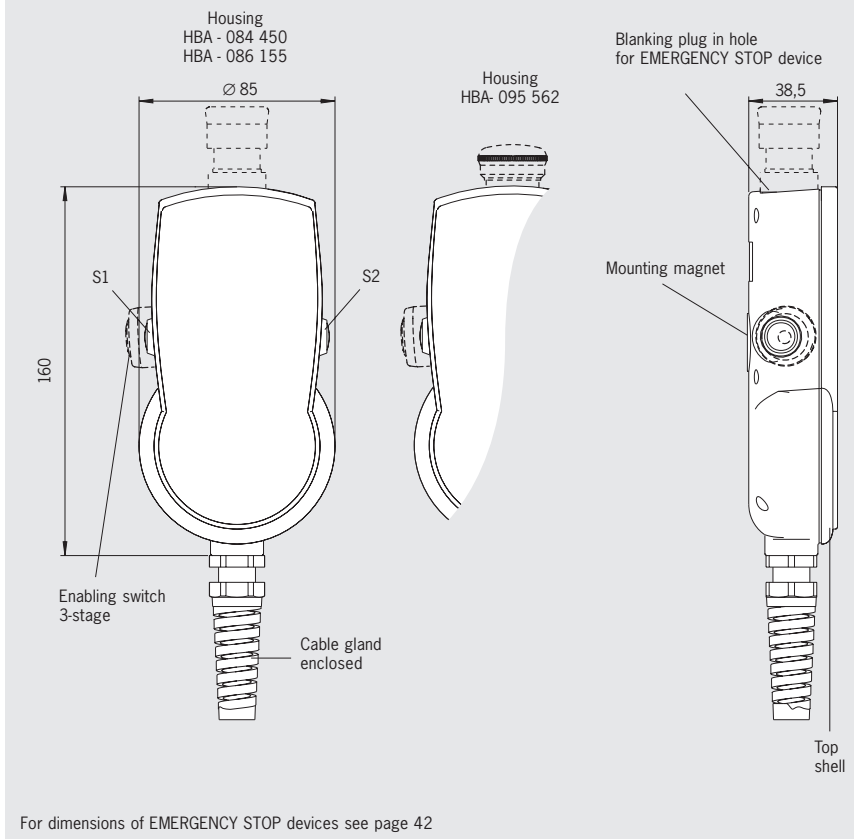
Depending on version:

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

Notes

- ▶ Matching front plate, see page 36
- ▶ Matching EMERGENCY STOP device (rotary or pull release) see page 46
- ▶ **Attention:** housing HBA - 095 562 only suitable for EMERGENCY STOP device with rotary release.
- ▶ Depending on version with two 2-stage enabling switches or one 3-stage enabling switch.

Dimension drawing

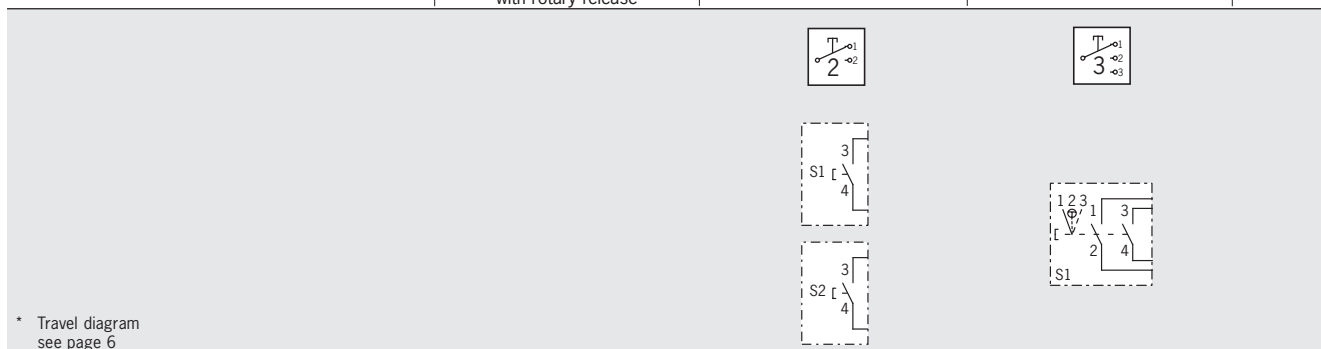


Technical data

Parameter	Value	Unit
Housing HBA		
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
Enabling switch, 2-stage		
Switching elements	2, 1 NO contact each	
Connection ratings	AC 30 V / 0.4 A; DC 30 V / 0.1 A	
Enabling switch ZXE, 3-stage		
Switching elements	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	Features			Order No.
	Hole for EMERGENCY STOP device	2 enabling switches*, 2-stage, 1 NO contact each S1, S2	1 enabling switch ZXE*, 3-stage, 2 NO contacts S1	
Housing HBA - 084 445 (without hole, without enabling switch)				084 445
Housing HBA - 084 450	● for EMERGENCY STOP with pull release			084 450
Housing HBA - 086 155	● for EMERGENCY STOP with pull release	●		086 155
Housing HBA - 095 562	● for EMERGENCY STOP with rotary release		●	095 562



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

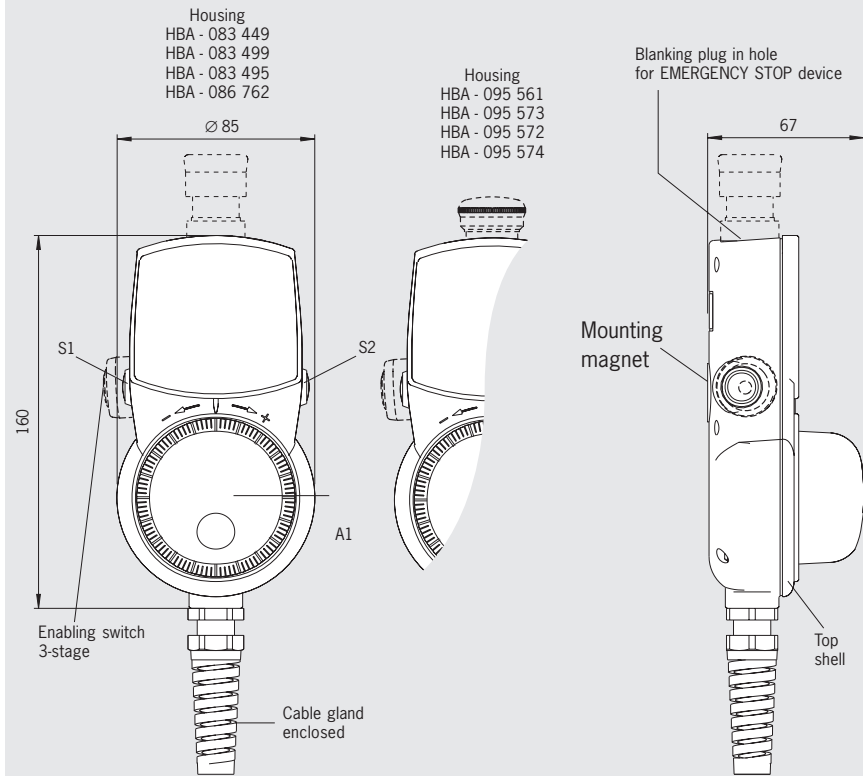
Depending on version:

- ▶ 2 enabling switches, 2-stage, 1 NO contact each
- ▶ 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 46
- ▶ **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 enabling switches or one 3-stage enabling switch.

Dimension drawing



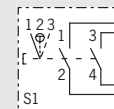
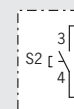
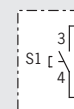
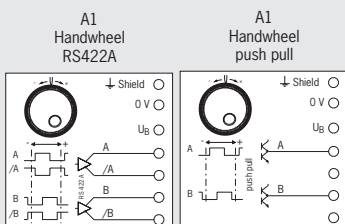
For dimensions of EMERGENCY STOP devices see page 46

Technical data

Parameter	Value	Unit
Housing HBA		
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
Enabling switch, 2-stage		
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	
Enabling switch ZXE, 3-stage		
Switching elements	1, 2 NO contacts	
Utilization category to IEC 60947-5-1	DC-13, U _e 24 V, I _e 0.1 A	
Handwheel RS422A (U_B = 5 V DC)		
Pulses / revolution	100	
Power supply	5 ± 5%	V DC
Output specifications	RS422A	
Handwheel push-pull 5 V (U_B = 10...30 V DC)		
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	
Handwheel push-pull 24 V (U_B = 10...30 V DC)		
Pulses / revolution	100	
Power supply	10 ... 30	V DC
Output circuit	Push-pull 24 V	
Output voltage / output current	HIGH, min. U _B - 3 V at 20 mA LOW, max. 3 V at 20 mA	
Handwheel push-pull 5 V (U_B = 5 V DC)		
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	

Ordering table / wiring diagram

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

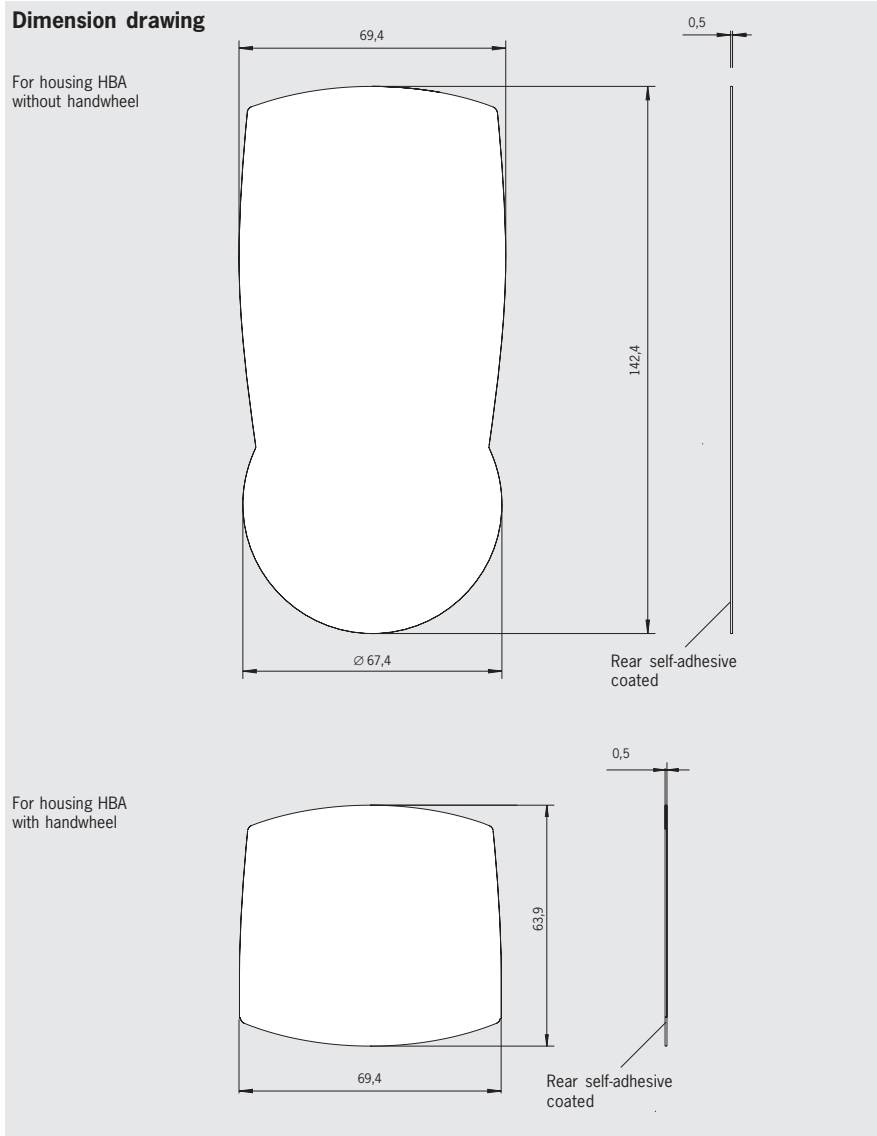


* Travel diagram
see page 6

Front plates for housing HBA with and without handwheel

Notes

- Matches housing HBA (see page 32 and page 34)



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	084 395
Front plate for housing HBA without handwheel, black anodized	084 396
Front plate for housing HBA with handwheel, silver anodized	083 635
Front plate for housing HBA with handwheel, black anodized	083 636

The kit is designed to match individual customer specifications.

The housings differ in the safety elements that can be integrated:

- ▶ Housing without holes and without safety-related components
- ▶ Housing with dual-channel enabling switch on both sides and hole for EMERGENCY STOP
- ▶ Housing with single-channel enabling switch 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:

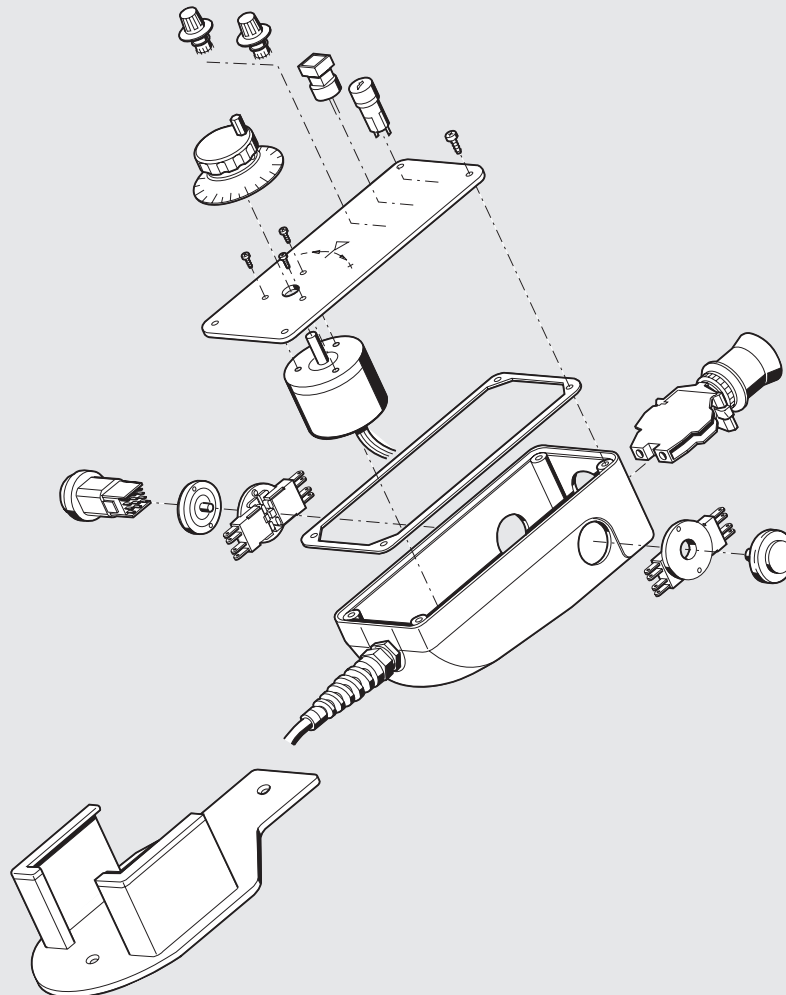
- ▶ Front plate for applications with handwheel
- ▶ Front plate for applications without handwheel

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 HBE



Housing HBE

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

Depending on version:

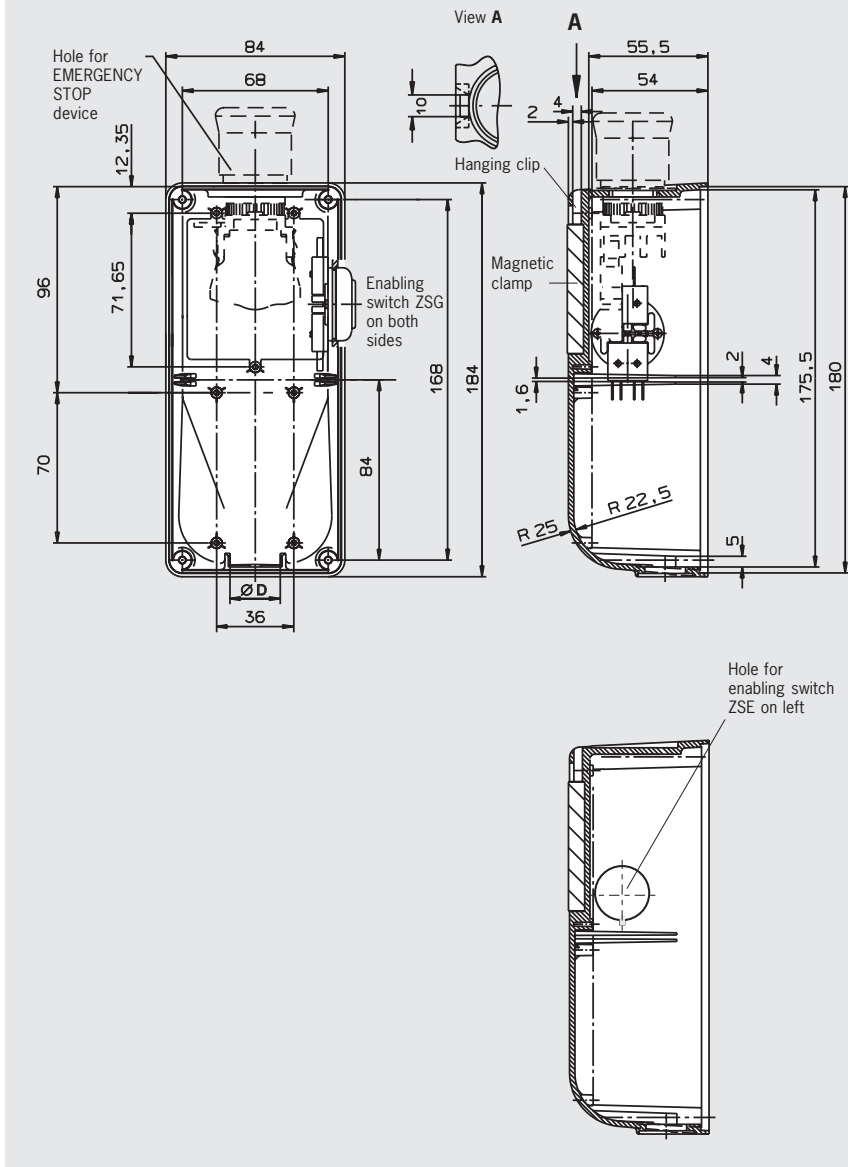
- ▶ Fastening nuts for cable gland Pg 11 or Pg 13.5
- ▶ Hole for EMERGENCY STOP device
- ▶ 2 enabling switches ZSG 2-stage, 2 NO contacts each
- ▶ Hole on left for enabling switch ZSE

Notes

- ▶ For EMERGENCY STOP devices see page 46 and 54
- ▶ For enabling switches ZSE see page 55
- ▶ For cable glands see page 52
- ▶ For assembly drawing see page 75
- ▶ Pg 11 for cable diameter 5 ... 10 mm
- ▶ Pg 13.5 for cable diameter 6 ... 12 mm

Number of cores in cable	Pg	Ø D
23	11	19
35	13.5	20.8

Dimension drawing



Technical data

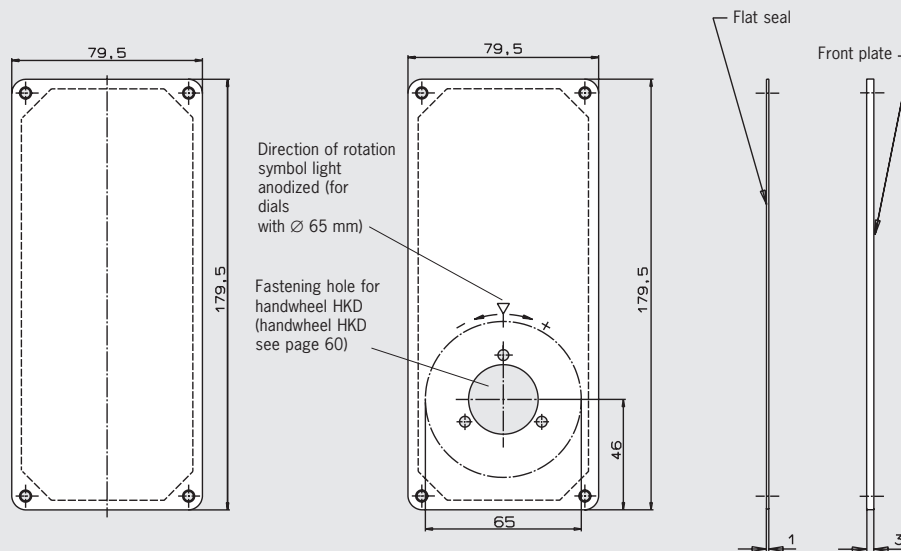
Parameter	Value	Unit
Housing HBE		
Material	Plastic	
Color	Blue-gray RAL 7031	
Ambient temperature	0 ... +55	°C
Degree of protection according to EN 60529 / NEMA	IP 65 / 250-12	
Weight	0.3	kg
Enabling switches ZSG, 2-stage		
Switching elements	2, 2 NO contacts each	
Utilization category to IEC 947-5-1	AC-15 U _e 24 V I _e 4 A	
	DC-13 U _e 24 V I _e 3 A	

Ordering table / wiring diagram

Version/ item	Features					Order No.	
	Fastening nut for cable gland		Hole for EMERGENCY STOP	Hole for enabling switch ZSE2-2 C1692 (enabling switch page 55)	Hole for enabling switch ZSE2-4 C1943 (enabling switch page 55)		2 enabling switches ZSG 2-stage 2 NO contacts each
	Pg 11	Pg 13.5					
Housing HBE - 048 429	●					048 429	
Housing HBE - 072 626		●				072 626	
Housing HBE - 054 982	●		●			054 982	
Housing HBE - 072 627		●	●			072 627	
Housing HBE - 074 973	●			●		074 973	
Housing HBE - 072 629		●		●		072 629	
Housing HBE - 072 984	●				●	072 984	
Housing HBE - 083 489		●			●	083 489	

Front plate for housing HBE

Dimension drawing



Technical data

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

Ordering table

Item	Order No.
HBE front plate, with seal	052 954
HBA front plate, with seal and hole for handwheel HKD	052 955
Front seal for HBE front plate	072 642

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 switch 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:

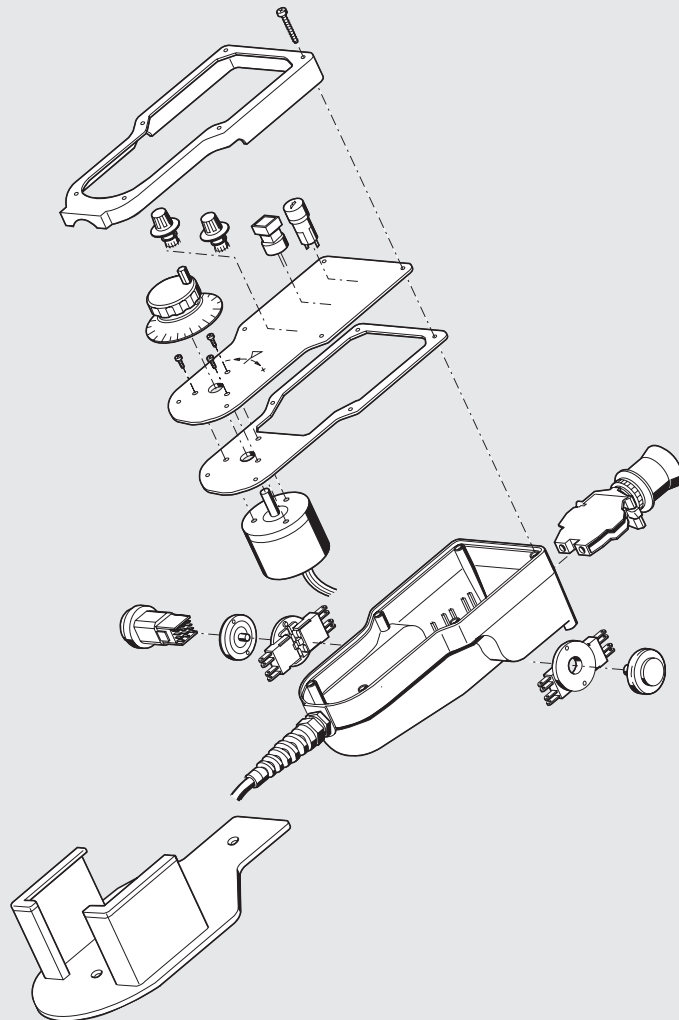
- ▶ Front plate for applications with handwheel
- ▶ Front plate for applications without handwheel

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:

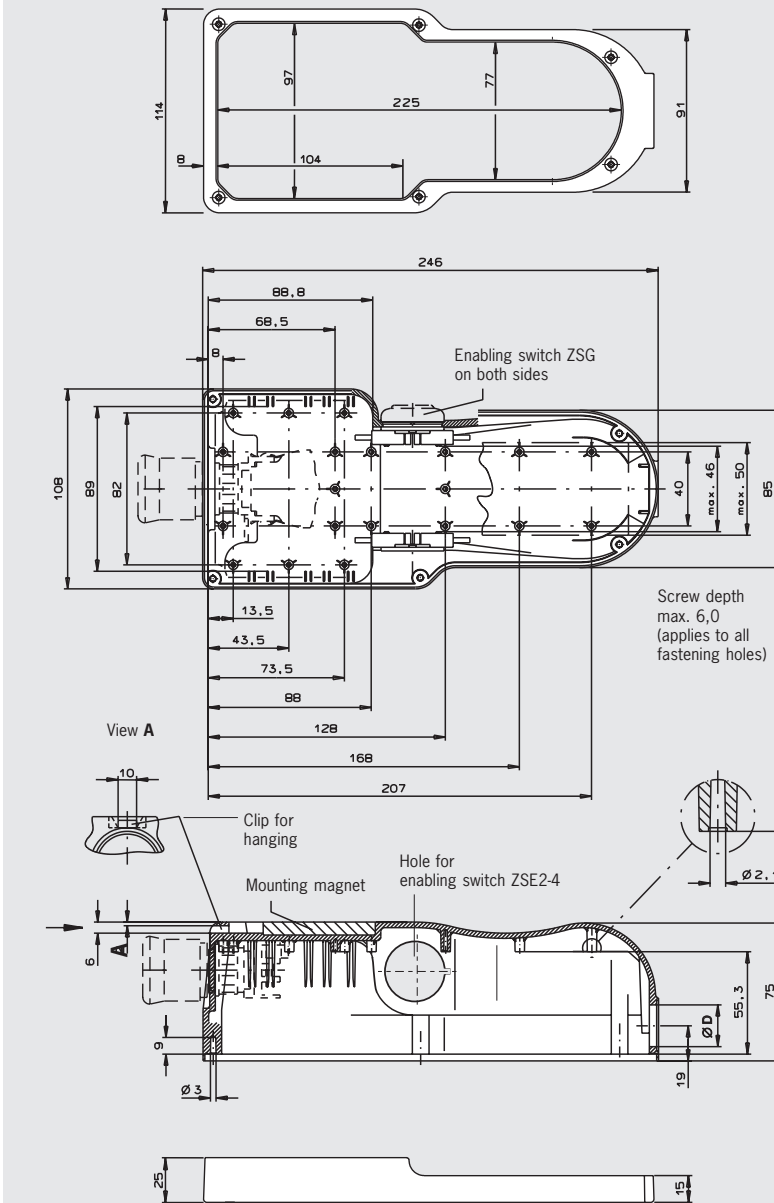
- ▶ Fastening nuts for cable gland Pg 11 or Pg 13.5
- ▶ Hole for EMERGENCY STOP device
- ▶ 2 enabling switches ZSG 2-stage, 2 NO contacts each
- ▶ Hole on left for enabling switch ZSE

Notes

- ▶ For EMERGENCY STOP devices see page 46 and 54
- ▶ For enabling switches ZSE see page 55
- ▶ For cable glands see page 52
- ▶ For assembly drawing see page 75
- ▶ Pg 11 for cable diameter 5 ... 10 mm
- ▶ Pg 13.5 for cable diameter 6 ... 12 mm

Number of cores in cable	Pg	Ø D
23	11	19
35	13,5	20,8

Dimension drawing



Technical data

Parameter	Value	Unit
Housing HBL		
Material	Plastic	
Color	Blue-gray RAL 7031	
Ambient temperature	0 ... +55	°C
Degree of protection according to EN 60529 / NEMA	IP 65 / 250-12	
Enabling switch ZSG, 2-stage		
Switching elements	2, 2 NO contacts each	
Direct opening travel	2 x 1.25 mm, redundant, per NO contact	
Utilization category to IEC 947-5-1	AC-15 U _e 24 V I _e 4 A DC-13 U _e 24 V I _e 3 A	

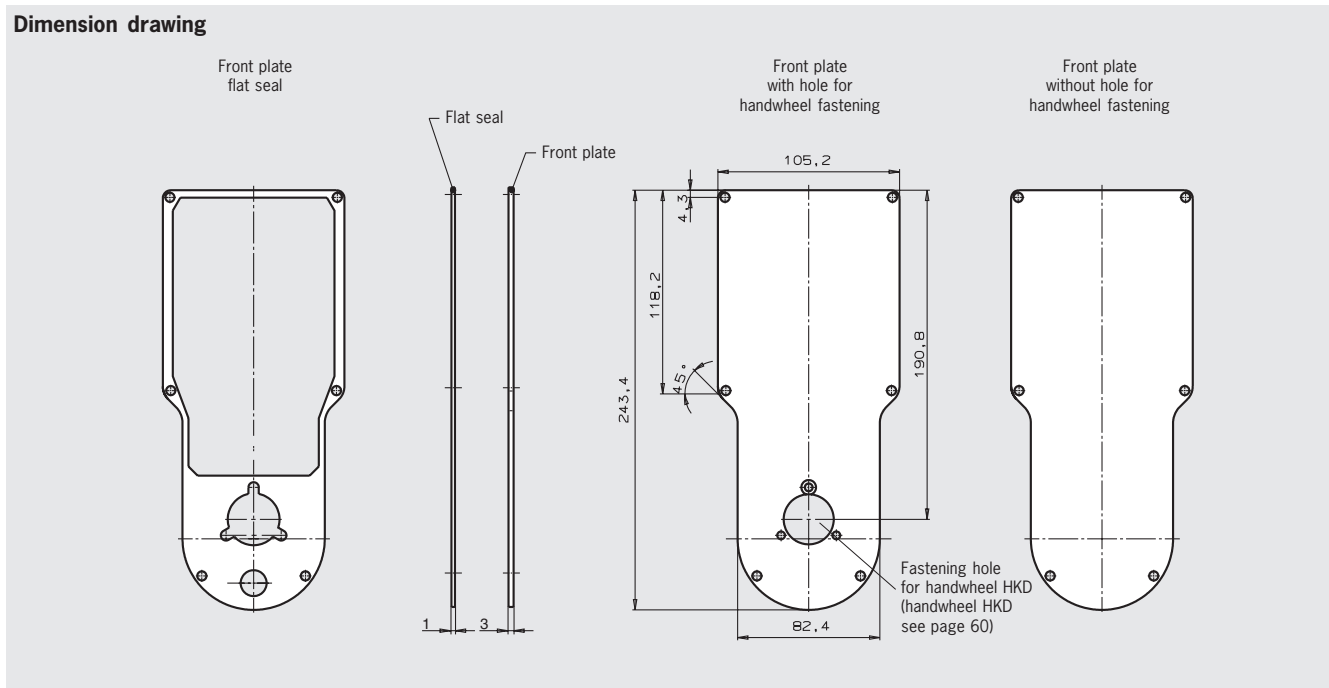
Ordering table / wiring diagram

Version	Features					Order No.	
	Fastening nut for cable gland		Hole for EMERGENCY STOP	Hole for enabling switch ZSE2-2 C1692 (enabling switch page 55)	Hole for enabling switch ZSE2-4 C1943 (enabling switch page 55)		2 enabling switches ZSG 2-stage 2 NO contacts each
	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	

1) Blanking plug \varnothing 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

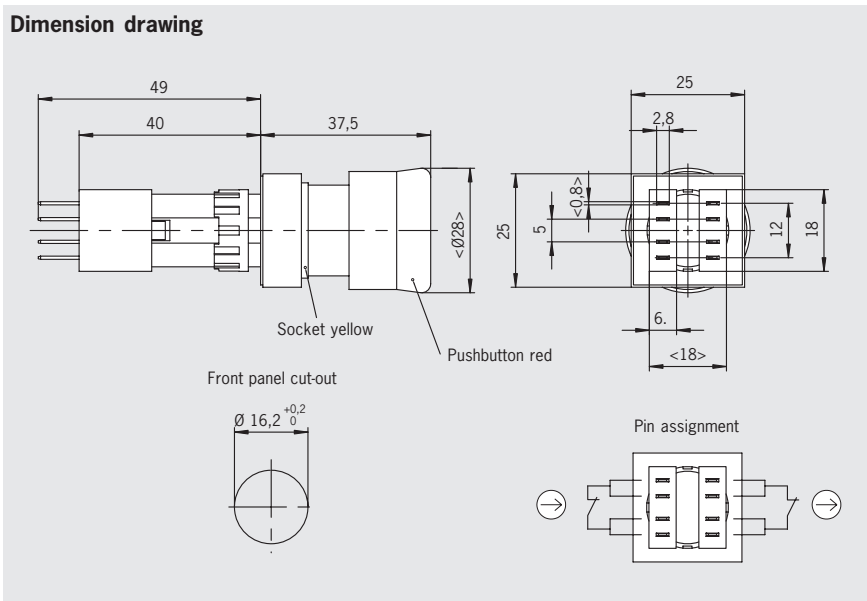
Accessories for kit	Accessories							Page
	EMERGENCY STOP device	Pushbutton	Key-operated switch	Selector switch	Enabling switch 3-stage	Plug connector	Connection cables	
Suitable for all designs	●							46
		●						47
			●					48
				●				48/49
						●		50
						●		51
Hand-held pendant stations HBA						●		53
Hand-held pendant stations HBE/HBL	●							54
					●			55

EMERGENCY STOP devices according to EN 418

- ▶ With pull release
- ▶ EMERGENCY STOP device for housing HBA without handwheel design 2/3 and all housings HBA with handwheel but not including 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



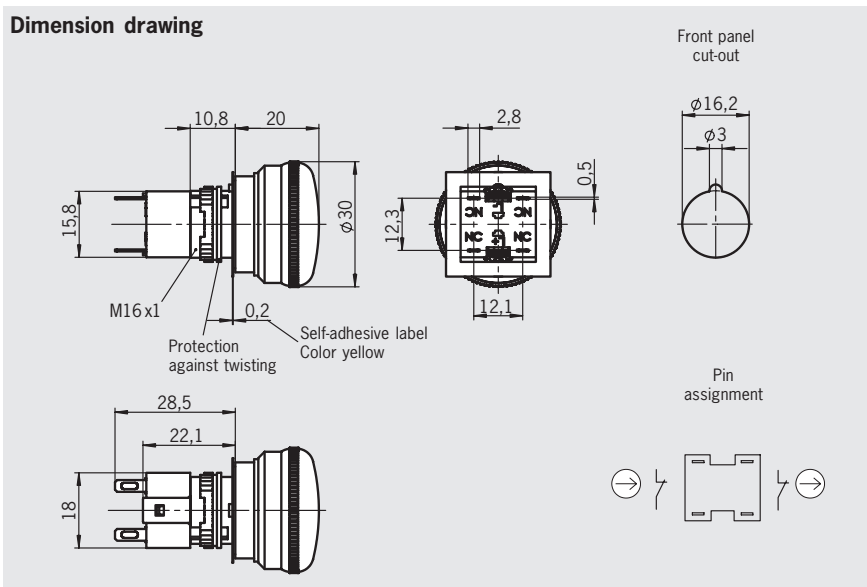
Technical data

Parameter	Value	Unit
Actuating element		
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 _e 24 V I _e 3 A	

- ▶ With rotary release
- ▶ EMERGENCY STOP device for housing HBA

Notes

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



Technical data

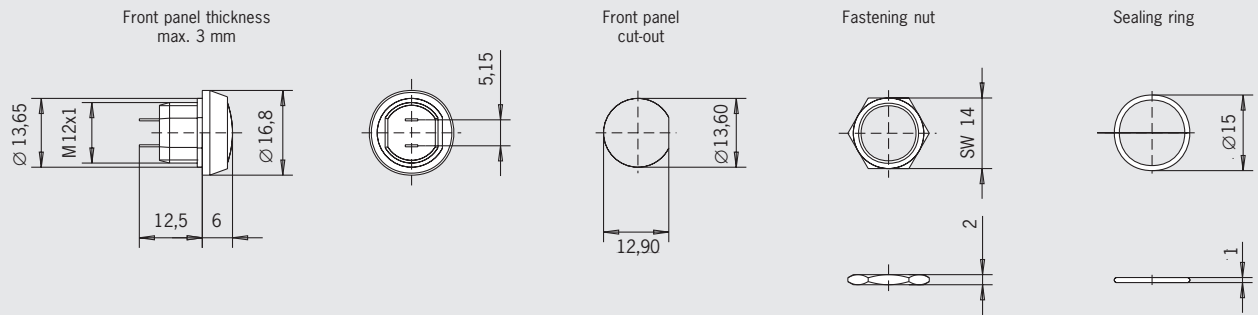
Parameter	Value	Unit
Actuating element		
Color of actuating button	Red	
Color of bottom shell	Black	
Switching elements	1, 2 positively driven contacts	
Degree of protection	IP 65	
Connection ratings	30 V DC / 3 A	

Ordering table

Item	Order No.
EMERGENCY STOP device (pull release) with 2 switching elements, 1 positively driven contact each	096 298
EMERGENCY STOP device (rotary release) 2 positively driven contacts	096 292
Blanking plug for fastening hole for EMERGENCY STOP device	083 653

Pushbutton

Dimension drawing



Technical data

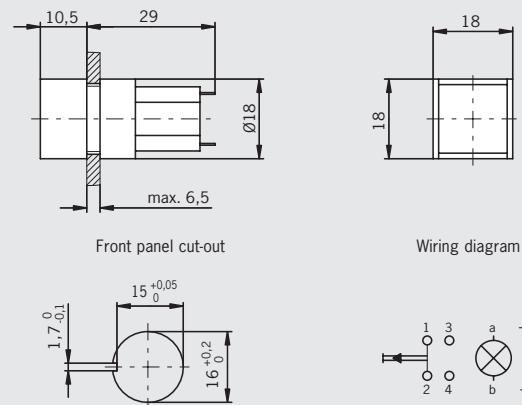
Parameter	Value	Unit
Ambient temperature	-25 ... +70	°C
Front degree of protection (integrated in front plate)	IP 67	
Switching principle	Button, snap-action switching element	
Switching elements	1 NO contact	
Switching current max.	0.1	A
Switching voltage	30	V DC
Connection type	Soldered connection	

Illuminated pushbutton (can be individually labeled)

Notes

- Installation in the front plate in the area of the EMERGENCY STOP switch and the enabling switch ZSE is not possible on hand-held pendant stations HBE

Dimension drawing



Technical data

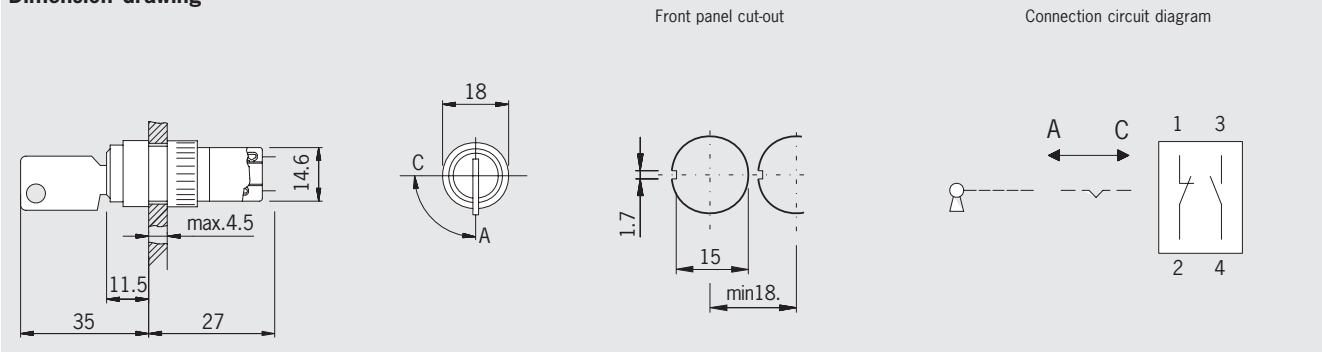
Parameter	Value	Unit
Ambient temperature	-25 ... +55	°C
Front degree of protection (integrated in front plate)	IP 65	
Switching principle	Button, snap-action switching element	
Switching elements	1 NC contact, 1 NO contact	m
Switching current max.	5	A
Switching voltage max.	250	V AC/DC
Connection type	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
Illuminated pushbutton, can be individually labeled	074 991

Key-operated switch

Dimension drawing



Technical data

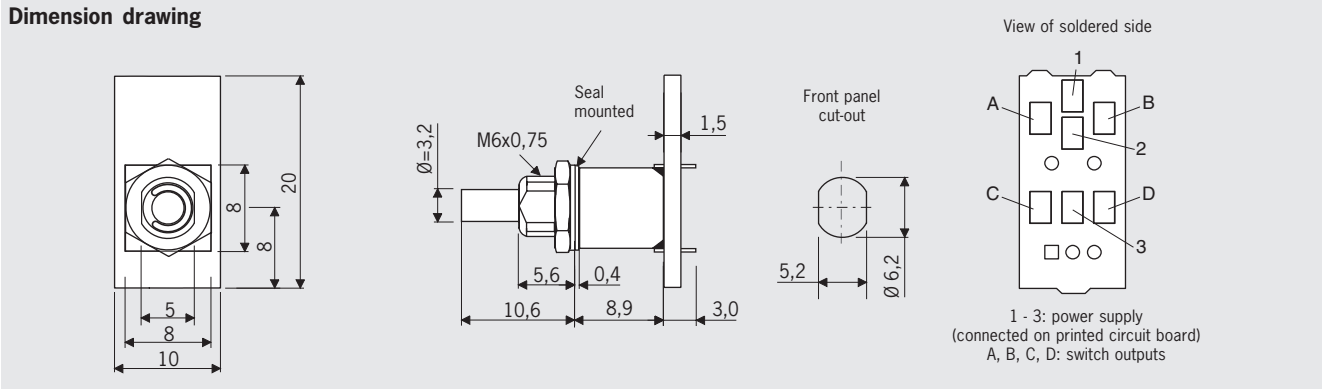
Parameter	Value	Unit
Ambient temperature	-25 ... +55	°C
Front degree of protection (integrated in front plate) / NEMA	IP 65 / 250-12	
Switching principle	Snap-action switching element	
Switching element	1 NC contact, 1 NO contact	
Switching voltage max.	30	V AC/DC
Connection type	Soldered connection	

Ordering table

Item	Order No.
Key-operated switch	083 639

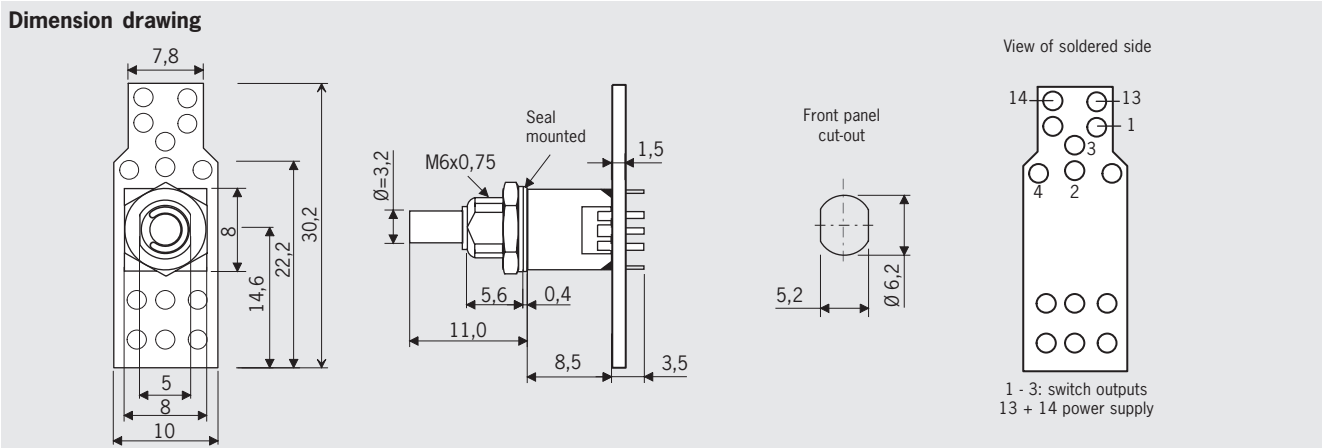
Gray code selector switch

Dimension drawing



Selector switch 1 of X

Dimension drawing

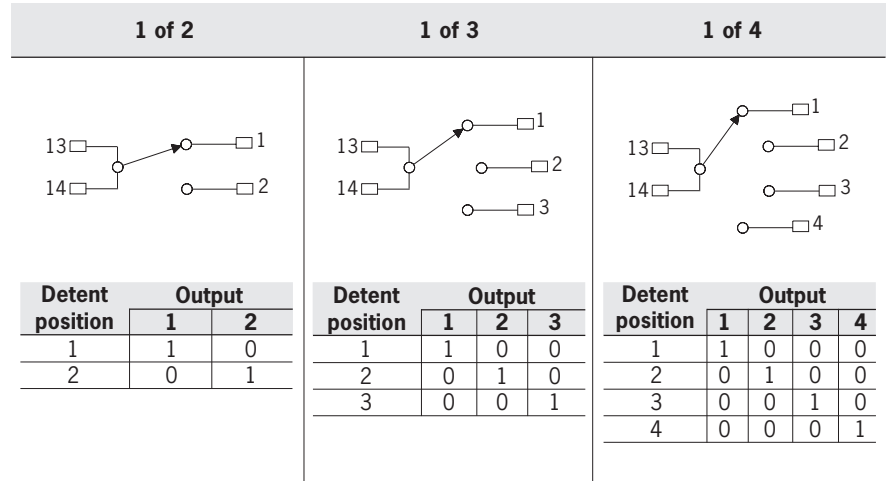


Code table, switch with Gray code

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

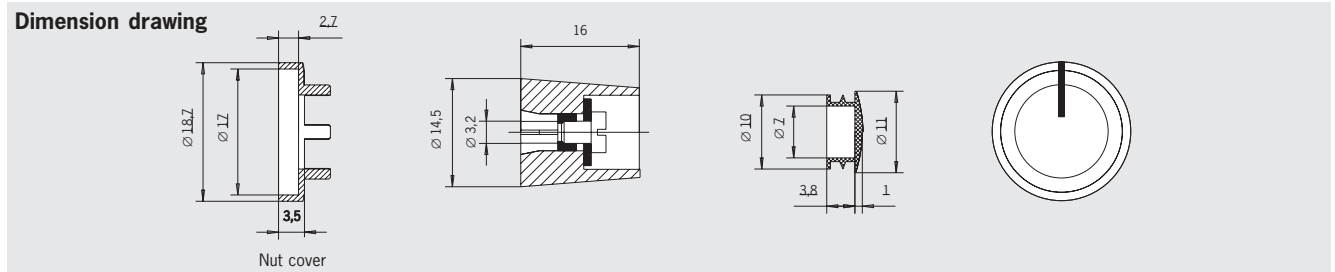
Circuit diagrams switch 1 of X



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.	0.4	VA
Switching current max.	0.05	A
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



Ordering table

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

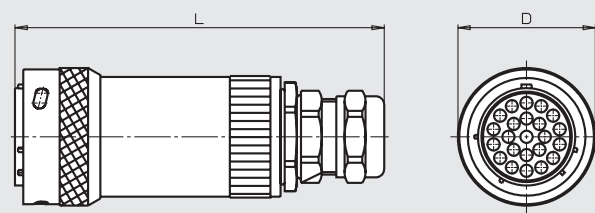
1) Break-before-make: all outputs are open between the switch positions.

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

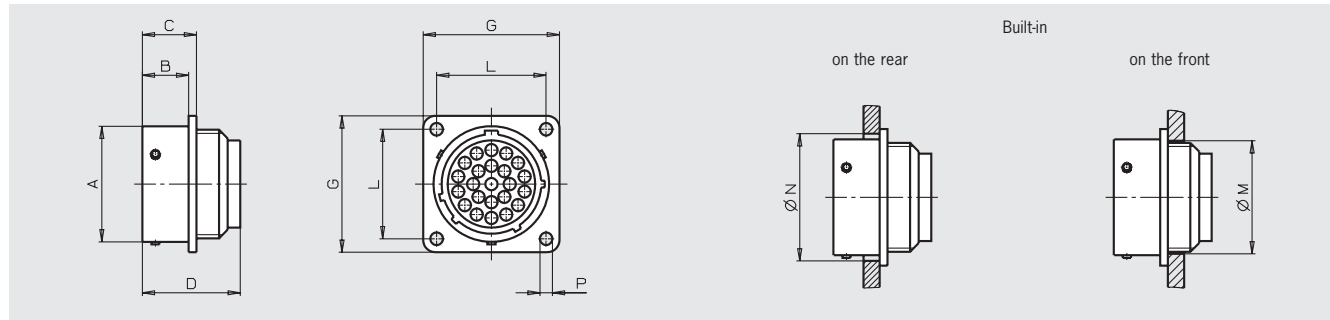
Plug connectors

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

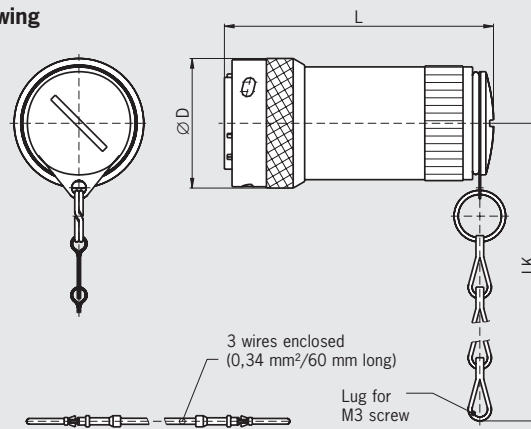


Number of pins	A	B _{max}	C _{max}	D _{max}	G _{max}	L	M	N	P
35	34.9	14.6	17.3	25.7	39.9	31.8	34.1	37.7	3.1
28	31.7	14.6	17.3	25.7	36.8	29.4	30.9	34.5	3.1
23	28.5	11.4	13.3	24.1	33.6	27	27.8	31.3	3.1
12	22.2	11.4	13.3	24.1	28.8	22.9	21.4	25	3.1

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



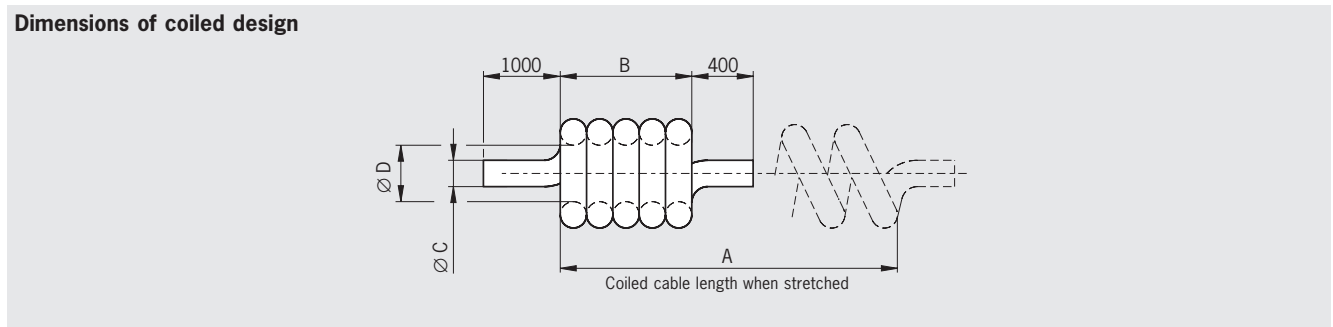
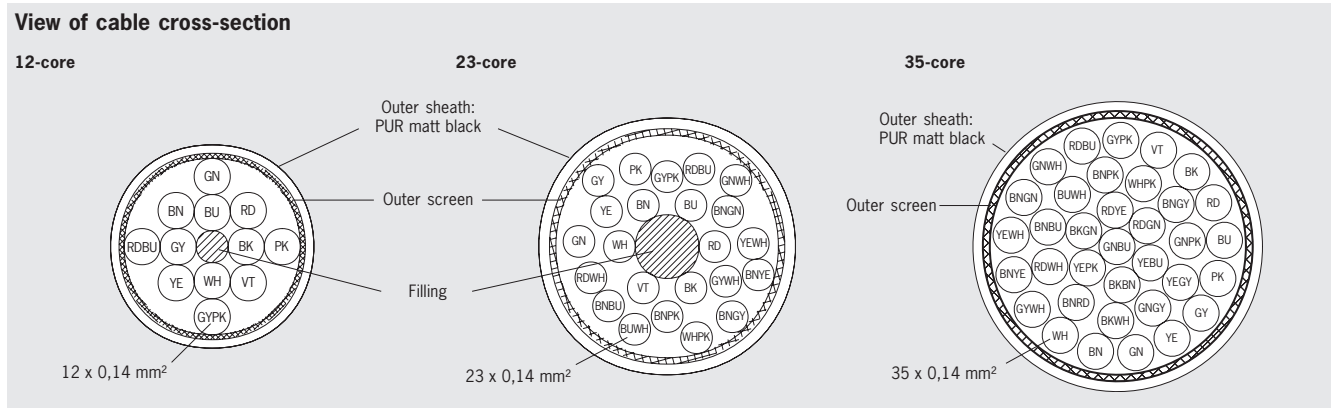
Technical data

Parameter	Value	Unit
Connecting plug/Flange socket		
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	074 395
Plug connector, 28-pin with pin contacts	074 394
Plug connector, 23-pin with pin contacts	074 393
Plug connector, 12-pin with pin contacts	086 748
Flange socket, 35-pin with socket contacts	074 386
Flange socket, 28-pin with socket contacts	074 385
Flange socket, 23-pin with socket contacts	074 384
Flange socket, 12-pin with socket contacts	086 749
Short-circuit plug with chain, 35-pin	083 459
Short-circuit plug with chain, 28-pin	083 458
Short-circuit plug with chain, 23-pin	083 457
Short-circuit plug with chain, 12-pin	087 802

Cable, coiled and straight



Technical data

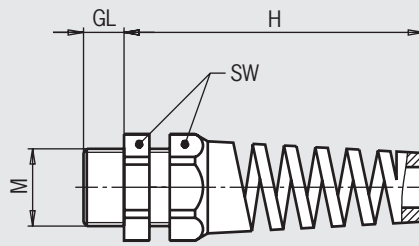
Parameter	Value	Unit	
Cable resistance	≤ 145	Ω/km	
Test voltage core / core	1.0	kV _{eff}	
Test voltage core / screen	1.0	kV _{eff}	
Insulation resistance	12-core and 23-core 35-core	≥ 200 ≥ 20	MΩ
Operating temperature	-10 ... +70	°C	
Bending radius	once several times	≥ 10 x cable diameter ≥ 15 x cable 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 HBE/HBL	5 - 10	22	11	71
Pg 13.5	Kit HBE/HBL	6 - 12	24	12.5	81

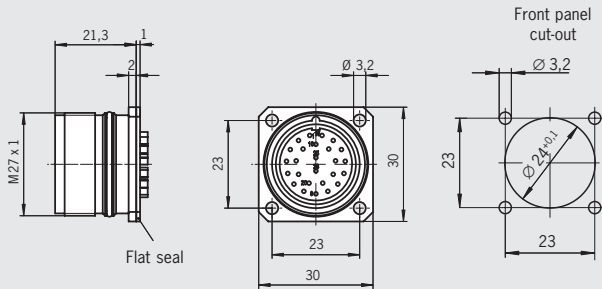
Ordering table

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

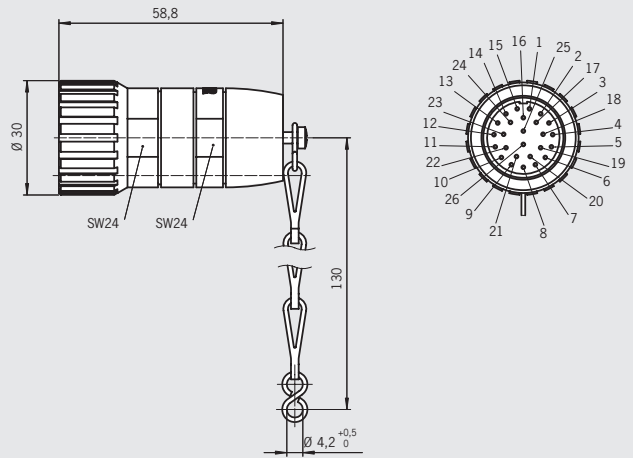
Connection kit

for design HBA - 098 404 and HBA - 098 405, 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
Flange socket	
Housing material	Metal
Number of pins	26
Degree of protection according to EN 60529 (inserted)	IP 67
Contact material	Copper alloy
Short-circuit plug	
Housing material	Metal
Number of pins	26
Degree of protection according to EN 60529 (inserted)	IP 67
Contact material	Copper alloy

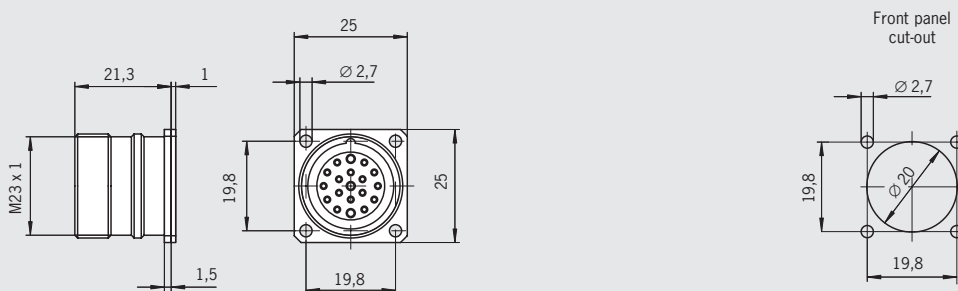
Ordering table

Item	Order No.
Flange socket and short-circuit plug	098 412

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

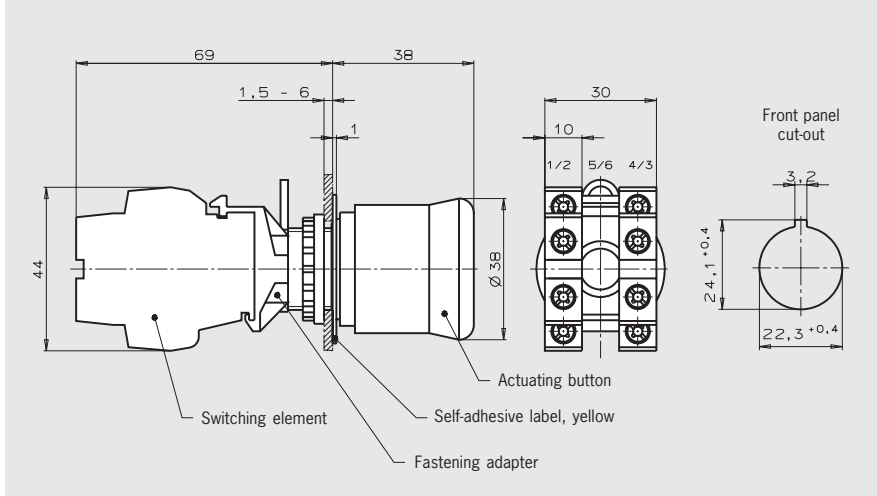
Item	Order No.
Flange plug, 19-pin with socket contacts	092 374

EMERGENCY STOP device, 22 mm with pull release according to EN 418

Notes

- ▶ The EMERGENCY STOP device engages when actuated by pressing, unlocks when pulled, and is overload-proof
- ▶ Use only for following housings:
 - HBE - 054 982
 - HBE - 072 627
 - 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 _e 24 V I _e 2.75 A	

Ordering table

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

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

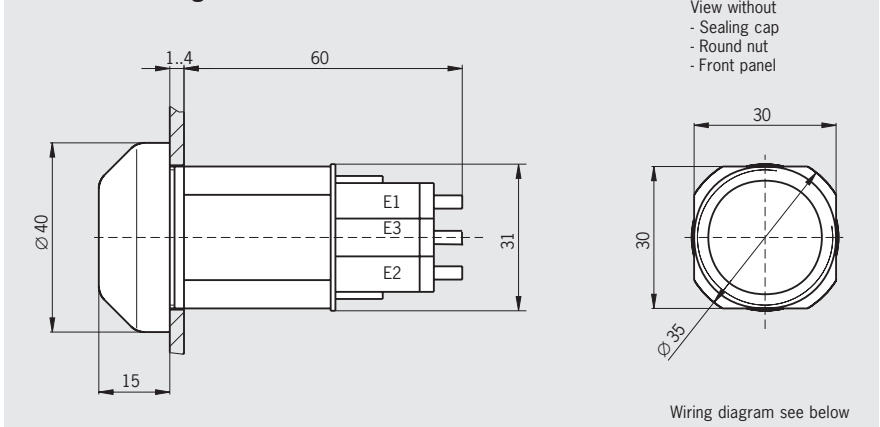
Notes

- ▶ Enabling switch ZSE2-2 C1692 for use in housing HBE - 074 973 and HBE - 072 629 (see page 38)

Switching elements

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

Dimension drawing



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

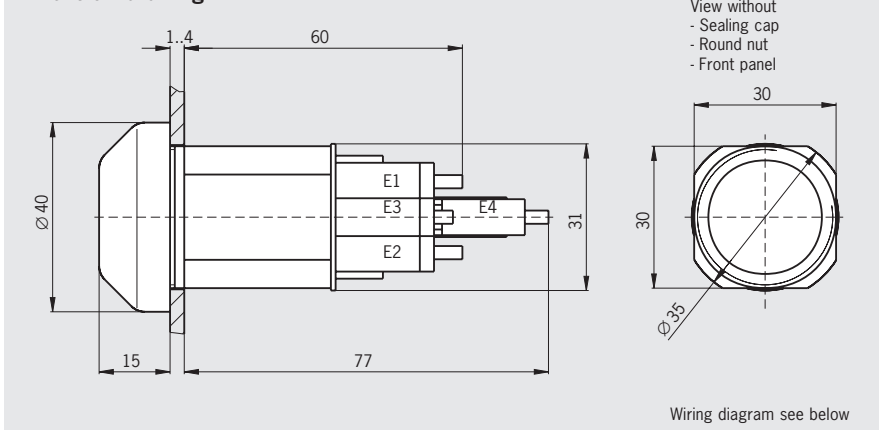
Notes

- ▶ Enabling switch ZSE2-4 C1943 for use in housing HBE - 072 984 and HBE - 083 489 (see page 38)

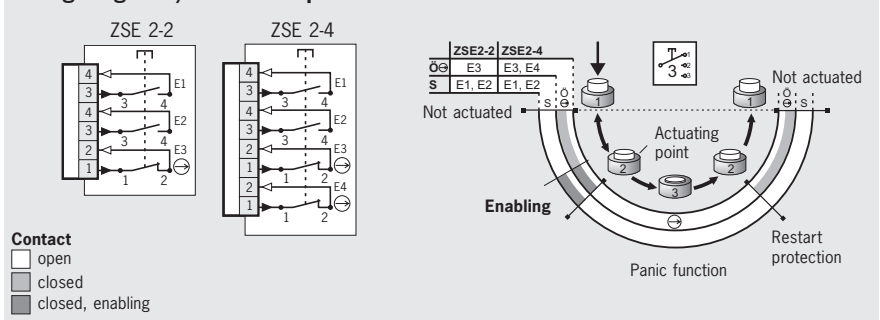
Switching elements

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

Dimension drawing



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



Technical data

Parameter	Value	Unit
Housing material	Plastic	
Fastening hole	∅ 30.5 ^{+0.5}	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 _e 24 V I _e 4 A DC-13 U _e 24 V I _e 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	070 752
ZSE2-4 C 1943	2 NO contacts + 2 positively driven contacts	Dual-channel	083 477

Holder HBA

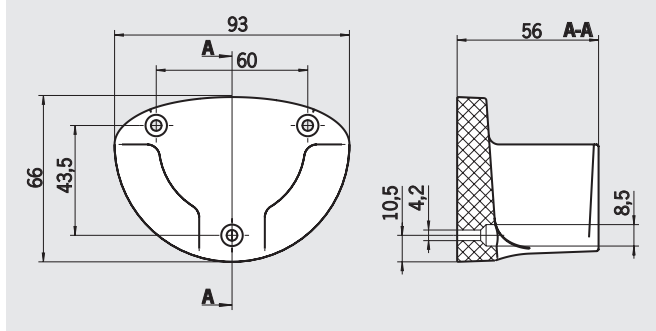
Technical data

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	072 828

Dimension drawing



Holder HBE

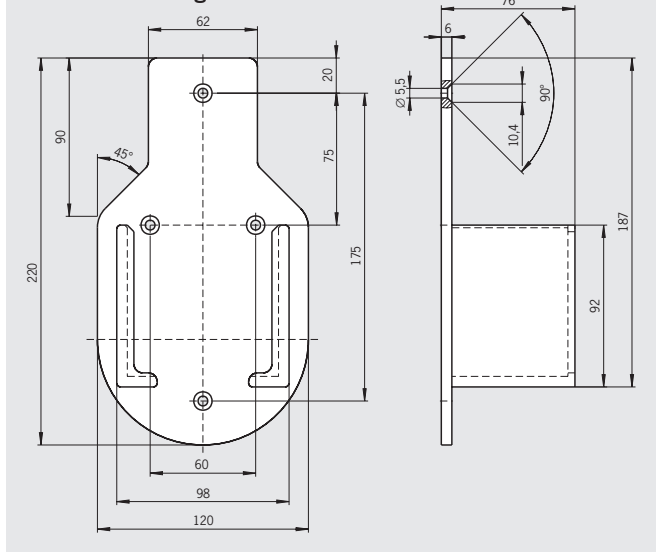
Technical data

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 HBE	083 445

Dimension drawing



Holder HBL

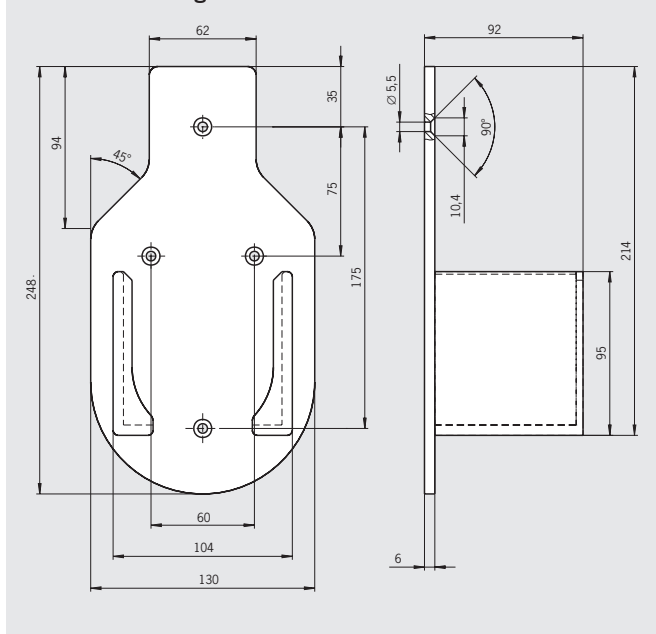
Technical data

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	084 397

Dimension drawing





Function and technology used in handwheels

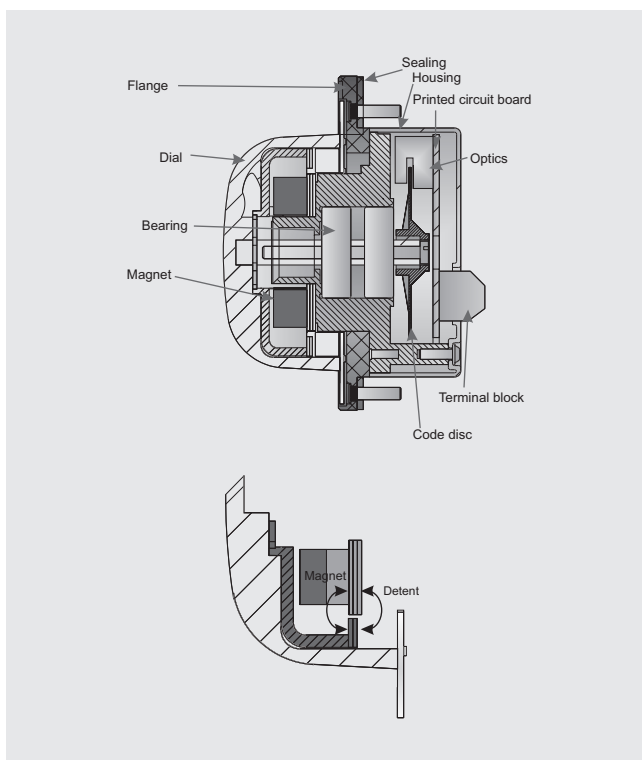
The change from a handwheel directly coupled to the spindle or axes to CNC-controlled axes has meant dramatic new developments for the handwheels. Along with the rotary movement and the visual indication of the position, the rotation of the handwheel generates square-wave pulses that are evaluated by the CNC axis controller and initiate the movement of the axis. With over 20 years of handwheel experience, EUCHNER provides a wide selection of handwheels that meet the high requirements on quality, reliability and safe signal generation in the machine tool sector. The daily use of handwheels places high demands on the mechanical design. With twin bearings and a wear-free detent, the handwheels are the optimum choice for trouble-free operation. The detent moment prevents undesired movement even in the event of machine vibration. The detent moment and the 100 or 25 pulses per revolution allow a desired value to be set quickly, reliably and accurately. In addition to the manual positioning of axes on CNC-controlled machines, handwheels are also used for medical and telecommunication applications. EUCHNER also offers handwheels for these applications.

Magnetic detent mechanism

Handwheels with magnetic detent are characterized by their absolutely wear-free and noiseless detent mechanism.

With 100 detent positions (100 or 25 pulses)

The detent position is generated by a magnetic field. A combination of 100 magnetic north/south poles is generated by the opposing magnetic fields creating 100 detent positions per revolution of the handwheel. Thanks to an air gap, the detent mechanism has no wear and is absolutely maintenance-free. With two ball bearings, the handwheel's bearing assembly can withstand high axial and radial forces. Different circuit outputs are available for all common controllers.



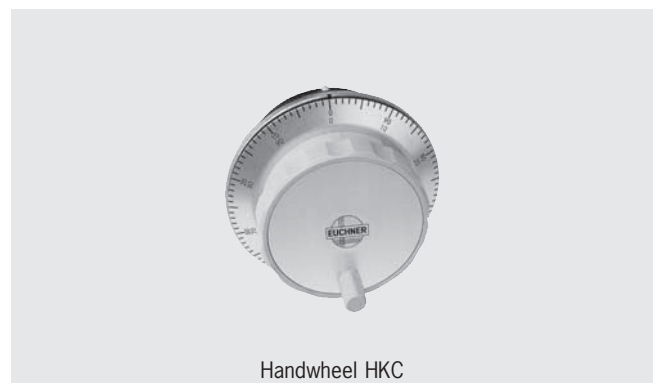
Three different designs are available:

- ▶ Design HKD
 - Suitable for installation in control panels and EUCHNER HBE and HBL series hand-held pendant stations
 - Suitable for integration in universal turning and milling machines for axis movement



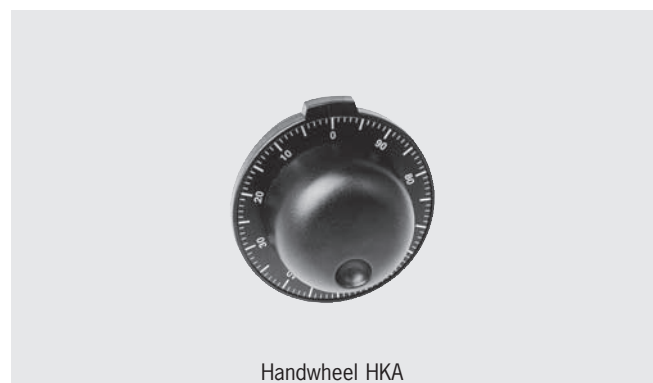
Handwheel HKD

- ▶ Design HKC
 - Suitable for installation in control panels
 - The design is particularly suitable for flat operating panels



Handwheel HKC

- ▶ Design HKA
 - Ergonomically shaped dial
 - The dial design is the same as on the built-in version in the hand-held pendant station HBA
 - Ideally suited for simultaneous use as a handwheel on the operating panel and in the hand-held pendant station



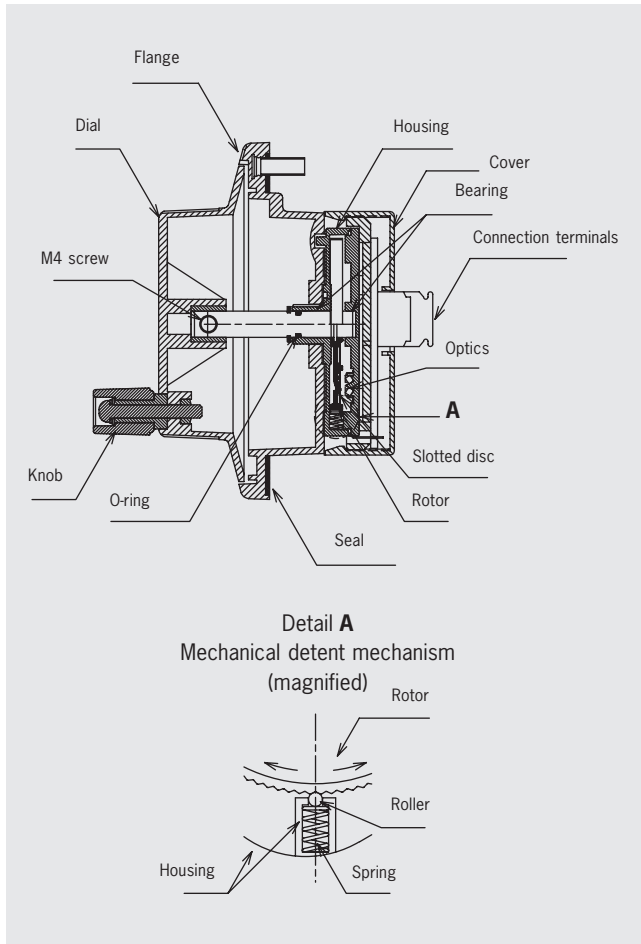
Handwheel HKA

Mechanical detent mechanism

Handwheels with mechanical detent are characterized by their light weight and shallow mounting depth.

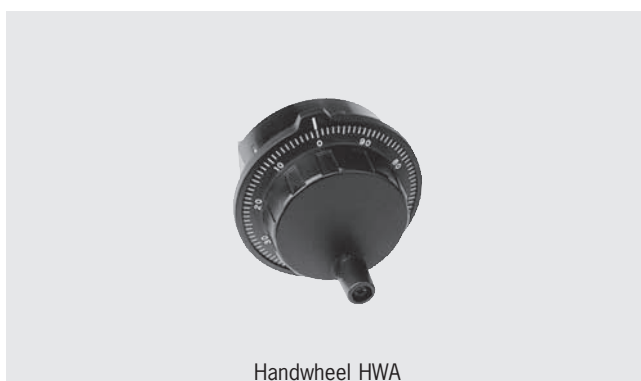
With 100 detent positions (100 or 25 pulses)

A toothed rotor working in conjunction with a roller creates the mechanical detent position. The roller is pushed between the teeth of the rotor by a spring and the dial fixed in position. The detent moment is produced by the movement of the roller over the teeth.



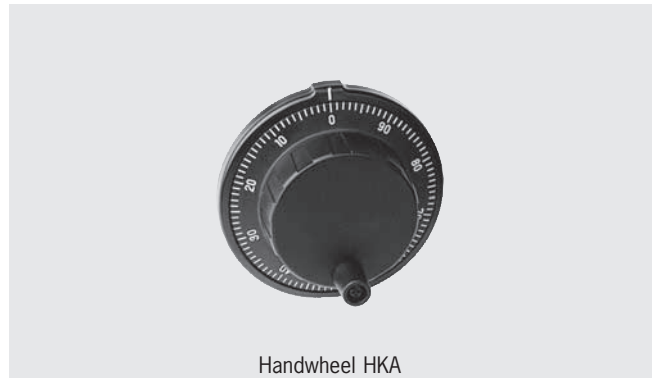
There are two different designs available:

- ▶ Design HWA
 - Suitable for installation in control panels.
 - Suitable for installation in EUCHNER hand-held pendant stations
 - With single-hole bushing mounting



Handwheel HWA

- ▶ Design HWB
 - Suitable for installation in control panels
 - With 3-point fastening



Handwheel HKA

With 20, 25 or 50 detent positions (pulses)

This lower number of pulses per revolution is sufficient for many applications. Handwheels with a small number of positions can be used on control devices with a display and indication of the position as a value. The user obtains the position information via the value displayed. The position is changed by turning the handwheel. Other uses include menu-based applications. The handwheel can be used, e.g. to scroll forwards/backwards or to change or accept default values. Due to the low number of pulses the handwheels are very small. They are ideal for portable applications or for integration in control panels on electronic equipment, e.g. in instruments or in medical and communications technology.

Three different designs are available:

- ▶ Design HWD
 - Suitable for integration in control panels or stand-alone devices
 - For printed circuit board installation
 - With 50 pulses per revolution
 - Small installation dimensions
 - With metal shaft
- ▶ Design HWE
 - Suitable for integration in control panels or stand-alone devices
 - For printed circuit board installation
 - With 20 pulses per revolution
 - Small installation dimensions
 - Cost optimized due to use of plastic shaft
- ▶ Design HWF
 - Suitable for integration in control panels or stand-alone devices
 - For printed circuit board installation
 - With 25 pulses per revolution
 - Small installation dimensions
 - With pushbutton function as acknowledgement signal



Handwheel HKD



- ▶ 100 detent positions per revolution
- ▶ Wear-free magnetic detent mechanism
- ▶ 100 or 25 pulses per revolution
- ▶ Installation in control panels and EUCHNER HBE and HBL series hand-held pendant stations



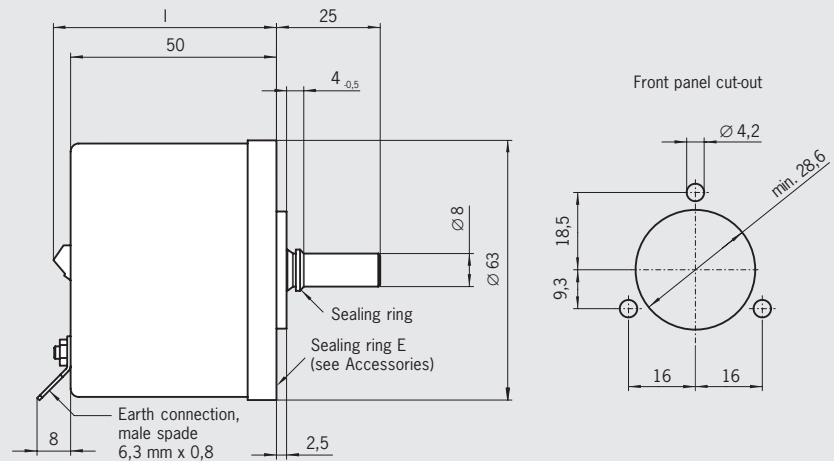
Notes

- ▶ A05 output suitable for Siemens controllers with RS422 input
- ▶ G05 output suitable for Fanuc control systems and Allen-Bradley control systems with push-pull inputs
- ▶ For dial, see Accessories page 73
- ▶ For front plate, see Accessories page 73

Mounting depth I

Connection type	I [mm]
Screw terminal S	55
Ribbon cable, 6-core V	53
D-Sub-min, 9-pin X	60

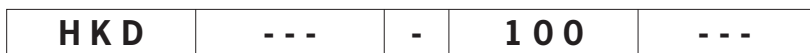
Dimension drawing



Ordering table

Item	Order No.
HKD025S100G12	091 525
HKD100S100A05	054 866
HKD100S100G05	083 354
HKD100S100G24	054 868
HKD025V100G12	091 526
HKD100V100A05	057 036
HKD100V100G05	091 527
HKD100V100G24	057 037
HKD100X100G12	083 359
HKD100X100A05	054 867
HKD100X100G24	093 433

Ordering code



Outputs

- A05** RS422A, $U_B = 5$ V DC
- G05** Push-pull 5 V, $U_B = 5$ V DC
- G12** Push-pull 5 V, $U_B = 10...30$ V DC
- G24** Push-pull 10...30 V, $U_B = 10...30$ V DC

Detent positions

Connection type

- S** Screw terminal
- V** Ribbon cable, 6-core, with plug
- X** D-Sub-min plug connector, 9-pin

Number of pulses per revolution

- 025** 25 pulses/revolution
- 100** 100 pulses/revolution

Technical data

Parameter	Value	Unit	
Pulses per revolution	2 x 25 or 2 x 100		
Detent positions	100		
Housing material	Aluminum		
Weight	0.5	kg	
Magnetic detent mechanism	0.04 ... 0.06	Nm	
Shaft loading, axial, max.	25	N	
Shaft loading, radial, max.	40	N	
Mechanical life, min.	20 x 10 ⁶	rev.	
Operating temperature	0 ... +70	°C	
Storage temperature	-25 ... +85	°C	
Atmospheric humidity, max.	80 % (condensation not allowed)		
Front degree of protection EN 60529 / IEC 529	IP 65		
NEMA 250	250-12		
Resistance to vibration			
Vibrations (3 axes)	DIN/IEC 68-2-6		
Shock (3 axes)	DIN/IEC 68-2-27		
EMC protection requirements in accordance with CE	EN 61000-6-2, EN 61000-6-4		
Output circuit RS422A			
Output circuit	A05		
Output signals	A, /A, B, /B		
Operating voltage U _B	5 ± 5 %	V DC	
Operating current, no load, max.	80	mA	
Output circuit	According to RS422A, RS422 use differential receiver module		
Output signals cw (clockwise rotation)	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>25 pulses</p> </div> <div style="text-align: center;"> <p>100 pulses</p> </div> </div>		
Pin assignment	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Ribbon cable V</p> </div> <div style="text-align: center;"> <p>Screw terminal S</p> </div> <div style="text-align: center;"> <p>D-Sub-min X</p> </div> </div>		
Output circuit, push-pull			
Output circuit	G05	G12	G24
Output signals		A, B	
Operating voltage U _B	5 ± 5 %		10 ... 30
Operating current, no load, max.		80	
Output voltage HIGH (1), min.	4.0 V / 0 mA	4.9 V / 0 mA	-
	3.4 V / 5 mA	3.9 V / 5 mA	-
	3.0 V / 20 mA	3.6 V / 20 mA	U _B - 3 V / 20 mA
Output voltage LOW (0), max.	1.3 V / 15 mA	1.3 V / 15 mA	3 V / 20 mA
Output current per output, max.		20	
Output signals cw (clockwise rotation)	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>25 pulses</p> </div> <div style="text-align: center;"> <p>100 pulses</p> </div> </div>		
Pin assignment	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Ribbon cable V</p> </div> <div style="text-align: center;"> <p>Screw terminal S</p> </div> <div style="text-align: center;"> <p>D-Sub-min X</p> </div> </div>		

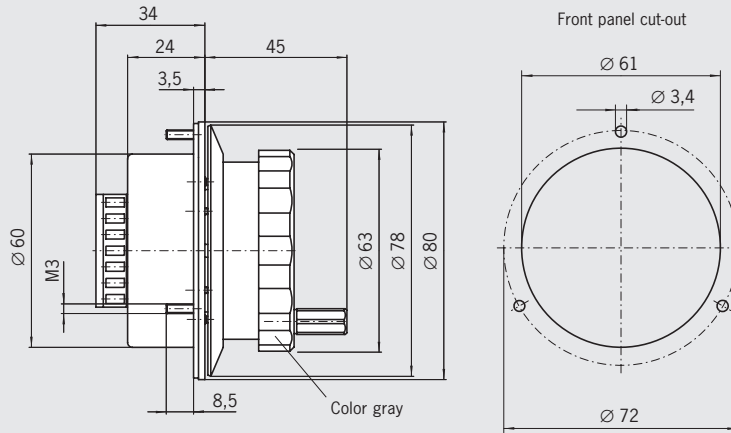
Handwheel HKC



- ▶ 100 detent positions per revolution
- ▶ Wear-free magnetic detent mechanism
- ▶ 100 or 25 pulses per revolution
- ▶ Flat design



Dimension drawing



Notes

- ▶ A05 output suitable for Siemens controllers with RS422 input
- ▶ G05 output suitable for Fanuc control systems and Allen-Bradley control systems with push-pull inputs

Ordering table

Item	Order No.
HKC025S100G12	072 940
HKC100S100A05	087 733
HKC100S100G05	082 573
HKC100S100G24	087 739

Ordering code

HKC	---	S	100	---
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Outputs

- A05** RS422A, $U_B = 5$ V DC
- G05** Push-pull 5 V, $U_B = 5$ V DC
- G12** Push-pull 5 V, $U_B = 10...30$ V DC
- G24** Push-pull 10...30 V, $U_B = 10...30$ V DC

Detent positions

Connection type

- S** Screw terminal

Number of pulses per revolution

- 025** 25 pulses/revolution
- 100** 100 pulses/revolution

Technical data

Parameter	Value	Unit		
Pulses per revolution	2 x 25 or 2 x 100			
Detent positions	100			
Housing material	Thermoplastic			
Weight	0.25	kg		
Detent	Magnetic			
Shaft loading, axial, max.	25	N		
Shaft loading, radial, max.	40	N		
Mechanical life, min.	20 x 10 ⁶	rev.		
Operating temperature	0 ... +50	°C		
Storage temperature	-20 ... +50	°C		
Atmospheric humidity, max.	80 % (condensation not allowed)			
Front degree of protection EN 60529 / IEC 529	IP 65			
NEMA 250	250-12			
Resistance to vibration				
Vibrations (3 axes)	DIN/IEC 68-2-6			
Shock (3 axes)	DIN/IEC 68-2-27			
EMC protection requirements in accordance with CE	EN 61000-6-2, EN 61000-6-4			
Output circuit RS422A				
Output circuit	A05			
Output signals	A, /A, B, /B			
Operating voltage U _B	5 ± 5 %	V DC		
Operating current, no load, max.	80	mA		
Output specifications	According to RS422A, RS422 use differential receiver module			
Output signals cw (clockwise rotation)	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>25 pulses</p> <p>Detent position areas</p> </div> <div style="text-align: center;"> <p>100 pulses</p> <p>Detent position area</p> </div> </div>			
Pin assignment	<p>Screw terminal S</p>			
Output circuit, push-pull				
Output circuit	G05	G12 G24		
Output signals		A, B		
Operating voltage U _B	5 ± 5 %	10 ... 30		
Operating current, no load, max.		80		
Output voltage	HIGH (1), min.	4.0 V / 0 mA	4.9 V / 0 mA	-
		3.4 V / 5 mA	3.9 V / 5 mA	-
		3.0 V / 20 mA	3.6 V / 20 mA	U _B - 3 V / 20 mA
	LOW (0), max.	1.3 V / 15 mA	1.3 V / 15 mA	3 V / 20 mA
Output current per output, max.		20		mA
Output signals cw (clockwise rotation)	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>25 pulses</p> <p>Detent position areas</p> </div> <div style="text-align: center;"> <p>100 pulses</p> <p>Detent position area</p> </div> </div>			
Pin assignment	<p>Screw terminal S</p>			

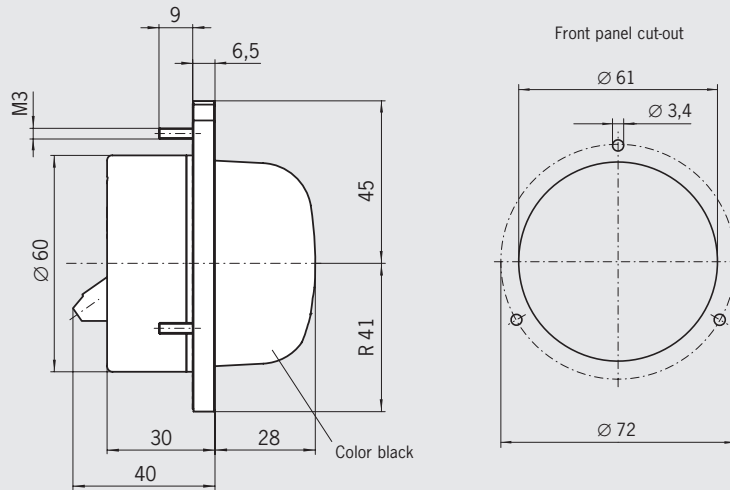
Handwheel HKA



- ▶ 100 detent positions per revolution
- ▶ Wear-free magnetic detent mechanism
- ▶ 100 or 25 pulses per revolution
- ▶ Haptic handwheel



Dimension drawing



Notes

- ▶ A05 output suitable for Siemens controllers with RS422 input
- ▶ G05 output suitable for Fanuc control systems and Allen-Bradley control systems with push-pull inputs

Ordering table

Item	Order No.
HKA025S100G12	072 956
HKA100S100A05	072 885
HKA100S100G05	072 955
HKA100S100G24	072 967

Ordering code

HKA	---	S	100	---
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Outputs

- A05** RS422A, $U_B = 5$ V DC
- G05** Push-pull 5 V, $U_B = 5$ V DC
- G12** Push-pull 5 V, $U_B = 10...30$ V DC
- G24** Push-pull 10...30 V, $U_B = 10...30$ V DC

Detent positions

Connection type

- S** Screw terminal

Number of pulses per revolution

- 025** 25 pulses/revolution
- 100** 100 pulses/revolution

Technical data

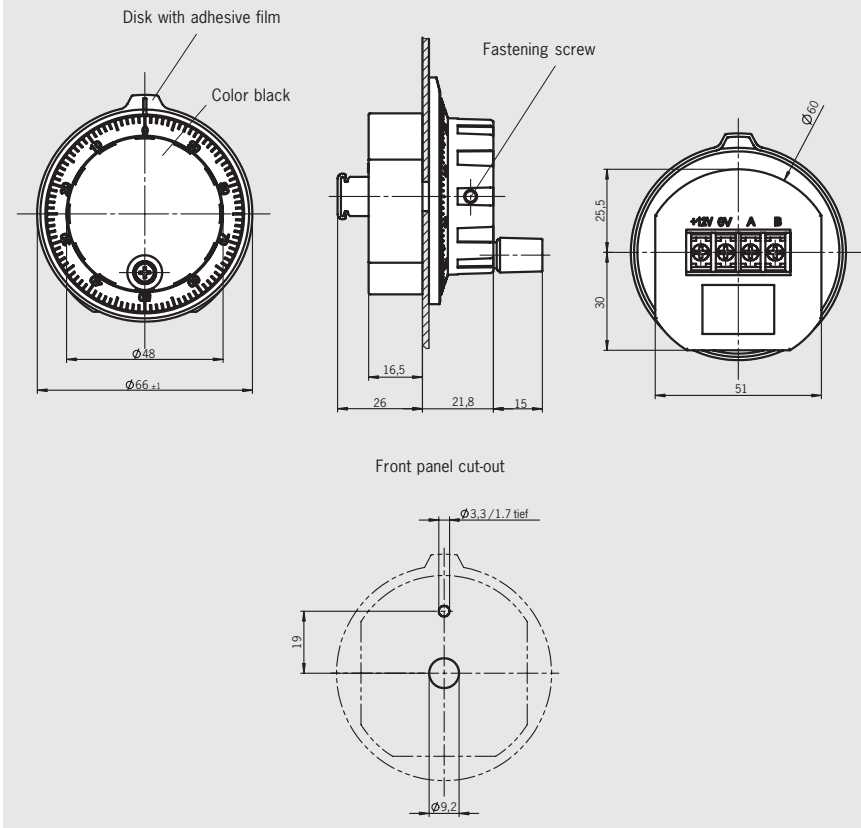
Parameter	Value	Unit	
Pulses per revolution	2 x 25 or 2 x 100		
Detent positions	100		
Housing material	Thermoplastic		
Weight	0.25	kg	
Detent	Magnetic		
Shaft loading, axial, max.	25	N	
Shaft loading, radial, max.	40	N	
Mechanical life, min.	20 x 10 ⁶	rev.	
Operating temperature	0 ... +50	°C	
Storage temperature	-20 ... +50	°C	
Atmospheric humidity, max.	80 % (condensation not allowed)		
Front degree of protection EN 60529 / IEC 529	IP 65		
NEMA 250	250-12		
Resistance to vibration			
Vibrations (3 axes)	DIN/IEC 68-2-6		
Shock (3 axes)	DIN/IEC 68-2-27		
EMC protection requirements in accordance with CE	EN 61000-6-2, EN 61000-6-4		
Output circuit RS422A			
Output circuit	A05		
Output signals	A, /A, B, /B		
Operating voltage U _B	5 ± 5 %	V DC	
Operating current, no load, max.	80	mA	
Output specifications	According to RS422A, RS422 use differential receiver module		
Output signals cw (clockwise rotation)	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>25 pulses</p> <p>Detent position areas</p> </div> <div style="text-align: center;"> <p>100 pulses</p> <p>Detent position area</p> </div> </div>		
Pin assignment	<p>Screw terminal S</p>		
Output circuit, push-pull			
Output circuit	G05	G12 G24	
Output signals		A, B	
Operating voltage U _B	5 ± 5 %	10 ... 30	
Operating current, no load, max.		80	
Output voltage			
HIGH (1), min.	4.0 V / 0 mA	4.9 V / 0 mA	-
	3.4 V / 5 mA	3.9 V / 5 mA	-
	3.0 V / 20 mA	3.6 V / 20 mA	U _B - 3 V / 20 mA
LOW (0), max.	1.3 V / 15 mA	1.3 V / 15 mA	3 V / 20 mA
Output current per output, max.		20	mA
Output signals cw (clockwise rotation)	<div style="text-align: center;"> <p>25 pulses</p> <p>Detent position areas</p> </div>	<div style="text-align: center;"> <p>100 pulses</p> <p>Detent position area</p> </div>	
Pin assignment	<p>Screw terminal S</p>		

Handwheel HWA

- ▶ 100 detent positions per revolution
- ▶ Mechanical detent mechanism
- ▶ 100 or 25 pulses per revolution
- ▶ Single-hole bushing mounting



Dimension drawing



Notes

- ▶ A05 output suitable for Siemens controllers with RS422 input
- ▶ G05 output suitable for Fanuc control systems and Allen-Bradley control systems with push-pull inputs

Ordering table

Item	Packaging unit	Order No.
HWA025T100G12/V10	10 pcs.	072 972
HWA100T100A05/V10	10 pcs.	072 970
HWA100T100G05/V10	10 pcs.	072 971

Ordering code

HWA	---	T	100	---
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Outputs

- A05** RS422A, $U_B = 5 \text{ V DC}$
- G05** Push-pull 5 V, $U_B = 5 \text{ V DC}$
- G12** Push-pull 5 V, $U_B = 12 \text{ V DC}$

Detent positions

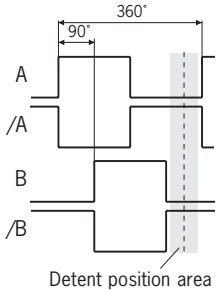

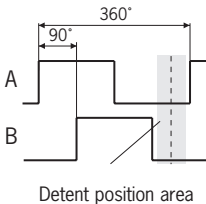
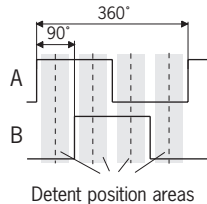

Connection type

- T** Screw terminal

Number of pulses per revolution

- 025** 25 pulses/revolution
- 100** 100 pulses/revolution

Technical data

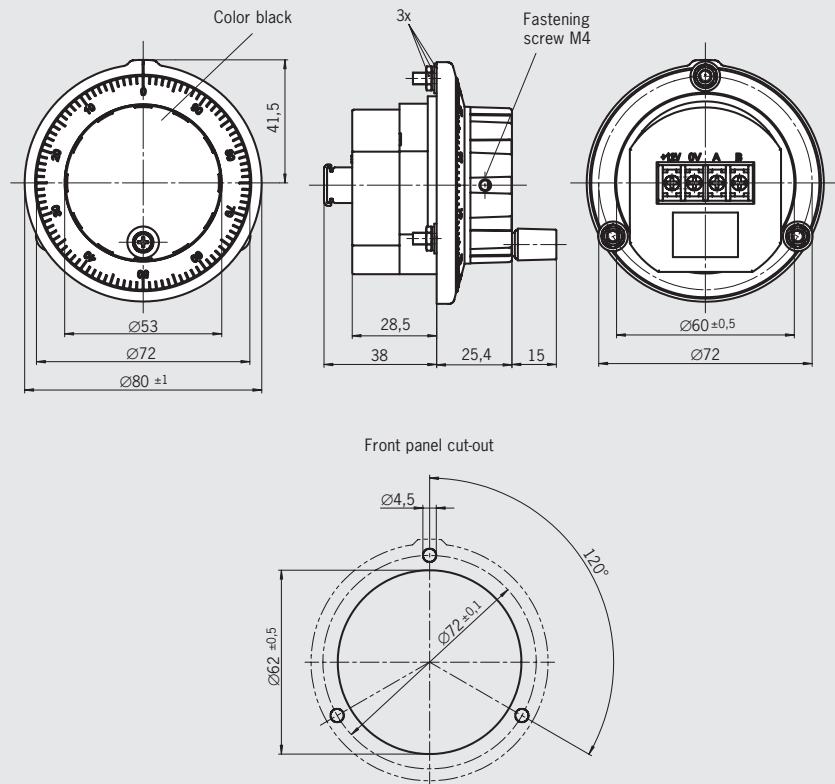
Parameter	Value	Unit
Pulses per revolution	2 x 25 or 2 x 100	
Detent positions	100	
Housing material	Plastic/metal	
Weight	0.1	kg
Detent	Mechanical	
Shaft loading, axial, max.	25	N
Shaft loading, radial, max.	40	N
Mechanical life, min.	1 x 10 ⁶	rev.
Operating temperature	0 ... +50	°C
Storage temperature	-20 ... +50	°C
Atmospheric humidity, max.	80 % (condensation not allowed)	
Front degree of protection	EN 60529 / IEC 529	
	NEMA 250	
	IP65	
	250-12	
Output circuit RS422A		
Output circuit	A05	
Output signals	A, /A, B, /B	
Operating voltage U _B	5 ± 10 %	V DC
Operating current, no load, max.	80	mA
Output specifications	According to RS422A, RS422 use differential receiver module	
Output signals cw (clockwise rotation)	100 pulses 	
Pin assignment	Screw terminal T +5V 0V A \bar{A} B \bar{B} 	
Output circuit, push-pull		
Output circuit	G05	G12
Output signals	A, B	
Operating voltage U _B	5 ± 10 %	12 ± 10 %
Operating current, no load, max.	80	
Output voltage	4.0 V / 20 mA	
HIGH (1), min.	0.5 V / 20 mA	
LOW (0), max.	20	
Output current per output, max.		
Output signals CW (clockwise rotation)	100 pulses  25 pulses 	
Pin assignment	Screw terminal T +U _B 0V A B 	

Handwheel HWB

- ▶ 100 detent positions per revolution
- ▶ Mechanical detent mechanism
- ▶ 100 or 25 pulses per revolution
- ▶ 3-point fixing



Dimension drawing



Notes

- ▶ A05 output suitable for Siemens controllers with RS422 input
- ▶ G05 output suitable for Fanuc control systems and Allen-Bradley control systems with push-pull inputs

Ordering table

Item	Packaging unit	Order No.
HWB025T100G12/V05	5 pcs.	072 975
HWB100T100A05/V05	5 pcs.	072 973
HWB100T100G05/V05	5 pcs.	072 974

Ordering code

HWB	---	T	100	---
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Outputs

- A05** RS422A, $U_B = 5$ V DC
- G05** Push-pull 5 V, $U_B = 5$ V DC
- G12** Push-pull 5 V, $U_B = 12$ V DC

Detent positions

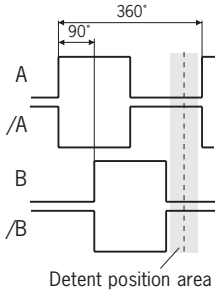

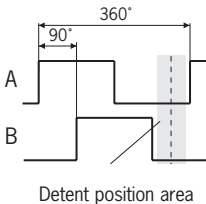
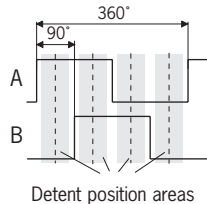

Connection type

- T** Screw terminal

Number of pulses per revolution

- 025** 25 pulses/revolution
- 100** 100 pulses/revolution

Technical data

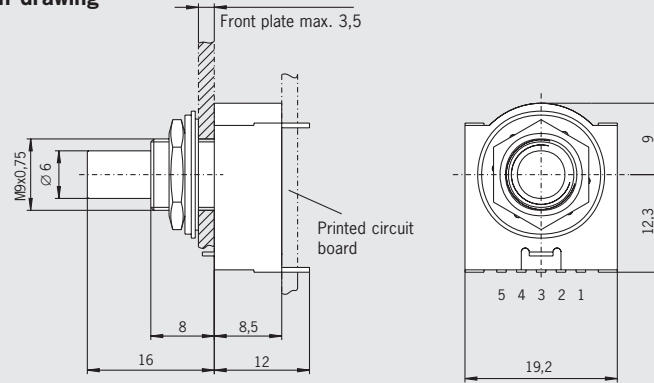
Parameter	Value	Unit
Pulses per revolution	2 x 25 or 2 x 100	
Detent positions	100	
Housing material	Plastic/metal	
Weight	0.125	kg
Detent	Mechanical	
Shaft loading, axial, max.	25	N
Shaft loading, radial, max.	40	N
Mechanical life, min.	1 x 10 ⁶	rev.
Operating temperature	0 ... +50	°C
Storage temperature	-20 ... +50	°C
Atmospheric humidity, max.	80 % (condensation not allowed)	
Front degree of protection	EN 60529 / IEC 529	
	NEMA 250	
	IP65	
	250-12	
Output circuit RS422A		
Output circuit	A05	
Output signals	A, /A, B, /B	
Operating voltage U _B	5 ± 10 %	V DC
Operating current, no load, max.	80	mA
Output specifications	According to RS422A, RS422 use differential receiver module	
Output signals cw (clockwise rotation)	100 pulses 	
Pin assignment	Screw terminal T +5V 0V A \bar{A} B \bar{B} 	
Output circuit, push-pull		
Output circuit	G05	G12
Output signals	A, B	
Operating voltage U _B	5 ± 10 %	12 ± 10 %
Operating current, no load, max.	80	
Output voltage	4.0 V / 20 mA	
HIGH (1), min.	0.5 V / 20 mA	
LOW (0), max.	20	
Output current per output, max.		
Output signals CW (clockwise rotation)	100 pulses  25 pulses 	
Pin assignment	Screw terminal T +U _B 0V A B 	

Handwheel HWD

- ▶ 50 detent positions per revolution
- ▶ Mechanical detent mechanism
- ▶ 50 pulses per revolution
- ▶ For printed circuit board installation
- ▶ Metal shaft

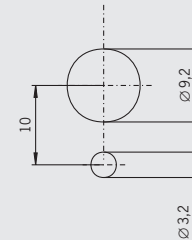
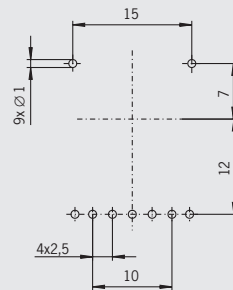


Dimension drawing



Printed circuit board drilling pattern
View from assembly side

Front panel cut-out



Notes

- ▶ For dial, see Accessories page 73

Technical data

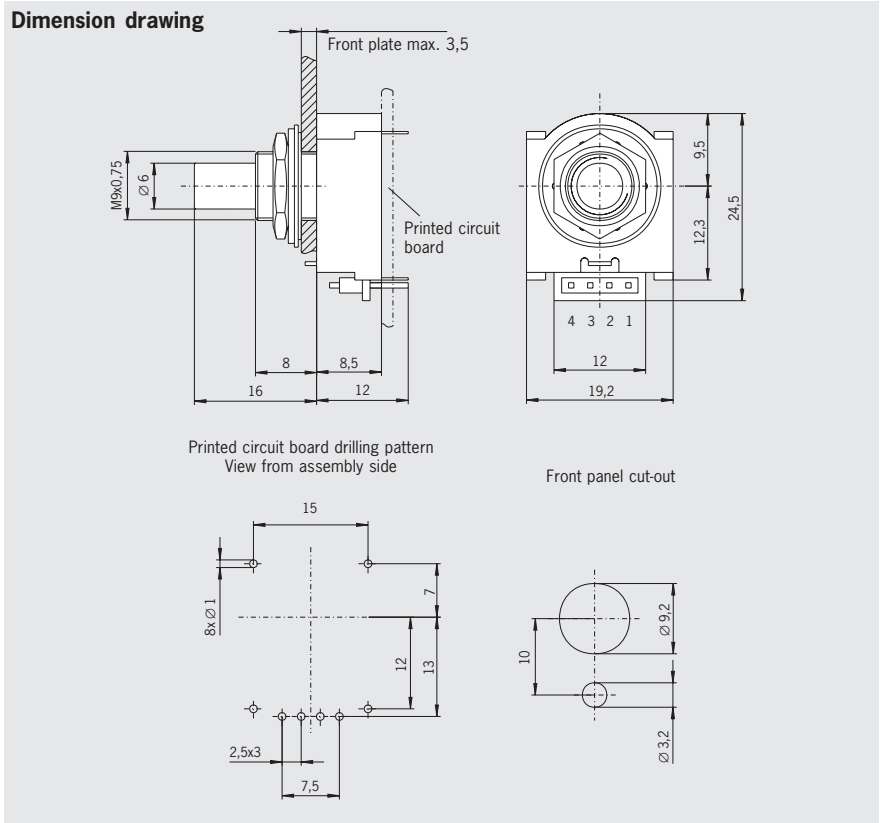
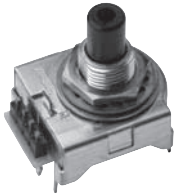
Parameter	Value	Unit
Pulses per revolution	50	
Detent positions	50	
Housing material	Plastic/metal	
Weight	20	g
Mechanical detent mechanism	7 ... 14 x 10 ⁻³	Nm
Mechanical life, min.	0.25 x 10 ⁶	rev.
Operating temperature	0 ... +70	°C
Storage temperature	-10 ... +80	°C
Front degree of protection EN 60529 / IEC 529	IP 65	
NEMA 250	250-12	
Output circuit		
Output circuit	Transistor open collector, 4.7 kΩ pull-up	
Output signals	A, B	
Operating voltage U _B	5 ±10%	V DC
Operating current, no load, max.	20	mA
Output voltage	HIGH (1), min. LOW (0), max.	U _B - 0.5 V (no load) 0.4 V (no load)
Output current per output, max.	8	mA
Open collector U _{max}	7	V
Open collector I _{max}	8	mA
Cable length > 300 mm	Amplifier required	
Output signals		
Pin assignment		
Output circuit		

Ordering table

Item	Packaging unit	Order No.
HWD-072988/V10	10 pcs.	072 988

Handwheel HWE

- ▶ 20 detent positions per revolution
- ▶ Mechanical detent mechanism
- ▶ 20 pulses per revolution
- ▶ For printed circuit board installation
- ▶ Plastic shaft



Notes

- ▶ For dial, see Accessories page 73

Technical data

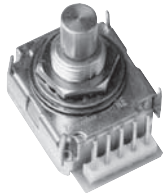
Parameter	Value	Unit
Pulses per revolution	20	
Detent positions	20	
Housing material	Plastic/metal	
Weight	15	g
Mechanical detent mechanism	3 ... 10 x 10 ⁻³	Nm
Mechanical life, min.	1 x 10 ⁶	rev.
Operating temperature	0 ... +60	°C
Storage temperature	-10 ... +80	°C
Front degree of protection EN 60529 / IEC 529	IP 65	
NEMA 250	250-12	
Output circuit		
Output circuit	CMOS level	
Output signals	A, B	
Operating voltage U _B	5 ±10%	V DC
Operating current, no load, max.	40	mA
Output voltage HIGH (1), min.	U _B - 0.5 V (no load)	
Output voltage LOW (0), max.	0.5 V (no load)	
Cable length > 300 mm	Amplifier required	
Output signals Pin assignment Output circuit		

Ordering table

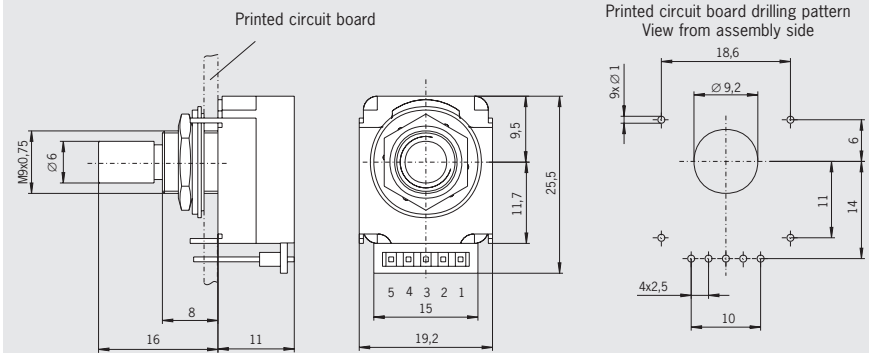
Item	Packaging unit	Order No.
HWE-072989/V10	10 pcs.	072 989

Handwheel HWF

- ▶ 25 detent positions per revolution
- ▶ Mechanical detent mechanism
- ▶ 25 pulses per revolution
- ▶ For printed circuit board installation
- ▶ Pushbutton function



Dimension drawing



Notes

- ▶ For dial, see Accessories page 69

Technical data

Parameter	Value	Unit
Pulses per revolution	25	
Detent positions	25	
Housing material	Plastic/metal	
Weight	20	g
Mechanical detent mechanism	$3 \dots 7 \times 10^{-3}$	Nm
Mechanical life, min.	1×10^6	rev.
Mechanical life pushbutton, min.	500×10^3 actuations	
Pushbutton stroke	1.2	mm
Operating temperature	0 ... +60	°C
Storage temperature	-10 ... +80	°C
Front degree of protection EN 60529 / IEC 529	IP 65	
NEMA 250	250-12	
Resistance to vibration		
Vibrations (3 axes)	DIN/IEC 68-2-6	
Shock (3 axes)	DIN/IEC 68-2-27	
Output circuit		
Output circuit	Transistor open collector, 10 kΩ pull-up	
Output signals	A, B	
Operating voltage U_B	$5 \pm 10\%$	V DC
Operating current, no load, max.	10	mA
Output voltage	$U_B - 0.5$ V (no load)	
	0.4 V (no load)	
Cable length > 300 mm	Amplifier required	
Pushbutton U_{max}	12	V DC
Pushbutton I_{max} (resistive load)	20	mA
Output signals		
Pin assignment		
Output circuit		
Soldering		
Manual soldering	Max. 350 °C / max. 3 s	
Reflow soldering	Not possible	

Ordering table

Item	Packaging unit	Order No.
HWF-072990/V10	10 pcs.	072 990

Accessories

Front plate for handwheel HKD

- ▶ Front plate with bonded seal
- ▶ Seal handwheels without front plate using sealing ring E

Dimensions

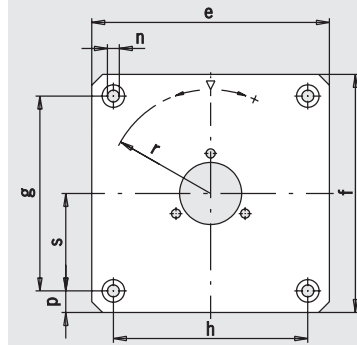
Design	e	f	g	h	k	m	n	p	s	r
F	110	110	90	90	-	-	DIN74-Am5	-	-	R48
G	108	108	89	89	-	-	5.2	-	-	R48
H	114.3	127	101.6	89	-	-	5.2	12.7	49.5	R48

Ordering table

Item	Order No.
Sealing ring E	054 861
Front plate F with seal	028 760
Front plate G with seal	028 761
Front plate H with seal	028 762

Dimension drawing

Front plate F, G, H



Dials for handwheel HKD

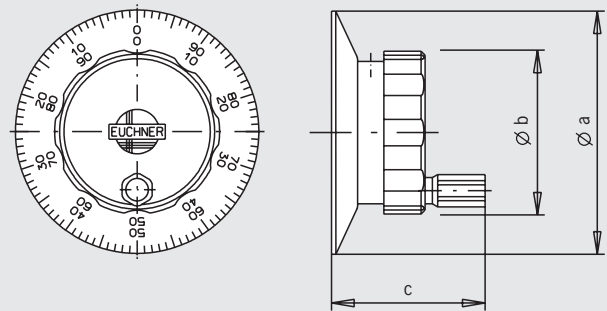
Dimensions

Design	Ø a	Ø b	c
Dial 90 mm	90	63	41
Dial 78 mm	78	63	39
Dial 65 mm	65	44	42
Dial 58 mm	58	44	40

Ordering table

Item	Order No.
Dial 90 mm black	057 266
Dial 90 mm silver	057 268
Dial 78 mm black	057 280
Dial 78 mm silver	057 272
Dial 65 mm black	057 318
Dial 65 mm silver	057 314
Dial 58 mm black	059 276

Dimension drawing



Dials for handwheels HWD/HWE/HWF

- ▶ Material plastic, color gray (similar RAL 7032)

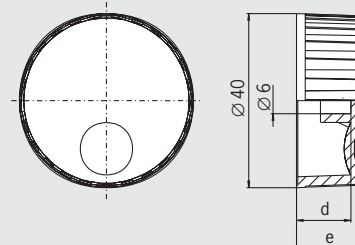
Dimensions

Design	d	e
Dial GD 60	7.5	10
Dial GE 60	12.5	15

Ordering table

Item	Packaging unit	Order No.
Dial GD60/V10	10 pcs.	072 991
Dial GE60/V10	10 pcs.	072 992

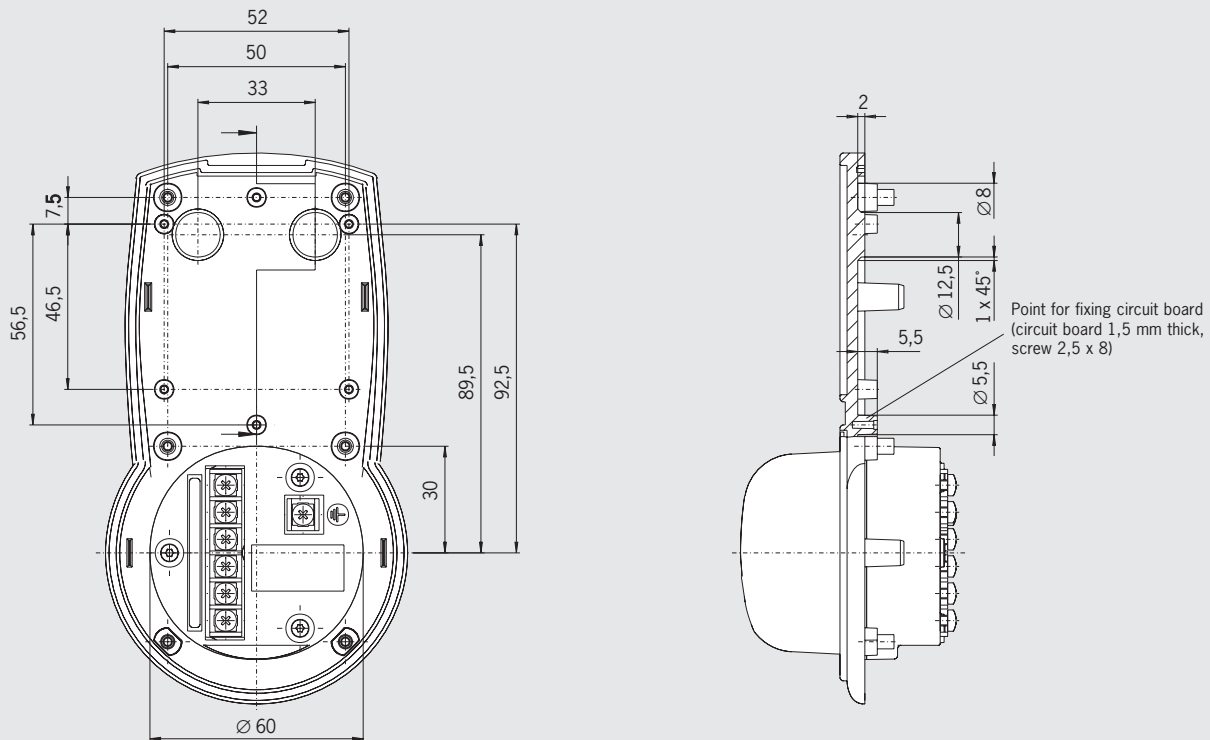
Dimension drawing



Dimension drawing hand-held pendant stations HBA

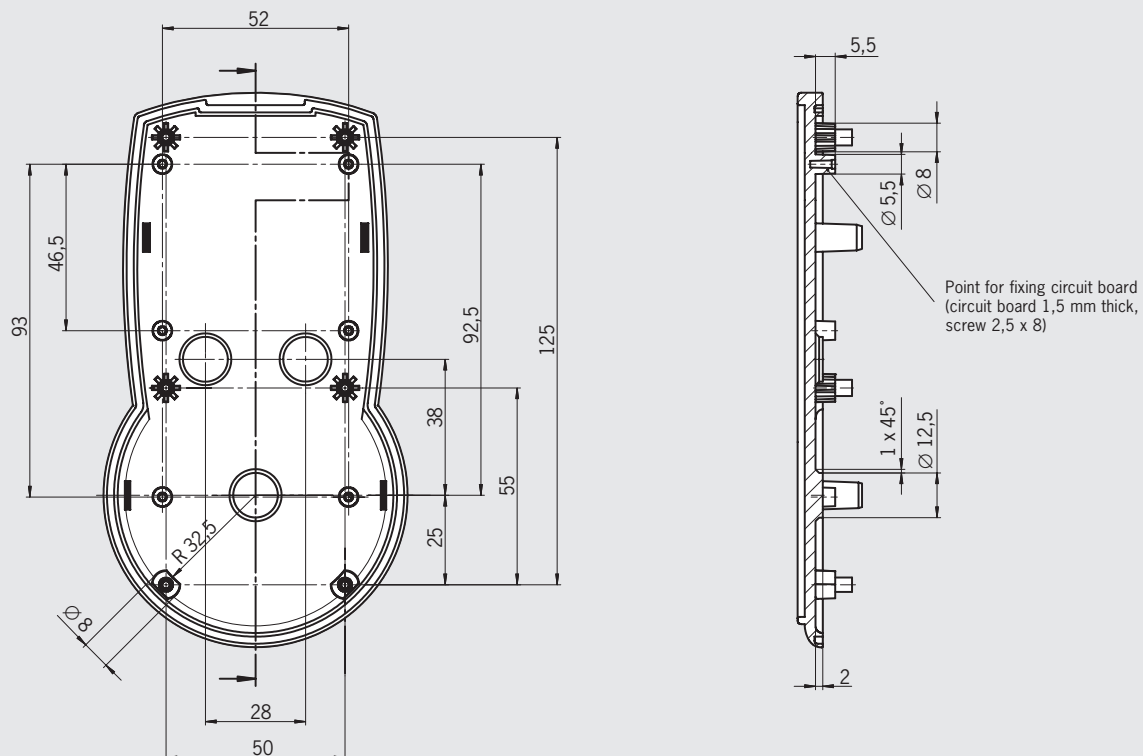
Top shell HBA with handwheel

Dimension drawing



Top shell HBA without handwheel

Dimension drawing

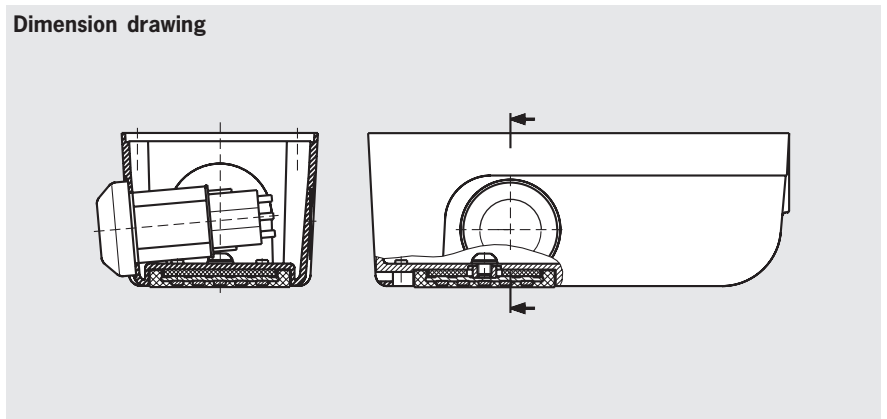


Assembly drawings

Housing HBE - 074 973 and HBE - 072 629

- ▶ Mounting enabling switch ZSE2-2 C1692 (2 NO contacts, 1 positively driven contact)
- ▶ No hole for EMERGENCY STOP device

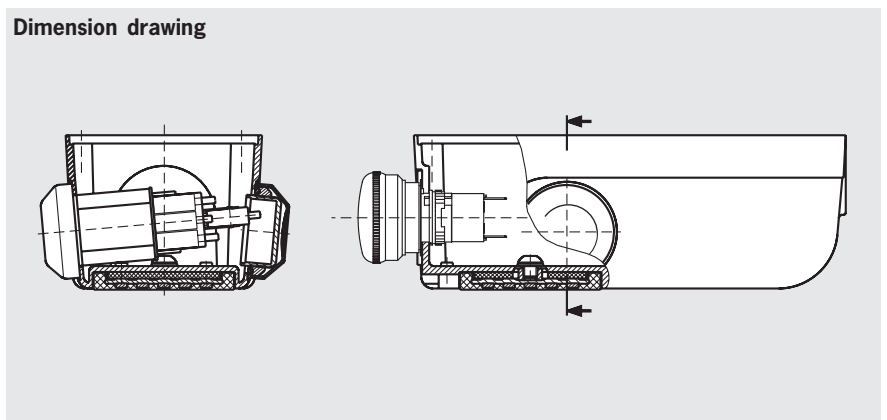
Dimension drawing



Housing HBE - 072 984 and HBE - 083 489

- ▶ Mounting enabling switch ZSE2-4 C1943 (2 NO contacts, 2 positively driven contacts)
- ▶ Mounting EMERGENCY STOP device 096 292

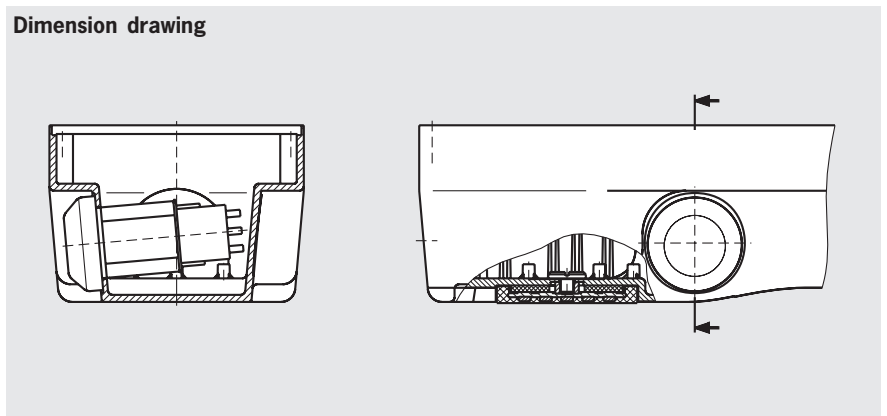
Dimension drawing



Housing HBL - 073 109 and HBL - 072 632

- ▶ Mounting enabling switch ZSE2-2 C1692 (2 NO contacts, 1 positively driven contact)
- ▶ No hole for EMERGENCY STOP device

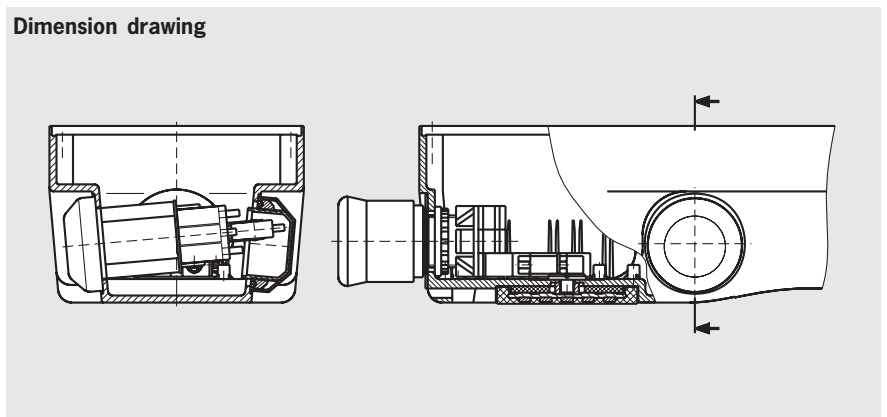
Dimension drawing



Housing HBL - 072 983 and HBL - 083 484

- ▶ Mounting enabling switch ZSE2-4 C1943 (2 NO contacts, 2 positively driven contacts)
- ▶ Mounting EMERGENCY STOP device 073 985

Dimension drawing



Request form for hand-held pendant stations HBA without handwheels

Customer			
Company		Telephone	
Address		Fax	
		E-mail	
Name		Department	
First name		Date	

<p>Housing</p> <p><input type="checkbox"/> Basic housing</p> <p><input type="checkbox"/> With hole for EMERGENCY STOP</p> <p><input type="checkbox"/> With hole for EMERGENCY STOP and 2 enabling switches</p> <p><input type="checkbox"/> With hole for EMERGENCY STOP and 3-stage enabling switch left</p> <p>Front foil</p> <p><input type="checkbox"/> EUCHNER standard colors</p> <p><input type="checkbox"/> Customer-specific as per attach.</p> <p>Logo</p> <p><input type="checkbox"/> None</p> <p><input type="checkbox"/> EUCHNER</p> <p><input type="checkbox"/> Customer-specific as per attach.</p> <p>Pushbutton</p> <p><input type="checkbox"/> None</p> <p><input type="checkbox"/> Membrane keys, quantity: _____</p> <p><input type="checkbox"/> Individual keys, quantity: _____</p> <p><input type="checkbox"/> Not illuminated</p> <p><input type="checkbox"/> Illuminated</p> <p>Key-operated switch</p> <p><input type="checkbox"/> None</p> <p><input type="checkbox"/> With</p> <p>Lamps/LED</p> <p><input type="checkbox"/> None</p> <p><input type="checkbox"/> Customer-specific as per attach.</p> <p>Cable</p> <p><input type="checkbox"/> Coiled can be stretched to 3.5 m</p> <p><input type="checkbox"/> Coiled can be stretched to 5.0 m</p> <p><input type="checkbox"/> Straight: _____ m</p> <p>Plug connector</p> <p><input type="checkbox"/> Burndy metal</p> <p><input type="checkbox"/> Coninvers metal</p> <p><input type="checkbox"/> Other: _____</p> <p><input type="checkbox"/> Without plug connector</p>		<p>EMERGENCY STOP</p> <p><input type="checkbox"/> OMRON (only with enabling switch ZXE)</p> <p><input type="checkbox"/> Moeller (pull release)</p> <p><input type="checkbox"/> Without EMERGENCY STOP</p> <p><input type="checkbox"/> 2 NC contacts</p> <p><input type="checkbox"/> 1 NC contacts</p> <p>Enabling switch</p> <p><input type="checkbox"/> 1 NO contact each right and left</p> <p><input type="checkbox"/> 1 NO contact each/NC contact right and left</p> <p><input type="checkbox"/> Without enabling switch</p> <p>Selector switch 1</p> <p><input type="checkbox"/> _____ Positions Gray code</p> <p><input type="checkbox"/> _____ Positions 1 of X</p> <p><input type="checkbox"/> Labeling _____</p> <p>Selector switch 2</p> <p><input type="checkbox"/> _____ Positions Gray code</p> <p><input type="checkbox"/> _____ Positions 1 of X</p> <p><input type="checkbox"/> Labeling _____</p> <p>Labeling selector switches</p> <p><input type="checkbox"/> On front foil as per attach.</p> <p><input type="checkbox"/> None</p>
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Special requirements

Quotation			
Quantity	One-off project requirement	Series production requirement per year	
Delivery date requested	Week		

Date	Signature

Request form for hand-held pendant stations HBA with handwheels

Customer			
Company		Telephone	
Address		Fax	
		E-mail	
Name		Department	
First name		Date	

LED

Without LED

Green

Other color: _____

Front foil

EUCHNER standard

Background color: _____

Logo

EUCHNER standard

Customer-specific as per attach.

Pushbuttons

3 membrane buttons ¹⁾

Other: 1) _____

Without buttons

Without LEDs

With LEDs

1) Labeling of the buttons as per attachment

Plug connector

Burndy metal

Coninvers metal

Other: _____

Without plug connector

EMERGENCY STOP

OMRON (only with enabling switch ZXE)

Moeller (pull release)

Without EMERGENCY STOP

2 NC contacts

1 NC contact

Selector switch left

_____ Positions Gray code

_____ Positions 1 of X

Without selector switch Labeling _____

Selector switch right

_____ Positions Gray code

_____ Positions 1 of X

Without selector switch Labeling _____

Enabling switch

Enabling switch ZXE left

1 NO contact each right and left

1 NO contact each/NC contact right and left

Without enabling switch

Handwheel

Operating voltage $U_b = DC 5 V$

Operating voltage $U_b = DC 10 - 30 V$

RS422 output

Output push-pull 5 V

Output push-pull + U_b

100 pulses

25 pulses ²⁾

2) Only for Mitsubishi control system

On which control system will the handwheel be operated?

Siemens

Fanuc

Mitsubishi

Allen Bradley

Cable

Coiled can be stretched to 3.5 m

Coiled can be stretched to 5.0 m

Straight: _____ m

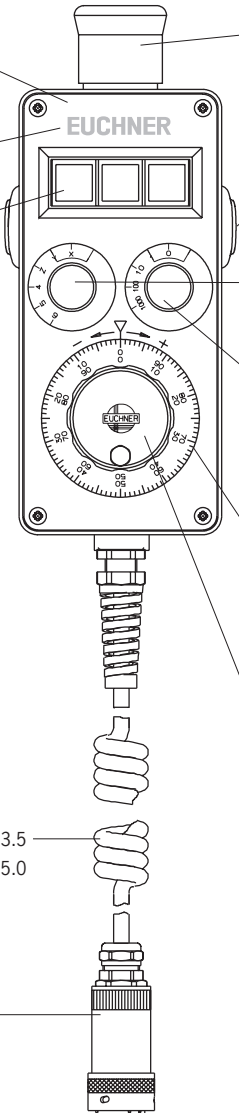
Special requirements	

Quotation			
Quantity	One-off project requirement	Series production requirement per year	
Delivery date requested	Week		

Date	Signature

Hand-held pendant stations HBE request form

Customer			
Company		Telephone	
Address		Fax	
		E-mail	
Name		Department	
First name		Date	



Front plate

- EUCHNER Standard black anodized silver labeling
- 9 keys with membrane
- Customer-specific as per attach.

Logo

- None
- Customer-specific as per attach.

Pushbutton

- None
- Number of NO contacts
- Number of NC contacts
- Not illuminated**
- Illuminated
- Symbol plate labeling as per attach.
- Front plate labeling as per attach.

Key-operated switch

- None
- With

Lamp/LED

- None
- Customer-specific as per attach.

Potentiometer

- None
- Technical data: _____

Cable

- Coiled can be stretched from 1.5 to 3.5
- Coiled can be stretched from 2.0 to 5.0
- Straight: _____ m

Plug connector

- Burndy metal**
- Coninvers metal
- Other: _____
- Without plug connector

EMERGENCY STOP

- Moeller (pull release, EN418)**
- Without EMERGENCY STOP
- 2 NC contacts**
- 1 NC contact

Enabling switch

- ZSG, 2 NC contacts each, on both sides**
- ZSE 2-2, 2 NO contacts + 1 positively driven contact, left
- ZSE 2-4, 2 NO contacts + 2 positively driven contact, left
- Without enabling switch

Selector switch left

- Without selector switch left**
- _____ Positions Gray code
- _____ Positions 1 of X
- Labeling _____

Selector switch right

- Without selector switch right**
- _____ Positions Gray code
- _____ Positions 1 of X
- Labeling _____

Labeling selector switches

- Through scale wheels**
- On front plate

Handwheel

- Operating voltage $U_b = DC 5 V$**
- Operating voltage $U_b = DC 10 - 30 V$
- RS422 output**
- Output push-pull 5 V
- Output push-pull $+U_b$
- 100 pulses**
- 25 pulses 2)
- 2) Only for Mitsubishi control system

Dial

- EUCHNER logo**
- Customer-specific logo as per attach.
- Silver 65 mm**
- Black 65 mm
- Silver 78 mm
- Black 78 mm

On which control system will the handwheel be operated?

- Siemens
- Fanuc
- Mitsubishi
- Allen Bradley

Special requirements

Quotation			
Quantity	One-off project requirement	Series production requirement per year	
Delivery date requested	Week		

Date	Signature

Hand-held pendant stations HBL request form

Customer			
Company		Telephone	
Address		Fax	
		E-mail	
Name		Department	
First name		Date	

Front plate

- EUCHNER Standard black anodized silver labeling
- Customer-specific as per attach.

Logo

- None
- Customer-specific as per attach.

Pushbutton

- None
- Number of NO contacts
- Number of NC contacts
- Not illuminated**
- Illuminated
- Symbol plate labeling as per attach.
- Front plate labeling as per attach.

Key-operated switch

- None
- With

Lamp/LED

- None
- Customer-specific as per attach.

Potentiometer

- None
- Technical data: _____

Cable

- Coiled can be stretched from 1.5 to 3.5
- Coiled can be stretched from 2.0 to 5.0 m
- Straight: _____ m

Plug connector

- Burndy metal**
- Coninvers metal
- Other: _____
- Without plug connector

EMERGENCY STOP

- Moeller (pull release, EN418)**
- Without EMERGENCY STOP
- 2 NC contacts**
- 1 NC contacts

Enabling switch

- ZSG, 2 NC contacts each, on both sides**
- ZSE 2-2, 2 NO contacts + 1 positively driven contact, left
- ZSE 2-4, 2 NO contacts + 2 positively driven contact, left
- Without enabling switch

Selector switch left

- Without selector switch left**
- _____ Positions Gray code
- _____ Positions 1 of X
- Labeling _____

Selector switch right

- Without selector switch right**
- _____ Positions Gray code
- _____ Positions 1 of X
- Labeling _____

Labeling selector switches

- Through scale wheels**
- On front plate

Handwheel

- Operating voltage $U_b = 5 V$**
- Operating voltage $U_b = 10 - 30 V$
- RS422 output
- Output push-pull 5 V
- Output push-pull $+U_b$
- 100 pulses
- 25 pulses ²⁾
- 2) Only for Mitsubishi control system

Dial

- EUCHNER logo**
- Customer-specific logo as per attach.
- Silver 65 mm
- Black 65 mm
- Silver 78 mm
- Black 78 mm

On which control system will the handwheel be operated?

- Siemens
- Fanuc
- Mitsubishi
- Allen Bradley

Special requirements	

Quotation	
Quantity	One-off project requirement
Delivery date requested	Series production requirement per year

Date	Signature

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Cable, 12-core, straight, 5000 mm	087 380	51
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Cable, 12-core, coiled, 5400 mm	086 722	51
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Automation



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- ▶ Position Switches according to EN 50 041

Precision Multiple Limit Switches

Inductive Limit Switches

Plug Connectors

Trip Rails/Trip Dogs

Inductive Ident Systems

Safety



Safety Switches, Metal Housing

- ▶ Safety Switches NZ/TZ
- ▶ Safety Switches NX/TX

Safety Switches, Plastic Housing

- ▶ Safety Switches NM
- ▶ Safety Switches NP/GP/TP
- ▶ Safety Switches STM
- ▶ Safety Switches STP

Non-Contact Safety Switches

- ▶ Non-Contact Safety Switches CES/CEM,
Transponder Coding
- ▶ Non-Contact Safety Switches CMS,
Magnetic Coding

Safety Products with integrated Bus Interface

Bolts for Safety Guards

Enabling Switches

Safety Relays

- ▶ Safety Relays ESM
- ▶ Modular Safety System ESM-F

Rope Pull Switches

ManMachine



Joystick Switches

Electronic Handwheels

Pendant Stations

- ▶ Pendant Stations HBA
- ▶ Pendant Stations HBE/HBL

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