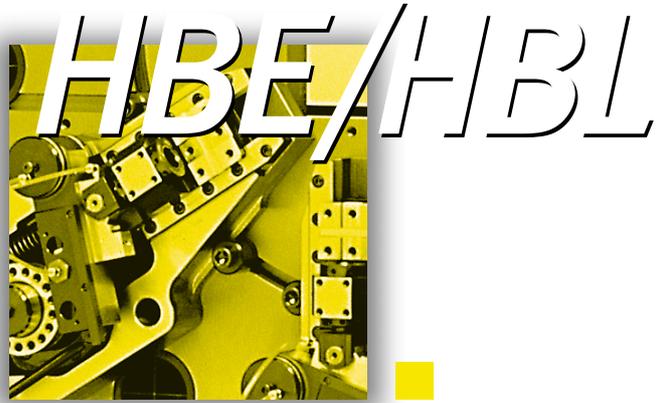


# Pendant Stations

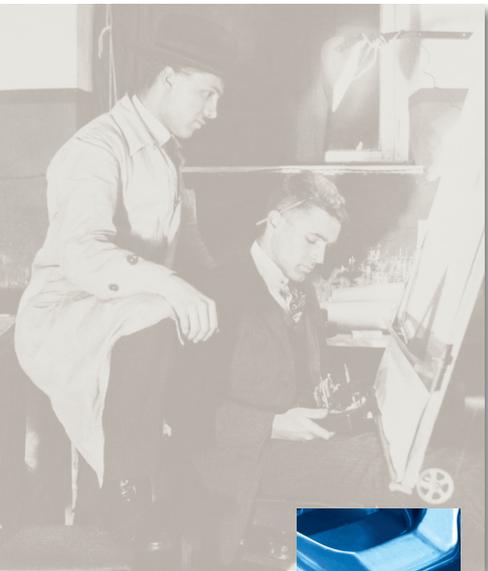


More than safety.

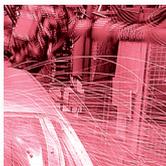


**EUCHER**

# 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 HBE and HBL

<b>General</b>	4
<b>Safety Precautions</b>	5
<b>Examples of different Versions</b>	6
<b>Kit for Hand-Held Pendant Stations</b>	7
<b>Complete Units</b>	
Version HBE	8
Version HBL	18
<b>Equipment Kits</b>	
Housing HBE	22
Housing HBL	27
Front Plate for Housing HBL	31
Front Plate for Housing HBE	32
Handwheel HKD	33
Dial	34
Emergency Stop Push Button	35
Enabling Switch ZSE	36
Push Button	37
Key-operated Rotary Switch	37
Selector Switch	38
Lead 35-core	40
Lead with connector 35-pin	40
Lead 23-core	41
Lead with connector 23-pin	41
Plug Connectors	42
Flange Socket	42
Cable Gland with bending protection	43
Short Circuit Connector	43
Fixing Bracket for HBE	44
Fixing Bracket for HBL	44

## Appendix

<b>Customized Hand-held Pendant Stations</b>	
Check list HBE	46
Check list HBL	47
<b>Assembly drawings</b>	
Housing HBE Version 4	48
Housing HBE Version 5	48
Housing HBL Version 3	48
Housing HBL Version 4	48

## General

### HBL and HBE the Hand-Held Pendant Stations from EUCHNER

To make operation of machines easier and safer for the user, EUCHNER was one of the first manufacturers of hand-held pendant stations to offer ergonomic pendant housings. The housing types HBL and HBE have been developed taking into account ergonomic criteria to ensure that they lie comfortably in the hand during operation.

Major manufacturers of machine tools and control systems all over the world use EUCHNER hand-held pendant stations.

The wide product range extends from complete hand-held pendant stations with basic functions up to hand-held pendant stations designed to individual customer specifications, e.g. with LCD display, multifunction keypad and serial communication interface. Custom-made hand-held pendant stations can be derived from the catalogue types and produced even in small quantities.

The new cables for the hand-held pendant stations contain four screened single wires, this enables short circuit monitoring. The screen must be connected to the PE wiring of the machine or control system. Therefore, if cables are crushed for example, short circuits are detected and the control is shut down immediately by means of short circuit protection monitoring in the control. This dispenses with the need for additional evaluation units for cable monitoring.

EUCHNER offers a hand-held pendant stations kit to provide you with the possibility of using ergonomically designed housings even for small quantities, e.g. for prototypes or special designs. The adaptable housing means that you can tailor your hand-held pendant station to meet your needs in a user-friendly housing.

In order to use these ergonomically designed housings for the various requirements, EUCHNER offers the option of customised solutions.

On pages 46 and 47 you will find forms which can be used to describe your requirements. We will be happy to draw up a quotation based on your requirements.

An optional ActiveX module is available for the hand-held HBLS (LCD Display) pendant station.

The user can program the application for the hand-held pendant station. Connection of the hand-held pendant station to the user's application is supported by the ActiveX module (for user programs with ActiveX capability under MS Windows®).

### HKD - the Handwheel from EUCHNER

**The electronic handwheel HKD from EUCHNER is a universal pulse generator for manual positioning of axes.**

The handwheel is mainly used for positioning on NC machine tools in Setup mode.

The output of the electronic handwheel has 100 square wave pulses per revolution. A second output in phase quadrature enables the control system to detect the direction of motion. Conversion of the pulses into distance takes place in the control system. The detent function is magnetic therefore absolutely wear-free.

### Enabling Devices

An enabling device may consist either of a two position push button in conjunction with an Emergency Stop Push Button or a three position push button (see EN 60204-1).

**Preference must be given to the three position device.**

Enabling switches are manually operated control devices which are intended for use by people working in possible danger areas of machines and installations.

In "manual mode", the protection offered by safety devices may be disabled under certain conditions if an enabling switch is used. Authorized personnel is then allowed to enter high risk areas to perform programming, setting-up, testing or service work.

Enabling switches can perform their task properly only if safe handling is possible for long periods, e.g. during observation of production sequences, without the operator becoming tired.

Besides the absolute reliability of function, in the case of the EUCHNER enabling units particular attention was paid to the ergonomic design and balance. These features enable fatigue-free operating and a substantial reduction in the risk of illegal manipulation. A comfortable nevertheless stable operating point was achieved through careful design considerations of EUCHNER enabling switches.

### Function

The functional sequence of EUCHNER enabling switches meets the requirements for 2-stage and 3-stage enabling switches in accordance with EN 775 and VDI 2854.

Functional sequence of 3-stage enabling switches:

**Stage 1: OFF function**

(actuating element not pressed)

**Stage 2: Enabling function**

(actuating element pressed to center position)

**Stage 3: OFF function with positively driven operation**

(actuating element pressed down fully past the center position)

A patented switch mechanism prevents the enabling function from being activated when the switch returns from stage 3 to stage 1. The exact functional sequence is shown in the switching diagrams of the respective enabling switches.

## Application

Enabling switches are used, for example, in automated production installations which are operated in "manual mode" in accordance with the regulations EN 775 and VDI 2854.

This operating mode must be defined by means of lockable selector switches in accordance with EN 60204, Part 1 (DIN VDE 0113, Part 1).

Safety guards are partially disabled in this mode. For this reason, the person working in the dangerous area with the enabling switch must be able to recognize dangerous conditions in good time and initiate corresponding counter-measures.

## Important

No commands which result in a dangerous situation must be initiated with the enabling switch alone. A second, conscious start command is necessary for this purpose. Each person within the dangerous area has to have an enabling switch.

## Approvals

EUCHNER enabling switches have the following approvals:

BIA, Germany  
SAQ, Sweden  
SUVA, Switzerland



## Safety Precautions

**The Hand-Held Pendant Station is used only as part of an overall control system.**



The operator of the control system, e.g. machine installer, is responsible for observing the safety and accident prevention regulations for to the specific application.



Installation of the Hand-Held Pendant Station must be performed by authorized personnel.

The operation-specific safety and accident prevention regulations must be observed when assembling the Hand-Held Pendant Station kit. These regulations include:

- EN 60204 Electrical equipment of machines
- EN 292 Safety of machines, general design principles
- EN 954 Safety-related parts of control systems



**Voltages supplied to Hand-Held Pendant Stations must not exceed 30 V!**

This is valid even if individual kit components are designed for higher voltages.

## Examples of different Versions



Version HBE - 072 599



Version HBE - 082 616



Version HBE - 072 601



Version HBE - 072 603



Version HBE - 072 602



Fixing Bracket HBE



Version HBL- 072 598



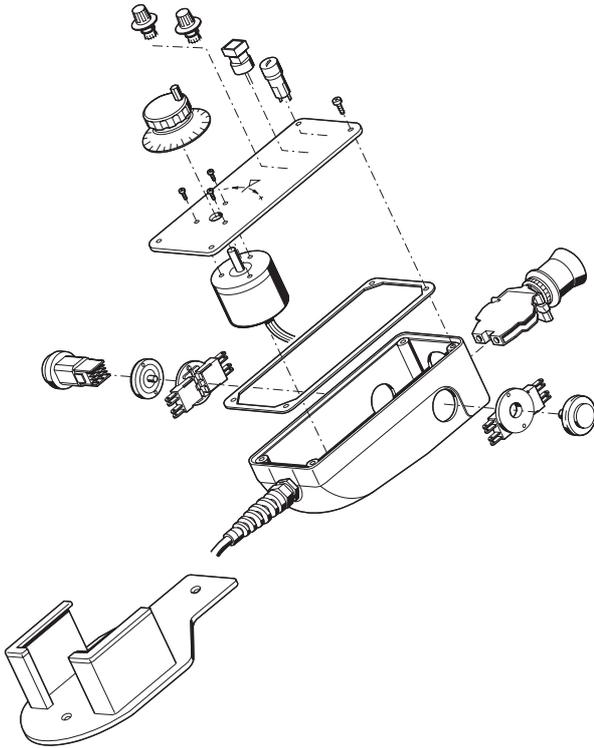
Version HBL- 072 725



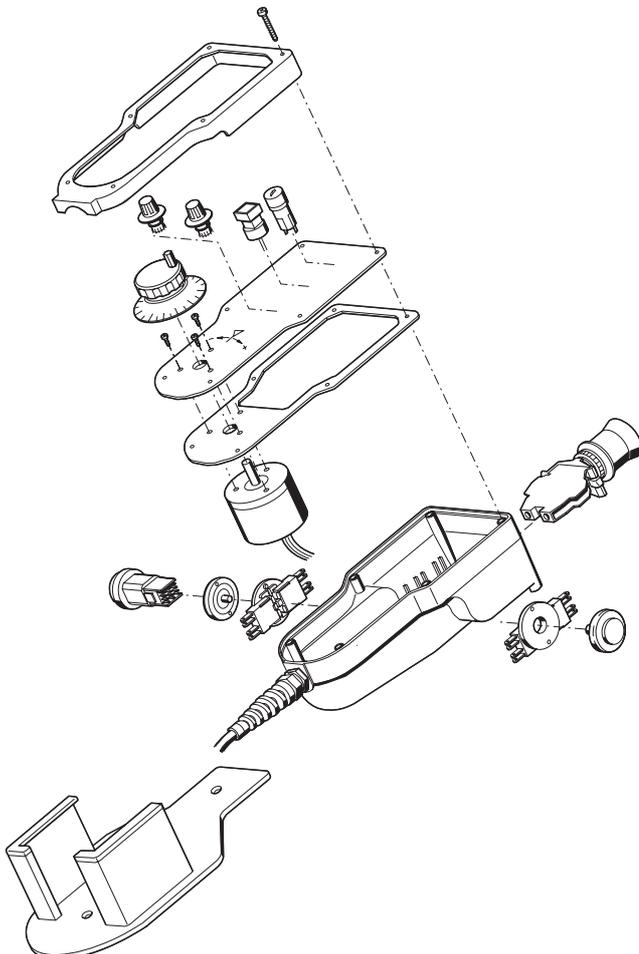
Fixing Bracket HBL

## Kit for Hand-Held Pendant Stations

### Kit for Hand-Held Pendant Stations HBE



### Kit for Hand-Held Pendant Stations HBL



The kit is designed to match individual customer specifications.

The housings are distinctive for their integrated safety elements:

- ▶ Housing without fixing holes, no safety-related elements
- ▶ Housing with dual channel enabling switch on both sides and fixing hole for EMERGENCY STOP PUSH BUTTON
- ▶ Housing with single-channel enabling switch on both sides and fixing hole for EMERGENCY STOP PUSH BUTTON (housing HBE only)
- ▶ Housing with 3-stage enabling switch (1 positively driven NC contact, 2 NO contacts) without EMERGENCY STOP PUSH BUTTON
- ▶ Housing with 3-stage enabling switch (2 positively driven NC contacts, 2 NO contacts) with assembly option for EMERGENCY STOP PUSH BUTTON

Two different versions of front plates are available for HBE and HBL housing designs:

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

With the relevant seal kit, degree of protection IP 65 is attained.

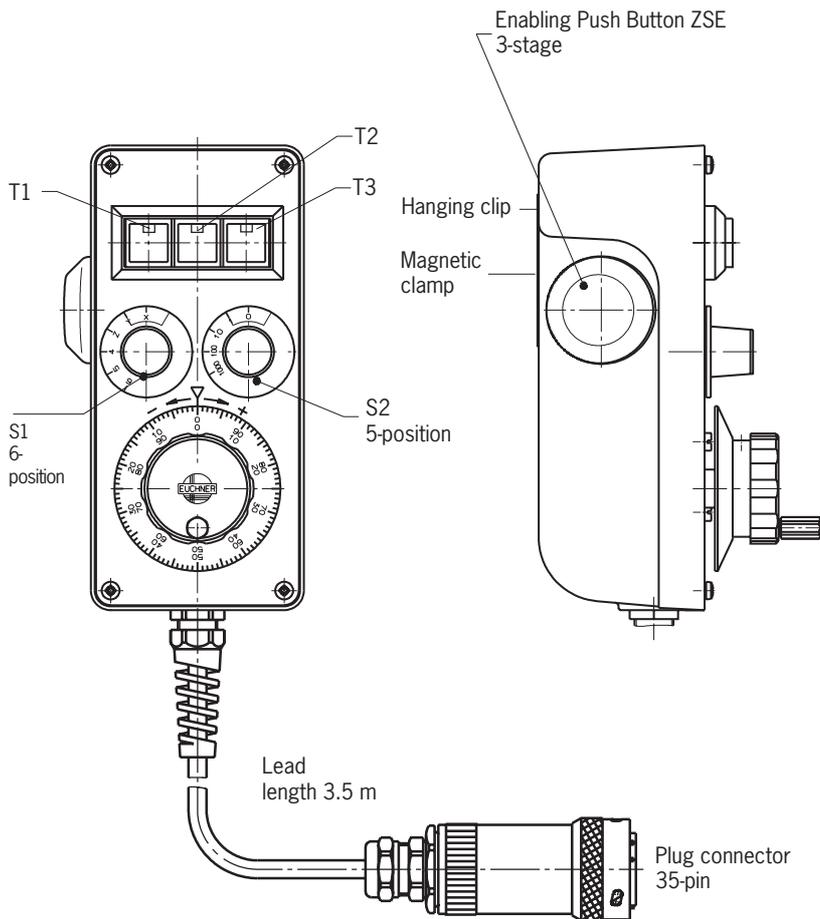
Customer-specific functionality can be created by using the components supplied in the kit (push button, selector switch, key operated rotary switch) and/or other components.

For connection to the pendant station, different conductor cables with or without plug connectors and the relevant flange sockets are available.

## HBE - 072 599

- ▶ Handwheel 2 x 100 pulses
- ▶ 3-stage Enabling Switch
- ▶ 3 Illuminated Push Buttons, individual inscribable
- ▶ 2 Selector Switches

### Dimension drawing



### Notes

- ▶ Fixing Bracket HBE for Hand-Held Pendant Stations see Page 44 Accessories
- ▶ Appropriate 35-pin Flange Socket see Page 42 Accessories

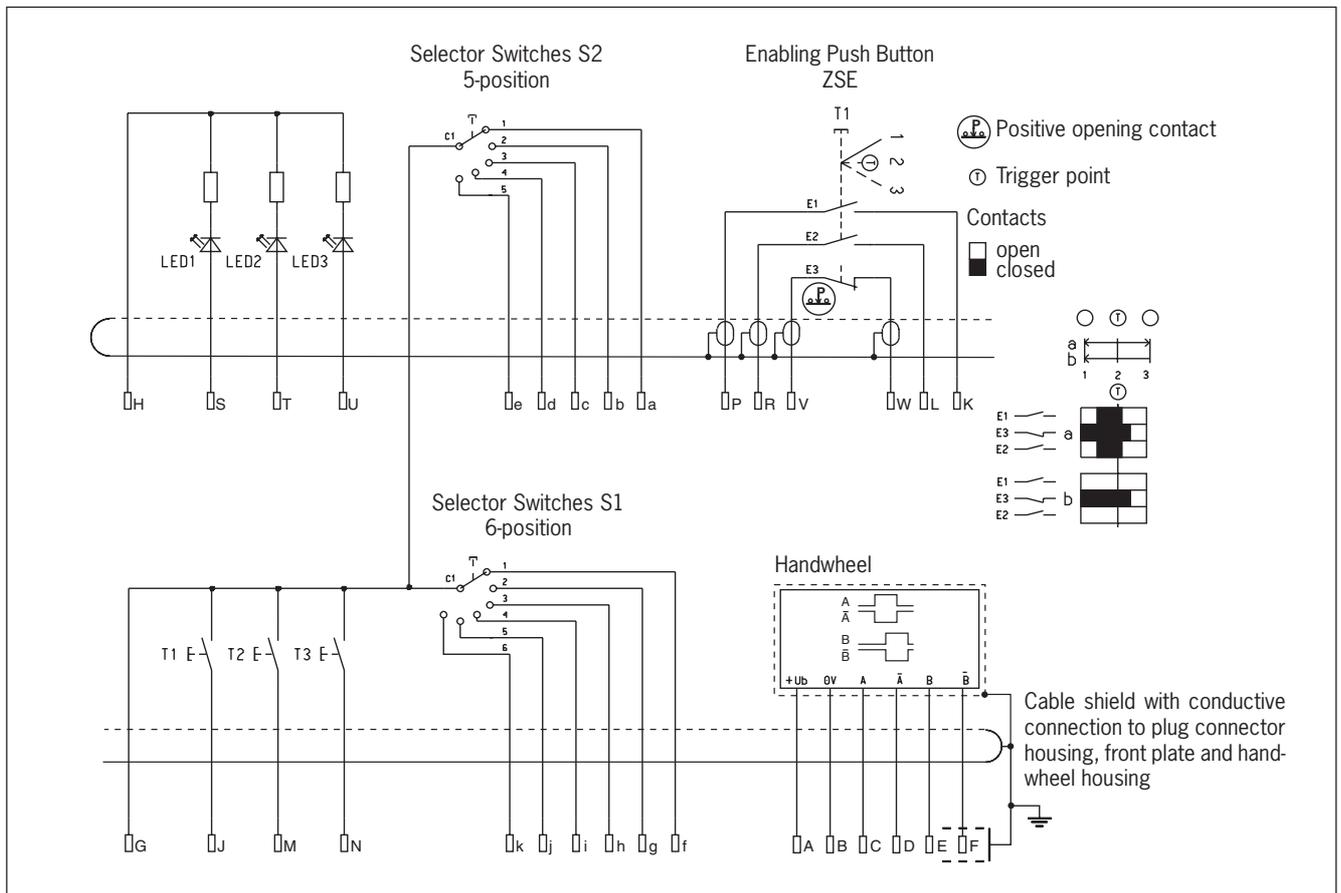
### Ordering Table

Article	Order No.
Hand-Held Pendant Station HBE with: Handwheel 2 x 100 pulses Enabling Push Button ZSE 3-stage, 2 x NO contacts, 1 x positively driven NC contact 3 Illuminated Push Buttons, 1 x NO contact each 2 Selector Switches, 6-position (X, Y, Z, 4, 5, 6) and 5-position (0, 1, 10, 100, 1000)	072 599

## Technical Data

Parameter	Value	Unit
<b>Housing HBE</b>		
Material	Polyamide	
Colour	blue-grey RAL 7031	
Ambient temperature	0 to +55	°C
Degree of protection to EN 60529	to IP 65	
Connection	Lead 3.5 m, plug connector 35-pin	
Weight	approx. 1.8	kg
<b>Handwheel HKD</b>		
Pulses / revolution	2 x 100	
Operating voltage	5 ± 5%	V DC
Output circuit	RS 422 A	
Output pulses for clockwise rotation	see page 33	
<b>Enabling Push Button ZSE</b>		
Switching element	2 x NO, 1 x positively driven NC	
Utilization category to IEC 947-5-1	AC-15 U <sub>e</sub> 24 V I <sub>e</sub> 4 A      DC-13 U <sub>e</sub> 24 V I <sub>e</sub> 3 A	
<b>3-fold Push Buttons</b>		
Switching element	1 x NO	
Switching voltage	max. 30	V DC
Switching current	max. 100	mA
Switching load	max. 1	W
LED	I = 4.7 mA / U = 24 V DC / R <sub>v</sub> = 4.7 kΩ	
<b>Selector Switches</b>		
Switching voltage max.	30	V DC
Switching current max.	100	mA
Switching load max.	2	W

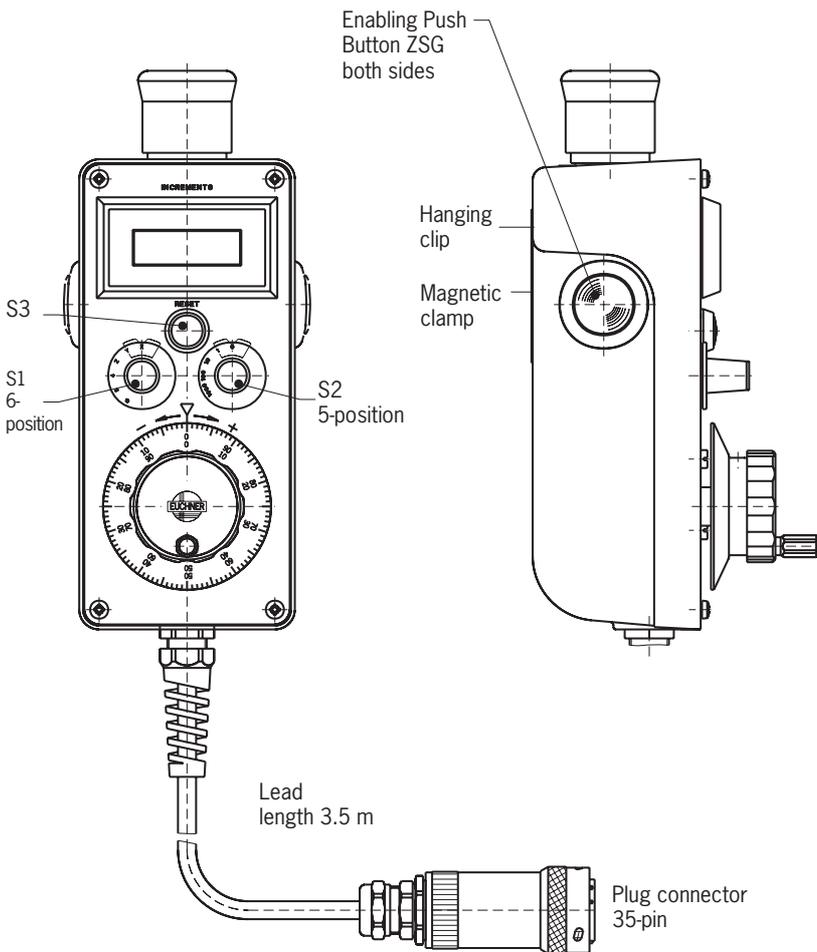
## Wiring Diagram



## HBE - 082 616

- ▶ Handwheel 2 x 100 pulses
- ▶ Emergency Stop Push Button with Override Protection to EN 418
- ▶ 2 Enabling Push Buttons ZSG both sides
- ▶ 2 Selector Switches
- ▶ 1 Reset button
- ▶ 1 Counter with display

### Dimension drawing



### Notes

- ▶ Fixing Bracket HBE for Hand-Held Pendant Stations see Page 44 Accessories
- ▶ Appropriate 35-pin Flange Socket see Page 42 Accessories

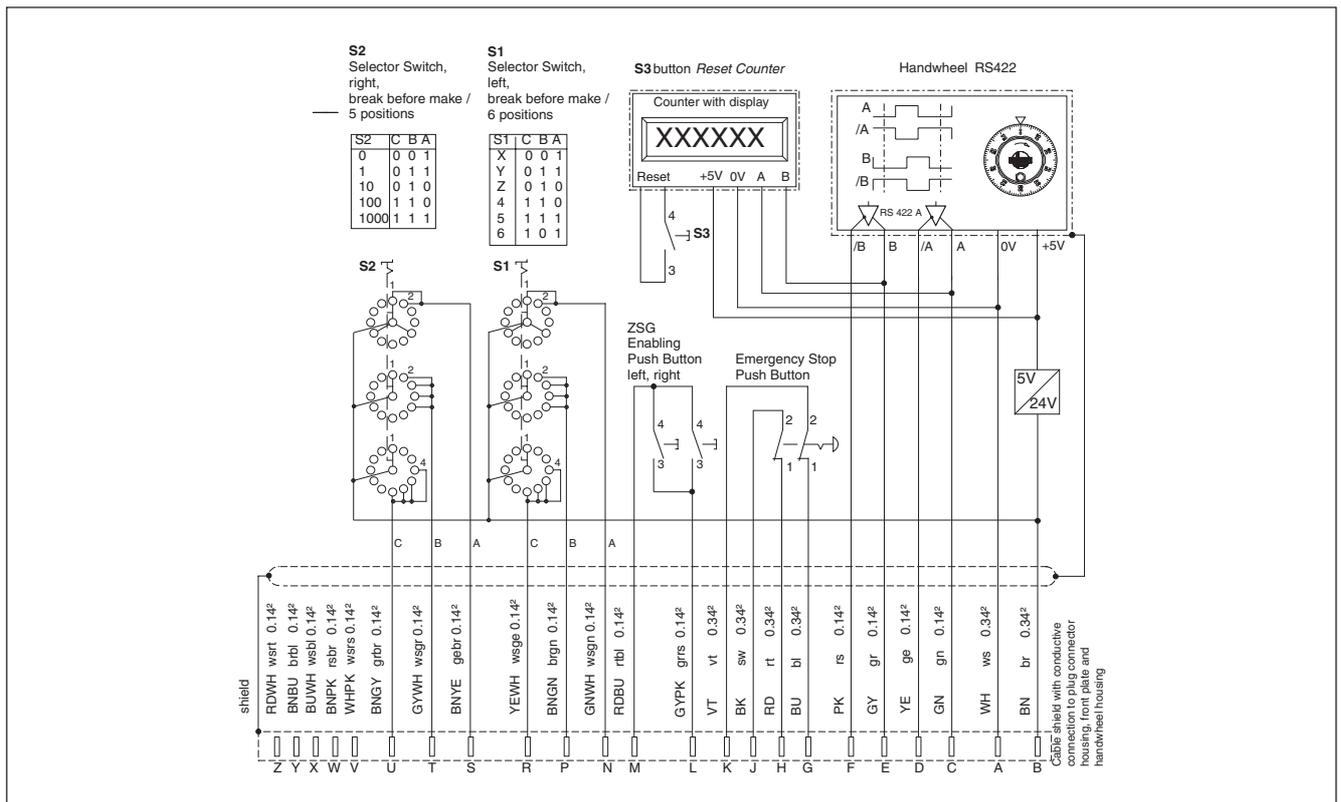
### Ordering Table

Article	Order No.
Hand-Held Pendant Station HBE with: Handwheel 2 x 100 pulses Emergency Stop Push Button with Override Protection, dual channel Enabling Push Buttons ZSG 1 x NO contact each 2 Selector Switches, 6-position (X, Y, Z, 4, 5, 6) and 5-position (0, 1, 10, 100, 1000) 1 Reset button 1 Counter with display	082 616

## Technical Data

Parameter	Value	Unit
<b>Housing HBE</b>		
Material	Polyamide	
Colour	blue-grey RAL 7031	
Ambient temperature	0 to +55	°C
Degree of protection to EN 60529	to IP 65	
Connection	Lead 3.5 m, plug connector 35-pin	
Weight	approx. 1.8	kg
<b>Emergency Stop Push Button to EN 418</b>		
Switching element	2 x NC	
Utilization category to IEC 947-5-1	DC-13 U <sub>e</sub> 24 V I <sub>e</sub> 2.75 A	
<b>Handwheel HKD</b>		
Pulses / revolution	2 x 100	
Operating voltage	5 ± 5%	V DC
Output circuit	RS 422 A	
Output pulses for clockwise rotation	see page 33	
<b>Enabling Push Buttonr ZSG</b>		
Switching element	1 x NO	
Utilization category to IEC 947-5-1	AC-15 U <sub>e</sub> 24 V I <sub>e</sub> 4 A      DC-13 U <sub>e</sub> 24 V I <sub>e</sub> 3 A	
<b>3-fold Push Buttons</b>		
Switching element	1 x NO	
Switching voltage	max. 30	V DC
Switching current	max. 100	mA
Switching load	max. 1	W
LED	I = 4.7 mA / U = 24 V DC / R <sub>v</sub> = 4.7 kΩ	
<b>Selector Switches</b>		
Switching voltage max.	30	V DC
Switching current max.	100	mA
Switching load max.	2	W
<b>Counter</b>		
Counter frequency	200	kHz
Counter range	-999.999 to +999.999	

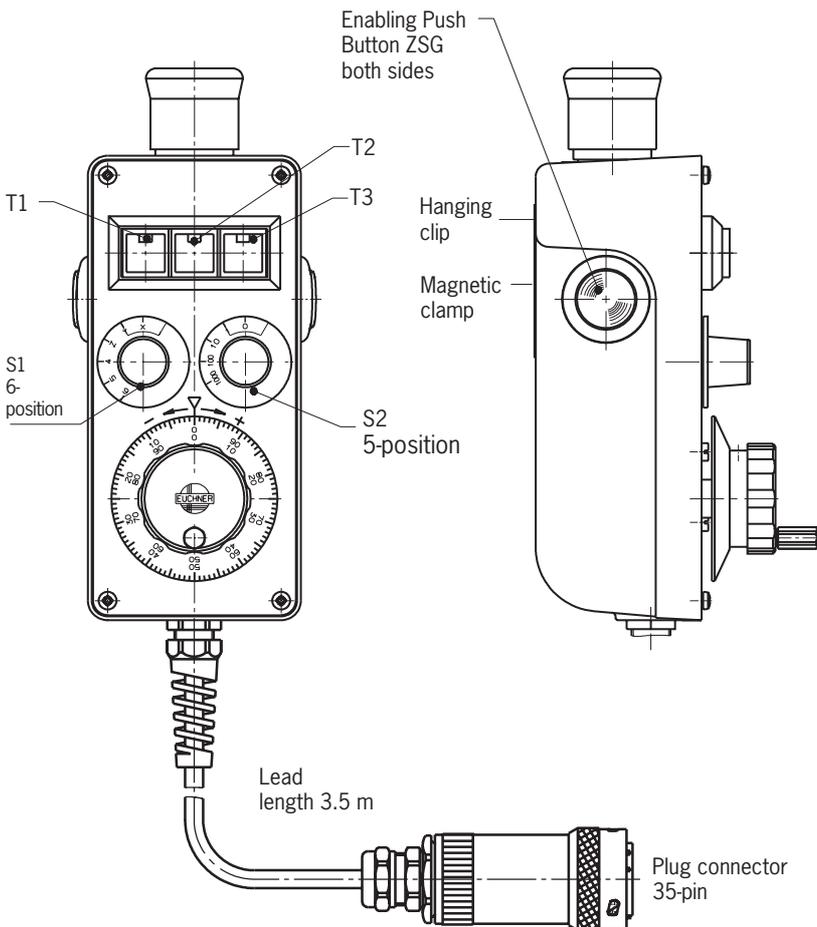
## Wiring Diagram



## HBE - 072 601

- ▶ Handwheel 2 x 100 pulses
- ▶ Emergency Stop Push Button with Override Protection to EN 418
- ▶ 2 Enabling Push Buttons, both sides
- ▶ 3 Illuminated Push Buttons, individual inscribable
- ▶ 2 Selector Switches

### Dimension drawing



### Notes

- ▶ Fixing Bracket HBE for Hand-Held Pendant Stations see Page 44 Accessories
- ▶ Appropriate 35-pin Flange Socket see Page 42 Accessories

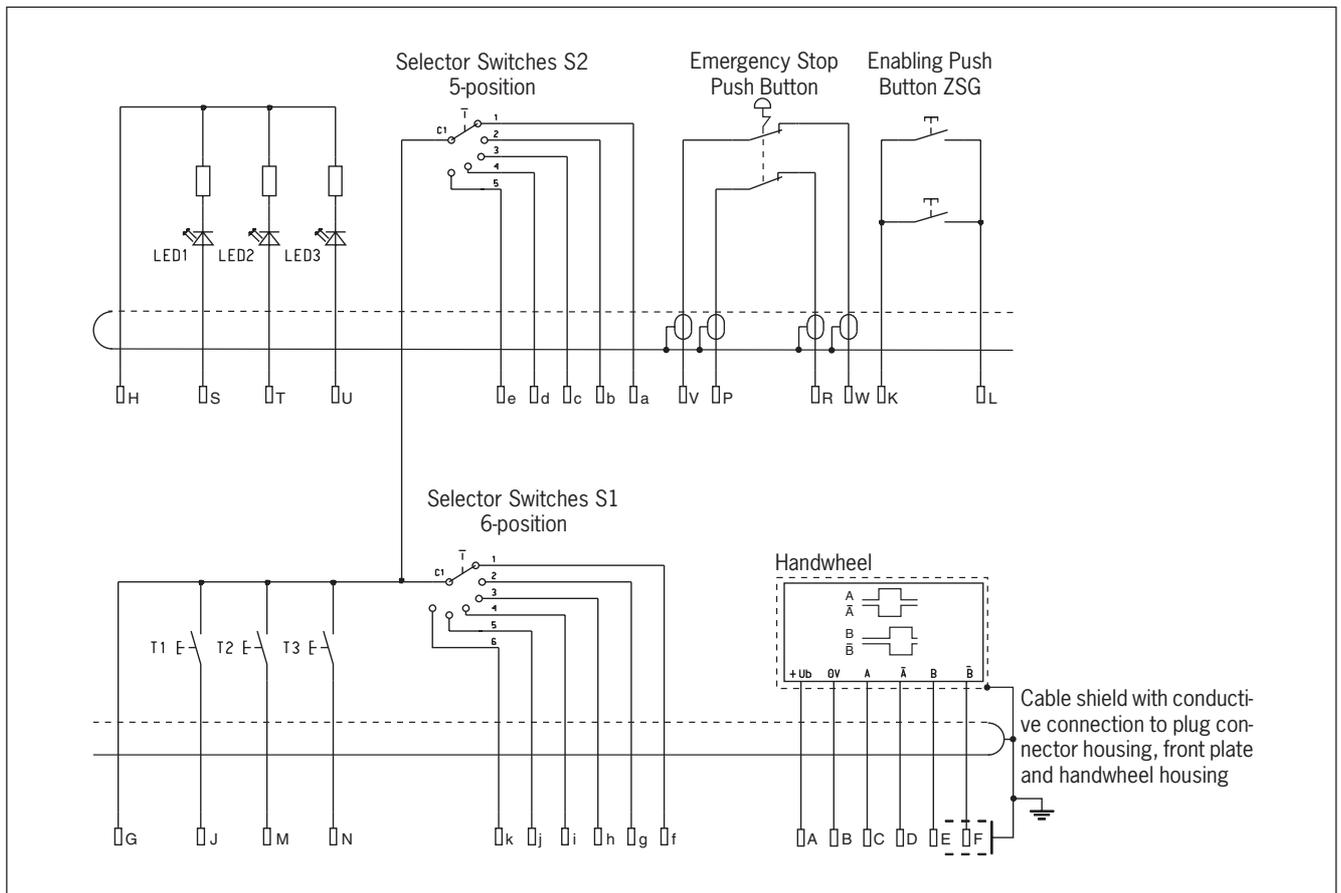
### Ordering Table

Article	Order No.
Hand-Held Pendant Station HBE with: Handwheel 2 x 100 pulses Emergency Stop Push Button with Override Protection, dual channel 2 Enabling Push Buttons ZSG, 1 x NO contact each 3 Illuminated Push Buttons, 1 x NO contact each 2 Selector Switches, 6-position (X, Y, Z, 4, 5, 6) and 5-position (0, 1, 10, 100, 1000)	072 601

## Technical Data

Parameter	Value	Unit
<b>Housing HBE</b>		
Material	Polyamide	
Colour	blue-grey RAL 7031	
Ambient temperature	0 to +55	°C
Degree of protection to EN 60529	to IP 65	
Connection	Lead 3.5 m, plug connector 35-pin	
Weight	approx. 1.8	kg
<b>Emergency Stop Push Button to EN 418</b>		
Switching element	2 x NC	
Utilization category to IEC 947-5-1	DC-13 U <sub>e</sub> 24 V I <sub>e</sub> 2.75 A	
<b>Handwheel HKD</b>		
Pulses / revolution	2 x 100	
Operating voltage	5 ± 5%	V DC
Output circuit	RS 422 A	
Output pulses for clockwise rotation	see page 33	
<b>Enabling Push Buttons ZSG</b>		
Switching element	1 x NO	
Utilization category to IEC 947-5-1	AC-15 U <sub>e</sub> 24 V I <sub>e</sub> 4 A      DC-13 U <sub>e</sub> 24 V I <sub>e</sub> 3 A	
<b>3-fold Push Buttons</b>		
Switching element	1 x NO	
Switching voltage	max. 30	V DC
Switching current	max. 100	mA
Switching load	max. 1	W
LED	I = 4.7 mA / U = 24 V DC / R <sub>v</sub> = 4.7 kΩ	
<b>Selector Switches</b>		
Switching voltage max.	30	V DC
Switching current max.	100	mA
Switching load max.	2	W

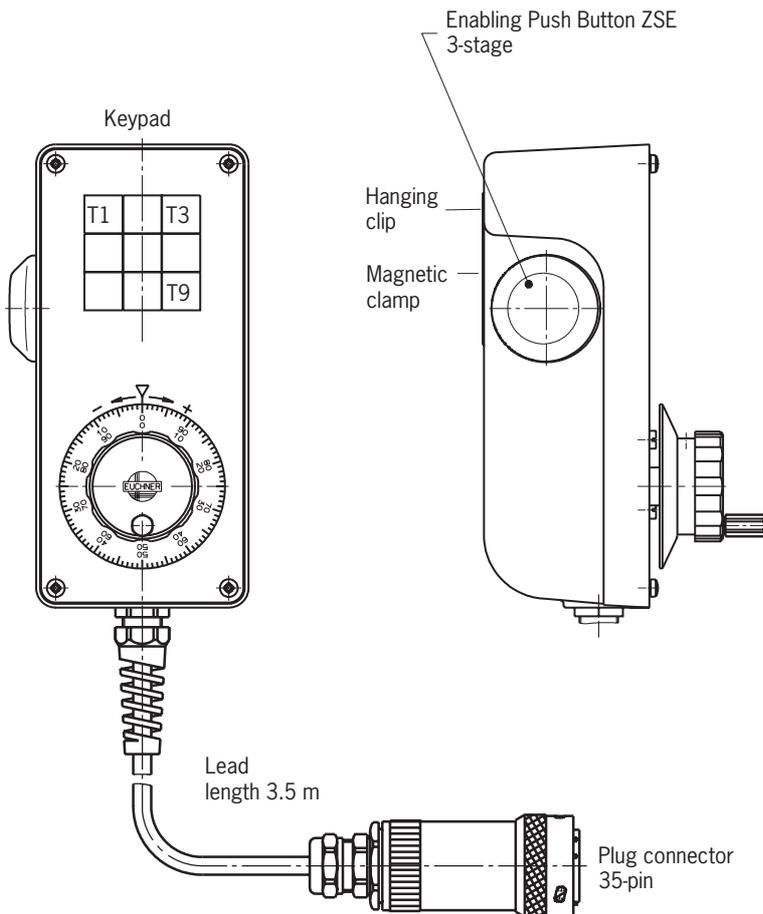
## Wiring Diagram



## HBE - 072 603

- ▶ Handwheel 2 x 100 pulses
- ▶ 3-stage Enabling Switch
- ▶ Illuminated 9-fold Keypad
- ▶ Moulded Keypad with Insertion Foil

### Dimension drawing



### Notes

- ▶ Fixing Bracket HBE for Hand-Held Pendant Stations see Page 44 Accessories
- ▶ Appropriate 35-pin Flange Socket see Page 42 Accessories

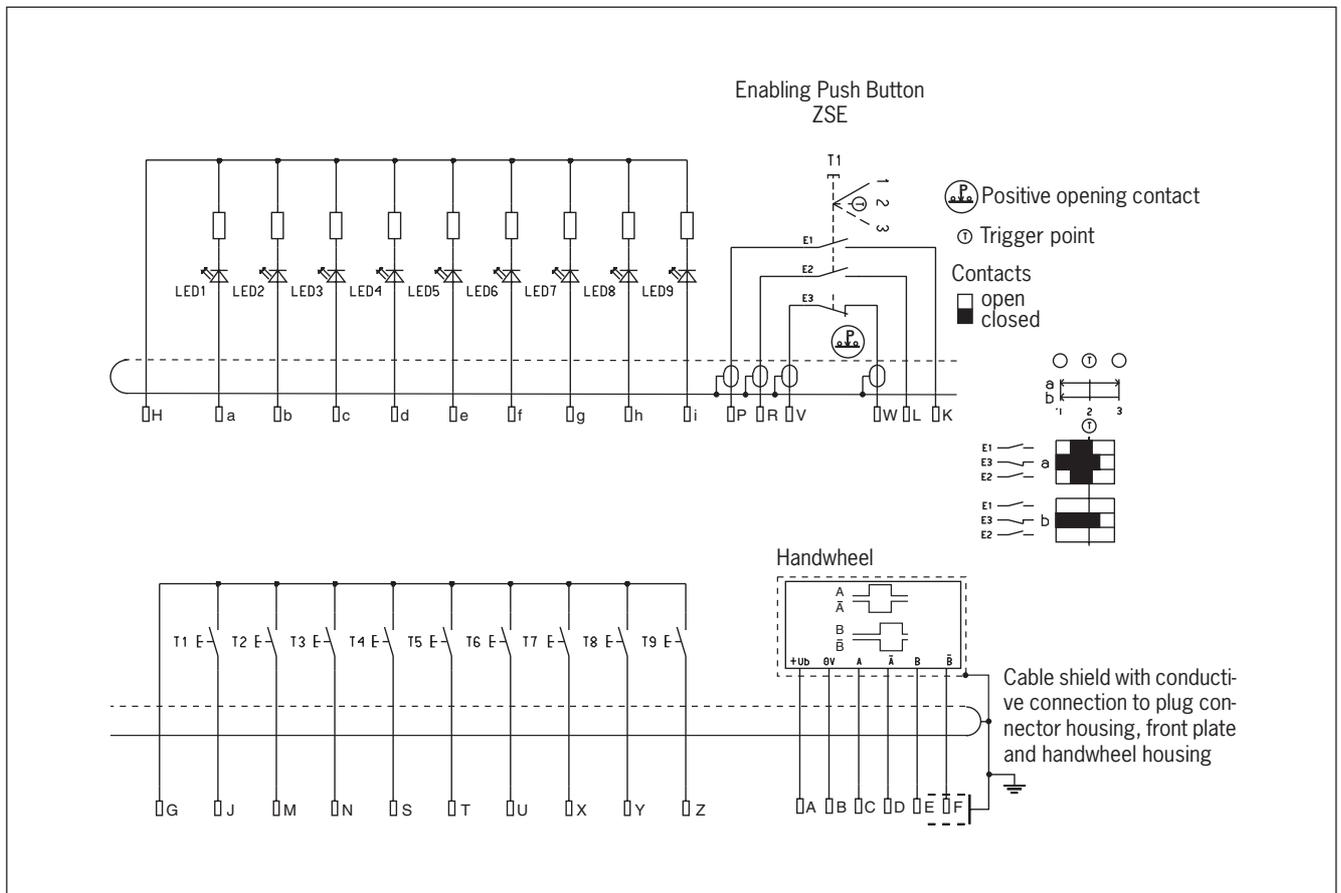
### Ordering Table

Article	Order No.
Hand-Held Pendant Station HBE with: Handwheel 2 x 100 pulses Enabling Push Button ZSE 3-stage, 2 x NO contacts, 1 x positively driven NC contact Illuminated 9-fold Keypad, 1 x NO contact each	072 603

## Technical Data

Parameter	Value	Unit
<b>Housing HBE</b>		
Material	Polyamide	
Colour	blue-grey RAL 7031	
Ambient temperature	0 to +55	°C
Degree of protection to EN 60529	to IP 65	
Connection	Lead 3.5 m, plug connector 35-pin	
Weight	approx. 1.8	kg
<b>Handwheel HKD</b>		
Pulses / revolution	2 x 100	
Operating voltage	5 ± 5%	V DC
Output circuit	RS 422 A	
Output pulses for clockwise rotation	see page 33	
<b>Enabling Push Button ZSE</b>		
Switching element	2 x NO, 1 x positively driven NC	
Utilization category to IEC 947-5-1	AC-15 U <sub>e</sub> 24 V I <sub>e</sub> 4 A      DC-13 U <sub>e</sub> 24 V I <sub>e</sub> 3 A	
<b>9-fold Keypad</b>		
Switching element	1 x NO	
Switching voltage	max. 30	V DC
Switching current	max. 100	mA
Switching load	max. 2	W
LED	I = 14.5 mA / U = 24 V DC / R <sub>v</sub> = 1.4 kΩ	

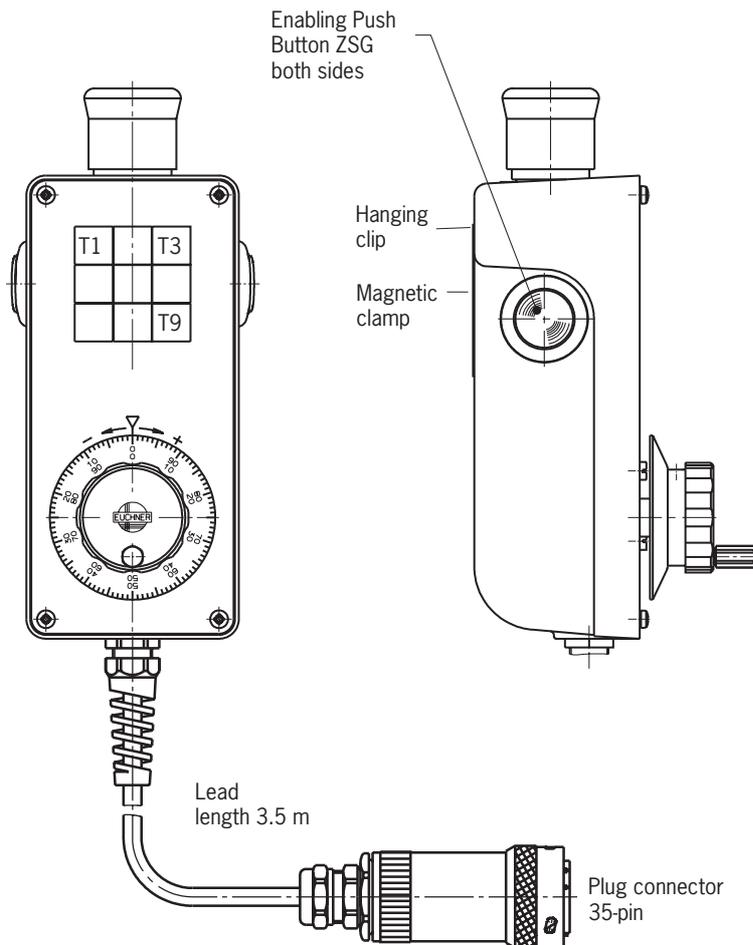
## Wiring Diagram



## HBE - 072 602

- ▶ Handwheel 2 x 100 pulses
- ▶ Emergency Stop Push Button with Override Protection to EN 418
- ▶ Illuminated 9-fold Keypad
- ▶ 2 Enabling Push Buttons, both sides
- ▶ Moulded Keypad with Insertion Foil

### Dimension drawing



### Notes

- ▶ Fixing Bracket HBE for Hand-Held Pendant Stations see Page 44 Accessories
- ▶ Appropriate 35-pin Flange Socket see Page 42 Accessories

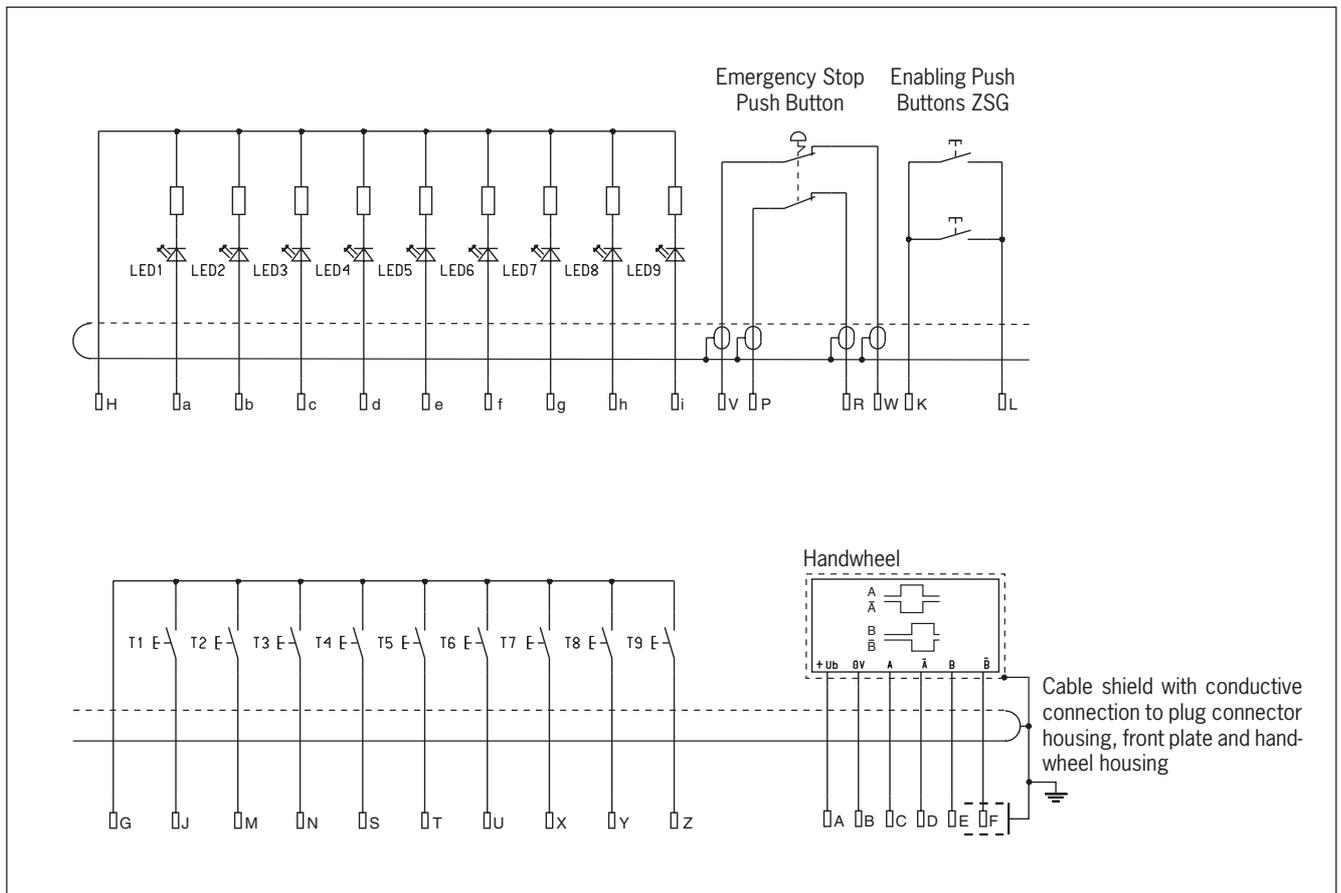
### Ordering Table

Article	Order No.
Hand-Held Pendant Station HBE with: Handwheel 2 x 100 pulses Emergency Stop Push Button with Override Protection, dual channel 2 Enabling Push Buttons ZSG, 1 x NO contact each Illuminated 9-fold Keypad, 1 x NO contact each	072 602

## Technical Data

Parameter	Value	Unit
<b>Housing HBE</b>		
Material	Polyamide	
Colour	blue-grey RAL 7031	
Ambient temperature	0 to +55	°C
Degree of protection to EN 60529	to IP 65	
Connection	Lead 3.5 m, plug connector 35-pin	
Weight	approx. 1.8	kg
<b>Emergency Stop Push Button to EN 418</b>		
Switching element	2 x NC	
Utilization category to IEC 947-5-1	DC-13 U <sub>e</sub> 24 V I <sub>e</sub> 2.75 A	
<b>Handwheel HKD</b>		
Pulses / revolution	2 x 100	
Operating voltage	5 ± 5%	V DC
Output circuit	RS 422 A	
Output pulses for clockwise rotation	see page 33	
<b>Enabling Push Buttons ZSG</b>		
Switching element	1 x NO	
Utilization category to IEC 947-5-1	AC-15 U <sub>e</sub> 24 V I <sub>e</sub> 4 A      DC-13 U <sub>e</sub> 24 V I <sub>e</sub> 3 A	
<b>9-fold Keypad</b>		
Switching element	1 x NO	
Switching voltage	max. 30	V DC
Switching current	max. 100	mA
Switching load	max. 2	W
LED	I = 14.5 mA / U = 24 V DC / R <sub>v</sub> = 1.4 kΩ	

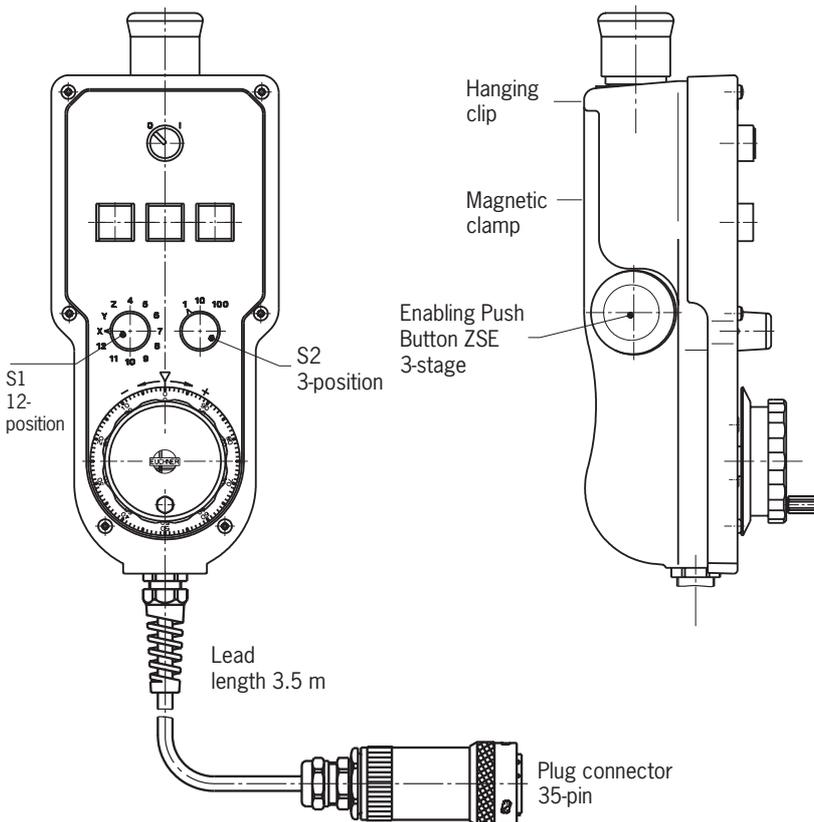
## Wiring Diagram



## HBL - 072 598

- ▶ Handwheel 2 x 100 pulses
- ▶ Emergency Stop Push Button with Override Protection to EN 418
- ▶ 3-stage Enabling Switch
- ▶ 3 Illuminated Push Buttons, individual inscribable
- ▶ 2 Selector Switches
- ▶ Key-operated Rotary Switch

### Dimension drawing



### Notes

- ▶ Fixing Bracket HBL for Hand-Held Pendant Stations see Page 44 Accessories
- ▶ Appropriate 35-pin Flange Socket see Page 42 Accessories

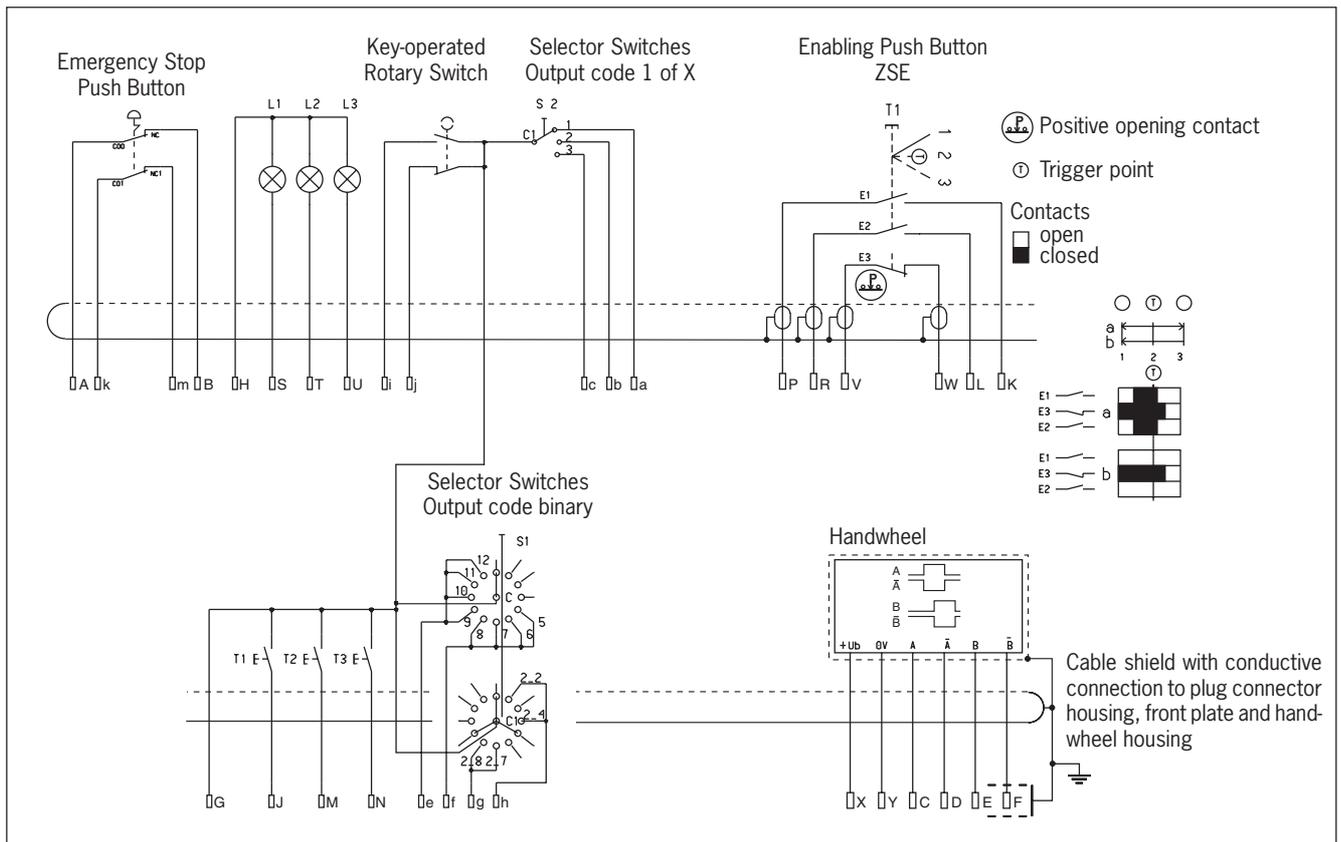
### Ordering Table

Article	Order No.
Hand-Held Pendant Station HBL with: Handwheel 2 x 100 pulses Emergency Stop Push Button with Override Protection, dual channel Enabling Push Button ZSE 3-stage, 2 x NO contacts, 1 x positively driven NC contact 3 Push Buttons, 1 x NO contact each 2 Selector Switches, 12-position and 3-position Key-operated Rotary Switch, 1 x NO, 1 x NC	072 598

## Technical Data

Parameter	Value	Unit
<b>Housing HBL</b>		
Material	Polyamide	
Colour	blue-grey RAL 7031	
Ambient temperature	0 to +55	°C
Degree of protection to EN 60529	to IP 65	
Connection	Lead 3.5 m, Plug connector 35-pin	
Weight	approx. 2.1	kg
<b>Emergency Stop Push Button to EN 418</b>		
Switching element	2 x NC	
Utilization category to IEC 947-5-1	DC-13 U <sub>e</sub> 24 V I <sub>e</sub> 2.75 A	
<b>Handwheel HKD</b>		
Pulses / revolution	2 x 100	
Operating voltage	5 ± 5%	V DC
Output circuit	RS 422 A	
Output pulses for clockwise rotation	see page 33	
<b>Enabling Push Button ZSE</b>		
Switching element	2 x NO, 1 x positively driven NC	
Utilization category to IEC 947-5-1	AC-15 U <sub>e</sub> 24 V I <sub>e</sub> 4 A DC-13 U <sub>e</sub> 24 V I <sub>e</sub> 3 A	
<b>Push Button</b>		
Switching element	1 x NO	
Switching voltage	max. 30	V DC
Switching current	max. 4	mA
Incandescent lamp	I = 21 mA / U = 24 V DC	
<b>Selector Switches</b>		
Switching voltage max.	30	V DC
Switching current max.	100	mA
Switching load max.	2	W
<b>Key-operated Rotary Switch</b>		
Switching voltage max.	30	V DC
Switching current max.	250	mA

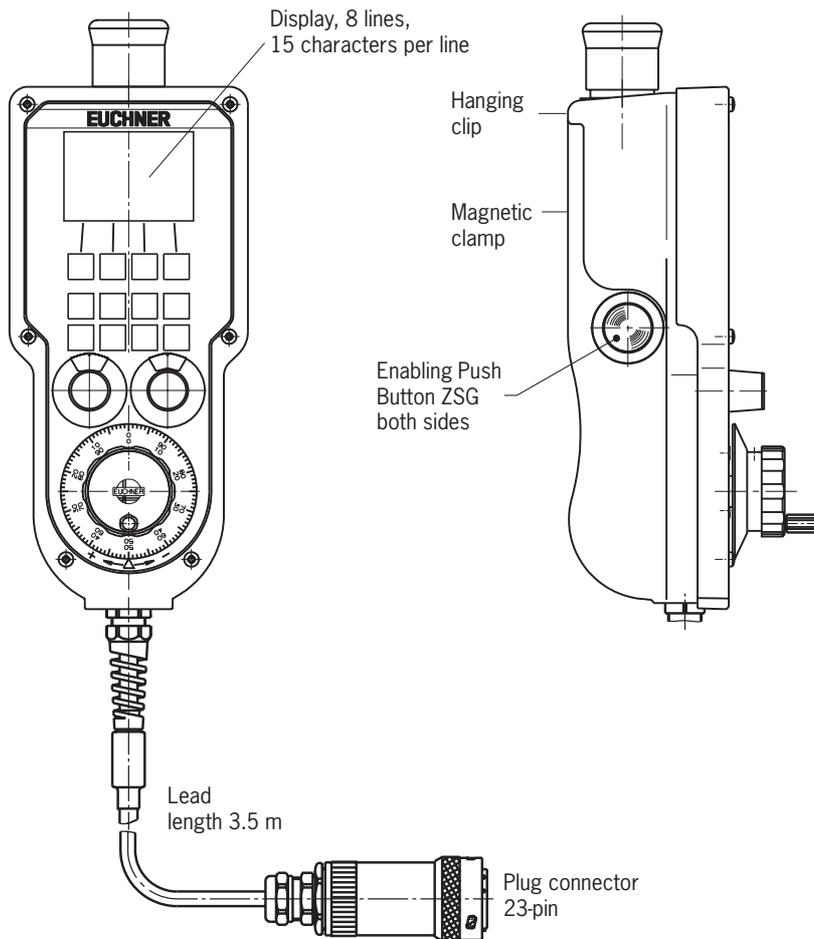
## Wiring Diagram



## HBLs - 072 725

- ▶ **Emergency Stop Push Button with Override Protection to EN 418**
- ▶ **2 Enabling Push Buttons, both sides**
- ▶ **2 Selector Switches**
- ▶ **Illuminated 12-fold Keypad**
- ▶ **Moulded Keypad with Insertion Foil**
- ▶ **High resolution LCD display (text mode)**
- ▶ **Serial RS422 interface**

### Dimension drawing



### Notes

- ▶ Fixing Bracket HBL for Hand-Held Pendant Stations see Page 44 Accessories
- ▶ Appropriate 23-pin Flange Socket see Page 42 Accessories
- ▶ ActiveX-Module for integration into the use application (if user programs have ActiveX capability on MS Windows®)

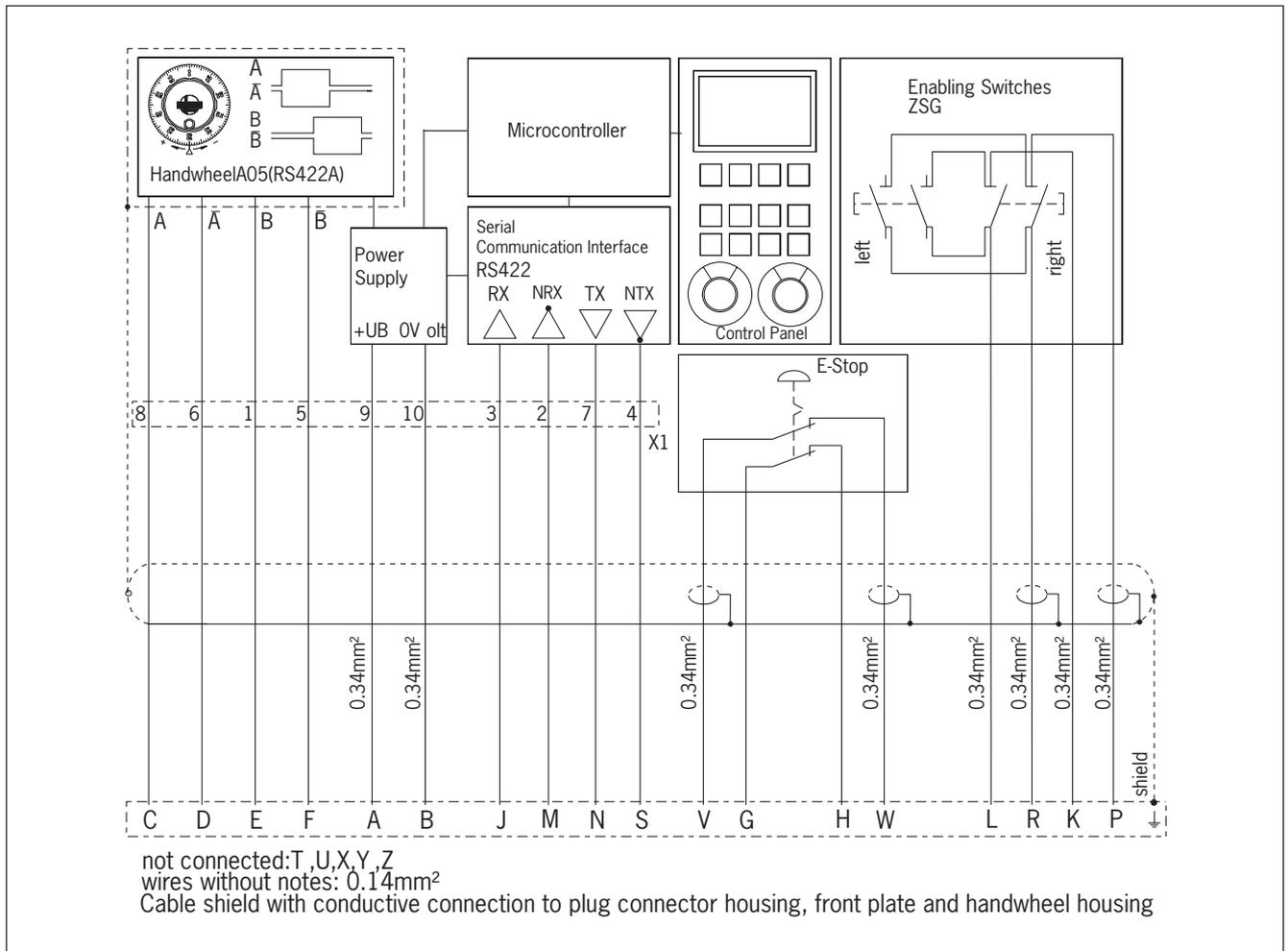
### Ordering Table

Article	Order No.
Hand-Held Pendant Station HBL with: Handwheel 2 x 100 pulses Emergency Stop Push Button with Override Protection, dual channel 2 Enabling Push Buttons ZSG, 2 x NO contact each 12-fold Keypad, illuminated 2 Selector Switches	072 725
ActiveX-Module	067 176
Software for integration into user software that supports ActiveX	067 176
Manual ActiveX-Module	067 178
Detailed documentation on use of the software	067 178

## Technical Data

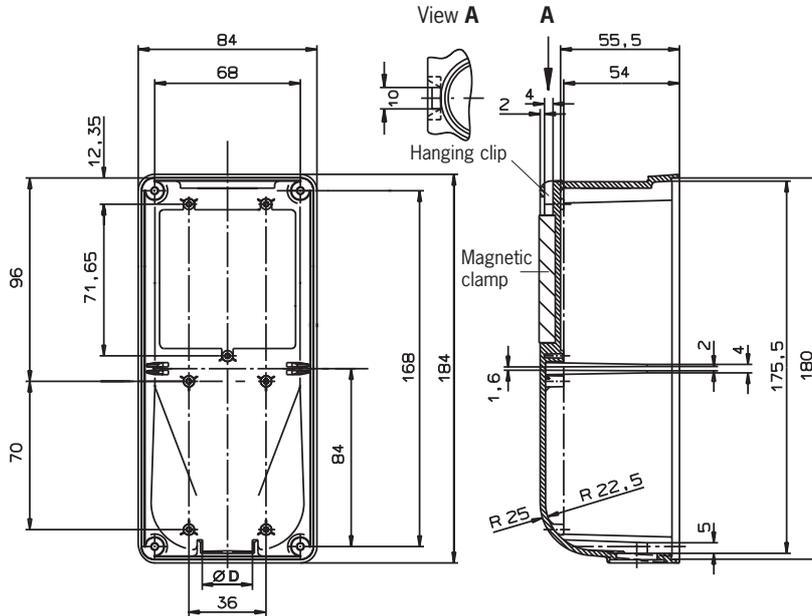
Parameter	Value	Unit
<b>Housing HBL</b>		
Material	Polyamide	
Colour	blue-grey RAL 7031	
Ambient temperature	0 to +50	°C
Degree of protection to EN 60529	to IP 65	
Connection	Lead 3.5 m, Stecker 23-pin	
Weight	2.2	kg
<b>Emergency Stop Push Button to EN 418</b>		
Switching element	2 x NC	
Utilization category to IEC 947-5-1	DC-13 U <sub>e</sub> 24 V I <sub>e</sub> 2.75 A	
<b>Handwheel HKD</b>		
Pulses / revolution	2 x 100	
Output circuit	RS 422 A	
Output pulses for clockwise rotation	see page 33	
<b>Enabling Push Buttons ZSG</b>		
Switching element	2 x NO	
Utilization category to IEC 947-5-1	AC-15 U <sub>e</sub> 24 V I <sub>e</sub> 4 A      DC-13 U <sub>e</sub> 24 V I <sub>e</sub> 3 A	
<b>Interface</b>		
Typ	RS 422	
Data format	8 Data bits, even Parity, 1 or 2 Stop bits	
Baud rate	9600 or 19200 (adjustable via DIL switch)	Baud
Communication protocol	3964 R	
<b>Power supply</b>		
Operating voltage range U <sub>B</sub>	24 ±20%	V DC
Operating current	< 200	mA

## Wiring Diagram



## Housing HBE Version 1 (Dimensions in mm)

### Dimension drawing



### Notes

- ▶ Two housing versions for different cable glands
- ▶ Cable glands see page 43

No. of cores	Version	PG	Ø D
23	1A	11	19
35	1B	13.5	20.8

### Technical Data

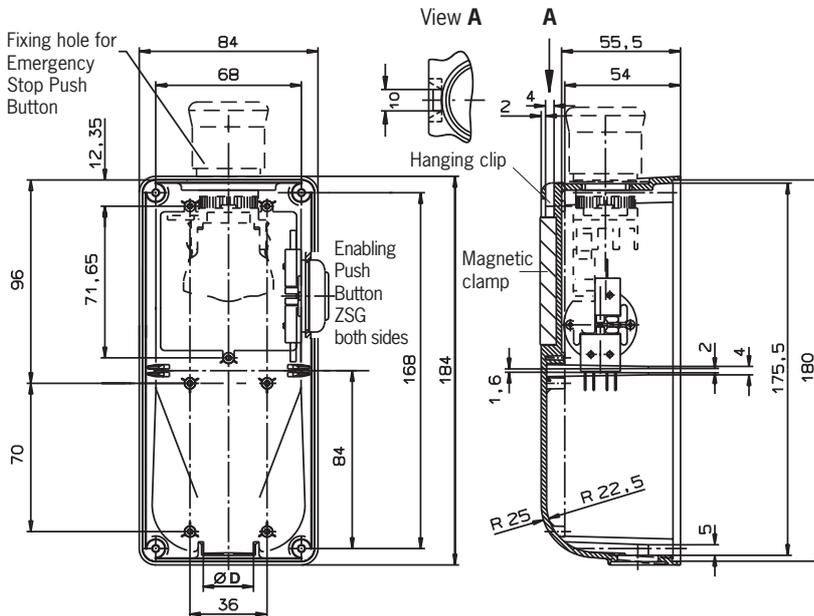
Parameter	Value	Unit
<b>Housing HBE</b>		
Material	Polyamide	
Colour	blue-grey RAL 7031	
Ambient temperature	0 to +55	°C
Degree of protection to EN 60529	to IP 65	
Weight	0.3	kg

### Ordering Table

Version	Article	Order No.
1A	Housing HBE, with magnetic clamp, hanging clip, fixing nut for heavy-gauge cable gland PG 11, 4 screws for front plate attachment	048 429
1B	Housing HBE, with magnetic clamp, hanging clip, fixing nut for heavy-gauge cable gland PG 13.5, 4 screws for front plate attachment	072 626

## Housing HBE Version 2 (Dimensions in mm)

### Dimension drawing



### Notes

- ▶ Two Enabling Push Buttons with 2 x NO contacts each
- ▶ Fixing hole for Emergency Stop Push Button
- ▶ Two housing versions for different cable glands
- ▶ Cable glands see page 43

No. of cores	Version	PG	Ø D
23	2A	11	19
35	2B	13.5	20.8

### Technical Data

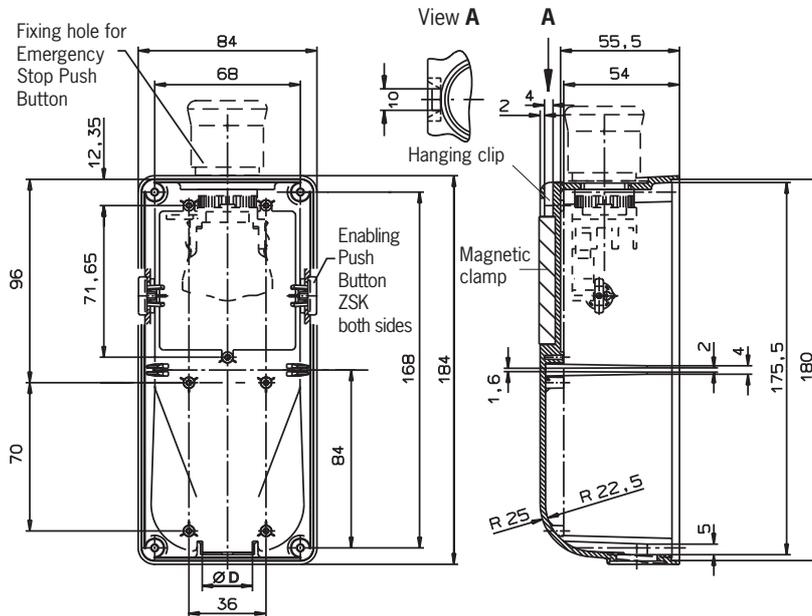
Parameter	Value	Unit
<b>Housing HBE</b>		
Material	Polyamide	
Colour	blue-grey RAL 7031	
Ambient temperature	0 to +55	°C
Degree of protection to EN 60529	to IP 65	
Weight	0.3	kg
<b>Enabling Push Button ZSG</b>		
Switching element	2 x NO	
Isolating distance	2 x 1.25 mm, redundant, per NO contact	
Utilization category to IEC 947-5-1	AC-15 U <sub>e</sub> 24 V I <sub>e</sub> 4 A	DC-13 U <sub>e</sub> 24 V I <sub>e</sub> 3 A

### Ordering Table

Version	Article	Order No.
2A	Housing HBE, with magnetic clamp, hanging clip, fixing nut for heavy-gauge cable gland PG 11, 4 screws for front plate attachment, 2 Enabling Push Buttons ZSG (2 x NO contacts each), mounted on right and left, fixing hole for Emergency Stop Push Button	054 982
2B	Housing HBE, with magnetic clamp, hanging clip, fixing nut for heavy-gauge cable gland 13.5, 4 screws for front plate attachment, 2 Enabling Push Buttons ZSG (2 x NO contacts each), mounted on right and left, fixing hole for Emergency Stop Push Button	072 627

## Housing HBE Version 3 (Dimensions in mm)

### Dimension drawing



### Notes

- ▶ Two Enabling Push Buttons with 2 x NO contacts each
- ▶ Fixing hole for Emergency Stop Push Button
- ▶ Two housing versions for different cable glands
- ▶ Cable glands see page 43

No. of cores	Version	PG	Ø D
23	3A	11	19
35	3B	13.5	20.8

### Technical Data

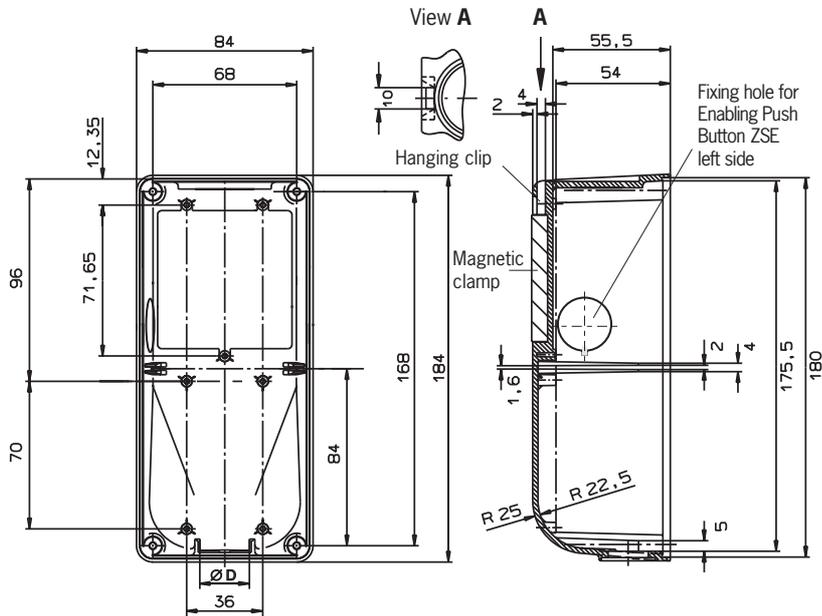
Parameter	Value	Unit
<b>Housing HBE</b>		
Material	Polyamide	
Colour	blue-grey RAL 7031	
Ambient temperature	0 to +55	°C
Degree of protection to EN 60529	to IP 65	
Weight	0.3	kg
<b>Enabling Push Button ZSK</b>		
Switching element	1 x NO	
Isolating distance	0.6	
Switching voltage min.	5	V DC
Switching voltage max.	30	V DC
Switching current max.	125	mA
Switching load nom.	24 V DC / 50 mA	

### Ordering Table

Version	Article	Order No.
3A	Housing HBE, with magnetic clamp, hanging clip, fixing nut for heavy-gauge cable gland PG 11, 4 screws for front plate attachment, 2 Enabling Push Buttons ZSK (1 x NO contacts each), mounted on right and left, fixing hole for Emergency Stop Push Button	054 983
3B	Housing HBE, with magnetic clamp, hanging clip, fixing nut for heavy-gauge cable gland PG 13.5, 4 screws for front plate attachment, 2 Enabling Push Buttons ZSK (1 x NO contacts each), mounted on right and left, fixing hole for Emergency Stop Push Button	072 628

## Housing HBE Version 4 (Dimensions in mm)

### Dimension drawing



### Notes

- ▶ For Enabling Push Button ZSE2-2 C1692, 3-stage with 2 x NO contacts and 1 x positively driven NC contact (see page 36)
- ▶ Two housing versions for different cable glands
- ▶ Cable glands see page 43
- ▶ Assembly drawing see page 48

No. of cores	Version	PG	Ø D
23	4A	11	19
35	4B	13.5	20.8

### Technical Data

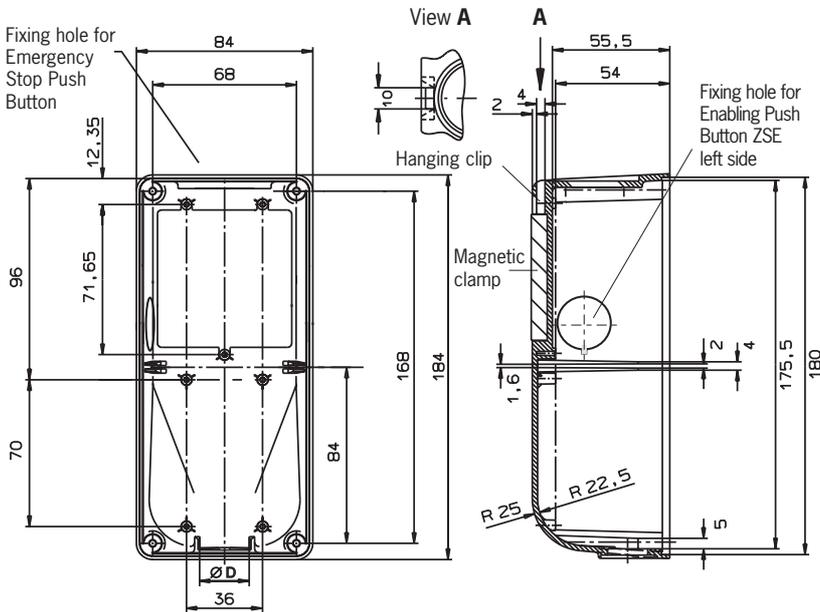
Parameter	Value	Unit
<b>Housing HBE</b>		
Material	Polyamide	
Colour	blue-grey RAL 7031	
Ambient temperature	0 to +55	°C
Degree of protection to EN 60529	to IP 65	
Weight	0.3	kg

### Ordering Table

Version	Article	Order No.
4A	Housing HBE, with magnetic clamp, hanging clip, fixing nut for heavy-gauge cable gland PG 11, 4 screws for front plate attachment, fixing hole for Enabling Push Button ZSE left side	074 973
4B	Housing HBE, with magnetic clamp, hanging clip, fixing nut for heavy-gauge cable gland PG 13.5, 4 screws for front plate attachment, fixing hole for Enabling Push Button ZSE left side	072 629

## Housing HBE Version 5 (Dimensions in mm)

### Dimension drawing



### Notes

- ▶ For Enabling Push Button ZSE2-4 C1943, 3-stage with 2 x NO contacts and 2 x positively driven NC contacts (see page 36)
- ▶ Two housing versions for different cable glands
- ▶ Plug for Emergency Stop Push Button  $\varnothing$  16 mm enclosed
- ▶ Cable glands see page 43
- ▶ Assembly drawing see page 48

No. of cores	Version	PG	$\varnothing$ D
23	5A	11	19
35	5B	13.5	20.8

### Technical Data

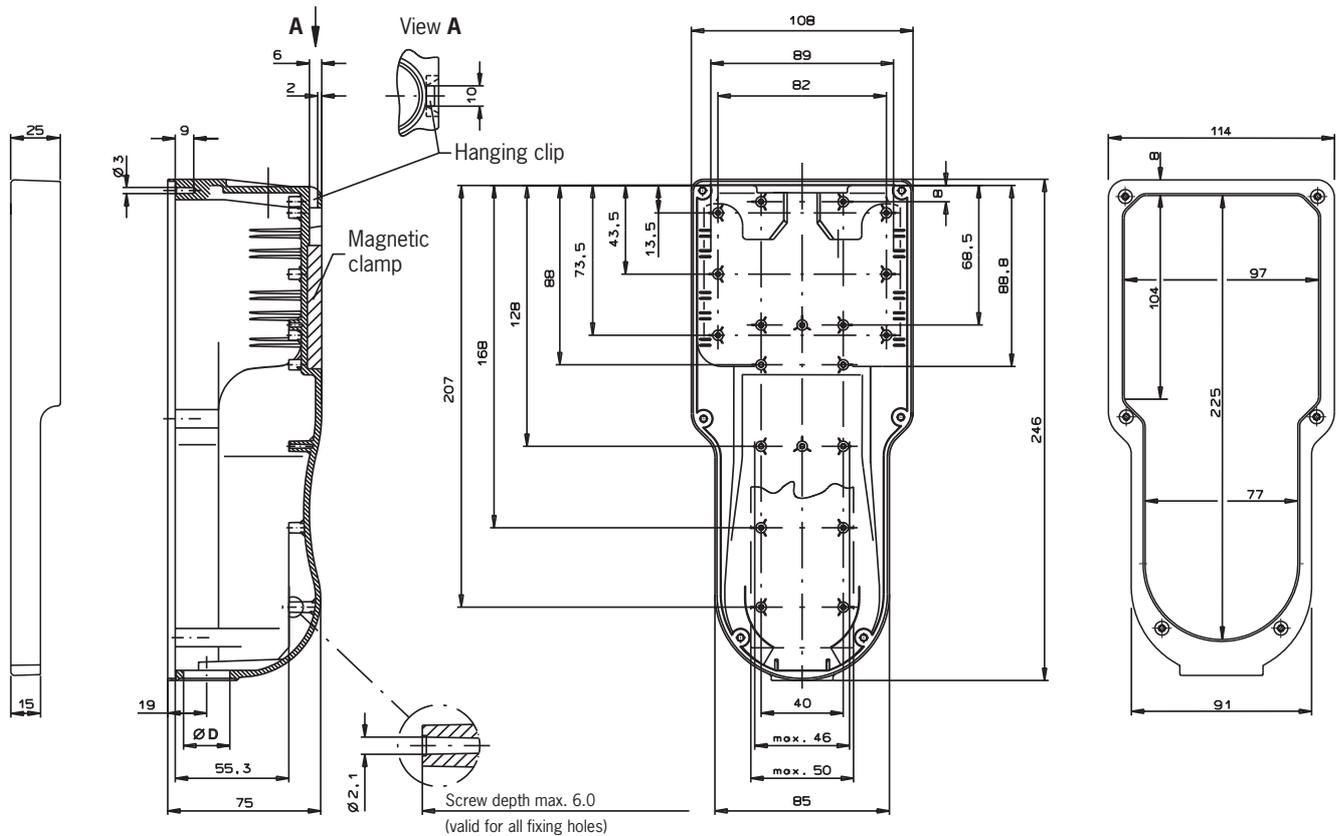
Parameter	Value	Unit
<b>Housing HBE</b>		
Material	Polyamide	
Colour	blue-grey RAL 7031	
Ambient temperature	0 to +55	°C
Degree of protection to EN 60529	to IP 65	
Weight	0.3	kg

### Ordering Table

Version	Article	Order No.
5A	Housing HBE, with magnetic clamp, hanging clip, fixing nut for heavy-gauge cable gland PG 11, 4 screws for front plate attachment, fixing hole for Enabling Push Button ZSE left side, fixing hole for Emergency Stop Push Button 083 492	072 984
5B	Housing HBE, with magnetic clamp, hanging clip, fixing nut for heavy-gauge cable gland PG 13.5, 4 screws for front plate attachment, fixing hole for Enabling Push Button ZSE left side, fixing hole for Emergency Stop Push Button 083 492	083 489

## Housing HBL Version 1 (Dimensions in mm)

### Dimension drawing



### Notes

- ▶ Two housing versions for different cable glands
- ▶ Cable glands see page 43

No. of cores	Version	PG	Ø D
23	1A	11	19
35	1B	13.5	20.8

### Technical Data

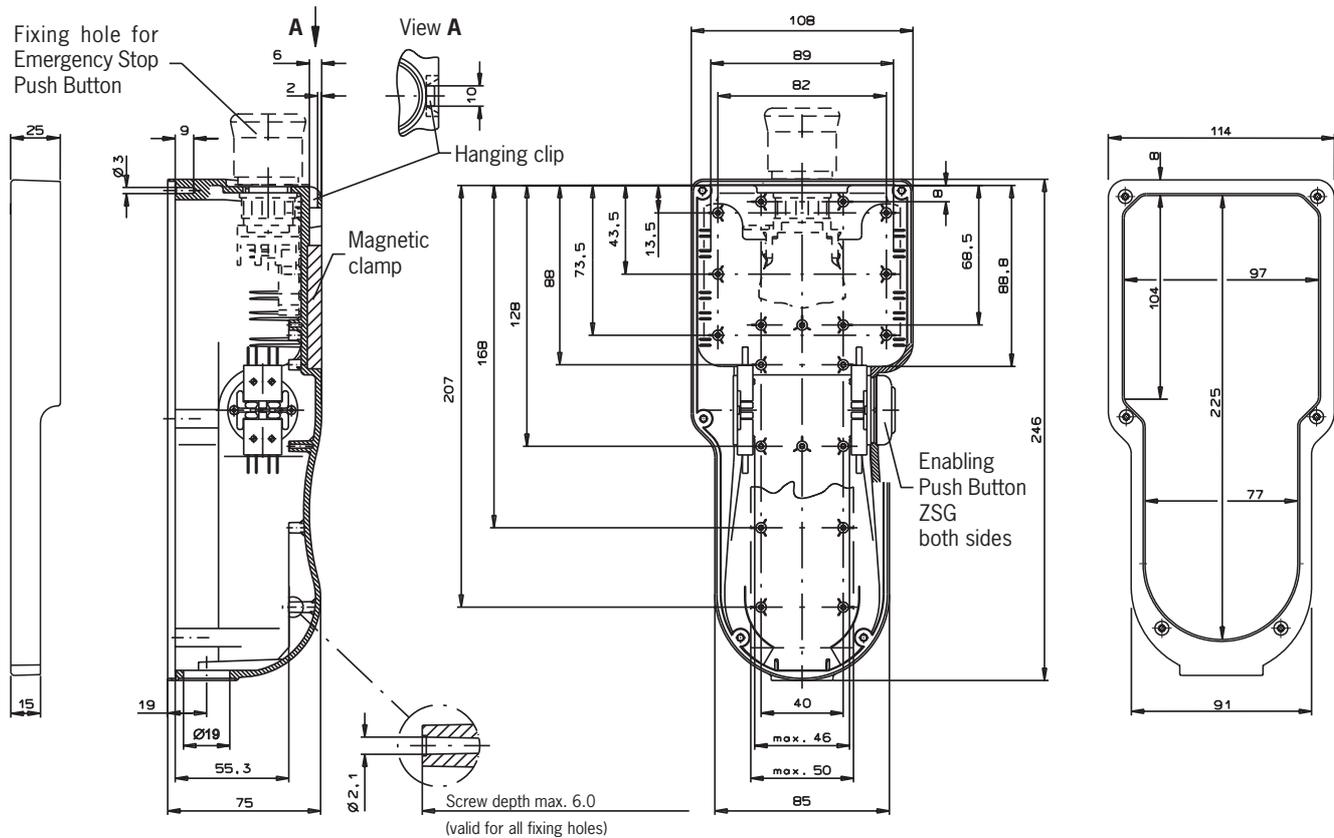
Parameter	Value	Unit
<b>Housing HBL</b>		
Material	Polyamide	
Colour	blue-grey RAL 7031	
Ambient temperature	0 to +55	°C
Degree of protection to EN 60529	to IP 65	
Weight	approx. 0.4	kg

### Ordering Table

Version	Article	Order No.
1A	Housing HBL, with magnetic clamp, hanging clip, fixing nut for heavy-gauge cable gland PG 11, 6 screws for front plate attachment, cover frame	073 098
1B	Housing HBL, with magnetic clamp, hanging clip, fixing nut for heavy-gauge cable gland PG 13.5, 6 screws for front plate attachment, cover frame	072 630

## Housing HBL Version 2 (Dimensions in mm)

### Dimension drawing



### Notes

- ▶ Two Enabling Push Buttons with 2 x NO contacts each
- ▶ Fixing hole for Emergency Stop Push Button
- ▶ Two housing versions for different cable glands
- ▶ Cable glands see page 43

No. of cores	Version	PG	Ø D
23	2A	11	19
35	2B	13.5	20.8

### Technical Data

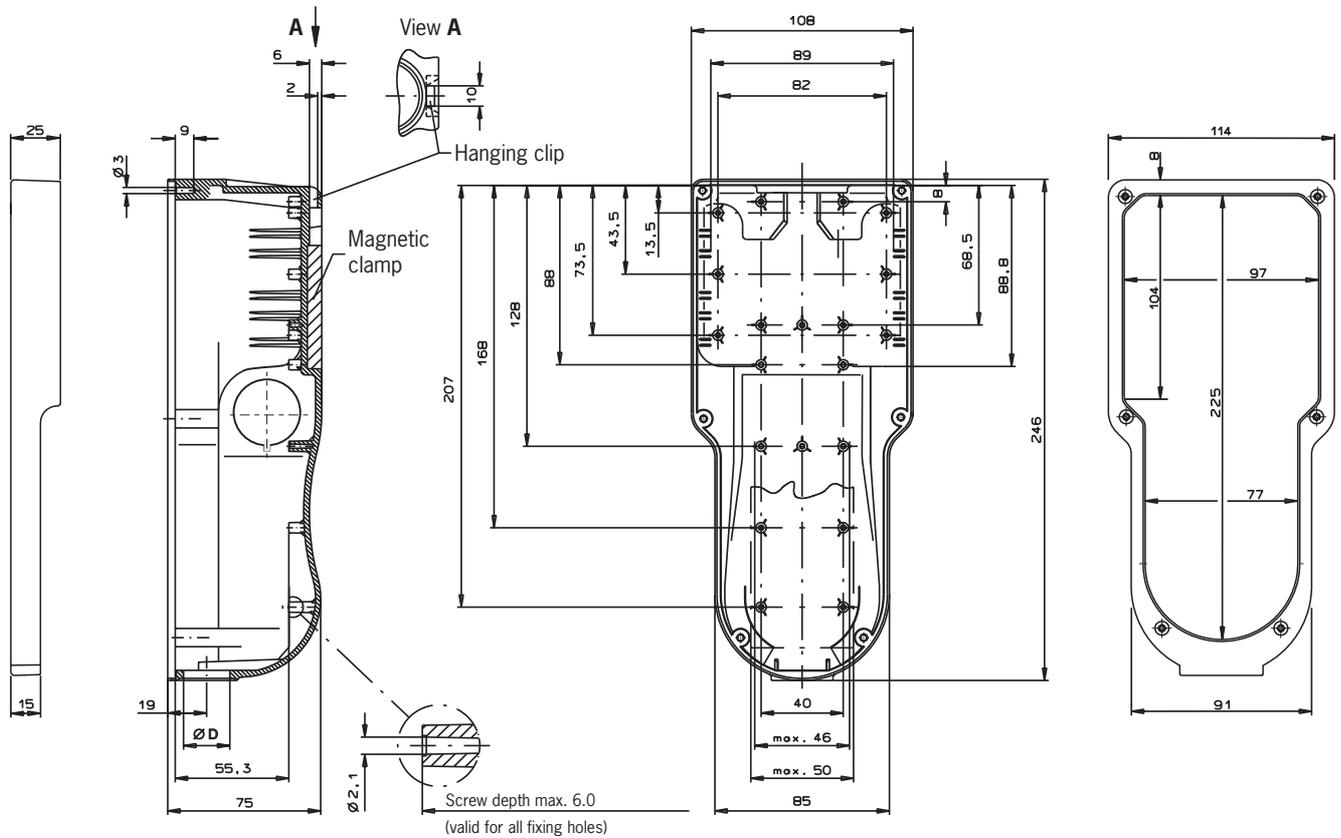
Parameter	Value	Unit
<b>Housing HBL</b>		
Material	Polyamide	
Colour	blue-grey RAL 7031	
Ambient temperature	0 to +55	°C
Degree of protection to EN 60529	to IP 65	
Weight	approx. 0.4	kg
<b>Enabling Push Button ZSG</b>		
Switching element	2 x NO	
Isolating distance	2 x 1.25 mm, redundant, per NO contact	
Utilization category to IEC 947-5-1	AC-15 U <sub>e</sub> 24 V I <sub>e</sub> 4 A	DC-13 U <sub>e</sub> 24 V I <sub>e</sub> 3 A

### Ordering Table

Version	Article	Order No.
2A	Housing HBL, with magnetic clamp, hanging clip, fixing nut for heavy-gauge cable gland PG 11, 6 screws for front plate attachment, 2 Enabling Push Buttons ZSG (2 x NO contact each) mounted on right and left, fixing hole for Emergency Stop Push Button, cover frame	073 113
2B	Housing HBE, with magnetic clamp, hanging clip, fixing nut for heavy-gauge cable gland PG 13.5, 6 screws for front plate attachment, 2 Enabling Push Buttons ZSG (2 x NO contact each) mounted on right and left, fixing hole for Emergency Stop Push Button, cover frame	072 631

## Housing HBL Version 3 (Dimensions in mm)

### Dimension drawing



### Notes

- ▶ For Enabling Push Button ZSE2-2 C1692, 3-stage with 2 x NO contacts and 1 positively driven NC contact (see page 36)
- ▶ Two housing versions for different cable glands
- ▶ Cable glands see page 43
- ▶ Assembly drawing see page 48

No. of cores	Version	PG	Ø D
23	3A	11	19
35	3B	13.5	20.8

### Technical Data

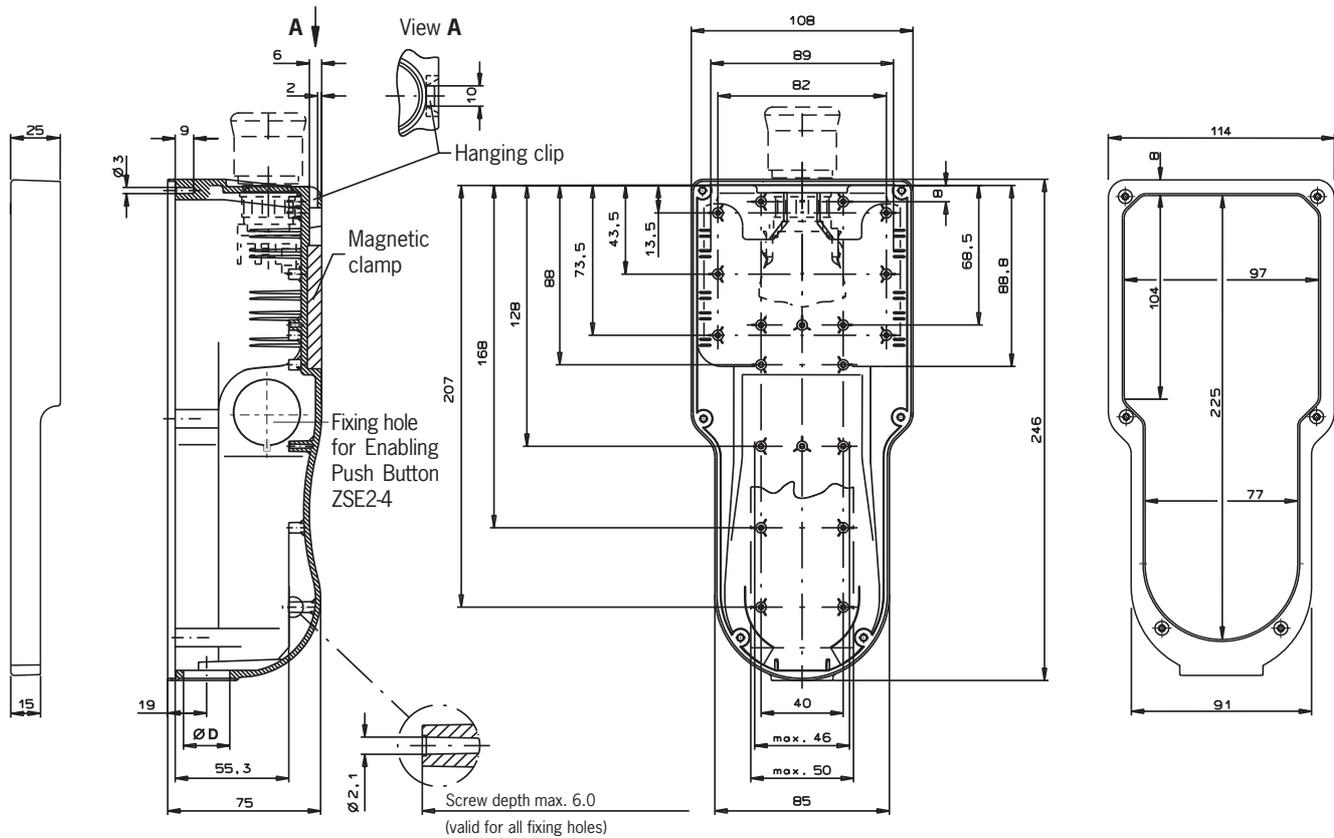
Parameter	Value	Unit
<b>Housing HBL</b>		
Material	Polyamide	
Colour	blue-grey RAL 7031	
Ambient temperature	0 to +55	°C
Degree of protection to EN 60529	to IP 65	
Weight	approx. 0.4	kg

### Ordering Table

Version	Article	Order No.
3A	Housing HBL, with magnetic clamp, hanging clip, fixing nut for heavy-gauge cable gland PG 11, 6 screws for front plate attachment, fixing hole for Enabling Push Button ZSE left side, cover frame	073 109
3B	Housing HBE, with magnetic clamp, hanging clip, fixing nut for heavy-gauge cable gland PG 13.5, 6 screws for front plate attachment, fixing hole for Enabling Push Button ZSE left side, cover frame	072 632

## Housing HBL Version 4 (Dimensions in mm)

### Dimension drawing



### Notes

- ▶ For Enabling Push Button ZSE2-4 C1943, 3-stage with 2 x NO contacts and 2 positively driven NC contacts (see page 36)
- ▶ Corresponding Enabling Push Button see page 36
- ▶ Corresponding Emergency Stop Push Button see page 35
- ▶ Two housing versions for different cable glands
- ▶ Cable glands see page 43
- ▶ Plug for Emergency Stop Push Button  $\varnothing$  22 mm enclosed
- ▶ Assembly drawing see page 48

No. of cores	Version	PG	$\varnothing$ D
23	3A	11	19
35	3B	13.5	20.8

### Technical Data

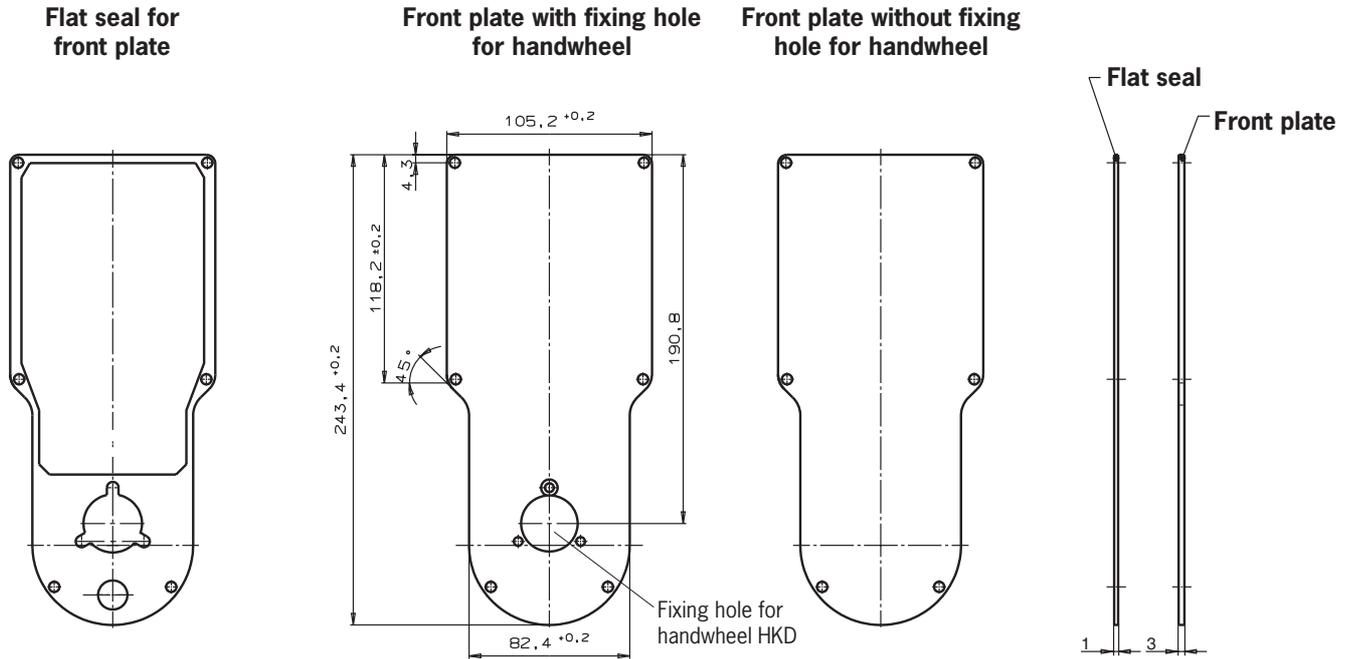
Parameter	Value	Unit
<b>Housing HBL</b>		
Material	Polyamide	
Colour	blue-grey RAL 7031	
Ambient temperature	0 to +55	$^{\circ}$ C
Degree of protection to EN 60529	to IP 65	
Weight	approx. 0.4	kg

### Ordering Table

Version	Article	Order No.
4A	Housing HBL, with magnetic clamp, hanging clip, fixing nut for heavy-gauge cable gland PG 11, 6 screws for front plate attachment, Fixing hole for Enabling Push Button ZSE2-4 left side, cover frame, fixing hole for Emergency Stop Push Button 073 985	072 983
4B	Housing HBE, with magnetic clamp, hanging clip, fixing nut for heavy-gauge cable gland PG 13.5, 6 screws for front plate attachment, Fixing hole for Enabling Push Button ZSE2-4 left side, cover frame, fixing hole for Emergency Stop Push Button 073 985	083 484

## Front plate for Housing HBL (Dimensions in mm)

### Dimension drawing



### Technical Data

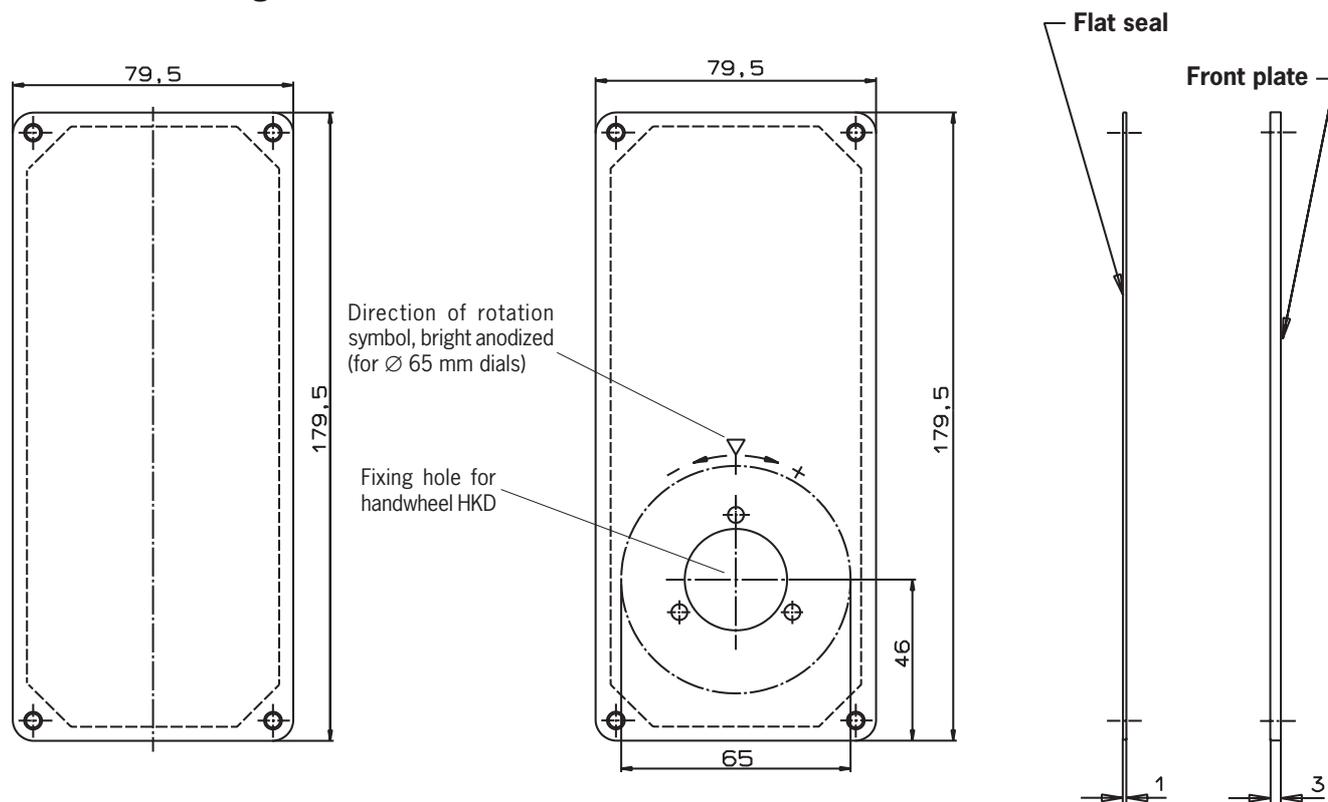
	Material
Front plate	Electro-anodized aluminium, black
Seal	NBR, self-adhesive on one side

### Ordering Table

Article	Order No.
HBL-Front plate with seal	073 138
HBL-Front plate with seal and fixing hole for handwheel HKD	073 139
Flat seal for HBL front plate	072 641

## Front plate for Housing HBE (Dimensions in mm)

### Dimension drawing



### Technical Data

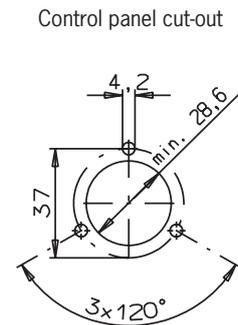
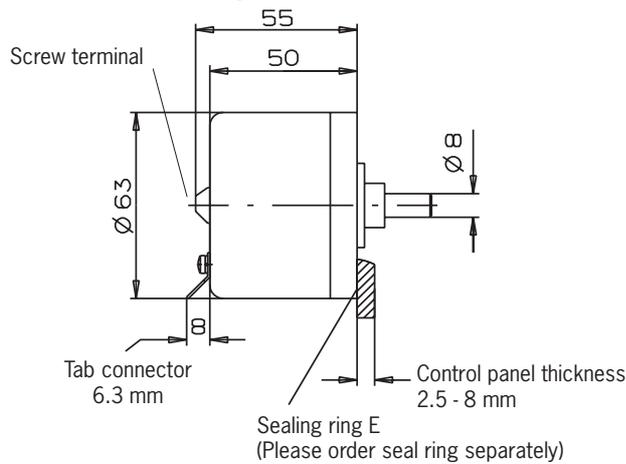
	Material	
Front plate	Electro-anodized aluminium, black	
Seal	NBR, self-adhesive on one side	

### Ordering Table

Article	Order No.
HBE-Front plate with seal	052 954
HBE-Front plate with seal and fixing hole for handwheel HKD	052 955
Flat seal for HBE front plate	072 642

## Handwheel HKD (Dimensions in mm)

### Dimension drawing



Pin assignment Screw terminal S	Output circuit A05 (RS422A)	Output circuit G24 (push-pull)	Output pulses for CW rotation 2x100 pulses/revolution
<p><math>U_B</math> OV A <math>\bar{A}</math> B <math>\bar{B}</math></p> <p>cable connection max. 1.5 mm<sup>2</sup></p>			

### Technical Data

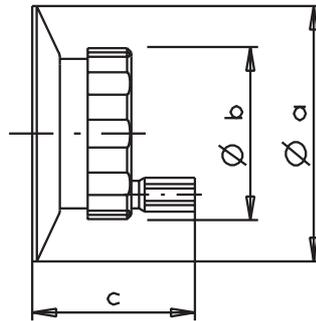
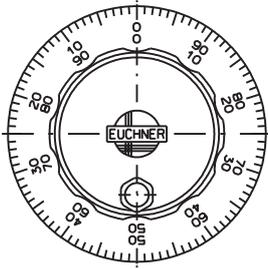
Parameter	Value	Unit	
Pulses / revolution (outputs A+B)	2 x 100		
Detent positions / revolution	100		
Housing material	Aluminium		
Weight	0.5	kg	
Max. axial shaft load	25	N	
Max. radial shaft load	40	N	
Ambient temperature	0 to +70	°C	
Storage temperature	-25 to +85	°C	
Degree of protection to (IEC 529 / EN 60529)	IP 65 at front / IP 50 on terminal side		
Resistance to vibrations			
Oscillation DIN / IEC 68-2-6 ( 3 axes)	10 - 55 Hz, amplitude 1 mm, 6 cycles of 5 min each		
Shock DIN / IEC 68-2-27 (3 axes)	6 shocks, half-sine, 18 ms, 30 g		
Output circuit	A05 (RS422A)	G24 (push-pull)	
Operating voltage $U_B$	5 ±5%	10 - 30	V DC
Operating current	< 100		mA
Output voltage HIGH (1) min. at $I_{Amax}$	RS422A	$U_B - 3$	V
Output voltage LOW (0) max. at $I_{Amax}$	RS422A	3	V
Output current $I_A$ per output max.	RS422A	20	mA
Output frequency max.	10		kHz
Humidity max.	80 (condensation formation prohibited)		%
EMC protection requirements to C€	EN 50081-2, EN 61000-6-2		

### Ordering Table

Article	Order No.
HKD100S100A05, Output circuit RS422	054 866
HKD100S100G24, Output circuit 24V push-pull	054 868
Sealing ring E (accessories)	054 861

Dial (Dimensions in mm)

## Dimension drawing



## Notes

- ▶ Dial without crank, with finger button and company logo on request to order

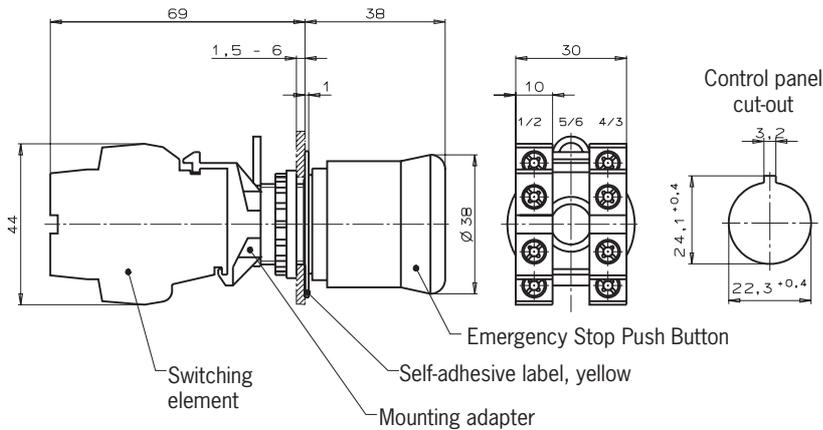
Type	Ø a	Ø b	c
Dial 75 mm	75	63	40
Dial 65 mm	65	44	43

## Ordering Table

Article	Order No.
Dial 75 mm silver for handwheel HKD	072 597
Dial 75 mm black for handwheel HKD	072 633
Dial 65 mm silver for handwheel HKD	057 314
Dial 65 mm black for handwheel HKD	057 318

## Emergency Stop Push Button with pull release to EN 418 (Dimensions in mm)

### Dimension drawing



### Notes

- ▶ Emergency Stop Push Button latches when pressed in. Release by pulling out. Override protected.
- ▶ For use with housing HBE version 2, HBE version 3, HBL version 2 and HBL version 4.

### Technical Data

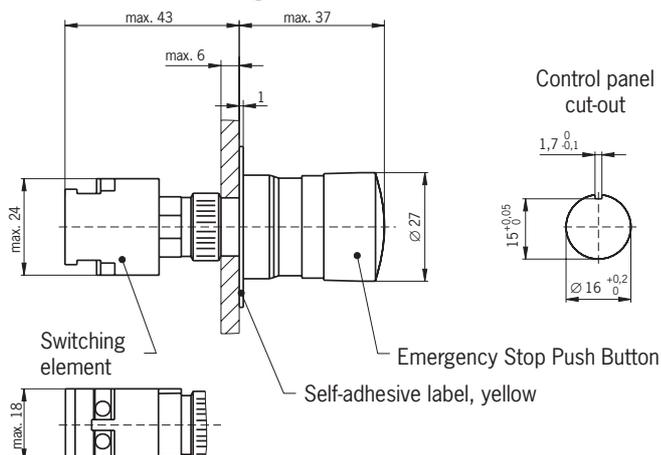
Parameter	Value	Unit
Colour of actuating button	red	
Colour of self-adhesive label	yellow	
Switching element	2 x NC	
Utilization category to IEC 947-5-1	DC-13 U <sub>e</sub> 24 V I <sub>e</sub> 2.75 A	

### Ordering Table

Article	Order No.
Emergency Stop Push Button, complete with switching element (2 x NC contacts), pull release	073 985
Dummy plug for Emergency Stop Push Button fixing hole	059 622

## Emergency Stop Push Button with rotary release to EN 418 (Dimensions in mm)

### Dimension drawing



### Notes

- ▶ For use only with housing HBE version 5

### Technical Data

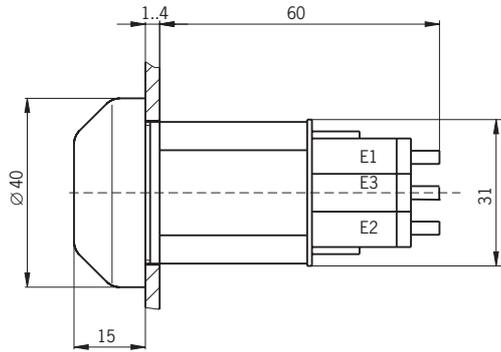
Parameter	Value	Unit
Colour of actuating button	red	
Colour of self-adhesive label	yellow	
Switching element	2 x NC	
Utilization category to IEC 947-5-1	DC-13 U <sub>e</sub> 24 V I <sub>e</sub> 5 A	

### Ordering Table

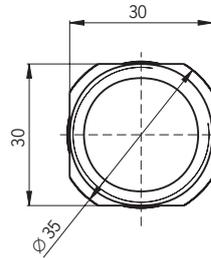
Article	Order No.
Emergency Stop Push Button, complete with switching element (2 x NC contacts), rotary release	083 492

## Enabling Push Button ZSE2-2, 3-stage, 1 positively driven NC (Dimensions in mm)

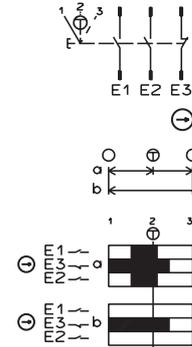
### Dimension drawing



View without  
- sealing cap  
- round nut  
- control panel

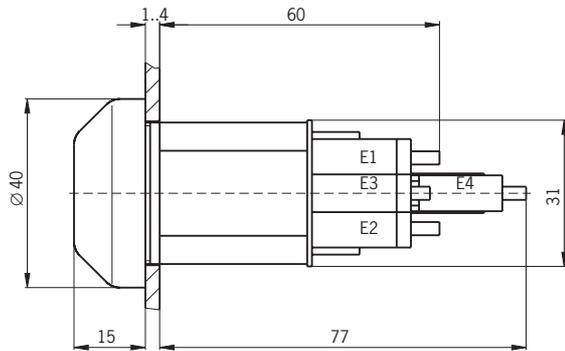


### Switching diagramm

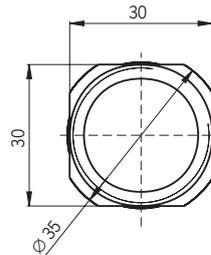


## Enabling Push Button ZSE2-4, 3-stage, 2 positively driven NC (Dimensions in mm)

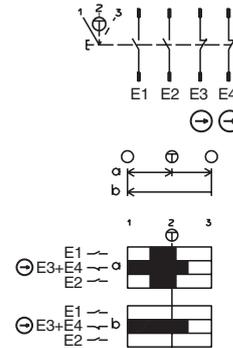
### Dimension drawing



View without  
- sealing cap  
- round nut  
- control panel



### Switching diagramm



### Notes

- ▶ Enabling Push Button ZSE2-2 C1692 for use only in housing HBE version 4 and housing HBL version 3
- ▶ Enabling Push Button ZSE2-4 C1943 for use only in housing HBE version 5 and housing HBL version 4

### Technical Data

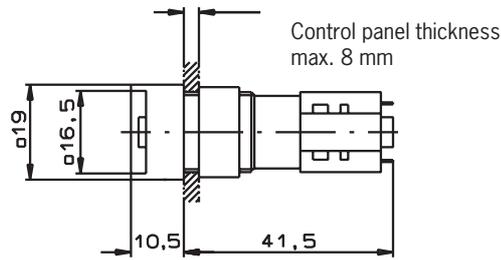
Parameter	Value	Unit
Housing material	Plastic	
Fixing hole	∅ 30.5 <sup>+0.5</sup>	mm
Degree of protection to IEC 529	IP 65 from front	
Ambient temperature	- 5 to + 60	°C
Switching principle	Dependent action	
Utilization category to IEC 947-5-1	AC-15 U <sub>e</sub> 24 V I <sub>e</sub> 4 A      DC-13 U <sub>e</sub> 24 V I <sub>e</sub> 3 A	
Short circuit protection (control fuse)	6 quick-acting	A
Weight	approx. 0.1	kg

### Ordering Table

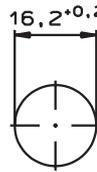
Type	Switching elements	Type of switch	Order No.
ZSE2-2 C 1692	2 NO + 1 positively driven NC	single channel	070 752
ZSE2-4 C 1943	2 NO + 2 positively driven NC	dual channel	083 477

## Illuminated Push Button individual inscribable (Dimensions in mm)

### Dimension drawing



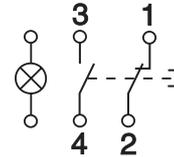
Control panel cut-out



### Notes

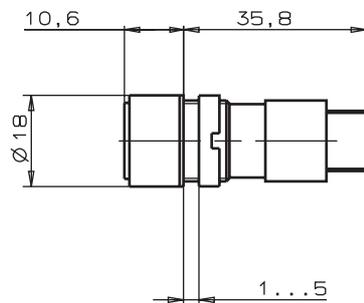
- ▶ Front panel installation in the area of the Emergency Stop Push Button and Enabling Switch ZSE not possible due to restricted space.

### Connection diagram

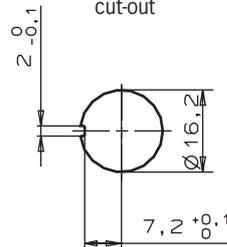


## Key-operated Rotary Switch (Dimensions in mm)

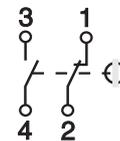
### Dimension drawing



Control panel cut-out



### Connection diagram



## Technical Data

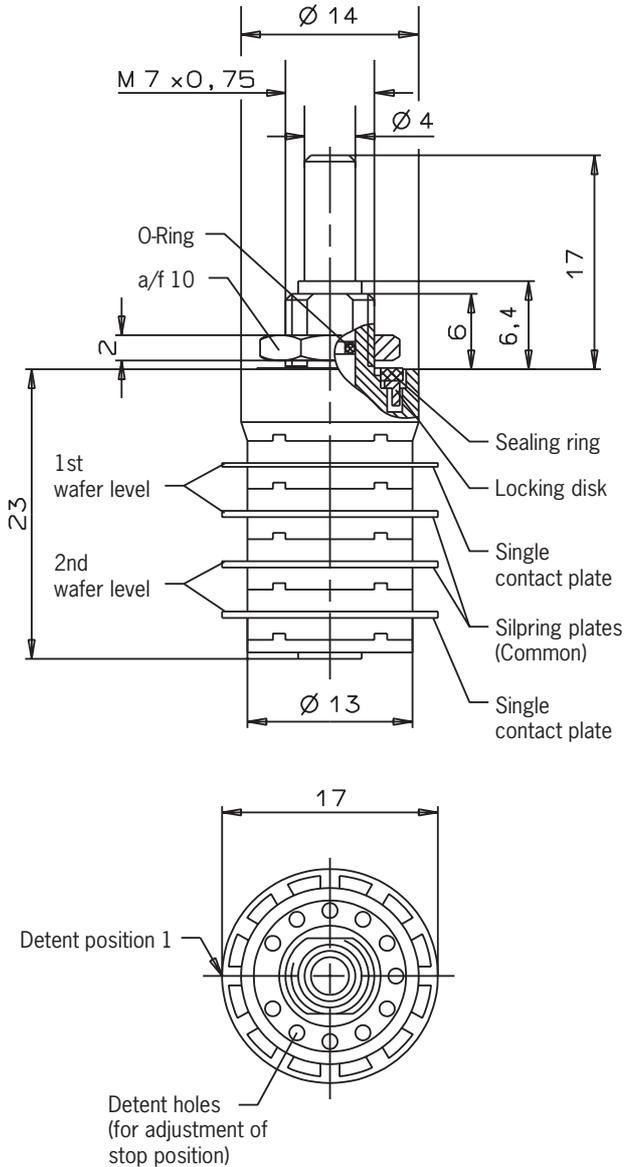
Parameter	Value	Unit
<b>Push Button</b>		
Housing material	PA6, black	
Lens material	PC, transparent	
Ambient temperature	-25 to +70	°C
Env. protection at front (installed in front plate)	to IP 65	
Switching principle	bridge snap-action momentary contact	
Switching element	1 x NO, 1 x NC	
Contact material	silver-plated	
Switching current max.	4	A
Switching voltage	12 to 24	V
Contact resistance (in new condition)	≤ 20	mΩ
Connection type	solder connection	
Illumination	Incandescent lamp, white, 24 V, 21 mA	
<b>Key-operated Rotary Switch</b>		
Housing material	PA black	
Ambient temperature	-25 to +70	°C
Env. protection at front (installed in front plate)	IP 65	
Switching principle	bridge snap-action momentary contact	
Switching element	1 x NO, 1 x NC	
Contact material	gold-plated	
Switching current max.	250	mA
Switching voltage	30	V
Contact resistance (in new condition)	< 20	mΩ
Connection type	PCB connection, tin-plated	

## Ordering Table

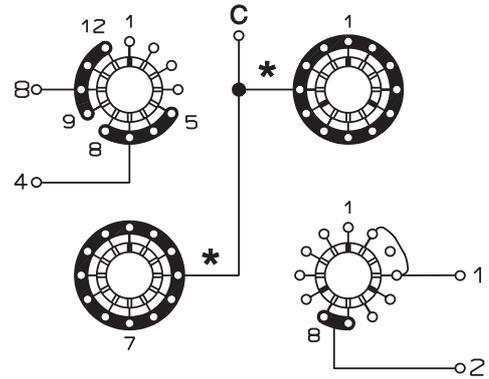
Article	Order No.
Push Button	070 520
Key-operated Rotary Switch	072 604

## Selector Switches (Dimensions in mm)

### Dimension drawing



### Output circuit diagram

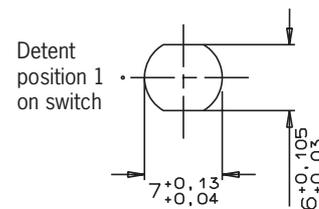


Detent position	Output			
	8	4	2	1
1	0	0	0	0
2	0	0	0	1
3	0	0	1	0
4	0	0	1	1
5	0	1	0	0
6	0	1	0	1
7	0	1	1	0
8	0	1	1	1
9	1	0	0	0
10	1	0	0	1
11	1	0	1	0
12	1	0	1	1

All outputs are open between the detent positions (Break before Make)

1 = Contact between terminal C and output

### Control panel cut-out to DIN 41634



### Technical Data

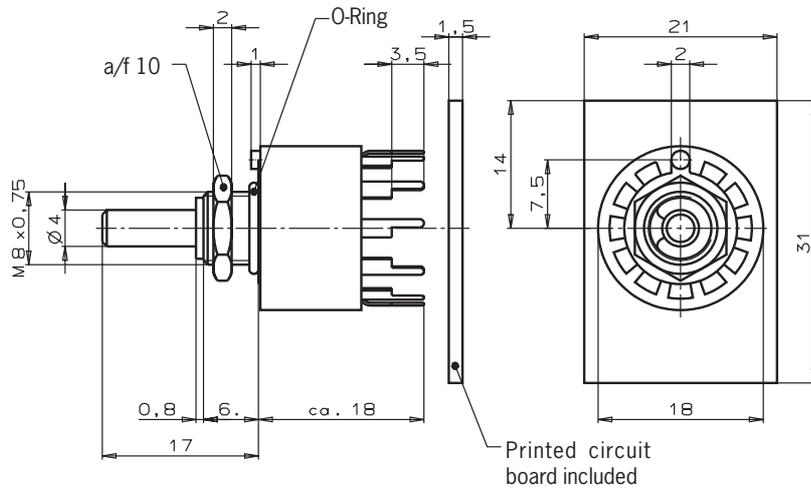
Parameter	Value	Unit
Env. protection at front (installed in front plate)	to IP 65	
Central mount	M7 x 0.75	
Max. tightening torque for fixing nut	1.2	Nm
Detent positions	max. 12, adjustable stop position from 2 up to 12 detent positions	
Output code	binary	
Contact material	silver-plated and gold-flashed	
Switching load max.	10	VA
Switching current max.	0.5	A
Switching voltage max.	24	V=
Contact resistance (in new condition)	≤ 6	mΩ
Connection type	solder connection	
Max. soldering time (16 W soldering iron)	3	s

### Ordering Table

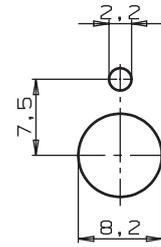
Article	Order No.
Selector Switch, 12 detent positions, binary code, Break before Make, adjustable stop position	072 634

## Selector Switches (Dimensions in mm)

### Dimension drawing

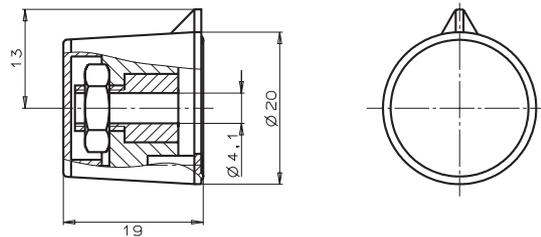


### Hole pattern for mounting



## Rotary Knob with indicator disc (Dimensions in mm)

### Dimension drawing



## Technical Data

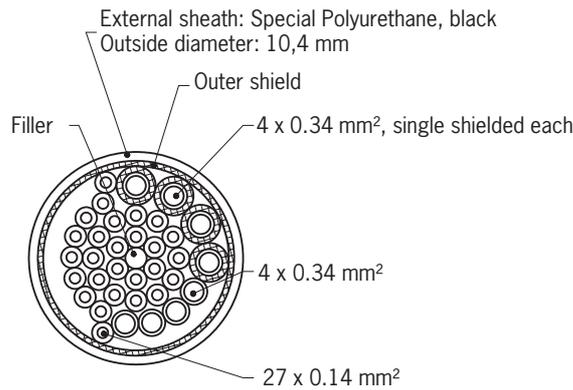
Parameter	Value	Unit
Env. protection at front (installed in front plate)	to IP 65	
Central mount	M8 x 0.75	
Max. tightening torque for fixing nut	3	Nm
Detent positions	12, adjustable stop position	
Switching type	Break before Make	
Contact material	silver-plated and gold-flashed	
Switching load max.	2 V / 1 A, 24 V / 0.5 A	
Switching current max.	2	A
Switching voltage max.	30	V
Contact resistance (in new condition)	≤ 10	mΩ
Connection type	solder connection (via PCB)	
Max. soldering time (16 W soldering iron)	3	s

## Ordering Table

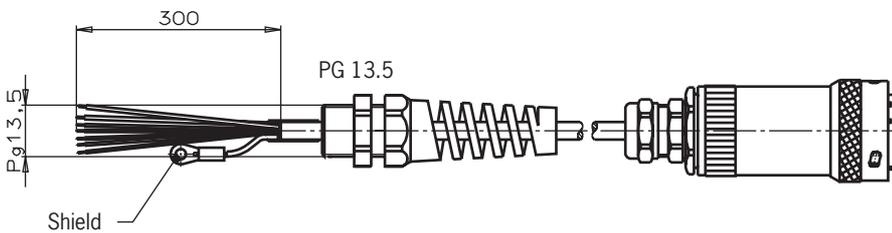
Article	Order No.
Selector Switch, 12 detent positions, Break before Make, adjustable stop position	073 974
Rotary knob with indicator disc	073 973

## Lead 35-core

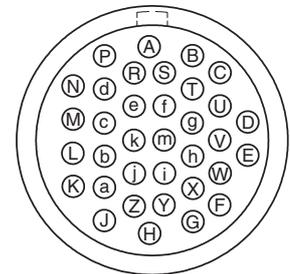
View to cable cross section



## Lead with plug connector 35-pin (Dimensions in mm)



Pin assignment



Pin	Colour	Cross section mm <sup>2</sup>	Pin	Colour	Cross section mm <sup>2</sup>	Pin	Colour	Cross section mm <sup>2</sup>
A	RD	0.34	N	BNGN	0.14	b	BKWH	0.14
B	BU	0.34	P	GN	0.34 <sup>1)</sup>	c	BKBN	0.14
C	GNWH	0.14	R	YE	0.34 <sup>1)</sup>	d	GNGY	0.14
D	YEWB	0.14	S	BNYE	0.14	e	YEGY	0.14
E	GYWH	0.14	T	BNGY	0.14	f	GNPK	0.14
F	WHPK	0.14	U	BNPK	0.14	g	YEPK	0.14
G	BK	0.14	V	WH	0.34 <sup>1)</sup>	h	GNBU	0.14
H	VT	0.14	W	BN	0.34 <sup>1)</sup>	i	YEBU	0.14
J	GYPK	0.14	X	BUWH	0.14	j	RDGN	0.14
K	GY	0.34	Y	BNBU	0.14	k	RDYE	0.14
L	PK	0.34	Z	RDWH	0.14	m	BKGN	0.14
M	RDBU	0.14	a	BNRD	0.14			

## Technical Data

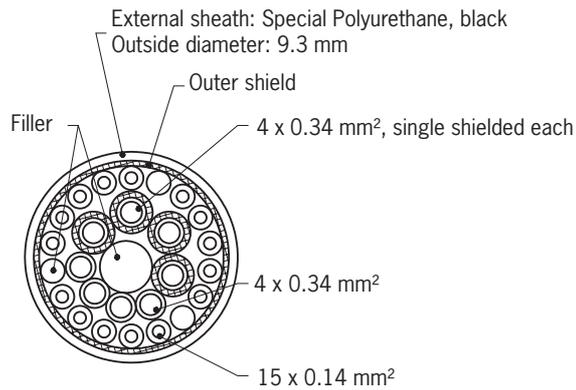
Parameter	Value	Unit
Conductor cross-section	0.14	mm <sup>2</sup>
Conductor resistance	≤ 145	Ω/km
Insulation test voltage core to core	1.5	kV <sub>eff</sub>
Insulation test voltage core to shield	0.8	kV <sub>eff</sub>
Insulation resistance	> 200	MΩ
Operating temperature	-40 to +80	

## Ordering Table

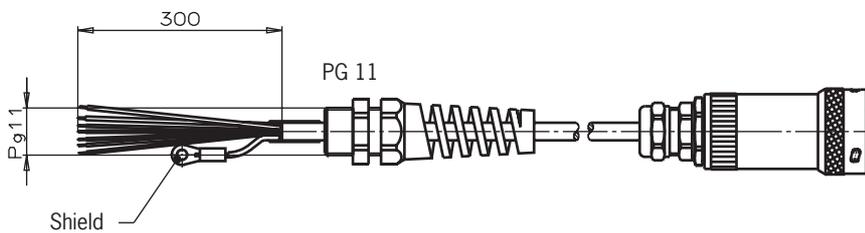
Article	Order No.
Lead, 35-core, length 10 m	074 604
Lead, complete with plug connector 35-pin and pin contacts, length 5 m	072 637

## Lead 23-core

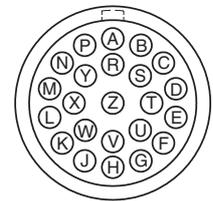
View to cable cross section



## Lead with plug connector 23-pin (Dimensions in mm)



Pin assignment



Pin	Colour	Cross section mm <sup>2</sup>	Pin	Colour	Cross section mm <sup>2</sup>	Pin	Colour	Cross section mm <sup>2</sup>
A	RD	0.34	J	GYPK	0.14	T	BNGY	0.14
B	BU	0.34	K	GY	0.34	U	BNPK	0.14
C	GNWH	0.14	L	PK	0.34	V	WH	0.34 <sup>1)</sup>
D	YEWH	0.14	M	RDBU	0.14	W	BN	0.34 <sup>1)</sup>
E	GYWH	0.14	N	BNGN	0.14	X	BUWH	0.14
F	WHPK	0.14	P	GN	0.34 <sup>1)</sup>	Y	BNBU	0.14
G	BK	0.14	R	YE	0.34 <sup>1)</sup>	Z	RDWH	0.14
H	VT	0.14	S	BNYE	0.14			

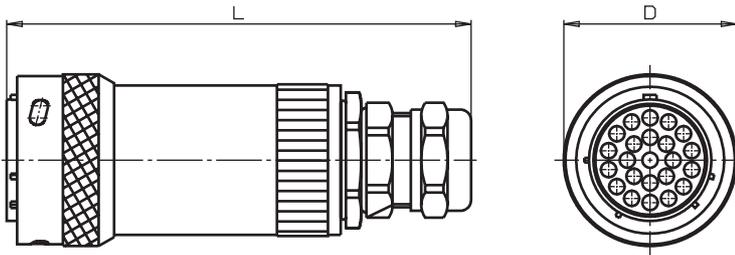
## Technical Data

Parameter	Value		Unit
Conductor cross-section	0.14	0.34	mm <sup>2</sup>
Conductor resistance	≤ 145	≤ 62	Ω/km
Insulation test voltage core to core	1.5		kV <sub>eff</sub>
Insulation test voltage core to shield	0.8		kV <sub>eff</sub>
Insulation resistance	> 200		MΩ
Operating temperature	-40 to +80		°C

## Ordering Table

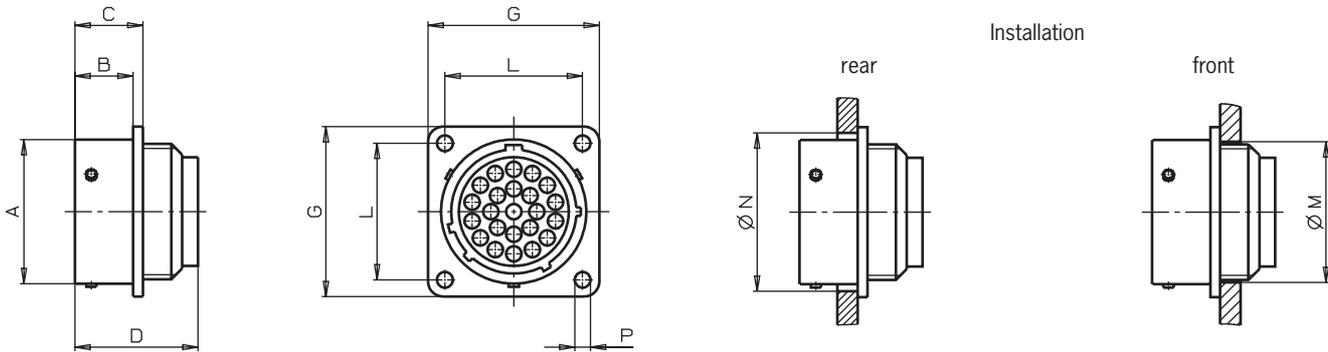
Article	Order No.
Lead, 23-core, length 10 m	074 605
Lead, complete with plug connector 23-pin and pin contacts, length 5 m	072 636

## Plug connector (Dimensions in mm)



No. of pins	D	Lead-Ø
35	40.2	8.0 - 12.0
28	37.2	8.0 - 12.0
23	33.9	6.0 - 10.0
12	27.5	5.5 - 9.5

## Flange Socket (Dimensions in mm)



No. of pin	A	B <sub>max</sub>	C <sub>max</sub>	D <sub>max</sub>	G <sub>max</sub>	L	M	N	P
35	34.9	14.6	17.3	25.7	39.9	31.8	34.1	37.7	3.1
28	31.7	14.6	17.3	25.7	36.8	29.4	30.9	34.5	3.1
23	28.5	11.4	13.3	24.1	33.6	27	27.8	31.3	3.1
12	22.2	11.4	13.3	24.1	28.8	22.9	21.4	25	3.1

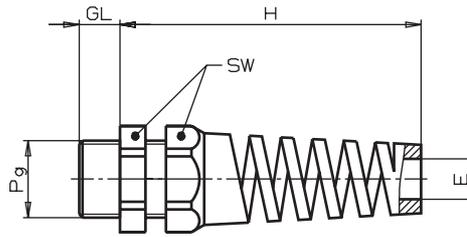
## Technical Data

Parameter	Value	Unit
<b>Plug connector/Flange socket</b>		
Housing material	Metal	
No. of pin	12 / 23 / 28 / 35	
Degree of protection to EN 60529 (fitted)	to IP 65	
Contact material	0.4 µ gold	

## Ordering Table

Article	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

## Cable Gland with bending protection (Dimensions in mm)

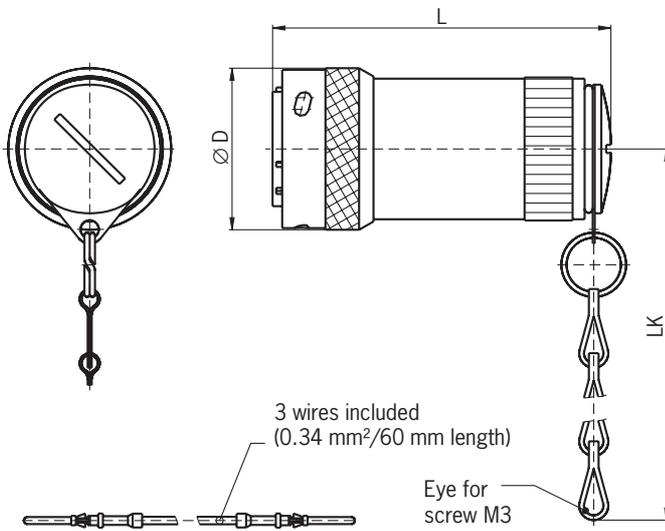


PG	Lead diameter	SW	GL	H	E <sub>min</sub>	E <sub>max</sub>
13.5	6 - 12	24	12.5	81	6	12
11	5 - 10	22	11	71	5	10

## Ordering Table

Article	Order No.
Cable gland PG 13.5 with bending protection and fixing nut, colour black	073 983
Cable gland PG 11 with bending protection and fixing nut, colour black	073 982

## Short Circuit Connector (Dimensions in mm)

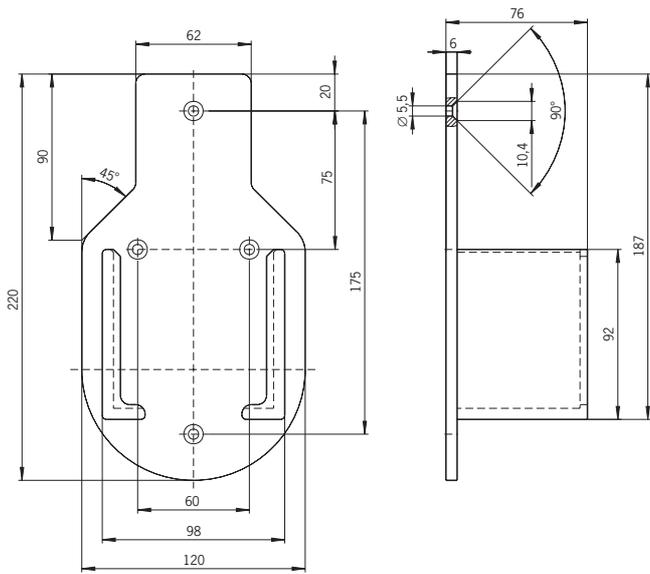


No. of pin	D	L	LK
35	40.2	84	255
28	37.2	78	255
23	33.9	72	252
12	27.5	59.4	251

## Ordering Table

Article	Order No.
Short Circuit Connector with chain, 35-pin	083 459
Short Circuit Connector with chain, 28-pin	083 458
Short Circuit Connector with chain, 23-pin	083 457
Short Circuit Connector with chain, 12-pin	087 802

## Fixing Bracket HBE



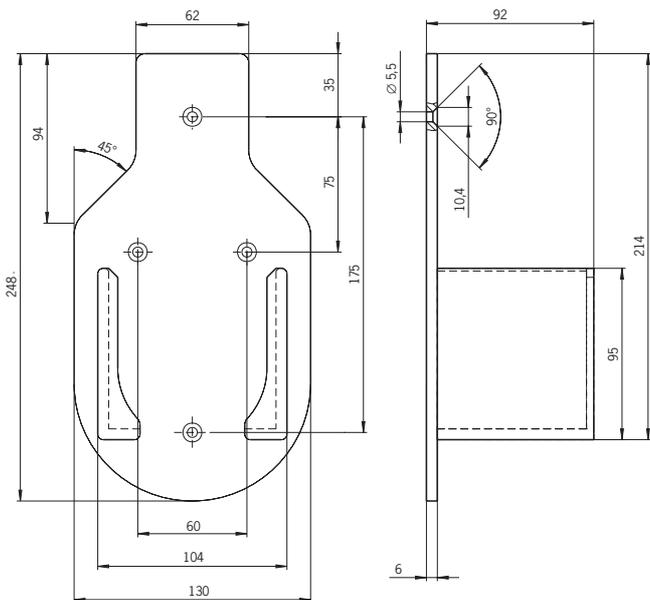
### Technical Data

Parameter	Value	Unit
Housing material	Plastic	
Type of mounting	Screw	
Ambient temperature	-5 to +60	°C
Weight	approx. 0.1	kg

### Ordering Table

Type	Order No.
Fixing Bracket HBE	083 445

## Fixing Bracket HBL



### Technical Data

Parameter	Value	Unit
Housing material	Plastic	
Type of mounting	Screw	
Ambient temperature	-5 to +60	°C
Weight	approx. 0.1	kg

### Ordering Table

Type	Order No.
Fixing Bracket HBL	084 397

## Appendix

- ▶ Customized Hand-held Pendant Stations
- ▶ Assembly drawings

## Request for Hand-Held Pendant Station HBE

Customer			
Company		Telephone	
Address		Telefax	
		E-mail	
Name		Department	
Surname		Date	

**Front plate**

EUCHNER Standard black anodized  
Inscription silver

9-fold push buttons with foil  
customized appendix:  
label of the logo

**Logo**

without  
customized appendix:  
label of the logo

**Push Buttons**

without  
Number of NO  
Number of NC  
**not illuminated**  
illuminated  
Inscription symbol plate see appendix  
Inscription front plate see appendix

**Key-operated Rotary Switch**

without  
 with

**Lamp/LED**

without  
customized appendix:  
label of the logo

**Potentiometer**

without  
technical data: \_\_\_\_\_

**Emergency Stop**

E-Stop (pull to unlock, EN418)  
without Emergency Stop  
**2 x NC**  
1 x NC

**Enabling Push Buttons**

ZSG, 2 x NC contacts each, both side  
ZSK, 1 x NO contact each, both side  
ZSE 2-2, 2 x NO + 1 x pos.opening cont.,left  
ZSE 2-4, 2 x NO + 2 x pos.opening cont.,left  
without Enabling Push Buttons

**Selector switch left**

without Selector switch left  
\_\_\_ positions gray-code  
\_\_\_ positions HEX-code  
\_\_\_ positions 1 of X  
Inscription: \_\_\_\_\_

**Selector switch right**

without Selector switch right  
\_\_\_ positions gray-code  
\_\_\_ positions HEX-code  
\_\_\_ positions 1 of X  
Inscription: \_\_\_\_\_

**Inscription Selector Switch**

on scale dial  
 on front plate

**Handwheel**

Supply voltage  $U_b= 5V$   
Supply voltage  $U_b= 10-30V$   
**Output RS422**  
Output Push-pull 5V  
Output Push-pull + $U_b$   
**100 pulses**  
25 pulses <sup>2)</sup>  
2) only for Mitsubishi

**Dial**

EUCHNER Logo  
Customized logo see appendix  
**silver 65 mm**  
black 65 mm  
silver 78 mm  
black 78 mm

**Which control is used?**

Siemens  
 Fanuc  
 Mitsubishi  
other: \_\_\_\_\_

**Lead**

spiralized 1.5 m, extendable up to 3.5 m  
 spiralized 2.0 m, extendable up to 5.0 m  
 straight: \_\_\_\_\_ m

**Connector**

Burndy Metal  
 Coninvers Metal  
other: \_\_\_\_\_  
 without connector

Special requests
------------------

Quotation			
Quantity	nonrecurring project demand		Series demand per year
	Requested delivery date	Week	

Date	Signature
------	-----------

## Request for Hand-Held Pendant Station HBL

<b>Customer</b>			
<b>Company</b>		<b>Telephone</b>	
<b>Address</b>		<b>Telefax</b>	
		<b>E-mail</b>	
<b>Name</b>		<b>Department</b>	
<b>Surname</b>		<b>Date</b>	

**Front plate**

- EUCHNER standard black anodized inscription silver
- customized appendix: label of the logo

**Logo**

- without
- customized appendix: label of the logo

**Push Buttons**

- without
- Number of NO
- Number of NC
- not illuminated
- illuminated
- Inscription symbol plates see appendix
- Inscription front plate see appendix

**Key-operated Rotary Switch**

- without
- with

**Lamp/LED**

- without
- customized appendix: label of the logo

**Potentiometer**

- without
- techn. notes: \_\_\_\_\_

**Emergency Stop**

- E-Stop (pull to unlock, EN418)
- without Emergency Stop
- 2 x NC
- 1 x NC

**Enabling Push Buttons**

- ZSG, 2 x NC contacts each, both side
- ZSK, 1 x NO contact each, both side
- ZSE 2-2, 2 x NO + 1 x pos.opening cont.,left
- ZSE 2-4, 2 x NO + 2 x pos.opening cont.,left
- without Enabling Push Buttons

**Selector switch left**

- without Selector switch left
- \_\_\_ positions gray-code
- \_\_\_ positions HEX-code
- \_\_\_ positions 1 of X
- Inscription: \_\_\_\_\_

**Selector switch right**

- without Selector switch right
- \_\_\_ positions gray-code
- \_\_\_ positions HEX-code
- \_\_\_ positions 1 of X
- Inscription: \_\_\_\_\_

**Inscription Selector Switch**

- on dial
- on Front plate

**Handwheel**

- Supply voltage  $U_b = 5V$
- Supply voltage  $U_b = 10-30V$
- Output RS422
- Output Push-pull 5V
- Output Push-pull + $U_b$
- 100 pulses
- 25 pulses <sup>2)</sup>
- 2) only for Mitsubishi

**Dial**

- EUCHNER Logo
- Logo customized see appendix
- silver 65 mm
- black 65 mm
- silver 78 mm
- black 78 mm

**Lead**

- spiralized 1,5 m, extendable up to 3.5 m
- spiralized 2,0 m, extendable up to 5.0 m
- straight: \_\_\_\_\_ m

**Connector**

- Burndy Metal
- Coninvers Metal
- other: \_\_\_\_\_
- without connector

**Which control is used?**

- Siemens
- Fanuc
- Mitsubishi
- other: \_\_\_\_\_

**Special requests**

---

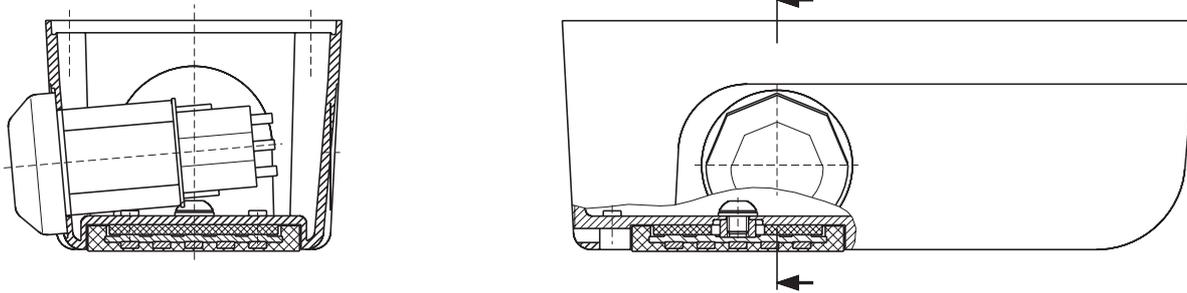
<b>Quotation</b>			
<b>Quantity</b>	nonrecurring project demand	Series demand per year	
<b>Requested delivery date</b>	Week		

**Date** \_\_\_\_\_ **Signature** \_\_\_\_\_

## Assembly drawings

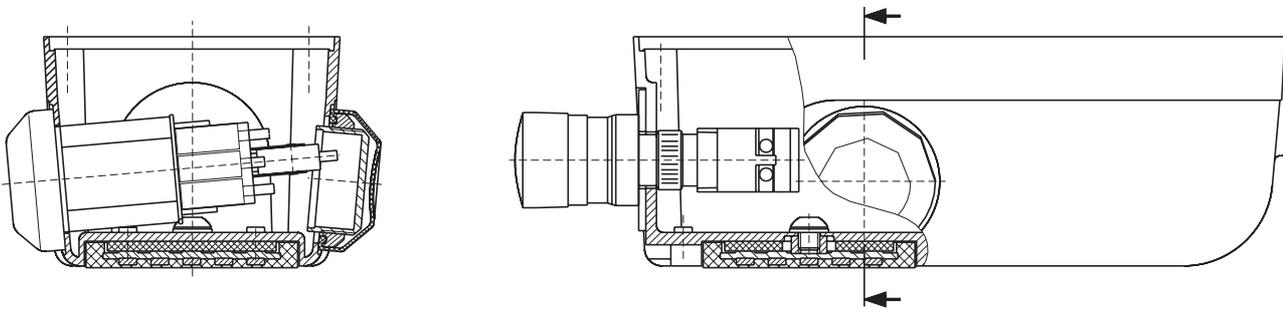
### Housing HBE Version 4

- ▶ Mounting of Enabling Push Button ZSE2-2 C1692 (2 NO contacts, 1 positively driven NC contact)
- ▶ Without hole for Emergency Push Button



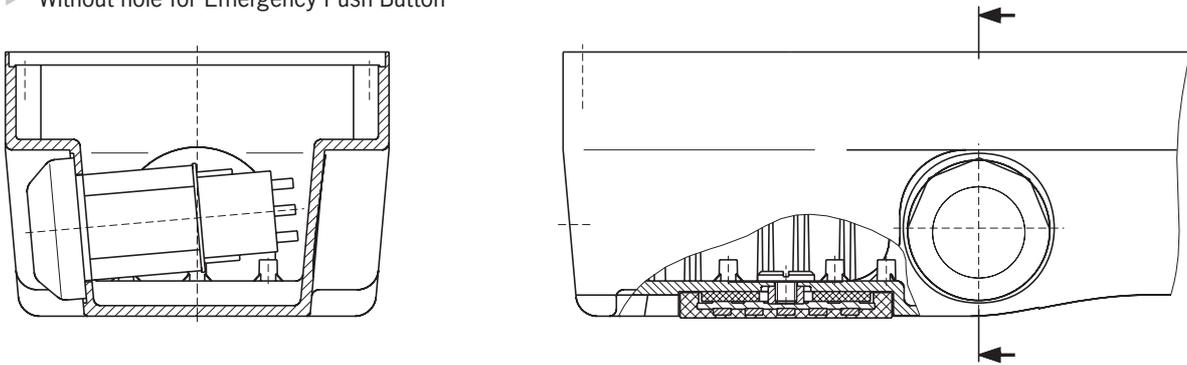
### Housing HBE Version 5

- ▶ Mounting of Enabling Push Button ZSE2-4 C1943 (2 NO contacts, 2 positively driven NC contacts)
- ▶ Mounting of Emergency Push Button 083 492



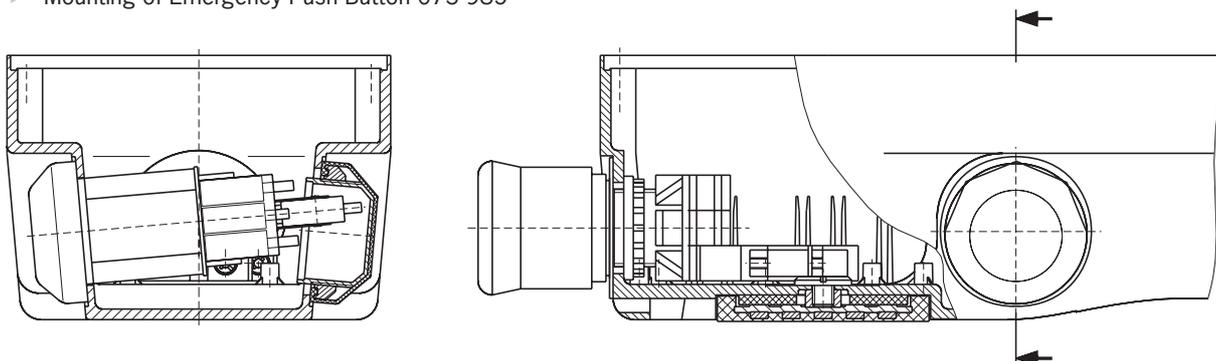
### Housing HBL Version 3

- ▶ Mounting of Enabling Push Button ZSE2-2 C1692 (2 NO contacts, 1 positively driven NC contact)
- ▶ Without hole for Emergency Push Button



### Housing HBL Version 4

- ▶ Mounting of Enabling Push Button ZSE2-4 C1943 (2 NO contacts, 2 positively driven NC contacts)
- ▶ Mounting of Emergency Push Button 073 985





# Representation international

## Australia

Micromax Pty. Ltd.  
PO Box 1238  
AUS:Wollongong  
NSW Australia 2500  
Tel. +61 (0) 2 4271 1300  
Fax +61 (0) 2 4271 8091  
micromax@micromax.com.au

## Austria

EUCHNER Ges. mbH  
Süddruckgasse 4  
A-2512 Tribuswinkel  
Tel. +43 (0) 22 52 4 21 91  
Fax +43 (0) 22 52 4 52 25  
info@euchner.at

## Benelux

EUCHNER (BENELUX) B.V.  
Postbus 119  
NL-3350 AC Papendrecht  
Tel. +31 (0) 78 6 15 47 66  
Fax +31 (0) 78 6 15 43 11  
info@euchner.nl

## Brazil

EUCHNER Itda.  
Av. Prof. Luiz Ignacio Anhaia  
Mello no. 4387  
S. Lucas  
São Paulo SP Brasil  
CEP 03295-000  
Tel. +55 (0) 11 69 18-22 00  
Fax +55 (0) 11 61 01-06 13  
euchner@euchner.com.br

## Canada

IAC & Associates Inc.  
1925 Provincial Road  
Windsor, Ontario N9A 6J3  
Tel. +1 (5 19) 966-3444  
Fax +1 (5 19) 966-6160  
sales@iacnassociates.com

## China

Knowhow I&C Co.  
C-2204 Webok Times Center  
No. 17 Zhongguancun Nandajie  
Beijing, 100081  
Tel. +86 10 8857 8899  
Fax +86 10 8857 8989  
info@knowhow.cn

## Czech Republic

Amtek spol s.r.o.  
Elektronické Součástky  
Automatizační Technika  
Přesné strojírenství  
Videňská 125  
CZ-619 00 Brno  
Česká republika  
Tel. +420 5 47 12 55 70  
Fax +420 5 47 12 55 56  
amtek@amtek.cz

## Denmark

Robotek EL & TEKNIK A/S  
Blokken 31, Postboks 30  
DK-3460 Birkerød  
Tel. +45 44 84 73 60  
Fax +45 44 84 41 77  
info@robotek.dk

## Eastern Europe

Hera Handels Ges. mbH  
Hauptstraße 61  
A-2391 Kaltleitgeben  
Tel. +43 (0) 22 38 7 75 18  
Fax +43 (0) 22 38 7 75 28  
hera@telering.at

## Finland

Sähkölehto Oy  
Lehto & Co.  
Holkkitie 14  
FIN-00880 Helsinki  
Tel. +358 (0) 9 774 6420  
Fax +358 (0) 9 759 1071  
office@sahkolehto.fi

## France

EUCHNER France S.A.R.L.  
Immeuble Le Colorado  
ERAGNY PARC  
Rue Rosa Luxembourg  
Parc d'affaires des Bellevues  
F-95610 ERAGNY sur OISE  
Tel. +33 (0) 1 39 09 90 90  
Fax +33 (0) 1 39 09 90 99  
info@euchner.fr

## Hong Kong

Imperial Engineers &  
Equipment Co. Ltd.  
Unit B 12th Floor  
Cheung Lee Industrial Building  
9 Cheung Lee Street  
HK-Chaiwan, Hong Kong  
Tel. +8 52/28 89 02 92  
Fax +8 52/28 89 18 14  
iechkh@netvigatator.com

## Hungary

EUCHNER Ges.mbh  
Magyarországi Fióktelep  
H-2045 Törökbálint  
Tópark Ipari park 3301/28  
Feketerét u. 1.  
Tel. +36/23/428 374  
Fax +36/23/428 375  
info@euchner.hu

## India

Teknic Controlgear PVT Ltd.  
703, Madhava,  
Bandra Kurla Complex  
Bandra East  
IND-Mumbai 400051  
Tel. +91-80-23 61 9348  
+91-80-23 61 7867  
Fax +91-80-23 61 8607  
teknic@vsnl.com

## Iran

INFOCELL IRAN Co.  
# 84, Manoucheri Ave.,  
P.O. Box 81655-861, Isfahan, IRAN  
Tel. +98 311 221 1358  
Fax +98 311 222 6176  
info@infocell-co.com

## Italy

TRITECNICA S.r.l.  
Viale Lazio 26  
I-20135 Milano  
Tel. +39 02 54 194-1  
Fax +39 02 55 01 04 74  
info@tritecnica.it

## Japan

Solton Co. Ltd.  
2-13-7, Shin-Yokohama  
Kohoku-ku, Yokohama  
Japan 222-0033  
Tel. +81 (0) 45 4 71 77 11  
Fax +81 (0) 45 4 71 77 17  
sales@solton.co.jp

## Korea

EUCHNER Korea Ltd.  
RM 810 Daerung Technotown  
#448 Gasan-Dong  
Kumchon-Gu, Seoul  
Tel. +82 (02) 2107 3500  
Fax +82 (02) 2107 3999  
sijang@euchner.co.kr

## Mexico

SEPIA S.A. de C.V.  
Maricopa # 10  
302, Col. Napoles.  
Del. Benito Juarez  
MEX-03810 Mexico D:F:  
Tel. +52 (5) 6822 347  
Fax +52 (5) 5367 787  
sepia@prodigy.net.mx

## New Zealand

WAF, W. Arthur Fisher  
11 Te Apunga Place  
Mt. Wellington  
Auckland, New Zealand  
Tel. +64 (0) 9 270 0100  
Fax +64 (0) 9 270 0900  
chrisl@waf.co.nz

## Norway

ELIS ELEKTRO AS  
Jericoveien  
N-1067 Oslo  
Tel. +47 (22) 90 56 70  
Fax +47 (22) 90 56 71  
post@eliselektro.no

## Poland

ELTRON  
pl. Wolności 7 B  
PL 50-071 Wrocław  
Tel. +48 (0)71 343 97 55  
Fax +48 (0)71 343 96 64  
LP@eltron.pl

## Portugal

PAM – Serviços Técnicos  
Industriais, Lda  
Rua Senhora da Alegria 188  
P-4785 Alvarelhos STS  
Tel. +3 51 (0) 22 98 27 518  
Fax +3 51 (0) 22 98 27 519  
pam@mail.telepac.pt

## Singapore

SENTRONICS  
Automation and Marketing Pte Ltd  
Blk 3021 Ubi Avenue 2  
# 03-169  
SGP-Singapore 408897  
Tel. +65/6744 8018  
Fax +65/6744 1929  
sentronics@pacific.net.sg

## Slovenia

SMM d.o.o.  
Production Systems Ltd.  
Jaskova 1E  
SLO-2001 Maribor  
Slovenia  
Tel. +386 (0)2 450 23 26  
Fax +386 (0)2 462 51 60  
franc.kit@smm.si

## Spain

EUCHNER, S.L.  
Gurutegi 12 - Local 1  
Polígono Belartza  
E-20018 San Sebastián  
Tel. +34 (9 43) 31 67 60  
Fax +34 (9 43) 31 64 05  
euchner@edunet.es

## Sweden

Censit AB  
Box 331  
S-33123 Värnamo  
Tel. +46 (0) 3 70 69 10 10  
Fax +46 (0) 3 70 188 88  
info@censit.se

## Switzerland

EUCHNER AG  
Ing.- und Vertriebsbüro  
Großstraße 17  
CH-8887 Mels/St. Gallen  
Tel. +41 (0) 81 7 20 45 90  
Fax +41 (0) 81 7 20 45 99  
euchner.schweiz@bluewin.ch

## Taiwan

Daybreak International  
(Taiwan) Corp.  
3 Fl., 124 Chung-Cheng Road  
Shihlin  
Taipei, Taiwan  
Tel. +8 86 (0) 2 8 866 1231  
Fax +8 86 (0) 2 8 866 1239  
day111@ms23.hinet.net

## Turkey

PINAR MÜHENDISLIK SAN.  
ve Tic. Ltd. Sti.  
Perpa Tic. Merkezi  
Kat. 11, No. 1705  
TR-80270 Okmeydani/Istanbul  
Tel. +90 (0) 2 12 2 20 02 77  
Fax +90 (0) 2 12 2 20 13 16  
pinarmuh@superonline.com

## United Kingdom

EUCHNER (U.K.) Ltd.  
Unit 2, Petre Drive,  
GB-Sheffield, S4 7PZ  
Tel. +44 (0) 1 14 2 56 01 23  
Fax +44 (0) 1 14 2 42 53 33  
info@euchner.co.uk

## USA

EUCHNER USA Inc.  
6723 Lyons St.  
USA-E. Syracuse, NY 13057  
Tel. +1 (3 15) 7 01-03 15  
Fax +1 (3 15) 7 01-03 19  
info@euchner-usa.com

