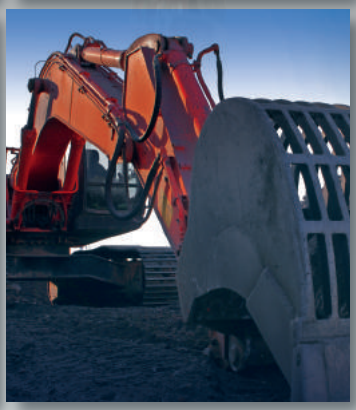
Industrial Controllers
Catalog

GESSMANN















Tool for Designers, Engineers and Purchasing Agents

Your tool for finding industrial controllers for cranes, electro-hydraulic systems, floor conveyors, industrial applications, ships, rail vehicles, and construction machinery of any kind, joysticks and masterswitches with electronic interface adjustment for all machines matching our product portfolio. Take advantage of our **fold-out order tool** on this page and the **detailed tables of contents** at the beginning of each position.

Product range

As of
2019

Product Portfolio

Gessmann is an international market leader. Our success in the market is based upon our decisive focus on innovative product development and the highest possible standards when it comes to quality. Our product range includes:

- Multi-axis controller, double-handle controller, control switch (master-switch), gear limit switch for hoisting, electro-hydraulic application, material-handling technology and remote control
- Geared limit switch for joisting equipment
- Complete crane control unit, portable control unit, pendant control unit, including wiring for all types of cranes, vehicles and industrial applications
- Operating panels for construction machinery, industrial applications, vehicles and harvesting machines
- Control pedestals, ship-operating transmitters, sensor units and actual-value transmitters for ship drives
- Pedal controllers for welding machines, road and rail vehicles
- Master controllers, panels and control stations for rail vehicles
- Displays for forklifts and construction machinery
- Proportional control electronics for solenoid valves
- Interface electronics with digital and analog outputs matching our controllers
- Interface electronics with Profibus interface or CAN-bus interface matching our controllers (input/output cards)
- DC controllers, selector switches (signal controllers) for high-voltage systems
- Customized solutions for operating devices and electronic units for any type of machinery and vehicles

Management certification:

ISO 9001 Certified

IRIS Certification

Contents

General Terms and Conditions

For our general conditions for sale and delivery please refer to our website at www.gessmann.com

Please also note:

The prices are ex-works in Leingarten excluding packaging. Packaging is charged at cost and cannot be returned. For orders below EURO 150.00 our gross prices are applicable. The minimum invoice amount is EURO 80.00, regardless of the value of the delivered goodp. Therefore, we recommend combining small orderp.

We are entitled to pass on any additional handling and production costs resulting from modifications to the order caused or requested by the customer (both technical modifications and non-compliance with deadlines).

Our periods of payment are: 30 days without a discount.
These conditions of payment shall be deemed agreed and accepted upon receipt of our written confirmation of order.

All delivered goods shall remain our sole and absolute property until full payment is received.

The delivery period only commences upon clarification of all technical detailp. Unforeseen circumstances justify an appropriate extension of the delivery period. All documents, such as drawings, dimensional drawings, circuit diagrams, etc., are non-binding. We reserve the right to make any changes necessary, in particular changes which serve the technical advancement.

The exclusive place of jurisdiction is 74072 Heilbronn, Germany.

Warning

Certain parts of this electrical device carry hazardous voltages when in operation.
Installation, maintenance, modification or retrofitting may only be carried out by qualified personnel in consideration of the appropriate safety precautionp.
Non-compliance may result in death, severe injuries or substantial property damage.

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Alwin Ehrensperger

Multi-axis controller
V27

GESSMANN

The multi-axis controller V27 is available in either single-axis or multi-axis options and is a robust controller used commonly in electro-hydraulic applications. The compact design allows for use in the smallest installation spaces. It can be integrated with detents and a very robust friction brake. With many output options including voltage, amperage and switching contacts and many handle options the V27 series is flexible and customisable. The multi-axis controller is resistant to oil, maritime conditions e.g. offshore / vessels, UV radiation typically from the sun.

1

Technical data

Mechanical life V27	10 million operating cycles
Supply voltage	See interface
Operation temperature	-40°C to +85°C
Degree of protection	up to IP67
Functional safety	PLd (EN ISO 13849) possible

Example

	V27	S8	P	T	-R11	+Z	-B10	-E...	-S...	-X
Basic unit										
V27.1 1-axis										
V27 2-axis										
Control-handle extended										
Standard 160 mm*										
S5 -20 mm										
S8 +20 mm										
**Only available in combination with grip!*										
Gate										
P Cross gate										
P X Special gate										
Grip / palm grip										
Knob *(included in basic unit!)*										
M Knob with mechanical zero interlock										
T Dead man										
H Signal button										
D Push button										
B... Palm grip B... *(see page palm grip 157)*										

Technical details may vary based on configuration or application! Technical data subject to change without notice!

Multi-axis controller
V27

GESSMANN

V27	S8	P	T	-R11	+Z	-B10	-E...	-S...	-X

1

Axis 1 / Axis 2 *(not applied for V27.1)*

Z	Spring return
R	Friction brake *(possible with one axis)*
	Latching:
11	1-0-1
22	2-0-2
33	3-0-3
44	4-0-4
55	5-0-5
08	end-position latching SR2 or SR4
19	1-0-1 + end-position latching SR2 or SR4
80	end-position latching SR1 or SR3
91	1-0-1 + end-position latching SR1 or SR3
88	end-position latching SR1 + SR2 or SR3 + SR4
99	1-0-1 + end-position latching SR1 + SR2 or SR3 + SR4

Degree of protection

B10	Joystick-main board sealed (IP67)
B11	Joystick-main board sealed (IP67) and handle function sealed, handle with drain hole

For a schematic description of the protection class, see page 139

Interface *(description see on the following pages)*

E0xx	Switching output
E1xx	Voltage output
E2xx	Current output
E3xx	CAN-interface
E4xx	CANOpen safety interface

Plug connectors

S..	Standard plug connectors *(see page 138)*

Special model

X	Special / customer specified

V2019/1 15.03.2019

Multi-axis controller
V27

Combination possibilities with our handles

1

Digital output			
Supply voltage	9-32 V DC		
Current carrying capacity	Direction signal 150 mA		
	Zero position signal 500 mA		
Mounting depth A	45 mm		
Wiring	1. cable 14 x 0,25 mm² 500 mm long without plug connector		
	2. cable 14 x 0,25 mm² (optional for grip function) 500 mm long without plug connector		
	Optional with plug connector *(standard plug connectors see page 138)*		S
2 Direction signals + 1 zero position signal (galvanically isolated) per axis			
	1 axis	E001 1	
	2 axis	2	

Voltage output (not stabilized)			
Supply voltage	4,75-5,25 V DC		
Current carrying capacity	Direction signal 8 mA		
Mounting depth A	45 mm		
Wiring	1. cable 14 x 0,25 mm² 500 mm long without plug connector		
	2. cable 14 x 0,25 mm² (grip function) 500 mm long without plug connector		
	Optional with plug connector *(standard plug connectors see page 138)*		S
0,5...2,5...4,5 V redundant + 2 direction signals per axis			
	1 axis	E104 1	
	2 axis	2	
	Output options		
	Characteristic:		
	Inverse dual	1	
	Dual	2	
	Inverse Dual with dead zone +/- 3° (standard)	3	
	Dual with dead zone +/- 3°	4	

Technical details may vary based on configuration or application! Technical data subject to change without notice!

1

Voltage output				
Supply voltage	9-32 V DC (*11,5-32)			
Current carrying capacity	Direction signal 150 mA			
	Zero position signal 500 mA			
Mounting depth A	45 mm *(60 mm from 3 axis)*			
Wiring	1. cable 14 x 0,25 mm² 500 mm long without plug connector			
	2. cable 14 x 0,25 mm² (optional for grip function) 500 mm long without plug connector			
	Optional with plug connector *(standard plug connectors see page 138)*			S
0,5...2,5...4,5 V redundant + 2 direction signals + 1 zero position signal (galvanically isolated) per axis				
	1 axis	E112 1		
	2 axis	2		
	3 axis*	3		
	4 axis*	4		
0...5...10 V redundant + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, supply voltage 11,5 - 32 V DC				
	1 axis	E132 1		
	2 axis	2		
	3 axis*	3		
	4 axis*	4		
10...0...10 V + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, supply voltage 11,5 - 32 V DC, sensor redundant with error monitoring and error signal				
	1 axis	E136 1		
	2 axis	2		
	3 axis*	3		
	4 axis*	4		
	Output options			
	Characteristic:			
	Inverse dual *¹		1	
	Dual *¹		2	
	Inverse dual with dead zone +/- 3° *¹ (standard)		3	
	Dual with dead zone +/- 3° *¹		4	
	*¹ *not combinable with output E136X*			
	Single *²		5	
	Single with dead zone *² (standard)		6	
	*² *not combinable with output E112X and E132X*			

**Axis for handle functions, interface can vary depending upon actuation element!*

Voltage output with other value on request!

Current output				
Supply voltage	9-32 V DC			
Current carrying capacity	Direction signal 150 mA			
	Zero position signal 500 mA			
Mounting depth A	45 mm *(60 mm from 3 axis)*			
Wiring	1. cable 14 x 0,25 mm² 500 mm long without plug connector			
	2. cable 14 x 0,25 mm² (optional for grip function) 500 mm long without plug connector			
	Optional with plug connector *(standard plug connectors see page 138)*			S
0...10...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, sensor redundant with error monitoring and error signal				
	1 axis		E206	1
	2 axis			2
	3 axis*			3
	4 axis*			4
20...0...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, sensor redundant with error monitoring and error signal				
	1 axis		E208	1
	2 axis			2
	3 axis*			3
	4 axis*			4
4...12...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, sensor redundant with error monitoring and error signal				
	1 axis		E214	1
	2 axis			2
	3 axis*			3
	4 axis*			4
20...4...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, sensor redundant with error monitoring and error signal				
	1 axis		E216	1
	2 axis			2
	3 axis*			3
	4 axis*			4
	Output options			
	Single			5
	Single with dead zone +/- 3° (standard)			6

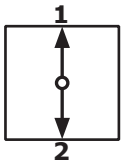
**Axis for handle functions, interface can vary depending upon actuation element!*

Current output with other value on request!

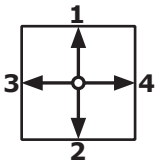
1

Identification of the installation variants with switching directions:

V27.1



V27



CAN			
Supply voltage	9-32 V DC		
Idle current consumption	120 mA (24 V DC)		
Current carrying capacity	Direction signal 100 mA		
	Zero position signal 100 mA		
	External digital output for LEDs 5 mA - 30 mA (dependent on the number of LEDs)		
	Digital switching output (potential-free) 100 mA		
Mounting depth A	45 mm (Expansion stage 1)		
	60 mm (Expansion stage 2)		
	80 mm (Expansion stage 3)		
Protocol	CANOpen CiA DS 301 or SAE J1939		
Baud rate	20 kBit/s to 1 Mbit/s (standard 250 kBit/s)		
Output value	255...0...255		
Wiring	CAN (IN) cable 300 mm with plug connector M12 (male)		
	CAN (OUT) cable 300 mm with plug connector M12 (female)		
	External in-/outputs cable 300 mm long without plug connector		
	External in-/outputs cable 300 mm long without plug connector (additional from 32 in-/outputs)		
	Optional with plug connector *(standard plug connectors see page 138)*		S
CAN V27 expansion stage 1		E304 1	
- 4 analog joystick axis			
- 15 digital joystick functions			
- Input for capacitive sensor			
Main-axis with additional digital outputs separately wired (not via CAN)			
- 2 direction signals per main axis			1
CAN V27 expansion stage 2		E305 1	
- 7 analog joystick axis			
- 15 digital joystick functions			
- 2 inputs for capacitive sensors			
With additional external in-/outputs			
- 8 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 8 external digital inputs			2
- 16 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 16 external digital inputs			3
External LED-outputs can be used in the grip for LEDs			

CAN V27 expansion stage 3	E306 1	
- 10 analog joystick axis		
- 15 digital joystick functions		
- 2 inputs for capacitive sensors		
With additional external in-/outputs		
- 8 external LED-outputs (dimmable optional), 2 switching outputs (potential-free, 100 mA), 8 external digital inputs	2	
- 16 external LED-outputs (dimmable optional), 2 switching outputs (potential-free, 100 mA), 16 external digital inputs	3	
- 24 external LED-outputs (dimmable optional), 2 switching outputs (potential-free, 100 mA), 24 external digital inputs	4	
- 32 external LED-outputs (dimmable optional), 2 switching outputs (potential-free, 100 mA), 32 external digital inputs	5	
External LED-outputs can be used in the grip for LEDs		
Main-axis with additional digital outputs separately wired (not via CAN)		
- 2 direction signals + 1 zero position signal (potential-free) per axis		3
With additional analog outputs on request!		

CANopen safety		
Supply voltage	9-32 V DC	
Idle current consumption	120 mA (24 V DC)	
Current carrying capacity	Direction signal 100 mA	
	Zero position signal 100 mA (potential-free)	
	External digital output for LEDs 5 mA - 30 mA (dependent on the number of LEDs)	
	Digital switching output (potential-free) 100 mA	
Baud rate	20 kBit/s to 1 MBit/s (standard 250 kBit/s)	
Output value	255...0...255	
Mounting depth	45 mm (Expansion stage 1)	
	60 mm (Expansion stage 2)	
	80 mm (Expansion stage 3)	
Protocol	CANopen Safety CIA 304	
Wiring	CAN (IN) cable 300 mm with plug connector M12 (male)	
	CAN (OUT) cable 300 mm with plug connector M12 (female)	
	External in-/outputs cable 300 mm long without plug connector	
	External in-/outputs cable 300 mm long without plug connector (additional from 32 in-/outputs)	
	Optional with plug connector *(standard plug connectors see page 138)*	S

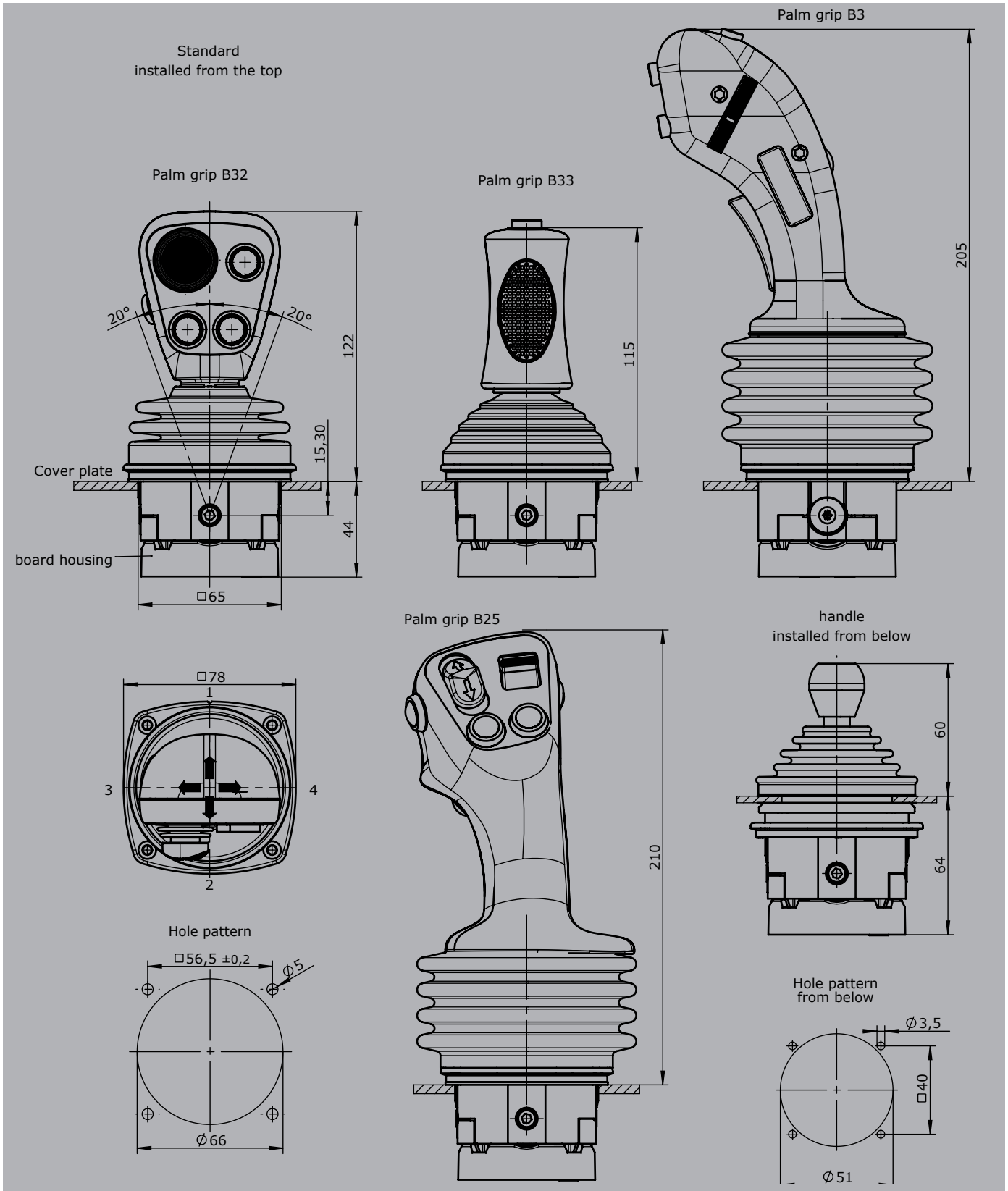
CANopen Safety expansion stage 1	E404 1	
- 4 analog joystick axis		
- 15 digital joystick functions		
- Input for capacitive sensor		
Main-axis with additional digital outputs separately wired (not via CAN)		
- 2 direction signals per main axis		1
CANopen safety expansion stage 2	E405 1	
- 7 analog joystick axis		
- 15 digital joystick functions		
- 2 inputs for capacitive sensors		
With additional external in-/outputs		
- 8 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 8 external digital inputs	2	
- 16 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 16 external digital inputs	3	
External LED-outputs can be used in the grip for LEDs		

Technical details may vary based on configuration or application! Technical data subject to change without notice!

1

CANopen safety expansion stage 3	E406 1	
- 10 analog joystick axis		
- 15 digital joystick functions		
- 2 inputs for capacitive sensor		
With additional external in-/outputs		
- 8 external LED-outputs (dimmable), 2 switching outputs (potential-free, 100 mA), 8 external digital inputs	2	
- 16 external LED-outputs (dimmable), 2 switching outputs (potential-free, 100 mA), 16 external digital inputs	3	
- 24 external LED-outputs (dimmable), 2 switching outputs (potential-free, 100 mA), 24 external digital inputs	4	
- 32 external LED-outputs (dimmable), 2 switching outputs (potential-free, 100 mA), 32 external digital inputs	5	
External LED-outputs can be used in the grip for LEDs		
Main-axis with additional digital outputs separately wired (not via CAN)		
- 2 direction signals + 1 zero position signal (potential-free) per axis		3
With additional analog outputs on request!		

Attachments		
Z01 Mating connector M12 male insert with 2 m cable	20201140	
Z02 Mating connector M12 female insert with 2 m cable	20202298	



Technical details may vary based on configuration or application! Technical data subject to change without notice!

Multi-axis controller
V85 / VV85

The multi-axis controller V85/VV85 is available in either single-axis or multi-axis options and is a robust controller used commonly in electro-hydraulic applications. With many output options including voltage, amperage and switching contacts and many handle options the V85/VV85 series is flexible and customisable. The V85/VV85 is resistant to oil, maritime conditions e.g. offshore / vessels, UV radiation typically from the sun.

1

Technical data

Mechanical life V85	10 million operating cycles
Mechanical life VV85	20 million operating cycles
Supply voltage	See interface
Operation temperature	-40°C to +85°C
Degree of protection	up to IP67
Functional safety	PLd (EN ISO 13849) possible

Example

	VV85	S8	P	T	-Z80	+R11	-B	-E...	-S...	-X
Basic unit										
V85.1 1-axis										
V85 2-axis										
Reinforced version										
VV85.1 1-axis										
VV85 2-axis										
Control-handle extended										
Standard 160 mm*										
S5 -20 mm										
S8 +20 mm										
**Only available in combination with grip!*										
Gate										
P Cross gate										
P X Special gate										
Grip / palm grip										
Knob *(included in basic unit!)*										
M Knob with mechanical zero interlock										
T Dead man										
H Signal button										
D Push button										
B... Palm grip B... *(see page palm grip 157)*										

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

VV85	S8	P	T	-Z80	+R11	-B	-E...	-S...	-X

Axis 1 / Axis 2 *(not applied for V/VV85.1)*

Z	Spring return
R	Friction brake*
	Latching:*
11	1-0-1
22	2-0-2
33	3-0-3
44	4-0-4
55	5-0-5
08	end-position latching SR2 or SR4
19	1-0-1 + end-position latching SR2 or SR4
80	end-position latching SR1 or SR3
91	1-0-1 + end-position latching SR1 or SR3
88	end-position latching SR1 + SR2 or SR3 + SR4
99	1-0-1 + end-position latching SR1 + SR2 or SR3 + SR4

**Maximum deflection angle +/- 25 degree!*

Degree of protection

B	Cover housing *(included in basic unit!)*
B10	Joystick-main board sealed (IP67)
B11	Joystick-main board sealed (IP67) and handle function sealed, handle with drain hole

For a schematic description of the protection class, see page 139

Interface *(description see on the following pages)*

E0xx	Switching output
E1xx	Voltage output
E2xx	Current output
E3xx	CAN-interface
E4xx	CANOpen safety interface
E5xx	Profibus DP-interface
E6xx	Profinet
E7xx	Profinet safe
E8xx	PWM - Output
E9xx	other outputs

Plug connectors

S..	Standard plug connectors *(see page 138)*

Special model

X	Special / customer specified

Technical details may vary based on configuration or application! Technical data subject to change without notice!

1

Combination possibilities with our handles

Digital output			
Supply voltage	9-32 V DC		
Current carrying capacity	Direction signal 150 mA		
	Zero position signal 500 mA		
Mounting depth A	65 mm		
Wiring	1. cable 14 x 0,25 mm² 500 mm long without plug connector		
	2. cable 14 x 0,25 mm² (optional for grip function) 500 mm long without plug connector		
	Optional with plug connector *(standard plug connectors see page 138)*		S
2 Direction signals + 1 zero position signal (galvanically isolated) per axis			
	1 axis	E001 1	
	2 axis	2	

Voltage output (not stabilized)			
Supply voltage	4,75-5,25 V DC		
Current carrying capacity	Direction signal 8 mA		
Mounting depth A	65 mm		
Wiring	1. cable 14 x 0,25 mm² 500 mm long without plug connector		
	2. cable 14 x 0,25 mm² (optional for grip function) 500 mm long without plug connector		
	Optional with plug connector *(standard plug connectors see page 138)*		S
0,5...2,5...4,5 V redundant + 2 direction signals per axis			
	1 axis	E104 1	
	2 axis	2	
	Output options		
	Characteristic:		
	Inverse dual		1
	Dual		2
	Inverse dual with dead zone +/- 3° (standard)		3
	Dual with dead zone +/- 3°		4

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Voltage output				
Supply voltage	9-32 V DC (*11,5-32)			
Current carrying capacity	Direction signal 150 mA			
	Zero position signal 500 mA			
Mounting depth A	65 mm			
Wiring	1. cable 14 x 0,25 mm² 500 mm long without plug connector			
	2. cable 14 x 0,25 mm² (optional for grip function) 500 mm long without plug connector			
	Optional with plug connector *(standard plug connectors see page 138)*			S
0,5...2,5...4,5 V redundant + 2 direction signals + 1 zero position signal (galvanically isolated) per axis				
	1 axis	E112	1	
	2 axis		2	
	3 axis*		3	
	4 axis*		4	
0...5...10 V redundant + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, supply voltage 11,5 - 32 V DC				
	1 axis	E132	1	
	2 axis		2	
	3 axis*		3	
	4 axis*		4	
10...0...10 V + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, supply voltage 11,5 - 32 V DC, sensor redundant with error monitoring and error signal				
	1 axis	E136	1	
	2 axis		2	
	3 axis*		3	
	4 axis*		4	
+10...0...-10 V + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, supply voltage 11,5 - 32 V DC, redundant sensor with error monitoring				
	1 axis	E138	1	
	2 axis		2	
	3 axis*		3	
	4 axis*		4	
	Output options			
	Characteristic:			
	Inverse dual *¹			1
	Dual *¹			2
	Inverse dual with dead zone +/- 3° *¹ (standard)			3
	Dual with dead zone +/- 3° *¹			4
	¹ not combinable with output E136X + E138X			
	Single *²			5
	Single with dead zone *² (standard)			6
	² not combinable with output E112X and E132X			
	Digital output signals:			
	Output signals standard:			
	Direction signals and zero position signals 1,5A 24V DC			1

**Axis for handle functions, interface can vary depending upon actuation element!*

Voltage output with other value on request!

GESSMANN

1

Current output					
Supply voltage	9-32 V DC				
Current carrying capacity	Direction signal 150 mA				
	Zero position signal 500 mA				
Mounting depth A	65 mm				
Wiring	1. cable 14 x 0,25 mm² 500 mm long without plug connector				
	2. cable 14 x 0,25 mm² (optional for grip function) 500 mm long without plug connector				
	Optional with plug connector *(standard plug connectors see page 138)*				S
0...10...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, sensor redundant with error monitoring and error signal					
	1 axis		E206	1	
	2 axis			2	
	3 axis*			3	
	4 axis*			4	
20...0...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, sensor redundant with error monitoring and error signal					
	1 axis		E208	1	
	2 axis			2	
	3 axis*			3	
	4 axis*			4	
4...12...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, sensor redundant with error monitoring and error signal					
	1 axis		E214	1	
	2 axis			2	
	3 axis*			3	
	4 axis*			4	
20...4...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, sensor redundant with error monitoring and error signal					
	1 axis		E216	1	
	2 axis			2	
	3 axis*			3	
	4 axis*			4	
+20...0...-20 mA + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, sensor redundant with error monitoring					
	1 axis		E226	1	
	2 axis			2	
	3 axis*			3	
	4 axis*			4	
	Output options				
	Single			5	
	Single with dead zone +/- 3° (standard)			6	
	Digital output signals:				
	Output signals standard:				
	Direction signals and zero position signals 1,5A 24 V DC			1	

**Axis for handle functions, interface can vary depending upon actuation element!*

Current output with other value on request!

CAN			
Supply voltage	9-32 V DC		
Idle current consumption	120 mA (24 V DC)		
Current carrying capacity	Direction signal 100 mA		
	Zero position signal 100 mA (potential-free)		
	External digital output for LEDs 5 mA - 30 mA (dependent on the number of LEDs)		
	Digital switching output (potential-free) 100 mA		
Mounting depth A	E3091: 65 mm		
	E3091X: 85 mm		
	E3101X - E3103X: 85 mm		
	E3104X - E3105X: 105 mm		
Protocol	CANopen CiA DS 301 or SAE J1939		
Baud rate	20 kBit/s to 1 Mbit/s (standard 250 kBit/s)		
Output value	255...0...255		
Wiring	CAN (IN) cable 300 mm with plug connector M12 (male)		
	CAN (OUT) cable 300 mm with plug connector M12 (female)		
	External in-/outputs cable 300 mm long without plug connector		
	External in-/outputs cable 300 mm long without plug connector (additionally from 32 in-/outputs)		
	Optional with plug connector *(standard plug connectors see page 138)*		S
CAN Expansion stage 1		E309 1	
- 7 analog joystick axis			
- 16 digital joystick functions			
- Input for capacitive sensor			
With additional external in-/outputs			
- 8 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 8 external digital inputs		2	
- 16 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 16* external digital inputs		3	
External LED-outputs can be used in the grip for LEDs			
CAN Expansion stage 2		E310 1	
- 10 analog joystick axis			
- 16 digital joystick functions			
- 2 inputs for capacitive sensors			
With additional external in-/outputs			
- 8 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 8 external digital inputs		2	
- 16 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 16 external digital inputs		3	
- 24 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 24 external digital inputs		4	
- 32 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 32* external digital inputs		5	
External LED-outputs can be used in the grip for LEDs			
Main-axis with additional digital-/analog outputs separately wired (not via CAN)			
- 2 direction signals + 1 zero position signal (potential-free) per main-axis			3
Additional analog outputs on request!			

*With the use of capacitive sensor, the external digital inputs reduce by one input!

*With the use of two capacitive sensors, the external digital inputs reduce by one input!

GESSMANN

1

CANopen safety		
Supply voltage	9-32 V DC	
Idle current consumption	120 mA (24 V DC)	
Current carrying capacity	Direction signal 100 mA	
	Zero position signal 100 mA (potential-free)	
	External digital output for LEDs 5 mA - 30 mA (dependent on the number of LEDs)	
	Digital switching output (potential-free) 100 mA	
Mounting depth A	E4091: 65 mm	
	E4091X: 85 mm	
	E4101X - E4103X: 85 mm	
	E4104X - E4105X: 105 mm	
Protocol	CANopen Safety CIA 304	
Baud rate	20 kBit/s to 1 MBit/s (standard 250 kBit/s)	
Output value	255...0...255	
Wiring	CAN (IN) cable 300 mm with plug connector M12 (male)	
	CAN (OUT) cable 300 mm with plug connector M12 (female)	
	External in-/outputs cable 300 mm long without plug connector	
	External in-/outputs cable 300 mm long without plug connector (additionally from 32 in-/outputs)	
	Optional with plug connector *(standard plug connectors see page 138)*	S

CANopen safety expansion stage 1	E409 1
- 7 analog joystick axis	
- 16 digital joystick functions	
- Input for capacitive sensor	
With additional external in-/outputs	
- 8 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 8 external digital inputs	2
- 16 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 16* external digital inputs	3
**external LED-outputs can be used in the grip for LEDs*	
**With the use of capacitive sensor, the external digital inputs reduce by one input!*	
CANopen safety expansion stage 2	E410 1
- 10 analog joystick axis	
- 16 digital joystick functions	
- 2 inputs for capacitive sensors	
With additional external in-/outputs	
- 8 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 8 external digital inputs	2
- 16 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 16 external digital inputs	3
- 24 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 24 external digital inputs	4
- 32 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 32* external digital inputs	5
External LED-outputs can be used in the grip for LEDs	
**With the use of two capacitive sensors, the external digital inputs reduce by one input!*	
Main-axis with additional digital outputs separately wired (not via CAN)	
- 2 direction signals + 1 zero position signal (potential-free) per main-axis	3
Additional analog outputs on request!	

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Profibus DP			
Supply voltage	18-30 V DC		
Baud rate	to 12 MBit/s		
Output value	0...128...255		
Mounting depth A	105 mm		
Wiring	Profibus, cable 100 mm with plug connector D-Sub 9		
	Supply voltage (if applicable contact wiring) cable 12 x 0,25 mm² 300 mm long without plug connector		
	External in-/outputs, cable 300 mm long without plug connector		
	Optional with plug connector *(standard plug connectors see page 138)*		S
Profibus DP		E501 1	
- 4 analog joystick axis			
- 16 digital joystick functions			
- Input for capacitive sensor			
With additional external in-/outputs			
- 8 external LED-outputs, 8 external digital inputs		2	
- 16 external LED-outputs, 16 external digital inputs		3	
**External LED-outputs can be used in the grip for LEDs*			
Main-axis with additional contact equipment separately wired (not via profibus)			
- 2 direction contacts + 1 zero position contact (not potential-free) per main-axis		1	
- 1 zero position contact (potential-free) per main-axis		2	

Profinet			
Supply voltage	18-30 V DC		
Baud rate	to 100 MBit/s		
Output value	0...512...1023		
Mounting depth A	85 mm		
Wiring	Profinet (1), cable 300 mm with M12 plug connector (female)		
	Profinet (2), cable 300 mm with M12 plug connector (female)		
	Supply voltage (if applicable contact wiring) cable 12 x 0,25 mm² 300 mm long without plug connector		
	External in-/outputs, cable 300 mm long without plug connector		
	Optional with plug connector *(standard plug connectors see page 138)*		S
Profinet		E601 1	
- 4 analog joystick axis			
- 16 digital joystick functions			
- Input for capacitive sensor			
With with additional external in-/outputs			
- 8 external LED-outputs, 8 external digital inputs		2	
- 16 external LED-outputs, 16 external digital inputs		3	
**External LED-outputs can be used in the grip for LEDs*			
Main-axis with additional signals separately wired (not via profinet)			
- 2 direction signals + zero position signal (potential-free) per main-axis		3	

1

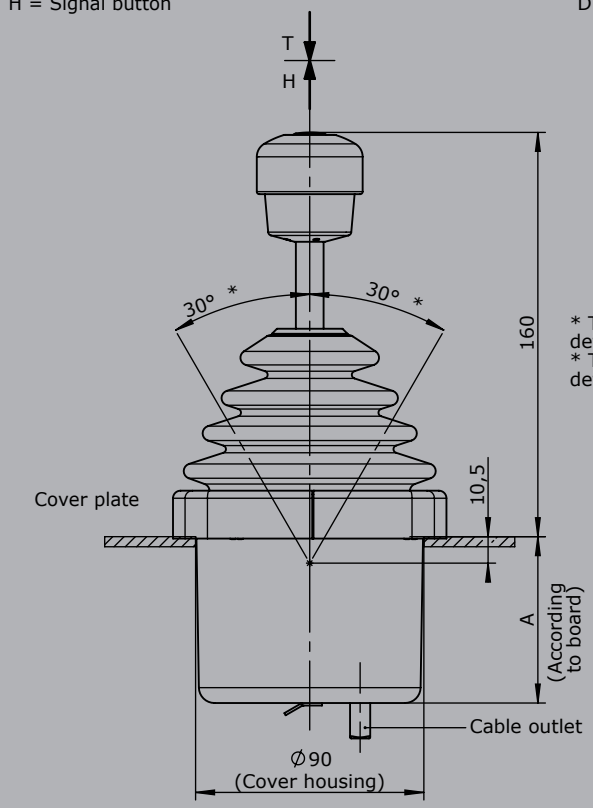
Profinet safe			
Supply voltage	18-30 V DC		
Baud rate	to 100 MBit/s		
Output value	0...512...1023		
Mounting depth A	85 mm		
Wiring	Profinet (IN), cable 300 mm with M12 plug connector (female)		
	Profinet (OUT), cable 300 mm with M12 plug connector (female)		
	Supply voltage (if applicable contact wiring) cable 12 x 0,25 mm² 300 mm long without plug connector		
	External in-/outputs, cable 300 mm long without plug connector		
	Optional with plug connector *(standard plug connectors see page 138)*		S
- 4 analog joystick axis		E701 1	
- 16 digital joystick functions			
- Input for capacitive sensor			
With additional external in-/outputs			
- 8 external LED-outputs, 8 external digital inputs		2	
- 16 external LED-outputs, 16 external digital inputs		3	
**External LED-outputs can be used in the grip for LEDs*			
Main-axis with additional signals separately wired (not via profinet safe)			
- 2 direction signals + zero position signal (potential-free) per main-axis			3

PWM Outputs			
Supply Voltage:	9-32V DC		
Valve control current:	max. 3 A		
PWM-frequency:	1225 Hz		
Dither frequency:	1...250 Hz adjustable		
Mounting depth A	85 mm		
Other features	Creep speed per axis		
	5 configurable switching outputs 2A		
	LED outputs for status indication		
	Input for redundant deadman		
Wiring:	Built-in socket Phoenix 2-pole (power supply)		
	Cable 1 (PWM) 12 x 1mm² 300 mm long without plug		
	Cable 2 (switching output) 12 x 1mm² 300 mm long without plug		
	Cable 3 (creep speed / dead man) 14x0,25mm² 300mm long without plug		
	Optional with plug connector *(standard plug connectors see page 138)*		S
PWM Output 0-3 A for 2 proportional valve magnets per axis	1 axis	E801 1	
	2 axis	2	
	3 axis	3	
	4 axis	4	

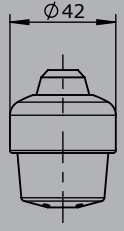
Other outputs				
Voltage output for PVG32 0,25...0,5...0,75Us, power supply 9-32 V DC				
Wiring:	1. cable 14 x 0,25 mm² 300 mm long without plug connector			
	2. cable 14 x 0,25 mm² 300 mm long without plug connector (optional for grip function)			
	Optional with plug connector *(standard plug connectors see page 138)*			S
		1 axis	E907 1	
		2 axis	2	
		3 axis	3	
		4 axis	4	
		5 axis	5	
		6 axis	6	
Main-axis with additional direction signals and zero direction signals (potential-free) per main-axis				3
8 Bit Gray-Code with direction signals per main-axis, supply voltage 9-36 V DC				
Wiring:	1. cable 37 x 0,14 mm² 300 mm long without plug connector (axis 1+2)			
	2. cable 37 x 0,14 mm² 300 mm long without plug connector (optional for axis 3+4)			
	Optional with plug connector *(standard plug connectors see page 138)*			S
		1 axis	E903 1	
		2 axis	2	
		3 axis	3	
		4 axis	4	
8 Bit Binär-Code with direction signals per main-axis, supply voltage 9-36 V DC				
Wiring:	1. cable 37 x 0,14 mm² 300 mm long without plug connector (axis 1+2)			
	2. cable 37 x 0,14 mm² 300 mm long without plug connector (optional for axis 3+4)			
	Optional with plug connector *(standard plug connectors see page 138)*			S
		1 axis	E904 1	
		2 axis	2	
		3 axis	3	
		4 axis	4	

Attachments		
Z01	Mating connector (CAN) M12 (male insert) with 2 m cable	20201140
Z02	Mating connector (CAN) M12 (female contact) with 2 m cable	20202298
Z03	Mating connector (Profibus) straight	22201440
Z04	Mating connector (Profibus) 90° angled	22201741
Z05	Mating connector (Profinet) M12 (male insert) with 2 m cable	5300000222

T = Dead man's button
H = Signal button

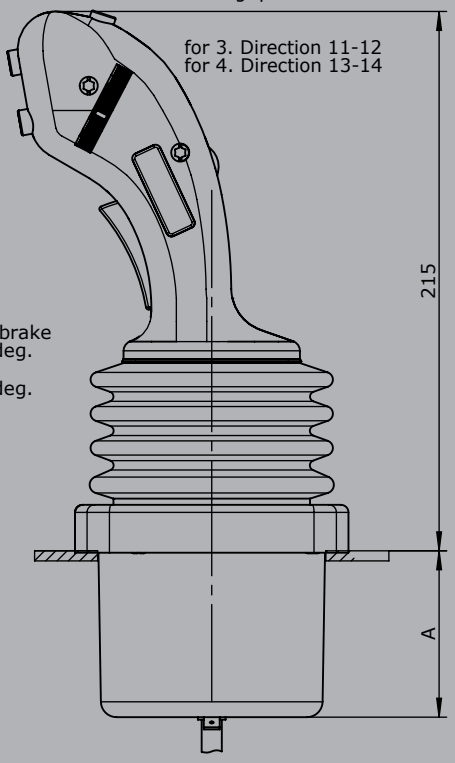


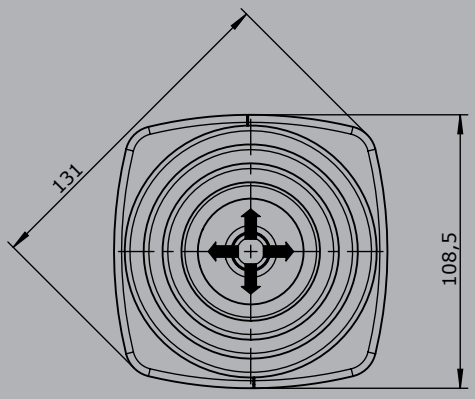
Knob solid
D= Push button



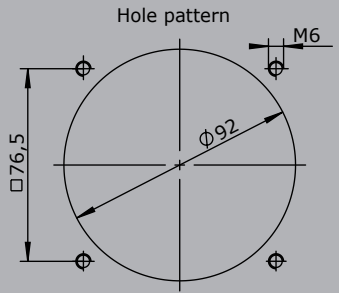
* Type with firction brake
deflection max. 25 deg.
* Type with detent
deflection max. 25 deg.

Palm grip B3

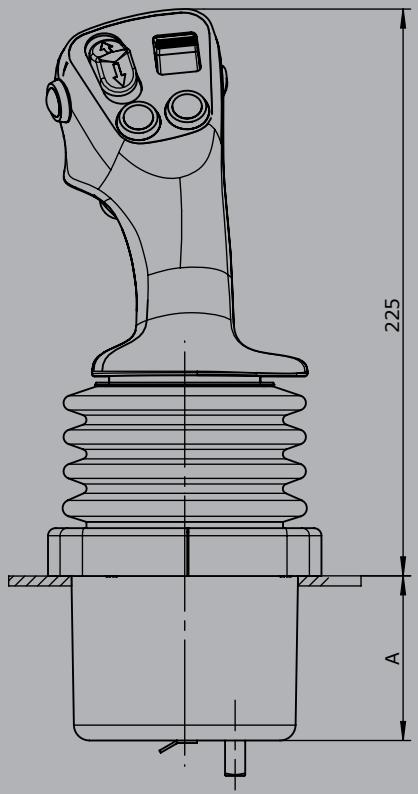




Hole pattern



Palm grip B25



Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Multi-axis controller
V8 / VV8

The multi-axis controller V8/VV8 is available in either single-axis or multi-axis options and is a robust controller used commonly in electro-hydraulic applications. With many output options including voltage, amperage and switch contacts and many handle options the V8 / VV8 series is hugely customisable. The V8 / VV8 is resistant to oil, maritime conditions e.g. offshore / vessels, UV radiation typically from the sun.

Technical data

Mechanical life V8	10 million operating cycles
Mechanical life VV8	20 million operating cycles
Operation temperature	-40°C to +85°C
Degree of protection	up to IP54

Example

VV8	S5	P	T	-2RP	+3ZP	-B	-A05 P184	+A050 P184	E9012	-X

Basic unit

VV8	2-axis, reinforced version

Control-handle extended

	Standard 160 mm*
S5	-20 mm
S8	+20 mm

**Only available in combination with handle!*

Gate

P	Cross gate
P X	Special gate

Grip / palm grip

T	Dead man

Axis 1

2	Contacts
R	Friction brake
P	Potentiometer

Axis 2

3	Contacts
Z	Spring return
P	Potentiometer

Cover housing

B	Cover housing

Description axis 1 (direction 1-2)

A050	Arrangement MSP21-0
P184	Potentiometer T301 2 x 5 kOhm

Description axis 2 (direction 3-4)

A05	Arrangement MSP21
P184	Potentiometer T301 2 x 5 kOhm

Interface *(description see on the following pages)*

E9012	Potentiometer output for proportional valve PVG32

Special model

X	Special / customer specified

Technical details may vary based on configuration or application! Technical data subject to change without notice!

1

Combination possibilities with our handles

VV8 S5 P T -2 R P + 3 Z P -B - A05 P184 + A050 P184 E9012 - X

Basic unit	
V81	1-axis
V8	2-axis
	reinforced version
VV81	1-axis
VV8	2-axis

Control-handle extended	
S5	-20 mm
S8	+20 mm

Gate	
P	Cross gate
P X	Special gate

Grip/ palm grip	
	Knob *(included in basic unit!)*
M	Mechanical zero interlock
MH	Mechanical zero interlock + signal contact
T	Dead man
H	Signal button
D	Push button
DV	Flush push button
B...	Palm grip B... *(see page palm grip 157)*

Axis 1: direction 1-2				
1	1 contact	Standard contact - arrangement see page 140		
2	2 contacts	e.g.		
3	3 contacts	A98	MS0	Zero position contact
		A05	MS21	Direction contacts
		A050	MS21-0	Direction contacts + zero position contact
Z	Spring return			
R	Friction brake only possible with VV8!			

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

(P)	Mounting options for potentiometer			
P	Potentiometer	P181	T301 2 x 0,5 kOhm	I max. 1 mA
		P182	T301 2 x 1 kOhm	I max. 1 mA
		P183	T301 2 x 2 kOhm	I max. 1 mA
		P184	T301 2 x 5 kOhm	I max. 1 mA
		P185	T301 2 x 10 kOhm	I max. 1 mA
		More potentiometers on request!		
H	Hall-Potentiometer	E14811	0,5...2,5...4,5 V / 4,5 V...2,5...0,5	

VV8 S5 P T -2 R P + 3 Z P -B - A05 P184 + A050 P184 E9012 - X

Axis 2: direction 3-4 *(not applied for V81/VV81)*

1	1 contact	Standard contact - arrangement see page 140		
2	2 contacts	e.g.		
3	3 contacts	A98	MS0	Zero position contact
		A05	MS21	Direction contacts
		A050	MS21-0	Direction contacts + zero position contact

Z	Spring return			
R	Friction brake only possible with VV8!			
(P)	Mounting options for potentiometer			
P	Potentiometer	P181	T301 2 x 0,5 kOhm	I max. 1 mA
		P182	T301 2 x 1 kOhm	I max. 1 mA
		P183	T301 2 x 2 kOhm	I max. 1 mA
		P184	T301 2 x 5 kOhm	I max. 1 mA
		P185	T301 2 x 10 kOhm	I max. 1 mA
		More potentiometers on request!		
H	Hall-Potentiometer	E14811	0,5...2,5...4,5V/4,5V...2,5...0,5	

VV8 S5 P T -2 R P + 3 Z P -B - A05 P184 + A050 P184 E9012 - X

Cover housing

B	Cover housing

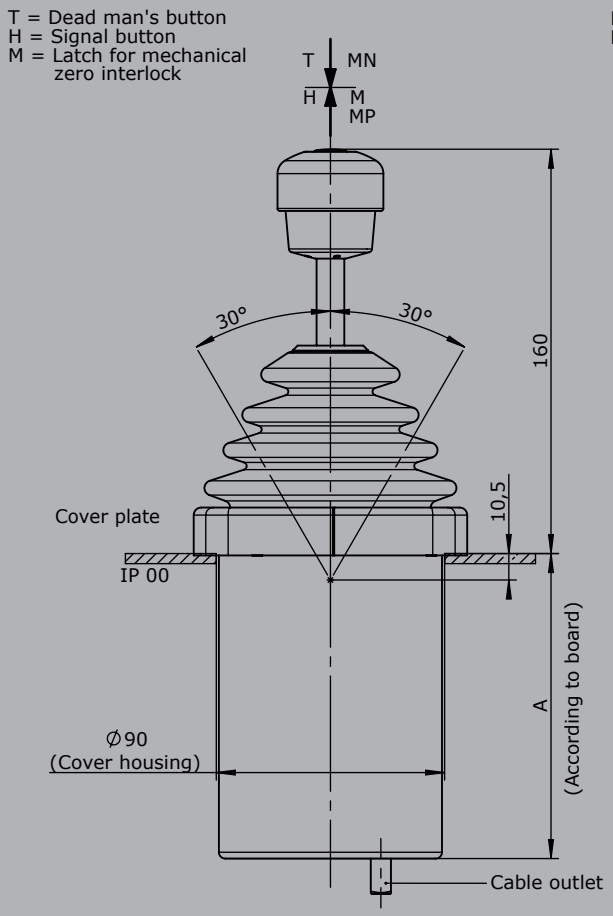
Interface

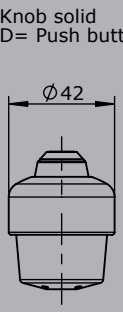
		Potentiometer output
E901		Potentiometer output for proportional valve PVG32
		0,25...0,5...0,75 Us
	1	1 axis
	2	2 axis
	3	3 axis
	4	4 axis

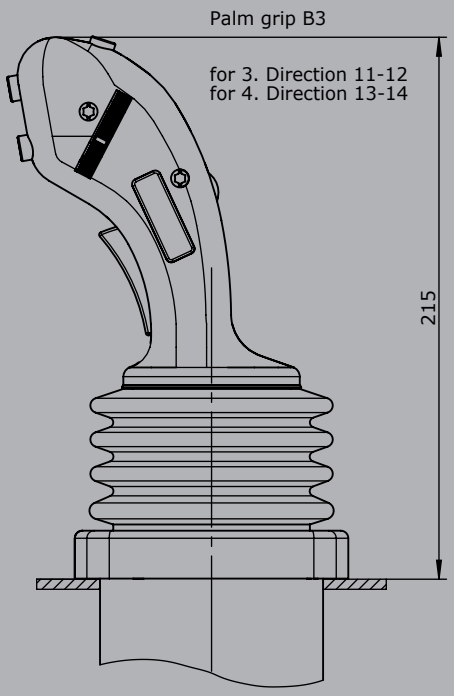
Special model

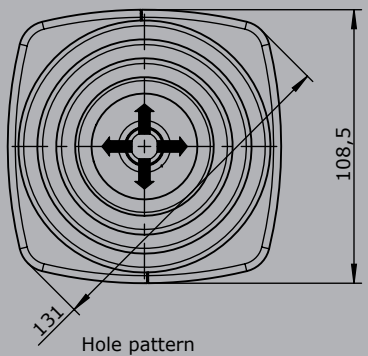
X	Special / customer specified

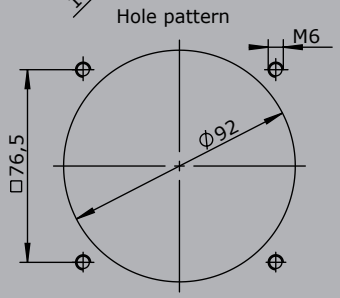
Technical details may vary based on configuration or application! Technical data subject to change without notice!

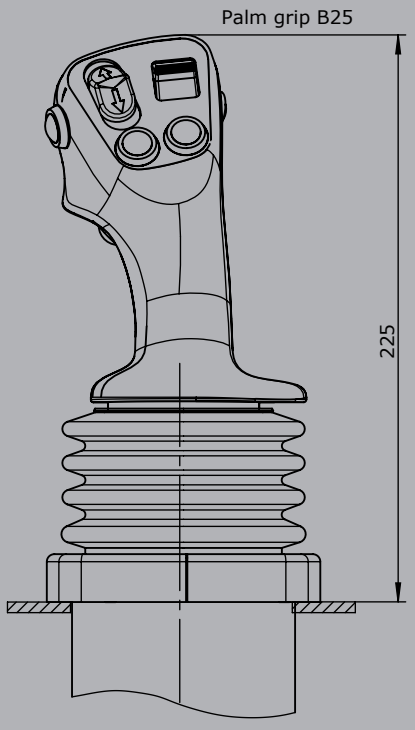












Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Multi-axis controller
V25

The multi-axis controller V25 is available in either single-axis or multi-axis options and is a robust controller used commonly in electro-hydraulic applications. With many output options including voltage, amperage and switching contacts and many handle options the V25 series is hugly customisable. The V25 is resistant to oil, maritime conditions e.g. offshore / vessels, UV radiation typically from the sun.

Technical data

Mechanical life V25	8 million operating cycles
Supply voltage	See interface
Operation temperature	-40°C to +85°C
Degree of protection	up to IP67
Functional safety	PLd (EN ISO 13849) possible

Example

V25	S8	P	T	-Z	-B10	-E...	-S...	-X

Basic unit

V25.1	1-axis
V25	2-axis

Control-handle long

	Standard 100 mm*
S8	+20 mm

**Only available in combination with grip!*

Gate

P	Cross gate *(deflection angle max. 15°)*

Grip / palm grip

	Knob *(included in basic unit!)*
M	Mechanical zero interlock
T	Knob with dead man
H	Knob with signal button
D	Knob with push button KDA/70
B ...	Palm grip B... *(see page palm grip 157)*

Spring return *(includet in basic unit!)*

Z	Spring return

Degree of protection

B	Cover housing
B10	Joystick-main board sealed
B11	Joystick-main board sealed and handle function sealed, handle with drain hole

For a schematic description of the protection class, see page 139

Interface *(description see on the following page)*

E0xx	Switching output
E1xx	Voltage output
E2xx	Current output
E3xx	CAN-interface
E4xx	CANOpen Safety interface

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V25	S8	P	T	-Z	-B10	-E...	-S...	-X

Plug connectors

S..	Standard plug connectors *(see page 138)*

Special model

X	Special / customer specified

1

Combination possibilities with our handles

Digital output

Supply voltage	9-32 V DC		
Current carrying capacity	Direction signal 150 mA		
	Zero position signal 500 mA		
Mounting depth A	60 mm		
Wiring	1. cable 14 x 0,25 mm² 500 mm long without plug connector		
	2. cable 14 x 0,25 mm² (optional for grip function) 500 mm long without plug connector		
	Optional with plug connector *(standard plug connectors see page 138)*		S
2 Direction signals + 1 zero position signal (galvanically isolated) per axis			
	1 axis	E001 1	
	2 axis	2	

Voltage output (not stabilized)

Supply voltage	4,75-5,25 V DC		
Current carrying capacity	Direction signal 8 mA		
Mounting depth A	60 mm		
Wiring	1. cable 14 x 0,25 mm² 500 mm long without plug connector		
	2. cable 14 x 0,25 mm² (optional for grip function) 500 mm long without plug connector		
	Optional with plug connector *(standard plug connectors see page 138)*		S
0,5...2,5...4,5 V redundant + 2 direction signals per axis			
	1 axis	E104 1	
	2 axis	2	
	Output options		
	Characteristic:		
	Inverse dual	1	
	Dual	2	
	Inverse Dual with dead zone +/- 3° (standard)	3	
	Dual with dead zone +/- 3°	4	

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Voltage output				
Supply voltage	9-32 V DC (*11,5-32)			
Current carrying capacity	Direction signal 150 mA			
	Zero position signal 500 mA			
Mounting depth A	60 mm			
Wiring	1. cable 14 x 0,25 mm² 500 mm long without plug connector			
	2. cable 14 x 0,25 mm² (optional for grip function) 500 mm long without plug connector			
	Optional with plug connector *(standard plug connectors see page 138)*			S
0,5...2,5...4,5 V redundant + 2 direction signals + 1 zero position signal (galvanically isolated) per axis				
	1 axis	E112 1		
	2 axis	2		
	3 axis*	3		
	4 axis*	4		
0...5...10 V redundant + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, supply voltage 11,5 - 32 V DC				
	1 axis	E132 1		
	2 axis	2		
	3 axis*	3		
	4 axis*	4		
10...0...10 V + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, supply voltage 11,5 - 32 V DC, sensor redundant with error monitoring and error signal				
	1 axis	E136 1		
	2 axis	2		
	3 axis*	3		
	4 axis*	4		
	Output options			
	Characteristic:			
	Inverse dual *¹		1	
	Dual *¹		2	
	Inverse dual with dead zone +/- 3° *¹ (standard)		3	
	Dual with dead zone +/- 3° *¹		4	
	*¹ *not combinable with output E136X*			
	Single *²		5	
	Single with dead zone +/- 3° *² (standard)		6	
	*² *not combinable with output E112X and E132X*			
	Digital output signals:			
	Output signals standard:			
	Direction signals and zero position signals 1,5A 24 V DC		1	

**Axis for handle functions, interface can vary depending upon actuation element!*

Voltage output with other value on request!

1

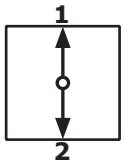
Current output					
Supply voltage	9-32 V DC				
Current carrying capacity	Direction signal 150 mA				
	Zero position signal 500 mA				
Mounting depth A	60 mm				
Wiring	1. cable 14 x 0,25 mm² 500 mm long without plug connector				
	2. cable 14 x 0,25 mm² (optional for grip function) 500 mm long without plug connector				
	Optional with plug connector *(standard plug connectors see page 138)*				S
0...10...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, sensor redundant with error monitoring and error signal					
	1 axis		E206	1	
	2 axis			2	
	3 axis*			3	
	4 axis*			4	
20...0...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, sensor redundant with error monitoring and error signal					
	1 axis		E208	1	
	2 axis			2	
	3 axis*			3	
	4 axis*			4	
4...12...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, sensor redundant with error monitoring and error signal					
	1 axis		E214	1	
	2 axis			2	
	3 axis*			3	
	4 axis*			4	
20...4...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, sensor redundant with error monitoring and error signal					
	1 axis		E216	1	
	2 axis			2	
	3 axis*			3	
	4 axis*			4	
	Output options				
	Single			5	
	Single with dead zone +/- 3° (standard)			6	
	Digital output signals:				
	Output signals standard:				
	Direction signals and zero position signals 1,5A 24 V DC			1	

**Axis for handle functions, interface can vary depending upon actuation element!*

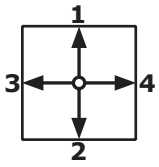
Current output with other value on request!

Identification of the installation variants with switching directions:

V25.1



V25



CAN			
Supply voltage	9-32 V DC		
Idle current consumption	120 mA (24 V DC)		
Current carrying capacity	Direction signal 100 mA		
	Zero position signal 100 mA		
	External digital output for LEDs 5 mA - 30 mA (dependent on the number of LEDs)		
	Digital switching output (potential-free) 100 mA		
Mounting depth A	60 mm (Expansion stage 1)		
	75 mm (Expansion stage 2)		
	95 mm (Expansion stage 3)		
Protocol	CANOpen CiA DS 301 or SAE J1939		
Baud rate	20 kBit/s to 1 Mbit/s (standard 250 kBit/s)		
Output value	255...0...255		
Wiring	CAN (IN) cable 300 mm with plug connector M12 (male)		
	CAN (OUT) cable 300 mm with plug connector M12 (female)		
	External in-/outputs cable 300 mm long without plug connector		
	External in-/outputs cable 300 mm long without plug connector (additional from 32 in-/outputs)		
	Optional with plug connector *(standard plug connectors see page 138)*		S
CAN V25 expansion stage 1		E304 1	
- 4 analog joystick axis			
- 15 digital joystick functions			
- Input for capacitive sensor			
Main-axis with additional digital outputs separately wired (not via CAN)			
- 2 direction signals per main axis		1	
CAN V25 expansion stage 2		E305 1	
- 7 analog joystick axis			
- 15 digital joystick functions			
- 2 inputs for capacitive sensors			
With additional external in-/outputs			
- 8 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 8 external digital inputs		2	
- 16 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 16 external digital inputs		3	
External LED-outputs can be used in the grip for LEDs			

1

CAN V25 expansion stage 3	E306 1	
- 10 analog joystick axis		
- 15 digital joystick functions		
- 2 inputs for capacitive sensors		
With additional external in-/outputs		
- 8 external LED-outputs (dimmable optional), 2 switching outputs (potential-free, 100 mA), 8 external digital inputs	2	
- 16 external LED-outputs (dimmable optional), 2 switching outputs (potential-free, 100 mA), 16 external digital inputs	3	
- 24 external LED-outputs (dimmable optional), 2 switching outputs (potential-free, 100 mA), 24 external digital inputs	4	
- 32 external LED-outputs (dimmable optional), 2 switching outputs (potential-free, 100 mA), 32 external digital inputs	5	
External LED-outputs can be used in the grip for LEDs		
Main-axis with additional digital outputs separately wired (not via CAN)		
- 2 direction signals + 1 zero position signal (potential-free) per axis		3
With additional analog outputs on request!		

CANopen safety		
Supply voltage	9-32 V DC	
Idle current consumption	120 mA (24 V DC)	
Current carrying capacity	Direction signal 100 mA	
	Zero position signal 100 mA (potential-free)	
	External digital output for LEDs 5 mA - 30 mA (dependent on the number of LEDs)	
	Digital switching output (potential-free) 100 mA	
Baud rate	20 kBit/s to 1 MBit/s (standard 250 kBit/s)	
Output value	255...0...255	
Mounting depth	60 mm (Expansion stage 1)	
	75 mm (Expansion stage 2)	
	95 mm (Expansion stage 3)	
Protocol	CANopen Safety CIA 304	
Wiring	CAN (IN) cable 300 mm with plug connector M12 (male)	
	CAN (OUT) cable 300 mm with plug connector M12 (female)	
	External in-/outputs cable 300 mm long without plug connector	
	External in-/outputs cable 300 mm long without plug connector (additional from 32 in-/outputs)	
	Optional with plug connector *(standard plug connectors see page 138)*	S

CANopen Safety expansion stage 1	E404 1	
- 4 analog joystick axis		
- 15 digital joystick functions		
- Input for capacitive sensor		
Main-axis with additional digital outputs separately wired (not via CAN)		
- 2 direction signals per main axis		1
CANopen safety expansion stage 2	E405 1	
- 7 analog joystick axis		
- 15 digital joystick functions		
- 2 inputs for capacitive sensors		
With additional external in-/outputs		
- 8 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 8 external digital inputs	2	
- 16 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 16 external digital inputs	3	
External LED-outputs can be used in the grip for LEDs		

Technical details may vary based on configuration or application! Technical data subject to change without notice!

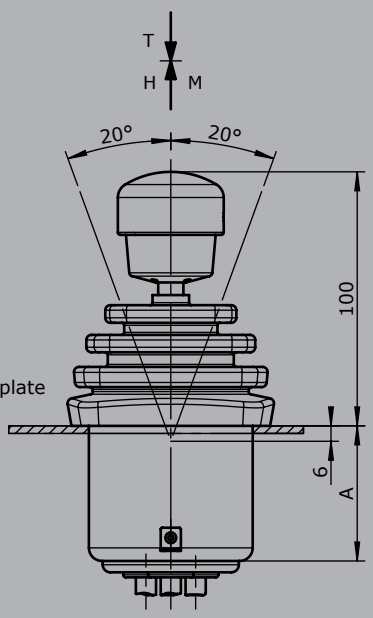
V2019/1 15.03.2019

CANopen safety expansion stage 3	E406 1	
- 10 analog joystick axis		
- 15 digital joystick functions		
- 2 inputs for capacitive sensor		
With additional external in-/outputs		
- 8 external LED-outputs (dimmable optional), 2 switching outputs (potential-free, 100 mA), 8 external digital inputs	2	
- 16 external LED-outputs (dimmable optional), 2 switching outputs (potential-free, 100 mA), 16 external digital inputs	3	
- 24 external LED-outputs (dimmable optional), 2 switching outputs (potential-free, 100 mA), 24 external digital inputs	4	
- 32 external LED-outputs (dimmable optional), 2 switching outputs (potential-free, 100 mA), 32 external digital inputs	5	
External LED-outputs can be used in the grip for LEDs		
Main-axis with additional digital outputs separately wired (not via CAN)		
- 2 direction signals + 1 zero position signal (potential-free) per axis		3
With additional analog outputs on request!		

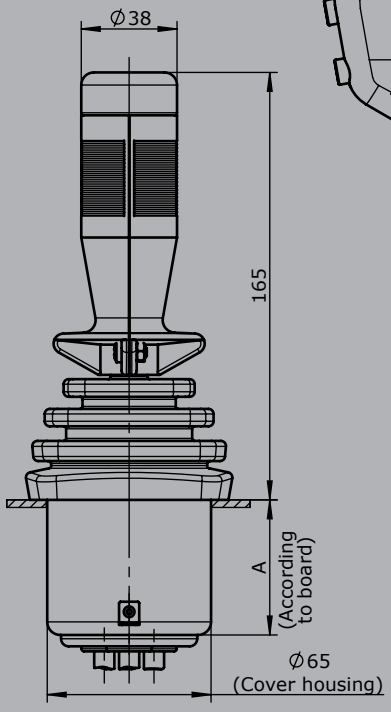
Attachments	
Z01 Mating connector M12 male insert with 2 m cable	20201140
Z02 Mating connector M12 female insert with 2 m cable	20202298

1

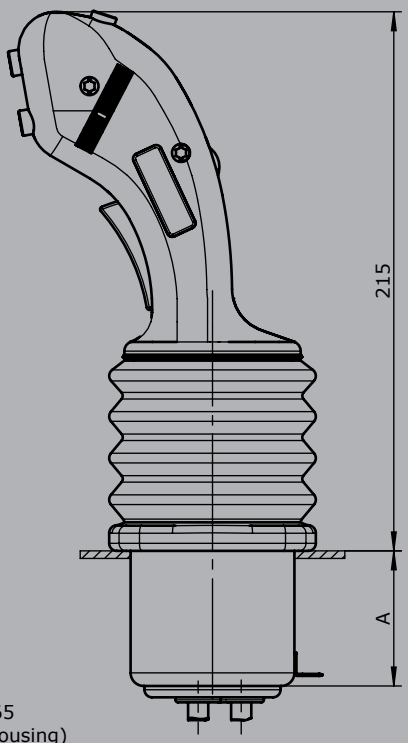
T = Dead man's button
H = Signal button
M = Latch for mechanical zero interlock

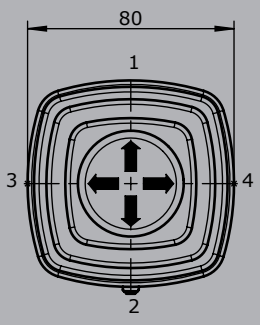


Palm grip B1

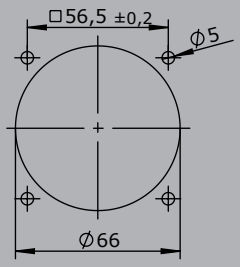


Palm grip B3

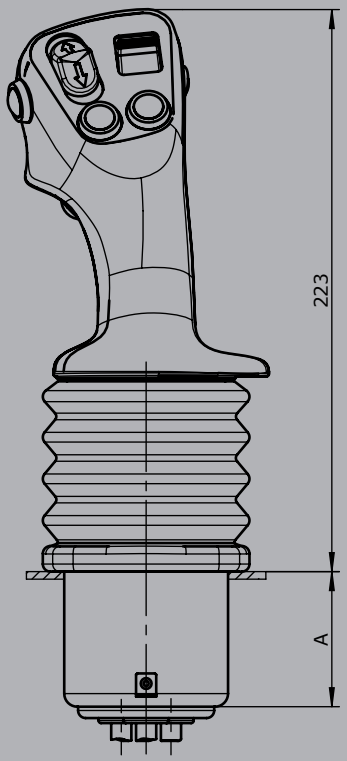




Hole pattern



Palm grip B25



* Optional IP 67

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Multi-axis controller
V24

GESSMANN

The association drive V24 is designed as a driving joystick for construction and agricultural machinery. It has a parking position which can be inserted in the zero position. The V24 is characterized by its extremely rugged design. Through it`s various interfaces and the many possibilities of combination with our numerous ball handles the V24 is very flexible.

Technical data

Mechanical life V24	20 million operating cycles
Supply voltage	See interface
Operation temperature	-40°C to +85°C
Degree of protection	up to IP67
Functional safety	PLd (EN ISO 13849) possible

1

Example

V24	P1	T	-R	-B10	-E...	-S...	-X

Basic unit

V24.1	Multi-axis controller, 1-axis
V24L	Multi-axis controller, 1-axis with parking position left
V24R	Multi-axis controller, 1-axis parking position right

Gate

P1	T-gate main axis axial *(included in basic unit!)*
P2	T-gate main axis right outside
P3	T-gate main axis left outside
PX	Special gate

Grip / Palm grip

	Knob *(included in basic unit!)*
T	Dead man
H	Signal button
D	Push button
B...	Palm grip B... *(see page palm grip 157)*

Main axis

R	Friction brake adjustable *(included in basic unit!)*

Degree of protection

B10	Joystick-main board sealed (IP67)
B11	Joystick-main board sealed (IP67) and handle function sealed, handle with drain hole

For a schematic description of the protection class, see page 139

Interface *(description see on the following pages)*

E3xx	CAN-interface
E4xx	CANOpen Safety interface

Plug connectors

S..	Standard plug connectors *(see page 138)*

Special model

X	Special / customer specified

Technical details may vary based on configuration or application! Technical data subject to change without notice!

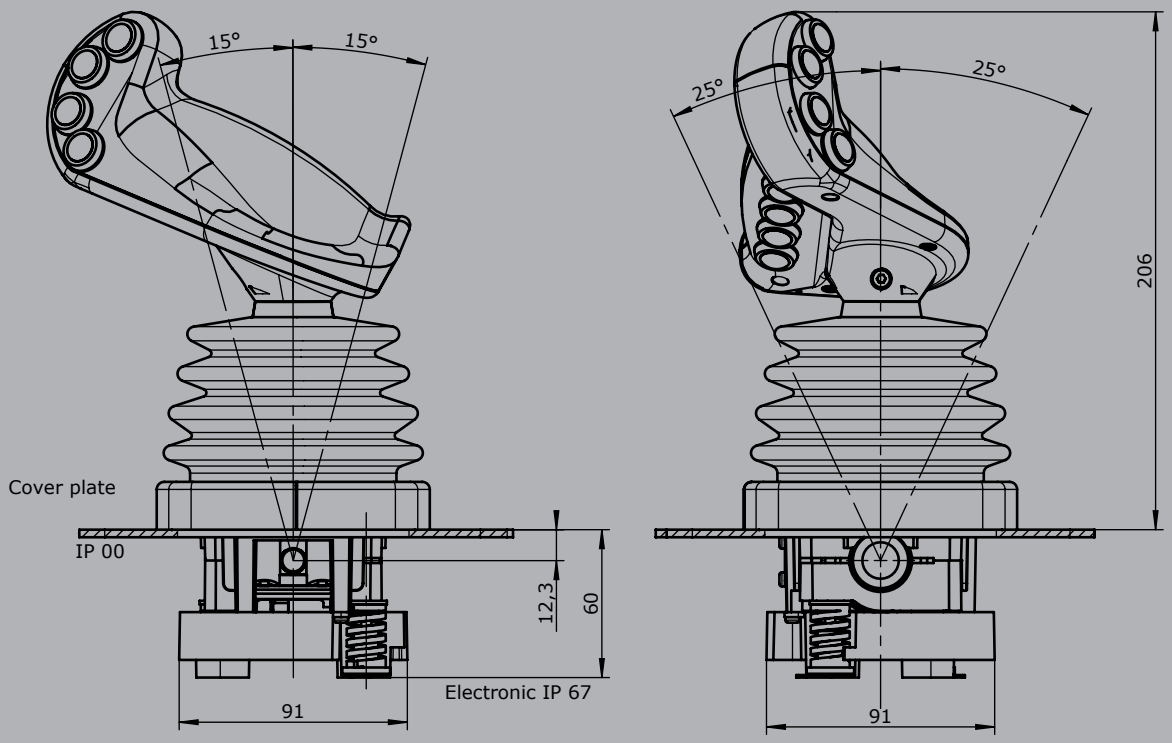
Combination possibilities with our handles

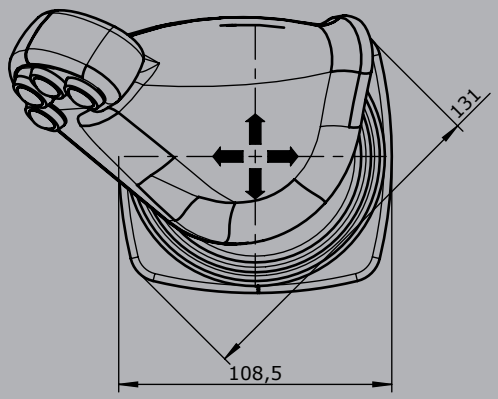
CAN		
Supply voltage	9-36 V DC	
Idle current consumption	120 mA	
Mounting depth A	60 mm	
Protocol	CANOpen CiA DS 301 or SAE J 1939	
Baud rate	125 kBit/s to 1 Mbit/s	
Output value	255...0...255	
Wiring	CAN (IN) cable 300 mm with plug connector M12 (male)	
	CAN (OUT) cable 300 mm with plug connector M12 (female)	
	External in-/outputs cable 300 mm long without plug connector	
	Optional with plug connector *(standard plug connectors see page 138)*	S
CAN V24		E312 1
- 7 analog joystick axis		
- 15 digital joystick functions		
**With the use of external inputs, the joystickfunctions reduce by 7 pieces!*		
- Input for capacitive sensor		
With additional external in-/outputs		
- 8 external LED-outputs, 1 switching output (potentialfree, 100 mA), 7 external digital inputs		2
- 16 external LED-outputs, 1 switching output (potentialfree, 100 mA), 7 external digital inputs		3
With additional digital outputs for the main-axis		
- 2 direction signals + 1 zero position signal (potential-free) per axis		3
Additional analog outputs on request!		

CANOpen safety			
Supply voltage	9-36 V DC		
Idle current consumption	120 mA		
Mounting depth A	60 mm		
Protocol	CANOpen safety CIA 304		
Baud rate	125 kBit/s to 1 Mbit/s		
Output value	255...0...255		
Wiring	CAN (IN) cable 300 mm with plug connector M12 (male)		
	CAN (OUT) cable 300 mm with plug connector M12 (female)		
	External in-/outputs cable 300 mm long without plug connector		
	Optional with plug connector *(standard plug connectors see page 138)*		S
CANopen Safety V24		E411 1	
- 7 analog joystick axis			
- 15 digital joystick functions			
**With the use of external inputs, the joystickfunctions reduce by 7 pieces!*			
- Input for capacitive sensor			
With additional external in-/outputs			
- 8 external LED-outputs, 1 switching output (potentialfree, 100 mA), 7 external digital inputs		2	
- 16 external LED-outputs, 1 switching output (potentialfree, 100 mA), 7 external digital inputs		3	
With additional digital outputs for the main-axis			
- 2 direction signals + 1 zero position signal (potential-free) per axis			3
Additional analog outputs on request!			

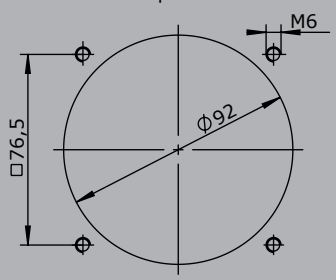
Attachments	
Z01 Mating connector (CAN) M12 (male insert) with 2 m cable	20201140
Z02 Mating connector (CAN) M12 (female contact) with 2 m cable	20202298

1





Hole pattern



Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Multi-axis controller
V26

The multi-axis controller V26 is a robust controller used commonly in electro-hydraulic applications. With many output options including voltage, amperage and switching contacts and many handle options the V26 series is hugly customisable.

Technical data

Mechanical life V26	10 million operating cycles
Supply voltage	See interface
Operation temperature	-40°C to +85°C
Degree of protection	IP22

1

	V26	T	-R	+R	-B	-E...	-S...	-X
Basic unit								
V26 2-axis	■							
Grip / palm grip								
Knob *(included in basic unit!)*		■						
T Dead man		■						
H Signal button		■						
D Push button		■						
B... Palm grip B... *(see page palm grip 157)*		■						
Axis 1								
R Friction brake			■	■				
Axis 2								
R Friction brake				■	■			
Cover housing								
B Cover housing *(included in basic unit!)*					■	■	■	■
Interface *(description see on the following pages)*								
E0xx Switching output						■	■	■
E1xx Voltage output						■	■	■
E2xx Current output						■	■	■
E3xx CAN-interface						■	■	■
E4xx CANOpen safety interface						■	■	■
Plug connectors								
S.. Standard plug connectors *(see page 138)*							■	■
Special model								
X Special / customer specified								■

Technical details may vary based on configuration or application! Technical data subject to change without notice!

1

Digital output				
Supply voltage	9-32 V DC			
Current carrying capacity	Direction signal 150 mA			
	Zero position signal 500 mA			
Mounting depth A	105 mm			
Wiring	Cable 500 mm long without plug connector			
	Optional with plug connector *(standard plug connectors see page 138)*			S
2 direction signals + 1 zero position signal (galvanically isolated) per axis				
		2 axis	E002 2	

Voltage output (not stabilized)				
Supply voltage	4,75-5,25 V DC			
Mounting depth A	105 mm			
Wiring	Cable 500 mm long without plug connector			
	Optional with plug connector *(standard plug connectors see page 138)*			S
0,5...2,5...4,5 V redundant per axis				
		2 Achsen	E103 2	
		Output options		
		Characteristic:		
		Inverse dual	1	
		Dual	2	
		Inverse dual with dead zone +/- 3° (standard)	3	
		Dual with dead zone +/- 3°	4	

Voltage output				
Supply voltage	9-32 V DC (*11,5-32)			
Mounting depth A	105 mm			
Wiring	Cable 500 mm long without plug connector			
	Optional with plug connector *(standard plug connectors see page 138)*			S
0,5...2,5...4,5 V redundant per axis				
		2 axis	E111 2	
0...5...10 V redundant per axis, supply voltage 11,5 - 32 V DC				
		2 axis	E131 2	
		Output options		
		Characteristic:		
		Inverse dual	1	
		Dual	2	
		Inverse dual with dead zone +/- 3° (standard)	3	
		Dual with dead zone +/- 3°	4	
Voltage output with other value on request!				

Current output				
Supply voltage	9-32 V DC			
Mounting depth A	105 mm			
Wiring	Cable 500 mm long without plug connector			
	Optional with plug connector *(standard plug connectors see page 138)*			S
0...10...20 mA per axis, sensor redundant with error monitoring and error signal				
	2 axis	E203 2		
4...12...20 mA per axis, sensor redundant with error monitoring and error signal				
	2 axis	E211 2		
	Output options			
	Single		5	
	Single with dead zone +/- 3° (standard)		6	
Current output with other value on request!				

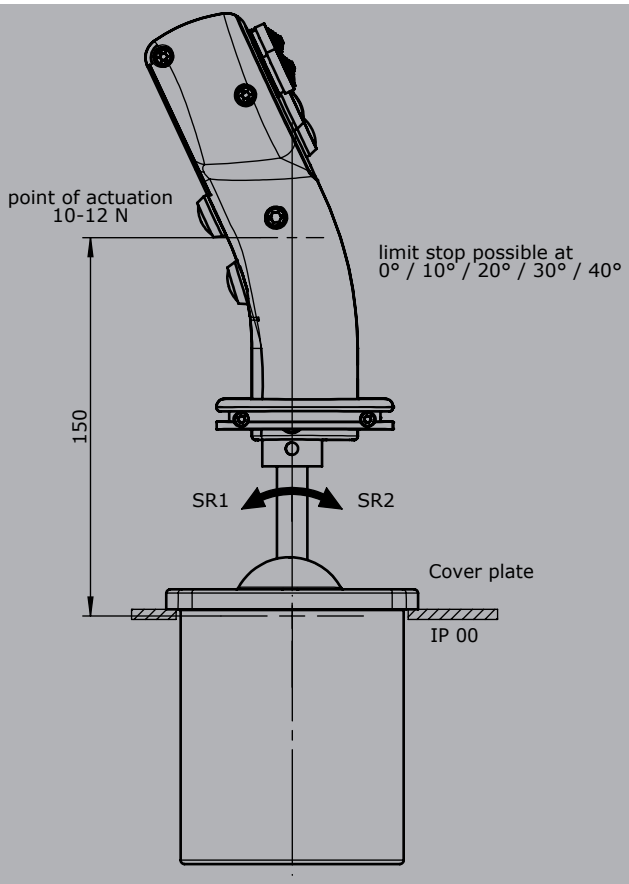
CAN				
Supply voltage	9-36 V DC			
Idle current consumption	120 mA			
	External digital output for LEDs 5-30 mA (dependent on the number of LEDs)			
	Digital switching output (potential-free) 100 mA			
Mounting depth A	E3091: 105 mm			
	E3091X: 130 mm			
	E3101X - E3103X: 130 mm			
	E3104X - E3105X: 160 mm			
Protocol	CANOpen CiA DS 301 or SAE J 1939			
Baud rate	125 kBit/s to 1 Mbit/s (standard 250 kBit/s)			
Output value	255...0...255			
Wiring	CAN (IN) cable 300 mm with plug connector M12 (male)			
	CAN (OUT) cable 300 mm with plug connector M12 (female)			
	External in-/outputs cable 300 mm without plug connector			
	External in-/outputs cable 300 mm without plug connector (additionally from 32 in-/outputs)			
	Optional with plug connector *(standard plug connectors see page 138)*			S
CAN expansion stage 1		E309	1	
- 7 analoge Joystickachsen				
- 16 digitale Joystickfunktionen				
- Input for capacitive sensor				
With additional external in-/outputs				
- 8 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 8 external digital inputs			2	
- 16 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 16* external digital inputs			3	
External LED-outputs can be used in the grip for LEDs				
**With the use of capacitive sensor, the external digital inputs reduce by one input!*				

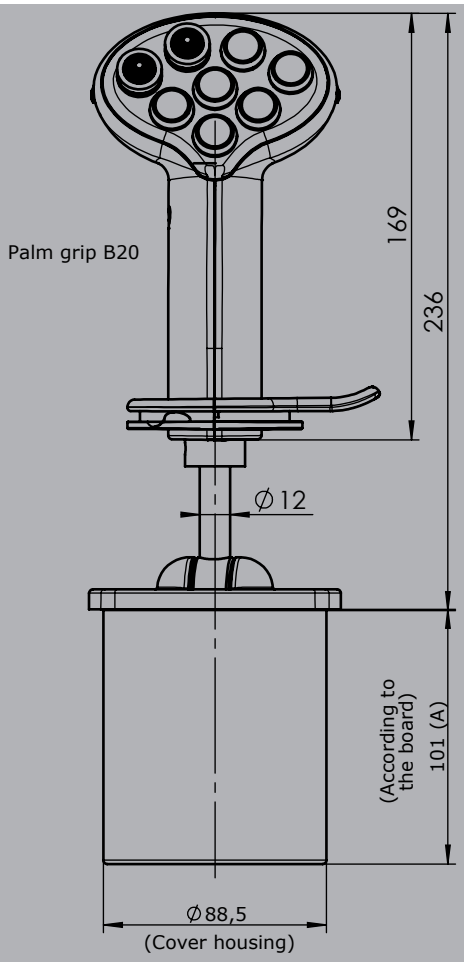
1

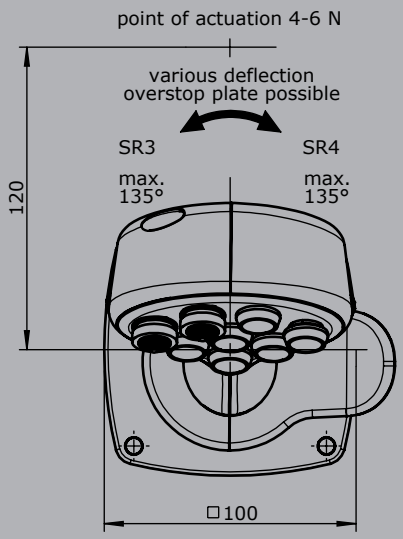
CANopen Safety			
Supply voltage	9-36 V DC		
Idle current consumption	120 mA		
	External digital output for LEDs 5-30 mA (depending on the number of LED`s)		
	Digital switching output (potential-free) 100 mA		
Mounting depth A	E4091: 105 mm		
	E4091X: 130 mm		
	E4101X - E4103X: 130 mm		
	E4104X - E4105X: 160 mm		
Protocol	CAN Safety CIA 304		
Baud rate	125 kBit/s to 1 MBit/s (Standard 250 kBits)		
Output value	255...0...255		
Wiring	CAN (IN) cable 300 mm with plug connector M12 (male)		
	CAN (OUT) cable 300 mm with plug connector M12 (female)		
	External in-/outputs cable 300 mm without plug connector		
	External in-/outputs cable 300 mm without plug connector (additionally from 32 in-/outputs)		
	Optional with plug connector *(standard plug connectors see page 138)*		S
CANOpen safety expansion stage 1		E409	1
- 7 analog joystick axis			
- 16 digital joystick functions			
- Input for capacitive sensor			
With additional external in-/outputs			
- 8 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 8 external digital inputs			2
- 16 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 16* external digital inputs			3
External LED-outputs can be used in the grip for LEDs			
**With the use of capacitive sensor, the external digital inputs reduce by one input!*			

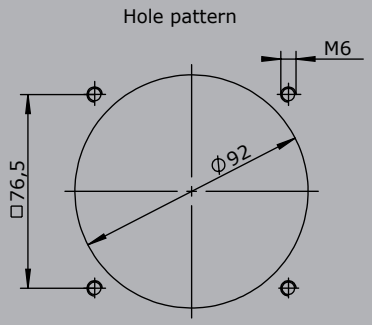
Other outputs			
Voltage output for PVG32 0,25...0,5...0,75Us, power supply 9-32V DC			
Wiring:	1. cable 14 x 0,25 mm² 300 mm long without plug connector		
	2. cable 14 x 0,25 mm² 300 mm long without plug connector (optional for grip function)		
	Optional with plug connector *(standard plug connectors see page 138)*		S
	2 axis	E907	2

Attachments	
Z01 Mating connector (CAN) M12 (male insert) with 2 m cable	20201140
Z02 Mating connector (CAN) M12 (female contact) with 2 m cable	20202298









Technical details may vary based on configuration or application! Technical data subject to change without notice!

Multi-axis controller
V1

The multi-axis controller V1 is a robust switching device for crane and hoisting applications. The modular design enables the switching device to be used universally. The V1 is resistant to oil, maritime conditions e.g. offshore / vessels, UV radiation typically from the sun.

1

Technical data

Mechanical life V1	6 million operating cycles
Supply voltage	See interface
Operation temperature	-40°C to +85°C
Degree of protection	up to IP65

V1	P	H11	H13	H15	H17	- Z	+ Z	- B	- E...	- S...	- X

Basic unit

V1.1	1-axis
V1	2-axis

Gate

P	Cross gate
PX	Special gate

Grip / Grip functions

	Grip *(included in basic unit!)*
H11	Additional axis 1 / Grip up - down
H13	Additional axis 2 / Grip rotate left - right
H15	Additional axis 3 / Grip tilt forwards - backwards
H17	Additional axis 4 / Grip tilt left - right

Axis 1

Z	Spring return

Axis 2 (not applicable to V1.1)

Z	Spring return

Cover housing

B	Cover housing (*included in basic unit!*)

Interface *(description see on the following pages)*

E1xx	Voltage output

Plug connectors

S..	Standard plug connectors *(see page 138)*

Special model

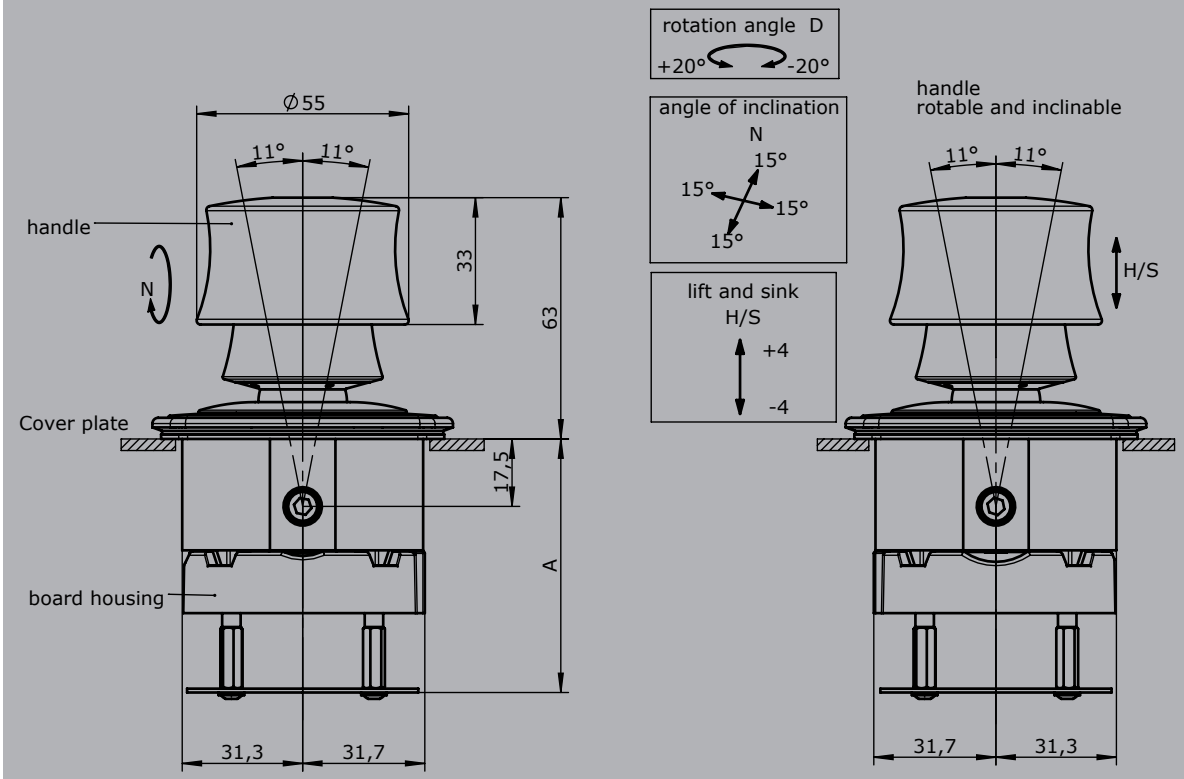
X	Special / customer specified

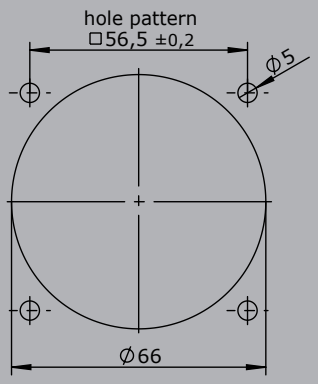
Technical details may vary based on configuration or application! Technical data subject to change without notice!

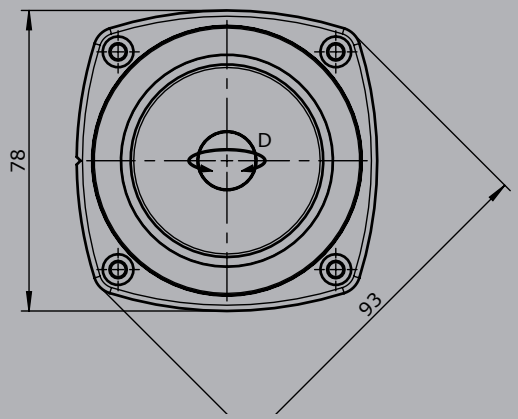
V2019/1 15.03.2019

Voltage output (not stabilized)			
Supply voltage	4,75-5,25V DC		
Current carrying capacity	Direction signal 8 mA		
Mounting depth A	85 mm		
Wiring	1. cable 14 x 0,25 mm² 500 mm long without plug connector		
	Optional with plug connector *(standard plug connectors see page 138)*		S
0,5...2,5...4,5V redundant signals per axis			
	1 axis	E103 1	
	2 axis	2	
	3 axis*	3	
	4 axis*	4	
	5 axis*	5	
	6 axis*	6	
	Output options		
	Characteristic:		
	Inverse dual	1	
	Dual	2	
	Inverse dual with dead zone +/- 3° (standard)	3	
	Dual with dead zone +/- 3°	4	
More outputs on request!			

1







Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Multi-axis controller
V21

GESSMANN

The multi-axis controller V21 is a robust hallsensor switching device for electro-hydraulic applications. The V21 is especially suitable for installation in our ball handles. The multi-axis controller is resistant to oil, maritime conditions e.g. offshore / vessels, UV radiation typically from the sun.

Technical data

Mechanical life	5 million operating cycles
Operating force	1,6 to 3,5N
Supply voltage	5V DC stabilized
Operation temperature	-40°C to +85°C
Degree of protection	IP67

Example

V21	P	-1	-E1032	-X

Basic unit

V21.1	1-axis, installation from top with fixing nut
V21	2-axis, installation from top with fixing nut
V21.1A	1-axis, with flange, installation from below
V21A	2-axis, with flange, installation from below
V21.1B	1-axis, with flange, installation from top
V21B	2-axis, with flange, installation from top

Gate

P	Cross gate
P X	Special gate

Knob

	Standard
1	KBAD 980
2	KBAD 1658
3	KBAD 1690

Interface

	Voltage output		
0,5...2,5...4,5 V redundant at Ub= 5 V			
	1 axis	E103	1
	2 axis		2
	Characteristic:		
	Inverse dual (standard)		1
	Dual		2

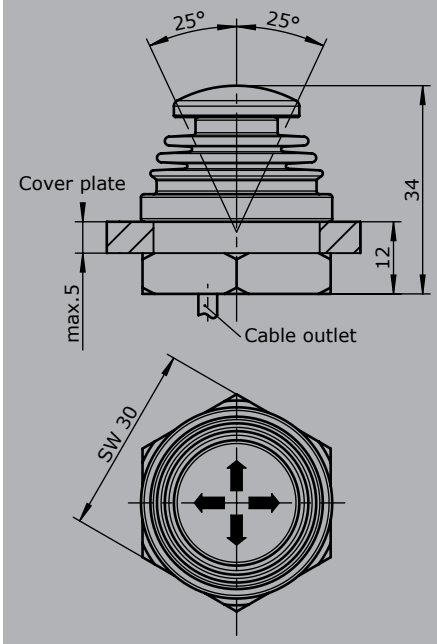
Special model

X	Special / customer specified

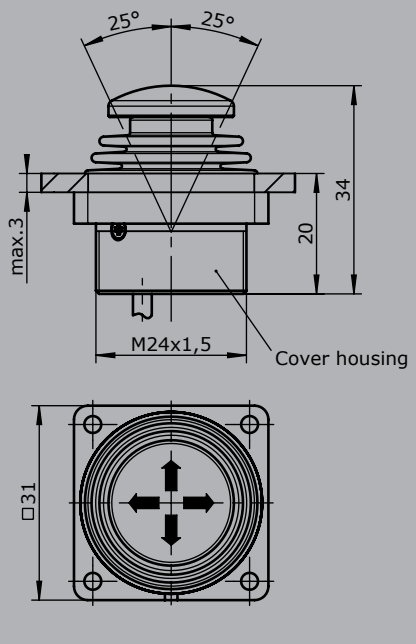
Technical details may vary based on configuration or application! Technical data subject to change without notice!

1

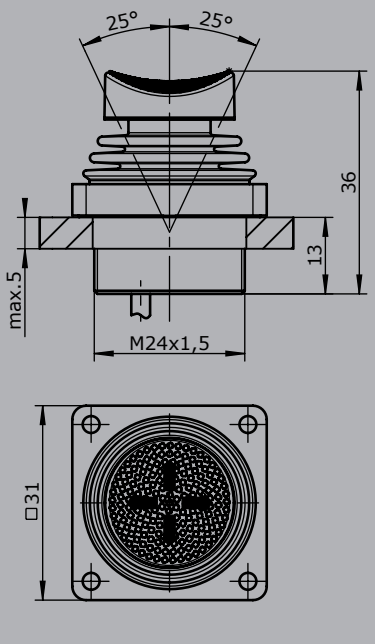
Standard
installed from the top



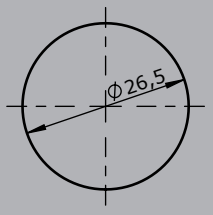
Version A with flange
installed from below



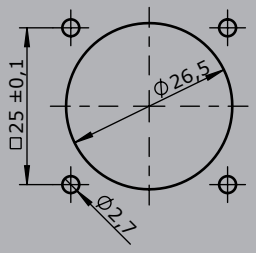
Version B with flange
installed from the top
with actuator KBAD 980



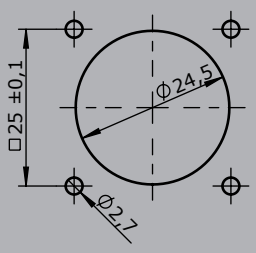
Hole pattern



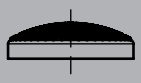
Hole pattern



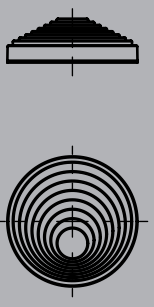
Hole pattern



Actuator KBAD 1658



Actuator KBAD 1690



Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Multi-axis controller
V22

The multi-axis controller V22 is a robust switching device for remote control. The multi-axis controller is resistant to oil, maritime conditions e.g. offshore / vessels, UV radiation typically from the sun.

Technical data

Mechanical life V22	3 million operating cycles
Operation temperature	-40°C to +85°C
Degree of protection	IP67 front

Example

V22A	-P	D	-E10321	-X

Basic unit

V22.1A	1-axis with spring return, installation from below
V22A	2-axis with spring return, installation from below
V22.1B	1-axis with spring return, installation from top
V22B	2-axis with spring return, installation from top

Gate

P	Cross gate
P X	Special gate

Grip

	Knob (standard)
D	Push button
GS9	Hall-twist grip with spring return
GS9-D	Hall-twist grip with spring return and push button on top

Interface

	Voltage output		
0,5...2,5...4,5 V redundant at Ub= 5 V			
	1 axis	E103 1	
	2 axis	2	
	Characteristic:		
	Inverse dual (standard)		1
	Dual		2

Special model

X	Special / customer specified

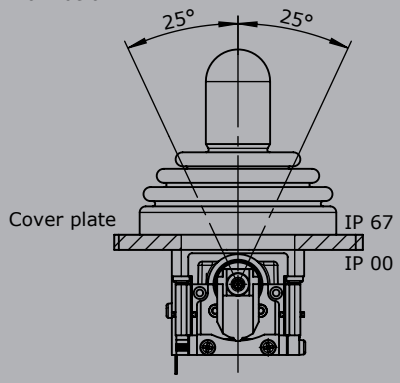
Attachments

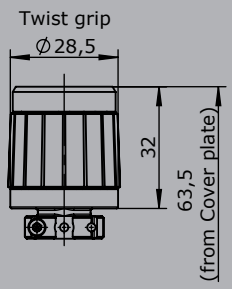
Mating connector JST 8-pole	5300000260
Mating connector JST 8-pole with single wire 500 mm long	5300000261

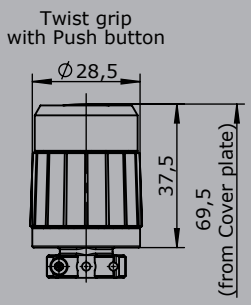
Technical details may vary based on configuration or application! Technical data subject to change without notice!

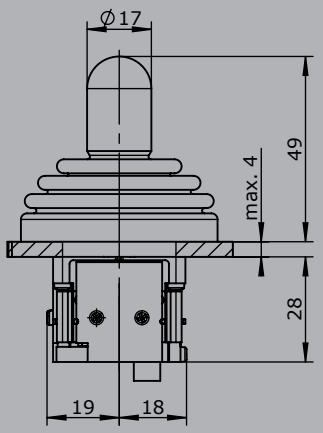
1

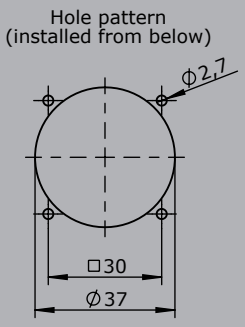
V22A
Installed from below

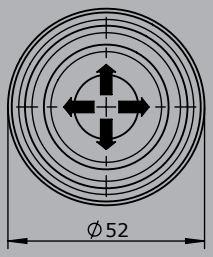




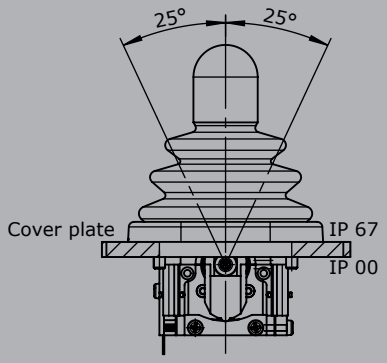


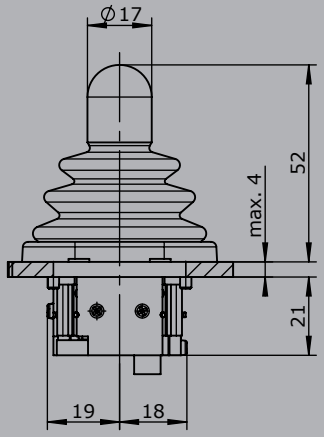


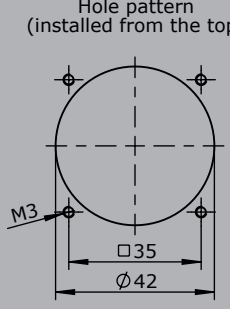


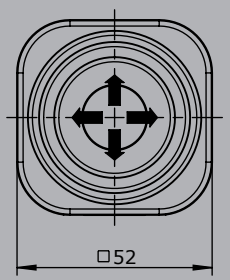


V22B
Installed from the top









Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Multi-axis controller
V23

The multi-axis controller V23 is a robust switching device for remote control applications. The multi-axis controller is resistant to oil, maritime conditions e.g. offshore / vessels, UV radiation typically from the sun.

Technical data

Mechanical life V23	3 million operating cycles
Operation temperature	-40°C to +85°C
Degree of protection	IP67 front

Example

		V23A	-P	-C80	+C80	-X
Basic unit						
V23.1A	1-axis with spring return, installation from below					
V23A	2-axis with spring return, installation from below					
V23.1B	1-axis with spring return, installation from top					
V23B	2-axis with spring return, installation from top					
Gate						
P	Cross gate					
P X	Special gate					
Axis 1: direction 1-2						
C80	Mechanical encoder					
	MEC 3-1					
	EA/26-10	I max. 1 mA				
	Potentiometer resistance	2x5 kOhm				
	Contact arrangement	Arrangement MS24				
	with 12-pol. JST-connector					
Axis 2: direction 3-4 (not applied for V23.1)						
See description axis 1!						
Special model						
X	Special / customer specified					

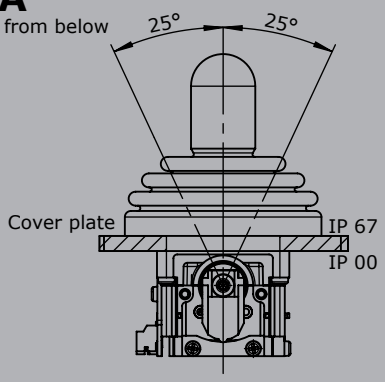
Attachments	
Mating connector JST 12-polig *(included in delivery!)*	5300000263
Mating connector JST 12-pole with single wire 500 mm long	5300000264

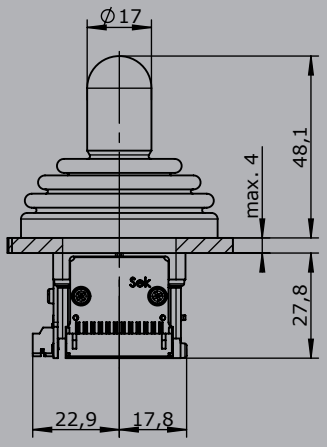
Technical details may vary based on configuration or application! Technical data subject to change without notice!

1

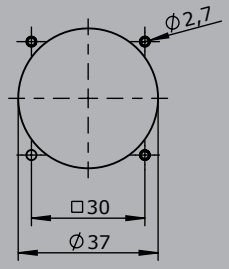
V23A

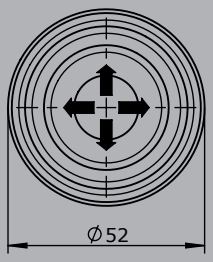
Installed from below





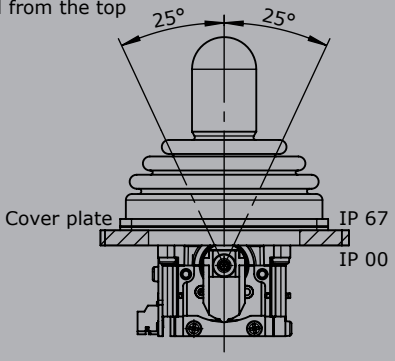
Hole pattern
(installed from below)

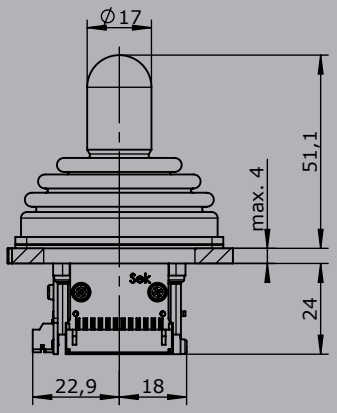




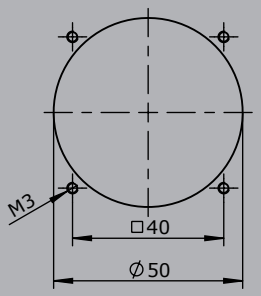
V23B

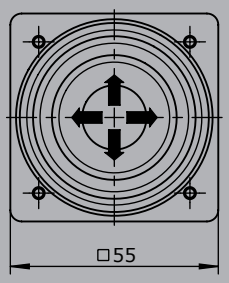
Installed from the top





Hole pattern
(installed from the top)





Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Multi-axis controller
V20

The multi-axis controller V20 is a rugged switching device for remote control. The multi-axis controller is resistant to oil, maritime conditions e.g. offshore / vessels, UV radiation typically from the sun.

Example

Technical data

Mechanical life V20	3 million operating cycles
Operation temperature	-40°C to +85°C
Degree of protection	IP65 (optional IP67)

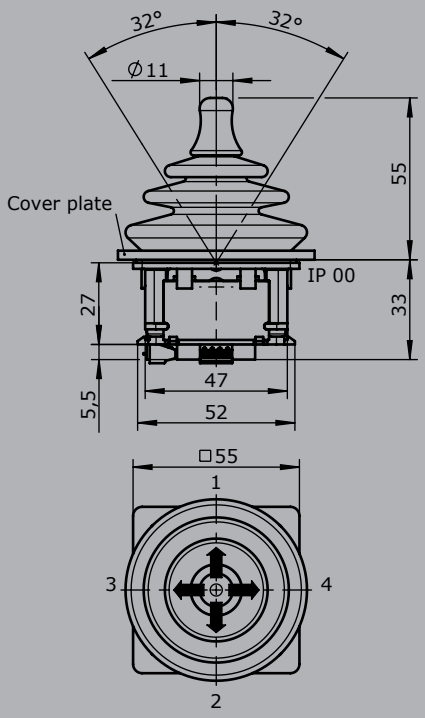
		V20	-P	D	-C71	+C71	-B	-X
Basic unit								
V20.1	1-axis with spring return							
V20	2-axis with spring return							
V20.1A	1-axis with spring return, IP67 front							
V20A	2-axis with spring return, IP67 front							
Gate								
p	Cross gate							
P X	Special gate							
Grip								
	Knob (standard)							
D	Push button							
GS9	Hall-twist grip with spring return							
GS9-D	Hall-twist grip with spring return and push button on top							
Axis 1: direction 1-2								
C70	Mechanical encoder							
	MEC 2-1							
	EA/15-10	I max. 1 mA						
	Potentiometer track	2 x 5 kOhm						
	Direction track	Arrangement MS224-0						
C71	Mechanical encoder							
	MEC 2-2							
	EA/11-10	I max. 1 mA						
	Potentiometer track	2 x 5 kOhm						
	Direction track	Arrangement MS24-0						
C72	Mechanical encoder							
	MEC 2-5							
	EA/21-10	I max. 1 mA						
	Potentiometer track	2 x 5 kOhm						
	Direction track	Arrangement MS25-0						
Axis 2: direction 3-4								
See description axis 1!								
Cover housing								
B	Cover housing KBQ 905 (IP65)							
Special model								
X	Special / customer specified							

Technical details may vary based on configuration or application! Technical data subject to change without notice!

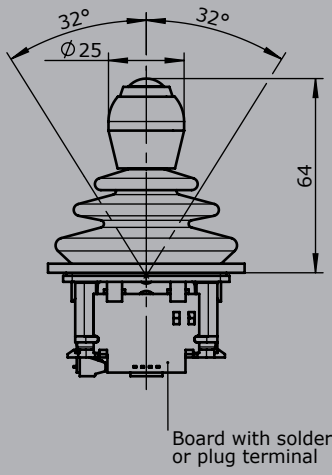
1

V20 Standard degree of protection front IP 65

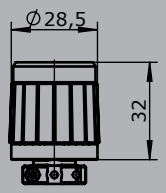
Knob solid



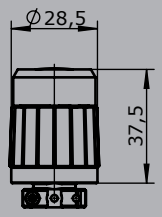
Knob solid
with Push button



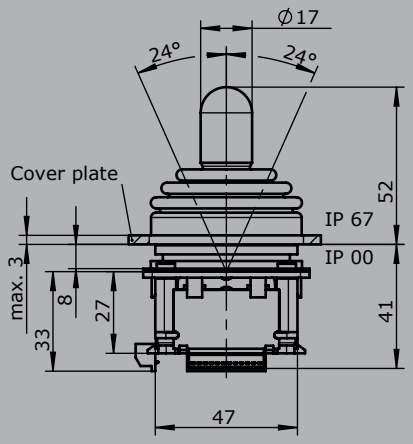
Twist grip

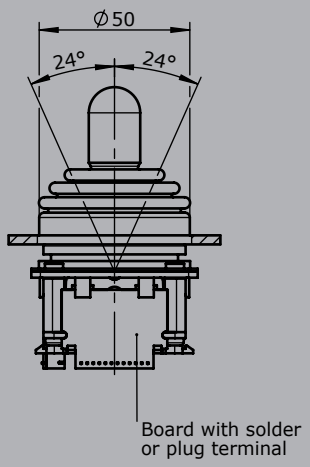


Twist grip
with Push button

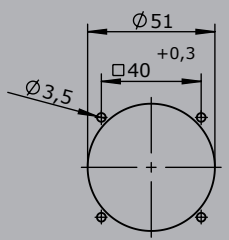


V20 Degree of protection front IP 67





Hole pattern



Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Multi-axis controller
V14

The multi-axis controller V14 is a robust switching device for remote control and electro-hydraulic applications. The modular design enables the switching device to be used universally. The V14 is resistant to oil, maritime conditions e.g. offshore / vessels, UV radiation typically from the sun.

Technical data

Mechanical life V14	6 million operating cycles
Operation temperature	-40°C to +85°C
Degree of protection	up to IP65

Example

V14L	S8	P	T	-01 Z C	+03 R	-A05 C61	+A110	-X

Basic unit

V14L 2-axis left

Control-handle extended

Standard 60 mm**

S8 +20 mm

**Only available in combination with handle!*

Gate

P Cross gate

Grip / Palm grip

T Dead man

Axis 1 (direction 1-2)

01 2 contacts (2A 250 V AC15)

Z Spring return

C Mechanical encoder

Axis 2 (direction 3-4)

03 6 contacts (2A 250 V AC15)

R Friction brake

Description axis 1 (direction 1-2)

A05 Arrangement MSP21

C61 Mechanical encoder MEC 1-2

Description axis 2 (direction 3-4)

A110 Arrangement MS24-0

Special model

X Special / customer specified

Technical details may vary based on configuration or application! Technical data subject to change without notice!

Multi-axis controller
V14

Combination possibilities with our handles

1

V14L S8 P T - 01 Z C + 03 R - A05 C61 + A110 - X

Basic unit

V14.1L	1-axis left
V14.1R	1-axis right
V14L	2-axis left
V14R	2-axis right

Control-handle extended

	Standard 60mm*
S8	+20 mm

**Only available in combination with handle!*

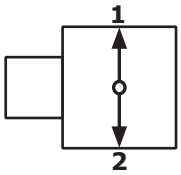
Gate

P	Cross gate
P X	Special gate

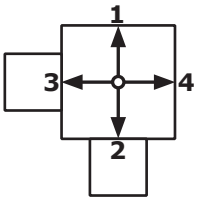
Grip / palm grip

	Knob 25 mm (standard)
M	Mechanical zero interlock
MH	Mechanical zero interlock + signal contact
T	Dead man
H	Signal button
GK1	Knob 42 mm
GK1M	Mechanical zero interlock
GK1MN	Mechanical zero interlock (push down)
GK1T	Dead man
GK1H	Signal button
GK1MH	Mechanical zero interlock + signal contact
GK1D	Push button
GK1DV	Flush push button
GS9	Hall-twist grip with spring return
GS9-D	Hall-twist grip with spring return and push button on top
B...	Palm grip B... *(see page palm grip page 157)*

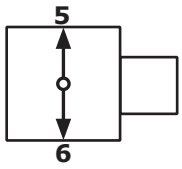
Identification of the installation variants with switching directions:



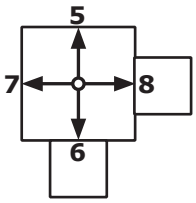
V14.1L



V14L



V14.1R



V14R

**Attention! The multi-axis controller V14 is not suitable for large palm grips (B3, B7/B8, B9...)*

V14L S8 P T - 01 Z C + 03 R - A05 C61 + A110 - X

Axis 1: direction 1-2 left / direction 5-6 right

(Standard contacts gold-plated 2A 250V AC15)

01	2 contacts	Standard contact - arrangement see page 140	
02	4 contacts	e.g.	
03	6 contacts	A05	MS21
		A0500	MS21-00
		A110	MS24-0
		A99 contact - arrangement according customer request	

V2019/1 15.03.2019

V14L	S8	P	T	-	01 Z C	+	03 R	-	A05	C61	+	A110	-	X

Z	Spring return *(included in basic unit!)*			
R	Friction brake			
C	Mechanical encoder	C61	MEC 1-2	
			EA/02-10	I max. 1 mA
			Potentiometer track	2 x 10 kOhm
			Direction tack	Arrangement MS26-0
		C62	MEC 1-7	
			EA/10-10	I max. 1 mA
			Potentiometer track	2 x 5 kOhm
			Direction track	Arrangement MS26-0-1
		C66	MEC 1-10	
			EA/17-10	I max. 10 mA
			Potentiometer track	2 x 1,5 kOhm
			Direction track	Arrangement MS21-0+MS21
		C63	MEC 1-6	
			EA/09-10	
			6 Bit Gray Code	
		C64	MEC 1-6-5	
			ER/36-10	Us=18-30 V
			Current output 20...4...20 mA	
		C65	MEC 1-6-8	
			ER/36-12	Us=18-30 V
			Current output 20...0...20 mA	
		C67	MEC 1-6-9	
			ER/36-11	Us=18-30 V
			Voltage output 10...0...10 V	
H	Hall-Potentiometer	E14811		0,5...2,5...4,5 V / 4,5...2,5...0,5 V

V14L	S8	P	T	-	01Z C	+	03 R	-	A05 C61	+	A110	-	X

Axis 2: direction 3-4 left / direction 7-8 right *(not applied for V14.1L and V14.1R)*

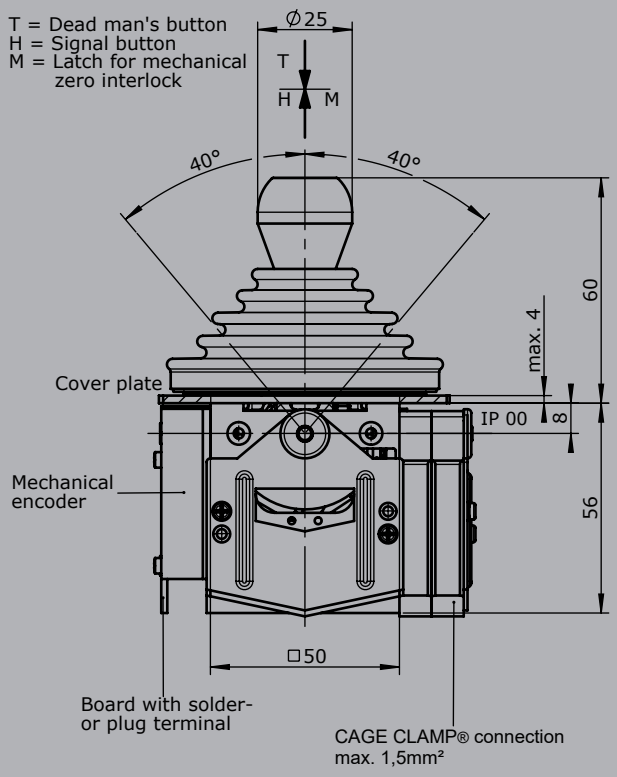
See description axis 1!

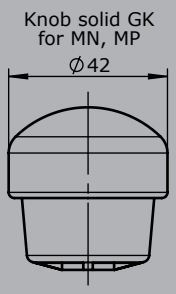
Special model

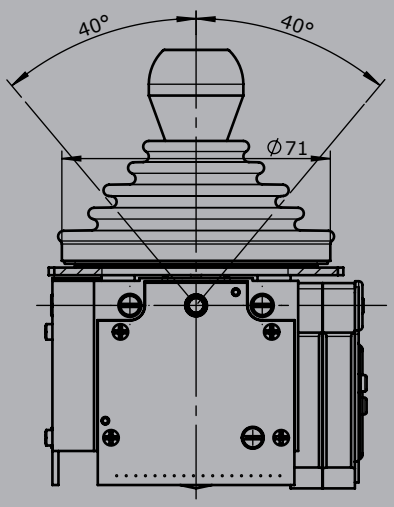
X Special / customer specified

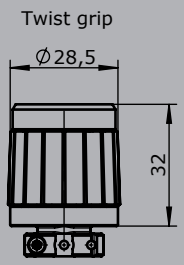
Technical details may vary based on configuration or application! Technical data subject to change without notice!

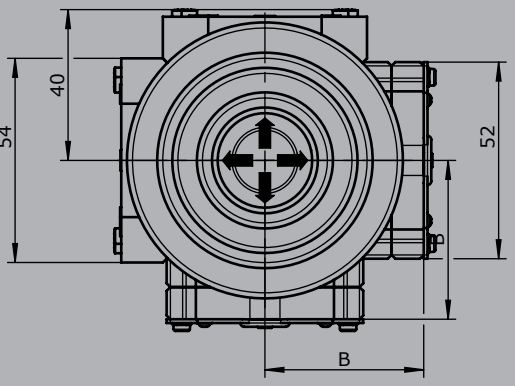
1

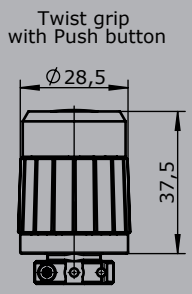


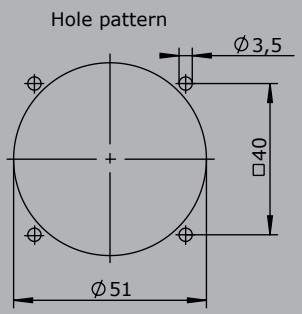












Type	No. of contacts	Dim.
01	2	36
02	4	45
03	6	54

V2019/1 15.03.2019

Multi-axis controller
V6 / VV6

The multi-axis controller V6 / VV6 is available in either single-axis or multi-axis options and is a robust controller used commonly in crane and hoisting applications. The modular design and many possibilities of combination with our handles enables the switching device to be used universally. The V6 / VV6 is resistant to oil, maritime conditions e.g. offshore / vessels, UV radiation typically from the sun.

Technical data

Mechanical life V6	10 million operating cycles
Mechanical life VV6	20 million operating cycles
Operation temperature	-40°C to +85°C
Degree of protection	up to IP54 front

Example

V62L	S5	P	T	-01 Z P	+03A R C	-A05 P134	+A110 C01	-X

Basic unit

V62L	2-axis left

Control-handle extended

S5	-20 mm

Gate

P	Cross gate

Grip / palm grip

T	Dead man

Axis 1 (direction 1-2)

01	2 contacts (2A 250 V AC15)
Z	Spring return
P	Potentiometer

Axis 2 (direction 3-4)

03A	6 contacts (4A 250 V AC15)
R	Friction brake
C	Opto-electronical encoder

Description axis 1 (direction 1-2)

A05	Arrangement MS21
P134	Potentiometer T396 2 x 5 kOhm

Description axis 2 (direction 3-4)

A110	Arrangement MS24-0
C01	OEC 2-1-1

Special model

X	Special / customer specified

Technical details may vary based on configuration or application! Technical data subject to change without notice!

Multi-axis controller
V6 / VV6

Combination possibilities with our handles

1

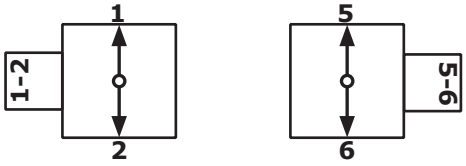
V62L	S5	P	T	-01 Z P	+03A R C	-A05 P134	+A110 C01	-X

Basic unit	
V61L	1-axis left
V61R	1-axis right
V61.1	1-axis
V64.1	1-axis
V62L	2-axis left
V62R	2-axis right
V64	2-axis
	reinforced version
VV61L	1-axis left
VV61R	1-axis right
VV61.1	1-axis
VV64.1	1-axis
VV62L	2-axis left
VV62R	2-axis right
VV64	2 axis

Control-handle extended	
	Standard 180 mm*
S3	-40 mm
S5	-20 mm
S8	+20 mm
Only available in combination with handle!	

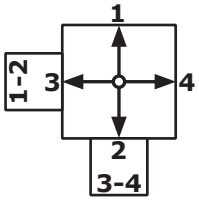
Gate	
P	Cross gate
P X	Special gate

Identification of the installation variants with switching directions:

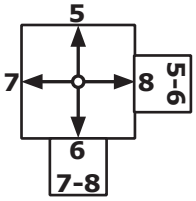


V61L/VV61L

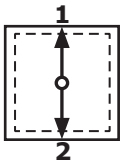
V61R/VV61R



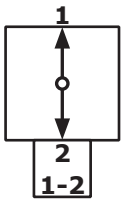
V62L/VV62L



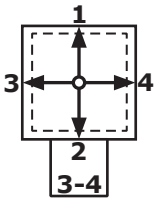
V62R/VV62R



V64.1/VV64.1



V61.1/VV61.1



V64/VV64

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

V62L	S5	P	T	-01 Z P	+03A R C	-A05 P134	+A110 C01	-X

Grip / palm grip

	Knob *(included in basic unit!)*
M	Mechanical zero interlock
MN	Mechanical zero interlock (push down)
T	Dead man
MT*	Mechanical zero interlock + dead man
H	Signal button
MH	Mechanical zero interlock + signal button
D	Push button
MD*	Mechanical zero interlock + push button
DV	Flush push button
MDV*	Mechanical zero interlock + flush push button
**Only possible with VV6!*	
B...	Palm grip B... *(see Palm grip page 157)*
Attention! When usage some handles reduces the deflection angle to 28 degrees!	

V62L	S5	P	T	-01 Z P	+03A R C	-A05 P134	+A110 C01	-X

Axis 1: direction 1-2 left / direction 5-6 right

	(Standard contacts gold-plated 2A 250 V AC15)				
01	☐ 2 contacts	Standard contact - arrangement see page 140			
02	☐ 4 contacts	z.B.			
03	☐ 6 contacts	A980	MS00		
04	☐ 8 contacts	A05	MS21		
05	☐ 10 contacts	A0500	MS21-00		
06	☐ 12 contacts	A110	MS24-0		
	Ⓐ = silver contacts (4A 250V AC15)	*A99 contact - arrangement according customer request*			
Z	Spring return				
R	Friction brake				
(P)	Possibility of mounting potentiometer and encoder (Gessmann-types)				
P	Potentiometer	P131	T396 2 x 0,5 kOhm	I max. 1 mA	
		P132	T396 2 x 1 kOhm	I max. 1 mA	
		P133	T396 2 x 2 kOhm	I max. 1 mA	
		P134	T396 2 x 5 kOhm	I max. 1 mA	
		P135	T396 2 x 10 kOhm	I max. 1 mA	
		More potentiometers on request!			
C	Encoder	C... Encoder see page 146			

1

V62L	S5	P	T	-01 Z P	+03A R C	-A05 P134	+A110 C01	-X

Axis 2: direction 3-4 left / Direction 7-8 right *(not applicable for V/VV61, V/VV61.1, V/VV64.1)*

(Standard contacts gold-plated 2A 250 V AC15)

01	☐	2 contacts	Standard contact - arrangement see page 140	
02	☐	4 contacts	z.B.	
03	☐	6 contacts	A980	MS00
04	☐	8 contacts	A05	MS21
05	☐	10 contacts	A0500	MS21-00
06	☐	12 contacts	A110	MS24-0
	A	= Silver contacts (4A 250 V AC15)	*A99 contact - arrangement according customer request*	

Z	Spring return			
R	Friction brake			
(P)	Possibility of mounting potentiometer and encoder (Gessmann-types)			
P	Potentiometer	P131	T396 2 x 0,5 kOhm	I max. 1 mA
		P132	T396 2 x 1 kOhm	I max. 1 mA
		P133	T396 2 x 2 kOhm	I max. 1 mA
		P134	T396 2 x 5 kOhm	I max. 1 mA
		P135	T396 2 x 10 kOhm	I max. 1 mA
		More potentiometers on request!		
C	Encoder	C... Encoder see page 146		

V62L	S5	P	T	-01 Z P	+03A R C	-A05 P134	+A110 C01	-X

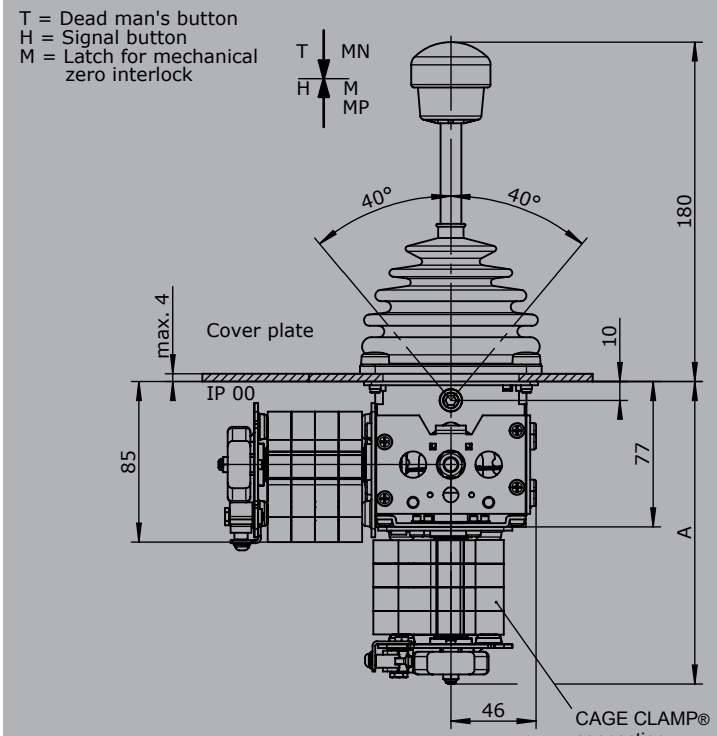
Special model

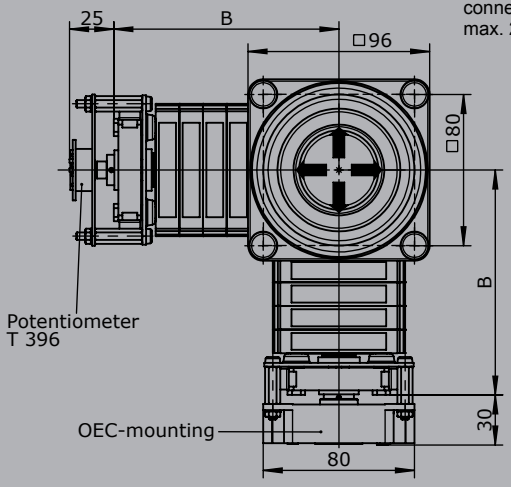
X	Special /customer specified

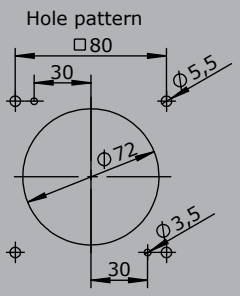
Attachments

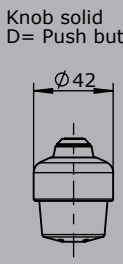
Indicating labels

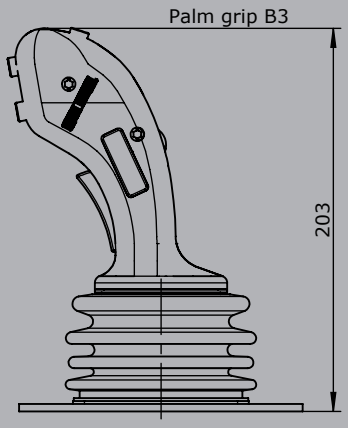
Indicating labels with engraving

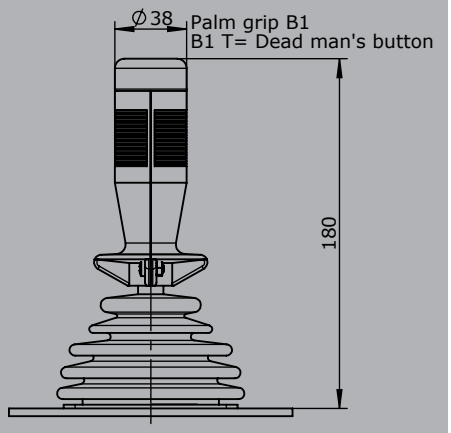


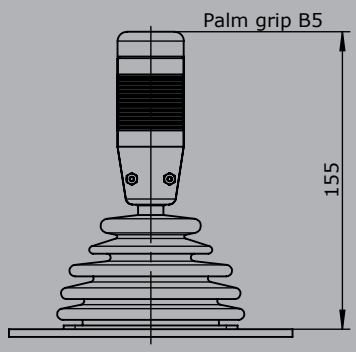












Type	No. of contacts	Dim. A	Dim. B
01	2	119	82
02	4	131	94
03	6	144	107
04	8	156	119
05	10	169	132
06	12	181	144

Multi-axis controller
VA6

The multi-axis controller VA6 is available in either single-axis or multi-axis options and is a robust explosion proof controller used commonly in crane and hoisting applications. The modular design enables the switching device to be used universally. The VA6 is resistant to oil, maritime conditions e.g. offshore / vessels, UV radiation typically from the sun.

Technical data

Mechanical life VA6	10 million operating cycles
Operation temperature	-40°C to +85°C
Degree of protection	IP54 front
	IP66 (microswitch and poteniometer)
Identifications	II 2G IIC T5 or T6
	II 2D T85° or T95°C
Group of devices	II
Equipment category	2D and 2G
Certificate	OBAC 17 ATEX 0126X

Example

VA62L	S5	P	T	-01 Z P	+03 R	-A05 P144	+A110

Basic unit

VA62L 2-axis left

Control-handle extended

S5 -20 mm

Gate

P Cross gate

Grip / palm grip

T Dead man

Axis 1 (direction 1-2)

01 2 contacts
Z Spring return
P Potentiometer

Axis 2 (direction 3-4)

03 6 contacts
R Friction brake

Description axis 1 (direction 1-2)

A05 Arrangement MS21

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

VA62L	S5	P	T	-01 Z P	+03 R	-A05 P144	+A110

Basic unit

VA61L	1-axis left
VA61R	1-axis right
VA61.1	1-axis
VA62L	2-axis left
VA62R	2-axis right

Control-handle extended

	Standard 180 mm
S3	-40 mm
S5	-20 mm
S8	+20 mm

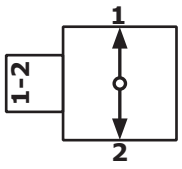
Gate

P	Cross gate
P X	Special gate

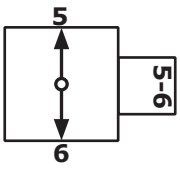
Grip / palm grip

	Knob *(included in basic unit!)*
M	Mechanical zero interlock
MN	Mechanical zero interlock (push down)
T	Dead man
H	Signal button
D	Push button
DV	Flush push button

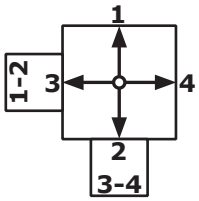
Identification of the installation variants with switching directions:



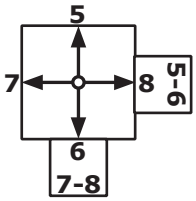
VA61L



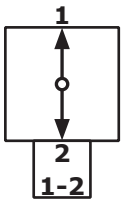
VA61R



VA62L



VA62R



VA61.1

VA62L	S5	P	T	-01 Z P	+ 03 R	A05	P144	+ A110

Axis 1: direction 1-2 left / direction 5-6 right

	(contacts gold-plated 2A 250V AC15, ⟨Ex⟩ II 2G Ex d IIC T6, connecting cable 6 m)				
01	2 contacts	Standard contact - arrangement see page 140			
02	4 contacts	z.B.			
03	6 contacts	A980	MS00		
04	8 contacts	A05	MS21		
05	10 contacts	A0500	MS21-00		
06	12 contacts	A110	MS24-0		
		A99 contact - arrangement according customer request			
Z	Spring return				
R	Friction brake				
P	Potentiometer Ex	P144	T1350 2 x 5 kOhm	I max. 1 mA	
		P145	T1350 2 x 10 kOhm	I max. 1 mA	
			⟨Ex⟩ II 2G Ex d IIC T6 Gb		
			Connecting cable 6 m		

Technical details may vary based on configuration or application! Technical data subject to change without notice!

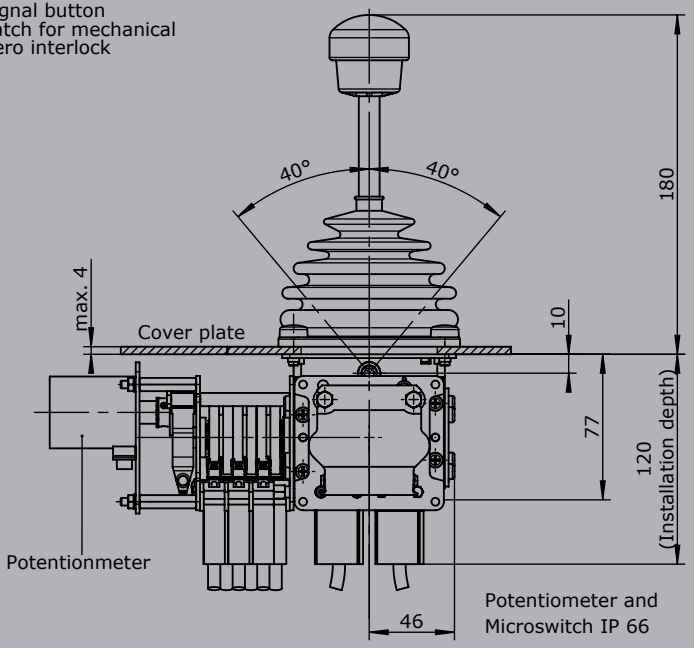
	VA62L	S5	P	T	-01 Z P	+03 R	-A05 P144	+A110

Axis 2: direction 3-4 left / Direction 7-8 right *(not applicable for VA61, VA61.1)*

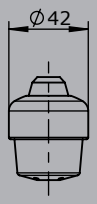
(contacts gold-plated 2A 250 V AC15, Ex II 2G Ex d IIC T6, connection cable 6 m)

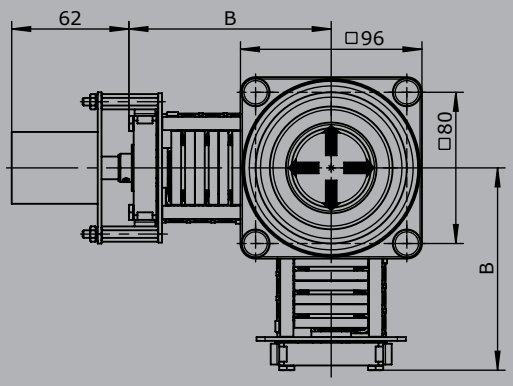
01	2 contacts	Standard contact - arrangement see page 140		
02	4 contacts	z.B.		
03	6 contacts	A980	MS00	
04	8 contacts	A05	MS21	
05	10 contacts	A0500	MS21-00	
06	12 contacts	A110	MS24-0	
		A99 contact - arrangement according customer request		
Z	Spring return			
R	Friction brake			
P	Potentiometer Ex	P144	T1350 2 x 5 kOhm	I max. 1 mA
		P145	T1350 2 x 10 kOhm	I max. 1 mA
			Ex II 2G Ex d IIC T6 Gb	
			connection cable 6 m	

T = Dead man's button
H = Signal button
M = Latch for mechanical zero interlock

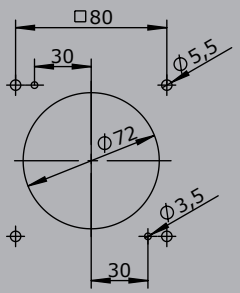


Knob solid
D= Push button





Hole pattern



Type	No. of contacts	Dim. B
01	2	82
02	4	94
03	6	107
04	8	119
05	10	132
06	12	144

Multi-axis controller
V11

The multi-axis controller V11 is a robust switching device for crane and hoisting applications. The modular design enables the switching device to be used universally. The V11 is resistant to oil, maritime conditions e.g. offshore / vessels, UV radiation typically from the sun.

1

Technical data

Mechanical life	10 million operating cycles
Operation temperature	-40°C to +85°C
Degree of protection	up to IP54 front

Example

V11L	S5	P	T	-01 Z P	+03A R	-A05 P324	+A110	-X

Basic unit

V11L 2-axis left

Control-handle extended

S5 -20 mm

Gate

P Cross gate

Grip / palm grip

T Dead man

Axis 1 (direction 1-2)

01 2 contacts (2A 250 V AC15)

Z Spring return

P Potentiometer

Axis 2 (direction 3-4)

03A 6 contacts (4A 250 V AC15)

R Friction brake

Description axis 1 (direction 1-2)

A05 Arrangement MS21

P324 Potentiometer T365 2 x 5 kOhm

Description axis 2 (direction 3-4)

A110 Arrangement MS24-0

Special model

X Special / customer specified

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Combination possibilities with our handles

V11L S5 P T - 01 Z P + 03A R P - A05 P324 + A110 P325 - X

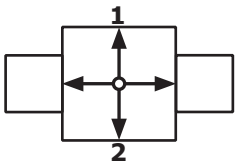
Basic unit	
V11L	2-axis left
V11R	2-axis right
V11.1L	1-axis left
V11.1R	1-axis right

Control-handle extended	
	Standard 120 mm*
S5	-20 mm
S8	+20 mm
*Only available in combination with handle!	

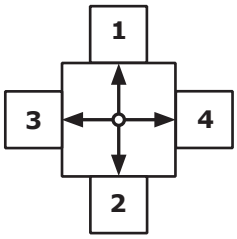
Gate	
P	Cross gate
P X	Special gate

Grip / palm grip	
	Knob *(included in basic unit!)*
M	Mechanical zero interlock
MN	Mechanical zero interlock (push down)
T	Dead man
H	Signal button
D	Push button
DV	Flush push button
B...	Palm grip B... *(see page palm grip 157)*

Identification of the installation variants with switching directions:



V11.1



V11

1

V11L S5 P T - 01 Z P + 03A R P - A05 P324 + A110 P325 - X

Axis 1: direction 1-2 left / direction 5-6 right

(Standard contacts gold-plated 2A 250 V AC15)

01	☐	2 contacts	Standard contact - arrangement see page 140	
02	☐	4 contacts	e.g.	
03	☐	6 contacts	A980	MS00
			A05	MS21
			A0500	MS21-00
			A110	MS24-0
			(Max. 4 steps per switching direction possible!)	
	A	= Silver contacts (4A 250 V AC15)	*A99 contact - arrangement according customer request*	

Z	Spring return			
R	Friction brake			
(P)	Possibility of mounting potentiometer and encoder (Gessmann-types)			
P	Potentiometer	P324	T365 2 x 5 kOhm	I max. 1 mA
		P325	T365 2 x 10 kOhm	I max. 1 mA
		More potentiometers on request!		
C	Encoder	C... Encoder see page 146		

V11L S5 P T - 01 Z P + 03A R P - A05 P324 + A110 P325 - X

Axis 2: direction 3-4 left / direction 7-8 right *(not applied for V11.1)*

(Standard contacts gold-plated 2A 250 V AC15)

01	☐	2 contacts (2A 250V AC15)	Standard contact - arrangement see page 140	
02	☐	4 contacts (2A 250V AC15)	z.B.	
03	☐	6 contacts (2A 250V AC15)	A980	MS00
			A05	MS21
			A0500	MS21-00
			A110	MS24-0
			(Max. 4 steps per switching direction possible!)	
	A	= Silver contacts (4A 250 V AC15)	*A99 contact - arrangement according customer request*	

Z	Spring return			
R	Friction brake			
(P)	Possibility of mounting potentiometer and encoder (Gessmann-types)			
P	Potentiometer	P324	T365 2 x 5 kOhm	I max. 1 mA
		P325	T365 2 x 10 kOhm	I max. 1 mA
		More potentiometers on request!		
C	Encoder	C... Encoder see page 146		

V11L S5 P T - 01 Z P + 03A R P - A05 P324 + A110 P325 - X

Special model

X	Special / customer specified

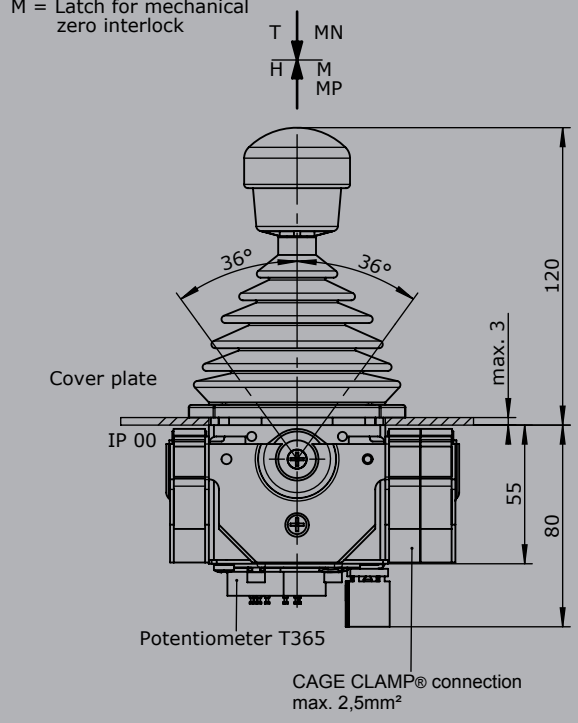
Attachments

Indicating labels
Indicating labels with engraving

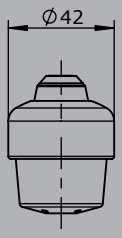
Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

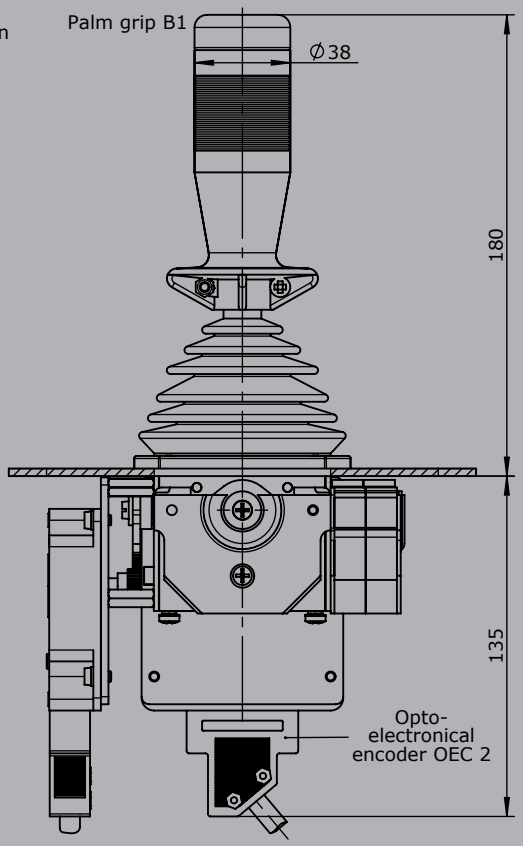
T = Dead man's button
H = Signalbutton
M = Latch for mechanical zero interlock

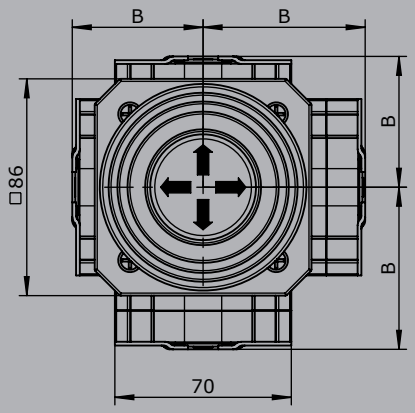


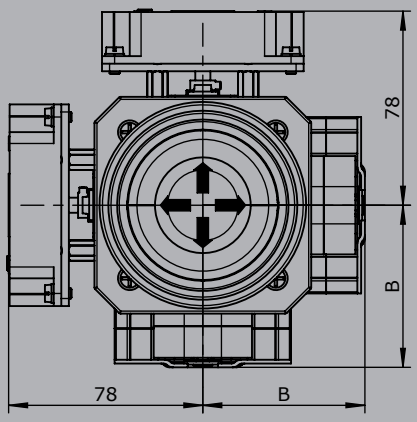
Knob solid
D= Push button



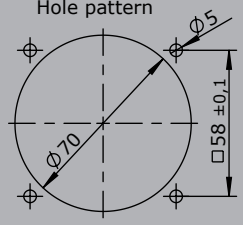
Palm grip B1







Hole pattern



Type	No. of contacts	Dim. B
01	2	51
02	4	64
03	6	76

Double-handle controller
D85

The double-handle controller D85 is a robust switching device for hoisting applications. The modular design enables the switching device to be used universally. The double-handle controller is resistant to oil, maritime conditions e.g. offshore /vessels, UV radiation typically from the sun.

1

Technical data

Mechanical life D85	8 million operating cycles
Operation temperature	-40°C to +85°C
Degree of protection	IP54 front

Example

D85	S5	Q	/	Q	-Z	+R	-B	-E...	-S..	-X

Basic unit

D85

Control-handle extended

	Standard 160 mm*
S5	-20 mm
S8	+20 mm

**Only available in combination with handle!*

Grip- control-handle left

	Knob
M	Mechanical zero interlock
T	Dead man
H	Signal button
D	Push button
Q	T-grip
QD	T-grip with push button side
B10...	Palm grip B10... *(see page 197)*

Grip- control-handle right

See grip-control-handle left

Axis 1: direction 1-2 left

Z	Spring return
R	Friction brake

Axis 2: direction 3-4 left

Z	Spring return
R	Friction brake

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Double-handle controller
D85

GESSMANN

D85 S5 Q / Q -Z +R -B -E... -S... -X

Cover housing

B	Cover housing

Interface *(description see following pages)*

E1xx	Voltage output
E2xx	Current output
E3xx	CAN-interface
E4xx	CANOpen Safety
E5xx	Profibus DP interface
E6xx	Profinet
E7xx	Profinet safe
E8xx	PWM output
E9xx	Other outputs

Plug connectors

S..	Standard plug connectors *(see page 138)*

Special model

X	Special/ customer specified

Combination possibilities with our handles

Digital output			
Supply voltage	9-32 V DC		
Current carrying capacity	Direction signal 150 mA		
	Zero position signal 500 mA		
Mounting depth A	85 mm		
Wiring	Cable 500mm long without plug connector		
	Optional with plug connector *(standard plug connectors see page 138)*		S
2 direction signals + 1 zero position signal (galvanically isolated) per axis			
	2 axis	E001 2	

Voltage output (not stabilized)			
Supply voltage	4,75-5,25 V DC		
Current carrying capacity	Direction signal 8 mA		
Mounting depth A	85 mm		
Wiring	Cable 500 mm long without plug connector		
	Optional with plug connector *(standard plug connectors see page 138)*		S
0,5...2,5...4,5V redundant + 2 direction signals per axis			
	2 Achsen	E104 2	
	Output options		
	Characteristic:		
	Inverse dual	1	
	Dual	2	
	Inverse dual with dead zone +/- 3° (standard)	3	
	Dual with dead zone +/- 3°	4	

Technical details may vary based on configuration or application! Technical data subject to change without notice!

1

Voltage output				
Supply voltage	9-32 V DC (*11,5-32)			
Current carrying capacity	Direction signal 150 mA			
	Zero position signal 500 mA			
Mounting depth A	85 mm			
Wiring	Cable 500 mm long without plug connector			
	Optional with plug connector *(standard plug connectors see page 138)*			S
0,5...2,5...4,5 V redundant + 2 direction signals + 1 zero position signal (galvanically isolated) per axis				
		2 axis	E112 2	
0...5...10 V redundant + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, supply voltage 11,5 - 32 V DC				
		2 axis	E132 2	
10...0...10 V + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, supply voltage 11,5 - 32 V DC, sensor redundant with error monitoring and error signal				
		2 axis	E136 2	
10...0...10 V + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, supply voltage 11,5 - 32 V DC, sensor redundant with error monitoring				
		2 axis	E138 2	
		Output options		
		Characteristic:		
		Inverse dual *¹	1	
		Dual *¹	2	
		Inverse dual with dead zone +/- 3° *¹ (standard)	3	
		Dual with dead zone +/- 3° *¹	4	
		*¹ *not combinable with output E136X and E138X*		
		Single *²	5	
		Single with dead zone +/- 3° *² (standard)	6	
		*² *not combinable with output E112X and E132X*		
		Digital output signals:		
		Output signals standard:		
Voltage output with other value on request!		Direction signals and zero position signals 1,5A 24 V DC	1	

Current output

Supply voltage	9-32 V DC			
Current carrying capacity	Direction signal 150 mA			
	Zero position signal 500 mA			
Mounting depth A	85 mm			
Wiring	Cable 500 mm long without plug connector			
	Optional with plug connector *(standard plug connectors see page 138)*			S
0...10...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, sensor redundant with error monitoring and error signal				
	2 axis	E206 2		
20...0...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, sensor redundant with error monitoring and error signal				
	2 axis	E208 2		
4...12...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, sensor redundant with error monitoring and error signal				
	2 axis	E214 2		
20...4...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, sensor redundant with error monitoring and error signal				
	2 axis	E216 2		
+20...0...-20 mA + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, sensor redundant with error monitoring and error signal				
	2 axis	E226 2		
	Output options			
	Single		5	
	Single with dead zone +/- 3° (standard)		6	
	Digital output signals:			
	Output signals standard:			
	Direction signals and zero position signals 1,5A 24 V DC			1

Current output with other value on request!

CAN

Supply voltage	9-36 V DC
Idle current consumption	120 mA
Current carrying capacity	Direction signal 100 mA
	Zero position signal 100 mA
	External digital output for LEDs 5-30 mA (dependent on the number of LED`s)
	Digital switching output (potential-free) 100 mA
Mounting depth A	E3091: 85 mm
	E3091X: 105 mm
	E3101X - E3103X: 105 mm
	E3104X - E3105X: 125 mm
Protocol	CANOpen CiA DS 301 or SAE J 1939
Baud rate	125 kBit/s to 1 Mbit/s (standard 250 kBit/s)
Output value	255...0...255
Wiring	CAN (IN) cable 300 mm with plug connector M12 (male)
	CAN (OUT) cable 300 mm with plug connector M12 (female)
	External in-/outputs cable 300 mm without plug connector
	External in-/outputs cable 300 mm without plug connector (additionally from 32 in-/outputs)

Technical details may vary based on configuration or application! Technical data subject to change without notice!

	Optional with plug connector *(standard plug connectors see page 138)*	S
CAN expansion stage 1	E309 1	
- 7 analoge Joystickachsen		
- 16 digitale Joystickfunktionen		
- Input for capacitive sensor		
With additional external in-/outputs		
- 8 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 8 external digital inputs	2	
- 16 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 16* external digital inputs	3	
External LED-outputs can be used in the grip for LEDs		
CAN expansion stage 2	E310 1	
- 10 analog joystick axis		
- 16 digital joystick functions		
- 2 inputs for capacitive sensor		
With additional external in-/outputs		
- 8 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 8 external digital inputs	2	
- 16 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 16* external digital inputs	3	
- 24 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 24 external digital inputs	4	
- 32 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 32* external digital inputs	5	
External LED-outputs can be used in the grip for LEDs		
Main-axis with additional digital-/analog outputs separately wired (not via CAN)		
- 2 direction signals + 1 zero position signal (potential-free) per main-axis		
Additional analog outputs on request!		

*With the use of capacitive sensor, the external digital inputs reduce by one input!

*With the use of capacitive sensor, the external digital inputs reduce by one input!

CANopen Safety	
Supply voltage	9-36 V DC
Idle current consumption	120 mA
Current carrying capacity	Direction signal 100 mA
	Zero position signal 100 mA
	External digital output for LEDs 5-30 mA (depending on the number of LED`s)
	Digital switching output (potential-free) 100 mA
Mounting depth A	E4091: 85 mm
	E4091X: 105 mm
	E4101X - E4103X: 105 mm
	E4104X - E4105X: 125 mm
Protocol	CAN Safety CIA 304
Baud rate	125 kBit/s to 1 MBit/s (Standard 250 kBits)
Output value	255...0...255
Wiring	CAN (IN) cable 300 mm with plug connector M12 (male)
	CAN (OUT) cable 300 mm with plug connector M12 (female)
	External in-/outputs cable 300 mm without plug connector
	External in-/outputs cable 300 mm without plug connector (additionally from 32 in-/outputs)

V2019/1 15.03.2019

	Optional with plug connector *(standard plug connectors see page 138)*	S
CANOpen safety expansion stage 1	E409 1	
- 7 analog joystick axis		
- 16 digital joystick functions		
- Input for capacitive sensor		
With additional external in-/outputs		
- 8 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 8 external digital inputs	2	
- 16 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 16* external digital inputs	3	
External LED-outputs can be used in the grip for LEDs		
**CANOpen safety expansion stage 2*		
CANOpen safety expansion stage 2	E410 1	
- 10 analog joystick axis		
- 16 digital joystick functions		
With additional external in-/outputs		
- 8 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 8 external digital inputs	2	
- 16 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 16* external digital inputs	3	
- 24 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 24 external digital inputs	4	
- 32 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 32* external digital inputs	5	
External LED-outputs can be used in the grip for LEDs		
**CANOpen safety expansion stage 2*		
Main-axis with additional digital-/analog outputs separately wired (not via CAN)		
- 2 direction signals + 1 zero position signal (potential-free) per main-axis	3	
Additional analog outputs on request!		

Profibus DP	
Supply voltage	18-30 V DC
Baud rate	to 12 MBit/s
Output value	0...128...255
Mounting depth A	105 mm
Wiring	Profibus, cable 100 mm with plug D-Sub 9
	Supply voltage (if applicable contact wiring) cable 12 x 0,25 mm² 300 mm long without plug connector
	External in-/outputs, cable 300 mm long without plug connector

	Optional with plug connector *(standard plug connectors see page 138)*	S
Profibus DP	E501 1	
- 4 analog joystick axis		
- 16 digital joystick function		
- Input for capacitive sensor		
With additional external in-/outputs		
- 8 external LED-output, 8 external digital input	2	
- 16 external LED-output, 16 external digital input	3	
External LED-outputs can be used in the grip for LEDs		
With additional contact equipment separately wired (not via profibus)		
- 2 direction contacts + 1 zero position contact (not potential-free) per main-axis	1	
- 1 zero position contact (potential-free) per main-axis	2	

Technical details may vary based on configuration or application! Technical data subject to change without notice!

1

Profinet			
Supply voltage	18-30 V DC		
Baud rate	to 100 MBit/s		
Output value	0...512...1023		
Mounting depth A	105 mm		
Verdrahtung	Profinet (1), cable 300 mm with M12 plug connector (female)		
	Profinet (2), cable 300 mm with M12 plug connector (female)		
	Supply voltage (if applicable contact wiring) cable 12 x 0,25 mm² 300 mm long without plug connector		
	External in-/outputs, cable 300 mm long without plug connector		
	Optional with plug connector *(standard plug connectors see page 138)*		S
Profinet		E601 1	
- 4 analog joystick axis			
- 16 digital joystick functions			
- Input for capacitive sensor			
With additional external in-/outputs			
- 8 external LED-outputs, 8 external digital inputs		2	
- 16 external LED-outputs, 16 external digital inputs		3	
**External LED-outputs can be used in the grip for LEDs*			
Main-axis with additional signals separately wired (not via profinet)			
- 2 direction signals + zero position signal (potential-free) per main-axis		3	

Profinet Safe			
Supply voltage	18-30 V DC		
Baud rate	to 12 MBit/s		
Output value	0...512...1023		
Mounting depth A	105 mm		
Wiring	Profinet (1), cable 300 mm with M12 plug connector (female)		
	Profinet (2), cable 300 mm with M12 plug connector (female)		
	Supply voltage (if applicable contact wiring) cable 12 x 0,25 mm² 300 mm long without plug connector		
	External in-/outputs, cable 300 mm long without plug connector		
	Optional with plug connector *(standard plug connectors see page 138)*		S
- 4 analog joystick axis		E701 1	
- 16 digital joystick functions			
- Input for capacitive sensor			
With additional external in-/outputs			
- 8 external LED-outputs, 8 external digital inputs		2	
- 16 external LED-outputs, 16 external digital inputs		3	
**External LED-outputs can be used in the grip for LEDs*			
Main-axis with additional signals separately wired (not via profinet safe)			
- 2 direction signals + zero position signal (potential-free) per main-axis		3	

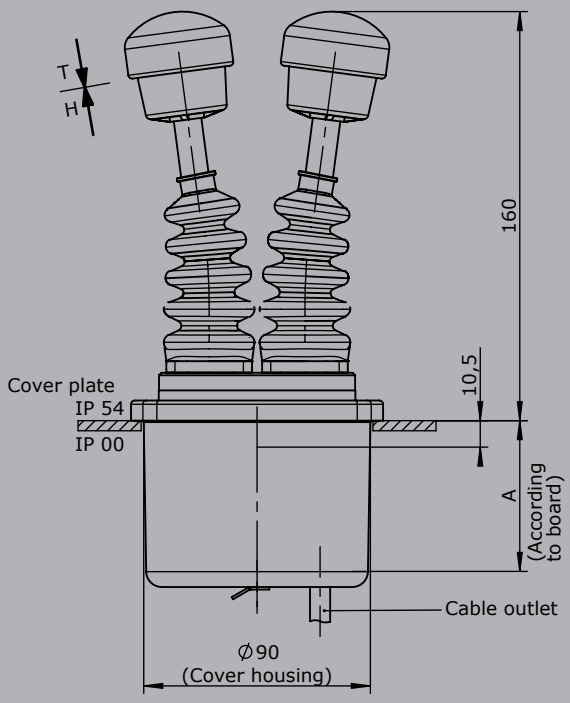
PWM Outputs				
Supply Voltage:	9-32V DC			
Valve control current:	max. 3 A			
PWM-frequency:	1225 Hz			
Dither frequency:	1...250 Hz adjustable			
Mounting depth A	85 mm			
Other features	Creep speed per axis			
	5 configurable switching outputs 2A			
	LED outputs for status indication			
	Input for redundant deadman			
Wiring:	Built-in socket Phoenix 2-pole (power supply)			
	Cable 1 (PWM) 12 x 1mm² 300 mm long without plug			
	Cable 2 (switching output) 12 x 1mm² 300 mm long without plug			
	Cable 3 (creep speed / dead man) 14x0,25mm² 300mm long without plug			
	Optional with plug connector *(standard plug connectors see page 138)*			S
PWM Output 0-3 A for 2 proportional valve magnets per axis		1 axis	E801 1	
		2 axis	2	
		3 axis	3	
		4 axis	4	

Other outputs				
Voltage output for PVG32 0,25...0,5...0,75 Us, power supply 9-32 V DC				
Wiring:	Cable 14 x 0,25 mm² 300 mm long without plug connector			
	Optional with plug connector *(standard plug connectors see page 138)*			S
		2 axis	E907 2	
Main-axis with additional direction contacts per main-axis				4
8 Bit Gray-Code with direction signals per main-axis, supply voltage 9-36 V DC				
Wiring:	Cable 37 x 0,14 mm² 300 mm long without plug connector (axis 1+2)			
	Optional with plug connector *(standard plug connectors see page 138)*			S
		2 axis	E903 2	
8 Bit Binär-Code with direction signals per main-axis, supply voltage 9-36 V DC				
Wiring:	Cable 37 x 0,14 mm² 300 mm long without plug connector (axis 1+2)			
	Optional with plug connector *(standard plug connectors see page 138)*			S
		2 axis	E904 2	

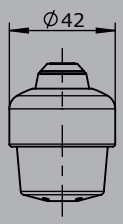
Attachments	
Z01 Mating connector (CAN) M12 (male insert) with 2 m cable	20201140
Z02 Mating connector (CAN) M12 (female contact) with 2 m cable	20202298
Z03 Mating connector (Profibus) straight	22201440
Z04 Mating connector (Profibus) 90° angled	22201741
Z05 Mating connector (Profinet) M12 (male insert) with 2 m cable	5300000222

1

T = Dead man's button
H = Signal button

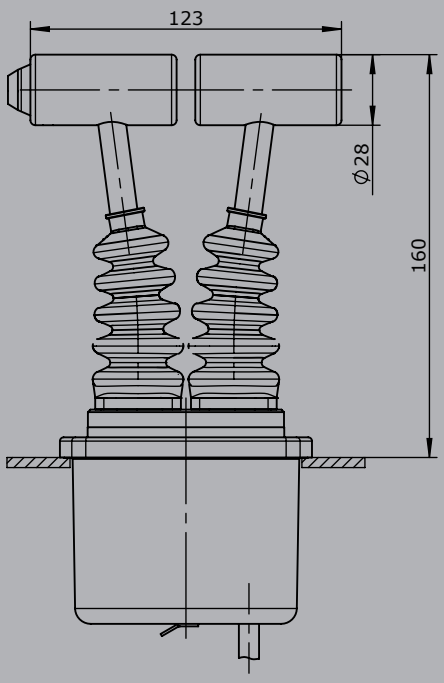


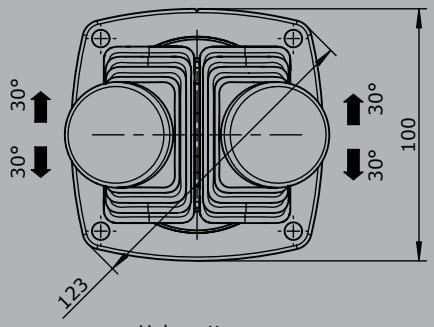
Knob solid
D= Push button



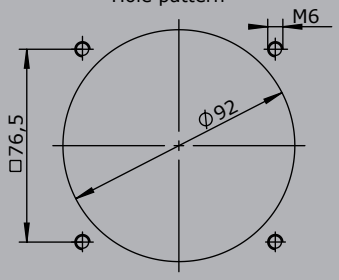
To build in:
Direction 1-2
Direction 3-4

T - grip
D= Push button





Hole pattern



Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Double-handle controller
D8

GESSMANN

The double-handle controller D8 is a robust switching device for the hoisting applications. The modular design enables the switching device to be used universally. The double-handle controller is resistant to oil, maritime conditions e.g. offshore /vessels, UV radiation typically from the sun.

1

Technical data

Mechanical life D8	8 million operating cycles
Operation temperature	-40°C to +85°C
Degree of protection	up to IP54 front

Example

D8	S5	Q	/ Q	-2ZP	+3 RP	-B	-A05 P184	+A050 P184	-E9012	-S...	-X
Basic unit											
D8											
Control-handle extended											
S5 -20 mm											
Grip- control-handle left											
Q T-grip											
Grip- control-handle right											
Q T-grip											
Axis 1 (direction 1-2)											
2 2 contacts (1,5A 24 V DC13)											
Z Spring return											
P Potentiometer											
Axis 2 (direction 3-4)											
3 3 contacts (1,5A 24 V DC13)											
R Friction brake											
P Potentiometer											
Cover housing											
B Cover housing											
Description axis 1 (direction 1-2)											
A05 Arrangement MSP21											
P184 Potentiometer T301 2 x 5 kOhm											
Description axis 2 (direction 3-4)											
A050 Arrangement MSP21-0											
P184 Potentiometer T301 2 x 5 kOhm											
Interface											
E9012 Potentiometer output for proportional valve PVG32											
Plug connector											
S... Standard plug connector (see page 138)											
Special model											
X Special / customer specified											

Technical details may vary based on configuration or application! Technical data subject to change without notice!

Double-handle controller
D8

D8	S5	Q / Q	-2 Z P	+3 R P	-B	-A05	P184	+A050	P184	-E9012	-X

Basic unit

D8

Control-handle extended

	Standard 160 mm*
S5	-20 mm
S8	+20 mm

**Only in combination with knob!*

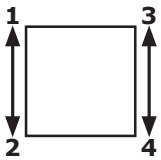
Grip- control-handle left

	Knob
M	Mechanical zero interlock
T	Dead man
H	Signal button
D	Push button
Q	T-grip
QD	T-grip with push button side
B10...	Palm grip B10... *(see page 197)*

Grip- control-handle right

	Knob
M	Mechanical zero interlock
T	Dead man
H	Signal button
D	Push button
Q	T-grip
QD	T-grip with push button side
B10...	Ball handle B10... *(see page 197)*

Identification of the installation variants with switching directions:



D8

D8	S5	Q / Q	-2 Z P	+3 R P	-B	-A05	P184	+A050	P184	-E9012	-X

Axis 1: direction 1-2 left

1	1 contact	Standard contact - arrangement see page 140		
2	2 contacts	e.g.		
3	3 contacts	A98		
		A05		
		A050		
		A99 contact - arrangement for customer request		
Z	Spring return			
R	Friction brake			
(P)	Mounting options for potentiometer and encoder (Gessmann-types)			
P	Potentiometer	P181	T301 2 x 0,5 kOhm	I max. 1 mA
		P182	T301 2 x 1 kOhm	I max. 1 mA
		P183	T301 2 x 2 kOhm	I max. 1 mA
		P184	T301 2 x 5 kOhm	I max. 1 mA
		P185	T301 2 x 10 kOhm	I max. 1 mA
		More potentiometers on request!		
H	Hall-potentiometer	E14811	0,5...2,5...4,5 V / 4,5...2,5...0,5 V	

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Double-handle controller
D8

Combination possibilities with our handles

1

	D8	S5	Q / Q	-2 Z P	+3 R P	-B	A05 P184	+A050	P184	-E9012	-X

Axis 2: direction 3-4

1	1 contacts	Standard contact - arrangement see page 140		
2	2 contacts	e.g.		
3	3 contacts	A98		
		A05		
		A050		
		A99 contact - arrangement for customer request		
Z	Spring return			
R	Friction brake			
(P)	Mounting options for potentiometer and encoder (Gessmann-types)			
P	Potentiometer	P181	T301 2 x 0,5 kOhm	I max. 1 mA
		P182	T301 2 x 1 kOhm	I max. 1 mA
		P183	T301 2 x 2 kOhm	I max. 1 mA
		P184	T301 2 x 5 kOhm	I max. 1 mA
		P185	T301 2 x 10 kOhm	I max. 1 mA
		More potentiometers on request!		
H	Hall-Potentiometer	E14811	0,5...2,5...4,5 V / 4,5...2,5...0,5 V	

	D8	S5	Q / Q	-2 Z P	+3 R P	-B	A05 P184	+A050 P184	-E9012	-X

Cover housing

B	Cover housing

Interface

E901	1	Potentiometer output for proportional valve PVG32 0,25...0,5...0,75 Us	1 axis
	2		2 axis

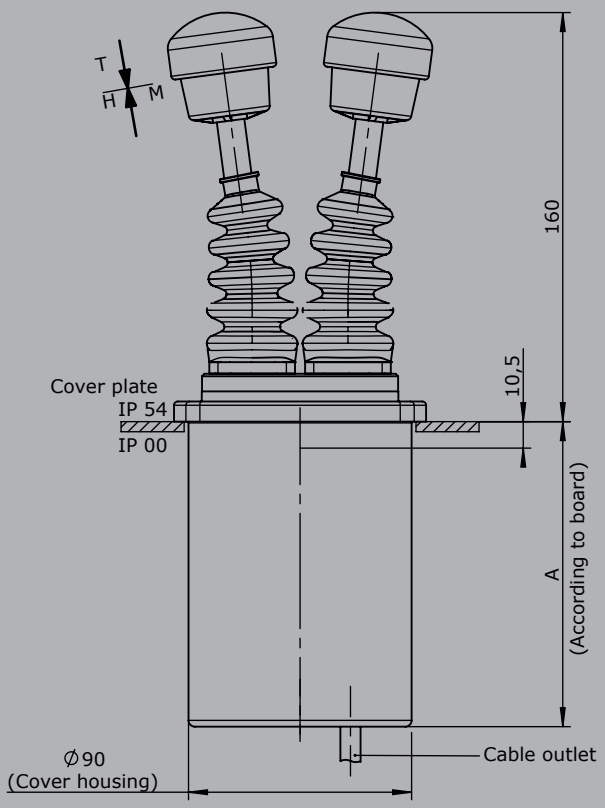
Special model

X	Special / customer specified

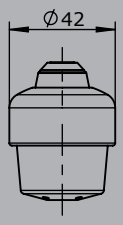
Technical details may vary based on configuration or application! Technical data subject to change without notice!

1

T = Dead man's button
H = Signal button
M = Latch for mechanical zero interlock

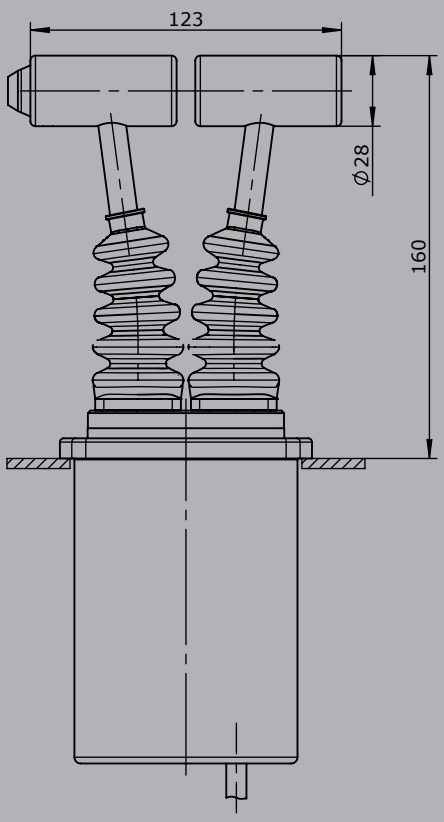


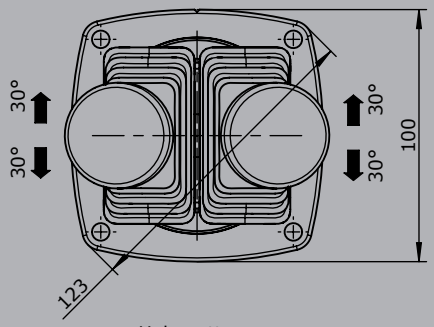
Knob solid
D= Push button



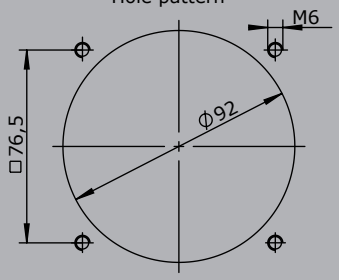
To build in:
Direction 1-2
Direction 3-4

T - grip
D= Push button





Hole pattern



Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Double-handle controller
D64 / DD64

The double-handle controller D64/DD64 is available in either single-axis or multi-axis options and is a robust controller used commonly in electro-hydraulic applications. The modular design enables the switching device to be used universally. The double-handle controller is resistant to oil, maritime conditions e.g. offshore / vessels, UV radiation typically from the sun.

Technical data

Mechanical life D64	10 million operating cycles
Mechanical life DD64	20 million operating cycles
Operation temperature	-40°C to +85°C
Degree of protection	up to IP54 front

Example

D64	S5	Q	/	Q	-01 Z P	+03A R C	-A05 P134	+A110 C01	-X

Basic unit

D64

Control-handle extended

S5 -20 mm

Grip- control handle left

Q T-grip

Grip- control handle right

Q T-grip

Axis 1 (direction 1-2)

01 2 contacts (2A 250 V AC15)

Z Spring return

P Potentiometer

Axis 2 (direction 3-4)

03A 6 contacts (4A 250 V AC15)

R Friction brake

C Opto-electronical encoder

Description axis 1 (direction 1-2)

A05 Arrangement MSP21

P134 Potentiometer T396 2 x 5 kOhm

Description axis 2 (direction 3-4)

A110 Arrangement MSP 24-0

C01 OEC 2-1-1

Special model

X Special / customer specified

Technical details may vary based on configuration or application! Technical data subject to change without notice!

Double-handle controller
D64 / DD64

Combination possibilities with our handles

1

	D64	S5	Q	/	Q	-01 Z P	+03 A R C	-A05	P134	+A110	C01	-X

Basic unit

D64	
	Reinforced version
DD64	

Control-handle long

	Standard 180 mm*
S5	-20 mm
S8	+20 mm
Only in combination with knob!	

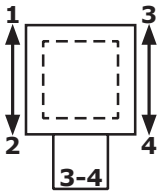
Grip- control handle left

	Knob
M	Mechanical zero interlock
T	Dead man
H	Signal button
D	Push button
DV	Flush push button
Q	T-grip
QM	T-grip with mechanical zero interlock
QMH	T-grip with mechanical zero interlock + signal contact
QH	T-grip + signal button
QD	T-grip + push button side
B10	Palm grip B10... *(see page 197)*

Grip- control handle right

	Knob
M	Mechanical zero interlock
T	Dead man
H	Signal button
D	Push button
DV	Flush push button
Q	T-grip
QM	T-grip with mechanical zero interlock
QMH	T-grip with mechanical zero interlock + signal contact
QH	T-grip with signal button
QD	T-grip push button side
B10...	Palm grip B10... *(see page 197)*

Identification of the installation variants with switching directions:



D64 / DD64

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

D64	S5	Q	/	Q	-01 Z P	+03 A R C	-A05	P134	+A110	C01	-X

Axis 1: direction 1-2

(Standard contacts gold-plated 2A 250 V AC15)

01	☐	2 contacts	Standard contacts - see arrangement page 140	
02	☐	4 contacts	e.g.	
03	☐	6 contacts	A980	MS00
04	☐	8 contacts	A05	MS21
05	☐	10 contacts	A0500	MS21-00
06	☐	12 contacts	A110	MS24-0
	Ⓐ	= Silver contact (4A 250 V AC15)	*A99 contact - arrangement according customer request*	

Z	Spring return			
R	Friction brake			
(P)	Mounting options for potentiometer and encoder (Gessmann-types)			
P	Potentiometer	P131	T396 2 x 0,5 kOhm	I max. 1 mA
		P132	T396 2 x 1 kOhm	I max. 1 mA
		P133	T396 2 x 2 kOhm	I max. 1 mA
		P134	T396 2 x 5 kOhm	I max. 1 mA
		P135	T396 2 x 10 kOhm	I max. 1 mA
		More potentiometers on request!		
C	Encoder	C... Encoder see page 146		

Axis 2: direction 3-4

(Standard contacts gold plated 2A 250 V AC15)

01	☐	2 contacts	Standard contact - see arrangement on page 140	
02	☐	4 contacts	e.g.	
03	☐	6 contacts	A980	MS00
04	☐	8 contacts	A05	MS21
05	☐	10 contacts	A0500	MS21-00
06	☐	12 contacts	A110	MS24-0
	Ⓐ	= Silver contacts (4A 250 V AC15)	*A99 contact - arrangement according customer request*	

Z	Spring return			
R	Friction brake			
(P)	Mounting options for potentiometer and encoder (Gessmann-types)			
P	Potentiometer	P131	T396 2 x 0,5 kOhm	I max. 1 mA
		P132	T396 2 x 1 kOhm	I max. 1 mA
		P133	T396 2 x 2 kOhm	I max. 1 mA
		P134	T396 2 x 5 kOhm	I max. 1 mA
		P135	T396 2 x 10 kOhm	I max. 1 mA
		More potentiometers on request!		
C	Encoder	C... Encoder see page 146		

D64	S5	Q	/	Q	-01 Z P	+03 A R C	-A05	P134	+A110	C01	-X

Special model

X Special / customer specified

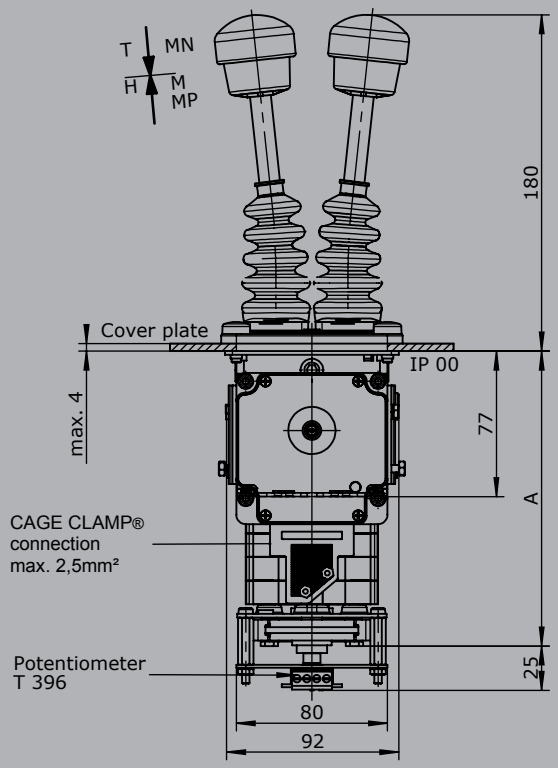
1

Attachments

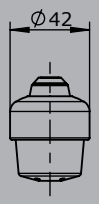
Indicating labels

Indicating labels engraved

T = Dead man's button
H = Signal button
M = Latch for mechanical zero interlock

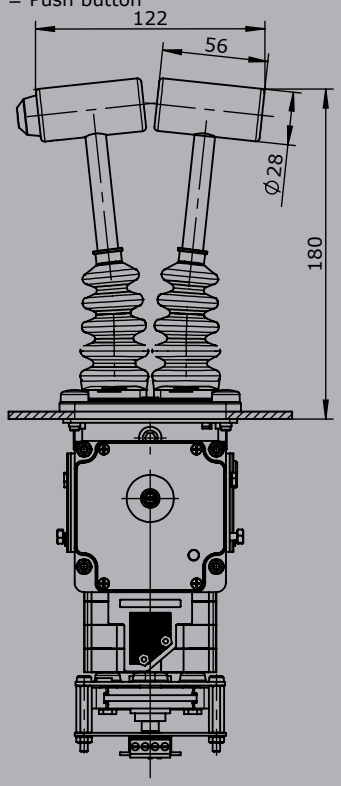


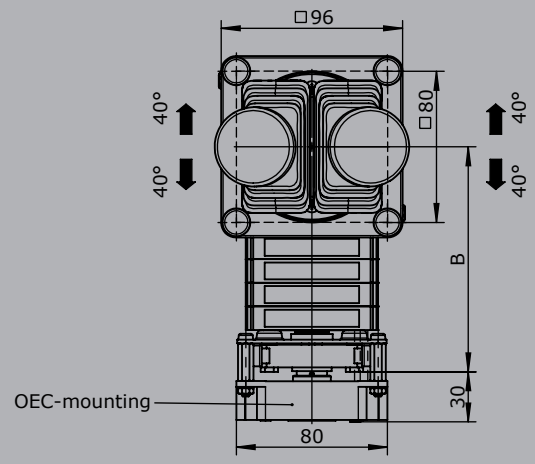
Knob solid
D= Push button



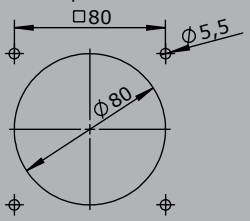
To build in:
Direction 1-2
Direction 3-4

T - grip
D = Push button





Hole pattern



Type	No. of contacts	Dim. A	Dim. B
01	2	119	82
02	4	131	94
03	6	144	107
04	8	156	119
05	10	169	132
06	12	181	144

Double-handle controller
D3

The double-handle controller D3 is a robust switching device for nautical navigation applications. The modular design enables the switching device to be used universally. The double-handle controller is resistant to oil, maritime conditions e.g. offshore /vessels, UV radiation typically from the sun.

1

Technical data

Mechanical life D3	12 million operating cycles
Operation temperature	-40°C to +85°C
Degree of protection	IP66 front

Example

D3	S5	Q	/ Q	-2 R P	+3 R P	-B	-A05 P484	+A05 P484	-E1292	-S...	-X

Basic unit

D3	

Control-handle extended

S5	-20 mm

Grip- control handle left

Q	T-grip

Grip- control handle right

Q	T-grip

Axis 1 (direction 1-2)

2	2 contacts (1,5A 24 V DC13)
R	Friction brake
P	Potentiometer

Axis 2 (direction 3-4)

3	3 contacts (1,5A 24 V DC13)
R	Friction brake
P	Potentiometer

Cover housing

B	Cover housing

Description axis 1 (direction 1-2)

A05	Arrangement MSP21
P484	Potentiometer T318 2 x 5 kOhm

Description axis 2 (direction 3-4)

A050	Arrangement MSP21-0
P484	Potentiometer T318 2 x 5 kOhm

Interface

E1292	Voltage output 0...5...10 V

Plug connectors

S..	Standard plug connectors *(see page 138)*

Special model

X	Special / customer specified

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Double-handle controller
D3

Combination possibilities with our handles

D3 S5 Q / Q - 2 R P + 3 R P - B - A05 P484 + A050 P484 - E1292 - X

Basic unit

D3

Control-handle extended*

	Standard 148 mm*
S5	-20 mm
S8	+20 mm

**Only available in combination with handle!*

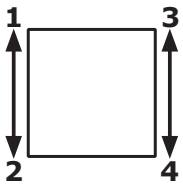
Grip-control-handle left

	Knob
D	Push button
Q	T-grip
QD	T-grip with push button side

Grip-control-handle right

	Knob
D	Push button
Q	T-grip
QD	T-grip with push button side

Identification of the installation variants with switching directions:



D3

D3 S5 Q / Q - 2 R P + 3 R P - B - A05 P484 + A050 P484 - E1292 - X

Axis 1: direction 1-2 left

1	1 contact	Standard contact- arrangement see page 140		
2	2 contacts	e.g.		
3	3 contacts	A98	MS0	
		A05	MS21	
		A050	MS21-0	
		A99 contact - arrangement according customer request		
R	Friction brake			
(P)	Mounting options for potentiometer and (Gessmann-types)			
P	Potentiometer	P484	T318 2 x 5 kOhm	I max. 1 mA
		More potentiometers on request!		
H	Hall-Potentiometer	E14811	0,5...2,5...4,5 V / 4,5...2,5...0,5 V	

D3 S5 Q / Q - 2 R P + 3 R P - B - A05 P484 + A050 P484 - E1292 - X

Axis 2: direction 3-4 left

1	1 contact	Standard contact- arrangement see page 140		
2	2 contacts	e.g.		
3	3 contacts	A98	MS0	
		A05	MS21	
		A050	MS21-0	
		A99 contact - arrangement according customer request		
R	Friction brake			
(P)	Mounting options for potentiometer (Gessmann-types)			
P	Potentiometer	P484	T318 2 x 5 kOhm	I max. 1 mA
		More potentiometers on request!		
H	Hall-Potentiometer	E14811	0,5...2,5...4,5 V / 4,5...2,5...0,5 V	

D3 S5 Q / Q - 2 R P + 3 R P - B - A05 P484 + A050 P484 - E1292 - X

Cover housing

B	Cover housing

Interface *(description the following pages)*

	Potentiometer output
E1xx	Voltage output
E2xx	Current output

Special model

X	Special / customer specified

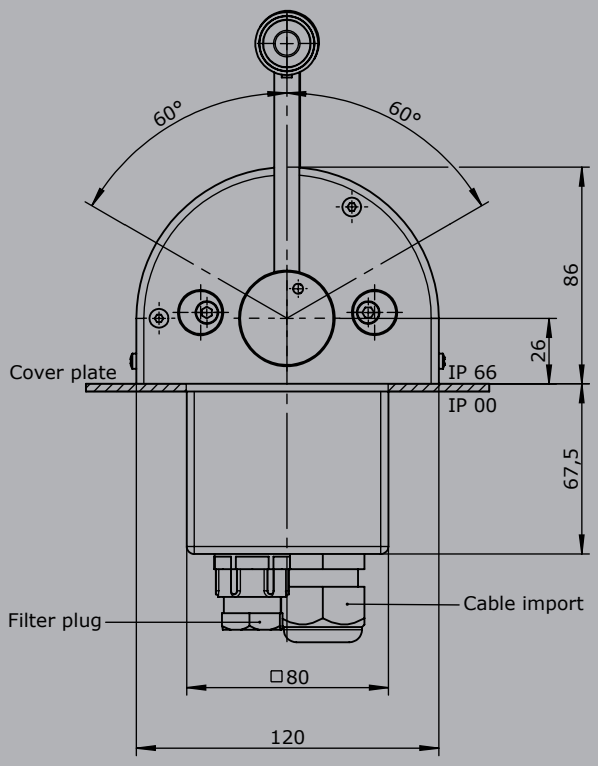
Voltage outputs

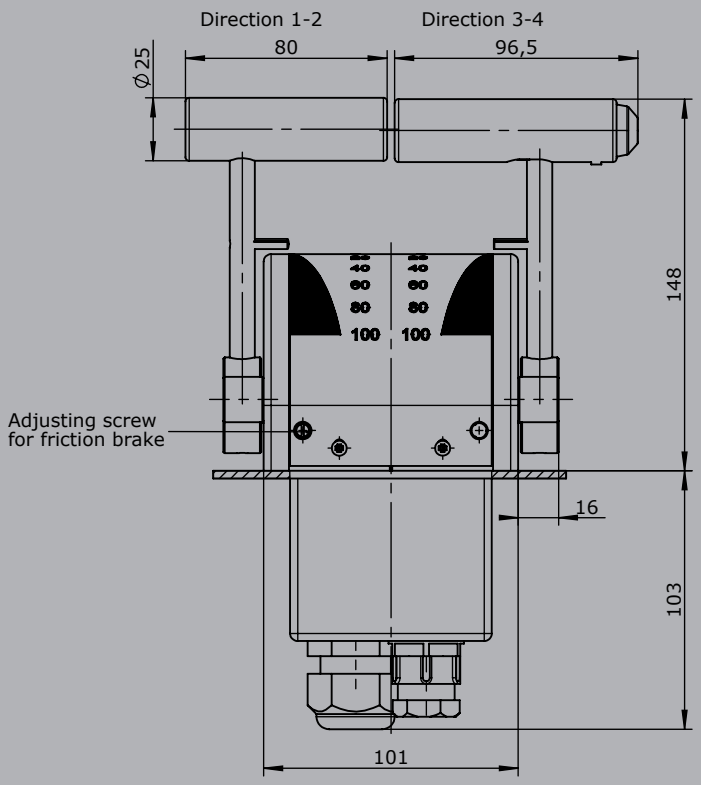
Supply voltage	11,5-32 V DC		
Wiring	Cable 300 mm long without plug connector		
	Optional with plug connector *(standard plug connectors see page 138)*		S
0...5...10 V per axis			
		1 axis	E129 1
		2 axis	2
10...0...10 V per axis			
		1 axis	E141 1
		2 axis	2
-10...0...+10 V per axis			
		1 axis	E140 1
		2 axis	2
Voltage output with other value on request!			

Current outputs				
Supply voltage	18-36 V DC			
Wiring	Cable 500 mm long without plug connector			
	Optional with plug connector *(standard plug connectors see page 138)*			S
4...12...20 mA per axis				
		1 axis	E209 1	
		2 axis	2	
20...4...20 mA per axis				
		1 axis	E217 1	
		2 axis	2	

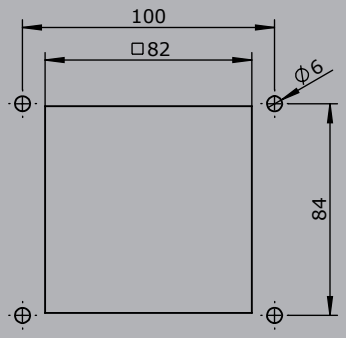
1

T- grip
D=Push button

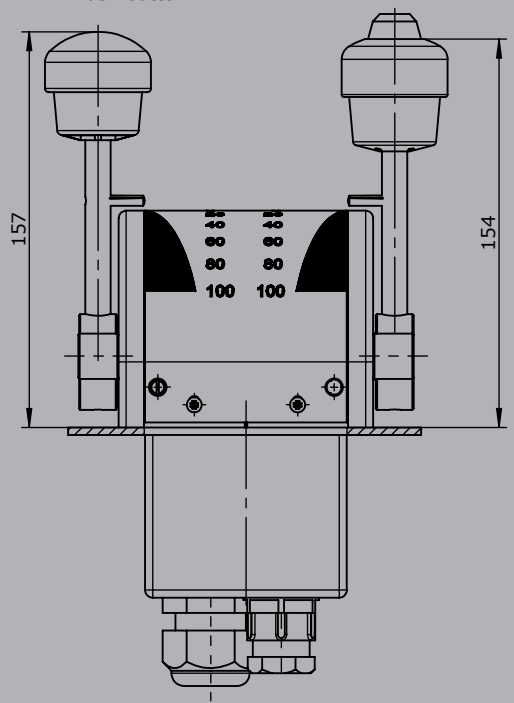




Hole pattern



Knob solid
D= Push button



Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Single-axis controller
S11

The single-axis controller S11 is a hall sensor switching device designed for electro-hydraulic and remote controlled hydraulic. The modular design of the switching device is universally applicable. The single-axis controller is resistant to oil, maritime conditions e.g. offshore /vessels, UV radiation typically from the sun.

Technical data

Mechanical life S11	6 million operating cycles
Operating temperature	-40°C to +85°C
Degree of protection	up to IP65, electronic assembly IP67

Example

S11	T	- Z	- E...	- S...	- X

Basic unit

S11	1-axis

Grip / palm grip

	Knob (standard)
M	Mechanical zero interlock
T	Dead man
D	Push button
GS8	Knob GS8

Z	Spring return *(included in basic unit!)*
R	Friction brake

Interface *(description on the following page)*

E0xx	Digital output
E1xx	Voltage output
E2xx	Current output

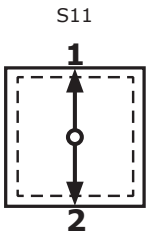
Plug connectors

S..	Standard plug connectors *(see page 138)*

Special model

X	Special / customer specified

Identification of the installation variants with switching directions:



Technical details may vary based on configuration or application! Technical data subject to change without notice!

GESSMANN

1

Digital Output			
Supply voltage	9-32 V DC		
Current carrying capacity	Direction signal 150 mA		
	Zero position signal 500 mA		
Wiring	Cable 500 mm long without plug connector		
	Optional with plug connector *(standard plug connectors see page 138)*		S
Cable 500mm long with plug (male)			
	1 axis	E001 1	

Voltage output (not stabilized)			
Supply voltage	4,75-5,25 V DC		
Current carrying capacity	Direction signal 8 mA		
Wiring	Cable 500 mm long without plug connector		
	Optional with plug connector *(standard plug connectors see page 138)*		S
0,5...2,5...4,5V redundant + 2 direction signals			
	1 axis	E104 1	
	Output options		
	Characteristic:		
	Inverse dual	1	
	Dual	2	
	Inverse dual with dead zone +/- 3° (standard)	3	
	Dual with dead zone +/- 3°	4	

Voltage output			
Supply voltage	9-32 V DC (*11,5-32 V)		
Current carrying capacity	Direction signal 150 mA		
	Zero position signal 500 mA		
Wiring	Cable 500 mm long without plug connector		
	Optional with plug connector *(standard plug connectors see page 138)*		S
0,5...2,5...4,5 V redundant + 2 direction signals + 1 zero position signal (galvanically isolated)			
	1 axis	E112 1	
0...5...10 V redundant + 2 direction signals + 1 zero position signal (galvanically isolated), supply voltage 11,5 - 32 V DC			
	1 axis	E132 1	
10...0...10 V + 2 direction signals + 1 zero position signal (galvanically isolated), supply voltage 11,5 - 32 V DC, sensor redundant with error monitoring and error signal			
	1 axis	E136 1	
	Output options		
	Characteristic:		
	Inverse dual *¹	1	
	Dual *¹	2	
	Inverse dual with dead zone +/- 3° *¹ (standard)	3	
	Dual with dead zone +/- 3° *¹	4	
	¹ not combinable with output E136X		
	Single *²	5	
	Single with dead zone *² (standard)	6	
	² not combinable with output E112X and E132X		
Voltage output with other value on request!			

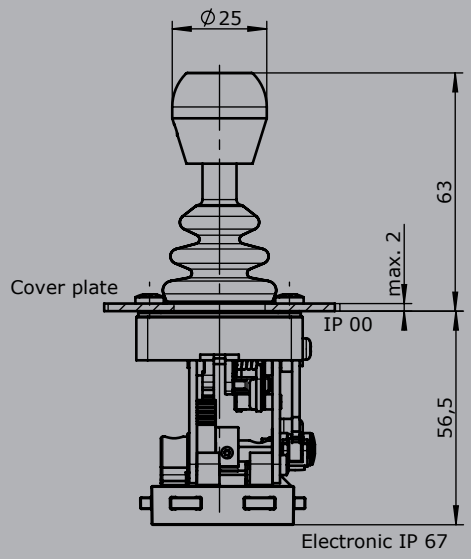
Current output				
Supply voltage	9-32 V DC			
Current carrying capacity	Direction signal 150 mA			
	Zero position signal 500 mA			
Wiring	Cable 500 mm long without plug connector			
	Optional with plug connector *(standard plug connectors see page 138)*			S
0...10...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated), sensor redundant with error monitoring and error signal				
		1 axis	E206 1	
20...0...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated), sensor redundant with error monitoring and error signal				
		1 axis	E208 1	
4...12...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated), sensor redundant with error monitoring and error signal				
		1 axis	E214 1	
20...4...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated), sensor redundant with error monitoring and error signal				
		1 axis	E216 1	
		Output options		
		Single		5
		Single with dead zone +/-3° (standard)		6
Voltage output with other value on request!				

1

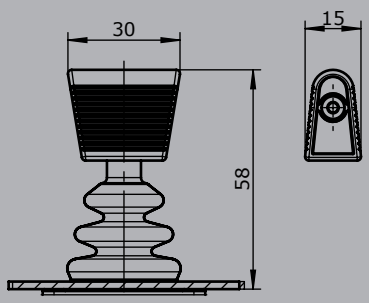
1

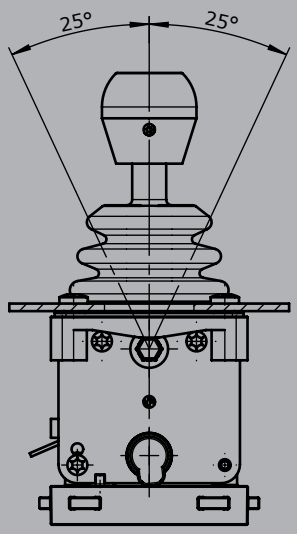
T = Dead man's button

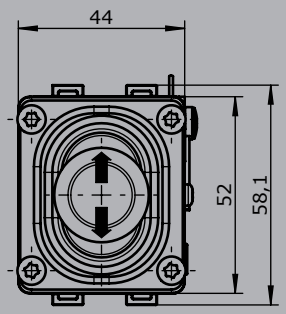
Knob solid GK4



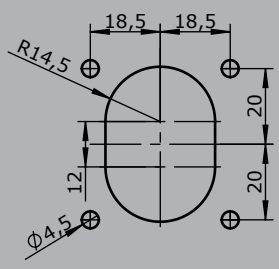
Knob GS8







Hole pattern



Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Single-axis controller
S1

The single-axis controller S1 is a robust switching device for remote control and eletro-hydraulic applications. The modular design of the switching device is universally applicable. The single-axis controller is resistant to oil, maritime conditions e.g. offshore /vessels, UV radiation typically from the sun.

Technical data

Mechanical life S1	6 million operating cycles
Operating temperature	-40°C to +85°C
Degree of protection	up to IP65

Example

S1	T	- 2 Z P	- A05 P374	- X

Basic unit

S1	1-axis

Grip / palm grip

T	Dead man

Axis 1 (direction 1-2)

2	2 contacts (1,5A 24 V DC13)
Z	Spring return
P	Potentiometer

Description axis 1 (direction 1-2)

A05	Arrangement MSP21
P374	Potentiometer T 375 2 x 5 kOhm

Special model

X	Special / customer specified

Technical details may vary based on configuration or application! Technical data subject to change without notice!

Single-axis controller
S1

S1 T - 2 Z P - A05 P374 - X

Basic unit	
S1	1-axis

1

Grip / palm grip	
	Knob (standard)
M	Mechanical zero interlock
T	Dead man
D	Push button
GS8	Knob GS8

S1 T - 2 Z P - A05 P374 - X

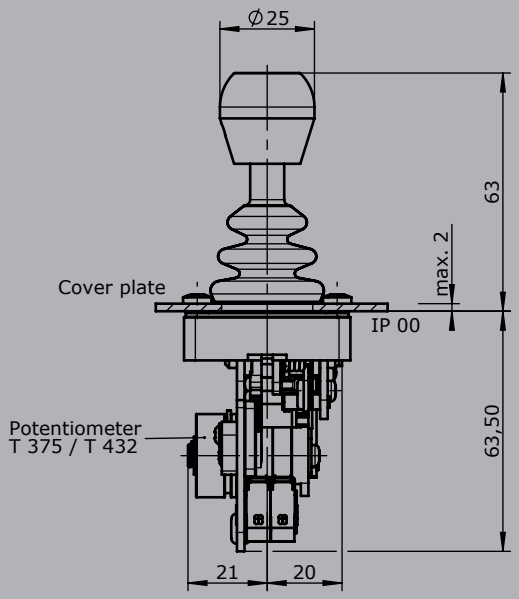
Axis 1: direction 1-2 left					
1	1 contact	Standard contact - arrangement see page 140			
2	2 contacts	z.B.			
3	3 contacts	A05	MS21		
4	4 contacts	A050	MS21-0		
		A060	MS22-0		
		A99 contact - arrangement according customer request			
Z	Spring return *(included in basic unit!)*				
R	Friction brake				
P	Potentiometer	P372	T375	2 x 1 kOhm	I max. 1 mA
		P374	T375	2 x 5 kOhm	I max. 1 mA
		P274	T430	2 x 5 kOhm	I max. 1 mA
		With direction track			

S1 T - 2 Z P - A05 P374 - X

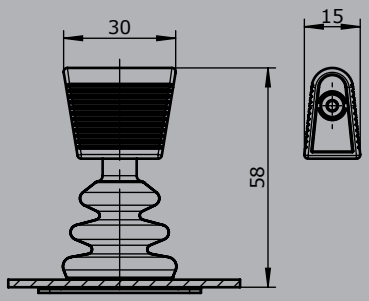
Special model	
X	Special / customer specified

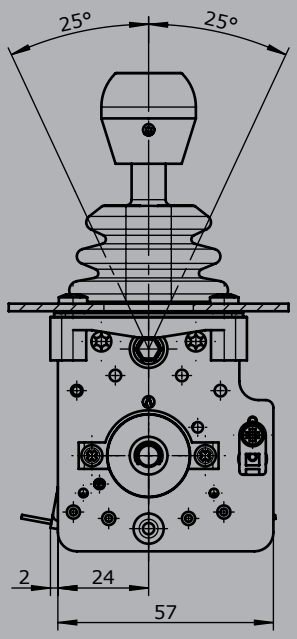
T = Dead man's button

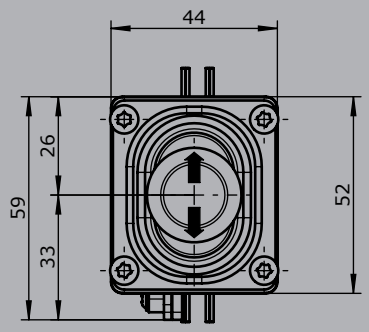
Knob solid GK4



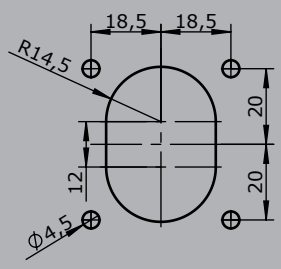
Knob GS8







Hole pattern



Thumbwheel
S12

The thumbwheel S12 is designed for electro-hydraulic applications. By the combination of different lighting options and colours you can customise the appearance.

1

Technical data

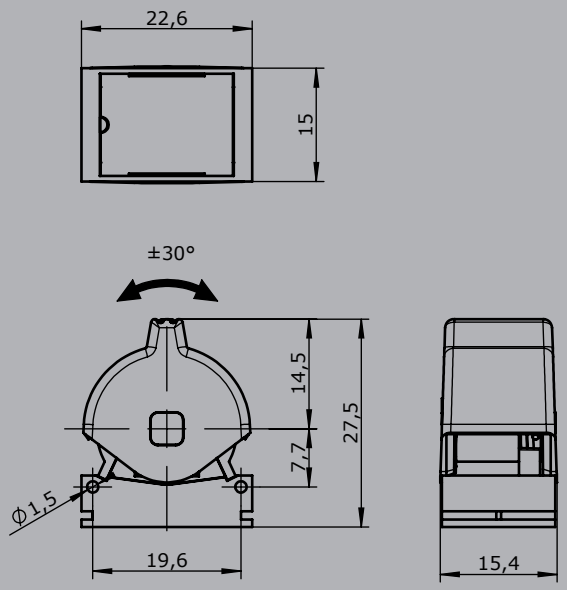
Mechanical life S12	5 million operating cycles
Operating temperature	-40°C to +85°C
Degree of protection	IP67
Functional safety	PLd (EN ISO 13849) possible

	S12	- 2	- 1	-1	-E1031	-X
Basic unit						
S12 Thumbwheel S12						
S12A Thumbwheel S12 with mounting frame						
Illumination						
1 Unlighted						
2 Functional lighting 2-colour red-green (separate switchable) U_LED= 4,5 - 5,5 V						
3 Functional lighting 2-colour white-red (separate switchable) U_LED= 4,5 - 5,5 V						
4 Functional lighting 2-colour white-green (separate switchable) U_LED= 4,5 - 5,5 V						
Actuator colour						
1 Black						
2 Grey						
3 Blue						
4 Red						
5 Yellow						
6 Orange						
Mechanical function						
1 T-0-T						
2 R-0-R						
3 T-0-R						
4 R-0-T						
5 R-R						
6 R-R-0-R-R						
Interface						
E1031 0,5...2,5...4,5 V redundant by Ub= 5 V						
1 Output option inverse dual						
2 Output option dual						
Special model						
X Special / customer specified						

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

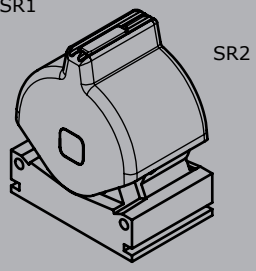
S12 without mounting frame



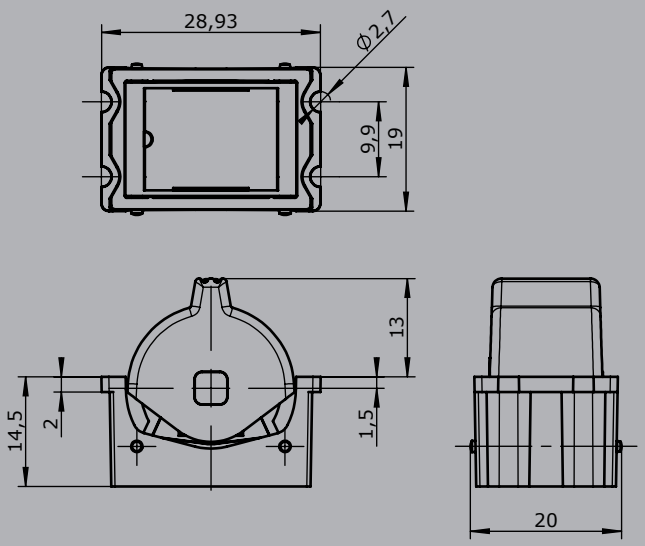
S12 with LED

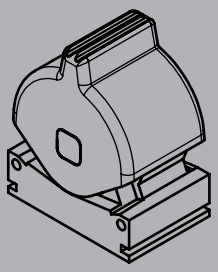
SR1

SR2



S12 with mounting frame





Single-axis controller
S9

The single-axis controller S9 is a hallsensor switching device designed for electro-hydraulic applications. Due to its small size, the S9 is particularly suitable for installation in our ball handles. The single-axis controller is resistant to oil, maritime conditions e.g. offshore /vessels, UV radiation typically from the sun.

1

Technical data

Mechanical life S9	5 million operating cycles
Operating force	1,6 to 3,5N
Supply voltage	5V DC stabilized
Operating temperature	-40°C to +85°C
Degree of protection	IP67

Example

S9	- E10311	- X

Basic unit

S9

Interface

E1031		0,5...2,5...4,5 V redundant by Ub= 5 V
	1	Output option inverse dual
	2	Output option dual

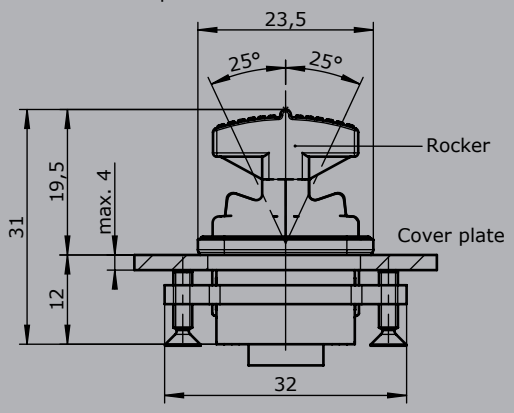
Special model

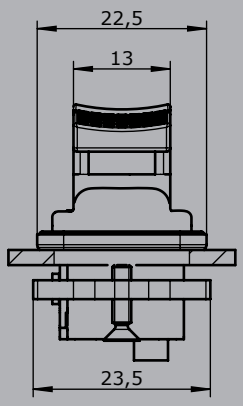
X Special / customer specified

Technical details may vary based on configuration or application! Technical data subject to change without notice!

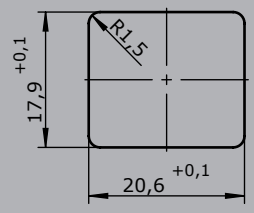
V2019/1 15.03.2019

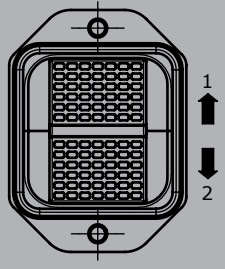
Installed from the top



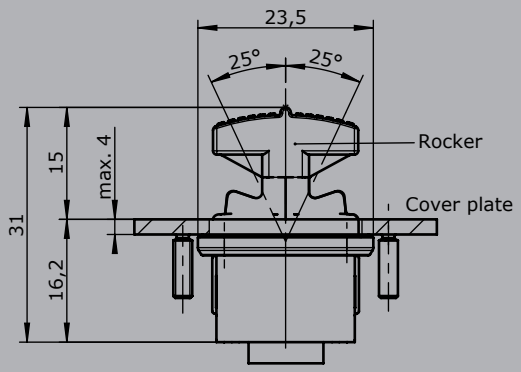


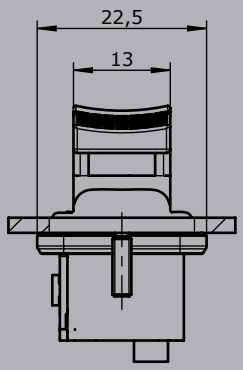
Hole pattern
(installed from the top)



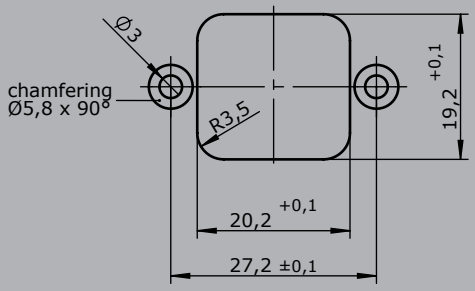


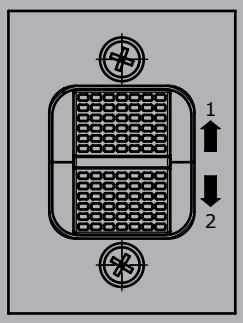
Installed from below





Hole pattern
(installed from below)





Technical details may vary based on configuration or application! Technical data subject to change without notice!

Single-axis controller
S26

The single-axis controller S26 is a hall sensor switching device designed for electro-hydraulic and remote controlled hydraulic. The modular design of the switching device is universally applicable. The single-axis controller is resistant to oil, maritime conditions e.g. offshore /vessels, UV radiation typically from the sun.

Technical data

Mechanical life S26	6 million operating cycles
Operating temperature	-40°C to +85°C
Degree of protection	up to IP54, electronic assembly IP67

Example

S26	T	- Z	- E...	- S...	- X

Basic unit

S26	1-axis

Grip / palm grip

	Knob
M	Mechanical zero interlock
T	Dead man
H	Signal button
D	Push button
B...	Palm grip B... *(on request!)*

Z	Spring return
R	Friction brake

Interface *(description on the following pages)*

E0xx	Digital output
E1xx	Voltage output
E2xx	Current output

Plug connectors

S..	Standard plug connectors *(see page 138)*

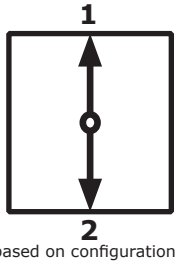
Special model

X	Special / customer specified

Identification of the installation variants

with switching directions:

S26



Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

GESSMANN

Digital output				
Supply voltage	9-32 V DC			
Current carrying capacity	Direction signal 150 mA			
	Zero position signal 500 mA			
Wiring	Cable 500 mm long without plug connector			
	Optional with plug connector *(standard plug connectors see page 138)*			S
2 direction signals + 1 zero position signal (galvanically isolated)				
	1 axis		E001 1	

Voltage output (not stabilized)				
Supply voltage	4,75-5,25 V DC			
Current carrying capacity	Direction signal 8 mA			
Wiring	Cable 500 mm long without plug connector			
	Optional with plug connector *(standard plug connectors see page 138)*			S
0,5...2,5...4,5 V redundant + 2 direction signals				
	1 axis		E104 1	
	Output options			
	Characteristic:			
	Inverse dual			1
	Dual			2
	Inverse dual with dead zone +/- 3° (standard)			3
	Dual with dead zone +/- 3° *¹			4

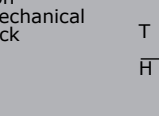
Voltage output				
Supply voltage	9-32 V DC (*11,5-32 V)			
Current carrying capacity	Direction signal 150 mA			
	Zero position signal 500 mA			
Wiring	Cable 500 mm long without plug connector			
	Optional with plug connector *(standard plug connectors see page 138)*			S
0,5...2,5...4,5 V redundant + 2 direction signals + 1 zero position signal (galvanically isolated)				
	1 axis		E112 1	
0...5...10 V redundant + 2 direction signals + 1 zero position signal (galvanically isolated), supply voltage 11,5 - 32 V DC				
	1 axis		E132 1	
10...0...10 V + 2 direction signals + 1 zero position signal (galvanically isolated), supply voltage 11,5 - 32 V DC, sensor redundant with error monitoring and error signal				
	1 axis		E136 1	
	Output options			
	Characteristic:			
	Inverse dual *¹			1
	Dual *¹			2
	Inverse dual with dead zone +/- 3° *¹ (standard)			3
	Dual with dead zone +/- 3° *¹			4
	¹ not combinable with output E136X			
	Single *²			5
	Single with dead zone *² (standard)			6
Voltage output with other value on request!	*² not combinable with output E112X and E132X*			

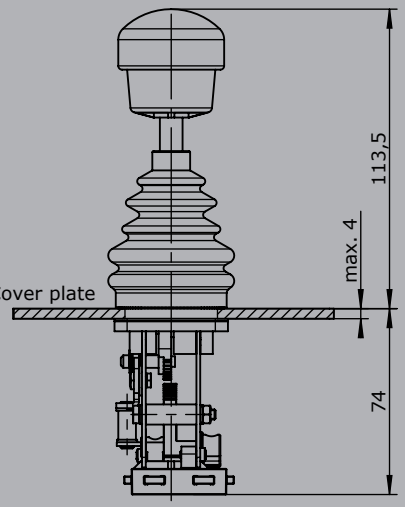
Technical details may vary based on configuration or application! Technical data subject to change without notice!

1

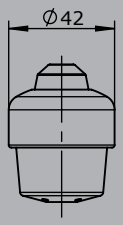
Current output			
Supply voltage	9-32 V DC		
Current carrying capacity	Direction signal 150 mA		
	Zero position signal 500 mA		
Wiring	Cable 500 mm long without plug connector		
	Optional with plug connector *(standard plug connectors see page 138)*		S
0...10...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated), sensor redundant with error monitoring and error signal			
	1 axis	E206 1	
20...0...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated), sensor redundant with error monitoring and error signal			
	1 axis	E208 1	
4...12...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated), sensor redundant with error monitoring and error signal			
	1 axis	E214 1	
20...4...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated), sensor redundant with error monitoring and error signal			
	1 axis	E216 1	
	Output options		
	Single		5
	Single with dead zone +/-3° (standard)		6
Current output with other value on request!			

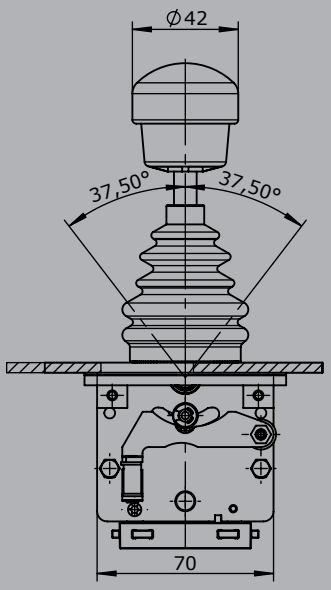
T = Dead man's button
H = Signal button
M = Latch for mechanical zero interlock

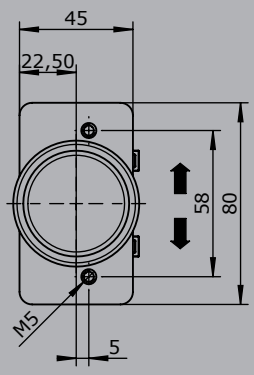




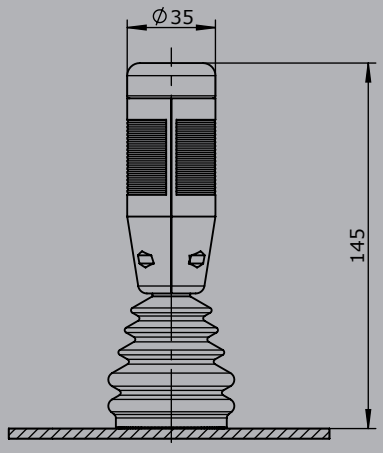
Knob solid
D= Push button



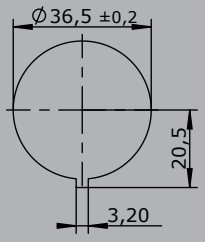




Palm grip B5
B5 T = Dead man's button



Hole pattern



Single-axis controller
S27

The single-axis controller S27 is a hall sensor switching device designed for electro-hydraulic and remote controlled hydraulic. The modular design of the switching device is universally applicable. The single-axis controller is resistant to oil, maritime conditions e.g. offshore /vessels, UV radiation typically from the sun.

Example

Technical data

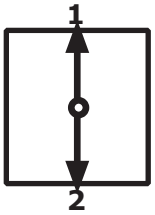
Mechanical life S27	6 million operating cycles
Operating temperature	-40°C to +85°C
Degree of protection	up to IP65, electronic assembly IP67

1

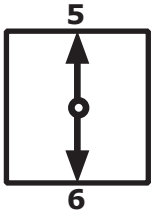
	S27L	M	- Z	- E...	- S...	- X
Basic unit						
S27L left						
S27R right						
Grip / palm grip						
Knob (standard)						
M Mechanical zero interlock						
Q T-grip						
Z Spring return						
R Friction brake						
Interface *(description on the following pages)*						
E0xx Digital output						
E1xx Voltage output						
E2xx Current output						
Plug connectors						
S.. Standard plug connectors *(see page 138)*						
Special model						
X Special / customer specific						

Identification of the installation variants with switching directions:

S27 left



S27 right



Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

GESSMANN

Digital Output			
Supply voltage	9-32 V DC		
Current carrying capacity	Direction signal 150 mA		
	Zero position signal 500 mA		
Wiring	Cable 500 mm long without plug connector		
	Optional with plug connector *(standard plug connectors see page 138)*		S
2 direction signals + 1 zero position signal (galvanically isolated)			
	1 axis	E001 1	

Voltage output (not stabilized)			
Supply voltage	4,75-5,25 V DC		
Current carrying capacity	Direction signal 8 mA		
Wiring	Cable 500 mm long without plug connector		
	Optional with plug connector *(standard plug connectors see page 138)*		S
0,5...2,5...4,5 V redundant + 2 direction signals			
	1 axis	E104 1	
	Output options		
	Characteristic:		
	Inverse dual	1	
	Dual	2	
	Inverse dual with dead zone +/- 3° (standard)	3	
	Dual with dead zone +/- 3°	4	

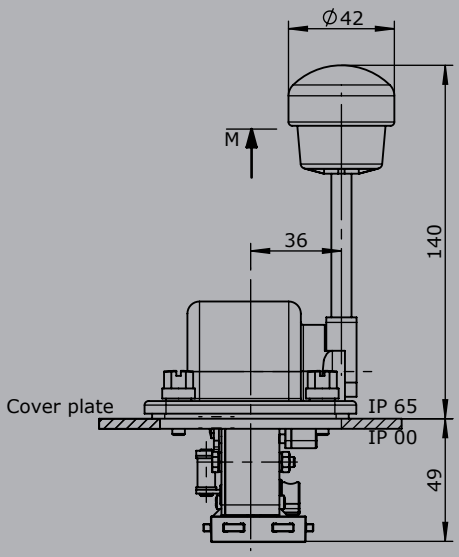
Voltage output			
Supply voltage	9-32 V DC (*11,5-32 V)		
Current carrying capacity	Direction signal 150 mA		
	Zero position signal 500 mA		
Wiring	Cable 500 mm long without plug connector		
	Optional with plug connector *(standard plug connectors see page 138)*		S
0,5...2,5...4,5 V redundant + 2 direction signals + 1 zero position signal (galvanically isolated)			
	1 axis	E112 1	
0...5...10 V redundant + 2 direction signals + 1 zero position signal (galvanically isolated), supply voltage 11,5 - 32 V DC			
	1 axis	E132 1	
10...0...10 V + 2 direction signals + 1 zero position signal (galvanically isolated), supply voltage 11,5 - 32 V DC, sensor redundant witherror monitoring and error signal			
	1 axis	E136 1	
	Output options		
	Characteristic:		
	Inverse dual *¹	1	
	Dual *¹	2	
	Inverse dual with dead zone +/- 3° *¹ (standard)	3	
	Dual with dead zone +/- 3° *¹	4	
	¹ not combinable with output E136X		
	Single *²	5	
	Single with dead zone *² (standard)	6	
	² not combinable with output E112X and E132X		
Voltage output with other value on request!			

Technical details may vary based on configuration or application! Technical data subject to change without notice!

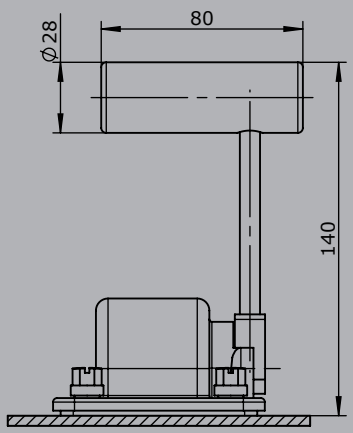
1

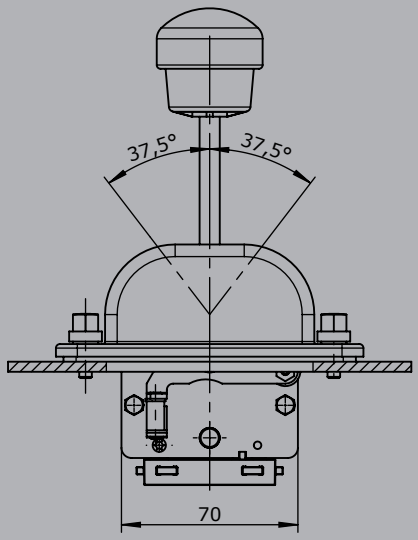
Current output				
Supply voltage	9-32 V DC			
Current carrying capacity	Direction signal 150 mA			
	Zero position signal 500 mA			
Wiring	Cable 500 mm long without plug connector			
	Optional with plug connector *(standard plug connectors see page 138)*			S
0...10...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated), sensor redundant with error monitoring and error signal				
		1 axis	E206 1	
20...0...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated), sensor redundant with error monitoring and error signal				
		1 axis	E208 1	
4...12...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated), sensor redundant with error monitoring and error signal				
		1 axis	E214 1	
20...4...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated), sensor redundant with error monitoring and error signal				
		1 axis	E216 1	
		Output options		
		Single		5
		Single with dead zone +/-3° (standard)		6
Current output with other value on request!				

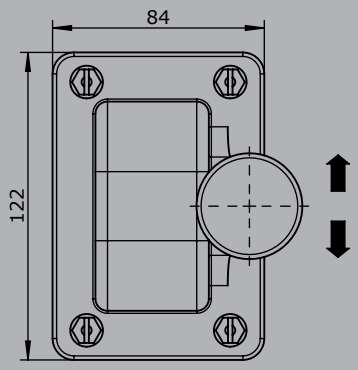
M = Latch for mechanical zero interlock



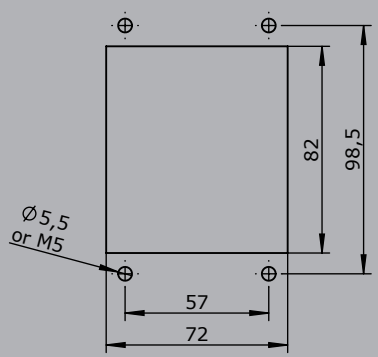
T - grip







Hole pattern



Technical details may vary based on configuration or application! Technical data subject to change without notice!

Single-axis controller
S2 / SS2 / S21

The single-axis controller S2/SS2 is a robust switching device for remote controlled and electrohydraulic applications. The modular design of the switching device is universally applicable. The single-axis controller is resistant to oil, maritime conditions e.g. offshore / vessels, UV radiation typically from the sun.

Technical data

Mechanical life S2 / S21	6 million operating cycles
Mechanical life SS2	10 million operating cycles
Operating temperature	-40°C to +85°C
Degree of protection	up to IP54

1

Example

S2L	S5	T	- 02 Z P	- A050 P134	- X

Basic unit

S2L	left

Control-handle extended

S5	-20 mm

Grip / palm grip

T	Dead man

Axis 1 (direction 1-2)

02	3 contacts (2A 250 V AC15)
Z	Spring return
P	Potentiometer

Description axis 1 (direction 1-2)

A050	Arrangement MSP21-0
P134	Potentiometer T396 2 x 5 kOhm

Special model

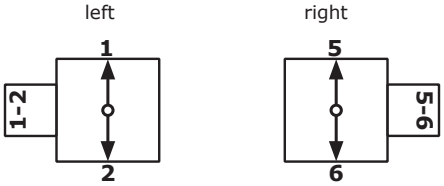
X	Special / customer specified

S2L | S5 | T | - 02 Z P | - A050 P134 | - X

Basic unit

S2L	Single-axis controller left
S2R	Single-axis controller right
S21L	Single-axis controller left with flange 96 x 96 mm
S21R	Single-axis controller right with flange 96 x 96 mm
	Reinforced version
SS2L	Single-axis controller left
SS2R	Single-axis controller right
SS21L	Single-axis controller left with flange 96 x 96 mm
SS21R	Single-axis controller right with flange 96 x 96 mm

Identification of the installation variants with switching directions:



Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Combination possibilities with our handles (valid for single-axis controller S21)

		S2L	S5	T	- 02 Z P	- A050 P134	- X

Control-handle extended

	Standard
S5	-20 mm
S8	+20 mm

Grip / palm grip

	Knob (standard)
M	Mechanical zero interlock
MN	Mechanical zero interlock (push down)
T	Dead man
MT	Mechanical zero interlock + dead man
H	Signal button
MH	Mechanical zero interlock + signal button
D	Push button
MD	Mechanical zero interlock + push button
DV	Flush push button
MDV	Mechanical zero interlock + flush push button
B...	Palm grip B... *(see page palm grip 157)*

		S2L	S5	T	- 02 Z P	- A050 P134	- X

Axis 1: direction 1-2 left / direction 5-6 right

02	3 contacts	Standard contact - arrangement see page 140		
03	5 contacts	z.B.		
04	7 contacts	A98	MS0	
05	9 contacts	A05	MS21	
		A0500	MS21-00	
		A110	MS24-0	
		A99 contact - arrangement according customer request		
Z	Spring return			
R	Friction brake			
(P)	Possibility of mounting potentiometer and encoder (Gessmann-types)			
P	Potentiometer	P131	T396 2 x 0,5 kOhm	I max. 1 mA
		P132	T396 2 x 1 kOhm	I max. 1 mA
		P133	T396 2 x 2 kOhm	I max. 1 mA
		P134	T396 2 x 5 kOhm	I max. 1 mA
		P135	T396 2 x 10 kOhm	I max. 1 mA
		More potentiometers on request!		
C	Encoder	C... Encoder see page 146		

Technical details may vary based on configuration or application! Technical data subject to change without notice!

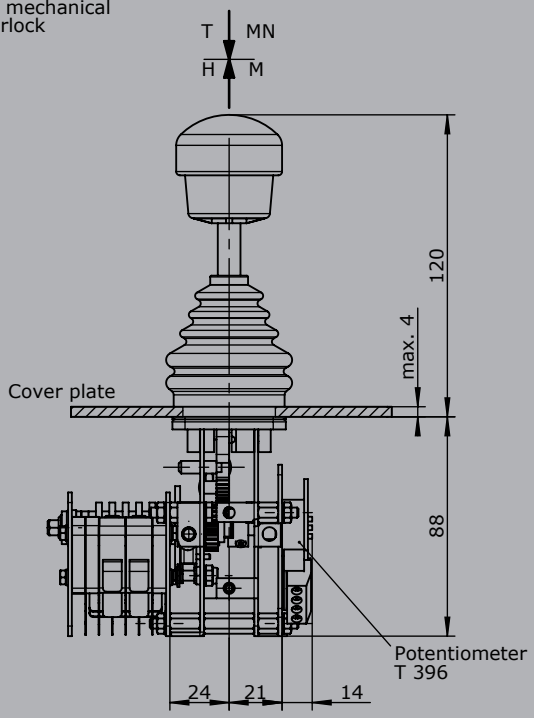
S2L	S5	T	- 02 Z P	- A050 P134	- X

Special model	
X	Special / customer specified
X1	Microswitch (MZT 1) positively driven NC contact

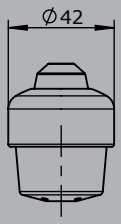
1

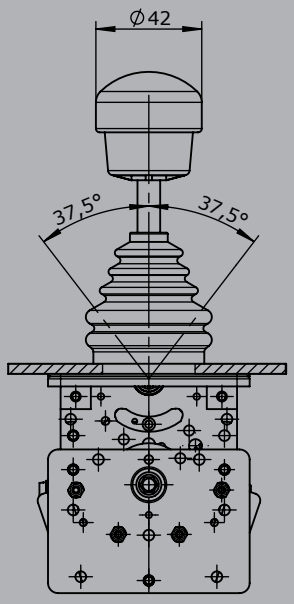
Attachments
Indicating labels
Indicating labels with engraving

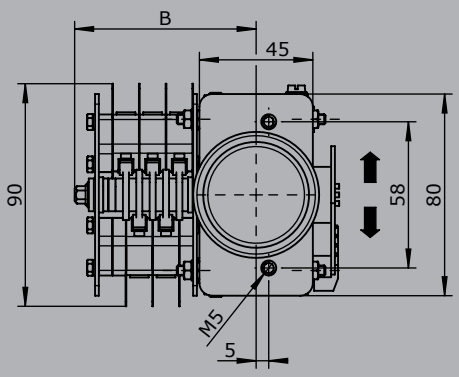
T = Dead man's button
H = Signal button
M = Latch for mechanical zero interlock



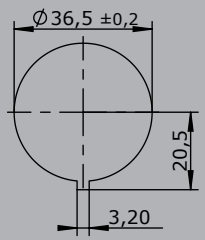
Knob solid
D= Push button



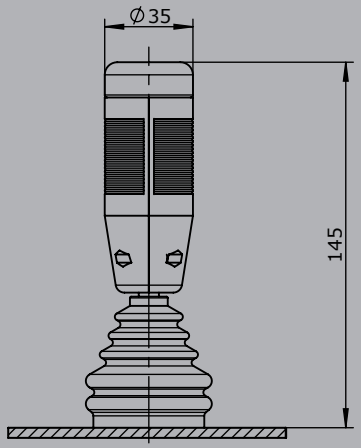




Hole pattern



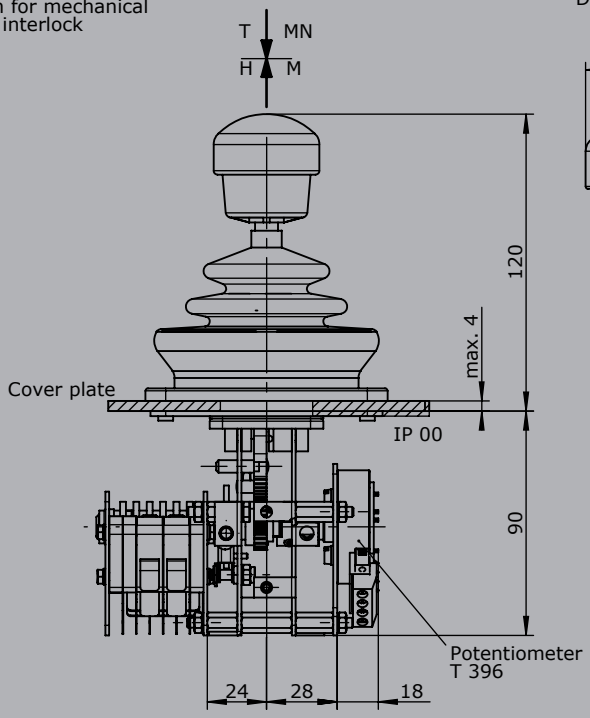
Palm grip B5
B5 T = Dead man's button



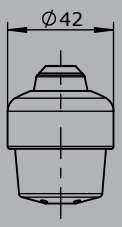
Type	No. of contacts	Maß B
02	3	62
03	5	72
04	7	83
05	9	93

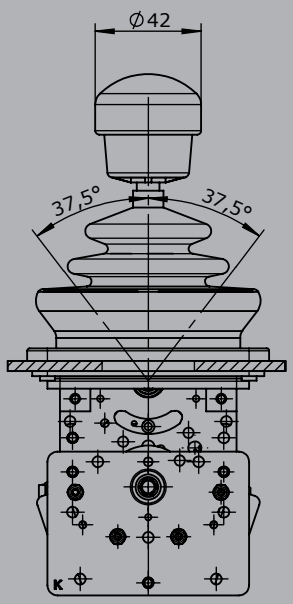
1

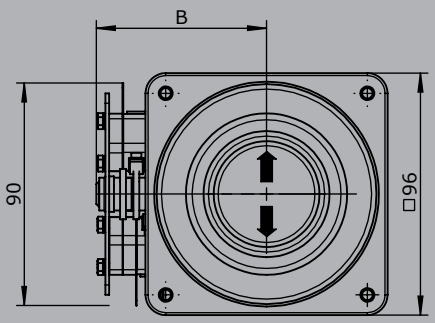
T = Dead man's button
H = Signal button
M = Latch for mechanical zero interlock



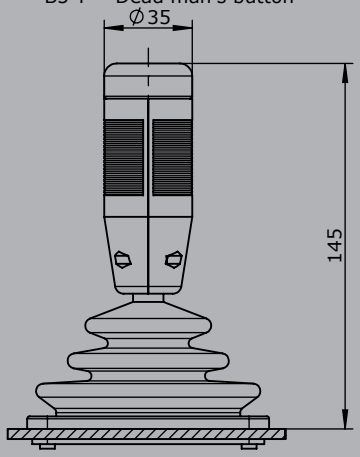
Knob solid
D= Push button



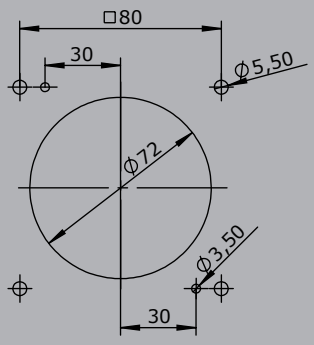




Palm grip B5
B5 T = Dead man's button



Hole pattern



Type	No. of contacts	Maß B
02	3	62
03	5	72
04	7	83
05	9	93

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Single-axis controller
S22 / SS22

The single-axis controller S2/SS2 is a robust switching device for remote controlled and electrohydraulic applications. The modular design of the switching device is universally applicable. The single-axis controller is resistant to oil, maritime conditions e.g. offshore / vessels, UV radiation typically from the sun.

Technical data

Mechanical life S22	6 million operating cycles
Mechanical life SS22	10 million operating cycles
Operating temperature	-40°C to +85°C
Degree of protection	up to IP54

1

Example

S22L	S5	T	- 3 Z P	- A050 P134	- X

Basic unit

S22L	left

Control-handle extended

S5	-20 mm

Grip / palm grip

T	Dead man

Axis 1 (direction 1-2)

3	3 contacts (2A 250 V AC15)
Z	Spring return
P	Potentiometer

Description axis 1 (direction 1-2)

A050	Arrangement MSP21-0
P134	Potentiometer T396 2 x 5 kOhm

Special model

X	Special / customer specified

S22L	S5	T	- 3 Z P	- A050 P134	- X

Basic unit

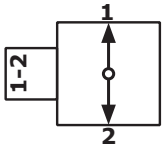
S22L	Single-axis controller left
S22R	Single-axis controller right
	Reinforced version
SS22L	Single-axis controller left
SS22R	Single-axis controller right

Control-handle extended

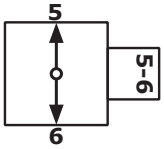
	Standard
S5	-20 mm
S8	+20 mm

Identification of the installation variants with switching directions:

S22L / SS22L



S22R / SS22R



Technical details may vary based on configuration or application! Technical data subject to change without notice!

1

	S22L	S5	T	- 3 Z P	- A050 P134	- X

Grip / palm grip

	Knob (standard)
M	Mechanical zero interlock
MN	Mechanical zero interlock (push down)
T	Dead man
MT	Mechanical zero interlock + dead man
H	Signal button
MH	Mechanical zero interlock + signal button
D	Push button
MD	Mechanical zero interlock + push button
DV	Flush push button
MDV	Mechanical zero interlock + flush push button
B...	Palm grip B... *(on request!)*

	S22L	S5	T	- 3 Z P	- A050	P134	- X

Axis 1: direction 1-2 left / direction 5-6 right

1	1 contact	Standard contact - arrangement see page 140			
2	2 contacts	z.B.			
3	3 contacts	A98		MS0	
4	4 contacts	A05		MS21	
		A0500		MS21-00	
		A99 contact - arrangement according customer request			
Z	Spring return				
R	Friction brake				
(P)	Possibility of mounting potentiometer and encoder (Gessmann-types)				
P	Potentiometer	P131	T396 2 x 0,5 kOhm	I max. 1 mA	
		P132	T396 2 x 1 kOhm	I max. 1 mA	
		P133	T396 2 x 2 kOhm	I max. 1 mA	
		P134	T396 2 x 5 kOhm	I max. 1 mA	
		P135	T396 2 x 10 kOhm	I max. 1 mA	
		More potentiometers on request!			
C	Codierer	C...Encoder see page 146			

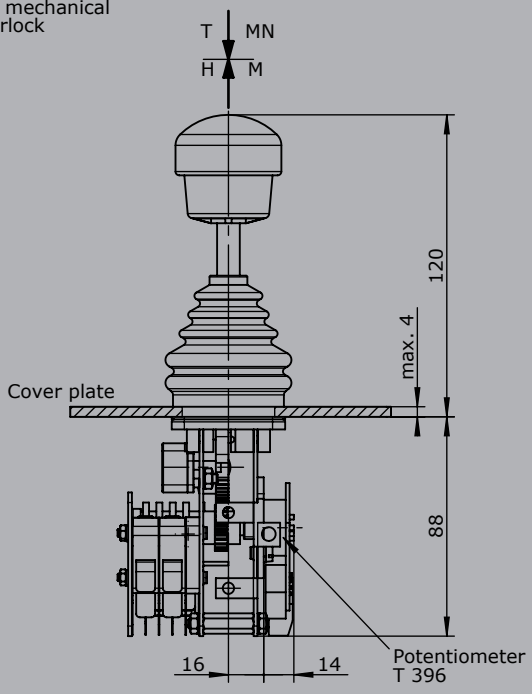
S22L	S5	T	- 3 Z P	- A050 P134	- X

Special model	
X	Special / customer specified
X1	Switching run 2-0-2

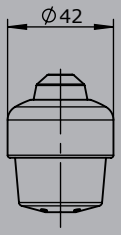
Attachments
Indicating labels
Indicating labels with engraving

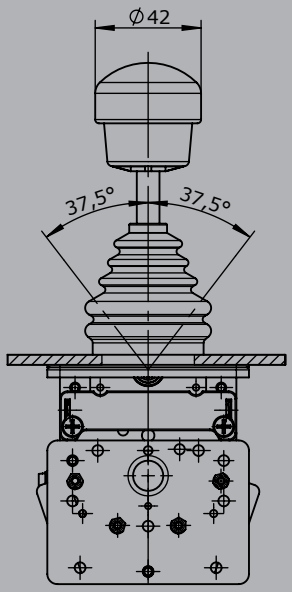
1

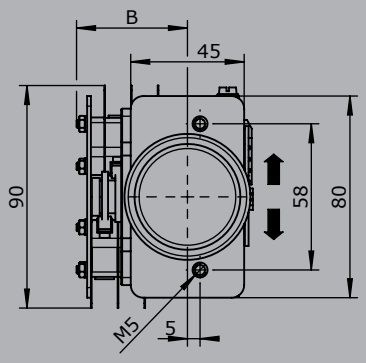
T = Dead man's button
H = Signal button
M = Latch for mechanical zero interlock



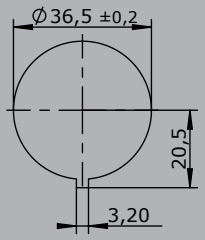
Knob solid
D= Push button



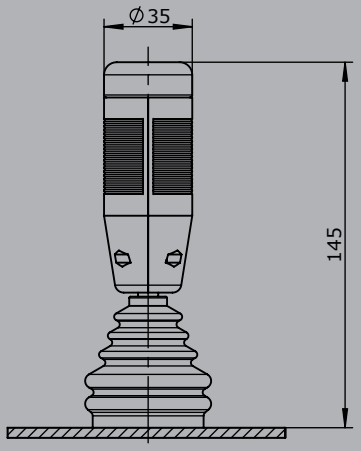




Hole pattern



Palm grip B5
B5 T = Dead man's button



Type	No. of contacts	Dim. B
1	1	25
2	2	31
3	3	36
4	4	42

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Single-axis controller
S23

The single-axis controller S23 is a robust switching device for shipbuilding and electro-hydraulic applications. The modular design of the switching device is universally applicable. The single-axis controller is resistant to oil, maritime conditions e.g. offshore /vessels, UV radiation typically from the sun.

Example

Technical data

Mechanical life S23	6 million operating cycles
Operating temperature	-40°C to +85°C
Degree of protection	IP65

S23L	S5	M	- 3 Z P	- A050 P134	- X

Basic unit

S23L	left

Control-handle extended

S5	-20 mm

Grip / palm grip

M	Mechanical zero interlock

Axis 1 (direction 1-2)

3	3 contacts (2A 250 V AC15)
Z	Spring return
P	Potentiometer

Description axis 1 (direction 1-2)

A050	Arrangement MSP21-0
P134	Potentiometer T396 2 x 5 kOhm

Special model

X	Special / customer specified

S23L	S5	M	- 3 Z P	- A050 P134	- X

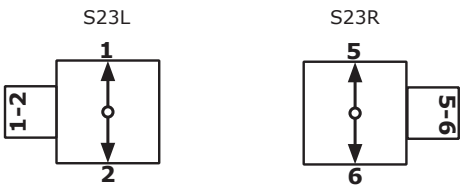
Basic unit

S23L	left
S23R	right

Control-handle extended

	Standard 140 mm
S5	-20 mm
S8	+20 mm

Identification of the installation variants with switching directions:



Technical details may vary based on configuration or application! Technical data subject to change without notice!

1

S23L	S5	M	- 3 Z P	- A050 P134	- X

Grip / palm grip

	Knob (standard)
M	Mechanical zero interlock
Q	T-grip
QM	T-grip with mechanical zero interlock

S23L	S5	M	- 3 Z P	- A050 P134	- X

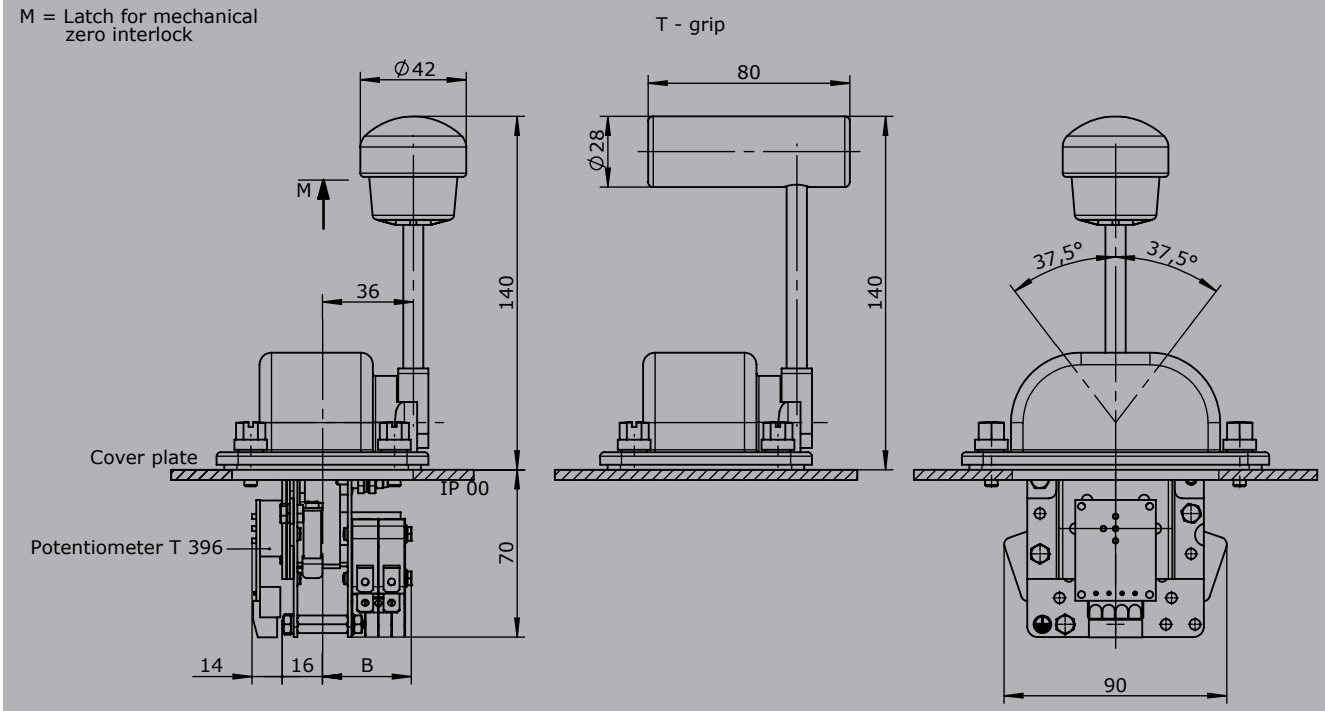
Axis 1: direction 1-2 left / direction 5-6 right

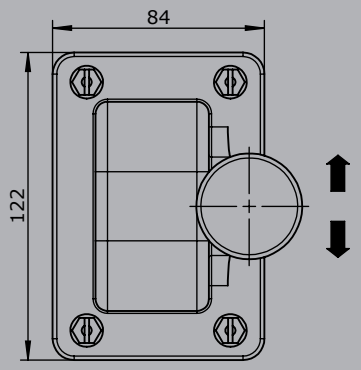
1	1 contact	Standard contact - arrangement see page 140		
2	2 contacts	z.B.		
3	3 contacts	A98	MS0	
4	4 contacts	A05	MS21	
		A0500	MS21-00	
		A99 contact - arrangement according customer request		
Z	Spring return			
R	Friction brake			
(P)	Possibility of mounting potentiometer and encoder (Gessmann-types)			
P	Potentiometer	P131	T396 2 x 0,5 kOhm	I max. 1 mA
		P132	T396 2 x 1 kOhm	I max. 1 mA
		P133	T396 2 x 2 kOhm	I max. 1 mA
		P134	T396 2 x 5 kOhm	I max. 1 mA
		P135	T396 2 x 10 kOhm	I max. 1 mA
		More potentiometers on request!		
C	Encoder	C... Encoder see page 146		

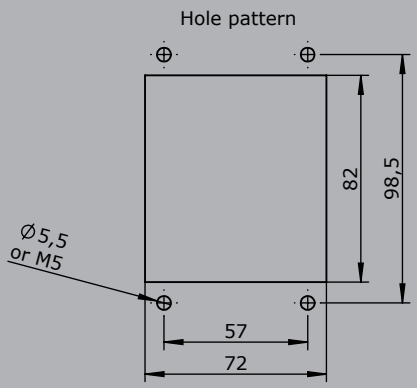
S23L	S5	M	- 3 Z P	- A050 P134	- X

Special model

X	Special / customer specified







Type	No. of contacts	Dim. B
1	1	25
2	2	31
3	3	36
4	4	42

Technical details may vary based on configuration or application! Technical data subject to change without notice!

Single-axis controller
S14

The single-axis controller S14 is a designed hall sensor switching device for electro-hydraulic and remote controlled hydraulic. The modular design of the switching device is universally applicable. The single-axis controller is resistant to oil, maritime conditions e.g. offshore /vessels, UV radiation typically from the sun.

1

Technical data

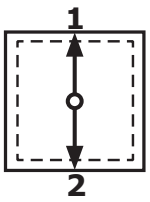
Mechanical life S14	6 million operating cycles
Operating temperature	-40°C to +85°C
Degree of protection	up to IP65

Example

	S14L	S8	T	-01ZC	-A05 C61	-X
Basic unit						
S14L						
Control-handle extended						
	Standard 60 mm*					
S8	+20 mm					
**Only possible in combination with handle!*						
Grip / palm grip						
T	Dead man					
Axis 1 (direction 1-2)						
01	2 contacts (2A 250 V AC15)					
Z	Spring return					
C	Mechanical encoder					
Description axis 1 (direction 1-2)						
A05	Arrangement MSP21					
C61	Mechanical encoder MEC 1-2					
Special model						
X	Special / customer specified					

	S14L	S8	T	-01ZC	-A05 C61	-X
Basic unit						
S14L	1-axis left					
S14R	1-axis right					
Control-handle extended						
	Standard 60 mm*					
S8	+20 mm					
**Only possible in combination with handle!*						
Grip / palm grip						
	Knob (standard)					
M	Mechanical zero interlock					
MH	Mechanical zero interlock + signal contact					
T	Dead man					
H	Signal button					
GK1	Knob 42 mm					
GK1M	Mechanical zero interlock					

Identification of the installation variants with switching directions:



S14

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

GESSMANN

1

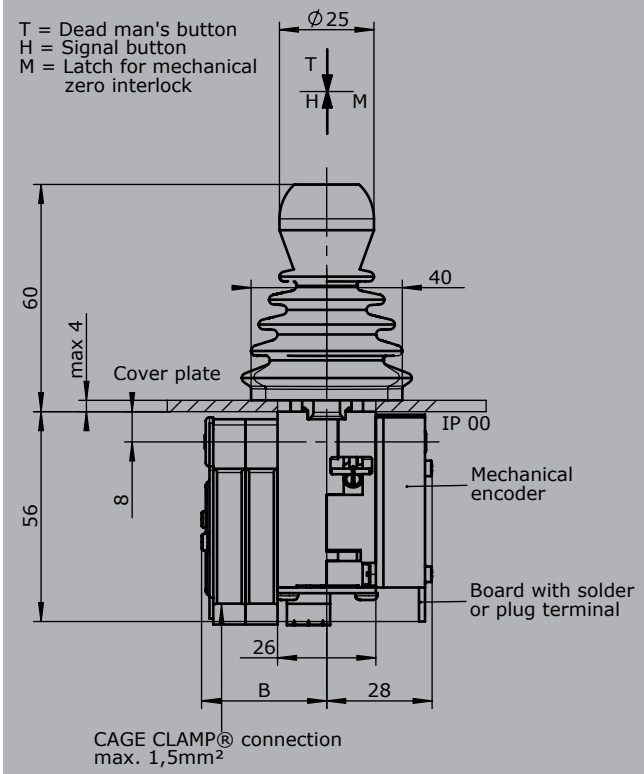
		S14L	S8	T	-01ZC	-A05	C61	-X
GK1MN	Mechanical zero interlock (push down)							
GK1T	Dead man							
GK1H	Signal button							
GK1MH	Mechanical zero interlock + signal contact							
GK1D	Push button							
GK1DV	Flush push button							
GS9	Hall-twist grip with spring return							
GS9-D	Hall-twist grip with spring return and push button on top							
B ...	Palm grip B... *(on request!)*							

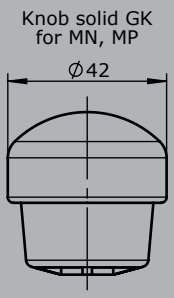
		S14L	S8	T	-01ZC	-A05	C61	-X
Axis 1: direction 1-2 left / direction 5-6 right								
	(Standard contacts gold-plated 2A 250V AC15)							
01	2 contacts	Standard contact - arrangement see page 140						
02	4 contacts	z.B.						
03	6 contacts	A05	MS21					
		A0500	MS21-00					
		A110	MS24-0					
		A99 contact - arrangement according customer request						
Z	Spring return *(included in basic unit!)*							
R	Friction brake							
C	Mechanical encoder	C61	MEC 1-2					
			EA/02-10			l max. 1 mA		
			Potentiometer track			2 x 10 kOhm		
			Direction track			Arrangement MS26-0		
		C62	MEC 1-7					
			EA/10-10			l max. 1 mA		
			Potentiometer track			2 x 5 kOhm		
			Direction track			Arrangement MS26-0-1		
		C66	MEC 1-10					
			EA/17-10			l max. 1 mA		
			Potentiometer track			2 x 1,5 kOhm		
			Direction track			Arrangement MS21-0+MS21		
		C63	MEC 1-6					
			EA/09-10					
			6 Bit Gray Code					
		C64	MEC 1-6-5					
			ER/36-10			Us= 18-30 V		
			Current output 20...4...20 mA					
		C65	MEC 1-6-8					
			ER/ 36-10			Us= 18-30 V		
			Current output 20...0...20 mA					
		C67	MEC 1-6-9					
			ER/36-11			Us= 18-30 V		
			Voltage output 10...0...10V					
		More potentiometers on request!						
H	Hall-Potentiometer	E14811				0,5...2,5...5,4 V / 4,5...2,5...0,5 V		

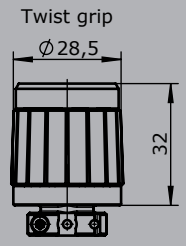
		S14L	S8	T	-01ZC	-A05	C61	-X
Special model								
X	Special / customer specified							

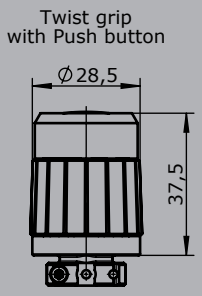
Technical details may vary based on configuration or application! Technical data subject to change without notice!

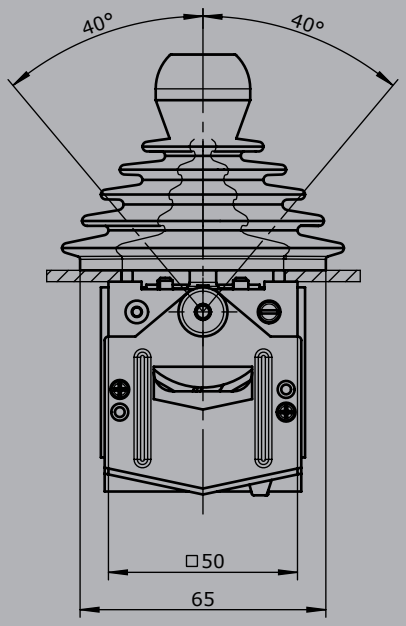
1

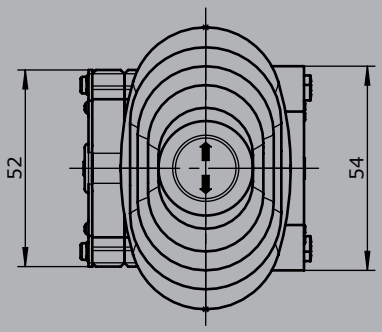


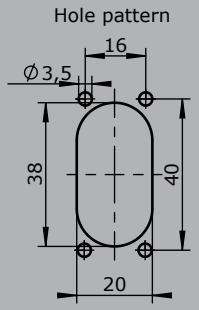












Type	No. of contacts	Dim. B
01	2	24
02	4	33
03	6	42

V2019/1 15.03.2019

Single-axis controller
S3

The single-axis control S3 is a rugged switching device for hoisting applications. The modular design enables the switching device to be used universally. The single-axis controller is resistant to oil, maritime conditions e.g. offshore /vessels, UV radiation typically from the sun.

Technical data

Mechanical life S3	12 million operating cycles
Operating temperature	-40°C to +85°C
Degree of protection	IP66 front

Example

S3L	S5	Q	-2 R P	-B	-A05 P484	-E1291	-S...	-X

Basic unit

S3L	Single-axis controller left

Control-handle extended

S5	-20 mm

Grip- control-handle left

Q	T-grip

Axis 1

2	2 contacts (1,5A 24 V DC13)
R	Friction brake
P	Potentiometer

Cover housing

B	Cover housing

Description axis 1 (direction 1-2)

A05	Arrangement MSP21
P484	Potentiometer T318 2 x 5 kOhm

Interface

E1291	Voltage output 0...5...10 V

Plug connectors

S..	Standard plug connectors *(see page 138)*

Special model

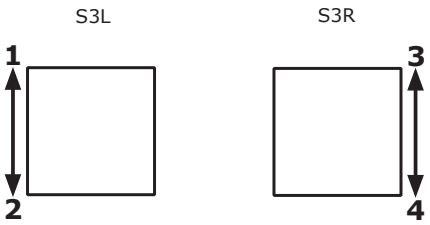
X	Special / customer specified

Technical details may vary based on configuration or application! Technical data subject to change without notice!

1

S3L	S5	Q	-2 R P	-B	-A05	P484	-E1291	-S...	-X

Identification of the installation variants with switching directions:



Basic unit

S3L	Single-axis controller, control-handle left
S3R	Single-axis controller, control-handle right

Control-handle extended

	Standard 148 mm*
S5	-20 mm
S8	+20 mm

**Only possible in combination with handle!*

Grip

	Knob
D	Push button
Q	T-grip
QD	T-grip with push button side

S3L	S5	Q	-2 R P	-B	-A05	P484	-E1291	-S...	-X

Axis 1: direction 1-2 left

1	1 contact	Standard contact - arrangement see page 140		
2	2 contacts	z.B.		
3	3 contacts	A98		
		A05		
		A050		
		A99 contact - arrangement according customer request		
R	Friction brake			
(P)	Possibility of mounting potentiometer and encoder (Gessmann-types)			
P	Potentiometer	P484	T318 2x5 kOhm	I max. 1 mA
			More potentiometers on request!	
H	Hall-Potentiometer		E14811	0,5...2,5...4,5 V / 4,5...2,5...0,5 V

S3L	S5	Q	-2 R P	-B	-A05	P484	-E1291	-S...	-X

Cover housing

B	Cover housing

Interface *(description on the following pages)*

	Potentiometer output
E1xx	Voltage output
E2xx	Current output

Special model

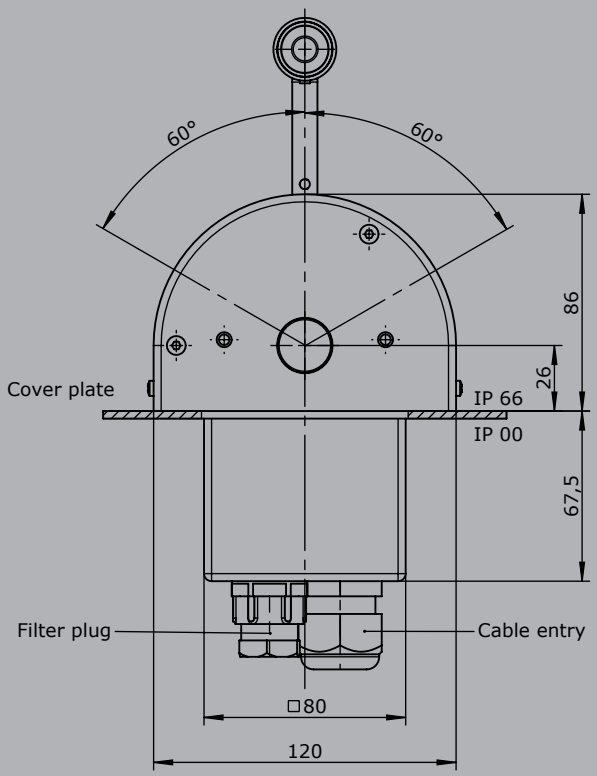
X	Special / customer specified

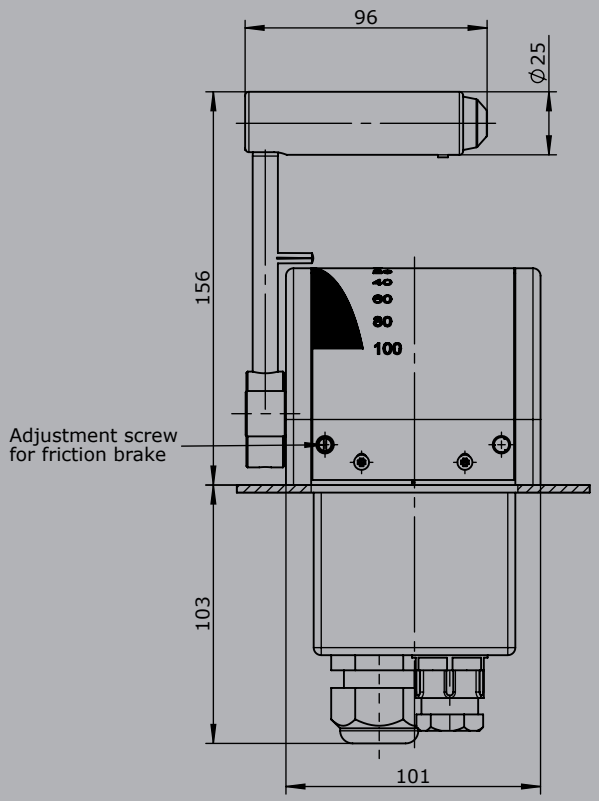
Voltage output			
Supply voltage	11,5-32 V DC		
Wiring	Cable 500 mm long without plug connector		
	Optional with plug connector *(standard plug connectors see page 138)*		S
...5...10V			
		1 axis	E112 1
10...0...10V			
		1 axis	E141 1
-10...0...+10V			
		1 axis	E140 1
Voltage output with other value on request!			

Current output			
Supply voltage	18-36 V DC		
Wiring	Cable 500mm long without plug connector		
	Optional with plug connector *(standard plug connectors see page 138)*		S
4...12...20 mA			
		1 axis	E209 1
20...4...20 mA			
		1 axis	E217 1

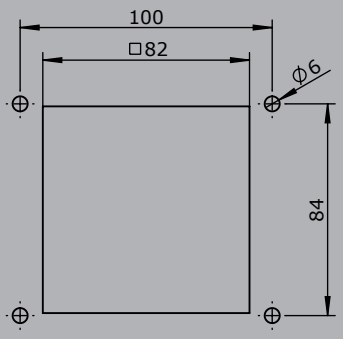
1

T - grip
D= Push button

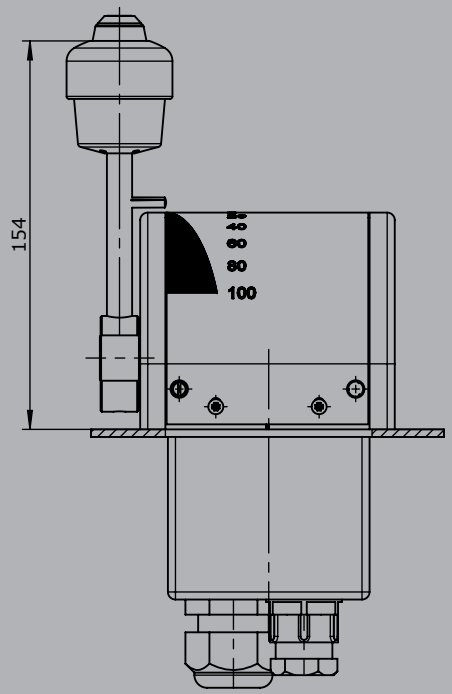




Hole pattern



Knob solid
D= Push button



Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Control switch
N6

The control-switch N6 is a rugged switching device for hoisting applications. The modular design enables the switching device to be used universally. The single-axis controller is resistant to oil, maritime conditions e.g. offshore /vessels, UV radiation typically from the sun.

Technical data

Mechanical life N6	10 million operating cycles
Operating temperature	-40°C to +85°C
Degree of protection	up to IP54

Example

N6	-DG	-01 Z P	-A05 P134	-X

Basic unit

N6	incl. ISO-front plate 88 x 88 mm

Grip

DG	Twist grip

Axis 1 (direction 2-4)

01	2 contacts (2A 250 V AC15)
Z	Spring return
P	Potentiometer

Description axis 1 (direction 3-4)

A05	Arrangement MSP21
P134	Potentiometer T396 2 x 5 kOhm

Special model

X	Special / customer specified

Technical details may vary based on configuration or application! Technical data subject to change without notice!

1

	N6	-DG	-01 Z P	-A05	P134	-X

Basic unit

N6	incl. ISO-front plate 88 x 88 mm
N6A	incl. ISO-front plate 88 x 88 mm, IP65 (front)

Grip

KN	Knob
HG	Ball grip
DG	Twist grip

Axis 1: direction 3-4

(Standard contacts gold-plated 2A 250 V AC15)

01	☐ 2 contacts	Standard contact - arrangement see page 140	
02	☐ 4 contacts	z.B.	
03	☐ 6 contacts	A980	MS00
04	☐ 8 contacts	A05	MS21
05	☐ 10 contacts	A0500	MS21-00
06	☐ 12 contacts	A110	MS24-0
	Ⓐ = Silver contacts (4A 250 V AC15)	*A99 contacts - arrangement according customer request*	

Z	Spring return			
R	Friction brake			
(P)	Possibility of mounting potentiometer and encoder (Gessmann-types)			
P	Potentiometer	P131	T396 2 x 0,5 kOhm	I max. 1 mA
		P132	T396 2 x 1 kOhm	I max. 1 mA
		P138	T396 2 x 2 kOhm	I max. 1 mA
		P134	T396 2 x 5 kOhm	I max. 1 mA
		P135	T396 2 x 10 kOhm	I max. 1 mA
		More potentiometers on request!		
C		C... Encoder see page 146		

	N6	-DG	-01 Z P	-A05	P134	-X

Special model

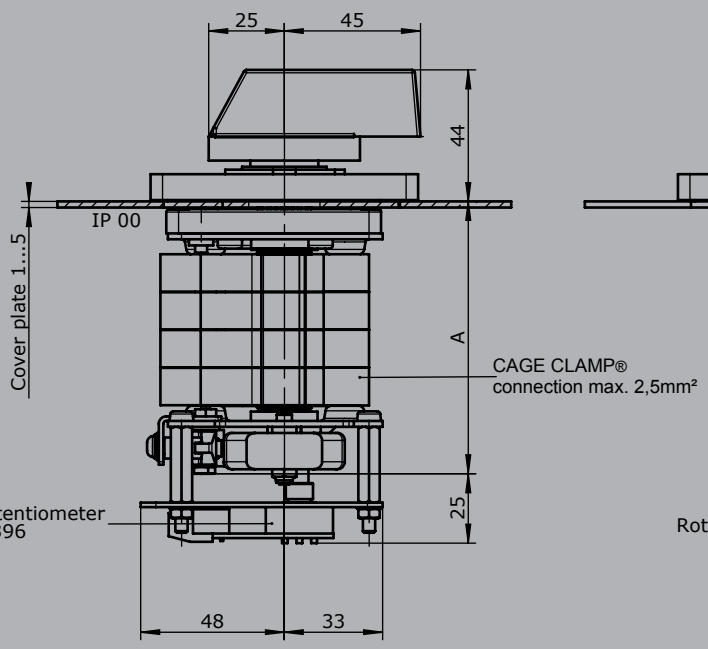
X	Special / customer specified

Attachments

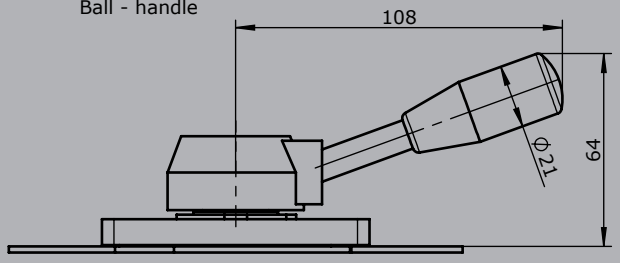
Indicating label

Indicating label with engraving

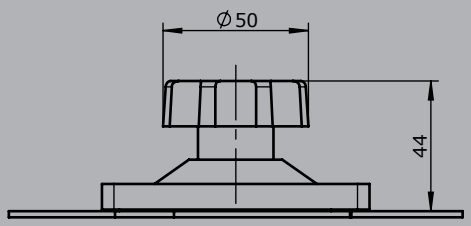
Knob

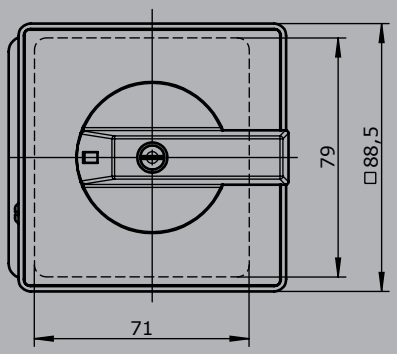


Ball - handle

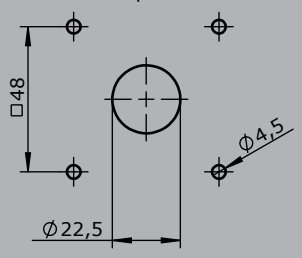


Rotary mechanism





Hole pattern



Type	No. of contacts	Dim. A	Spring return
01	2	53	+25
02	4	65	
03	6	78	
04	8	90	
05	10	103	
06	12	115	

Technical details may vary based on configuration or application! Technical data subject to change without notice!

Control switch
N9

The control-switch N9 is a rugged switching device for electrohydraulic and hoisting applications. The modular design enables the switching device to be used universally.

Technical data

Mechanical life N9	10 million operating cycles
Operating temperature	-40°C to +85°C
Degree of protection	IP54

1

Example

N9	-2 R P	-A05	P134	-X

Basic unit

N9	Control switch with twist grip

Axis 1: direction 3-4

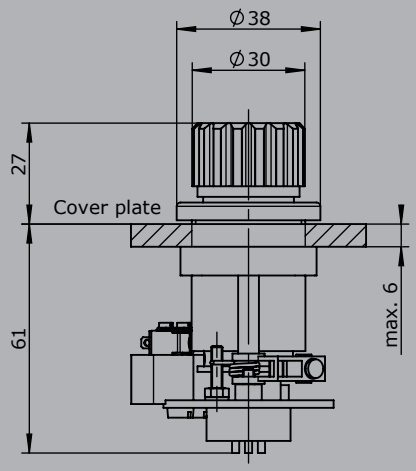
1	1 contact	Standard contact - arrangement see page 140		
2	2 contacts	z.B.		
		A98	MS0	
		A05	MS21	
		A99 contacts - arrangement according customer request		
R	Friction brake (included in basic unit)			
(P)	Possibility of mounting potentiometer and encoder (Gessmann-types)			
P	Potentiometer	P131	T396 2 x 0,5 kOhm	I max. 1 mA
		P132	T396 2 x 1 kOhm	I max. 1 mA
		P133	T396 2 x 2 kOhm	I max. 1 mA
		P134	T396 2 x 5 kOhm	I max. 1 mA
		P135	T396 2 x 10 kOhm	I max. 1 mA
		More potentiometers on request!		
H	Hall-Potentiometer	E14811	0,5...2,5...4,5 V / 4,5...2,5...0,5 V	

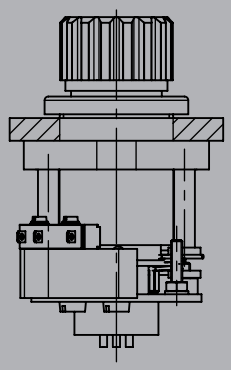
Special model

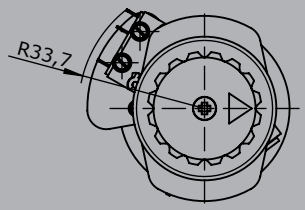
X	Special / customer specified

Technical details may vary based on configuration or application! Technical data subject to change without notice!

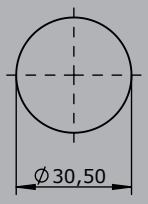
V2019/1 15.03.2019







Hole pattern



Control switch
N10

The control switch N10 is a rugged switching device for electrohydraulic and hoisting applications. Up to 18 detent points can be integrated.

Technical data

Mechanical life	10 million operating cycles
Mechanical life with detent	3 million operating cycles
Operating temperature	-40°C to +85°C
Degree of protection	IP67 (electronic)

N10	-90	1	-6	-E14811	-X

Basic unit

N10	Control switch with rotary knob

Operating distance

270°
180°
90°

Detent

0	Without detent
1	Detent point in middle position
2	Detent points at a distance of 15°

Dead zone around the center position

0	No dead zone
Example +/-3° => 6	

Interface

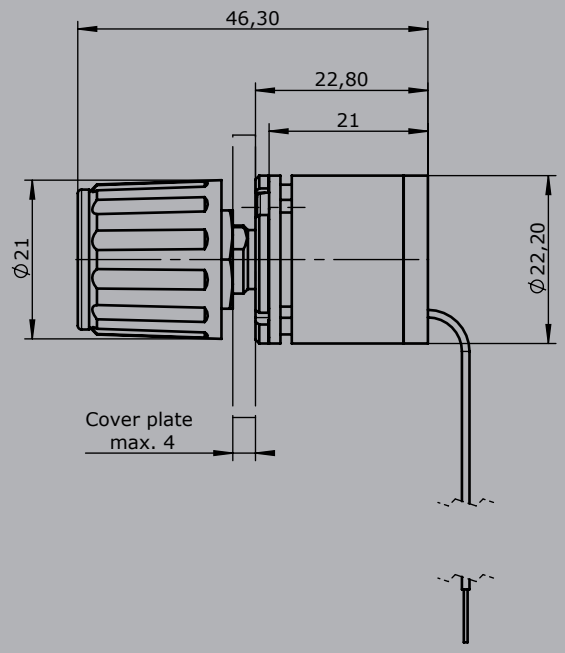
Voltage output

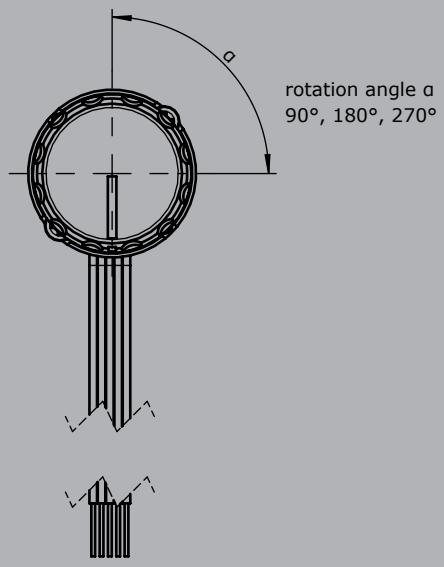
E1481	1	0,5...2,5...4,5 V dual inverse Ub= 5 V DC
	2	0,5...2,5...4,5 V dual positive gradient clockwise (cw) Ub= 5 V DC
	3	0,5...2,5...4,5 V dual positive gradient counter clockwise (ccw) Ub= 5 V DC
E1491	1	0,5...2,5...4,5 V positive gradient clockwise (cw) with zero position signal Ub= 5 V DC
	2	0,5...2,5...4,5 V positive gradient counter clockwise (ccw) with zero position signal Ub= 5 V DC
	3	0,5...2,5...4,5 V positive gradient clockwise (cw) with direction signals Ub= 5 V DC
	4	0,5...2,5...4,5 V positive gradient counter clockwise (ccw) with direction signals Ub= 5 V DC

Special model

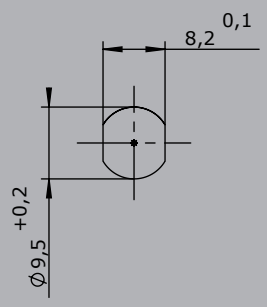
X	Special / customer specified

V2019/1 15.03.2019





Hole pattern



GESSMANN

1

Molex Micro-Fit 3.0 - Suited for conductor cross-section 0,1 til 0,75 mm²

S004	Male housing 10-pole	S012	Female housing 10-pole
S006	Male housing 14-pole	S014	Female housing 14-pole
S007	Male housing 18-pole	S015	Female housing 18-pole

Deutsch DTM - Suited for conductor cross-section 0,25 til 1,5 mm²

S017	Male housing 4-pole	S022	Female housing 4-pole
S018	Male housing 6-pole	S023	Female housing 6-pole
S019	Male housing 8-pole	S024	Female housing 8-pole
S021	Male housing 12-pole	S026	Female housing 12-pole

Deutsch DT - Suited for conductor cross-section 0,25 til 2,0 mm²

S027	Male housing 4-pole	S032	Female housing 4-pole
S028	Male housing 6-pole	S033	Female housing 6-pole
S029	Male housing 8-pole	S034	Female housing 8-pole
S031	Male housing 12-pole	S036	Female housing 12-pole

AMP CPC - Suited for conductor cross-section 0,12 til 1,5 mm²

S037	Male housing CPC 13 9-pole	S040	Female housing CPC 13 9-pole
S038	Male housing CPC 17 14-pole	S041	Female housing CPC 17 14-pole
S039	Male housing CPC 23 37-pole	S042	Female housing CPC 23 37-pole

AMP Mini-Universal MATE-N-LOK (seaked) - Suited for conductor cross-section 0,12 til 1,5 mm²

S043	Male housing 4-pole	S048	Female housing 4-pole
S044	Male housing 6-pole	S049	Female housing 6-pole
S045	Male housing 8-pole	S050	Female housing 8-pole
S046	Male housing 10-pole	S051	Female housing 10-pole
S047	Male housing 16-pole	S052	Female housing 16-pole

Phoenix - Suited for conductor cross-section til 1,5 mm²

S053	Male housing IC 2,5 *(STGF)* 8-pole with screw terminal	S057	Female housing MSTB 2,5 *(STF)* 8-pole with screw t erminal
S054	Male housing IC 2,5 *(STGF)* 12-pole with screw terminal	S058	Female housing MSTB 2,5 *(STF)* 12-pole with screw terminal
S055	Male housing IC 2,5 *(STGF)* 14-pole with screw terminal	S059	Female housing MSTB 2,5 *(STF)* 14-pole with screw terminal
S056	Male housing IC 2,5 *(STGF)* 18-pole with screw terminal	S060	Female housing MSTB 2,5 *(STF)* 18-pole with screw terminal

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

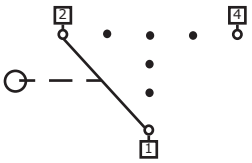
Degree of protection	
B10	Joystick-main circuit board grouted (IP67)
B11	Joystick-main circuit board grouted (IP67) and grip function sealed, grip with drain hole

Standard contact-arrangement for master switch

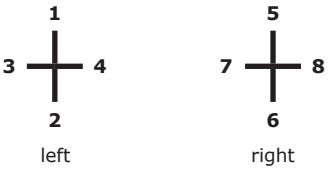
Type	Form
MS11	A01
MS12	A02
MS13	A03
MS14	A04
MS21	A05
MS22	A06
MS212	A07
MS222	A08
MS23	A09
MS213	A10

Type	Form
MS24	A11
MS214	A12
MS224	A13
MS25	A14
MS26	A15
MS0	A98
Zero contact NC	A...0
Zero contact NO	A...1

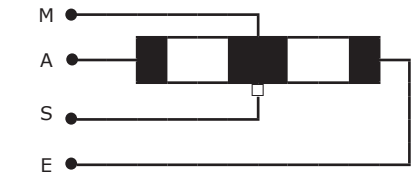
Micro change over contact for control handle with dead man`s button signal button push button



contact 5 05 = direction1/4/5/8
contact 3 03 = direction 2/3/6/7



Deflection directions designated DIN 15025



Poten-
tiome-
ter
MSP

Utilization categories for control switches to IEC/EN 60947-5-1

Type of current	Utilization category	Typical examples of application	Normal conditions of use					
		I= current made, Ic= current broken Ie= rated operational current, U= voltage before make Ue= rated operational voltage Ur= recovery voltage T 0,95= time in ms, to reach 95% of the steady-state current. P= UE · Ie= steady-state power consumption in watts	Make			Breake		
			I / Ie	U / Ue	cos	Ic / Ie	Ur / Ue	cos
alternating current	AC12	Control of resistive loads and solid state loads with isolation by opto couplers control of a.c. electromagnetic loads (> 72VA)	1	1	0,9	1	1	0,9
	AC15		10	1	0,3	1	1	0,3
			I / Ie	U / Ue	t 0,95	Ic / Ie	Ur / Ue	t 0,95
Direct current	DC 12	Control of resistive loads and solid state loads with isolation by opto couplers Control of d.c. electromagnets	1	1	1 ms	1	1	1 ms
	DC 13		1	1	6 · P	1	1	6 · P

The value 6·P results from an empirical relationship with is found to represent most d.c. magnetic loads to an upper limit of P = 50 W viz 6·P = 300 ms. Loads having power consumption greater than 50 W are assumed to consist of smaller loads in parallel. Therefore 300 ms is to be an upper limit, irrespective of the power consumption value.

Attach our switching device		V6 N6 S6 N61 N62	VV6 DD64	V11	V5 S2-S23	VV5 SS2-SS21
Rated isolation voltage Ui in Volt		250	250	250	250	250
Rated operational voltage Ue in Volt		250	250	250	250	250
Rated operational current in Ampere	Ie AC 12	6 or 16	6 or 16	6 or 16	10	10
	AC 15	2 4	2 4	2 4	2	2
DC 12	24 V	6 8	6 8	6 8	4	4
	48 V	2 4	2 4	2 4	2	2
	110 V	0,5 1	0,5 1	0,5 1	0,2	0,2
	220 V	0,1 0,5	0,1 0,5	0,1 0,5	0,1	0,1
Contacts gold-coated	24 V	5 mA	5 mA	5 mA	5 mA	5 mA
DC 13	24 V	1	1	1	3	3
	48 V	0,5	0,5	0,5	1,5	1,5
	110 V	0,2	0,2	0,2	0,1	0,1
	220 V	0,05	0,05	0,05	0,05	0,05
Short-circuit-protection in Ampere Fuse Circuit-breaker G-characteristic	9L	6 16 6 16	6 6 6 16	6 16 6 16	10 10	10 10
Terminal screws Plug-in connector CAGE CLAMP® connection is a registered trademarkt of WAGO Kontakttechnik GmbH Germany		M 3,5 2,5 mm²	M 3,5 2,5 mm²	M 3,5 2,5 mm²	M 3,5 6,3 x 0,8	M3,5 6,3 x 0,8
Conductor sizes in mm² finely stranded with end steeves		1,5	1,5	1,5	1,5	1,5
Mechanical life in million (operation cycles) max. switching frequency c/h 1000		10	20	10	6	10
Mechanical shock resistance IEC 68-2-27		Shock-amplitude > 15 Shock duration 20 ms				
Clearances and creepage distances IEC 947-1; 2.5.46.51		Overvoltage category III pollution grade 3				

Technical data

1

Attach our switching device		V8 V85 D8	VV8 VV85 D3 S3	V10 V25 S1	V14 S14	V3	Dead man`s button signal button push button
Rated isolation voltage Ui in Volt		110	110	110	250	500	250
Rated operational voltage Ue in Volt		110	110	110	250	350	250
Rated operational voltage in Ampere	Ie AC 12	2	2	2	6	16	6
	AC 15	0,5	0,5	0,5	2	4	2
DC 12	24 V	2	2	2	6	8	4
	48 V	1	1	1	2	4	2
	110 V	0,1	0,1	0,1	0,5	1	0,2
	220 V				0,1	0,5	0,1
Contacts gold-coated	24 V	5 mA	5 mA	5 mA	5 mA	5 mA	5 mA
DC 13	24 V	1,5	1,5	1,5	1	1	3
	48 V	0,5	0,5	0,5	0,5	0,5	1,5
	110 V	0,05	0,05	0,05	0,2	0,2	0,1
	220 V				0,05	0,05	0,05
Short-circuit-protection in Ampere Fuse Circuit-breaker G-characteristic	9L	4 4	4 4	4 4	6 6	16 16	6 6
Terminal screws Plug-in connector CAGE CLAMP® connection is a registered trademarkt of WAGO Kontakttechnik GmbH Germany		Solder terminal			M4 1,5 mm²	M 3,5 6,3 x 0,8	6,3 x 0,8
Conductor sizes in mm² finely stranded with end steeves		0,5	0,5	0,5	1	1,5	1,5
Mechanical life in million (operation cycles) max. switching frequency c/h 1000		8	12	8	6	6	10
Mechanical shock resistance IEC 68-2-27		Shock-amplitude > 15	Shock duration 20 ms				
Clearances and creepage distances IEC 947-1; 2.5.46.51		Overvoltage category III pollution grade 3					

Degree of protection to IEC/EN 60529	1. numerial protection of contact and foreign bodies	2. numerial protection of water
IP00	No protection	No protection
IP54	Dust-protected	protected against splashing water
IP65	dust-tight	protected against water jets
IP66	dust-tight	protected against powerful water jets
IP67	dust-tight	protected against the effects of temporary immersion in water

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Potentiometer
with attach to our switching device

GESSMANN

for mounting on	Typ	Capacity (W)	Imax wiper (mA)	Typ	Expansion	with centre tap life: 2 x 0,5 kOhm	2 x 1 kOhm	2 x 2 kOhm	2 x 5 kOhm	2 x 10 kOhm	Hall 0,5...2,5...4,5V / 4,5...2,5...0,5V	Part No.	Addition for Part No.	Comment
						1	2	3	4	5				
V6 / VV6 D64 / DD64 V5 / VV5 V3 S2 / SS2 S6 N6 P7 P8	T1420	1,5	10	P44	☐	x	x	x	x	x		524004400	☐	
	T132	2,5	10	P05	☐	x	x	x	x	x		524000500	☐	
	T132 Öl	2,5	10	P06	☐	x	x		x	x		524000600	☐	
	T178	1,5	10	P07	☐		x	x	x			524000700	☐	characteristic progressive
	T238	1	10	P08	☐	x	x	x	x	x*1		524000800	☐	*1 R= 2 x 6,5 kOhm
	T133	60	85	P10	☐	x						524001000	☐	
	T396	0,5	1	P13	☐	x	x	x	x	x		524001300	☐	
	T1350 Ex	0,5	1	P14	☐	x	x	x	x	x		524001400	☐	
	T1360			P43							x	5240043009		
V8 / VV8 D8 P10 P11 P12	T239	1	10	P17	☐			x	x			524001700	☐	
	T301	0,5	1	P18	☐		x	x	x	x		524001800	☐	
	T426	0,5	1	P19	☐				x	x		524001900	☐	with direction lines
	T432	0,5	1	P20	☐				x			524002000	☐	
	T246	0,5	1	P21	☐	x	x		x	x		524002100	☐	
	T362	0,5	1	P22	☐		x	x	x			524002200	☐	
	T1003			P42							x	5240042009		
	T1360			P43							x	5240043009		
V10 S1 Palm handle	T321	1	10	P24	☐		x					524002400	☐	
	T320	0,5	1	P25	☐		x		x			524002500	☐	
	T1187	0,5	1	P27	☐				x			524002700	☐	with direction lines
	T375	0,5	1	P37	☐		x		x			524003700	☐	
	T997			P41							x	5240041009		
V11	T316	1	10	P31	☐				x*2			524003100	☐	*2 R= 2 x 4 kOhm
	T365	0,5	1	P32	☐				x	x		524003200	☐	
D3 S3	T318	0,5	1	P48	☐				x			524004800	☐	

for mounting on	Typ	Capacity (W)	Imax wiper (mA)	Typ	Expansion	without centre tap life: 0,5 kOhm	1 kOhm	2 kOhm	5 kOhm	10 kOhm	Part No.	Addition for Part No.	Commend
						1	2	3	4	5			
V6 / VV6 D64 / DD64 V5 / VV5 V3 S2 / SS2 S6 N6 P7 / P8	T1491	1,5	10	P46	☐	x	x	x	x	x	524004600	☐	
	T131	2,5	10	P03	☐	x	x	x	x	x	524000300	☐	
	T131 Oil	2,5	10	P04	☐		x		x	x	524000400	☐	
	T134	60	85	P11	☐				x		524001100	☐	
	T374	0,5	1	P12	☐	x	x	x	x	x	524001200	☐	
V8 / VV8 /D8 P10/P11/P12	T244	0,5	1	P23	☐			x	x	x	524002300	☐	
	T397	0,5	1	P47	☐		x	x	x		524004700	☐	
V10 / S1 Palm grip	T337	0,5	1	P26	☐		x	x	x	x	524002600	☐	
GE1/GE2	PW70	5	30	P45	☐	x	x		x		524004500	☐	

Technical details may vary based on configuration or application! Technical data subject to change without notice!

Hall-Potentiometer
HG 2

The Hall-Potentiometer HG2 is distinguished by its precision and longevity.

Technical data

Mechanical life	10 million operating cycles
Operation temperature	-40°C to +85°C
Degree of protection	IP67

2

Example

	HG2A	-60	-6	-E14811	-X

Basic unit

HG2A Hall-Potentiometer HG2 Model A
HG2B Hall-Potentiometer HG2 Model B

Operating distance

0-359° possible
Example 60° => 60

Dead zone around the center position

0 No dead zone
Example +/-3° => 6

Interface

Voltage output HG2

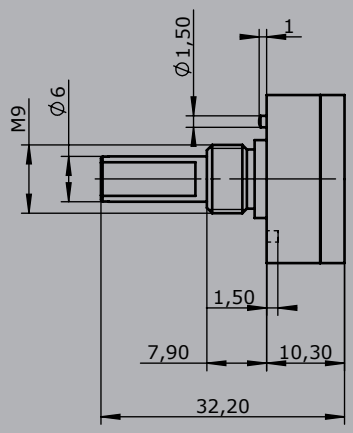
E1481	1	0,5...2,5...4,5 V dual inverse Ub= 5 V DC
	2	0,5...2,5...4,5 V dual positive gradient clockwise (cw) Ub= 5 V DC
	3	0,5...2,5...4,5 V dual positive gradient counter clockwise (ccw) Ub= 5 V DC
E1491	1	0,5...2,5...4,5 V positive gradient clockwise (cw) with zero position signal Ub= 5 V DC
	2	0,5...2,5...4,5 V positive gradient counter clockwise (ccw) with zero position signal Ub= 5 V DC
	3	0,5...2,5...4,5 V positive gradient clockwise (cw) with direction signals Ub= 5 V DC
	4	0,5...2,5...4,5 V positive gradient counter clockwise (ccw) with direction signals Ub= 5 V DC

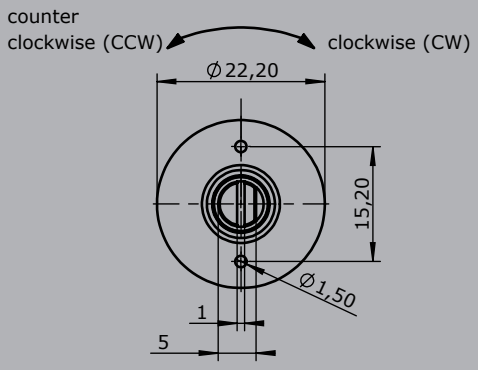
Special model

X Special / customer specified

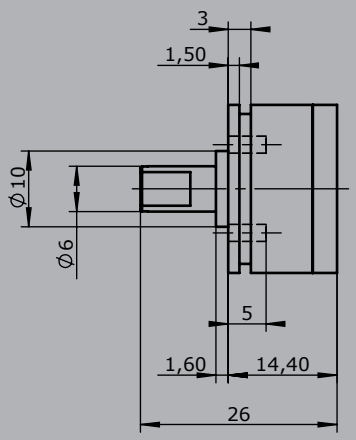
V2019/1 15.03.2019

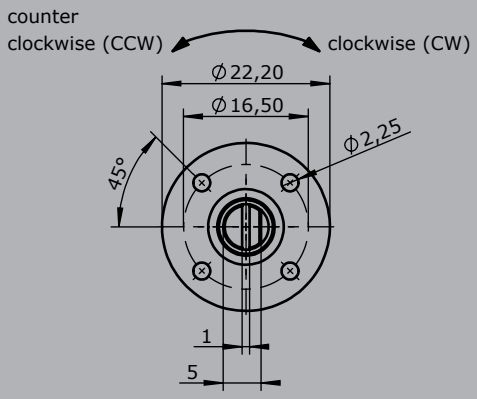
HG2A





HG2B





2

Opto-electronic encoder
Output digital OEC 2
with attach to our switching device

GESSMANN

Opto-electronical encoder OEC 2 with digital output gray-/binär-cdode

Power supply	18-30 V DC				
Rotation angle	Max. +/-150° (by 9 Bit 300°)				
Digital output	8 Bit Gray-Code T359	Output characteristic linear	OEC 2-1-1	C01	410 g
	8 Bit Binary-Code T359	Output characteristic linear	OEC 2-2-1	C02	410 g
	6 Bit Gray-Code T359	Output characteristic linear	OEC 2-3-1	C031	410 g
	6 Bit Gray-Code T359	Output characteristic quadratic	OEC 2-3-2	C032	410 g
	6 Bit Binary-Code T359	Output characteristic linear	OEC 2-4-1	C041	410 g
	6 Bit Binary-Code T359	Output characteristic quadratic	OEC 2-4-2	C042	410 g
	9 Bit Gray-Code T384	Output characteristic linear one side clockwise	OEC 2-5-4	C054	410 g
	9 Bit Gray-Code T384	Output characteristic linear one side anticlockwise	OEC 2-5-5	C055	410 g
	9 Bit Binary-Code T384	Output characteristic linear one side clockwise	OEC 2-6-4	C064	410 g
	9 Bit Binary-Code T384	Output characteristic linear one side anticlockwise	OEC 2-6-5	C065	410 g

6 Bit-type T359

PIN	connection	Colour-code
1	Not connected	-
2	D4	brown
3	D3	green
4	D2	yellow
5	D1	grey
6	Not connected	-
7	Not connected	-
8	Housing 0 V	black
9	Input 18-30 V DC	red
10	Not connected	-
11	Not connected	-
12	Direction-signal left	violet
13	Direction-signal grey	grey-pink
14	D6	red-blue
15	D5	white-green
-	Cable screen	brown-green

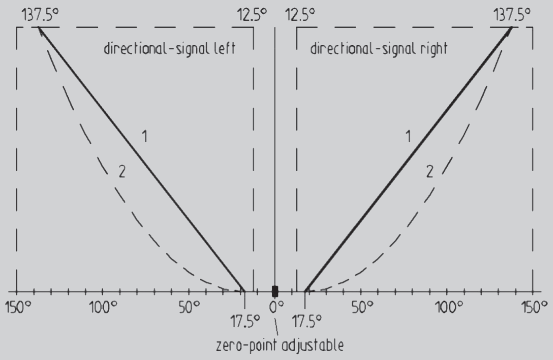
8-Bit-type T359

PIN	connection	Colour-code
1	Not connected	-
2	D6	brown
3	D5	green
4	D4	yellow
5	D3	grey
6	D2	pink
7	D1	blue
8	Housing 0 V	black
9	Input 18-30 V DC	red
10	Not connected	-
11	Not connected	-
12	Direction-signal left	violett
13	Direction-signal right	grey-pink
14	D8	red-blue
15	D7	white-green
-	Cable screen	brown-green

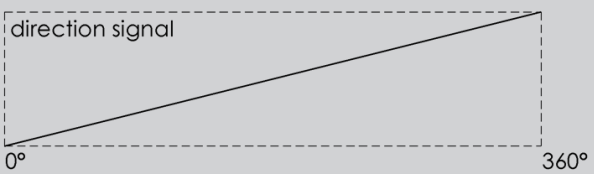
9 Bit-type T384

PIN	connection	Colour-code
1	Not connected	-
2	D6	brown
3	D5	green
4	D4	yellow
5	D3	grey
6	D2	pink
7	D1	blue
8	Housing 0 V	black
9	Input 18-30 V DC	red
10	Not connected	-
11	Not connected	-
12	Direction-signal left	violett
13	D9	grey-pink
14	D8	red-blue
15	D7	white-green
-	Cable screen	brown-green

6 Bit-type T359 **8 Bit-type T359**



9 Bit-type T384



Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

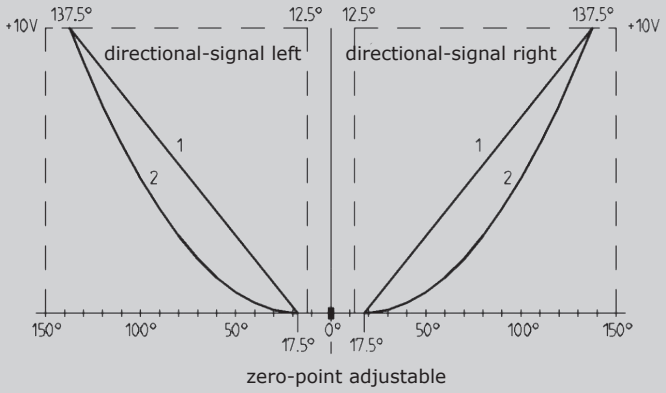
Opto-electronic encoder digital OEC 2 with attach to our switching device

Opto-electronical encoder OEC 2 with voltage output					
Power supply	18 - 30 V DC				
Scanning	6 Bit Gray-Code				
Rotation angle	Max. +/-150°				
Voltage output	10...0...10 V T366	Output characteristic linear	OEC 2-3-1-1	C111	410 g
	10...0...10 V T366	Output characteristic quadratic	OEC 2-3-2-1	C112	410 g
	-10...0...+10 V T367	Output characteristic linear	OEC 2-3-1-2	C151	410 g
	-10...0...+10 V T367	Output characteristic quadratic	OEC 2-3-2-2	C152	410 g

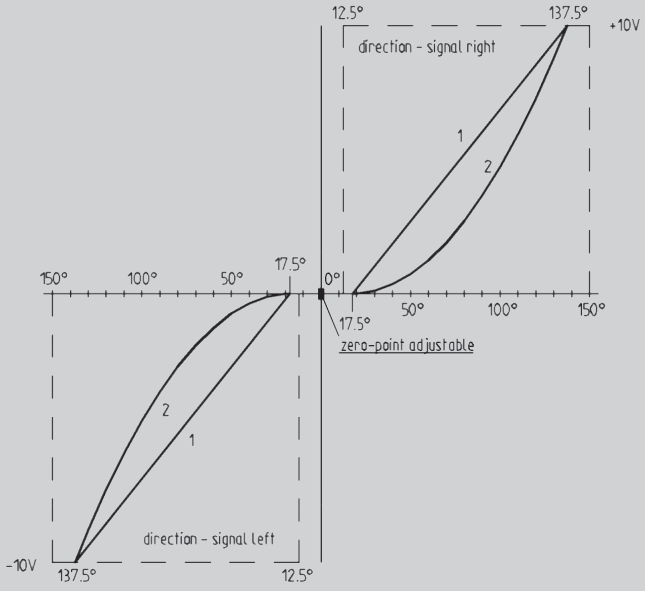
Voltage output

PIN connection		Colour-code
1	Not connected	-
2	Not connected	-
3	Not connected	-
4	Not connected	-
5	Not connected	-
6	Not connected	-
7	Not connected	-
8	Housing 0V	blue
9	Input 18-30V DC	brown
10	Not connected	-
11	Voltage output	green
12	Direction signal left	yellow
13	Direction signal right	grey
14	Not connected	-
15	Not connected	-
-	Cable screen	white

6 Bit-type T366



6 Bit-type T367



Technical details may vary based on configuration or application! Technical data subject to change without notice!

Opto-electronic encoder
Output digital OEC 2
with attach to our switching device

GESSMANN

Opto-electronical encoder OEC 2 with current output

Power supply	18 - 30 V DC				
Scanning	6 Bit Gray-Code				
Rotation angle	Max. +/-150°				
Output current	20...4...20 mA T368	Output characteristic linear	OEC 2-3-1-5	C191	410 g
	20...4...20 mA T368	Output characteristic quadratic	OEC 2-3-2-5	C192	410 g
	20...0...20 mA T368	Output characteristic linear	OEC 2-3-1-8	C201	410 g
	20...0...20 mA T368	Output characteristic quadratic	OEC 2-3-2-8	C202	410 g
	-20...0...+20 mA T369	Output characteristic linear	OEC 2-3-1-6	C231	410 g
	-20...0...+20 mA T369	Output characteristic quadratic	OEC 2-3-2-6	C232	410 g

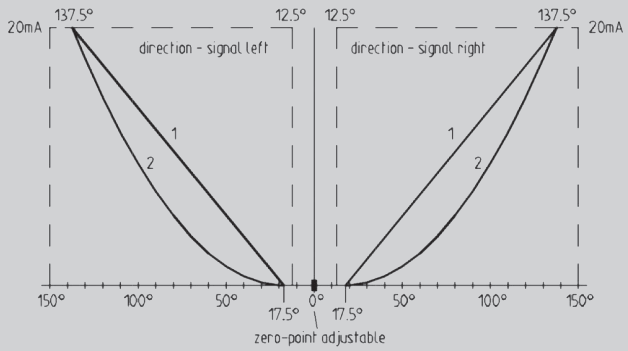
6 Bit-Type T368

PIN connection		Colour-code
1	Not connected	-
2	Not connected	-
3	Not connected	-
4	Not connected	-
5	Not connected	-
6	Not connected	-
7	Not connected	-
8	Housing 0 V	blue
9	Input 18-30 V DC	brown
10	Not connected	-
11	Current output	green
12	Direction signal left	yellow
13	Direction signal right	grey
14	Not connected	-
15	Not connected	-
-	Cable screen	white

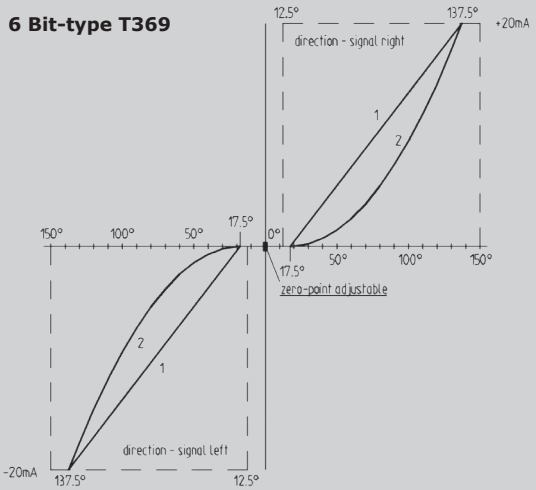
6 Bit-Type T369

PIN connection		Colour-code
1	Not connected	-
2	Not connected	-
3	Not connected	-
4	Not connected	-
5	Not connected	-
6	Not connected	-
7	Not connected	-
8	Housing 0V	blue
9	Input 18-30 V DC	brown
10	Not connected	-
11	Current output	green
12	Direction signal left	yellow
13	Direction signal right	grey
14	Not connected	-
15	Not connected	-
-	Cable screen	white

6 Bit-type T368



6 Bit-type T369



Attachment

Plug with cable 14 x 0,25 mm², 2000 mm long, cable head open (for OEC 2 with digital outputs)	5300000495
Plug with cable 7 x 0,34 mm², 2000 mm long, cable head open (for OEC 2 with analog outputs)	5300000496

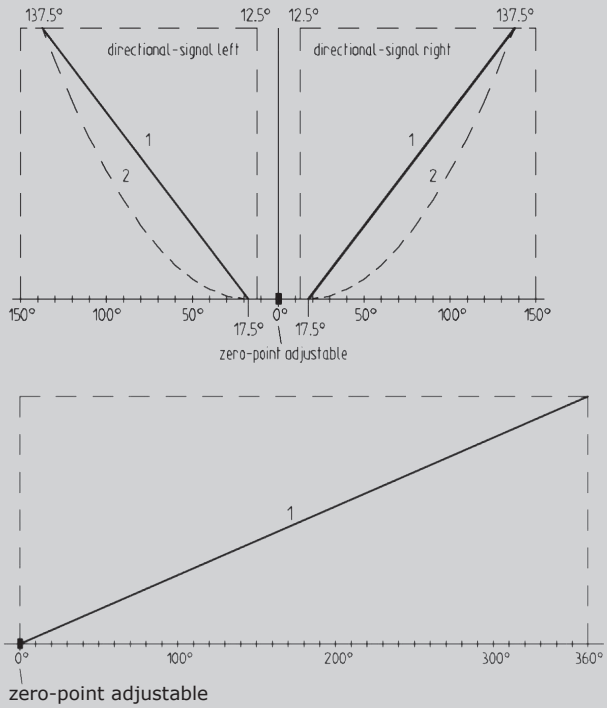
The OEC 2 is able for mounting on V6,VV6/D64,DD64/V11/S2,SS2/S6/N6. For mounting a potentiometer mounting option (P) of the respective controller is required!

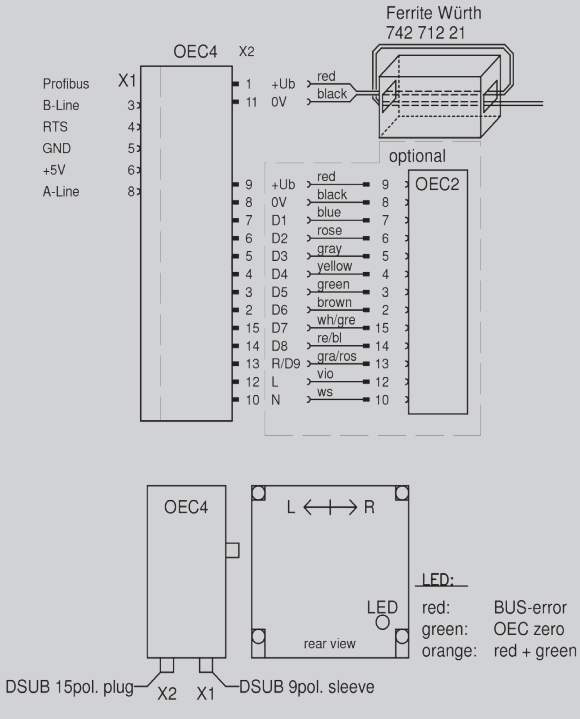
Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Opto-electronic encoder
OEC 4
with interface Profibus DP

Opto-elecetronic encoder				
Power supply	18 - 30 V DC			
Scanning	6, 8 or 9 Bit Gray-Code			
Rotation angle	Max. +/-150°			
Interface	Profibus, DP, address 0-99 adjustable above selector switch			
Voltage output	8 Bit Gray-Code T496 linear	OEC 4-1-1-2	C27	820 g
	8 Bit Binary-Code T496 linear	OEC 4-2-1-2	C28	820 g
	6 Bit Gray-Code T496 linear	OEC 4-3-1-2	C291	820 g
	6 Bit Gray-Code T496 quadratic	OEC 4-3-2-2	C292	820 g
	6 Bit Binary-Code T496 linear	OEC 4-4-1-2	C301	820 g
	6 Bit Binary-Code T496 quadratic	OEC 4-4-2-2	C302	820 g
	9 Bit Gray-Code T497 linear one sided right turn	OEC 4-5-4-2	C314	820 g
	9 Bit Gray-Code T497 linear one sided left turn	OEC 4-5-5-2	C315	820 g
	9 Bit Binary-Code T497 linear one sided right turn	OEC 4-6-4-2	C324	820 g
	9 Bit Binary-Code T497 linear one sided left turn	OEC 4-6-5-2	C325	820 g





Attachment

Plug (Profibus) straight

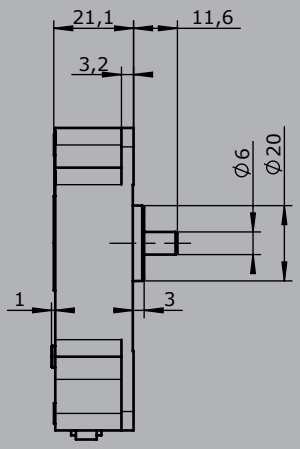
Plug (Profibus) 90° angled

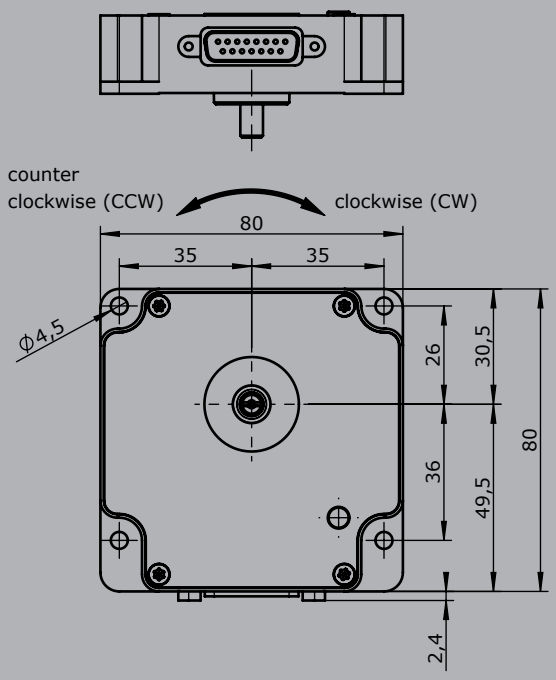
Plug with cable 2 x 0,25 mm², 2000 mm long, cable head open (cable for current supply OEC 4 single application)

Connecting cable OEC 4/ OEC 2 (14 x 0,25 mm²) with 2 plug connectors incl. cable for current supply (2 x 0,25 mm² 2000 mm long, cable head open)

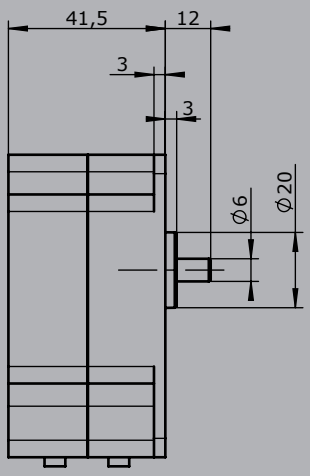
The OEC 4 is able for mounting on V6,VV6/D64,DD64/V11/S2,SS2/S6/N6. For mounting a potentiometer mounting option (P) of the respective controller is required! For a controller with one axis is required 1 piece of OEC 4, for a controller with 2 axis are required 1 piece of OEC 4 and 1 piece of OEC 2.

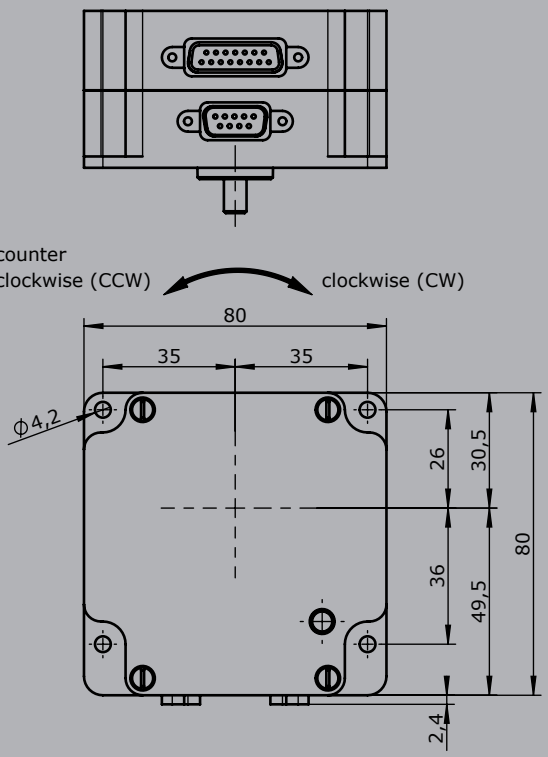
OEC 2





OEC 4

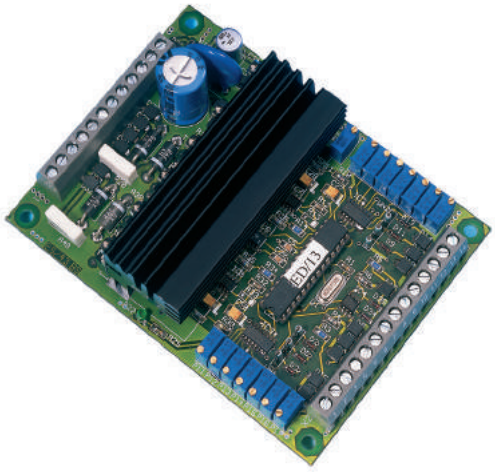




V2019/1 15.03.2019

Electronic control unit ES/43

The electronic control unit ES/43 serves for control of proportional valves without position control. There is a version for 4 proportional valve solenoids (ES / 43-10) and a version for 2 Proportional valve solenoids (ES / 43-11) available.



Example

Features:

- Stabailized voltage
- Chopper output stage with adjustable frequency
- Ramp time setting ON/OFF delay
- Creep speed circuit adjustable
- Solenoid current setting separate for minimum current and maximum current
- Output current controlled independently of temperature and solenoid
- Power output short-circuit-proof with overload protection
- Voltage input protected against polarity reversal
- Mechanical selection of direction by means of contacts
- LED operating voltage and working display
- Microprocessor technology therefore especially adaptable

Technical data:

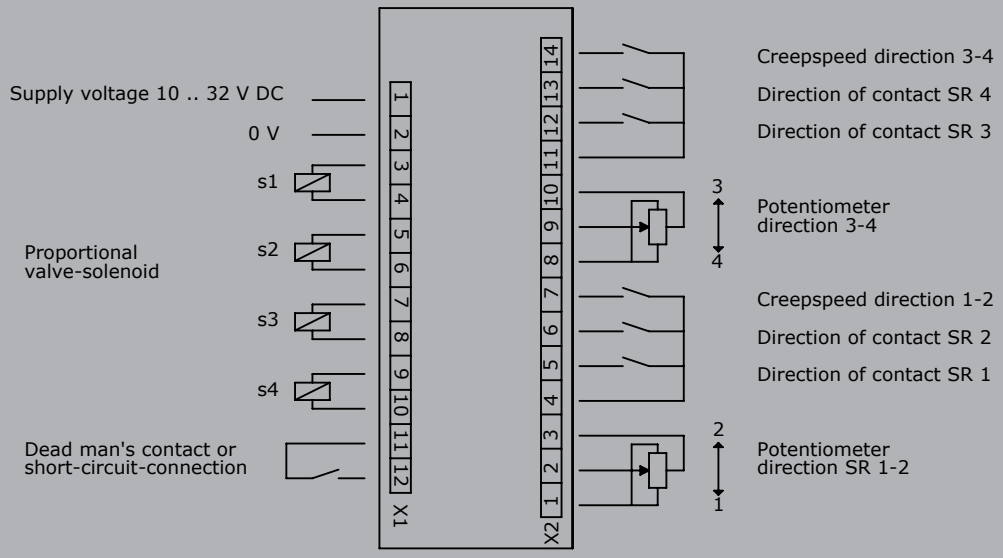
- Supply voltage		10...	32 V DC
- Residual ripple		20%	
- Control voltage range	Ue	0...	5 V
- Control current	Ie	< 1mA	
- Dither frequency	f	25...	250Hz
- Proportional valve S 1-4	I min.	0...	1A
Output	I max. = I min ...		2A at 12 Volt
Output	I max. = I min ...		1A at 24 Volt
- Ramp time setting	t on	0,2...	25 sec
	t off	0,2...	25 sec
- Creep speed	variable reduction		25...75%
- Operating temperature	-40°C to +85°C		
- Storage temperature	-40°C to +80°C		

Electronic control unit for 4 proportional valves solenoid ES/43-10

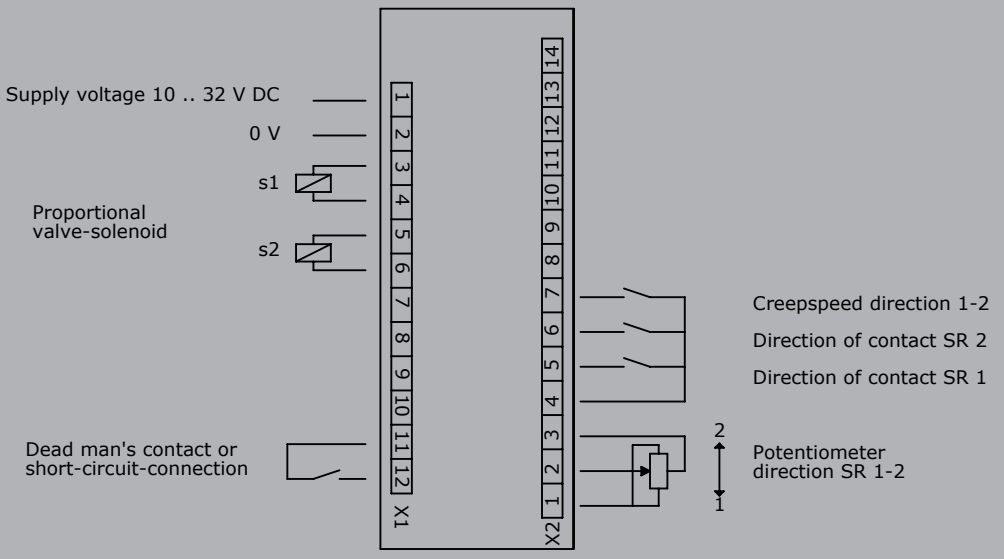
Electronic control unit for 2 proportional valves solenoid ES/43-11

2

ES / 43-10
4 Proportional valves-solenoid



ES / 43-11
2 Proportional valves-solenoid



V2019/1 15.03.2019

Palm grip MATRIX
with attach to our switching device

Controllers	Palm grip																				
	B1	B2	B3	B5	B6	B7 / B8	B9	B10	B14 / B15	B20	B22	B23	B24	B25	B28	B29	B30	B31	B32	B33	B34
V6 / VV6	X	X	X *1	X	X			X	X		X		X		X		X		X	X	X
V11	X			X	X			X	X		X		X		X		X		X	X	X
V8 / VV8	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
V85 / VV85	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
V25	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
V24	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
V14 / S14				X	X						X								X*2	X	
D64 / DD64								X													
D8								X													
D3								X													
S2 / SS2				X																	
S22 / SS22				X																	
S21 / SS21				X	X			X			X		X		X	X	X		X	X	X
S26				X																	
V27	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

*1 deflection limited to 28°
*2 only with adapter installation plate (installation from the top)

Hall-push button
HD

The hall-push button impressed by its durability and versatility. It is available in three basic versions. By combining different lighting options, colours and symbols, it is possible to customize.

Technical data

Mechanical life	10 million operating cycles
Operation temperature	-40°C til +85°C
Degree of protection	IP67

2

Example

	HD1	-2	-1	-1	-1	-E0111	-X
Basic unit							
HD1	Hall-push button digital with bellow						
HD2	Hall-push button digital without bellow						
HD3	Hall-push button digital, flat mounting without bellow						
HD4	Hall-push button digital without bellow, actuator convex						
HD5	Hall-push button digital, flat mounting without bellow, actuator convex						
Illumination							
1		Unlighted					
2		Night light white, U_LED=4,5 - 5,5 V					
3		Functional lighting 2-coloured red-green (single shiftable) U_LED=4,5 - 5,5 V					
4		Functional lighting 2-coloured red-white (single shiftable) U_LED=4,5 - 5,5 V					
5		Functional lighting 2-coloured green-white (single shiftable) U_LED=4,5 - 5,5 V					
Actuator colour							
1			Transparent				
2			Black*				
3			White*				
4			Yellow*				
5			Green*				
6			Blue*				
7			Red*				
8			Orange*				
9			Grey*				
**Only possible by HD4 and HD5!*							
Icon platelets							
0				Without incon platelets (only for HD4 and HD5)			
1				White transparent* (Print on back side possible, thereby the print is resistant to abrasion!)			
2				White*			
3				Yellow*			
4				Green*			
5				Blue*			
6				Black*			
7				Red*			
8				Orange*			
**Not possible with HD4 and HD5!*							

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Hall-push button
HD

HD1	-2	-1	-1	-1	-E0111	-X

Symbol

1	Without
2	Buzzer*
3	Arrow up*
4	Arrow down*
5	Turtle*
6	Rabbit*
X	Custom-made*

*Only possible by HD1 til HD3!

**More Symbols on request!*

Interface

E0101		Push button signal not redundant Ub=4,5 - 5,5 V DC
E0111		Push button signal redundant Ub=4,5 - 5,5 V DC
E0201		Push button signal not redundant Ub=4 - 32 V DC
E0211		Push button signal redundant Ub=4 - 32 V DC
	0	Energy safe I (Hall) max. = 3,2 mA (limited)
	1	Possible for optocoupler and PLC
	2	Power switch (Open Drain) I_Hallmax= 25 mA

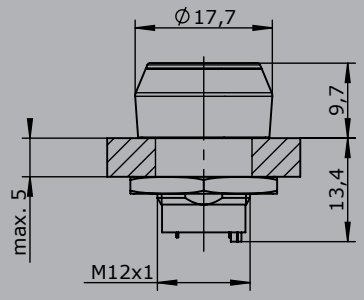
Special model

X	Special / customer specified

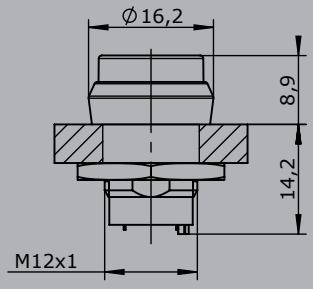
2

2

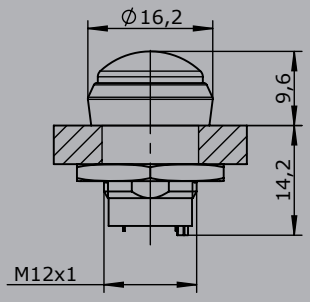
Edition:
HD1

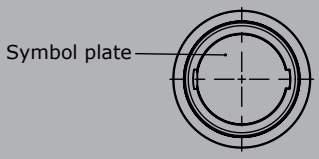


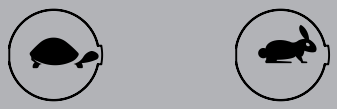
Edition:
HD2



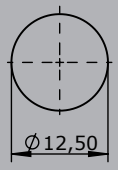
Edition:
HD4

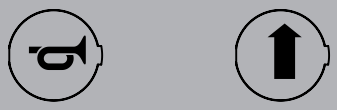




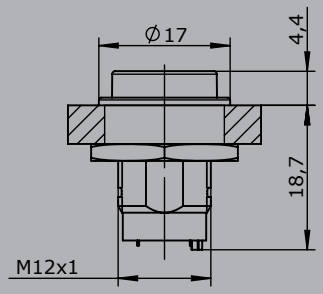


Hole pattern
HD1, HD2, HD4

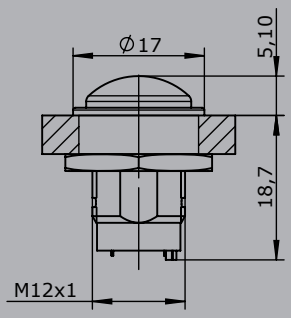




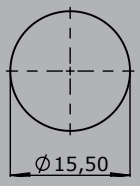
Edition:
HD3



Edition:
HD5



Hole pattern
HD3, HD5



Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Palm grip
B25

The palm grip B25 has different equipment options for many requirements. It is compatible with our multi-axis controller or mounted on hydraulic drives. The palm grip has a highly flexible single wire (0,1 mm², 450 mm long). The mounting piece for the drive rod can be supplied with a tapped hole 12 mm (standard) or 10 mm.

Technical data

Operating temperature	-40°C to +85°C
Degree of protection	Control element up to IP67
Contact complement	1,5A 24 V DC 13 (*¹ 0,1A 24 V DC13)

Example

B25L	-2D	W	K	SE	V21	H13	-X

Basic unit

B25L	Palm grip left
B25R	Palm grip right

Digital actuating element

D	Push button KDA21 *¹
	Colour: red, black, yellow, green, blue, white, orange
HD	Hall-push button *(see page 154)*
W	Rocker switch momentary (T) or maintained (R), colours: red, black, yellow, blue, white Mechanical functions: T-0-T, 0-T, R-0-T, R-0-R, 0-R, R-R
K	Lever switch
SR	Sliding switch R-O-R
ST	Sliding switch T-0-T
SE	Sensor button capacitive with external control electronics
S	Sensor button capacitive without external control electronics
	(Consistent with V85 / VV85 with interface E1xx to E6xx, E907 and V25/V27 with interfaces E3xx + E4xx)
V	Vibration

Analog actuating element

S12	Hall-Thumb rocker, Output 0,5...2,5...4,5 V inverse dual *(see page 100)*
V21	Hall-minijoystick, Output 0,5...2,5...4,5 V inverse dual *(see page 45)*
H13	Hall-rotary grip, Output 0,5...2,5...4,5 V inverse dual

CAN

Supply voltage	9-32 V DC
Idle current consumption	80 mA (24 V DC)
Current carrying capacity	External digital output for LEDs 5 mA - 30 mA (dependent on the number of LED`s)
Protocol	CANopen CiA DS 301, SAE J1939 or CANopen Safety CIA 304
Baud rate	20 kBit/s to 1 Mbit/s (standard 250 kBit/s)
Output value	255...0...255

CAN	E313 1	**CANopen Safety**	E412 1
- 8 analoge joystick axis		- 8 analog joystick axis	
- 48 digital joystick functions		- 48 digital joystick functions	
Additional with 16 LED-outputs	2	Additional with 16 LED-outputs	2
Additional with 32 LED-outputs	3	Additional with 32 LED-outputs	3

Special model

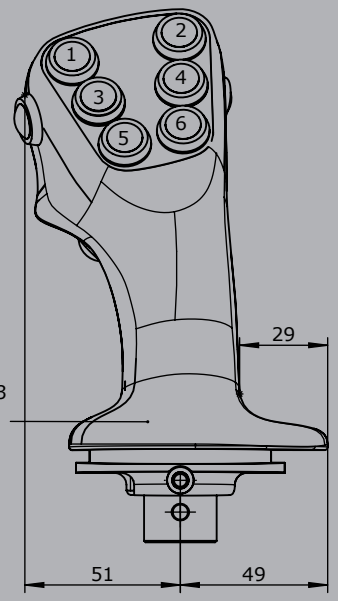
X	Special / customer specified

Technical details may vary based on configuration or application! Technical data subject to change without notice!

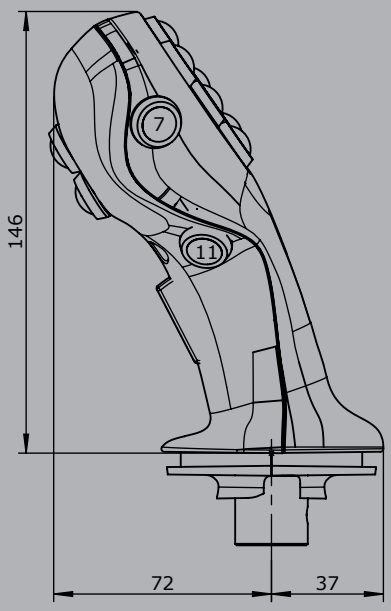
2

B25R

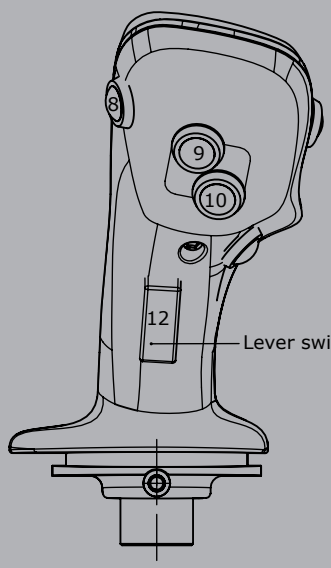
Push button installed Pos. 1 - 11
Lever switch installed Pos. 12



Twist grip PA13,H13
Direction 13-14
Actuating by
rotation ± 25°

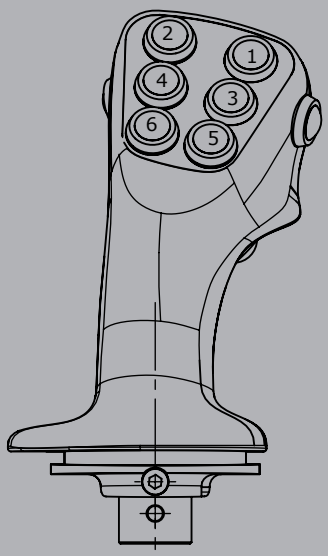


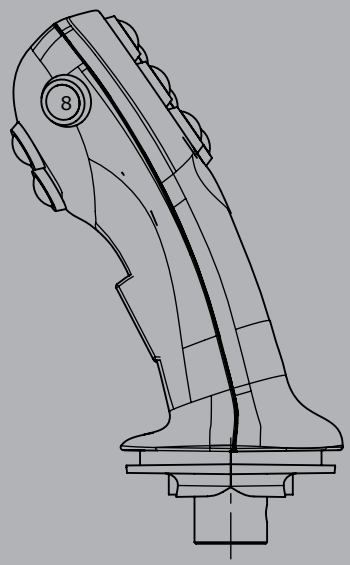
Rocker switch
installed Pos. 9+10 possible

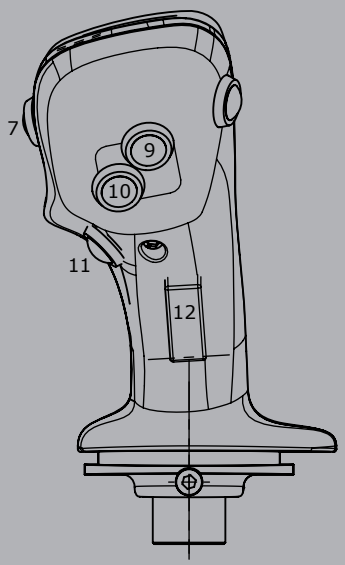


B25L

Push button installed Pos. 1 - 11
Lever switch installed Pos. 12







Edition: B25R
Rocker switch installed Pos. 3+1
Rocker switch installed Pos. 2+4

Edition: B25R
Sliding switch installed Pos. 3+1
Rocker switch installed Pos. 2+4

Edition: B25R
Multi-axis controller V21
installed Pos. 2+4
Rocker switch installed Pos. 5+6

Edition: B25R
Hall Push button
installed Pos. 1,2,5,6,15
Rocker switch installed Pos. 3,4

V2019/1 15.03.2019

Palm grip
B30

The palm grip B30 has different equipment options for many requirements. It is compatible with our multi-axis controller or mounted on hydraulic drives. The palm grip has a highly flexible single wire (0,1 mm², 450 mm long). The mounting piece for the drive rod can be supplied with a tapped hole 12 mm (standard) or 10 mm.

Technical data

Operating temperature	-40°C to +85°C
Degree of protection	Control element up to IP67
Contact complement	1,5A 24 V DC 13 (*¹ 0,1A 24 V DC13)

Example

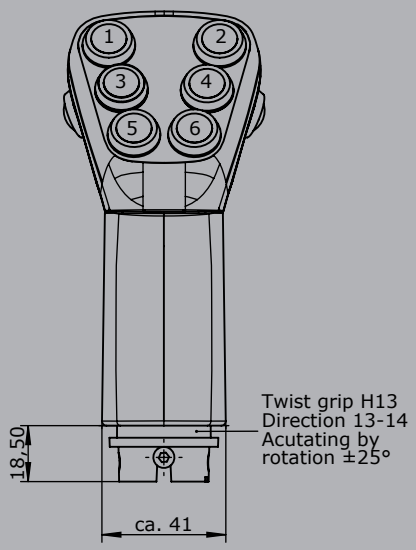
		B30	-2D	W	SR	SE	S12	H13	-X
Basic unit									
B30	Palm grip								
Digital actuating element									
D	Push button KDA21 *¹								
	Colour: red, black, yellow, green, blue, white, orange								
HD	Hall-push button *(see page 154)*								
W	Rocker switch T-0-T, Colour: red, black, yellow, blue, white								
W	Rocker switch 0-T, Colour: red, black, yellow, blue, white								
W	Rocker switch R-0-T, Colour: red, black, yellow, blue, white								
W	Rocker switch R-0-R, Colour: red, black, yellow, blue, white								
W	Rocker switch 0-R, Colour: red, black, yellow, blue, white								
W	Rocker switch R-R, Colour: red, black, yellow, blue, white								
SR	Sliding switch R-O-R								
ST	Sliding switch T-0-T								
SE	Sensor button capacitive with external control electronics								
S	Sensor button capacitive without external control electronics								
	(Consistent with V85 / VV85 with interface E1xx to E6xx, E907 and V25/V27 with interfaces E3xx + E4xx)								
Analog actuating element									
S12	Hall-Thumb rocker *(see page 100)*								
	Output 0,5...2,5...4,5 V inverse dual								
V21	Hall-minijoystick *(see page 45)*								
	Output 0,5...2,5...4,5 V inverse dual								
H13	Hall-rotary grip								
	Output 0,5...2,5...4,5 V inverse dual								
Special model									
X	Special / customer specified								

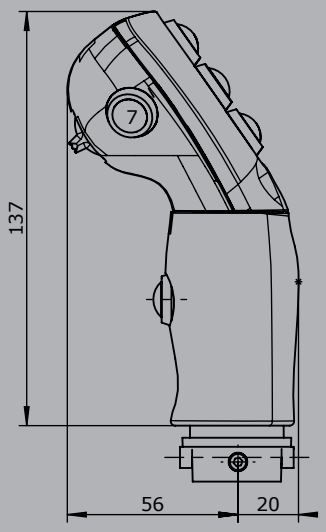
GESSMANN

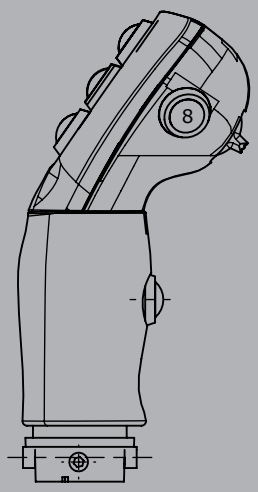
2

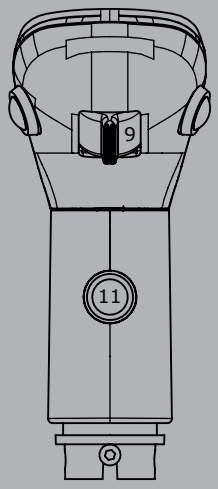
B30

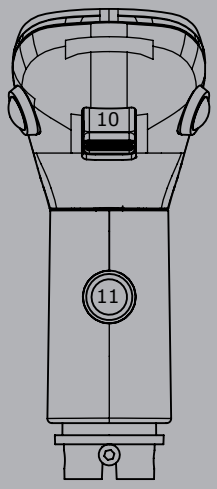
Push button
installed Pos. 1 - 8 +11
Rocker switch
installed Pos. 9+10



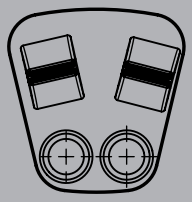




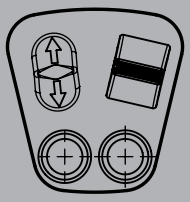




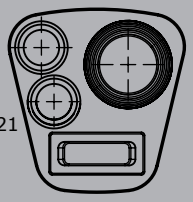
Edition:
installed Pos. 3+1
Rocker switch
installed Pos. 2+4
Rocker switch



Edition:
installed Pos. 3+1
Sliding switch
installed Pos. 2+4
Rocker switch



Edition:
installed Pos. 2+4
Multi-axis controller V21
installed Pos. 5+6
Rocker switch



V2019/1 15.03.2019

Palm grip
B3

The palm grip B3 has different equipment options for many requirements. It is compatible with our multi-axis controller or mounted on hydraulic drives. The palm grip has a highly flexible single wire (0,1 mm², 450 mm long). The mounting piece can be supplied with a tapped hole 12 mm (standard) or 10 mm.

Technical data

Operating temperature	-40°C to +85°C
Degree of protection	Control element up to IP67
Contact complement	1,5A 24 V DC13 (*¹ 0,1A 24 V DC13)

Example

		B3	-2D	W	K	SE	PA11	PA13	-X
Basic unit									
B3	Palm grip								
Digital actuating element									
D	Push button								
	Colour: red, black, yellow, green, blue, grey								
D	Push button KDA21 *¹								
	Colour: red, black, yellow, green, blue, white, orange								
W	Rocker switch T-0-T								
W	Rocker switch 0-T								
W	Rocker switch R-0-T								
W	Rocker switch R-0-R								
W	Rocker switch 0-R								
W	Rocker switch R-R								
K	Lever switch								
SR	Sliding switch								
ST	Sliding switch								
ZD	Push button with 2 steps								
A12	Push button Pos. 11-12								
A11	Thumbwheel T-0-T								
A11	Thumbwheel R-0-R								
	L left, R right								
A13	Rotary grip T-0-T								
SE	Sensor button capacitive								
S	Sensor button capacitive without external control electronics								
	(Consistent with V85 / VV85 with interface E1xx to E6xx, E907 and V25/V27 with interfaces E3xx + E4xx)								
V	Vibration								

2

Technical details may vary based on configuration or application! Technical data subject to change without notice!

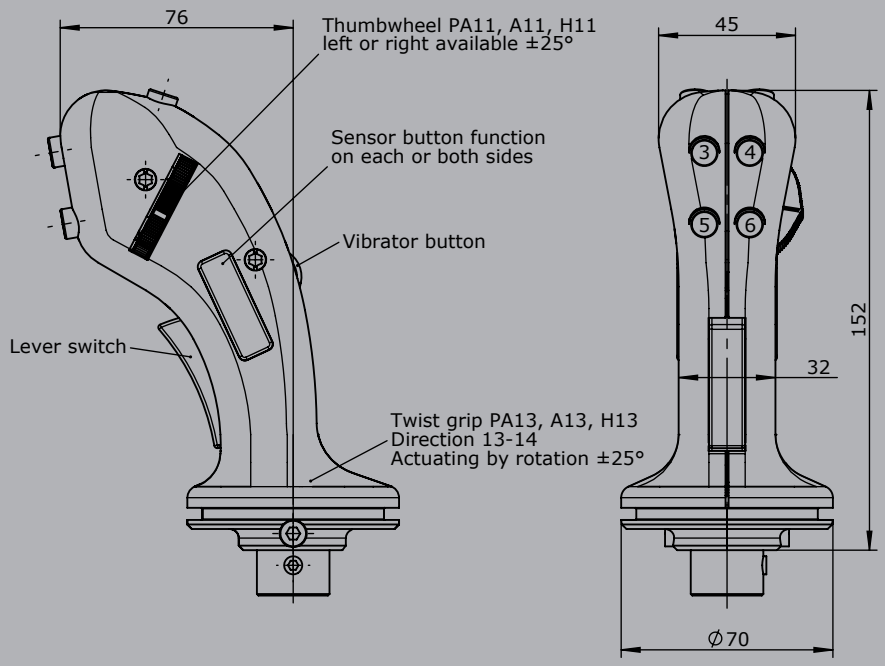
GESSMANN

		B3L	-2D	W	K	SE	PA11R	PA13	-X
Analog actuating element									
PA11	Thumbwheel								
	Potentiometer T375 2 x 5 kOhm with direction contacts								
H11	Thumbwheel								
	Hall-Potentiometer								
	Output 0,5...2,5...4,5 V inverse dual								
	L left, R right								
PA12	Push button analog Pos. 11+12								
	Potentiometer T375 2 x 5 kOhm with direction contacts								
H12	Push button analog Pos. 11+12								
	Hall-Potentiometer								
	Output 0,5...2,5...4,5 V inverse dual								
PA13	Rotary handle								
	Potentiometer T375 2 x 5 kOhm with direction contacts								
H13	Hall-Rotary handle								
	Output 0,5...2,5...4,5 V inverse dual								
Special model									
X	Special / customer specified								

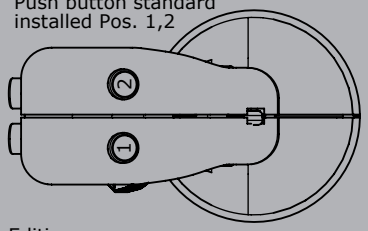
Attachments		
Z01	Bellow KMD 109	10300009
Z02	Bellow KMD 190	10300093
Z03	Rosette KBF 905 with 4 screws M5 x 15 necessary for bellow KMD 190	520990004

2

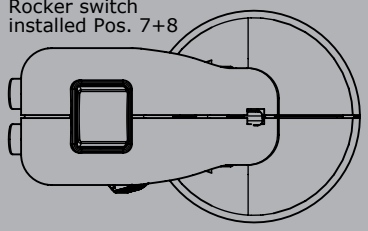
B3



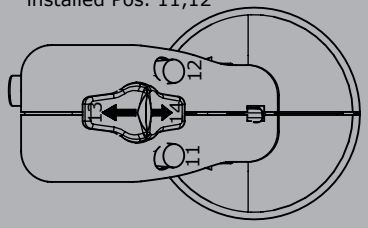
Edition:
Push button standard
installed Pos. 1,2



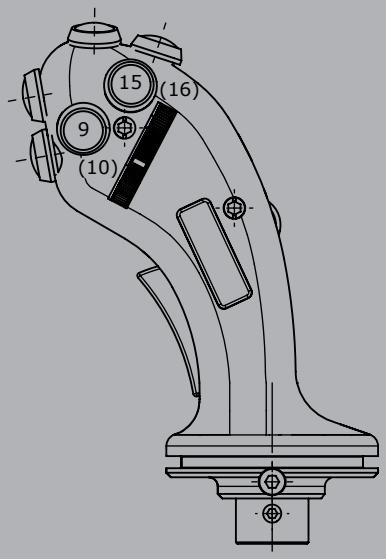
Edition:
Rocker switch
installed Pos. 7+8

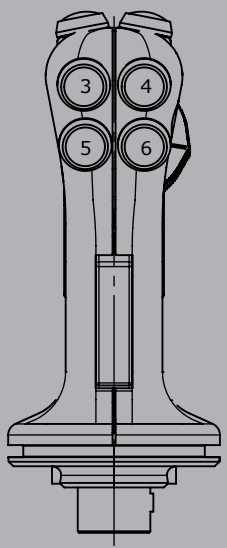


Edition:
Sliding switch
installed Pos. 13 + 14
Drive with potentiometer PA12 bzw.
Push button with 2 steps ZD
installed Pos. 11,12

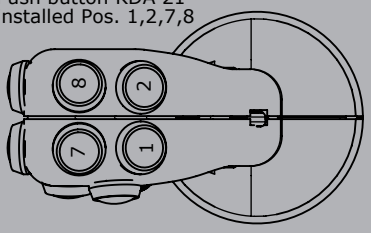


() = Installation right

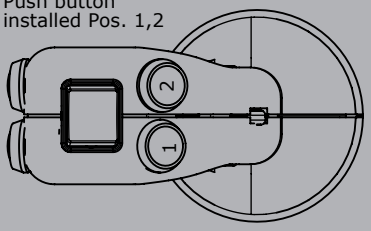




Edition:
Push button KDA 21
installed Pos. 1,2,7,8



Edition:
Rocker switch
installed Pos. 7 + 8
Push button
installed Pos. 1,2



Palm grip
B31

The palm grip B31 has different equipment options for many requirements. It is compatible with our multi-axis controller or mounted on hydraulic drives. The palm grip has a highly flexible single wire (0,1 mm², 450 mm long).

Technical data

Operating temperature	-40°C to +85°C
Degree of protection	Control element up to IP67
Contact complement	1,5A 24 V DC13 (*¹ 0,1A 24 V DC13)

2

Example

		B31R	-2D	W	KT	S12	V21	-X
Basic unit								
B21R	Palm grip right							
Digital actuating element								
D	Push button KDA21 *¹							
	Colour: red, black, yellow, green, blue, white, orange							
HD	Hall-push button *(see page 154)*							
W	Rocker switch momentary (T) or maintained (R), colours: red, black, yellow, blue, white Mechanical functions: T-0-T, 0-T, R-0-T, R-0-R, 0-R, R-R							
KT	Cross switch T-0-T / T-0-T							
Analog actuating element								
S12	Hall-Thumb rocker *(see page 100)*							
	Output 0,5...2,5...4,5 V inverse dual							
V21	Hall-minijoystick *(see page 45)*							
	Output 0,5...2,5...4,5 V inverse dual							

CAN		
Supply voltage	9-32 V DC	
Idle current consumption	80 mA (24 V DC)	
Current carrying capacity	External digital output for LEDs 5 mA - 30 mA (dependent on the number of LED`s)	
Protocol	CANopen CiA DS 301, SAE J1939 or CANopen Safety CIA 304	
Baud rate	20 kBit/s to 1 Mbit/s (standard 250 kBit/s)	
Output value	255...0...255	
CAN		E313 1
- 8 analoge joystick axis		
- 48 digital joystick functions		
Additional with 16 LED-outputs		2
Additional with 32 LED-outputs		3
CANopen Safety		E412 1
- 8 analog joystick axis		
- 48 digital joystick functions		
Additional with 16 LED-outputs		2
Additional with 32 LED-outputs		3

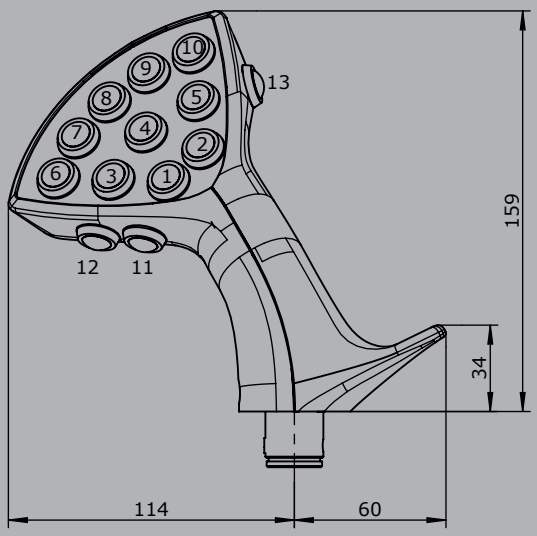
Special model	
X	Special / customer specified

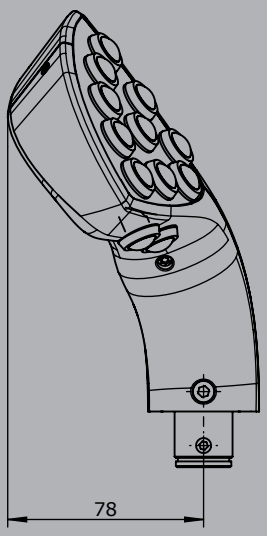
Technical details may vary based on configuration or application! Technical data subject to change without notice!

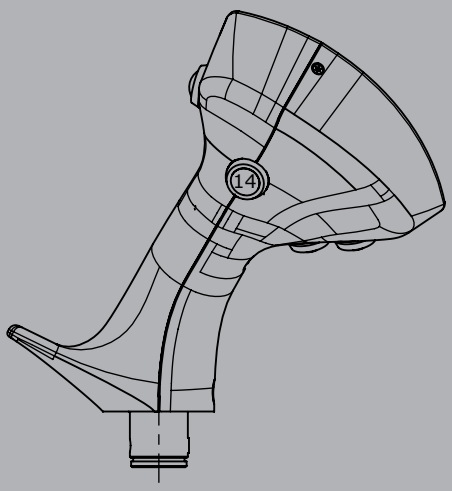
V2019/1 15.03.2019

B31

Edition:
Push button installed Pos. 1-14



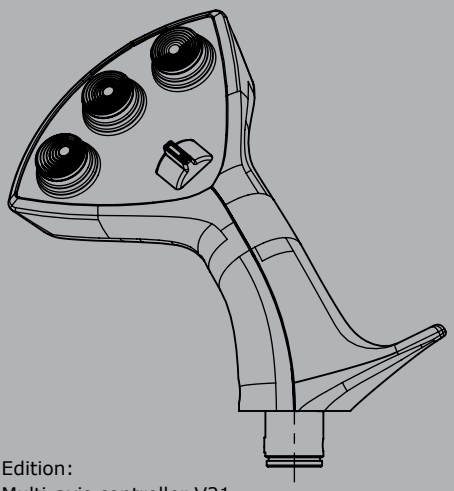


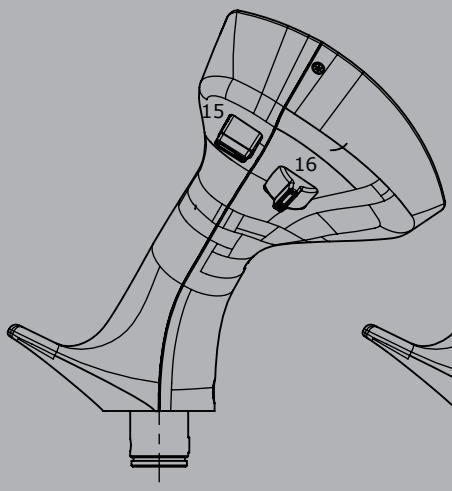


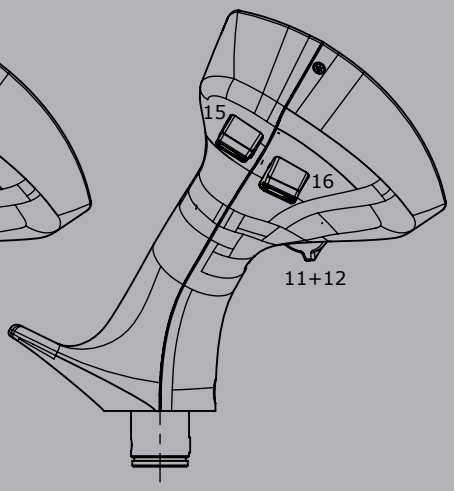
Edition:
Multi-axis controller V21
installed Pos. 6+7, Pos.8, Pos. 9+10
Rocker switch installed Pos. 1+2

Edition:
Rocker switch
installed Pos. 15, 16 horizontal

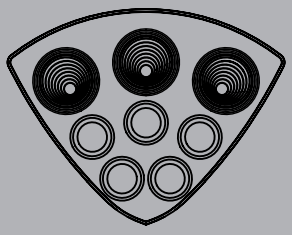
Edition:
Rocker switch
installed Pos.11+12, 15, 16 vertical







Edition:
Multi-axis controller V21
Installed Pos. 6+7, Pos.8, Pos. 9+10
Push button installed Pos. 1-5



Palm grip
B32

The palm grip B32 has different equipment options for many requirements. It is compatible with our multi-axis controller or mounted on hydraulic drives. The palm grip has a highly flexible single wire (0,1 mm², 450 mm long). The mounting piece for the drive rod can be supplied with a tapped hole 12 mm (standard) or 10 mm.

Technical data

Operating temperature	-40°C to +85°C
Degree of protection	Control element up to IP67
Contact complement	1,5A 24 V DC 13 (*¹ 0,1A 24 V DC13)

2

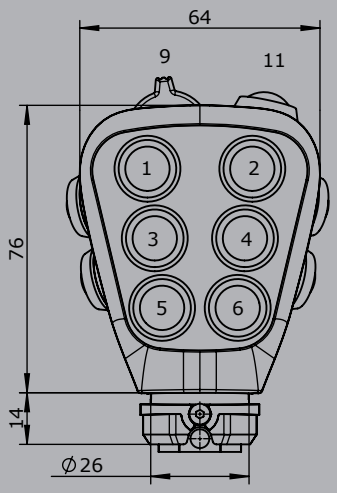
		Example B32L	-2D	W	SE	S12	-X
Basic unit							
B32L	Palm grip left						
B32R	Palm grip right						
Digitale actuating element							
D	Push button KDA21 *¹						
	Colour: red, black, yellow, green, blue, white, orange						
HD	Hall-push button *(see page 154)*						
W	Rocker switch T-0-T, Colour: red, black, yellow, blue, white						
W	Rocker switch 0-T, Colour: red, black, yellow, blue, white						
W	Rocker switch R-0-T, Colour: red, black, yellow, blue, white						
W	Rocker switch R-0-R, Colour: red, black, yellow, blue, white						
W	Rocker switch 0-R, Colour: red, black, yellow, blue, white						
W	Rocker switch R-R, Colour: red, black, yellow, blue, white						
SE	Sensor button capacitive with external control electronics						
S	Sensor button capacitive without external control electronics						
	(Consistent with V85 / VV85 with interface E1xx to E6xx, E907 and V25/V27 with interfaces E3xx + E4xx)						
Analog actuating element							
S12	Hall-Thumb rocker *(see page 100)*						
	Output 0,5...2,5...4,5 V inverse dual						
V21	Hall-minijoystick *(see page 45)*						
	Output 0,5...2,5...4,5 V inverse dual						
Special model							
X	Special / customer specified						

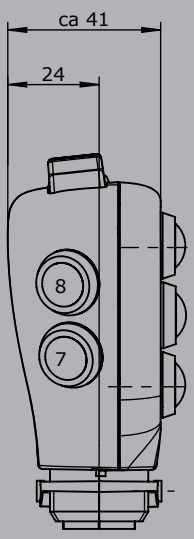
Technical details may vary based on configuration or application! Technical data subject to change without notice!

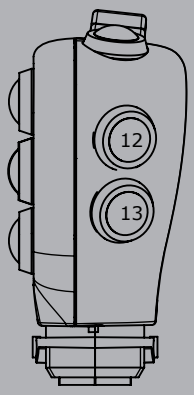
V2019/1 15.03.2019

B32

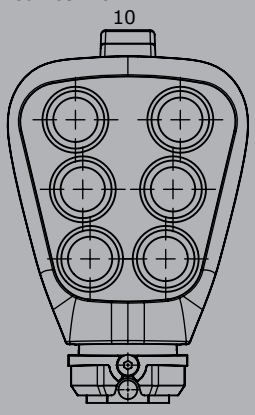
Push button
installed Pos. 1 - 8, 11 - 13
Rocker switch
installed Pos.9



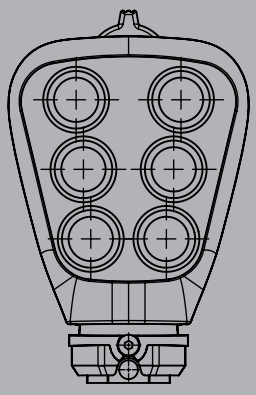




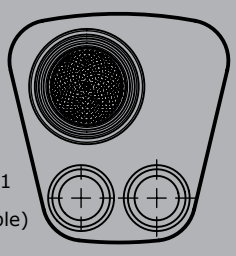
Push button
installed Pos. 1 - 8, 12 + 13
Rocker switch lengthwise
installed Pos. 10



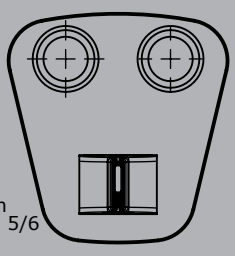
Rocker switch crosswise
installed Pos. 10



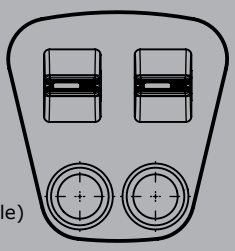
Edition:
Multi-axis controller V21
installed Pos. 1/3
(Pos. 9 - 11 not available)



Edition:
Rocker switch
installed Pos. 5/6



Edition:
Rocker switch
installed Pos.1/3 + 2/4
(Pos. 9 - 11 not available)



Palm grip
B33

The palm grip B32 has different equipment options for many requirements. It is compatible with our multi-axis controller or mounted on hydraulic drives. The palm grip has a highly flexible single wire (0,1 mm², 450 mm long). The mounting piece for the drive rod can be supplied with a tapped hole 10 mm.

Technical data

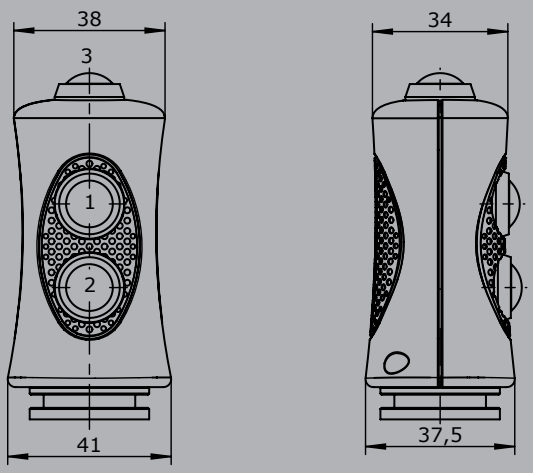
Operating temperature	-40°C to +85°C
Degree of protection	Control element up to IP67
Contact complement	*¹ 0,1A 24 V DC13

2

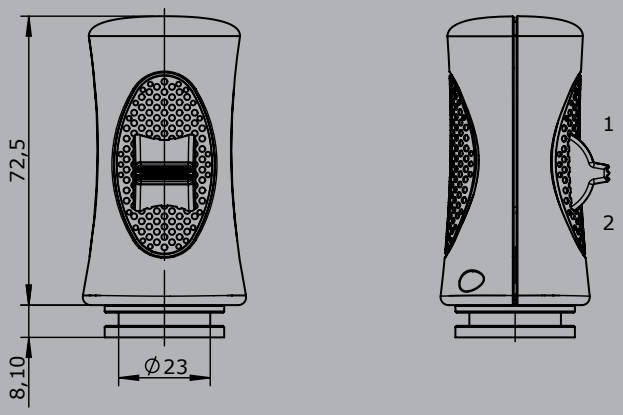
		B33L	-2D	S12	-X
Basic unit					
B33L	Palm grip left				
B33R	Palm grip right				
Digitale actuating element					
D	Push button KDA21 *¹				
	Colour: red, black, yellow, green, blue, white, orange				
HD	Hall-push button *(see page 154)*				
Analog actuating element					
S12	Hall-Thumb rocker *(see page 100)*				
	Output 0,5...2,5...4,5 V inverse dual				
Special model					
X	Special / customer specified				

B33

Edition:
Push button installed Pos. 1,2,3



Edition:
Rocker switch installed Pos. 1+2



Palm grip
B34

The palm grip B32 has different equipment options for many requirements. It is compatible with our multi-axis controller or mounted on hydraulic drives. The palm grip has a highly flexible single wire (0,1 mm², 450 mm long). The mounting piece for the drive rod can be supplied with a tapped hole 12 mm (standard) or 10 mm.

Technical data

Operating temperature	-40°C to +85°C
Degree of protection	Control element up to IP67
Contact complement	1,5A 24 V DC 13 (*¹ 0,1A 24 V DC13)

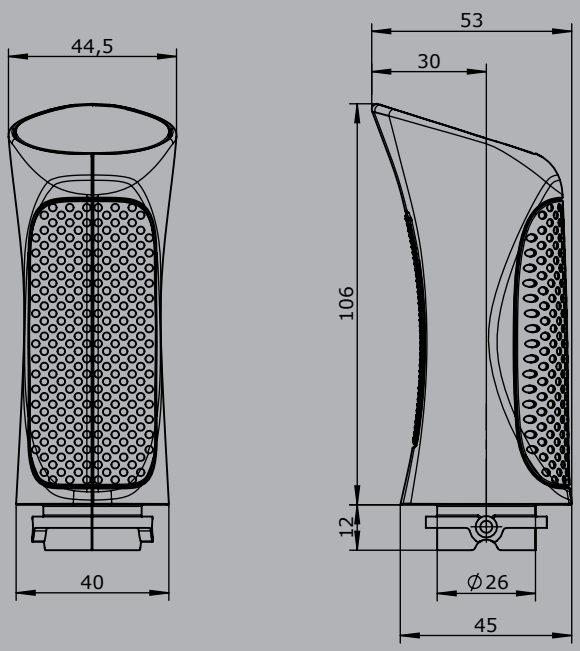
2

		B34L	-2D	W	S12	-X
Basic unit						
B34L	Palm grip left					
B34R	Palm grip right					
Digitale actuating element						
D	Push button KDA21 *¹					
	Colour: red, black, yellow, green, blue, white, orange					
HD	Hall-push button *(see page 154)*					
W	Rocker switch T-0-T, Colour: red, black, yellow, blue, white					
W	Rocker switch 0-T, Colour: red, black, yellow, blue, white					
W	Rocker switch R-0-T, Colour: red, black, yellow, blue, white					
W	Rocker switch R-0-R, Colour: red, black, yellow, blue, white					
W	Rocker switch 0-R, Colour: red, black, yellow, blue, white					
W	Rocker switch R-R, Colour: red, black, yellow, blue, white					
K	Lever switch					
Analog actuating element						
S12	Hall-Thumb rocker *(see page 100)*					
	Output 0,5...2,5...4,5 V inverse dual					
Special model						
X	Special / customer specified					

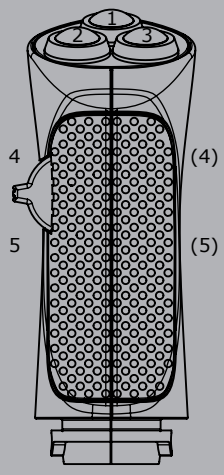
Technical details may vary based on configuration or application! Technical data subject to change without notice!

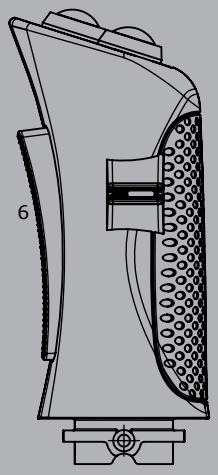
V2019/1 15.03.2019

B34

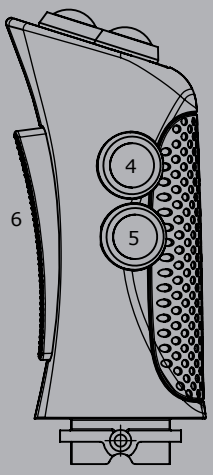


Edition:
Push button installed Pos. 1-3
Rocker switch installed Pos. 4-5
Lever switch installed Pos. 6
Position rocker switch or push button left hand ()





Edition:
Push button installed Pos. 1-3,4,5
Lever switch installed Pos. 6



Palm grip
B23

The palm grip B23 has different equipment options for many requirements. It is compatible with our multi-axis controller or mounted on hydraulic drives. The palm grip has a highly flexible single wire (0,1 mm², 450 mm long). The mounting piece for the drive rod can be supplied with a tapped hole 12 mm (standard) or 10 mm.

Technical data

Operating temperature	-40°C to +85°C
Degree of protection	Control element up to IP67
Contact complement	1,5A 24 V DC13 (*¹ 0,1A 24 V DC13)

2

Example

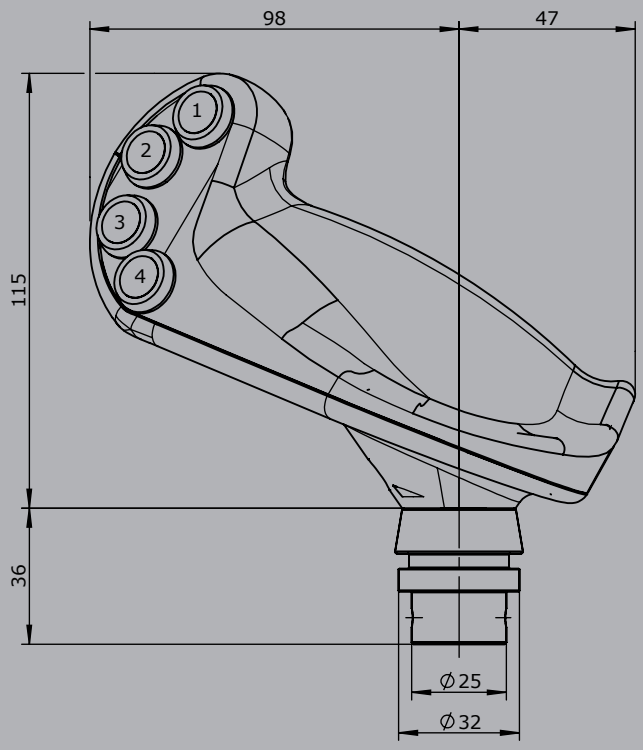
		B23R	-2D	W	V21	-X
Basic unit						
B23L	Palm grip left					
B23R	Palm grip right					
Digital actuating element						
D	Push button KDA21 *¹					
	Colour: red, black, yellow, green, blue, white, orange					
W	Rocker switch T-0-T, Colour: red, black, yellow, blue, white					
W	Rocker switch 0-T, Colour: red, black, yellow, blue, white					
W	Rocker switch R-0-T, Colour: red, black, yellow, blue, white					
W	Rocker switch R-0-R, Colour: red, black, yellow, blue, white					
W	Rocker switch 0-R, Colour: red, black, yellow, blue, white					
W	Rocker switch R-R, Colour: red, black, yellow, blue, white					
Analog actuating element						
S12	Hall-Thumb rocker *(see page 100)*					
	Output 0,5...2,5...4,5 V inverse dual					
V21	Hall-minijoystick *(see page 45)*					
	Output 0,5...2,5...4,5 V inverse dual					
Special model						
X	Special / customer specified					

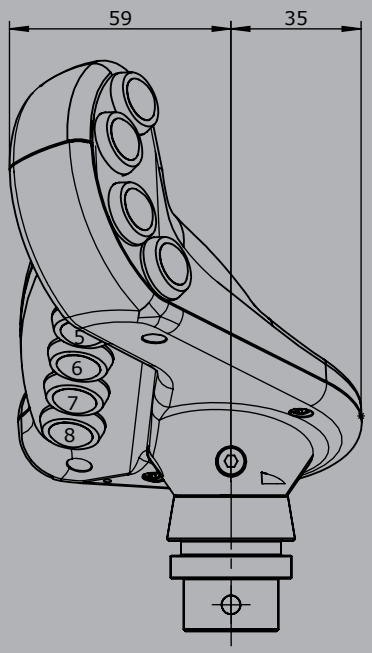
Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

B23R

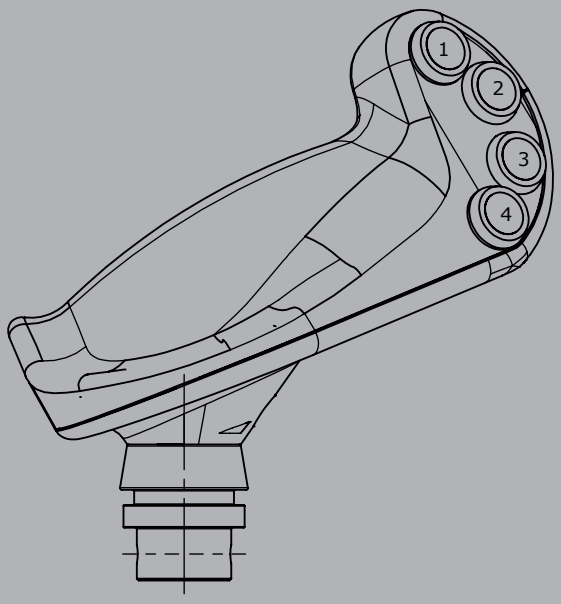
Push button installed Pos. 1 - 8



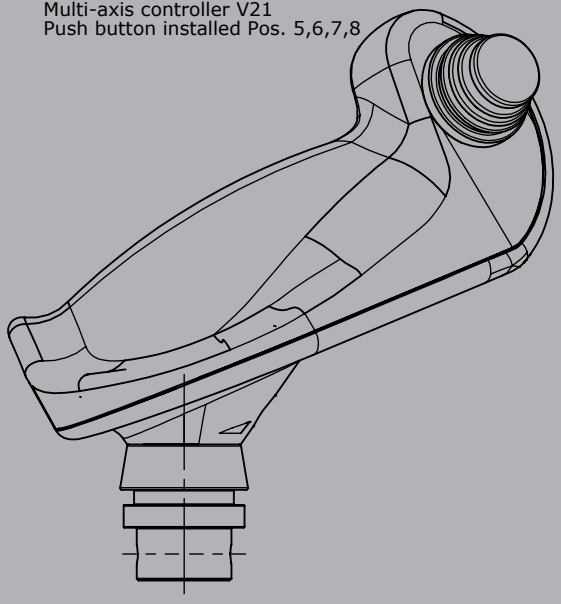


B23L

Push button installed Pos. 1 - 8



Edition :
Multi-axis controller V21
Push button installed Pos. 5,6,7,8



Palm grip
B20

The palm grip B20 has different equipment options for many requirements. It is compatible with our multi-axis controller or mounted on hydraulic drives. The palm grip has a highly flexible single wire (0,1 mm², 450 mm long). The mounting piece for the drive rod can be supplied with a tapped hole 12 mm.

Technical data

Operating temperature	-40°C to +85°C
Degree of protection	Control element up to IP67
Contact complement	1,5A 24 V DC13 (*¹ 0,1A 24 V DC13)

2

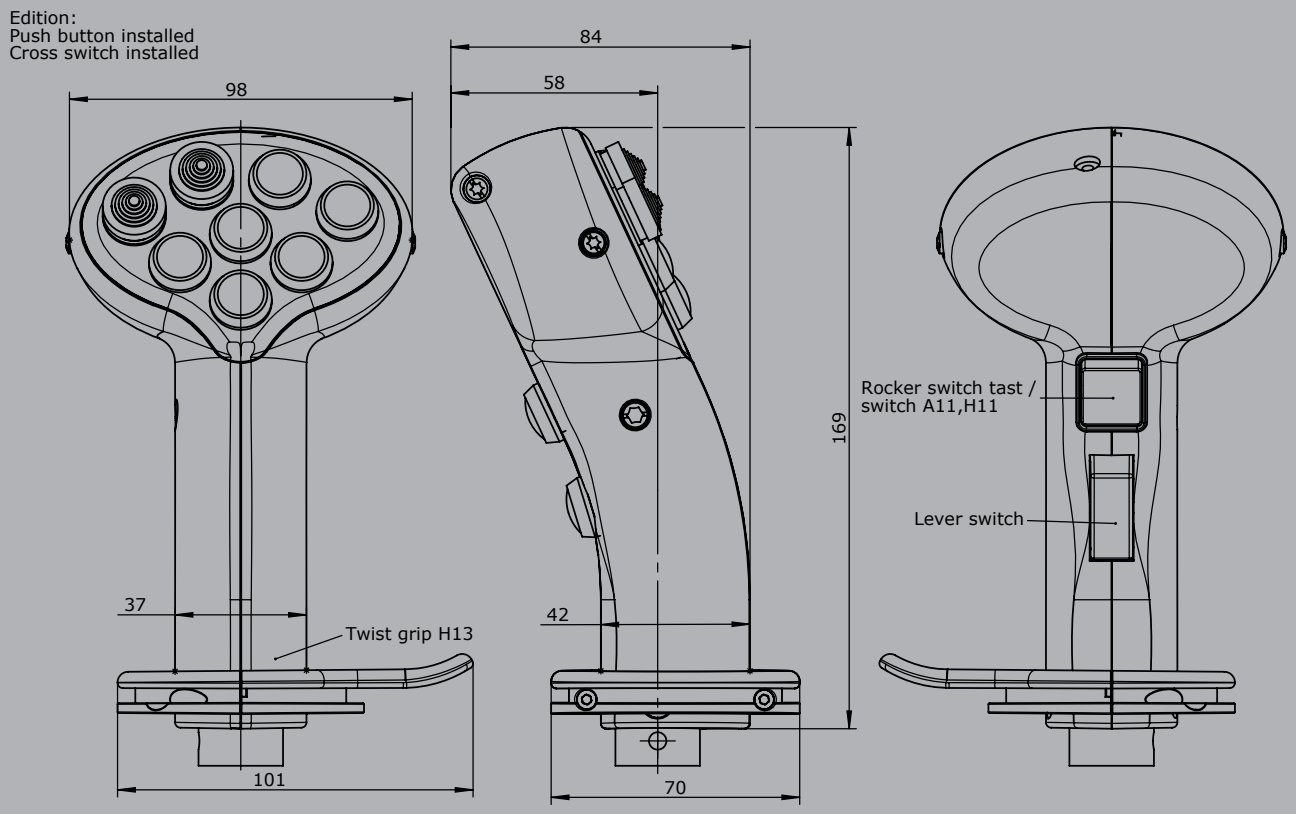
Example

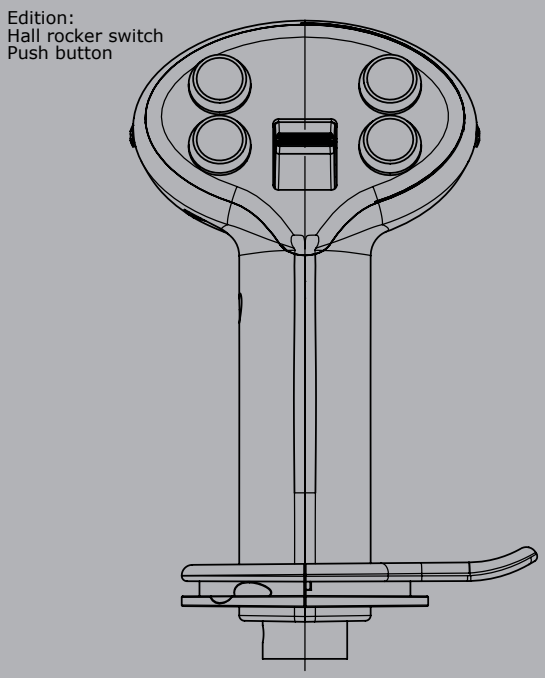
		B20L	-2D	W	K	V21	H13	-X
Basic unit								
B20L	Palm grip left with hand pad							
B20R	Palm grip right with hand pad							
Digital actuating element								
D	Push button KDA21 *¹							
	Colour: red, black, yellow, green, blue, white, orange							
HD	Hall-push button *(see page 154)*							
W	Rocker switch T-0-T, Colour: red, black, yellow, blue, white							
W	Rocker switch 0-T, Colour: red, black, yellow, blue, white							
W	Rocker switch R-0-T, Colour: red, black, yellow, blue, white							
W	Rocker switch R-0-R, Colour: red, black, yellow, blue, white							
W	Rocker switch 0-R, Colour: red, black, yellow, blue, white							
W	Rocker switch R-R, Colour: red, black, yellow, blue, white							
K	Lever switch							
KT	Cross switch T-0-T / T-0-T							
SE	Sensor button capacitive with external control electronics							
S	Sensor button capacitive without external control electronics							
	(Consistent with V85 / VV85 with interface E1xx to E6xx, E907 and V25/V27 with interfaces E3xx + E4xx)							
Analog actuating element								
S12	Hall-thumb rocker *(see page 100)*							
	Output 0,5...2,5...4,5 V inverse dual							
V21	Hall-minijoystick *(see page 45)*							
	Output 0,5...2,5...4,5 V inverse dual							
P9	Thumbwheel with potentiometer							
H13	Hall-Rotary grip							
	Output 0,5...2,5...4,5 V inverse dual							
Special model								
X	Special / customer specified							

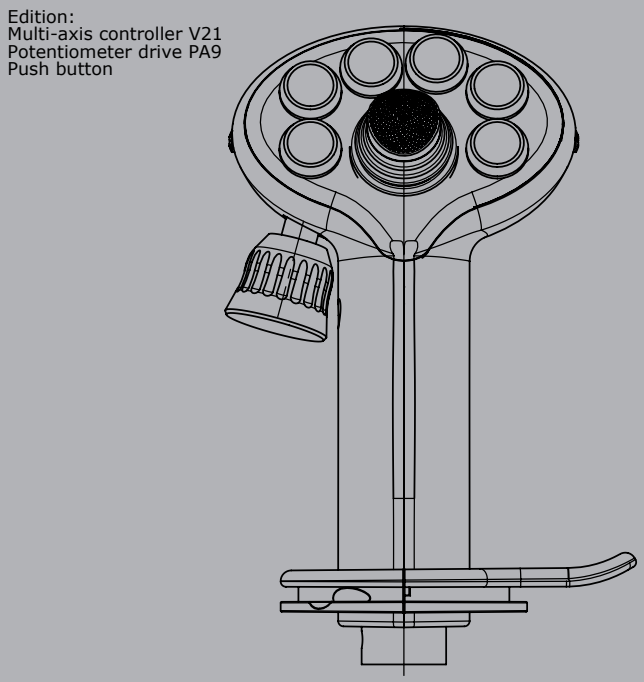
Attachments		
Z01	Bellow KMD 109	10300009
Z02	Bellow KMD 190	10300093
Z03	Rosette KBF 905 with 4 screws M5 x 15 necessary for bellow KMD 190	5209900404

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019







2

Palm grip
B22

The palm grip B22 has different equipment options for many requirements. It is compatible with our multi-axis controller or mounted on hydraulic drives. The palm grip has a highly flexible single wire (0,1 mm², 450 mm long). The mounting piece for the drive rod can be supplied with a tapped hole 7 mm.

Technical data

Operating temperature	-40°C to +85°C
Degree of protection	Control element up to IP67
Contact complement	1,5 24 V DC13 (*¹ 0,1A 24 V DC13)

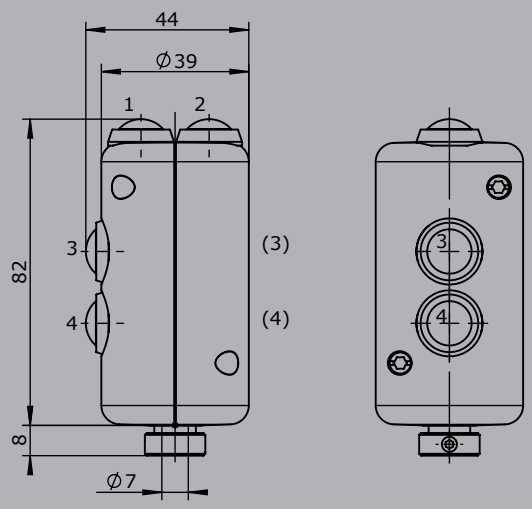
2

Example

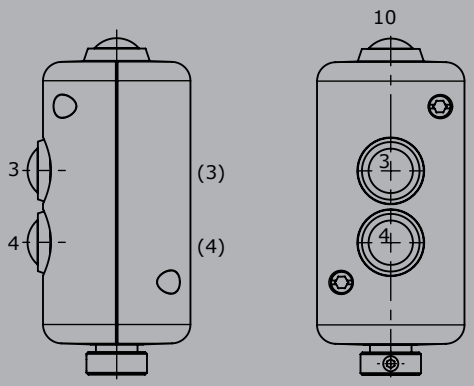
		B22AL	-4D	W	-X
Basic unit					
B22L	Palm grip left				
B22R	Palm grip right				
B22AL	Palm grip left with support				
B22AR	Palm grip right with support				
Digital actuating element					
D	Push button KDA21 *¹				
	Colour: red, black, yellow, green, blue, white, orange				
W*	Rocker switch T-0-T				
W*	Rocker switch 0-T				
W*	Rocker switch R-0-T				
W*	Rocker switch R-0-R				
W*	Rocker switch 0-R				
W*	Rocker switch R-R				
	**Only possible with version with support!*				
SE	Sensor button capacitive with external control electronics				
S	Sensor button capacitive without external control electronics				
	(Consistent with V85 / VV85 with interface E1xx to E6xx, E907 and V25/V27 with interfaces E3xx + E4xx)				
Special model					
X	Special / customer specified				

B22

Edition:
Push button installed Pos. 1,2,3,4
Position push button left hand ()

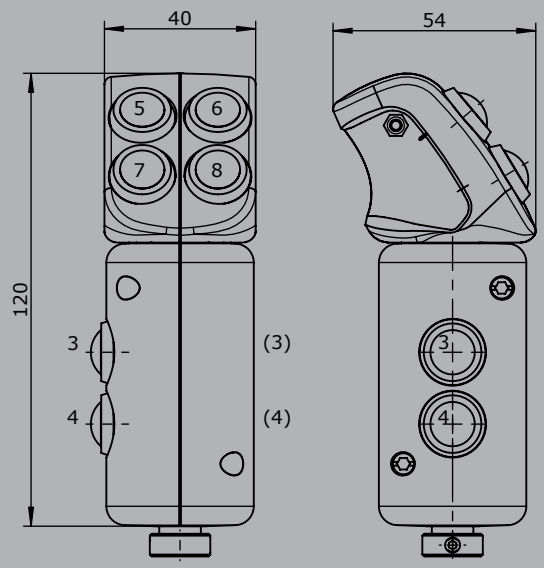


Edition:
Push button installed Pos. 3,4,10
Position push button left hand ()

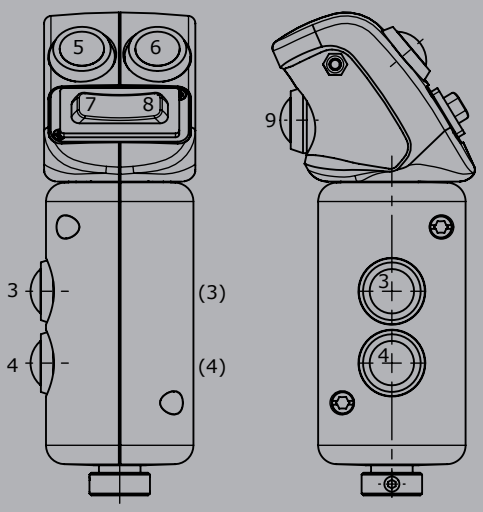


B22A

Editon:
Push button installed Pos. 3,4,5,6,7,8
Position push button left hand ()



Edition:
Push button installed Pos. 3,4,5,6,9
Rocker switch installed Pos. 7-8
Position push button left hand ()



Palm grip
B24

The palm grip B24 has different equipment options for many requirements. It is compatible with our multi-axis controller or mounted on hydraulic drives. The superior grip surface is framed by an illuminated coloured ring element. The palm grip has a highly flexible single wire (0,1 mm², 450 mm long). The mounting piece for the drive rod can be supplied with a tapped hole 12 mm (standard) or 10 mm.

Technical data

Operating temperature	-40°C to +85°C
Degree of protection	Control element up to IP67
Contact complement	1,5A 24 V DC13 (*¹ 0,1A 24 V DC13)

2

Example **B24** | **-D** | **2W** | **V21** | **-IWH** | **-X**

Basic unit

B24	Palm grip

Digital actuating element

D	Push button KDA21 *¹
	Colour: red, black, yellow, green, blue, white, orange
W	Rocker switch T-0-T
W	Rocker switch 0-T
W	Rocker switch R-0-T
W	Rocker switch R-0-R
W	Rocker switch 0-R
W	Rocker switch R-R
SE	Sensor button capacitive with external control electronics
S	Sensor button capacitive without external control electronics
	(Consistent with V85 / VV85 with interface E1xx to E6xx, E907 and V25/V27 with interfaces E3xx + E4xx)

Analog actuating element

V21	Hall-minijoystick *(see page 45)*
	Output 0,5...2,5...4,5 V inverse dual
H13	Hall-rotary grip
	Output 0,5...2,5...4,5 V inverse dual

Additional option

IWH	Colour ring white, illuminated
IRD	Colour ring red, illuminated
IBL	Colour ring blue, illuminated
WH	Colour ring white
RD	Colour ring red
BL	Colour ring blue
GN	Colour ring green
YE	Colour ring yellow

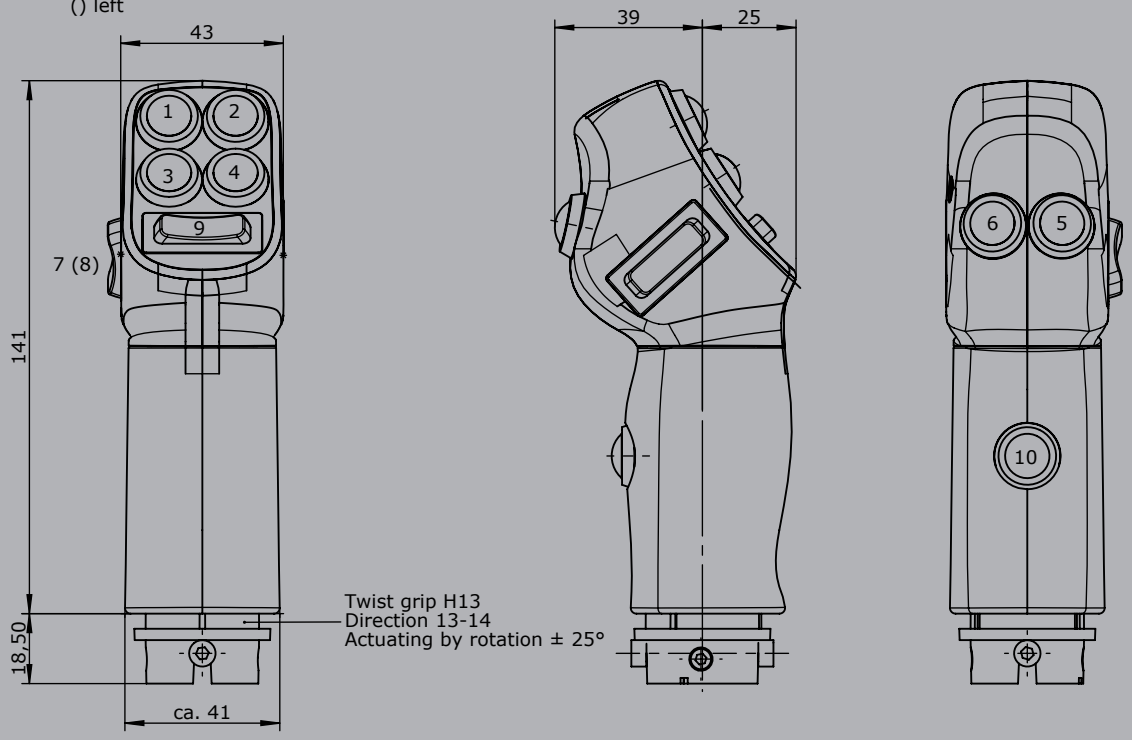
Special model

X	Special / customer specified

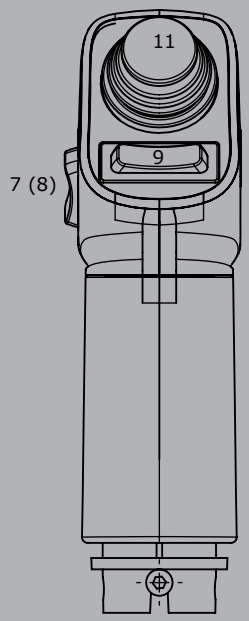
Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Edition :
Push button installed Pos. 1 - 6, 10
Rocker switch / taste installed Pos. 7,(8), 9
() left



Edition :
Push button installed Pos. 5,6,10
Rocker switch / taste Pos. 7,(8), 9
multi-axis controller V21 Pos. 11
() left



2

Palm grip
B9

The palm grip B9 has different equipment options for many requirements. It is compatible with our multi-axis controller or mounted on hydraulic drives. The palm grip has a highly flexible single wire (0,1 mm², 450 mm long). The mounting piece for the drive rod can be supplied with a tapped hole 12 mm (standard) or 10 mm.

Technical data

Operating temperature	-40°C to +85°C
Degree of protection	IP54
Contact complement	1,5A 24 V DC13

2

Example

	B9	-2D	KT	A13	PA11	PA13	-X
Basic unit							
B9 Palm grip							
Digital actuating element							
D Push button							
Colour: red, black, yellow, green, blue, white							
KT Cross switch T-0-T / T-0-T							
KR Cross switch R-0-R / R-0-R							
A11 Rocker switch T-0-T Pos. 11 + 12							
A11 Rocker switch R-0-R Pos. 11 + 12							
A13 Rotary grip T-0-T							
Analog actuating element							
V21 Hall-minijoystick *(see page 45)*							
Output 0,5...2,5...4,5 V inverse dual							
PA11 Rocker analog Pos. 11 + 12							
Potentiometer T394 2 x 5 kOhm with direction contacts							
H11 Rocker analog Pos. 11 + 12							
Hall-Potentiometer							
Output 0,5...2,5...4,5 V inverse dual							
PA13 Rotary grip							
Potentiometer T375 2 x 5 kOhm with direction contacts							
H13 Hall-Rotary grip							
Output 0,5...2,5...4,5 V inverse dual							
Special model							
X Special / customer specified							

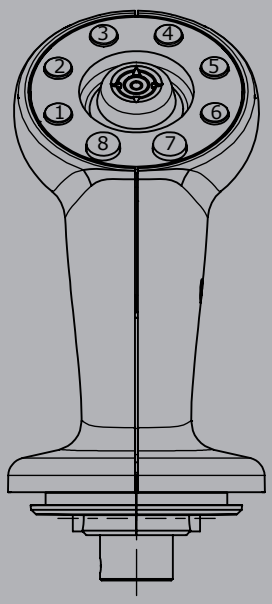
Attachments		
Z01	Bellow KMD 109	10300009
Z02	Bellow KMD 190	10300093
Z03	Rosette KBF 905 with 4 screws M5x15 necessary for bellow KMD 190	5209900404

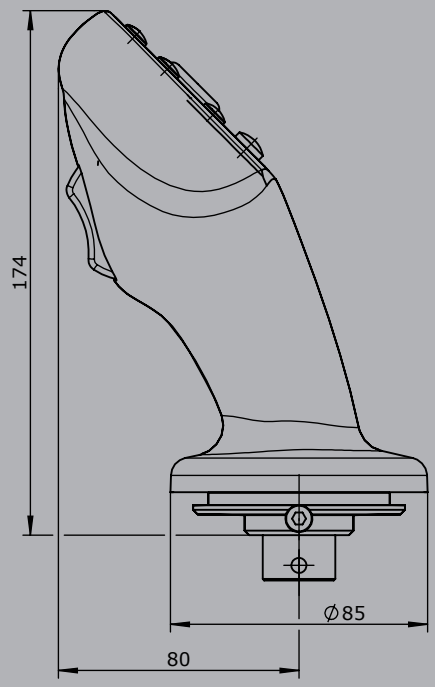
Technical details may vary based on configuration or application! Technical data subject to change without notice!

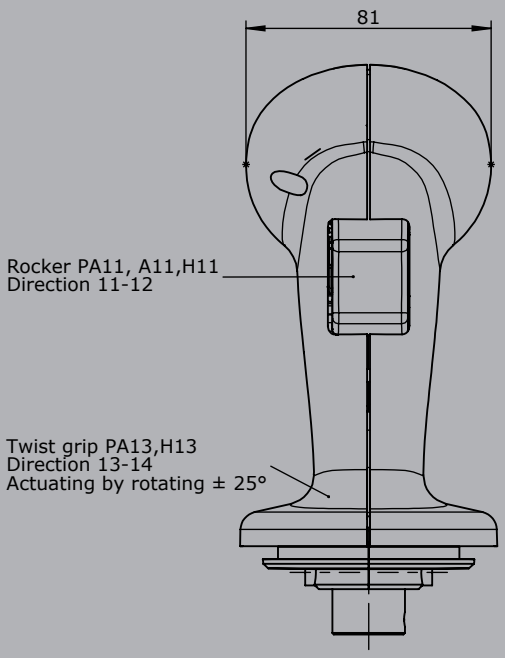
V2019/1 15.03.2019

B9

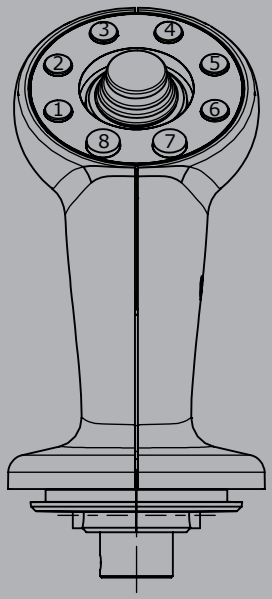
Edition :
Push button installed Pos. 1 - 8
Cross switch tast







Edition :
Push button installed Pos. 1 - 8
Multi-axis controller V21



Palm grip
B7 / B8

The palm grip B7 / B8 has different equipment options for many requirements. It is compatible with our multi-axis controller or mounted on hydraulic drives. The palm grip has a highly flexible single wire (0,1 mm², 450 mm long). The mounting piece for the drive rod can be supplied with a tapped hole 12 mm (standard) or 10 mm.

Example

Technical data

Operating temperature	-40°C to +85°C
Degree of protection	Control element up to IP67
Contact complement	1,5A 24 V DC13 (*¹ 0,1A 24 V DC13)

2

		B7	-2D	W	K	SE	S9	PA13	-X
Basic unit									
B7	Palm grip left								
B8	Palm grip right								
Digital actuating element									
D	Push button								
	Colour: red, black, yellow, green, white, orange								
D	Push button KDA21 *¹								
	Colour: red, black, yellow, green, blue, white, orange								
W	Rocker switch T-0-T, Colour: red, black, yellow, blue, white								
W	Rocker switch 0-T, Colour: red, black, yellow, blue, white								
W	Rocker switch R-0-T, Colour: red, black, yellow, blue, white								
W	Rocker switch R-0-R, Colour: red, black, yellow, blue, white								
W	Rocker switch 0-R, Colour: red, black, yellow, blue, white								
W	Rocker switch R-R, Colour: red, black, yellow, blue, white								
K	Lever switch								
A13	Rotary grip T-0-T								
SE	Sensor button capacitive with external control electronics								
S	Sensor button capacitive without external control electronics								
	(Consistent with V85 / VV85 with interface E1xx to E6xx, E907 and V25/V27 with interfaces E3xx + E4xx)								
V	Vibrator								
	Impulse 24 V DC ED 100%								
Analog actuating element									
S12	Hall-thumb rocker *(see page 100)*								
	Output 0,5...2,5...4,5 V inverse dual								
V21	Hall-minijoystick *(see page 45)*								
	Output 0,5...2,5...4,5 V inverse dual								
PA13	Rotary grip								
	Potentiometer T375 2 x 5 kOhm with direction contacts								
H13	Hall-Rotary grip								
	Output 0,5...2,5...4,5 V inverse dual								

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

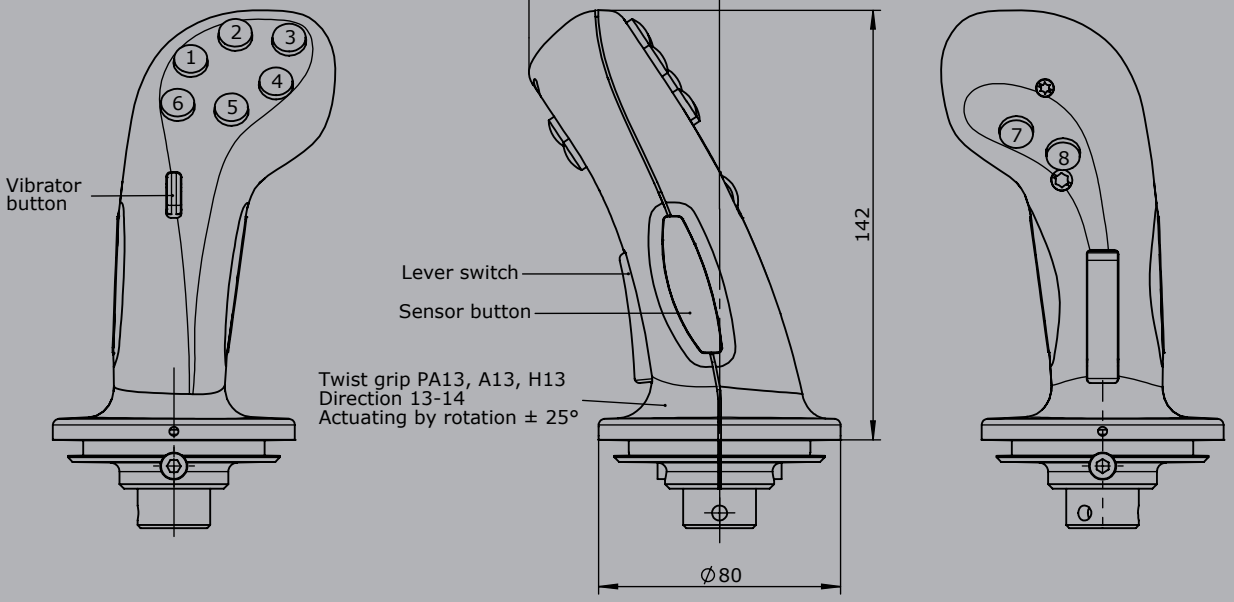
		B7	-2D	W	K	SE	S9	PA13	-X
Special model									
X	Special / customer specified								

Attachments		
Z01	Bellow KMD 109	10300009
Z02	Bellow KMD 190	10300093
Z03	Rosette KBF 905 with 4 screws M5x15 necessary for bellow KMD 190	5209900404

2

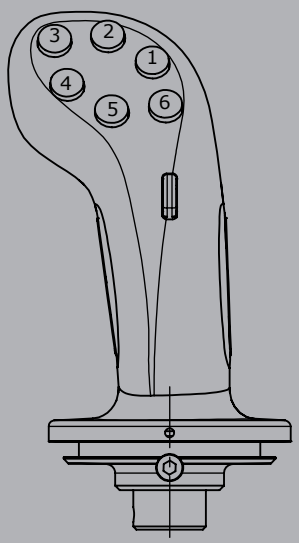
B7

Edition:
Push button installed Pos. 1 - 8

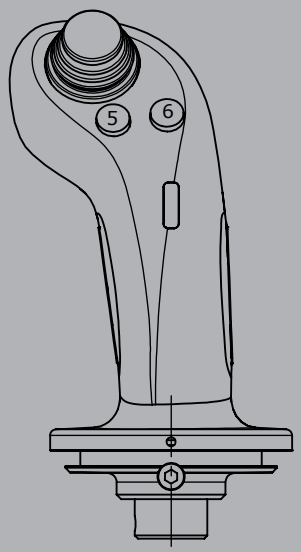


B8

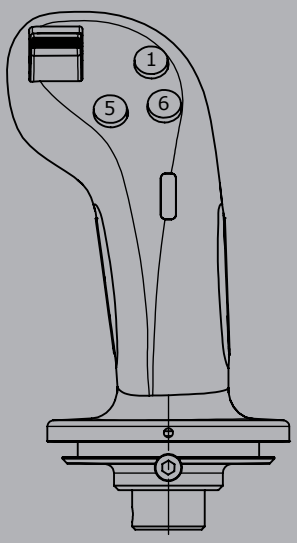
Editon:
Push button installed Pos. 1 - 8



Edition:
Multi-axis controller V21
Push button installed Pos. 5,6,7,8



Edition :
Hall Rocker switch
Push button installed Pos. 1,5,6,8



V2019/1 15.03.2019

Palm grip
B1

The palm grip B1 has different equipment options for many requirements. It is compatible with our multi-axis controller or mounted on hydraulic drives. The palm grip has a highly flexible cable (4 respectively 8 x 0,25 mm², 450 mm long). The mounting piece can be supplied with a tapped hole M10 (standard) or M8.

Technical data

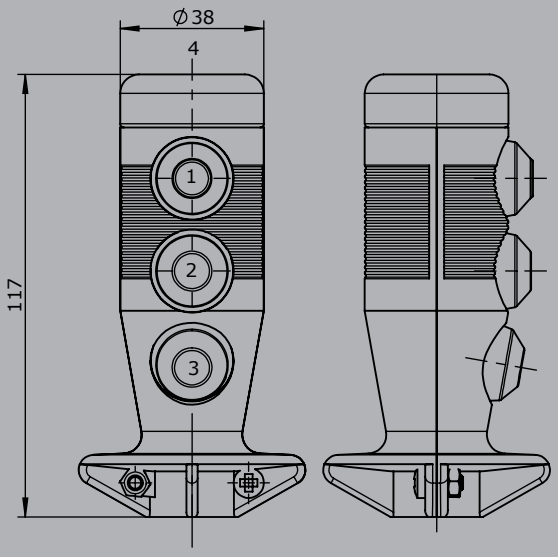
Operating temperature	-40°C to +85°C
Degree of protection	IP54
Contact complement	3A 24 V DC13 (*¹ 1,5A 24 V DC13)

Example

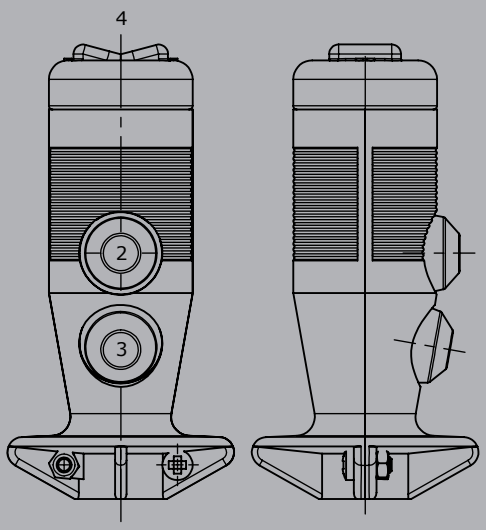
		B1	-2D	W	-X
Basic unit					
B1	Palm grip				
Digital actuating element					
D	Push button top				
D	Push button side *¹				
W	Rocker switch top T-0-T				
W	Rocker switch top R-0-T				
W	Rocker switch top R-0-R				
T	Push button top with mechanical operation				
	(Only possible with multi-axis controller or single-axis controller!)				
K	Lever switch				
KT	Lever switch mechanical operation				
	(Only possible with multi-axis controller or single-axis controller!)				
Special model					
X	Special / customer specified				

2

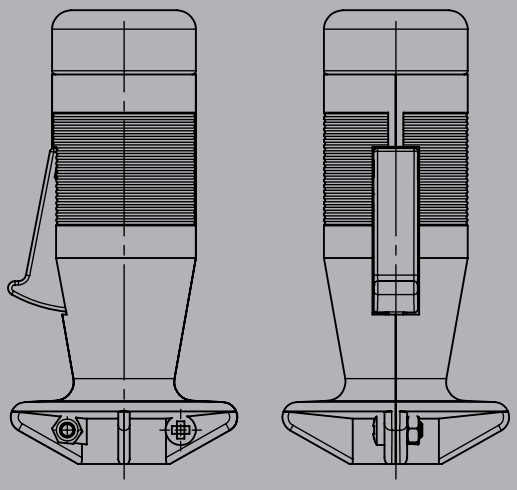
Edition:
Push button installed Pos. 1,2,3,4



Edition:
Rocker switch installed Pos. 4
Push button installed Pos. 2,3



Edition:
Lever switch installed side



V2019/1 15.03.2019

Palm grip
B2

The palm grip B2 has different equipment options for many requirements. It is compatible with our multi-axis controller or mounted on hydraulic drives. The palm grip has a highly flexible cable (8 x 0,25 mm², 450 mm long). He can be tilted in any direction by 20 degrees and can lock in this position. The mounting piece can be supplied with a tapped hole M10 (standard) or M8.

Technical data

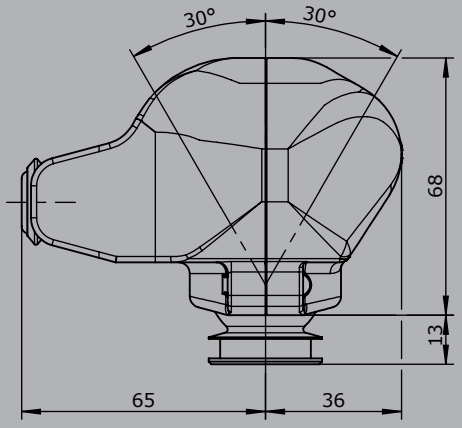
Operating temperature	-40°C to +85°C
Degree of protection	IP54
Contact complement	1,5A 24 V DC13 (*¹ 0,1A 24 V DC13)

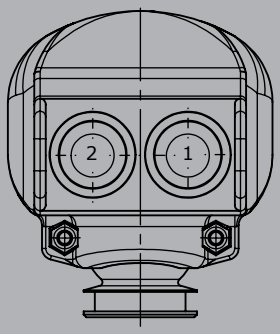
Example

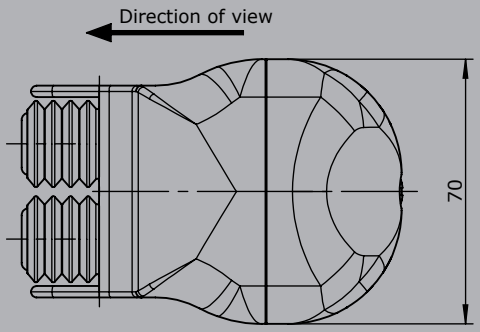
		B2	-2D	PA15	-X
Basic unit					
B2	Palm grip				
Digital actuating element					
D	Push button KDA/70				
D	Push button KDA21 *¹				
	Colour: red, black, yellow, green, blue, white, orange				
A15	2 push button Pos. 1 + 2 interlocked				
Analog actuating element					
PA15	Push button analog Pos. 1 + 2				
	2 potentiometer T301 2 x 5 kOhm with direction contacts				
Special model					
X	Special / customer specified				

B2

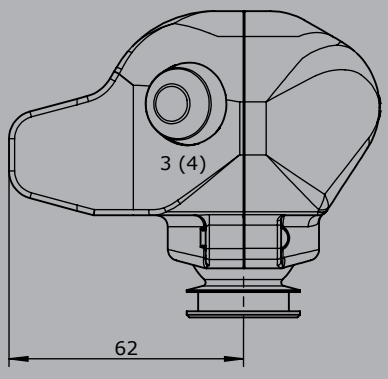
Edition:
Pusher installed Pos. 1,2



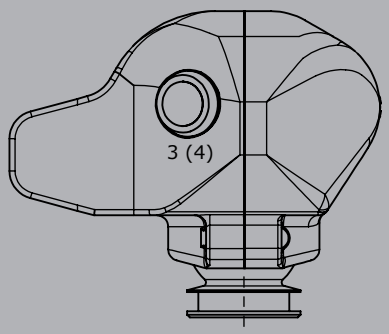




Edition:
Push button KDA / 70
installed Pos. 1,2,3,4



Edition:
Push button KDA 21
installed 1,2,3,4



V2019/1 15.03.2019

Palm grip
B5

The palm grip B5 has different equipment options for many requirements. It is compatible with our multi-axis controller or mounted on hydraulic drives. The palm grip has a highly flexible single wire (4 respectively 8 x 0,25 mm², 450 mm long). The mounting piece can be supplied with a tapped hole M10 (standard) or M8.

Technical data

Operating temperature	-40°C to +85°C
Degree of protection	IP54
Contact complement	3A 24 V DC13 (*¹ 1,5A 24 V DC13)

Example **B5** **-2D** **W** **-X**

Basic unit

B5 Palm grip

Digital actuating element

D Push button top

D Push button side *¹

W Rocker switch top T-0-T

W Rocker switch top R-0-T

W Rocker switch top R-0-R

T Push button top mechanical operation
(Only possible in combination with multi-axis controller or single-axis controller!)

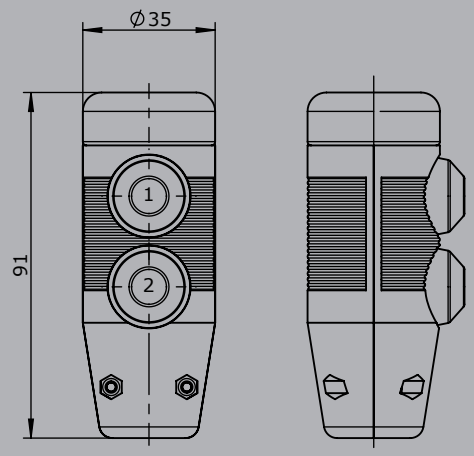
Special model

X Special / customer specified

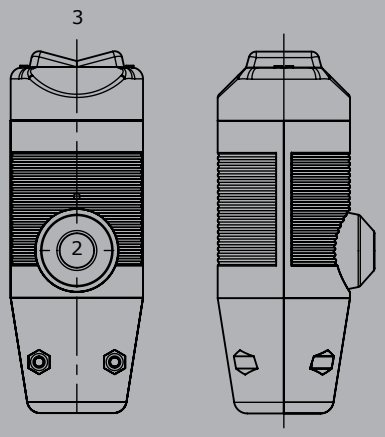
2

2

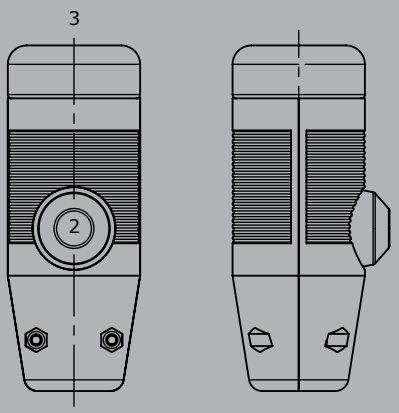
Edition:
Push button installed Pos. 1,2



Edition:
Rocker switch installed Pos. 3
Push button installed Pos. 2



Edition:
Push button installed Pos. 2,3



Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Palm grip
B6

The palm grip B6 has different equipment options for many requirements. It is compatible with our multi-axis controller or mounted on hydraulic drives. The palm grip has a highly flexible cable (4 respectively 8 x 0,25 mm², 450 mm long). The mounting piece can be supplied with a tapped hole M10 (standard) or M8.

Technical data

Operating temperature	-40°C to +85°C
Degree of protection	IP54
Contact complement	1,5A 24 V DC13

Example

B6	-2D	K	-X

Basic unit

B6	Palm grip

Digital actuating element

D	Push button top
W	Rocker switch top T-0-T
W	Rocker switch top R-0-T
W	Rocker switch top R-0-R
K*	Lever switch
	** Included with the delivery of palm grip B6!*

Special model

X	Special / customer specified

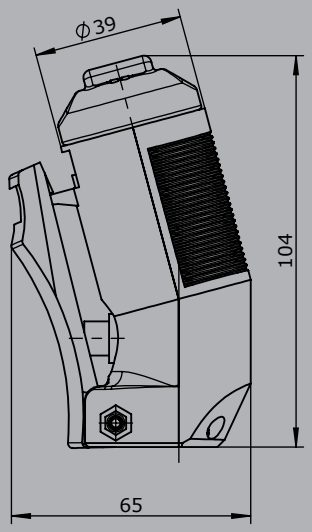
2

Technical details may vary based on configuration or application! Technical data subject to change without notice!

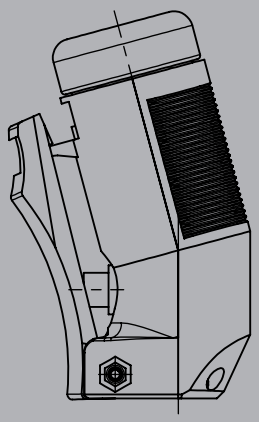
2

B6

Edition:
Lever switch side
Rocker switch installed top



Edition:
Lever switch side
Push button top



V2019/1 15.03.2019

Palm grip
B28

The palm grip B28 has different equipment options for many requirements. It is compatible with our multi-axis and single-axis controller or mounted on hydraulic drives. The palm grip has a highly flexible single wire (0,1 mm², 450 mm long). The mounting piece for the drive rod can be supplied with a tapped hole 10 mm (standard).

Technical data

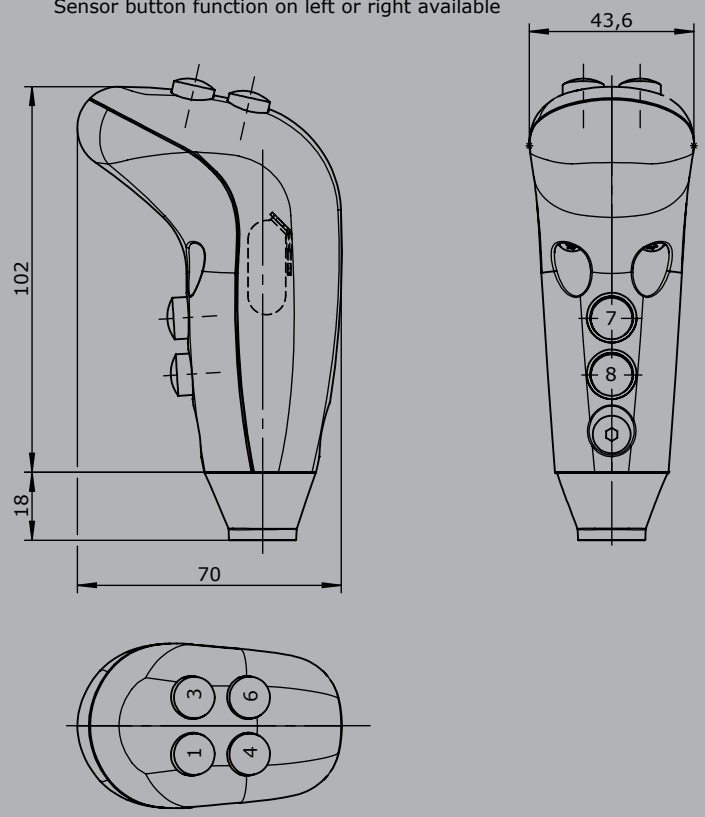
Operating temperature	-40°C to +85°C
Degree of protection	up to IP54

Example

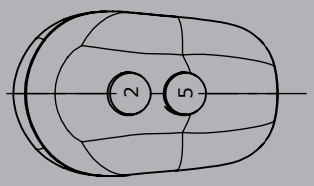
	B28	-2D	SE	-X
Basic unit				
B28 Palm grip				
Digital actuating element				
D Push button (1,5A 24 V DC13)				
Colour: red, black, yellow, green, blue, grey				
SE Sensor button capacitive with external control electronics				
S Sensor button capacitive without external control electronics				
(Consistent with V85 / VV85 with interface E1xx to E6xx, E907 and V25/V27 with interfaces E3xx + E4xx)				
Special model				
X Special / customer specified				

2

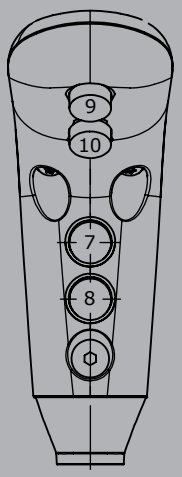
Edition:
Push button installed
Pos. 1,3,4,6,7,8
Sensor button function on left or right available



Edition:
Push button installed
Pos. 2,5,7,8
Sensor button function on left or right available



Edition:
Push button installed
Pos. 7,8,9,10
Sensor button function on left or right available



V2019/1 15.03.2019

Palm grip
B29

The palm grip B29 has different equipment options for many requirements. It is compatible with our multi-axis and single-axis controller or mounted on hydraulic drives. The palm grip has a highly flexible single wire (0,1 mm², 450 mm long). The mounting piece for the drive rod can be supplied with a tapped hole 12 mm (standard) or 10 mm.

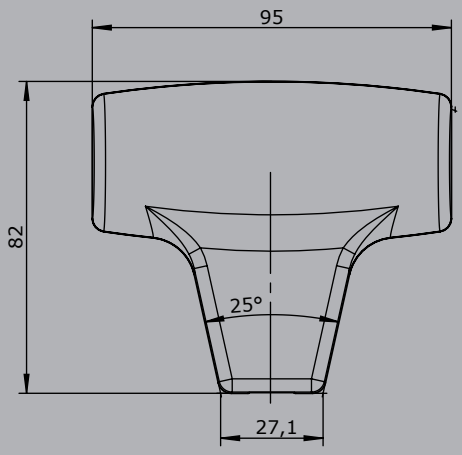
Technical data

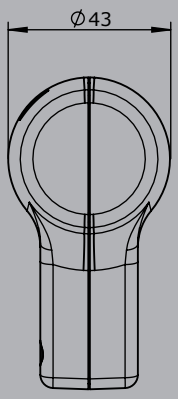
Operating temperature	-40°C to +85°C
Degree of protection	Control element up to IP67
Contact complement	0,1A 24 V DC13

Example

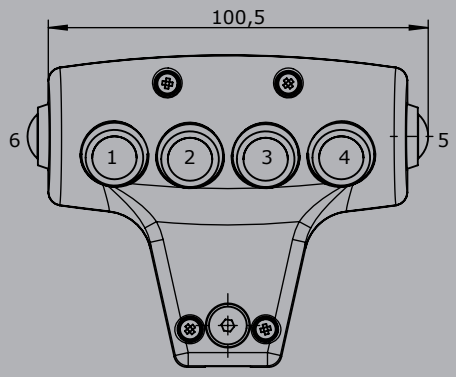
	B29	-2D	-X
Basic unit			
B29 Palm grip			
Digital actuating element			
D Push button KDA21			
Colour: red, black, yellow, green, blue, white, orange			
SE Sensor button capacitive with external control electronics			
S Sensor button capacitive without external control electronics			
(Consistent with V85 / VV85 with interface E1xx to E6xx, E907 and V25/V27 with interfaces E3xx + E4xx)			
Special model			
X Special / customer specified			

B29

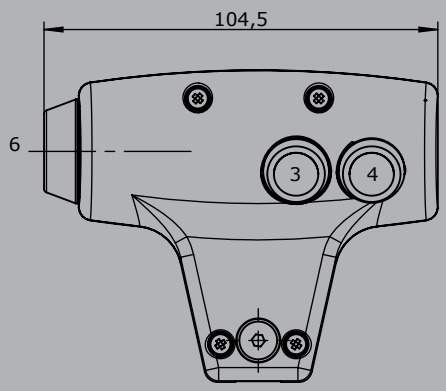




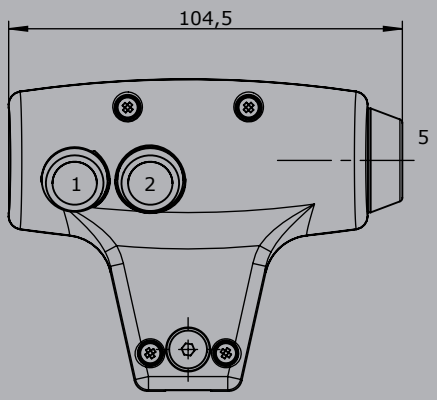
Edition:
Push button installed Pos. 1-6



Edition:
Sensor installed Pos. 6,
Push button installed Pos. 3,4



Edition:
Sensor installed Pos. 5,
Push button installed Pos. 1,2



V2019/1 15.03.2019

Palm grip
B10

The palm grip B10 has different equipment options for many requirements. It is compatible with our double-handle controller or mounted on hydraulic drives. The palm grip has a highly flexible single wire (0,1 mm², 450 mm long). The mounting piece for the drive rod can be supplied with a tapped hole 10 mm.

Technical data

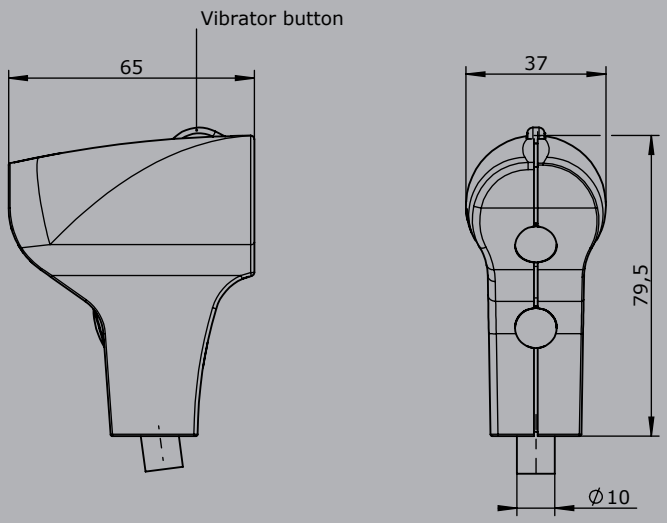
Operating temperature	-40°C to +85°C
Degree of protection	Control element up to IP67
Contact complement	1,5A 24 V DC13 (*¹ 0,1A 24 V DC13)

Example

	B10AL	-3D	W	V	-X
Basic unit					
B10L Palm grip left					
B10R Palm grip right					
B10AL Palm grip left with growing part					
B10AR Palm grip right with growing part					
Digital actuating element					
D Push button KDA21 *¹					
Colour: red, black, yellow, green, blue, white, orange					
W* Rocker switch T-0-T					
W* Rocker switch 0-T					
W* Rocker switch R-0-T					
W* Rocker switch R-0-R					
W* Rocker switch 0-R					
W* Rocker switch R-R					
**Only possible with version with attachment!*					
V Vibration pulse 24V DC ED 100%					
Special model					
X Special / customer specified					

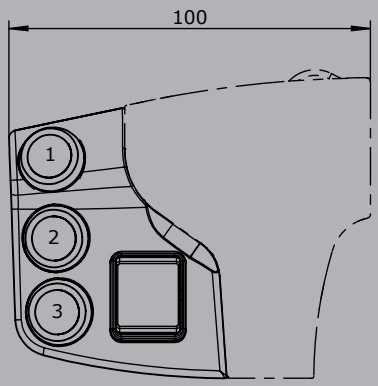
2

B10

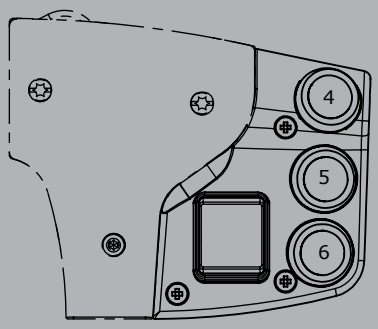


B10A

Edition installed left:
Push button installed Pos. 1,2,3
Rocker switch



Edition installed right:
Push button installed Pos. 4,5,6
Rocker switch



V2019/1 15.03.2019

Palm grip
B14 / B15

The palm grip B14/B15 has different equipment options for many requirements.
It is compatible with our multi-axis and single-axis controller or mounted on hydraulic drives. The palm grip has a highly flexible single wire (0,1 mm², 450 mm long). The mounting piece for the drive rod can be supplied with a tapped hole 12 mm (standard) or 10 mm.

Example

Technical data

Operation temperature	-40°C to +85°C
Degree of protection	Control element up to IP67
Contact complement	0,1A 24 V DC13

		B14	-2D	-X
Basic unit				
B14	Palm grip left			
B15	Palm grip right			
Digital actuating element				
D	Push button KDA21 (0,1A 24 V DC13)			
	Colour: red, black, yellow, green, blue, white, orange			
Special model				
X	Special / customer specified			

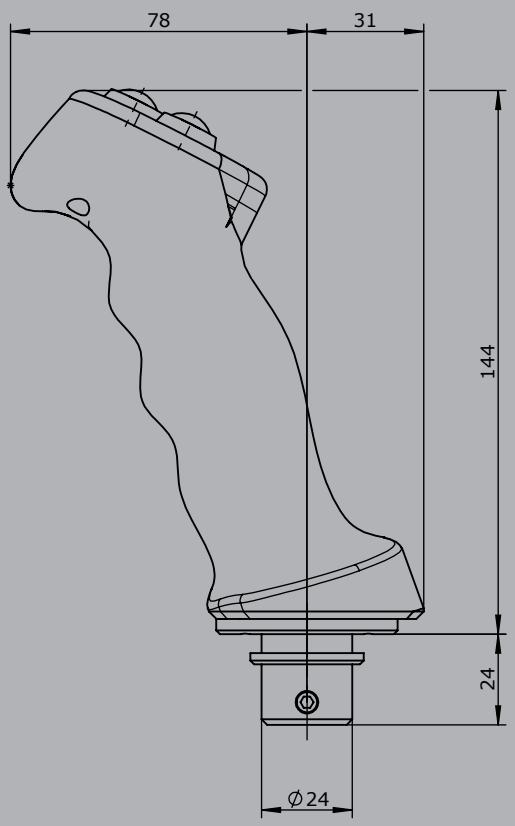
2

GESSMANN

2

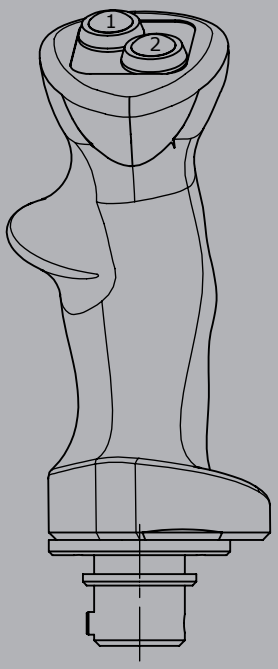
B14

Push button installed Pos. 1,2



B15

Push button installed Pos. 1,2



V2019/1 15.03.2019

Housing for our switching devices

Dimension outside in mm (BxLxH)	Dimension inside in mm (BxLxH)	Remarks	Weight KG	Form
Steel sheet housing material thickness 1/1,5 mm Protection IP54 painting RAL 7032 pebble-grey textured varnish				
200 x 200 x 92	166 x 166 x 90		1,3	B 200
230x 230 x 105	196 x 196 x 102		1,4	B 230
230 x 340 x 105	196 x 306 x 102		1,5	B 230 x 340
230 x 440 x 105	196 x 406 x 102		1,6	B 230 x 440
250 x 250 x 150	216 x 216 x 147		1,6	B 250 x 250
150 x 400 x 105	116 x 366 x 102		3,2	B 150 x 400
150 x 500 x 105	116 x 466 x 102		3,5	B 150 x 500
150 x 600 x 105	116 x 566 x 102		3,8	B 150 x 600
260 x 500 x 105	226 x 466 x 102		3,8	B 260 x 500
260 x 600 x 105	226 x 566 x 102		4,2	B 260 x 600
dimensions special		On enquiry		
Plastic housing polycarbonat Protection IP65 colour RAL 7035 fair-grey				
120 x 122 x 105	113 x 115 x 98		0,35	l 120 x 122
120 x 160 x 140	113 x 134 x 133		0,6	l 120 x 160
160 x 240 x 120	153 x 215 x 114		0,8	l 160 x 240
160 x 360 x 100	153 x 352 x 94		1,0	l 160 x 360
230 x 300 x 110	223 x 293 x 103		1,15	l 230 x 300
Plastic housing polyester Protection IP65 colour RAL 7000 grey				
220 x 335 x 115	200 x 292 x 108	Colour altern. RAL 9011 black	1,65	l 220 x 335
220 x 465 x 115	200 x 432 x 108	Colour altern. RAL 9011 black	2,24	l 220 x 465
250 x 255 x 120	236 x 243 x 110		2,65	l 250 x 255
250 x 400 x 120	236 x 386 x 110		3,65	l 250 x 400
250 x 600 x 120	236 x 586 x 110		5,24	l 250 x 600
Accessory parts				
Hinges each housing (2 pcs.)			0,2	
Armrest with clamp adjustable straps			0,5	
Cable entry M20 cable 7 - 13 mm		With anti-kink predection and strain relief	0,15	
Cable entry M32 cable 11 - 21 mm		With anti-kink predection and strain relief	0,2	
Cable entry M40 cable 19 - 28mm		With anti-kink predection and strain relief	0,25	
Pillar with flange 100 x 100 x 535 mm high		Flange 150 x 150 mm	14,0	
Indicating labels not engraved for Multi-axis / Single-axis controller				
Indicating labels with engraving for Multi-axis / Single-axis controller		Character		

Attachment for crane control unit, portable control units and housings

Command and indicating devices 22 mm (Siemens Typ 3SU) incl. indicating label		Contact-complement	Weight KG	Type
Push button		1 S + 1 Ö	0,040	D
Selector switch 0-1	2 positions	1 S + 1 Ö	0,050	W
Selector switch 1-0-2	3 positions	2 S + 2 Ö	0,060	W
Key switch 0-1	2 positions	1 S + 1 Ö	0,130	S
Key switch 1-0-2	3 positions	2 S + 2 Ö	0,140	S
Mushroom key switch latching		1 S + 1 Ö	0,080	PS
Mushroom head push button latching		1 Ö	0,060	PV
Illuminated push button diode 24 V DC/AC		1 S + 1 Ö	0,040	LD
Illuminated push button diode 230 V AC		1 S + 1 Ö	0,040	LD
Indicator light diode 24 V DC/AC			0,040	L
Indicator light diode 230 V AC			0,040	L
Coordinate switch 2 positions horizontal T-O-T 3SU1030-7AC10		2 S	0,102	K
Coordinate switch 2 positions vertical T-O-T 3SU1030-7AD10		2 S	0,102	K
Coordinate switch 4 positions T-O-T / T-O-T 3SU1030-7AF10		4 S	0,112	K
Switching element in addition		1S + 1Ö	0,010	
Other command and indicating devices				
Summer			0,250	
Knee button FAK-S/KC/I		1 S + 1 Ö	0,350	
Foot button		1 S + 1 Ö	0,450	
Attachments				
Drilling 22 mm				
Blind plug 22 mm				
Cutouts for display devices				
Microphone with gooseneck				
Power supply 230 V/24 V DC for driver seat				

Crane control unit
KST 30 swiveling

The KST 30 is an ergonomically designed swiveling crane control chair which provides a high degree of comfort. The inner consoles, mounted to the driver's seat, swing with the seat. The consoles can be positioned to perfectly match any person by means of length, height and inclination adjustment. For console version 1 the whole control unit can be expanded by additional fixed outer consoles.
The standard version includes:

Inner consoles:
The plastic consoles can be height-adjusted to match joysticks of any size. In addition consoles can be equipped with custom command and indicating devices.

Outer consoles:
The outer metal consoles feature foldable top covers, including mechanical fixation to keep cover in open position. Internal terminal strips can easily be accessed be removeable side covers. Command and indicating devices can be added based on customer's choice. Also special sizes and shapes of outer consoles are available on request.

Driver's seat:
The comfortable driver's seat KFS 11 is equipped with a spring loaded hydraulic vibration absorption system, including weight adjustment, air-permeable textile cover, arm rests and head rest.

Cross-member with swivel base:
The cover of the sheet steel cross-member including the driver's seat is forward foldable. Thereby all wirings, terminals and bushings are easily accessible during commissioning and maintenance. Swivel base has zero-tolerance bearings and rotation can be locked in 3° steps.

Surface treatment:
Base coat and textured varnish
Standard colour RAL 7035 light grey in combination with RAL 7015 slate-grey

Example

KST 3011	-U2	-M1	-F3	-LK	/	KFS 11	/	V85	/	V85	/	KL	/	X

Basic unit

KST 3001	With inner equipment boxes version 1
KST 3011	With inner eqiupment boxes version 1 and outside eqiupment boxes 160 mm wide
KST 3031	With inner eqiupment boxes version 1 and outside eqiupment boxes 270 mm wide
KST 3041	With inner eqiupment boxes version 1 and outside eqiupment boxes 320 mm wide
	Special equipment boxes form on request!

Base unit

U2	Swiveling 180° left, 90° right with detent
U3	Electric swiveling 180° left, 90° right
U4	Non swiveling

Attachments

M1	Monitor mounting with monitor housing
M2	Monitor mounting with monitor mounting bracket
M3	Monitor mounting without monitor housing/ -mounting bracket
F3	Footrest KBF/716
LK	Plate for horizontal manual adjustment for control units +/- 250 mm

Driver seat

KFS 11*	*(Included in the delivery!)*
KFS 9*	
KFS 10*	
KFS 12*	

**Description see driver seat page 229*

Technical details may vary based on configuration or application! Technical data subject to change without notice!

Crane control unit
KST 30 swiveling

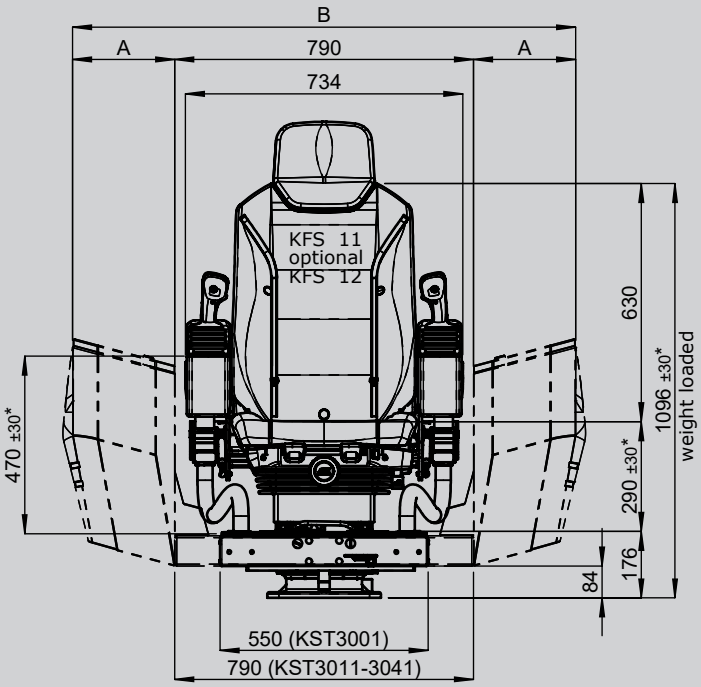
KST 3011 -U2 -M1 -F3 -LK / KFS 11 / V85 / V85 / KL / X

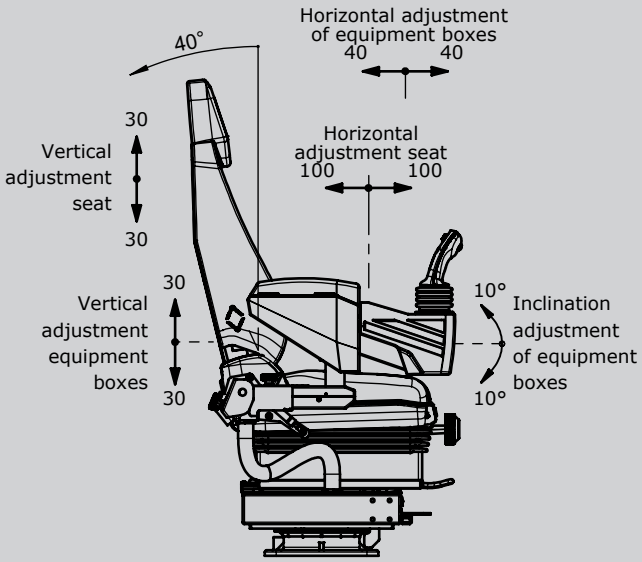
Mounting for equipment boxes	
V...	Multi-axis controller *(see page 1)*
S...	Single-axis controller *(see page 93)*
D...	Double-handle controller *(see page 70)*
N...	Control-switch *(see page 131)*
...	*More command and indicating devices (see page 202)*

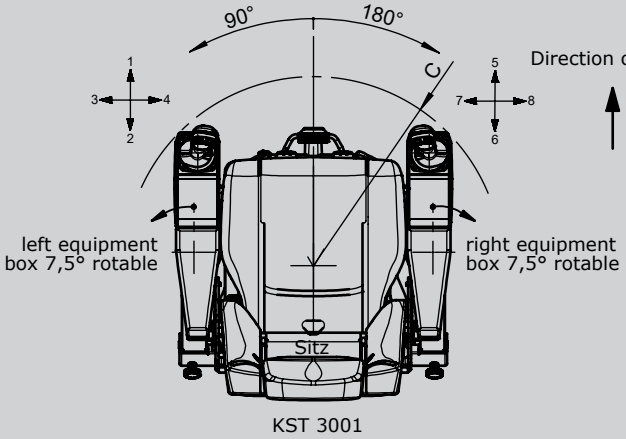
Wiring	
KL	Without wiring, but terminal block built in each terminal
KLV	On terminal block 4 mm² with single wire 1 mm² each terminal
KLV	On SPS (SPS provision) with single wire 1 mm² each terminal
KLVA	External wiring single wire highly flexible 1,5 mm², 5 m long each terminal
	Additional-/ reduction price per meter

Special model	
X	Special / customer specified
X	Special painted

3

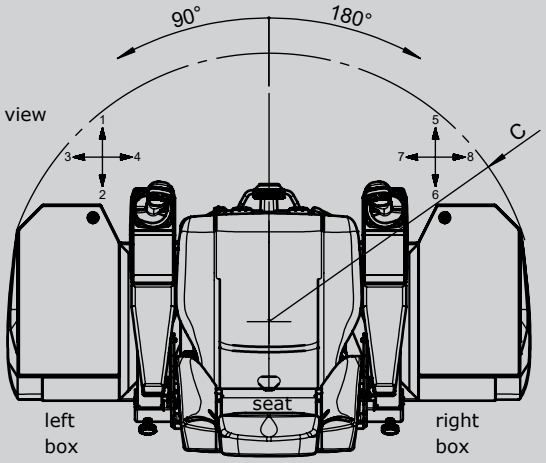






KST 3001

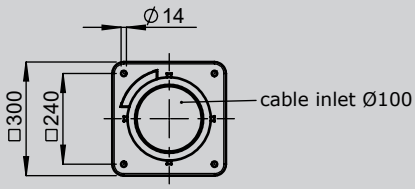
Direction of view



KST 3011-3041

Equipment boxes NOT rotable

Floor mounting



* adjustable

Type	Dim. A	Dim. B	Dim. C
KST 3001	-	-	500
KST 3011	160	1110	610
KST 3031	270	1330	710
KST 3041	320	1430	755

Crane control unit
KST 19 swiveling

The KST 19 is an ergonomically designed swiveling crane control chair which provides a high degree of comfort.

Equipment boxes:
The equipment boxes are vertically and horizontally adjustable. The arrangement of the joysticks, indicators and control devices is customised according to customer specifications. Cabling is carried out through a cross-member in the traverse. (Terminal block)

Driver seat:
As standard the KST 19 is fitted with a KFS 10 seat. The seat itself is fitted with a pneumatic vibration absorption system complete with weight adjustment to ensure that the comfort level is fitted with armrests and a headrest. There is the option to have the seat covered with air-permeable artificial leather.

Cross-member with swivel base:
Swivel base has zero-clearance bearing and can be locked by a friction brake.

Surface treatment:
Base coat and textured varnish
Standard colour RAL 7035 light grey, equipment boxes RAL 7016 anthracite

Example

KST 19	-U1	-M1	-F3	-LK	/	KFS 10	/	V85	/	V85	/	KL	/	X

Basic unit

KST 19	With equipment boxes

Base unit

U1	Swiveling 180° left, 90° right with friction brake
U2	Swiveling 180° left, 90° right with detent
U4	Non swiveling

Attachments

M1	Monitor mounting with monitor housing
M2	Monitor mounting with monitor mounting bracket
M3	Monitor mounting without monitor housing/ -mounting bracket
M4	Monitor mounting (Monitor < 5 kg) with monitor housing
M5	Monitor mounting (Monitor < 5 kg) with mounting adapter
F3	Footrest KBF/716
H	Heater 2 x 2 kW with ventilator
LK	Plate for horizontal manual adjustment for control units +/- 250 mm

Driver seat

KFS 10*	*(Included in the delivery!)*

**Description see driver seat page 229*

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Crane control unit
KST 19 swiveling

KST19 -U1 -M1 -F3 -LK / KFS10 / V85 / V85 / KL / X

Mounting for equipment boxes	
V...	Multi-axis controller *(see page 1)*
S...	Single-axis controller *(see page 93)*
D...	Double-handle controller *(see page 70)*
N...	Control-switch *(see page 131)*
...	*More command and indicating devices (see page 202)*

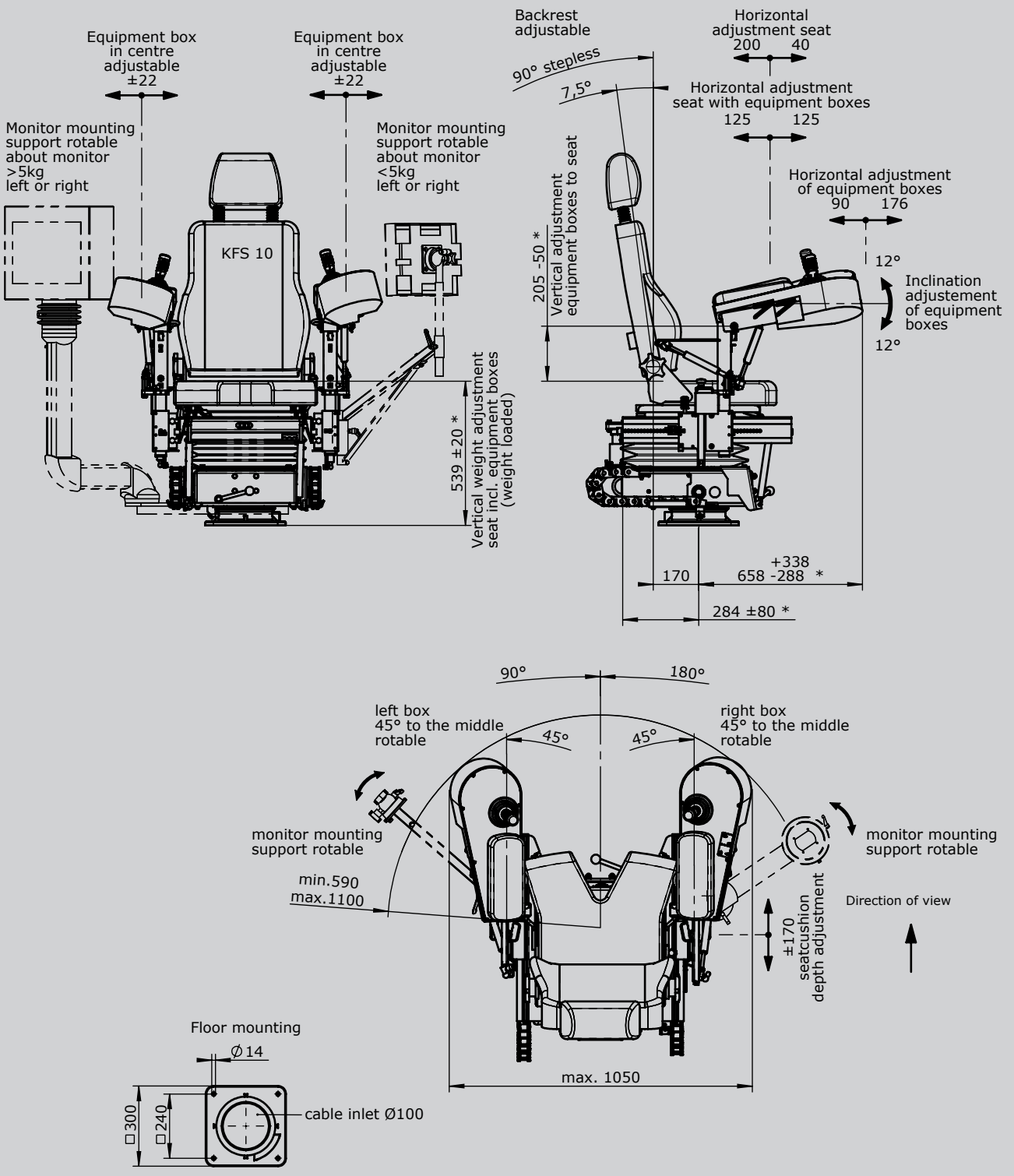
Wiring	
KL	Without wiring, but terminal block built in each terminal
KLV	On terminal block 4 mm² with single wire 1 mm² each terminal
KLV	On SPS (SPS provision) with single wire 1 mm² each terminal
KLVA	External wiring single wire highly flexible 1,5 mm², 5 m long each terminal

Special model	
X	Special / customer specified
X[1]	Special painted

Option
Radio remote control system

3

Technical details may vary based on configuration or application! Technical data subject to change without notice!



3

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Crane control unit
KST 10 swiveling

The KST 10 is an ergonomically designed swiveling crane control chair which provides a high degree of comfort.

Equipment boxes:
The equipment boxes are vertically and horizontally adjustable. The arrangement of the joysticks, indicators and control devices is customised according to customer specifications. Cabling is carried out through a cross-member in the traverse. (Terminal block)
Special boxes available upon request.

Driver seat:
As standard the KST 10 is fitted with a KFS 11 seat. The seat itself is fitted with a hydraulic vibration absorption system complete with weight adjustment to ensure that the comfort level is fitted with armrests and a headrest. There is the option to have the seat covered with air-permeable artificial leather.

Cross-member with swivel base:
The cover of the sheet steel cross-member including the driver's seat is forward foldable. Thereby all wirings, terminals and bushings are easily accessible during commissioning and maintenance. Swivel base has zero-clearance bearing and can be locked by a friction brake.

Surface treatment:
Base coat and textured varnish
Standard colour RAL 9011 black

Example

KST 10	-U1	-M1	-F3	-LK	/	KFS 11	/	V85	/	V85.1	/	KL	/	X

Basic unit

KST 10	With equipment boxes

Base unit

U1	Swiveling 180° left, 90° right with friction brake
U2	Swiveling 180° left, 90° right with detent
U3	Electric swiveling 180° left, 90° right
U4	Non swiveling
U5	Without base frame

Attachments

M1	Monitor mounting with monitor housing
M2	Monitor mounting with monitor mounting bracket
M3	Monitor mounting without monitor housing/-mounting bracket
F3	Footrest KBF/716
H	Heater 2 x 2 kW with ventilator
LK	Plate for horizontal manual adjustment of control units +/- 250 mm

Driver seat

KFS 11*	*(Included in the delivery!)*
KFS 9*	
KFS 10*	
KFS 12*	

**Description see driver seat page 229*

Technical details may vary based on configuration or application! Technical data subject to change without notice!

Crane control unit
KST 10 swiveling

KST 10 -U1 -M1 -F3 -LK / KFS 11 / V64 / V64.1 / KL / X

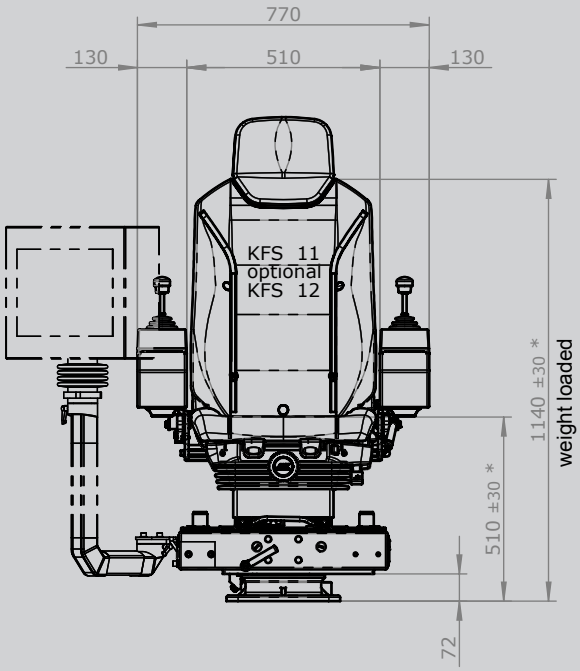
Mounting for equipment boxes	
V...	Multi-axis controller *(see page 1)*
S...	Single-axis controller *(see page 93)*
D...	Double-handle controller *(see page 70)*
N...	Control-switch *(see page 131)*
...	*More command and indicating devices (see page 202)*

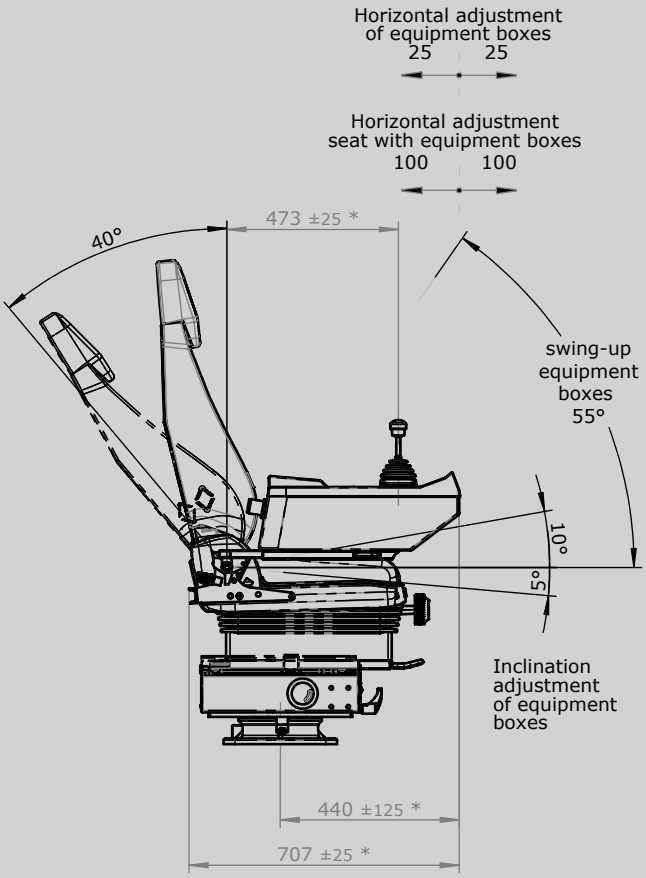
Wiring	
KL	Without wiring, but terminal block built in each terminal
KLV	On terminal block 4 mm² with single wire 1 mm² each terminal
KLV	On SPS (SPS provision) with single wire 1 mm² each terminal
KLVA	External wiring single wire highly flexible 1,5 mm², 5 m long each terminal

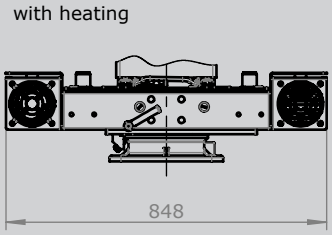
Special model	
X	Special / customer specified
X¹	Special painted

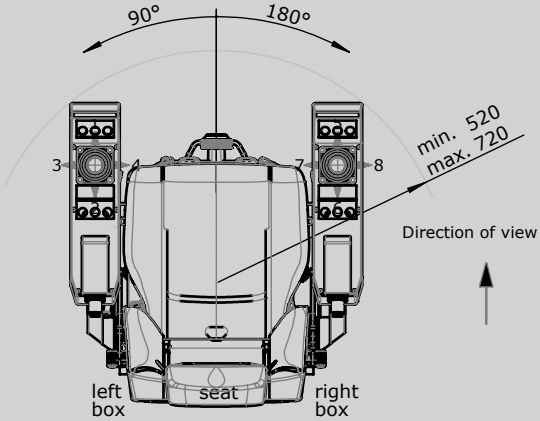
Option
Radio remote control system

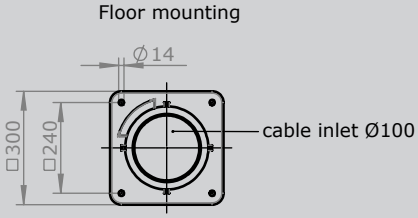
3











* adjustable

3

Crane control unit
KST 4 swiveling

The KST 4 is an ergonomically designed swiveling crane control chair which provides a high degree of comfort.

Equipment boxes:
The sheet steel equipment boxes are vertically and horizontally adjustable. The arrangement of the joysticks, indicators and control devices is customised according to customer specifications. Cabling is carried out through a cross-member in the traverse. (Terminal block)
Special boxes available upon request.

Driver seat:
As standard the KST 4 is fitted with a KFS 11 seat. The seat itself is fitted with a hydraulic vibration absorption system complete with weight adjustment to ensure that the comfort level is fitted with armrests and a headrest. There is the option to have the seat covered with air-permeable artificial leather.

Cross-member with swivel base:
The cover of the sheet steel cross-member including the driver's seat is forward foldable. Thereby all wirings, terminals and bushings are easily accessible during commissioning and maintenance. Swivel base has zero-clearance bearing and can be locked by a friction brake.

Surface treatment:
Base coat and textured varnish
Standard colour RAL 9011 black

Example

KST 41	-U1	-M1	-F3	-LK	/	KFS 11	/	V64	/	V64.1	/	KL	/	X

Basic unit

KST 41	With equipment boxes 160 x 420 mm
KST 42	With equipment boxes 200 x 420 mm

Base unit

U1	Swiveling 180° left, 90° right with friction brake
U2	Swiveling 180° left, 90° right with detent
U3	Electric swiveling 180° left, 90° right
U4	Non swiveling
U5	Without base frame

Attachments

M1	Monitor mounting with monitor housing
M2	Monitor mounting with monitor mounting bracket
M3	Monitor mounting without monitor housing/-mounting bracket
F3	Footrest KBF/716
H	Heater 2 x 2 kW with ventilator
LK	Plate for horizontal manual adjustment of crane control units +/- 250 mm

Driver seat

KFS 11*	*(Included in the delivery!)*
KFS 9*	
KFS 10*	
KFS 12*	

**Description see driver seat page 229*

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Crane control unit
KST 4 swiveling

KST 41 -U1 -M1 -F3 -LK / KFS 11 / V64 / V64.1 / KL / X

Mounting for equipment boxes	
V...	Multi-axis controller *(see page 1)*
S...	Single-axis controller *(see page 93)*
D...	Double-handle controller *(see page 70)*
N...	Control-switch *(see page 131)*
...	*More command and indicating devices (see page 202)*

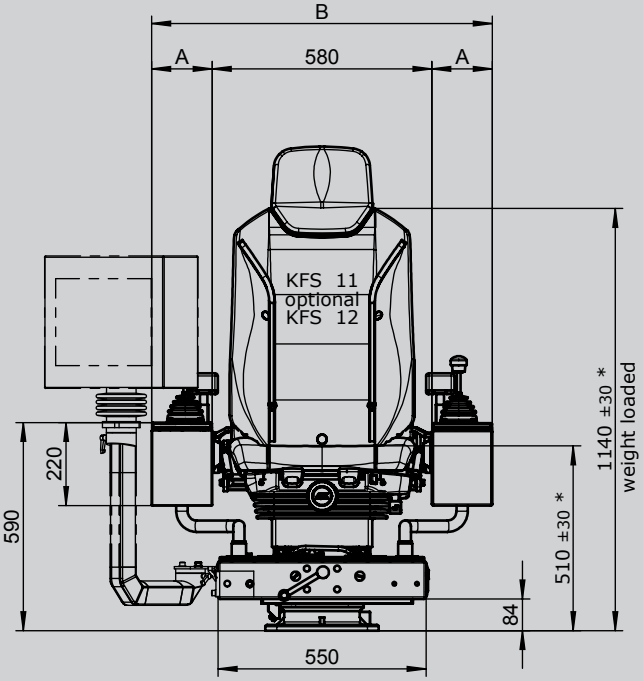
Wiring	
KL	Without wiring, each terminal block built in each terminal
KLV	On terminal block 4 mm² with single wire 1 mm² each terminal
KLV	On SPS (SPS provision) with single wire 1 mm² each terminal
KLVA	External wiring single wire highly flexible 1,5 mm², 5 m long each terminal

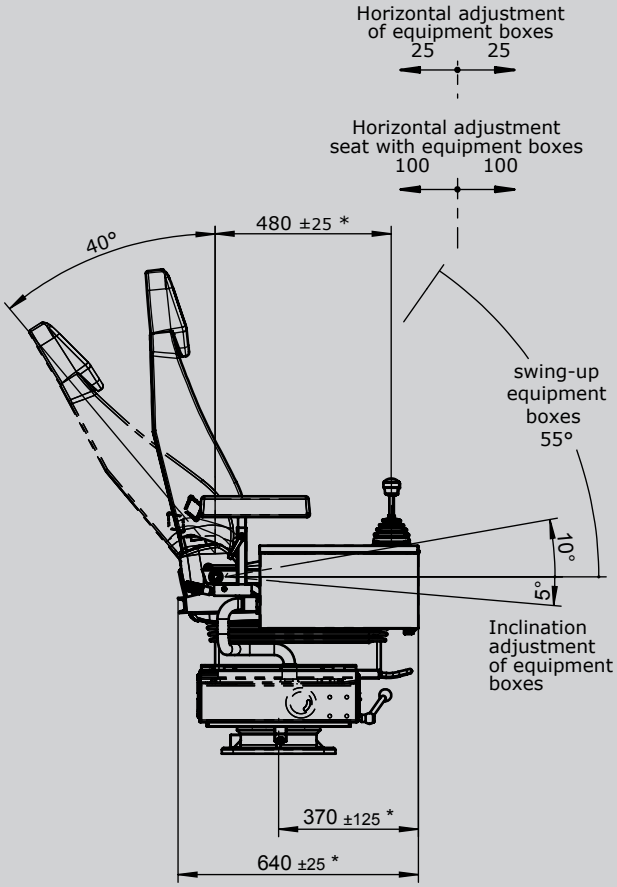
Special model	
X	Special / customer specified
X[1]	Special painted

Option
Radio remote control system

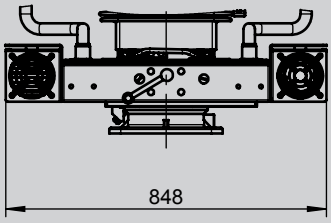
3

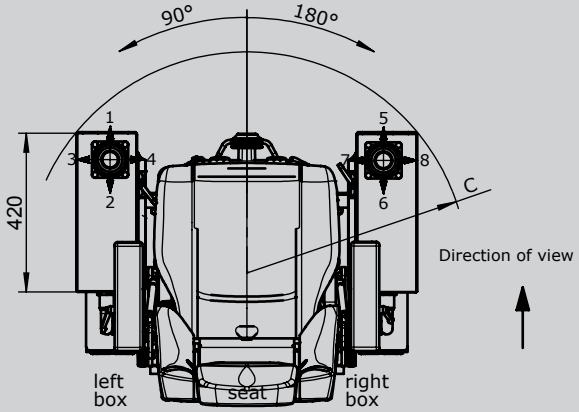
Technical details may vary based on configuration or application! Technical data subject to change without notice!



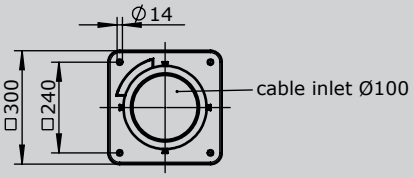


with heating





Floor mounting



* adjustable

Type	Dim. A	Dim. B	Dim. C
KST 41	160	900	max. 670 min. 570
KST 42	200	980	max. 700 min. 600

V2019/1 15.03.2019

Crane control unit
KST 5 swiveling

The KST 5 is an ergonomically designed swiveling crane control chair which provides a high degree of comfort.

Equipment boxes:
The equipment boxes are made from sheet steel and as standard have a hinged lid with locking feature. This allows for easy inspection and maintenance. The side of the equipment boxes is as standard fitted with an inspection plate which again is lockable. The arrangement of the joystick, indicators and control devices is cutomised according to customer specifications. This combined with the custom sized and pro-filed equipment boxes that are available means that the KST 5 is very flexible and customisable solution.

Driver seat:
As standard the KST 5 is fitted with a KFS 11 seat. The seat itself is fitted with a hydraulic vibration absorption system complete with weight adjustment to ensure that the comfort level is fitted with armrests and a headrest. There is the option to have the seat covered with air-permeable artificial leather.

Cross-member with swivel base:
The cover of the sheet steel cross-member including the driver's seat is forward foldable. Thereby all wirings, terminals and bushings are easily accessible during commissioning and maintenance. Swivel base has zero-clearance bearing and can be locked by a friction brake.

Surface treatment:
Base coat and textured varnish
Standard colour RAL 7035 light grey

Example

KST 51	-U1	-M1	-F3	-LK	/	KFS 11	/	V64	/	V64.1	/	KL	/	X

Basic unit

KST 51	With equipment boxes 200 x 580 mm
KST 52	With equipment boxes 270 x 580 mm
KST 54	With equipment boxes 320 x 580 mm
	Special boxes for request!

Base unit

U1	Swiveling 180° left, 90° right with friction brake
U2	Swiveling 180° left, 90° right with detent
U3	Electric swiveling 180° left, 90° right
U4	Non swiveling

Attachments

M1	Monitor mounting with monitor housing
M2	Monitor mounting with monitor mounting bracket
M3	Monitor mounting without monitor housing/-mounting bracket
F3	Footrest KBF/716
H	Heater 2 x 2 kW with ventilator 240V AC
LS	Plate for horizontal manual adjustment for control units +/- 75 mm
LK	Plate for horizontal manual adjustment for control units +/- 250 mm
Label without engraving for multi-axis-/ single-axis controller	
Label with engraving for multi-axis-/ single-axis controller	

Technical details may vary based on configuration or application! Technical data subject to change without notice!

Crane control unit
KST 5 swiveling

KST 51 -U1 -M1 -F3 -LK / KFS 11 / V64 / V64.1 / KL / X

Driver seat	
KFS 11*	*(Included in the delivery!)*
KFS 9*	
KFS 10*	
KFS 12*	
*Description see driver seat page 229	

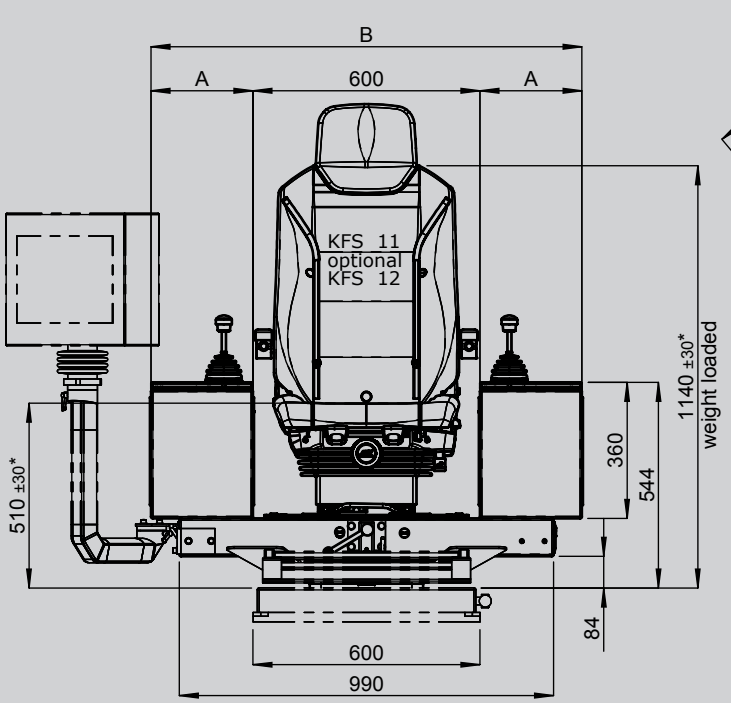
Mounting for equipment boxes	
V...	Multi-axis controller *(see page 1)*
S...	Single-axis controller *(see page 93)*
D...	Double-handle controller *(see page 70)*
N...	Control-switch *(see page 131)*
...	*More command and indicating devices (see page 202)*

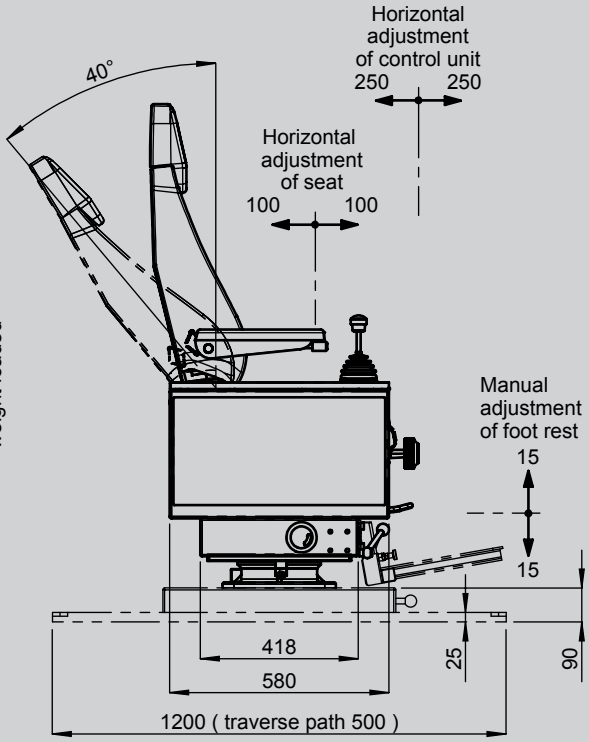
Wiring	
KL	Without, but terminal block built each terminal
KLV	On terminal block 4 mm² with single wire 1 mm² each terminal
KLV	On SPS (SPS provision) with single wire 1 mm² each terminal
KLVA	External wiring single wire highly flexible 1,5 mm², 5 m long each terminal

Special model	
X	Special / customer specified
X1	Special painted

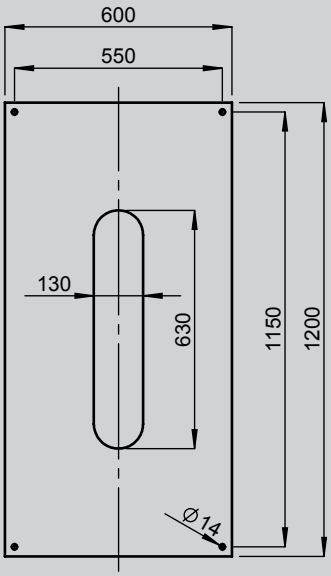
3

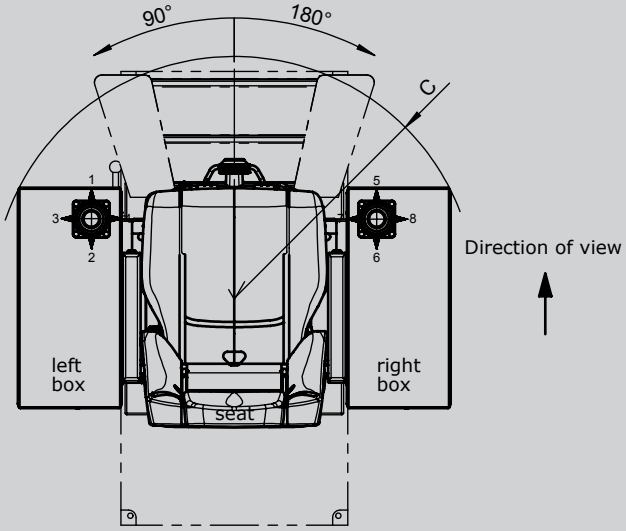
Option
Radio remote control system



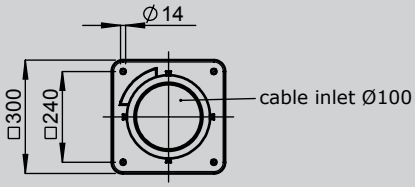


Floor mounting





Floor mounting



* adjustable

Type	Dim. A	Dim. B	Dim. C
KST 51	200	1000	580
KST 52	270	1140	640
KST 54	320	1240	690

Crane control unit
KST 6 swiveling

The KST 6 is an ergonomically designed swiveling crane control chair which provides a high degree of comfort.

Equipment boxes:
The equipment boxes are vertically and horizontally adjustable. The arrangement of the joysticks, indicators and control devices is customised according to customer specifications. Cabling is carried out through a cross-member in the traverse. (Terminal block)

Driver seat:
As standard the KST 6 is fitted with a KFS 11 seat. The seat itself is fitted with a hydraulic vibration absorption system complete with weight adjustment to ensure that the comfort level is fitted with armrests and a headrest. There is the option to have the seat covered with air-permeable artificial leather.

Cross-member with swivel base:
The cover of the sheet steel cross-member including the driver's seat is forward foldable. Thereby all wirings, terminals and bushings are easily accessible during commissioning and maintenance. Swivel base has zero-clearance bearing and can be locked by a friction brake.

Surface treatment:
Base coat and textured varnish
Standard colour RAL 9011 black

Example

KST 6	-U2	-M1	-F3	-LK	/	KFS 11	/	V64	/	V64.1	/	KL	/	X

Basic unit

KST 6	With equipment boxes

Base unit

U1	Swiveling 180° left, 90° right with friction brake
U2	Swiveling 180° left, 90° right with detent
U3	Electric swiveling 180° left, 90° right
U4	Non swiveling
U5	Without base frame

Attachments

M1	Monitor mounting with monitor housing
M2	Monitor mounting with monitor mounting bracket
M3	Monitor mounting without monitor housing/-mounting bracket
F3	Footrest KBF/716
H	Heater 2 x 2 kW with ventilator
LK	Plate for horizontal manual adjustment for control units +/- 250 mm

Driver seat

KFS 11*	*(Included in the delivery!)*
KFS 9*	
KFS 10*	
KFS 12*	

**Description see driver seat page 229*

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Crane control unit
KST 6 swiveling

KST 6 -U2 -M1 -F3 -LK / KFS 11 / V64 / V64.1 / KL / X

Mounting for equipment boxes	
V...	Multi-axis controller *(see page 1)*
S...	Single-axis controller *(see page 93)*
D...	Double-handle controller *(see page 70)*
N...	Control-switch *(see page 131)*
...	*More command and indicating devices (see page 202)*

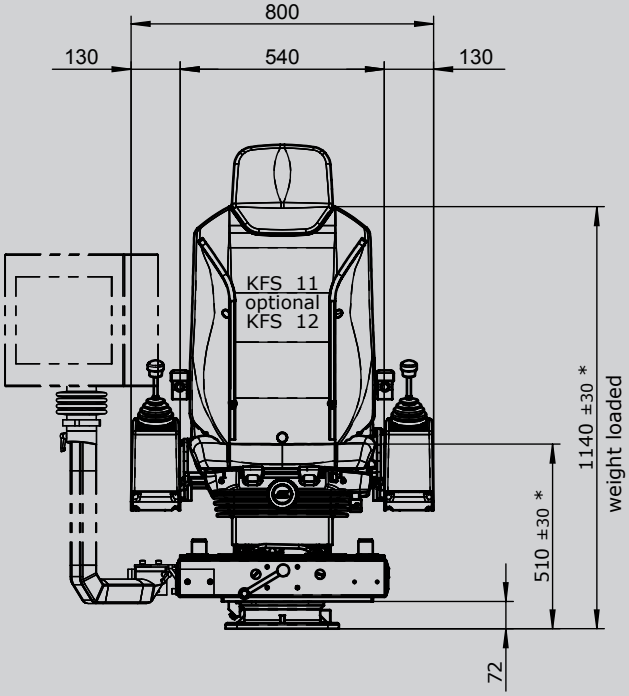
Wiring	
KL	Without, but terminal block built each terminal
KLV	On terminal block 4 mm² with single wire 1 mm² each terminal
KLV	On SPS (SPS provision) with single wire 1 mm² each terminal
KLVA	External wiring single wire highly flexible 1,5 mm², 5 m long each terminal

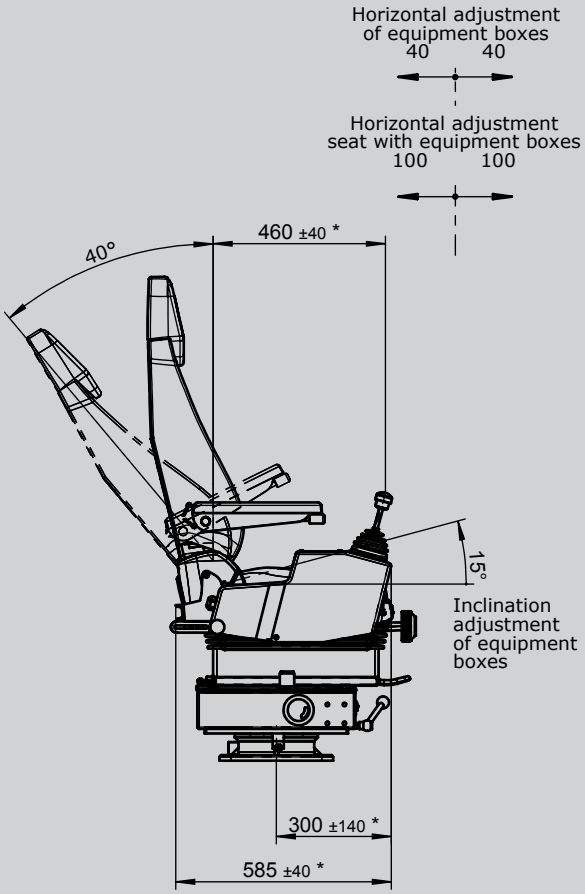
Special model	
X	Special / customer specified
X[1]	Special painted

Option
Radio remote control system

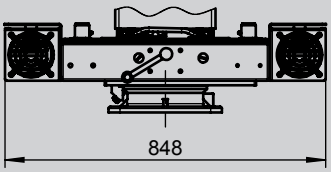
3

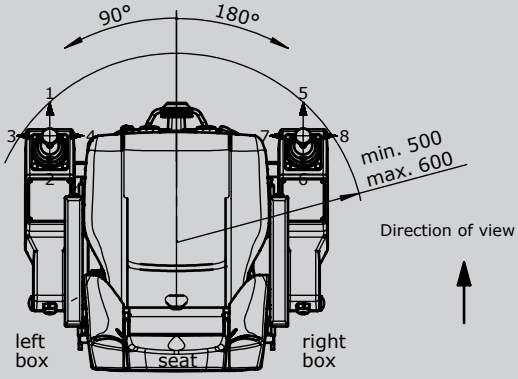
Technical details may vary based on configuration or application! Technical data subject to change without notice!



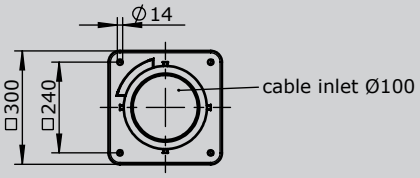


with heating





Floor mounting



* adjustable

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Crane control unit
KST 8 swiveling

The KST 8 is an ergonomically designed swiveling crane control chair which provides a high degree of comfort.

Equipment boxes:
The equipment boxes are vertically and horizontally adjustable. The arrangement of the joysticks, indicators and control devices is customised according to customer specifications. Cabling is carried out through a cross-member in the traverse. (Terminal block)
Special boxes available upon request.

Driver seat:
As standard the KST 8 is fitted with a KFS 11 seat. The seat itself is fitted with a hydraulic vibration absorption system complete with weight adjustment to ensure that the comfort level is fitted with armrests and a headrest. There is the option to have the seat covered with air-permeable artificial leather.

Cross member with swivel base:
The cover of the sheet steel cross-member including the driver's seat is forward foldable. Thereby all wirings, terminals and bushings are easily accessible during commissioning and maintenance. Swivel base has zero-clearance bearing and can be locked by a friction brake.

Surface treatment:
Base coat and textured varnish
Standard colour RAL 9011 black

Example

KST 8	-U1	-M1	-F3	-LK	/	KFS 11	/	V64	/	V64.1	/	KL	/	X

Basic unit

KST 8	With equipment boxes

Base unit

U1	Swiveling 180° left, 90° right with friction brake
U2	Swiveling 180° left, 90° right with detent
U3	Electric swiveling 180° left, 90° right
U4	Non swiveling
U5	Without base frame

Attachments

M1	Monitor mounting with monitor housing
M2	Monitor mounting with monitor mounting bracket
M3	Monitor mounting without monitor housing/-mounting bracket
F3	Footrest KBF/716
H	Heater 2 x 2 kW with ventilator
LK	Plate for horizontal manual adjustment of control units +/- 250 mm

Driver seat

KFS 11*	*(Included in the delivery!)*
KFS 9*	
KFS 10*	
KFS 12*	

**Description see driver seat page 229*

3

Technical details may vary based on configuration or application! Technical data subject to change without notice!

Crane control unit
KST 8 swiveling

KST 8 -U1 -M1 -F3 -LK / KFS 11 / V64 / V64.1 / KL / X

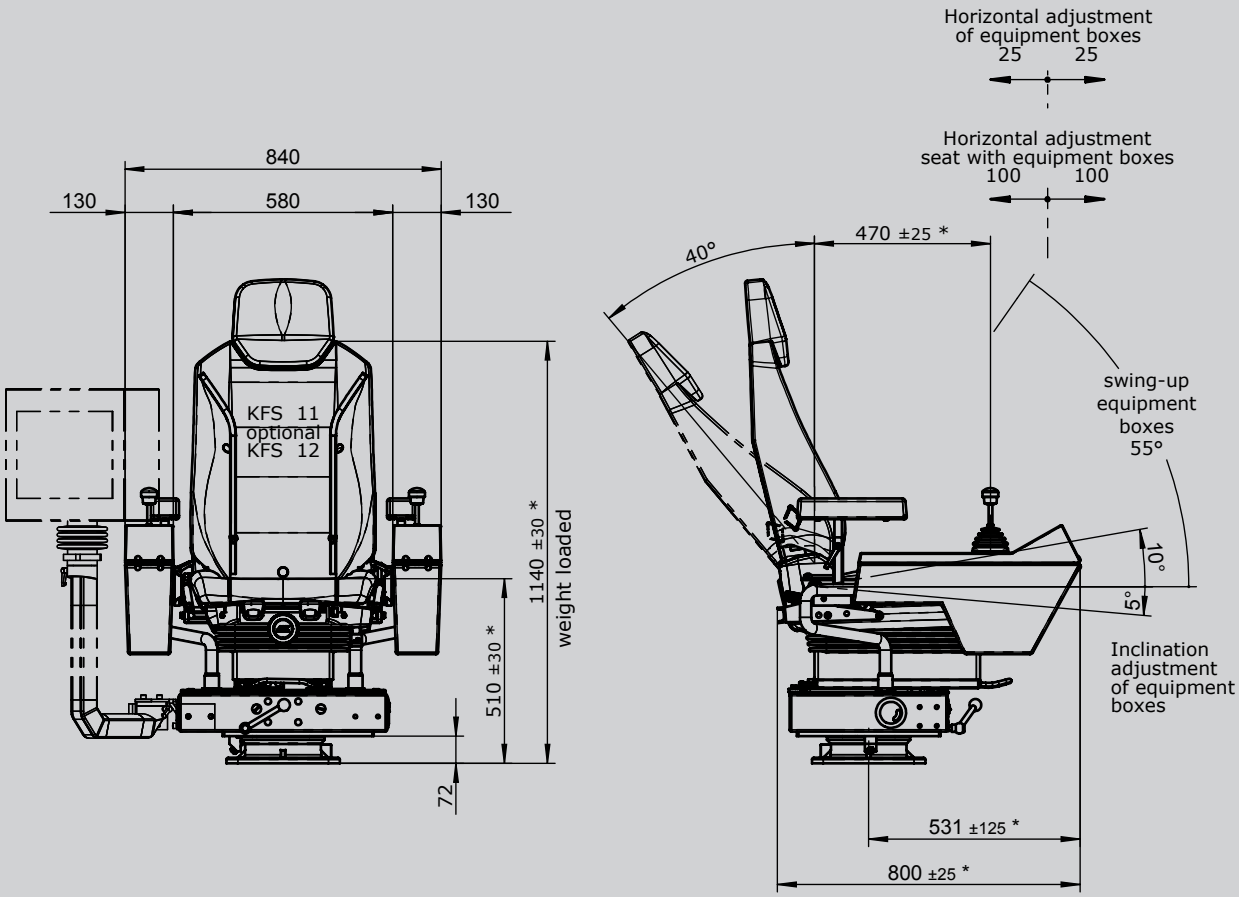
Mounting for equipment boxes	
V...	Multi-axis controller *(see page 1)*
S...	Single-axis controller *(see page 93)*
D...	Double-handle controller *(see page 70)*
N...	Control-switch *(see page 131)*
...	*More command and indicating devices (see page 202)*

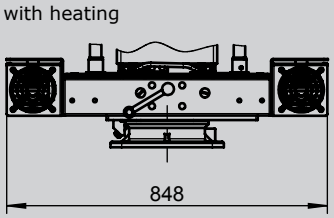
Wiring	
KL	Without wiring, but terminal block built each terminal
KLV	On terminal block 4 mm² with single wire 1 mm² each terminal
KLV	On SPS (SPS provision) with single wire 1 mm² each terminal
KLVA	External wiring single wire highly flexible 1,5 mm², 5 m long each terminal

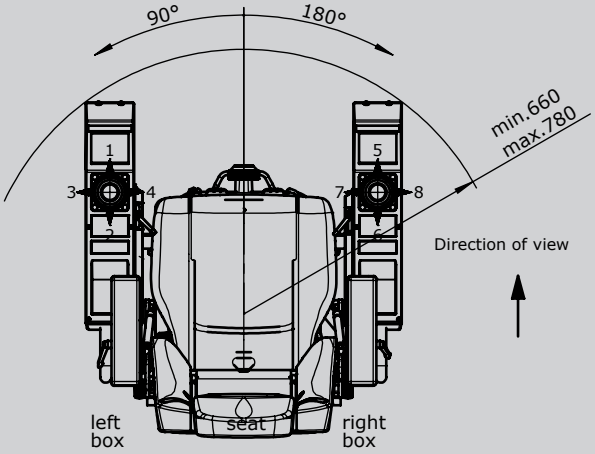
Special model	
X	Special / customer specified
X¹	Special painted

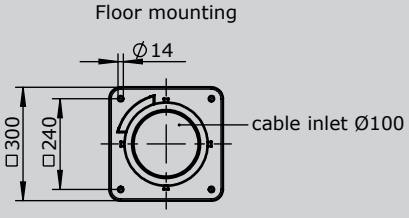
Option
Radio remote control system

3









* adjustable

3

Crane control unit
KST 85

The KST 85 is an ergonomically designed swiveling crane control chair which provides a high degree of comfort.

Equipment boxes:
The equipment boxes are vertically and horizontally adjustable. The arrangement of the joysticks, indicators and control devices is customised according to customer specifications. Cabling is carried out through a cross-member in the traverse. (Terminal block)
Special boxes available upon request.

Driver seat:
The comfortable spring mounted seat KFS 14 with roller-bearing swivel systems.

Heating console:
Cover with 2 steps heating (2x2kW 400V AC) with integrated ventilator. The cover of the heating cover can be tilted forward to reach the terminal block of the heating and cable execution.

Surface treatment:
Base coat and textured varnish
Standard colour RAL 9011 black

Example

KST 85	-M1	/	KFS 82	/	V64	/	V64.1	/	KL	/	X

Basic unit

KST 85	With heating in the apron
KST 87	With apron without heating

Attachments

M1	Monitor mounting with monitor housing
M2	Monitor mounting with monitor mounting bracket
M3	Monitor mounting without monitor housing/-mounting bracket

Driver seat

KFS 82*	*(Included in the delivery!)*

Mounting for equipment boxes

V...	Multi-axis controller *(see page 1)*
S...	Single-axis controller *(see page 93)*
D...	Double-handle controller *(see page 70)*
N...	Control-switch *(see page 131)*
....	*More command and indicating devices (see page 202)*

Wiring

KL	Without wiring, but with terminal block built each terminal
KLV	On terminal block 4 mm² with single wire 1 mm² each terminal
KLV	On SPS (SPS provision) with single wire 1 mm² each terminal
KLVA	External wiring single wire highly flexible 1,5 mm², 5 m long each terminal

Special model

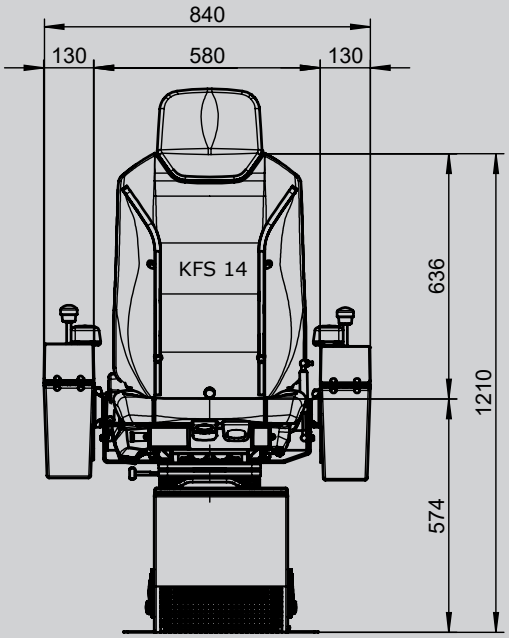
X	Special / customer specified
X[1]	Special painted

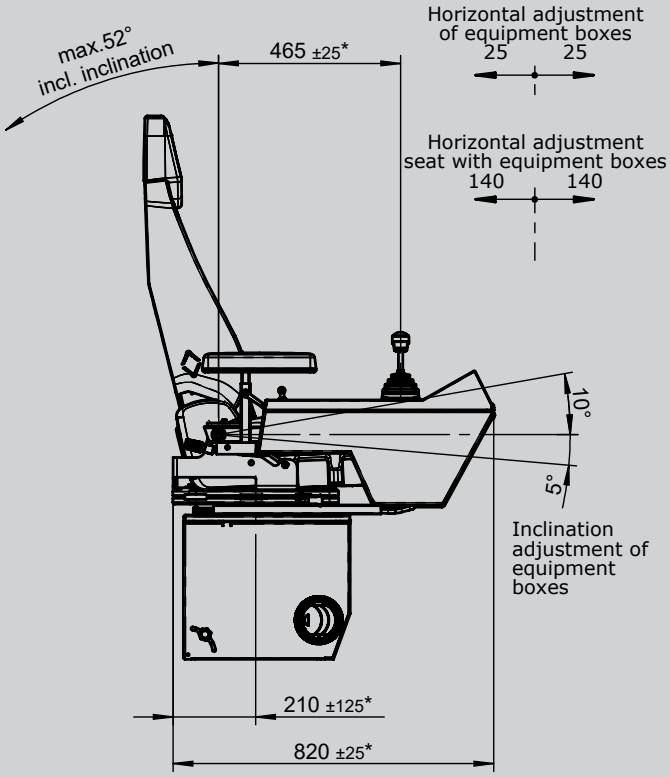
Option

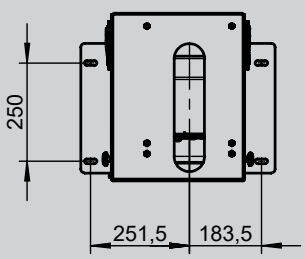
Radio remote control system

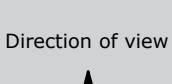
Technical details may vary based on configuration or application! Technical data subject to change without notice!

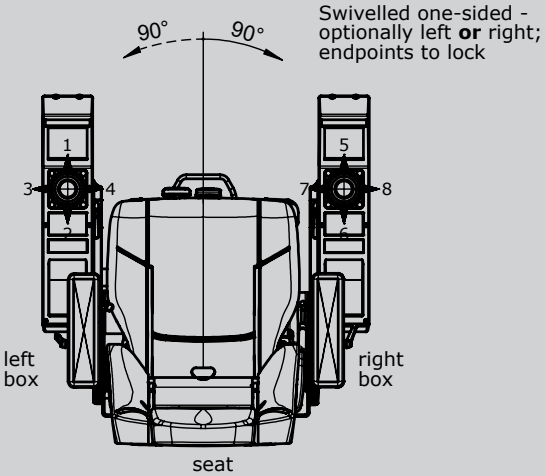
V2019/1 15.03.2019











3

Technical details may vary based on configuration or application! Technical data subject to change without notice!

Crane control unit
KST 7

The KST 7 is an ergonomically designed swiveling crane control chair which provides a high degree of comfort.

Equipment boxes:
The equipment boxes are made from sheet steel and as standard have a hinged lid with locking feature. This allows for easy inspection and maintenance. The side of the equipment boxes is as standard fitted with an inspection plate which again is lockable. The arrangement of the joystick, indicators and control devices is customised according to customer specifications. This combined with the custom sized and profiled equipment boxes that are available means that the KST 7 is very flexible and customisable solution.

Driver seat:
The tipped spring mounted seat KFS 4 is fit with an hydraulic vibration absorption system incl. weight adjustment. With the folding spring mounted seat you can also arrive your workplace in small cabins.

Base plate:
The cran control unit is available with or without base plate.

Surface treatment:
Base coat and textured varnish
Standard colour RAL 7035 light grey

Example

KST 7	-1	/	KFS 11	/	V64	/	V64.1	/	KL	/	X

Basic unit

KST 7	With equipment boxes 290 x 500 mm
KST 75	With equipment boxes 210 x 500 mm
	Special boxes for request!

Base plate

1	With base plate prepare for driver seat KFS 4
2	With base plate prepare for driver seat KFS 2
3	With base plate with apron for driver seat KFS 9, KFS 11...
4	Without base plate

Driver seat

KFS 4*	*(Included in the delivery!)*
KFS 2*	
KFS 11*	
KFS 9*	
*Description see driver seat page 229	

Mounting for equipment boxes

V...	Multi-axis controller *(see page 1)*
S...	Single-axis controller *(see page 93)*
D...	Double-handle controller *(see page 70)*
N...	Control-switch *(see page 131)*
...	*More command and indicating devices (see page 202)*

Technical details may vary based on configuration or application! Technical data subject to change without notice!

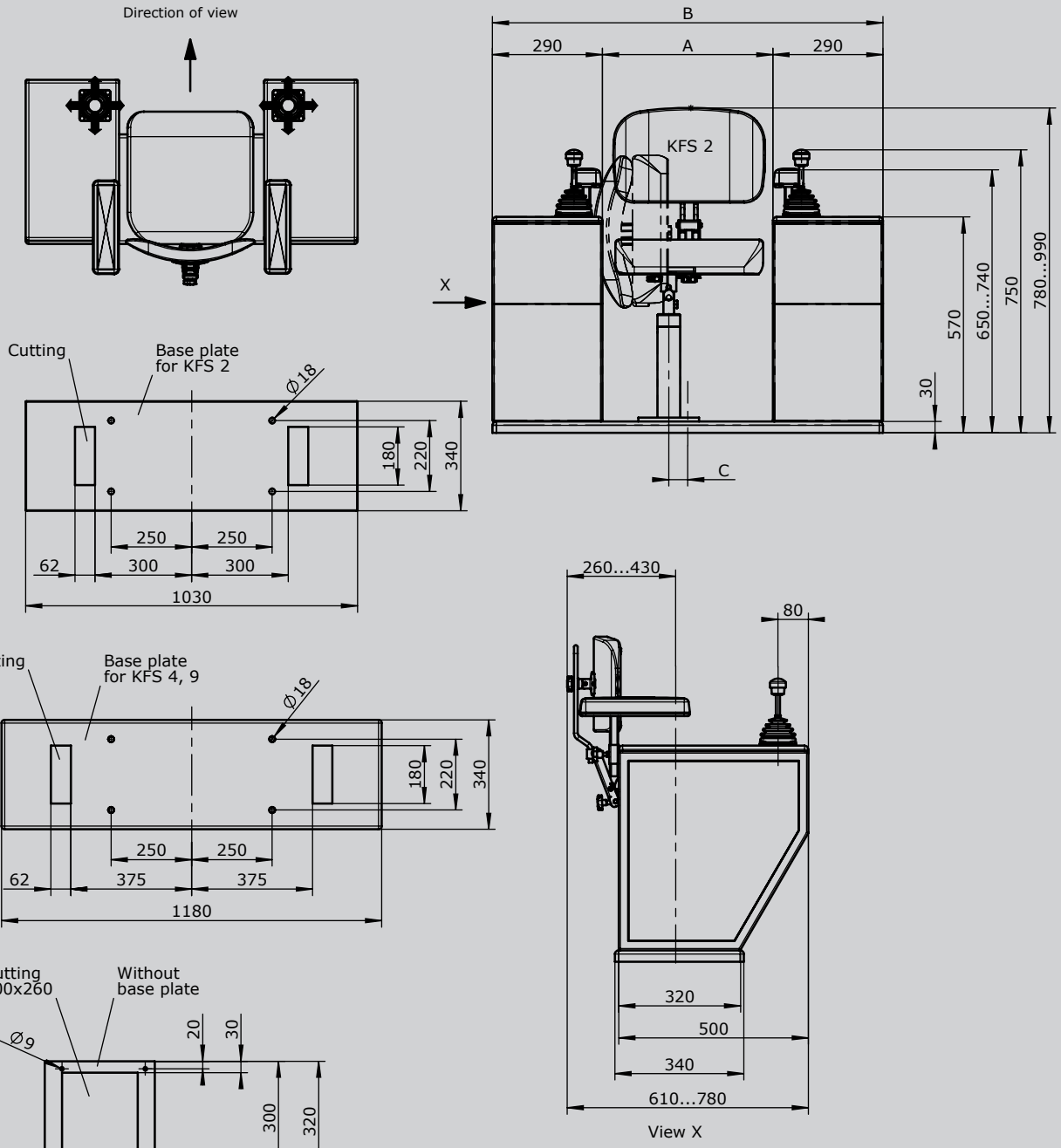
V2019/1 15.03.2019

KST 7 -1 / KFS 11 / V64 / V64.1 / KL / X

Wiring	
KL	Without wiring, but terminal block built each terminal
KLV	On terminal block 4 mm² with single wire 1 mm² each terminal
KLV	On SPS (SPS provision) with single wire 1 mm² each terminal
KLVA	External wiring single wire highly flexible 1,5 mm², 5 m long each terminal

Special model	
X	Special / customer specified
X[1]	Special painted

Option
Radio remote control system



Type	Dim. A	Dim. B	Dim. C
KFS 2	450	1030	50
KFS 4	600	1180	25
KFS 9	600	1180	25

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Driver seat
KFS 12

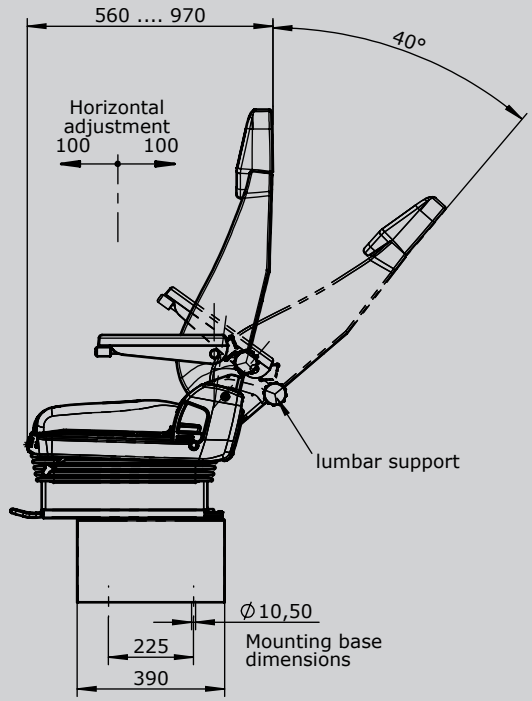
The crane driver`s seat KFS 12 is ergonomically designed and provides a high grade of comfort. The driver's seat is equipped with an air-sprung vibration system. The weight adjustment is infinitely. Heated seats 24V, lumbar support, seat cushion adjustment, seat allocation recognition and headrest are included in the standard delivery. All adjustment controls are positioned ergonomically within easy access. The metal parts are protected against corrosion and painted black.

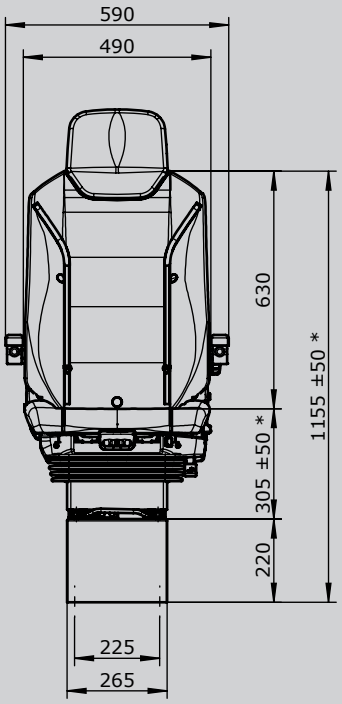
Technical data:

Suspension stoke	80 mm
Weight adjustment	50 - 150 kg
Horizontal adjustment	200 mm
Inclination of the backrest	-12°/+40°
Slope adjustment	-2°/+14°
Height adjustment	100 mm
Seat cushion adjustment	60 mm

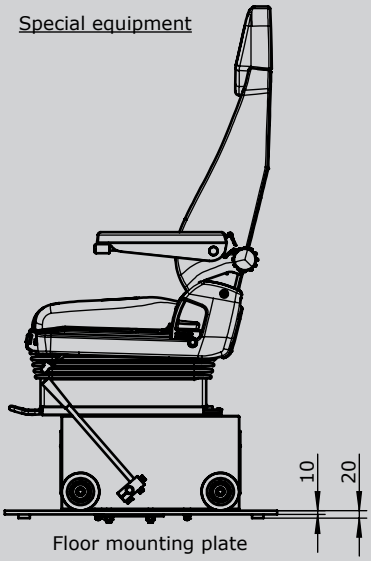
Example

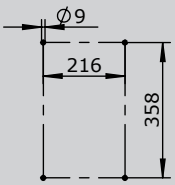
		KFS 12	-A1	-S1
Driver seat				
KFS 12	Driver seat with textile cover black			
Attachments				
A1	Armrest adjustable (2 pieces) 50 mm wide			
A2	Armrest continuously adjustable (2 pieces) 100 mm wide			
S1	Safety belt 2 point fixing (automatic)			
S3	Safety belt 2 point fixing (static)			
LK	Plate for horizontal manual adjustment of seat adjustable +/-250 mm			
C4	Loose cover for driver seat KFS 11 / KFS 12			
U	Console (base)			

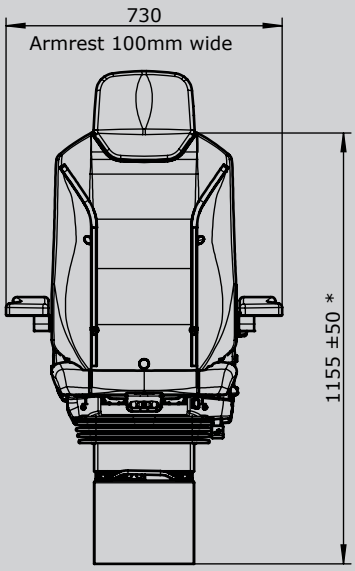


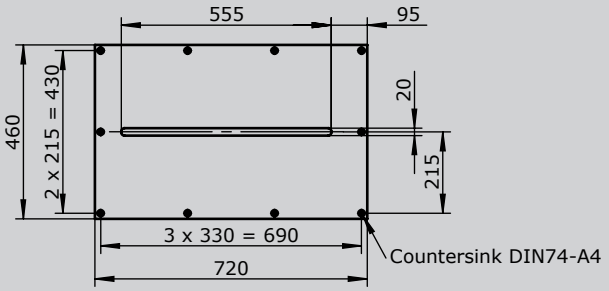


Special equipment









* adjustable

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Driver seat
KFS 11

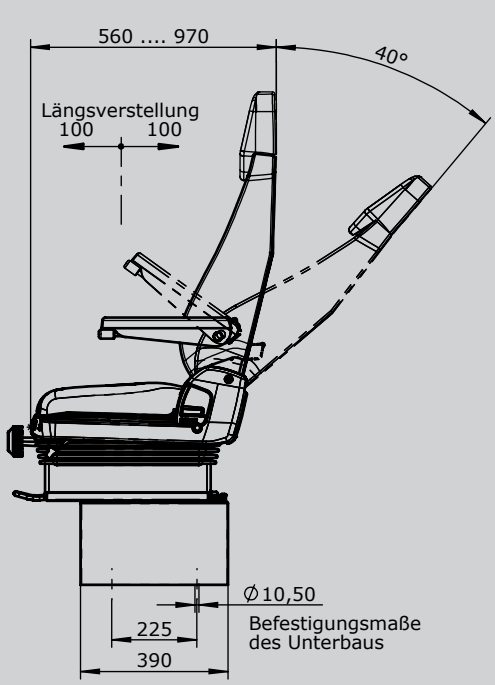
The crane driver`s seat KFS 11 is ergonomically designed and provides a high grade of comfort. The driver`s seat is a low level mechanical suspension seat with an oil-hydraulic vibration absorption system with weight adjustment. All adjustment controls are positioned ergonomically within easy access. The metal parts are protected against corrosion and painted black.

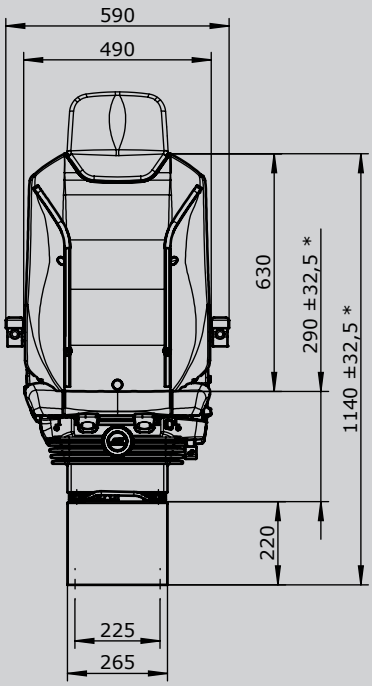
Example

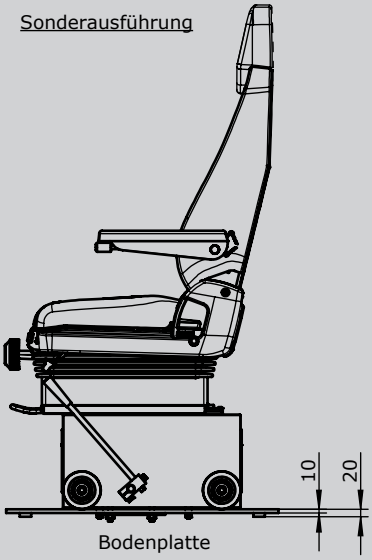
Technical data

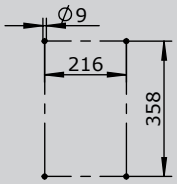
Suspension stoke	80 mm
Weight adjustment	50 - 150 kg
Horizontal adjustment	200 mm
Inclination of the backrest	-12°/+40°
Slope adjustment	-10°/+12°
Height adjustment	65 mm

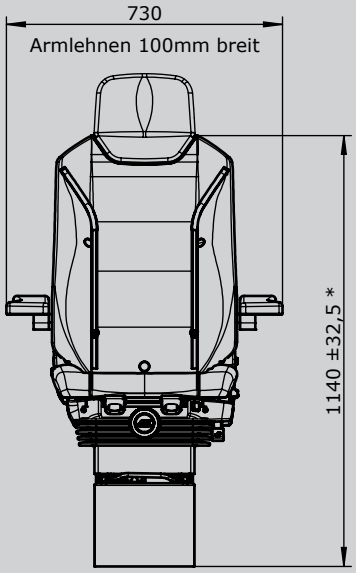
		KFS 11	-A1	-S1
Driver seat				
KFS 11	Driver seat with textile cover black	●	●	●
Attachments				
K	Headrest	●	●	●
A1	Armrest adjustable (2 pieces) 50 mm wide	○	●	●
A2	Armrest continuously adjustable (2 pieces) 100 mm wide	○	○	○
H	Seat cushion and backrest with heating element 24V DC 75W	○	○	○
S1	Safety belt 2 point fixing (automatic)	○	○	●
S3	Safety belt 2 point fixing (static)	○	○	○
LK	Plate for horizontal manual adjustment of seat adjustable +/-250 mm	○	○	○
C4	Loose cover for driver seat KFS 11 / KFS 12	○	○	○
U	Console (base)	○	○	○

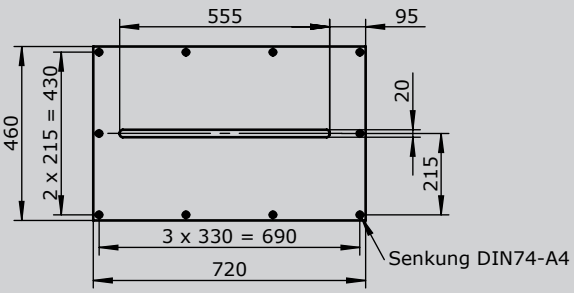












* einstellbar

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Driver seat
KFS 10

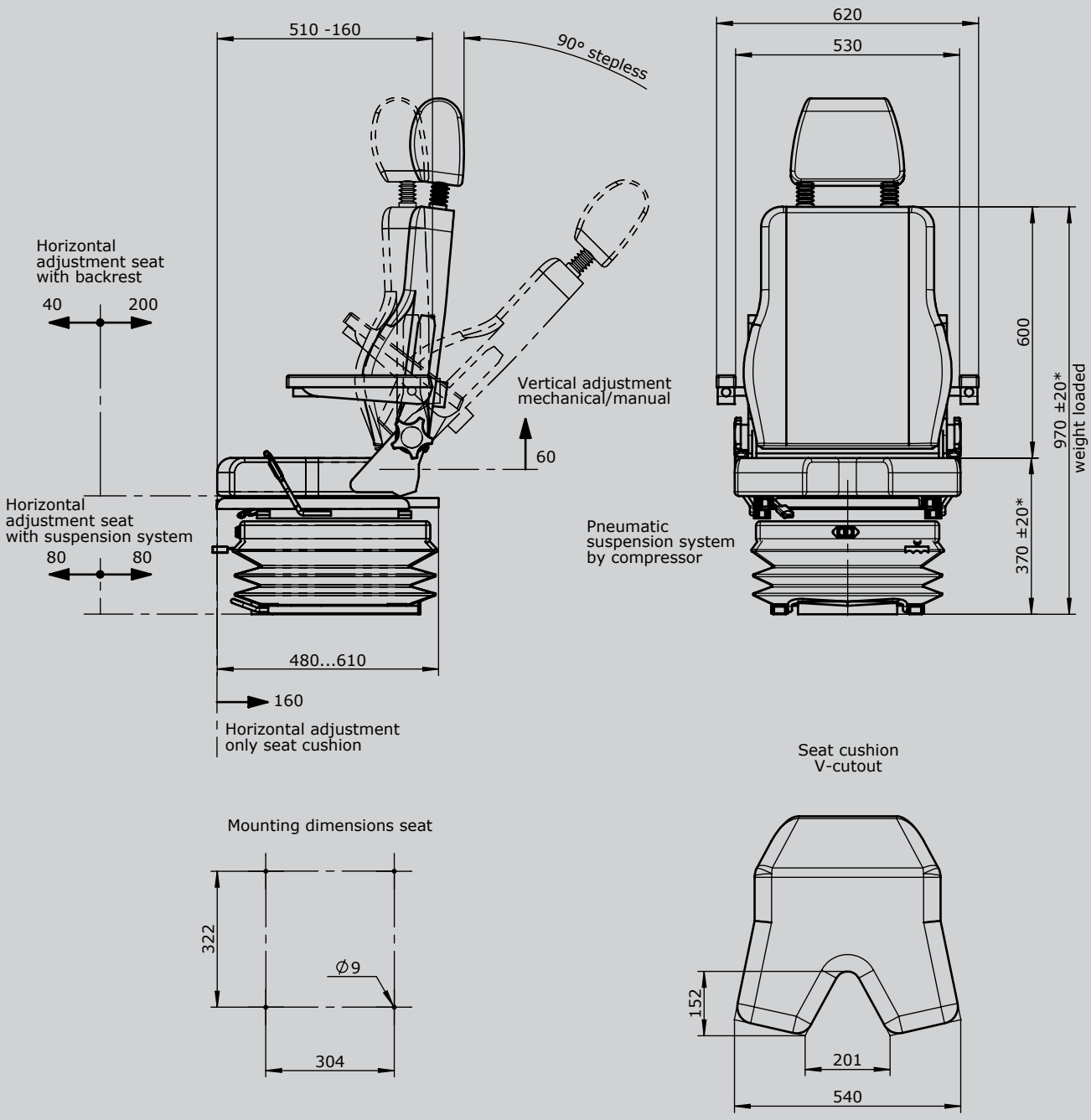
The crane driver`s seat KFS 10 is ergonomically designed and provides a high grade of comfort. The driver`s seat has a pneumatic vibration absorption system with weight adjustment by compressor (24V DC 8 Ampere) and a standard seat cushion V-cut. Through its three horizontal adjustment, it can be flexibly adapted to very many applications. All adjustment controls are positioned ergonomically within easy access. The metal parts are protected against corrosion and painted black.

Technical data:

Suspension stoke	80 mm
Weight adjustment	50 - 150 kg (pneumatic)
	50 - 130 kg (mechanical)
Horizontal adjustment	
Seat with suspension system	160 mm
Seat part individual	240 mm
Seat cushion	160 mm
Inclination of the backrest	max. 90°
Height and slope adjustment	40 mm

Example

		KFS 102	-A1	-L2	-S2	-R1
Driver seat						
KFS 101	Driver seat with air-permeable artificial leather cover black with V-cut					
KFS 102	Driver seat with textile cover black with V-cut					
Attachments						
K	Headrest					
A1	Armrest adjustable (2 pieces) 50 mm wide					
A2	Armrest continuously adjustable (2 pieces) 100 mm wide					
L1	Lumbar support manual adjustment - 2 movement					
L2	Lumbar support manual adjustment - 4 movement					
B	Seat allocation recognition					
H	Seat cushion and backrest with heating element 24 V DC 47W					
S1	Safety belt 2 point fixing (automatic)					
S2	Safety belt 4 point fixing (headrest required)					
S3	Safety belt 2 point fixing (static)					
U	Console (base)					
C3	Loose cover for driver seat KFS 10 with V-cut					
R1	Price reduction pneumatic vibration absorption system					
R2	Seat cushion without V-cut					



* adjustable

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Driver seat
KFS 9

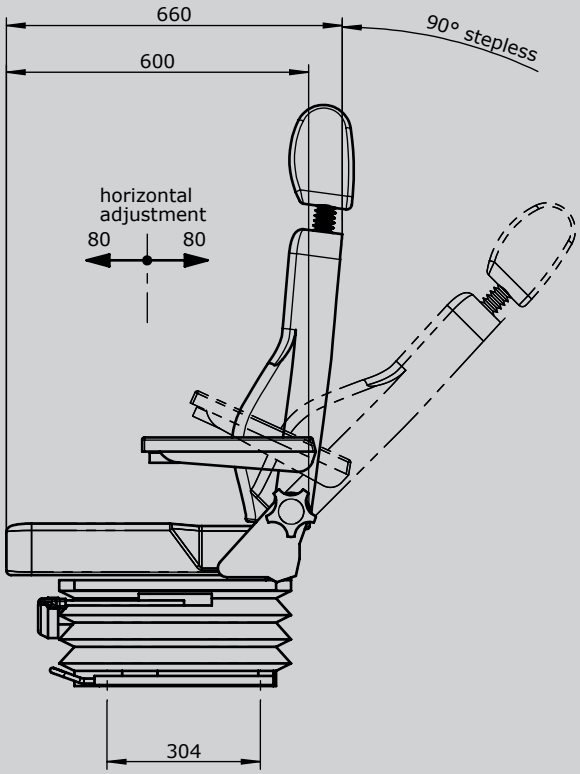
The crane driver`s seat KFS 9 is ergonomically designed and provides a high grade of comfort. The driver`s seat is a low level mechanical suspension seat with an oil-hydraulic vibration absorption system with weight adjustment. Upon request, a pneumatic vibrating system with weight adjustment is available. All adjustment controls are positioned ergonomically within easy access. The metal parts are protected against corrosion and painted black.

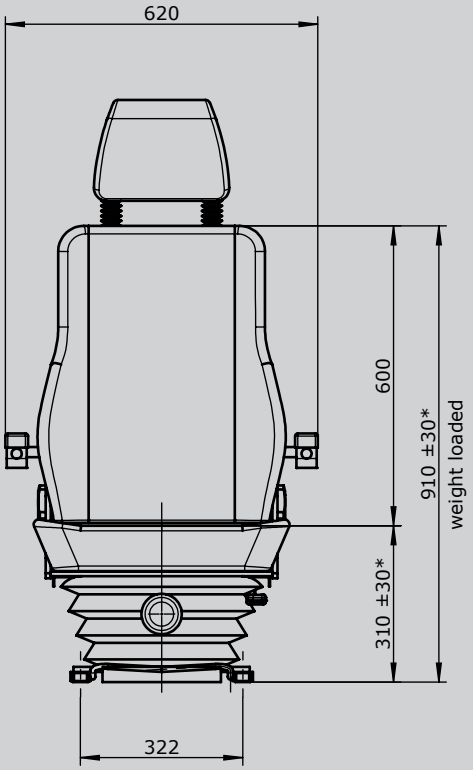
Technical data

Suspension stoke	80 mm
Weight adjustment	50 - 150 kg (pneumatic)
	50 - 130 kg (mechanical)
Horizontal adjustment	160 mm
Inclination of the backrest	max. 90°
Height and slope adjustment	60 mm

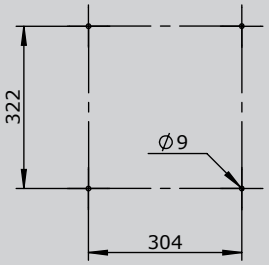
Example

		KFS 92	-A1	-L2	-S1	-P
Driver seat						
KFS 91	Driver seat with air-permeable artificial leather cover black					
KFS 92	Driver seat with textile cover black					
Attachments						
K	Headrest rain					
A1	Armrest adjustable (2 pieces) 50 mm wide					
A2	Armrest continuously adjustable (2 pieces) 100 mm wide					
L1	Lumbar support manual adjustment - 2 movement					
L2	Lumbar support manual adjustment - 4 movement					
B	Seat allocation recognition					
H	Seat cushion and backrest standard with heating element 24 V DC 47W					
S1	Safety belt 2 point fixing (automatic)					
S2	Safety belt 4 point fixing (headrest required)					
S3	Safety belt 2 point fixing (static)					
V	Seat cushion with V-cut (LD required!)					
LD	Horizontal adjustment dual (seat height +30 mm!)					
P	Pneumatic vibration absorption system with weight adjustment (incl. compressor)					
LK	Plate for horizontal manual adjustment of seat adjustable +/-250 mm					
C1	Loose cover for driver seat KFS 9					
C2	Loose cover for driver seat KFS 9 with V-cut					
U	Console (base)					

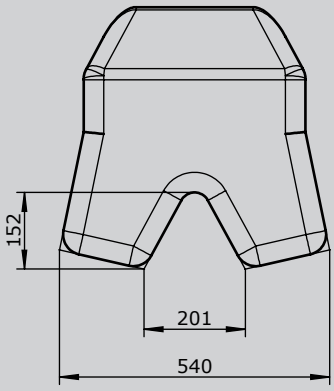




Mounting dimensions
of the seal rails



Seat cushion
v-cutout



* adjustable

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Driver seat
KFS 14

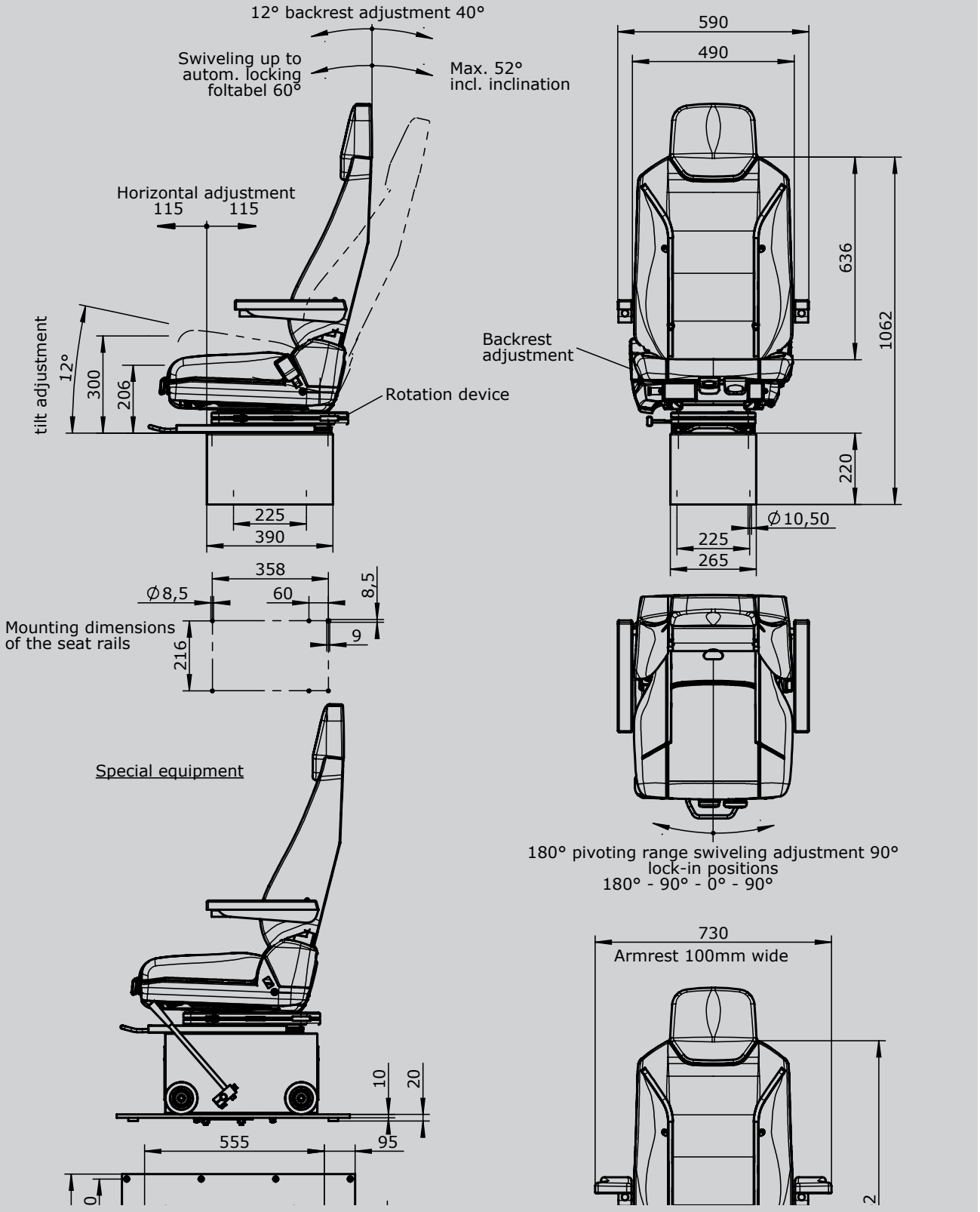
The crane driver`s seat KFS 14 is a static seat with ergonomically designed and provides a high grade of comfort. The driver`s seat is equipped with roller-bearing swivel system. All adjustment controls are positioned ergonomically within easy access. The metal parts are protected against corrosion and painted black.

Technical data:

Horizontal adjustment	150 mm
Inclination of the backrest	max. 28°
Height adjustment	65 mm

Example

		KFS 14	-A1	-S1	-U
Driver seat					
KFS 14	Driver seat with textile cover black				
Attachments					
K	Headrest				
A1	Armrest fully adjustable (2 pieces) 50 mm wide				
A2	Armrest fully adjustable (2 pieces) 100 mm wide				
S1	Safety belt 2-point mounting (automatic)				
S3	Safety belt 2-point mounting (static)				
U	Base frame (Apron)				



3

V2019/1 15.03.2019

Driver seat
KFS 4

The crane driver`s seat KFS 4 has stepless high adjustment by means of a gas-loaded spring and an oil-hydraulic vibration absorption system with weight adjustment. The backrest can be tilted, forwards into the cushion, which in turn can then be tilted 90° sideways. All functions are performed by a simple lever operation. The metal parts are protected against corrosion and painted black.

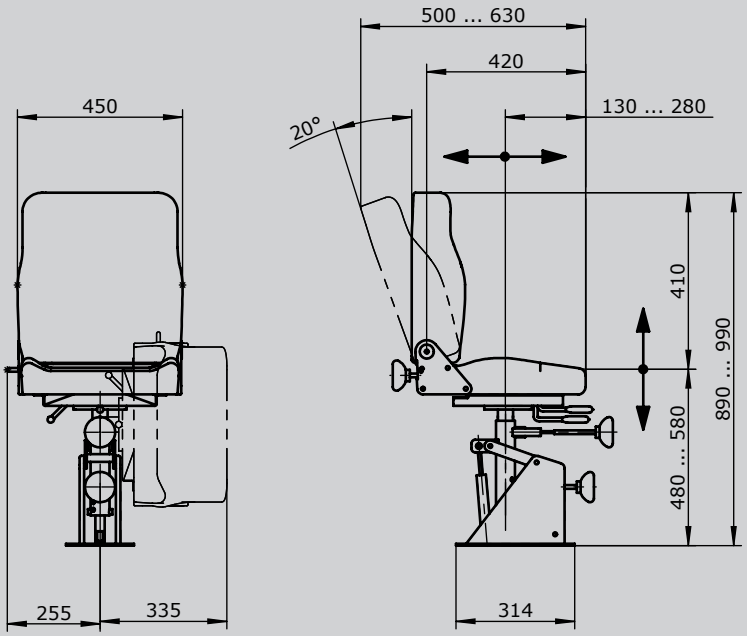
Example

Technical data:

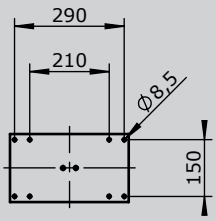
Suspension stoke	80 mm
Weight adjustment	50 - 130 kg
Horizontal adjustment	100 mm
Inclination of the backrest	max. 20°
Height adjustment	100 mm

		KFS 42	-A1
Driver seat			
KFS 41	Driver seat with air-permeable artificial leather cover black		
KFS 42	Driver seat with textile cover grey / black		
Attachments			
A1	Armrest fully adjustable (2 pieces) 50 mm wide		
A2	Armrest fully adjustable (2 pieces) 100 mm wide		

3



Floor mounting



3

Driver seat
KFS 2

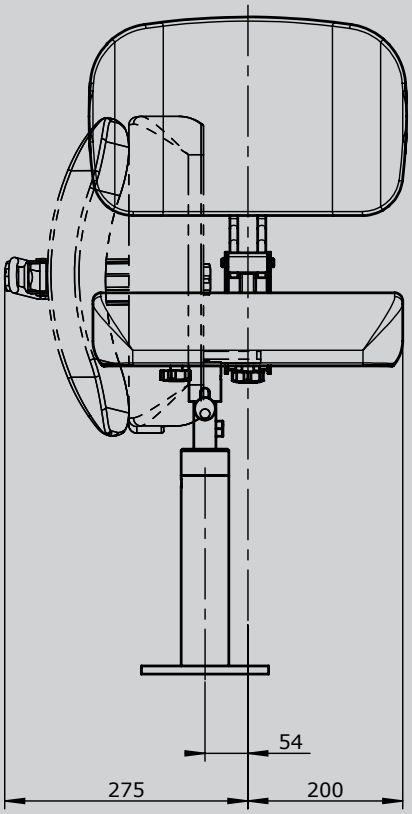
The crane driver`s seat KFS 2 has stepless high adjustment by means of a gas-loaded spring. The backrest can be tilted, forwards onto the cushion, which in turn can then be tilted 90° sideways. All these functions are performed easily via levers.

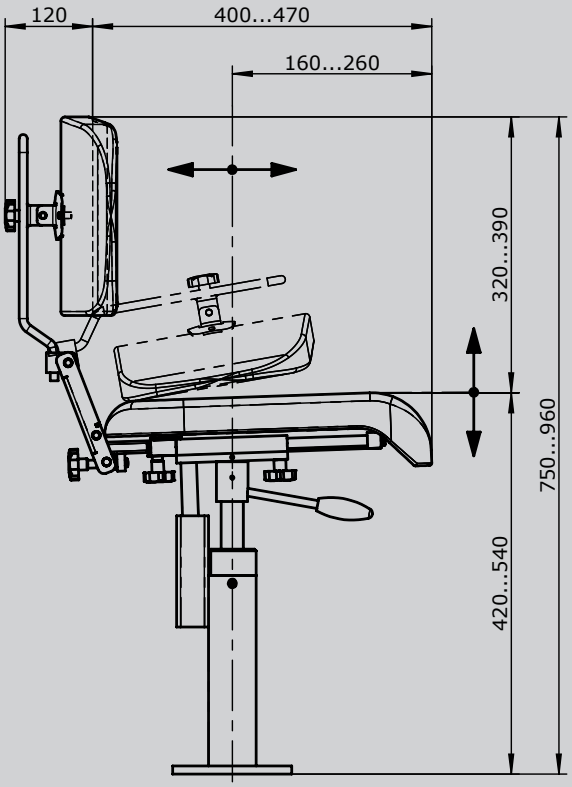
Example

Technical data

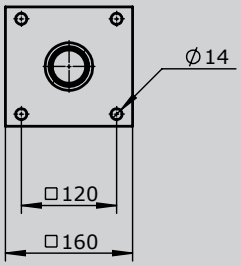
Horizontal adjustment	100 mm
Inclination of the backrest	max. 10°
Height adjustment	120 mm

		KFS 22
Driver seat		
KFS 21	With air-permeable artificial leather cover black	
KFS 22	With textile cover grey / black	





Floor mounting



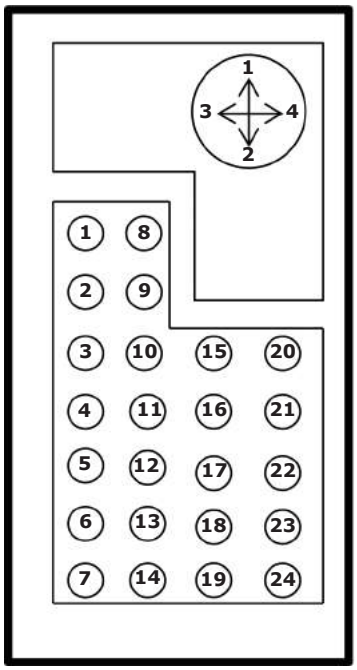
3

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Customer _____ Order No. _____

Equipment box left



Maximum installation of command and indicating devices 22 (*see p.202*) in our control units and housings if our multi-axis controllers V62 (*see p.57*) are used. Additional command and indicating devices can be installed of multi-axis controllers V64 or V11 (*see p.57 or p.66*) are used. (please enquire)

Pos. No.	Type	Colour	Label text (max. 2 x 12 characters	Plant ref.	Desti-nation	Notes
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						

Control unit (see p. 203) Type		No. of pieces max.
KST 3	1 - 6, 8 - 13, 15 - 18	16
KST 41/181	1 - 5, 10 - 12	8
KST 42/182	1 - 5, 8 - 12, 15 - 17	13
KST 51/151	3 - 7, 10 - 14, 15 - 19, 20 - 24	20
KST 52/53/54/152/154	1 -24	24
KST 6	3 - 4, 10 - 11, 15 - 16	6
KST 7	1 - 24	24
KST 75	1 - 19	19

Technical details may vary based on configuration or application! Technical data subject to change without notice!

Ordering information

Customer _____ Order No. _____

Pos. No.	Type	Colour	Label text (max). 2 x 12 characters	Plant ref.	Destination	Notes
1						
2						
3						
4						
5						
6						
7						
8						
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11						
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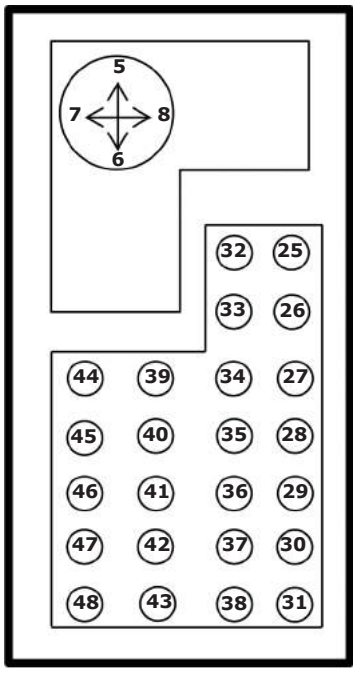
21						
22						
23						
24						

Equipment box right



Maximum installation of command and indicating devices 22 (*see p.202*) in our control units and housings if our multi-axis controllers V62 (*see p.57*) are used. Additional command and indicating devices can be installed if multi-axis controllers V64 or V11 (*see p.57 or p.66*) are used. (please enquire)

	No. of pieces max.	Control unit (*see p.203*) Type
25 - 30, 32 - 37, 39 - 42	16	KST 3
25 - 29, 34 - 36	8	KST 41/181
25 - 29, 32 - 36, 39 - 41	13	KST 42/182
27 - 31, 34 - 38, 39 - 43, 44 - 48	20	KST 51/151
25 - 48	24	KST 52/53/54/152/154
27 - 28, 34 - 35, 39 - 40	6	KST 6
25 - 48	24	KST 7
25 - 43	19	KST 75

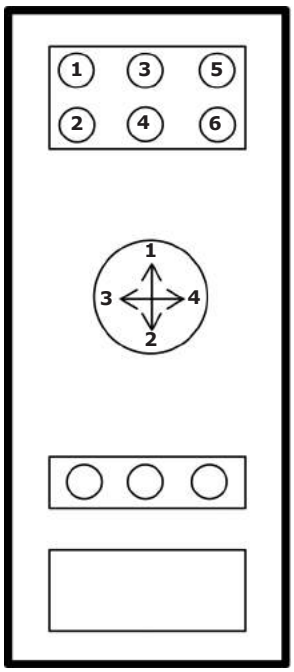
Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Ordering information KST 8, 85

Customer _____ Order No. _____

Equipment box left



Pos. No.	Type	Colour	Lable text (max). 2 x 12 characters	Plant ref.	Desti-nation	Notes
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						

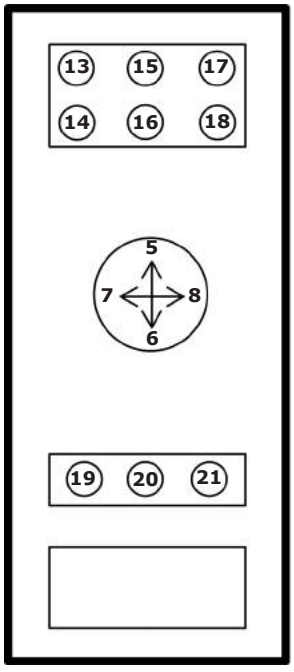
Max. 6 pcs. installation of command and indicating devices 22 (*see p.202*) or 1 pcs. monitoring device 72 x 72mm

Multi-axis controller V64 (*see p.57*) or V11 (*see p.63*)

Max. 3 pcs. installation of command and indicating devices 22 (*see p.202*)

Place to put on devices

Equipment box right



Pos. No.	Type	Colour	Lable text (max). 2 x 12 characters	Plant ref.	Desti-nation	Notes
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						

Max. 6 pcs. installation of command and indicating devices 22 (*see p.202*) or 1 pcs. monitoring device 72 x 72mm

Multi-axis controller V64 (*see p.57*) or V11 (*see p.63*)

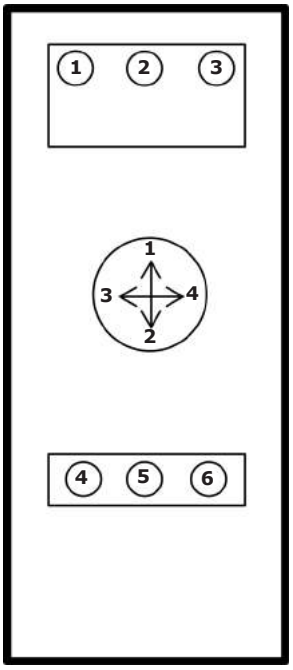
Max. 3 pcs. installation of command and indicatin devices 22 (*see p.202)*

Place to put on devices

Ordering information KST 10

Customer _____ Order No. _____

Equipment box left



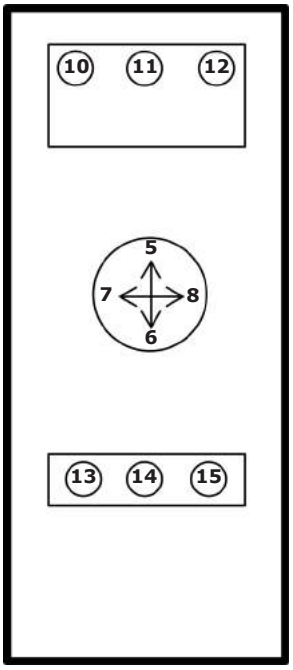
Max. 3 pcs. installation of command and indicating devices 22 (*see p.202*)

Multi-axis controller V11, V14, V25, V85

Max. 3 pcs. installation of command and indicating devices 22 (*see p.202*)

Pos. No.	Type	Colour	Label text (max. 2 x 12 characters	Plant ref.	Desti-nation	Notes
1						
2						
3						
4						
5						
6						
7						
8						
9						

Equipment box right



Max. 3 pcs. installation of command and indicating devices 22 (*see p.202*)

Multi-axis controller V11, V14, V25, V85

Max. 3 pcs. installation of command and indicating devices 22 (*see p.202*)

Pos. No.	Type	Colour	Label text (max. 2 x 12 characters	Plant ref.	Desti-nation	Notes
13						
14						
15						
16						
17						
18						

V2019/1 15.03.2019

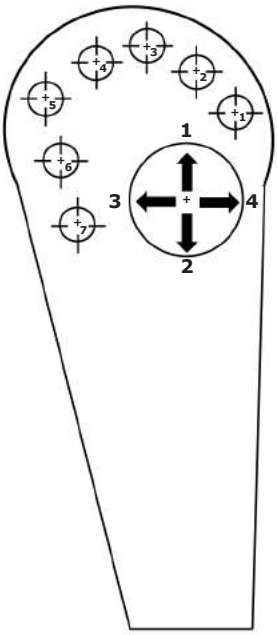
Order information KST 19

Customer _____ Order No. _____

Equipment box left

Multi-axis controller V11, V14, V25, V85
see p. 63, 50, 25, 10

max. 7 installations of command and indicating devices 22 (*see p.202*)

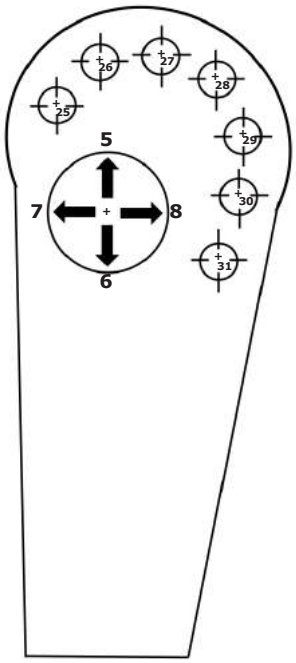


Pos. No.	Type	Colour	Label text (max. 2 x 12 characters	Plant-ref.	Desti-nation	Notes
1						
2						
3						
4						
5						
6						
7						
8						
9						

Equipment box right

Multi-axis controller V11, V14, V25, V85
see p. 63, 50, 25, 10

max. 7 installations of command and indicating devices 22 (*see p.202*)

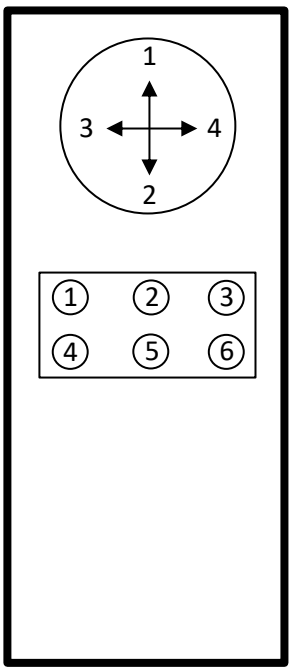


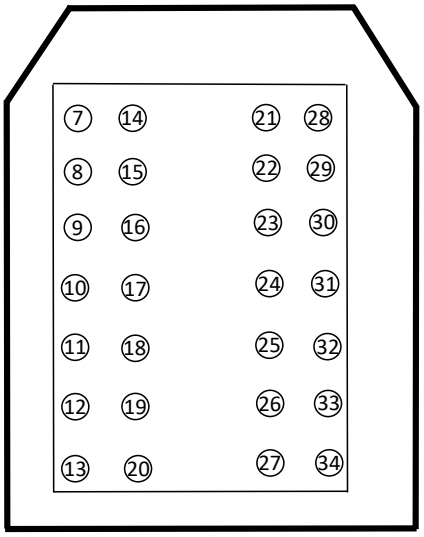
Pos. No.	Type	Colour	Label text (max. 2 x 12 characters	Plant-ref.	Desti-nation	Notes
25						
26						
27						
28						
29						
30						
31						

Ordering information KST 30

Customer _____ Order No. _____

Equipment box left





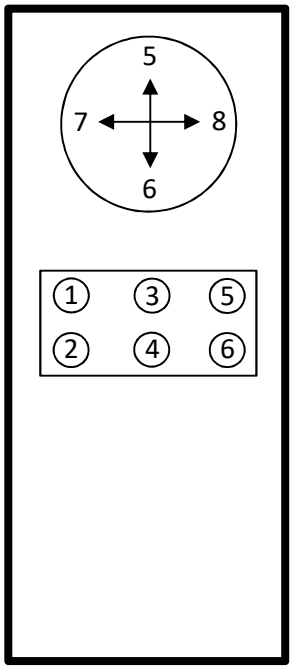
Pos. No.	Type	Colour	Lable text (max). 2 x 12 characters	Plant ref.	Desti-nation	Notes
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						

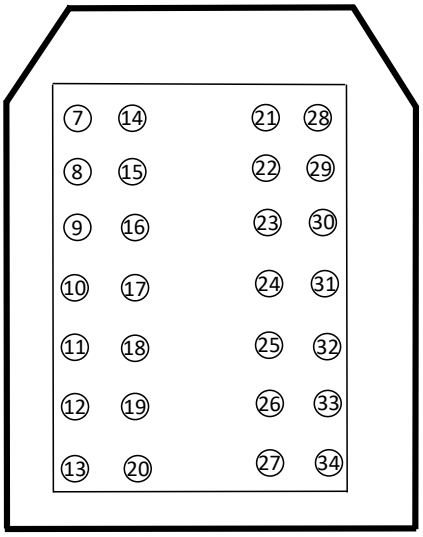
V2019/1 15.03.2019

Ordering information KST 30

Customer _____ Order No. _____

Equipment box right





Pos. No.	Type	Colour	Lable text (max). 2 x 12 characters	Plant ref.	Desti-nation	Notes
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						

Portable control unit
TS 1

The portable control unit TS 1 is used for controlling and monitoring the necessary equipment. The chest panel and straps enable the operator to carry it without becoming tired. An adjustable carrying strap can also be fitted for use without the chest plate.

Surface treatment:
Priming and structure-finishing paint
Standard colour RAL 7032 pepple-grey

Technical data:

Operation temperature	-40°C to +85°C
Degree of protection	IP54

Example

TS 1	-SB 1	-RH 1	-K 3	-HS 1	/	V...	/	KLS	/	X

Basic unit

TS 1	With chest plate and straps
TS 11	With straps

Attachment

SB 1	Legs for control unit alu-tube 2 pieces	
SB 2	Legs for control unit stainless steel-tube V2 A 2 pieces	
RH 1	Reeling hooks for control unit stainless steel V2 A	
K 1	Cable entry M32 cable 11 - 21 mm	
K 2	Cable entry M40 cable 19-28 mm	
K 3	Cable entry 180° swiveling M32 cable 11-21 mm	
HS 1	Plug in socket 16-pole male insert	HAN 16E without wiring
HB 1	Connector 16-pole female insert	HAN 16E without wiring
HS 2	Plug in socket 24-pole female insert	HAN 24E without wiring
HB 2	Connector 24-pole female insert	HAN 24E without wiring
HS 3	Plug in socket 32-pole male insert	HAN 32E without wiring
HB 3	Connector 32-pole female insert	HAN 32E without wiring

Indicating labels not engraved for multi-axis-/ single-axis controller

Mounting for equipment boxes

V	Multi-axis controller *(see page 1)*
S	Single-axis controller *(see page 93)*
N	Control-switch *(see page 131)*
...	*More command and indicating devices (see page 202)*

Cable and wiring

Cable Ölflex Classic FD 810 P	18 x 1 mm²	13,9 mm Ø	-5°C to +70°C	each meter
Cable Ölflex Classic FD 810 P	25 x 1 mm²	16,4 mm Ø	-5°C to +70°C	each meter
Cable Ölflex Classic FD 810 P	34 x 1 mm²	18,9 mm Ø	-5°C to +70°C	each meter
Cable Neonflex	18 x 1 mm²	19,2 mm Ø	-25°C to +80°C	each meter
Cable Neonflex	24 x 1 mm²	22,1 mm Ø	-25°C to +80°C	each meter
Cable Neonflex	36 x 1 mm²	26,1 mm Ø	-25°C to +80°C	each meter

KLS	Wired on connector / plug in socket per core
KLK	Wiring for cable per core

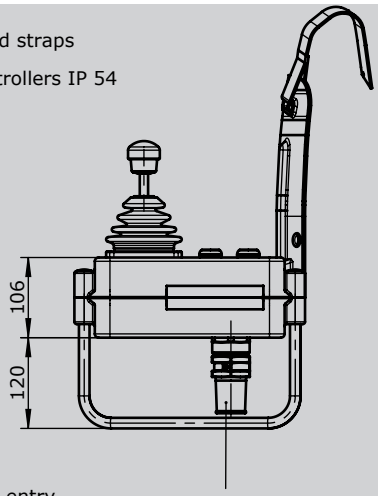
Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

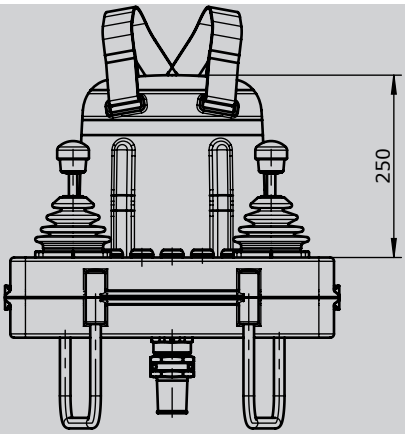
TS 1	-SB 1	-RH 1	-K 3	-HS 1	/	V...	/	KLS	/	X

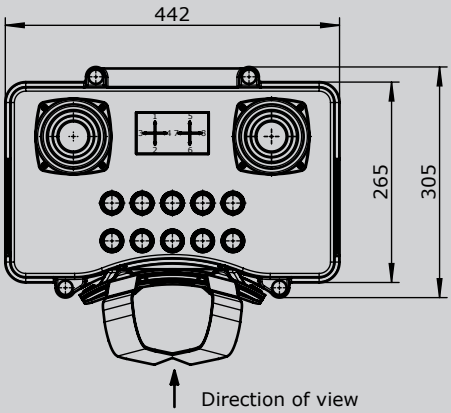
Special model	
X	Special / customer specified
X1	Housing antistatic design < 10^9 Ohm/cm
X2	Finishing colour yellow RAL 1021

With chest plate and straps
Protection IP 65
with multi-axis controllers IP 54

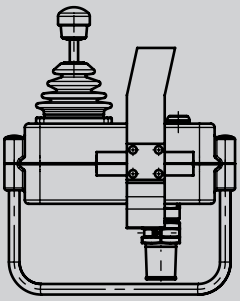


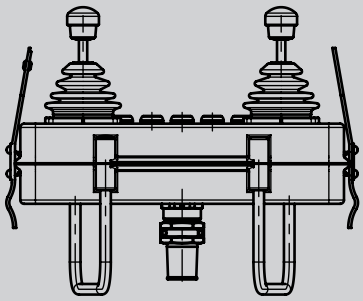
Cable entry
with anti-kink protection
and stain relief or connectors





With adjustable carrying strap
Protection IP 65
with multi-axis controllers IP 54





V2019/1 15.03.2019

Portable control unit
TS 2

The portable control unit TS 2 is used for controlling and monitoring the necessary equipment. The chest panel and straps enable the operator to carry it without becoming tired. An adjustable carrying strap can also be fitted for use without the chest plate.

Surface treatment:
Priming and structure-finishing paint
Standard colour RAL 7032 pepple-grey

Technical data:

Operation temperature	-40°C to +85°C
Degree of protection	IP65

Example

TS 2	-SB 1	-RH 1	-K 3	-HS 1	/	V...	/	KLS	/	X

Basic unit

TS 2	With chest plate, straps
TS 21	With straps
TS 22	With bracket and straps

Attachment

SB 1	Legs for control unit alu-tube 2 pieces	
SB 2	Legs for control unit stainless steel-tube V2 A 2 pieces	
RH 1	Reeling hooks for control unit stainless steel V2 A	
K 1	Cable entry M32 cable 11 - 21 mm	
K 2	Cable entry M40 cable 19 - 28 mm	
K 3	Cable entry 180° swiveling M32 cable 11-21 mm	
HS 1	Plug in socket 16-pole male insert	HAN 16E without wiring
HB 1	Connector 16-pole female insert	HAN 16E without wiring
HS 2	Plug in socket 24-pole female insert	HAN 24E without wiring
HB 2	Connector 24-pole female insert	HAN 24E without wiring
HS 3	Plug in socket 32-pole male insert	HAN 32E without wiring
HB 3	Connector 32-pole female insert	HAN 32E without wiring
Indicating labels not engraved for multi-axis-/ single-axis controller		
Indicating labels engraved for multi-axis-/ single-axis controller		

Mounting for equipment boxes

V	Multi-axis controller *(see page 1)*
S	Single-axis controller *(see page 93)*
N	Control-switch *(see page 131)*
...	*More command and indicating devices (see page 202)*

3

Technical details may vary based on configuration or application! Technical data subject to change without notice!

Portable control unit
TS 2

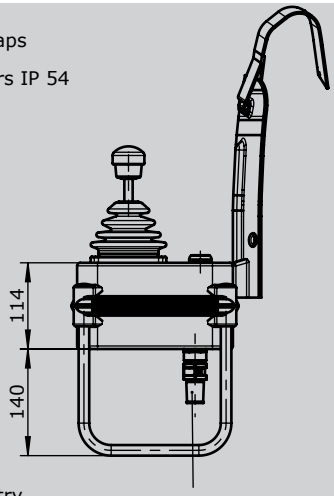
TS 2	-SB 1	-RH 1	-K 3	-HS 1	/	V...	/	KLS	/	X

Cable and wiring				
Cable Oelflex	18 x 1 mm²	13,9 mm Ø	-5°C to +70°C	each meter
Cable Oelflex	25 x 1 mm²	16,4 mm Ø	-5°C to +70°C	each meter
Cable Oelflex	34 x 1 mm²	18,9 mm Ø	-5°C to +70°C	each meter
Cable Ölflex Crane	18 x 1 mm²	19,2 mm Ø	-25°C to +80°C	each meter
Cable Ölflex Crane	24 x 1 mm²	22,1 mm Ø	-25°C to +80°C	each meter
Cable Ölflex Crane	36 x 1 mm²	26,1 mm Ø	-25°C to +80°C	each meter
KLS	Wired on connector / plug in socket per core			
KLK	Wiring for cable per core			

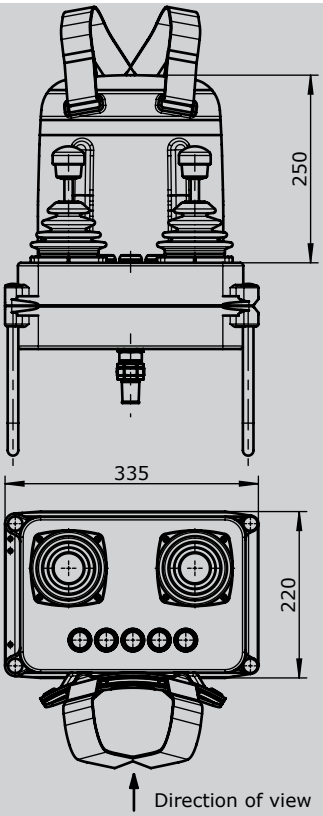
Special model	
X	Special / customer specified
X1	Housing antistatic design < 10^9 Ohm/cm
X2	Finishing color yellow RAL 1021

3

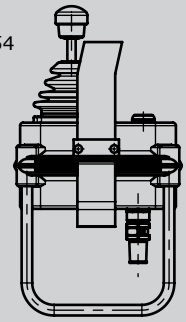
With chest plate and straps
Protection IP 65
with multi-axis controllers IP 54

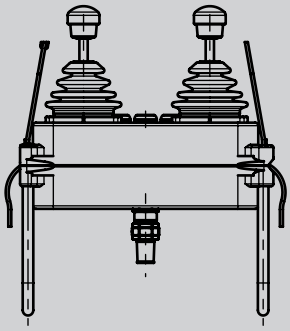


Cable entry
with anti-kink protection
and stain relief or connectors

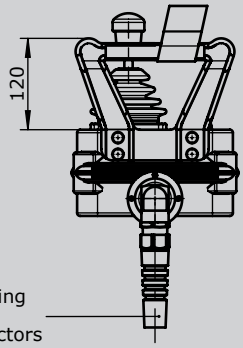


With adjustable carrying strap
Protection IP 65
with multi-axis controllers IP 54

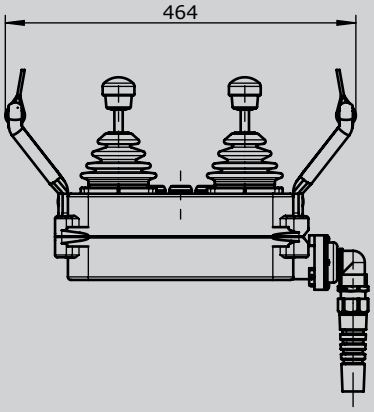




With bracket and cable entry swivelling
Protection IP 65
with multi-axis controllers IP 54



Cable entry 180° swivelling
with anti-kink protection
and stain relief or connectors



3

Control pedestal for offshore
U22 / 32

The control pedestal U22 / 32 accomodate the devices necessary for control and monitoring.
Ready wired, it can be quickly and easily installed on the sea deck.
The housing (pedestal head) is made of seawater-resistant aluminium.

Surface treatment:
Priming and structure-finishing paint
Standard colour RAL 7032 pepple-grey

Technical data:

Operation temperature	-40°C to +85°C
Degree of protection	IP66

Example

U22 / 32	/	N61.../ N62...	/	H / PW / 2D	/	PQ	/	KLV	/	X

Housing

U22/32	With 1 narrow side-plate with pillar-gasket
FD	Side-plate narrow gasket
HD	Side-plate wide gasket (required for command and indicating devices)
KD	Hinged side-plate with gasket that can be locked in position
IA	Monitoring devices cover with gasket for max. 2 monitors 72 x 72 mm or 4 monitors 72 x 36 mm and max. 6 indicating devices pos. 28, 29
RS	Pillar 108 mm Ø 670 mm height with flange quadratic or round

Masterswitch / Control-switch

N61	HG Masterswitch with ball handle and indicating labels
N62	KN Control-switch with knob and indicating label

	-HG	-01 Z P	-A05	P134	-X

Axis 1: direction 3-4

(Standard contacts gold-plated 2A 250 V AC15)

01	2 contacts	Standard contact - arrangement see page 140		
02	4 contacts	z.B.		
03	6 contacts	A05	MS21	
04	8 contacts	A0500	MS21-00	
		A99 *contact - arrangement according customer request*		

Z	Spring return			
R	Friction brake			
P	Potentiometer	P131	T396 2 x 0,5 kOhm	I max. 1 mA
		P132	T396 2 x 1 kOhm	I max. 1 mA
		P133	T396 2 x 2 kOhm	I max. 1 mA
		P134	T396 2 x 5 kOhm	I max. 1 mA
		P135	T396 2 x 10 kOhm	I max. 1 mA
		More potentiometers on request!		

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Control pedestal for offshore
U22 / 32

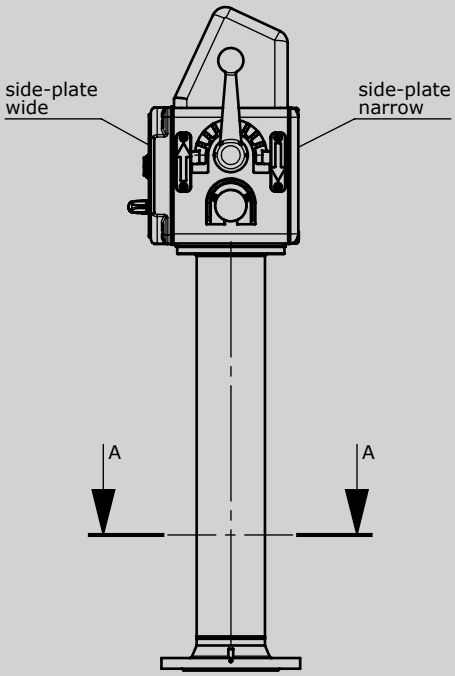
U22 / 32 / N61.../N62... / H / PW / 2D / PQ / KLV / X

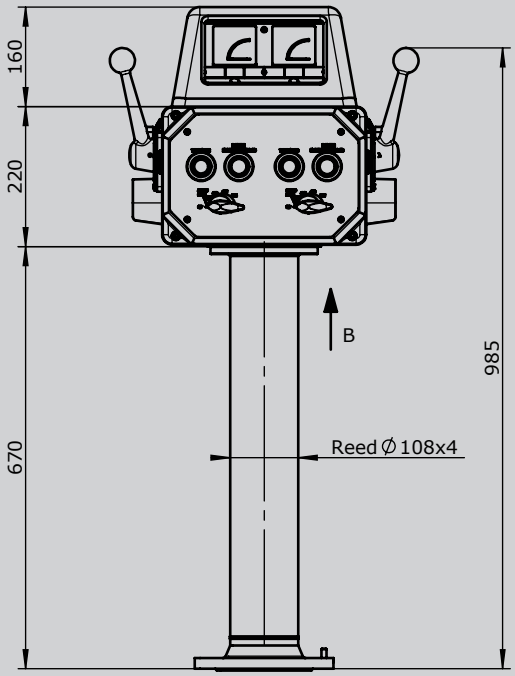
Command and indicating devices			
H	Heating	20 Watt 220 or 110V 50/60 Hz	
PV	Mushroom head push button latching	22 latching with indicating label	1 NC
P	Mushroom head push button	22 with indicating label	1 NO
D	Push button	22 with indicating label	1 NO
W	Selector switch 0-1	22 with indicating label	1 NO
L	Indicator light	22 with indicating label	Diode 24 Volt
L	Indicator light	22 with indicating label	Diode 230 Volt AC
	Contact block additional		1 S or 1 Ö
L	Indicator light	22 with indicating label	Diode 24 Volt protection IP65
L	Indicator light	10 with indicating label	Diode 24 Volt protection IP65

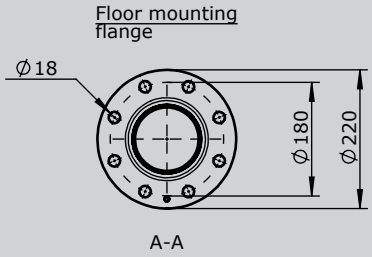
Display devices		
PQ	Powermeter PQ 72 1 mA DC	Engraved your instructions
PQI	Powermeter PQ 72 1 mA DC illuminated 24 Volt	Engraved your instructions
PQ	Powermeter PQ 72 x 36 1 mA DC	Engraved your instructions
PQI	Powermeter PQ 72 x 36 1 mA DC illuminated 24 Volt	Engraved your instructions
EQ	Amperemeter EQ 72 100/200/1A	Engraved your instructions
EQI	Amperemeter EQ 72 100/200/1A illuminated 24 Volt	Engraved your instructions
EQ	Amperemeter EQ 72 x 36 100/200/1A	Engraved your instructions
EQI	Amperemeter EQ 72 x 36 100/200/1A illuminated 24 Volt	Engraved your instructions

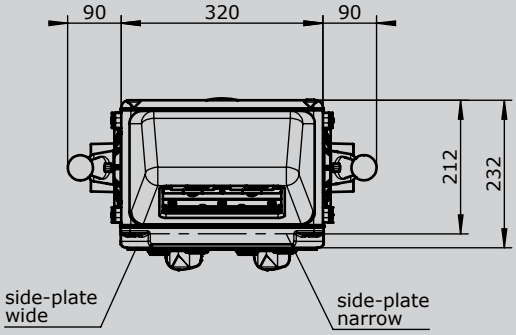
Wiring
KLV on terminal block 2,5mm² with wire line 0,75 mm²

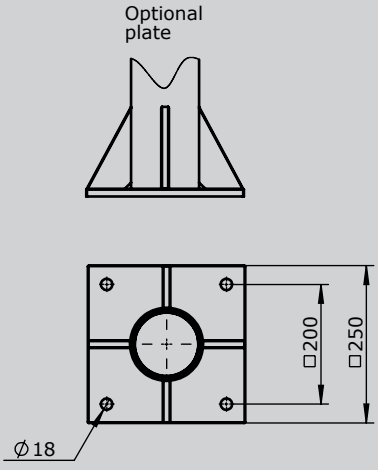
Special model	
X	Special / customer specified

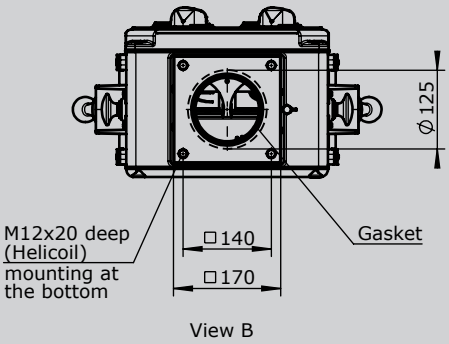












Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Control pedestal for offshore
U23 / 23

The control pedestal U23 / 23 accomodate the devices necessary for control and monitoring. Ready wired, it can be quickly and easily installed on the sea deck. The housing (pedestal head) is made of seawater-resistant aluminium.

Surface treatment:
Priming and structure-finishing paint
Standard colour RAL 7032 pepple-grey

Technical data:

Operation temperature	-40°C to +85°C
Degree of protection	IP66

Example

U23 / 23	/	N61.../N62...	/	H / PW / 2D	/	PQ	/	KLV	/	X

Housing

U23/23	With 1 narrow cover with pillar-gasket
U23/23A	With 1 narrow cover without drilling in the housing
IA	Monitoring devices cover with gasket for max. 2 monitors 72 x 72 mm or 4 monitors 72 x 36 mm and max. 6 indicating devices pos. 28, 29
RS	Pillar 108mm Ø 670 mm height with flange quadratic or round

Masterswitch / Control-switch

N61	HG Masterswitch with ball handle and indicating labels
N62	KN Control-switch with knob and indicating label

-HG	-01 Z P	-A05	P134	-X

Axis 1: direction 3-4

(Standard contacts gold-plated 2A 250 V AC15)

01	2 contacts	Standard contact - arrangement see page 140	
02	4 contacts	z.B.	
03	6 contacts	A05	MS21
04	8 contacts	A0500	MS21-00
		A99 *contact - arrangement according customer request*	

Z	Spring return			
R	Friction brake			
P	Potentiometer	P131	T396 2 x 0,5 kOhm	I max. 1 mA
		P132	T396 2 x 1 kOhm	I max. 1 mA
		P133	T396 2 x 2kOhm	I max. 1 mA
		P134	T396 2 x 5 kOhm	I max. 1 mA
		P135	T396 2 x 10 kOhm	I max. 1 mA
		More potentiometers on request!		

3

Technical details may vary based on configuration or application! Technical data subject to change without notice!

Control pedestal for offshore
U23 / 23

U23 / 23 / N61.../N62... / H / PW / 2D / PQ / KLV / X

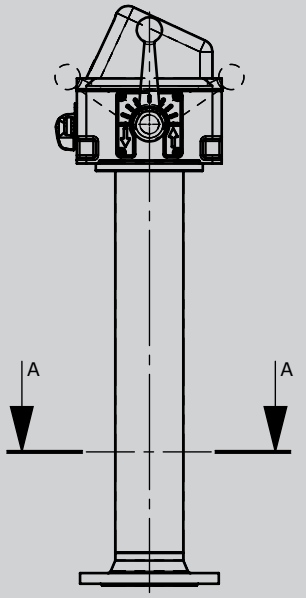
Command and indicating devices			
H	Heating	20 Watt 220 or 110V 50/60 Hz	
PV	Mushroom head push button latching	22 latching with indicating label	1 Ö
P	Mushroom head push button	22 with indicating label	1 S
D	Push button	22 with indicating label	1 S
W	Selector switch 0-1	22 with indicating label	1 S
L	Indicator light	22 with indicating label	Diode 24 Volt
L	Indicator light	22 with indicating label	Diode 230 Volt AC
	Contact block additional		1 S or 1 Ö
L	Indicator light	22 with indicating label	Diode 24 Volt protection IP65
L	Indicator light	10 with indicating label	Diode 24 Volt protection IP65

Display devices		
PQ	Powermeter PQ 72 1 mA DC	Engraved your instructions
PQI	Powermeter PQ 72 1 mA DC illuminated 24 Volt	Engraved your instructions
PQ	Powermeter PQ 72 x 36 1 mA DC	Engraved your instructions
PQI	Powermeter PQ 72 x 36 1 mA DC illuminated 24 Volt	Engraved your instructions
EQ	Amperemeter EQ 72 100/200/1A	Engraved your instructions
EQI	Amperemeter EQ 72 100/200/1A illuminated 24 Volt	Engraved your instructions
EQ	Amperemeter EQ 72 x 36 100/200/1A	Engraved your instructions
EQI	Amperemeter EQ 72 x 36 100/200/1A illuminated 24 Volt	Engraved your instructions

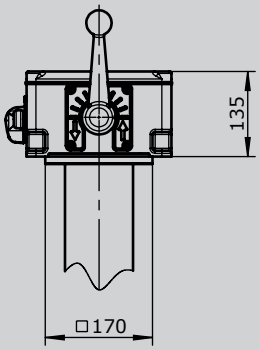
Wiring
KLV on terminal block 2,5 mm² with wire line 0,75 mm²

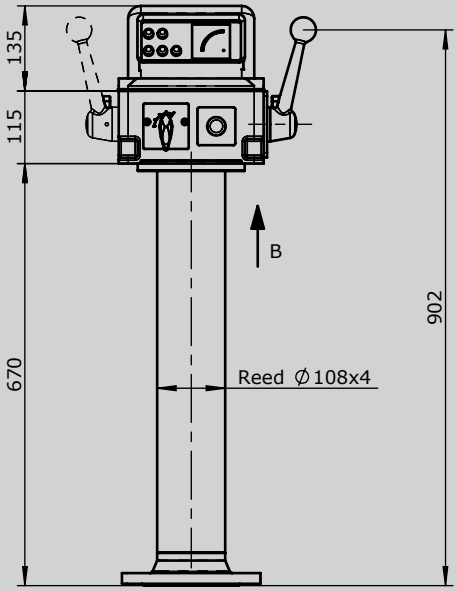
Special model	
X	Special / customer specified

V2019/1 15.03.2019

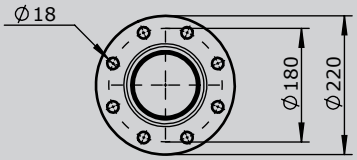


Protection with narrow cover

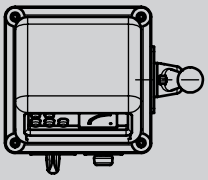




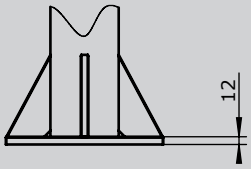
Floor mounting flange

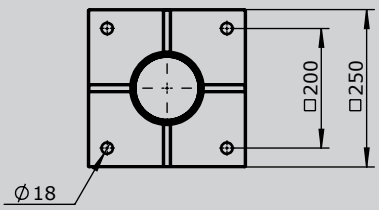


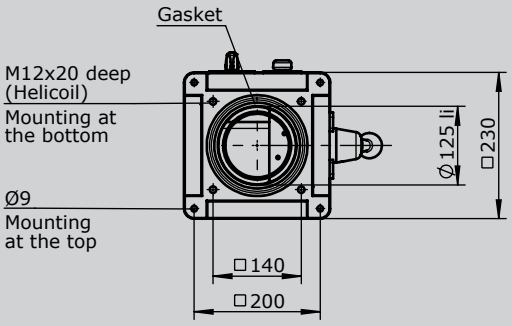
A-A



Optional plate







View B

3

Naval cruise controller
AZ1

The naval cruise controller AZ1 is a rugged switching device. The modular design enables the switching device to be used universally.
The design includes:
The mechanical control-system for the engine speed 0-max. rpm. switching angle 60 degrees with pressure print at 7 degrees and friction brake direction 0-2. The mechanical control-system for the steering left/right direction 13-14, 360 degrees with pressure points 4x90 degrees and friction brake.

The AZ1 is resistant to oil, maritime climate, ozone and UV radiation.

Technical data

Mechanical life AZ 1	12 million operating cycles
Operation temperature	-40°C to +85°C
Degree of protection	IP66

Example

AZ1	-L	E2112	-X

Basic unit

AZ1 Naval cruise controller

Options

L Scale illuminated (LED) 24 V dimmable

Interface

Voltage output (not stabilized)

Supply voltage 4,75 - 5,25 V DC

Characteristic: 1 = Inverse dual, 2 = Dual

0,5...2,5...4,5 V redundant per axis	1 axis	E103 1
	2 axis	2

Voltage output

Supply voltage 9 - 32 V DC (*11,5 - 32 V DC)

Characteristic: 1 = Inverse dual, 2 = Dual

0,5...2,5...4,5 V redundant per axis	1 axis	E111 1
	2 axis	2

Output power

Supply voltage 9-32 V DC

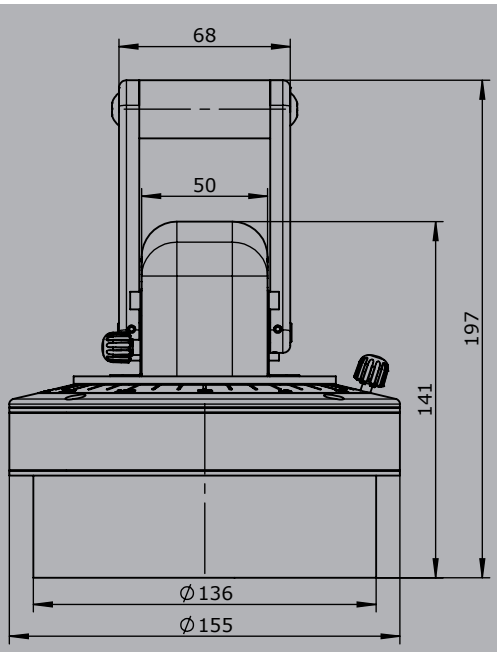
Characteristic: 1 = Inverse dual, 2 = Dual

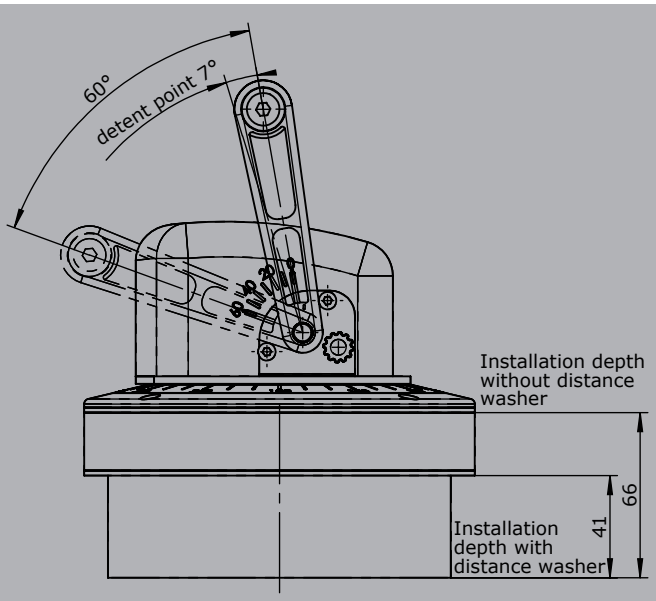
4...12...20 mA redundant per axis	1 axis	E211 1
	2 axis	2

Special model

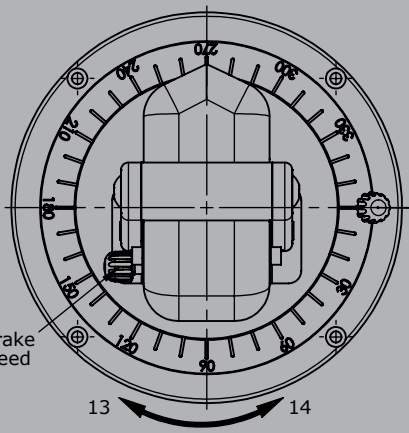
X Special / customer specified

V2019/1 15.03.2019

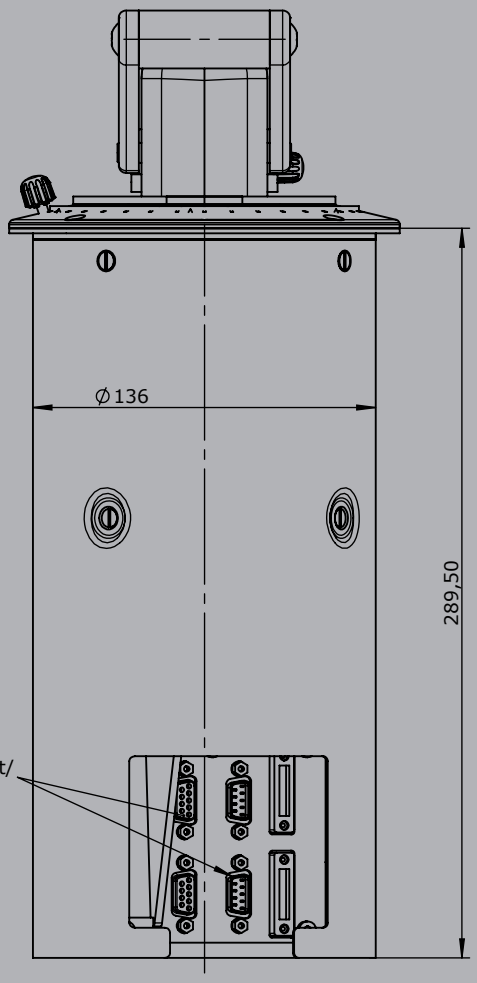




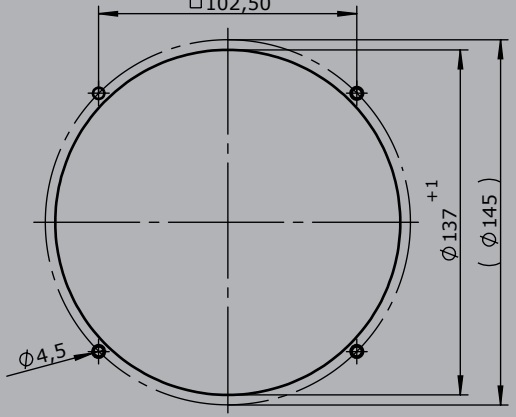
Edition:
with motor rosseting control system



Steering 360°, with detent 4 x 90°



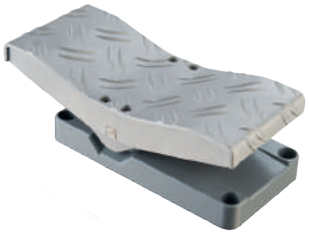
Hole pattern
□102,50

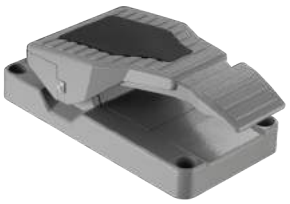


4

Pedal-controller
P20

The pedal-controller P20 is a rugged switching device for electro-hydraulic. The modular design enables the switching device to be used universally. The P20 is resistant to oil, maritime, climate, ozone and UV radiation.





Technical data

Mechanical life P20	10 million operating cycles
Operation temperature	-40°C to +85°C
Degree of protection P20	IP67 (electronic)
Functional safety	PLd (EN ISO 13849) possible

Example

	P20	-1	-ZZ	-E1041	-S...	-X
Basic unit						
P20 Pedal-controller						
Pedal						
1 Pedal shape A 0-15°						
2 Pedal shape B 0-25°						
3 Pedal shape C 15°-0-15°						
4 Pedal shape C 0-15°						
Spring return						
Z Spring return						
ZZ Spring return redundant						
Interfaces *(description see on the following pages)*						
E 0xx Switching output						
E 1xx Voltage output						
E 2xx Current output						
E 3xx CAN-interface						
E 4xx CANopen Safety interface						
Plug connectors						
S... Standard plug connectors *(see page 138)*						
Special model						
X Special / customer specified						

4

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

Digital output

Supply voltage	9-32 V DC	
Current carrying capacity	Direction signal 150 mA	
	Zero position signal 500 mA	
Wiring	Cable 500mm long without plug connector	
	Optional with plug connector *(standard plug connectors see page 138)*	S
2 direction signals + 1 zero position signal (galvanically isolated)		E001 1
1 direction signal + 1 zero position signal (galvanically isolated)		E003 1

Voltage output (not stabilized)

Supply voltage	4,75-5,25 V DC	
Current carrying capacity	Direction signal 8 mA	
Wiring	Cable 500mm long without plug connector	
	Optional with plug connector *(standard plug connectors see page 138)*	S
0,5...2,5...4,5 V redundant + 2 direction signals		E104 1
0,5...2,5...4,5 V redundant + 1 direction signal		E145 1

Output options	
Characteristic:	
Inverse dual	1
Dual	2
Inverse dual with dead zone +/- 3° (standard)	3
Dual with dead zone +/- 3°	4

Voltage output

Supply voltage	9-32 V DC (*11,5-32 V)	
Current carrying capacity	Direction signal 150 mA	
	Zero position signal 500 mA	
Wiring	Cable 500mm long without plug connector	
	Optional with plug connector *(standard plug connectors see page 138)*	S
0,5...2,5...4,5 V redundant + 2 direction signals + 1 zero position signal (galvanically isolated)		E112 1
0,5...2,5...4,5 V redundant + 1 direction signal + 1 zero position signal (galvanically isolated)		E146 1
0...5...10 V redundant + 2 direction signals + 1 zero position signal (galvanically isolated), supply voltage 11,5 - 32 V DC		E132 1
0...5...10 V redundant + 1 direction signal + 1 zero position signal (galvanically isolated), supply voltage 11,5 - 32 V DC		E147 1
10...0...10 V + 2 direction signals + 1 zero position signal (galvanically isolated), supply voltage 11,5 - 32 V DC, sensor redundant with error monitoring and error signal		E136 1

Output options	
Characteristic:	
Inverse dual *¹	1
Dual *¹	2
Inverse dual with dead zone +/- 3° *¹ (standard)	3
Dual with dead zone +/- 3° *¹	4
*¹ *not combinable with output E136X*	
Single *²	5
Single with dead zone +/- 3° *² (standard)	6
² not combinable with output E1121 and E1321, E1461 und E1471	

Voltage output with other value on request!

Technical details may vary based on configuration or application! Technical data subject to change without notice!

Current output			
Supply voltage	9-32 V DC		
Current carrying capacity	Direction signal 150 mA		
	Zero position signal 500 mA		
Wiring	Cable 500 mm long without plug connector		
	Optional with plug connector *(standard plug connectors see page 138)*		S
0...10...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated), sensor redundant with error monitoring and error signal		E206 1	
0...20 mA + 1 direction signal + 1 zero position signal (galvanically isolated), sensor redundant with error monitoring and error signal		E222 1	
20...0...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated), sensor redundant with error monitoring and error signal		E208 1	
4...12...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated), sensor redundant with error monitoring and error signal		E214 1	
4...20 mA + 1 direction signal + 1 zero position signal (galvanically isolated), sensor redundant with error monitoring and error signal		E223 1	
20...4...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated), sensor redundant with error monitoring and error signal		E216 1	
	Output options		
	Single		5
	Single with dead zone +/- 3° (standard)		6
Current output with other value on request!			

CAN			
Supply voltage	9-36 V DC		
Idle current consumption	120 mA		
Current carrying capacity	Direction signal 100 mA		
Protocol	CANopen CiA DS 301 or SAE J 1939		
Baud rate	125 kBit/s to 1 Mbit/s (standard 250 kBit/s)		
Output value	0...255 / 255...0...255		
Wiring	CAN (IN) cable 500 mm with plug connector M12 (male)		
	CAN (OUT) cable 500 mm with plug connector M12 (female)		
CAN P20		E307 1	
With additional digital output separately wired (not via CAN)			
- 1 direction signal			2

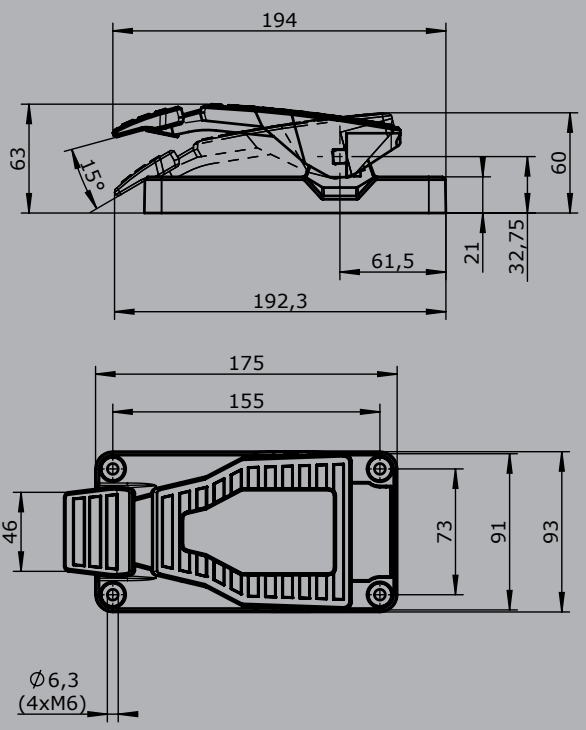
CANopen Safety			
Supply voltage	9-36 V DC		
Idle current consumption	120 mA		
Current carrying capacity	Direction signal 100 mA		
Protocol	CANopen Safety CIA 304		
Baud rate	125 kBit/s bis 1 MBit/s (standard		
Output value	0...255 / 255...0...255		
Wiring	CAN (IN) cable 500 mm with plug connector M12 (male)		
	CAN (OUT) cable 500 mm with plug connector M12 (female)		
CANopen Safety P20		E407 1	
With additional digital outputs separately wired (not via CAN)			
- 1 direction signal			2

Attachments	
Z01 Mating connector M12 male insert with 2 m cable	20201140
Z02 Mating connector M12 female insert with 2 m cable	20202298

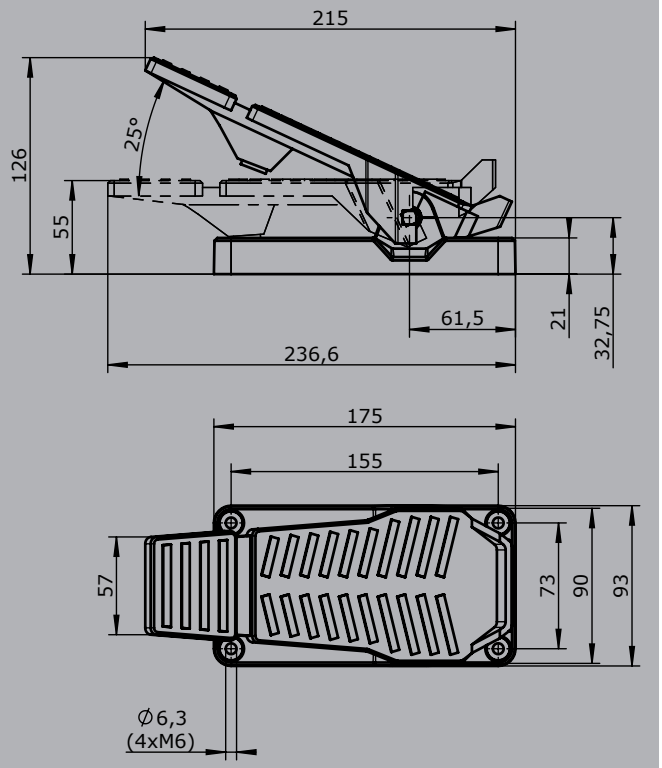
Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019

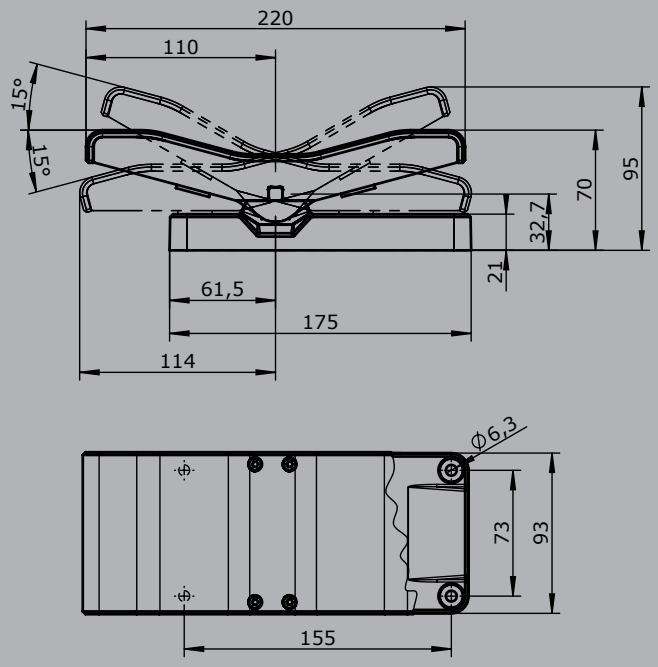
Pedalform A



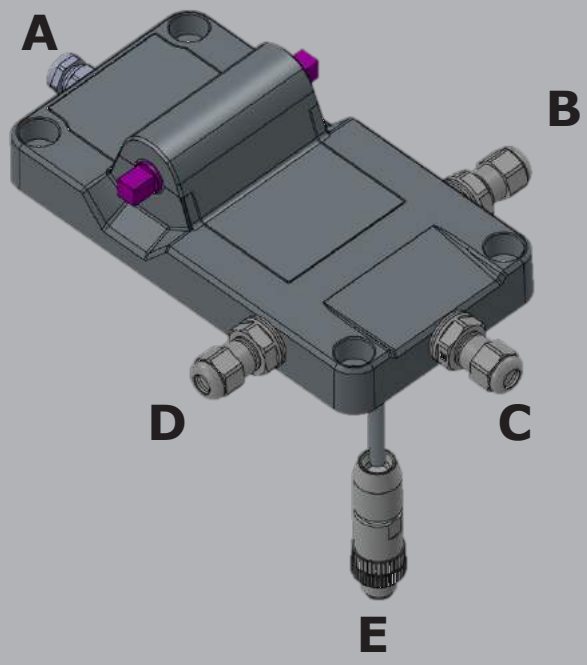
Pedalform B



Pedalform C



Possible cable outputs



Technical details may vary based on configuration or application! Technical data subject to change without notice!

Pedal-controller
P10/P11/P12

The pedal-controller P10/P11/P12 is a rugged switching device for electro-hydraulic. The modular design enables the switching device to be used universally. The P10/P11/P12 is resistant to oil, maritime, climate, ozone and UV radiation.

Technical data

Mechanical life P10	8 million operating cycles
Operation temperature	-40°C to +85°C
Degree of protection P10	IP66

Example

P10		-1 Z	P	-A01	P224	-B	-X

Basic unit

P10	Pedal-controller, 0-30°
P11	Pedal-controller, 15°-0-15°
P12	Pedal-controller, 0-15°

Detent

	Without
R4	1-0-1

Direction 1-2

1	1 contact	Standard contact - arrangement see page 140			
2	2 contacts	z.B.			
3	3 contacts	MS11		A01	
		MS12		A02	
		MS13		A03	
		MS21		A05	
		A99 contact - arrangement according customer request			
Z	Spring return				
R	Friction brake				
(P)	Possibility of mounting potentiometer (Gessmann-types)				
P	Potentiometer	P222	T362	1 kOhm	I max. 1 mA
		P223	T362	2 kOhm	I max. 1 mA
		P224	T362	5 kOhm	I max. 1 mA
		More potentiometers on request!			

Cover housing

B	Cover housing with cable entry M20

Special model

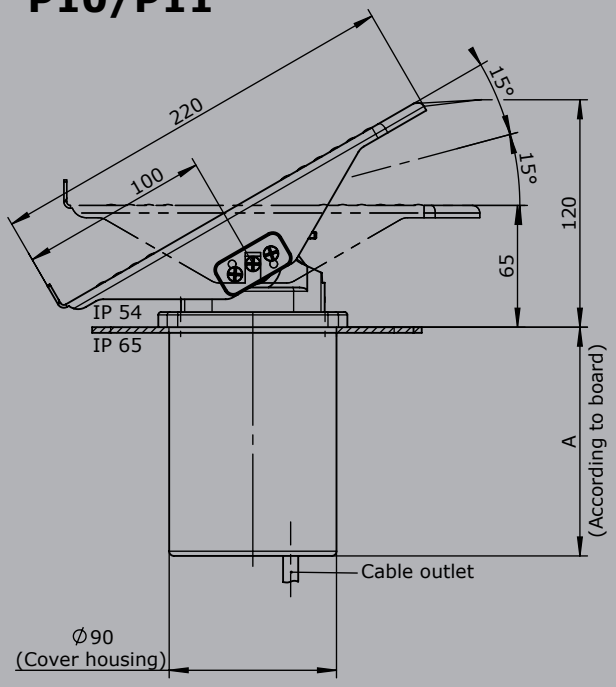
X	Special / customer specified

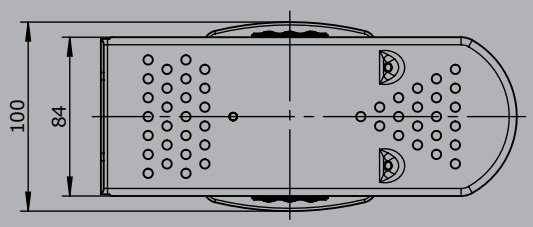
4

Technical details may vary based on configuration or application! Technical data subject to change without notice!

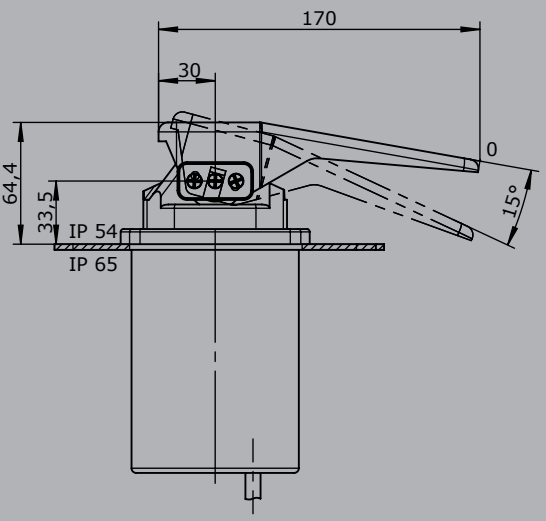
V2019/1 15.03.2019

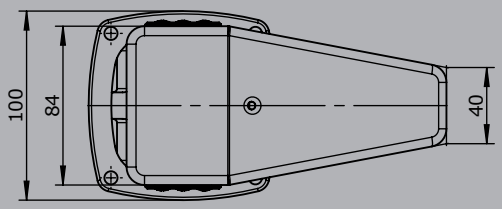
P10/P11



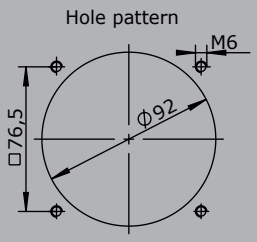


P12





Hole pattern



4

Pedal-controller
P8 / PP8

The pedal-controller P8 and PP8 is a rugged switching devices for footing applications. The pedal-controller is resistant to oil, maritime conditions e.g. offshore /vessels, UV radiation typically from the sun.

Technical data

Mechanical life P8	6 million operating cycles
Mechanical life PP8	10 million operating cycles
Operation temperature	-40°C to +85°C
Degree of protection P8	IP54
Degree of protection PP8	IP65
Colour	RAL 7032 pebble-grey

Example

	P8	-1 Z	P	-A01	P124	-X

Basic unit

P8	Pedal-controller
	Reinforced version
PP8	Pedal-controller

Detent

	without
R2	0-2
R3	0-3
R4	0-4

Direction 1-2

1	1 contact	Standard contact - Arrangement see page 140	
2	2 contacts	z.B.	
3	3 contacts	MS11	A01
4	4 contacts*	MS12	A02
5	5 contacts*	MS13	A03
6	6 contacts*	MS14	A04
*Only possible without potentiometer!		*A99 contact - arrangement according customer request*	

Z	Spring return
R	Friction brake
(P)	Mounting options for potentiometer and encoder (Gessmann-types)

P	Potentiometer	P121	T374	0,5 kOhm	I max. 1 mA
		P122	T374	1 kOhm	I max. 1 mA
		P123	T374	2 kOhm	I max. 1 mA
		P124	T374	5 kOhm	I max. 1 mA
		P125	T374	10 kOhm	I max. 1 mA
		More potentiometers on demand!			

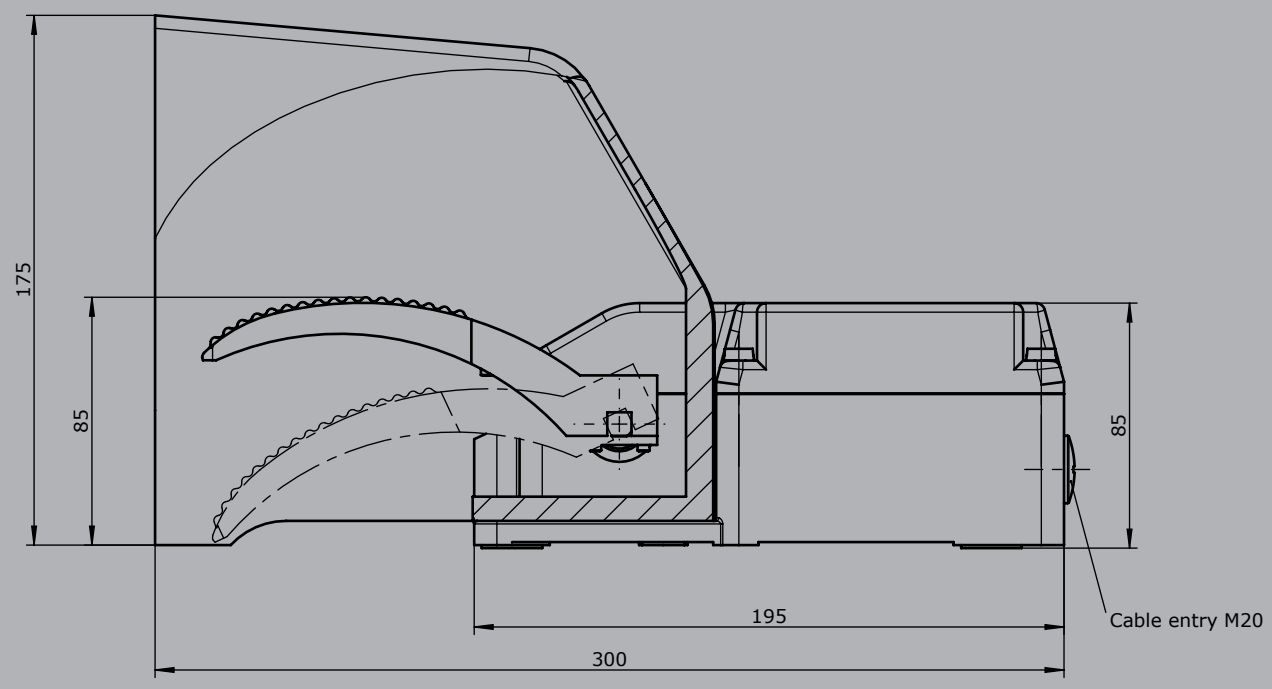
Special model

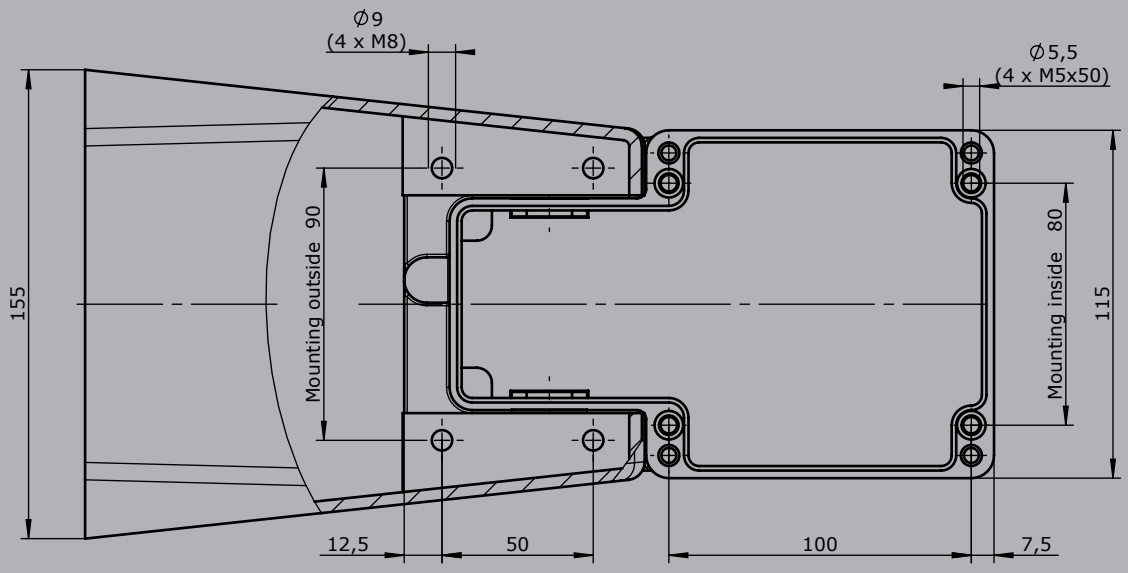
X	Special / customer specified

4

Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2019/1 15.03.2019





Pedal-controller
P7 / PP7

The pedal-controller P7 and PP7 is a rugged switching devices for footing applications. The pedal-controller is resistant to oil, maritime conditions e.g. offshore /vessels, UV radiation typically from the sun.

Technical data

Mechanical life P7	6 million operating cycles
Mechanical life PP7	10 million operating cycles
Operation temperature	-40°C to +85°C
Degree of protection P7	IP54
Degree of protection PP7	IP65
Colour	RAL 7032 pebble-grey

Example

	P7	-1 Z	P	-A01	P124	-X

Basic unit

P7	Pedal-controller
	Reinforced version
PP7	Pedal-controller

Detent

	Without
R2	0-2
R3	0-3
R4	0-4
R11	1-0-1
R22	2-0-2

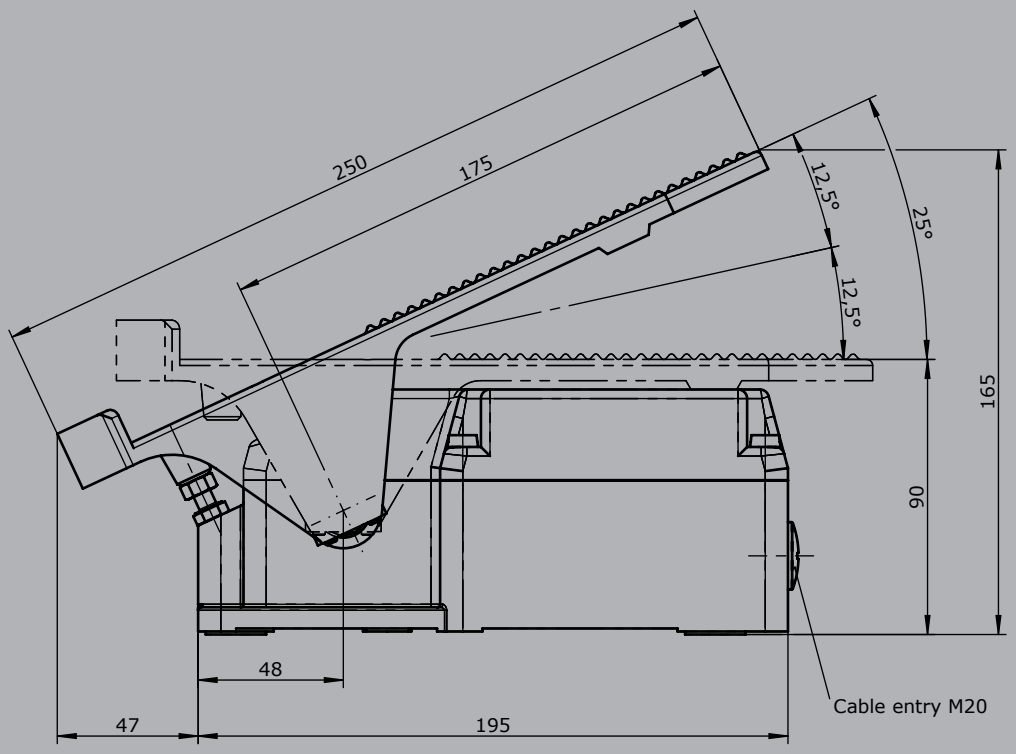
Direction 1-2

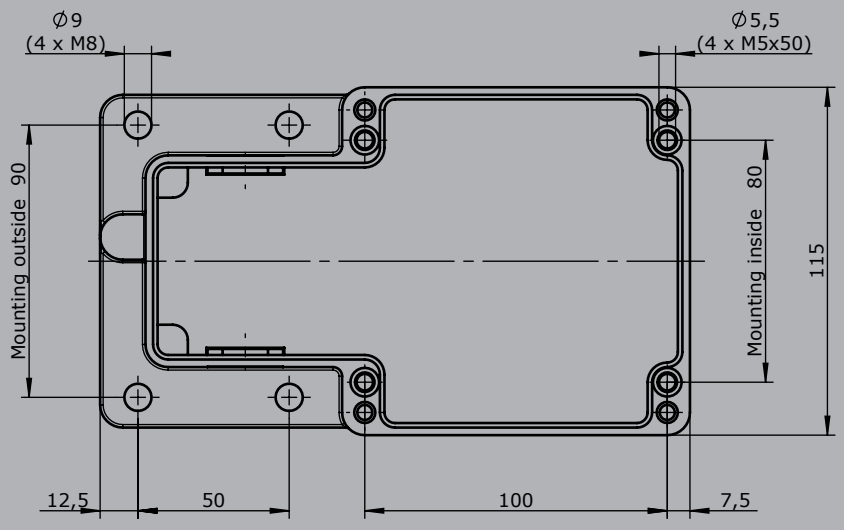
1	1 contact	Standard contact - Arrangement see page 140			
2	2 contacts	z.B.			
3	3 contacts	MS11		A01	
4	4 contacts*	MS12		A02	
5	5 contacts*	MS13		A03	
6	6 contacts*	MS14		A04	
*Only possible without potentiometer!		MS21		A05	
		A99 contact - arrangement according customer request			
Z	Spring return				
R	Friction brake				
(P)	Mounting options for potentiometer and encoder (Gessmann-types)				
P	Potentiometer	P121	T374	0,5 kOhm	I max. 1 mA
		P122	T374	1 kOhm	I max. 1 mA
		P123	T374	2 kOhm	I max. 1 mA
		P124	T374	5 kOhm	I max. 1 mA
		P125	T374	10 kOhm	I max. 1 mA
		More potentiometers on demand!			

Special model

X	Special / customer specified

Technical details may vary based on configuration or application! Technical data subject to change without notice!





Gear limit switch
GE 1 / GE 2

The gear limit switch GE 1 / GE 2 is a rugged switching device designed for hoisting applications. The modular micro changeover contacts with positive opening operation. The device is programmed by means of stepless adjustment of double cam discs, which can be provided from 18° to 192° contact discs according to the switching program required.
The type GE 1 includes a double cam disc conjointly lockable.
The type GE 1 includes a double cam disc conjointly lockable.

Technical data

Mechanical life GE1/GE2	10 million operating cycles
Operation temperature	-40°C to +85°C
Degree of protection	IP65
Colour	RAL 7032 pebble grey

Example

	GE 1	-10	-4	-P		-U7	-P	-18	-30	-60	-90	-X
Basic unit												
GE 1 Gear limit switch GE 1 with mounting flange												
GE 2 Gear limit switch GE 2 with mounting flange												
Gearing												
Ratios: 2:1 to 10:1 example: 10:1 => 10												
11:1 to 20:1												
21:1 to 40:1												
41:1 to 80:1												
81:1 to 160:1												
161:1 to 320:1												
Limit switch												
2 2 contacts												
3 3 contacts												
4 4 contacts												
5 5 contacts												
6 6 contacts												
7 7 contacts												
8 8 contacts												
9 9 contacts												
10 10 contacts												
11 11 contacts												
12 12 contacts												
13 13 contacts												
14 14 contacts												
15 15 contacts												
16 16 contacts												
(P) Possibility of mounting potentiometer (Gessmann-types)												
P Potentiometer		P451 PW70 0,5 kOhm I max. 30 mA										
		P452 PW70 1 kOhm I max. 30 mA										
		P453 PW70 2 kOhm I max. 30 mA										
		P454 PW70 5 kOhm I max. 30 mA										
		P455 PW70 10 kOhm I max. 30 mA										
		More potentiometers on request!										

Technical details may vary based on configuration or application! Technical data subject to change without notice!

GE 1	-10	-4	-P	-U7	-P	-18	-30	-60	-90	-X

Aluminium housing

U5 U17/13 170 x 130 mm (max. 8 contacts GE 1)

U6 U16/16 160 x 160 mm (max. 12 contacts GE 1/ max. 6 contacts GE 2)

U7 U16/20 160 x 200 mm (max. 16 contacts GE 1/max. 10 v GE 2)

U8 U16/26 160 x 260 mm (max. 16 contacts GE2)

U9 U16/35 160 x 350 mm

Program-disc

Following program-discs are available :

18°, 24°, 30°, 36°, 45°, 60°, 75°, 90°, 110°, 120°, 176°, 192°

Example:

Contact 1: program-discs pair 18° (adjustment range 18°-36°)

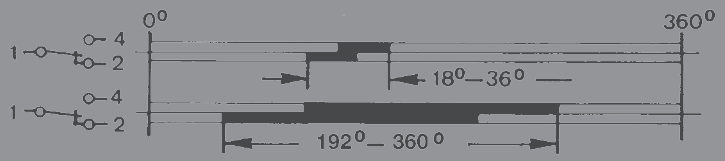
Contact 2: program-discs pair 30° (adjustment range 30°-60°)

Contact 3: program-discs pair 60° (adjustment range 60°-120°)

Contact 4: program-discs pair 90° (adjustment range 90°-180°)

Contact n:

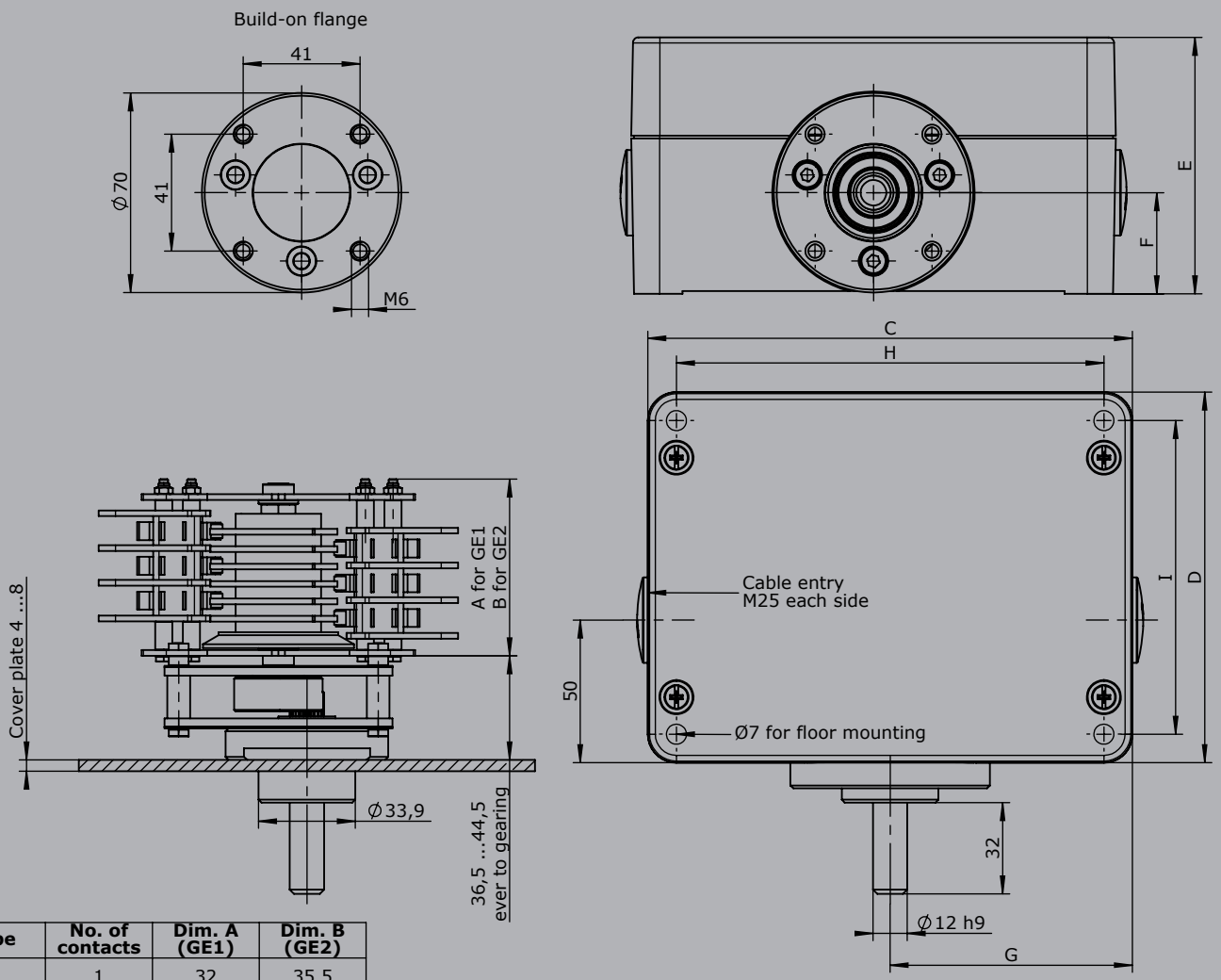
Illustration



The programm-discs are infinitely adjustable within 360°

Special model

X Special / customer specified



Type	No. of contacts	Dim. A (GE1)	Dim. B (GE2)
1	1	32	35,5
2	2	38,5	42
3	3	44,5	48
4	4	50,5	54
5	5	56,5	60
6	6	63	66,5
7	7	69	72,5
8	8	75	78,5
9	9	81	84,5
10	10	87	90,5
11	11	93	96,5
12	12	99	102,5
13	13	105,5	109
14	14	111,5	115
15	15	117,5	121
16	16	123,5	127

Type	Dim. C	Dim. D	Dim. E	Dim. F	Dim. G	Dim. H	Dim. I
U17/13	170	130	90	35,5	75	150	110
U16/16	160	160	91	45	70	110	140
U16/20	160	200	100	45	70	140	180
U16/26	160	260	91	45	70	110	240
U16/35	160	350	100	45	70	140	330

V2019/1 15.03.2019

DC-Contact
SO 1.10 Normally closed (NC)
SS 1.10 Normally open (NO)

The DC contact block is used for signalling and annunciation applications. The snap-action mechanism prevents slow contact opening when the plunger is operated slowly. Quenching of the arc that occurs with DC is supported by two-capacity permanent magnets.

These are arranged so that the polarity can be ignored when connecting +/- cabling. However, the polarity of the quenching magnets must be noted when installing the contact blocks to prevent the magnets adversely affecting each other. Contact blocks in four different colours are available for polarity identification of the magnets when fitted.

The contact blocks may only be installed on non-magnetisable materials with screw, etc. made of non-ferrous metal.

The self-cleaning silver contacts are designed for low switching frequency, low currents and voltages. Gold coated contacts can be supplied (approx 0,2µ), less than 42 Volt required. The screw connection M3.5 at the side is suitable for 2 conductors max. 2,5 mm². The plug-in connection at the top 4.8 x 0.8 mm DIN 46247.

Several contact blocks can be plugged on the top of each other and operated jointly. The plug-type terminals are then only accessible on the top unit. The contact blocks can be provided with shock protection to DIN VDE 0106 Part 100.

Example

	Switching capacity		
	NC	NO	Time constant
250 V DC	2A	1A	20 ms
125 V DC	4A	3A	20 ms
50 V DC	6A	6A	20 ms
30 V DC	10A	10A	20 ms
250 V AC 15	6A	6A	

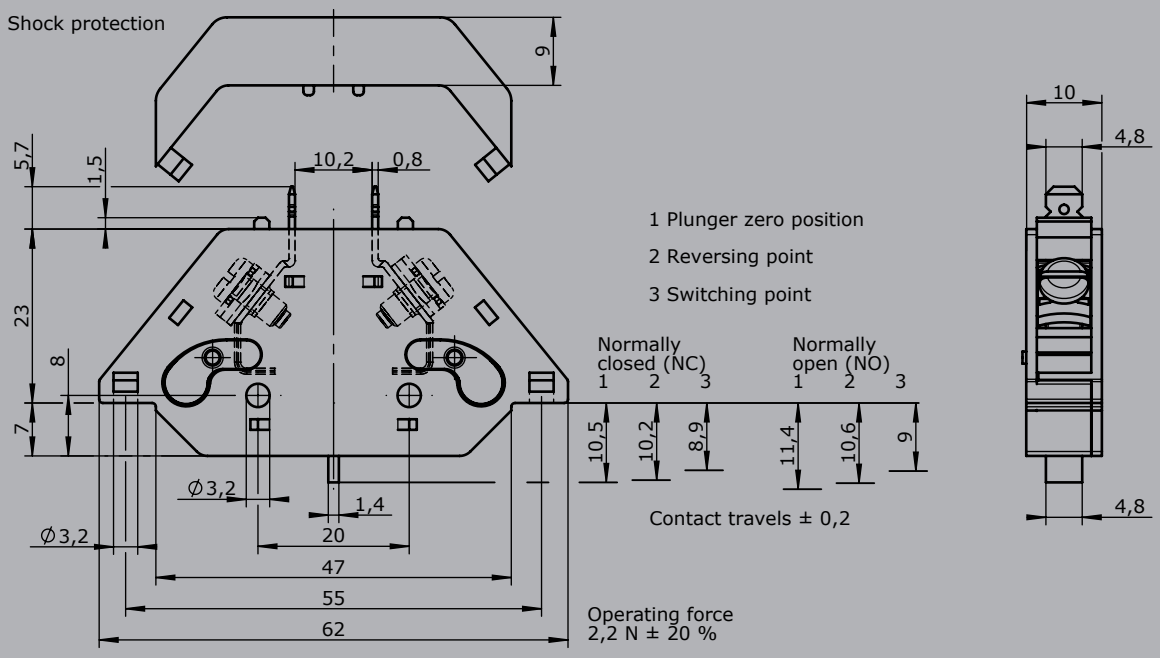
Technical data

Mechanical life	2 million operating cycles
Electrical service life	50.000 operating cycles (at 2A 250 V DC L/R 20 ms)
Operation temperature	-40°C to +85°C
Degree of protection	IP40

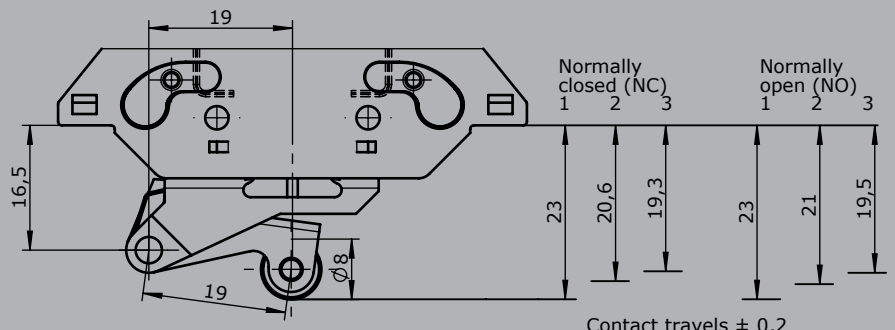
		SO 1.10	-B	-R	-F	-X
Basic unit						
SO1.10	DC-contact normally closed (NC)					
	Colour code grey or blue					
SS1.10	DC-contact normally open (NO)					
	Colour code yellow or green					
Attachment						
B	Shock protection KEG 142 to DIN VDE 0106 part 100					
R	Roller lever					
K	Toggle lever (switching is one direction only)					
F	Plug-in connection at side 4,8 x 0,8 mm (2 pieces)					
AU	Contacts gold-coated approx. 0,5					
Special model						
X	Special / customer specified					
X1	Contact without quenching magnets					

Technical details may vary based on configuration or application! Technical data subject to change without notice!

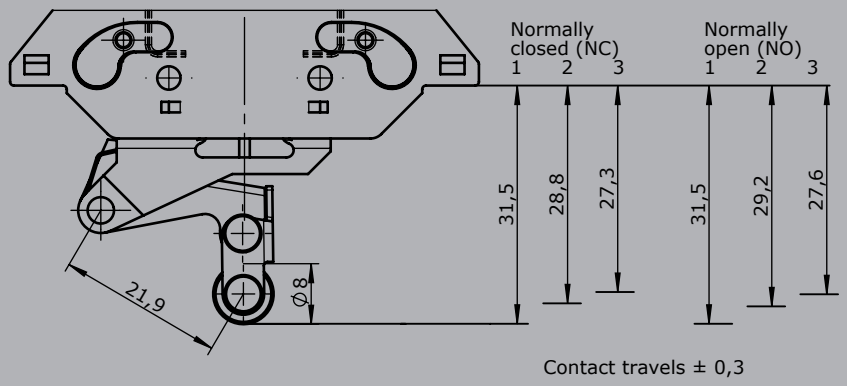
DC-Contact
SO 1.10 Normally closed (NC)
SS 1.10 Normally open (NO)



with roller lever



with toggle lever



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V2019/1 15.03.2019

Signal-cam controller NU 1

The cam controller NU 1 is used as a signal and annunciation switch in HV systems. This rugged switching device has cam discs made of insulation material that can be set at 10° intervals. The DC contact blocks are designed to permit series assembly, which can be operated simultaneously.

Technical data

Mechanical life NU1	2 million operating cycles
Operation temperature	-40°C to +85°C
Degree of protection	IP40 / IP65 with aluminium housing

Switching capacity	NC	NO	Time constant
250 V DC	2A	1A	20 ms
125 V DC	4A	3A	20 ms
50 V DC	6A	6A	20 ms
30 V DC	10A	10A	20 ms
250 V DC15	6A	6A	

Example

NU1	-4	-4	-F2	-Z	-W	-A		-X

Basic unit

NU 1	Signal-cam controller

Contacts (1. range)

2	2 contacts
4	4 contacts
6	6 contacts
8	8 contacts
10	10 contacts
12	12 contacts
14	14 contacts
16	16 contacts

Contacts (2. range)

2	2 contacts
4	4 contacts
6	6 contacts
8	8 contacts
10	10 contacts
12	12 contacts
14	14 contacts
16	16 contacts

Signal-cam controller NU 1

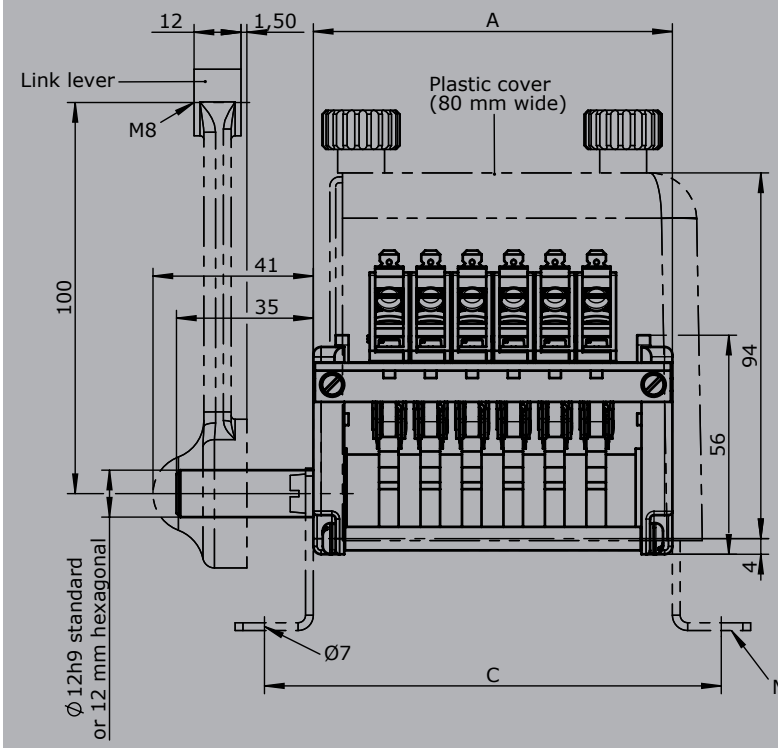
NU1	-4	-4	-F2	-Z	-W	-A		-X

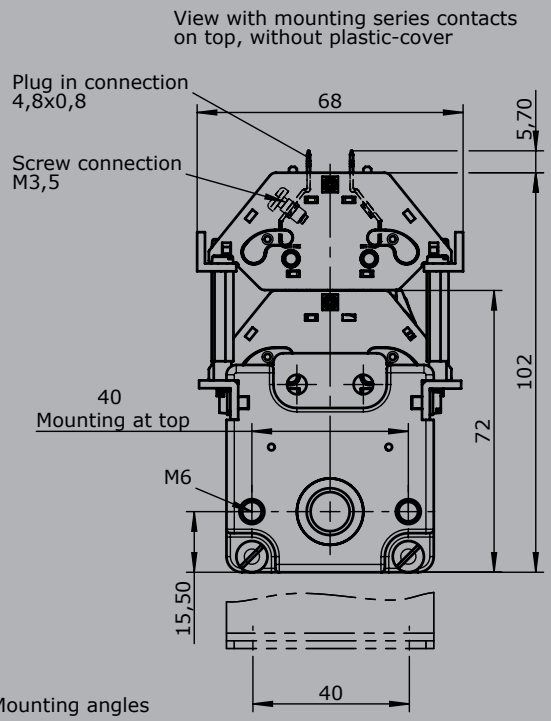
Option	
F1	1 free shaft-end with hexagonal 12 mm
F2	2 free shaft-end diameter 12 mm
F3	2 free shaft-end with hexagonal 12 mm
Z	Spring return
W	Mounting angles (2 pieces)
GH	Link lever
A	Cover housing off Astralon
	Til installation size 4 contacts
	Til installation size 8 contacts
	Til installation size 12 contacts
	Til installation size 16 contacts
B	Shock protection KEG 142 for single contact

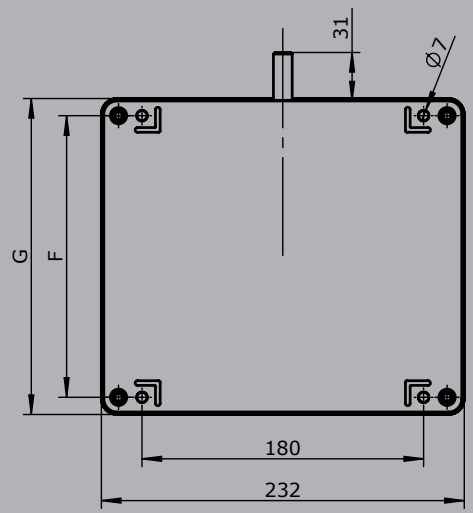
Aluminium housing	
U11	U23/20 232 x 202 mm (max. 10 contacts)
U12	U23/28 232 x 280 mm (max. 16 contacts)
Housing only possible with single-row version contacts	

Special model	
X	Special / customer specified

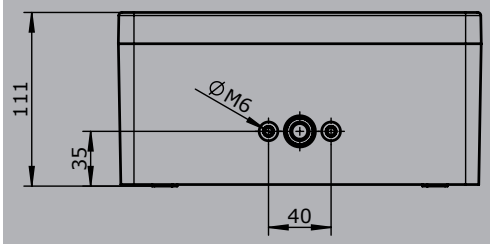
4







Aluminuim housing
protection IP 65



Type	No. of contacts	Dim. A	Dim. C	Housing	Dim. F	Dim. G
2	2	7	74	U 23/20	180	202
4	4	70	95			
6	6	91	117			
8	8	113	138			
10	10	134	159			
12	12	155	180	U 23/28	260	280
14	14	176	201			
16	16	197	222			

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