

Multi-axis Controller

V25



The V25 is a compact and robust joystick commonly used in electro-hydraulic applications. Long life and high reliability is ensured by the latest contactless hall-technology. With many outputs and grip options the V25 series is hugely customisable.

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 compatible (EN ISO 13849, complies SIL2 to DIN EN IEC 61508)



1

	V25	S8	P	T	-Z	-B10	-E...	-S...	-X
<i>Example</i>									
Basic unit									
V25.1 1-axis									
V25 2-axis									
Control-handle long									
Standard 100 mm*									
S8 +20 mm									
*Only available in combination with a handle!									
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 170)									
Spring return (included in basic unit!)									
Z Spring return									
Degree of protection									
B Cover housing									
B10 Joystick-main board sealed									
B11 Joystick-main board sealed and grip function sealed, grip with drain hole									
For a schematic description of the protection class, see page 150									
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!

Multi-axis Controller

V25



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

Plug connectors

S... Standard plug connectors (see page 149)

Special model

X Special / customer specified

Combination possibilities with our grips

B1  p. 201	B2  p. 203	B3  p. 178	B5  p. 205	B6  p. 207	B7 B8  p. 199	B9  p. 197	B10  p. 213	B14 B15  p. 215
B20  p. 191	B22  p. 193	B23  p. 189	B24  p. 195	B25  p. 170	B26  p. 172	B28  p. 209	B29  p. 211	B30  p. 176
B31  p. 181	B32  p. 183	B33  p. 185	B34  p. 187	B35  p. 174				

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 mm ² 500 mm long without plug connector 2. cable 14 x 0,25 mm ² (optional for grip function) 500 mm long without plug connector Optional with plug connector (standard plug connectors see page 149)	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 mm ² 500 mm long without plug connector 2. cable 14 x 0,25 mm ² (optional for grip function) 500 mm long without plug connector Optional with plug connector (standard plug connectors see page 149)	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!

Voltage output

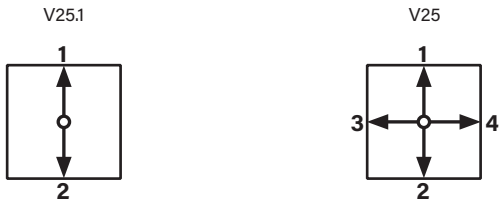
Supply voltage	9-32 V DC (*11,5-32)		
Current carrying capacity	Direction signal 150 mA		
	Zero position signal 500 mA		
Mounting depth A	60 mm		
Wiring	1. cable 14 x 0,25 mm ² 500 mm long without plug connector		
	2. cable 14 x 0,25 mm ² (optional for grip function) 500 mm long without plug connector		
	Optional with plug connector (<i>standard plug connectors see page 149</i>)		
0,5...2,5...4,5 V redundant + 2 direction signals + 1 zero position signal (galvanically isolated) per axis			
	1 axis	E112 1	S
	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	S
	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	S
	2 axis	2	
	3 axis*	3	
	4 axis*	4	
Output options			
Characteristic:			
	Inverse dual * ¹	1	S
	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	S
	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 grip 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	60 mm			
Wiring	1. cable 14 x 0,25 mm ² 500 mm long without plug connector			
	2. cable 14 x 0,25 mm ² (optional for grip function) 500 mm long without plug connector			
Optional with plug connector (<i>standard plug connectors see page 149</i>)				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 grip functions, interface can vary depending upon actuation element!				
Current output with other value on request!				

Identification of the installation variants with switching directions:



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 (<i>standard plug connectors see page 149</i>)		S
CAN 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 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 (dimnable optional), 1 switching output (potential-free, 100 mA), 8 external digital inputs		2
- 16 external LED-outputs (dimnable optional), 1 switching output (potential-free, 100 mA), 16 external digital inputs		3
*External LED-outputs can be used for LEDs in the grip		

CAN 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 (dimnable optional), 2 switching outputs (potential-free, 100 mA), 8 external digital inputs		2
- 16 external LED-outputs (dimnable optional), 2 switching outputs (potential-free, 100 mA), 16 external digital inputs		3
- 24 external LED-outputs (dimnable optional), 2 switching outputs (potential-free, 100 mA), 24 external digital inputs		4
- 32 external LED-outputs (dimnable optional), 2 switching outputs (potential-free, 100 mA), 32 external digital inputs		5
<i>*External LED-outputs can be used for LEDs in the grip</i>		
Main-axis with additional digital outputs separately wired (not via CAN)		
- 2 direction signals + 1 zero position signal (potential-free) per axis		3
<i>With additional analog outputs on request!</i>		

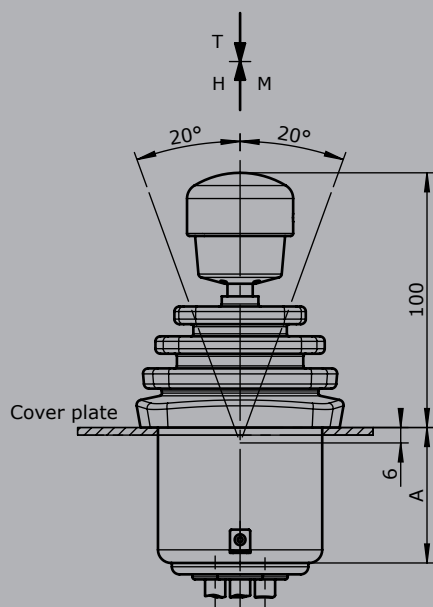
CANopen Safety		
Supply voltage	9-32 V DC	
Idle current consumption	120 mA (24 V DC)	
Current carrying capacity	Direction signal 100 mA	
	Zero position signal 100 mA (potential-free)	
	External digital output for LEDs 5 mA - 30 mA (dependent on the number of LEDs)	
	Digital switching output (potential-free) 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 (<i>standard plug connectors see page 149</i>)		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 (dimnable optional), 1 switching output (potential-free, 100 mA), 8 external digital inputs		2
- 16 external LED-outputs (dimnable optional), 1 switching output (potential-free, 100 mA), 16 external digital inputs		3
<i>*External LED-outputs can be used for LEDs in the grip</i>		

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

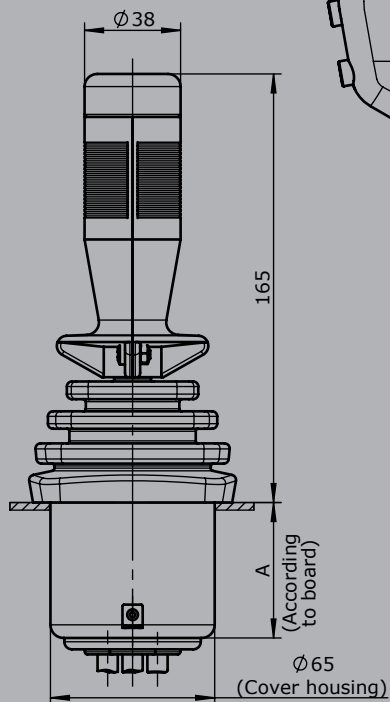
CANopen Safety expansion stage 3		E406 1
- 10 analog joystick axis		
- 15 digital joystick functions		
- 2 inputs for capacitive sensor		
With additional external in-/outputs		
- 8 external LED-outputs (dimnable optional), 2 switching outputs (potential-free, 100 mA), 8 external digital inputs		2
- 16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

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

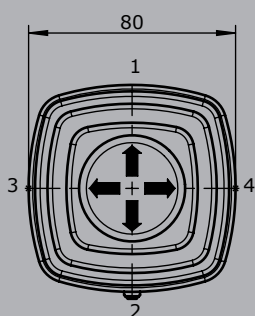
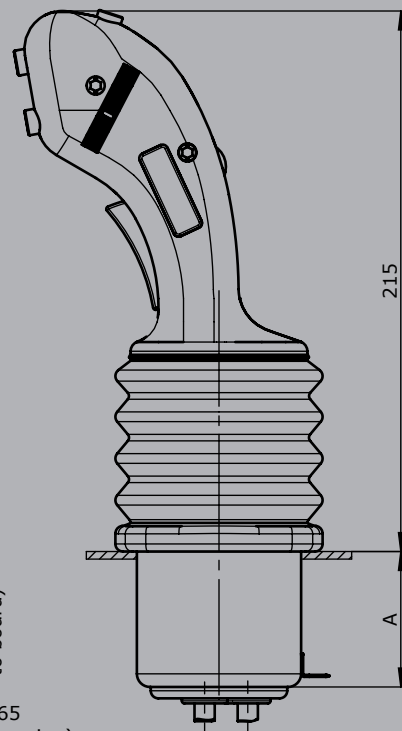
T = Dead man's button
H = Signal button
M = Latch for mechanical
zero interlock



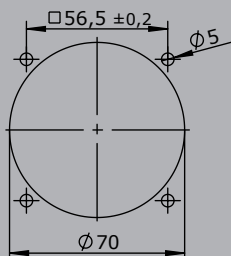
Palm grip B1



Palm grip B3



Hole pattern



Palm grip B25

