

Multi-Axis Controller V27



The V27 is a robust joystick commonly used in electro-hydraulic applications. The compact design allows for use in smallest installation spaces. It can be integrated with detents and a very robust friction brake. Long life and high reliability is ensured by the latest contactless hall-technology. With many outputs and grip options the V27 series is flexible and customisable.

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



		V27	S8	P	T	-R11	+Z	-B10	-E...	-S..	-X
Basic unit											
V27.1	1-axis										
V27	2-axis										
Control-handle extended											
	Standard 95 mm*										
S8	+20 mm										
*Only available in combination with a handle!											
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 154)										
Axis 1 / Axis 2 (not applied for V27.1)											
Z	Spring return										
R	Friction brake (possible with one axis!)										
	Latching: (possible with one axis!)										
11	1-0-1										
22	2-0-2										
33	3-0-3										
44	4-0-4										
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										

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

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

Degree of protection

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

For a schematic description of the protection class, see page 121

Interface (description see on the following pages)

E0xx	Switching output
E1xx	Voltage output
E2xx	Current output
E3xx	CAN-interface
E4xx	CANopen Safety interface
E9xx	Other outputs

Plug connectors

S...	Standard plug connectors (see page 120)
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Special model

X	Special / customer specified
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Combination possibilities with our grips

B1  p. 199	B2  p. 197	B3  p. 194	B5  p. 192	B6  p. 188	B7 B8  p. 188	B9  p. 186	B10  p. 184	B14 B15  p. 182
B20  p. 180	B22  p. 178	B23  p. 176	B24  p. 174	B25  p. 172	B26  p. 170	B28  p. 168	B29  p. 166	B30  p. 164
B31  p. 162	B32  p. 160	B33  p. 158	B34  p. 156	B35  p. 154				

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 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 120)
2 Direction signals + 1 zero position signal (galvanically isolated) per axis	
	1 axis
	2 axis
	E001 1
	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 mm ² 500 mm long without plug connector 2. cable 14 x 0,25 mm ² (grip function) 500 mm long without plug connector		
	Optional with plug connector (<i>standard plug connectors see page 120</i>)		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

Voltage output

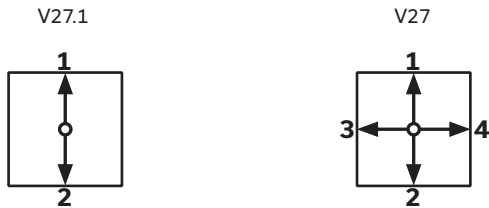
Supply voltage	9-32 V DC (*11,5-32)		
Current carrying capacity	Direction signal 150 mA Zero position signal 500 mA		
Mounting depth A	45 mm (60 mm from 3 axis)		
Wiring	1. cable 14 x 0,25 mm ² 500 mm long without plug connector 2. cable 14 x 0,25 mm ² (optional for grip function) 500 mm long without plug connector		
	Optional with plug connector (<i>standard plug connectors see page 120</i>)		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 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	45 mm (60 mm from 3 axis)
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 120</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
*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	45 mm (expansion stage 1) 60 mm (expansion stage 2) 80 mm (expansion stage 3)	
Protocol	CANopen CiA DS 301 or SAE J1939 (based on)	
Baud rate	20 kBit/s to 1 Mbit/s (standard 250 kBit/s)	
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 120</i>)	S
CAN expansion stage 1	- 4 analog joystick axis - 15 digital joystick functions - Input for capacitive sensor	E304 1
Main-axis with additional digital outputs separately wired (not via CAN)	- 2 direction signals per main axis	1
CAN expansion stage 2	- 7 analog joystick axis - 15 digital joystick functions - 2 inputs for capacitive sensors	E305 1
With additional external in-/outputs	- 8 external LED-outputs (dimnable optional), 1 switching output (potential-free, 100 mA), 8 external digital inputs - 16 external LED-outputs (dimnable optional), 1 switching output (potential-free, 100 mA), 16 external digital inputs	2 3
*External LED-outputs can be used for LEDs in the grip		

CAN expansion stage 3		E306 1
<ul style="list-style-type: none"> - 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
<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>		

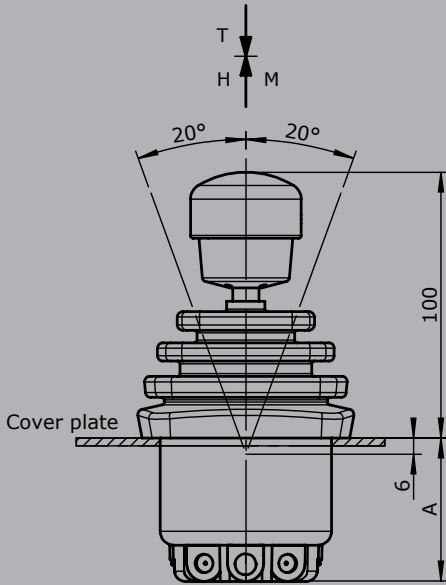
CANopen Safety		
Supply voltage	9-32 V DC	
Idle current consumption	120 mA (24 V DC)	
Current carrying capacity	Direction signal 100 mA	
	Zero position signal 100 mA (potential-free)	
	External digital output for LEDs 5 mA - 30 mA (dependent on the number of LEDs)	
	Digital switching output (potential-free) 100 mA	
Baud rate	20 kBit/s to 1 MBit/s (standard 250 kBit/s)	
Mounting depth	45 mm (expansion stage 1)	
	60 mm (expansion stage 2)	
	80 mm (expansion stage 3)	
Protocol	CANopen Safety EN50325-5	
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 120</i>)	S
CANopen Safety expansion stage 1		E404 1
<ul style="list-style-type: none"> - 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
<ul style="list-style-type: none"> - 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
<i>*External LED-outputs can be used for LEDs in the grip</i>		

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
<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>		

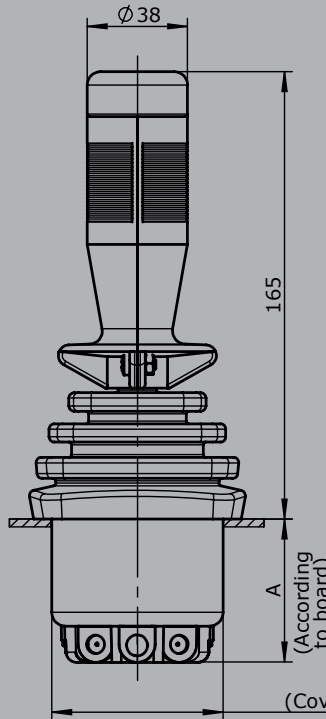
Other outputs		
Voltage output for PVG32 0,25...0,5...0,75Us, power supply 9-32 V DC		
Option	Input for capacitive sensor	
Mounting depth A	45 mm (60 mm from 3 axis)	
Wiring:	1. cable 14 x 0,25 mm ² 300 mm long without plug connector	
	2. cable 14 x 0,25 mm ² 300 mm long without plug connector (optional for grip function)	
	Optional with plug connector (<i>standard plug connectors see page 120</i>)	S
	1 axis	E907 1
	2 axis	2
	3 axis	3
	4 axis	4
Main-axis with additional direction signals and zero direction signals (potential-free) per main-axis		3

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

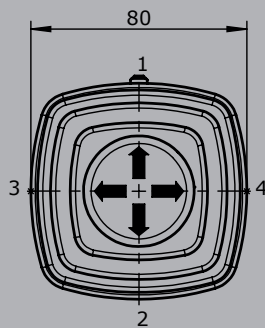
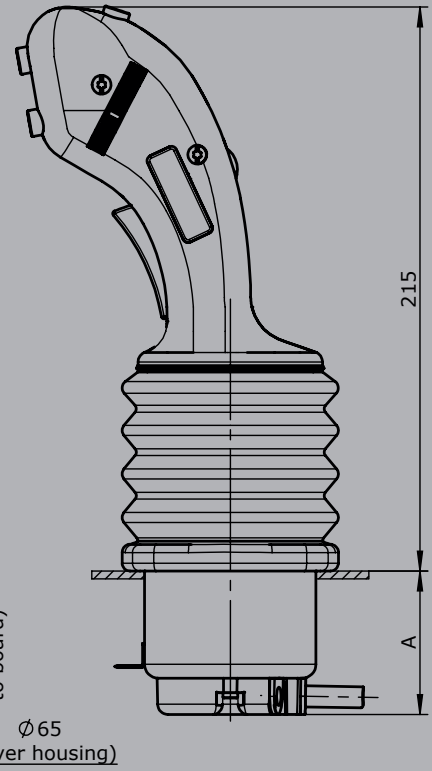
T = Dead man's button
H = Signal button
M = Latch for mechanical zero interlock



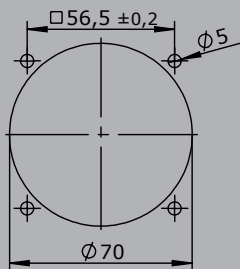
Palm grip B1



Palm grip B3



Hole pattern



Palm grip B25

