

Multi-axis controller V27



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.

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



1

		V27	S8	P	Example						
					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!

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

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)
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Special model

X	Special / customer specified
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Combination possibilities with our handles

 B1 p. 185	 B2 p. 187	 B3 p. 161	 B5 p. 189	 B6 p. 191	 B7 B8 p. 182	 B9 p. 180	 B10 p. 197	 B14 B15 p. 199
 B20 p. 174	 B22 p. 176	 B23 p. 172	 B24 p. 178	 B25 p. 157	 B28 p. 193	 B29 p. 195	 B30 p. 159	 B31 p. 164
 B32 p. 166	 B33 p. 168	 B34 p. 170						

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 (<i>standard plug connectors see page 138</i>)			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 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 138</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 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)		
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

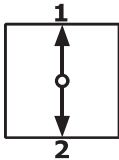
Supply voltage	9-32 V DC		
Current carrying capacity	Direction signal 150 mA		
	Zero position signal 500 mA		
Mounting depth A	45 mm (60 mm from 3 axis)		
Wiring	1. cable 14 x 0,25 mm² 500 mm long without plug connector		
	2. cable 14 x 0,25 mm² (optional for grip function) 500 mm long without plug connector		
	Optional with plug connector (standard plug connectors see page 138)		
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!

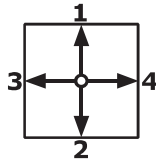
Current output with other value on request!

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 (<i>standard plug connectors see page 138</i>)

S

CAN V27 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 V27 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 (dimmable optional), 1 switching output (potential-free, 100 mA), 8 external digital inputs
- 16 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 16 external digital inputs

2

3

External LED-outputs can be used in the grip for LEDs

CAN V27 expansion stage 3

- 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
- 16 external LED-outputs (dimmable optional), 2 switching outputs (potential-free, 100 mA), 16 external digital inputs
- 24 external LED-outputs (dimmable optional), 2 switching outputs (potential-free, 100 mA), 24 external digital inputs
- 32 external LED-outputs (dimmable optional), 2 switching outputs (potential-free, 100 mA), 32 external digital inputs

External LED-outputs can be used in the grip for LEDs

E306 1

Main-axis with additional digital outputs separately wired (not via CAN)

- 2 direction signals + 1 zero position signal (potential-free) per axis

With additional analog outputs on request!

3

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 (<i>standard plug connectors see page 138</i>)

S

CANopen Safety expansion stage 1

- 4 analog joystick axis
- 15 digital joystick functions
- Input for capacitive sensor

E404 1

Main-axis with additional digital outputs separately wired (not via CAN)

- 2 direction signals per main axis

1

CANopen safety expansion stage 2

- 7 analog joystick axis
- 15 digital joystick functions
- 2 inputs for capacitive sensors

E405 1

With additional external in-/outputs

- 8 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 8 external digital inputs
- 16 external LED-outputs (dimmable optional), 1 switching output (potential-free, 100 mA), 16 external digital inputs

External LED-outputs can be used in the grip for LEDs

2

3

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), 2 switching outputs (potential-free, 100 mA), 8 external digital inputs
- 16 external LED-outputs (dimnable), 2 switching outputs (potential-free, 100 mA), 16 external digital inputs
- 24 external LED-outputs (dimnable), 2 switching outputs (potential-free, 100 mA), 24 external digital inputs
- 32 external LED-outputs (dimnable), 2 switching outputs (potential-free, 100 mA), 32 external digital inputs

2

3

4

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

