

Multi-Axis Controller V27



GESSMANN®

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	Multi-Axis Controller, 1-axis										
V27	Multi-Axis Controller, 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 163)										
Axis 1 / Axis 2 (not applied for V27.1)											
Z	Spring return										
R	Friction brake (possible with one axis!)										
	Latching										
11	1-0-1 (zero detent)										
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										
B	Cover housing (included in basic unit!)									
B10	Joystick-main board sealed (IP67)* ¹									
B11	Joystick-main board sealed (IP67) and grip function sealed, grip with drain hole* ¹									
For a schematic description of the protection class (see page 128)										
* ¹ not for interface E321x, E421x, E6xx, E7xx possible!										
Interface (description see on the following pages)										
E0xx	Switching output									
E1xx	Voltage output									
E2xx	Current output									
E3xx	CAN-interface									
E4xx	CAN Safety interface									
E6xx	Profinet									
E7xx	PROFIsafe									
E9xx	Other outputs									
Plug connectors										
S...	Standard plug connectors (see page 127)									
Special model										
X	Special / customer specified									

Combination possibilities with our grips

 p. 211	 p. 209	 p. 206	 p. 204	 p. 202	 p. 200	 p. 198	 p. 196	 p. 194
 p. 192	 p. 190	 p. 188	 p. 186	 p. 183	 p. 181	 p. 179	 p. 177	 p. 175
 p. 173	 p. 171	 p. 169	 p. 167	 p. 165	 p. 163			

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 127)	
2 Direction signals + 1 zero position signal (galvanically isolated) per axis	
	S
	1 axis
	2 axis
	E001 1
	2

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

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 127</i>)
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 127</i>)
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	

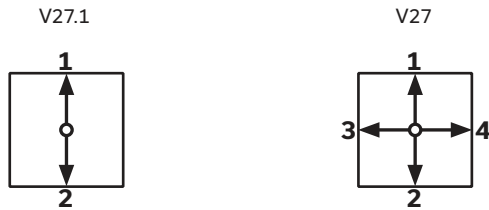
*Axis for grip functions, interface can vary depending upon actuation element!

Voltage output with other value on request!

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			
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 (standard plug connectors see page 127)		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)		
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 127</i>)			S
CAN expansion stage 1		E320 1	
- 6 analog joystick axis			
- 16 digital joystick functions (of which 2 inputs can be used for the cap. sensor)			
CAN expansion stage 2		E321 1	
- 12 analog joystick axis			
- 16 digital joystick functions (of which 2 inputs can be used for the cap. 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), 1 switching output (potential-free, 100 mA), 24 external digital inputs		4	
- 32 external LED-outputs (dimmable), 1 switching output (potential-free, 100 mA), 32 external digital inputs		5	
*External LED-outputs can be used for LEDs in the grip			
(Control of intelligent RGB LEDs possible on request)			
Main-axis with additional digital outputs separately wired (not via CAN)			
- 2 direction signals per main axis + 1 zero position signal (potential-free) per main axis			3

CAN 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)		
Protocol	CANopen Safety EN50325-5 or J1939-76		
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 127</i>)		S
CAN Safety expansion stage 1		420 1	
- 6 analog joystick axis			
- 16 digital joystick functions (of which 2 inputs can be used for the cap. sensor)			
(Control of intelligent RGB LEDs possible on request)			
CAN Safety expansion stage 2		E421 1	
- 12 analog joystick axis			
- 16 digital joystick functions (of which 2 inputs can be used for the cap. sensor)			
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	
- 24 external LED-outputs (dimnable optional), 1 switching output (potential-free, 100 mA), 24 external digital inputs		4	
- 32 external LED-outputs (dimnable optional), 1 switching output (potential-free, 100 mA), 32* external digital inputs		5	
*External LED-outputs can be used for LEDs in the grip!			
(Control of intelligent RGB LEDs possible on request)			
Main-axis with additional digital outputs separately wired (not via CAN)			
- 2 direction signals per main axis			3

Profinet		
Supply voltage	18-30 V DC	
Baud rate	To 100 MBit/s	
Ausgangswert	0...512...1023	
Mounting depth A	90 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 mm ² 300 mm long without plug connector	
	External in-/outputs, cable 300 mm long without plug connector	
	Optional with plug connector (<i>standard plug connectors see page 127</i>)	S
Profinet		E602 1
- 4 analog joystick axis		
- 20 digital joystick functions		
- Input for capacitive sensor		
With additional external in-/outputs		
- 8 external LED-outputs, 8 external digital inputs		2
*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

PROFIsafe		
Supply voltage	18-30 V DC	
Baud rate	To 100 MBit/s	
Output value	0...512...1023	
Mounting depth A	90 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 mm ² 300 mm long without plug connector	
	External in-/outputs, cable 300 mm long without plug connector	
	Optional with plug connector (<i>standard plug connectors see page 127</i>)	S
PROFIsafe		E702 1
- 4 analog joystick axis		
- 20 digital joystick functions		
- Input for capacitive sensor		
With additional external in-/outputs		
- 8 external LED-outputs, 8 external digital inputs		2
*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

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 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 127)

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

