

The V28 is a compact 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 V28 series is hugely customisable.

Technical data

Mechanical life V28	5 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)



		V28	P	Example GS9	-Z	-B10	-E...	-S...	-X
Basic unit									
V28.1	Multi-Axis Controller, 1-axis								
V28	Multi-Axis Controller, 2-axis								
Gate									
P	Cross gate								
Grip / Palm Grip									
	Knob (included in basic unit!)								
D	Knob with 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 163)								
Spring return (included in basic unit!)									
Z	Spring return								
Degree of protection									
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 128)									
Interface (description see on the following page)									
E1xx	Voltage output								
E2xx	Current output								
E3xx	CAN-interface								
E4xx	CAN Safety interface								
Plug connectors									
S...	Standard plug connectors (see page 127)								
Special model									
X	Special / customer specified								

Combination possibilities with our grips

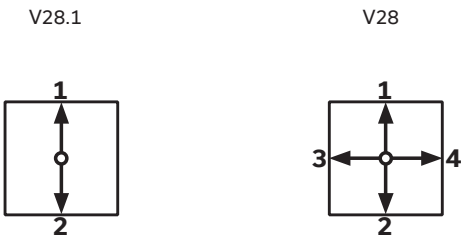


Voltage output (Not stabilized)				
Supply voltage	4,75-5,25 V DC			
Current carrying capacity	Direction signal 8 mA			
Mounting depth A	35 mm			
Wiring	1. cable 14 x 0,25 mm ² 500 mm long without plug connector 2. cable 14 x 0,25 mm ² (optional for grip function) 500 mm long without plug connector Optional with plug connector (<i>standard plug connectors see page 127</i>)			
0,5...2,5...4,5 V redundant	1 axis	E103	1	S
	2 axis		2	
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	35 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)			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
0...5...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			
	1 axis	E132	1
	2 axis		2
	3 axis*		3
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			
	1 axis	E136	1
	2 axis		2
	3 axis*		3
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			
*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	35 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 (<i>standard plug connectors see page 127</i>)			S
0...10...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, sensor redundant with error monitoring				
	1 axis		E206 1	
	2 axis		2	
	3 axis*		3	
20...0...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, sensor redundant with error monitoring				
	1 axis		E208 1	
	2 axis		2	
	3 axis*		3	
4...12...20 mA per axis, sensor redundant with error monitoring				
	1 axis		E209 1	
	2 axis		2	
	3 axis*		3	
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	
20...4...20 mA + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, sensor redundant with error monitoring				
	1 axis		E216 1	
	2 axis		2	
	3 axis*		3	
	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:



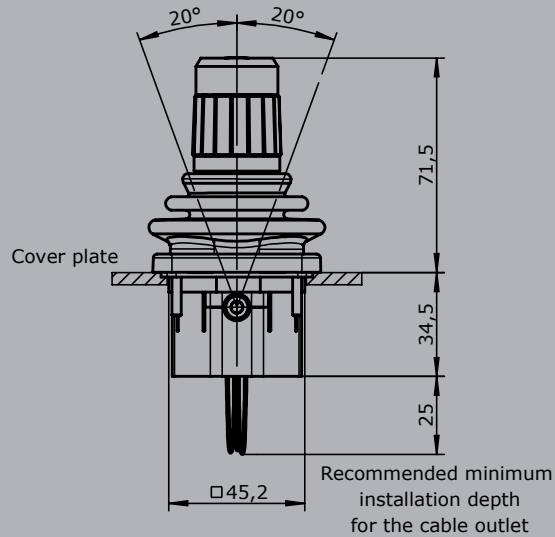
CAN		
Supply voltage	9-32 V DC	
Idle current consumption	120 mA (24 V DC)	
Current carrying capacity	External digital output for LEDs 5 mA - 30 mA (dependent on the number of LEDs)	
Mounting depth A	35 mm	
Protocol	CANopen CiA DS 301 or SAE J1939 (based on)	
Baud rate	20 kBit/s to 1 Mbit/s (standard 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	
Optional with plug connector (standard plug connectors see page 127)		S
CAN		E322 1
- 4 analog joystick axis		
- 8 digital joystick functions (incl. input for capacitive sensor)		
- Output for vibrator control		
With additional outputs		
- 8 LED-Outputs (dimmable optional)		2

CAN Safety		
Supply voltage	9-32 V DC	
Idle current consumption	120 mA (24 V DC)	
Current carrying capacity	External digital output for LEDs 5 mA - 30 mA (dependent on the number of LEDs)	
Baud rate	20 kBit/s to 1 MBit/s (standard 250 kBit/s)	
Mounting depth	35 mm	
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	
Optional with plug connector (standard plug connectors see page 127)		S
CAN Safety		E422 1
- 4 analog joystick axis		
- 8 digital joystick functions (incl. input for capacitive sensor)		
- Output for vibrator control		
With additional outputs		
- 8 LED-Outputs (dimmable optional)		2

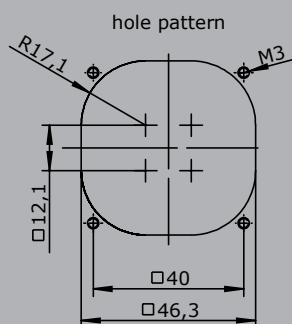
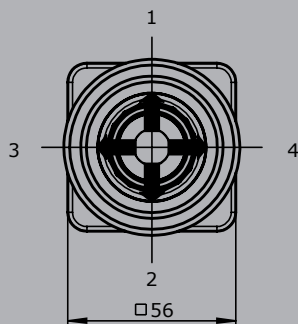
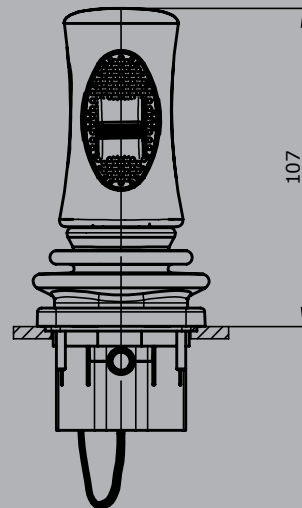
Attachments		
Z01 Mating connector M12 male insert with 2 m cable	20201140	
Z02 Mating connector M12 female insert with 2 m cable	20202298	

Standard
installed from the top

Hall-twist grip GS9



Palm grip B33



knob

installed from below

