Multi-Axis Controller
V28

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)

Example

V28	P	T	-GS9	-B10	-E...	-S...	-X

Basic unit

V28.1	1-axis
V28	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 Palm Grip 154)*

Spring return *(includet 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 121

Interface *(description see on the following page)*

E1xx	Voltage output
E2xx	Current output
E3xx	CAN-interface
E4xx	CANopen Safety interface

Plug connectors

S...	Standard plug connectors *(see page 120)*

Special model

X	Special / customer specified

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

V2021/1 01.01.2021

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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 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 120)*			S
0,5...2,5...4,5 V redundant		1 axis	E103 1	
		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

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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 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 120)*			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!

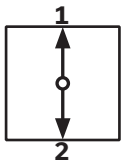
Current output					
Supply voltage	9-32 V DC				
Current carrying capacity	Direction signal 150 mA				
	Zero position signal 500 mA				
Mounting depth A	35 mm				
Wiring	1. cable 14 x 0,25 mm² 500 mm long without plug connector				
	2. cable 14 x 0,25 mm² (optional for grip function) 500 mm long without plug connector				
	Optional with plug connector *(standard plug connectors see page 120)*				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 + 2 direction signals + 1 zero position signal (galvanically isolated) per axis, sensor redundant with error monitoring					
	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!*

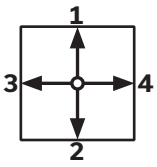
Current output with other value on request!

Identification of the installation variants with switching directions:

V28.1



V28



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

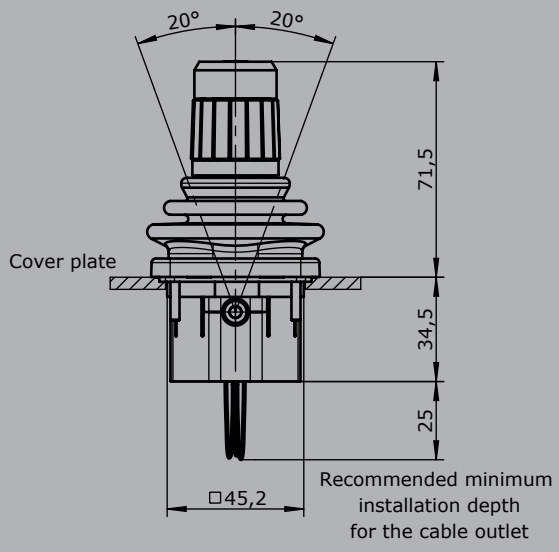
CAN			
Supply voltage	9-32 V DC		
Idle current consumption	120 mA (24 V DC)		
Current carrying capacity	External digital output for LEDs 5 mA - 30 mA (dependent on the number of LEDs)		
Mounting depth A	35 mm		
Protocol	CANopen CiA DS 301 or SAE J1939 (based on)		
Baud rate	20 kBit/s to 1 Mbit/s (standard 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 120)*		S
CAN		E314 1	
- 4 analog joystick axis			
- 8 digital joystick functions (incl. input for capacitive sensor)			
- 8 LED-Outputs (dimmable optional) for grip function			

CANopen 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		
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 120)*		S
CANopen Safety		E413 1	
- 4 analog joystick axis			
- 8 digital joystick functions (incl. input for capacitive sensor)			
- 8 LED-Outputs (dimmable optional) for grip function			

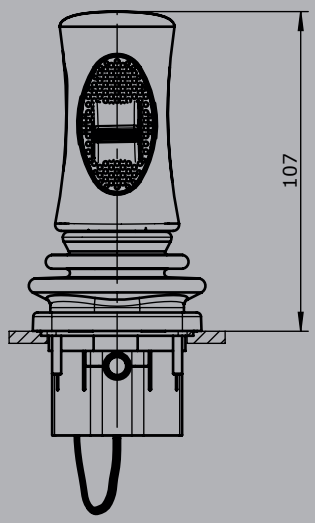
Attachments	
Z01 Mating connector M12 male insert with 2 m cable	20201140
Z02 Mating connector M12 female insert with 2 m cable	20202298

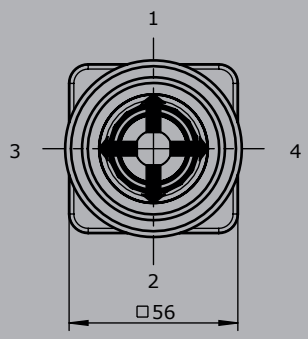
Standard
installed from the top

Hall-twist grip GS9

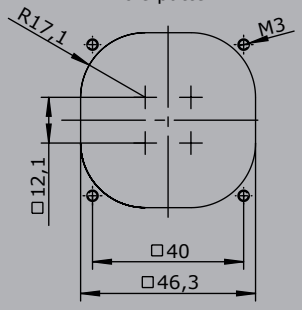


Palm grip B33

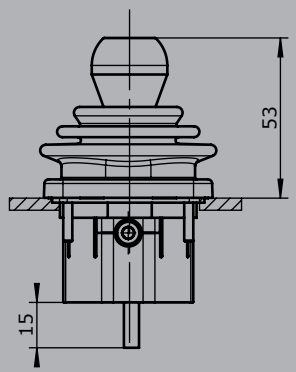




hole pattern

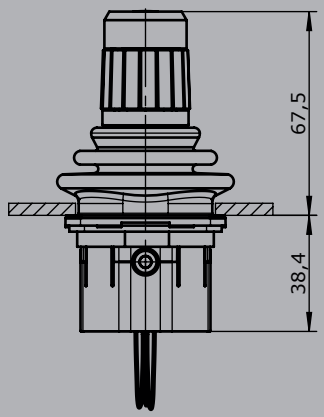


knob



Recommended minimum
installation depth
for the cable outlet

installed from below



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