

Electric proportional joysticks **SERIES JEP**

Description:

The JEP series electric proportional joysticks are used to remotely control, via cable, electro-hydraulic pressure reducing valves typically used for fine positioning of directional control valve's spools, or servo-controls of variable displacement pumps and motors. Supply voltage range 12 or 24 VDC to be stabilized at a constant value of 5,5 Volt upstream the joystick's input connection.

The JEP joystick, available in dual, single and Z axis options, is designed around the rugged mechanism of a traditional 4-way hydraulic joystick, but it utilizes contactless Hall Effect technology for increased life and more dependable performance in the field. This combination provides long life and unique performance and features, never before available in an electronic joystick.

The Hall effect sensors are fully protected against electromagnetic and radio frequency interference (EMI and RFI) up to 100V/M; their programmable design with built-in magnetic temperature compensation logic ensure consistent and repeatable operation in any working condition.



The JEP series joystick is designed for maximum flexibility in features and in tactile feel. A wide variety of input and output configurations are available to satisfy different needs. The modular electronic package can be configured for both standard and custom I/O requirements including PWM, CANbus, USB and other customer output options available. This allows the product to meet a wide variety of Customers requirements from aerospace to marine, from construction to agricultural, in addition to many industrial applications.

The JEP series joystick can be combined with all the ergonomic, cylindrical and palm multifunction grips, that can be fitted with "on-off" push-button switches and proportional single axis & dual axis mini joysticks with contactless Hall effect system. This allows to control with one hand and in a simple, light and intuitive mode, up to 4 remote services at variable speed (2 with the main joystick and 2 with the grip) in addition to the "on-off" ones.

Features:

- Single, dual and Z axis available
- Adapts to a wide variety of shaft styles and handles
- 15 million cycle life in all directions
- 136 Kg static load strength at grip
- 20° maximum deflection angle each direction
- Redundant outputs available
- Electronics sealed to IP68S
- S EMI/RFI shielding up to 100V/M
- Factory programmable pre-travel & over-travel
- Analogical, CANbus, USB & other output options available
- Fail safe & neutral indicate





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Technical data:

Electrical:

MIN TYPICAL MAX

Nominal supply voltage (VDC)

Supply voltage (VDC)

Output voltage (VDC)

Tolerance on output signal at minimum

deflection angle of $0^\circ \div 2^\circ$ @ 5 VDC

Tolerance on output signal at maximum

deflection angle of $19^\circ \div 20^\circ$ @ 5 VDC

Supply current for each sensor (mA)

Output current limit (mA)

Type of sensor

Design of sensor

MIN	TYPICAL	MAX
5 @ 20°C, load 1 mA (4÷7 kΩ)		
4,50	5,00	5,50
1 ÷ 4		
-0,15	N/A	+0,15
-0,15	N/A	+0,15
N/A	N/A	10
-1	N/A	+1
Analogical, Hall effect, 1 or 2 outputs on each axis		
Double magnet		

Mechanical:

MIN TYPICAL MAX

Mechanical life (all directions)

Travel angle (°)

Pre-travel angle (°)

Over-travel angle (°)

Operating force at grip centre @ $20 \div 85^\circ\text{C}$ (N)

Operating force at grip centre @ -40°C (N)

MIN	TYPICAL	MAX
15.000.000 cycles		
19	20	21
1,5	2,0	2,5
0,5	1,0	1,5
15,6	20,0	24,4
57,8	68,9	80,0

Environmental:

MIN TYPICAL MAX

Operating temperature (°C)

Storage temperature (°C)

Humidity

Vibration

Electronic seal integrity

RFI withstand

EMI withstand

MIN	TYPICAL	MAX
-40	20	85
-65	20	105
96% RH @ 70 °C, 96 hrs		
10g, 10 Hz ÷ 2kHz swept sinusoidal		
IP68		
100V/M, 14 kHz to 1 GHz		
MIL-STD-461D/SAE J1113-22		

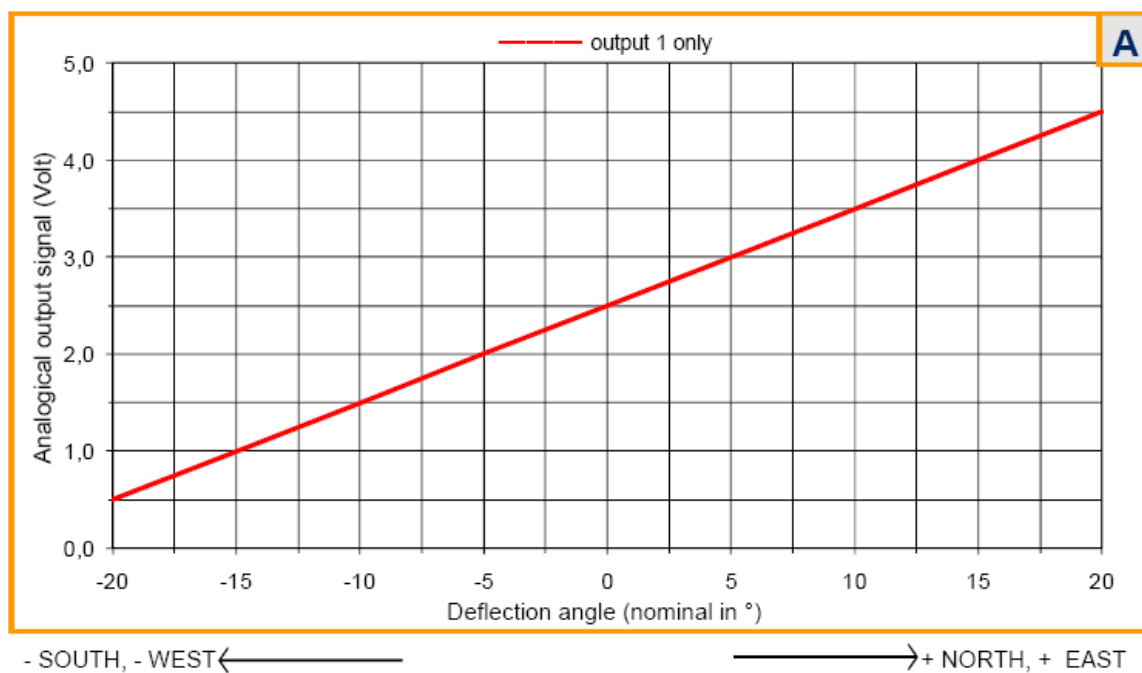


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Output metering curves:

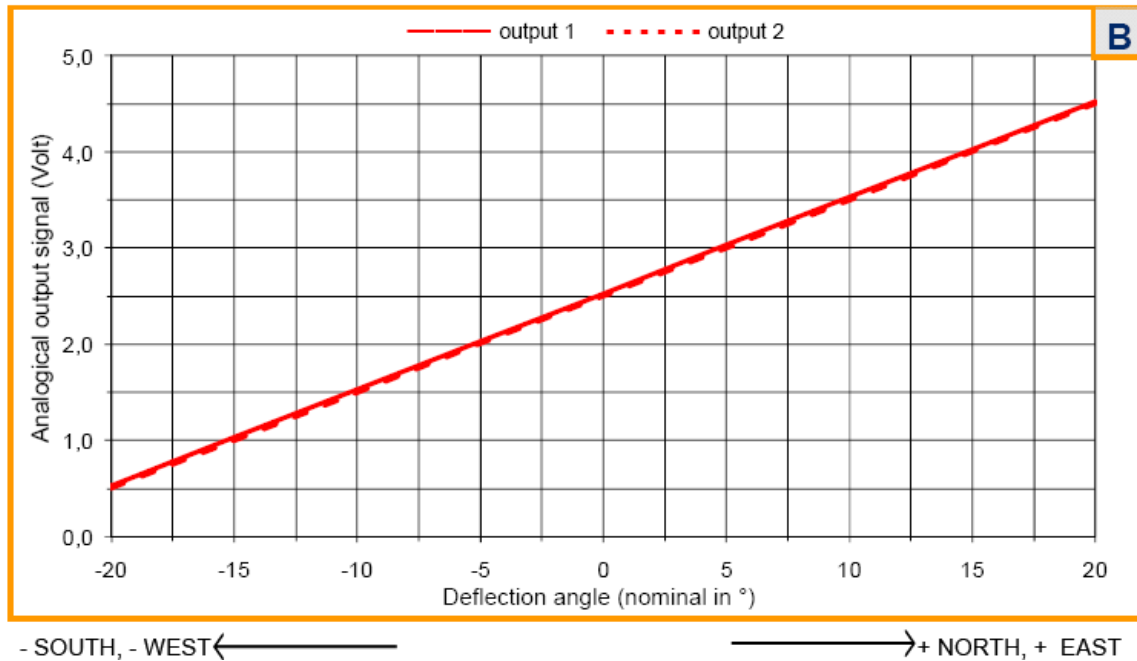
1 output (max. - | zero | max. +) for single axis joystick North-South only



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2 outputs (max. - | zero | max. +) for single axis joystick North-South only

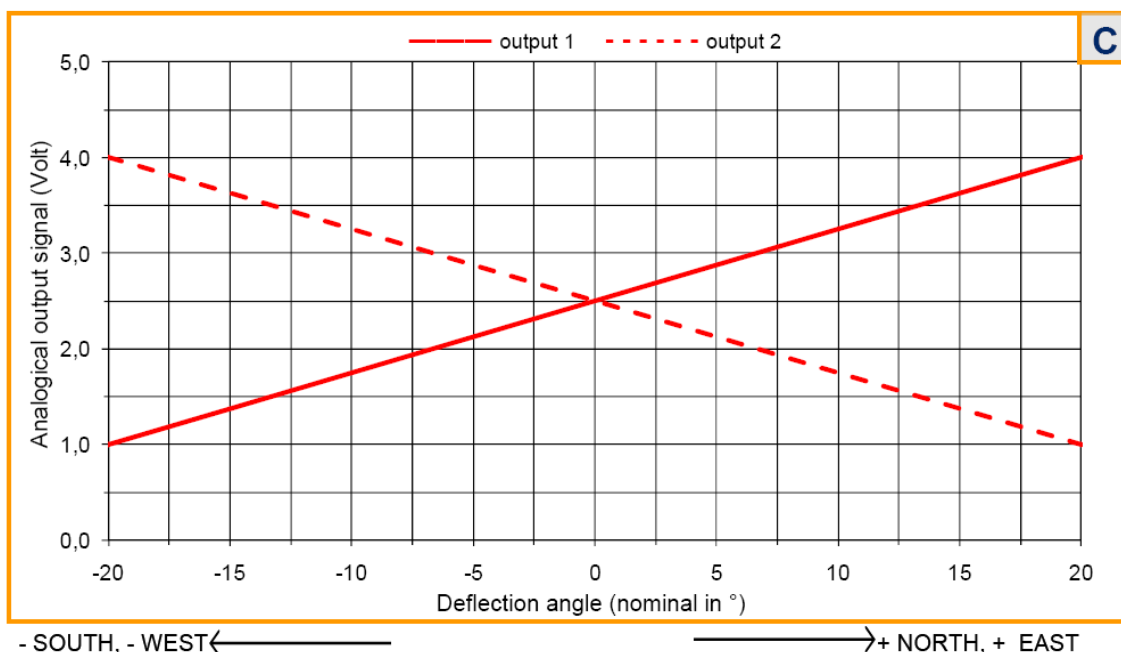


Output metering curves:

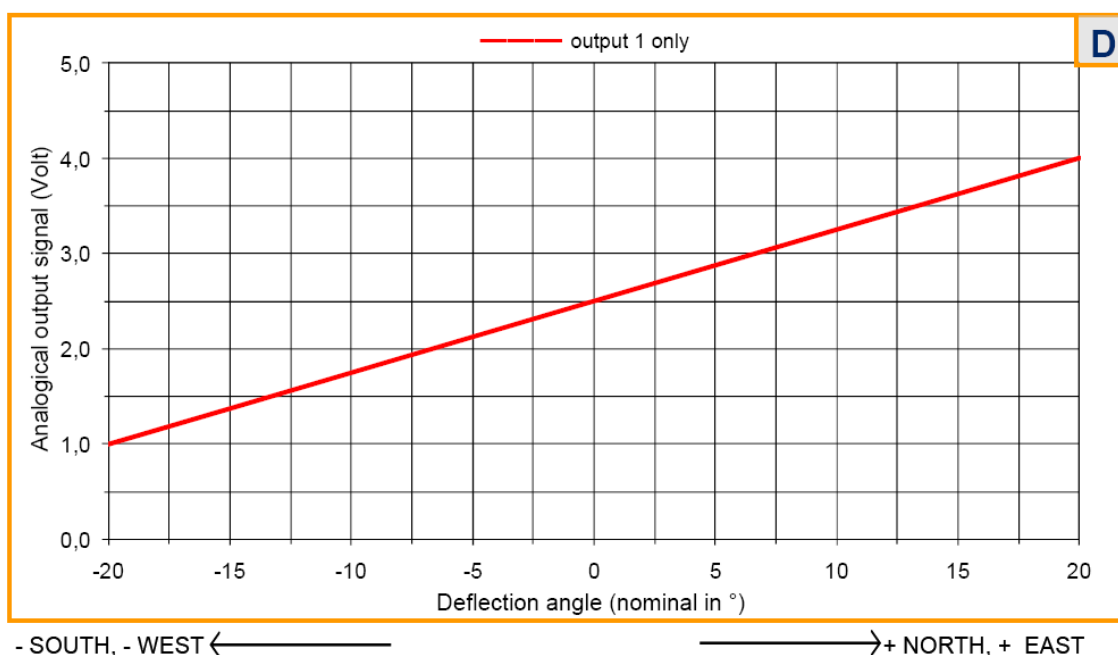
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2 outputs (max. - | zero | max. +) for single axis joystick North-South only



1 output (max. - | zero | max. +) for single axis joystick North-South only



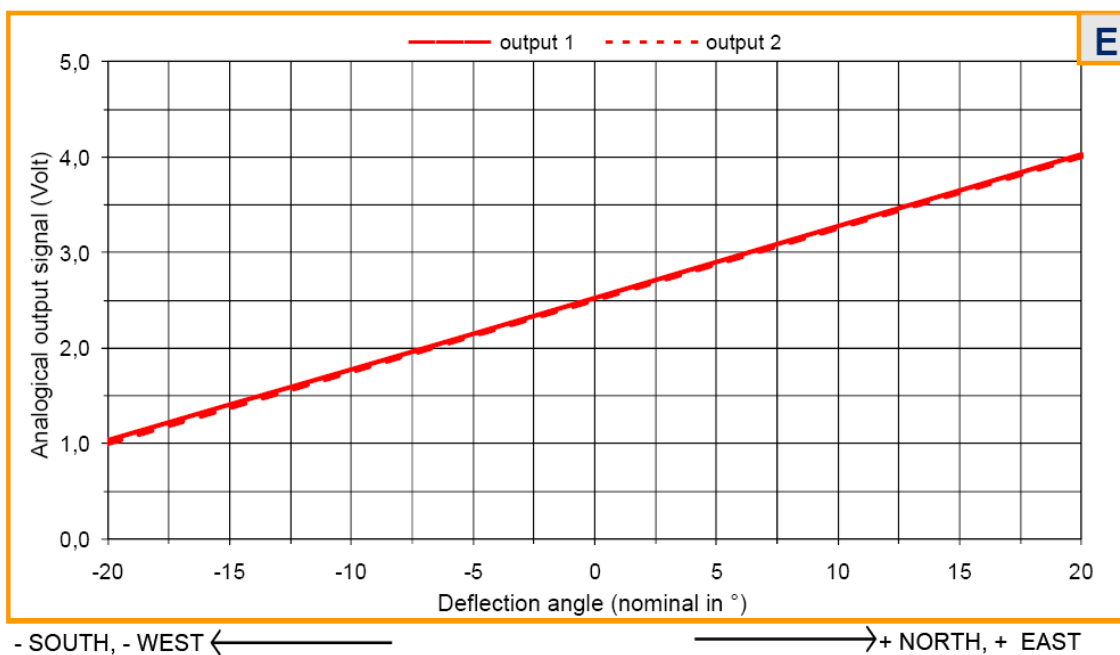
Output metering curves:



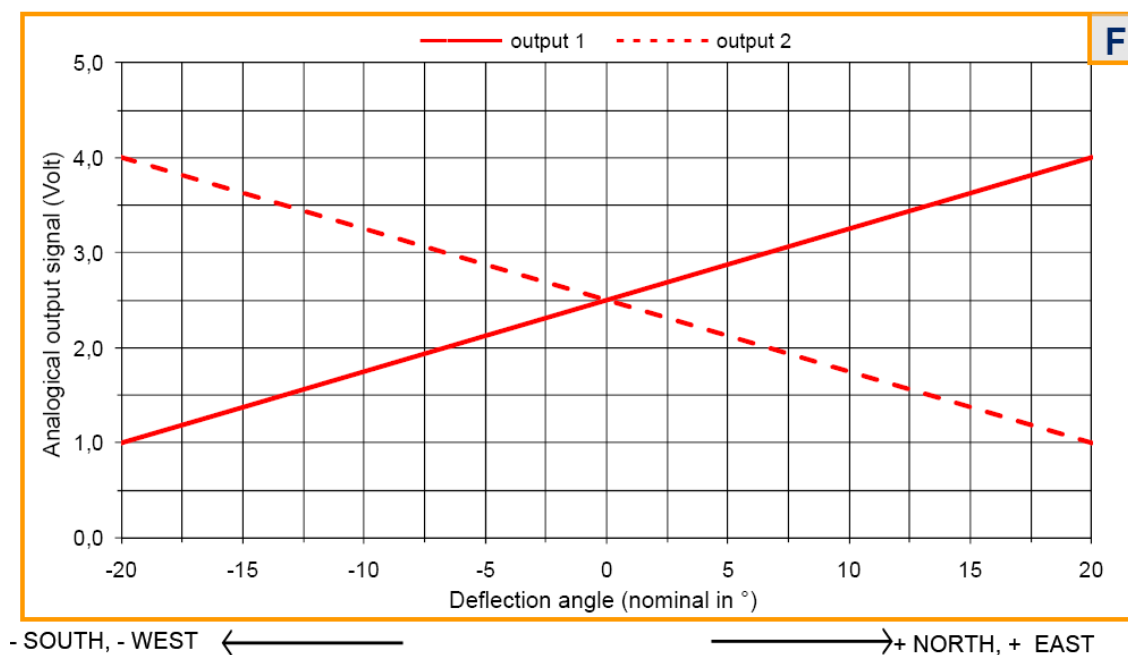
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2 outputs (max. - | zero | max. +) for single axis joystick North-South only



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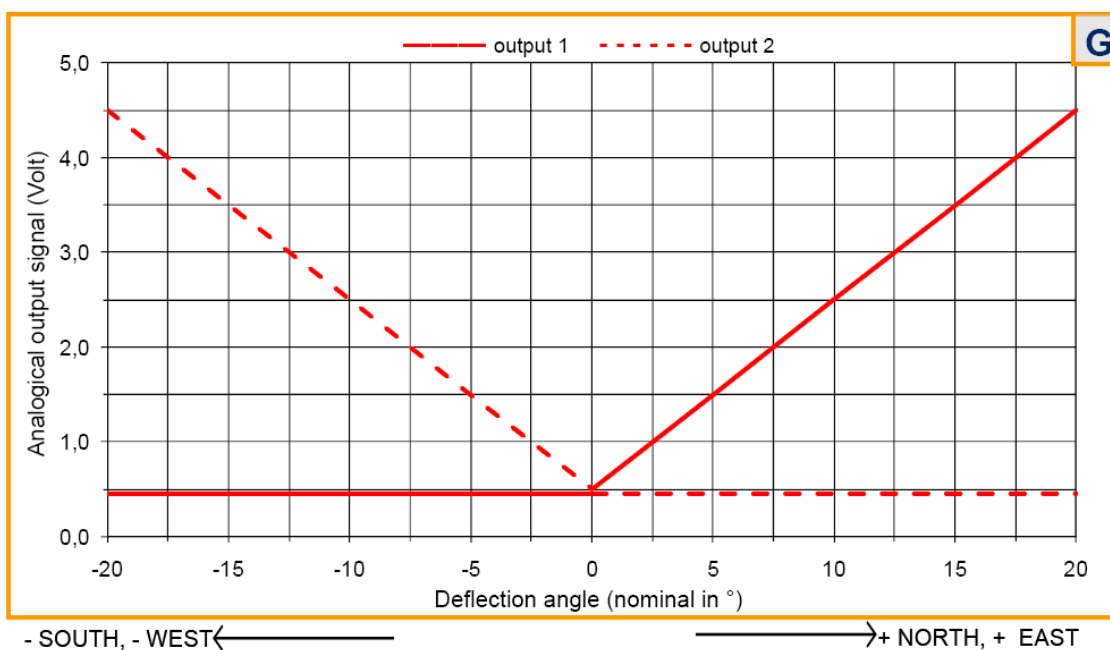


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Output metering curves:

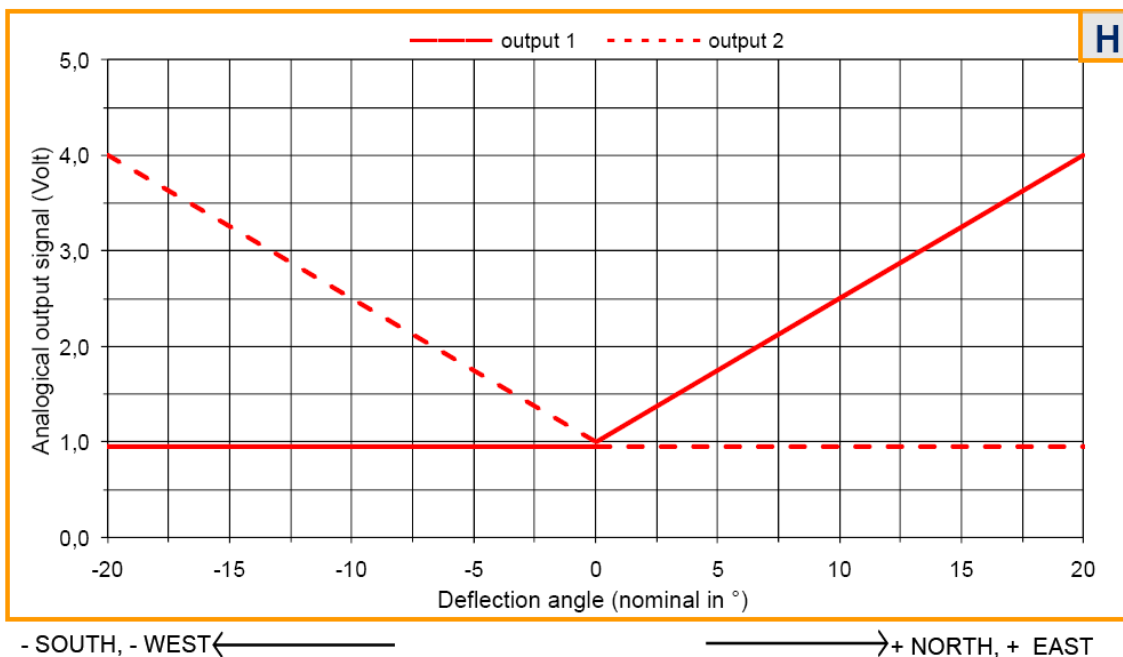
2 outputs (max. - | zero | max. +) for single axis joystick North-South only



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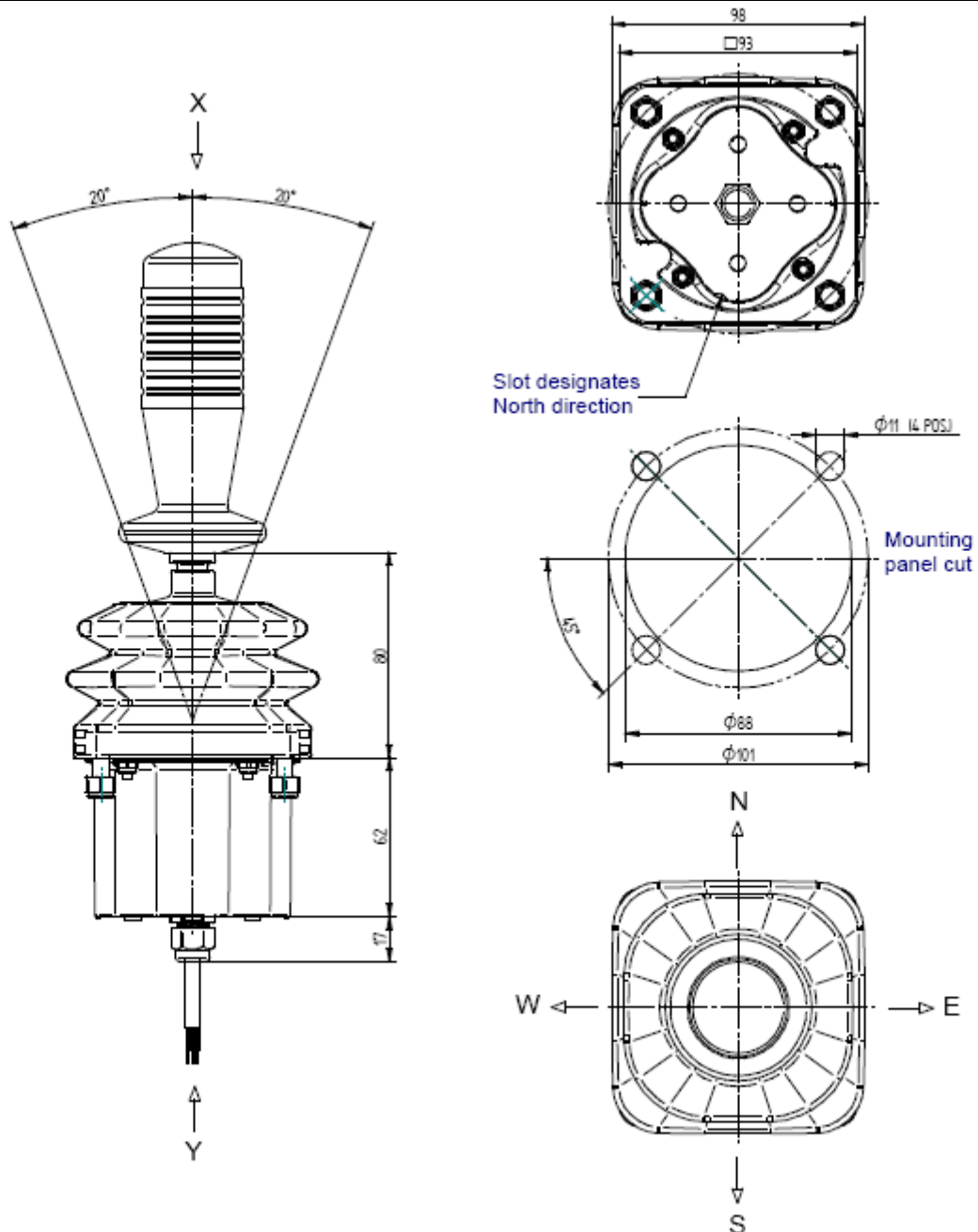
2 outputs (max. - | zero | max. +) for single axis joystick North-South only



Dimensional data:

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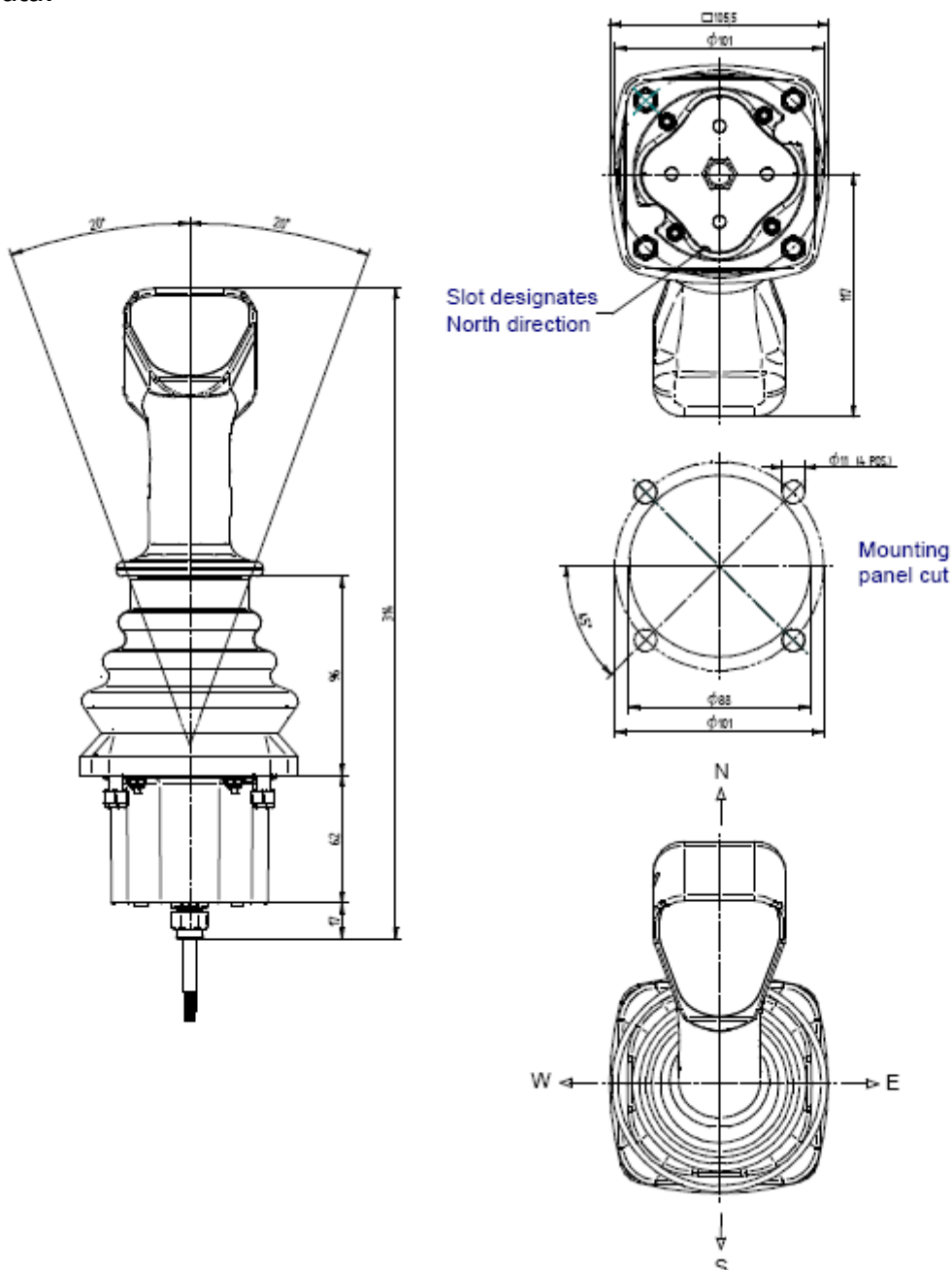


JEPAB dual axis joystick fitted with cylindrical handle without switches

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Dimensional data:

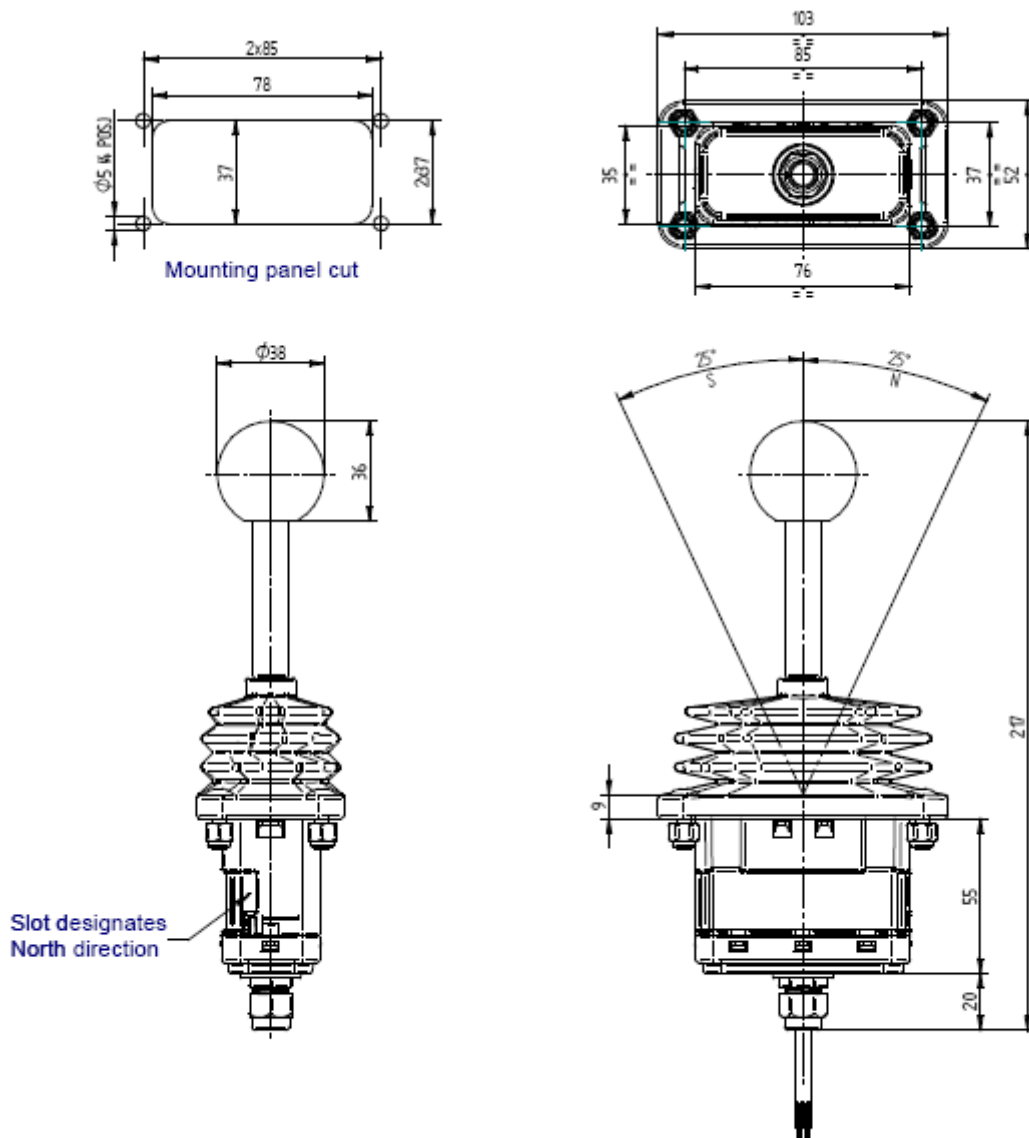


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JEPAB dual axis joystick fitted with ergonomic handle without switches

Dimensional data:



JEPAM single axis joystick fitted with palm handle without switches



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Control handles:

For details on the configuration of the required
handle please consult the specific catalogue



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Without control handle	Z	Palm type, for single axis only	IP1
Standard cylindrical handle	ID1	Multifunction cylindrical handle	ID2
Multifunction ergonomic handle	IE1	Multifunction ergonomic handle	IG3

Protection boots:

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Without protection boot

Z

Rectangular protection boot, available for single axis version only

R

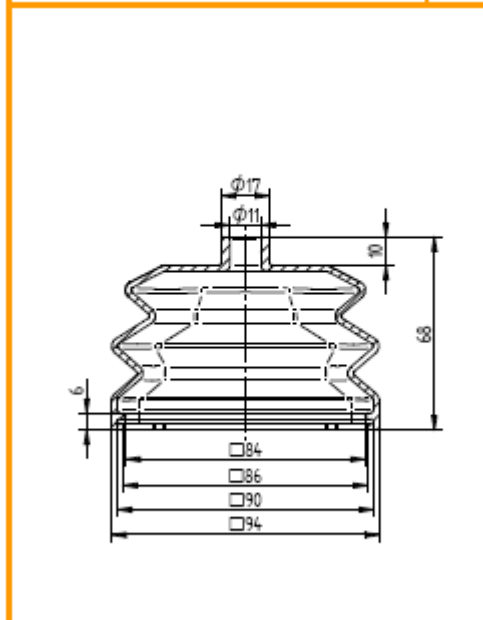
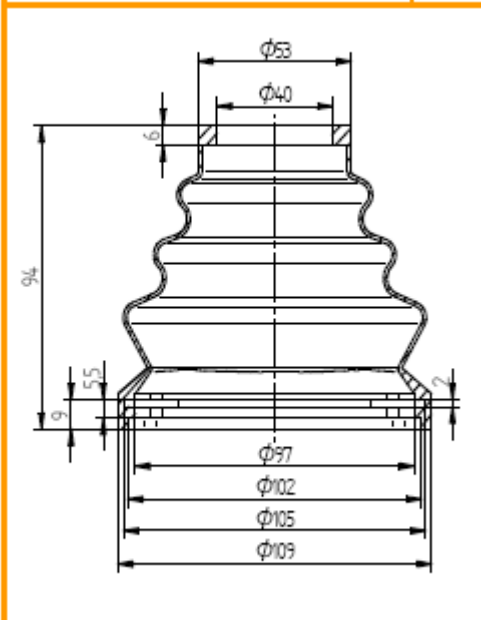


High protection boot option for ergonomic handles

A

Low protection boot option for cylindrical handles

B



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Ordering key:

JEP	A	B	A	IE1	XXXX	A
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Protection boot (page 13):

- Z = Without protection boot
- A = Square boot high design for ergonomic handles
- B = Square boot low design for cylindrical handles
- R = Rectangular boot for single axis option only

Control handle identification code:

To be assigned by Fluidea's Technical Office

Control handle (page 12):

- Z = Without handle
- ID1 = Cylindrical handle series ID1
- ID2 = Cylindrical handle series ID2
- IE1 = Ergonomic handle series IE1
- IG3 = Ergonomic handle series IG3
- IP1 = Palm handle series IP1 for single axis only

Output metering curves (pages 5-6-7-8):

- A = 0,5 to 4,5 VDC one output (side zero)
- B = 0,5 to 4,5 VDC two // outputs (side zero)
- C = 0,5 to 4,5 VDC two X outputs (central zero)
- D = 1 to 4 VDC one output (side zero)
- E = 1 to 4 VDC two // outputs (side zero)
- F = 1 to 4 VDC two X outputs (central zero)
- G = 0,5 to 4,5 VDC two V outputs (central zero)
- H = 1 to 4 VDC two V outputs (central zero)

Joystick configuration:

- B = Dual axis design
- M = Single axis design

Output signal format:

- A = Analogic
- P = PWM
- C = CANbus (*)
- U = USB (*)

(*) Code to be assigned by Fluidea's Technical Office

Design series:

- JEP = Electric proportional joystick



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