

Data Sheet

Dual Axis Fingertip Joystick

JS2000



Mobile Machine Management

The JS2000 dual axis fingertip joystick is an element of the flexible, powerful, expandable, and affordable joystick family of mobile machine management products.

The JS2000 is specially designed to meet the harsh operating requirements of today's mobile machine market.

This joystick is available with one, two or three axis of control and can accommodate a variety of grips including push-button switch versions.



Ergonomic and Precise Operation

Developed for applications where ergonomics and precise proportional control are required, the JS2000's compact design provides smooth fingertip control with low operating forces that minimize repetitive stresses and operator fatigue.

Compact Design

The compact design is ideal for mounting in low clearance locations such as seating armrests and chest packs.

Reliability

The JS2000 is designed for precision fingertip control applications where safety and long, trouble-free life are primary requirements. The contactless and redundant Hall Effect sensing design provides security and reliability in an easy to operate device.

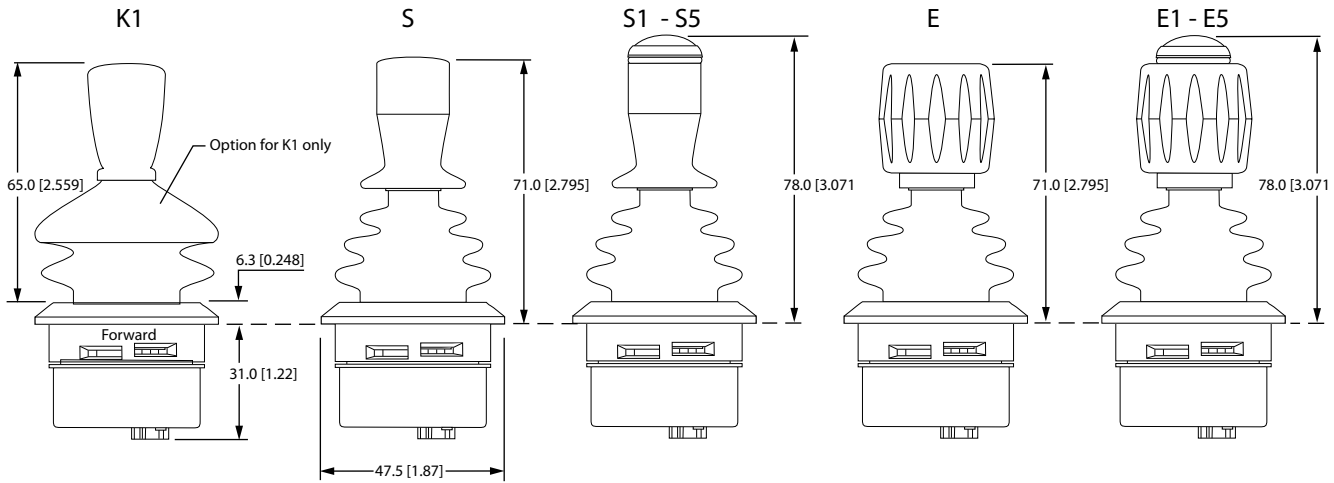
Features

- Redundant sensors
- Contactless Hall effect sensing
- Two and three axis control
- Multiple gate options
- Spring return to center
- Compact size
- Multiple grip options, including twist Z axis
- Easy installation
- Low operating forces
- Operating life (XY Axis), 15 M operations
- IP 65 sealing above panel
- CE approved

Comprehensive technical literature is
online at www.danfoss.com

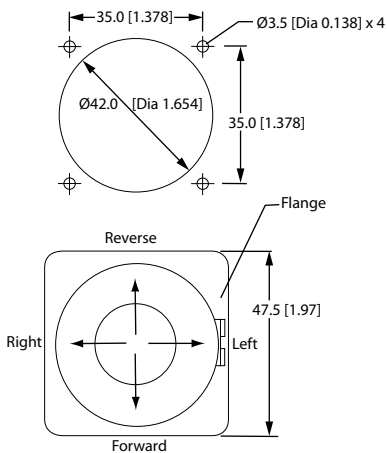
Dimensions and pin assignments

Dimensions in millimeters



Flange dimension 44.3 mm square (with trim plate removed)

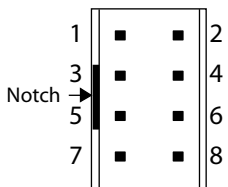
4 off through holes Ø3.3 mm, countersunk on top surface



Danfoss mating connector assembly ordering number

Connector with 400 mm [15.75 in] ribbon cable	10102031
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Bottom view of joystick connector



Caution

Red lead on mating connector ribbon cable is assigned to pin 8.

Pinout and wiring information

Pin	XY Joystick	XYZ Joystick
1	Supply voltage	
2	Left/Right output 1	Left/Right output
3	Ground	
4	Forward/Reverse output 1	Forward/Reverse output
5	Forward/Reverse output 2	5 V DC
6	Center tap	
7	Left/Right output 2	Z axis output
8	Switch output (No connection if no switch)	

Characteristics

Mechanical specifications—XY Axis

Shaft operation force (applied at top of grip)	Breakout	1 N (0.22 lbf) nominal
	Operating	2 N (0.45 lbf) nominal, full deflection
	Maximum allowable	300 N (67.44 lbf) XY option 195 N (43.84 lbf) XYZ option
Shaft mechanical angle	Single axis option	± 20° forward/reverse
	Round gate, XY option	± 20°
	Square and Diamond gate, XY option	± 20° to corners, ± 14° to flats
	Cross and plus gate, XY option	± 20° at extent of axes
Expected life	15 M operations	
Weight	90 g (0.20 lb) base without grip	

Mechanical specifications—Z Axis

Operating torque	Breakout	0.04 N.m (0.03 ft.lb)
	Operating	0.06 N.m (0.04 ft.lb)
	Maximum allowable	1.0 N.m (0.74 ft.lb)
Mechanical angle	± 20°	
Expected life	5 M operations	

Electrical specifications

Sensor type	Hall effect
Resolution	Infinite
Supply voltage range (Vs)	5 V _{DC} ± 0.5 V _{DC} , regulated
Over voltage, maximum	15 V _{DC}
Reverse voltage, maximum	14.5 V _{DC}
Output voltage range X and XY, ± 40% span	Nominal 0.5 to 4.5 V _{DC}
Output voltage range XYZ, ± 25% span	Nominal 1.1 to 3.0 V _{DC}
Output impedance	100 Ω each axis
Center tap voltage (no load)	50% Vs ± 1%
Center tap impedance	1.1 kΩ
Return to center voltage (no load)	X and Y axis—within ± 60 mV of Vs/2 at 20°C (68°F), ± 73 mV over full temperature range Z axis—within ± 100 mV of Vs/2 at 20°C (68°F), ± 100 mV over full temperature range
Current consumption	17.5 mA nominal
Output sense, XY axis	Return to center voltage (no load) The twin outputs of the XY axis can be independently selected to be rising together in the same direction (PP) or opposed (PN).
Output sense, Z axis	The three axis option can only provide a single output per axis.

Environmental specifications

Operating temperature	-25°C to +70°C [-13°F to +158°F]
Storage temperature	-40°C to +70°C [-40°F to +158°F]
Ingress Protection rating	IP 65, above panel
EMC immunity level	60 V/m (25 MHz to 1 GHz, 1 kHz sine wave modulation)
EMC emissions level	Complies with EN50081-1 (1992), 30 MHz to 1 GHz
ESD immunity level	±8 kV Contact discharge; 15 kV air discharge (10 discharges)

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