

Data Sheet for Joysticks

Finger Joystick

Series 826



- Outstanding quality of mechanics and sensors
- 1 to 2 axes
- For demanding applications
- Conductive plastic potentiometers or hall sensors on the outside of the housing
- Various configuration options for switches, latching positions, etc.
- Protection class up to IP65 above panel on request
- Optionally redundant (dual-ganged potentiometers)
- Optionally with current (only for Hall sensors) or USB interface

The 826 series joysticks are ideal for demanding applications with up to two axes, where quality, durability and reliability are paramount and the sensor technology has to meet special requirements.

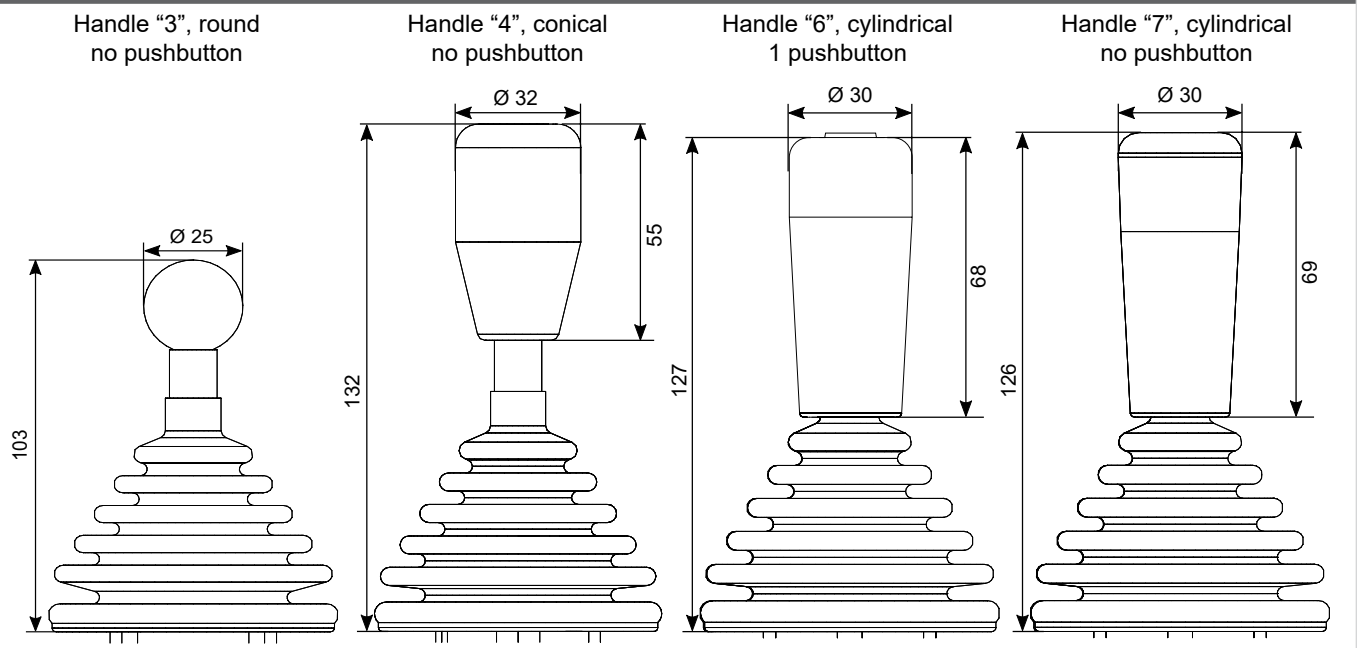
The mechanically separate shafts for the two axes allow special adaptations to be made: For example, detent points can be realized and a friction brake can be installed. In addition, up to 6 microswitches can be mounted on the outside of the housing.

Technical Data Joystick

Angle of Movement X+Y Axis	±30° to ±35°
Return to Center Accuracy X+Y Axis	±1°
Operating Force X+Y Axis	3 to 15 N
Lifetime	typ. 5 million cycles
Vibration 10 bis 55 Hz, 1 min.	10 G (MIL-STD-202F-204)*
Shock	30 G (MIL-STD-202F-213)*
Protection Grade (above panel)	IP54, IP65 if sealed mounting plate is selected (option „MIP“)
Operating Temperature	-20°C to +65°C
Weight	ca. 350 g*
Panel Thickness	max. 3.2 mm

* only valid for potentiometer version without USB

Handle types



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Please contact us for information regarding stock articles, delivery times and minimum order quantities.

Order Code									
Description	Selection: standard= black/bold , possible <i>options=grey/italics</i>								
Series	826								
Axes:									
1 Axis									
2 Axes									
2 Axes with pushbutton									
1 Axis with pushbutton									
Sealing:									
Rubber boot									
Return Mechanism:									
Spring return									
No spring return									
Friction clutch, with detent in center position									
Friction clutch, w/o detent									
Handle versions:									
Ball-Tip, Ø25 mm									
Cylindrical handle, with pushbutton, Ø30 mm									
Cylindrical handle, without pushbutton, Ø30 mm									
Conical handle, Ø32 mm									
Trim function:									
w/o trim									
with trim function ⁽¹⁾									
Sensor type/output interface:									
Potentiometer type F / unwired, output 0 to 100 %									
Potentiometer type F / USB HID-compliant game controller									
Potentiometer type F / USB HID-compliant mouse emulation									
Hall sensors, voltage output 0.5 to 4.5 V, supply 5 VDC / unwired									
Hall sensors, voltage output 0 to 5 V, supply 24 VDC / unwired									
Hall sensors, current output 4 to 20 mA, supply 24 VDC / unwired ⁽²⁾									
Limiters:									
Round									
Square									
Single axis Y									
X-/Y-Axis plus, "+"									
Micro switches:									
none									
Common center detect switch X-/Y-Axis ⁽³⁾									
Separate center detect switches (for 2 axes)									
Switches ON @ ±3°, X-/Y-Axis									
Switches ON @ ±3°, center detect, X-/Y-Axis									
Switches ON @ ±5°, 1 or 2 axes									
Switches ON @ ±5°, center detect, X-/Y-Axis									
Additional options:									
Mounting plate									
Mounting plate sealed to IP65 (glued rubber boot)									
Potentiometer with center tap ⁽⁴⁾									

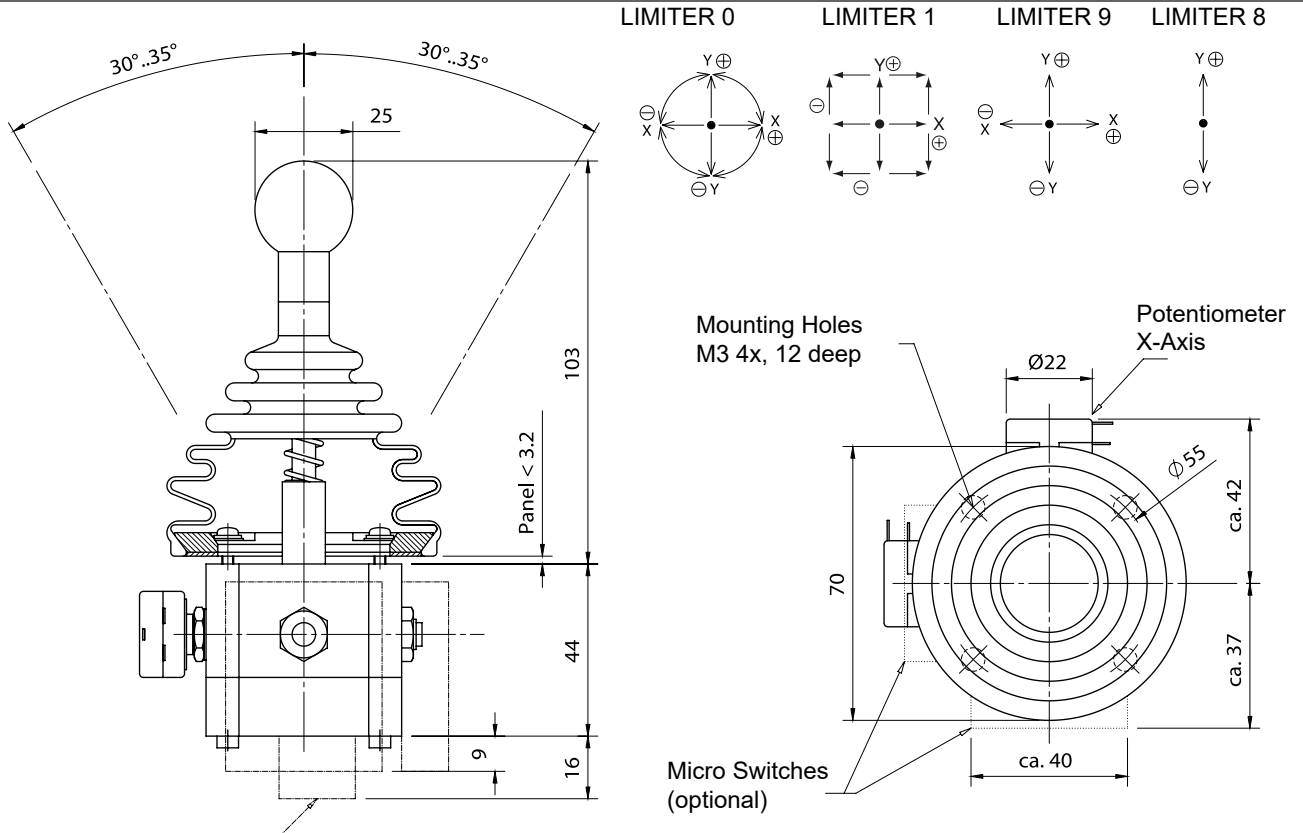
⁽¹⁾ Only possible if potentiometers are selected as sensors
⁽²⁾ The output must be connected with a load resistance of 500 Ohm
⁽³⁾ Code also applies to 1-axis variant
⁽⁴⁾ Not available for versions with current output, USB

For higher quantities or on-going demand, additional options are available

For example:

- Specific configuration of the two axes
- Combinations of micro switches
- Customer-specific cable and handles

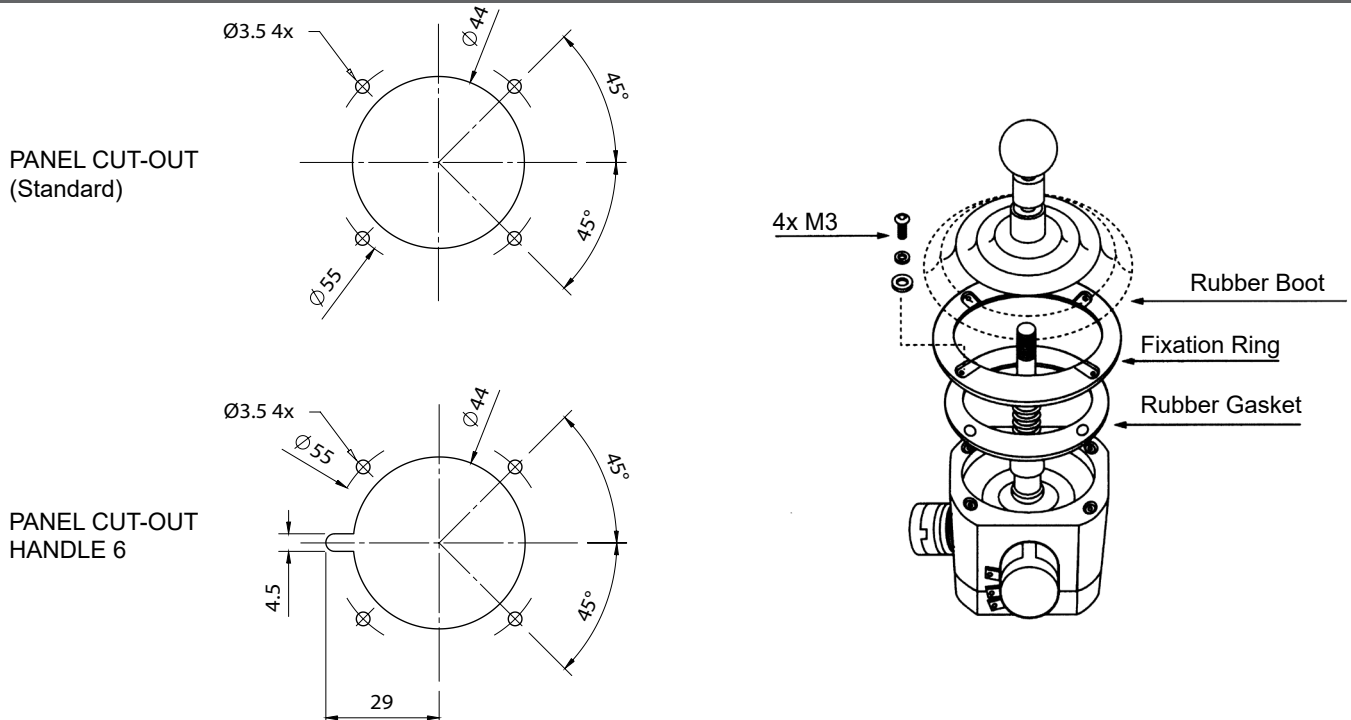
Drawing



Center Detect (optional) - in the presence of handle "6" two microswitches will be attached to the housing instead of a single center detecting switch.

Dimensions in mm

Installation



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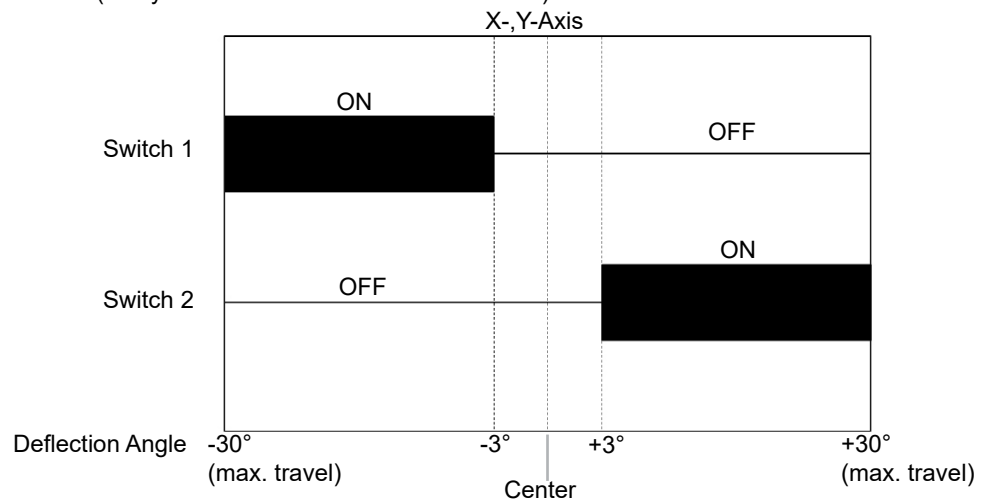
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Pushbutton & Micro Switches

The 826 series joysticks offer the option of integrating microswitches for deflection-dependent switch actuation. Three different angles can be defined per axis, e.g. one switch to detect the centre position of the joystick handle plus one switch each at $+10^\circ$ and -10° . Due to the large number of different combinations we cannot give a complete list of order codes. We recommend that you contact us personally to determine the optimum solution for your needs.

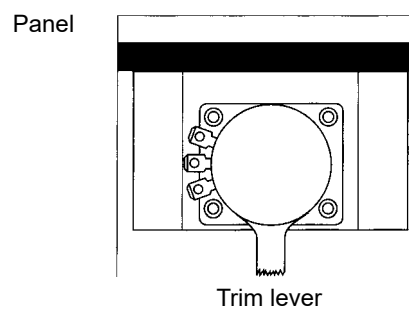
Technical Data	Pushbutton (handle 6)	Micro Switch	Center Detect
Voltage / Current (max.)	50 VAC / 6 A	50 VAC / 5 A	30 VDC / 100 mA
Lifetime (typ.)	25000	200000	100000

SCHEME (Standard) of deflection-dependent switch actuation
 e.g. "Switches ON @ $\pm 3^\circ$, X-/Y-Axis" (many other combinations can be realized).



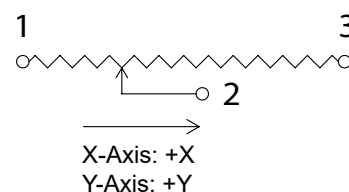
Trim Option „3“

Using the Trim function, potentiometers can repeatedly be adjusted ("trimmed") to an individual zero position.



Technical Data Potentiometer Type F

Technology	Conductive plastic
Nominal Total Resistance	10 kOhm
Resistance Tolerance	$\pm 15\%$
Independent Linearity	$\pm 3\%$
Power Rating @ 40°C	0.15 W
Effective Electrical Angle of Rotation	60°
max. Wiper Current	1 mA



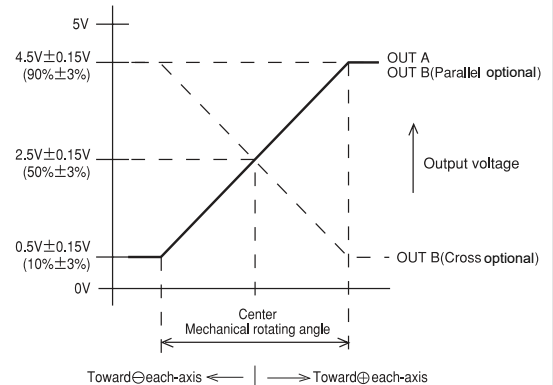
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Technical data Hall sensor option H0505

Supply voltage	5 VDC $\pm 10\%$
Current consumption	ca. 6 mA
Output signal	0.5 to 4.5 V
Load resistance	> 10 kOhm
Independent linearity	$\pm 3\%$
Temperature drift output	$< \pm 2,5\% U_{Out} * FS$
Temperature drift center pos.	$< 0,5\% U_{Out} * FS$
Insulation voltage	1 Minute at 250 VAC
Insulation resistance	> 100 MOhms at 250 VAC



Technical data Hall sensor option H2405

Supply voltage	24.0 ± 0.5 V
Current consumption	ca. 16 mA
Output signal	0 to 5 V
Electrical connection	Lead wires 0.18 m, black=GND, red = VSUP, white=OUT
Load resistance	≥ 10 kOhm
Independent linearity	$\pm 3\%$
Insulation voltage	± 8 kV (contact), ± 16 kV (air) (IEC 61000-4-2)
Insulation resistance	> 1000 MOhm at 500 VDC

Technical data Hall sensor option H2442

Supply voltage	24.0 ± 0.5 V
Output signal	4 to 20 mA
Load resistance	≤ 500 Ohm
Independent linearity	$\pm 3\%$
Insulation voltage	± 8 kV (Kontakt), ± 16 kV (Luft) (IEC 61000-4-2)
Insulation resistance	> 1000 MOhm at 500 VDC

Limiters



Square - Option "1"



1-axis "Y" - Option „8“



Round - Option "0"



X/Y Plus "+" - Option „9“

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USB specifications (sensor/output options 5 and 6)

Supply voltage 5 V (via USB type A connector)

USB version: 2.0

Operating systems: Windows 7, Windows 8.1, Windows 10, Linux depending on kernel configuration

Cable (included) USB cable (length approx. 198 cm) with USB type A plug

Attached to the joystick body is the PCB for the USB interface. There is no IP protection for the PCB. Power is supplied to the joystick via the interface cable. Most Windows and Linux versions recognize the device without additional drivers. There are two different configurations of the joystick available according to the datasheet:

USB HID-compliant game controller (option 5)

The device identifies itself on the USB bus as a USB 2.0 HID-compliant game controller, i.e. as a joystick. The axis resolution is 10 bits.

USB HID-compliant mouse emulation (USB joystick as a mouse replacement, option 6)

Optionally, the joystick can also be operated as a mouse replacement. In this case, the device identifies itself on the USB bus as a USB 2.0 HID-compliant mouse. The X and Y axes are converted in the movement of the mouse pointer on the screen. Button 1 is a left mouse button, button 2 as right mouse button. Linux is not supported.