

Data Sheet for Joysticks

Hand Joystick

Series 890



- Large heavy duty hand joystick of the highest quality with stock grip handle
- Detection by conductive plastic potentiometers or Hall sensors
- Handles available with button, rocker, or third axis (z rotation) protection class IP65
- Spring Return to Center or Friction Clutch
- Wide range of configuration options for switches, latching positions

The large 890 series hand grip joysticks are specially designed for multi-axis machine control in harsh, demanding environments where quality, tactility and sensor configurability are required. The joysticks are a guarantee of success in demanding applications with up to three axes.

Technical Data Joystick

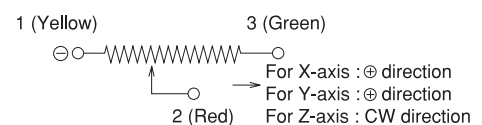
Sensor	Potentiometer or Hall Effect
Expected Life	typ. 5 million cycles
Angle of Movement X-, Y-Axis	$\pm 22^\circ$ to $\pm 26^\circ$ from center
Angle of Movement Z-Axis	$\pm 45^\circ$ to $\pm 50^\circ$
Return to Center Accuracy X/Y	$\pm 2^\circ$
Operating Force X-, Y-Axis	2 to 12 N
Operating Force Z-Axis	0.02 to 0.085 Nm
Protection Class	IP65 (above panel)
Vibrations	10 to 55 Hz 98 m/s ²
Shock	294 m/s ²
Operating Temperature	-20 °C to +65 °C
Weight	ca. 650 g (2 Axes), ca. 750 g (3 Axes)

Technical Data Potentiometer

	X- & Y-Axis Type F	Z-Axis Type D
Technology	Conductive Plastic	Conductive Plastic
Bearing	Sleeve Bearing	Sleeve Bearing
Resistance	10 kOhm	10 kOhm
Resistance Tolerance	$\pm 15\%$	$\pm 15\%$
Independent Linearity Tolerance	$\pm 3\%$ full-scale	$\pm 3\%$ full-scale
Max. Current / Sensitivity V_{out}	1 mA	1 mA
Power Rating at 70 °C	0.2 W	0.3 W
Electrical Rotating Angle	44°	90°
Expected Life (cycles)	typ. 5 million	typ. 5 million

Lead wires (AWG26, length approx. 300 mm) are supplied as standard only when the joystick is configured with a housing.

For versions without a housing, the sensors are directly accessible for connection to their terminals (no cables included). We can supply customized wiring if required.



Note: Max. Voltage < 50 VAC resp. < 75 VDC, additionally max. power rating must be considered.

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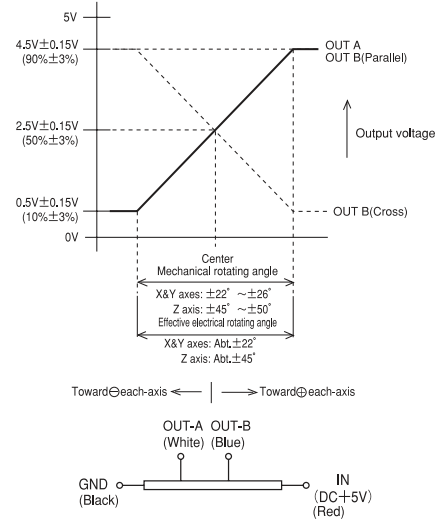
Series 890

Technical Data Hall Sensor

Supply Voltage	5 VDC $\pm 10\%$
Current Consumption	ca. 6 mA
Output Voltage	0.5 to 4.5 V
Impedance	> 10 kOhm
Independent Linearity	$\pm 3\%$
Temperature Drift Output	$< \pm 2.5\% U_{Out} * FS$
Temperature Drift Center	$< 0.5\% U_{Out} * FS$
Dielectric Strength	1 minute @ 250 VAC
Insulation Resistance	> 100 MOhm @ 250 VAC
Operating Temperature	-20 °C to +65 °C
Expected Life	typ. 5 million cycles

Lead wires (AWG26, length approx. 300 mm) are supplied as standard only when the joystick is configured with a housing pot.

For versions without a pot, the sensors are directly accessible for connection to their terminals. We can supply customized wiring if required.



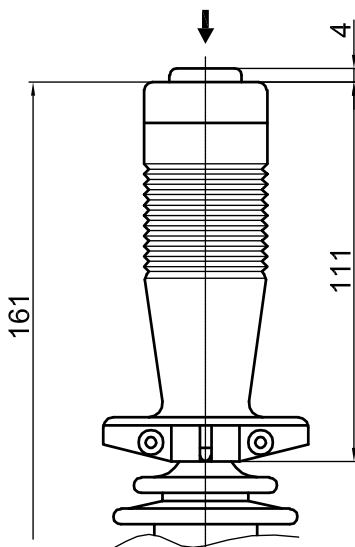
The lead wires are marked. The lead wire colours are mentioned in the brackets in the drawing above.

Technical Data Micro Switches

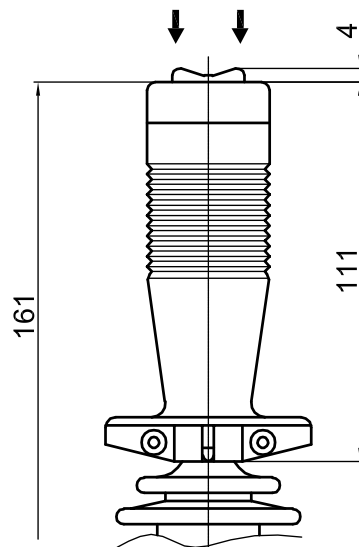
Series 890 joysticks can be fitted with directional switches for the X and Y axes. Up to three switch positions can be defined for each axis. Deflection angles can be specified by the customer. For example, a microswitch can be fitted to detect when the handle is in the centre position (or away from the centre) and additional microswitches can be fitted at $+10^\circ/-10^\circ$ on each axis to detect the degree of deflection for further switching or control scenarios.

	Pushbutton Handle	Micro switches (w/o / with Housing pot)	Micro switch at Center
Voltage, Current	50 VAC, 10 A	50 VAC, 5 A (30 VDC, 100 mA)	50 VAC, 5 A
Expected Life (typ.)	300.000 actions	200.000 (100.000) actions	200.000 actions

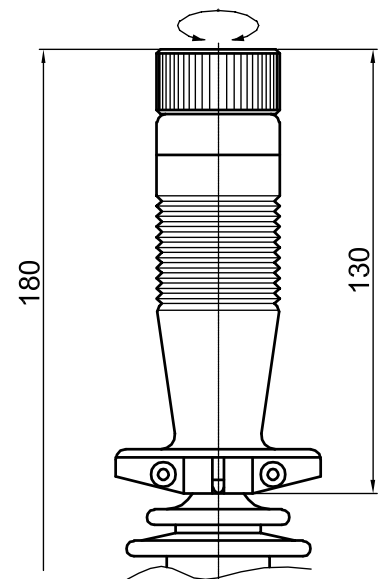
Handle 6 with Pushbutton



Handle A with Rocker



Handle 8 with 3. Axis



Dimensions in mm

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Hand Joystick

Series 890

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

Order Code

Series	890																			
Axes / Functions																				
1 Axis																				1
1 Axis with Pushbutton																				7
1 Axis with Rocker																				5
2 Axes																				2
2 Axes with Pushbutton																				3
2 Axes with Rocker																				6
3 Axes																				4
Sealing																				
Rubber Boot																				5
Return Mechanism^(*)																				
Spring Return to Center Position																				1
Without Spring Return																				2
Friction Clutch with Center Detect Switch																				5
Friction Clutch																				6
Handles																				
Stock Grip „1“, for 1 or 2 Axes																				1
Stock Grip „6“, with Pushbutton, for 1 or 2 Axes																				6
Stock Grip „A“, with Rocker, for 1 or 2 Axes																				A
Stock Grip „8“ incl. 3rd Axis																				8
No Trim Function																				1
Sensor																				
Potentiometer, Type F X-/Y-Axis, Type D Z-Axis																				4
Hall Sensor X-/Y-Axis (Type D Z-Axis if applicable)																				H
Housing^(*)																				
Without Housing pot																				0
With Housing pot																				1
Limiters																				
Round																				1
Square																				2
„L“-Shape																				3
Single Axis Y																				6
Single Axis X																				7
Plus Shape „+“																				9
Micro switches^(*)																				
None																				0
Center detect X & Y (with handle „1“)																				1
2 Position switches, 1 Axis, ON at ±15°																				3
2 Position switches per axis, 2 Axes, ON at ±15° each																				3xy
2 Position switches, 1 axis, ON at ±10°																				4
Center detect, 1 axis (handle „6“)																				5
Center detect, 2 axes (handles „6, 8, A“)																				6
2 Position switches, x axis, ON at ±5°																				7x
2 Position switches, y axis, ON at ±5°																				7y
2 Position switches per axis, 2 axes, ON at ±5°																				7xy
Center detect & position switches, 2 axes, ON at ±5°, handles „6, 8, A“																				8xy
Center detect & position switches, x axis, ON at ±5°, handles „6, 8, A“, w/o housing pot																				8x
2 Position switches / axis, 2 axes, ON at ±max. deflection																				9

(*) For custom versions, the feel of the x and y axes can be customized independently of each other. Versions with detent positions can only be realized without housing.

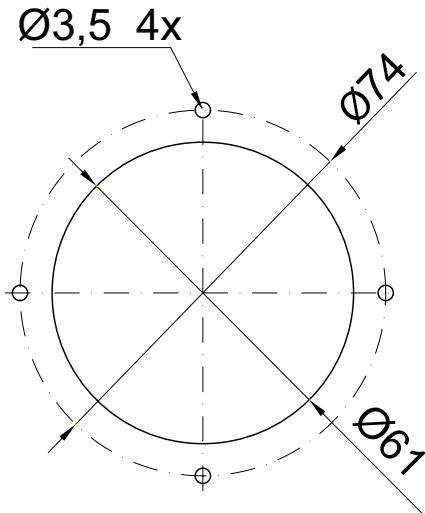
(**) Micro switches can be realized also for different angles and as redundant versions.

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

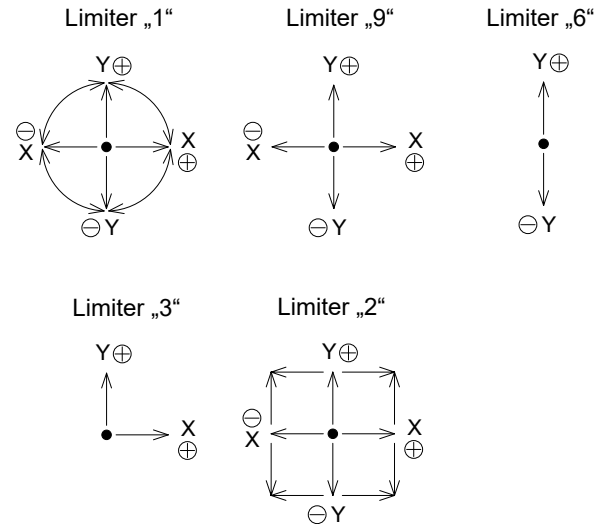
Please contact us. Because of the broad configuration options, we suggest personal advice to find the optimum solution for your requirements.

Mounting Cut-Out and Orientation of Limiters

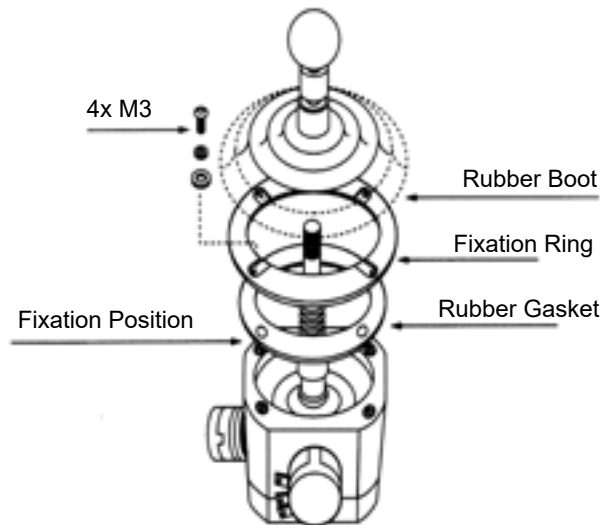
Panel Cut-Out



Limiters



Mounting (schematic)



Dimensions in mm

Limiters



Square - Option "2"



1-axis "X" - Option „7“



Round - Option "1"



1-axis "Y" - Option „6“



L Shape - Option "3"



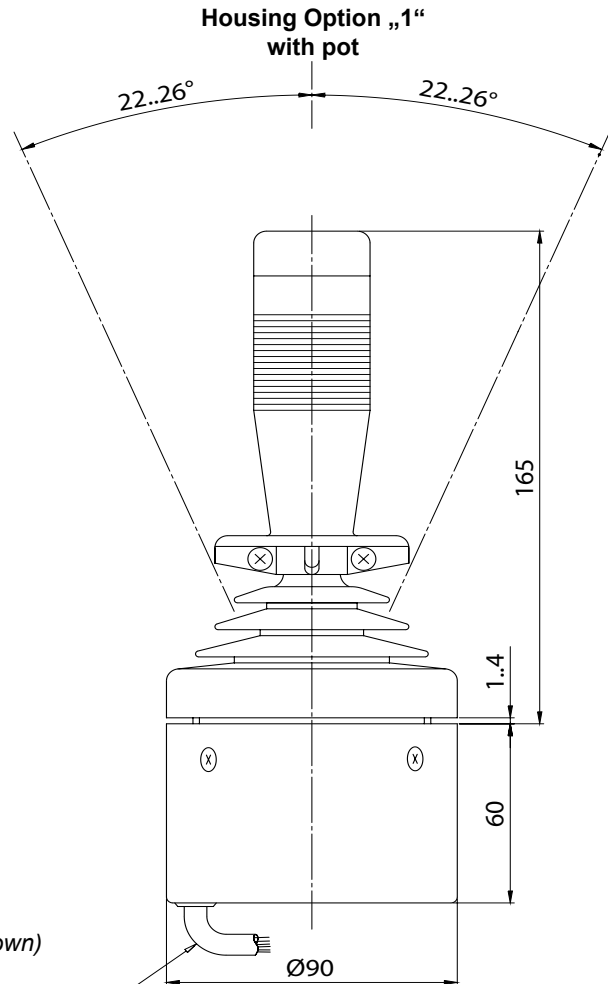
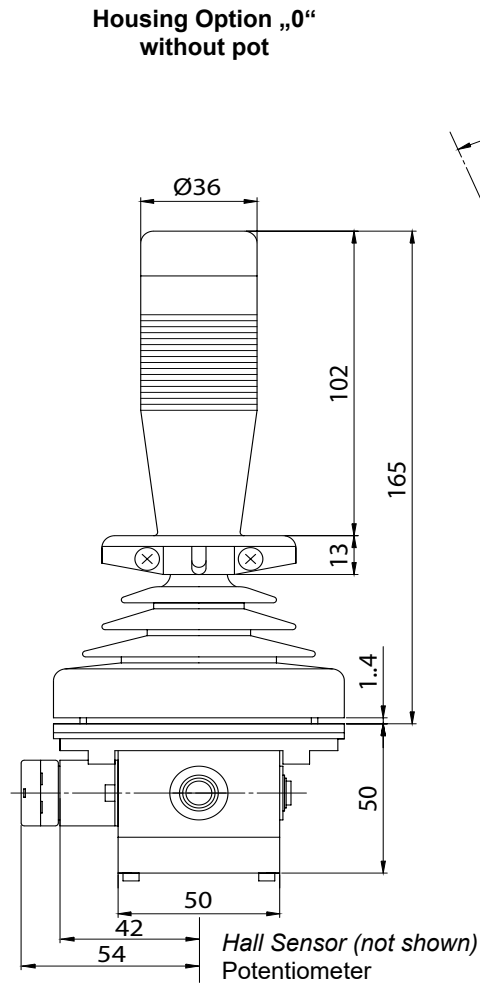
X/Y Plus "+" - Option „9“

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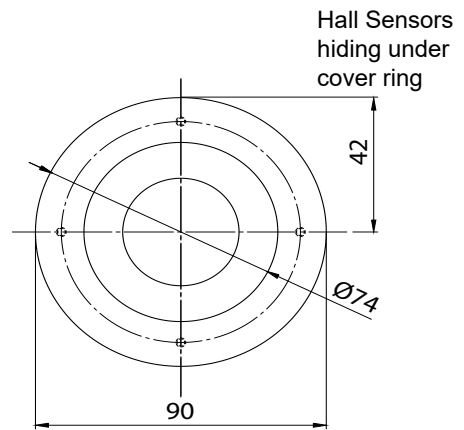
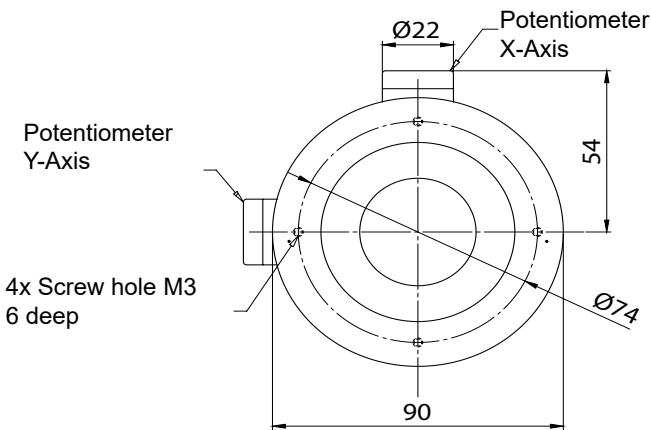
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Drawing



Wires AWG26, Length ca. 300mm.



Dimensions in mm