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)
- IP65
- Spring Return to Center or Friction Clutch
- Wide range of configuration options for switches, latching positions
- Haptics and behaviour of the x and y axis can be adjusted separately

The large Hand Grip Joysticks of the 890 series with stock grip handle were specially developed for the multi-axis control of machines in tough, demanding environments, where the highest requirements on quality and feel must be met and where the sensors must be configurable. The joysticks are a guarantee for success in demanding applications with up to three axes.

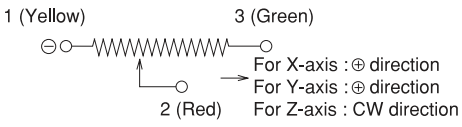
Technical Data Joystick

Sensor	Potentiometer or Hall Effect
Expected Life	typ. 5 million cycles
Angle of Movement X-, Y-Axis	±22°.. ±26° from center
Angle of Movement Z-Axis	±45°.. ±50°
Return to Center Accuracy X/Y	±2°
Operating Force X-, Y-Axis	2..12 N
Operating Force Z-Axis	0,02..0,085 Nm
Protection Class	IP65 (above panel)
Vibrations	10..55 Hz 98 m/s²
Shock	294 m/s²
Operating Temperature	-20°C .. +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	±15%	±15%
Independent Linearity Tolerance	±3% full-scale	±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

Only when the joystick is configured with a housing, lead wires (AWG26, length approx. 300 mm) are supplied as standard.
In versions without a housing, the sensors are directly accessible for connection to their terminals. If case of ongoing demand, we are happy to provide customized cabling for you.



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

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Technical Data Hall Sensor

Supply Voltage	5 VDC ±10%
Current Consumption	ca. 6 mA
Output Voltage	0,5..4,5 V
Impedance	> 10 kOhm
Independent Linearity	±3%
Temperature Drift Output	< ±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 .. +65°C
Expected Life	typ. 5 million cycles

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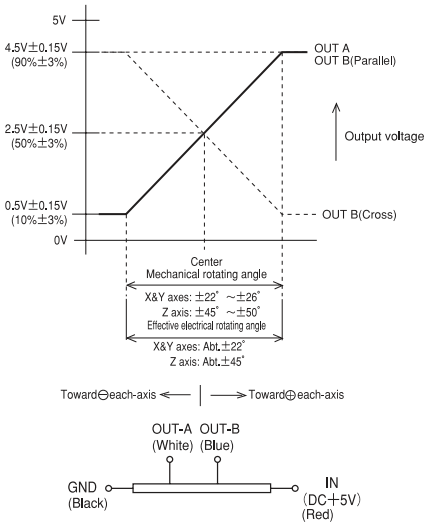


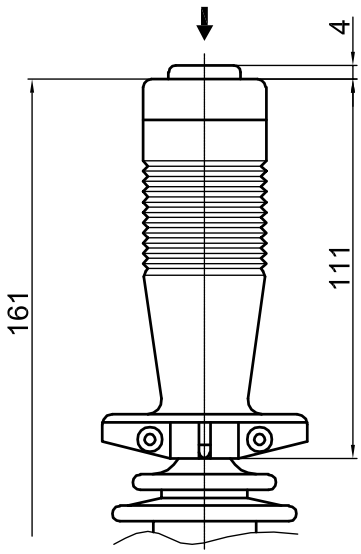
The lead wires are marked. The lead wire colours are mentioned in the brackets in the drawing above.

Technical Data Micro Switches

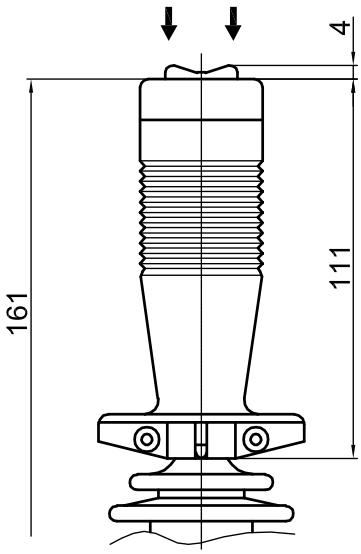
Joysticks of series 890 can be provided with directional switches for X- and Y-axis. For each axis up to three switching positions can be defined. Deflection angles can be specified by the customer. For example, one micro switch can be installed for detecting the handle resting at center position (or when moved away from center), and additional micro switches at +10°/-10° on each axis detecting the degree of deflection for further switching or control scenarios.

	Pushbutton Handle	Micro switches (w/o / with Housing)	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

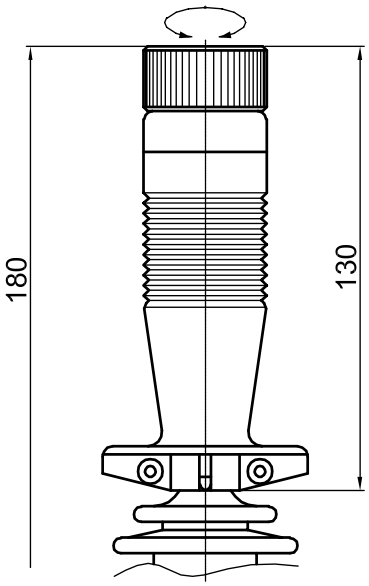
Handle 6 with Pushbutton



Handle A with Rocker



Handle 8 with 3. Axis



Dimensions in mm

Data Sheet for Joysticks

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							
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, for 1 or 2 Axes					1				
Stock Grip, with Pushbutton, for 1 or 2 Axes					6				
Stock Grip, with Rocker, for 1 or 2 Axes					A				
Stock Grip 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								0	
With Housing								1	
Limiters									
Round (Standard)									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 ±5°									2y
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, 1 Axis, ON at ±5°									7x
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, 1 Axis, ON at ±5°, Handles „6, 8, A“, w/o Housing									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.

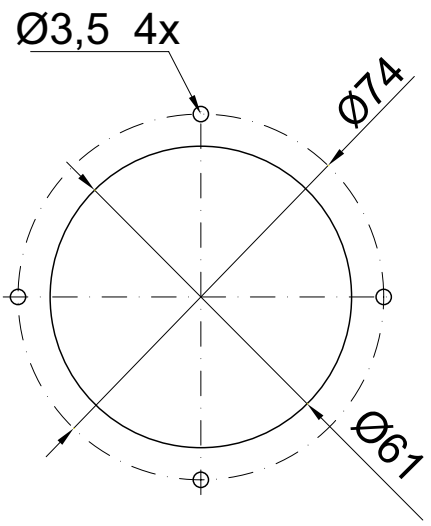
(**) Micro switches can be realized also for different angles and as redundant versions.

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

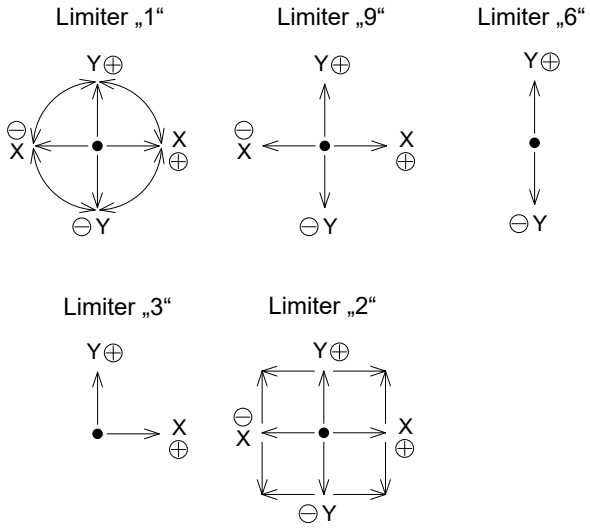
Please contact us. Because of the broad configuration options, we suggest personal advice to find the optimum solution for your requirements.

Mounting Cut-Out and Orientation of Limiters

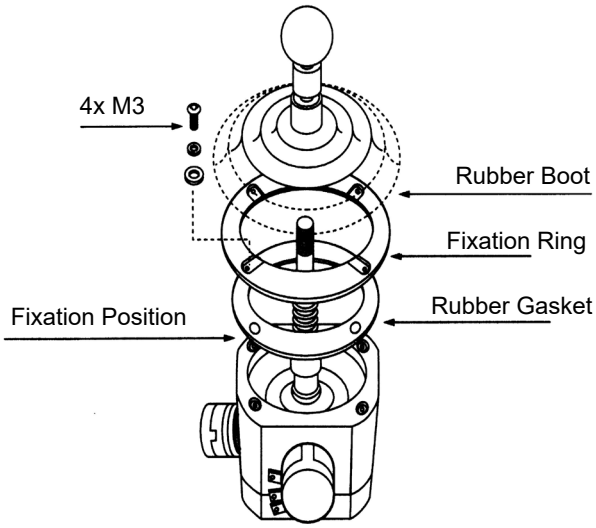
Panel Cut-Out



Limiters



Mounting (schematic)



Dimensions in mm

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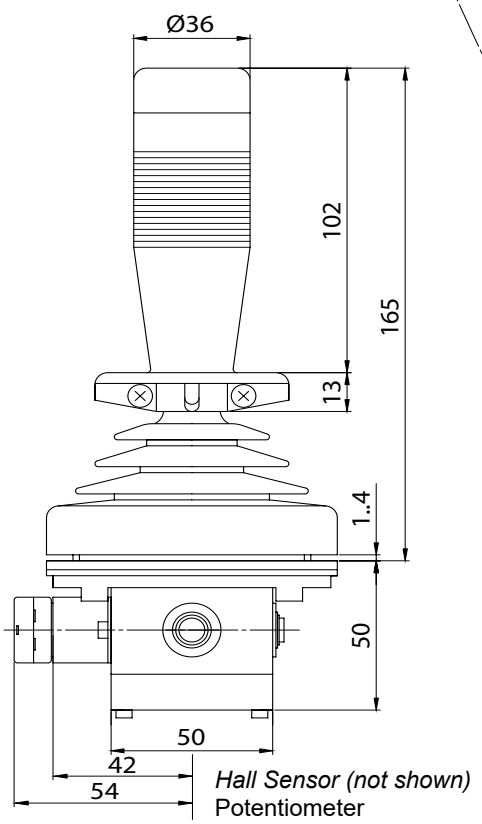
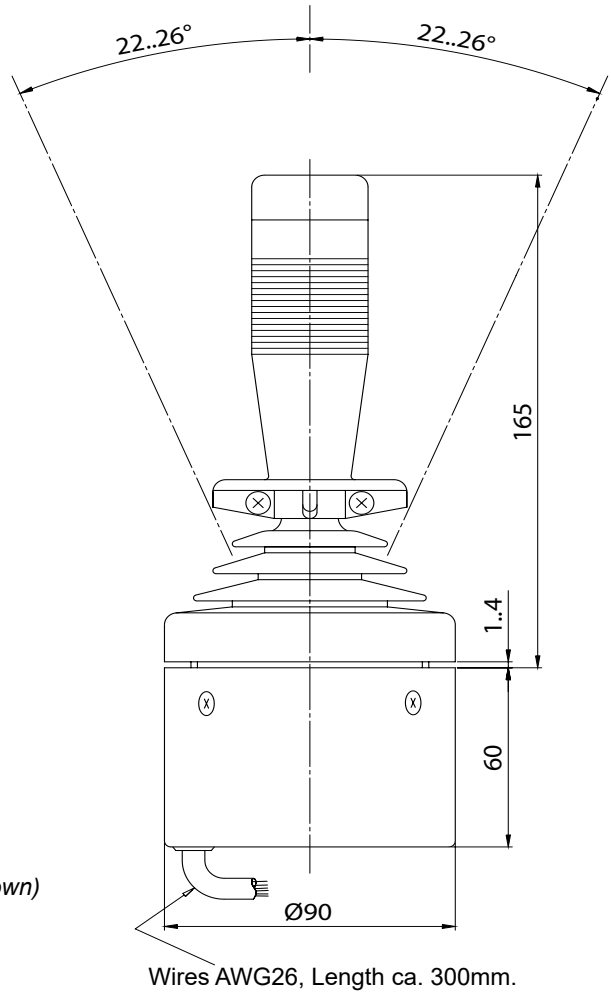
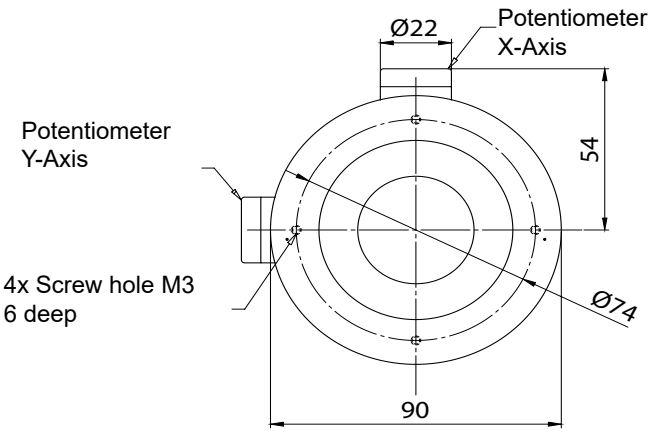
Drawing

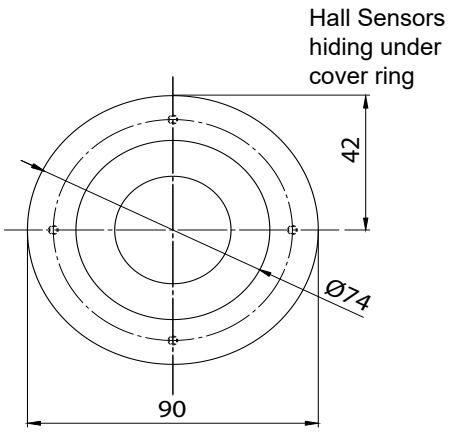
Housing Option „0“



Housing Option „1“







Dimensions in mm