

# Data Sheet for Joysticks

Finger Joystick

Series 829



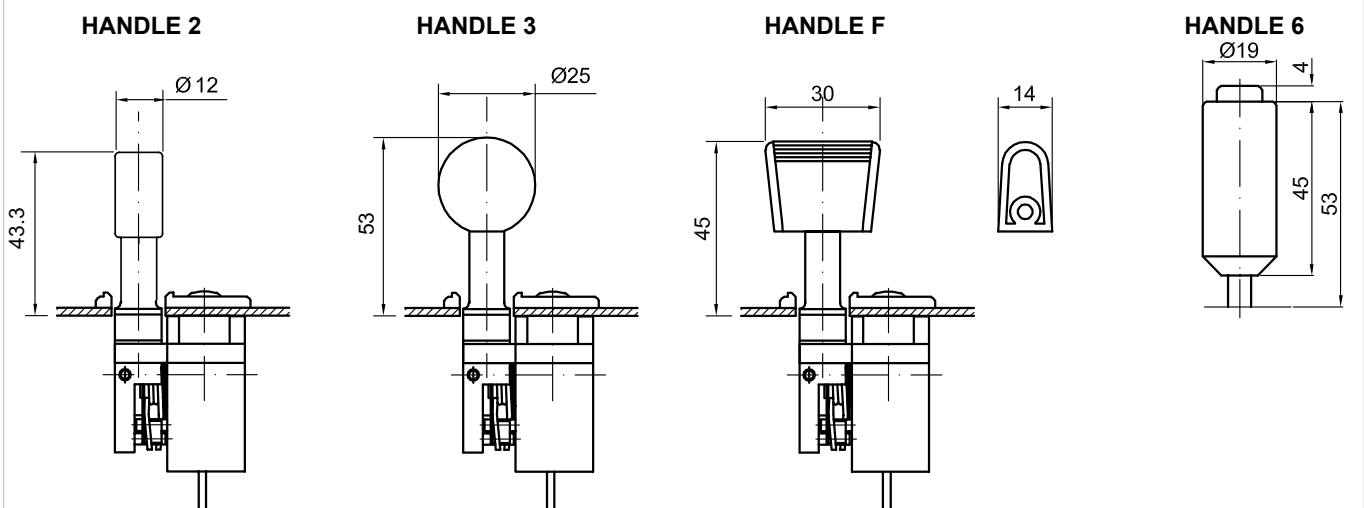
- Exceptional quality of mechanics and sensors
- For demanding applications
- 1 axis, spring return or friction clutch (with or without detent)
- Optional with Hall sensors or potentiometers
- Resting position of handle in center position, at negative max. deflection or at any angle using a friction clutch
- Optional extension for current output conversion (4 to 20 mA)

The 829 series joystick meets the highest quality standards. Its strengths lie in demanding single-axis applications where durability and reliability are paramount. The solid mechanical construction and the resulting high quality haptics provide a safe operating feel and enable the user to control machines precisely. The 829 series offers a wide range of configurations to suit almost any application.

## Technical Data Joystick

Angle of movement	$\pm 20^\circ$ from center
Operating force	1 to 2.5 N (1 to 5.5 N with rubber boot)
Return to center accuracy	$\pm 1^\circ$
Operating temperature	$-20^\circ\text{C}$ to $+60^\circ\text{C}$
Vibration (MIL-STD-202F-204)	10 to 55 Hz 98 m/s <sup>2</sup>
Shock (MIL-STD-202F-213)	294 m/s <sup>2</sup>
Lifetime	typ. 2 million cycles
Weight	ca. 100 g
Protection grade	IP65 with rubber boot (handles without button), IP40 with rubber boot for handle 6

## Handle versions



Dimensions in mm

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

## Order Code

Description	Selection: <b>standard=black/bold</b> , possible <i>options=grey/italics</i>							
<b>Series</b>	<b>829</b>							
<b>Axes:</b> <b>1 Axis</b>		<b>1</b>						
<b>Sealing:</b> <b>Rubber boot</b> <i>Square bezel (no sealing)</i>			<b>5</b> 8					
<b>Return mechanism:</b> <b>Spring return</b> <i>Friction clutch with centre detent</i> <i>Friction clutch (no detents)</i> <i>Spring return to negative limit (-Y position)</i>				<b>1</b> 5 6 8				
<b>Handles:</b> <i>Cylinder</i> <b>Ball tip</b> <i>Flat</i> <i>Cylinder, with pushbutton (IP40 above panel)</i>					2 <b>3</b> F 6			
<b>Mounting plate:</b> <b>none</b> <i>With mounting plate</i>						<b>1</b> 4		
<b>Sensors:</b> <b>Potentiometer type K</b> <i>Hall sensor type H, single output, 0.5 to 4.5 V</i> <i>Hall sensor type H0505, single output, 0.0 to 5.0 V</i> <i>Hall sensor type HP, dual parallel output, 0.5 to 4.5 V</i> <i>Hall sensor type HX, dual crossed output, 0.5 to 4.5 V / 4.5 to 0 V</i> <i>No sensor</i>							<b>K</b> H H0505 HP HX 0	
<b>Micro switches:</b> <b>none</b> <i>Center detect switch</i> <i>2 micro switches, ON @ ±5°</i> <i>Micro switch at negative limit (-Y position)</i>								<b>0</b> 1 2 8
<b>Additional options:</b> <i>Custom resistance values potentiometer (1k, 5k)</i> <i>Center tap (for potentiometers)</i> <i>Output 4..20 mA, current transformer integrated in cable outlet, supply 24 VDC*</i>								RxK CT 2442

\* Only available for potentiometers or Hall sensor option 0505. See information below.

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

For example:

- Specific switch configurations
- Customer-specific cable

## Order example

### Requirements:

Round handle, rubber boot, with mounting plate, Hall sensor, current converter with output 4 to 20 mA

### Example for order code:

829 1 5 1 3 4 H 0 2442

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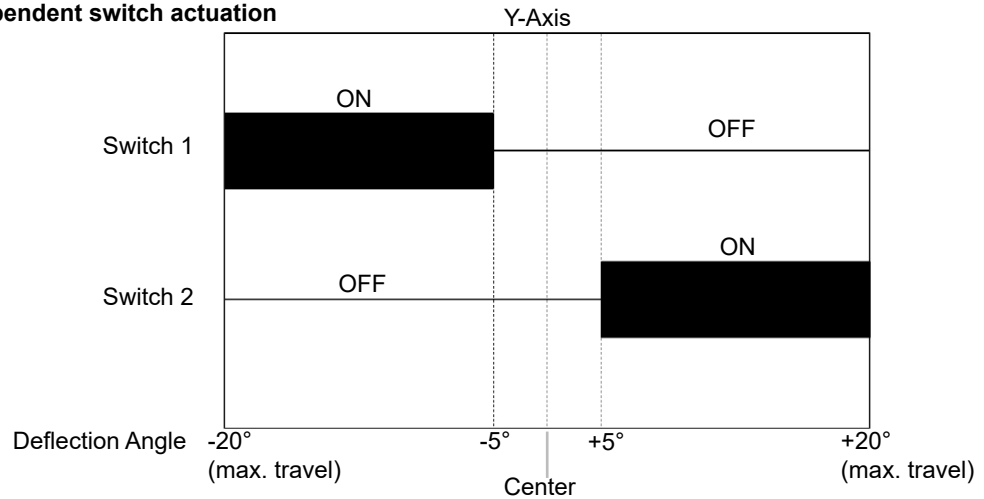
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## Switches

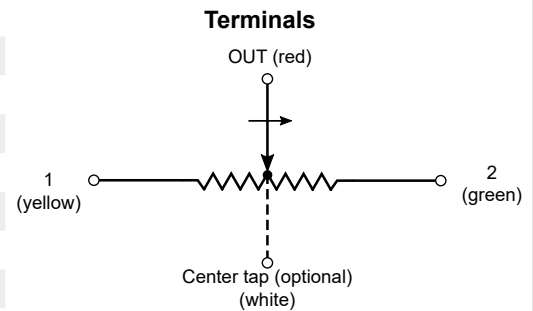
### SCHEME of deflection-dependent switch actuation

e.g. "Switches ON @  $\pm 5^\circ$  "



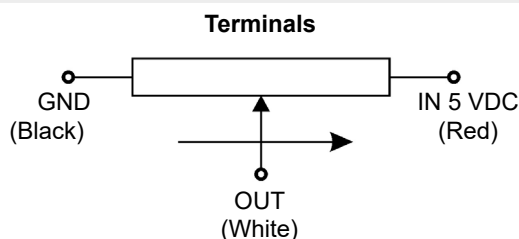
## Technical Data Potentiometer Type K

Technology	Conductive plastic; bearing
Nominal total resistance	10 kOhm
Resistance tolerance	$\pm 20\%$
Independent linearity	$\pm 5\%$ full-scale
Power rating @ 40°C	0.1 W
Effective electrical angle of rotation	40°
Lifetime	typ. 2 million cycles
Max. wiper current	1 mA (short-time)
Termination	Lead wires AWG20, length ca. 300 mm



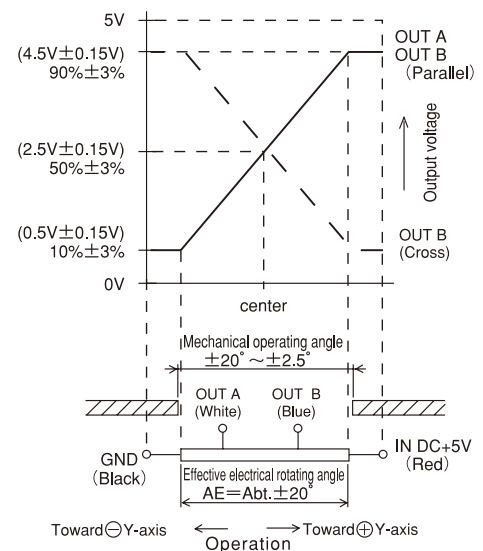
## Technical Data Hall Sensor Type H / H0505

Technology	Hall sensor
Supply voltage	5 VDC $\pm 10\%$
Power consumption	ca. 6 mA
Output voltage ( $U_{out}$ )	0.5 V to 4.5 V (option H) 0.0 to 5.0 V (option H0505)
Independent linearity	$\pm 3\%$ full-scale
Load resistance	> 100k Ohm
Temperature drift output	< $\pm 2.5\%$ $U_{out}$ full-scale
Temperature drift center position	< 0.5% $U_{out}$ full-scale
Insulation resistance	> 100 MOhm @ 250 VAC
Lifetime	typ. 5 million cycles

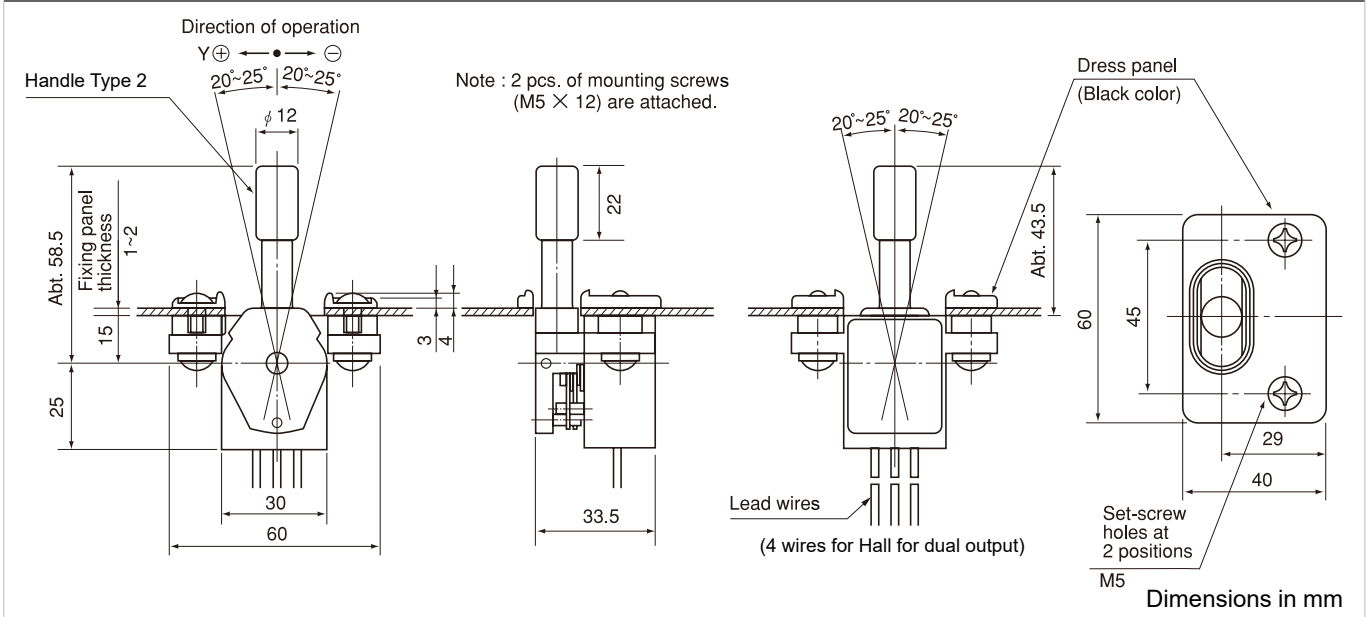


Wires AWG20, Length ca. 300 mm

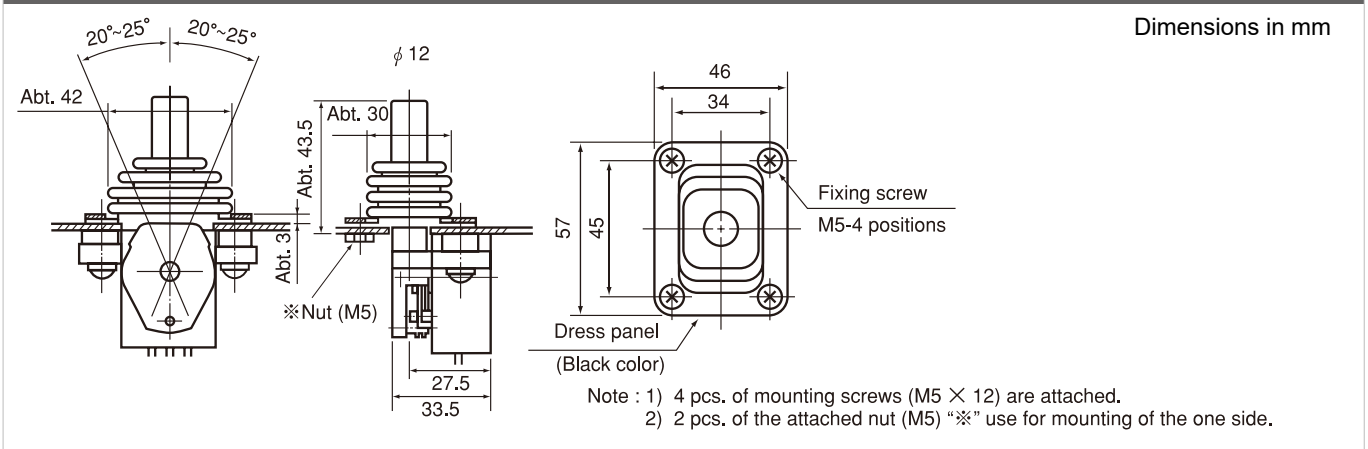
### Output signal for option H



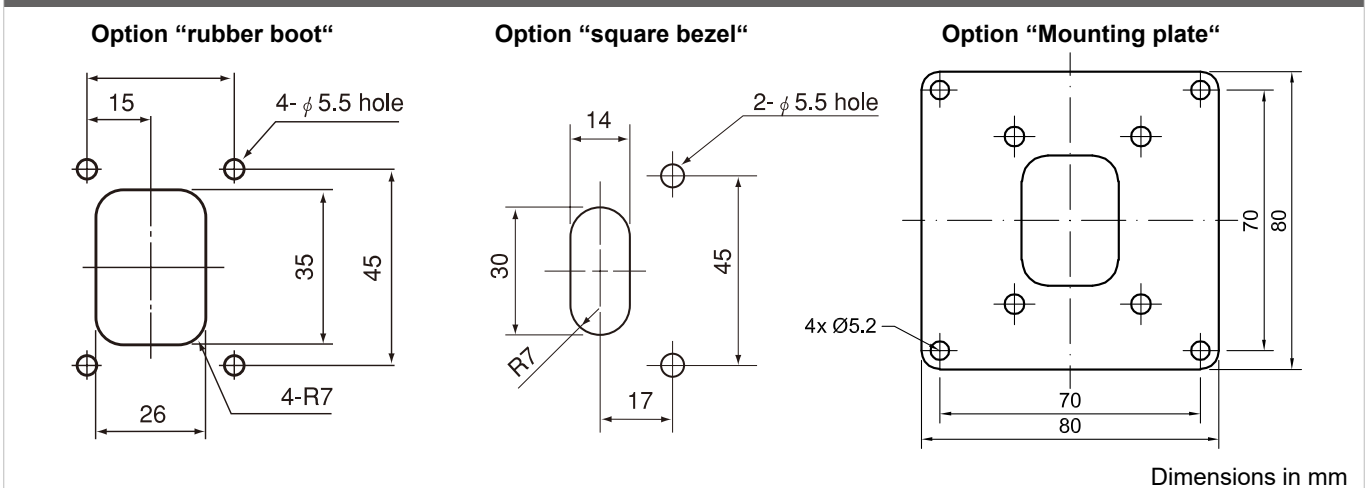
### Technical drawing - for option sealing (not spring return) „8“ with rectangular bezel



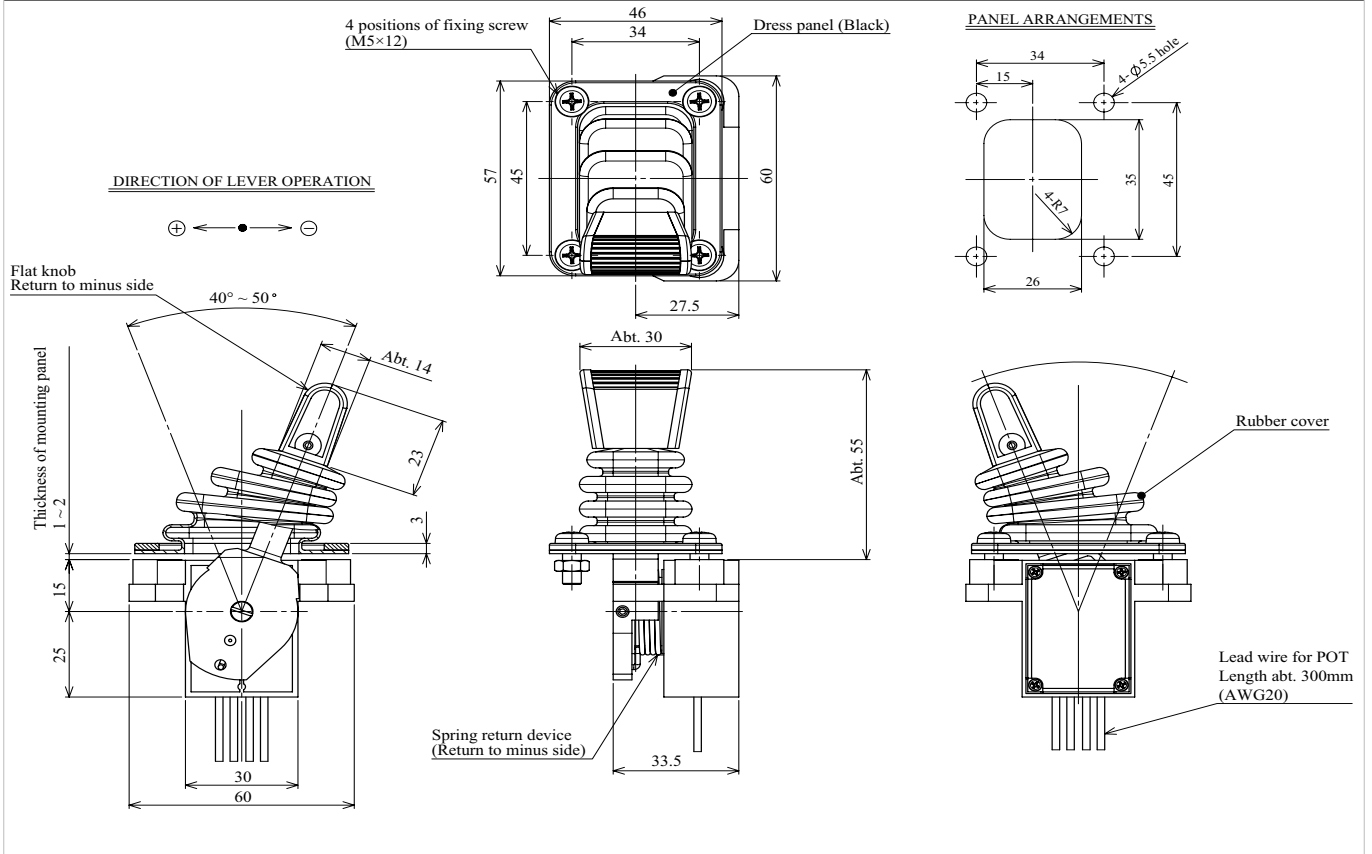
### Technical drawing - for option sealing „5“ with rubber boot



### Panel cut-outs and mounting plate option



### Technical drawing - for option spring return „8“ with rectangular bezel



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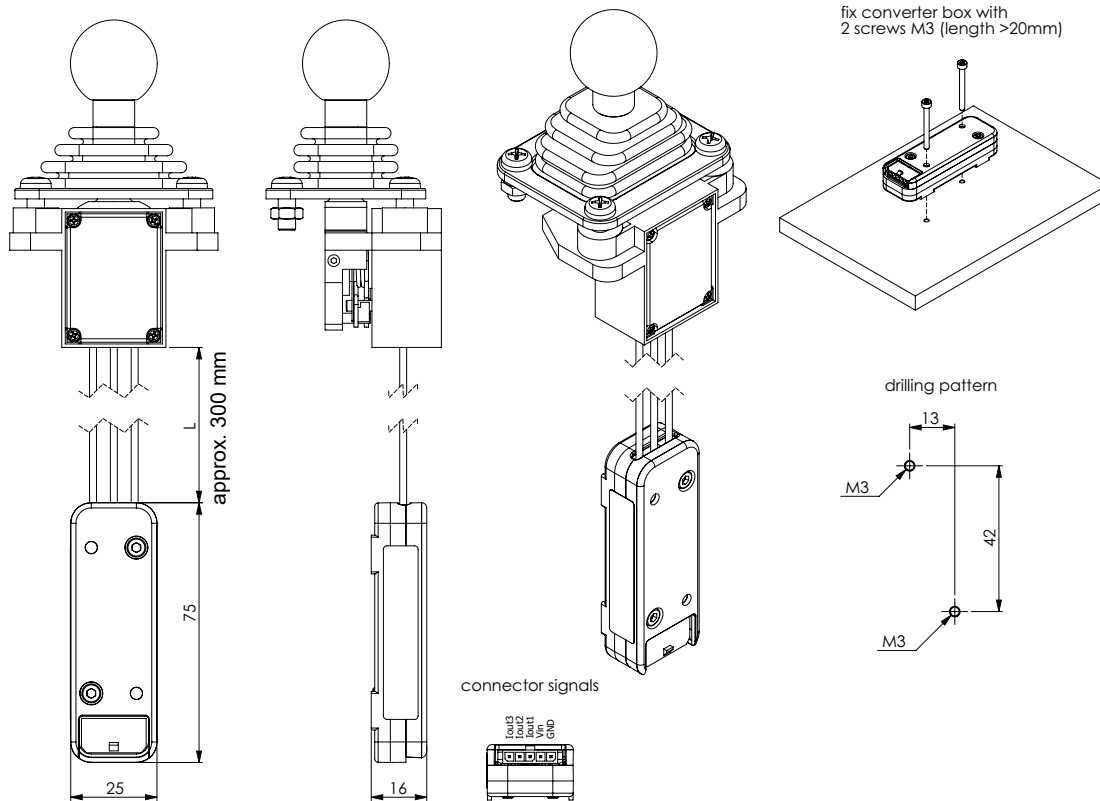
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### Technical data current converter (additional option 2442)

Supply voltage	12 to 24 V
Current consumption	Maximum consumption <100 mA, Consisting of: 1) Basic consumption voltage transformer 40 mA + 2) sum of currents per channel (4..20 mA, max. 30 mA) + 3) consumption joystick (max. 30 mA)
Output signal	4 to 20 mA (max. 2 channels)
Operating temperature	-20°C to +60°C
Independent Linearity	< ±1% (note: this is added to the one of the mechanics and the sensor)
Temperature-dependent drift	< ±0.01%/°C
Insulation resistance	> 1000 MOhm at 500 VDC
Terminating resistor	min. 50 Ohm (Attention: this resistance must be provided by the customer!), recommended 250 - 500 Ohm

The current transformer is a separate electronics box that can be ordered as an extension to the joystick. The converter supplies the sensor of a joystick with voltage and converts the voltage signal (0 to 5V) of the joystick into a current signal of 4 to 20 mA. The current transformer can provide up to 3 analogue signals as current outputs, while the joystick 829 offers up to two channels. It is equipped with a Molex connector type 43650-0501. The converter box can be mounted by the customer using two M3 screws (see drawing for details). Tensile loads on the converter connections must be avoided.



Immunity			
Port	Disturbance type	EMC Specification	Test Level
Housing	ESD	IEC 61000-4-2	4 kV Contact / 8 kV Air
	Conducted Sinus Wave	IEC 61000-4-3	3 V/m 80 MHz - 6 GHz
DC Power	BURST	IEC 61000-4-4	1 kV (5 kHz)
	Conducted Sinus Wave	IEC 61000-4-6	3 V (150 kHz-80 MHz)
I/O	BURST	IEC 61000-4-4	1 kV (5 kHz)
	Conducted Sinus Wave	IEC 61000-4-6	3 V (150 kHz-80 MHz)

Emission			
Port	Disturbance type	EMC Specification	Class
AC/ DC Power	Emission	CISPR 55011	B
Housing	Emission	CISPR 55011	B

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## Technical data Hall sensor option H2442

Supply voltage	24 ± 0.5 V
Current consumption	ca. 16 mA
Output signal	4 to 20 mA
Load resistance	500 Ohm (must be applied, otherwise damage might occur)
Independent linearity	±3%
Insulation voltage	±8 kV (contact), ±16 kV (air) (IEC 61000-4-2)
Insulation resistance	> 1000 MOhm at 500 VDC

