

# Data Sheet for Joysticks

## Thumb Joystick

## Series TRY14



- Contactless Hall sensors
- Optionally with pushbutton function in handle
- Mounting option threaded housing
- Waterproof, IP class 68 (1 metre) / IP69K

The TRY14 series are miniature proportional thumb joysticks with Hall sensors for long life and consistent signal quality. The signal output is available in different versions, such as dual output or PWM output. The size of these joysticks is comparable to widely used gamepads, but integrated into an industrial housing with a reliable mechanism. Typical applications range from remote control, armrest integration or integration into larger joystick handles to swivel arms.

### Technical Data Joystick

Sensor	Hall Effect
Power Supply	5.0 ± 0.5 VDC transient free
Resolution	1.22 mV
Return to Center Voltage Tolerance	±200 mV
Expected Life	1 million cycles, valid for versions without pushbutton
Output Signal	0 to 5 V / 0.5 to 4.5 V / 0.25 to 4.75 V / USB / PWM (further see order code)
Mechanical Angle of Movement X-Y-Axis	50°
Operation Force X-Y-Axis	3.1 N ± 0.5 N
Max. Force applied vertical	200 N (on handle)
Max. Force applied horizontal	150 N (on handle)
Operating Temperature	-40°C up to +85°C
Storage Temperature	-40°C up to +85°C
Sealing	IP68 / IP69K (sealing of panel opening excluded)
Panel thickness	max. 2.03 mm

### Technical Data Pushbutton, Handle F

Electrical life	100.000 cycles
Rating	50 mA, 12 VDC
Terminal	Brass with silver plating
Contact resistance	100 mΩ max.
Insulation resistance	100 MΩ min. 500 VDC
Dielectric strength	250 VAC / 1 minute
Contact arrangement	1 pole, 1 throw
Operation Force	6.7 N
Stop strength	Max. 29.4 N vertical static load for 15 seconds
Operating Temperature	-25°C to +70°C
Storage Temperature	-30°C to +85°C
Vibration resistance	MIL-STD-202F METHOD 201A
Shock resistance	MIL-STD-202F METHOD 213B

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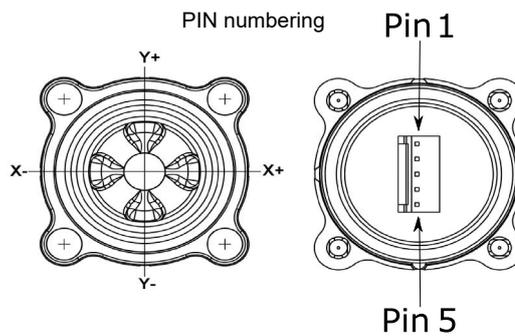
## Connection

Function	Wire colour <sup>(1)</sup>	TE Connector standard <sup>(2)</sup>	TE Connector dual output <sup>(3)</sup>
Ground & pushbutton common	Black	Pin 4	Pin 2
Supply +5 VDC	Red	Pin 2	Pin 5
Output X-axis	Blue	Pin 3	Pin 3
Output X-axis dual output	Blue/White	-	Pin 7
Output Y-axis	Yellow	Pin 1	Pin 6
Output Y-axis dual output	Yellow/Black	-	Pin 4
Pushbutton (handle F)	Orange	Pin 5	Pin 1
Ground redundant dual output	Black/White	-	-
Supply redundant dual output	Red/White	-	-

<sup>(1)</sup> Wire AWG22 or AWG28 (ref. to order description)

<sup>(2)</sup> 5 position connector TE 3-647166-5, pitch 2.54 mm

<sup>(3)</sup> 7 position connector TE 3-647166-7, pitch 2.54 mm



PLASTIC THREADED HOUSING

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## Order Description

Description	Selection: <b>standard=black/bold</b> , <i>possible options=grey/italics</i>									
<b>Series</b>	<b>TRY14</b>									
<b>Axes/Functions:</b>										
1 Axis		1								
1 Axis with pushbutton		6								
<b>2 Axes</b>		<b>2</b>								
2 Axes with pushbutton		3								
<b>Mounting options:</b>										
Rubber boot without bezel				5						
Rubber boot, drop-in mounting				6						
<b>Rubber boot, below panel mounting</b>				<b>7</b>						
Metal threaded housing				8						
Plastic threaded housing				9						
<b>Return mechanism:</b>										
<b>Spring return</b>					1					
<b>Handles:</b>										
<b>Handle A</b>						<b>A</b>				
Handle F with pushbutton (not with output 2 & 4, not with mounting option 9)						F				
Handle B						B				
Handle C						C				
Handle D						D				
Handle E						E				
Handle G (not mounting option 8 & 9)						G				
Handle H low profile (not mounting option 8 & 9)						H				
Handle I						I				
Handle J						J				
Handle K						K				
No handle						0				
<b>Limiters:</b>										
<b>Square</b>							<b>1</b>			
X-Y guided feel							4			
X-Y "Plus +"							5			
Single axis X							8			
<b>Output signal:</b>										
0 to 5.0 V (rail to rail)								1		
0.25 to 4.75 V								2		
<b>0.5 to 4.5 V</b>								<b>3</b>		
1 to 4 V								4		
PWM								P		
USB HID-compliant game controller <sup>(1)</sup>								5		
USB HID-compliant mouse emulation <sup>(1)</sup>								6		
<b>Output signal options:</b>										
<b>none</b>									<b>0</b>	
Dual parallel <sup>(2)</sup>									1	
Dual parallel redundant <sup>(3)</sup>									2	
Dual inverted <sup>(2)</sup>									3	
Dual inverted redundant <sup>(3)</sup>									4	
<b>Connection</b>										
<b>Wires AWG 28, 25 ± 1.27 cm</b>										<b>1</b>
Wires AWG 22, 25 ± 1.27 cm										2
TE Connector, pitch 2.54 mm <sup>(4)</sup>										3
TE Connector, pitch 2.54 mm <sup>(4)</sup> with 10" mating harness										4
Devices with output signal "5" and "6" (USB) <sup>(1)</sup>										--

<sup>(1)</sup> Overmold cable with USB male type connector, length ca. 1.75 m. Linux is not officially supported.

<sup>(2)</sup> Common power supply of signals

<sup>(3)</sup> Individual power supply for each output signal; only in combination with connection "1" or "2"; not in combination with handle option "F"

<sup>(4)</sup> Not with output options 2 and 4. 5- resp. 7-position, ref. to sect. "Wiring"

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

- Redundant output signals (inverted or parallel)
- Increased return-to-center spring tension
- Voltage regulator
- Customer-specific cables

## Limiters



Square - Option "1"



1-axis "X" - Option „8"



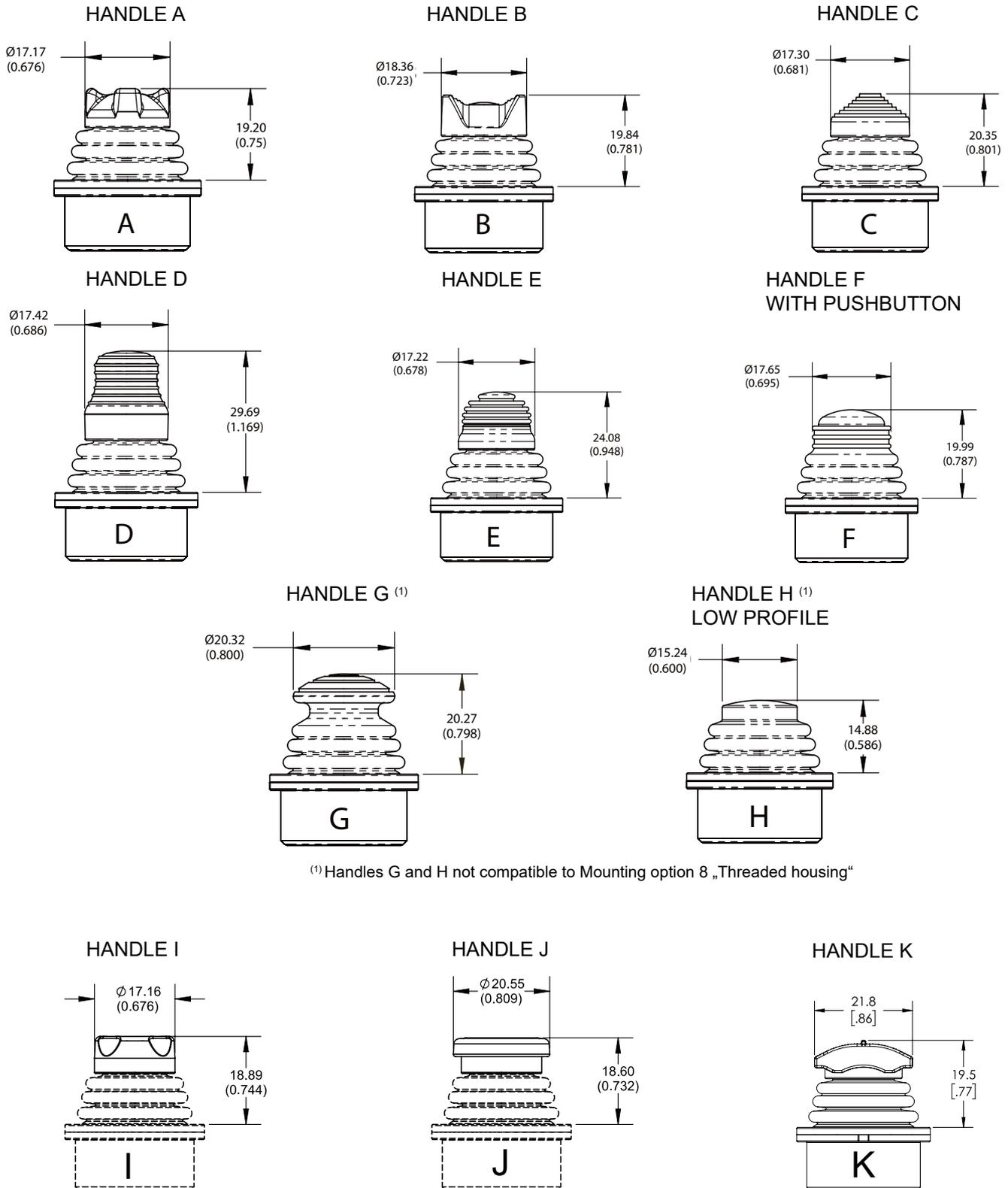
Square  
"guided feel" <sup>(1)</sup> - Option "4"



X/Y Plus "+" - Option „5"

<sup>(1)</sup>"guided feel" still allows the joystick handle to be deflected omni-directionally, but as the operation force needed for the main axes is slightly below the force needed for diagonal deflection the resulting impression is that of a „guided movement".

### Drawings Handles

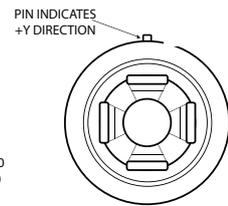
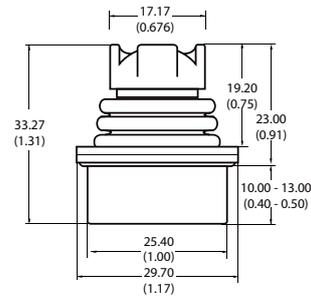


<sup>(1)</sup> Handles G and H not compatible to Mounting option 8 „Threaded housing“

All Dimensions in mm (inch)

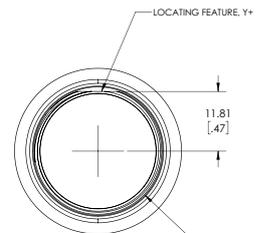
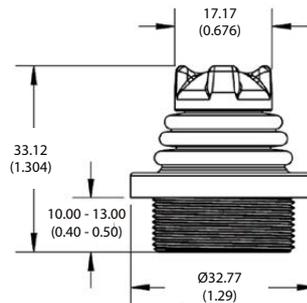
## Drawing DIMENSIONS

### PLASTIC HOUSING

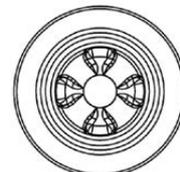


Top view

### METAL THREADED HOUSING

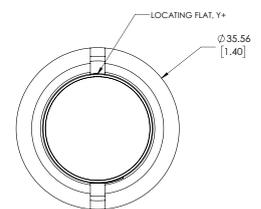
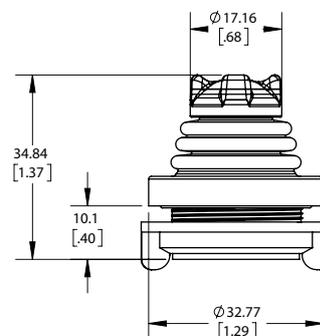


Bottom view

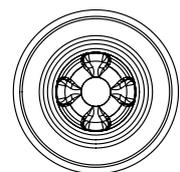


Top view

### PLASTIC THREADED HOUSING



Bottom view



Top view

All Dimensions in mm (inch)

# Data Sheet for Joysticks

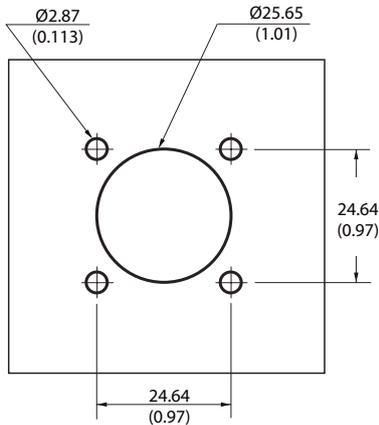
Thumb Joystick

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## Drawing MOUNTING CUTOUT

### PLASTIC HOUSING - DROP-IN (MOUNTING OPTION 6)

=> Installation depth below panel 16.02 mm

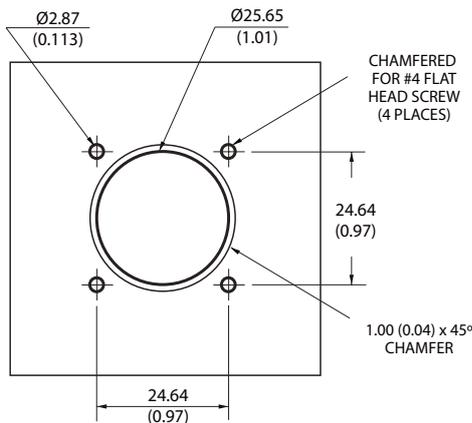


4 x PUSH IN CONNECTORS



### PLASTIC HOUSING - REAR MOUNT (MOUNTING OPTION 7)

=> Max. Panel Thickness 2.032 mm



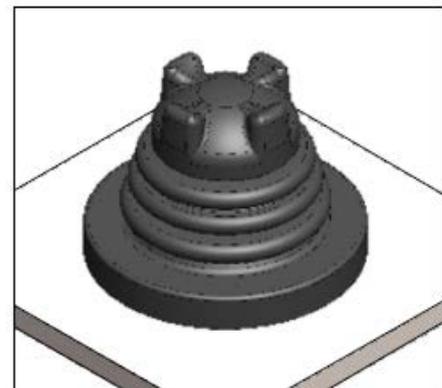
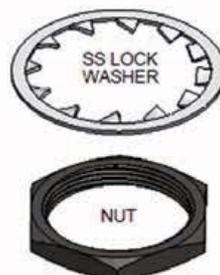
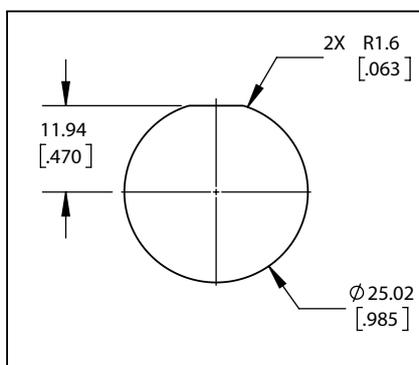
4 x 1/2 FH SS PHIL SCREW



### THREADED HOUSING - DROP-IN (MOUNTING OPTIONS 8 & 9)

=> Installation depth below panel 14.55 mm

=> recommended torque 13.6 Nm



All Dimensions in mm (inch)

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## USB specifications (output options 5-6)

Supply voltage:	5 V
Max. current consumption:	70 mA
USB version:	2.0
Operating systems:	Windows 7, Windows 8.1, Windows 10, (Linux depending on kernel configuration)
Cable outlet:	Overmold cable with USB male type A connector, length ca. 1.75 m

The USB controller is integrated in the joystick housing. The joystick is powered via the interface cable. Windows systems recognize the device without additional drivers. Linux is not officially supported.

There are two different configurations of the joystick available according to the data sheet:

### 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 12 bits (0 to 4095).

### 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. The third axis acts as an additional input element similar to a mouse wheel and can be assigned various functions by the user. Button 1 is a left mouse button, button 2 is a right mouse button.