

# Data Sheet for Joysticks

Finger Joystick

Series 847



- Dual redundant outputs
- IP67 sealed
- 2 lever heights: 48mm and 60mm
- 5 lever colors

Series 847 is offering paddle joysticks of high precision and quality - claims that are not only supported by sculpted grips with soft touch, but also by technical properties. Contactless Hall technology paired with a smooth and easy to operate mechanic are resulting in a long-lasting and reliably working joystick, specially suited for mild to extreme environments in mobile remote controls, cleaning machines, material handling and agricultural vehicles. Two different device geometries allow to choose the one optimally suiting the application needs.

## Technical Data

Sensor	Hall effect
Supply Voltage Vsupply	5VDC ±0,5V transient free
Output Voltages	0..5 V / 0,5..4,5 V (Dual Output), PWM optional
Center Voltage	Vsupply/2 ± 5% * full scale
Current Consumption	< 20mA
Switch Output	Open Drain, internal Pull-Up 1,5kΩ to Vsupply, smoothed to 0V with 100nF
Loads	Minimum 10 kΩ, >100kΩ recommended
Mechanical Operating Angle	60° (±30° from center)
Max. load to mechanism	Horizontal: 75N / Vertical: 1K08 (BSEN62262:2002)
Life Cycles	10 million cycles
Operating Temperature	-25°C..+70°C
Storage Temperature	-40°C..+85°C
Seal above Panel	IP67 above panel (with gasket) - BS EN 60529:1992+A2:2013
Damp Heat	BS EN 60068-2-78:2002, 21 days @ +85°C 85%RH
Salt Spray	BS EN 60068-2-11:1999, 48 hours @ +35°C with 5% NaCl
Conducted Emissions	CISPR 25:2008 Ed. 3.0
Radiated Emissions	CISPR 25:2008 Ed. 3.0, EN61000-6-4:2011
Radiated Immunity	ISO 11452-2: 2004 (150V/m), EN61000-6-2: 2005
Conducted Immunity	ISO 11452-4:2011
Signal Cable Transients	EN 6100-6-2:2005
AC Magnetic Field Immunity	MIL-STD-461F
ESD	ISO 10605: 2008 inc A1: 2014 (8kV contact / 15kV air discharge) EN61000-4-2
Vibration	ISO15003 level 1 in 3 axes 10...350Hz, Level 2, 8 hours/axis
Bump	BS EN 60068-2-27:2009 40g 6ms half sine, 50 shocks in each sense of each axis, total 300 shocks
Freefall drop	BS EN 60068-2-31:2008, 1000mm onto all faces and edges
Shock	BS EN 60068-2-27:2009 50g 6ms half sine, 3 shocks in each sense of each axis, total 18 shocks

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## Order Code

<b>Series</b>	847					
<b>Paddle</b>						
60mm height above panel		1				
48mm height above panel		2				
<b>Lever Operation</b>						
Spring Return to Center = 0°			1			
<b>Paddle Inserts</b>						
Black				A		
Red				B		
Blue				C		
Yellow				D		
Green				E		
<b>Output Options</b>						
Dual Output, signals parallel (standard)					1	
Dual Output, signal 2 inverted					2	
PWM Signal					3	
<b>Output Signal</b>						
0 .. 5,0V (rail to rail)						5
0,5 .. 4,5V						4
<b>Switching Points</b>						
No Switches						0
Switching at ±5°						1
Switching at ±15°						2
Switching at ±30°						3



## Wiring

PIN	Function
1	Vsupply A
2	Switch 1(+)
3	Ground A
4	Output A
5	Output B
6	Ground B
7	Switch 2 (-)
8	Vsupply B

(-) direction:  
Decreasing  
Signal Output



(+) direction:  
Increasing Signal  
Output

Connection via 8-pole connector, 2,54 pitch. Cable not included.  
Please contact us for individual cable configurations.

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## Information on „Output Options“ and „Switching Points“

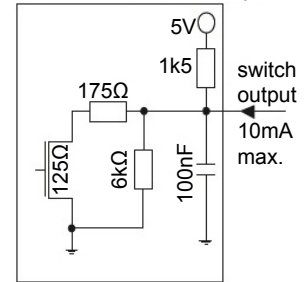
The 847 series joystick is configured as two “electrical” controls in one mechanical package. The Paddle operates from 5V and provides two proportional outputs. The second output is accurate to the first within +/-3% of the power supply. The power supply for the secondary output is also completely independent. Customers may choose their preference of voltage outputs. The secondary output can be of the same or inverse polarity to the primary wiper. For example, with a secondary inverse output, the first and second outputs can be summed and compared to zero to verify that the joystick is operating correctly. Paddles having two identical outputs of the same polarity may be used to drive two identical dual redundant circuits

### Selectable „Switching Points“

The joystick incorporates two Hall effect switches. The angle of the lever at the switch trigger point can be selected when ordering. If no switches are specified then the output on pins 2 and 7 will be unused.

The outputs are configured as ‘open drain’ type with a 1K5 pull up resistor to 5V.

Equivalent circuit for switch output



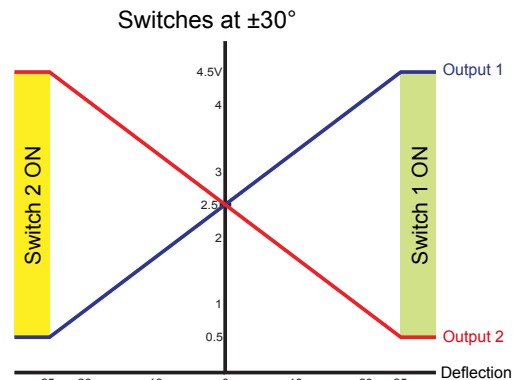
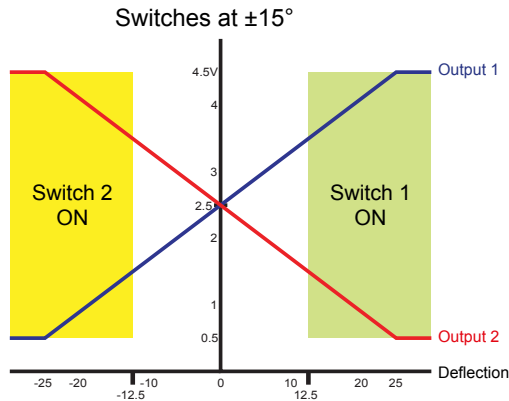
### Output Impedance

The voltage outputs at center and at each end of travel are specified across an infinite load, with no current flowing. The output impedance specified in the electrical specification should be taken into account when designing a system. Load resistance of less than 10K Ohms is not recommended (also ref. to „Technical Data“ page 1)

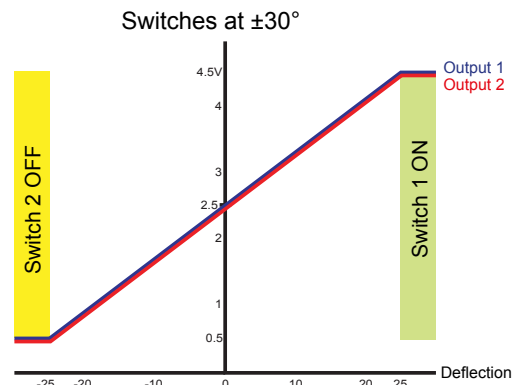
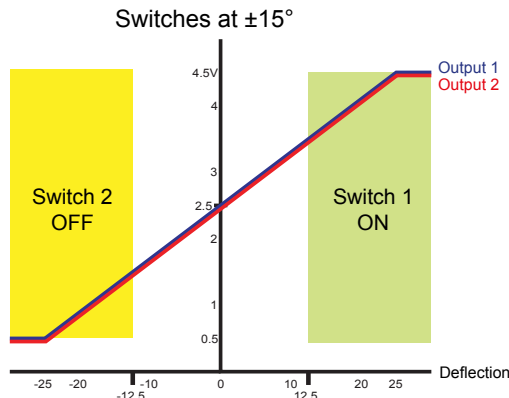
### Output Characteristics (here: 0,5 - 4,5V Output)

Note: When option „Dual Parallel Output“ is selected the polarity of Switch 2 is inverted.

#### 1) DUAL INVERSE OUTPUTS



#### 2) DUAL PARALLEL OUTPUTS

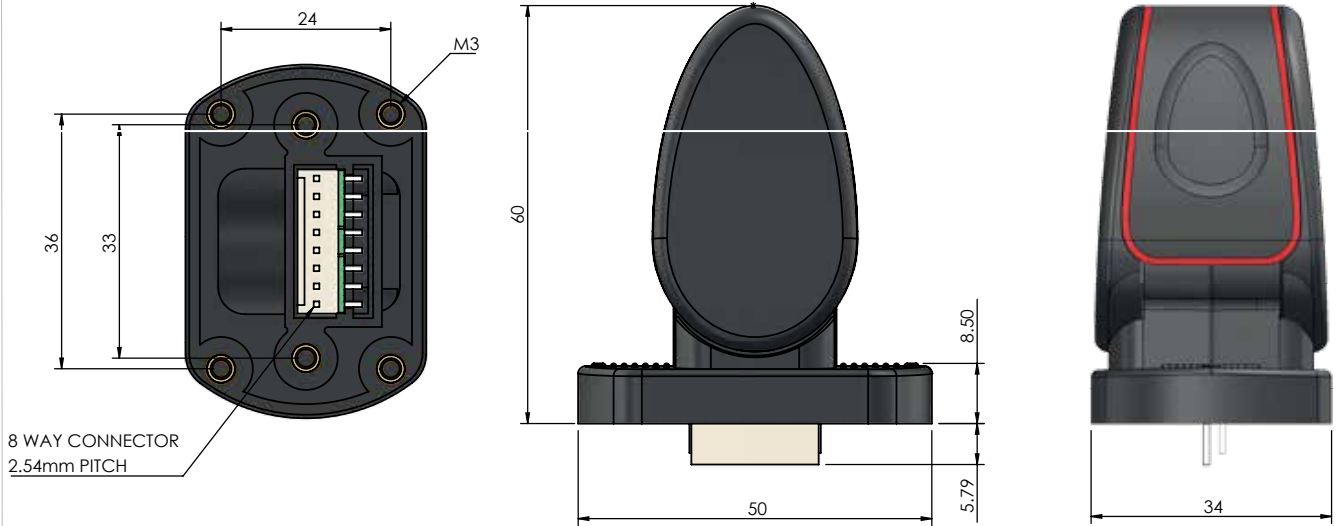


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## Technical Drawing "Paddle 1" 60mm height above panel

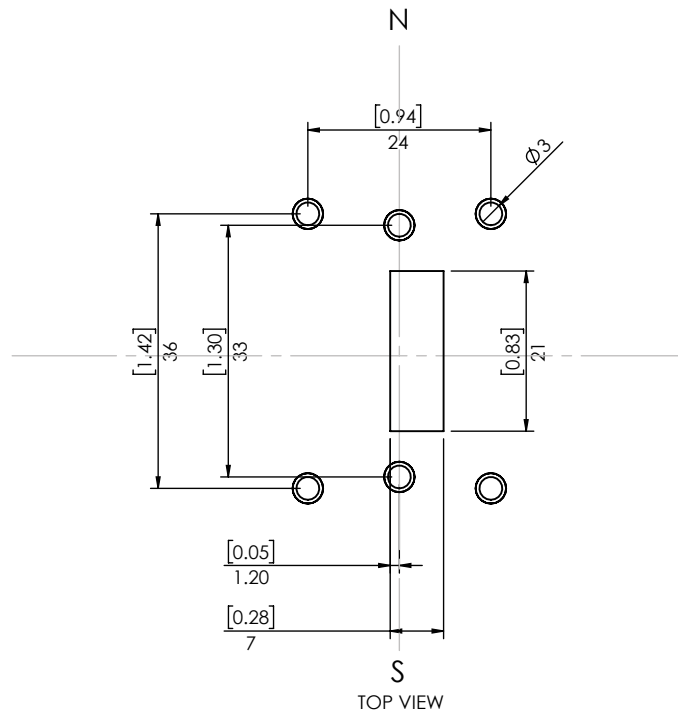
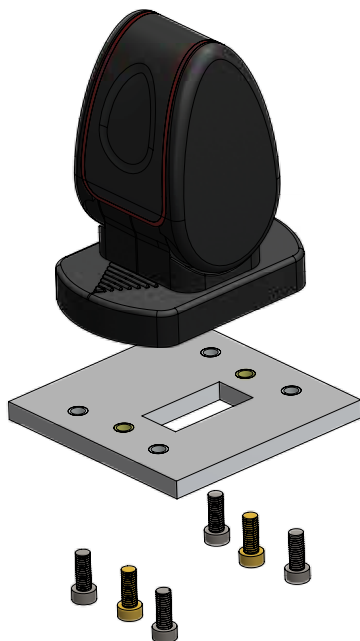


Dimensions in mm

## Panel Cut-Out & Mounting "Paddle 1"

The Joystick is fitted with M3 bushes in all six positions and may be mounted with two different hole patterns:

- Two screws (shown in yellow)
- Four screws (shown in silver).



Screws are not included.  
The appropriate length of the screws is dependent on panel thickness.

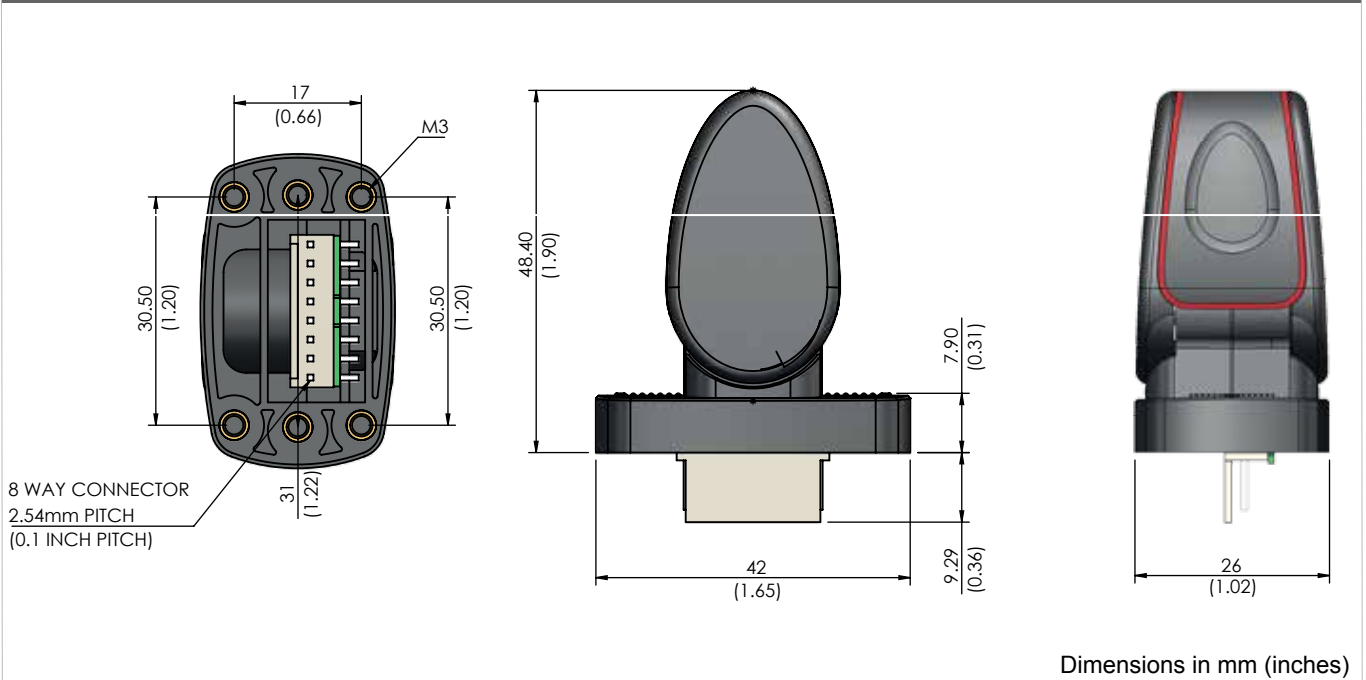
Dimensions in [inches] mm

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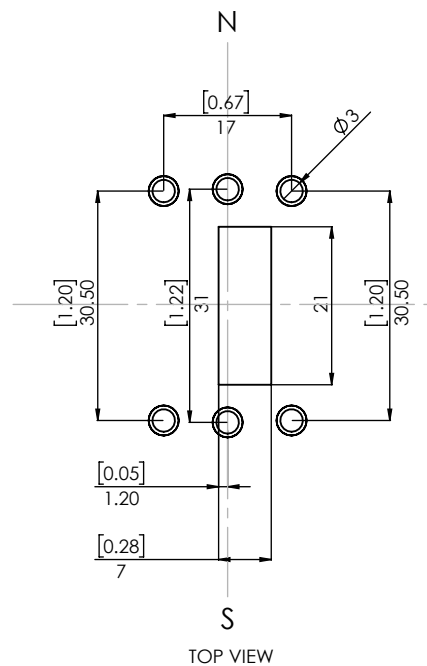
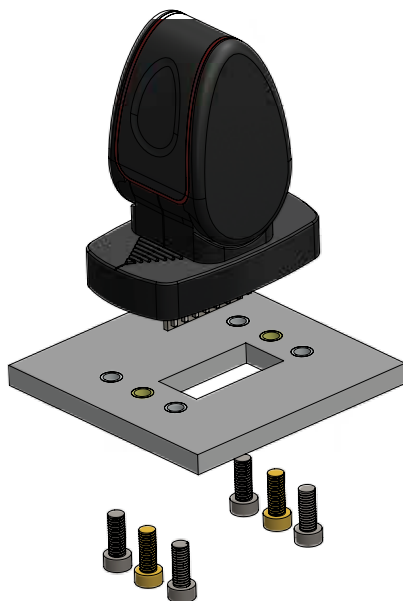
## Technical Drawing "Paddle 2" 48mm height above panel



## Panel Cut-Out & Mounting "Paddle2"

The Joystick is fitted with M3 bushes in all six positions and may be mounted with two different hole patterns:

- Two screws (shown in yellow)
- Four screws (shown in silver).



Screws are not included.  
The appropriate length of the screws is dependent on panel thickness.

Dimensions in [inches] mm