

# SAL2

Joystick

## Introduction

The SAL2 Joystick from Sensata Technologies provides the reliability and long life required in demanding environmental conditions such as heavy duty industrial applications. Building on Sensata's industry leading Hall-effect joystick technology, the SAL2 joystick combines flexibility with high mechanical strength. This strength and the unique sensing design make the joystick ideal for rigorous use in rugged, harsh environments offering best durability. The SAL2 Joystick is designed to accommodate standard and custom designed multifunction grips.



## Main Features

- Contactless sensing Hall-effect technology
- Redundant Sensors
- Life greater than 10 million cycles (without detent option)
- 2 sensors on axis
- Integrated temperature compensation
- Environmentally sealed
- Potted electronics
- Standard or customized multifunction grips

## Custom Modifications

- Output characteristics
- Operating force
- Lever deflection angle
- Mounting Method and Bolt pattern
- Tactile and Latching Detents
- Multifunction grips

## SPECIFICATIONS

### Electrical

### Variant

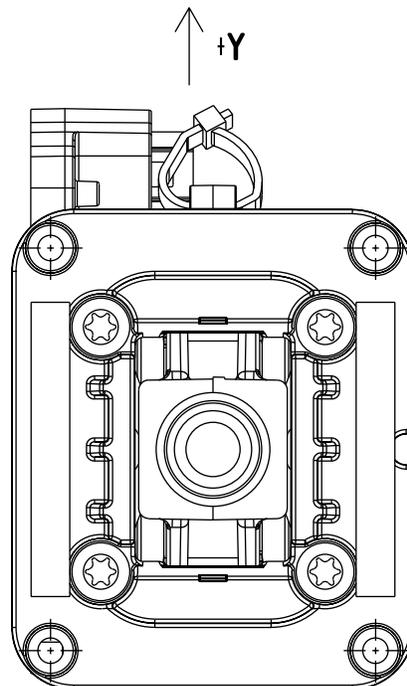
<b>Supply Ratings</b> - System Voltage - Voltage Range - Maximum Current		12V or 24V dc 9V ... 32V dc 75 mA at 24V dc
<b>PWM Output</b>	PW2	500 Hz ± 80 Hz
<b>CAN Bus Output</b>	J19	SAE J1939
<b>Other electrical Characteristics</b>	EMI	100 V/m Redundant Sensors

## Mechanical

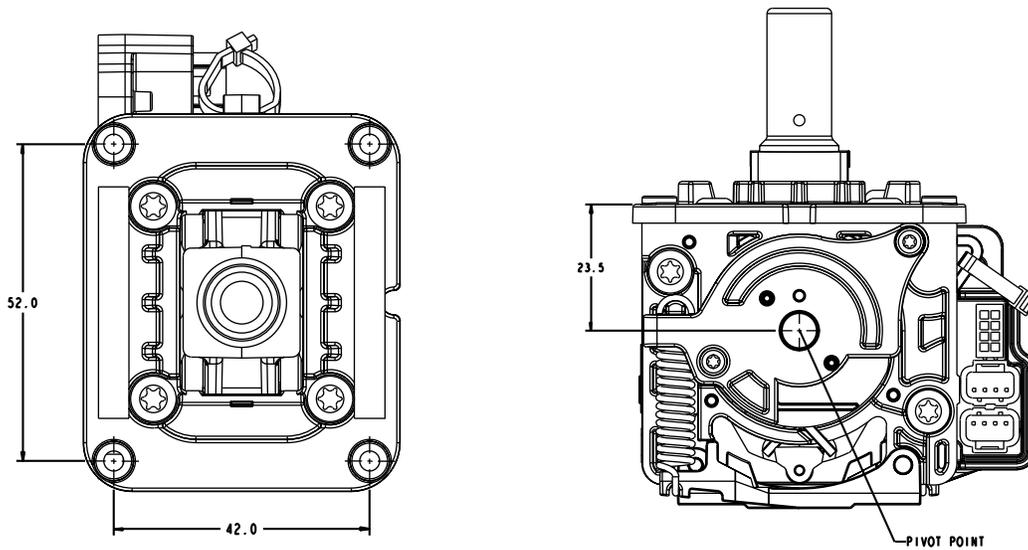
<b>Life</b>	> 10 million cycles
<b>Detent Life</b>	3 million cycles
<b>Operating temperature</b>	- 40°C to 85°C
<b>Storage temperature</b>	- 50°C to 90°C
<b>Horizontal maximum load (165mm from pivot point)</b>	1000 N (250lbs)
<b>Vertical load maximum</b>	1110 N (250lbs)
<b>Max Torque (Z-axis)</b>	25 Nm (18,5 ft lb)
<b>Protection Level</b>	IP 67
<b>Electronics Protection</b>	Fully potted
<b>Lever deflection X/Y max</b>	± 30° (A)
<b>Center null zone</b>	± 1.5°
<b>Weight</b>	<860g
<b>Housing</b>	Plastic
<b>Boot</b>	EPDM (black)
<b>Vehicle Connection</b>	Customer Specified

## DIMENSIONS

### SAL2 with bottom Mount Top Gate (+Y and -Y can be Swapped)



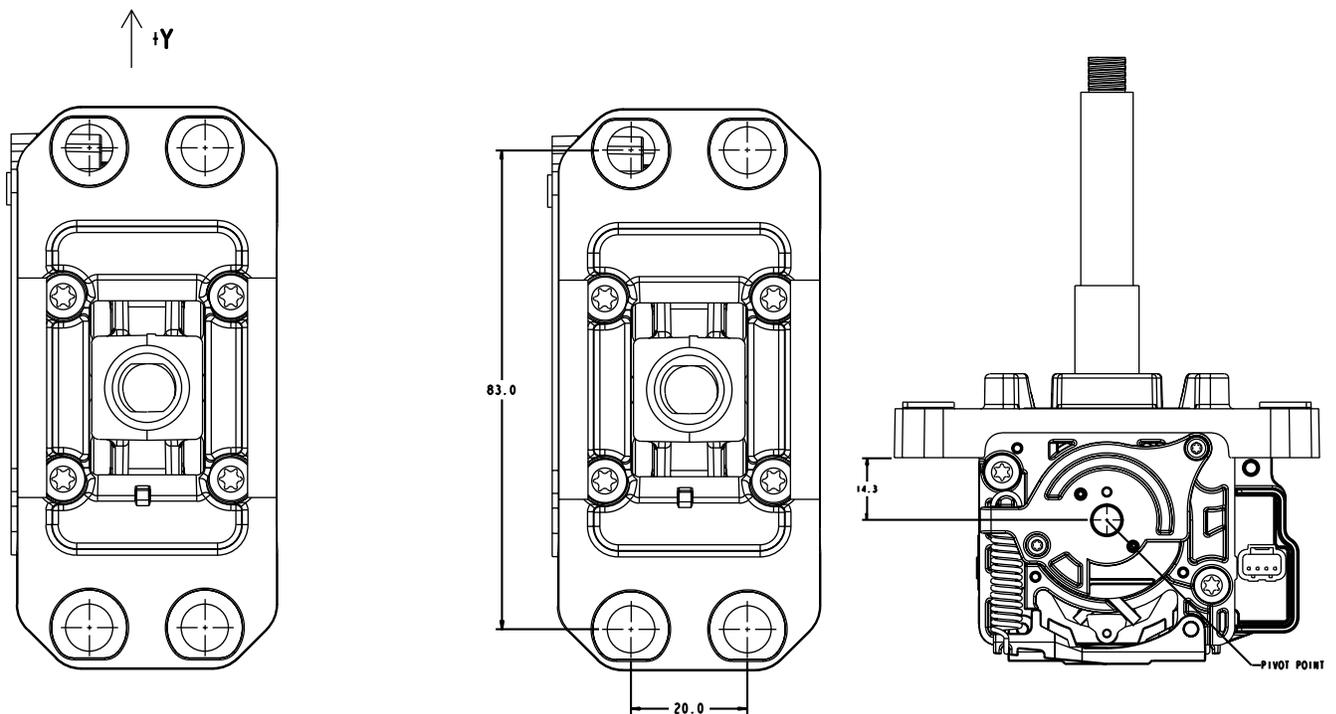
## Install dimensions for Bottom Mount SAL2 Joysticks



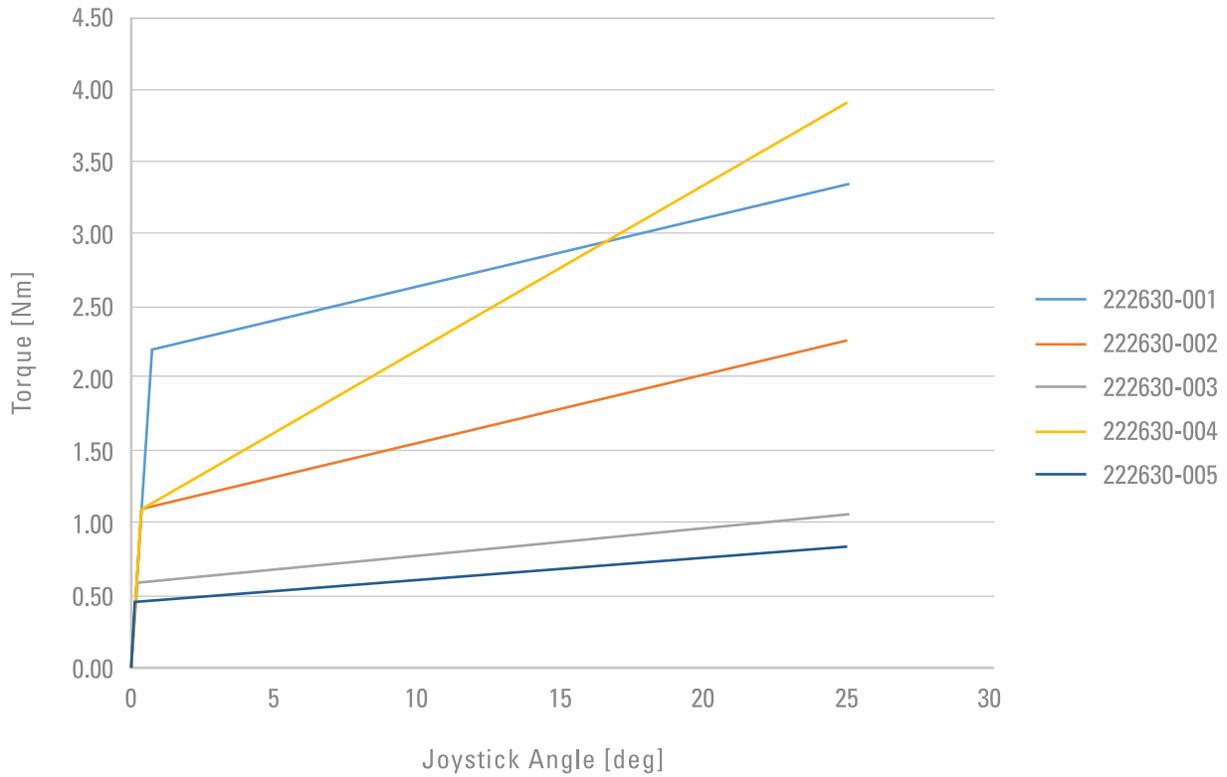
## SAL2 with Top Mount Top Gate

(+Y and -Y can be Swapped)

## Install dimensions for Top Mount SAL2 Joysticks



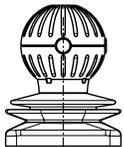
**SAL2**  
(Torque Curves)



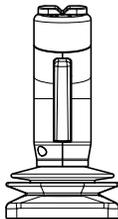
**MULTIFUNCTION GRIPS**

for details see MFG datasheet

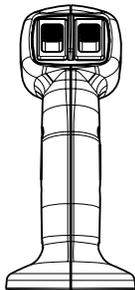
MFG Ball



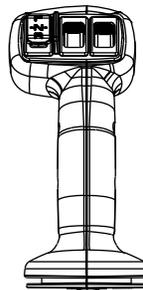
MFG S2



MFG S4



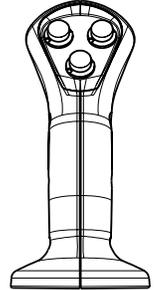
MFG S4E



MFG S6



MFG S7





## ORDERING OPTIONS

This information is to assist the user in identifying what he is looking for in the joystick base. There are many options available for SAL2 and specific details on these options will need to come from the Sensata EOC "Electronic Operator Control" team directly. While this information does not fully define a joystick base, it will go a long way to helping the EOC team define the best option for the user.

### Top Gate Type

Selecting the top gate will require knowing what mounting method that is desired. The options are mounting from the top side and mounting from the underside.

- Current available options are a  $\pm 17^\circ$  mounting from the top and a  $\pm 20^\circ$  mounting from the bottom.

### Pivot Point

In relation to mounting plane: Knowing the height of the grip required by the customer can help with this selection.

- This is different based on the mounting method.

### Shaft Type

Handle dependent. Very customizable

### Spring Force

Two springs are used for SAL2 products. Combining spring forces to get a slightly lower or higher force is an option. Standard spring torques listed.

### Detent

Information can be requested for specific activation angles and detent type.

### Output Options

- CAN, PWM, Analog

### Input Options

- 5V, 12V

### Grip to Base Communication

- Through shaft and around shaft grip wiring.



## GENERAL NOTES

<sup>(A)</sup> *less is available on request*

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