

## Key Features and Benefits

- ▶ Plug + Play
- ▶ All-in-One design
- ▶ ISO 9409-1-50-4-M6 mounting
- ▶ Integrated IMU [with EtherCAT]
- ▶ 5x Overload protection
- ▶ Negligible temperature drift
- ▶ Compatible with ROS, LabVIEW, and MATLAB®



## Technical Specifications

Please refer to the table for all sensor specifications. For additional information about the sensor, we recommend speaking with one of our engineers by contacting [info@botasys.com](mailto:info@botasys.com).

### SensONE Force/Torque Sensor

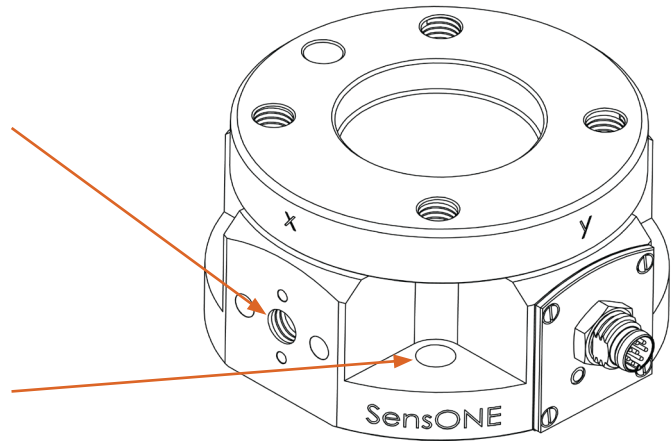
	Fxy	Fz	Mxy	Mz
Range	500 N	1200 N	15 Nm	12 Nm
Overload	2500 N	4500 N	35 Nm	40 Nm
Noise Free Resolution*	0.15 N	0.15 N	0.005 Nm	0.002 Nm
Weight	~220 grams			
Size ( D x L )	70 x 35 mm			
Ingress Protection	dustproof and water-resistant			
Operating Temperature	0° – 55° C			
	Serial		EtherCAT	
Communication	USB, RS422		CANopen over EtherCAT	
Maximum Sampling Rate	800 Hz		1000 Hz	
IMU	--		6 DoF IMU	
Acceleration	--		±2g, 4g, 8g, 16g	
Gyroscope	--		±250°/sec, ±500°/sec, ±1000°/sec, ±2000°/sec	
Power Supply	5 V, 1.0 W		9 – 70 V, 1.5 W	

\* We define noise-free resolution as the peak-to-peak noise ( $6\sigma$ ) of a signal with no load in a stable environment. The signal's samples are obtained at a frequency of 100 Hz.

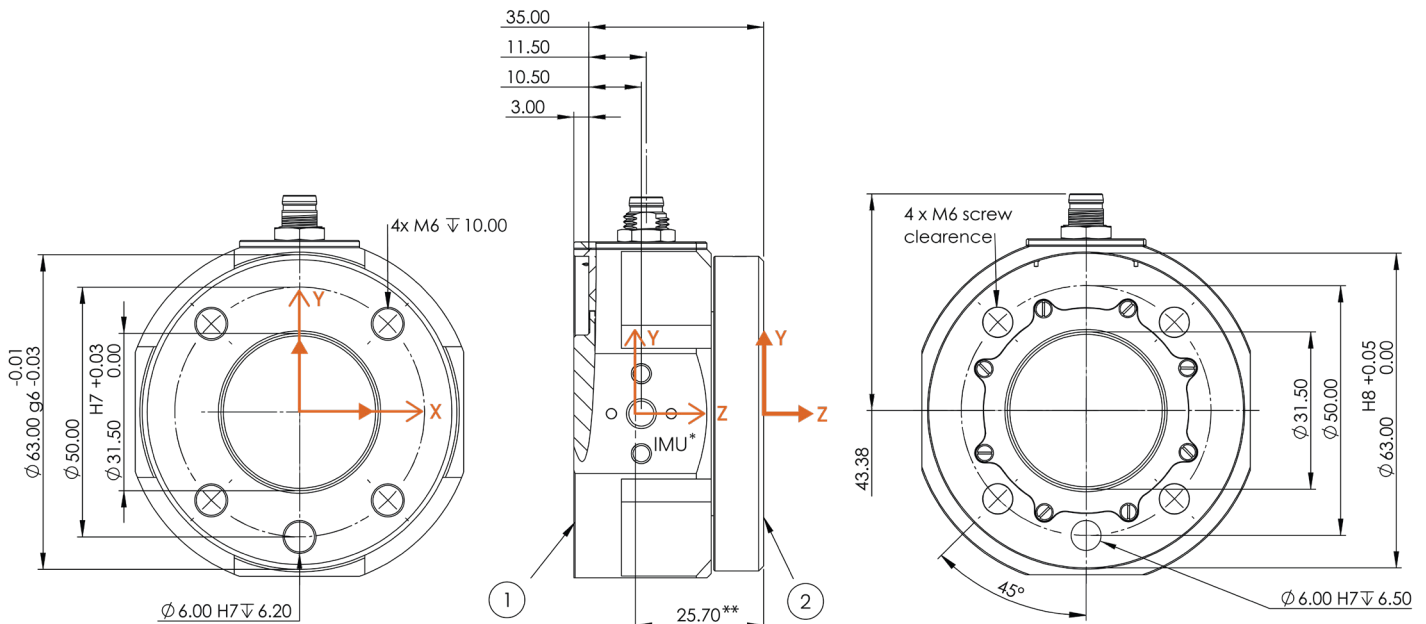
## Mechanical Dimensions

The SensONE includes three mounting flanges for additional integration with tools and sensors. For example, the Intel RealSense Depth Camera or Microsoft Kinect Sensor integrates easily with Bota Systems mounting accessories.

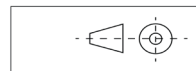
With an ISO 9409-1-50-4-M6 mounting flange on the robot and tool side, we recommend using bolts with a class 10.9 or stronger and using the bolts provided for the robot-sensor mounting surface. For any questions regarding integration and mounting, please contact our engineers at [info@botasys.com](mailto:info@botasys.com).



## Side Connector Configuration



SensONE by Bota Systems AG

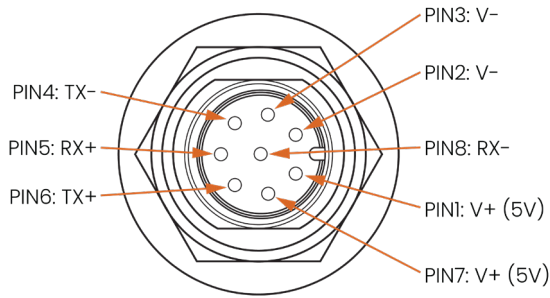


- \* 6 DoF IMU and the internal location
- \*\* Distance from force/torque sensor and IMU reference frames
- 1 Robot side mounting surface
- 2 Tool side mounting surface

## Connector Pinout

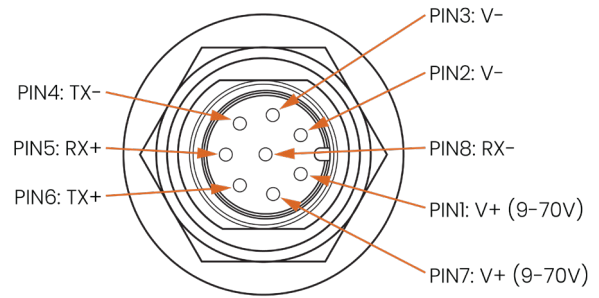
### Serial

IP67 M8 Connector Pinout



### EtherCAT

IP67 M8 Connector Pinout



## Combined Loading Graphs

During single-axis loading, the sensor can operate up to its normal range. Above the sensor's normal range, the readings become inaccurate. The sensor should not work outside of its normal operating range.

When more than one axis is loaded, it becomes a combined loading, and the range of the sensor reduces.

The following graphs represent the combined loading scenarios, and the **orange area** represents the sensor's normal operating range.

