



3-axis High Resolution Tactile (Pressure) Sensor

Model: SINGLEX-3

Datasheet

The **SINGLEX** line offers a range of pressure sensors from by Seed Robotics, providing high resolution and high integration with the Robot Hands produced by Seed Robotics.

This line derives from the field proven FTS sensor line that is integrated in the Fingertips of Seed Robotics hands. **SINGLEX** are similar in all aspects except that they come in a **self-contained package**, ready for use in third party applications.

The **SINGLEX-3** sensor measures the magnitude of force applied on the X, Y and Z axis of the sensor, providing a wide range of measurement.

The sensor measures the force applied (1 point) in all 3 axis, from perpendicular (**gripping force**) to 90° angle (**shear force** - parallel or tangent - to surface)

These sensors are recommended for applications where high resolution contact force measurement is necessary. The high resolution and low cost make it possible to build highly sensitive hands for next generation research in A.I., industrial robots and medical applications.

Key Benefits:

- High resolution
- High measurement range
- High overload tolerance
- Mechanical shock resistant
- Cost efficient
- Compensated for Temperature
- Immune to Magnetic interference



SINGLEX-3 Sensor unit

Sensor Type	3 axis contact pressure sensor	
External Dimensions	Circle, 20mm diameter	Mounting points available in the back (M1.6)
Dimensions of Preferential contact area	Circular, 12mm diameter	Perpendicular to 90° from center of unit.
Nominal Capacity	Standard Range: 0-10N	Extended Range: 10N – 30N
Maximum Resolution	Standard Range Resolution: 1mN	Extended Range Resolution: 10mN
Non linearity	Standard Range: 2.5%	Extended Range: 5%
Overload capability	Up to 50N	
Hysteresis (typical)	< 2%	
Sampling Frequency	50Hz	
Output	Standard Output: force reading in X, Y and Z axis in mN Alternative Output: higher resolution force reading in X, Y, Z axis, in counts (~200counts per mN)	
Working temperature range	10°C – 35°C (operation is possible outside this range but non-linearly may increase)	
SINGLEX Interface	All SINGLEX sensors must connect to a DAQ. Maximum 5 sensors can be connected to one DAC	
DAQ Interface	RS422. One DAC provides data for all connected sensors in one single stream.	
Cable Length	SINGLEX to DAQ: 20cm standard, 30cm max	DAQ to Host: up to 5 meters
Power requirement	2mA per sensor	Power is supplied by the DAQ.

In addition to providing the vector (direction) and magnitude of the force applied, the SINGLEX-3 sensor can also be used to detect shear force – parallel or tangent – to the sensor unit.

The sensor is optimized for measuring in the 0-10N range, where it can provide its highest resolution and precision. For measurement above 10N and up to 30N, an extended range model is used, achieving the additional measurement.

Accessories:

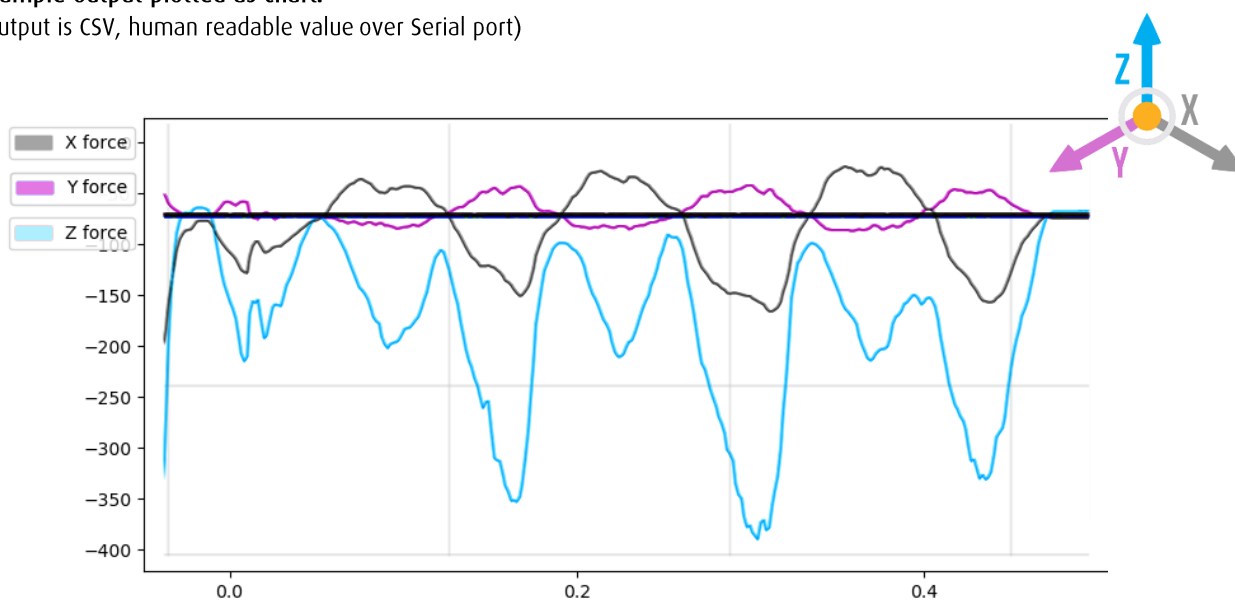
All SINGLEX sensors must be connected to a DAQ for Data Acquisition, processing and relaying to the Host.

For SINGLEX units, the DAC is made available separately; one DAC can connect up to 5 SINGLEX Sensors.

Cable distance from SINGLEX to DAC is 30cm maximum. Cable distance from DAC to Host is 5m maximum (1.8m standard)

Example output plotted as chart:

(output is CSV, human readable value over Serial port)



Remarks:

- Seed Robotics is a registered trademark by Seed Cognitiva, Robotics Innovation, Lda
- The information shown is accurate at the time of writing and may be subject to change without notice.