

# Multi-Axis Sensors



Multi-Axis Sensors v1.4 10-24-2025



**interface**  
FORCE MEASUREMENT SOLUTIONS

The World Leader in Force Measurement Solutions™

# Multi-Axis Sensors are designed to measure a multiple of forces and moments simultaneously with a single load cell.

These sensors provide multiple bridges that precisely measure the applied force from one direction with little or no cross-talk from the force or moment. Our 3-axis, 6-axis, and axial torsion load cells provide the ultimate in force and torque measurement. We can measure forces simultaneously in three mutually perpendicular axes, with the 6-axis load cells also measuring torque around those axes.

Data-driven design is at the forefront of product development, especially in highly-regulated markets like aerospace, medical and industrial. Interface's multi-axis sensors are designed to provide the most comprehensive force and torque data points on advanced machinery. With our industry-leading reliability and accuracy, these multi-axis sensors are able to provide the data our customers need to ensure performance and safety in their product design.

## 3-Axis Load Cells

Interface's 3-axis load cell measures forces simultaneously in three mutually perpendicular axes: X, Y, and Z - tension and compression. Each axis provides a unique mV/V output and requires no mathematical manipulation. The 3-axis load cell is built to minimize eccentric loading effects and crosstalk between axes. The company offers five different models in its 3A series 3-axis load cell designed for a wide variety of capacities.

## 6-Axis Load Cells

Interface's 6-axis load cell measures forces simultaneously in three mutually perpendicular axes and three simultaneous torques on those same axes. Six full bridges provide mV/V output on six independent channels. A 36-term coefficient matrix is included for calculating the load and torque values in each axis. An 8-channel amplifier with a USB PC interface is also available, which simplifies data analysis. The company offers five different models of 6-axis load cells for a wide variety of capacities.

## Axial Torsion Load Cells

Interface's axial torsion load cell is used for measuring both torque and force in a single sensor. Typical applications of the axial torsion transducer include bearing test and material test machines. The features of our axial torsion load cell include minimal cross talk, extraneous load resistance and the load cell is fatigue rated. Customers can also add the following options, an integral cable, compression overload protection and connector protector.

Interface multi-axis load cells are ideally suited to many industrial and scientific applications, such as aerospace, robotics, automotive and medical research (orthopedics and biomechanical). In fact, their unique capabilities are helping the medical industry optimize prosthetic design via multi-axis testing. The automotive industry is using Interface's multi-axis products in wind tunnels, and the military is using them to test the center of gravity in aerospace applications.

### Axial Torsion

- What it measures: Fz and Mz in one sensor
- Benefits: Compact design
- Limitations: Fixed ratios of force to torque

### 2-Axis – 2x Single Axis Sensors

- What it measures: Any two forces or torques simultaneously
- Benefits: Off-the-shelf, high accuracy sensors

### 3-Axis

- What it measures: Forces in all 3 Axis – Fx, Fy & Fz
- Benefits: Compact design
- Limitations: Fixed capacities in each axis
- How it works: 3 single-axis sensors combined into one sensor

### 6-Axis

- What it measures: Forces and torques in all axis
- Benefits: Compact design, simplified installation, reduces required engineering
- Limitations: Fixed capacities in each axis
- How it works: 6 full wheatstone bridges
- All six legs react to any given load
- Individual load values are calculated using the product of a all 6 channels of output and a coefficient matrix

## Axial Torsion, 2-Axis, & 3-Axis Force & Moment



### 1216 2-Axis Axial Torsion

Force: 250 to 2K lbf  
Torque: 8.85 to 88.5K lbf-in  
Force: 50 to 100K N  
Torque: 1 to 10K Nm



### 1516 2-Axis Axial Torsion

Force: 100 lbf  
Torque: 50 lbf-in  
Force: 444.8 N  
Torque: 5.6 Nm



### 2816 2-Axis Axial Torsion

Force: 3.3K to 15K lbf  
Torque: 2K to 7.5K lbf-in  
Force: 14.6 to 66.7 kN  
Torque: 226 to 847 Nm



### 5200xyz 3-Axis Force Moment

Force: 1K to 50K lbf  
Torque: 400 to 20K lbf-in  
Force: 4.45 to 222 kN  
Torque: 45.2 to 2.26K Nm

## 3-Axis Force



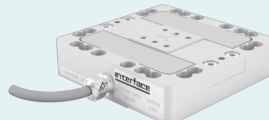
### 3A40 3-Axis Force

Force: 0.45 lbf to 11.2 lbf  
Force: 2 N to 50 N



### 3A60A 3-Axis Force

Force: 2.25 lbf to 112K lbf  
Force: 10 N to 500 kN



### 3A120 3-Axis Force

Force: 11.2 lbf to 1.12K lbf  
Force: 50 N to 5 kN



### 3A160 3-Axis Force

Force: 450 lbf to 11.2K lbf  
Force: 2 kN to 50 kN

## 6-Axis Force & Torque



### 6A27 6-Axis Force Torque

Force: 11.2 to 44.7K lbf  
Torque: 8.85 lbf-in  
Force: 50 N to 200 N  
Torque: 1 Nm



### 6A40 6-Axis Force Torque

Force: 1.2 to 112.4 lbf  
Torque: 44.3 lbf-in to 177 lbf-in  
Force: 5 N to 500 N  
Torque: 5 Nm to 20 Nm



### 6A68 6-Axis Force Torque

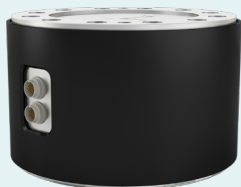
Force: 224.8 to 2.25K lbf  
Torque: 177 lbf-in to 4.43K lbf-in  
Force: 1 kN to 10 kN  
Torque: 20 Nm to 500 Nm



### 6A80 6-Axis Force Torque

Force: 112.4 to 1.12K lbf  
Torque: 177 lbf-in to 2.21K lbf-in  
Force: 500 N to 5 kN  
Torque: 20 Nm to 250 Nm

## 6-Axis Force & Torque



### 6A300 6-Axis Force Torque

Force: 89.9K lbf  
Torque: 354K lbf-in  
Force: 400 kN  
Torque: 40 kNm



### 6ADF45 6-Axis Force Torque

**DIN Flange-Type**  
Force: 20 N to 50 N  
Torque: 1 Nm



### 6ADF80 6-Axis Force Torque

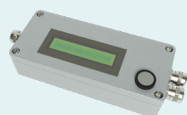
**DIN Flange-Type**  
Force: 100 N to 600 N  
Torque: 10 Nm to 30 Nm



### 6ADF100 6-Axis Force Torque

**DIN Flange-Type**  
Force: 400 N to 1.2 kN  
Torque: 20 Nm to 60 Nm

## Compatible Instrumentation



**BSC1-HD** Single Channel  
PC Interface Module  
with Analog Output  
Single Channel



**BSC2** Dual Channel  
PC Interface Module  
Dual Channel



**BSC4A** Bridge Amplifier &  
PC Interface Module  
4 Channel



**BSC6A-HD44** 6-Channel Strain  
Gage Amplifier  
6 Channel  
Analog Output

## Axial Torsion, 2-Axis, & 3-Axis Force & Moment



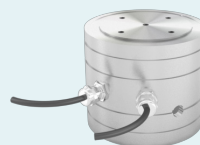
### 5600 2-Axis Axial Torsion

Force: 6K to 180K lbf  
Torque: 5K to 300 lbf-in  
Force: 27 to 800 kN  
Torque: 560 to 33K Nm



### AT101 2-Axis Axial Torsion

Force: 112 to 3.37K lbf  
Torque: 44.3 to 266 lbf-in  
Force: 0.5 to 2 kN  
Torque: 5 to 50 Nm



### AT102 2-Axis Axial Torsion

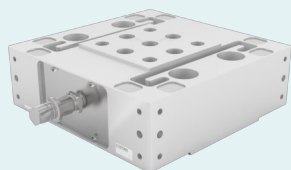
Force: 2.25K lbf  
Torque: 88.5 lbf-in  
Force: 10 kN  
Torque: 10 Nm



### AT103 2-Axis Axial Torsion

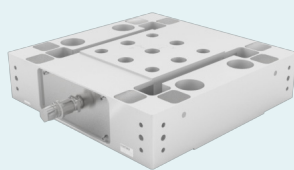
Force: 2.25K to 4.5K lbf  
Torque: 88.5 to 177 lbf-in  
Force: 10 to 20 kN  
Torque: 10 to 20 Nm

## 3-Axis Force



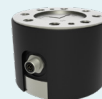
### 3A300 3-Axis Force

Force: 11.2 lbf to 45K lbf  
Force: 50 N to 200 kN



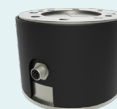
### 3A400 3-Axis Force

Force: 112K lbf  
Force: 500 kN



### 3AR100 Series Round 3-Axis Force

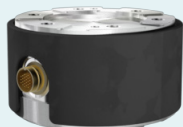
Force: 2.2K lbf to 13.5K lbf  
Force: 10 kN to 60 kN



### 3AR125 Series Round 3-Axis Force

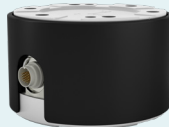
Force: 6.7K lbf to 27K lbf  
Force: 30 kN to 120 kN

## 6-Axis Force & Torque



### 6A110 6-Axis Force Torque

Force: 224.8 to 2.25K lbf  
Torque: 885 lbf-in to 6.64K lbf-in  
Force: 1 kN to 10 kN  
Torque: 100 Nm to 750 Nm



### 6A130 6-Axis Force Torque

Force: 224.8 to 3.37K lbf  
Torque: 1.77K lbf-in to 10.6K lbf-in  
Force: 1 kN to 15 kN  
Torque: 200 Nm to 1.2 kNm



### 6A150 6-Axis Force Torque

Force: 449 to 6.7K lbf  
Torque: 1.77K lbf-in to 26.5K lbf-in  
Force: 2 kN to 30 kN  
Torque: 200 Nm to 3 kNm



### 6A154 6-Axis Force Torque

Force: 11.2 to 112.4 lbf  
Torque: 44.3 lbf-in to 442 lbf-in  
Force: 50 N to 500 N  
Torque: 5 Nm to 50 Nm

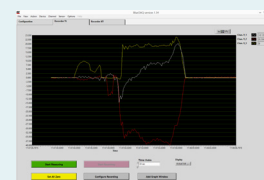
## Compatible Software

### BlueDAQ Software

The BlueDAQ software is suitable for live viewing, recording, and analysis of stored measuring data. The multiple channels can be recorded over the time axis (y-t diagram) or via an "X-axis" (X-Y diagram). The BlueDAQ software is available for models BX6, BX8, BSC1, BSC2, BSC4D, and the 9330. The measuring data is stored in binary "TDMS" by recording and can be opened, displayed, and exported in text or Excel format with the integrated "File Monitor".

### BlueDAQ-PRO Software

License to activate the "Professional Functions of the BlueDAQ software.



### BlueDAQ

Scale Input/Output,  
Force & Moment Value Calculation,  
Graphing, Logging, & Display

## Compatible Instrumentation



### BX6-ETH/CAN 6-Channel CANbus & Ethernet Strain Gage Amplifier

6 Channel



### BX6-HD44-ECP Strain Gage Amplifier with EtherCat Protocol

6 Channel



### BX8-AS Data Acquisition System & Amplifier

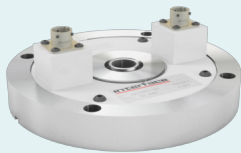
8 Channel



### BX8-HD15 Data Acquisition System & Amplifier

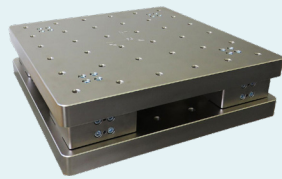
8 Channel

## Axial Torsion, 2-Axis, & 3-Axis Force & Moment



### TXY 2-Axis Force

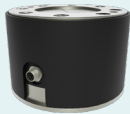
X: 1K to 2K lbf  
Y: 500 lbf  
X: 4.4 to 8.8 kN  
Y: 2.2 kN



### Force Plates

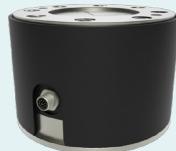
A system of multiple multi-axis sensors mounted between two plates

## 3-Axis Force



### 3AR155 Series Round 3-Axis Force

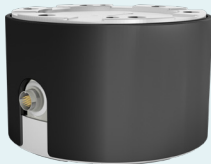
Force: 11.2K lbf to 56.2K lbf  
Force: 50 kN to 250 kN



### 3AR225 Series Round 3-Axis Force

Force: 22.5K lbf to 112K lbf  
Force: 100 kN to 500 kN

## 6-Axis Force & Torque



### 6A175 6-Axis Force Torque

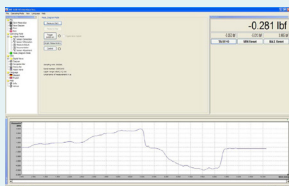
Force: 2.25K to 11.2K lbf  
Torque: 8.85 lbf-in to 44.3K lbf-in  
Force: 10 kN to 50 kN  
Torque: 1 kNm to 5 kNm



### 6A225 6-Axis Force Torque

Force: 11.2K to 44.9K lbf  
Torque: 88.5K lbf-in to 177K lbf-in  
Force: 50 kN to 200 kN  
Torque: 10 kNm to 20 kNm

## Compatible Software



### SI-USB

Setup & Scaling, Logging, Graphing, & Display



### Log 100

Display, Logging, Graphing, & Mapping

## Compatible Instrumentation



### BX8-HD44 Data Acquisition System & Amplifier

8 Channel



### SI-USB PC Interface Module

Dual Channel

# Interface Multi-Axis Sensors

- 2-Axis
- 3-Axis
- 6-Axis
- Axial Torsion
- LowProfile™
- Fatigue Rated
- Moment Compensated
- Flange Mount

*Interface force measurement multi-axis sensors are available in many design configurations for project designs requiring the highest performance.*

**To learn more about the Interface products or force measurement solutions call 480-948-5555.**

The Bluetooth® word mark and logos are registered trademarks owned by the Bluetooth SIG, Inc. and any use of such marks by Interface, Inc. is under license. Other trademarks and trade names are those of their respective owners.

**Interface is the world's trusted leader in technology, design and manufacturing of force measurement solutions.**

**Our clients include a "who's who" of the aerospace, automotive and vehicle, medical device, energy, industrial manufacturing, test and measurement industries.**

Interface engineers around the world are empowered to create high-level tools and solutions that deliver consistent, high quality performance. These products include load cells, torque transducers, multi-axis sensors, wireless telemetry, instrumentation and calibration equipment.

Interface, Inc., was founded in 1968 and is a US-based, woman-owned technology manufacturing company headquartered in Scottsdale, Arizona.