

# Interface

FORCE MEASUREMENT SOLUTIONS.

## CASE STUDY

### Advancing Medical Device Design, Testing, and Performance



#### About

Precision in medical device design, testing, and functionality is paramount. Medical devices, including robotic surgical tools, prosthetics, and diagnostic equipment, require precision, accuracy, and durability to ensure patient safety and meet stringent regulatory standards. Interface is a trusted supplier of measurement solutions to medical device designers, engineers, testing labs and manufacturers.

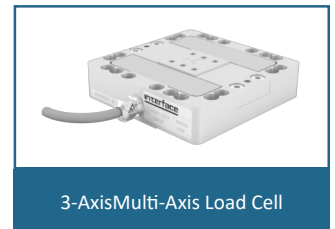
Interface has expertise and measurement solutions to meet unique medical design, test, and monitoring application requirements. Accuracy is vital in all healthcare use cases as minor deviations can compromise patient health. By integrating Interface's products into prototypes and testing processes, medical device companies can uphold both efficacy and protection, enhancing patient outcomes and supporting healthcare advancements.

Interface's force measurement tools provide the reliability and precision that medical device manufacturers need to push the boundaries of innovation while meeting the industry's strict regulatory demands.

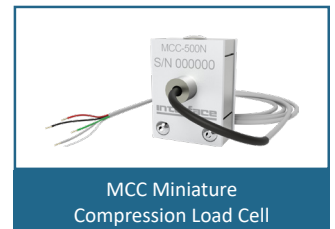
#### Challenge

Precision in force measurement is essential for the successful performance of medical devices. For instance, surgical staplers require exact force measurements to perform safely, while prosthetic limbs must have precise fatigue resistance to withstand regular use. Stents must undergo extensive stress tests to ensure they can endure the forces present in the human body over a lifetime. Surgical robotics must articulate exact measurements to perform functions with the detail and precision needed in any medical use case.

Regulatory compliance is rigorous. Interface's force measurement solutions are accredited and calibrated sensors that align with international measurement standards.



3-Axis Multi-Axis Load Cell



MCC Miniature Compression Load Cell



6A Series 6-Axis Standard Capacity Load Cell



9330 Battery Powered High Speed Data Logging Indicator

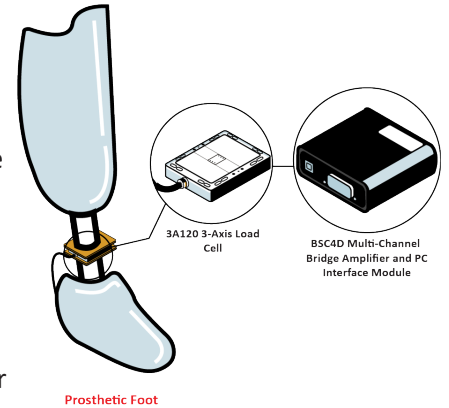
## Solutions

Medical devices often have unique constraints that necessitate compact measurement solutions. Interface miniature load cells offer a solution, fitting directly within devices without sacrificing accuracy. This adheres to both functional and spatial requirements while achieving high precision even in small-scale or embedded applications.

Reliability over extended periods is another critical factor for many medical devices that must function effectively without recalibration or replacement. Interface's sensors are specifically built with durability, using materials that resist wear and environmental challenges, thereby maintaining accuracy and reliability through prolonged use.

### Prosthetic Foot Performance Using 3-Axis Load Cells

A medical researcher analyzes how a prosthetic foot responds as it loaded during different stances using Interface's 3-Axis Load Cell installed between the leg socket and the prosthetic foot. The multi-axis sensors connect to our Multi-Channel Bridge Amplifier and PC Interface Module. Data is gathered from the X, Y, and Z axes to review the results and identify premature foot flat and dead spots during foot use to improve designs.

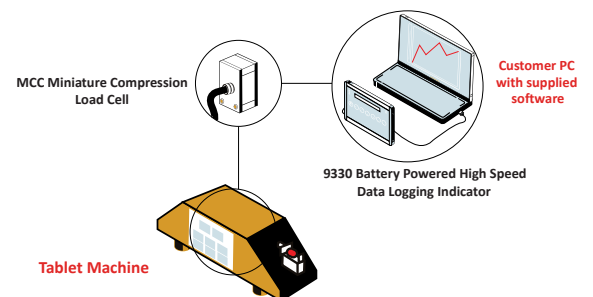


### Data Acquisition and Instrumentation for Medical Research

Interface DAQ Systems and Data Loggers help analyze force measurement data over time. During heart valve stress testing, the 9330 Data Indicator records force data to assess durability under thousands of stress cycles. This data is then used to refine the valve's design, ensuring it can withstand the stresses of long-term use in the human body.

### Miniature Load Cells and Sensors for Pharmaceutical Equipment

Interface's Mini Load cells are ideal for applications requiring precise measurement within compact designs. The MCC Miniature Compression Load Cell is used to test pharmaceutical tablet hardness, ensuring that each tablet meets specified standards. This miniature load cell is small enough to fit within a tablet-testing device, allowing for compression testing within a limited space.



### Torque Transducers for Tools and Instruments

Torque measurement is critical in many medical devices, such as dental tools and orthopedic surgery instruments. Interface's torque transducers allow for precise measurement of rotational forces.

### Custom Solutions for Medical Device Manufacturers

Most medical device manufacturers require custom sensor solutions tailored to unique measurement dimensions, capacities, and specifications. Interface's engineering team collaborates closely with device engineers and OEMs to design sensors for unique application needs.

## Conclusion

Force measurement is integral to the advancement of medical devices, from initial design to final testing and ongoing monitoring. Interface empowers medical technology companies to bring safe, effective, innovative products to life. With our force measurement solutions, medical devices can be tested and refined to perfect performance, improve patient safety, advance research, and support the healthcare industry's delivery of high-quality care.