

The Cambridge Technology, Inc. Series 400 Force Transducer System is a high-sensitivity scientific instrument used primarily for measuring isometric force in research applications involving biological or artificial materials.

Generic Description

This device functions as a force transducer and a control unit. It utilizes a variable displacement capacitor design, where applied force bends a fused silica beam, changing capacitance that is electronically measured and converted into a force reading. The control unit provides power and signal processing, while a separate, delicate "head" (sensor) is connected via a cable to physically interact with the sample being measured.

Use Case

The Series 400 system is designed for precise, bi-directional force measurement (both tension and compression) in a laboratory setting. It is widely used in muscle physiology and materials science research to assess mechanical properties such as stiffness, deformation, and contractile force. Specific applications have included:

Measuring contractions in single muscle fibers or whole skeletal muscle samples. Testing properties of various materials, including hydrogels, nanowires, and spider silk.

Year of Manufacture

A definitive year of manufacture for the exact unit pictured is not available in the search results, as it depends on the specific production date and serial number. However, the technology has evolved over time:

The original 400A series was an early iteration of this design.

The 400B series was introduced around or before 2019.

The current model is the 400C series, which was released after the B series and features advancements like detachable cables and internal signal processing circuitry in the head. The unit in the image appears to be an older model, likely from the 1980s or 1990s, based on its design and the subsequent release of newer series.