Permeabilized Fiber Test System

1400A | 1405A | 1410A

aurora SCIENTIFIC

Performance.
Precision.
Progress.

aurorascientific.com/1400a

Simplify your most demanding permeabilized fiber experiments with a revolutionary automatic indexing test system.

The 1400A, 1405A and 1410A are a revolutionary set of test systems designed to enhance experimental throughput and simplify complex permeabilized and intact fiber experiments.

Aurora Scientific understands the broad range and application of studying permeabilized fibers. That is why we designed the 1400A series to permit precise measurements of fiber properties. Our dependable temperature controlled apparatus contains XYZ micrometer stages with built-in mounts for our high-speed length controllers and force transducers.

In addition, this groundbreaking bath controller features our software programmable motion control sequencer allowing specific, automated bath transfer of the fiber being studied.

This dedicated software package also includes a library of experimental protocols to simplify the most demanding of experiments, allowing easy control and measurement of both force and length. Control and measurement of force, length and sarcomere length (when combined with our optional HVSL component) permits characterization of muscle tissue including force-pCa, kTR, length-tension, force-velocity and stiffness.

This completely integrated test system is manufactured using corrosion resistant materials and is easily mounted on an inverted microscope for basic observation or more sophisticated imaging. Choose the 1400A, 1405A and 1410A for performance, precision and progress.

Variants

1405A	Permeabilized/Intact Fiber System Variant
1410A	Temperature Jump Variant

System Components

315D/322D	High-Speed Length Controller
400C	Force Transducer
600A	Complete Data Acquisition and Digital Controller System
802D	Permeabilized Fiber Test Apparatus

Features

Streamlined and efficient system to test single, permeabilized fibers

Temperature controlled 8-well bath plate

Real-time Linux software with revolutionary automatic indexing

Resolution as low as 0.01µN

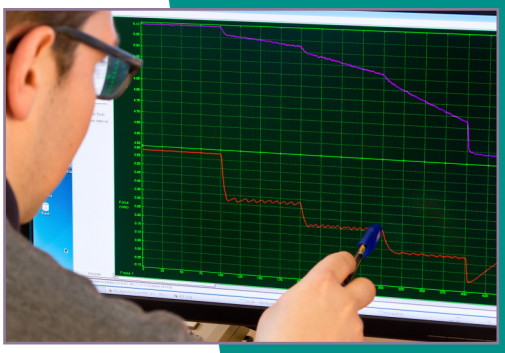
Control and measure force, length and sarcomere spacing

Measure force-pCA, kTR, stiffness, length-tension and force-velocity relationships

Range of peak forces from 0.5mN to 100mN

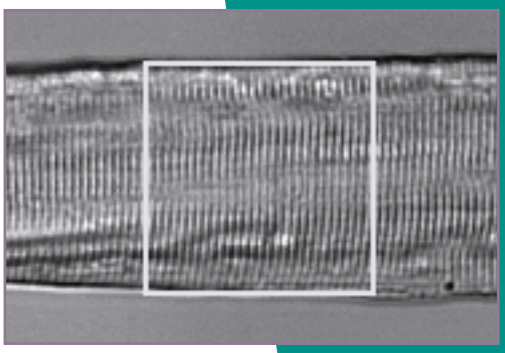
Automated Sample Chamber

Performing a force-pCa experiment is a breeze with our automatically indexing bath plate. Pre-program calcium concentrations and activation/ relaxation sequences and let the 1400A system do the rest.



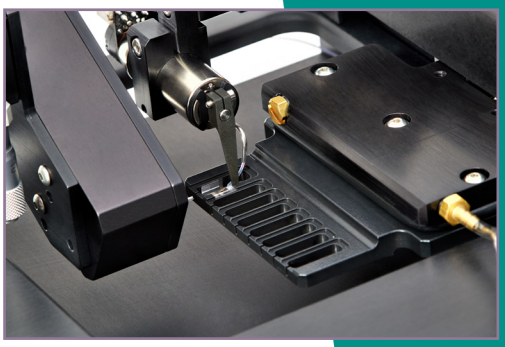
Powerful Software with Standard Protocols

The software's protocol library includes a variety of experiments for single fiber studies, with easy to use applets for adjusting system settings. Powerful, pre-written functions allow you to add your own custom protocols as well to streamline system operation with multiple lab members.



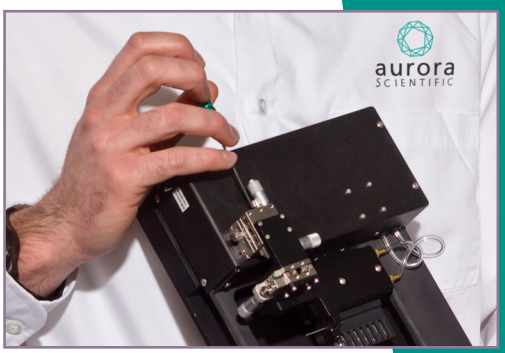
Integrate with Sarcomere Length

Setting your resting sarcomere length accurately becomes trivial when pairing the 1400A with our 901D High-Speed Video Sarcomere Length Software (HVSL). The high frame rate camera synchronizes with the data acquisition software enabling force, fiber length and SL to be collected in real time in a single, time-synchronized file.



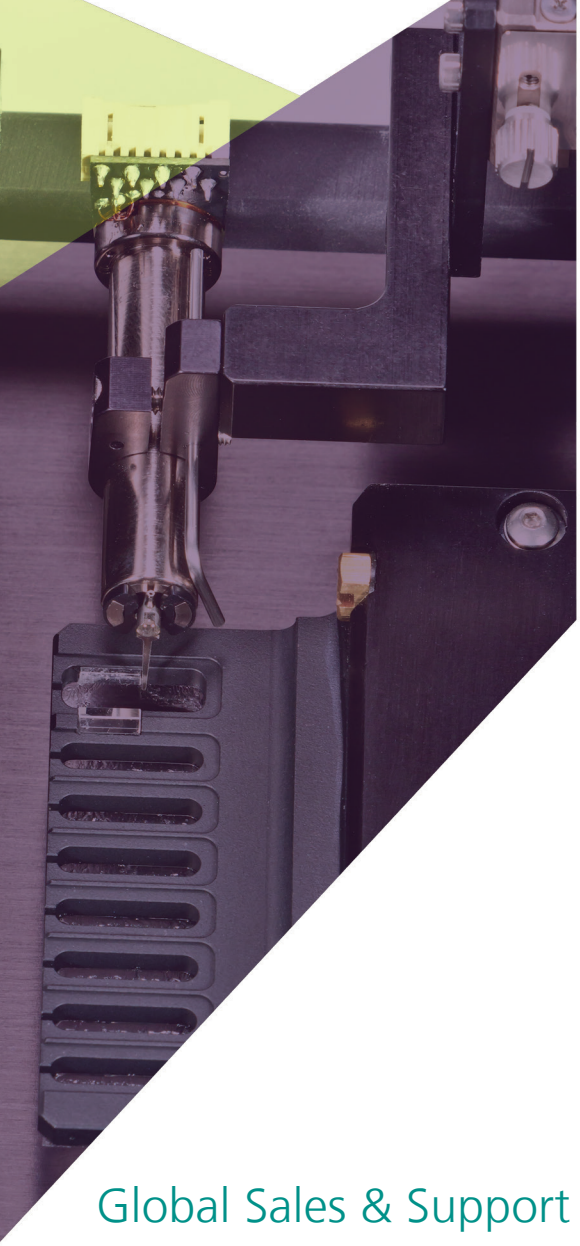
Available Temperature-Jump Option

Study the effect of temperature dependent activation with our T-jump variant (1410A; 802D-120-TJ). Precise, Peltier controlled bath plates allow for the creation of cold and warm baths simultaneously at any temperature between 0-40 degrees Celsius.



Friendly and Reliable Support

We stand by our products and by our customers. We can provide complete onsite installation, full service training and detailed instruction regarding software controls. As your partner in research we do all we can to ensure your studies stay on track and deliver the data you need.



Select Publications

Multiscale analysis of Klf10's impact on the passive mechanical properties of murine skeletal muscle.

Tatarenko, Y et al. J Mech Behav Biomed Mater. (2024) 150: 106298. PMID: 38096609

Myosin-binding protein C regulates the sarcomere lattice and stabilizes the OFF states of myosin heads.

Hessel, Anthony L et al. Nat Commun. (2024) 15.1: 2628. PMID: 38521794

Preservation of shortening velocity and power output in single muscle fibres from patients with idiopathic inflammatory myopathies.

Henning F & Kohn TA. J Muscle Res Cell Motil. (2023) 44.1: 1-10. PMID: 36517707

Insights into posttranslational regulation of skeletal muscle contractile function by the acetyltransferases, p300 and CBP.

Meyer, Gretchen A et al. J Appl Physiol. (2024) 136.6: 1559-1567. PMID: 38722753

Effects of intensified training with insufficient recovery on joint level and single muscle fibre mechanical function: The role of myofibrillar Ca2+ sensitivity.

Roussel, Olivia P et al. Appl Physiol Nutr Metab. (2024) 49.12: 1646-1657. PMID: 39121503

Comparing the effects of chemical Ca2+ dyes and R-GECO on contractility and Ca2+ transients in adult and human iPSC cardiomyocytes.

Robinson, Paul et al. J Mol Cell Cardiol (2023) 180: 44-57. PMID: 37127261

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