

Small Intact Muscle Test System

1500A | 1510A | 1530A



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This highly integrated, turnkey system was designed to provide physiology researchers a simple way to control and measure small tissue muscle mechanics.

The 1500A, 1510A and 1530A small intact muscle test systems provide researchers with the ability to accurately measure length-tension, force-velocity, work-loop and stiffness of small tissues with a high degree of confidence and repeatability. Offering extensive configuration options, these temperature controlled test systems have the versatility to precisely measure force and length of an array of small tissue types including cardiac trabecula, papillary and ventricular strips, single intact skeletal muscle fibers, bundles and whole muscle, in addition to engineered tissues. All systems include XYZ micrometer stages with built-in mounts for our 400 series of force transducers, high speed length controllers (315D/322D), and optionally our Dual-Mode Lever Systems (300 series).

The force transducer is attached to the muscle through a unique slot in the end of the bath. This provides an ideal configuration for engineered muscle tissue or oxygen consumption studies that require the chamber to be sealed with an available lid. Both force and length can be controlled and measured allowing simple tension tests as well as complete mechanical characterization.

Signal acquisition and data management is handled by our software that includes standardized protocols, which transform complex experiments into simple and straightforward measurement. Furthermore, a stand is included with each system for easy storage and for adaptation to a standard stereo or inverted microscope.

Variants

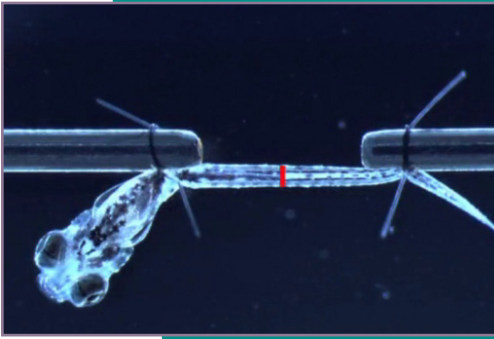
1510A	Isometric Force
1530A	Dual-Mode Lever System

System Components

315D/322D	High Speed Length Controller
400C	Force Transducer
600A	Complete Data Acquisition and Digital Controller System
701C	High-Power, Bi-Phasic Stimulator
801C	Small Intact Muscle Apparatus

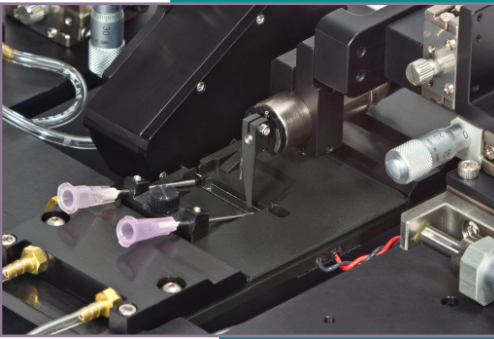
Features

- Complete Test System with integrated bath apparatus for small intact muscle
- Temperature controlled bath plate (sizes from 400 μ L to 1900 μ L)
- Control and measure both force and length
- Compatible with camera (901D HVSL) or laser based (902A) sarcomere length detection
- Compatible with standard and inverted microscopes
- Resolution as low as 0.01 μ N
- Force ranges from 0.5mN to 1000mN



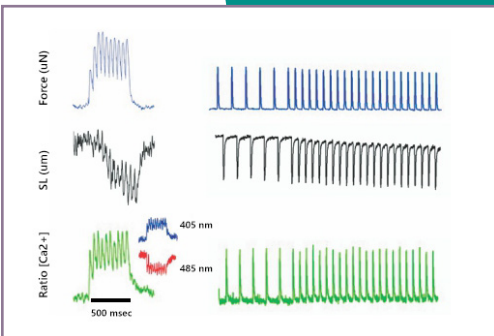
An Extremely Versatile Solution

With nearly limitless options and configurability the 1500A system is the ideal solution for researchers seeking to study several different muscle or tissue units and samples. From tissue engineered constructs to zebrafish the 1500A system is the serious choice for functional muscle measurements and beyond.



Novel Chamber Design

Our glass bottom bath chamber with integrated stimulation electrodes and perfusion permit imaging of the sample while maintaining tissue viability. The open top, horizontal design also permits a sealing lid to be mounted in place for oxygen consumption or hypoxia studies.



Add FluoroTrack and Sarcomere Length

The 1500A system works with most inverted microscopes, allowing integration of Sarcomere Length and biofluorimetry measurements. Pair your 1500A with our FluoroTrack and Video Sarcomere Length Modules for force, calcium and sarcomere length measurements all synchronized in real time.

(Data courtesy of Chris Ward, University of Maryland)



Powerful Software with Standard Protocols

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



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

Susceptibility to innate immune activation in genetically mediated myocarditis.

Selgrade, Daniel F. et al. J Clin Invest. (2024) 134.13: e180254. PMID: 38768074

Comprehensive phenotypic characterization of an allelic series of zebrafish models of NEB-related nemaline myopathy.

Lacramioara, Fabian et al. Hum Mol Genet. (2024) 33.12: 1036-1054. PMID: 38493359

Inhibition of the skeletal muscle Lands cycle ameliorates weakness induced by physical inactivity.

Shahtout, Justin L et al. J Cachexia Sarcopenia Muscle. (2024) 15.1: 319-330. PMID: 38123161

Ca²⁺ and force during dynamic contractions in mouse intact skeletal muscle fibers.

Fukutani, Atsuki et al. Sci Rep. (2024) 14.1: 689. PMID: 38184730

Mechanical Control of Relaxation using Intact Cardiac Trabeculae.

Bukowski, Melissa et al. J Vis Exp. (2023) 192:10.3791/64879. PMID: 36876939

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