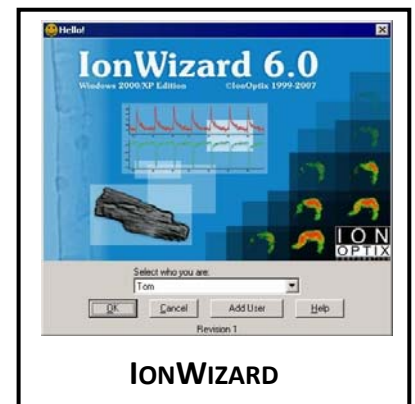


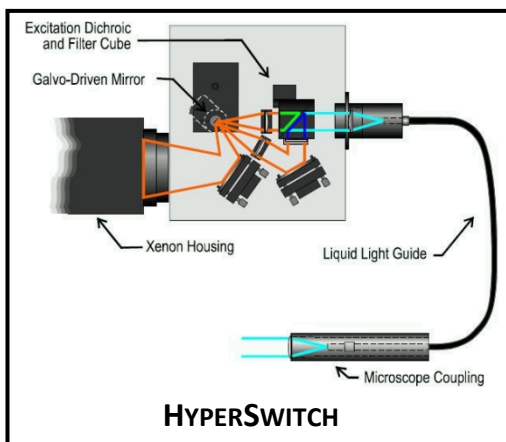
HMSYS: Myocyte Calcium & Contractility Recording System

IonOptix has developed its **Myocyte Calcium & Contractility Recording System** over many years of collaboration with top cardiovascular researchers. We take pride in a line of precision products that are application driven and built to meet the needs of a demanding research environment. Since its inception in 1990 IonOptix has installed hundreds of high performance, turn-key systems in research laboratories worldwide.

The list of components comprising a complete, integrated workstation can be extensive. Our complete systems are built from components designed to work seamlessly with one another, providing completely synchronous and accurate data acquisition. Our systems begin with the [IonWizard](#) core software. IonWizard's central functions can be expanded through the [SoftEdge](#), [SarLen](#) and [PMTACQ](#) acquisition modules to record cell length, sarcomere length and ratiometric fluorescence data. IonWizard communicates directly with two root devices, the video acquisition camera and our fluorescence system interface. Our newest camera, the [MyoCam-S](#), offers 500Hz acquisition for fast recording of cellular dimensions. It also offers USB connectivity for greater flexibility. The fluorescence system interface ([FSI](#)) provides a hub for communication with all peripheral hardware devices through a suite of analog and digital connections, which allows the software to synchronize data acquisition. The FSI also synchronizes the control of our fluorescence excitation light source with collection from emission sensors, an essential component of accurate ratiometric fluorescence measurements.

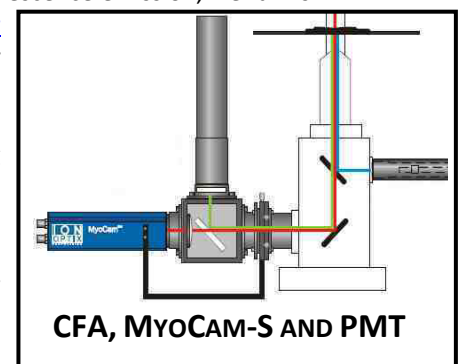


IONWIZARD



Cellular calcium levels rise and fall on millisecond time scales. For dual excitation indicator dyes such as Fura-2, the fluorescence excitation light source must switch between two light paths with the speed and precision. The IonOptix [HyperSwitch](#) uses a galvanometer-driven mirror to steer light between two light paths. With sub-millisecond switching times, the HyperSwitch offers 250 true ratios per second when driven by our IonWizard core software and the PMTACQ acquisition module. The HyperSwitch comes equipped with a Xenon arc lamp for nearly uniform light intensity in the near ultraviolet and visible spectrum. The HyperSwitch delivers fluorescence illumination to your microscope through an efficient liquid light guide and a microscope-specific adapter, precision machined at our facility. For detecting and quantifying fluorescence emission, we furnish systems with one or more [photomultiplier tubes](#) (PMTs). The PMT offers broader

dynamic range, faster acquisition rates and greater photosensitivity (compared to CCD-based sensors). To enable simultaneous cellular dimensioning with the MyoCam-S, we equip every fluorescence recording workstation with our cell framing adapter ([CFA](#)). The CFA hosts several optical elements for filtering and directing light to the appropriate device. It holds an aperture for physically framing the image, preventing unwanted extracellular background from contributing to the fluorescent signal. The CFA also comes outfitted with our MyoHandle, a device for mechanically rotating the camera image to align the cell for dimensioning. Coupling the appropriate optical filters with our CFA, camera and PMT, our systems offer precise, real-time calcium and contractility measurements.

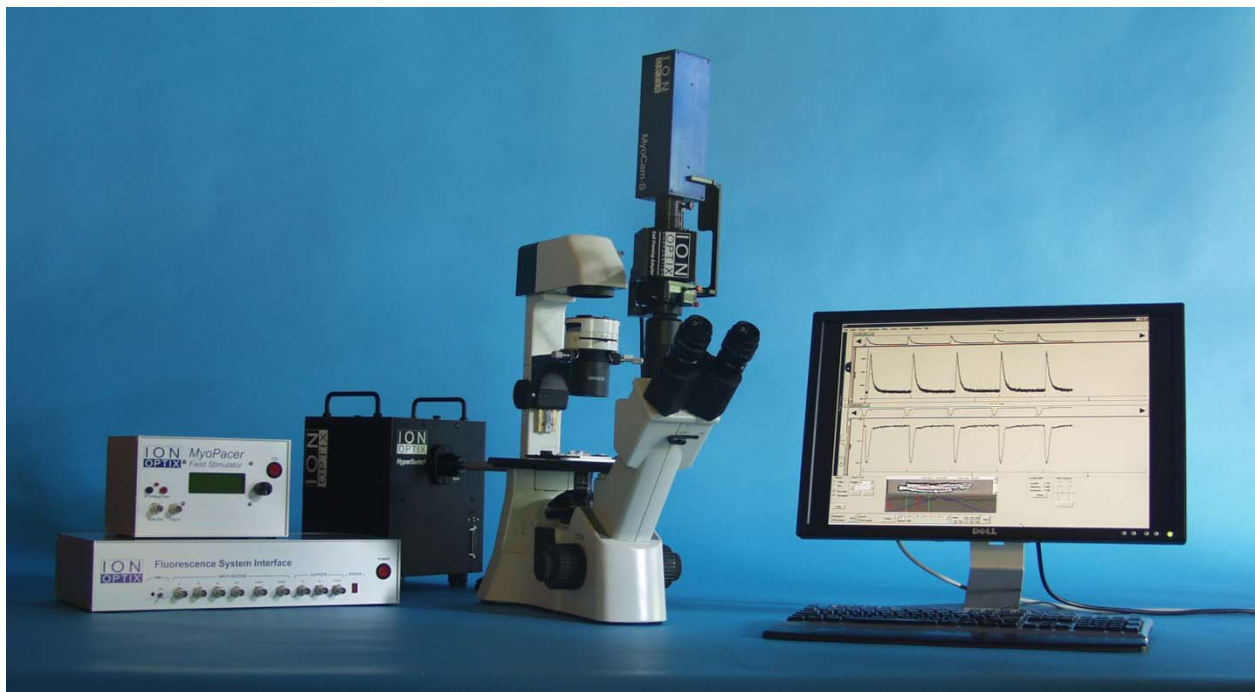


CFA, MYOCAM-S AND PMT

For myocyte studies, we include our acute field stimulator, the [MyoPacer](#), to electrically pace cellular contractions. The MyoPacer offers full control of stimulation pulse duration, frequency, and voltage. When coupled to an IonOptix system interface, stimulation marks are recorded and interpreted by IonWizard for event averaging and [analysis](#). We also offer the [FHD Microscope Chamber System](#), a stimulation and superfusion cell chamber system that uses 25mm coverglass. As an added bonus, the FHD chamber can be equipped with a thermistor to monitor chamber temperature when coupled to the optional [TempC2](#), a temperature controller and in-line heater package.

No system would be complete without a microscope. We can equip your microscope with all the necessary couplings to attach your IonOptix hardware or we can supply the microscope as part of your system. We offer a high quality [Motic inverted microscope](#) configured to our specifications. Our microscope package offers upscale features such as uniform Koehler illumination, infinity corrected optics and high transmittance UV objectives at a very reasonable price. Our microscope package guarantees you'll have everything you need for precise calcium and contractility measurements.

Equipped with the latest computers, we assemble and test all components at our facility before shipping. Every system includes a visit to your lab for installation and training. When we install our complete systems we use your preparations to help get you started as quickly as possible. And when you need assistance we offer unlimited phone and email support for the lifetime of your system.



COMPLETE CALCIUM & CONTRACTILITY RECORDING SYSTEM



Standard Components:

Software

[IonWizard-Core and Analysis](#)

[SoftEdge™ Myocyte Cell Length Acquisition Module](#)

[SarLen Sarcomere Length Acquisition Module](#)

[PMTACQ PMT Acquisition Module](#)

Light Sources

[HyperSwitch Light Source](#)

Cameras and PMTs

[MyoCam-S Digital CCD Video Camera](#)

[PMT Sub-System](#)

[Cell Framing Adapter](#)

Interfaces

[Fluorescence System Interface](#)

Stimulators

[MyoPacer Cell Stimulator](#)

Cell Chambers and Temperature Control

[FHD Microscope Chamber System](#)

[Cell MicroControls mTCII Temperature Controller & Heater](#)

Microscope

[IonOptix/ Motic Fluorescence Microscope Package](#)

Dye-specific Optics Packages

Every complete system includes one application-specific filter package. Optional filter packages are available upon request. [Contact](#) your IonOptix representative for more information.

Optional Components:

Light Sources

[µStep Light Source](#) (replaces HyperSwitch Light Source for slower filter switching)

Stimulators

[MyoPacer EP Cell Stimulator](#) (replaces MyoPacer for additional functionality)

Cell Chambers

[C-Stim CMC Microscope Chamber System](#) (replaces FHD Microscope Chamber System)

Please visit us at www.ionoptix.com for more information.

Email your IonOptix representative at info@ionoptix.com for a system tailored specifically to your application.