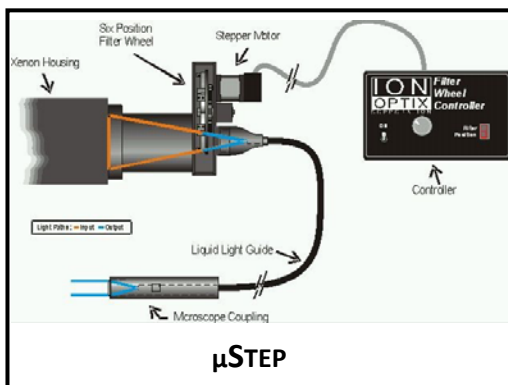


MMSYS: Myocyte Calcium & Contractility Recording System

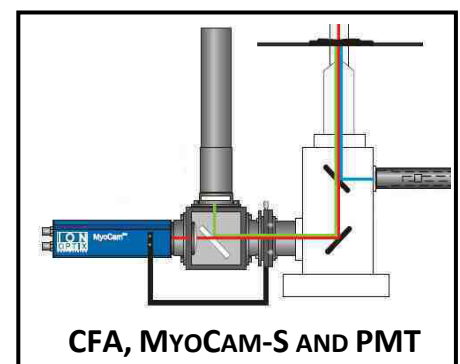
IonOptix has developed its **Myocyte Calcium & Contractility Recording System** over many years of collaboration with top cardiovascular researchers. We take pride in a line of precision products that are application driven and built to meet the needs of a demanding research environment. Since its inception 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 communication hub for 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.



Cellular calcium levels rise and fall on millisecond time scales. For dual excitation indicator dyes such as Fura-2, sampling rates must keep pace with the dynamic changes in intracellular calcium. The IonOptix [μStep](#) uses an economical filter wheel to direct fluorescence excitation light between up to six paths. In combination with our IonWizard core software and the PMTACQ acquisition module, the [μStep](#) allows pseudo-ratio sampling rates of 1000 Hz. More about this technique and its advantages and limitations can be found on our website: [Interpolated Numerator Method](#). The [μStep](#) comes equipped with a Xenon arc lamp for nearly uniform light intensity in the near ultraviolet and visible spectrum. The [μStep](#) 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.



ION OPTIX

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. The FHD chamber is equipped with a thermistor to monitor chamber temperature when coupled to the [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 – μ STEP CONFIGURATION



Standard Components:

Software

[IonWizard-Core and Analysis](#)
[SoftEdge™ Myocyte Cell Length Acquisition Module](#)
[SarLen Sarcomere Length Acquisition Module](#)
[PMTACQ PMT Acquisition Module](#)

Light Sources

[μStep 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

[HyperSwitch Light Source](#) (replaces μStep Light Source for sub-millisecond switching and true ratios)

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.