

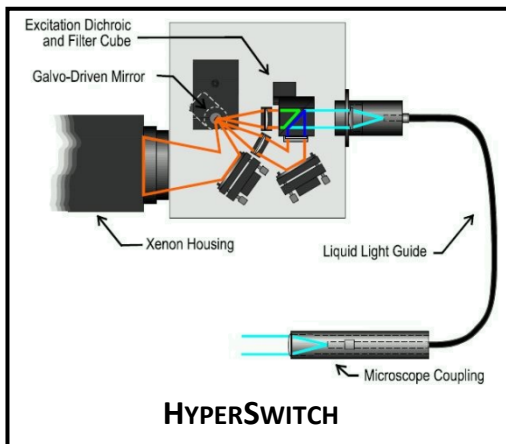
HPSYS: HyperSwitch™ Fluorescence Photometry System

IonOptix developed its **HyperSwitch Fluorescence Photometry System** over many years of collaboration with top researchers. We take pride in the manufacture 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. All of our systems begin with [IonWizard](#), our core software. IonWizard's functions can be expanded to record ratiometric fluorescence data through the [PMTAcq](#) acquisition software module. IonWizard communicates with our fluorescence system interface ([FSI](#)) device through a high-speed 16-bit digital I/O PCI card. The fluorescence system interface provides a hub for communicating with all peripheral hardware devices, synchronizing data acquisition through a suite of analog and digital connections. 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.

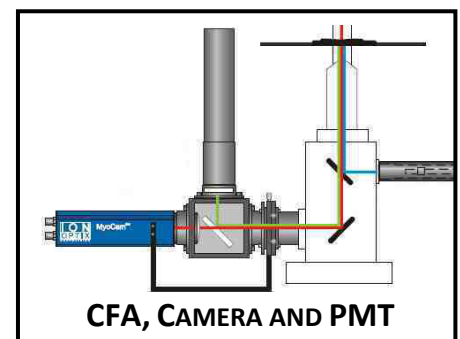


IONWIZARD



Cellular ion levels can rise and fall on millisecond time scales. For dual excitation indicator dyes such as Fura-2, the fluorescence excitation light source must switch between excitation wavelengths with 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. 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 photometry, the detection and quantification of light, we furnish our fluorescence systems with one or more [photomultiplier tubes](#) (PMTs). The PMT offers broader dynamic range, faster acquisition rates and greater

photosensitivity (compared to imaging cameras and their CCD- and CMOS-based sensors). Our fluorescence collection and measurement systems also come equipped with a cell framing adapter ([CFA](#)) and monitoring camera to precisely position the sample for better signal-to-noise and greater recording accuracy. 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. Coupling the appropriate optical filters with our CFA and PMT, our systems offer precise, real-time calcium measurements.



CFA, CAMERA AND PMT

For cellular studies requiring electrical pacing, we offer our digital acute field stimulators, the [MyoPacer](#) or the [MyoPacer EP](#). The MyoPacers offer 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 [Motoc 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 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.



IONOPTIX CALCIUM RECORDING SYSTEM – HYPERSWITCH CONFIGURATION



Standard Components:

Software

[IonWizard-Core and Analysis](#)

[PMTACQ PMT Acquisition Module](#)

Light Sources

[HyperSwitch Light Source](#)

Cameras and PMTs

[PMT Sub-System](#)

[Cell Framing Adapter](#)

Interfaces

[Fluorescence System Interface](#)

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. See common dye packages below. [Contact](#) your IonOptix representative for more information.

Optional Components:

Light Sources

[μStep Light Source](#) (replaces HyperSwitch Light Source for non-ratiometric probes and slow or pseudo-ratiometric recording)

Stimulators

[MyoPacer Cell Stimulator](#)

[MyoPacer EP Cell Stimulator](#)

Cell Chambers

[FHD Microscope Chamber System](#)

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

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

Dye Packages

DP-BCECF-HS	BCECF dye-specific optics package for HyperSwitch
DP-BCECF-MU	BCECF dye-specific optics package for muStep
DP-Fluo	Fluo-3/4 dye-specific optics package
DP-Fura-MU	Fura-2 dye-specific optics package for muStep
DP-Indo	Indo-1 dye-specific optics package
DP-Fura-HS	Fura-2 dye-specific optics package for HyperSwitch

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.