ION OPTIX

MCS300
MyoCam-S3

User Manual

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Research Use Only

This product is intended for research purposes only. It is not certified for clinical applications (including diagnostic purposes). Use of this product in uncertified applications is in violation of FDA regulations.

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Safety Precautions

To ensure reliability and safety, we recommend using the instrument according to the guidelines described in this manual. All safety and operating instructions should be read and understood before use.

Electric shock risk! Do not remove instrument cover. There are no user-serviceable parts inside. Refer servicing to IonOptix technical support (support@ionoptix.com). Static electricity can damage electronic components. Take care to discharge yourself before handling the device.

Please adhere to the following safety guidelines:

- Unplug the instrument from the wall before cleaning.
- Keep the instrument free from moisture, water, and dust.
- Do not place instrument on unstable surface and do not drop the device.
- If ventilation slots are present on instrument panels, keep clear of obstructions.
- All cables and power supply cords should be routed so as to not cause a hazard. Use only supplied or approved/recommended cables.
- Ensure instrument is not situated near a heat source.

Statement of Conformity

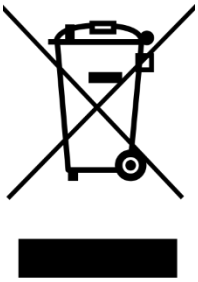
This instrument carries the CE mark and meets the appropriate EU directives.

Intended Use

This product is intended for **research purposes only**. It is not certified for clinical applications (including diagnostic purposes). Use of this product in uncertified applications is in violation of FDA regulations.

IonOptix products are intended to be installed, used, and operated under the supervision of an appropriately qualified life-science researcher.

Disposal



Forward to recycling center or return to manufacturer. Unwanted equipment bearing the Waste Electrical and Electronic Equipment (WEEE) Directive symbol requires separate waste collection. For a product labeled with this symbol, either forward to a recycling center or contact your nearest IonOptix representative for methods of disposal at the end of its working life.

Warranty

This IonOptix instument is warrantied for a period of one (1) year from delivery under normal use and conditions, and will operate in material conformance with applicable IonOptix specifications or standards.

This warranty does not apply to any defect caused by failure to provide a suitable operating environment, any other excluded use, or any other abuse, misuse, or neglect of the instrument.

Technical Specifications

Item	Specification
Dimensions	82 (L) x 45 (W) x 45 (H) mm
Weight	175 g
Resolution	2.4 MPixel (1936 x 1216)
Connection	USB3
IN / OUT connector physical standard	BNC
IN / OUT connector electrical standard	5V TTL/CMOS
Power	USB bus powered (5V)
Sensor	1/1.2” CMOS (5.86 µm pixels)
Operating temperature	10 - 40 °C
Air humidity	10 – 90 % RH, non-condensing
Pollution degree	2
Exposure Time	10 µs – 20 s
Frame Rate	161.4 Hz (subfield frame rates > 1 kHz)
ADC Resolution	12 bit
SNR (max)	45.1 dB (EMVA1288)
Dynamic range	66.4 dB (EMVA1288)
Programmable gain and offset	USB3 Vision industry standard
Lens Mount	C-mount

Overview

This manual describes how to setup and use the MyoCam-S3 camera in your application.

The IonOptix MyoCam-S3™ is our third generation MyoCam. Featuring a faster, higher resolution CMOS sensor, it is uniquely designed for use with IonOptix Contractility Systems where high frame rates and sub-micron resolution are required to capture myocyte shortening.

The MyoCam-S3™ is an all-digital, variable field rate camera that utilizes the USB3 Vision standard for higher data transfer rates over its USB2 predecessor while retaining an easy-to-use plug and play interface.

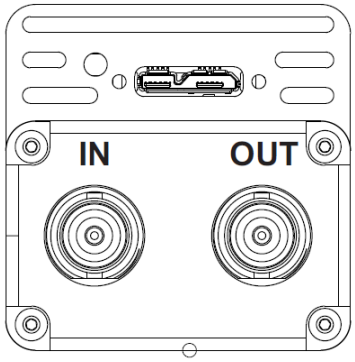
Power and data occur over the same lockable USB3 cable, enabling simple, secure setup and connectivity with better performance and a lower performance overhead.

The MyoCam-S3™ gives you complete control of all aspects of video acquisition to deliver the optimum combination of temporal and spatial resolution, making it the ideal choice for superior myocyte data acquisition.

Features

- Single, lockable USB3 cable for power and data transfer
- Compact form factor
- Programmable integration time to stop fast movement or increase camera sensitivity
- Programmable frame period and external trigger to synchronize with other recording devices

Connections



USB3

USB3 connection to computer. Use the recommended cable with jack screws to prevent inadvertent disconnections.

IN (Timing Trigger Input)

This is a 5 Volt TTL/CMOS logic level input used to synchronize the camera timestamps with the rest of the fluorescence system interface data streams.

Out (Frame Active Signal)

This is a 5 Volt TTL/CMOS logic level output that is high when the sensor is actively integrating photons. This can be used as a trigger or for debugging purposes

Installation

Attention: Always use the supplied or recommended cables and mounting accessories.

- Install camera with the C-Mount into microscope or CFA.
- Connect USB cable (USB3) to computer.
- Connect IN to Start Out of IonOptix Fluorescence System Interface (FSI). FSI must be FSI800 or FSI700 with FPGA circuit (manufactured in 2014 or later).

How to Use

There are no user controls on the camera itself. All options are controlled by software. See the IonWizard Acquisition Manual for software setup and control options.

Cleaning and Maintenance

Cleaning

- Use a soft cloth and a mild cleaner (e.g. window cleaner) to clean the outside of the camera as necessary.
- Do not use solvents like acetone or thinner.
- Do not allow device to become saturated with cleaning solution.
- Do not attempt to clean the image sensor!

Maintenance

- No maintenance other than cleaning is necessary.
- In case of malfunctions contact the manufacturer

Storage and Transport

Storage

- When not in use, keep the camera in the box it was delivered in.
- Store in a dry and clean environment

Transport

- For transport, the original box is preferred.

Faults and Troubleshooting

Troubleshooting

- If the image stream does not start, check USB cable connection and FSI Start-out to Camera In connection.

Repairing

- If the MyoCam-S3™ is damaged, stop using it and disconnect all cabling.
- The MyoCam-S3™ cannot be repaired by the user, and there are no user-serviceable parts inside.
- For repair or inspection, contact the manufacturer.

Accessories

Part Number	Description
Z-C-USB-3.0-MAB	USB 3.0 A/M to Micro B/M with Dual Screw Lock Cable, 3m (10 ft.)
Z-C-BNC-MM-6FT	6 ft, male to male bnc cable
Z-MC-CF-MHF-S3	Myohandle fork for MCS300
Z-MC-CM/UC	C-mount/UC adapter
Z-OS-1mm/100Div	Stage Micrometer

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