Keops Ophthalmic

Workstation Solutions

1st Edition

October 2007

Keops Ophthalmic Workstation Solutions

Copyright © 2007 Matisse Software Inc. All Rights Reserved.

Matisse Software Inc.
930 San Marcos Circle
Mountain View, CA 94043
USA

Printed in USA.

Content

Table of Figures

Introduction

Keops Ophthalmic is a state of the art collaborative imaging platform for documenting the finest eye pathology when conducting ophthalmic research, regulatory toxicology studies or clinical studies. Uniquely designed to run in a highly regulated industrial environment, Keops Ophthalmic provides a fast acquisition process of high-definition images using a direct connection to a variety of ophthalmic instruments ranging from video-enabled slit lamps, to digital retinal cameras to video indirect ophthalmoscopes.

Keops Ophthalmic features a distributed system to manage digital assets of ophthalmic studies. The main features of Keops Ophthalmic are comprised of:

- Connectivity to imaging instruments to capture digital media. Digital still cameras, analog video camera and digital video cameras are currently supported.
- Management of pre-clinical or clinical studies with several treatment groups.
- Management of users and modifications in compliance with FDA regulations. All changes related to clinical study data are recorded and can be viewed in an audit log.
- A comprehensive set of in-depth searching capabilities.

With its cutting-edge media capture workstation solutions, Keops Ophthalmic benefits companies by reducing the screening time of large treatment groups while improving the quality of diagnostics by capturing high-definition images and by enabling real-time or after-the-event peer-review.

Scope

This document is intended to help you discover various workstation solutions, architectures and workflow supported by Keops Ophthalmic. Keops Open Platform allows us to build configurations tailored to your individual needs.

Before you begin

Throughout this document, we presume that you are already familiar with ophthalmic instruments.

Non-Rodent Workstation

Workstation Duo

To streamline the screening of large treatment groups, the Non-Rodent Workstation Duo enables simultaneous examination and observation recordings of two animals, one about anterior segment of the eyes using a slit lamp, the other about its posterior segment using a digital retinal camera or a binocular indirect ophthalmoscope.

Figure 1: Non-Rodent Workstation Duo

The architecture diagram below presents the dual examination stations and details the connection of its components.

On the Anterior Exam station, an examiner observes a live video of the anterior segment of an animal eye on the LCD monitor and can record an observation by a single press on a footswitch.

At the same time, a second operator on the Posterior Exam station observes a live video of the posterior segment of another animal eye captured from the ophthalmoscope. He can then record an observation by a single press on a footswitch. The operator can also record observations from the digital retinal camera with a click on the retinal camera joystick.
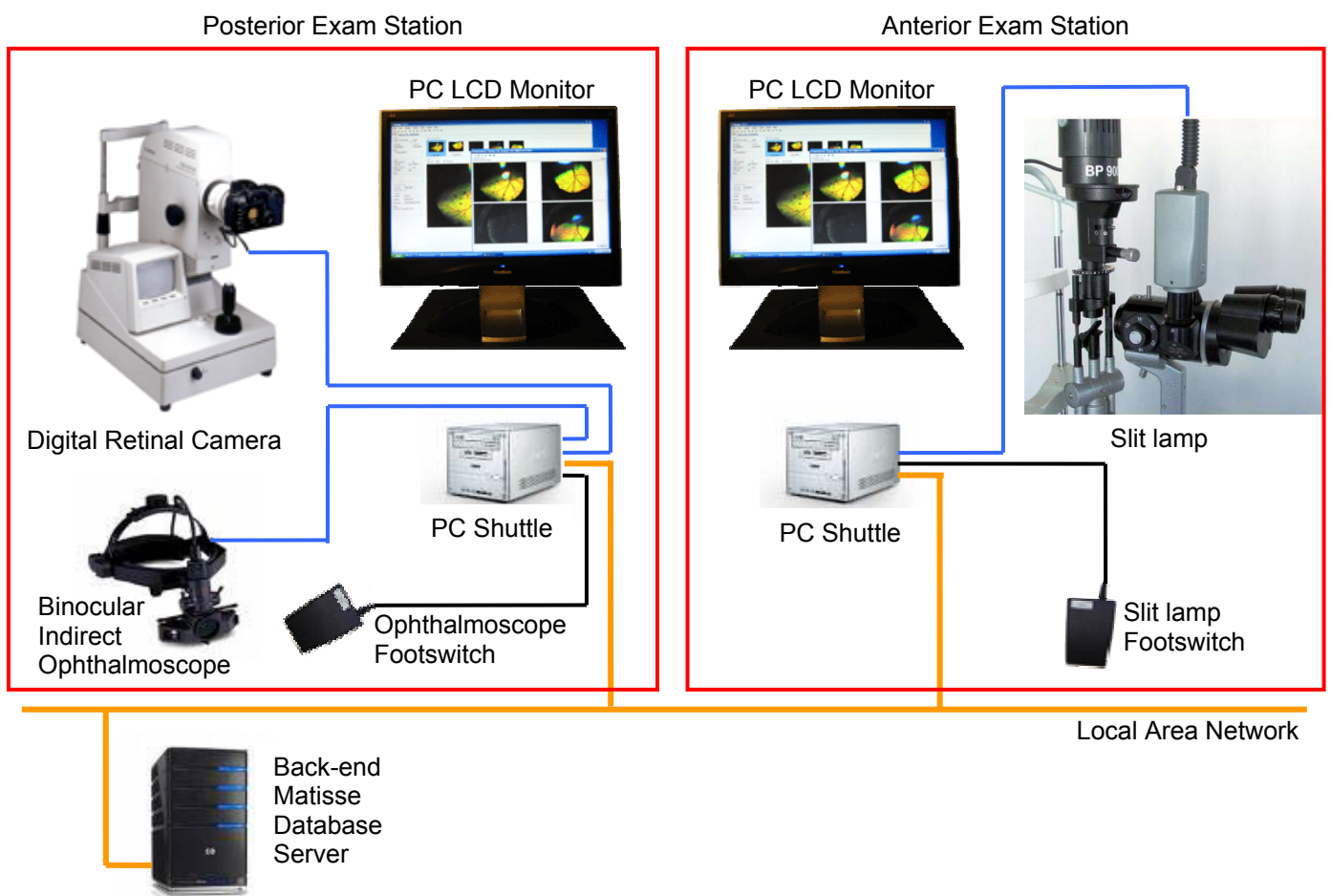
Figure 2: Dual-Examination Non-Rodent Workstation Architecture

Rodent Workstations

We present 2 very popular solutions which tend to cover the needs of the vast majority of research labs.

Workstation Duo

The Rodent Workstation Duo enables simultaneous examination and observation recordings of two animals, one about anterior segment of the eyes using a slit lamp, the other about its posterior segment using a binocular indirect ophthalmoscope or any other instrument suited to the animal anatomy.

Figure 3: Rodent Workstation Duo

The architecture diagram below presents the dual examination stations and details the connection of its components.

An examiner on the Anterior Exam station observes a live video of the anterior segment of an animal eye on the LCD monitor and can record an observation by a single press on a footswitch.

At the same time, a second operator on the Posterior Exam station observes a live video of the posterior segment of another animal eye captured from the ophthalmoscope. He can then record an observation by a single press on a footswitch.
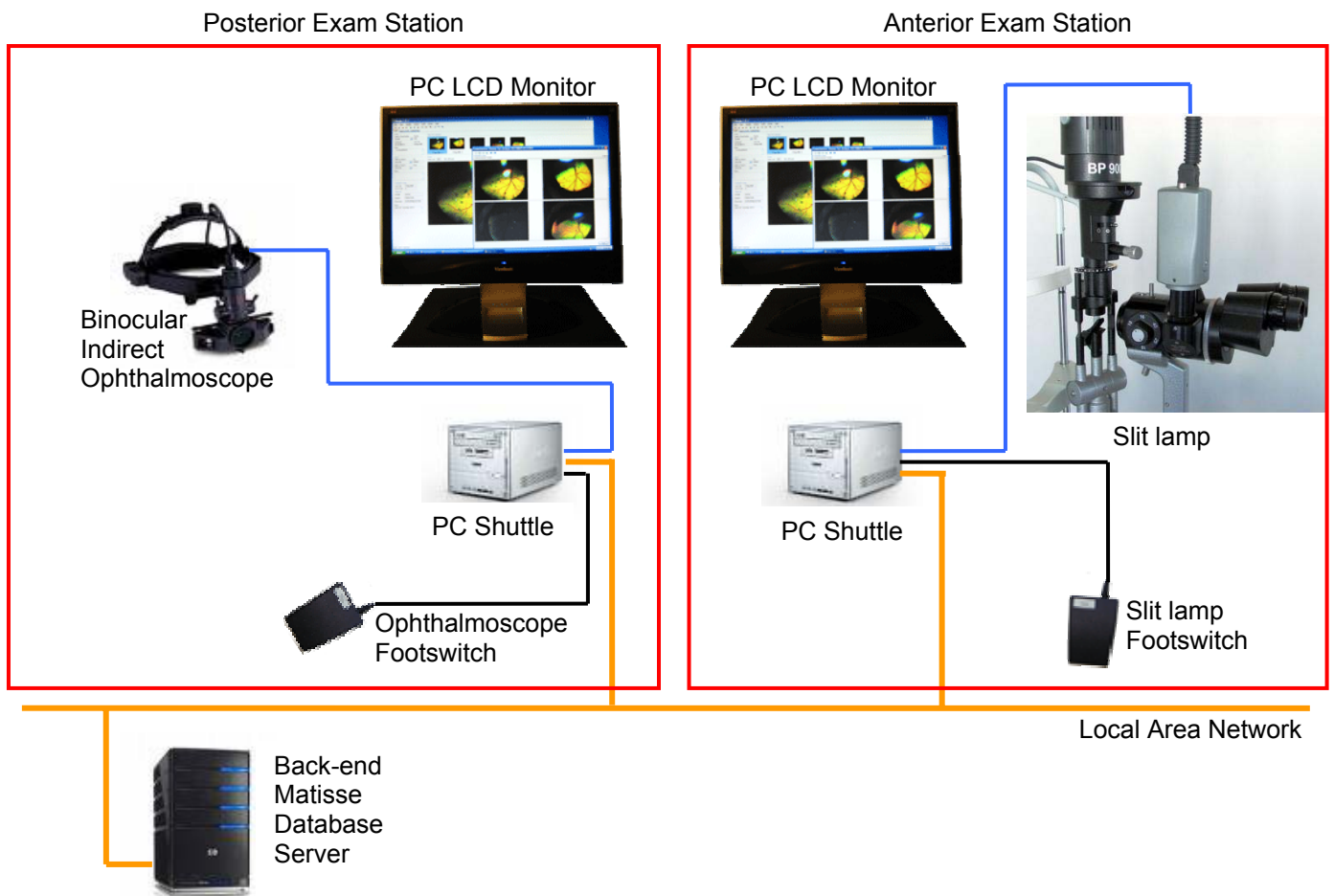
Figure 4: Dual-Examination/Dual-Capture Rodent Workstation Architecture

Single-Capture Workstation

The alternative architecture still enables simultaneous examination of two animals, one about anterior segment of the eyes displaying a live video on the control monitor connected to the slit lamp, the other about its posterior segment displaying a live video on second control monitor. But when an observation needs to be recorded, one operator takes control of the PC, selects the instrument in Keops and then proceeds with the image or video capture.

Figure 5: Single-Capture Rodent Workstation

The architecture diagram below presents the dual examination/single capture station and details the connection of its components.

An examiner on the Anterior Exam station observes a live video of the anterior segment of an animal eye on the control monitor. But when an observation needs to be recorded, the examiner takes control of the PC, selects the slit lamp in Keops which shows the live video of the anterior segment of the eye and then can record an observation by a single press on the slit lamp footswitch.

A second operator on the Posterior Exam station observes a live video on the second control monitor of the posterior segment of another animal eye captured from the ophthalmoscope. If he needs to record an observation, the operator takes control of the PC, selects the ophthalmoscope in Keops which shows the live video of the posterior segment of the eye and then can record an observation by a single press on the ophthalmoscope footswitch.
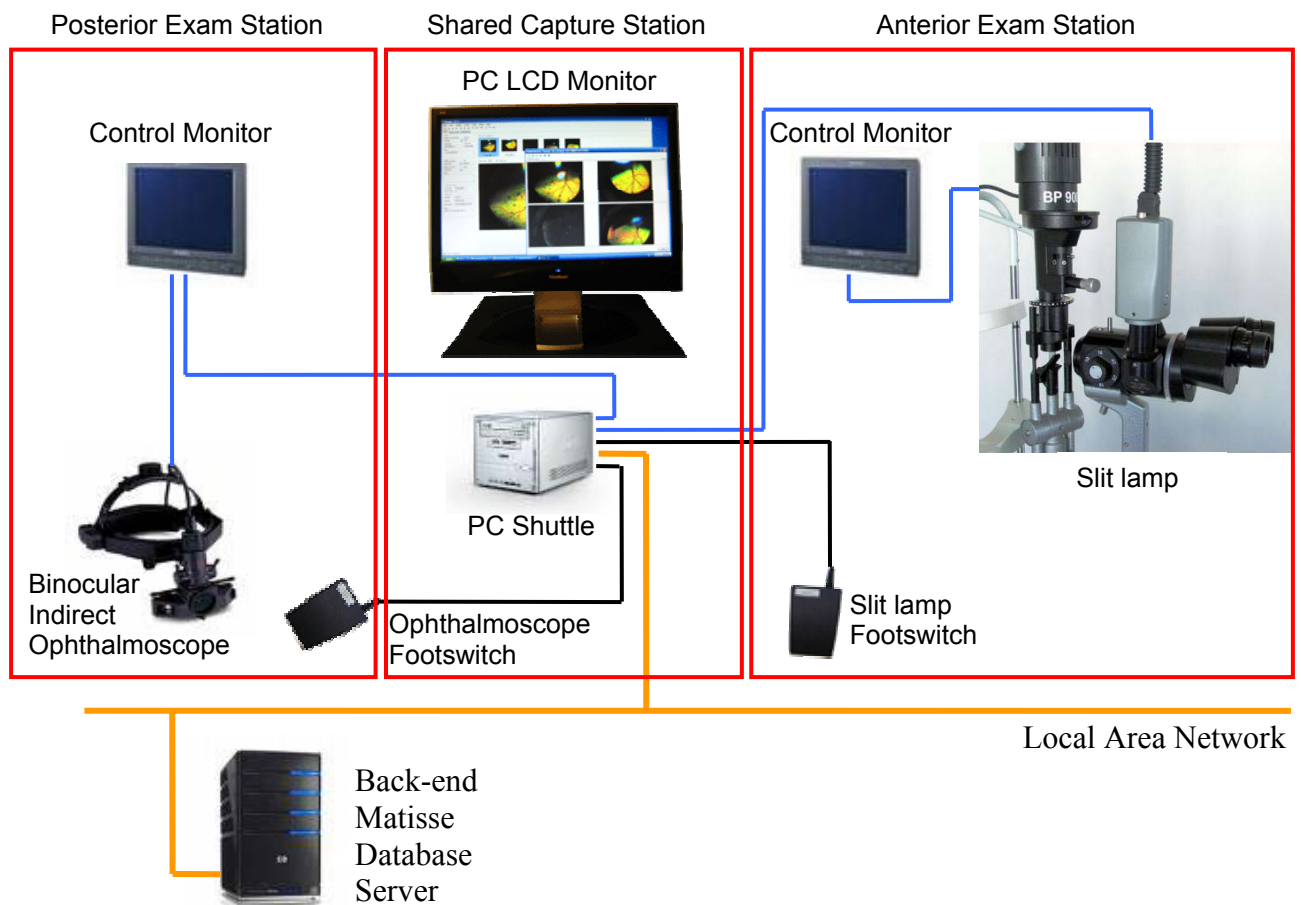

Figure 6: Dual-Examination/Single-Capture Rodent Workstation Architecture

Solo Workstation

The Solo Workstation architecture enables a single animal examination.
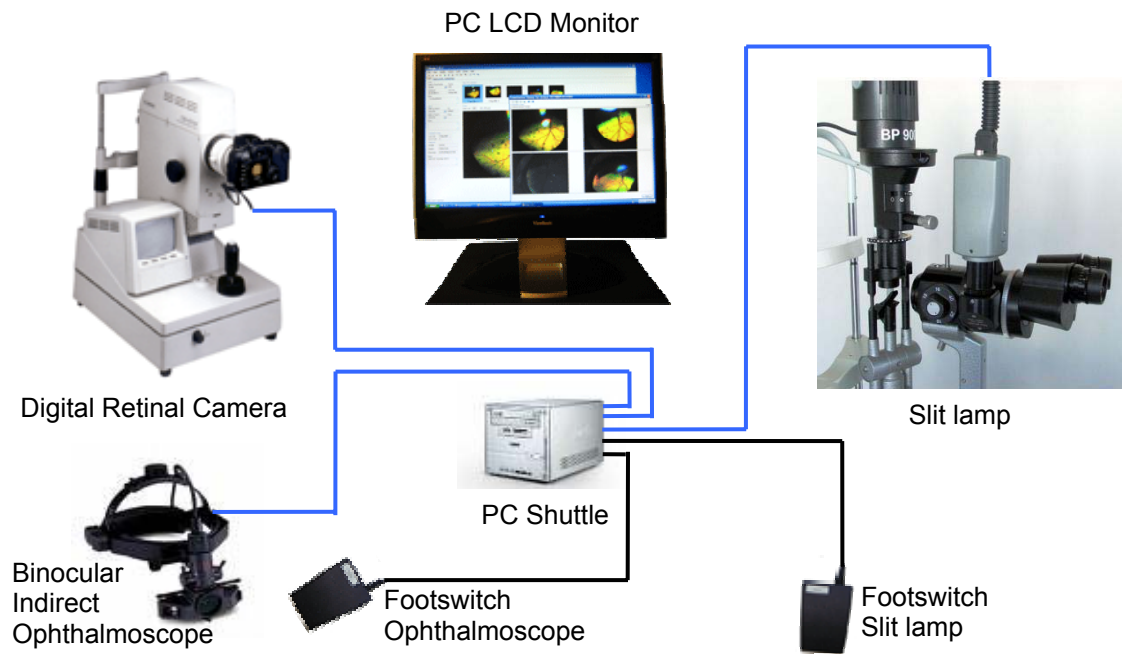

Figure 7: Single-Operator Multi-Purpose Workstation Architecture

Equipment Specifications

Workstations can be tailored to the most specific needs ranging from imaging quality to acquisition speed to volume of archived studies.

Keops Ophthalmic is designed to connect to any ophthalmic instrument available on the market, which uses a digital or analog video camera or a digital camera.

The table below presents only a few medical instruments from renowned vendors compatible with Keops. Upon request, Keops Ophthalmic can be tailored to connect to any particular medical instrument not yet mentioned below.

Digital Retinal Camera	Canon CF-60DSi digital fundus camera* with Canon EOS Series** Canon CR-DGi non-mydriatic retinal digital camera* with Canon EOS Series** TOPCON Retinal Camera TRC Series*** * connected to the PC via a USB connector ** supported cameras include EOS 400D/Digital Rebel XTi, EOS 350D/Digital Rebel XT, EOS 40D, EOS 30D, EOS 20D/20Da, EOS 5D, EOS-1D Mark II N, EOS-1D Mark II, EOS-1Ds Mark II, EOS-1D Mark III and EOS-1Ds Mark III *** connection information available upon request
PC LCD Monitor	22" LCD widescreen* * ViewSonic VX2235wm
Control Monitor	14" LCD monitor* * Sony NO LMD-1410

PC Shuttle	CPU: AMD64 2.4GHz
	 RAM: 1 Gbytes
	 Disk: 250 Gbytes
	 OS: Windows XP
	 Connectors: 4 USB ports
	              1 400Mbps 1394 Firewire connector
	              1 serial DB9 (25 pin) connector
	 Options:
	 CPU: AMD64 X2 2.2GHz
	 RAM: 2 Gbytes

	Disk: up to 750 Gbytes Video board: Flashbus Spectrim Lite PCI Video board Connectors: 1 800Mbps 1394 Firewire connector
Slit lamp	Haag-Streit BM 900* with Sony "FireWire" digital video camera** Haag-Streit BQ 900* with Sony "FireWire" digital video camera** Haag-Streit BX 900*** with Canon EOS Series**** TOPCON SL-D Series***** * connected to the PC via a 1394 "FireWire" connector ** XCD-SX910CR/X710CR series *** connected to the PC via a USB connector **** supported cameras include EOS 400D/Digital Rebel XTi, EOS 350D/Digital Rebel XT, EOS 40D, EOS 30D, EOS 20D/20Da, EOS 5D, EOS-1D Mark II N, EOS-1D Mark II, EOS-1Ds Mark II and EOS-1D Mark III ***** connection information available upon request
Binocular Indirect Ophthalmoscope	Heine Video OMEGA 2C with C-mount CCD Camera* * connected to the PC Flashbus PCI Video board via a S-Video connector
Footswitch Ophthalmoscope	Herga light duty footswitch with jack stereo connector* * connected to the PC Flashbus PCI Video board via a jack stereo connector
Footswitch Slit lamp	Herga light duty footswitch with serial DB9 (25 pin) connector* * connected to the PC via a serial connector
Database Server	Back-end Server* running Matisse Database Server on Windows * Keops Solo Edition does not require a back-end server since Matisse Database Server is installed on the Shuttle PC.

Figure 8: Standard Equipment Specifications

Connection Details

Keops Ophthalmic features direct connection to ophthalmic instruments using standard PC connectors avoiding manual transfer of media data (images or video clips).

Firewire (1394)
Slit lamp camera
Connector

Slit lamp
Footswitch
Serial
Connector

Retinal Camera
USB Connector

Flashbus Spectrim Lite
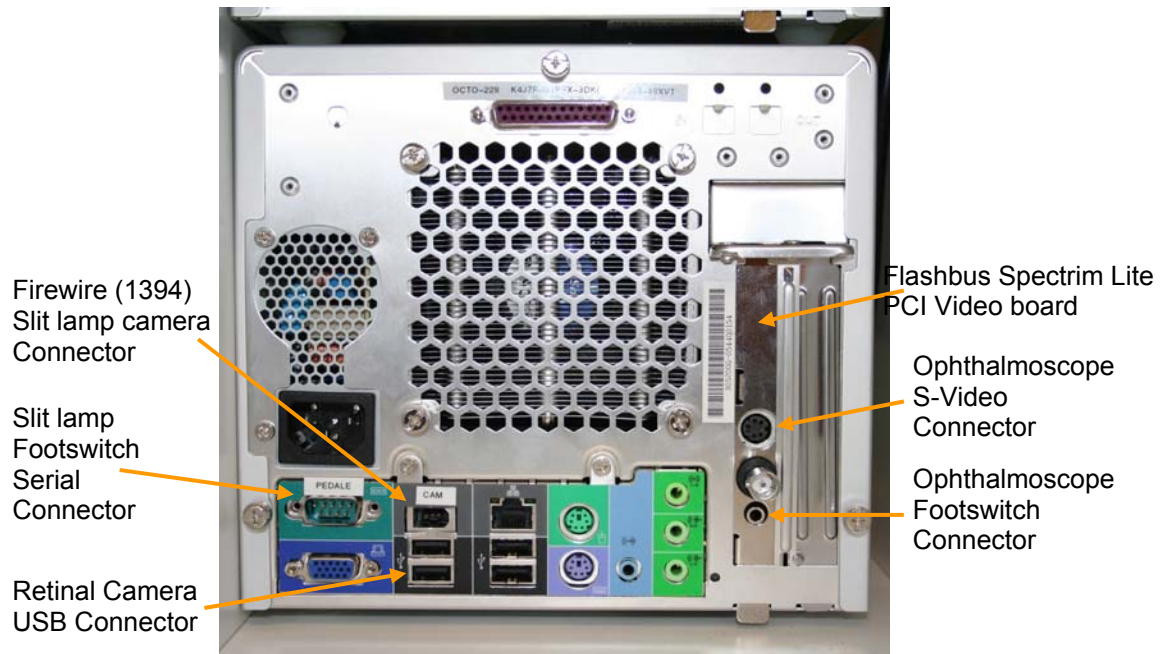PCI Video board

Ophthalmoscope
S-Video
Connector

Ophthalmoscope
Footswitch
Connector

Figure 9: PC Shuttle Back Panel