THORLABS

Thorlabs
Digital Cameras

Quick Start Guide

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Chapter 1 Introduction

1.1 Explanation of Safety Warnings


Danger, Warning, or Caution


ESD Component Caution



The CE/UKCA markings on the product are the manufacturer's declaration that the product complies with the essential requirements of the relevant European health, safety, and environmental protection legislation.


The symbol on the product, the accessories or packaging indicates that this device must not be treated as unsorted municipal waste but must be collected separately.

1.2 Description

This booklet is a Quick Start Guide to the installation of Thorlabs Compact and Scientific-Grade cameras, and it is meant to be a companion to the camera user guides and ThorImage®CAM User Guide. This Quick Start Guide is intended to provide basic information regarding the initial setup and installation of your camera.

It is highly recommended that you familiarize yourself with the detailed information contained in the documentation folder associated with your specific camera model and Thorlabs Software once you have completed this installation.

The manuals are also available on the specific camera model web page at **www.thorlabs.com**. The ThorImageCAM User Guide can also be found in the About window under the Help tab of the ThorImageCAM interface.

1.3 Simplified Declaration of Conformity

The full text of the EU declaration of conformity for the cameras are available at the following internet addresses:

http://www.thorlabs.com/f332974

https://www.thorlabs.com/f317187

https://www.thorlabs.com/f334942

https://www.thorlabs.com/f313271

1.4 FCC Designation

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules, and meets all requirements of the Canadian Interference Causing Equipment Standard ICES-003 for digital apparatus. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Thorlabs is not responsible for any radio television interference caused by modifications of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by Thorlabs. The correction of interference caused by such unauthorized modification, substitution or attachment will be the responsibility of the user. The use of shielded I/O cables is required when connecting this equipment to any and all optional peripheral or host devices. Failure to do so may violate FCC and ICES rules.

Chapter 2 Safety



Caution
This Caution symbol indicates that additional information is available in these user guides.

Please carefully read the instruction manual for the appropriate model device before operating your Digital Video Camera. All statements regarding safety and technical specifications are published in that document and will only apply when the unit is operated correctly.

This equipment is intended for laboratory use only and is not certified for medical applications, including but not limited to, life support situations.

Check the supply voltage of the system before plugging in the power supply. Make sure the included power cord is the correct type for the service you are connecting to AND connected to a properly grounded power outlet (100 - 240 VAC; 50 - 60 Hz).

Transportation and delivery may cause the Digital Video Camera to be warm or cool upon receipt. Please wait for the device to reach room temperature before attempting to operate.

There are NO user accessible fuses in this Digital Video Camera or the included External Power Supply.

Do not open the Digital Video Camera or the External Power Supply. Doing so is dangerous and could result in damage to the unit or death to the user.

Please contact Thorlabs Tech Support at **techsupport@thorlabs.com,** and a member of our team will be happy to assist you with any questions you may have regarding this product.

Chapter 3 Installation

3.1 Warranty Information

Any modifications or servicing by unqualified personnel renders the warranty null and void, leaving Thorlabs free of liability. Please refer to your camera's user guide for complete warranty information.

This precision device is only serviceable if returned and properly packed into the complete original packaging including the complete shipment plus the cardboard insert that holds the enclosed devices. If necessary, ask for replacement packaging. Refer servicing to qualified personnel.

3.2 Receiving and Unpacking

Your camera was thoroughly tested and carefully packed at the factory. Once the camera shipment is accepted for delivery, the carrier assumes full responsibility for its safe arrival. Should you receive your shipment with any damage—concealed or apparent—please contact the carrier at once. The carrier will instruct you on how to initiate a damage claim. If a visual inspection reveals damage upon receipt, it must be noted on the freight bill or express receipt and the notation signed by the carrier's agent. Failure to do so can result in the carrier refusing to honor the claim.

To return your camera to Thorlabs Imaging Systems for service, you must first contact your local Thorlabs office or distributor and request a Return Material Authorization (RMA). Returns will not be accepted without an RMA. See the Section 3.1 titled "Warranty Information" for details.

3.3 Thorlabs' Digital Camera Families

Zelux®, Kiralux® / Quantalux® (including Low Profile models), and Cooled sCMOS / CMOS cameras have a black and red aluminum case. All Scientific Camera families have their own USB 3.0 drivers and Software Designer Kits (SDK).



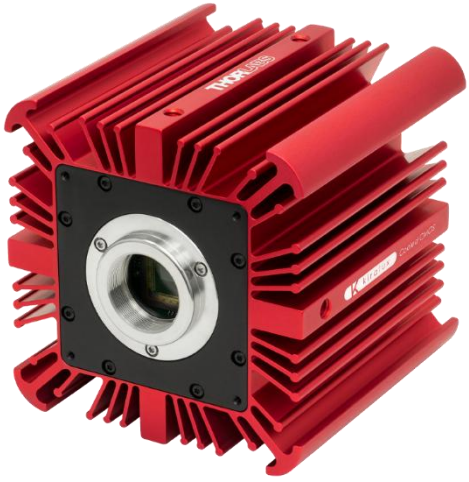
Zelux
CMOS Cameras



Kiralux and Quantalux
CMOS CS Cameras



Kiralux
LP CMOS Cameras



Kiralux Cooled CMOS and
Quantalux Cooled sCMOS Cameras

3.4 Scientific Camera USB 3.0 Installation:

If you purchased a Scientific USB 3.0 camera (Zelux, Kiralux, Quantalux, including Cooled sCMOS / CMOS), an optional USB 3.0 PCIe interface card is available, Item # USB3-PCIE, which may provide higher throughput over an integrated USB 3.0 port on your PC (Other USB interface cards may work but are not supported).

1. **Run the Software Installer** – follow the steps outlined in Section 3.5, including driver installation.
2. **If installing a PCIe USB 3.0 card – Power down the computer.**

   Taking necessary ESD precautions, install the USB 3.0 PCIe interface card. Turn on the computer.
3. Otherwise, simply connect the camera to a SuperSpeed USB 3.0 port on the PC using the provided USB 3.0 cable*.
4. Accept the driver installation recommendations for the newly installed hardware.
5. Power on the camera and run the ThorImageCAM application software.

*We recommend using only the USB 3.0 cable that was shipped with the camera.

3.5 Installing the Software

The latest Thorlabs camera software, ThorImageCAM, is only supported by Windows 10 (64-bit Only) or Windows 11. For those operating with Windows version 10 (32-bit) or lower, use the ThorCam™ software.

3.5.1 Download the Software Installation Package

Download the ThorImageCAM Imaging Software located at the following link:

https://www.thorlabs.com/software-pages/thorcam/

Once downloaded, double-click on the ThorImageCAM_vX.X.XX_Setup.exe application file and follow the

screen prompts to complete the installation and setup. If using the ThorCam™ software, you will be prompted to choose the desired driver option from the popup window. After selecting your driver, click Next to install the ThorCam software. For assistance, please contact **techsupport@thorlabs.com**.

Once setup is complete, you may now proceed to the next section that will describe how to connect and power on your camera. When the camera is connected and powered up, you can navigate to the ThorImageCAM Software as shown below:

"Start" → "All Programs" → "Thorlabs" → "ThorImageCAM"

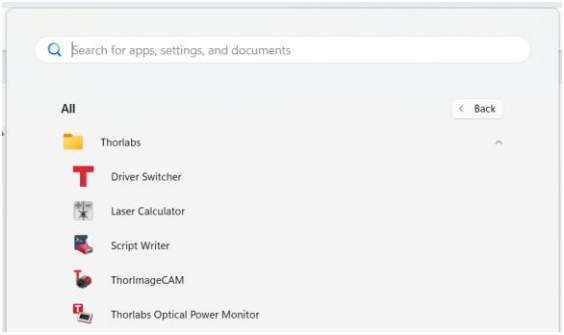


Figure 1 Thorlabs ThorImage® CAM Start Menu Shortcuts

Please refer to the model specific user guide for more information on the additional items installed during this procedure.

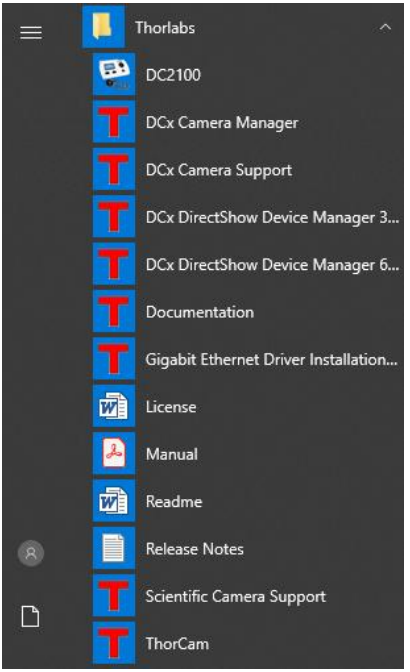


Figure 2 Thorlabs ThorCam™ Start Menu Shortcuts

Please refer to the model-specific User Guide for more information on the additional items installed during this procedure, including configuring the Gigabit Ethernet Driver for best performance.

3.6 Basic Connections

3.6.1 Connections for USB 3.0 Cameras

Using the supplied USB 3.0 cable, simply connect the camera to the appropriate SuperSpeed (SS) USB 3.0 port on the host computer.

A CABU31 USB 3.0 Type-A to Micro-B cable is provided for the CS and CC series cameras, and a CABU32 USB 3.0 Type-A to right-angle Micro-B cable is provided for the LP series cameras.

Secure the micro-B end of the cable to the camera using one or two thumbscrews, depending on the cable. Hand-tighten only.

3.6.2 I/O Connections

To connect I/O cables to the camera, follow the steps below:

1. If external I/O signaling is required:
    a. Kiralux / Quantalux “CS” cameras: Connect an 8050-CAB1 cable (not included) to the I/O port. Refer to the device-specific user guide for signal details.



Figure 3 Kiralux / Quantalux “CS” Camera with the I/O port visible in the middle.

    b. Zelux and Kiralux / Quantalux “LP” cameras: Connect the supplied MMCX coaxial cables to the appropriate ports for triggering and signal monitoring. Refer to the device-specific user guide for signal details.



Figure 4 Zelux (Left) and Kiralux (Right) "LP" Cameras with the MMCX jacks visible.

3.6.3 Connections for a USB 3.0 Cooled sCMOS or CMOS Camera



Figure 5 Cooled sCMOS and CMOS Camera Rear Panel

To connect the camera, follow the steps below:

1. Connect the provided USB 3.0 cable to the mating USB 3.0 port on the back of the camera. The camera end of the cable will have two thumb screws. Make sure the connector is fully inserted, and then tighten the thumbscrews by hand into the camera housing.

2. Connect the provided +5 V / 3 A power supply to the TEC Power port by threading the mating connector onto the camera's connector. This provides power to the thermoelectric cooler (Peltier device).
3. Connect the other end of the USB 3.0 cable to a USB 3.0 port (USB SS) on the host computer. Note: The camera will turn on at this point.
4. If external I/O signaling is required, connect an 8050-CAB1 cable (not included) to the I/O port. Refer to the device-specific user guide for signal details.
5. Confirm that the appropriate AC Mains adapter is installed on the +5 V / 3 A power supply, then plug it into a suitable AC Mains power source of 100 - 240 VAC @ 50 - 60 Hz. Sensor cooling will not work without the power source.

Chapter 4 Maintenance and Cleaning

- Do not store or operate in a damp, closed environment.
- Do not use solvents on or near the equipment.
- Keep away from dust, dirt, and airborne pollutants (including cigarette smoke). The system is not designed for outdoor use. Protect the equipment from rain, snow, and humidity.
- Do not expose the camera to mechanical or thermal extremes. Protect the equipment from rapid variation in temperature.
- Handle all connectors with care. Do not use unnecessary force, as this may damage the connectors.
- Clean using a soft, lint-free cloth. Use of isopropyl alcohol is permitted; however, do not immerse it in any liquid or solvent.
- Clean any accessible optical surfaces with an appropriate optics-grade tissue or cloth. Follow the instructions in the device-specific user guide for cleaning.

4.1.1 Service

Only trained and approved Thorlabs personnel should service the system. Please contact Thorlabs' Technical Support at **techsupport@thorlabs.com,** and a member of our team will be happy to assist you.

Chapter 5 Troubleshooting

Compact Scientific Cameras, Including Kiralux, Quantalux, and Zelux

LED	If LED is On	If LED is Flashing	If LED is Off
Status	**Blue**: Connected to USB 3.0 Port **Green**: Connected to USB 2.0 Port **Amber**: The camera has an internal problem, or the host computer port has malfunctioned.[a]	The USB port cannot provide sufficient power to the camera.	There is no USB connection providing power to the camera.

Cooled sCMOS / CMOS Cameras

LED	If LED is On	If LED is Flashing	If LED is Off
Status	**Blue**: Connected to USB 3.0 Port **Green**: Connected to USB 2.0 Port **Amber**: The camera has an internal problem.[a] **Cyan**: The TEC power supply is not connected or turned on.	The USB port cannot provide sufficient power to the camera.	There is no USB connection providing power to the camera.

a. The Status LED is amber at power up while the camera initializes. It may take 5 seconds or more for the LED to transition from amber to blue, green, or cyan, depending on the model and USB connection.

Chapter 6 Disposal



Thorlabs verifies our compliance with the WEEE (Waste Electrical and Electronic Equipment) directive of the European Community and the corresponding national laws. Accordingly, all end users in the EC may return “end of life” Annex I category electrical and electronic equipment sold after August 13, 2005 to Thorlabs, without incurring disposal charges. Eligible units are marked with the crossed out “wheelie bin” logo (see right), were sold to and are currently owned by a company or institute within the EC and are not dissembled or contaminated. Contact Thorlabs for more information. Waste treatment is your own responsibility. “End of life” units must be returned to Thorlabs or handed to a company specializing in waste recovery. Do not dispose of the unit in a litter bin or at a public waste disposal site. It is the user’s responsibility to delete all private data stored on the device prior to disposal.

Chapter 7 Thorlabs Worldwide Contacts

For technical support or sales inquiries, please visit us at www.thorlabs.com/contact for our most up-to-date contact information.



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