THORLABS

Thorlabs Digital Camera Quick Start Guide
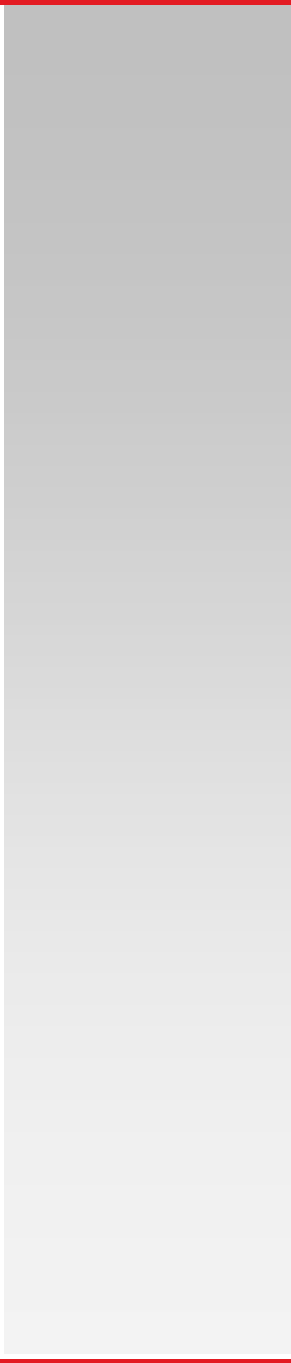
Table of Contents

Chapter 1 **Description**

1.1. Introduction

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 Manuals in the Program Files\Thorlabs\Scientific Imaging\Documentation** folder that will be installed with your software. This Quick Start Guide is intended to provide basic information regarding the initial set-up 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.

1500_Series_Digital_Camera_User_Manual

8051-4070-340-1501_Series_Digital_Camera_User_Manual

CS2100M-USB, CS505MU/CU_Series_Digital_Camera_User_Manual

TSI_Application_Programming_Interface_Guide

ThorCam_Software_User_Manual

DCx Camera Documents

1.2. 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 TSI 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 chapter titled "Warranty Information" for details.

Chapter 2   **Safety**

2.1.   Precautions

<table>
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⚠️   **ATTENTION USERS**   ⚠️

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

Please read the instruction manual for the appropriate model device carefully 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.

Refer to this Quick Start Guide or User Guide whenever the following symbols are encountered on the Digital Video Camera and Power Supply:

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' Technical 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.

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2.2.   Before installation

STOP Before proceeding with the installation of hardware or software, please identify whether your camera interface is Camera Link, Gigabit Ethernet (GigE), or USB 3.0. Please note the significant difference in installation steps for the three types of cameras.

Chapter 3 **Setup & installation**

3.1. **Know Your Camera Family!**

Scientific Cameras and **Compact Scientific Cameras** have a black and red aluminum case. Both Scientific Camera families have their own drivers (Camera Link, Gigabit Ethernet, USB 3.0) and SDK.

Figure 1 Scientific and Compact Scientific Cameras

DCC- or DCU- (also referred to as DCx) Compact USB Cameras are small with either a black/stainless steel or grey plastic case, depending on the model. The DCx Camera family has its own USB drivers and SDK.

Figure 2 DCU/DCC cameras

3.2. USB Camera Installation

If you purchased a DCx or Compact Scientific USB camera, the only connection required is with the supplied USB cable.

1. **Run the software installer** – follow the steps outlined in the next section, including driver installation.

2. Connect the USB cable* to the appropriate USB port.

3. Wait for windows to recognize the camera

4. Run ThorCam application software

* We recommend using only the USB3 cable that was shipped with the camera.

3.3. GigE Camera Installation:

If you purchased a Gigabit Ethernet camera, an Intel PCI/PCIe adapter card is provided for use on desktop computer systems. Although the system will work with other adapters (including laptop GigE adapters), it is recommended that this card be used for optimal performance on all desktop installations.

1. **Power down the computer.**

2. Taking necessary precautions, **install the Intel PCI/PCIe GigE adapter**.

3. Turn on the computer and accept Windows driver recommendations for the newly installed hardware

4. **Run the software installer** – follow the steps outlined in the next section, including driver installation.

5. Connect camera per section 3.5, then power on camera and run ThorCam application software.

3.4. Camera Link Installation:

If you purchased a Camera Link camera, an EDT PCIe interface card is provided. Other Camera Link interface cards are not supported.

1. **Run the Software Installer** - follow the steps outlined in the next section, including driver installation.

2. **Power down the computer**.

3. Taking necessary precautions, **install the EDT PCI/PCIe Camera Link interface card.**

4. Turn on the computer

5. Accept the driver installation recommendations for the newly installed hardware.

6. Connect camera per section 3.7, then power on camera and run ThorCam application software

3.5.   Scientific USB 3.0 Installation:

If you purchased a Scientific or Compact Scientific USB 3.0 camera, an optional USB 3.0 PCIe interface card is available, **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 the next section, including driver installation.

2. **If installing a PCIe USB3.0 card - Power down the computer**. Taking necessary precautions, install the USB 3.0 PCIe interface card. Turn on the computer.

3. Otherwise, simply connect the camera to a USB3.0 port on the PC.

4. Accept the driver installation recommendations for the newly installed hardware.

5. Power on the camera and run the ThorCam application software.

3.6.   Installing the Software

The Thorlabs camera software runs on **Windows 7, 8.1, and 10 operating systems ONLY.**

3.6.1.   Load the Distribution Disk

A CD or DVD disk can be found with the camera. Load the disk into the CD/DVD drive on the computer you wish to operate the camera and software. The installation software will automatically detect whether your system is 32-bit or 64-bit. Loading and detection could take a minute or two, depending on your drive speed. You may also download the latest version from our website at https://www.thorlabs.com/software_pages/viewsoftwarepage.cfm?code=ThorCam .
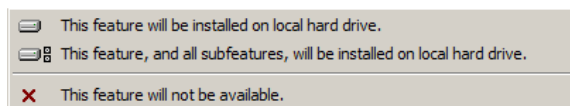
3.6.2.   Driver Selection

Your camera requires a driver to be installed on your computer. After the welcome screen, acceptance of the license agreement, and entering your user information, you will be presented with a choice of drivers. Select the driver that matches the interface on your camera; USB (2.0 or 3.0), Gigabit Ethernet, or Camera Link. If you have more than one camera and with different interfaces, select all that apply. If you're unsure, select them all.
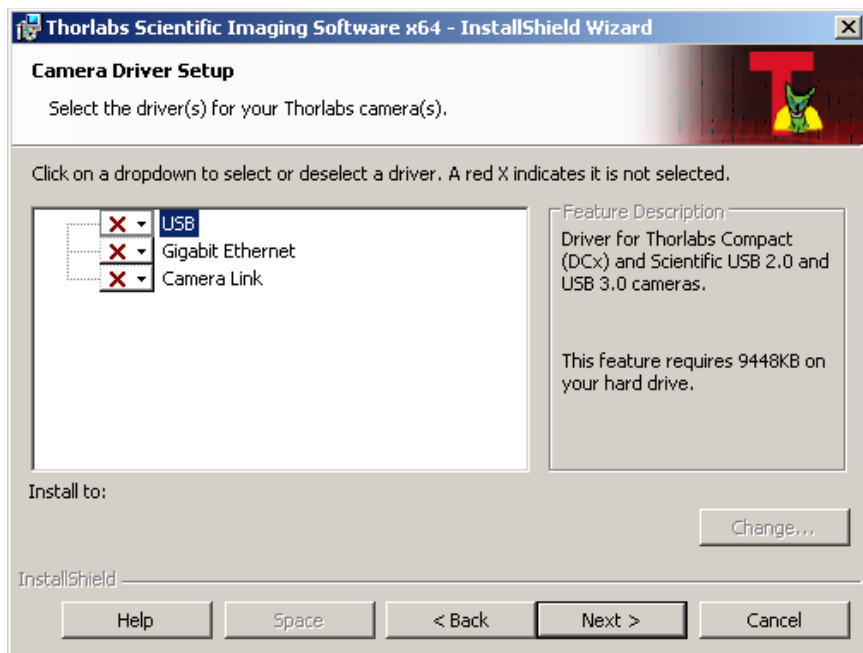

Select a driver for installation by clicking on the dropdown and selecting either of the two choices; "This feature will be installed on local hard drive," or "This feature, and all subfeatures, will be installed on local hard drive." There are no subfeatures, so both choices do the same thing.

If you do not wish to install the driver, select "This feature will not be available"

Once a driver is selected, the red X will be replaced with a hard drive icon as shown in the USB selection below.
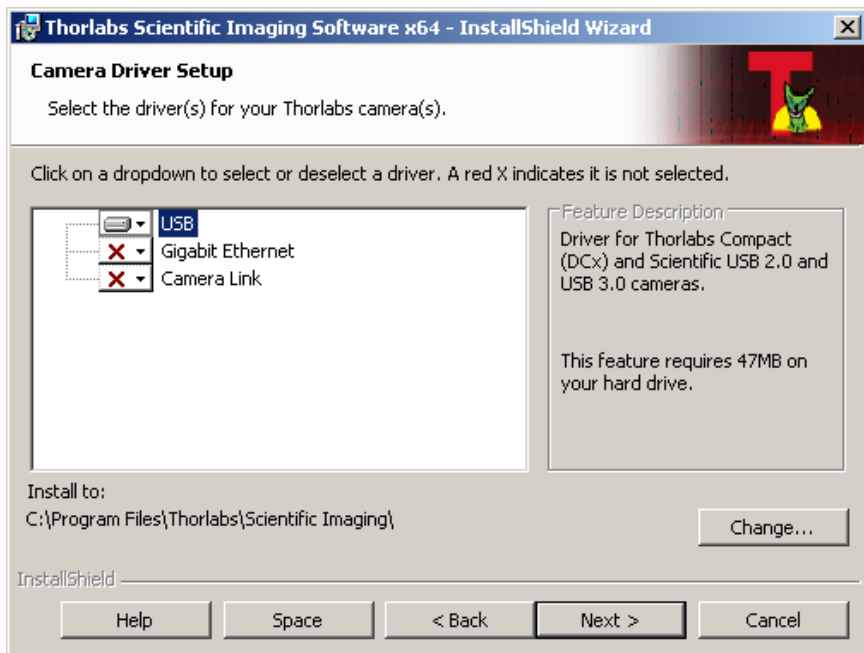
Click Next to proceed with the driver installation. Depending on your PC's configuration and the drivers you selected, you might encounter the additional Windows security dialogs below. Be sure to click install to complete the operation, otherwise the installer will "roll back" and exit.

Camera Link Driver Installation (if selected). Click "Install"
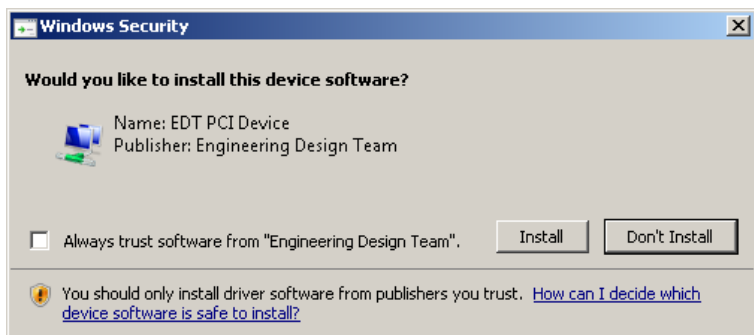
USB Driver Installation (if selected). Click "Install"
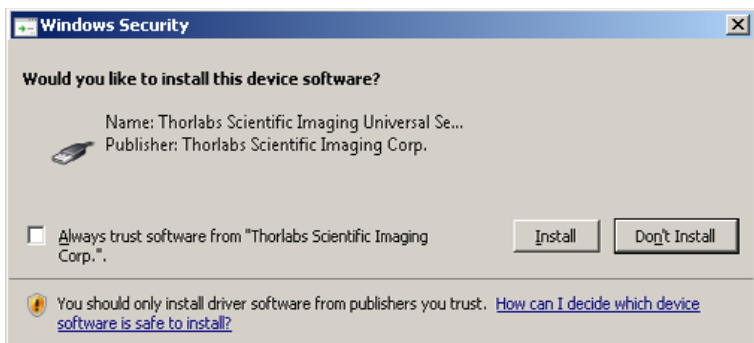
Gigabit Ethernet Driver Installation (if selected). Click "Install"
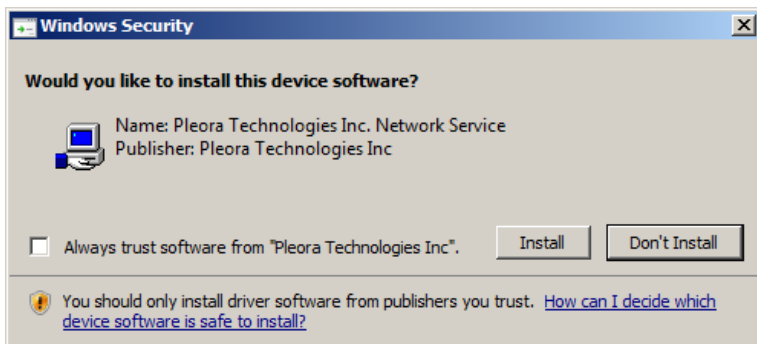
Once setup is complete, you may now proceed to the next section that will describe how to connect and power on your camera. When the camera is connected and powered up, you can navigate to the ThorCam Imaging Software as shown below.

"Start"→"All Programs"→"Thorlabs" →"Scientific Imaging "→"ThorCam"
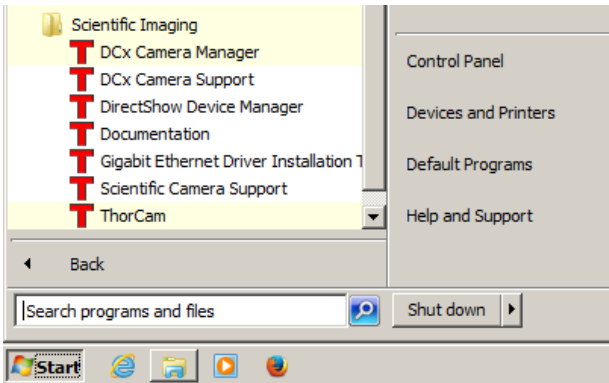
Figure 3   Thorlabs Start Menu Shortcuts

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

3.7.   Basic Connections

3.7.1.   Connections for Camera Link Scientific Camera

Power to camera must be turned off before connecting to computer

CL_0 to Camera Link Port 0 / CL_1 to Camera Link Port 1

Port 0 is default Port. Port 1 used for Multi-Tap operation

For operation with a single Camera Link cable always use port 0.

3.7.2.   Connections for a Gigabit Ethernet Scientific Camera

3.7.3. Connections for a USB 3.0 Scientific Camera

Chapter 4   **Regulatory**

As required by the WEEE (Waste Electrical and Electronic Equipment Directive) of the European Community and the corresponding national laws, Thorlabs offers all end users in the EC the possibility to return "end of life" units without incurring disposal charges.

- This offer is valid for Thorlabs electrical and electronic equipment:
- Sold after August 13, 2005
- Marked correspondingly with the crossed out "wheelie bin" logo (see right)
- Sold to a company or institute within the EC
- Currently owned by a company or institute within the EC
- Still complete, not disassembled and not contaminated
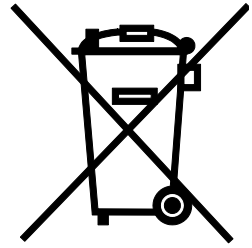
Wheelie Bin Logo

As the WEEE directive applies to self-contained operational electrical and electronic products, this end of life take back service does not refer to other Thorlabs products, such as:

- Pure OEM products, that means assemblies to be built into a unit by the user (e.g. OEM laser driver cards)
- Components
- Mechanics and optics
- Left over parts of units disassembled by the user (PCB's, housings etc.).

If you wish to return a Thorlabs unit for waste recovery, please contact Thorlabs or your nearest dealer for further information.

4.1.   Waste Treatment is Your Own Responsibility

If you do not return an "end of life" unit to Thorlabs, you must hand it to a company specialized in waste recovery. Do not dispose of the unit in a litter bin or at a public waste disposal site.

4.2.   Ecological Background

It is well known that WEEE pollutes the environment by releasing toxic products during decomposition. The aim of the European RoHS directive is to reduce the content of toxic substances in electronic products in the future.

The intent of the WEEE directive is to enforce the recycling of WEEE. A controlled recycling of end of life products will thereby avoid negative impacts on the environment.

Chapter 5 **Product Care**

- 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 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 in any liquid or solvent.

- Clean any accessible optical surfaces with an appropriate optics grade tissue or cloth.

5.1.1. 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.

5.1.2. Warranty

Any modification or servicing by unqualified personnel renders the warranty null and void, leaving Thorlabs free of liability. Please refer to your camera User Manual for complete warranty information.

5.1.3. Troubleshooting

Ethernet Connector LED Indications:

1500x-GE Models:

LED Color	If LED is On	If LED is Flashing	If LED is Off
Green	The Link is Operational, but the Camera is Currently not Sending Data	Normal (Indicates that the Camera is Sending Data)	There is no Ethernet Connection
Yellow	Normal Operation	Not Applicable	There is no Ethernet Connection, or The Camera is Plugged into a 10/100 Mbps Network

8051/4070/1501/340 –GE Models:

LED Color	If LED is On	If LED is Flashing	If LED is Off
Green	The Link is Operational, but the Camera is not Sending Data	Normal (Indicates that the Camera is Sending Data)	There is no Ethernet Connection
Green/ Orange	Normal Operation/ or 10/100Mbps	Normal Operation/ or 10/100Mbps	There is no Ethernet Connection

USB 3.0 Rear Panel LED Indications:

Scientific Cameras 8051/4070/1501/340 –USB Models:

LED	If LED is On	If LED is Flashing	If LED is Off
Link	**Blue**: Connected to USB 3.0 Port **Green**: Connected to USB 2.0 Port **Amber**: Camera has internal USB problem	**Not Applicable**	There is no USB Connection or, Camera is turned off
Status	**Green**: Camera is paused	**Green**: Camera is sending frames	Camera is turned off

Compact Scientific Cameras CS2100M/C-USB, CS505MU, CS505CU:

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**: Camera has internal USB problem	USB port cannot provide sufficient power to the camera	There is no USB Connection providing power to the camera

Chapter 6 **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.

www.thorlabs.com