



**Spectrometer**

# **CCS Series Quick Start Manual**



**2013**

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We aim to develop and produce the best solution for your application in the field of optical measurement technique. To help us to live up to your expectations and improve our products permanently we need your ideas and suggestions. Therefore, please let us know about possible criticism or ideas. We and our international partners are looking forward to hearing from you.

*Thorlabs GmbH*

### **Warning**

Sections marked by this symbol explain dangers that might result in personal injury or death. Always read the associated information carefully, before performing the indicated procedure.

### **Attention**

Paragraphs preceded by this symbol explain hazards that could damage the instrument and the connected equipment or may cause loss of data.

### **Note**

This manual also contains "NOTES" and "HINTS" written in this form.

Please read these advices carefully!

# 1 General Information

The CCS Series Spectrometer is designed for general laboratory use. Integrated routines allow averaging, smoothing, peak indexing, as well as saving and recalling data sets.

## **Attention**

Do not connect the CCS Series Spectrometer to a PC prior to installing the OSA-SW Application! The installation package includes CCS Series Spectrometer specific drivers and software that must be installed before the CCS Series Spectrometer is connected to the PC for the first time.

A troubleshooting section and detailed specifications of the various components are provided in this manual. The description of the instrument driver commands can be found in the VXIpnv VISA instrument driver package.

## **Application software OSA-SW**

**OSA-SW** is an acronym for "Optical Spectrum Analyzer Software". This software can be used for acquiring direct, transmittance and absorbance measurements in conjunction with Thorlabs' optical spectrum analyzers and CCD spectrometers.

After the installation, the software is able to communicate with all Thorlabs CCD based CCS Series Spectrometers and OSA20x Optical Spectrum Analyzers. Additionally, a number of virtual devices are included to demonstrate the functionality of OSA-SW: five for OSA20x Analyzers and one for CCS spectrometers.

## 1.1 Safety

### **Attention**

**All statements regarding safety of operation and technical data in this instruction manual will only apply when the unit is operated correctly as it was designed for.**

**All modules must only be operated with proper shielded connection cables.**

**Only with written consent from *Thorlabs* may changes to single components be carried out or components not supplied by *Thorlabs* be used.**

**This precision device is only serviceable if properly packed into the complete original packaging including the plastic foam sleeves. If necessary, ask for replacement packaging.**

## 1.2 Ordering Codes and Accessories

<u>Ordering code</u>	<u>Short description</u>
<b>CCS100(/M)</b> <sup>1)</sup>	CCS spectrometer, 350 - 700 nm
<b>CCS175(/M)</b> <sup>1)</sup>	CCS spectrometer, 500 - 1000 nm
<b>CCS200(/M)</b> <sup>1)</sup>	CCS spectrometer, 200 - 1000nm
<b>M14L01</b>	1 m SMA MMF Patch Cable, 50µm / 0.22 NA (to CCS100 and CCS175)
<b>BFH22-200-030-SMA-1M</b>	1 m SMA MMF Patch cable, 200µm / 0.22 NA, High OH (to CCS200)
<b>CVH100; CVH100/M</b>	Cuvette holder (imperial and metric versions)

<sup>1)</sup> CCSxxx = imperial version, mounting holes 1/4-20;  
CCSxxx/M = metric version, mounting holes M6x1

### Attention

Make sure to use your CCS spectrometer only with the included fiber (see above table). If using a different fiber, the Amplitude Correction Calibration will be affected!

## 1.3 Requirements

These are the requirements to the PC intended to be used for remote operation of the CCS Series Spectrometer.

### Minimum Hardware and Software Requirements

- Operating System: Windows Vista or Windows 7 (32 or 64 bit)
- Free USB 2.0 high speed port (Notice that a USB 1.1 port cannot be used)
- Processor: Intel Pentium 4 or AMD Athlon 64 3000+
- 2.0 GB RAM
- .NET framework 4.0 or higher

### Recommended Hardware and Software Requirement

- Operating System: Windows 7, 64 bit
- Free USB 2.0 high speed port (Notice that a USB 1.1 port cannot be used)
- Processor: Intel Core i5 or AMD Athlon II
- 6.0 GB RAM
- .NET framework 4.0 or higher

### Note

Please be aware that the OSA software requires a number of third party software installed on your system. The installer checks for these software components and, if necessary, will install them automatically. You will be notified accordingly.

## 2 Installation

### Attention

Do not connect the CCS Series Spectrometer to a PC prior to install the OSA-SW Application! The installation package includes CCS Series Spectrometer specific drivers and software that must be installed before the CCS Series Spectrometer is connected to the PC for the first time.

### 2.1 Parts List

Inspect the shipping container for damage. If the shipping container seems to be damaged, keep it until you have inspected the contents and you have inspected the CCS Series Spectrometer mechanically and electrically.

Verify that you have received the following items within the package:

- 1x CCS Series Spectrometer
- 1x This CCS Series Spectrometer Quick Reference
- 1x CD-ROM with application software OSA-SW, drivers and PDF User Manual
- 1x USB 2.0 A-B mini cable, 1.5 meters
- 1x Optical Fiber, SMA to SMA, 50 $\mu$ m / 0.22 NA, 1 meter (CCS100, CCS175)  
Quartz Fiber, SMA to SMA, 200 $\mu$ m / 0.22 NA, 1 meter (CCS200)
- 1x Trigger Input cable SMB to BNC

### Attention

Make sure to use your CCS spectrometer only with the included fiber (see above table). If using a different fiber, the Amplitude Correction Calibration will be affected.

### CCS Spectrometer - Ports and Signal LEDs



- (1) USB port
- (2) Fiber input (SMA connector)
- (3) Status LED
- (4) Trigger Input (SMB connector)

## 2.2 Installing Software

Before installing OSA Software, please make sure that no CCS Series Spectrometer is connected. After you insert the OSA Software installation CD an autorun menu will appear (see figure below). If autorun is disabled on your system, you will have to browse the installation CD and run

"[CD-Drive]:\Autorun\Autorun.exe":



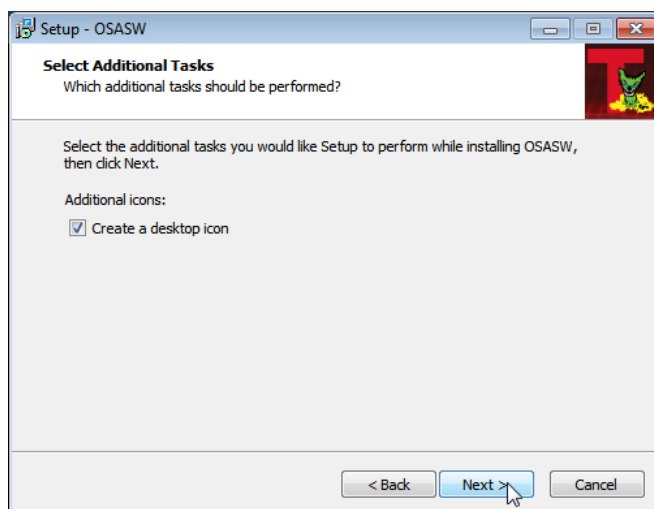
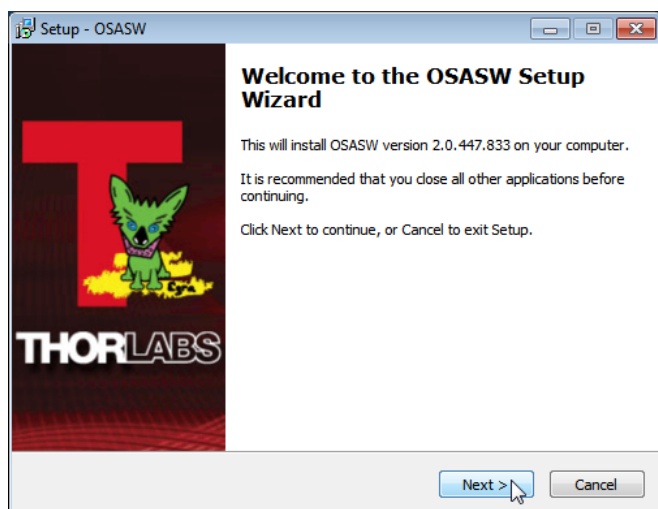
Click to "Install Software":

### Note

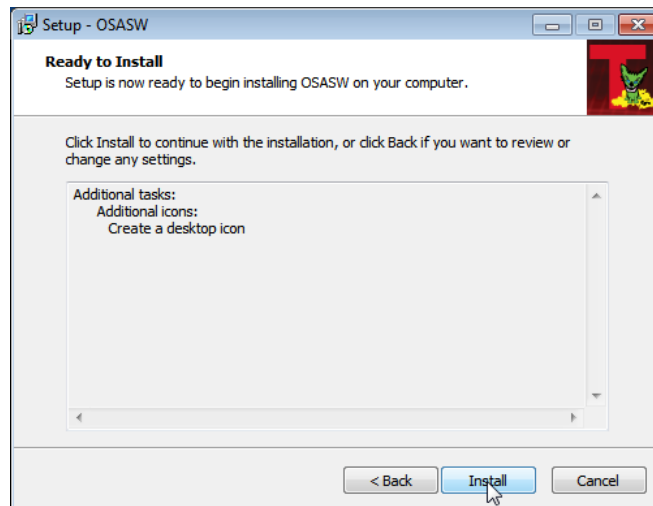
Please be aware that the OSA software requires a number of third party software installed on your system. The installer checks for these software components and, if necessary, will install them automatically. You will be notified accordingly.

Administrator privileges are required for installation. Please contact your system administrator if you get an error message.

Installation steps are shown below in detail for an installation on a Windows 7<sup>®</sup> operating system. After selecting "Install Software", the installer checks your system and determines the software components that need to be installed.

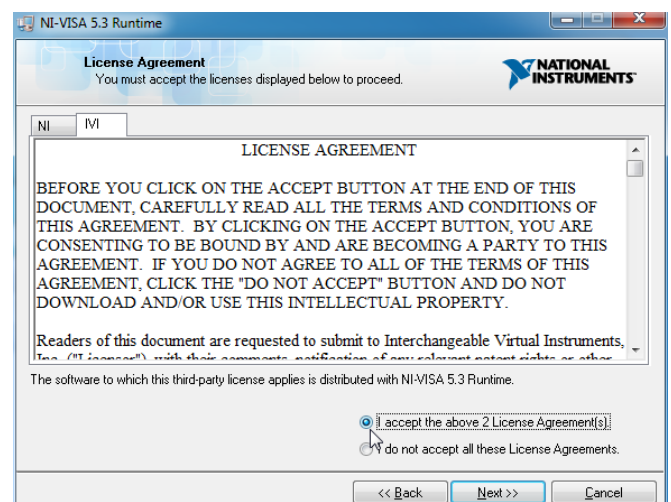
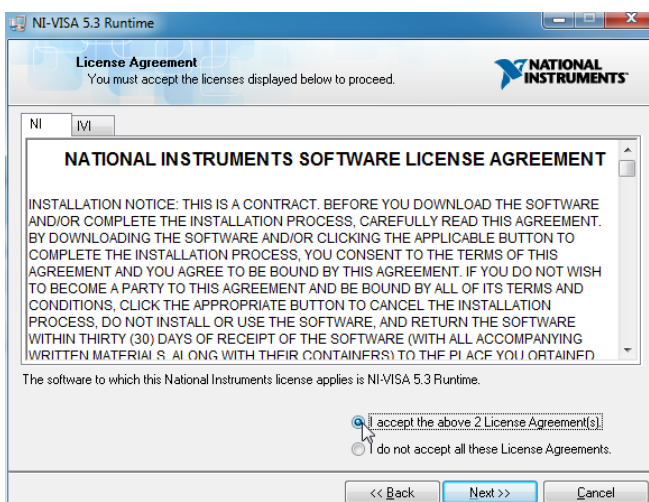
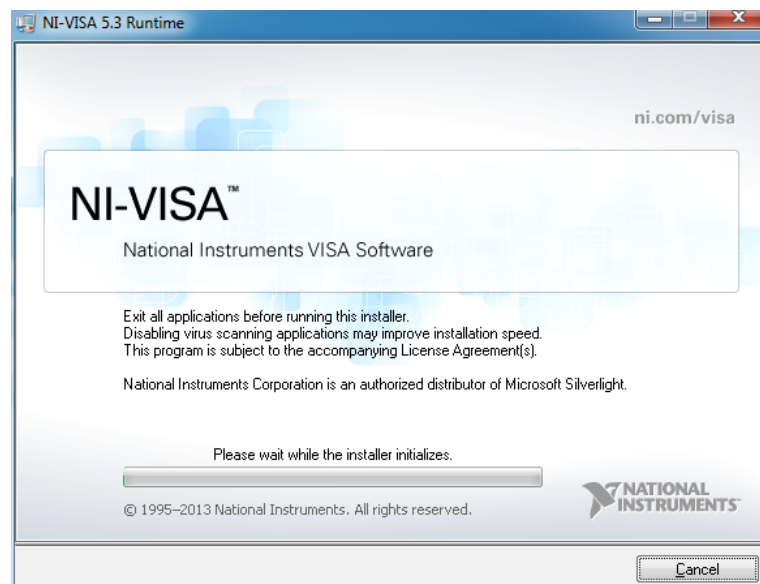




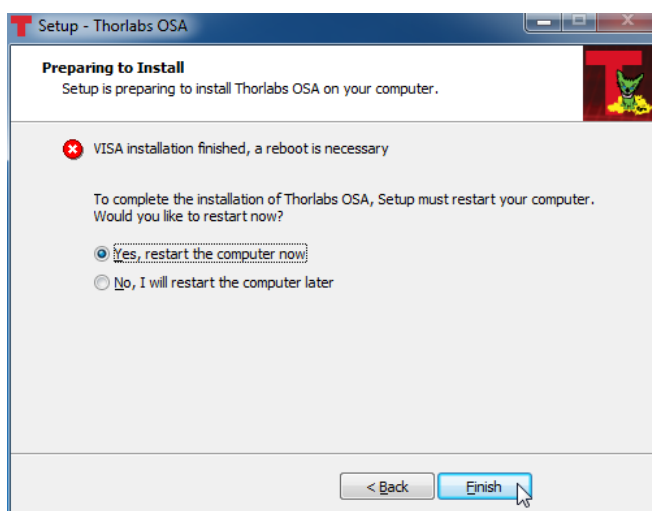
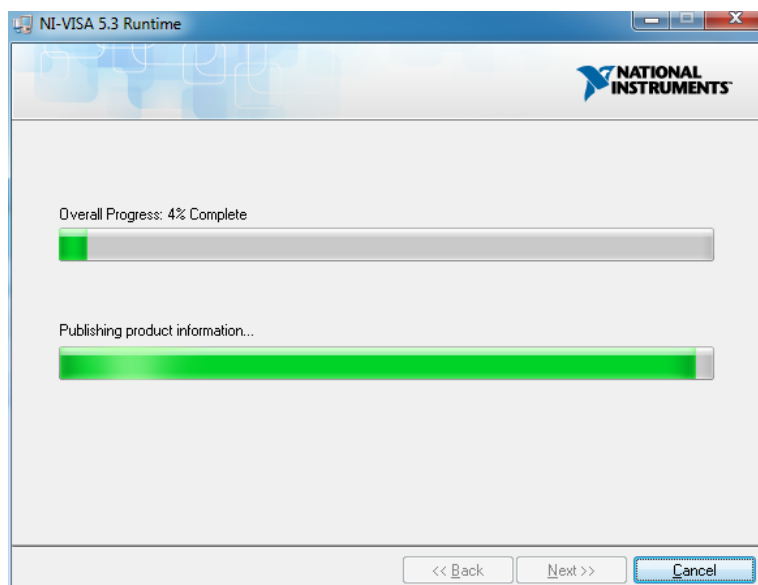


Click "Install" to continue. The necessary software components are being installed, followed by installation of device driver software. The installation of all components is described below.

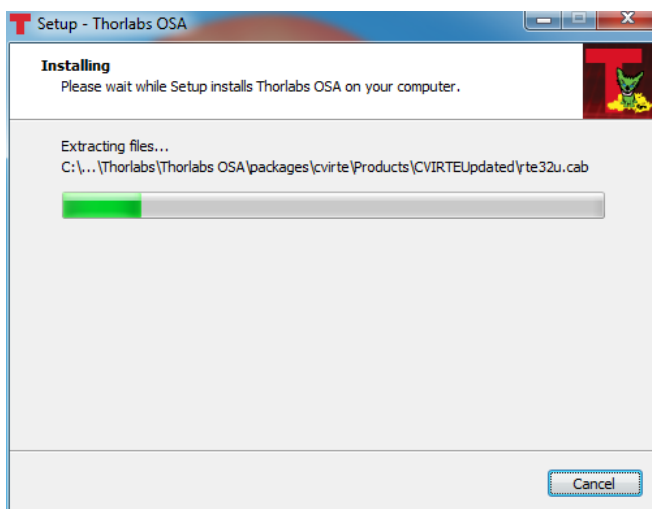
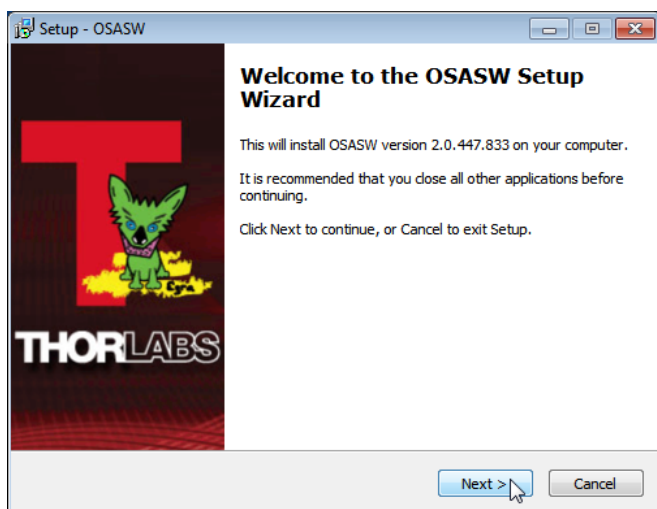
## NI VISA installation

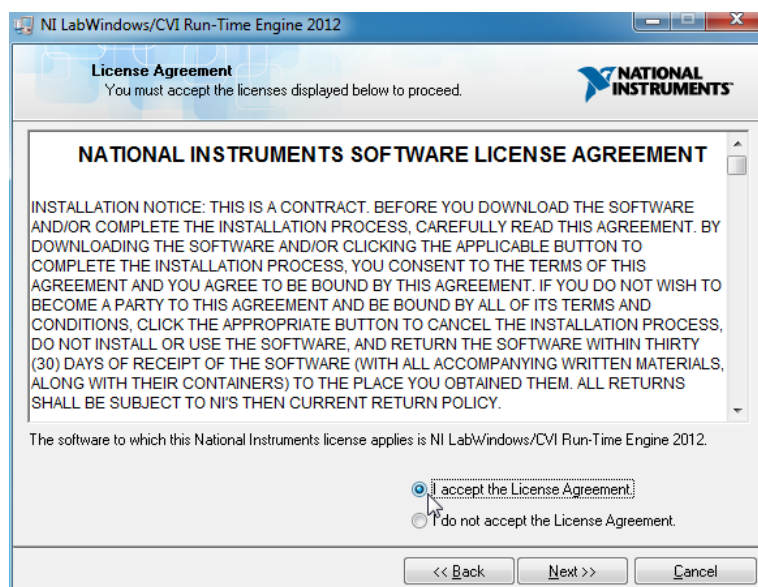
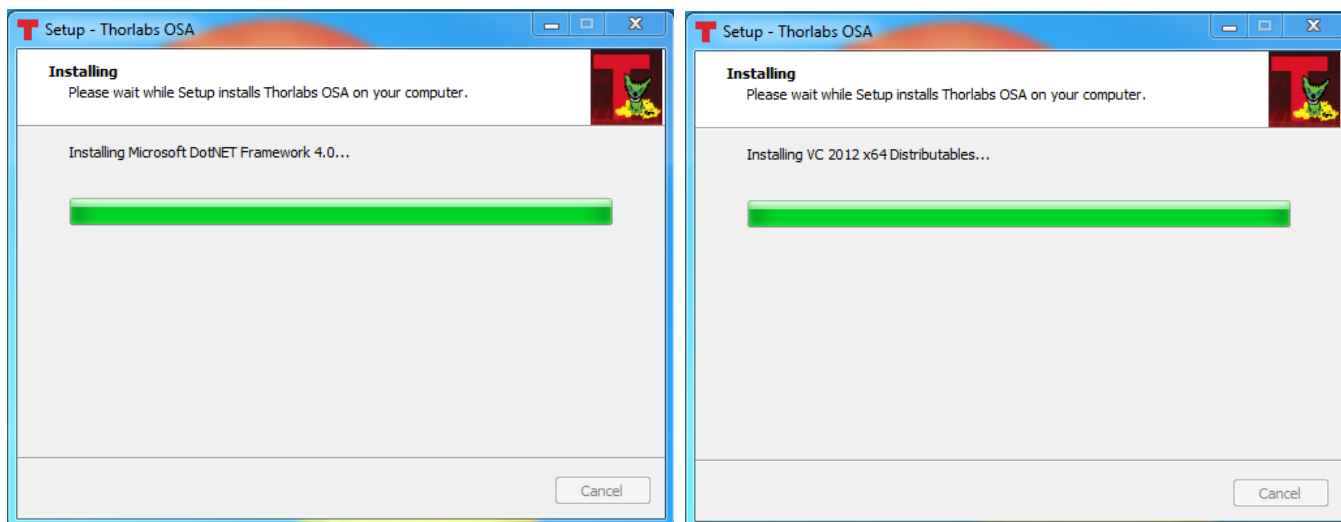


Click "I accept...", then "Next>>" to continue:

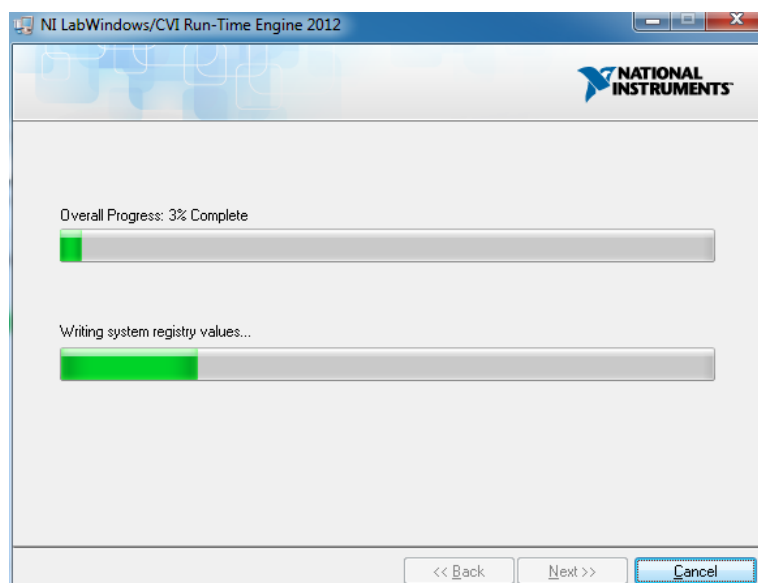


After NI-VISA Installation, the computer must be restarted. After reboot, the setup wizard restarts automatically and continues to install further software components:



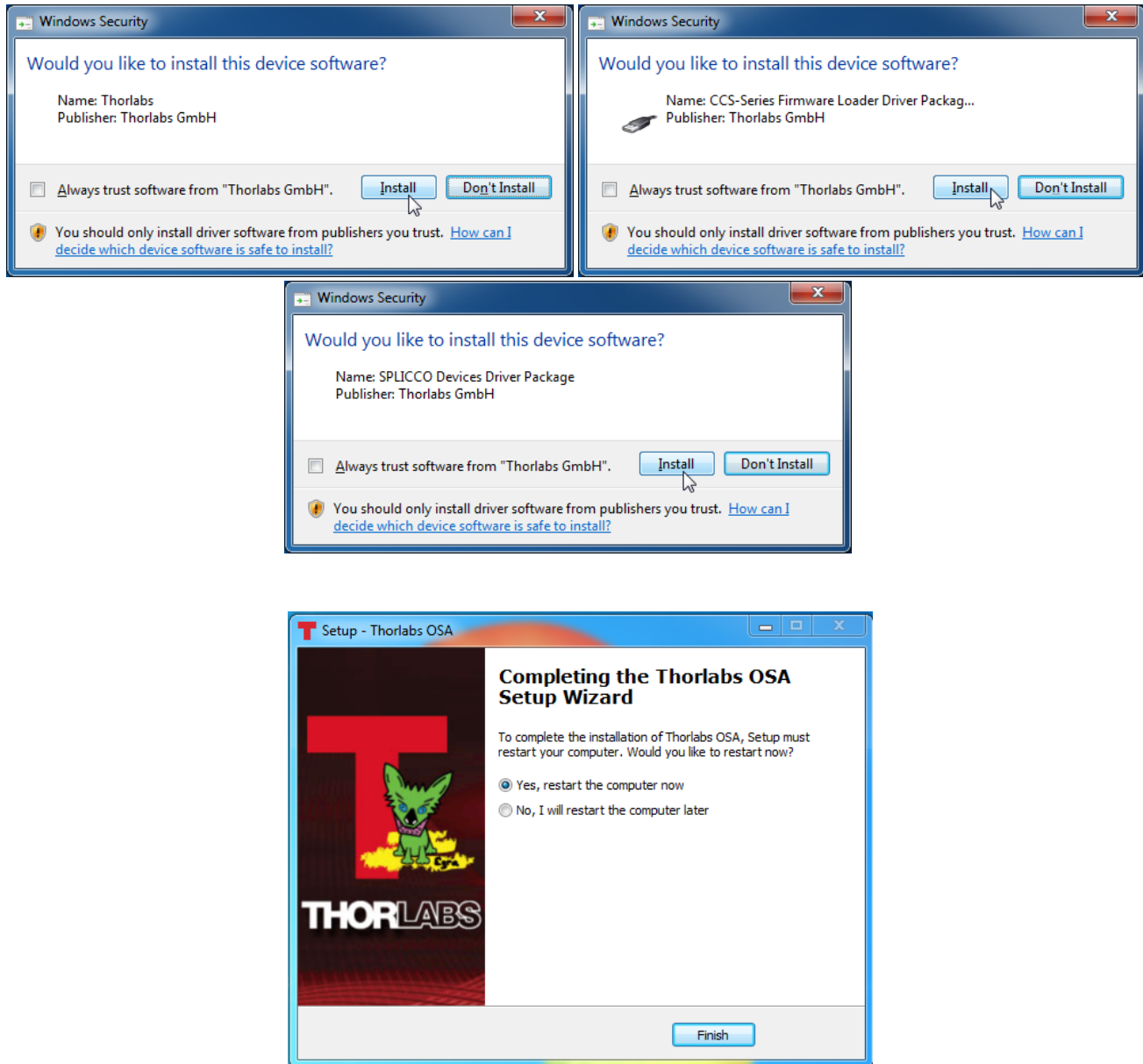


Click "I accept...", then "Next>>" to continue:



Depending on the set up security level, the Installation Wizard might ask to allow to install the

driver software:



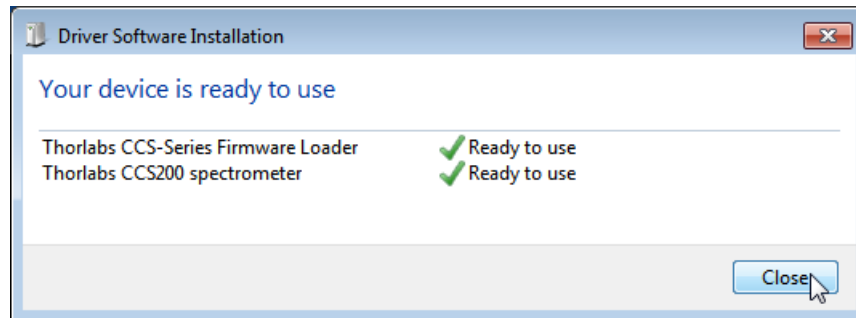
To finalize the OSA Software installation, the computer must be restarted. Click "Finish" to restart and complete installation.

### 3 Getting Started

#### Attention

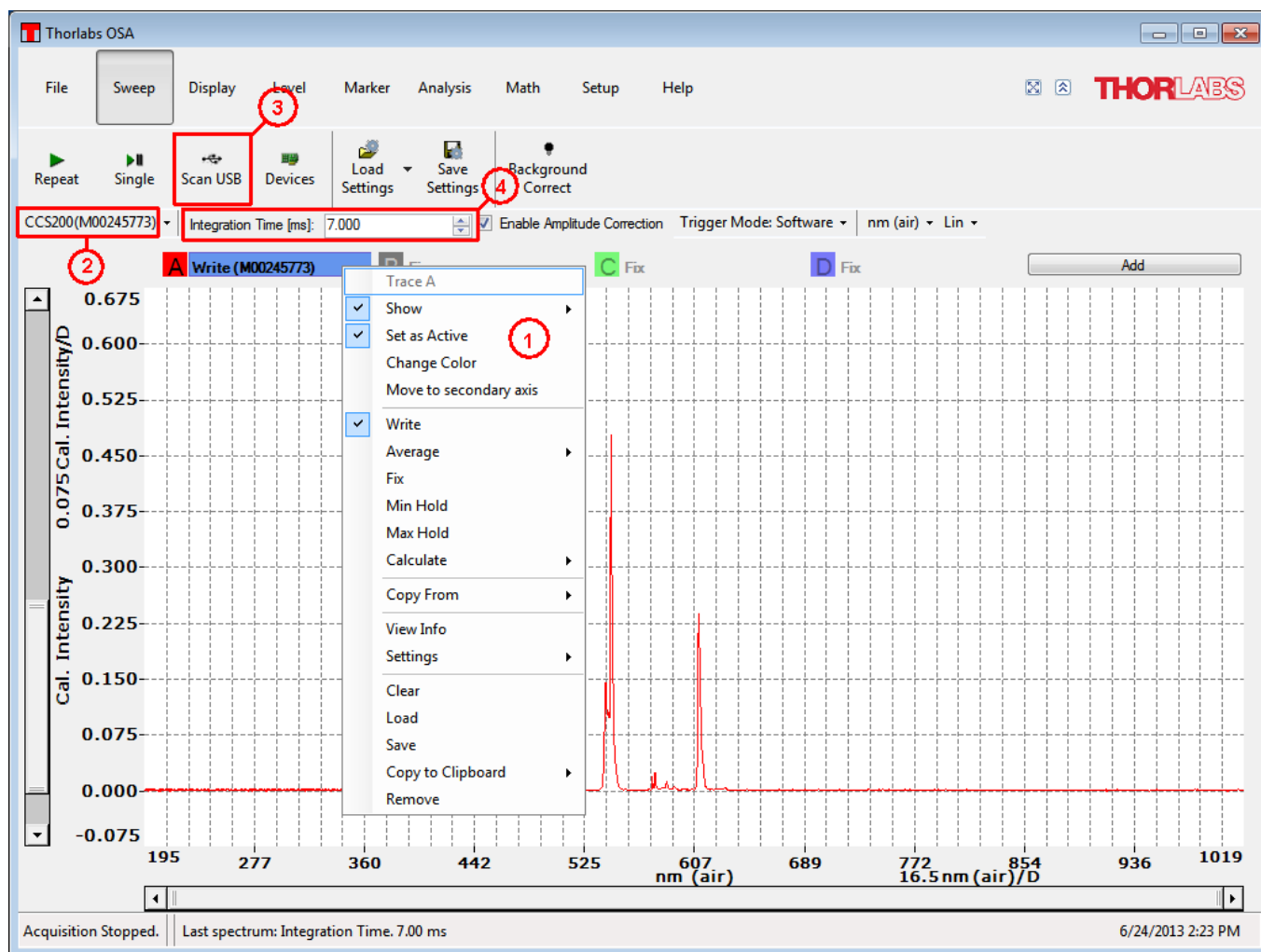
Do not connect the CCS Series Spectrometer to a PC prior to installing the OSA-SW Application! The installation package includes CCS Series Spectrometer specific drivers and software that must be installed before the CCS Series Spectrometer is connected the first time to the PC.

The initial setup is simple to complete. Following [installation of the software](#)<sup>6</sup>, connect the CCS Series Spectrometer to a USB 2.0 port. The operating system recognizes the new hardware and installs the firmware loader and the driver:



Then run the application software OSA-SW either from the desktop icon





1. Click to trace A and make sure that the topics below are checked.

- Show
- Set as Active
- Write

2. Check that the connected spectrometer is recognized. If not, click to "Scan USB"

3. Apply an optical input signal to the fiber input. Increase the integration time until the spectrum is displayed. A right click into the data display area zooms in the intensity axis to it's best fit to the spectrum.

Please see details about the OSA software features, handling and CCS Series Spectrometer settings in the advanced user manual, provided with the data carrier. After the software has been installed, it can be found as well in the folder

"All Programs - Thorlabs - Thorlabs OSA - CCS".

## 4 Appendix

### 4.1 Warranty

*Thorlabs* warrants material and production of the CCS Series Spectrometer for a period of 24 months starting with the date of shipment. During this warranty period *Thorlabs* will see to defaults by repair or by exchange if these are entitled to warranty.

For warranty repairs or service the unit must be sent back to *Thorlabs*. The customer will carry the shipping costs to *Thorlabs*, in case of warranty repairs *Thorlabs* will carry the shipping costs back to the customer.

If no warranty repair is applicable the customer also has to carry the costs for back shipment.

In case of shipment from outside EU duties, taxes etc. which should arise have to be carried by the customer.

*Thorlabs* warrants the hard- and software determined by *Thorlabs* for this unit to operate fault-free provided that they are handled according to our requirements. However, *Thorlabs* does not warrant a fault free and uninterrupted operation of the unit, of the software or firmware for special applications nor this instruction manual to be error free. *Thorlabs* is not liable for consequential damages.

#### **Restriction of warranty**

The warranty mentioned before does not cover errors and defects being the result of improper treatment, software or interface not supplied by us, modification, misuse or operation outside the defined ambient stated by us or unauthorized maintenance.

Further claims will not be consented to and will not be acknowledged. *Thorlabs* does explicitly not warrant the usability or the economical use for certain cases of application.

*Thorlabs* reserves the right to change this instruction manual or the technical data of the described unit at any time.

## 4.2 Copyright and Exclusion of Reliability

*Thorlabs* has taken every possible care in preparing this Operation Manual. We however assume no liability for the content, completeness or quality of the information contained therein. The content of this manual is regularly updated and adapted to reflect the current status of the software. We furthermore do not guarantee that this product will function without errors, even if the stated specifications are adhered to.

Under no circumstances can we guarantee that a particular objective can be achieved with the purchase of this product.

Insofar as permitted under statutory regulations, we assume no liability for direct damage, indirect damage or damages suffered by third parties resulting from the purchase of this product. In no event shall any liability exceed the purchase price of the product.

Please note that the content of this User Manual is neither part of any previous or existing agreement, promise, representation or legal relationship, nor an alteration or amendment thereof. All obligations of *Thorlabs* result from the respective contract of sale, which also includes the complete and exclusively applicable warranty regulations. These contractual warranty regulations are neither extended nor limited by the information contained in this User Manual. Should you require further information on this product, or encounter specific problems that are not discussed in sufficient detail in the User Manual, please contact your local *Thorlabs* dealer or system installer.

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### 4.3 Thorlabs 'End of Life' Policy (WEEE)

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<sup>th</sup> 2005
- marked correspondingly with the crossed out “wheelie bin” logo (see Figure 58)
- 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

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.).

#### Waste treatment on 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.

WEEE Number (Germany) : DE97581288

#### Ecological background

It is well known that waste treatment 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.



*Crossed out  
"Wheelie Bin" symbol*

## 4.4 Thorlabs Worldwide Contacts

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