THORLABS

SPCNT

Single Photon Counting Device

User Guide



2023

Version: 1.0
Date: 30-May-2023

Copyright © 2023 Thorlabs

Table of Contents

Chapter 1	**Safety**	**1**
Chapter 2	**Intended Use**	**2**
Chapter 3	**Introduction**	**2**
3.1	**Ordering Codes and Accessories**	**3**
3.2	**Requirements**	**3**
Chapter 4	**Getting Started**	**3**
4.1	**Parts List**	**3**
4.2	**Operating Elements**	**4**
4.3	**Setup**	**4**
4.4	**Software Installation**	**5**
4.5	**Compatible Detectors**	**5**
Chapter 5	**Operation**	**6**
5.1	**SMA Connectors**	**6**
5.2	**Operation without a Connected PC**	**7**
5.3	**Optical Power Monitor**	**7**
5.3.1	Devices	**8**
5.3.2	Monitoring	**14**
5.3.2.1	Logging Settings	16
5.3.3	Data Viewer	**17**
5.3.4	Help	**17**
5.4	**Write Your Own Application**	**18**
Chapter 6	**Operating Principle**	**20**
6.1	**Measurement Modes**	**20**
Chapter 7	**Specifications**	**22**
7.1	**Dimensions**	**23**
Chapter 8	**Maintenance and Service**	**23**
Chapter 9	**Certifications and Compliances**	**24**
Chapter 10	**Warranty and RMA Information**	**25**
10.1	**Return of Devices**	**25**
10.2	**WEEE Policy**	**25**
Chapter 11	**Manufacturer Address**	**25**
Chapter 12	**Copyright and Exclusion of Liability**	**26**

Chapter 13 Thorlabs Worldwide Contacts 27

Chapter 1 Safety

Attention

The safety of any system incorporating the equipment is the responsibility of the assembler of the system.

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.

The SPCNT must not be operated in explosion endangered environments!

Do not obstruct the air ventilation slots in the housing!

Do not remove covers!

Do not open the cabinet. There are no user-serviceable parts inside!

This precision device is only serviceable if returned and properly packed into the complete original packaging including the cardboard inserts. If necessary, ask for replacement packaging.

Refer servicing to qualified personnel!

Changes to this device cannot be made nor may components not supplied by Thorlabs be used without written consent from Thorlabs.

Attention

The following statement applies to the products covered in this manual, unless otherwise specified herein. The statement for other products will appear in the respective accompanying documentation.

Note This equipment has been tested and found to comply with the limits for a Class B 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 in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/T.V. technician for help.

Users that change or modify the product described in this manual in a way not expressly approved by Thorlabs (party responsible for compliance) could void the user's authority to operate the equipment.

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.

 © 2023 Thorlabs

Attention

Mobile telephones, cellular phones or other radio transmitters are not to be used within the range of three meters of this unit since the electromagnetic field intensity may then exceed the maximum allowed disturbance values according to IEC 61326-1.

Chapter 2 Intended Use

The SPCNT Single Photon Counting Device counts pulse events such as those generated with single photon detectors. It is used in photonics research and development applications.

The SPCNT single photon counting device is designed for laboratory use only. This product may not be used or integrated into equipment that is applied in pharmaceutical, medical or military applications.

Thorlabs, Inc. Life Support and Military Use Application Policy is stated below:

THORLABS' PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS OR IN ANY MILITARY APPLICATION WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT OF THORLABS, INC. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.

2. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system or to affect its safety or effectiveness.

3. The Thorlabs products described in this document are not intended nor warranted for usage in Military Applications.

Chapter 3 Introduction

The Thorlabs SPCNT Single Photon Counting Device recognizes pulses originating from a connected single photon detector and shows the results numerically as counts or frequency either on the built-in display or a connected PC for further analysis. The SPCNT is connected to the PC via the USB port, and can be controlled by Thorlabs' Optical Power Monitor (OPM) software, which can also monitor and save the counting results.

The SPCNT single photon counter excels in combination with the Thorlabs single photon detectors SPDMA and the SPDMHx Series. The signal monitor output (MONITOR TTL port, SMA connector) allows the counts or frequency of signal pulses to be observed by a separate counter or an oscilloscope. Signal counting can be activated or stopped by an external signal generator.

Additionally, Thorlabs provides the Standard Commands for Programmable Instruments (SCPI) to generate custom made software for the remote control of the SPCNT counting device.

Attention

Please find all safety information and warnings concerning this product in the chapter Safety.

3.1 Ordering Codes and Accessories

SPCNT	Single Photon Counting Device

Required Accessories:

For direct operation without connection to a PC via USB 2.0, please use an external power supply with the specifications stated in the chapter Specifications. The Thorlabs DS5 power supply is recommended.

Single Photon Detector

1. SPDMA Single Photon Detection Module with Adjustable Gain

or

2. SPDMHx Single Photon Detection Modules with Fixed Gain

3.2 Requirements

These are the requirements for the PC intended to be used for remote operation of the SPCNT.

Software Requirements

The SPCNT can be run with the Thorlabs Optical Power Monitor software (OPM). Please see the requirements for the OPM on the OPM website.

Chapter 4 Getting Started

4.1 Parts List

Please inspect the shipping container for damage. Please do not cut through the cardboard, as the box might be needed for storage or returns.

If the shipping container appears to be damaged, keep it until you have inspected the contents for completeness and tested the SPCNT mechanically and electrically.

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

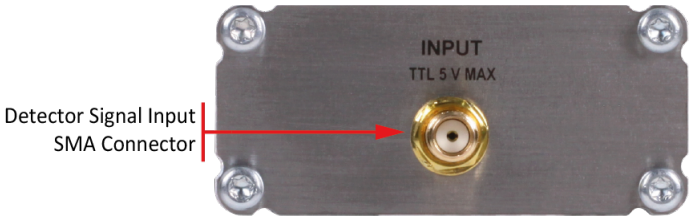
1. SPCNT Single Photon Counting Device
2. USB 2.0 Cable: Cable Length 1.5 m
3. Quick Reference

© 2023 Thorlabs

4.2 Operating Elements



SPCNT Left Side Panel



SPCNT Right Side Panel



4.3 Setup

1. Download and install the Optical Power Monitor software (OPM) to the computer (PC/laptop) that will be used to control the counting device.

   Note Install the software prior to connecting the counting device to the PC.
2. Connect the SPCNT counting device to the PC/laptop using the supplied USB 2.0 cable (1.5 m length). For direct operation without a PC, connect the SPCNT via the USB connector to a suitable power supply. The Thorlabs DS5 power supply is recommended.
3. Connect a compatible detector on the INPUT connector (SMA). The sensor may also be connected or exchanged at a later point.
4. The SPCNT counting device is now ready for operation and is recognized by the OPM software. In case the SPCNT is not automatically recognized, please see the section troubleshooting.

5. If not already done in (3), connect a compatible detector to the SPCNT counting device or exchange the sensor connected previously.
6. Configure the SPCNT counting device in the Thorlabs OPM software as described in the section Optical Power Monitor.
7. The counts can now be monitored either via the OPM software or on the SPCNT display directly.

Note In addition to using the Thorlabs software Optical Power Monitor, the user can build custom made software with the help of the SCPI commands saved within the OPM software. Please see the chapter Write-Your-Own-Application for further instructions.

4.4 Software Installation

Attention

Exit all running applications on your PC as the installer may require a reboot of your PC during installation!

The Optical Power Meter (OPM) Software can be downloaded from the Thorlabs website:

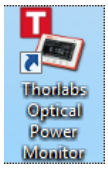
https://www.thorlabs.com/software_pages/ViewSoftwarePage.cfm?Code=OPM

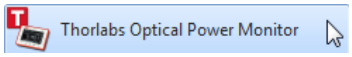
Note Do not connect a Thorlabs device to the PC during software installation! Please make sure that the installation is carried out completely, including the reboot requests.

- Save the ZIP file to your computer and unpack the archive.
- Double click the setup.exe to start the Install Shield Wizard.
- Read and accept the End-User License Agreement and the GNU Lesser General Public License.
- After installing the OPM, connect the counting device to the PC.

Start Application

Start the Optical Power Meter Software from the desktop icon:



or access the OPM from the START button: 

4.5 Compatible Detectors

The SPCNT counting device is compatible with all Thorlabs single photon detectors.

1. SPDMA Single Photon Detection Module with Adjustable Gain

or

2. SPDMHx Single Photon Detection Modules with Fixed Gain

 © 2023 Thorlabs

Chapter 5 Operation

The SPCNT single photon counting device receives an input signal from a single photon detector, arriving at the INPUT connector (SMA). The device then counts and analyzes the signal with the default settings for bin width, dead time, and threshold. The results are shown on the device display. Please see the chapter Specifications on technical information concerning the compatible input signal. The buttons DIM and VIEW next to the display allow the user to dim the display, switch between the display or counts or frequency, and to ZERO the signal in order to eliminate background. Please find more information on operation directly on the SPCNT in the chapter Operation without a Connected PC.

When connected to a PC, incoming signal is analyzed according to settings in the remote software Optical Power Monitor (OPM): bin width, dead time, zero level, and threshold. As an alternative to the internal binning, set within the software, the signal can be gated with an external signal generator via the TRIG IN connector.

Please find information on how to download the OPM software in the chapter Software Installation. The operation of the SPCNT, using the OPM software, is described in the chapter Optical Power Monitor.

Alternatively, custom made software can be generated with the help of the provided SCPI commands. For more information, please see the chapter Write-Your-Own-Application (WYOA).

5.1 SMA Connectors

The SPCNT counting device has three SMA connector for signal input, montior output, and for input of an external signal measurement gating.

Signal Input

The SMA connector INPUT receives the pulse signal from a connected single photon detector.

Please find the technical data for the INPUT port in the Specifications.

Monitor Output

The monitor output SMA connector provides to access the pulses of the input signal with another external counter or oscilloscope. The monitor output signal is not identical to the input signal, as the Schmitt Trigger (see chapter Operating Principle) between Input and Monitor Output applies the threshold.

Please find the technical data for the monitor output port in the Specifications.

External TRIG IN Signal

An external active high TTL signal can be applied to define the bin width or dead time via external hardware. Use the measurement mode "Gated" in the interface Devices in the OPM software.

The technical data for the external TRIG IN signal is provided in the chapter Specifications.

5.2 Operation without a Connected PC

The SPCNT can be used to monitor counts or their frequency directly on the device display. In this case the default settings, which are listed below, are applied to the SPCNT.

For applications without a connected PC, a power supply is required. Please see the chapter Specifications for the power supply requirements. The Thorlabs DS5 power supply is recommended.

Switch between display of counts or frequency by pressing the button VIEW on the device front panel.

Dim the display for sensitive applications by pressing the button DIM on the device front panel. Pressing the DIM button multiple times lowers the light level until the display is dark. Pressing again return the display to full brightness.

To ZERO the signal in order to eliminate background, simultaneously apply a short press to the buttons DIM and VIEW .

Default Settings:

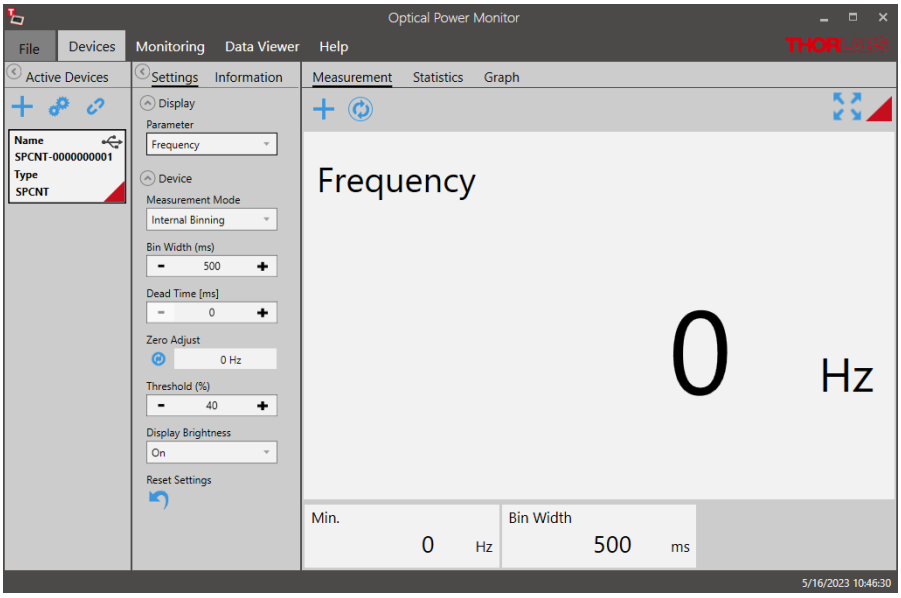
- Bin Width: 500 ms
- Dead Time: 0 ms
- Threshold: 40%

Please refer to the chapter Optical Power Monitor for explanations on the settings.

5.3 Optical Power Monitor

After connecting of the SPCNT counting device to the PC running the installed OPM software, open the software and select the SPCNT as the active device in the left panel.

The OPM software will then show the following interface. The following chapters describe the functions for the SPCNT in the OPM software.



 © 2023 Thorlabs

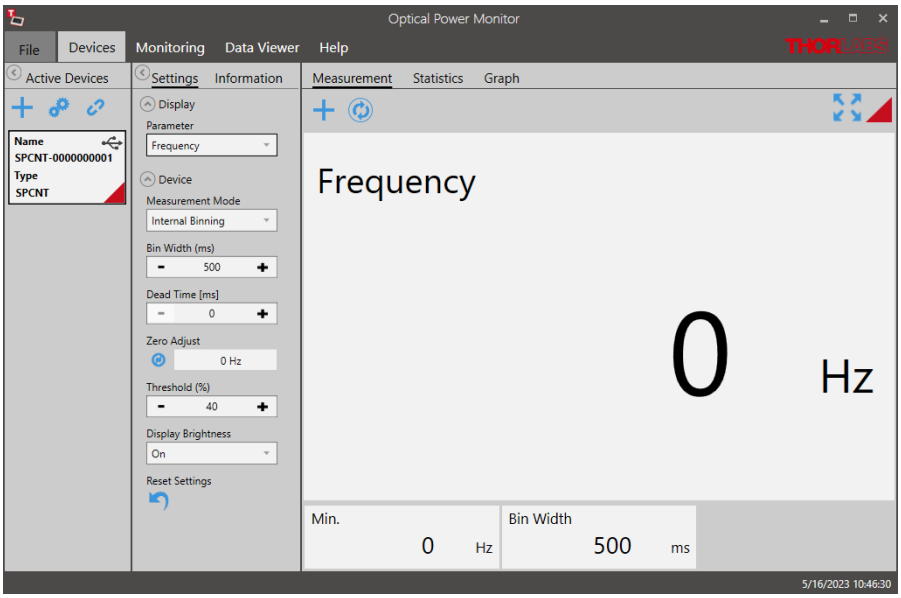
5.3.1 Devices

The Devices menu administers the currently connected devices, short-term measurements and the respective settings.

To start a measurement, follow the sequence suggested by the menu bar from left to right:

- Activate Devices
- Adjust Settings
- Observe the Measurement

In the following interface, adjust the settings for the SPCNT:



1. Active Devices Panel

This left panel lists the recognized, connected devices.

Additional devices (up to 8 SPCNT in parallel) may be added via the icon +.

To change the displayed name or assign a color in the OPM for a selected device, click the icon . Disconnect devices via the link icon .

2. Settings Panel

Use the settings panel to configure the SPCNT counting device.

a. Display - Parameter: Select between display of Frequency or Counts in the main panel Measurement.

b. Device:

i. Measurement Mode: Choose between Internal Binning to set the binning from within the OPM software, or Gated to use a TTL start/stop signal from an external device to define the binning. Please see the chapter Measurement Modes for more information on the modi Internal Binning and Gated.

Internal Binning

Use internal binning to set binning from within the OPM software. Internal Binning provides adjustment of the following parameters:

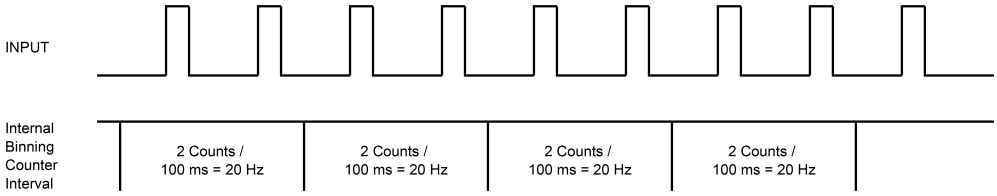
1. Bin Width [ms]

The bin width determines the duration within which pulses are counted.

The displayed frequency is calculated based on the number of pulses during the set bin width.

$$Frequency = \frac{Counts}{Bin\ Width * 1000}$$

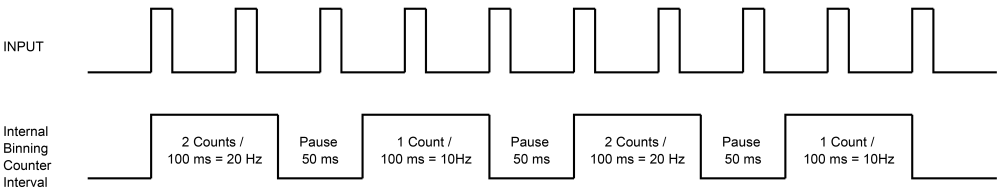
Please see the chapter Operating Principle for more information.



Internal Binning (Default)

2. Dead Time [ms] introduces a periodic interruption between bins. During the dead time, pulse counts are discarded. The dead time can be configured between 0 seconds (disabled) and 6 seconds with a microsecond accuracy. An example is shown in the figure below.

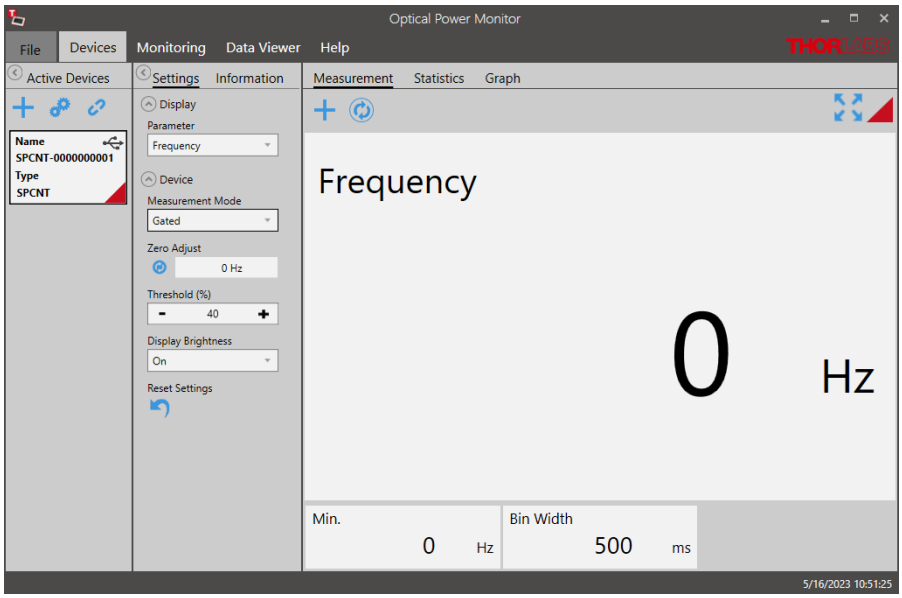
Please see the chapter Operating Principle for more information.



Internal Binning With Dead Time

Gated

In Gated mode, an external device provides an Active High TTL Signal to define the binning. The OPM software in Gated mode provides adjustment via the following interface with the parameters described below:



ii. Zero Adjust eliminates background noise originating from the connected Single Photon Detector or other unwanted background signal. When connected to a PC running the OPM software, the zero button on SPCNT device is disabled. To set Zero to eliminate background, set up the detector as used but in the absence of the desired signal. Cover the detector and click the icon .

iii. Threshold [%] defines the signal level above which signal is counted. This function can be used to eliminate afterpulsing. The default settings for the threshold are optimal for the Thorlabs SPDMA and SPDMHx single photon detectors. To compensate for afterpulsing in other detectors, first determine the afterpulsing characteristics of the connected single photon detector and then set the threshold level.

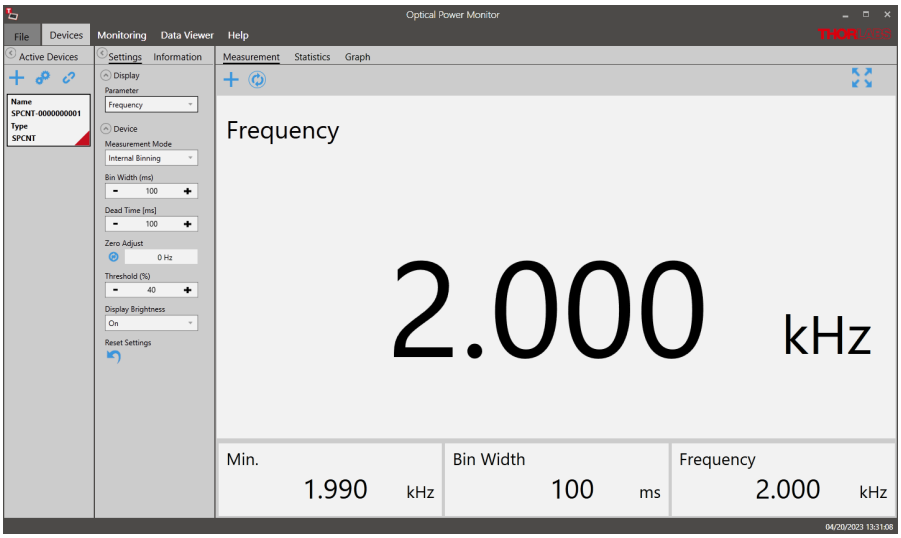
iv. Display Brightness adjusts the brightness of the display.

3. Information Panel

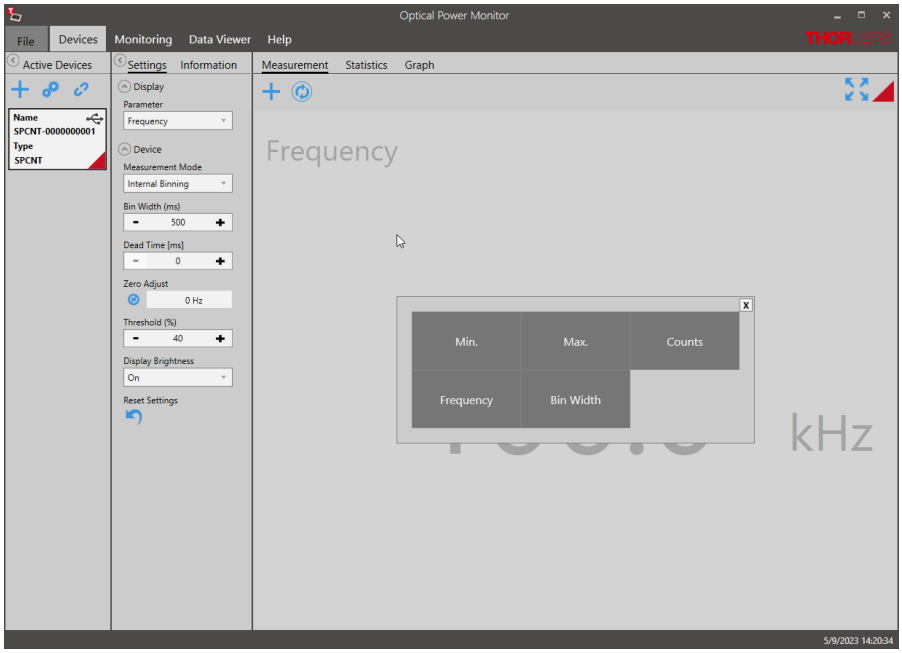
The panel Information shows the Name of the device, the serial number as well as the firmware revision.

4. Measurement Panel

The panel Measurement displays the numeric counts or frequency data as set in the settings panel as shown above. Click the refresh icon to reset the cumulative value that is displayed.

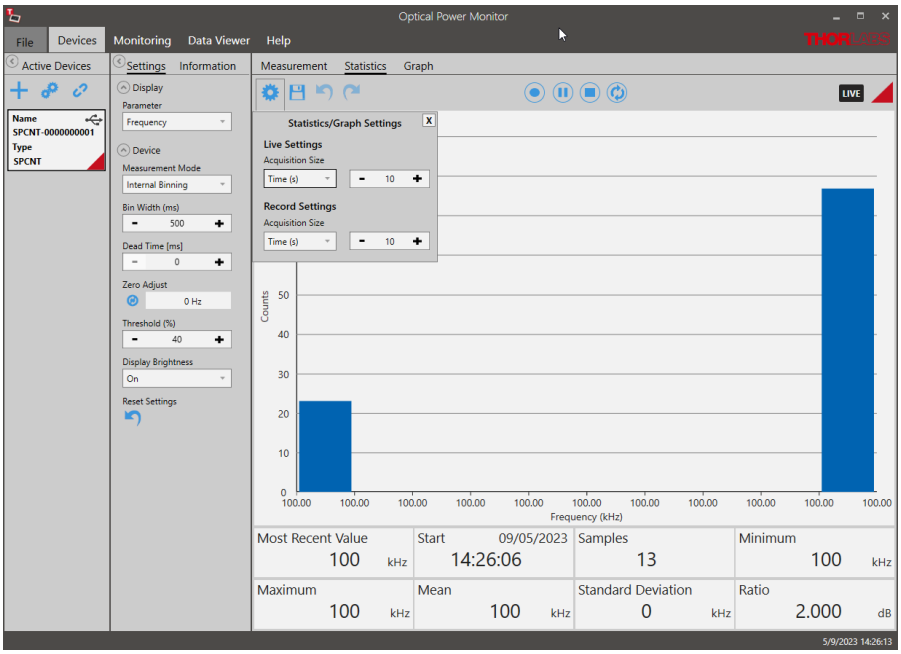


As in other applications of the Optical Power Monitor software, click the icon + to add display of more features.



5. Statistics

The **Statistics** panel shows the measurement statistics in chart and table format. This data can be recorded via the icon .

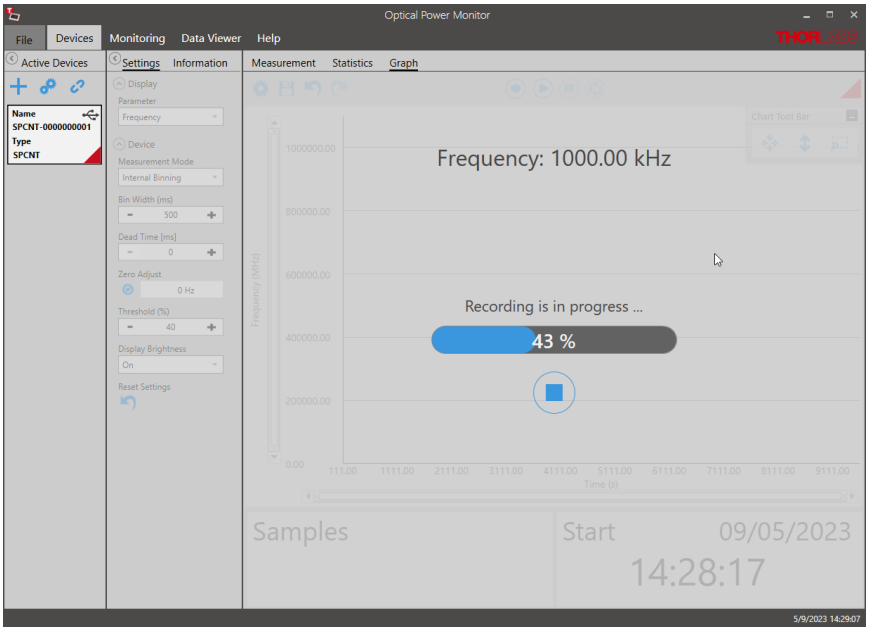


to set the duration of the acquired statistics and the recording duration.

to save statistics, which were acquired just before via ▶, or a recording

to switch to the last or next statistics frame which was recorded via the icon .

to record statistics data within the duration set via the icon . During the recording, the following interface appears:

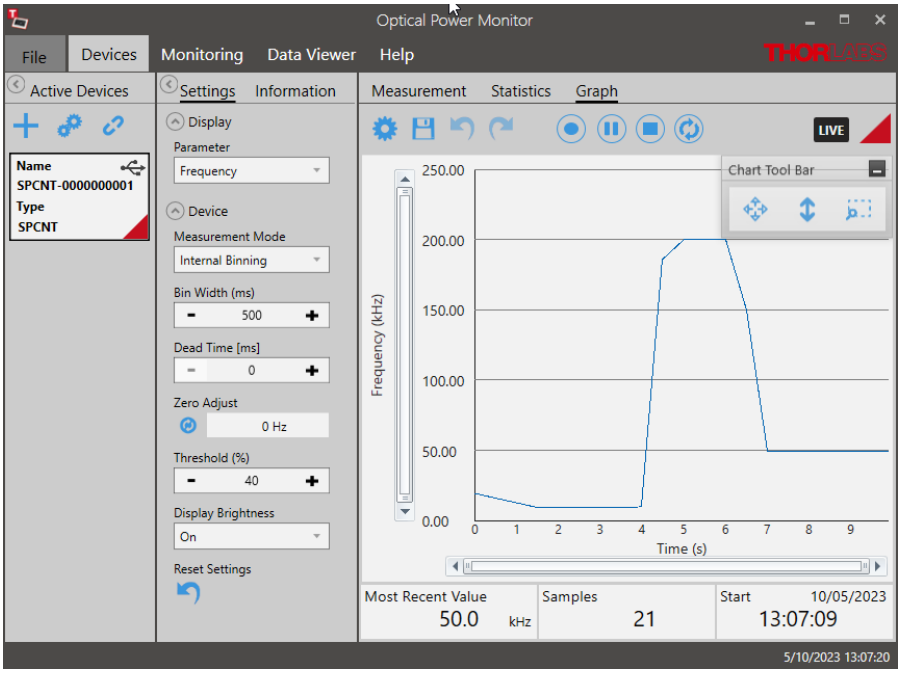


▶ ⏸ ⏹ These icons start, pause, and stop acquisition and running display of acquired signal, respectively.

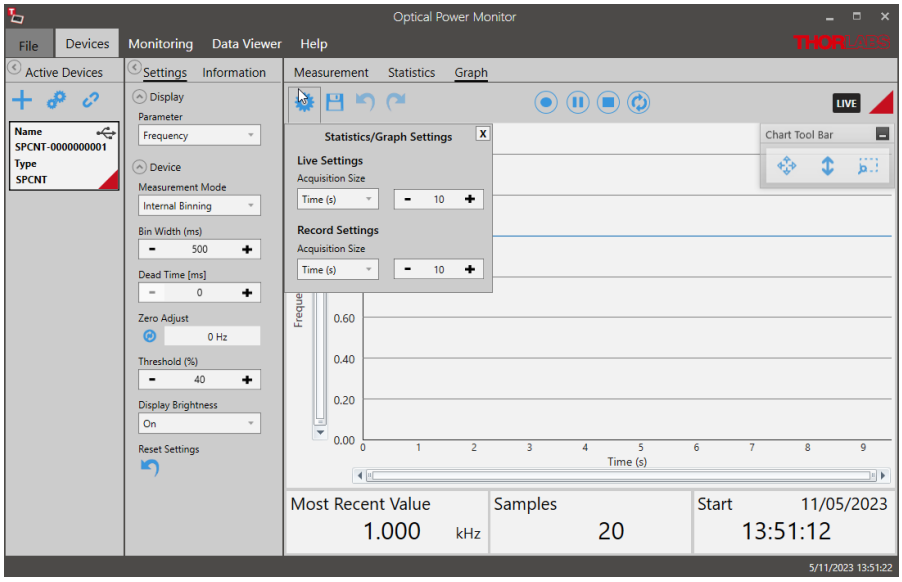
to refresh the statistics during an acquisition period.

6. Graph

The Graph panel shows the signal over time either as frequency or counts, as selected under Settings-Display - Parameter.



to set the duration of the acquired graph and the recording duration.

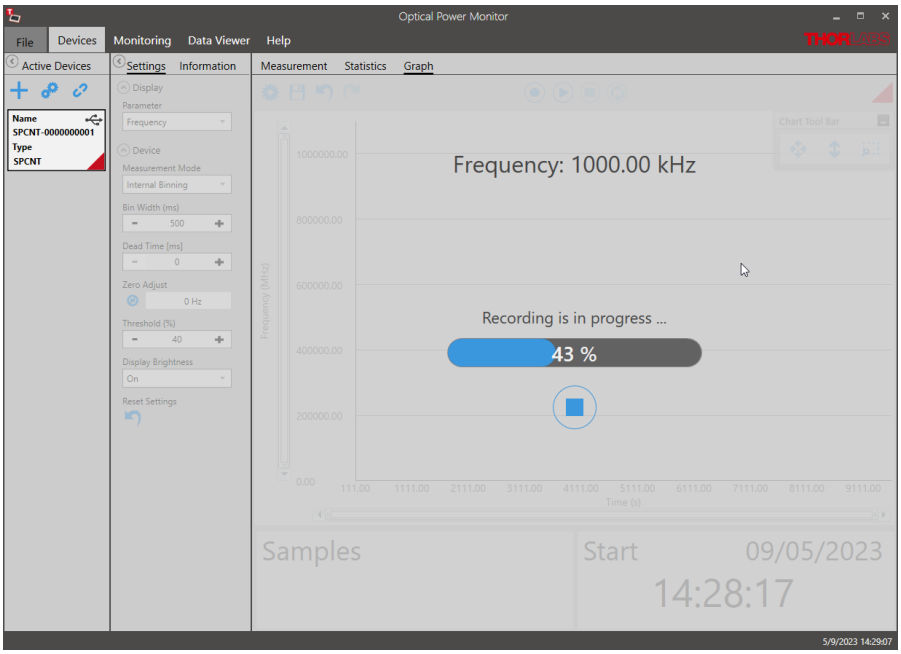


to save a graph, which was acquired just before via ▶, or a recording

to switch to the last or next graph frame which was recorded via the icon .

to record graph within the duration set via the icon . During the recording, the following interface appears. The Recording can be saved via the icon

 © 2023 Thorlabs

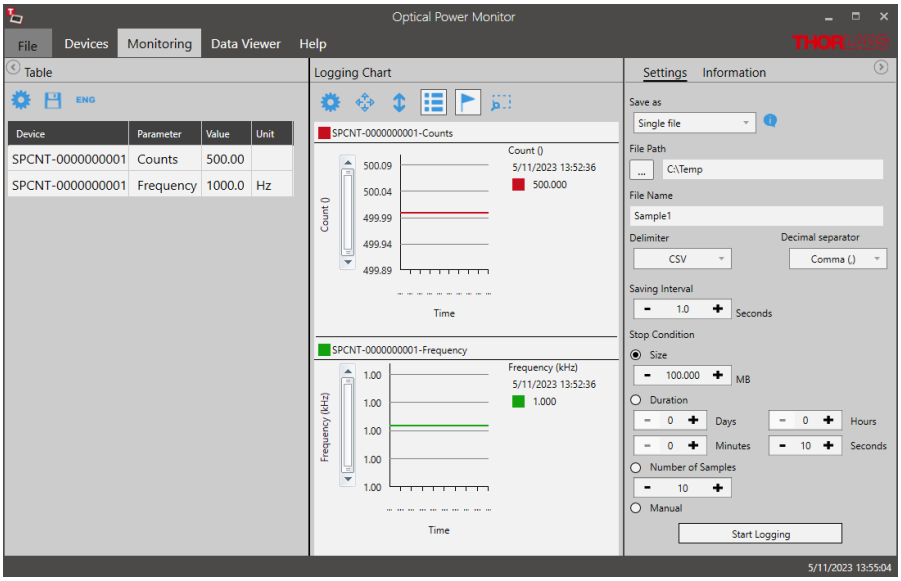


These icons start, pause, and stop acquisition and running display of acquired signal, respectively.

to refresh the graph display during an acquisition period.

5.3.2 Monitoring

Use the Monitoring panel to configure, execute, observe, and save long-term monitoring of up to 8 connected SPCNTs in parallel in Frequency and Counts. Long-term measurements can be recorded with a minimal interval of 0.1 second.



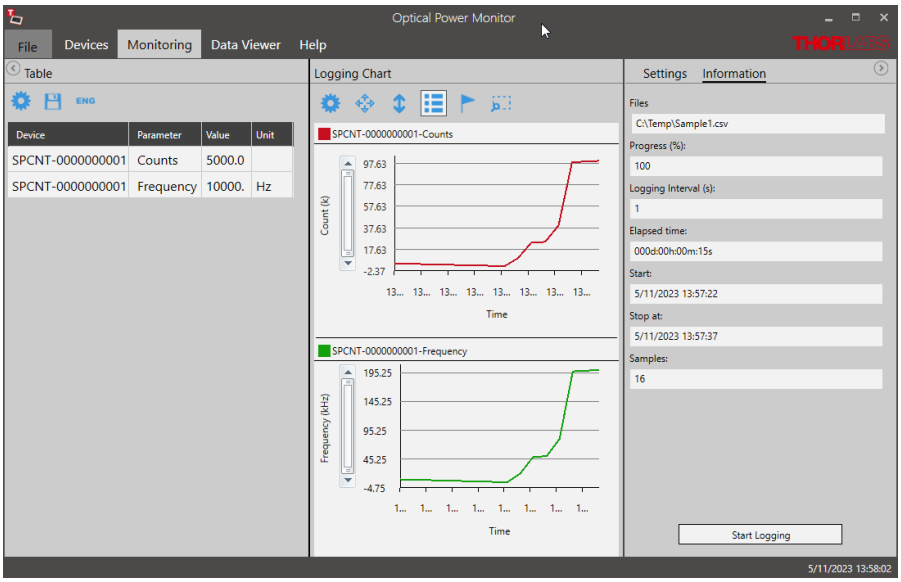
The Monitoring interface has three sections from left to right:

1) Table: The table lists the connected SPCNT devices which are selected for logging in the Monitoring interface. To select them, click the settings icon .

2) Logging Chart: This panel displays the frequency or counts over time according the settings selected under the setting icon . The region of interest in the graph, display of the legend and marks of certain data points can be selected in the panel above the graph. In general, these features are analogous to the features described in the full OPM manual.

3) Setting and Information: Use the settings panel to configure and start the long-term data logging. A description on the settings options is in the next chapter Logging Settings.

The monitoring panel looks as follows during a measurement with the Information panel to the right:



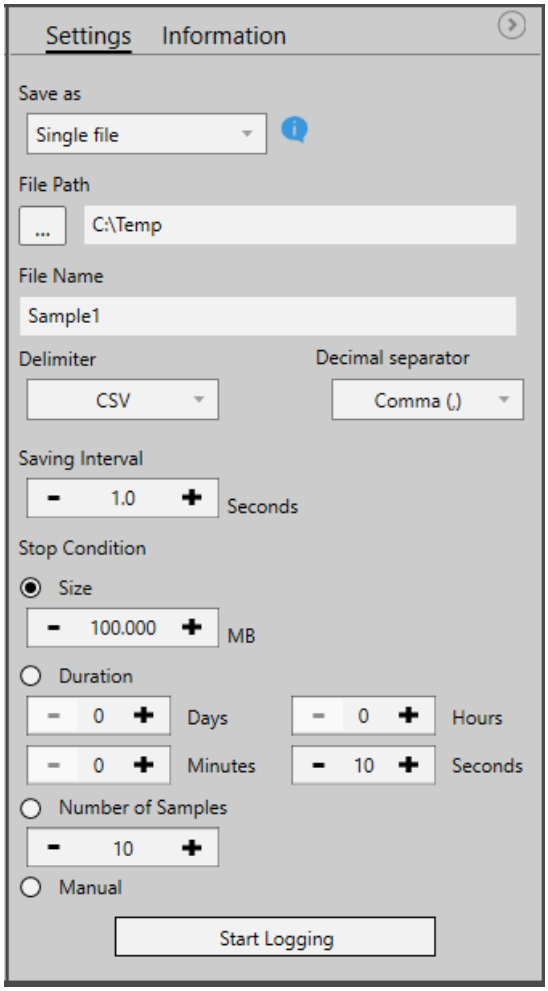
 © 2023 Thorlabs

5.3.2.1 Logging Settings

Configure the logging of a measurement and select the output file format, location, and name, and set the duration and resolution for logging under Settings.

Please read the section File Format in the OPM manual to learn about the data saved in the log files.

Review the **Logging Settings** prior to starting the measurement**:**



Save as: Choose to save data either as single files or multiple files, depending on the data volume.

o Single files: The OPM software saves a .csv file for short measurements with small data volume.

o Multiple files: The OPM software saves multiple .cvs files for measurements with large data volumes such as longer measurements or measurements with multiple SPCNT devices in parallel. When the software saves multiple files, an associated .tcsv file is saved for accelerated loading of data into the data viewer. Do not move or delete any files from the common folder. Please find more information in the section File Format in the OPM manual.

File Path: Select the Output File location.

File Name: Choose the file name.

Delimiter and **Decimal separator**: Choose the Delimiter and Decimal separator for easy access and analysis of your saved data.

Saving Interval: Set the time interval between saved data points. The minimal interval is 0.1 second.

Stop Condition: Select the criteria for terminating the logging process.

o Size: Measure up to a file size of 99 999 MB

o Duration: Measure for a certain duration.

o Number of Samples: Measure a set number of samples.

o Manual**:** Stop logging manually.

Note

Logging can not be started if no parameters were selected in the table section of the monitoring panel.

Attention

Disable hibernation and sleep mode of the PC. Otherwise, the PC looses the connection to the monitored devices, the measurement stops, and the OPM software may freeze when entering sleep mode or hibernation.

Start Logging

Click this button to start logging of the measurement. If the file name was already used, a warning window appears.

The Logging Settings panel will change to the **Logging Information** panel and show the status of the measurement.

5.3.3 Data Viewer

Data logged by the OPM software can be loaded and displayed in the Data Viewer.

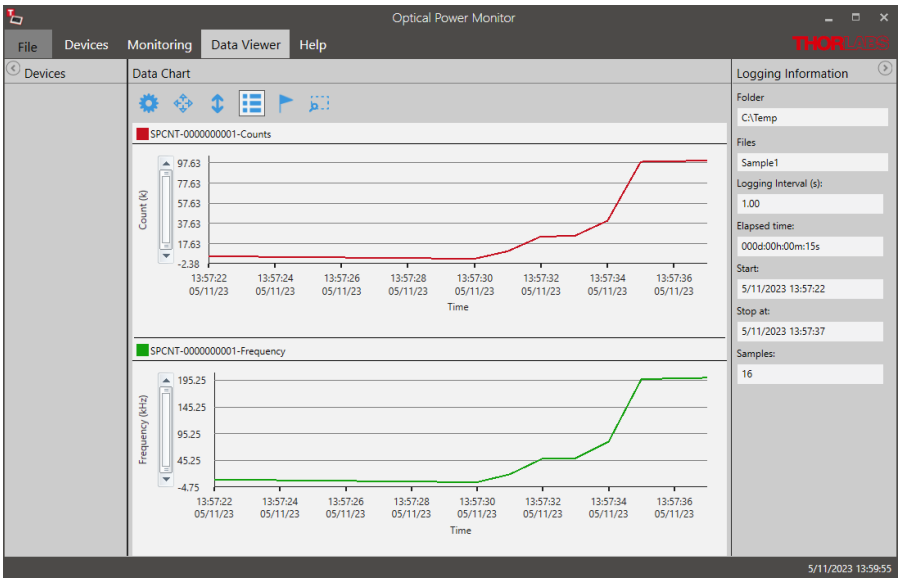
Loading Data:

To load data into the Data Viewer, go to the tab **File** menu and select **Load** to open the file of interest.

Data from the SPCNT, logged by the OPM software, can be loaded and displayed in the Data Viewer.

Data Chart

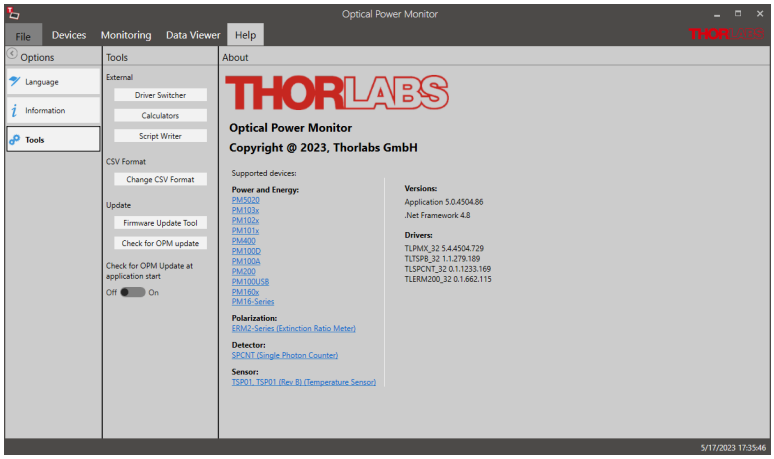
The Data Chart displays the loaded data over time. The display optionally includes a legend for the monitored devices and a cursor to choose the display of a specific measurement value. Use the Tool Bar on top of the chart to edit the display and analyze the data set.



For a more detailed description of OPM software standard settings, please see the OPM manual.

5.3.4 Help

In the HELP interface, choose the language, find the operating instructions of the OPM software, log files, and software license under Information, and change instrument drivers or update firmware of software.



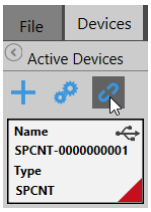
The general functions for the interface Help are as described in the OPM manual.

 © 2023 Thorlabs

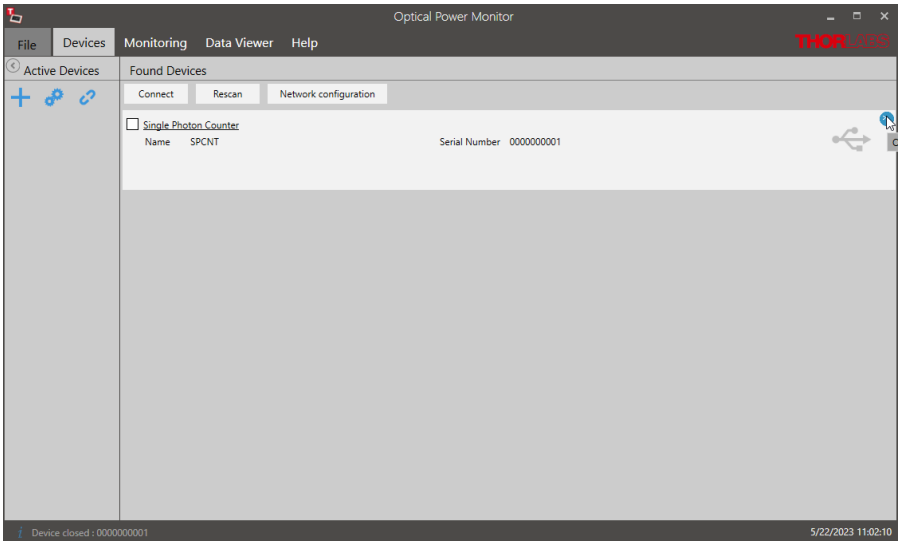
5.4 Write Your Own Application

In order to write your own application, a specific instrument driver and some tools for use in different programming environments are required. The driver and tools are included in the installer package of the OPM software.

The SCPI commands are accessible via the software Optical Power Monitor. Please download and open the software. Connect the SPCNT device to the PC. The connected SPCNT will be recognized. To access the SCPI commands, disconnect the SPCNT from within the OPM with a click to the link icon .

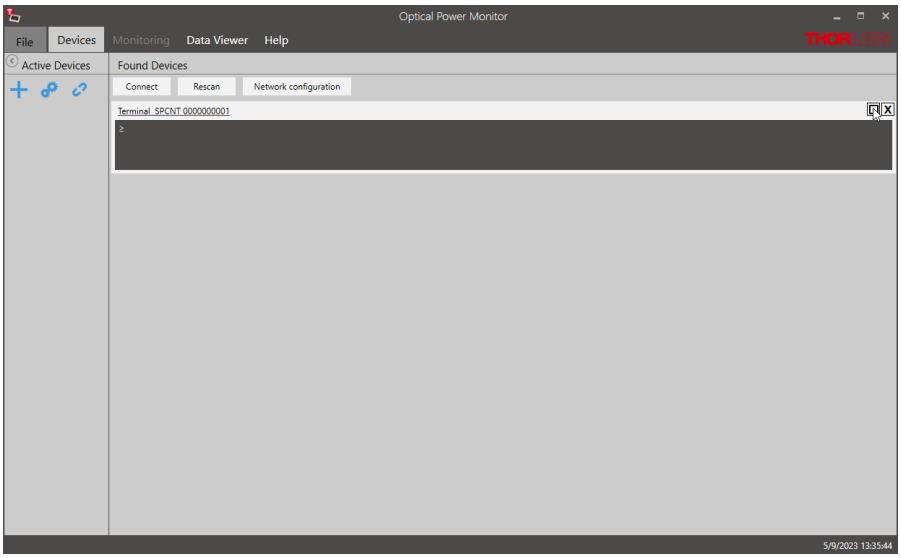


The following interface appears:

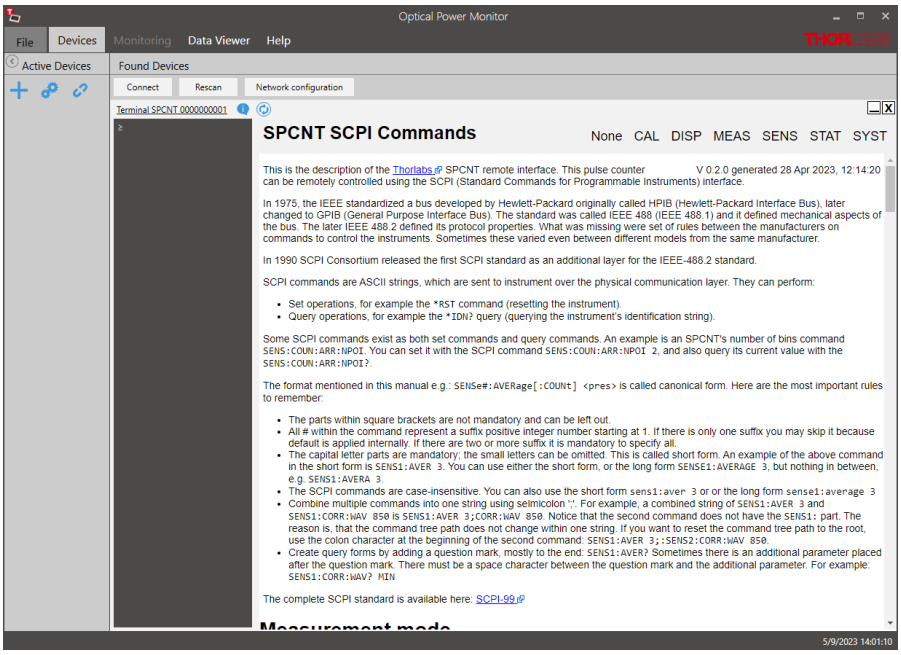


Click on the very right blue icon to open the Terminal with the SCPI commands.

Click the square MAXIMIZE icon to the right:



The SCPI commands appear.



To go to different SCPI command sections, either scroll down or jump to a specific category by clicking respective tabs on the top right side of the panel.

The SCPI commands and background information in this .html file can be saved (right click - save) and opened in a separate browser.

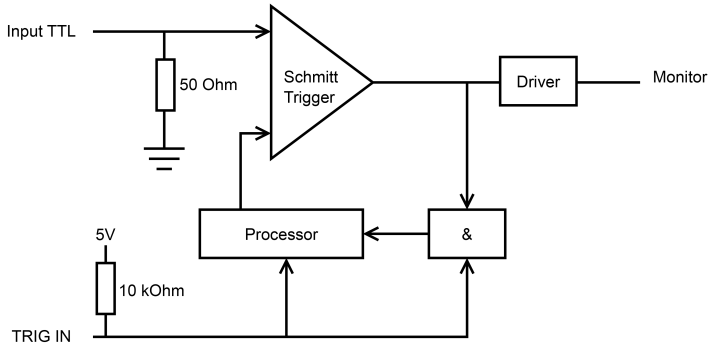
 © 2023 Thorlabs

Chapter 6 Operating Principle

The Thorlabs SPCNT Single Photon Counting Device recognizes signal pulses originating from a connected single photon detector. The results are shown numerically as counts or frequency on the display, or sent to a connected PC for display and analysis.

The underlying base unit for the SPCNT is pulses / bin. The bin width and Dead Time (to introduce periodic interruptions) are set either in the provided OPM software, via custom made software, or using an external gated signal from a signal generator. Within the OPM software, the binning mode can be set to the software driven mode (internal binning mode) or hardware driven mode using an external signal source (gated mode). Please find more information on these modes in the chapter measurement modes.

The following block diagram gives an overview of the SPCNT counting device hardware. The counter evaluates the counts for every single bin.



The INPUT signal is 50 Ohm terminated internally. A Schmitt-Trigger is used to compare the pulse input with a configurable threshold generated by the controller. The Schmitt-Trigger output is connected to an AND gate and is also output by a driver on the MONITOR output. An external TRIG IN signal, when applied, is pulled high (10 kOhm) internally and also connected to the AND gate. The output of the AND gate is evaluated by the controller by an 32-bit counter.

The SPCNT counting device supports both positive input signals and zero-balanced signals. The smallest background reduction via setting a base line zero is 0 V input signal.

6.1 Measurement Modes

The SPCNT module supports different modes of measurement: The internal binning mode where binning is defined via software, and the gated mode where binning is defined via an external signal.

Internal Binning

In internal binning mode, bin width and dead time between bins are defined by the provided software Optical Power Monitor (OPM) or by custom made software (please see the chapter Write Your Own Application).

The bin width is set in the software and the displayed frequency is calculated based on the number of pulses during the set bin width.

$$Frequency = \frac{Counts}{Bin\ Width * 10000}$$

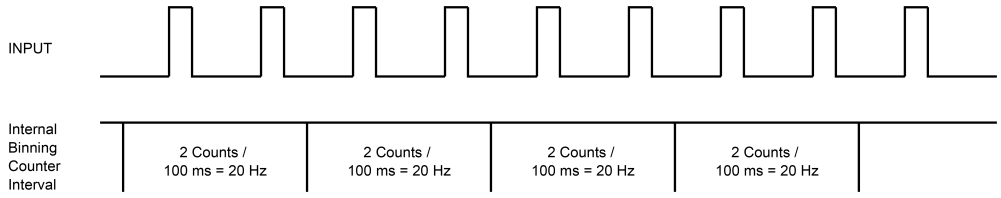
By default the internal binning is used with a bin width of 0.5 seconds. In this internal binning mode the input pulses are counted periodically without an interruption. The bin width can be configured between 0.001 and 6 seconds with a microsecond accuracy.

To introduce a periodic interruption between bins, use the dead time setting. During the dead time, pulse counts are discarded. The dead time can be configured between 0 seconds (disabled) and 6 seconds with a microsecond accuracy.

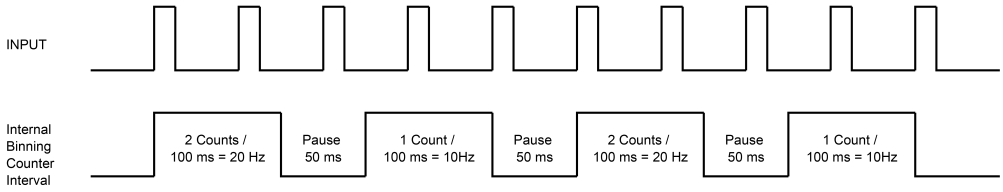
Examples

In the upper example in the schematic below, two counts/signal events occur within 100 ms bin width, which corresponds to a frequency of 20 Hz.

In the lower example, a dead time of 50 ms was introduced. No signal is counted during the dead time.



Internal Binning (default)



Internal Binning With Dead Time

Gated Mode

The Gated mode starts or stops the acquisition of the signal via an external signal source to synchronize the binning with other devices.

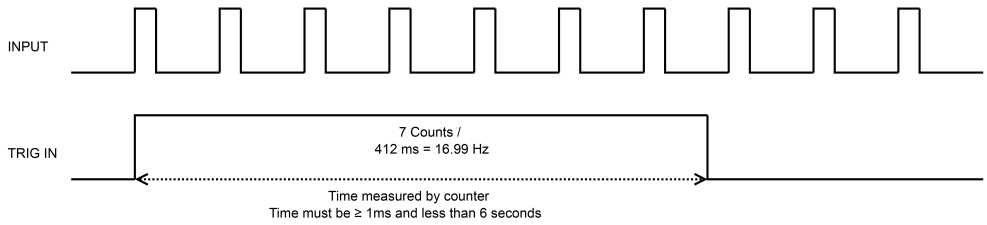
The external synchronization signal can be used in combination with the OPM software. For this, select the measurement mode "Gated" in the Devices panel.

On the external signal generator side: Pulses are counted upon an active high TTL signal. The time interval must be between 0.001 and 6 seconds. TRIG IN is pulled at 5 V internally. You can either actively drive or blank out the signal.

In Gated mode, the OPM software settings are limited to adjust the zero level and set the threshold above which signal is counted.

In the example below, an external signal is set to 412 ms. 7 counts occur within the 412 ms, which equals a frequency of 16.99 Hz. This frequency is displayed on the SPCNT device as well as on the OPM interface.

 © 2023 Thorlabs



Gated Measurement Mode

Chapter 7 Specifications

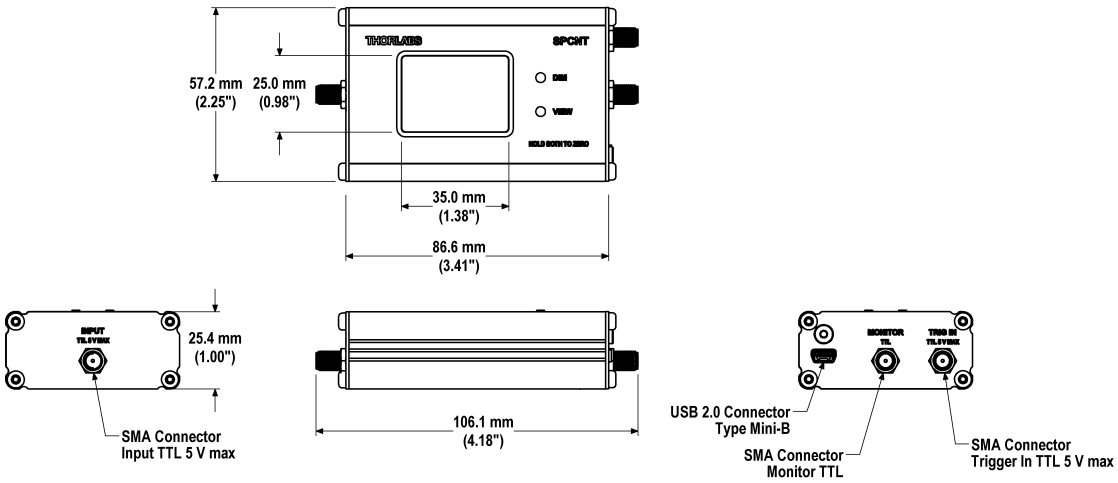
Item#	SPCNT
Input Signal	
Frequency	0 to 100 MHz
Resolution	1 Hz
Pulse Width	>10 ns
Edge Time	<2 µs
Amplitude	0 to 5 V, with high level ≥ threshold
Threshold[1])	0 to 100% (100% corresponds to 3.2 V)
Monitor Output	
Logic	TTL and LVTTL
Low	≤0.4 V
High	≥2.7 V
Delay to Input Signal	25 ns
Continuous Output Current	50 mA
Gated Signal Input	
Logic	TTL and LVTTL
Low	≤0.8 V
High	≥2.0 V
Power Supply	
Connector	USB 2.0
Voltage	5 V
Current	200 mA
General	
Operating Temperature Range [2])	0 to 40 °C
Storage Temperature Range	-40 to 70 °C
Dimensions (W x H x D)	106.1 mm x 25.4 mm x 57.2 mm (4.18" x 1.00" x 2.25")
Weight	180 g
Display Type	Graphic OLED White, 102 x 64 Pixels
Display Size	25 mm x 35 mm (0.98" x 1.38")

[1]) The SPCNT device counts pulses only when the signal level is above the threshold.

[2]) non-condensing

All technical data are valid at 23 ± 5°C and 45 ± 15% rel. humidity (non condensing).

7.1 Dimensions



Chapter 8 Maintenance and Service

Protect the SPCNT from adverse weather conditions. The SPCNT is not water resistant.

Attention

To avoid damage to the instrument, do not expose it to spray, liquids or solvents!

The unit does not need regular maintenance by the user. It does not contain any modules and/or components that could be repaired by the user himself. If a malfunction occurs, please see the Return of Devices section and contact Thorlabs for return instructions.

Do not remove covers!

 © 2023 Thorlabs

Chapter 9 Certifications and Compliances

EU Declaration of Conformity

in accordance with EN ISO 17050-1:2010

We: Thorlabs GmbH

Of: Münchner Weg 1, 85232 Bergkirchen, Deutschland

in accordance with the following Directive(s):

2014/30/EU Electromagnetic Compatibility (EMC) Directive

2011/65/EU Restriction of Use of Certain Hazardous Substances (RoHS)

hereby declare that:

Model: ***SPCNT***

Equipment: ***Single Photon Counting Device***

is/are in conformity with the applicable requirements of the following documents:

EN 61326-1	Electrical Equipment for Measurement, Control and Laboratory Use - EMC Requirements	2013
EN 63000	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances	2018

and which, issued under the sole responsibility of Thorlabs, is/are in conformity with Directive 2011/65/EU of the European Parliament and of the Council of 8th June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment, for the reason stated below:

I hereby declare that the equipment named has been designed to comply with the relevant sections of the above referenced specifications, and complies with all applicable Essential Requirements of the Directives.

Signed: *On:* 07 March 2023

Name: Julien Vigroux

Position: General Manager

EDC - SPCNT -2023-03-07

CE

Chapter 10 Warranty and RMA Information

Thorlabs warrants material and production of the SPCNT for a period of 24 months starting with the date of shipment in accordance with and subject to the terms and conditions set forth in Thorlabs' General Terms and Conditions of Sale which can be found at:

General Terms and Conditions:

https://www.thorlabs.com/Images/PDF/LG-PO-001_Thorlabs_terms_and_%20agreements.pdf

and

https://www.thorlabs.com/images/PDF/Terms%20and%20Conditions%20of%20Sales_Thorlabs-GmbH_English.pdf

10.1 Return of Devices

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.

10.2 WEEE Policy

Thorlabs 'End of Life' Policy (WEEE)



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 11 Manufacturer Address

Manufacturer Address Europe
Thorlabs GmbH
Münchner Weg 1
D-85232 Bergkirchen
Germany
Tel: +49-8131-5956-0
Fax: +49-8131-5956-99
www.thorlabs.de
Email: europe@thorlabs.com

EU-Importer Address
Thorlabs GmbH
Münchner Weg 1
D-85232 Bergkirchen
Germany
Tel: +49-8131-5956-0
Fax: +49-8131-5956-99
www.thorlabs.de
Email: europe@thorlabs.com

UK-Importer Address
Thorlabs, LTD.
204 Lancaster Way Business Park
Ely, CB6 3NX
UK
Tel: +44-1353-654440
Fax: +44 (0)1353-654444
www.thorlabs.com
Email:
techsupport.uk@thorlabs.com

 © 2023 Thorlabs

Chapter 12 Copyright and Exclusion of Liability

Thorlabs has taken every possible care in preparing this document. We however assume no liability for the content, completeness or quality of the information contained therein. The content of this document is regularly updated and adapted to reflect the current status of the product.

All rights reserved. This document may not be reproduced, transmitted or translated to another language, either as a whole or in parts, without the prior written permission of Thorlabs. Copyright © Thorlabs 2023. All rights reserved.

Please refer to the general terms and conditions linked under Warranty.

Chapter 13 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.



USA, Canada, and South America
Thorlabs, Inc.
sales@thorlabs.com
techsupport@thorlabs.com

UK and Ireland
Thorlabs Ltd.
sales.uk@thorlabs.com
techsupport.uk@thorlabs.com

Europe
Thorlabs GmbH
europe@thorlabs.com

Scandinavia
Thorlabs Sweden AB
scandinavia@thorlabs.com

France
Thorlabs SAS
sales.fr@thorlabs.com

Brazil
Thorlabs Vendas de Fotônicos Ltda.
brasil@thorlabs.com

Japan
Thorlabs Japan, Inc.
sales@thorlabs.jp

China
Thorlabs China
chinasales@thorlabs.com

 © 2023 Thorlabs



THORLABS

www.thorlabs.com