

# GAN520C1 - JUL 10, 2018

Item # GAN520C1 was discontinued on July 10, 2018. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

## Ganymede Series SD-OCT Systems



[Overview](#) [Software](#) [OCT Tutorial](#) [Brochures](#) [Feedback](#) [Selection Guide](#)

### Features

- Configurable High-Resolution OCT Systems Optimized for High-Sensitivity or High-Speed Imaging
- Two Options with up to 36 kHz A-Scan Rate and up to 101 dB Sensitivity
  - 6.0  $\mu\text{m}$  Axial Resolution in Air with 2.9 mm Imaging Depth (930 nm Center Wavelength)
  - 3.0  $\mu\text{m}$  Axial Resolution in Air with 1.9 mm Imaging Depth (900 nm Center Wavelength)
- Two Options with up to 100 kHz A-Scan Rate and up to 96 dB Sensitivity
  - 5.5  $\mu\text{m}$  Axial Resolution in Air with 2.6 mm Imaging Depth (930 nm Center Wavelength)
  - 3.0  $\mu\text{m}$  Axial Resolution in Air with 1.9 mm Imaging Depth (900 nm Center Wavelength)
- All Systems Include Computer and ThorImage<sup>®</sup> OCT Software Package (See the *Software* Tab)
- Build-Your-Own and Preconfigured Systems Available
- See the *Brochures* Tab for More Information on Thorlabs' OCT Systems

### Choose Components to Build or Customize Your OCT System

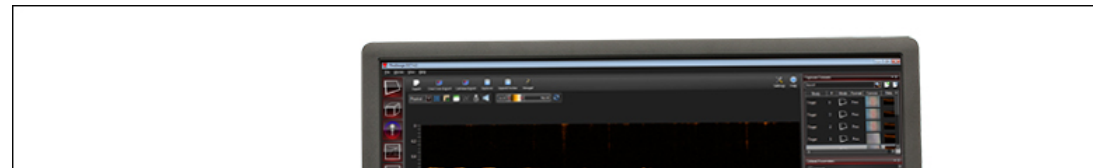
- Choose from Base Units Optimized for a Range of Applications
- Standard, User-Customizable, and Handheld Scanners Available
- Scan Lens Kits to Optimize Lateral Resolution and Focal Length for Your Application
- Ring- and Immersion-Style Sample Z-Spacers for Air or Liquid Imaging Applications
- Scanner Stand and Translation Stage Accessories
- Contact Our [OCT Team](#) to Request a Quote and Discuss Building a System

Optical Coherence Tomography (OCT) is a noninvasive optical imaging technique that produces real-time, 2D cross-sectional and 3D volumetric images of a sample. This technique provides structural information about the sample based on light backscattered from different layers of material within that sample, producing images with micron-level resolution and millimeters of imaging depth. OCT imaging can be considered as an optical analog to ultrasound imaging that achieves higher resolution at the cost of decreased penetration depth. In addition to high resolution, the non-contact, noninvasive nature of OCT makes it well suited for imaging samples such as biological tissue, small animals, and industrial materials.

Thorlabs' Ganymede Series of OCT Imaging Systems provides the flexibility required for general-purpose and high-resolution imaging applications, with A-scan line rates up to 36 or 100 kHz. The 64-bit software pre-installed on the included computer displays and processes 2D and 3D OCT data in real time. Choose from a number of scanner options including a robust standard scanner, user-customizable scanner, and the portable handheld scanner. Optional accessories are available below to customize your OCT system to meet the requirements of your application. Additionally, Thorlabs offers complete, preconfigured OCT systems operating with 930 nm or 900 nm center wavelengths based on the components sold on this page.

The components below can also be used to upgrade your existing Thorlabs OCT system with additional features and are fully compatible out of the box with Thorlabs' OCT systems and accessories. While most systems are upgradable, we recommend contacting the [OCT Team](#) to determine the optimal solution for your system and intended application.

Click on the Image Below or in the Table to the Right for Details on Customization Options



### Let Thorlabs Help with Your Imaging Project!

We recognize that our customers have unique application requirements. For this reason, we stand ready to discuss how our OCT systems can be adapted to meet your needs. You can easily contact us directly at [oct@thorlabs.com](mailto:oct@thorlabs.com) or via our [online request form](#); an OCT representative will contact you shortly. We are happy to assist with purchasing or information requests:

[Contact Us](#)

- **Request a Quote:** E-mail us with a list of parts or specifications you want.
- **Technical Consultation:** Ask our engineers for help with configuring a system.
- **Sample Testing:** Send us your sample and let our engineers determine the right OCT configuration for you.
- **Request a Demo:** Demos are available for customers in the US and Europe through our Newton, NJ and Lübeck, Germany locations.
- **OEM and Custom Projects:** Click [here](#) to learn about our OEM capabilities.

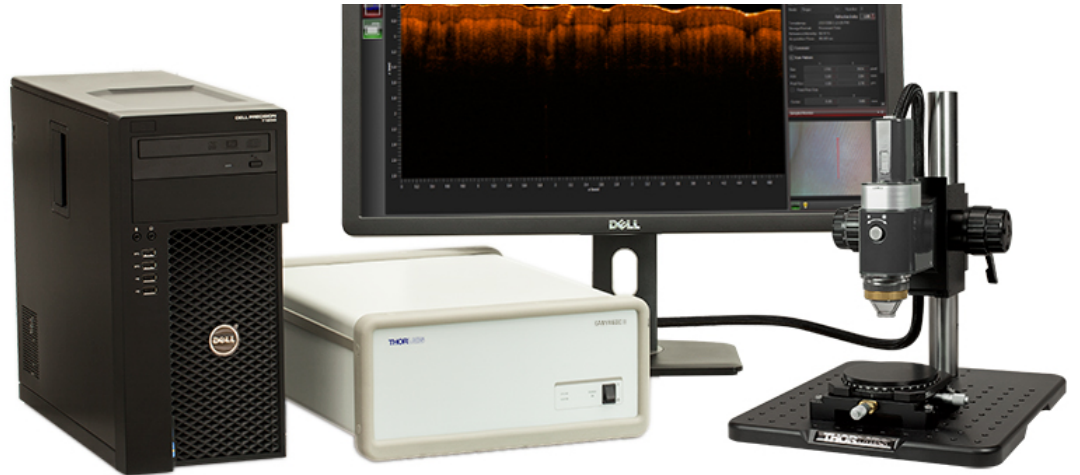
### OCT System Comparison

	CALLS	HANDHELD	STANDARD
Scan Rate (kHz)	36	100	100
Axial Resolution (µm)	6.0	3.0	3.0
Imaging Depth (mm)	2.9	1.9	1.9
Sensitivity (dB)	101	96	96

[Application Articles](#)

7/10/2018

## Ganymede Series SD-OCT Systems



### Ganymede Customization Options

[OCT Base Unit](#)

(Computer Included)

[Scanning System](#)

[Scan Lens Kit](#)

[Reference Length Adapter](#)

(For Standard Scanners Only)

[Sample Z-Spacer](#)

[Adjustable Scanner Stand](#)

[Translation Stage](#)

[Preconfigured Systems](#)

(Z-Spacer Not Included)

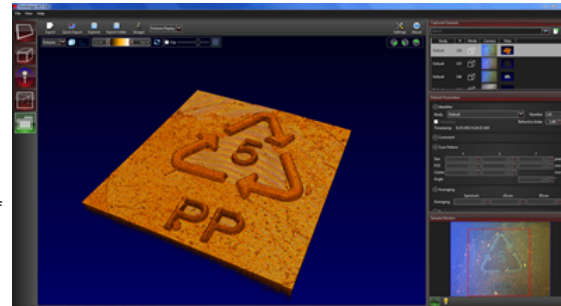
## ThorImage OCT Software Index

- [Introduction](#)
- Imaging Modes
  - [2D Mode](#) for Cross-sectional Imaging
  - [3D Mode](#) for Volume Imaging
  - [Doppler Mode](#) for Doppler Flow Imaging
  - [Speckle Variance Mode](#) for Angiographic Imaging
- [Externally-Triggered Acquisition](#) for Synchronized Measurements
- [Easy Probe Calibration](#) for Different Configurations
- [Video](#) Showing Screencast of Rendering Capabilities

## ThorImage OCT Software

- Interactive Scan Position Control through Video Display (Draw and Scan)
- Advanced Dataset Management
- High-Speed Volume Rendering of 3D Data
- Doppler and Speckle Variance Imaging
- Versatile Scan and Acquisition Control

ThorImage OCT is high-performance data acquisition software that is included with all Thorlabs Spectral Domain OCT systems. This 64-bit Windows-based software package is capable of data acquisition, processing, scan control, and displaying OCT images. Additionally, NI LabVIEW and C-based Software Development Kits (SDKs) are available, which contain a complete set of libraries for measurement control, data acquisition and processing, as well as storage and display of OCT images. The SDKs provide the means for developing highly specialized OCT imaging software for every individual application.

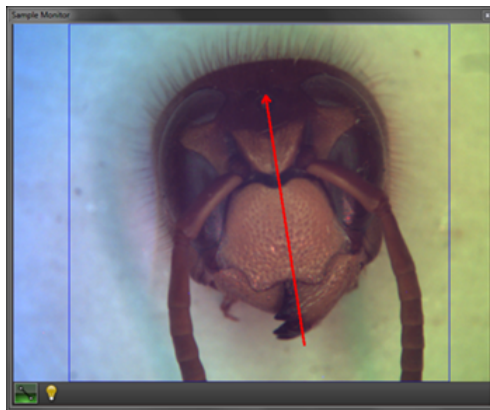


[Click to Enlarge](#)

The ThorImage OCT Window in Volume Rendering Mode

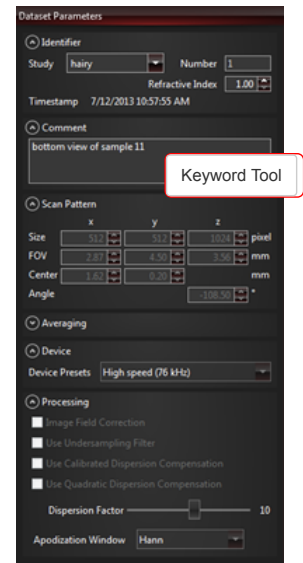
### Scan Control

ThorImage OCT provides numerous scan and acquisition controls. The camera integrated in the probe of our OCT system provides live video images in the application software. Defining the scan line for 2D imaging or the scan area for 3D imaging is accomplished through the easy-to-use "Draw and Scan" feature by clicking on the video image. The scan pattern can also be adjusted by specifying parameters in the controls of the software. Additionally, one can further set processing parameters, averaging parameters, and the speed and sensitivity of the device using device presets. By using a high-speed preset, video-like frame rates in 2D and fast volume rendering in 3D are possible, whereas high-sensitivity acquisition is enabled by choosing a preset with a lower acquisition speed.



[Click to Enlarge](#)

The Sample Monitor can be used to define the scan pattern using the "Draw and Scan" feature.



[Click to Enlarge](#)

Various acquisition parameters can be adjusted in ThorImage OCT.

### Dataset Management

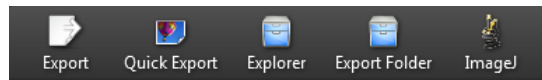
ThorImage OCT provides advanced dataset management capabilities, which allow opening several datasets simultaneously. Datasets are uniquely defined using an identifier consisting of study (or test series) name and an experiment number. Grouping of datasets is possible using the same study name. The "Captured Datasets" list shows an overview of all open datasets, including the study name, the acquisition mode, and preview pictures of the still video image and the OCT data.

Datasets can be exported in various image formats, such as PNG, BMP, JPEG, PDF, or TIFF. Formats suited for post-processing purposes, such as RAW/SRM, FITS, VTK, VFF, and 32-bit floating-point TIFF, are also supported.

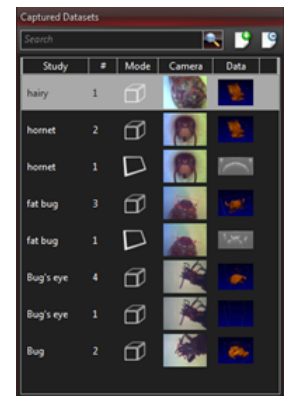
The OCT file format native to ThorImage OCT allows OCT data, sample monitor data, and all relevant metadata to be stored in a single file. ThorImage OCT can also be installed and run on computers without an OCT system installed in order to view data.

### Third Party Applications

If ImageJ is installed on the computer with ThorImage OCT installed, opening acquired OCT data in ImageJ is one mouse click away, as shown in the image below. This enables a flawless workflow when requiring the advanced image processing functionality provided by ImageJ. Clicking the Explorer button shown below will open the folder and select the file in Windows Explorer where the currently active dataset is stored.



Export buttons are accessible in the Action Toolbar of ThorImage OCT.



[Click to Enlarge](#)

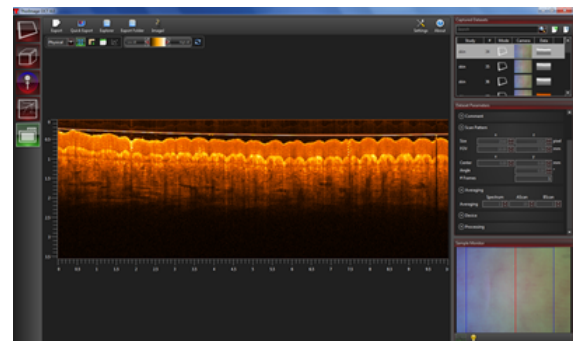
The Dataset Management Window of ThorImage OCT

### Imaging Modes

Different OCT imaging modes can be selected using the mode selector. If the ThorImage OCT software finds a compatible system connected and switched on, all operational modes will be selectable. If no OCT device is present, only the data viewing mode for viewing and exporting OCT data will be available.

#### 2D Mode

In the 2D imaging mode the probe beam scans in one direction, thus acquiring cross-sectional OCT images, which are then displayed in real time. Line averaging before or after the Fast Fourier Transform (FFT) is available as well as B-Scan averaging. Image display parameters, such as color mapping, can be controlled in this mode. We have also implemented an option for automatic calculation of the optimum contrast and brightness of the displayed OCT images.



[Click to Enlarge](#)

The ThorImage OCT Window in 2D Mode

#### 3D Mode

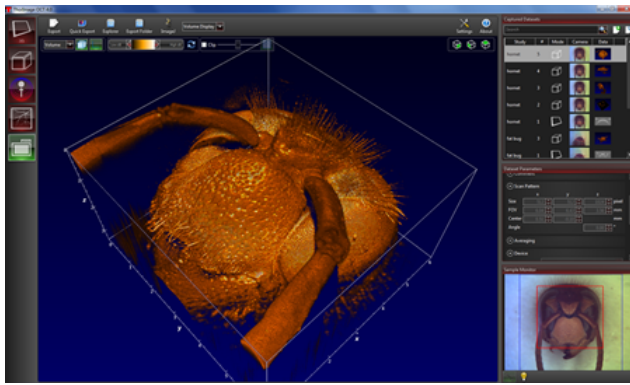
In the 3D imaging mode, the OCT probe beam scans sequentially across the sample to collect a series of 2D cross-sectional images, which are then processed to build a 3D image.

In the ThorImage OCT software, 3D volume datasets can be viewed as orthogonal cross-sectional planes (see below) and volume renderings.

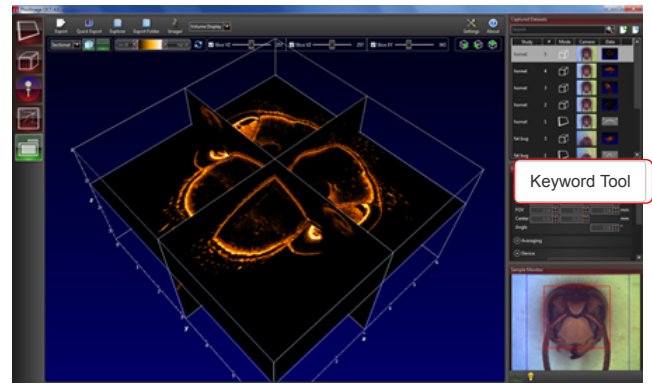
The Sectional View features cross-sectional images in all three orthogonal planes, independent of the orientation in which the data was acquired. The view can be rotated as well as zoomed in and out.

The Rendering View provides a volumetric rendering of the acquired volume dataset. This view enables quick 3D visualization of the sample being imaged. Planes of any orientation can be clipped to expose structures within the volume. The 3D image can be zoomed in and out as well as rotated. Furthermore, the coloring and dynamic range settings can be adjusted.

Utilizing the full potential of our high-performance software in combination with our high-speed OCT systems, we have included a Fast Volume Rendering mode in ThorImage OCT, which serves as a preview for high-resolution 3D acquisitions. In this mode, high-speed volume renderings can be displayed in real-time, providing rapid visualization of samples in three dimensions.



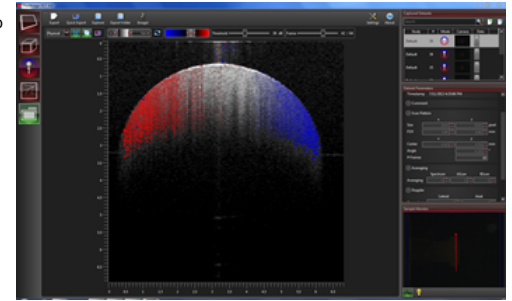
[Click to Enlarge](#)  
Rendering View



[Click to Enlarge](#)  
Sectional View

### Doppler Mode

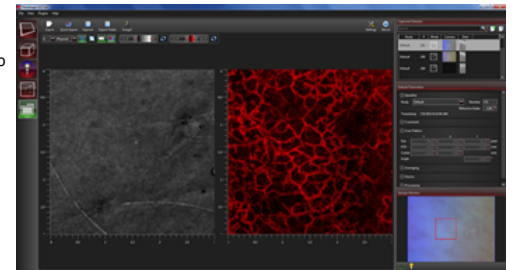
Doppler OCT imaging comes standard with all OCT systems. In the Doppler mode, phase shifts between adjacent A-scans are averaged to calculate the Doppler frequency shift induced by particle motion or flow. The number of lateral axial pixels can be modified to change velocity sensitivity and resolution during phase shift calculation. The Doppler images are displayed in the main window with a color map indicating forward- or backward-directed flow, relative to the OCT beam.



[Click to Enlarge](#)  
Doppler dataset showing the velocity of a rotated plastic stick.

### Speckle Variance Mode

The speckle variance acquisition mode uses the variance of speckle noise to calculate angiographic images. It can be used to visualize three dimensional vessel trees without requiring significant blood flow and without requiring a specific acquisition speed window. The speckle variance data can be overlaid on top of intensity pictures providing morphological information. Different color maps can be used to display the multimodal pictures.



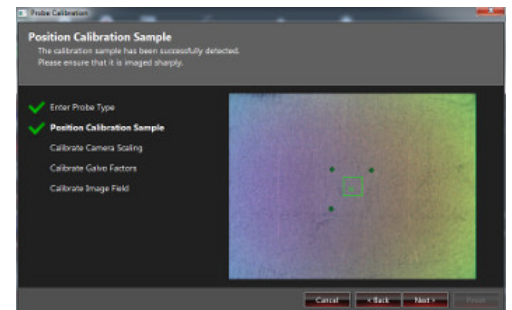
[Click to Enlarge](#)  
Speckle variance measurement showing blood vessels of a hand.

### Externally-Triggered Acquisition

ThorImage OCT and the SDK APIs provide the ability to externally trigger the acquisition of A-Scans. This enables the user to synchronize measurements from different modalities (e.g. vibrometry and synchronized positioning) with an OCT measurement. Synchronization is greatly simplified with all current CameraLink-based Thorlabs OCT systems (a TTL level trigger signal source required). External triggering is available for all imaging modes and can be toggled in the settings dialog in ThorImage OCT.

### Easy Probe Calibration

Changing to a different scan lens kit ([sold below](#)) will generally require a different probe configuration in order to adapt to changes in the optical parameters of the system. When an additional scan lens is purchased for your Thorlabs OCT scanner system, ThorImage OCT enables you to easily create a fitting configuration for your new scan lens by using the calibration sample shipped with the lens and an intuitive step-by-step calibration process (shown in the image to the right).



[Click to Enlarge](#)  
Probe Calibration Window in ThorImage OCT

### Video Showing Screenshot of ThorImage OCT Rendering Capabilities

In this video, OCT images of a finger are acquired and manipulated in the 3D volume and cross section modes.

## Brochure and Configuration Chart

The buttons below link to PDFs of printable materials and a graphical customization guide for our Ganymede Series OCT Systems.

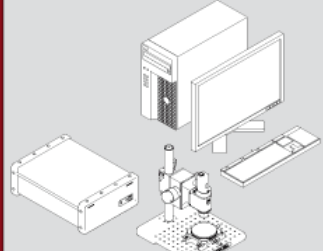
**Download  
a Brochure**

**PDF**



# Ganymede Series OCT Systems

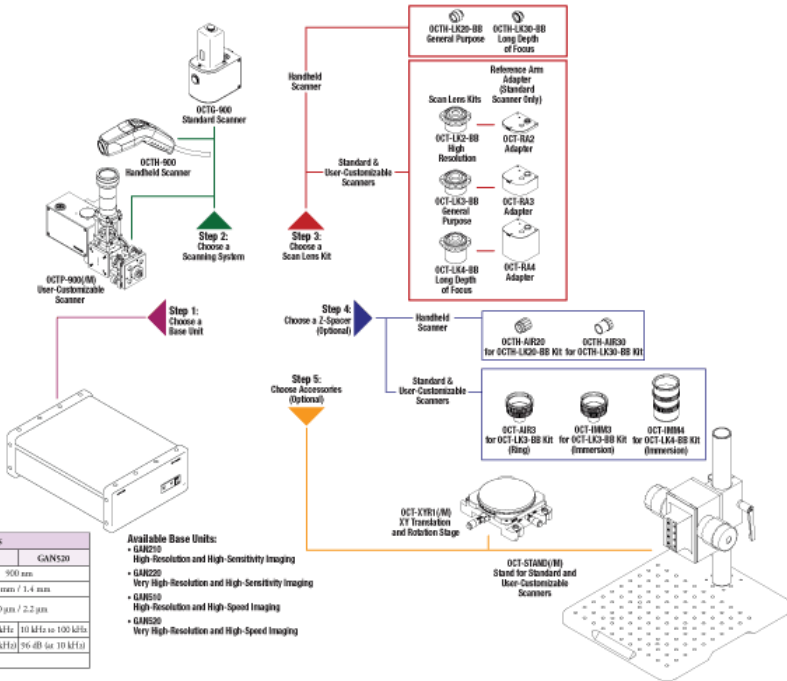
GANYMEDI SERIES PRECONFIGURED SYSTEMS				
ITEM #	GAN210C1	GAN510C1	GAN220C1	GAN520C1
Base Unit	GAN210	GAN510	GAN220	GAN520
Center Wavelength	900 nm			
Scanning System	OCTG-900 (Standard Scanner)			
Scan Lens Kit	OCT-LK3-BB		OCT-LK2-BB	
Reference Length Adapter	OCT-RA1		OCT-RA2	
Accessories	OCT-STAND1(M) and OCT-XYR1(M)			



**GAN210C1**  
The GAN210C1 configuration consists of a GAN210 high-resolution and high-sensitivity 900 nm base unit, standard scanner, general-purpose scan lens kit, reference length adapter, stand, and stage.

GANYMEDI SERIES OCT BASE UNIT SPECIFICATIONS				
ITEM #	GAN210	GAN510	GAN220	GAN520
Center Wavelength	900 nm			
Imaging Depth (Air/Water)	2.0 mm / 2.2 mm	2.6 mm / 2.0 mm	1.8 mm / 1.4 mm	
Axial/Depth Resolution (Air/Water)	6.0 μm / 4.5 μm	5.5 μm / 4.1 μm	5.0 μm / 2.2 μm	
A-Scan/Line Rate	5.5 k/s to 36 k/s	10 k/s to 100 k/s	5.5 k/s to 36 k/s	10 k/s to 100 k/s
Sensitivity*	101 dB (at 5.5 k/s)	96 dB (at 10 k/s)	101 dB (at 5.5 k/s)	96 dB (at 10 k/s)
Base Unit Dimensions	620 mm x 320 mm x 149 mm			

\*Typical Values Measured Using a Common Path Probe with 50% Recoupling





Thorlabs offers a variety of OCT Imaging Systems to meet a range of application requirements. The OCT base unit and scan lens kit are key to OCT system performance. Significant performance characteristics, including axial resolution, A-Scan rate, and imaging depth, are entirely or strongly dependent on the design of the OCT base unit. The choice of scan lens kit determines other parameters, such as lateral resolution and field of view. Thorlabs offers a variety of OCT base units and scan lens kits that provide foundations for systems with a wide range of capabilities. The tables below present key performance parameters of our base units and include links to our other OCT imaging system pages. We encourage you to contact us directly at [oct@thorlabs.com](mailto:oct@thorlabs.com) or via our [online request form](#) to discuss specific imaging requirements.

### 900 nm OCT Base Units

Item #	CAL110 <sup>a</sup>	GAN210 <sup>a</sup>	GAN510 <sup>a</sup>	GAN220 <sup>a</sup>	GAN520 <sup>a</sup>
Series Name (Click for Link)	<a href="#">Callisto</a>	<b>Ganymede</b>			
Key Performance Feature(s)	High Sensitivity	High Resolution		Very High Resolution	
		High Sensitivity	High Speed	High Sensitivity	High Speed
Center Wavelength	930 nm	930 nm		900 nm	
Imaging Depth <sup>b</sup> (Air/Water)	1.7 mm / 1.3 mm	2.9 mm / 2.2 mm	2.6 mm / 2.0 mm	1.9 mm / 1.4 mm	
Axial Resolution <sup>b</sup> (Air/Water)	7.0 μm / 5.3 μm	6.0 μm / 4.5 μm	5.5 μm / 4.1 μm	3.0 μm / 2.2 μm	
A-Scan Line Rate	1.2 kHz	5.5 kHz to 36 kHz	10 kHz to 100 kHz	5.5 kHz to 36 kHz	10 kHz to 100 kHz
Sensitivity (Max) <sup>c</sup>	107 dB (at 1.2 kHz)	101 dB (at 5.5 kHz)	96 dB (at 10 kHz)	101 dB (at 5.5 kHz)	96 dB (at 10 kHz)
OCT Type	Spectral Domain				

a. These Item #s are OCT base units that can be customized using a wide selection of OCT scanners, lens kits, and optional accessories.

b. Axial resolution and actual imaging depth are dependent on the optical properties of the sample being imaged.

c. Values for the Callisto and Ganymede systems are typical and were measured using a scanner with a common reference/sample path and 50% path split.

### 1300 nm OCT Base Units

Item #	TEL210 <sup>a</sup>	TEL310 <sup>a</sup>	TEL220 <sup>a</sup>	TEL320 <sup>a</sup>	VEG110 <sup>a</sup>
Series Name (Click for Link)	<a href="#">TelesTo</a>				<a href="#">Vega</a>
Key Performance Feature(s)	High Imaging Depth		High Resolution		Long Imaging Range
	General Purpose	Highest Speed	General Purpose	Highest Speed	High Speed
Center Wavelength	1325 nm		1300 nm		1300 nm
Imaging Depth <sup>b</sup> (Air/Water)	7.0 mm / 5.3 mm		3.5 mm / 2.6 mm		12 mm
Axial Resolution <sup>b</sup> (Air/Water)	12 μm / 9.0 μm		5.5 μm / 4.2 μm		16 μm
A-Scan Line Rate	5.5 kHz to 76 kHz	10 kHz to 146 kHz	5.5 kHz to 76 kHz	10 kHz to 146 kHz	100 kHz
Sensitivity (Max) <sup>c</sup>	111 dB (at 5.5 kHz)	109 dB (at 10 kHz)	111 dB (at 5.5 kHz)	109 dB (at 10 kHz)	101 dB (at 100 kHz)
OCT Type	Spectral Domain				Swept Source

a. These Item #s are OCT base units that can be customized using a wide selection of OCT scanners, lens kits, and optional accessories.

b. Axial resolution and actual imaging depth are dependent on the optical properties of the sample being imaged.



7/10/2018

## Ganymede Series SD-OCT Systems

c. Values for the Telesto systems are typical and were measured using a scanner with a common reference/sample path and 50% path split. The value measured for the Vega system is typical and was measured using a scanner with a dual path setup.

## Ganymede Series Complete Preconfigured Systems



[Zoom](#)

- Complete Preconfigured 900 nm or 930 nm OCT Systems (See Tables Below)
- Item # GAN210C1: High-Resolution and High-Sensitivity Imaging
  - Item # GAN510C1: High-Resolution and High-Speed Imaging
  - Item # GAN220C1: Very-High-Resolution and High-Sensitivity Imaging
  - Item # GAN520C1: Very-High-Resolution and High-Speed Imaging
- Fully Customizable Using Other Ganymede Series Components

Thorlabs offers four complete, preconfigured Ganymede OCT systems, each of which is fully compatible with all Ganymede Series OCT components. The GAN210C1 configuration features a center wavelength of 930 nm and is designed for general-purpose imaging applications requiring high sensitivity. The GAN510C1 system offers similar resolution and imaging depth combined with high-speed operation, but with reduced sensitivity. The GAN220C1 system has a 900 nm center wavelength and is optimized for high-resolution imaging applications requiring high sensitivity. The GAN520C1 system operates with a 900 nm center wavelength, possesses identical resolution and imaging depth specifications, and operates at higher speeds with reduced sensitivity.

These Ganymede Series preconfigured OCT system configurations are built completely from components sold in sections located lower on this page. Each preconfigured system includes the three mandatory OCT system core components (the base unit, a scanning system with its reference length adapter, and a scan lens kit), as well as two optional accessories (scanner stand and translation stage). For more information about a component included in the preconfigured systems, click on the component description in the table to the lower left to navigate down to the related section on this page.

For information about these systems or to inquire about custom configurations, please contact [oct@thorlabs.com](mailto:oct@thorlabs.com).

Preconfigured System Included Components				
System Item #	GAN210C1	GAN510C1	GAN220C1	GAN520C1
<a href="#">Base Unit</a>	GAN210	GAN510	GAN220	GAN520
<a href="#">Scanning System</a>	OCTG-900 (Standard Scanner)			
<a href="#">Scan Lens Kit</a>	OCT-LK3-BB		OCT-LK2-BB	
<a href="#">Reference Length Adapter</a>	OCT-RA3		OCT-RA2	
<b>Accessories:</b> <a href="#">Stand and Stage</a>	OCT-STAND/(M) (Scanner Stand) and OCT-XYR1/(M) (Translation Stage)			

- a. Click on the component description to navigate down to the related section on this page.

Preconfigured System Key Specifications				
System Item #	GAN210C1	GAN510C1	GAN220C1	GAN520C1
<b>Imaging Depth (Air/Water)</b>	2.9 mm / 2.2 mm	2.6 mm / 2.0 mm	1.9 mm / 1.4 mm	
<b>Axial Resolution (Air/Water)</b>	6.0 μm / 4.5 μm	5.5 μm / 4.1 μm	3.0 μm / 2.2 μm	
<b>Lateral Resolution</b>	8 μm		4 μm	
<b>A-Scan/Line Rate</b>	5.5 - 36 kHz <sup>a</sup>	10 - 100 kHz <sup>b</sup>	5.5 - 36 kHz <sup>a</sup>	10 - 100 kHz <sup>b</sup>
<b>Sensitivity (Max)</b>	101 dB (at 5.5 kHz)	96 dB (at 10 kHz)	101 dB (at 5.5 kHz)	96 dB (at 10 kHz)

a. Three Discrete A-Scan Rates: 5.5 kHz, 15 kHz, and 36 kHz.

b. Four Discrete A-Scan Rates: 10 kHz, 25 kHz, 60 kHz, and 100 kHz

**Based on your currency / country selection, your order will ship from Newton, New Jersey**

+1	Qty	Docs	Part Number - Universal	Price	Available / Ships
<a href="#">+</a>	<input type="text"/>		<a href="#">GAN210C1</a> Spectral Domain OCT System, 930 nm, 6.0 μm Resolution, 5.5 to 36 kHz	\$52,000.00	<a href="#">Lead Time</a>
<a href="#">+</a>	<input type="text"/>		<a href="#">GAN510C1</a> <b>Customer Inspired!</b> Spectral Domain OCT System, 930 nm, 5.5 μm Resolution, 10 to 100 kHz	\$56,000.00	<a href="#">Lead Time</a>
<a href="#">+</a>	<input type="text"/>		<a href="#">GAN220C1</a> Spectral Domain OCT System, 900 nm, 3.0 μm Resolution, 5.5 to 36 kHz	\$61,600.00	<a href="#">Lead Time</a>
<a href="#">+</a>	<input type="text"/>		<a href="#">GAN520C1</a> <b>Customer Inspired!</b> Spectral Domain OCT System, 900 nm, 3.0 μm Resolution, 10 to 100 kHz	\$64,600.00	<a href="#">Lead Time</a>

Add To Cart

## OCT Base Units (Required OCT System Component)

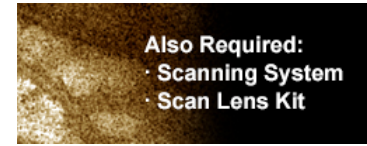
Flexibility in Imaging Speed and Sensitivity, with High- and Very-High-Resolution Performance Options



GAN210  
[Zoom](#)

- Systems with up to 36 kHz A-Scan Rate and up to 101 dB Sensitivity (See Table Below)
- 6.0 µm Axial Resolution in Air with 2.9 mm Imaging Depth (930 nm Center Wavelength)
  - 3.0 µm Axial Resolution in Air with 1.9 mm Imaging Depth (900 nm Center Wavelength)
- Systems with up to 100 kHz A-Scan Rate and up to 96 dB Sensitivity (See Table Below)
- 5.5 µm Axial Resolution in Air with 2.6 mm Imaging Depth (930 nm Center Wavelength)
  - 3.0 µm Axial Resolution in Air with 1.9 mm Imaging Depth (900 nm Center Wavelength)

The imaging performance of any OCT system is largely dependent on the design and components incorporated into the base unit. All of Thorlabs' OCT Base Units include an OCT engine, high-performance computer, pre-installed software, and a software development kit (SDK). For a fully operational system, a [scanning system](#) and a [scan lens kit](#) (sold separately below) must be purchased with the base unit. The engines of the Ganymede Series OCT Base Units consist of a superluminescent diode light source, scanning electronics, and a linear CCD array-based spectrometer for detection. The engine and detection components are integrated into a 420 mm x 320 mm x 149 mm (16.5" x 12.6" x 5.86") enclosure.



To be functional, an OCT system build must include a base unit, a scanning system, and a scan lens kit.

**General-Purpose Imaging Base Units: High-Sensitivity and High-Speed Options**

Integrated into Thorlabs' GAN210 and GAN510 base units is a 930 nm superluminescent laser diode (SLD) providing over 100 nm of spectral bandwidth. The SLD enables the base units to achieve high imaging depths and axial resolutions: 2.9 mm and 6.0 µm for the GAN210, and 2.6 mm and 5.5 µm for the GAN510, respectively. The two base units use different cameras, with the one built into the GAN210 providing higher sensitivities (up to 101 dB for the GAN210 vs. a maximum of 96 dB for the GAN510) and the one used in the GAN510 providing higher maximum A-Scan rates (up to 100 kHz for the GAN510 vs. a maximum of 36 kHz for the GAN210). These base units both achieve a balance between imaging depth and resolution, with the GAN210 optimized for sensitivity and the GAN510 optimized for a high A-Scan speed.

**Very-High-Resolution Imaging Base Units: High-Sensitivity and High-Speed Options**

Our GAN220 and GAN520 very-high-resolution base units feature Thorlabs' highest resolution OCT imaging capability at a center wavelength of 900 nm. Utilizing a matched pair of superluminescent diodes, they boast over 150 nm of bandwidth that translates to 3.0 µm axial resolution and an imaging depth of 1.9 mm. The camera in the GAN220 enables high-sensitivity imaging from 101 dB to 93 dB, with corresponding scan rates ranging from 5.5 kHz to 36 kHz. The camera built into the GAN520 is optimized for speed and provides high A-Scan rates from 10 kHz to 100 kHz, with corresponding sensitivities ranging from 96 dB to 85 dB. These two base units are the ideal choices for high-resolution imaging in scattering samples, with the GAN220 optimized for sensitivity and the GAN520 optimized for a high A-Scan speed.

Base Unit Item #	GAN210	GAN510	GAN220	GAN520
Description	High Resolution		Very High Resolution	
	High Sensitivity	High Speed	High Sensitivity	High Speed
Center Wavelength	930 nm		900 nm	
Imaging Depth (Air/Water)	2.9 mm / 2.2 mm	2.6 mm / 2.0 mm	1.9 mm / 1.4 mm	
Axial Resolution (Air/Water)	6.0 µm / 4.5 µm	5.5 µm / 4.1 µm	3.0 µm / 2.2 µm	
A-Scan Line Rate	5.5, 15, & 36 kHz	10, 25, 60, & 100 kHz	5.5, 15, & 36 kHz	10, 25, 60, & 100 kHz
Sensitivity <sup>a</sup>	93 dB (at 36 kHz) to 101 dB (at 5.5 kHz)	85 dB (at 100 kHz) to 96 dB (at 10 kHz)	93 dB (at 36 kHz) to 101 dB (at 5.5 kHz)	85 dB (at 100 kHz) to 96 dB (at 10 kHz)
Maximum Pixels per A-Scan	1024			
Compatible Scanners	OCTP-900, OCTP-900/M, OCTG-900, and OCTH-900			

a. Typical Values Measured Using a Scanner with a Common Reference/Sample Path and 50% Path Split

Computer Specifications <sup>a</sup>	
Operating System	Windows 10, 64 Bit
Processor	Quad Core, 3.6 GHz
Memory	32 GB
Hard Drive	512 GB SSD
Data Acquisition	Camera Link

a. Computer Specifications Subject to Change

Based on your currency / country selection, your order will ship from Newton, New Jersey

+1	Qty	Docs	Part Number - Universal	Price	Available / Ships
	<input type="text"/>		<a href="#">GAN210</a> Ganymede OCT Base Unit, 930 nm, 6.0 µm Resolution, 5.5 to 36 kHz	\$36,000.00	<a href="#">Lead Time</a>
	<input type="text"/>		<a href="#">GAN510</a> Ganymede OCT Base Unit, 930 nm, 5.5 µm Resolution, 10 to 100 kHz	\$40,000.00	<a href="#">Lead Time</a>
	<input type="text"/>		<a href="#">GAN220</a> Ganymede OCT Base Unit, 900 nm, 3.0 µm Resolution, 5.5 to 36 kHz	\$45,000.00	<a href="#">Lead Time</a>
	<input type="text"/>		<a href="#">GAN520</a> Ganymede OCT Base Unit, 900 nm, 3.0 µm Resolution, 10 to 100 kHz	\$48,000.00	<a href="#">Lead Time</a>

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**Scanning Systems (Required OCT System Component)**

Scan an OCT Light Source Beam Across a Sample to Acquire 2D or 3D Images

Three Available Options

- Standard Scanner for High Stability and Ease-of-Use
- User-Customizable Scanners with Open Construction for Customization of Scan Path
- Portable Handheld Scanner for Applications Requiring High Mobility

Thorlabs' OCT Scanning Systems are designed to scan the OCT light source beam across a sample for 2D cross-sectional and 3D volumetric imaging. OCT applications can vary widely, from live animal imaging to industrial materials analysis, with each requiring a different set of scanning parameters. We currently offer three types of beam scanning systems for use with our Ganymede Base Units: standard, user-customizable, and handheld.

Each scanner contains an OCT interferometer with a sample arm and a reference arm. The reference arm of the OCT interferometer is placed near the sample and housed within the scanning system itself to guarantee the phase stability of the sample arm relative to the reference arm. To account for different sample distances and reflectivities (e.g., while imaging through water), the reference arm path length, as well as the reference arm intensity, is adjustable. To minimize image distortion caused by dispersion, our OCT systems are designed to optically match the reference and sample arm lengths to the greatest extent possible. Dispersion effects from the sample (e.g., imaging through water or glass) can be compensated for using the included ThorImage OCT software. For customers interested in dual-path setups, any of these scanners can be configured without a beamsplitter; please contact [oct@thorlabs.com](mailto:oct@thorlabs.com) for more information.



OCTG-900  
[Click to Enlarge](#)  
Standard OCT Scanner



OCTP-900  
[Click to Enlarge](#)  
User-Customizable OCT Scanner



OCTH-900  
[Click to Enlarge](#)  
Handheld OCT Scanner

Scanner Type	Item #	Compatible Base Units
Standard Scanner <sup>a</sup>	OCTG-900	GAN210 GAN220
User-Customizable Scanner	OCTP-900(M)	GAN510 GAN520
Handheld Scanner <sup>b</sup>	OCTH-900	Compatible Base Units

All scanners are equipped with an integrated camera that can obtain real-time *en face* video of the sample during OCT measurements when used with our ThorImage OCT software (see the *Software* tab for details). Illumination of the sample is provided by a ring of user-adjustable white light LEDs around the exit aperture of each scanner.

**Standard Scanner**

The OCTG-900 Standard Scanner is ideal for imaging applications that require a stable, easy-to-operate setup. The entire design of the standard scanner is contained within a rugged, light-tight housing that minimizes the risk of misalignment. The standard scanner is equipped with a reference path length distance indicator for ease-of-use during reference adjustments. A knob located at the top of the standard scanner allows for fine adjustments to the reference path length.

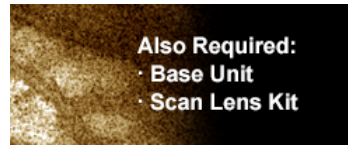
**User-Customizable Scanner**

The OCTP-900(M) User-Customizable Scanner is designed with an open construction to enable easy customization of the optical beam path using Thorlabs' standard optomechanical components. This scanner features SM1 (1.035"-40) ports and 4-40 tapped holes at several locations that allow mounting of SM1-threaded or 30 mm cage-compatible components, respectively. The scan lens port is directly compatible with either M25 x 0.75 or SM1-threaded components, and can be converted to other thread standards, such as RMS (0.800"-36) via our selection of [thread adapters](#). Additional scanning and non-scanning optical input/output ports are available for integration of a laser for fluorescence excitation or additional sample illumination.

**Compact Handheld Scanner**

The compact and lightweight OCTH-900 Handheld Scanner is specifically designed for applications requiring high mobility. Easy access buttons located directly on the scanner enable fingertip control of our ThorImage OCT Software. Users can program each button from a selection of imaging and acquisition software controls and the software uses visual and audio feedback for button presses. The OCTH-900 features a removable cover under the handle that provides access to the reference length and intensity settings. Compatible scan lens kits and sample z-spacers for the OCTH-900 are sold below; z-spacers help maintain the correct working distance when using the handheld scanner. Please note that due to the limitations of the internal MEMS scanner, the frame rate (i.e., B-Scan rate) is limited to 25 frames per second when using the handheld scanner.

- a. Standard Scanner Requires Purchase of [Reference Length Adapter](#)
- b. [Sample Z-Spacers](#) Recommended When Using OCTH-900



To be functional, an OCT system build must include a base unit, a scanning system, and a scan lens kit.



[Click to Enlarge](#)  
OCTH-900 Handheld Scanner with OCTH-AIR30 Sample Z-Spacer

Based on your currency / country selection, your order will ship from Newton, New Jersey

+1 Qty	Docs	Part Number - Imperial	Price	Available / Ships
		<b>OCTP-900</b> <b>Customer Inspired!</b> User-Customizable OCT Scanner for 900 nm / 930 nm, Imperial	\$12,000.00	<a href="#">Lead Time</a>
<b>+1 Qty</b>	<b>Docs</b>	<b>Part Number - Universal</b>	<b>Price</b>	<b>Available / Ships</b>
		<b>OCTG-900</b> Standard OCT Scanner for 900 nm / 930 nm	\$11,500.00	<a href="#">Lead Time</a>
		<b>OCTH-900</b> Handheld OCT Scanner for 900 nm / 930 nm	\$9,900.00	<a href="#">Lead Time</a>
<b>+1 Qty</b>	<b>Docs</b>	<b>Part Number - Metric</b>	<b>Price</b>	<b>Available / Ships</b>
		<b>OCTP-900/M</b> <b>Customer Inspired!</b> User-Customizable OCT Scanner for 900 nm / 930 nm, Metric	\$12,000.00	<a href="#">Lead Time</a>

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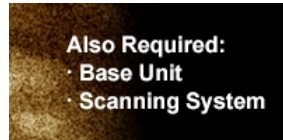
**Scan Lens Kit (Required OCT System Component)**

Telecentric Scan Lenses Provide a Flat Imaging Plane  
Lens AR Coated for 800 - 1100 nm

- Scan Lens Kits for Standard / User-Customizable Scanners Include
- o Telecentric Scan Lens
  - o Illumination Tube
  - o IR Card
  - o Calibration Target

Compact Scan Lens Kits Designed for the OCTH-900 Handheld Scanner with Integrated Scan Lens and Illumination Ring

Thorlabs' Scan Lens Kits enable easy exchange of scan lenses in an OCT system, providing the flexibility to tailor imaging resolution or working distance for each application. Based on our line of OCT [telecentric scan lenses](#), these lens kits minimize image distortion without extensive post-image processing and maximize coupling of the light scattered or emitted from the sample surface into the detection system.



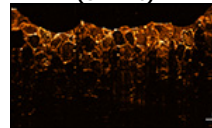
To be functional, an OCT system build must include a base unit, a scanning system, and a scan lens kit.

As seen in the table below, we offer scan lens kits compatible with the standard (Item # OCTG-900) and user-customizable (Item # OCTP-900) scanners, as well as two lens kits compatible with the handheld scanner (Item # OCTH-900).

Each kit includes a telecentric scan lens, illumination tube, IR card, and calibration target. The included illumination tube serves as a light guide that channels light from the LED illumination ring down to the sample area. The IR card and calibration target are provided for calibration of the scanning mirror and lens kit, ensuring the best image quality when swapping between scan lenses.

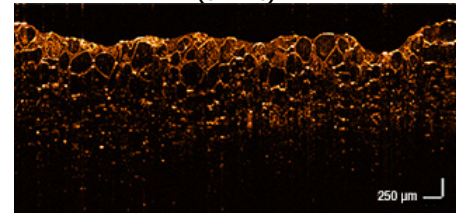
The cross-section images below of an apple were taken with the OCT-LK2-BB and OCT-LK3-BB scan lens kits using a Ganymede Series OCT system. Choose a scan lens kit that provides the right resolution and focal length for your application.

**OCT-LK2-BB High Resolution (GAN220)**



[Click to Enlarge](#)  
Magnification: 10X  
Scan Region: 3 mm x 1.9 mm  
Lateral Resolution: 4 µm

**OCT-LK3-BB General Purpose (GAN210)**



[Click to Enlarge](#)  
Magnification: 5X  
Scan Region: 6 mm x 2.9 mm  
Lateral Resolution: 8 µm

Scan Lens Kit Item #	OCT-LK2-BB	OCT-LK3-BB	OCT-LK4-BB	OCTH-LK20-BB	OCTH-LK30-BB
Click Image to Enlarge					
Design Wavelength	900 nm / 930 nm			900 nm / 930 nm	
Compatible Scanner	OCTG-900 (Standard) or OCTP-900 (User-Customizable)			OCTH-900 Handheld Scanner	
Lateral Resolution <sup>a</sup>	4 µm	8 µm	12 µm	9 µm	14 µm
Focal Length	18 mm	36 mm	54 mm	20 mm	30 mm
Working Distance	3.4 mm (with Tube) <sup>b</sup> 7.5 mm (without Tube)	24.9 mm (with Tube) <sup>b</sup> 25.1 mm (without Tube)	41.6 mm (with Tube) <sup>b</sup> 42.3 mm (without Tube)	12 mm	22 mm
Field of View	6 mm x 6 mm	10 mm x 10 mm	16 mm x 16 mm	Ø8 mm	Ø10 mm

Scan Lens Kit Item #	OCT-LK2-BB	OCT-LK3-BB	OCT-LK4-BB	OCTH-LK20-BB	OCTH-LK30-BB
Lens Threading	M25 x 0.75	M25 x 0.75	M25 x 0.75	M20 x 0.5 (For Z-Spacer) M14 x 0.5 (For OCTH-900)	

- a.  $1/e^2$  Beam Diameter at Focus
- b. The illumination tube is user-removable.

Based on your currency / country selection, your order will ship from Newton, New Jersey

+1	Qty	Docs	Part Number - Universal	Price	Available / Ships
	<input type="text"/>		<b>OCT-LK2-BB</b> OCT Scan Lens Kit, 18 mm FL, 900 nm / 930 nm	\$1,938.00	<a href="#">Lead Time</a>
	<input type="text"/>		<b>OCT-LK3-BB</b> OCT Scan Lens Kit, 36 mm FL, 900 nm / 930 nm	\$1,326.00	<a href="#">Lead Time</a>
	<input type="text"/>		<b>OCT-LK4-BB</b> OCT Scan Lens Kit, 54 mm FL, 900 nm / 930 nm	\$1,326.00	<a href="#">Lead Time</a>
	<input type="text"/>		<b>OCTH-LK20-BB</b> OCT Scan Lens Kit for OCTH-900, 20 mm FL, 900 nm / 930 nm	\$1,009.80	<a href="#">Lead Time</a>
	<input type="text"/>		<b>OCTH-LK30-BB</b> OCT Scan Lens Kit for OCTH-900, 30 mm FL, 900 nm / 930 nm	\$1,009.80	<a href="#">Lead Time</a>

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### Reference Length Adapters (Required for Standard Scanners)



Arm Adapters for Matching Reference Path Length to the Sample Path Length  
Use Multiple Reference Adapters for Rapid Switching Between Scan Lens Kits  
Must be Purchased with Standard Scanner (Item # OCTG-900)

These adapters adjust the reference arm path length within the OCTG-900 Standard Scanner to match the sample path length of the scan lens used. Choose from three options that are compatible with the scan lens kits sold above. Reference length adapters also enable the user to quickly swap between different scan lens kits without going through extensive adjustments during each switch. The table to the right provides a compatibility list to help select the appropriate reference adapters.

Item # <sup>a</sup>	Compatible Scan Lens Kit
OCT-RA2	OCT-LK2-BB
OCT-RA3	OCT-LK3-BB
OCT-RA4	OCT-LK4-BB

a. Multiple reference adapters can be purchased for rapid switching between scan lens kits.

Based on your currency / country selection, your order will ship from Newton, New Jersey

+1	Qty	Docs	Part Number - Universal	Price	Available / Ships
	<input type="text"/>		<b>OCT-RA2</b> Reference Arm Adapter for Standard Scanner and OCT-LK2(-BB) Scan Lens Kit	\$520.20	<a href="#">Lead Time</a>
	<input type="text"/>		<b>OCT-RA3</b> Reference Arm Adapter for Standard Scanner and OCT-LK3(-BB) Scan Lens Kit	\$520.20	<a href="#">Lead Time</a>
	<input type="text"/>		<b>OCT-RA4</b> Reference Arm Adapter for Standard Scanner and OCT-LK4(-BB) Scan Lens Kit	\$520.20	<a href="#">Lead Time</a>

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### Sample Z-Spacers (Optional Accessories)



Sample Z-Spacers Position Scanner at Optimal Working Distance From Sample  
Ring (Air) and Immersion (Liquid) Z-Spacers Available  
Two Z-Spacers Recommended for Use with OCTH-900 Handheld Scanner

Thorlabs offers both ring and immersion style sample Z-spacers that enable optimal positioning of a scanning system relative to the sample. The OCT-AIR3, OCT-IMM3, and OCT-IMM4 Z-spacers feature knurled rings that allow the spacing distance to be adjusted and locked in place for increased stability. Several Z-spacer options are available; please see the table below for compatibility with our scanners and lens kits.

Additionally, we offer two ring-style Z-spacers that are designed specifically for the OCTH-900 Handheld Scanner; these spacers greatly assist in maintaining the correct sample working distance when using the handheld scanner. The spacing distance on the OCTH-AIR20 and OCTH-AIR30 Z-Spacers can be adjusted by rotating the spacer.

[Click to Enlarge](#)  
Z-Spacers for the OCTG-900 and OCTP-900(M) Scanners

Our ring-style Z-spacers provide a distance guide between the scanner and sample. The sample is in contact with the ring-shaped tip of the spacer and should only be used when air is the scanning medium. In contrast, our immersion spacers are equipped with a glass plate that contacts the sample surface within the scanning area. Unlike the ring-style spacers, immersion spacers enable access to samples contained within a liquid environment while also providing sample stabilization. Better index matching and a tilted glass plate also help reduce strong back reflections from the sample surface and enhances the contrast of the image.



[Click to Enlarge](#)  
Z-Spacers for the OCTH-900 Handheld Scanner

Item # <sup>a</sup>	Type	Adjustable	Adjustment Range	Lockable	Compatible Scanner	Compatible Scan Lens Kit
OCT-AIR3	Ring (Air)	Yes	+3.5 mm / -1.0 mm	Yes	OCTG-900 OCTP-900(M)	OCT-LK3-BB
OCT-IMM3	Immersion	Yes	+3.4 mm / -1.1 mm	Yes		OCT-LK4-BB
OCT-IMM4	Immersion	Yes	+1.0 mm / -17.0 mm	Yes		
OCTH-AIR20	Ring (Air)	Yes	±4 mm	No	OCTH-900 <sup>a</sup>	OCTH-LK20-BB
OCTH-AIR30	Ring (Air)	Yes	±2 mm	No		OCTH-LK30-BB

a. We recommend purchasing a sample Z-spacer if using the OCTH-900 handheld scanner.

Based on your currency / country selection, your order will ship from Newton, New Jersey

+1	Qty	Docs	Part Number - Universal	Price	Available / Ships
	<input type="text"/>		<a href="#">OCT-AIR3</a> Ring-Style Sample Z-Spacer for OCT-LK3(-BB) Scan Lens Kit	\$728.28	<a href="#">Lead Time</a>
	<input type="text"/>		<a href="#">OCT-IMM3</a> Immersion-Style Sample Z-Spacer for OCT-LK3(-BB) Scan Lens Kit	\$884.34	<a href="#">Lead Time</a>
	<input type="text"/>		<a href="#">OCT-IMM4</a> Immersion-Style Sample Z-Spacer for OCT-LK4(-BB) Scan Lens Kit	\$988.38	<a href="#">Lead Time</a>
	<input type="text"/>		<a href="#">OCTH-AIR20</a> Ring-Style Sample Z-Spacer for OCTH-LK20(-BB) Scan Lens Kit	\$187.68	<a href="#">Lead Time</a>
	<input type="text"/>		<a href="#">OCTH-AIR30</a> Ring-Style Sample Z-Spacer for OCTH-LK30(-BB) Scan Lens Kit	\$187.68	<a href="#">Lead Time</a>

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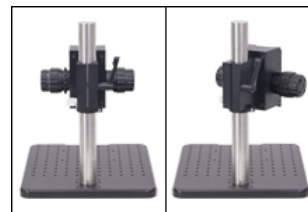
### Scanner Stand (Optional Accessory)



Recommended Stand for Mounting Standard or User-Customizable Scanners  
Focus Block with Coarse/Fine Z-Axis Travel on Ø1.5" Stainless Steel Post  
12" x 14" (300 mm x 350 mm) Aluminum Breadboard with 1/4"-20 (M6) Tapped Holes

For convenient mounting of our Standard or User-Customizable Scanners, we offer a scanner stand that is ideal for use in vibration-sensitive studies such as angiography. It consists of a post-mounted focus block with knobs that provide both coarse (40 mm/rev) and fine (225 µm/rev) z-axis travel. A rotation and height collar underneath the focus block allows it to rotate 45° in order to move the scanner head away from the sample to make adjustments.

The focus block attaches to a 12" x 14" (300 mm x 350 mm) aluminum breadboard via the included Ø1.5" post. The aluminum breadboard has side grips and rubber feet for easy lifting and transportation. There is an array of 1/4"-20 (M6) tapped holes for mounting optomechanics. Four extra 1/4"-20 (M6) tapped holes allow the mounting of the OCT-YR1 Translation Stage (sold below) to the OCT-STAND and the OCT-YR1/M Translation Stage to the OCT-STAND/M directly underneath the scan lens. A 1/4"-20 (M6) counterbore is also provided for securing the Ø1.5" post.



The focus block can be rotated 45° to move the scanner head away from the sample.

[Click for Details](#)

Based on your currency / country selection, your order will ship from Newton, New Jersey

+1	Qty	Docs	Part Number - Imperial	Price	Available / Ships
	<input type="text"/>		<a href="#">OCT-STAND</a> Stand for Standard and User-Customizable OCT Scanning Systems, 1/4"-20 Tapped Holes	\$2,040.00	✓ Today
	<input type="text"/>		<a href="#">OCT-STAND/M</a> Stand for Standard and User-Customizable OCT Scanning Systems, M6 Tapped Holes	\$2,040.00	✓ Today

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### Translation Stage (Optional Accessory)



Optional Translation Stage with 0.5" (13 mm) of XY Travel and 360° Rotation  
Includes Cover Plate for Sample Mounting  
Can Mount Optomechanics by Removing Cover Plate

Precise translation and rotation are often required for optimal positioning of a sample before and during OCT imaging. The OCT-XYR1(M) is an XY linear translation stage with a rotating platform and solid plate for sample mounting and easy cleaning. The OCT-XYR1 or OCT-XYR1/M stage can be secured to the OCT-STAND or OCT-STAND/M, respectively, using the 1/4" (M6) counterbores at the corners. The top plate is removable for access to 4-40, 8-32 (M4), and 1/4"-20 (M6) tapped holes and an SM1-threaded (1.035"-40) central hole for mounting optomechanical components. The [XYR1A](#) Solid Sample Plate can be purchased separately as a direct replacement for the top plate.

Specifications	
Horizontal Load Capacity (Max)	10 lbs (4.5 kg)
Mounting Platform Dimensions	Ø4.18" (Ø106 mm)
Stage Height	1.65" (41.8 mm)
Linear Translation Range	1/2" (13 mm)
Travel per Revolution	0.025" (0.5 mm)
Graduation	0.001" (10 µm) per Division



The cover plate is removable for access to tapped holes and the SM1-threaded central hole.

[Click to Enlarge](#)

is removable for access to 4-40, 8-32 (M4), and 1/4"-20 (M6) tapped holes and an SM1-threaded (1.035"-40) central hole for mounting optomechanical components. The [XYR1A](#) Solid Sample Plate can be purchased separately as a direct replacement for the top plate.

The X and Y micrometers offer 1/2" (13 mm) of travel with graduations every 0.001" (10 µm). The stage's rotation and translation can be freely changed without compromising the stability of attached components. An engraved angular scale along the outer edge of the stage's rotating platform allows the user to set the angular orientation of the stage, which can then be fixed using the 5/64" (2 mm) hex locking setscrew. Locking the rotation of the stage does not prevent XY translation using the actuators.

Based on your currency / country selection, your order will ship from Newton, New Jersey

+1	Qty	Docs	Part Number - Imperial	Price	Available / Ships
	<input type="text"/>		<a href="#">OCT-XYR1</a> XY Stage with Solid Top Plate, 1/2" Travel, 360° Rotation, Imperial Taps	\$728.28	✓ Today
	<input type="text"/>		<a href="#">OCT-XYR1/M</a> XY Stage with Solid Top Plate, 13 mm Travel, 360° Rotation, Metric Taps	\$728.28	✓ 3-5 Days

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