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LTS150 - May 11, 2023

Item # LTS150 was discontinued on May 11, 2023. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

150 MM LINEAR TRANSLATION STAGE WITH INTEGRATED CONTROLLER, STEPPER MOTOR

- **Integrated Controller with Keypad and Remote USB Control**
- **Stackable in XY, XZ, and XYZ Configurations**
- **Minimum Calibrated On-Axis Accuracy of 5.0 µm**
- **Horizontal Load Capacity of 15 kg (33.1 lbs)**

LTS150

LTSP2
Right-Angle Bracket

Application Idea
Two LTS150 Stages in XZ Configuration, Using an LTSP2 Right-Angle Bracket

Hide Overview

OVERVIEW

Features

- 150 mm Travel Range
- Integrated Stepper Motor Controller
- Control via Manual Keypad or Remote PC
- Load Capacity
  - Horizontally Mounted: 15 kg (33.1 lbs)
  - Vertically Mounted: 4 kg (8.8 lbs)
- Maximum Velocity of 50 mm/s
- Bidirectional Repeatability of 2 µm
- XY, XZ, and XYZ Configurable
- 1/4"-20 or M6 Tapped Holes for Mounting Standard Optomechanics
- Power Supply Included

Thorlabs' LTS150(/M) Linear Translation Stage with Integrated Controller is optimized for applications requiring high load capacity and high resolution, such as measurement and inspection. It provides 150 mm of linear travel for loads as great as 15 kg (33.1 lbs) when mounted horizontally and 4 kg (8.8 lbs) when mounted vertically. Each stage features an accuracy within ±5.0 µm when the unit-specific calibration files are used with the Thorlabs Kinesis or APT™ software. Due to the stepper motor design, the platform position remains fixed when no power is supplied to the stage, unlike with DC servo motor translation stages.

Key Specifications[a]	
Travel Range	150 mm (5.9")
Horizontal Velocity (Max)	50 mm/s
Vertical Velocity (Max)	3 mm/s
Minimum Achievable Incremental Movement[b]	0.1 µm
Minimum Repeatable Incremental Movement[c]	4 µm
Calibrated Accuracy[d]	< ±5.0 µm
Bidirectional Repeatability[e]	< ±2 µm
Backlash[f]	2 µm
Load Capacity (Max) - Stage Mounted Horizontally	15 kg (33.1 lbs)
Load Capacity (Max) - Stage Mounted Vertically	4 kg (8.8 lbs)
Actuator Type	Stepper Motor

Cable Length (USB)	2 m (6.5 ft)

Integrated Controller with Manual and Remote PC Control

The LTS150(/M) stage features an integrated electronic controller that can be controlled remotely using a PC or manually via the buttons and velocity potentiometer on the control keypad (see photo to the left). Parameter settings can be adjusted on the PC and stored in non-volatile memory within the unit itself. When the unit is powered up, these settings are applied automatically. This is particularly useful when the stage is being used manually in the absence of a PC and USB link.

- a. Please see the *Specs* tab for a complete specifications list.
- b. The measured minimum incremental motion that the stage can achieve, also referred to as the minimum step size.
- c. The minimum incremental motion that the stage can repeatedly achieve within its standard error.
- d. Using Included Calibration Files
- e. The average of the repeatability when a set position is approached from both directions.
- f. When a stage is moved to a position and then returned to its original position, some motion is lost due to the lead screw mechanism. This loss is known as backlash.

The stage is lightweight, compact, and robust with high performance over the full travel range. The heavy-duty aluminum construction and 40 mm moving platform height makes this stage ideal for applications where space is limited. Integrated magnetic limit switches allow homing and overdrive protection in both directions. A precision-ground lead screw delivers smooth, virtually noise-free movement. The power supply provided with the stage operates with 90 - 264 VAC input voltages (47 - 63 Hz) and is shipped with a location-specific power cord.

Thorlabs also offers the LTS300(/M) Linear Translation Stage with Integrated Controller, which features 300 mm of travel.

Motorized Linear Long-Travel Stages	
100 mm	Stepper
	DC Servo
150 mm	Stepper
	Stepper with Integrated Controller
220 mm	DC Servo
300 mm	Stepper with Integrated Controller
	DC Servo
600 mm	DC Servo
Optical Delay Line Kits	
Other Translation Stages	

Calibration Files

Each LTS150(/M) Linear Translation Stage is calibrated during manufacturing. Calibration enables the controller to correct for any mechanical errors present in the system. Mechanical components, such as the lead screw and linkages, can be machined only within a certain tolerance. These mechanical errors result in deviations of the actual position from the commanded position. However, the deviations are repeatable and can be compensated for using the Kinesis or APT software and included calibration files. These files are used by the APT software to convert the position entered by the user into the required mechanical motion. The calibration files can be downloaded by clicking on the red Docs icon ( ) next to the item # below and entering your device's serial number under "Download Calibration Data."

The use of calibration files is optional. Without them, the repeatability and resolution of the stage are unaffected, but no compensations are made to enhance the accuracy. Each stage is calibrated at the factory, giving a typical on-axis accuracy of 20 µm without the use of the calibration files.

Stage Combinations

If an XY configuration is desired, any combination of LTS150(/M) and LTS300(/M) Linear Positioning Stages (the latter features a 300 mm travel range) can be mounted atop one another using the LTSP1(/M) XY Adapter Plate (sold below). XZ and XYZ configurations are possible using our LTSP2(/M) Z-Axis Bracket, which orients an LTS150(/M) stage in the vertical plane. Please note that stages and adapters with imperial or metric taps are only compatible with other stages and adapters featuring the same thread standards.

Software

The ActiveX® APT system software is also compatible with other APT family controllers, including our multi-channel controllers, rack-based controller, and smaller, optical-table-mountable K-Cube™ controllers. This single unified software offering allows seamless mixing of the LTS150(/M) stages with any APT benchtop, tabletop, or rack-based controllers.

S P E C S

Stage Specifications	
Translation	
Travel Range	150 mm (5.9")
Bidirectional Repeatability[a]	< ±2 µm
Backlash[b]	2 µm
Maximum Velocity[c]	50 mm/s Horizontal, 3 mm/s Vertical

Velocity Stability	±1 mm/s
Maximum Acceleration[c]	50 mm/s^2 Horizontal, 5 mm/s^2 Vertical
Accuracy	
Min Achievable Incremental Movement[d]	100 nm
Min Repeatable Incremental Movement[e]	4 µm
Calibrated On-Axis Accuracy	< ±5.0 µm
Max Percentage Accuracy[f]	0.13%
Home Location Accuracy	±0.6 µm
Pitch[g]	<0.016° (279 µrad)
Yaw[g]	<0.05° (873 µrad)
Load Capacity	
Load Capacity (Max) - Stage Mounted Horizontally	Max: 15 kg (33.1 lbs) Recommended: <12 kg (26.5 lbs)
Load Capacity (Max) - Stage Mounted Vertically	Max: 4 kg (8.8 lbs)
General	
Weight	1.9 kg (4.8 lbs)
Dimensions (W x D x H)	100 mm x 360 mm x 39.5 mm (3.94" x 14.17" x 1.56")

Electrical Specifications	
Motor Specifications	
Step Angle	1.8° (50 Poles and ±2 Phases for 360°, Divided by 200)
Step Accuracy	5%
Rated Phase Current	0.85 A
Phase Resistance	5.4 Ω
Phase Inductance	5.6 mH
Holding Torque	20 N•cm
Detent Torque	2.0 N•cm
Operating Temperature	-20 to 40 °C (Motor Specification Only)
Controller Specifications	
Microsteps per Full Step	2048
Microsteps per Revolution of Motor	409,600 (for 200 Step Motor)
Motor Drive Voltage	24 V
Motor Drive Power	12.5 W (Avg) Up to 25 W (Peak)
Motor Speeds	Up to 3000 RPM (200 Full Step Motor)
Input Power Requirements	
Voltage	24 VDC
Power	25 W (Peak)
Power Supply Requirements	90 - 264 VAC (47 - 63 Hz)

Notes

- **a. Bidirectional Repeatability**
  The average of the repeatability when a set position is approached from both directions.
- **b. Backlash**
  When a stage is moved to a position and then returned to its original position, some motion is lost due to the lead screw mechanism. This loss is known as backlash.
- **c. Max Velocity, Max Acceleration, and Max Load**
  The max velocity and acceleration values quoted above are achievable with lighter loads. As the load is increased, the velocity and acceleration should

be decreased accordingly. For the maximum 15 kg load, the velocity should be reduced to either 15 mm/s with 3 mm/s^2 acceleration or 12 mm/sec with 5 mm/s^2 acceleration, depending upon whether speed or acceleration is more important for the intended application.

- **d. Min Achievable Incremental Movement**
  The measured minimum incremental motion that the stage can achieve, also referred to as the minimum step size.
- **e. Min Repeatable Incremental Movement**
  The minimum incremental motion that the stage can repeatedly achieve within its standard error.
- **f. On-Axis Maximum Percentage Accuracy**
  This is the maximum discrepancy between the commanded position and the absolute position expressed as ($|P_{absolute} - P_{commanded}| / P_{commanded}$). The advantage of expressing this as a percentage is that the higher accuracy at the lower travel range of a stage can be represented. As the maximum percentage error will not necessarily be at full travel, this means the value given will be an excellent representation of the maximum possible error that can be expected.
- **g. Pitch and Yaw**
  Pitch and Yaw define how much the moving world shifts as the stage translates. Pitch is measured by moving the stage over its full travel range and taking an angular robust laser interferometry (RLI) measurement in the pitch axis at 20 equidistant points along the travel. This is repeated 10 times and the maximum discrepancy between minimum and maximum value taken. Yaw is measured using the same procedure.

FURTHER INFO

Controller Features

The LTS150(/M) stage features an integrated APT™ compatible controller that can operated using either the manual keypad or remote computer control using APT software. The controller is fully configurable with key parameters exposed through the associated software graphical interface panels. Jog step sizes can be selected, phase currents can be limited to suitable peak powers as required, and limit switch configuration is accommodated through flexible logic settings.

In addition, relative and absolute moves can be initiated with move profiles set using velocity profile parameters (including acceleration/deceleration). Similarly, homing sequences have a full set of associated parameters that can be adjusted for a particular application. For ease of use, the APT software incorporates pre-configured settings for the LTS150(/M) stage.

All key parameters may be adjusted using our intuitive software graphical panels. For example, a move to the next position can be initiated by clicking directly on the position display and entering a new value. These settings and parameters are also accessible through the ActiveX® programmable interfaces for automated alignment sequences. Refer to the *Motion Control Software* tab for further information on the APT software support for the BSC200 Series.

Full Software GUI Control Suite & ActiveX Controls Included

A full and sophisticated software support suite for use with the LTS150(/M) stage includes a number of user utilities that allow immediate operation of the unit without any detailed pre-configuration. All operating modes can be accessed manually, and all operating parameters may be changed and saved for future use. For more advanced motion control applications, a fully featured ActiveX programming environment is also available to facilitate custom application development in a wide range of programming environments. Note that all settings and parameters described above are also accessible through these ActiveX programmable interfaces. For further information on the APT software support for the LTS150(/M) stage, refer to the *Motion Control Software* tab. Demonstration videos illustrating how to program the APT software are also available on the *APT Tutorials* tab.

The ActiveX APT system software is also compatible with other APT family controllers, including our multi-channel benchtop units, rack-based systems, and smaller optical table mountable T-Cube controllers. This allows for allows seamless mixing of components. The common software architecture also makes it easy to create automated alignment/positioning systems which interact at the software level. All controllers in the APT range are equipped with USB connectivity. This allows multiple APT units to be connected to a single controller PC using USB hubs and cables. When planning a multi-channel application, simply add up the number and type of drive channels required and connect together the associated number of APT controllers.

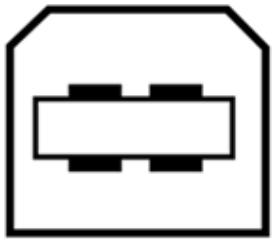
Software Development Support

A development kit is included in the APT software for developers working on large, system integration projects that incorporate APT products. The kit contains an extensive selection of code samples as well as a library of video tutorials. Please see the *Motion Control Software* tab for details.

PIN DIAGRAM

Computer Connection

USB Type B



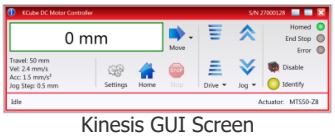
2 m (6.5 ft) USB Type B to Type A Cable Included

MOTION CONTROL SOFTWARE

Thorlabs offers two platforms to drive our wide range of motion controllers: our Kinesis® software package or the legacy APT™ (Advanced Positioning Technology) software package. Either package can be used to control devices in the Kinesis family, which covers a wide range of motion controllers ranging from small, low-powered, single-channel drivers (such as the K-Cubes™ and T-Cubes™) to high-power, multi-channel, modular 19" rack nanopositioning systems (the APT Rack System).

The Kinesis Software features .NET controls which can be used by 3rd party developers working in the latest C#, Visual Basic, LabVIEW™, or any .NET compatible languages to create custom applications. Low-level DLL libraries are included for applications not expected to use the .NET framework. A Central Sequence Manager supports integration and synchronization of all Thorlabs motion control hardware.

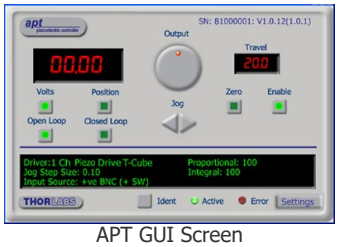
Our legacy APT System Software platform offers ActiveX-based controls which can be used by 3rd party developers working on C#, Visual Basic, LabVIEW™, or any Active-X compatible languages to create custom applications and includes a simulator mode to assist in developing custom applications without requiring hardware.



Kinesis GUI Screen

By providing these common software platforms, Thorlabs has ensured that users can easily mix and match any of the Kinesis and APT controllers in a single application, while only having to learn a single set of software tools. In this way, it is perfectly feasible to combine any of the controllers from single-axis to multi-axis systems and control all from a single, PC-based unified software interface.

The software packages allow two methods of usage: graphical user interface (GUI) utilities for direct interaction with and control of the controllers 'out of the box', and a set of programming interfaces that allow custom-integrated positioning and alignment solutions to be easily programmed in the development language of choice.



APT GUI Screen

A range of video tutorials is available to help explain our APT system software. These tutorials provide an overview of the software and the APT Config utility. Additionally, a tutorial video is available to explain how to select simulator mode within the software, which allows the user to experiment with the software without a controller connected. Please select the *APT Tutorials* tab above to view these videos.

Software

Kinesis Version 1.14.37

The Kinesis Software Package, which includes a GUI for control of Thorlabs' Kinesis and APT™ system controllers.

Also Available:

- Communications Protocol

Software

APT Version 3.21.6

The APT Software Package, which includes a GUI for control of Thorlabs' APT™ and Kinesis system controllers.

Also Available:

- Communications Protocol

Software Software

APT TUTORIALS

The APT video tutorials available here fall into two main groups - one group covers using the supplied APT utilities and the second group covers programming the APT System using a selection of different programming environments.

Disclaimer: The videos below were originally produced in Adobe Flash. Following the discontinuation of Flash after 2020, these tutorials were re-recorded for future use. The Flash Player controls still appear in the bottom of each video, but they are not functional.

Every APT controller is supplied with the utilities APTUser and APTConfig. APTUser provides a quick and easy way of interacting with the APT control hardware using intuitive graphical control panels. APTConfig is an 'off-line' utility that allows various system wide settings to be made such as pre-selecting mechanical stage types and associating them with specific motion controllers.

APT User Utility

The first video below gives an overview of using the APTUser Utility. The OptoDriver single channel controller products can be operated via their front panel controls in the absence of a control PC. The stored settings relating to the operation of these front panel controls can be changed using the APTUser utility. The second video illustrates this process.

APT User - Overview APT User - OptoDriver Settings

APT Config Utility

There are various APT system-wide settings that can be made using the APT Config utility, including setting up a simulated hardware configuration and associating mechanical stages with specific motor drive channels. The first video presents a brief overview of the APT Config application. More details on creating a simulated hardware configuration and making stage associations are present in the next two videos.

APT Config - Overview APT Config - Simulator Setup APT Config - Stage Association

APT Programming

The APT Software System is implemented as a collection of ActiveX Controls. ActiveX Controls are language-independant software modules that provide both a graphical user interface and a programming interface. There is an ActiveX Control type for each type of hardware unit, e.g. a Motor ActiveX Control covers operation with any type of APT motor controller (DC or stepper). Many Windows software development environments and languages directly support ActiveX Controls, and, once such a Control is embedded into a custom application, all of the functionality it contains is immediately available to the application for automated operation. The videos below illustrate the basics of using the APT ActiveX Controls with LabVIEW, Visual Basic, and Visual C++. Note that many other languages support ActiveX including LabWindows CVI, C++ Builder, VB.NET, C#.NET, Office VBA, Matlab, HPVEE etc. Although these environments are not covered specifically by the tutorial videos, many of the ideas shown will still be relevant to using these other languages.

Visual Basic

Part 1 illustrates how to get an APT ActiveX Control running within Visual Basic, and Part 2 goes on to show how to program a custom positioning sequence.

APT Programming Using Visual Basic - Part 1 APT Programming Using Visual Basic - Part 2

LabVIEW

Full Active support is provided by LabVIEW and the series of tutorial videos below illustrate the basic building blocks in creating a custom APT motion control sequence. We start by showing how to call up the Thorlabs-supplied online help during software development. Part 2 illustrates how to create an APT ActiveX Control. ActiveX Controls provide both Methods (i.e. Functions) and Properties (i.e. Value Settings). Parts 3 and 4 show how to create and wire up both the methods and properties exposed by an ActiveX Control. Finally, in Part 5, we pull everything together and show a completed LabVIEW example program that demonstrates a custom move sequence.

APT Programming Using LabVIEW - Part 1: Accessing Online Help APT Programming Using LabVIEW - Part 2: Creating an ActiveX Control APT Programming Using LabVIEW - Part 3: Create an ActiveX Method

APT Programming Using LabVIEW - Part 4: Create an ActiveX Property APT Programming Using LabVIEW - Part 5: How to Start an ActiveX Control

The following tutorial videos illustrate alternative ways of creating Method and Property nodes:

APT Programming Using LabVIEW - Create an ActiveX Method (Alternative)

APT Programming Using LabVIEW - Create an ActiveX Property (Alternative)

Visual C++

Part 1 illustrates how to get an APT ActiveX Control running within Visual C++, and Part 2 goes on to show how to program a custom positioning sequence.

APT Programming with Visual C++ - Part 1

APT Programming with Visual C++ - Part 2

MATLAB

For assistance when using MATLAB and ActiveX controls with the Thorlabs APT positioners, click here.

To further assist programmers, a guide to programming the APT software in LabVIEW is also available here.

MOTORIZED LINEAR STAGES

Motorized Linear Translation Stages

Thorlabs' motorized linear translation stages are offered in a range of maximum travel distances, from a stage with 20 µm of piezo translation to our 600 mm direct drive stage. Many of these stages can be assembled in multi-axis configurations, providing XY or XYZ translation. For fiber coupling applications, please see our multi-axis stages, which offer finer adjustment than our standard motorized translation stages. In addition to motorized linear translation stages, we offer motorized rotation stages, pitch and yaw platforms, and goniometers. We also offer manual translation stages.

Piezo Stages

These stages incorporate piezoelectric elements in a variety of drive mechanisms. Our Nanoflex™ translation stages use standard piezo chips along with manual actuators. Our LPS710E z-axis stage features a mechanically amplified piezo design and includes a matched controller. The PD1 stage incorporates a piezo inertia drive that uses "stick-slip" friction properties to obtain an extended travel range. The Elliptec® stages use resonant piezo motors to push and pull the moving platform through resonant elliptical motion.

Piezoelectric Stages							
Product Family	**Nanoflex™ 20 µm Stage with 5 mm Actuator**	**Nanoflex™ 25 µm Stage with 1.5 mm Actuator**	**ORIC® PD2 Open-Loop 5 mm Stage**	**ORIC® PD1 Open-Loop 20 mm Stage**	**ORIC® PD1D Open-Loop 20 mm Monolithic XY Stage**	**ORIC® PDX1 Closed-Loop 20 mm Stage**	**ORIC® PD3 Open-Loop 50 mm Stage**
Click Photo to Enlarge							
Travel	20 µm + 5 mm Manual	25 µm + 1.5 mm Manual	5 mm	20 mm			50 mm
Maximum Velocity	-		10 mm/s[a]	3 mm/s		20 mm/s	10 mm/s[a]
Drive Type	Piezo with Manual Actuator		Piezoelectric Inertia Drive				
Possible Axis Configurations	X, XY, XYZ		X, XY, XYZ	X, XY, XYZ	XY, XYZ	X, XY, XYZ	X, XY, XYZ
Mounting Surface Size	75 mm x 75 mm	30 mm x 30 mm	13 mm x 13 mm	30 mm x 30 mm			80 mm x 30 mm
Additional Details							More [+]

a. Specified using PDXC Benchtop Controller. For performance when controlled with a KIM001 or KIM101 K-Cube Controller, see the *Specs* tab of the PD2 or PD3 stage presentation..

Piezoelectric Stages			
Product Family	**Elliptec® 28 mm Stage**	**Elliptec® 60 mm Stage**	**LPS710E 1.1 mm Vertical Stage**
Click Photo to Enlarge			
Travel	28 mm	60.0 mm	1.1 mm
Maximum Velocity	180 mm/s	90 mm/s	-
Drive Type	Resonant Piezoelectric Motor		Amplified Piezo
Possible Axis Configurations	X		Z
Mounting Surface Size	15 mm x 15 mm		21 mm x 21 mm
Additional Details			More [+]

Stepper Motor Stages

These translation stages feature removable or integrated stepper motors and long travel ranges up to 300 mm. The MLJ150 stage also offers high load capacity vertical translation. The other stages can be assembled into multi-axis configurations.

Stepper Motor Stages							
Product Family	**LNR Series 25 mm Stage**	**LNR Series 50 mm Stage**	**NRT Series 100 mm Stage**	**NRT Series 150 mm Stage**	**LTS Series 150 mm Stage**	**LTS Series 300 mm Stage**	**MLJ150 50 mm Vertical Stage**
Click Photo to Enlarge							
Travel	25 mm	50 mm	100 mm	150 mm	150 mm	300 mm	50 mm
Maximum Velocity	2.0 mm/s	50 mm/s	30 mm/s		50 mm/s		3.0 mm/s
Possible Axis Configurations	X, XY, XYZ	X, XY, XYZ	X, XY, XYZ		X, XY, XYZ		Z
Mounting Surface Size	60 mm x 60 mm	100 mm x 100 mm	84 mm x 84 mm		100 mm x 90 mm		148 mm x 131 mm
Additional Details							More [+]

DC Servo Motor Stages

Thorlabs offers linear translation stages with removable or integrated DC servo motors. These stages feature low profiles and can be assembled in multi-axis configurations.

DC Servo Motor Stages							
Product Family	**MT Series 12 mm Stages**	**PT Series 25 mm Stages**	**MTS Series 25 mm Stage**	**MTS Series 50 mm Stage**	**M30 Series 30 mm Stage**	**M30 Series 30 mm Monolithic XY Stage**	**KVS30 30 mm Vertical Stage**
Click Photo to Enlarge							

							
Travel	12 mm	25 mm	25 mm	50 mm	30 mm		30 mm
Maximum Velocity	2.6 mm/s		2.4 mm/s		2.4 mm/s		8.0 mm/s
Possible Axis Configurations	X, XY, XYZ		X, XY, XYZ		X, Z	XY, XZ	Z
Mounting Surface Size	61 mm x 61 mm	101.6 mm x 76.2 mm	43 mm x 43 mm		115 mm x 115 mm		116.2 mm x 116.2 mm
Additional Details							More [+]

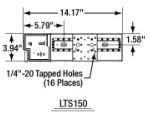
Direct Drive Stages

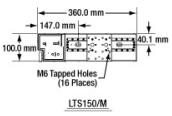
These low-profile stages feature integrated brushless DC servo motors for high speed translation with zero backlash. When no power is applied, the platforms of these stages have very little inertia and are virtually free running. Hence these stages may not be suitable for applications where the stage's platform needs to remain in a set position when the power is off. We do not recommend mounting these stages vertically.

Direct Drive Stages					
Product Family	**DDS Series 50 mm Stage**	**DDS Series 100 mm Stage**	**DDS Series 220 mm Stage**	**DDS Series 300 mm Stage**	**DDS Series 600 mm Stage**
Click Photo to Enlarge					
Travel	50 mm	100 mm	220 mm	300 mm	600 mm
Maximum Velocity	500 mm/s		300 mm/s	400 mm/s	400 mm/s
Possible Axis Configurations	X, XY		X, XY	X	X
Mounting Surface Size	60 mm x 52 mm		88 mm x 88 mm	120 mm x 120 mm	
Additional Details					More [+]

150 mm Linear Translation Stage with Integrated Controller, Stepper Motor

Thorlabs' LTS150(/M) stage provides 150 mm (5.9") of travel with an integrated stepper motor and controller. The controller features manual keypad and remote computer control. Optomechanics can be directly mounted to the moving platform using sixteen 1/4"-20 (M6) tapped holes, which are spaced 1.0" (25.0 mm) apart.





Part Number	Description	Price	Availability
LTS150/M	**150 mm Translation Stage with Stepper Motor, Integrated Controller, M6 Taps**	**$3,108.39**	**Lead Time**
LTS150	**150 mm Translation Stage with Stepper Motor, Integrated Controller, 1/4"-20 Taps**	**$3,108.39**	**Lead Time**

XY Adapter Plate

- Mount LTS150(/M) and LTS300(/M) Stages in XY Configurations

- Stages can be Mounted in Left- or Right-Handed Setups
- Dowels Included to Ensure Orthogonality

The LTSP1(/M) is a spacer plate, allowing any two LTS translation stages to be mounted in an XY configuration. When assembled as shown to the right, the working height of the upper stage is 3.15" (80 mm). The spatial dimensions of the stage configuration will depend on the orientation (left-handed or right-handed) of the X and Y stages. Please contact Tech Support for the exact dimensions of a particular setup.

LTS150 and LTS300 Stages Mounted in XY Configuration Using LTSP1 Spacer Plate

Part Number	Description	Price	Availability
LTSP1/M	XY Adapter Plate for LTS150/M or LTS300/M Stages	$82.11	Today
LTSP1	XY Adapter Plate for LTS150 or LTS300 Stages	$82.11	Today

Z-Axis Bracket for LTS150 Stage

- Mount an LTS150(/M) Stage in XZ and XYZ Configurations
- Stage can be Mounted in Left- or Right-Handed Setups
- Not Designed for Direct Breadboard Mounting (See Below)

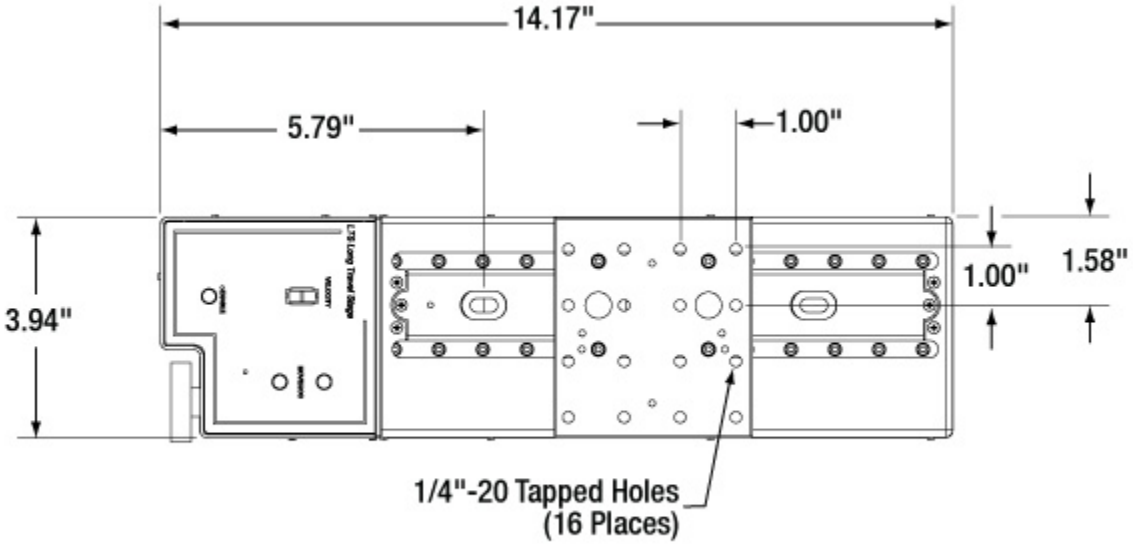
The LTSP2(/M) right angle bracket allows an LTS150(/M) stage to be mounted in a vertical (Z-axis) orientation as shown to the right. XYZ configurations can be made using an LTSP1(/M) adapter plate (sold above) and LTSP2(/M) angle bracket.

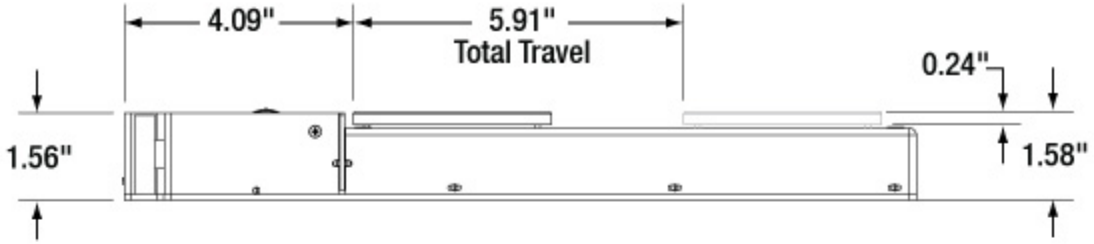
Please note that these adapters are not designed for mounting directly to a breadboard. The bottom of the vertical stage extends past the base of the adapter, and thus, the adapter must be elevated above the table to provide adequate clearance for the stage.

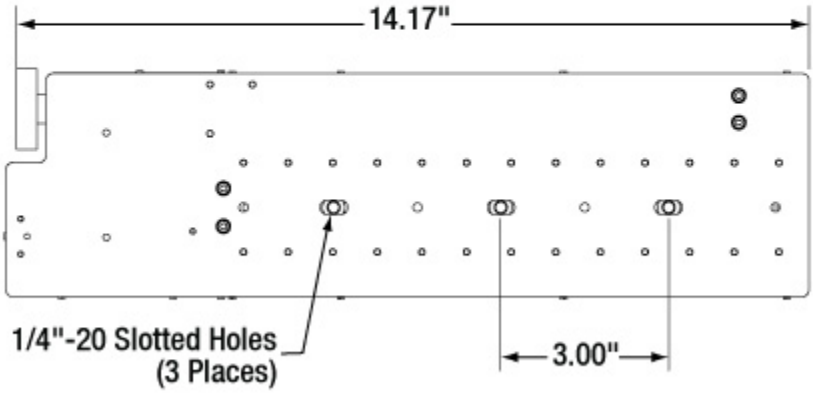
Two LTS150 Stages Mounted in XZ Configuration Using LTSP2 Bracket

Part Number	Description	Price	Availability
LTSP2/M	Z-Axis Bracket for LTS150/M Stage	$166.55	Today
LTSP2	Z-Axis Bracket for LTS150 Stage	$166.55	Today

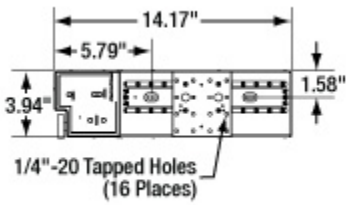

LTS Long Travel Stage
WARNING
ENSURE USB CABLE IS
CONNECTED TO PC PRIOR TO
CONNECTING POWER SUPPLY
24VDC
USB IN





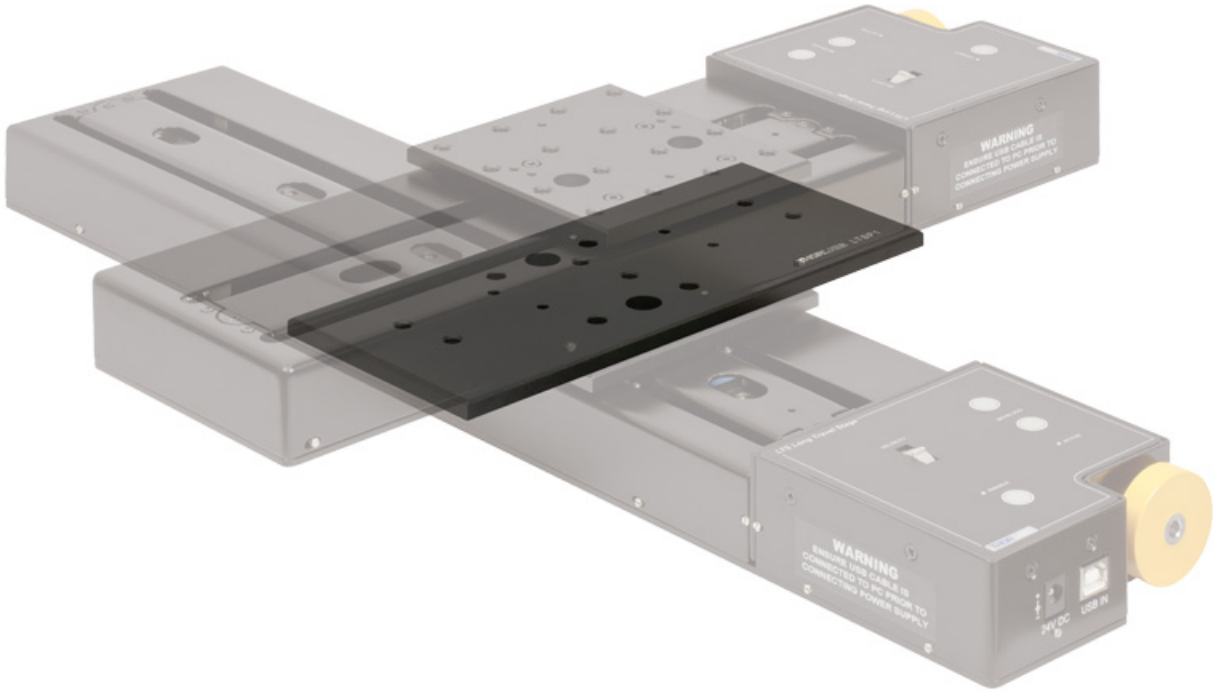


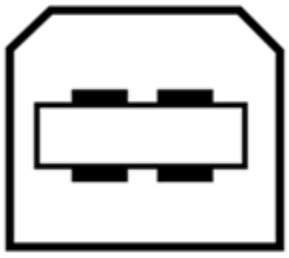
LTS150

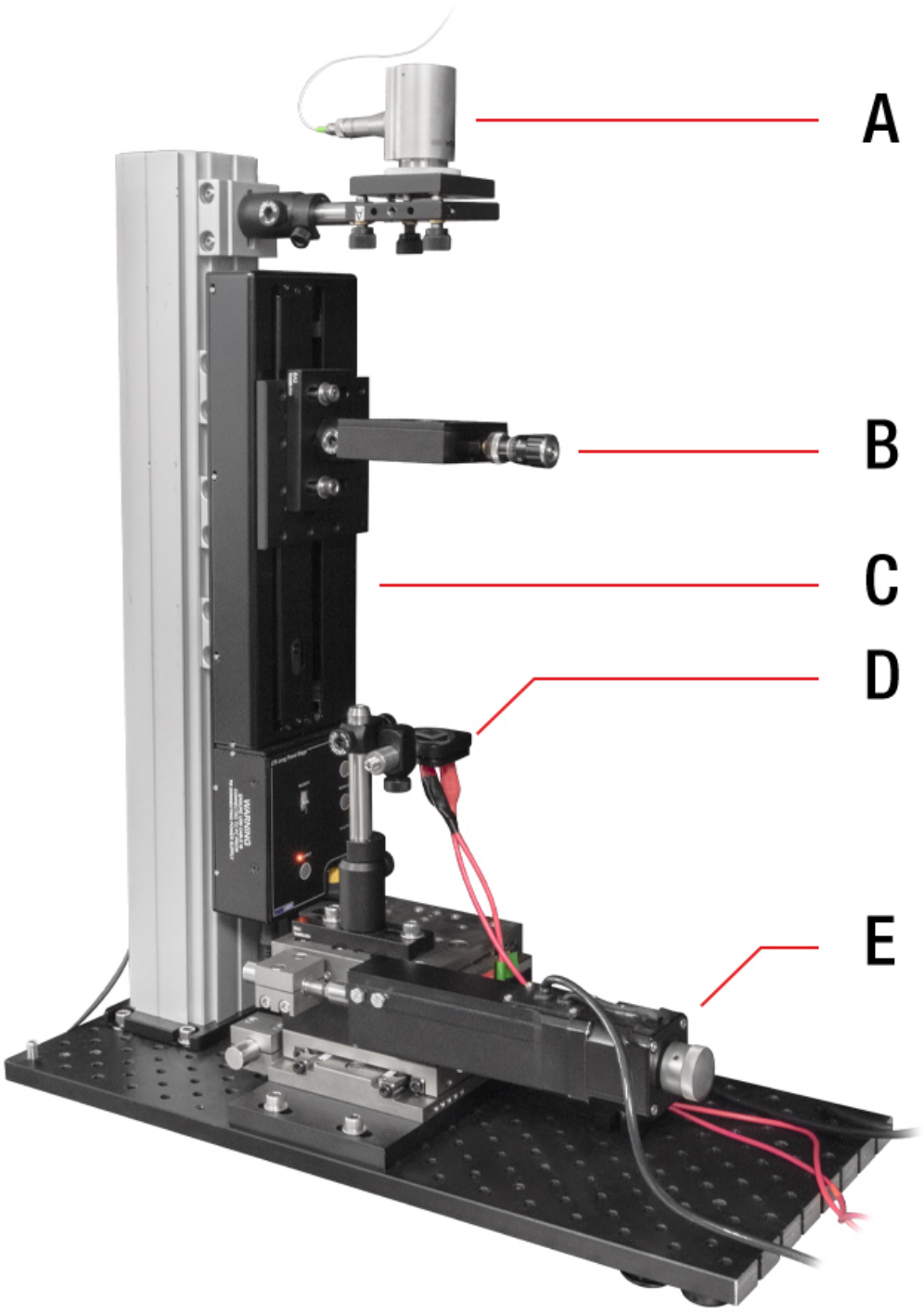


LTS150


WARNING
WARNING


WARNING
ENSURE USB CABLE IS
CONNECTED TO PC PRIOR TO
CONNECTING POWER SUPPLY
WARNING
ENSURE USB CABLE IS
CONNECTED TO PC PRIOR TO
CONNECTING POWER SUPPLY
24V DC
USB IN




A
B
C
D
E


LTS Long Travel Stage
VELOCITY
MOVE/JOG
ACTIVE
ENABLE
THORLABS
24V
USB IN
THORLABS
CB7 4EX UK