THORLABS

# DDS300(/M), DDS600(/M), DDS800(/M), and DDS1000(/M)
# Direct Drive Translation Stages

## User Guide



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# Chapter 1 Introduction

## 1.1 Intended Use

Thorlabs' DDS300(/M), DDS600(/M), DDS800(/M), and DDS1000(/M) stages are low-profile, direct-drive stages providing 300 mm, 600 mm, 800 mm, and 1000 mm of travel respectively, with a maximum speed of 400 mm/s and a minimum achievable incremental movement of 100 nm. Imperial and metric stages are available. The stages are designed for applications that require high speed and precise positioning, including automated alignment, surface inspection, mapping, and probing. They are to be used in an indoor laboratory environment only, to be operated with the ambient temperature range of 5 °C to 40 °C and in an environment with maximum humidity below 80% RH (non-condensing) at 31 °C. Proper working is not guaranteed outside this temperature range. To ensure reliable operation the units should not be exposed to corrosive agents or excessive moisture, heat or dust. If a unit has been stored at a low temperature or in an environment of high humidity, it must be allowed to reach ambient conditions before being powered up. The unit must not be used in an explosive environment.

The product may only be used in accordance with the instructions described in this manual. Any other use will invalidate the warranty.

## 1.2 Explanation of Safety Warnings

**⚠CAUTION** Caution indicates a hazard with a low level of risk that, if not avoided, could result in minor or moderate injury.

**NOTICE** Indicates information considered important, but not hazard-related, such as possible damage to the product.

CE UKCA The CE/UKCA markings on the product are the manufacturer's declaration that the product complies with the essential requirements of the relevant European health, safety, and environmental protection legislation.



The symbol on the product, the accessories or packaging indicates that this device must not be treated as unsorted municipal waste but must be collected separately.

## 1.3 Description

The low-profile design integrates brushless linear motors and eliminates external housings that can create mechanical interference and restrict access to the moving platform. Direct-drive operation removes the need for a lead screw and eliminates backlash.

Twin precision grooved linear bearings provide high rigidity and linearity, supporting accurate on-axis motion. Backlash-free operation, combined with high-resolution closed-loop optical feedback, delivers bidirectional repeatability as listed in Section 1.4.1.

The stage also includes an integrated cable management system, removing the need for user-side cabling.

The DDS300(/M), DDS600(/M), DDS800(/M), and DDS1000(/M) stages provide high-speed translation and accurate positioning for surface mapping and characterization applications. They support constant-velocity motion of cameras or probes while data is captured. Fine positioning and motion control are achieved through the closed-loop control system and an optional MJC2 or MJC3 joystick.

## 1.4 Technical Data

### 1.4.1 Specifications

| Item # | | DDS300(/M) | DDS600(/M) | DDS800(/M) | DDS1000(/M) |
|---|---|---|---|---|---|
| **Travel Range** | | 300 mm (11.8") | 600 mm (23.6") | 800 mm (31.5") | 1000 mm (39.4") |
| **Maximum Speed** | | 400 mm/s | | | |
| **Maximum Acceleration**[a] | | 10 000 mm/s$^2$ | | | |
| **Bidirectional Repeatability** | | ±0.25 µm | ±0.25 µm | ±0.6 µm | ±0.6 µm |
| **Backlash**[b] | | N/A | | | |
| **Encoder Resolution** | | 50 nm | | | |
| **Minimum Achievable Incremental Movement** | | 100 nm | | | |
| **Horizontal Load Capacity (Maximum)**[c] | | 10.0 kg (22.0 lbs) | | | |
| **Absolute On-Axis Accuracy** | | ±7.5 µm | ±12.0 µm | ±15.0 µm | ±24.0 µm |
| **Straightness/Flatness** | | ±4.0 µm | ±10.0 µm | ±25.0 µm | ±25.0 µm |
| **Pitch** | | ±100 µrad | ±100 µrad | ±150 µrad | ±150 µrad |
| **Yaw** | | ±150 µrad | ±75 µrad | ±100 µrad | ±150 µrad |
| **Continuous Motor Force** | | 10.0 N | | | |
| **Peak Motor Force (2 s)** | | 20.0 N | | | |
| **Bearing Type** | | High Rigidity, Recirculating, Precision Linear Bearings | | | |
| **Limit Switches** | | Magnetic Sensor at Each End of Stage | | | |
| **Operating Temperature Range**[d] | | 5 to 40 °C (41 to 104 °F) | | | |
| **Motor Type** | | Brushless DC Linear Motor | | | |
| **Cable Length** | | 2.5 m (8.2') | 2.2 m (7.2') | 2.0 m (6.5') | 1.8 m (5.9') |
| **Dimensions** | | 500 mm x 130 mm x 50 mm (19.7" x 5.1" x 2.0") | 800 mm x 130 mm x 50 mm (31.5" x 5.1" x 2.0") | 1000 mm x 130 mm x 50 mm (39.4" x 5.1" x 2.0") | 1200 mm x 130 mm x 50 mm (47.2" x 5.1" x 2.0") |
| **Mass (Weight)** | Excluding Cables | 5.9 kg (13.0 lbs) | 8.8 kg (19.4 lbs) | 11.0 kg (24.3 lbs) | 13.1 kg (28.9 lbs) |
| | Including Cables | 6.1 kg (13.5 lbs) | 9.1 kg (20.0 lbs) | 11.2 kg (24.7 lbs) | 13.3 kg (29.3 lbs) |

All measurements were performed at a velocity of 400 mm/s (300 mm/s for Item # DDS300(/M)) and an acceleration of 5000 mm/s$^2$ over the maximum travel distance of the full travel range. The default tuning parameters can be adjusted to optimize settling time for specific loads.

a. Set the acceleration according to the applied load. Acceleration is limited by the continuous motor force.
b. The stage does not exhibit backlash because it does not use a leadscrew.
c. The controller's default PID parameters are configured for a 2 kg load. For higher loads, the PID parameters may require adjustment, and the acceleration should be reduced. Acceleration remains limited by the available motor force.
d. When operating at temperatures outside normal room conditions, PID parameter optimization may be required.

Applications involving high speed, high acceleration, or heavy loads can cause the stage to warm during operation. Temperature changes may affect dimensional stability, resulting in reduced positioning accuracy and repeatability. For applications in which repeatability and accuracy are critical, allow the stage temperature to reach a steady state before taking measurements. As an alternative mitigation, reduce the applied load, acceleration, or duty cycle from their maximum values. Achieving optimal settings may require adjustment through trial and error.

### 1.4.2 Mechanical Drawings

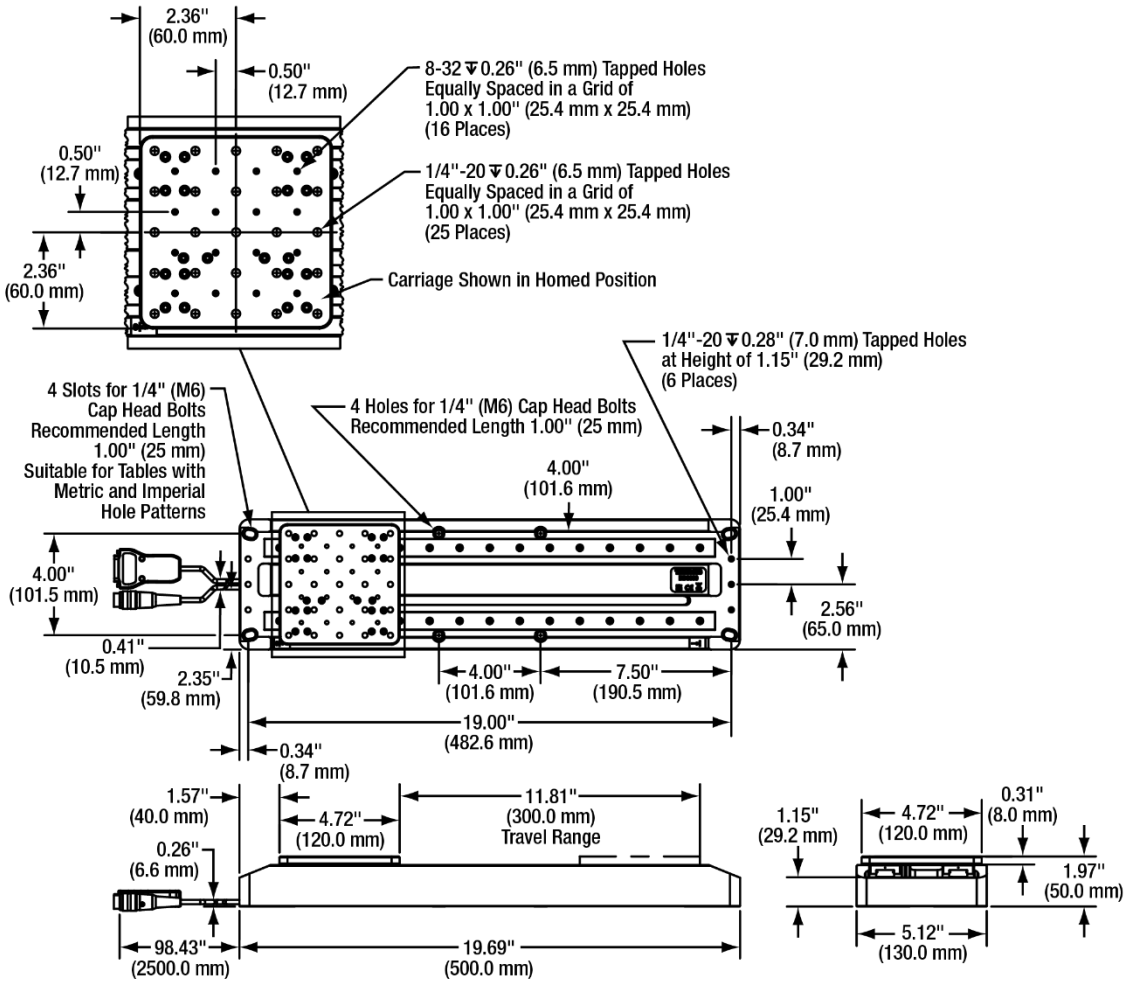



***Figure 1 Mechanical Drawing for DDS300***

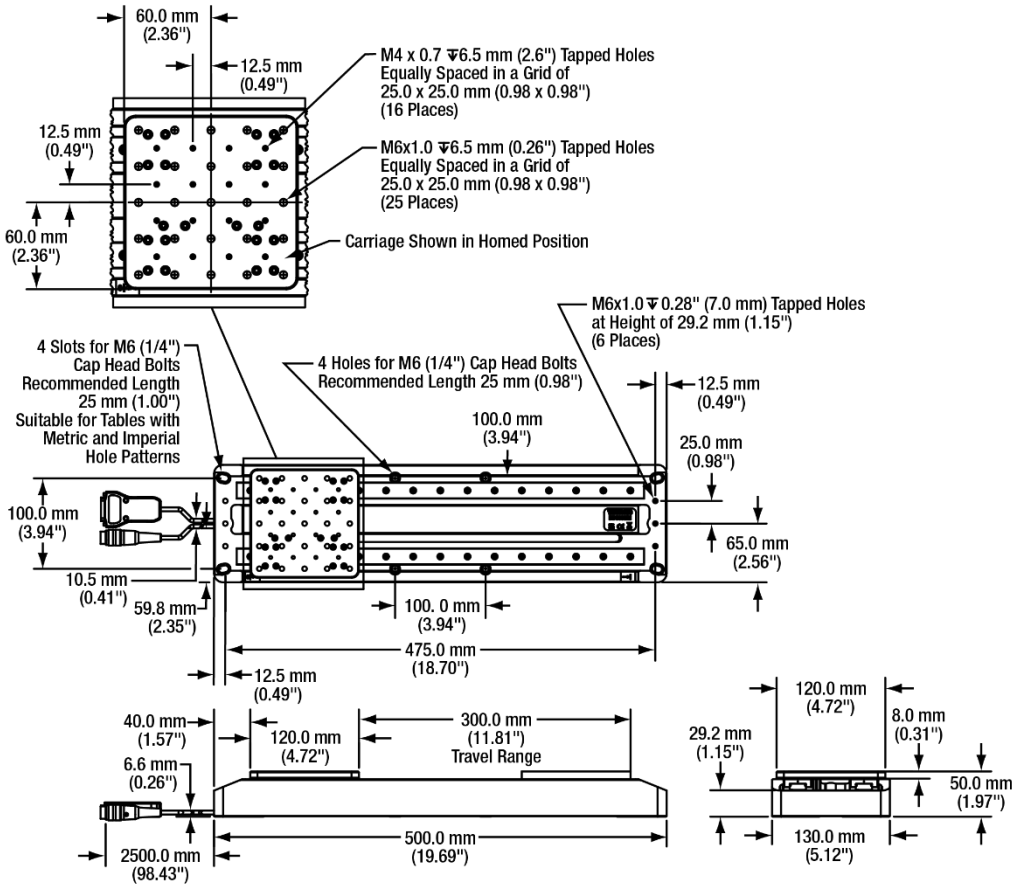



***Figure 2 Mechanical Drawing for DDS300/M***

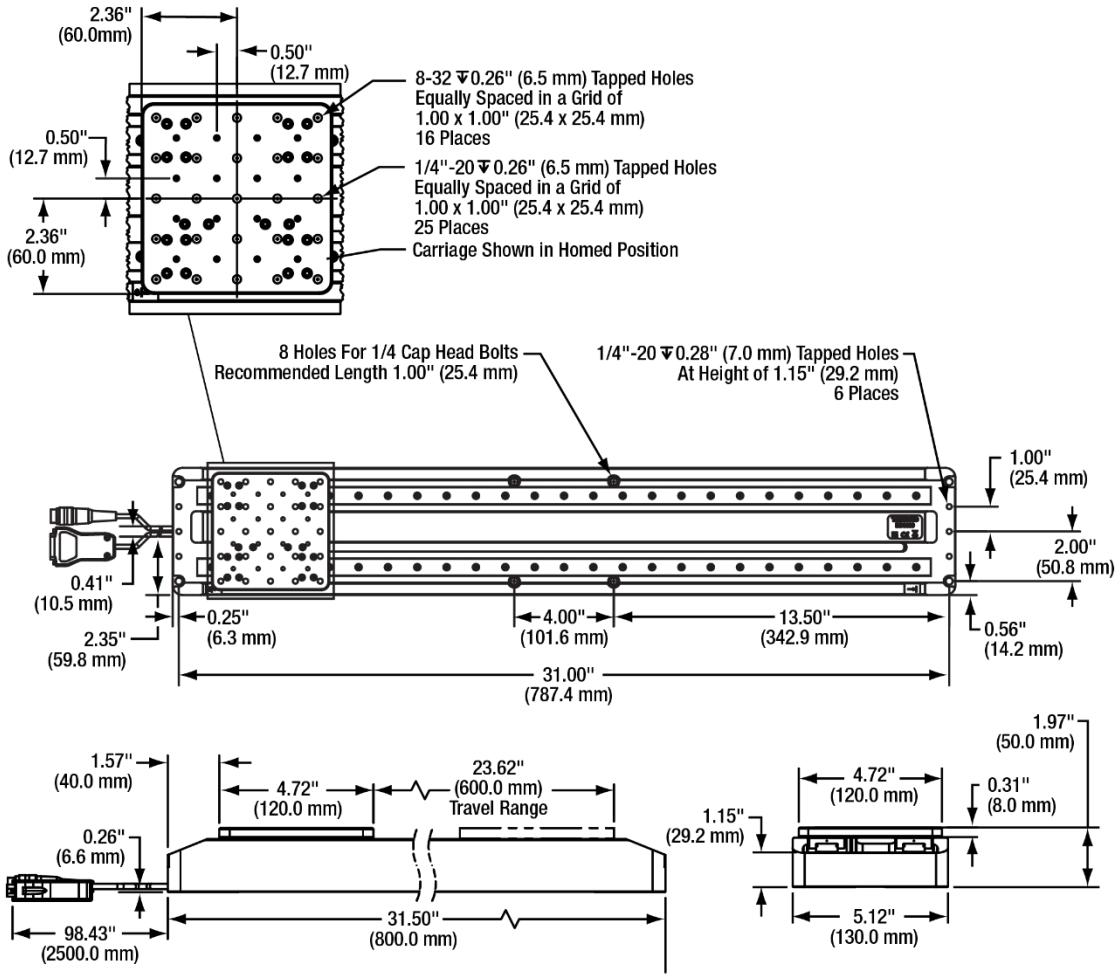



***Figure 3 Mechanical Drawing for DDS600***

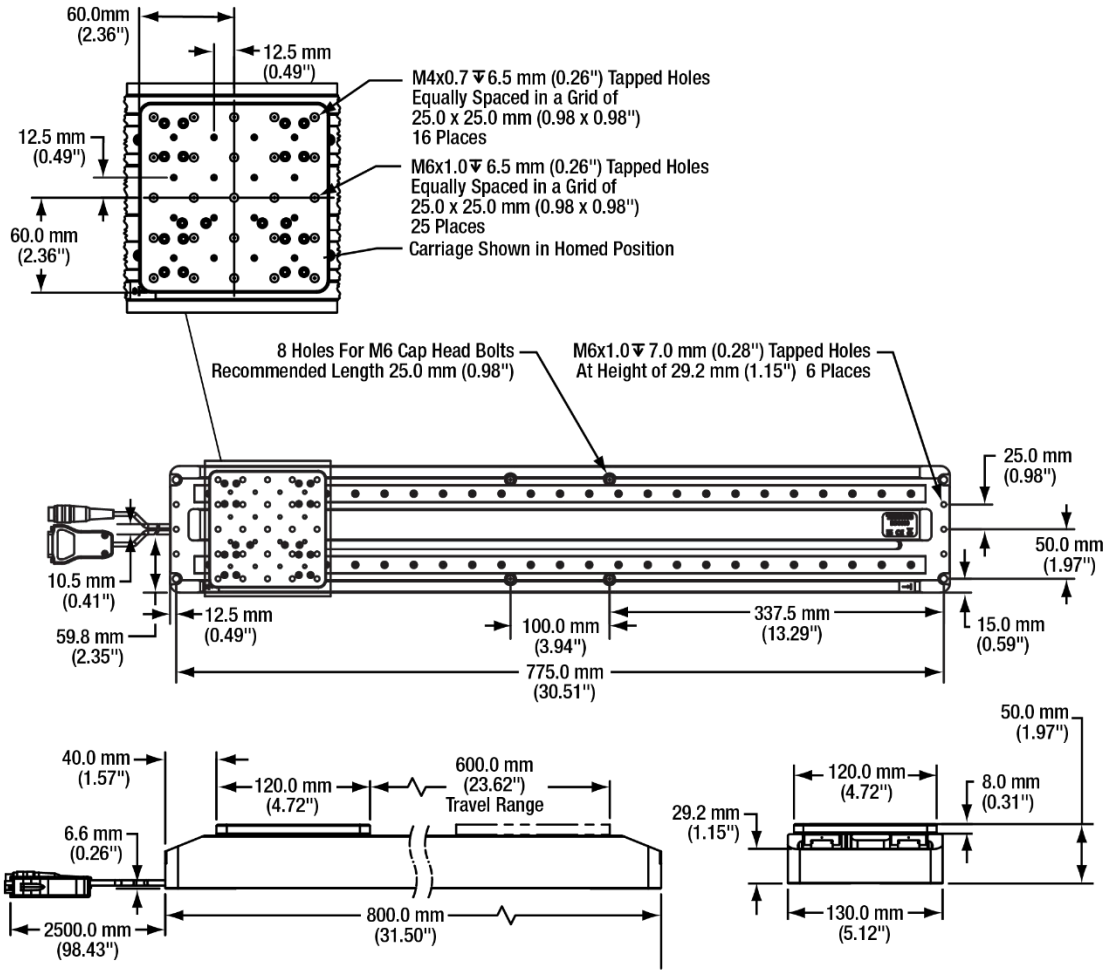



***Figure 4 Mechanical Drawing for DDS600/M***

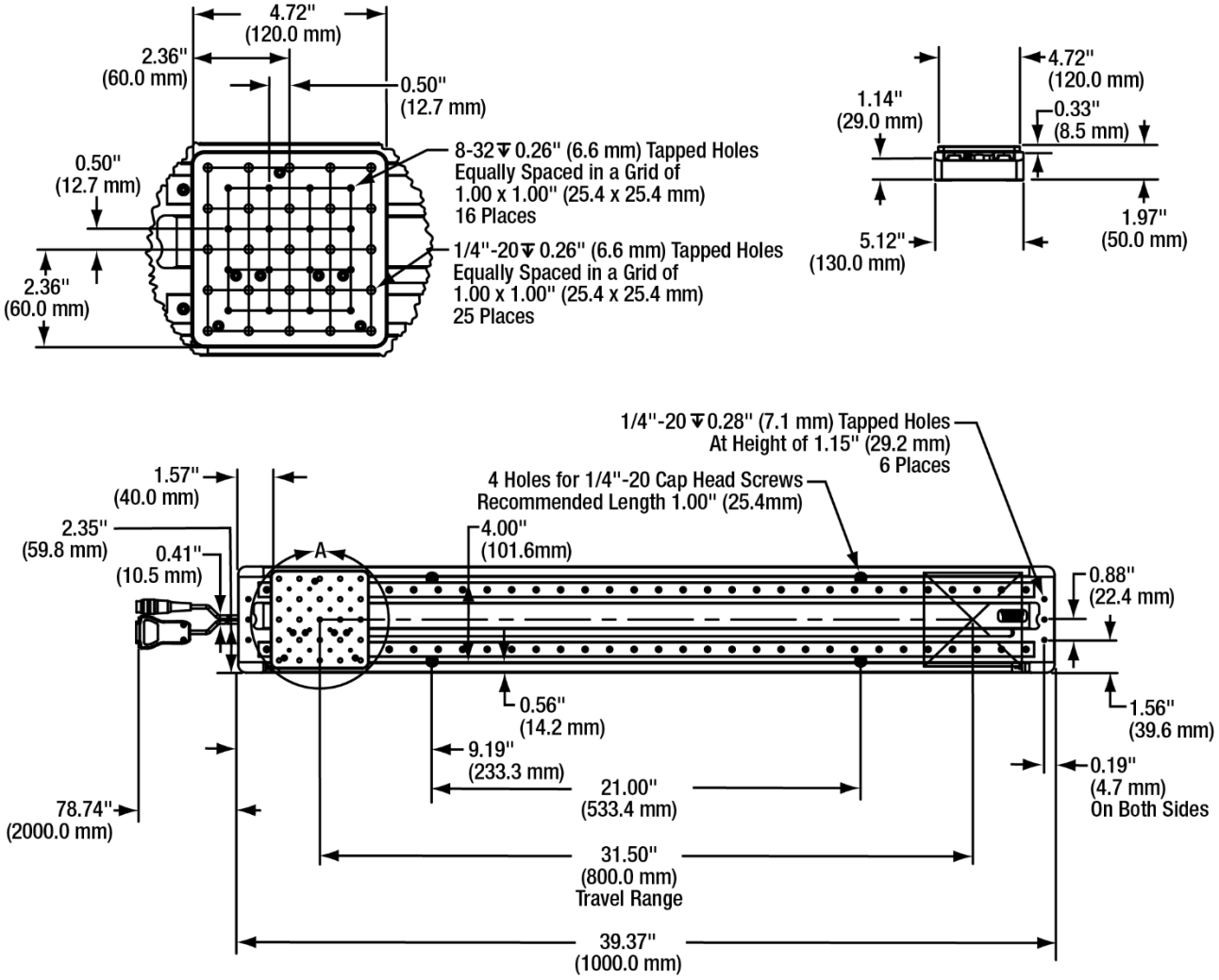



***Figure 5 Mechanical Drawing for DDS800***

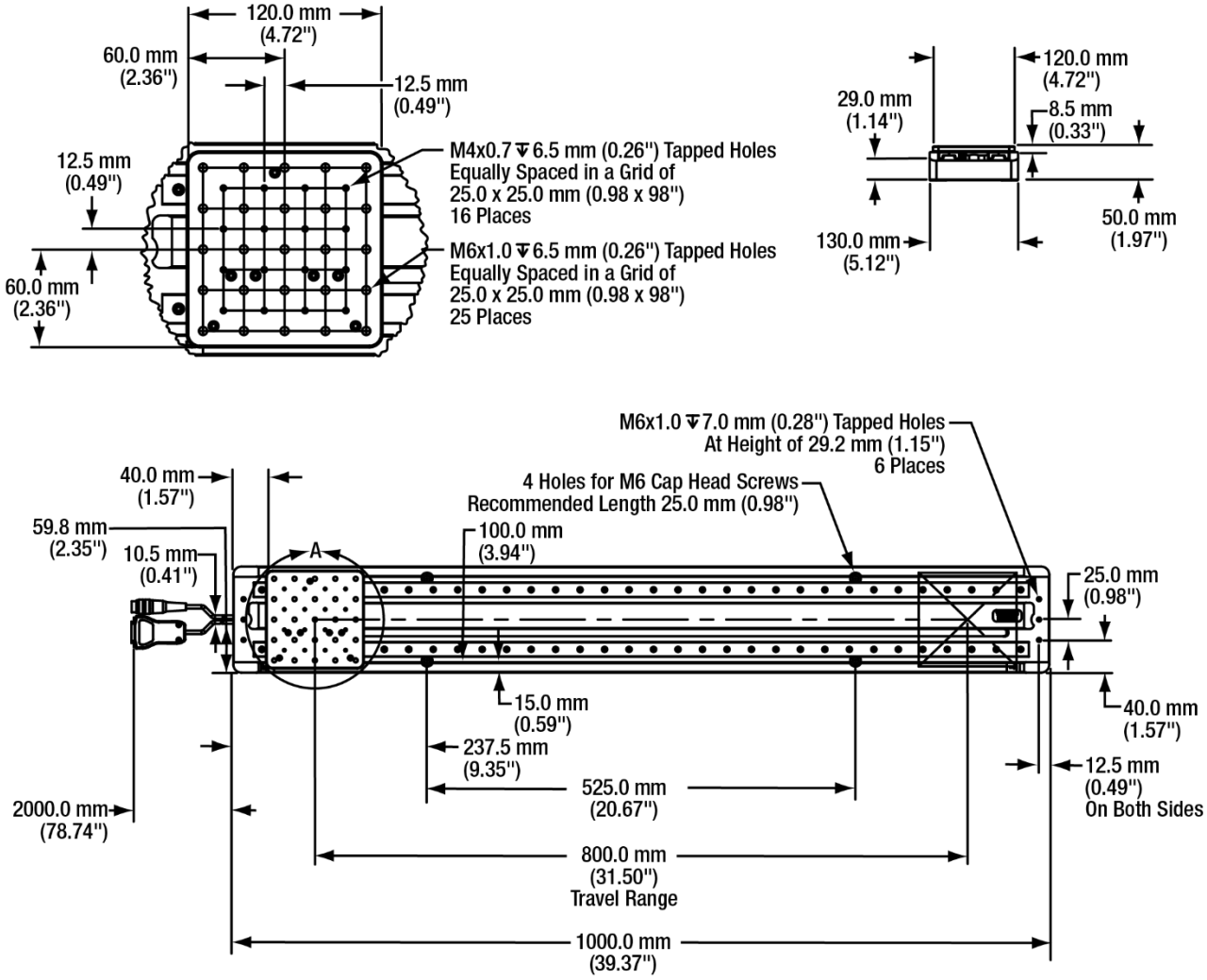



***Figure 6 Mechanical Drawing for DDS800/M***

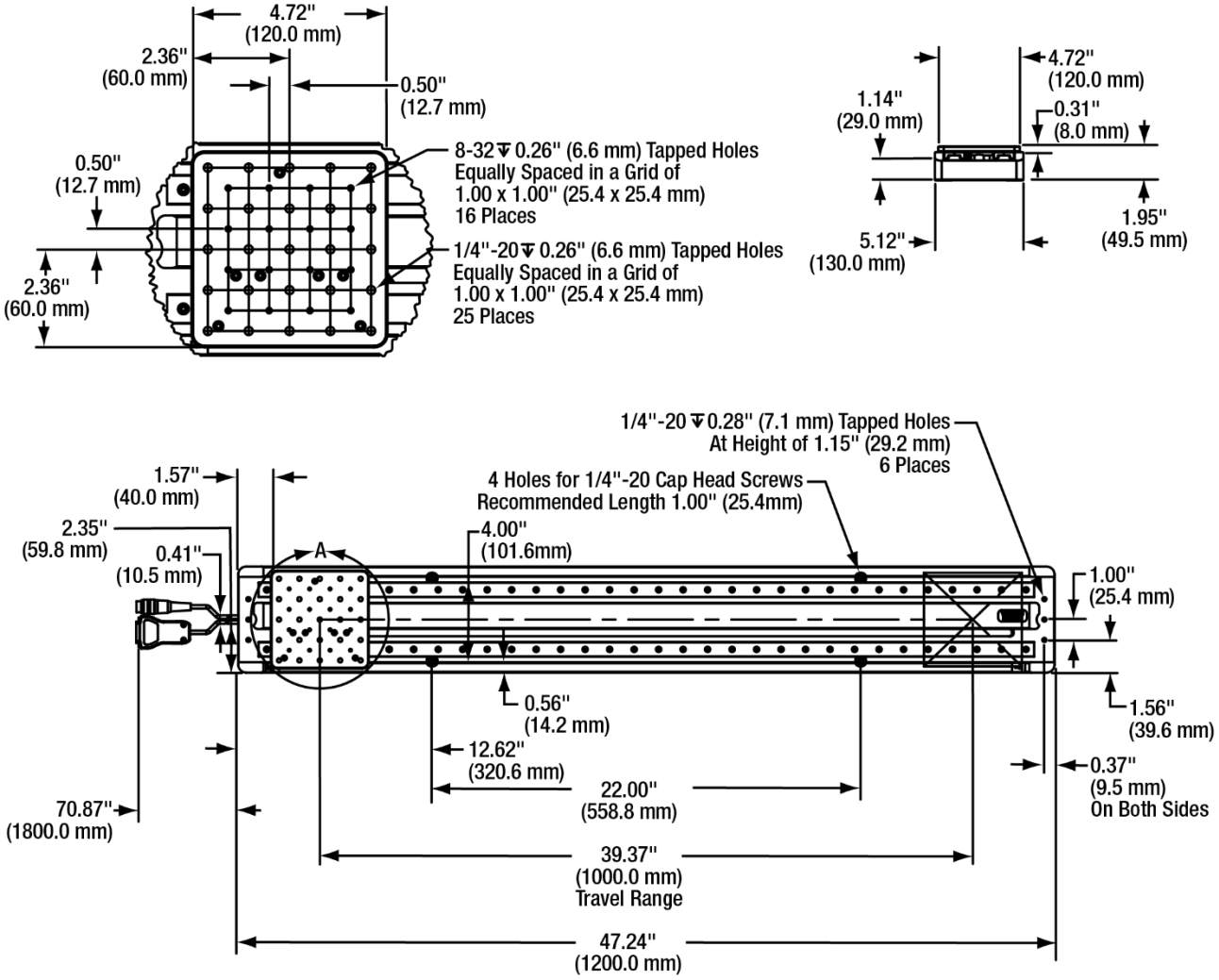



***Figure 7 Mechanical Drawing for DDS1000***

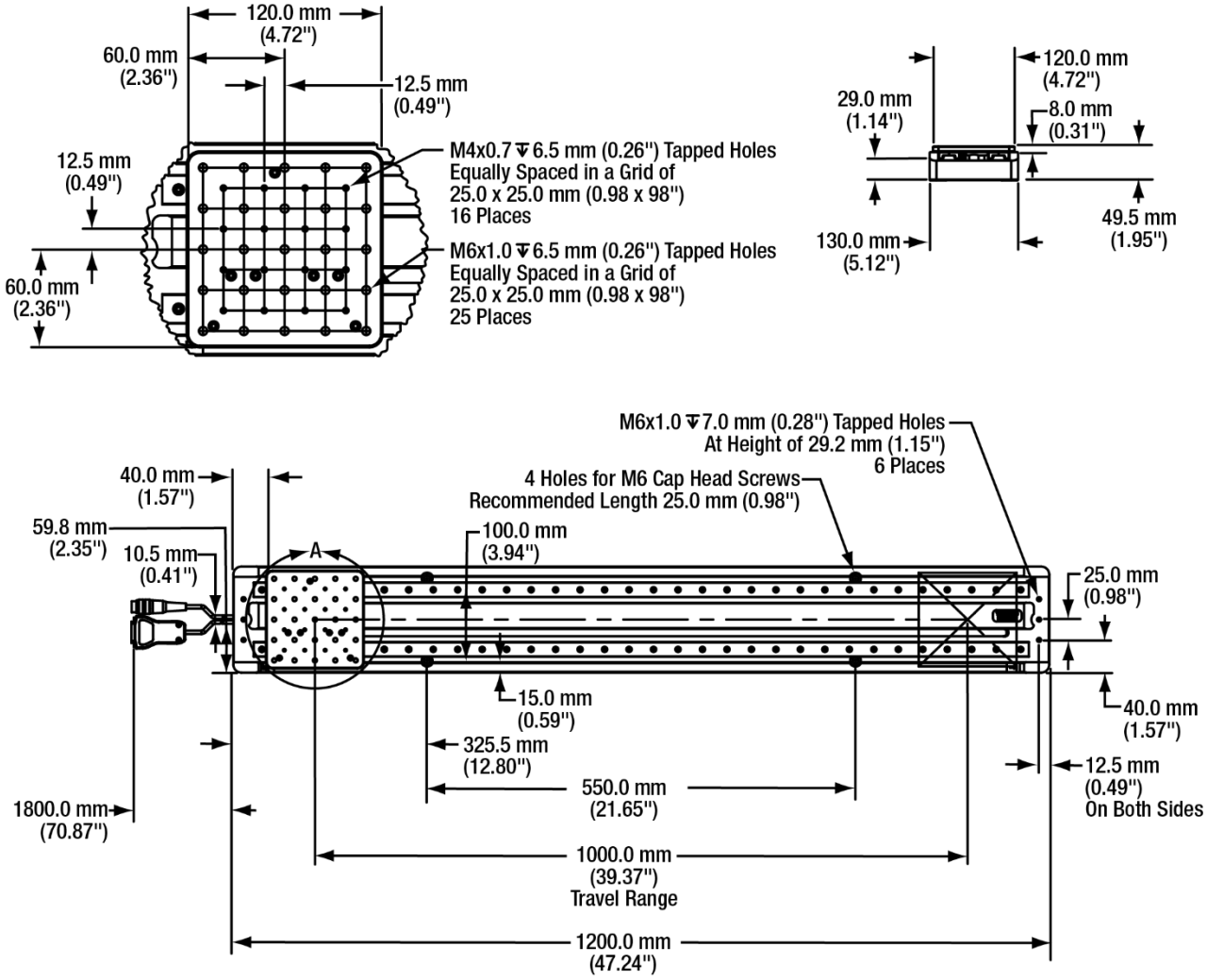



***Figure 8 Mechanical Drawing for DDS1000/M***

## 1.5 Simplified Declaration of Conformity




# EU Declaration of Conformity

*Manufacturer:* Thorlabs LTD

*Address:* 204 Lancaster Way, Ely, CB6 3NX, UK

*We hereby declare under our sole responsibility that:*

*Product:* **DDS Series - DDS220(/M), DDS300(/M), DDS600(/M), DDS800(/M), DDS1000(/M)**

*Product description:* **Direct Drive Stage (Imperial & Metric)**

*is/are in conformity with the following directive(s):*

| | |
|---|---|
| 2014/30/EU | Electromagnetic Compatibility (EMC) Directive |
| 2011/65/EU | Restriction of Use of Certain Hazardous Substances (RoHS), including 2015/863 |
| 2006/42/EC | Machinery Directive (MD) |

*and (harmonized) standards / technical specifications :*

| | | |
|---|---|---|
| EN 61326-1 | Electrical Equipment for Measurement, Control and Laboratory Use - EMC Requirements | 2021 |
| EN IEC 63000 | Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances | 2018 |
| EN ISO 12100 | Safety of Machinery. General Principles for Design. Risk Assessment and Risk Reduction | 2010 |

*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:* Keith Dhese

*Name:* Keith Dhese *On:* 6/2/2026

*Position:* General Manager

CE

# Chapter 2 Safety

**⚠CAUTION** Operation outside the following environmental limits listed in Section 1.1 may adversely affect operator safety.

**⚠CAUTION** Due to their size and length, the DDS800(/M) and DDS1000(/M) stages require two-person manual handling. This requirement is based on dimensional stability and safe grip considerations rather than weight alone. Follow the specified handling instructions to reduce the risk of loss of control, impact damage, or musculoskeletal injury during installation.

**NOTICE**

If the equipment is operated in a manner not specified by the manufacturer, its protective features may be reduced. Exposure to excessive moisture can impair operation.

Avoid spilling fluids, such as sample solutions, on the equipment. If a spill occurs, clean it immediately using absorbent material. Do not allow fluids to enter the internal mechanism.

When securing the stage to a work surface or attaching a load to the top platform, excessive tightening torque on the mounting bolts can increase resistance on the moving platform. This may degrade performance and require adjustment of the PID parameters. As a general guideline, use a nominal tightening torque of 70 N·cm for attachment bolts.

# Chapter 3 Installation

## 3.1 Warranty Information

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.

## 3.2 Unpacking Instructions

During handling or shipping, always secure the moving platform to prevent damage to the bearings.

Retain the original packaging for use during future transportation.

Two handles are supplied with the unit to assist with safe lifting and positioning. Fit the handles into the center threaded hole at each end of the stage. To ensure safe load bearing, engage each handle with a minimum of three full turns.

After removal from the packaging, the stage can be damaged by improper handling. Handle the unit only by the base. Do not lift or support the stage by attachments mounted to the moving platform.

## 3.3 Transportation

When preparing the unit for shipment, use the original packaging. If the original packaging is not available, place the unit in a rigid shipping container and surround it with at least 100 mm of shock-absorbing material.

Ensure that the moving platform is securely restrained to prevent damage during shipping.

## 3.4 Mounting

**NOTICE**

The safety of any system incorporating this equipment is the responsibility of the person performing the installation.

### 3.4.1 General

Stage performance may be affected if the mounting surface flatness exceeds 200 µm. When securing the stage to the work surface, ensure that the base is not distorted. Base distortion can increase stiffness in the bearing rails and degrade motion performance. Use shims as required to maintain flatness.

When installing the stage near other equipment, ensure that the full travel of the moving platform is unobstructed. If equipment mounted on the moving platform contacts a rigid object during motion, damage to the internal mechanism may result. The total ranges of travel are 300 mm (11.8"), 600 mm (23.6"), 800 mm (31.5") and 1000 mm (39.4").

When positioning the stage near adjacent equipment or structures, ensure that cables attached to the moving carriage can move freely and are not restricted throughout the full range of motion.

Excessive tightening torque applied when mounting the stage to the work surface or securing a load to the top platform can increase resistance on the moving platform. Increased resistance can reduce performance and may require adjustment of the PID parameters. As a general guideline, use a nominal tightening torque of 70 N·cm for attachment bolts.

Minimize drag forces from attachments to the moving platform, such as cables, tubing, or electrical wiring, particularly during direction changes. Excessive drag can negatively affect phase initialization, homing, positioning accuracy, and overall system reliability.

### 3.4.2 Vertical Mounting

The stages are not suitable for mounting in a vertical (Z-axis) configuration.

### 3.4.3 Cable Routing and Cable Extension

The D-type shell of the motor connector contains an identification chip that can be damaged if the connector is opened. The encoder connector contains internal circuitry that is susceptible to damage from static discharge.

Do not open or remove these connectors under any circumstances, including for cable routing or repositioning.

### 3.4.4 Mounting the Stage to the Work Surface and XY Configuration

Mount the DDS300(/M) and DDS600(/M) stages to the work surface using four 25 mm-long M6 (1"-long 1/4") cap screws inserted through the mounting holes at each end of the stage. Access the mounting holes from the top of the stage, as shown in Figure 9. Ensure that the screws pass through the mounting holes. On the DDS800(/M) and DDS1000(/M), there are four screws positioned similarly to the DDS300(/M) and DDS600(/M), but slightly closer to the center of the stage.

A nominal tightening torque of 70 N·cm is recommended for the attachment bolts. Overtightening may cause stage distortion, leading to degraded performance.

Tighten the four mounting screws using a diagonal (cross) pattern.

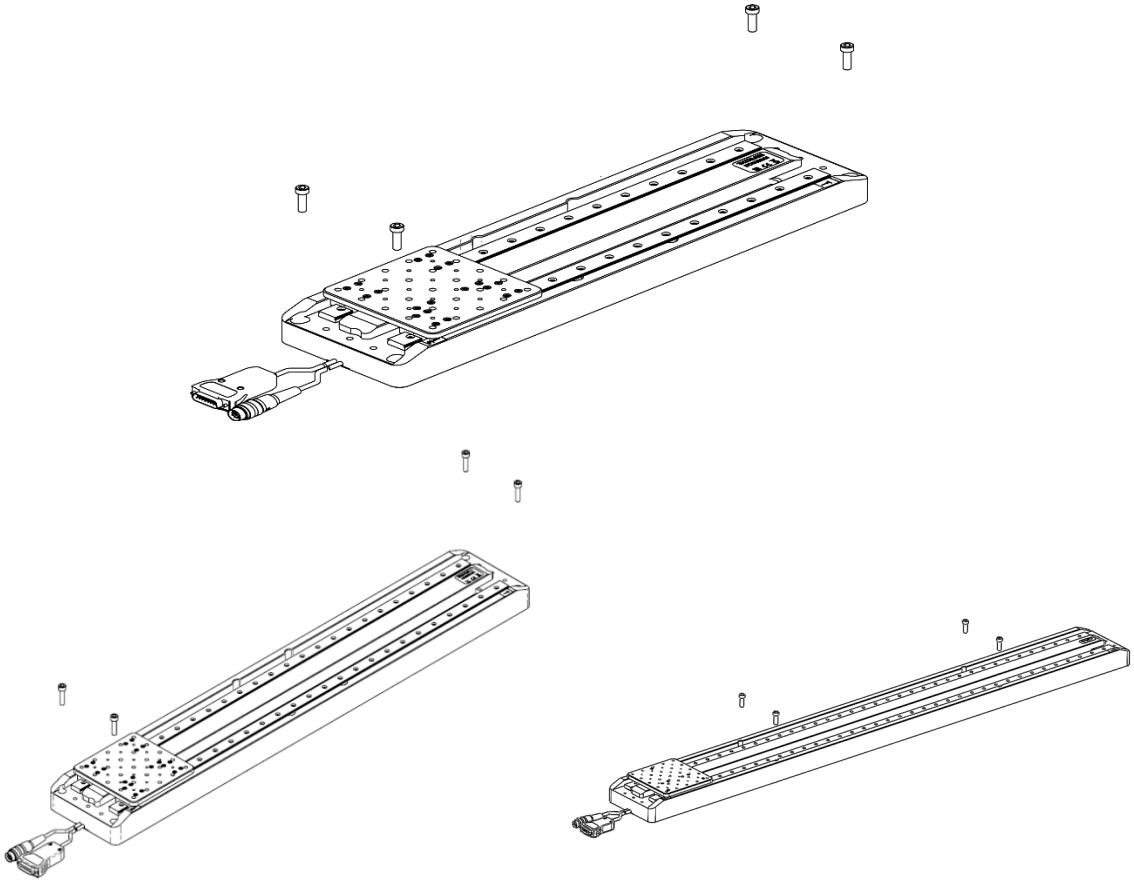


***Figure 9 DDS300(/M), DDS600(/M), and DDS1000(/M) Stage Mounting***

When mounting the stage to the work surface, use only the mounting holes located at the ends of the stage, as shown above. Stage performance may be affected if the mounting surface is not flat. The pads at the ends of the stage and the pad in the middle are not coplanar. Use the center mounting holes only when the ends of the stage are unsupported.

When securing the stage, ensure that the base plate is not distorted. Base plate warping can increase stiffness in the bearing rails and degrade motion performance.

After mounting, if increased resistance is observed when moving the top platform, the most likely cause is excessive tightening torque on the mounting bolts.

Figure 10 illustrates a typical XY configuration in which the upper stage is bolted to a mounting plate attached to the lower stage. Any stage from the DDS300(/M)-DDS1000(/M) range may be used as the base stage. However, only the DDS300(/M) is suitable for use as the upper stage.

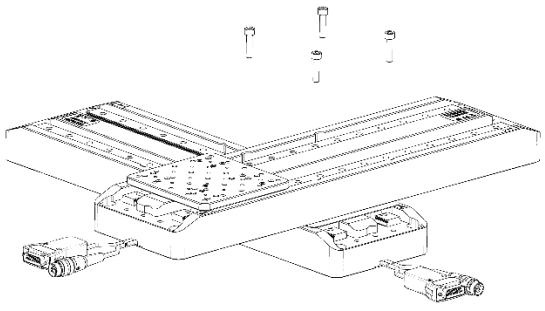


***Figure 10 XY Configuration***

The stage can also be mounted on its side using two AP90RL(/M) brackets, as shown in Figure 11. Tighten all four mounting screws using a diagonal (cross) pattern.

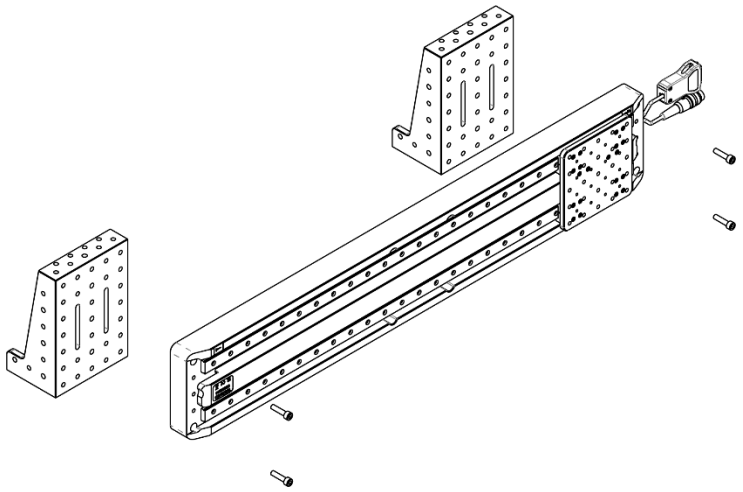


***Figure 11 Side Mounting***

**NOTICE**

When mounting the stage on its side, ensure that the cable exit is positioned on the right-hand side, as shown above. Mounting the stage with the cable exit on the left-hand side may damage the internal cable management system.

**⚠CAUTION**

Ensure that all devices and components attached to the moving platform are securely fastened. Improperly secured components can become loose during operation and cause damage or injury.

## 3.5 Electrical Connections

The stage must be driven either by a Thorlabs BBD series controller or UMC series controller. Connect the motor leads to the MOTOR DRIVE connectors and the encoder leads to the FEEDBACK connectors. Ensure that the motor drive and corresponding feedback leads for each motor are connected to the correct controller channel.

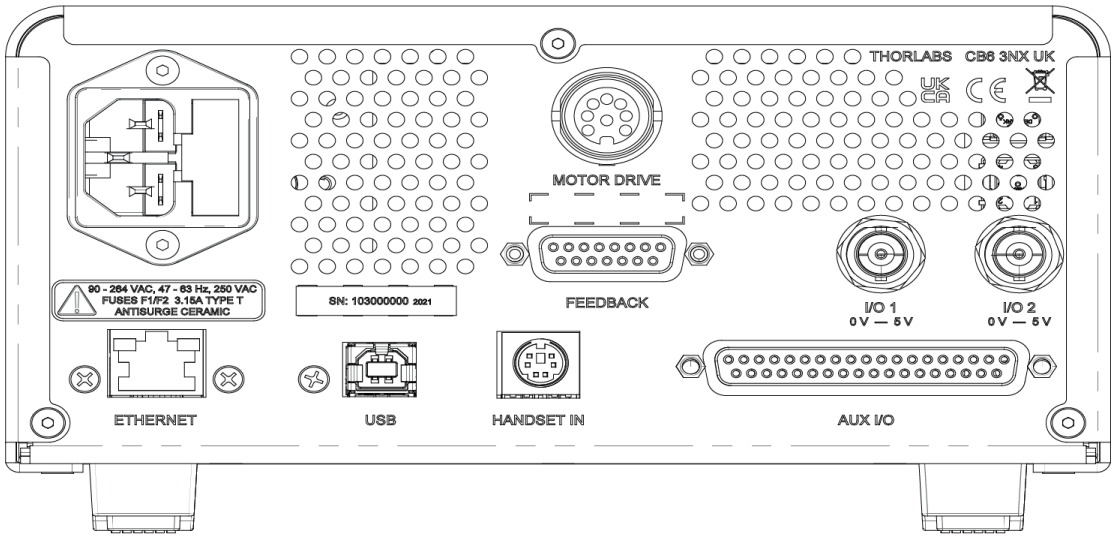
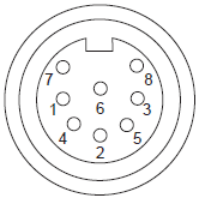



***Figure 12 BBD Series Controller Electrical Connections***

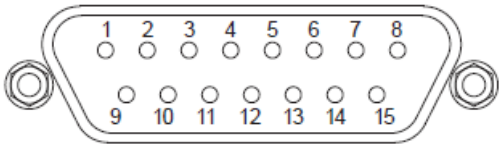
Pinout information for the motor drive and encoder feedback connectors on the motor flying leads is detailed below.




| Pin | Description | Pin | Description |
|---|---|---|---|
| **1** | Motor Phase B | **5** | Stage Identification |
| **2** | Ground | **6** | Enable |
| **3** | Unused (Motor Phase D) | **7** | Motor Phase C |
| **4** | Motor Phase A | **8** | + 5 V |

The signals present on pins 3 and 8 are not used by Brushless Controllers.

***Figure 13 Motor Drive Pin Out Details***




| Pin | Description | Pin | Description |
|---|---|---|---|
| **1** | Not Connected | **9** | Ground |
| **2** | Ground | **10** | Limit Switch+ |
| **3** | Not Connected | **11** | Limit Switch- |
| **4** | Encoder Index- | **12** | Encoder Index+ |
| **5** | QB– | **13** | QB+ |
| **6** | QA– | **14** | QA+ |
| **7** | 5 V* | **15** | Not Used |
| **8** | 5 V* | | |

* Pins 7 and 8 are short-circuited internally.

***Figure 14 Encoder Feedback Pin Out Details***

# Chapter 4 Operation

## 4.1 Getting Started

Thorlabs releases firmware updates to correct issues and add support for new features. Thorlabs recommend installing the latest software version and using the supplied firmware update utility. Failure to update the firmware may prevent the stage from being recognized by newer controllers.

The DDS300(/M), DDS600(/M), DDS800(/M), and DDS1000(/M) stages are designed for use with Thorlabs BBD30x brushless DC motor controllers or UMC series controllers. The stage connects to the controller via two

flying leads: one terminated with a D-sub connector for encoder feedback (FEEDBACK), and one terminated with an 8-pin round DIN connector for motor drive (MOTOR DRIVE).

**NOTICE**

Switch off the motor controller before connecting or disconnecting at any stage. Failure to power off the controller can damage the controller, the stage, or both.
When running custom motion sequences or under fault conditions, the stage may move unexpectedly. Exercise caution when working within the stage's range of motion.

For a complete tutorial on operating the stage, refer to the controller manual.

Perform the procedure below to control the stage:

1. Make the electrical connections as described in Section 3.5.
2. Manually move the moving platform along its full range of travel several times to overcome any storage resistance. Position the moving platform near the center of its travel.

**NOTICE**

Three-phase brushless DC motors are electronically commutated. The controller drives the motor coils using a precisely controlled waveform that depends on the position of the motor coil assembly. At power-up, this position of the coil housing is unknown. The controller determines it by briefly energizing the coils and measuring the resulting movement.
As a result, the stage may emit a slight buzzing sound and move slightly during power-up. Phase initialization can occur only if the stage is free to move. Before powering on the BBD series controller, ensure that stage motion is unobstructed.

3. Power on the controller and wait approximately 10 seconds until the Channel Enable LEDs begin flashing.
4. If using a joystick:
    - Press and hold the High/Low button for 2 seconds, then release to start the homing sequence.
    - When homing is complete, the green LED stops flashing.
5. If a joystick is not used:
    - Launch the software utility.
    - Click Home on each GUI panel.
    - When homing is complete, the Channel Enable LEDs stop flashing.

**NOTICE**

The stage incorporates reference markers on the encoder scale that are used to calibrate the position counter.
Homing is required because, at power-up, the motor (stage) is at an undefined position, and the position counter value is not valid. During the homing sequence, the motor moves to allow the encoder readhead to scan the encoder scale and locate the designated reference marker. Once the reference marker is detected, the position counter is reset, and the software displays a valid absolute position.

6. After homing, control the stage using the joystick, the GUI panel, or motion commands for relative and absolute moves. For details, see the BBD series controller manual and the software help file.

## 4.2 Kinesis Operation

The following sections provide a brief overview of operating the stage using Kinesis® software. The BBD30x controllers are also supported by the Thorlabs XA software application. For detailed operating instructions, refer to the manual for the applicable controller (BBD30x).

The stage is shipped with default parameter settings that provide satisfactory performance for most applications. Depending on system requirements, it may be necessary to adjust the PID loop parameters to optimize the stage response. If parameter adjustments are required, users can create and apply a custom settings group.

Do the following:

1. If Kinesis Software is not running, start the software
   (**Start > Programs > Thorlabs > Kinesis > Kinesis**)
   When the software starts, the server reads the connected stage and controller information. The main GUI panel is displayed in Figure 15.

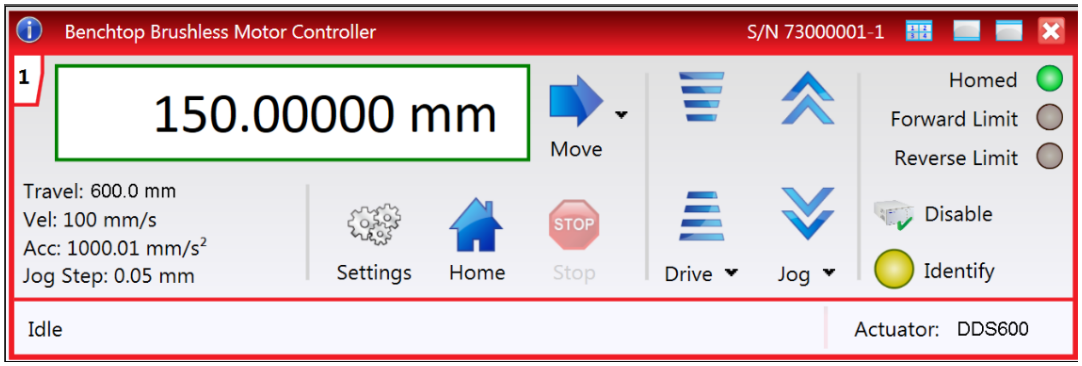



***Figure 15 Kinesis GUI Screen***

   Each MOTOR DRIVE connector contains an EEPROM that stores the factory default setup parameters. When the stage is connected, these parameters are automatically loaded into the controller at startup. The default settings are optimized for loads of up to 2.0 kg (4.4 lbs), 3.0 kg (6.6 lbs) and operating speeds of up to 100 mm/s. Depending on the applied load and the speed or duty cycle of the application, additional optimization of the position PID loop may be required. If issues such as closed-loop instability, lost motion, or incomplete moves occur, adjust the position loop PID parameters to tune the stage for the specific application. In most cases, only minor adjustments to the Proportional, Integral, and Derivative parameters are required. Achieving optimal performance typically involves iterative adjustment and testing. The following guidelines are provided to assist with PID parameter tuning when further adjustment is necessary.

2. On the GUI panel, click **Settings** to open the Settings dialog, and then select the **Advanced** tab as shown in Figure 16.

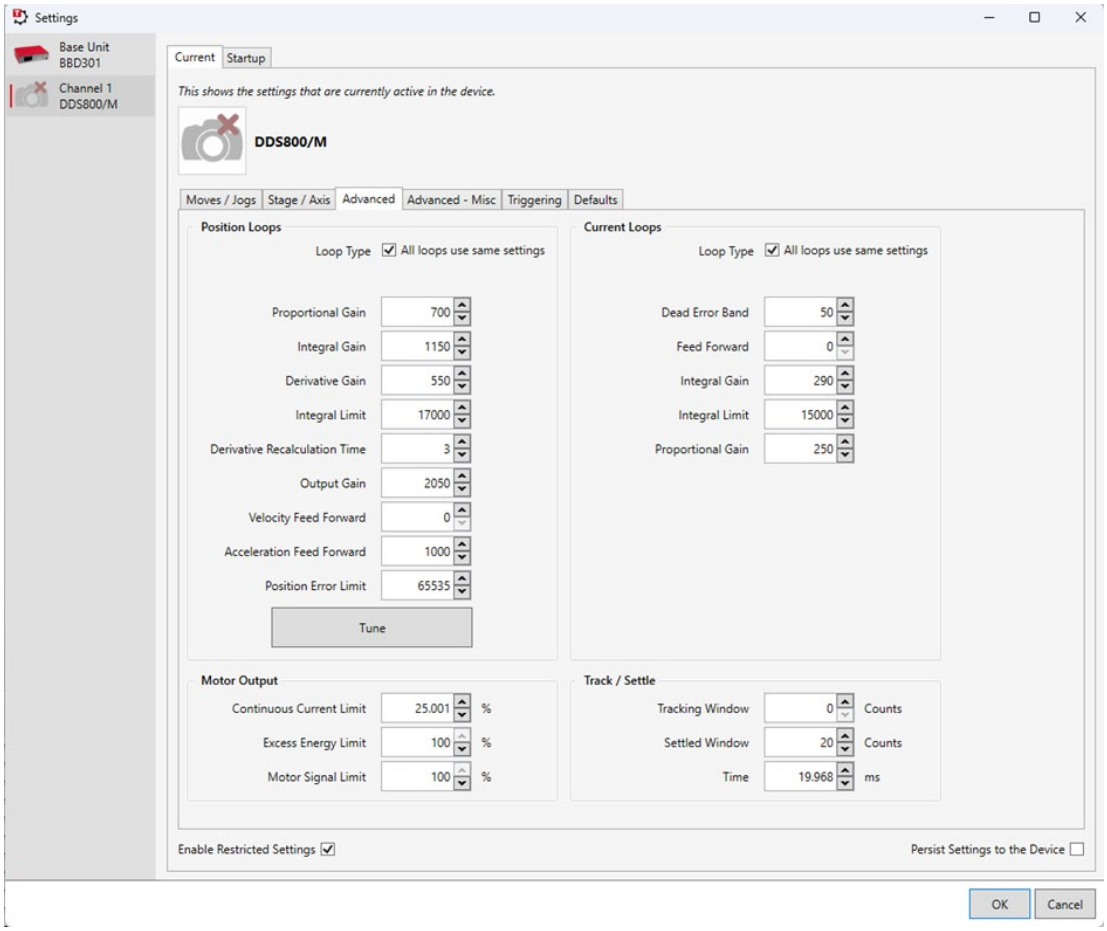



***Figure 16 Advanced Control Loop Settings***

3. Create a Custom Settings Group (see the Kinesis help file for instructions). Adjust the PID parameters fine-tune the control loop for your application. For detailed information on PID parameters, refer to the handbook supplied with the BBD30x controller.

   The stage is shipped with default PID parameters that are optimized for most applications and for loads up to 10 kg positioned at the center of the plate. These parameters are stored in the stage and are automatically loaded into the controller at power-up. If issues such as closed-loop instability, lost motion, or incomplete moves occur, the position PID parameters can be adjusted to optimize performance for the specific application. In most cases, only minor adjustments to the Proportional, Integral, and Derivative terms are required. Achieving optimal performance typically involves incremental adjustments and testing.

| Load | Proportional | Integral | Derivative | Integral Limit | Output Gain | Derivative Recalibration Time |
|---|---|---|---|---|---|---|
| 0-10 kg | 700 | 1150 | 550 | 17000 | 2050 | 3 |

***Table 1 Default PID Parameters***

4. After completing the parameter adjustments, select Persist Settings to Hardware, and then click OK. This ensures that the updated parameters are loaded automatically the next time the unit is powered on, even when a PC is not connected.

If settings persisted and the stage is subsequently replaced, additional parameter adjustment may be required to achieve optimal performance with the new stage.

### 4.3 Stopping the Stage

Enable or disable the drive channel by selecting Enable on the GUI panel or on the front panel of the controller. When the drive channel is enabled, the green indicator is illuminated. Disabling the channel removes drive power and allows the stage or actuator to be positioned manually.

During operation, stop stage motion at any time by selecting Stop on the GUI panel. Selecting Stop halts motion but does not remove power from the drive channel.

### 4.4 Position Error Messages

The maximum operating velocity of the encoder is 400 mm/s. At speeds above this limit, encoder pulses may be lost, resulting in incorrect position feedback. Because motor phase commutation relies on encoder feedback, loss of encoder pulses prevents normal operation.

When the stage is controlled by a BBD series controller, the maximum velocity is limited to safe values. However, if the controller output is disabled (while the controller remains connected and monitoring position) and the stage is moved manually at speeds exceeding 400 mm/s, this limit may be exceeded.

If manual movement above this speed occurs and the controller is subsequently used to drive the stage, incorrect encoder feedback can cause abnormal behavior, including sudden uncontrolled motion. Do not move the stage at excessive speed during manual operation.

The BBD series controllers include fault monitoring to detect encoder pulse loss. If this fault is detected, an error message is generated, and the controller must be powered off and restarted to restore proper phasing and commutation.

If this fault occurs while the stage is operated using a MJC2 or MJC3 joystick without a connected PC, the red LED on the joystick console illuminates and all operation is suspended until the controller is shut down and rebooted.

## Chapter 5 Maintenance and Cleaning

Prolonged repetitive motion can cause lubricants to accumulate, which may result in uneven motion. Periodically power down the stage and move the top platform from one end of travel to the other several times to redistribute the bearing lubricant.

The product is maintenance-free for up to 5 million cycles. If any issues occur during this period, contact local Thorlabs Technical Support for assistance. After 5 million cycles, replacement of the internal flexible cable and relubrication of the bearing carriers is recommended. Contact Thorlabs Technical Support for detailed service instructions.

**⚠CAUTION** Prolonged and repeated contact of the lubricant used on the linear rail bearing may cause skin irritation. Gloves should be worn before contact.

**NOTICE** The coating on the bearing rails can be damaged or removed by solvents, such as paint thinners, and other aggressive substances. Do not allow these substances to contact the bearing rails.

# Chapter 6 Troubleshooting

If an unexpected obstruction is encountered during stage motion, the control system interface software disables current to the affected drive channel. Depending on the condition, the channel may or may not be fully disabled. After removing the obstruction, disable the affected controller channel to clear any fault conditions, and then enable the channel before resuming operation. In the event of a product malfunction or breakdown, contact **Thorlabs Technical Support** for assistance.

For a given load, the recommended PID values may require adjustment by approximately ±10% to achieve optimal performance. Use the following troubleshooting guide to fine-tune the controller settings:

Stage Overshoots the Target Position
Possible cause: Excessive integral action or insufficient damping.
Recommended action:

- Reduce the Integral (I) term.
- Increase the Proportional (P) term.
- Increase the Derivative (D) term.

Stage Fails to Reach the Target Position
Possible cause: Insufficient corrective action.
Recommended action:

- Increase the Integral (I) term.
- Increase the Proportional (P) term.

Motion Is Unstable
Possible cause: Excessive proportional or integral gain.
Recommended action:

- Reduce the Proportional (P) term.
- Reduce the Integral (I) term.
- Increase the Derivative (D) term.

Stage Produces Excessive Noise
Possible cause: Derivative gain is too high.
Recommended action:

- Reduce the Derivative (D) term.

Stage Is Overly Sensitive to Noise
Possible cause: Excessive derivative action amplifying signal noise.
Recommended action:

- Reduce the Derivative (D) term.

# Chapter 7 Accessories List

The Thorlabs MJC2 joystick console supports remote operation and provides manual positioning control of the stage. The console includes an XY Hall-effect joystick and a speed adjustment control for coarse or fine motion. The enclosure is constructed from anodized aluminum.

An optional DDSA04(/M) adapter plate is available to increase the moving platform height to 62.5 mm, enabling compatibility with Thorlabs 3-axis positioning stage assemblies.

| Part Number | Description |
|---|---|
| **MJC2** | 2-Axis USB HID Joystick |
| **MJC3** | 3-Axis USB HID Joystick |
| **DDSA04(/M)** | Adapter Plate for 62.5 mm Deck Height |

# Chapter 8 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.



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