ONE-XY Series
Integrated XY Linear Motor Stages

Warranty

Newport Corporation warrants this product to be free from defects in material and workmanship for a period of 1 year from the date of shipment. If found to be defective during the warranty period, the product will either be repaired or replaced at Newport's discretion.

To exercise this warranty, write or call your local Newport representative, or contact Newport headquarters in Irvine, California. You will be given prompt assistance and return instructions. Send the instrument, transportation prepaid, to the indicated service facility. Repairs will be made and the instrument returned, transportation prepaid. Repaired products are warranted for the balance of the original warranty period, or at least 90 days.

Limitation of Warranty

This warranty does not apply to defects resulting from modification or misuse of any product or part.

CAUTION

Warranty does not apply to damages resulting from:

- Incorrect usage:
  - Load on the stage greater than maximum specified load.
  - Carriage speed higher than specified speed.
  - Improper grounding.
    - Connectors must be properly secured.
    - When the load on the stage represents an electrical risk, it must be connected to ground.
  - Excessive or improper cantilever loads.

- Modification of the stage or any part thereof.

This warranty is in lieu of all other warranties, expressed or implied, including any implied warranty of merchantability or fitness for a particular use. Newport Corporation shall not be liable for any indirect, special, or consequential damages.

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Original instructions.

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Service Form .................................................................................15
The manufacturer:
Newport Corp.
1791 Deere Avenue
Irvine, CA 92606 - USA

Hereby declares that the product:
• Description: "ONE-XY"
• Function: Integrated XY Linear Motor Stage
• Type of equipment: Special Purpose Laboratory Equipment Consisting of 2 Devices, an X & Y Axis Linear Motorized Stage and a CE Compliant Programmable Controller with Interconnect Cable
– complies with all the relevant provisions of the Directive 2014/30/EU relating to electromagnetic compatibility (EMC).
– complies with all the relevant provisions of the Directive 2006/95/EC relating to electrical equipment designed for use within certain voltage limits (Low Voltage).
– complies by exemption granted to test, Measurement and Control equipment with all the relevant provisions of the Directive 2011/65/EU relating to the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS2).

– was designed and built in accordance with the following harmonised standards:
• EN 61326-1:2013 « Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements »
• EN 61010-1:2010 « Safety requirements for electrical equipment for measurement, control and laboratory use – Part 1: General requirements »
• EN 55011:2009 Classe A

– was designed and built in accordance with the following other standards:
• EN 61000-3-2
• EN 61000-3-3
• EN 61000-4-2
• EN 61000-4-3
• EN 61000-4-4
• EN 61000-4-5
• EN 61000-4-6
• EN 61000-4-8
• EN 61000-4-11
• EN 62311

Date: 22/07/2015
Dominique DEVIDAL
Quality Director

MICRO-CONTROLE Spectra-Physics
Zone Industrielle
F-45340 Beaune La Rolande, France
Definitions and Symbols

The following terms and symbols are used in this documentation and also appear on the product where safety-related issues occur.

General Warning or Caution

The exclamation symbol may appear in warning and caution tables in this document. This symbol designates an area where personal injury or damage to the equipment is possible.

The following are definitions of the Warnings, Cautions and Notes that may be used in this manual to call attention to important information regarding personal safety, safety and preservation of the equipment, or important tips.

WARNING
Warning indicates a potentially dangerous situation which can result in bodily harm or death.

CAUTION
Caution indicates a potentially hazardous situation which can result in damage to product or equipment.

NOTE
Note indicates additional information that must be considered by the user or operator.

European Union CE Mark

The presence of the CE Mark on Newport Corporation equipment means that it has been designed, tested and certified as complying with all applicable European Union (CE) regulations and recommendations.

Warnings and Cautions

ATTENTION
This stage is a Class A device. In a residential environment, this device can cause electromagnetic interference. In this case, suitable measures must be taken by the user.
WARNING

When the ONE-XY stage is installed or combined with other instruments in a machine, additional testing to directive 2006/42/EC may be required. It is the responsibility of the end-user or integrator to perform a risk-analysis and the necessary tests to conform to the EC directives. Newport is not liable for damages caused by not executing this responsibility.

Warnings

WARNING

The motion of objects of all types carries potential risks for operators. Ensure the protection of operators by prohibiting access to the dangerous area and by informing the personnel of the potential risks involved.

WARNING

The magnetic channel included in this device has the potential to disrupt pacemakers. Consequently, it is recommended that individuals maintain a distance of 1 meter or more from the stage as a precautionary measure.

WARNING

Do not use this stage when its motor is emitting smoke or is unusually hot to the touch or is emitting any unusual odor or noise or is in any other abnormal state.

Stop using the stage immediately, switch off the motor power and then disconnect the electronics power supply.

After checking that smoke is no longer being emitted contact your Newport service facility and request repairs. Never attempt to repair the stage yourself as this can be dangerous.

WARNING

Make sure that this stage is not exposed to moisture and that liquid does not get into the stage.

Nevertheless, if any liquid has entered the stage, switch off the motor power and then disconnect the electronics from power supply. Contact your Newport service facility and request repairs.
WARNING
Do not insert or drop objects into this stage, this may cause an electric shock, or lock the drive.
Do not use this stage if any foreign objects have entered the stage. Switch off the motor power and then disconnect the electronics power supply. Contact your Newport service facility for repairs.

WARNING
Do not place this stage in unstable locations such as on a wobbly table or sloping surface, where it may fall or tip over and cause injury.
If this stage has been dropped or the case has been damaged, switch off the motor power and then disconnect the electronics power supply. Contact your Newport service facility and request repairs.

WARNING
Do not attempt to modify this stage; this may cause an electric shock or downgrade its performance.

WARNING
Do not exceed the usable depth indicated on the mounting holes (see section “Dimensions”). Longer screws can damage the mechanics or cause a short-circuit.

WARNING
Do not exceed speed and load limitations as specified in this manual.
Caution

CAUTION

Do not place this stage in a hostile environment such as X-Rays, hard UV,... or in any vacuum environment.

CAUTION

Do not place this stage in a location affected by dust, oil fumes, steam or high humidity. This may cause an electric shock.

CAUTION

Do not leave this stage in places subject to extremely high temperatures or low temperatures. This may cause an electric shock.

- Operating temperature: 0 to +50 °C
- Storage/Operating altitude: 1000 m
- Storage/Operating humidity: 10 to 80% non-condensing
- Storage temperature: -10 to +40 °C (in its original packaging)

CAUTION

Do not move this stage if its motor power is on.

Make sure that the cable to the electronics is disconnected before moving the stage. Failure to do so may damage the cable and cause an electrical shock.

CAUTION

Prior to transporting the stage, secure the axis by re-installing the shipping screws that lock the axis together.

CAUTION

Be careful that the stage is not bumped when it is being carried. This may cause it to malfunction.

CAUTION

When handling this stage, always unplug the equipment from the power source for safety.

CAUTION

When the carriage is in its end-of-run position, it is strongly recommended not to go beyond this point as this may damage the stage mechanism.

CAUTION

Contact your Newport service facility to request cleaning and specification control every year.
1.0 Introduction

This manual provides operating instructions for the ONE-XY stage. Inside this manual you will find useful information and technical references. It is recommended that the user download all support documentation from the ONE-XY page of the Newport website to have as reference.

**RECOMMENDATION**

We recommend you carefully read the chapter “Connection to electronics” before using the ONE-XY stage.
2.0 Description

The ONE-XY series of integrated XY linear motor stages are designed to eliminate the integration of individual X and Y stages and increase system stiffness for dynamic applications. The available travel ranges from 60 mm to 400 mm, with precise orthogonality alignment between the X and Y axes.

The stages feature robust components and deliver high performance, making them ideal solutions for precision industrial applications such as semiconductor wafer inspection, microelectronics test and assembly, metrology, laser microprocessing.

The ONE-XY has a monolithic, aluminum middle plate that is stiffer than the conventional interface between two individual linear stages. The linear motor drive is an iron-less design that is suited for high precision positioning, but at the same time offers high dynamic performance. Cross-roller bearings provide high load capacity as well as straight trajectories.

Precision position feedback is supplied by a highly repeatable linear scale mounted inside the stage. The encoder signals are interpolated by Newport’s XPS motion controller with 50 nm MIM for outstanding Minimum Incremental Motion, repeatability, and stability. Absolute home position and limit signals are incorporated to improve repeatability and reliability, while simplifying the design with less electronics and mechanical parts.

2.1 Design Details

<table>
<thead>
<tr>
<th>Base Material</th>
<th>Aluminum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bearings</td>
<td>High precision crossed roller bearings</td>
</tr>
<tr>
<td>Drive System</td>
<td>3-phase synchronous ironless core linear motor</td>
</tr>
<tr>
<td>Motor Initialization</td>
<td>Done by controller</td>
</tr>
<tr>
<td>Feedback</td>
<td>Non-contact optical encoder</td>
</tr>
<tr>
<td>Limit &amp; Home Switches</td>
<td>Integrated home and end of travel limits</td>
</tr>
<tr>
<td>Cable</td>
<td>High Flex, 10M cycle, 3 m length</td>
</tr>
<tr>
<td>MTBF</td>
<td>20,000 hours</td>
</tr>
</tbody>
</table>
3.0 Characteristics

3.1 Definitions
Specifications of our products are established in reference to ISO 230 standard part II “Determination of accuracy and repeatability of positioning numerically controlled axes”.

This standard gives the definition of position uncertainty which depends on the 3 following parameters:

**Absolute Accuracy**
Difference between ideal position and real position.

**Accuracy**
Difference between ideal position and real position after the compensation of linear errors.

Linear errors include: cosine errors, inaccuracy of screw or linear scale pitch, angular deviation at the measuring point (Abbe error) and thermal expansion effects. All Newport motion electronics can compensate for linear errors.

The relation between absolute accuracy and on-axis accuracy is as follows:

\[
\text{Absolute Accuracy} = \text{Accuracy} + \text{Correction Factor} \times \text{Travel}
\]

**Repeatability**
Ability of a system to achieve a commanded position over many attempts.

**Reversal Value (Hysteresis)**
Difference between actual position values obtained for a given target position when approached from opposite directions.

**Minimum Incremental Motion (MIM or Sensitivity)**
The smallest increment of motion a device is capable of delivering consistently and reliably.

**Resolution**
The smallest increment that a motion device can theoretically move and/or detect. Resolution is not achievable, whereas MIM, is the real output of a motion system.

**Yaw, Pitch**
Rotation of carriage around the Z axis (Yaw) or Y axis (Pitch), when it moves.

The testing of accuracy, repeatability, and reversal error are made systematically with test equipment in controlled environment (20 ±1 °C).

A linear cycle with 21 data points on the travel and 4 cycles in each direction gives a total of 168 points.

**Guaranteed and Typical Specifications**
Guaranteed maximum performance values are verified per Newport’s A167 metrology test procedure. For more information, please consult the metrology tutorial section in the Newport catalog or at [www.newport.com](http://www.newport.com)
### 3.2 Mechanical Specifications

<table>
<thead>
<tr>
<th>ONE-XY60</th>
<th>ONE-XY60HA</th>
<th>ONE-XY100</th>
<th>ONE-XY100HA</th>
<th>ONE-XY200</th>
<th>ONE-XY200HA</th>
<th>ONE-XY300</th>
<th>ONE-XY300HA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel Range (mm)</td>
<td>50 x 50</td>
<td>90 x 90</td>
<td>190 x 190</td>
<td>290 x 290</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum Incremental Motion (µm)</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
</tr>
<tr>
<td>Accuracy, Typical (Guaranteed) (µm)</td>
<td>±0.4 (±1.5)</td>
<td>n/a (±0.3)</td>
<td>±0.5 (±2.0)</td>
<td>n/a (±0.3)</td>
<td>n/a (±2.5)</td>
<td>n/a (±0.4)</td>
<td>n/a (±3.0)</td>
</tr>
<tr>
<td>Repeatability</td>
<td>±0.040 (±0.070)</td>
<td>±0.040 (±0.080)</td>
<td>n/a (±0.090)</td>
<td>n/a (±0.100)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Straightness, Typical (µm)</td>
<td>±0.5</td>
<td>±1.0</td>
<td>±2.0</td>
<td>±3.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flatness, Typical (µm)</td>
<td>±0.5</td>
<td>±1.0</td>
<td>±2.0</td>
<td>±3.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pitch, Typical (Guaranteed) (µrad)</td>
<td>±0.040 (±0.070)</td>
<td>±0.040 (±0.080)</td>
<td>n/a (±0.090)</td>
<td>n/a (±0.100)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yaw, Typical (Guaranteed) (µrad)</td>
<td>±0.040 (±0.070)</td>
<td>±0.040 (±0.080)</td>
<td>n/a (±0.090)</td>
<td>n/a (±0.100)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roll (µrad)</td>
<td>58</td>
<td>58</td>
<td>72</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orthogonality (µrad)</td>
<td>96</td>
<td>96</td>
<td>96</td>
<td>96</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. Speed (m/s)</td>
<td>0.3</td>
<td>0.4</td>
<td>0.5</td>
<td>0.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. Acceleration (G)</td>
<td>0.3</td>
<td>0.3</td>
<td>0.2</td>
<td>0.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. Load Capacity (N)</td>
<td>100</td>
<td>120</td>
<td>150</td>
<td>350</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight [lb (kg)]</td>
<td>6.4 (2.9)</td>
<td>12.8 (5.8)</td>
<td>26.4 (12)</td>
<td>165 (75)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1) Specifications measured on stage centerline, 50 mm above mounting surface. Newport provides NIST traceable, test results.
2) Flatness specifications dependent on system base. Contact Newport for more information.
3) Stage performance values at no load. Does not account for drive or resolution effects.
4) To obtain arcsec units, divide m rad value by 4.8.
5) Over 80% of travel range.

**Notes:** HA versions are error mapped in XY. Speed and acceleration can be higher with other drive options.

---

**NOTE**

The following specifications are controller/drive dependent. Refer to the ONE-XY Series page on www.newport.com for specifications achievable with specific Newport controller/drive combination.

- MIM
- Accuracy
- Repeatability
- Max Speed
- Max Acceleration

---

**CAUTION**

To reach stated specifications, the stages must be fixed on a plane surface with a flatness of 5 µm.

---

### 3.3 Hard Stop

Hard stops are supplied, only for emergency use.

### 3.4 Load Characteristics and Stiffness

**Normal Load Capacity (Cz)**

Maximum load a stage can move while maintaining specifications.

---

**NOTE**

For other than centered loads, please contact Newport technical support.
4.0 Drive and Motor

4.1 Motor characteristics (Direct Drive Brushless Motor)

<table>
<thead>
<tr>
<th>Magnet Pitch [N-N] (mm)</th>
<th>ONE-XY50</th>
<th>ONE-XY100</th>
<th>ONE-XY200</th>
<th>ONE-XY300</th>
<th>ONE-XY400</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30.48</td>
<td>30.48</td>
<td>30.48</td>
<td>30.48</td>
<td>30.48</td>
</tr>
<tr>
<td>Max. Voltage [Line to Line] (V)</td>
<td>500</td>
<td>500</td>
<td>500</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Electrical Time Constant (ms)</td>
<td>0.19</td>
<td>0.19</td>
<td>0.20</td>
<td>0.20</td>
<td>0.20</td>
</tr>
<tr>
<td>Max. Motor Temperature (°C)</td>
<td>130</td>
<td>130</td>
<td>130</td>
<td>130</td>
<td>130</td>
</tr>
</tbody>
</table>

Motor Connection: DELTA DELTA DELTA DELTA DELTA

Motor Constant (Nm/W)

<table>
<thead>
<tr>
<th>Force Constant (N/Apk)</th>
<th>ONE-XY50</th>
<th>ONE-XY100</th>
<th>ONE-XY200</th>
<th>ONE-XY300</th>
<th>ONE-XY400</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8.1</td>
<td>16.3</td>
<td>28.7</td>
<td>43.0</td>
<td>57.4</td>
</tr>
</tbody>
</table>

Phase Resistance (Ω @ 25 °C) (Ω)

<table>
<thead>
<tr>
<th>Phase Resistance (Ω @ 25 °C) (Ω)</th>
<th>ONE-XY50</th>
<th>ONE-XY100</th>
<th>ONE-XY200</th>
<th>ONE-XY300</th>
<th>ONE-XY400</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5.8</td>
<td>11.6</td>
<td>11.7</td>
<td>17.6</td>
<td>23.5</td>
</tr>
</tbody>
</table>

Thermal Resistance (°C/W)

<table>
<thead>
<tr>
<th>Thermal Resistance (°C/W)</th>
<th>ONE-XY50</th>
<th>ONE-XY100</th>
<th>ONE-XY200</th>
<th>ONE-XY300</th>
<th>ONE-XY400</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.1</td>
<td>2.1</td>
<td>2.3</td>
<td>3.5</td>
<td>4.7</td>
</tr>
</tbody>
</table>

Inductance (mH)

<table>
<thead>
<tr>
<th>Inductance (mH)</th>
<th>ONE-XY50</th>
<th>ONE-XY100</th>
<th>ONE-XY200</th>
<th>ONE-XY300</th>
<th>ONE-XY400</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.1</td>
<td>2.1</td>
<td>2.3</td>
<td>3.5</td>
<td>4.7</td>
</tr>
</tbody>
</table>

Continuous Resistance (Ω)

<table>
<thead>
<tr>
<th>Continuous Resistance (Ω)</th>
<th>ONE-XY50</th>
<th>ONE-XY100</th>
<th>ONE-XY200</th>
<th>ONE-XY300</th>
<th>ONE-XY400</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>23</td>
<td>47</td>
<td>93</td>
<td>140</td>
<td>186</td>
</tr>
</tbody>
</table>

Continuous Current (Apk)

<table>
<thead>
<tr>
<th>Continuous Current (Apk)</th>
<th>ONE-XY50</th>
<th>ONE-XY100</th>
<th>ONE-XY200</th>
<th>ONE-XY300</th>
<th>ONE-XY400</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2.9</td>
<td>2.9</td>
<td>3.2</td>
<td>3.2</td>
<td>3.2</td>
</tr>
</tbody>
</table>

Peak Force (N)

<table>
<thead>
<tr>
<th>Peak Force (N)</th>
<th>ONE-XY50</th>
<th>ONE-XY100</th>
<th>ONE-XY200</th>
<th>ONE-XY300</th>
<th>ONE-XY400</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>75</td>
<td>151</td>
<td>295</td>
<td>442</td>
<td>589</td>
</tr>
</tbody>
</table>

Peak Current (A)

<table>
<thead>
<tr>
<th>Peak Current (A)</th>
<th>ONE-XY50</th>
<th>ONE-XY100</th>
<th>ONE-XY200</th>
<th>ONE-XY300</th>
<th>ONE-XY400</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9.2</td>
<td>9.2</td>
<td>10.3</td>
<td>10.3</td>
<td>10.3</td>
</tr>
</tbody>
</table>

Back EMF Constant (V/m/s)

<table>
<thead>
<tr>
<th>Back EMF Constant (V/m/s)</th>
<th>ONE-XY50</th>
<th>ONE-XY100</th>
<th>ONE-XY200</th>
<th>ONE-XY300</th>
<th>ONE-XY400</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8.1</td>
<td>16.3</td>
<td>28.7</td>
<td>43.0</td>
<td>57.4</td>
</tr>
</tbody>
</table>

CAUTION

High RMS current will generate motor heating which will degrade characteristics of the stage, such as repeatability, accuracy, etc...

4.2 Command Signals

NOTE

The values above indicate voltage induced by energized coil of one phase on next phase coil. A positive value for U-V would indicate a higher voltage on U relative to V.
4.4 Position Feedback Signals

<table>
<thead>
<tr>
<th>Signal description / Voltage / wiring</th>
<th>Renishaw standard 1 Vpp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference mark position</td>
<td>see drawing “Sensor Positions”</td>
</tr>
<tr>
<td>Resolution</td>
<td>Scale pitch 20 µm</td>
</tr>
<tr>
<td>Maximum speed</td>
<td>10 m/s</td>
</tr>
</tbody>
</table>

4.5 Pinouts

The pinout diagrams for the ONE-XY stage connectors are shown below.

Motor (SUB-D9M Connector)

- Max. voltage: 96 V
- Max. rms Current: 3.1 A
**WARNING**

**GROUNDING:** The stage’s protective ground is located on pin #8 of the motor power connector.

If you are using grounds other than those provided by Newport, you must connect pin #8 to a ground connection.

---

**Encoder and End-of-Runs (SUB-D15M Connector)**

![Diagram of Encoder and End-of-Runs (SUB-D15M Connector)]

---

### 4.6 ONE-XY Cable Wiring

All ONE-XY stages are delivered with the three cables required for operation. The wiring diagrams and connectors for these cables are provided in the following diagrams. When operating the non-Newport controllers, it is recommended to adhere to the wiring conventions presented here and to use cabling with similar characteristics.

![Diagram of ONE-XY Stage Wiring](image)

---

**NOTE**

This is the wiring of the cables that provided with the connection to Newport Controllers, for third party controllers, we recommend using a cable with similar characteristics.
5.0 Stage Installation

5.1 Unpacking

The ONE-XY stage will be delivered to your site in packaging designed for safe transport. Larger ONE-XY stages will be delivered in Pelican cases. All accessories will be included in this case.

Attached to the body of the stage are handles for safe removal from packaging. It is recommended to carefully lift the stage from packaging using these handles.

CAUTION

The largest stages are quite heavy, and we recommend a two person job or by some cherry picker.

CAUTION

Before operating the stage, remove the screws that hold the stages during shipment.
NOTE

Put away shipping screws, in case the unit needs to be returned to the factory.

The stage will come delivered with a control report that indicates performance of your stage within guaranteed specification. These measurements were taken in a controlled environment under flat mounting conditions.

5.2 Mounting Conditions

ONE-XY stages require the following mounting conditions for best performance.

<table>
<thead>
<tr>
<th>Installation Considerations</th>
<th>5 µm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting surface flatness</td>
<td></td>
</tr>
<tr>
<td>Mounting screw torque</td>
<td>7 Nm</td>
</tr>
</tbody>
</table>

Mounting holes to a table, whether a granite or flat steel table can be accessed by moving the stage manually.
6.0 Connection to Newport Controllers

NOTE
Visit www.newport.com for compatible Newport controllers.

6.1 Warnings on Controllers
Controllers are intended for use by qualified personnel who recognize shock hazards and are familiar with safety precautions required to avoid possible injury. Read the controller user’s manual carefully before operating the instrument and pay attention to all written warnings and cautions.

Specifications listed in this guide are based on operation with Newport Control and Drive Electronics. The XPS Controller is delivered with a configuration file that has been developed at the factory for operation in a no-load condition for immediate plug-and-play operation.

Newport has developed technical notes which guide the configuration process for operation of ONE-XY stages with a non-zero, application specific payload.

For operation under such conditions the Scaling Acceleration, Acceleration Limit and PID tuning parameters may need to be adjusted. Please download our tech notes on Scaling Acceleration, Tuning and configuring direct drive stages on the ONE-XY page of the Newport website.

For additional information about controllers, visit www.newport.com.

WARNING
Disconnect the power plug under the following circumstances:
• If the power cord or any attached cables are frayed or damaged in any way.
• If the power plug is damaged in any way.
• If the unit is exposed to rain, excessive moisture, or liquids are spilled on the unit.
• If the unit has been dropped or the case is damaged.
• If you suspect service or repair is required.
• Whenever you clean the electronics unit.

CAUTION
To protect the unit from damage, be sure to:
• Keep all air vents free of dirt and dust.
• Keep all liquids away from the unit.
• Do not expose the unit to excessive moisture (85% humidity).
• Read this manual before using the unit for the first time.

WARNING
All attachment plug receptacles in the vicinity of this unit are to be of the grounding type and properly polarized.
Contact your electrician to check your receptacles.
WARNING

This product operates with voltages that can be lethal.
Pushing objects of any kind into stage slots or holes, or spilling any liquid on the product, may affect voltage points or short out parts. Any unauthorized access to internal electronics represents a potential shock hazard and precaution should be taken.

6.2 Connection

On each stage there is a label which indicates the stage name and serial number.

WARNING

Always turn the controller’s power OFF before connecting to a stage.

Stages may be connected to the rear panel motor connectors labeled “Motor...” at any time prior to power-up with the supplied cable assemblies.

6.3 Cables

All ONE-XY stages are delivered with a set of 3-meter cables with SUB-D connectors for direct connection to Newport Controllers.

WARNING

ONE-XY Series translation stages can only operate with cable lengths of 3 m or less.

WARNING

These cables are shielded. For correct operation, make sure to lock connectors (ground continuity provided by cables).

WARNING

Keep the cables at a safe distance from other electrical cables in your environment to avoid potential cross talk.
7.0 Connection to Non-Newport Controllers

Newport stages can be operated with Non-Newport controllers. However, under such operational conditions Newport makes no guarantee regarding achievable specifications. To aid Newport customers using non-Newport Controllers with ONE-XY stages we have provided wiring conventions and motor characteristics below. It should be noted, damage caused by improper configuration or operation while in use with non-Newport controllers is not covered by the warranty.

Please refer to Design Details and Specifications for more information to help configure the stage with your controller. Newport also provides a tech note on configuring third party stages with Newport controllers on ONE-XY website, which may be useful as a reference.

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**WARNING**

Newport is not responsible for malfunction or damage of ONE-XY stages when used with non-Newport controllers.

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**WARNING**

Newport guarantees "CE" compliance of ONE-XY stages only if used with the Newport cables and a XPS series controller.

It is the customer’s responsibility to modify the cable and take care of sensor signal connections, when using the stage with non-Newport controllers.
8.0 Dimensions

MODEL | TRAVEL | L | W | H | A
--- | --- | --- | --- | --- | ---
ONE-XY60 | 1.97 | 4.92 | 4.92 | 2.36 | 6.0
| (50) | (125) | (125) | (60) | (152.4)
ONE-XY100 | 7.48 | 10.83 | 10.83 | 2.36 | 6.0
| (190) | (275) | (275) | (60) | (152.4)
ONE-XY200 | 11.42 | 16.69 | 16.69 | 3.94 | 12.0
| (290) | (500) | (500) | (100) | (304.8)

MODEL SHOWN: ONE-XY100
DIMENSIONS IN INCHES (AND MILLIMETERS)

MODEL | B | C | D | E | F
--- | --- | --- | --- | --- | ---
ONE-XY60 | 3.0 | 3.94 | 2.95 | 1.81 | 2.36
| (76.2) | (100) | (75) | (46) | (60)
ONE-XY100 | 4.0 | 4.92 | 3.94 | 1.81 | 4.72
| (101.6) | (125) | (100) | (46) | (120)
ONE-XY200 | 6.0 | 6.89 | 4.92 | 4.72 | 6.0
| (152.4) | (175) | (170) | (170)
ONE-XY300 | 8.0 | 13.78 | 9.84 | 6.69 & 8.86 | 10.83
| (203.2) | (350) | (250) | (170 & 225) | (275)

MODEL SHOWN: ONE-XY100
DIMENSIONS IN INCHES (AND MILLIMETERS)

MODEL | G | I | J | K | M
--- | --- | --- | --- | --- | ---
ONE-XY60 | 1.38 | 1/4-20 | 4 HOLES | 4 HOLES |
| (35) | or M6 | M5 | –
ONE-XY100 | 2.76 | 1/4-20 | 4 HOLES | 6 HOLES |
| (70) | or M6 | M4 | M5 | 2.05
| | | | (52)
ONE-XY200 | 2.76 | 1/4-20 | 8 HOLES | 6 HOLES |
| (70) | or M6 | M5 | M6 | 2.96
| | | | (80)
ONE-XY300 | 3.94 | 5/16-18 | 8 HOLES | 6 HOLES |
| (100) | or M6 | M5 | M5 | 3.78
| | | | (96)

Newport®
9.0 Maintenance

RECOMMENDATION
It is recommended to contact our After Sales Service which will know to define the appropriate maintenance for your application.

9.1 Maintenance
The ONE-XY stage requires no particular maintenance. Nevertheless, this is a precision mechanical device that must be kept and operated with caution.

PRECAUTIONS
The ONE-XY stage must be used or stocked in a clean environment, without dust, humidity, solvents or other substances.

RECOMMENDATION
It is recommended to return your ONE-XY stage to Newport's After Sales Service after every 2000 hours of use for lubrication.

If your stage is mounted on a workstation and cannot be easily removed, please contact Newport's After Sales Service for further instructions.

9.2 Repair

NOTE
Install the shipping screws to hold down the stage prior to packing.

CAUTION
Never attempt to disassemble a component of the stage that has not been covered in this manual.
This can cause a malfunction of the stage.

If you observe a malfunction in your stage, please contact us immediately to arrange for repair.

CAUTION
Any attempt to disassemble or repair a stage without prior authorization will void the warranty.

9.3 Calibration

CAUTION
It is recommended to return your ONE-XY stage to Newport once a year for recalibration to its original specifications.
Service Form

Name: ____________________________  Return authorization #: ____________________________

Company: ____________________________  (Please obtain prior to return of item)

Address: ____________________________  Date: ____________________________

Country: ____________________________  Phone Number: ____________________________

P.O. Number: ____________________________  Fax Number: ____________________________

**Item(s) Being Returned:**

Model #: ____________________________  Serial #: ____________________________

Description: ____________________________

Reasons of return of goods (please list any specific problems):

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

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