HIGH PRECISION LINEAR
MOTOR DRIVEN STAGES

SELECTION GUIDE

CHPS - 150
CHPS - 200
CHPS - 250

Anorad

Rockwell Automation
IMPORTANT USER INFORMATION
This guide has been developed as a quick reference tool for Anorad high precision linear motor driven stages. It is not intended to replace user manuals or technical documentation supplied with our products, which should be referred to for installation, connection, operation, and maintenance of Anorad products.

Because of the variety of uses for the products described in this publication, those responsible for the application and the use of these products must satisfy themselves that all necessary steps have been taken to ensure that each application and use meets all performance and safety requirements, including any applicable laws, regulations, codes and standards.

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QUICK GUIDE

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Product Features

- Direct drive linear motors that provide for high speed, fast acceleration, and quick settling times, all of which decrease cycle time and increase productivity.
- Linear guides capable of speeds up to 5 m/s to increase productivity.
- Quieter operation than belt or ballscrew drives providing a friendlier work environment.
- The precision of a high-accuracy ground ballscrew system at a fraction of the cost and leadtime.
- Availability with iron core or ironless motors to meet your needs of high force or extreme smoothness.
- Quick change cabling to reduce maintenance time during cable replacement.
- Availability with or without covers and seals to maximize your value.
- Connectivity with world class Allen-Bradley controls providing service that is second to none.

APPLICATIONS

CHPS Series high precision linear motor driven stages have all the versatility necessary to satisfy a variety of positioning applications at a competitive cost. The state-of-the-art linear servomotor, encoder feedback, cable guidance, recirculating bearings, and light weight structural materials provide the ultimate in Price, Performance, and Precision. The CHPS Series linear motor stages are available in a variety of widths, travels, and precision levels to match your needs.

The CHPS Series linear motor stage combines a rugged bearing and drive design with precision positioning capabilities for single and multi-axis applications requiring travels up to 1260 mm (50 in.). The aluminum stage base and carriage are designed to be very stiff, yet lightweight structures. Incorporated into the stage are matched linear guides capable of speeds up to 5 m/s and 5 g’s of acceleration. The linear brushless servomotor provides non-contact linear drive forces allowing rapid rates of move and settle.

The zero-cogging ironless LZ linear motor offers extremely tight velocity control and provides the ultimate in precision. LC iron core motors provide high performance for heavy loads and high accelerations. Cables, limits, and stops are all integrated in the compact stage package with easy access for servicing.
WHY BUILD A STAGE WHEN YOU CAN BUY ONE
Consider the time it takes to determine the proper linear motor, linear bearing, encoder, cable management, shock absorbers, and flex cables. Now consider the time it takes to engineer the base, carriage, and junction boxes. Then consider the time it takes to generate all the part and assembly drawings you need to make and assemble the stage. Finally, consider all the vendors that you need to work with to make everything happen when you want it. Then don’t forget the issues you run into if something fails and you have to determine which vendor is responsible.

Now consider the simplicity of buying a stage, one part number, one drawing (provided by us) and one person accountable for the product working properly.

It’s up to you... complexity versus simplicity.

PERFORMANCE AND PRECISION
The CHPS Series linear motor stages satisfy a broad range of application needs by combining either iron core or ironless type linear motor technology with mechanical and positioning devices. Iron core linear motors can be combined with various resolution linear encoders to provide the most cost effective solution for speeds up to 5 m/s. If extreme accuracy or super smooth motion is what you’re looking for, ironless linear motors can be combined with encoders of 1.0 µm resolution or better to give you the highest performance and precision.

VARIETY OF FRAME SIZES AND TRAVEL LENGTHS
CHPS Series linear motor stages are available in three frame widths 150, 200, and 250 mm. Standard travel lengths are available in 6 cm increments up to 1.2 meters. When a longer travel is necessary, you can contact Anorad Applications Engineering to discuss a design solution that may meet your needs.

YOUR CHOICE OF ENVIRONMENTAL PROTECTION
Depending upon your needs, you can choose to have your stages uncovered, covered, or covered with strip seals which provide IP30 level protection.
FEATURES AND BENEFITS

1. Base - High strength extruded aluminum, precision manufactured to provide exceptional straightness and flatness.
2. End Caps - rugged design, extruded aluminum construction for durability.
3. Springs - Shock absorbing springs minimize stage damage as a result of accidental over-run of the end of travel.
4. Guides - Caged ball linear guides provide maximum rigidity, speeds up to 5 m/s, quiet operation, and extended lubrication cycle.
5. Linear Motors - Iron core or ironless provide a highly responsive smooth running, zero backlash drive with none of the reliability issues of a belt or ball screw drive.
6. Linear Encoder - Non-contact sensing with 1 µm to 0.1 µm or 1V p-p analog resolution.
7. Environmental Protection - Stages are available with aluminum cover and an optional side seal to provide you with a protection rating of IP30.
8. Easy Change Cable Management - Stages come equipped with easy to change cable transport modules to minimize downtime.
9. Adjustable Home and Limits - These easy access sensors can be located right where you need them.
10. Lubrication - Lubrication ports accept separately purchased grease gun to facilitate quick and easy maintenance without disassembling the stage.
11. Mounting Options - Three mounting options (toe clamps, bolt thru, and tee slot) expand your design capability.
### CHPS-150 Stage Specifications

#### Specifications

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Static Load Capacity</td>
<td>kN (lbf)</td>
<td>38.8 (87.22)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pitch Moment Load Rating (Static)</td>
<td>Nm (ft-lbf)</td>
<td>21 (52)</td>
<td>128 (294)</td>
<td>128 (294)</td>
</tr>
<tr>
<td>Roll Moment Load Rating (Static)</td>
<td>Nm (ft-lbf)</td>
<td>87 (211)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tare Moment Load Rating (Static)</td>
<td>Nm (ft-lbf)</td>
<td>18.3 (144)</td>
<td>227 (241)</td>
<td>227 (241)</td>
</tr>
<tr>
<td>Repeatability with 0.1 µm encoder</td>
<td>µm</td>
<td>±1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repeatability with 0.5 µm encoder</td>
<td>µm</td>
<td>±1.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repeatability with 1 µm encoder</td>
<td>µm</td>
<td>±2.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carriage Mass</td>
<td>kg (lb)</td>
<td>4.64 (10.23)</td>
<td>6.48 (14.28)</td>
<td>6.48 (14.28)</td>
</tr>
</tbody>
</table>

#### Incremental Encoder Option

<table>
<thead>
<tr>
<th>Signal</th>
<th>Description</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Supply</td>
<td>5V dc ±5%</td>
<td></td>
</tr>
<tr>
<td>Digital A/B/Index</td>
<td>ISA422 Differential Line Driver</td>
<td></td>
</tr>
<tr>
<td>Analog Sine/Cosine</td>
<td>0.6…1.2V p-p Differential Analog</td>
<td></td>
</tr>
<tr>
<td>Integral Index Mark</td>
<td>Differential Phase 0.8…1.3V p-p</td>
<td></td>
</tr>
</tbody>
</table>

#### Maximum Velocity for Allen-Bradley Drives

<table>
<thead>
<tr>
<th>Option</th>
<th>Maximum Velocity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 µm/count Encoder</td>
<td>4.0 m/s&lt;sup&gt;(1,2)&lt;/sup&gt; or 1.5 m/s&lt;sup&gt;(3)&lt;/sup&gt;</td>
</tr>
<tr>
<td>0.5 µm/count Encoder</td>
<td>2.0 m/s&lt;sup&gt;(1,2)&lt;/sup&gt; or 0.7 m/s&lt;sup&gt;(3)&lt;/sup&gt;</td>
</tr>
<tr>
<td>0.1 µm/count Encoder</td>
<td>0.5 m/s&lt;sup&gt;(4)&lt;/sup&gt;</td>
</tr>
<tr>
<td>Analog Encoder, 20 µm pitch</td>
<td>5 m/s&lt;sup&gt;(5)&lt;/sup&gt; (consult Anorad)</td>
</tr>
</tbody>
</table>

#### Contact Anorad for 3rd party drives and controllers. The controls will need to meet a minimum recommended counter clock frequency that varies with encoder type and resolution and required peak speed.

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(1) Trapezoidal Hall and thermistor included.
(2) For enclosed and sealed stages, derate by 10%.
(3) Maximum cable length 10 meters. Please contact Anorad Applications Engineering concerning application requiring longer cables.
(4) Based upon a fully supported and clamped in place unit, mounted on a rigid surface with flatness of 0.012/300 x 300 mm, NTE 0.025 mm overall (0.0004/12 x 12 in., NTE 0.001 in. overall).
(5) Non-cumulative. For higher performance or software error mapping, please contact Anorad Applications Engineering.
(6) Accuracy specification is based upon a 5 kg test load, measured 35 mm above the center of the carriage, fully supported on a granite surface.

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### Peak Acceleration vs. Payload

![Graph showing Peak Acceleration vs. Payload](Image)

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### Incremental Encoder Option

![Graph showing Incremental Encoder Option](Image)

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### Unit Mass vs. Travel Length

![Graph showing Unit Mass vs. Travel Length](Image)
### CHPS-150 STAGE DIMENSIONS

**Dimensions** mm (in)

<table>
<thead>
<tr>
<th>Linear Motor Option</th>
<th>LZ-030-T-120-D</th>
<th>LZ-030-T-240-X</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>239 (9.41)</td>
<td>339 (13.35)</td>
</tr>
<tr>
<td>D</td>
<td>30 (1.18)</td>
<td>87 (3.42)</td>
</tr>
<tr>
<td>OAL</td>
<td>350 (13.78)</td>
<td>450 (17.71)</td>
</tr>
<tr>
<td>Shortest Travel</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>Travel Increments</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>Longest Travel</td>
<td>1620 (63.78)</td>
<td>1560 (61.42)</td>
</tr>
<tr>
<td>P</td>
<td>62 (2.44)</td>
<td>104.5 (4.11)</td>
</tr>
<tr>
<td>M</td>
<td>115 (4.53)</td>
<td>130 (5.12)</td>
</tr>
</tbody>
</table>

**Linear Motor Option**
- LZ-030-T-120-D
- LZ-030-T-240-X

**Stage Options**
- Toe clips (CHPS-TOE) are standard for covered stages. Mount to base using M6 x 1.0 socket cap screw.
- M6 tee nuts (CHPS-6-TNUT) are supplied 10 per package and must be ordered separately if you plan on using the tee slots for mounting. CHPS-TOE are supplied 10 per package and are included with the covered stages only.

1. Mounting options:
   a. Toe clips (CHPS-TOE) spaced at 120.0 mm apart on both sides of stage.
   b. M6 tee nuts (CHPS-6-TNUT) in bottom of stage spaced at 120.0 mm apart.
   2. Stage length calculation:
      a. Slide length "S" (LZ-030-T-240-X = 339.0 mm, LZ-030-T-120-D = 239.0 mm).
      b. Electrical travel "T".
      c. Maximum Spring compression each side = 25.5 mm.
      d. Over travel each side = 5.0 mm.
      e. End cap each side = 25.0 mm.
      f. Constant "C" (over travel + maximum spring compression + end caps) = 111 mm.
      g. Overall length "OAL" = T + S + C.

**Note:**
- CHPS-6-TNUT are supplied 10 per package and must be ordered separately if you plan on using the tee slots for mounting.
- CHPS-TOE are supplied 10 per package and are included with the covered stages only.
CHPS-200 STAGE SPECIFICATIONS

**Specifications**

<table>
<thead>
<tr>
<th>Units</th>
<th>Linear Motor Option&lt;sup&gt;10&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Static Load Capacity (kN)</td>
<td>66 (148.6)</td>
</tr>
<tr>
<td>Pitch Moment Load Rating (Static) (Nm)</td>
<td>112 (255)</td>
</tr>
<tr>
<td>Roll Moment Load Rating (Static) (Nm)</td>
<td>265 (595)</td>
</tr>
<tr>
<td>Yaw Moment Load Rating (Static) (Nm)</td>
<td>not applicable</td>
</tr>
<tr>
<td>Repeatability with 0.1 µm encoder (µm)</td>
<td>±1.0</td>
</tr>
<tr>
<td>Repeatability with 0.5 µm encoder (µm)</td>
<td>±1.5</td>
</tr>
<tr>
<td>Repeatability with 1 µm encoder (µm)</td>
<td>not applicable</td>
</tr>
<tr>
<td>Repeatability with analog encoder (µm)</td>
<td>not applicable</td>
</tr>
<tr>
<td>Peak Thrust Force (N)</td>
<td>302 (683)</td>
</tr>
<tr>
<td>Peak Current (A rms)</td>
<td>8.3 (11.7)</td>
</tr>
<tr>
<td>Continuous Current (A rms)</td>
<td>3.1 (4.3)</td>
</tr>
<tr>
<td>Rated Bus Voltage&lt;sup&gt;11&lt;/sup&gt; (V dc)</td>
<td>650</td>
</tr>
<tr>
<td>Straightness and Flatness&lt;sup&gt;12&lt;/sup&gt; (µm/in.)</td>
<td>±3 µm/25 mm NTE ±8 µm/300 mm (±0.0001 in./1 in. NTE ±0.0003 in./12 in.)</td>
</tr>
<tr>
<td>Accuracy&lt;sup&gt;13,14&lt;/sup&gt; (µm/in.)</td>
<td>±3 µm/25 mm NTE ±8 µm/300 mm (±0.0001 in./1 in. NTE ±0.0003 in./12 in.)</td>
</tr>
</tbody>
</table>

**Signal**

**Commutation Sensors**
- Input Power: 5...24V dc, 10 mA maximum
- Output: NPN, open collector, 10 mA maximum

**Limit Sensors (Optional)**
- Input Power: 12...28V dc, 15 mA maximum
- Output: NPN, open collector, Normally Closed 50 mA maximum sourcing

**PTC Thermistor**
- Temp (°C): Up to 100
- Resistance (ohm): Less than 750
- Up to 105
- Less than 7500
- Up to 110
- Greater than 10,000

**Encoder Signal Specification**

<table>
<thead>
<tr>
<th>Type</th>
<th>Signal</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Supply</td>
<td>5V dc ±5%</td>
<td></td>
</tr>
<tr>
<td>Digital</td>
<td>A/B/Index</td>
<td>RS-422 Differential Line Driver</td>
</tr>
<tr>
<td>Analog</td>
<td>Sine/Cosine</td>
<td>0.6...1.2V p-p Differential Analog</td>
</tr>
<tr>
<td>Digital</td>
<td>Integral Index Mark</td>
<td>Differential Pulse 0.8...1.3V p-p</td>
</tr>
</tbody>
</table>

Contact Anorad for 3rd party drives and controllers. The control will need to meet a minimum recommended counter clock frequency that varies with encoder type and resolution and required peak speed.

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Unit Mass

**Peak Acceleration vs. Payload**

- LC-050-200-X
- LZ-030-T-240-X
- LC-050-100-D
- LZ-030-T-120-D

**Incremental Encoder Option**

- 1 µm/count Encoder: 4.0 m/s<sup>1</sup> or 1.5 m/s<sup>2</sup>
- 0.5 µm/count Encoder: 2.0 m/s<sup>1</sup> or 0.7 m/s<sup>2</sup>
- 0.1 µm/count Encoder: 0.5 m/s<sup>2</sup>
- Analog Encoder, 20 µm pitch: 5 m/s (consult Anorad)

(1) Allen-Bradley Ultra 1000 and Ultra 3000 drives (115V only for 0.1 µm)
(2) Allen-Bradley Kinetic 2000 drives
(3) Allen-Bradley Kinetic 6000 drives

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Publication CHPS-SG001C-EN-P August 2007
CHPS-200 STAGE DIMENSIONS

1. Mounting options:
   a. Toe clips (CHPS-TOE) spaced at 120.0 mm apart on both sides of stage.
   b. M6 square nuts (CHPS-8-TNUT) in bottom of stage spaced at 120.0 mm apart.

2. Stage length calculation:
   a. Slide length "S" (LC-050-100-D and LZ-030-T-120-D = 239.0 mm, LC-050-200-X and LZ-030-T-240-X = 339.0 mm).
   b. Electrical travel "T".
   c. Maximum spring compression each side = 25.4 mm.
   d. End cap each side = 25.4 mm.
   e. Constant "C" (maximum spring compression + end caps) = 101.6 mm.
   f. Overall length "OAL" = T + S + C.

Dimensions mm (in)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>239 (9.41)</td>
<td>339 (13.35)</td>
</tr>
<tr>
<td>D</td>
<td>44 (1.73)</td>
<td>104 (4.09)</td>
</tr>
<tr>
<td>OAL</td>
<td>340.0 (13.41) + Travel</td>
<td>440.0 (17.35) + Travel</td>
</tr>
<tr>
<td>Shortest Travel</td>
<td>60 (2.36)</td>
<td>80 (3.15)</td>
</tr>
<tr>
<td>Travel Increments</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>Longest Travel</td>
<td>1680 (69.6)</td>
<td>1580 (62.2)</td>
</tr>
<tr>
<td>P</td>
<td>56.0 (2.20)</td>
<td>116.3 (4.58)</td>
</tr>
</tbody>
</table>

CHPS-8-NUT are supplied 10 per package and must be ordered separately if you plan on using the tee slots for mounting.
CHPS-TOE are supplied 10 per package and are included with the covered stages only.
### Linear Motor Option

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Units</th>
<th>LC-075-100-D</th>
<th>LC-075-200-D</th>
<th>LC-075-200-E</th>
<th>LZ-050-T-120-D</th>
<th>LZ-050-T-240-D</th>
<th>LZ-050-T-240-E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Static Load Capacity</td>
<td>kN (lbf)</td>
<td>93.6 (21042)</td>
<td>93.6 (21042)</td>
<td>93.6 (21042)</td>
<td>93.6 (21042)</td>
<td>93.6 (21042)</td>
<td>93.6 (21042)</td>
</tr>
<tr>
<td>Pitch Moment Load Rating (Static)</td>
<td>Nm (ft-lbf)</td>
<td>170 (125)</td>
<td>224 (165)</td>
<td>224 (165)</td>
<td>170 (125)</td>
<td>224 (165)</td>
<td>224 (165)</td>
</tr>
<tr>
<td>Roll Moment Load Rating (Static)</td>
<td>Nm (ft-lbf)</td>
<td>385 (284)</td>
<td>385 (284)</td>
<td>385 (284)</td>
<td>385 (284)</td>
<td>385 (284)</td>
<td>385 (284)</td>
</tr>
<tr>
<td>Yaw Moment Load Rating (Static)</td>
<td>Nm (ft-lbf)</td>
<td>334 (245)</td>
<td>334 (245)</td>
<td>334 (245)</td>
<td>334 (245)</td>
<td>334 (245)</td>
<td>334 (245)</td>
</tr>
<tr>
<td>Repeatability with 0.1 µm encoder</td>
<td>µm</td>
<td>±1.0</td>
<td>±1.0</td>
<td>±1.0</td>
<td>±1.0</td>
<td>±1.0</td>
<td>±1.0</td>
</tr>
<tr>
<td>Repeatability with 0.5 µm encoder</td>
<td>µm</td>
<td>±1.5</td>
<td>±1.5</td>
<td>±1.5</td>
<td>±1.5</td>
<td>±1.5</td>
<td>±1.5</td>
</tr>
<tr>
<td>Repeatability with 1 µm encoder</td>
<td>µm</td>
<td>±2.0</td>
<td>±2.0</td>
<td>±2.0</td>
<td>±2.0</td>
<td>±2.0</td>
<td>±2.0</td>
</tr>
<tr>
<td>Repeatability with analog encoder</td>
<td>µm</td>
<td>Interpolation Dependent</td>
<td>Interpolation Dependent</td>
<td>Interpolation Dependent</td>
<td>Interpolation Dependent</td>
<td>Interpolation Dependent</td>
<td>Interpolation Dependent</td>
</tr>
<tr>
<td>Peak Thrust Force</td>
<td>N (lbf)</td>
<td>441 (99)</td>
<td>882 (198)</td>
<td>882 (198)</td>
<td>328 (74)</td>
<td>656 (147)</td>
<td>656 (147)</td>
</tr>
<tr>
<td>Peak Current</td>
<td>A rms (A o-pk)</td>
<td>8.1 (11.5)</td>
<td>16.2 (22.9)</td>
<td>16.2 (22.9)</td>
<td>8.1 (11.5)</td>
<td>16.2 (22.9)</td>
<td>16.2 (22.9)</td>
</tr>
<tr>
<td>Continuous Thrust Force (at 20 °C ambient)</td>
<td>N (lbf)</td>
<td>93.6 (21042)</td>
<td>170 (125)</td>
<td>224 (165)</td>
<td>224 (165)</td>
<td>170 (125)</td>
<td>224 (165)</td>
</tr>
<tr>
<td>Continuous Current (at 20 °C ambient)</td>
<td>A rms (A o-pk)</td>
<td>8.1 (11.5)</td>
<td>8.1 (11.5)</td>
<td>8.1 (11.5)</td>
<td>8.1 (11.5)</td>
<td>8.1 (11.5)</td>
<td>8.1 (11.5)</td>
</tr>
<tr>
<td>Rated Bus Voltage</td>
<td>V dc</td>
<td>650</td>
<td>650</td>
<td>650</td>
<td>650</td>
<td>650</td>
<td>650</td>
</tr>
<tr>
<td>Carriage Mass</td>
<td>kg (lb)</td>
<td>9.69 (21.4)</td>
<td>11.54 (25.4)</td>
<td>11.54 (25.4)</td>
<td>8.58 (18.9)</td>
<td>9.62 (21.2)</td>
<td>9.62 (21.2)</td>
</tr>
<tr>
<td>Straightness and Flatness</td>
<td>µm (in.)</td>
<td>±3 µm/25 mm NTE ±8 µm/300 mm (±0.0001 in./1 in. NTE ±0.0003 in./12 in.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accuracy</td>
<td>µm (in.)</td>
<td>±3 µm/25 mm NTE ±10 µm/300 mm (±0.0001 in./1 in. NTE ±0.0004 in./12 in.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Incremental Encoder Option

<table>
<thead>
<tr>
<th>Maximum Velocity for Allen-Bradley Drives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 µm/count Encoder</td>
</tr>
<tr>
<td>0.5 µm/count Encoder</td>
</tr>
<tr>
<td>0.1 µm/count Encoder</td>
</tr>
<tr>
<td>Analog Encoder, 20 µm pitch</td>
</tr>
</tbody>
</table>

---

(1) Trapezoidal Hall and thermistor included.
(2) For covered and sealed stages derate by 10%.
(3) Maximum cable length 10 meters. Please contact Anorad Applications Engineering concerning application requiring longer cables.
(4) Based upon a fully supported and clamped in place unit, mounted on a rigid surface with flatness of 0.012/300 x 300 mm, NTE 0.025 mm overall (0.0004/12 x 12 in., NTE 0.001 in. overall).
(5) Non-cumulative. For higher performance or software error mapping, please contact Anorad Applications Engineering.
(6) Accuracy specification is based upon a 5 kg test load, measured 35 mm above the center of the carriage, fully supported on a granite surface.

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**CHPS-250 STAGE SPECIFICATIONS**
CHPS-9-TNUT are supplied 10 per package and must be ordered separately if you plan on using the tee slots for mounting.

CHPS-TOE are supplied 10 per package and are included with the covered stages only.

<table>
<thead>
<tr>
<th>Dimensions mm (in)</th>
<th>Linear Motor Option</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LC-075-100-D, LZ-050-T-120-D</td>
</tr>
<tr>
<td>S</td>
<td>279 (10.98)</td>
</tr>
<tr>
<td>D</td>
<td>44 (1.73)</td>
</tr>
<tr>
<td>OAL</td>
<td>380.6 (14.96) + Travel</td>
</tr>
<tr>
<td>Shortest Travel</td>
<td>80 (3.15)</td>
</tr>
<tr>
<td>Travel Increments</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>Longest Travel</td>
<td>1640 (64.6)</td>
</tr>
<tr>
<td>P</td>
<td>66.4 (2.22)</td>
</tr>
</tbody>
</table>

1. Mounting options:
   a. Toe clips (CHPS-TOE) spaced at 120.0 mm apart on both sides of stage.
   b. M6 tee nuts (CHPS-9-TNUT) in bottom of stage spaced at 120.0 mm spacing.

2. Stage length calculation:
   a. Slide length “S” (LC-075-100-D and LZ-050-T-120-D = 279.0 mm, LC-075-200-X and LZ-050-T-240-X = 339.0 mm).
   b. Electrical travel “T”.
   c. Max. Spring compression each side = 25.4 mm.
   d. End cap each side = 25.4 mm.
   e. Constant "C" (max.spring compression + end caps) = 101.6 mm.
   f. Overall length "OAL" = T + S + C.
Let our experienced Anorad Applications Engineers assist you with stage based servo sizing, moment loading and estimated bearing life analysis. Our advanced application analysis tools allow us to quickly and accurately determine the best frame size and motor option for your application. Our experienced engineers can also assist you with best selection of the remaining stage options.

To insure proper sizing, we ask that you fill the Application Requirements Form that best matches your application. On the form you will describe your payload, external forces and required accuracy. Then you will detail your motion profile in eight segments. Be sure to complete the Additional Information section. Then fax it or e-mail it using the contact information at the bottom of the form. An applications engineer will contact you during normal business hours M-F, 8 am-5 pm, Eastern time to confirm receipt of your information. In return we will provide you with a complete analysis and recommendation of which stage to use.
### Application Requirements for Table Mount Stages

#### Customer Information:

Name ______________________________________
Title _______________________________________
Company ___________________________________
Address _____________________________________
E-mail _______________________________________
Phone _______________________________________

#### Payload Information:

Payload _________ kg  
X dim ___________ mm  
Y dim ___________ mm  
Z dim ___________ mm  

#### External Force Information:

<table>
<thead>
<tr>
<th>Location</th>
<th>Force</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xf dim</td>
<td>Fx</td>
</tr>
<tr>
<td>Yf dim</td>
<td>Fy</td>
</tr>
<tr>
<td>Zf dim</td>
<td>Fz</td>
</tr>
</tbody>
</table>

#### Required Accuracy and Repeatability:

<table>
<thead>
<tr>
<th>Accuracy</th>
<th>Repeatability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Motion Profile Information:

<table>
<thead>
<tr>
<th>Seg 1</th>
<th>Seg 2</th>
<th>Seg 3</th>
<th>Seg 4</th>
<th>Seg 5</th>
<th>Seg 6</th>
<th>Seg 7</th>
<th>Seg 8</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Distance of move (mm)

|       |       |       |       |       |       |       |       |

#### Time of move (s)

|       |       |       |       |       |       |       |       |

#### Dwell before next move (s)

|       |       |       |       |       |       |       |       |

#### Is the External Force Present (y/n)

|       |       |       |       |       |       |       |       |

#### Additional Information:

1. Brief technical description of application, ______________________________________________________________
2. Is the motion in a horizontal, vertical, or angled plane. (Specify angle θ). _______________
3. Are there any overall or specific dimension constraints? ________________________________________________
4. Is the application a Point-To-Point move (PTP) or Path Sensitive (PS) such as scanning or imaging where tight velocity control is required. __ PTP or __ PS check one
5. For PS applications, specify the following: maximum following error___________, critical speeds ________, Velocity ripple % __________, sampling rate __________.
6. If this is a strobe based application, specify if Time-Based (TB) or Position (P) encoder will be used. ___TB or ___P check one
7. Stage will operate _______ hours/day, _______ days/week, and _______ weeks/year.
8. How many years must the stage last before repair (yrs) __________ replacement (yrs) __________.
9. What is the ambient temperature that the stage will operate in _____ °C or _____ °F.
10. List any contaminants the stage will be subject to (dust, debris, fluids, or other). ______________________________________________________________
11. What operating voltage do you require? (115, 230, 460V ac) __________ (Note certain motor options are 230V ac maximum).
12. What drive do you plan on using? (1) _______________________________________________________

(1) Check that the servo drive to be used is compatible with 3-phase permanent magnet brushless linear motor control, and supports one of the following commutation schemes: Trapezoidal/Hall only (recommended only for certain applications), Encoder only (initialization motion occurs on power-up) or Trapezoidal/Hall-Encoder combination (no motion occurs on power-up). Note that all CHPS stages are compatible with Allen-Bradley servo drives.
### Application Requirements for Wall Mount Stages

#### Customer Information:
- Name ____________________________
- Title _____________________________
- Company __________________________
- Address ___________________________
- E-mail ____________________________
- Phone _____________________________

#### Payload Information:
- Payload _________ kg
- X dim _________ mm
- Y dim _________ mm
- Z dim _________ mm

#### External Force Information:
- Location Force
  - Xf dim _________ mm
  - Yf dim _________ mm
  - Zf dim _________ mm
- Force
  - Fx _________ N
  - Fy _________ N
  - Fz _________ N

#### Motion Profile Information:
- Segments for One Cycle

<table>
<thead>
<tr>
<th>Seg 1</th>
<th>Seg 2</th>
<th>Seg 3</th>
<th>Seg 4</th>
<th>Seg 5</th>
<th>Seg 6</th>
<th>Seg 7</th>
<th>Seg 8</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Distance of move (mm)
- Time of move (s)
- Dwell before next move (s)
- Is the External Force Present (y/n)

#### Required Accuracy and Repeatability:
- Accuracy _________ (microns)
- Repeatability ______ (microns)

#### Additional Information:
1. Brief technical description of application. ____________________________________________
2. Is the motion in a horizontal, vertical, or angled plane (Specify angle θ). ______________
3. Are there any overall size or specific dimension constraints? _________________________
4. Is the application a Point-To-Point move (PTP) or Path Sensitive (PS) such as scanning or imaging where tight velocity control is required. ___ PTP or ___PS check one
5. For PS applications, specify the following: maximum following error __________, critical speeds __________, Velocity ripple % __________, sampling rate __________.
6. If this is a strobe based application, specify if Time-Based (TB) or Position (P) encoder will be used. ___TB or ___P check one
7. Stage will operate _____ hours/day, _____ days/week, and _____ weeks/year.
8. How many years must the stage last before repair (yrs) _______ replacement (yrs) _______.
9. What is the ambient temperature that the stage will operate in _____ °C or _____ °F
10. List any contaminants the stage will be subject to (dust, debris, fluids, or other).

   __________________________________________________________________________________

11. What operating voltage do you require? (115, 230, 460V ac) ________ (Note certain motor options are 230V ac maximum),
12. What drive do you plan on using? (1) _______________________________________________________

   (1) Check that the servo drive to be used is compatible with 3-phase permanent magnet brushless linear motor control, and supports one of the following commutation schemes: Trapezoidal Hall only (recommended only for certain applications), Encoder only (initialization motion occurs on power-up) or Trapezoidal Hall-Encoder combination (no motion occurs on power-up). Note that all CPS stages are compatible with Allen-Bradley servo drives.

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Fax to 631-344-6601, Call 631-344-6600 or e-mail to anorad@anorad.com
CHPS-150 STAGE

Bulletin Number
Voltage
A = 230V ac
Frame Size
6 = 150 mm base
Stroke
Travel lengths start at 6 cm and are available in 6 cm increments.
IE: 006 for 6 cm travel or 054 for 54 cm travel. Maximum travel = 120 cm.
Motor
A = LZ-030-T-120-D
B = LZ-030-T-240-D
C = LZ-030-T-240-E
Feedback
F = 1.0 micron incremental optical encoder, with integral index mark
G = 0.5 micron incremental optical encoder, with integral index mark
H = 0.1 micron incremental optical encoder, with integral index mark
I = 1V p-p sine/cosine encoder, 20 µm signal period, with integral index mark

CHPS-200 STAGE

Bulletin Number
Voltage
A = 230V ac
B = 460V ac (LC motors only)
Frame Size
8 = 200 mm base
Stroke
For -100 and -120 motor coil lengths
Travel lengths start at 6 cm and are available in 6 cm increments.
IE: 006 for 6 cm travel or 054 for 54 cm travel. Maximum travel = 126 cm.
For -200 or -240 motor coil lengths
Travel lengths start at 8 cm and are available in 6 cm increments.
IE: 008 for 8 cm travel or 020 for 20 cm travel. Maximum travel = 122 cm.
Motor
A = LZ-030-T-120-D
B = LZ-030-T-240-D
C = LZ-030-T-240-E
D = LC-050-100-D
E = LC-050-200-D
F = LC-050-200-E

CHPS-250 STAGE

Bulletin Number
Voltage
A = 230V ac
B = 460V ac (LC motors only)
Frame Size
9 = 250 mm base
Stroke
Travel lengths start at 8 cm and are available in 6 cm increments.
IE: 008 for 8 cm travel or 020 for 20 cm travel. Maximum travel = 122 cm.
Motor
G = LZ-050-T-120-D
H = LZ-050-T-240-D
I = LZ-050-T-240-E
J = LC-075-100-D
K = LC-075-200-D
L = LC-075-200-E

(1) Not for upside-down mounting.
(2) Contact Anorad Applications Engineering for upside-down mounting.
(3) Strip seal and covers required for wall mount applications.

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