

## LRQ300BL-DE51CT10A Datasheet



- 75, 150, 300, 450, 600 mm travel
- Up to 10  $\mu\text{m}$  accuracy over 600 mm travel
- Up to 270 mm/s speed and up to 500 N thrust
- 100 kg load capacity
- Inline and parallel drive configurations
- Includes stainless steel dust cover
- Ball screw and lead screw configurations
- Integrated linear encoders with 50 nm resolution provide slip/stall detection and position correction
- Designed for use with an X-MCC Series stepper motor controller or any 2-phase stepper motor controller
- With AutoDetect, the X-MCC controller configures its settings automatically for the connected peripheral
- Custom versions available

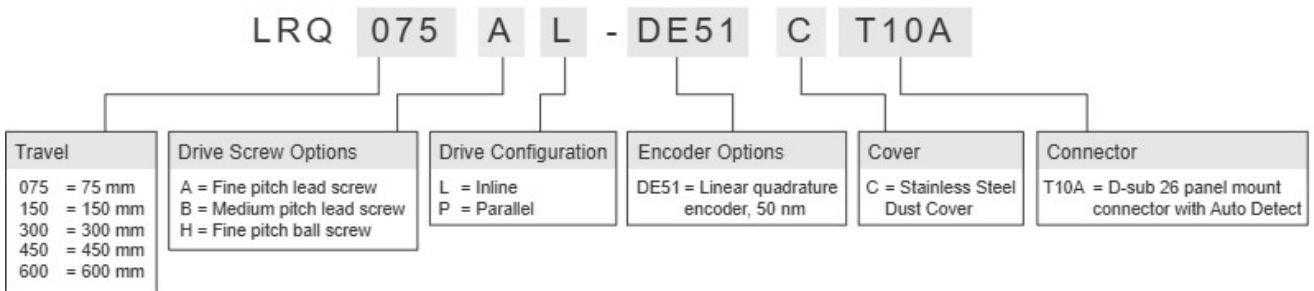
## LRQ-DEC Series Overview

Zaber's LRQ-DEC Series products are computer-controlled, motorized linear stages with high stiffness, load, and lifetime capabilities in a compact size. An integrated linear encoder combined with stage calibration provides high accuracy positioning over the full travel of the device. A flexible stainless steel dust cover prevents the ingress of small objects. At only 48 mm high, these stages are excellent for applications where a low profile is required. These stages are capable of speeds up to 270 mm/s, and can bolt together into XY and XYZ systems. Some multi axis configurations may require additional accessories, please contact Zaber Technical Support to ensure the correct ones are selected. Each device is available in either an inline or parallel drive configuration.

The stages are designed to connect directly to our X-MCC Series universal motor controllers, or they can be used with any 2-phase stepper motor controller through the panel mount DB26 connector. Set up is easy with AutoDetect. Once connected, the X-MCC controller will automatically detect and configure the LRQ-DEC.

For more information visit: <https://www.zaber.com/products/linear-stages/LRQ-DEC>

## LRQ-DEC Series Part Numbering & Options



## LRQ300BL-DE51CT10A Drawings

- [LRQxL-DECT10A.png \(Drawing for the LRQxL-DECT10A\)](#)

## LRQ300BL-DE51CT10A Specifications

|                                            |                                            |
|--------------------------------------------|--------------------------------------------|
| <b>Microstep Size (Default Resolution)</b> | <b>0.49609375 <math>\mu\text{m}</math></b> |
| Built-in Controller                        | No                                         |
| Recommended Controller                     | X-MCC (48 V) Recommended                   |
| AutoDetect                                 | Yes                                        |
| Travel Range                               | 300 mm (11.811")                           |
| Accuracy (unidirectional)                  | 13 $\mu\text{m}$ (0.000512")               |
| Repeatability                              | < 2 $\mu\text{m}$ (< 0.000079")            |
| Backlash                                   | < 6.5 $\mu\text{m}$ (< 0.000256")          |
| Maximum Speed                              | 270 mm/s (10.630"/s)                       |
| Minimum Speed                              | 0.000303 mm/s (0.000012"/s)                |
| Speed Resolution                           | 0.000303 mm/s (0.000012"/s)                |
| Encoder Type                               | Linear quadrature encoder                  |
| Encoder Resolution                         | 50 nm                                      |
| Peak Thrust                                | 150 N (33.6 lb)                            |
| Back-driving Force*                        | ( $\pm$ 30%) 106 N (23.8 lb)               |
| Maximum Continuous Thrust                  | 100 N (22.4 lb)                            |
| Maximum Centered Load                      | 1000 N (224.3 lb)                          |
| Maximum Moment (Pitch)                     | 30 N-m (22.1 ft-lb)                        |
| Maximum Moment (Roll)                      | 30 N-m (22.1 ft-lb)                        |
| Maximum Moment (Yaw)                       | 30 N-m (22.1 ft-lb)                        |
| Vertical Runout                            | < 35 $\mu\text{m}$ (< 0.001378")           |
| Horizontal Runout                          | < 30 $\mu\text{m}$ (< 0.001181")           |
| Pitch                                      | 0.034° (0.593 mrad)                        |
| Roll                                       | 0.015° (0.262 mrad)                        |
| Yaw                                        | 0.03° (0.523 mrad)                         |
| Stiffness in Pitch                         | 250 N-m/° (70 $\mu\text{rad/N-m}$ )        |
| Stiffness in Roll                          | 600 N-m/° (29 $\mu\text{rad/N-m}$ )        |
| Stiffness in Yaw                           | 430 N-m/° (41 $\mu\text{rad/N-m}$ )        |
| Linear Motion Per Motor Rev                | 6.35 mm (0.250")                           |
| Motor Steps Per Rev                        | 200                                        |
| Motor Type                                 | Stepper (2 phase)                          |

|                                            |                                            |
|--------------------------------------------|--------------------------------------------|
| <b>Microstep Size (Default Resolution)</b> | <b>0.49609375 <math>\mu\text{m}</math></b> |
| Motor Rated Current                        | 2300 mA/phase                              |
| Motor Winding Resistance                   | 1 ohms/phase                               |
| Inductance                                 | 2.2 mH/phase                               |
| Motor Connection                           | D-sub 26                                   |
| Default Resolution                         | 1/64 of a step                             |
| Guide Type                                 | Recirculating Ball Linear Guide            |
| Mechanical Drive System                    | Precision lead screw                       |
| Limit or Home Sensing                      | Magnetic home sensor                       |
| Axes of Motion                             | 1                                          |
| Mounting Interface                         | M6 and M3 threaded holes                   |
| Operating Temperature Range                | 0 to 50 °C                                 |
| CE Compliant                               | Yes                                        |
| Vacuum Compatible                          | No                                         |
| Weight                                     | 3.73 kg (8.223 lb)                         |

LRQ-DEC Series Charts

Thrust Speed Performance



### Thrust Speed Performance



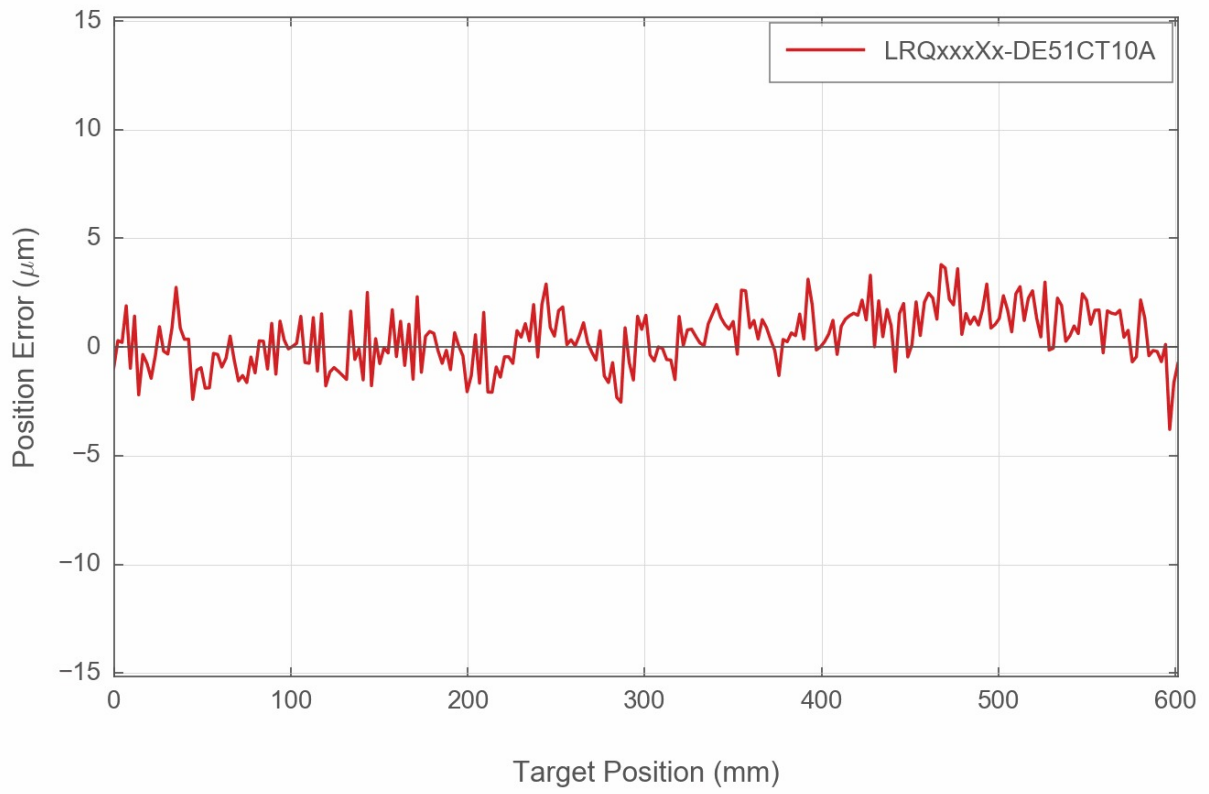
### Thrust Speed Performance



## Thrust Speed Performance



### Typical Accuracy



### LRQ Linear Bearing Lifetime



## Contact

Email: [contact@zaber.com](mailto:contact@zaber.com)

Phone (toll free Canada/USA): 1-888-276-8033

Phone (direct): 1-604-569-3780

Fax: 1-604-648-8033

Zaber Technologies Inc.

#2 - 605 West Kent Ave. N.

Vancouver, British Columbia

Canada, V6P 6T7

<https://www.zaber.com>