LRU-E Series Datasheet

- 250, 500, 1000, 1500, 2000 mm travel
- 500 kg load capacity and up to 360 Nm moment load capacity
- Achieves thrust up to 2850 N and speeds up to 400 mm/s
- Large mounting platform with high moment stiffness
- Built-in, 500 CPR motor encoder provides slip/stall detection and recovery
- Designed for use with Zaber's 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
- Optional integrated power-off brake for vertical applications

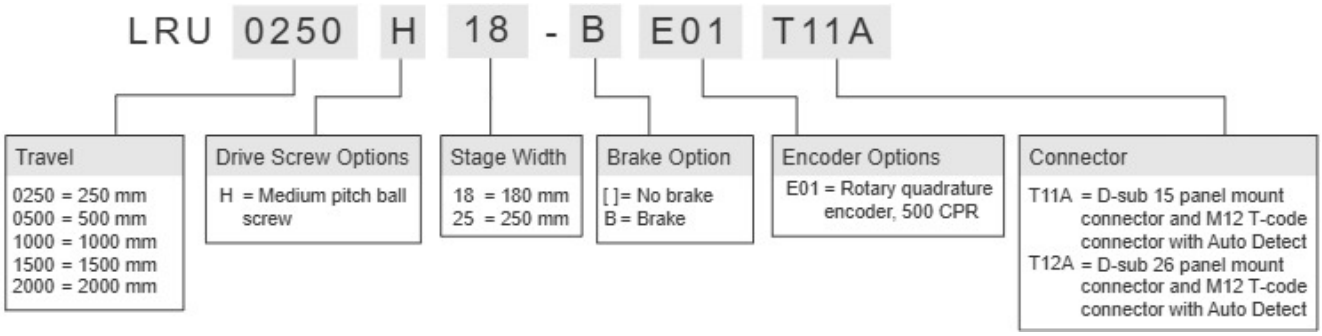
LRU-E Series Overview

Zaber's LRU-E Series are motorized linear stages with built-in motor encoders . They support up to 500 kg loads and output up to 2850 N of thrust while having long lifetime capabilities. An optional power-off brake is available to protect against backdriving and other unwanted motion in a power-off state. They provide a large stage top and footprint. These stages integrate well with the T-slot ecosystem. They also share mounting patterns with other Zaber devices for easily building XY systems, gantries, or gimbals. These mounting patterns also support popular third party cobot arms. Some multi-axis configurations may require additional accessories; please contact Zaber Technical Support to ensure the correct ones are selected.

The built-in motor encoder allows for closed-loop operation and slip/stall recovery features. The stages are designed to connect directly to Zaber's X-MCC Series universal motor controllers, or they can be used with any high power 2-phase stepper motor controller. Set up is easy with AutoDetect. Once connected, the X-MCC controller will automatically detect and configure the LRU-E.

For more information visit: https://www.zaber.com/products/linear-stages/LRU-E

LRU-E Series Part Numbering & Options



LRU-E Series Drawings

- Drawing for the LRUxH18-E.pdf (Drawing for the LRUxH18-E)
- Drawing for the LRUxH18-BE.pdf (Drawing for the LRUxH18-BE)
- Drawing for the LRUxH25-E.pdf (Drawing for the LRUxH25-E)
- Drawing for the LRUxH25-BE.pdf (Drawing for the LRUxH25-BE)

LRU-E Series Specifications

Microstep Size (Default Resolution)	**0.78125 µm**
Built-in Controller	No
Recommended Controller	X-MCC (48 V) Recommended
AutoDetect	Yes
Repeatability	< 3 µm (< 0.000118")
Backlash	< 40 µm (< 0.001575")
Minimum Speed	0.000476 mm/s (0.000019"/s)
Speed Resolution	0.000476 mm/s (0.000019"/s)
Encoder Resolution	500 CPR (2000 states/rev)
Encoder Type	Rotary quadrature encoder
Peak Thrust	2850 N (639.1 lb)
Back-driving Force*	(± 30%) 250 N (56.1 lb)
Maximum Continuous Thrust	2850 N (639.1 lb)
Maximum Centered Load	5000 N (1121.3 lb)
Stiffness in Pitch	3700 N-m/° (5 µrad/N-m)
Stiffness in Roll	2600 N-m/° (7 µrad/N-m)
Stiffness in Yaw	3300 N-m/° (5 µrad/N-m)
Linear Motion Per Motor Rev	10 mm (0.394")
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	9470 mA/phase
Motor Winding Resistance	0.23 ohms/phase
Inductance	2.1 mH/phase
Default Resolution	1/64 of a step
Guide Type	Recirculating ball linear guide
Mechanical Drive System	Precision ball screw
Limit or Home Sensing	Magnetic home sensor
Axes of Motion	1
Operating Temperature Range	0 to 50 °C
CE Compliant	Yes
Vacuum Compatible	No

Part Number	Travel Range	Accuracy (unidirectional)	Maximum Speed	Maximum Moment (Pitch)
LRU0250H18-E01T11A	250 mm (9.843")	90 µm (0.003543")	400 mm/s (15.748"/s)	240 N-m (177.1 ft-lb)
LRU0250H25-E01T11A	250 mm (9.843")	90 µm (0.003543")	400 mm/s (15.748"/s)	360 N-m (265.7 ft-lb)
LRU0500H18-E01T11A	500 mm (19.685")	160 µm (0.006299")	380 mm/s (14.961"/s)	240 N-m (177.1 ft-lb)
LRU0500H25-E01T11A	500 mm (19.685")	160 µm (0.006299")	380 mm/s (14.961"/s)	360 N-m (265.7 ft-lb)
LRU1000H18-E01T11A	1000 mm (39.370")	250 µm (0.009842")	350 mm/s (13.780"/s)	240 N-m (177.1 ft-lb)
LRU1000H25-E01T11A	1000 mm (39.370")	250 µm (0.009842")	350 mm/s (13.780"/s)	360 N-m (265.7 ft-lb)
LRU1500H18-E01T11A	1500 mm (59.055")	350 µm (0.013779")	200 mm/s (7.874"/s)	240 N-m (177.1 ft-lb)
LRU1500H25-E01T11A	1500 mm (59.055")	350 µm (0.013779")	200 mm/s (7.874"/s)	360 N-m (265.7 ft-lb)
LRU2000H18-E01T11A	2000 mm (78.740")	425 µm (0.016732")	120 mm/s (4.724"/s)	240 N-m (177.1 ft-lb)
LRU2000H25-E01T11A	2000 mm (78.740")	425 µm (0.016732")	120 mm/s (4.724"/s)	360 N-m (265.7 ft-lb)
LRU0250H18-BE01T12A	250 mm (9.843")	90 µm (0.003543")	400 mm/s (15.748"/s)	240 N-m (177.1 ft-lb)
LRU0250H25-BE01T12A	250 mm (9.843")	90 µm (0.003543")	400 mm/s (15.748"/s)	360 N-m (265.7 ft-lb)
LRU0500H18-BE01T12A	500 mm (19.685")	160 µm (0.006299")	380 mm/s (14.961"/s)	240 N-m (177.1 ft-lb)
LRU0500H25-BE01T12A	500 mm (19.685")	160 µm (0.006299")	380 mm/s (14.961"/s)	360 N-m (265.7 ft-lb)
LRU1000H18-BE01T12A	1000 mm (39.370")	250 µm (0.009842")	350 mm/s (13.780"/s)	240 N-m (177.1 ft-lb)
LRU1000H25-BE01T12A	1000 mm (39.370")	250 µm (0.009842")	350 mm/s (13.780"/s)	360 N-m (265.7 ft-lb)
LRU1500H18-BE01T12A	1500 mm (59.055")	350 µm (0.013779")	200 mm/s (7.874"/s)	240 N-m (177.1 ft-lb)
LRU1500H25-BE01T12A	1500 mm (59.055")	350 µm (0.013779")	200 mm/s (7.874"/s)	360 N-m (265.7 ft-lb)
LRU2000H18-BE01T12A	2000 mm (78.740")	425 µm (0.016732")	120 mm/s (4.724"/s)	240 N-m (177.1 ft-lb)
LRU2000H25-BE01T12A	2000 mm (78.740")	425 µm (0.016732")	120 mm/s (4.724"/s)	360 N-m (265.7 ft-lb)

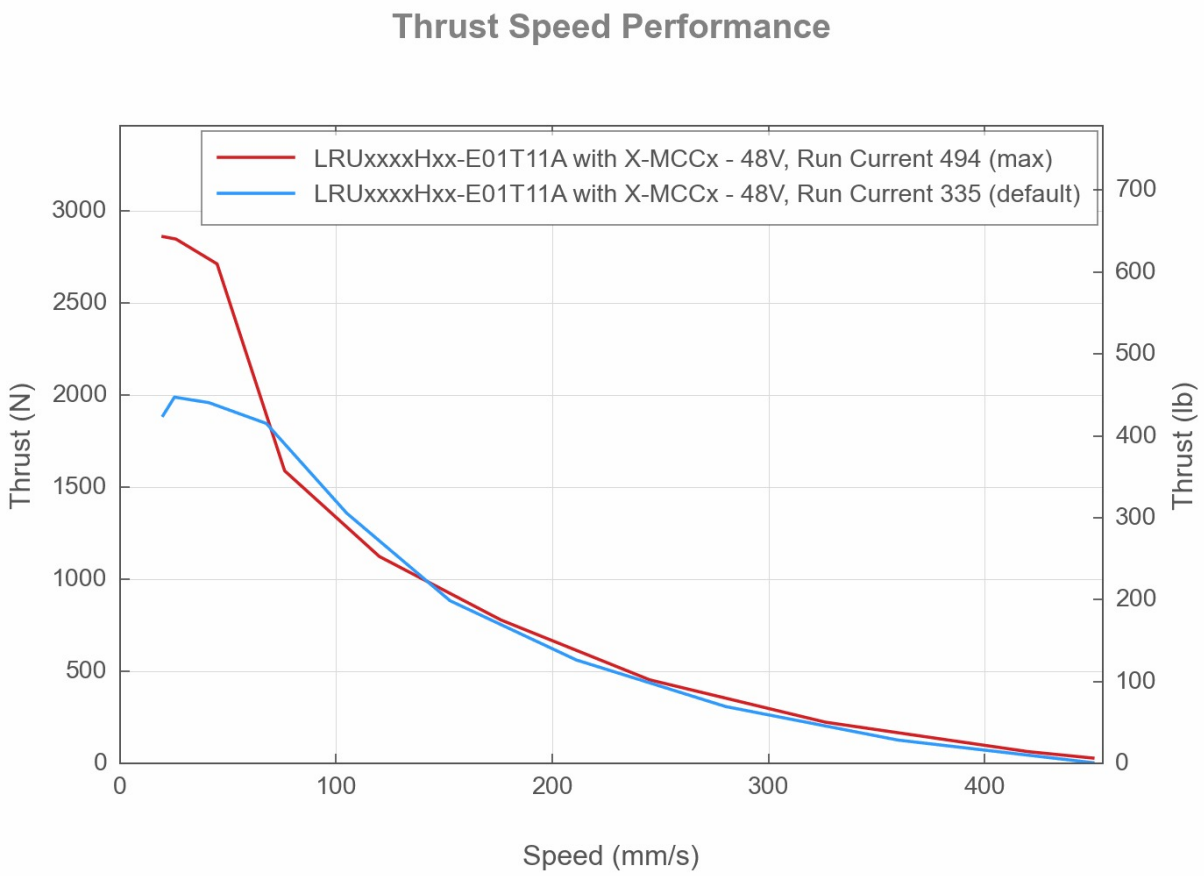
Part Number	Maximum Moment (Roll)	Maximum Moment (Yaw)	Vertical Runout	Horizontal Runout
LRU0250H18-E01T11A	240 N-m (177.1 ft-lb)	240 N-m (177.1 ft-lb)	< 35 µm (< 0.001378")	< 35 µm (< 0.001378")
LRU0250H25-E01T11A	360 N-m (265.7 ft-lb)	360 N-m (265.7 ft-lb)	< 35 µm (< 0.001378")	< 35 µm (< 0.001378")
LRU0500H18-E01T11A	240 N-m (177.1 ft-lb)	240 N-m (177.1 ft-lb)	< 70 µm (< 0.002756")	< 70 µm (< 0.002756")
LRU0500H25-E01T11A	360 N-m (265.7 ft-lb)	360 N-m (265.7 ft-lb)	< 70 µm (< 0.002756")	< 70 µm (< 0.002756")
LRU1000H18-E01T11A	240 N-m (177.1 ft-lb)	240 N-m (177.1 ft-lb)	< 140 µm (< 0.005512")	< 140 µm (< 0.005512")
LRU1000H25-E01T11A	360 N-m (265.7 ft-lb)	360 N-m (265.7 ft-lb)	< 140 µm (< 0.005512")	< 140 µm (< 0.005512")
LRU1500H18-E01T11A	240 N-m (177.1 ft-lb)	240 N-m (177.1 ft-lb)	< 180 µm (< 0.007087")	< 210 µm (< 0.008268")
LRU1500H25-E01T11A	360 N-m (265.7 ft-lb)	360 N-m (265.7 ft-lb)	< 180 µm (< 0.007087")	< 210 µm (< 0.008268")
LRU2000H18-E01T11A	240 N-m (177.1 ft-lb)	240 N-m (177.1 ft-lb)	< 220 µm (< 0.008661")	< 280 µm (< 0.011024")
LRU2000H25-E01T11A	360 N-m (265.7 ft-lb)	360 N-m (265.7 ft-lb)	< 220 µm (< 0.008661")	< 280 µm (< 0.011024")
LRU0250H18-BE01T12A	240 N-m (177.1 ft-lb)	240 N-m (177.1 ft-lb)	< 35 µm (< 0.001378")	< 35 µm (< 0.001378")
LRU0250H25-BE01T12A	360 N-m (265.7 ft-lb)	360 N-m (265.7 ft-lb)	< 35 µm (< 0.001378")	< 35 µm (< 0.001378")
LRU0500H18-BE01T12A	240 N-m (177.1 ft-lb)	240 N-m (177.1 ft-lb)	< 70 µm (< 0.002756")	< 70 µm (< 0.002756")
LRU0500H25-BE01T12A	360 N-m (265.7 ft-lb)	360 N-m (265.7 ft-lb)	< 70 µm (< 0.002756")	< 70 µm (< 0.002756")
LRU1000H18-BE01T12A	240 N-m (177.1 ft-lb)	240 N-m (177.1 ft-lb)	< 140 µm (< 0.005512")	< 140 µm (< 0.005512")
LRU1000H25-BE01T12A	360 N-m (265.7 ft-lb)	360 N-m (265.7 ft-lb)	< 140 µm (< 0.005512")	< 140 µm (< 0.005512")
LRU1500H18-BE01T12A	240 N-m (177.1 ft-lb)	240 N-m (177.1 ft-lb)	< 180 µm (< 0.007087")	< 210 µm (< 0.008268")
LRU1500H25-BE01T12A	360 N-m (265.7 ft-lb)	360 N-m (265.7 ft-lb)	< 180 µm (< 0.007087")	< 210 µm (< 0.008268")
LRU2000H18-BE01T12A	240 N-m (177.1 ft-lb)	240 N-m (177.1 ft-lb)	< 220 µm (< 0.008661")	< 280 µm (< 0.011024")
LRU2000H25-BE01T12A	360 N-m (265.7 ft-lb)	360 N-m (265.7 ft-lb)	< 220 µm (< 0.008661")	< 280 µm (< 0.011024")

Part Number	Pitch	Roll	Yaw	Motor Connection
LRU0250H18-E01T11A	0.03° (0.523 mrad)	0.03° (0.523 mrad)	0.03° (0.523 mrad)	M12 T-code (motor) and D-sub 15 (sensors)
LRU0250H25-E01T11A	0.03° (0.523 mrad)	0.03° (0.523 mrad)	0.03° (0.523 mrad)	M12 T-code (motor) and D-sub 15 (sensors)
LRU0500H18-E01T11A	0.06° (1.047 mrad)	0.06° (1.047 mrad)	0.06° (1.047 mrad)	M12 T-code (motor) and D-sub 15 (sensors)
LRU0500H25-E01T11A	0.06° (1.047 mrad)	0.06° (1.047 mrad)	0.06° (1.047 mrad)	M12 T-code (motor) and D-sub 15 (sensors)
LRU1000H18-E01T11A	0.09° (1.570 mrad)	0.09° (1.570 mrad)	0.09° (1.570 mrad)	M12 T-code (motor) and D-sub 15 (sensors)
LRU1000H25-E01T11A	0.09° (1.570 mrad)	0.09° (1.570 mrad)	0.09° (1.570 mrad)	M12 T-code (motor) and D-sub 15 (sensors)
LRU1500H18-E01T11A	0.11° (1.919 mrad)	0.11° (1.919 mrad)	0.11° (1.919 mrad)	M12 T-code (motor) and D-sub 15 (sensors)
LRU1500H25-E01T11A	0.11° (1.919 mrad)	0.11° (1.919 mrad)	0.11° (1.919 mrad)	M12 T-code (motor) and D-sub 15 (sensors)
LRU2000H18-E01T11A	0.12° (2.094 mrad)	0.12° (2.094 mrad)	0.12° (2.094 mrad)	M12 T-code (motor) and D-sub 15 (sensors)
LRU2000H25-E01T11A	0.12° (2.094 mrad)	0.12° (2.094 mrad)	0.12° (2.094 mrad)	M12 T-code (motor) and D-sub 15 (sensors)
LRU0250H18-BE01T12A	0.03° (0.523 mrad)	0.03° (0.523 mrad)	0.03° (0.523 mrad)	M12 T-code (motor) and D-sub 26 (sensors)
LRU0250H25-BE01T12A	0.03° (0.523 mrad)	0.03° (0.523 mrad)	0.03° (0.523 mrad)	M12 T-code (motor) and D-sub 26 (sensors)
LRU0500H18-BE01T12A	0.06° (1.047 mrad)	0.06° (1.047 mrad)	0.06° (1.047 mrad)	M12 T-code (motor) and D-sub 26 (sensors)
LRU0500H25-BE01T12A	0.06° (1.047 mrad)	0.06° (1.047 mrad)	0.06° (1.047 mrad)	M12 T-code (motor) and D-sub 26 (sensors)
LRU1000H18-BE01T12A	0.09° (1.570 mrad)	0.09° (1.570 mrad)	0.09° (1.570 mrad)	M12 T-code (motor) and D-sub 26 (sensors)
LRU1000H25-BE01T12A	0.09° (1.570 mrad)	0.09° (1.570 mrad)	0.09° (1.570 mrad)	M12 T-code (motor) and D-sub

Part Number	Pitch	Roll	Yaw	Motor Connection
				26 (sensors)
LRU1500H18-BE01T12A	0.11° (1.919 mrad)	0.11° (1.919 mrad)	0.11° (1.919 mrad)	M12 T-code (motor) and D-sub 26 (sensors)
LRU1500H25-BE01T12A	0.11° (1.919 mrad)	0.11° (1.919 mrad)	0.11° (1.919 mrad)	M12 T-code (motor) and D-sub 26 (sensors)
LRU2000H18-BE01T12A	0.12° (2.094 mrad)	0.12° (2.094 mrad)	0.12° (2.094 mrad)	M12 T-code (motor) and D-sub 26 (sensors)
LRU2000H25-BE01T12A	0.12° (2.094 mrad)	0.12° (2.094 mrad)	0.12° (2.094 mrad)	M12 T-code (motor) and D-sub 26 (sensors)

Part Number	Maximum Axial Brake Force	Weight
LRU0250H18-E01T11A		15.5 kg (34.172 lb)
LRU0250H25-E01T11A		18.7 kg (41.226 lb)
LRU0500H18-E01T11A		18.5 kg (40.785 lb)
LRU0500H25-E01T11A		22.2 kg (48.943 lb)
LRU1000H18-E01T11A		24.4 kg (53.793 lb)
LRU1000H25-E01T11A		29 kg (63.934 lb)
LRU1500H18-E01T11A		30.4 kg (67.020 lb)
LRU1500H25-E01T11A		35.8 kg (78.925 lb)
LRU2000H18-E01T11A		37 kg (81.571 lb)
LRU2000H25-E01T11A		42.7 kg (94.137 lb)
LRU0250H18-BE01T12A	2850 N (640.7 lb)	16.5 kg (36.376 lb)
LRU0250H25-BE01T12A	2850 N (640.7 lb)	19.7 kg (43.431 lb)
LRU0500H18-BE01T12A	2850 N (640.7 lb)	19.5 kg (42.990 lb)
LRU0500H25-BE01T12A	2850 N (640.7 lb)	23.2 kg (51.147 lb)
LRU1000H18-BE01T12A	2850 N (640.7 lb)	25.4 kg (55.997 lb)
LRU1000H25-BE01T12A	2850 N (640.7 lb)	30 kg (66.139 lb)
LRU1500H18-BE01T12A	2850 N (640.7 lb)	31.4 kg (69.225 lb)
LRU1500H25-BE01T12A	2850 N (640.7 lb)	36.8 kg (81.130 lb)
LRU2000H18-BE01T12A	2850 N (640.7 lb)	38 kg (83.776 lb)
LRU2000H25-BE01T12A	2850 N (640.7 lb)	43.7 kg (96.342 lb)

LRU-E Series Charts



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