

LA48 – Linear Actuator – Specification Sheet

the LA48 by CTW Automation - (4) Motor (8) Inches of travel

the LA Series of Linear Actuators by CTW Automation



when you need more than a sine wave....

LA48 - Key Specifications

- Fully Electric – Magnetic linear actuator for instant on motion and force
- Usable stroke range of 8+ inches / 200+ mm
- Peak force of 4,100 lbf. < > 18.24 kN
 - 4,000 lbf. out to 80 in/sec < > 2.00 Met/sec
 - 475 lbf. to 216 in/sec < > 5.50 Met/sec
 - Based on 240VAC power +/-2.5%
- Peak Velocity of 220 in/sec & 5.60 Met/sec
- Acceleration of 120+ G's peak & 30 G's continuous
- Frequency response above 200 Hz
- Optimized motion for cooler and quieter operation
- Includes complete Win10 operating system with computer and monitor
- Sine, Triangle, Split Velocity/ Variable Velocity, track data and more
- Input power 208-240 VAC III phase – 80 A(i)



The **LA Series** of actuators by CTW Automation is the ultimate in high performance linear motion that puts wave form creation and the resulting data collection at your fingertips; quickly, easily and in a repeatable fashion. While sine waves are standard, the LA allows for “any wave form” drive profiles allowing you to attain a better view into your testing world. From square, to triangle, sine on sine, frequency sweeps and stepped input; this platform lets you do it all. And because of the actuation methodology, coupled to the advanced motion controller, motion will be as requested and at a lower operating temperature and lower audible level.

Standard System Features:

Sensors and signals:

Displacement, Force and Temperature (via an infrared non-contacting sensor) are standard. **Velocity** is derived from Displacement giving (4) channels to be used in viewing the resulting data.

- Force / load is measure via Interface 5K Pancake design to ensure accurate and repeatable results with low noise rejection.
- Displacement comes from analog encoder of 1 nanometer resolution mounted to the actuator to deliver a true reading of motion in the vertical axis.
- Temperature is mounted on an easy to move, CTW custom quick clamp allowing the User to test any damper at a constant point helping to improve consistency in comparing dampers and changes.

Stroke:

The LA48 has a useable range of 8.00 inches & 200 mm as the maximum available movement is more thus allowing for a very usable stroke as well as additional travel outside the range.

Velocity:

The LA48 peak velocity is 236 in/sec & 6.0 Met/sec. Owners should expect a very useful 5.50 Met/sec peak operating velocity with minimal displacement error within a given force range.

Acceleration:

Due to extreme design considerations in moving mass the acceleration performance far exceeds the industry norms. Over 120G's can be achieved for peak while a constant 30 G's is usable for testing. The frequency response is well over 200 Hz at less than 3dB down.

Waveforms:

Wave forms include, but not limited to, Sine, Square, Triangle, Sine-on-Sine, Stepped and Pause function as well as Split-Velocity for separating compression and extension speeds. There will also be the potential for drive files to be imported so that you can replay displacement data from a track or event as well as white noise and other frequency generating wave forms.



Software:

By using a GUI based on Windows 10 application platform, you are ready to build your own Test sequences via command-based prompts that allow you to go from nothing to 200 Hz in a few moments. In standard configuration, the User has a wide variety of canned wave forms, logging and prompts to develop specific Tests for every given damper or test specimen.

- See website for additional information on software

Columns:

Columns are 2.00" diameter and standard length provides a test opening of 46.5" / 1180 mm from the end of the load cell stud to the top of the actuator. Longer columns can be purchased in additional 12" / 300 mm increments.

Power input:

The LA48 requires 208-240VAC III phase power of up to 80 A(i). Outside of North America, it is best to use a step-down transformer to go from 380/440 VAC III phase to the 240 VAC III. Power and controls are fed to the LA via a control cabinet interface.

* Note – for peak performance, three phase (III) – 80 Amps (i) and a high buss voltage up to 240 VAC should be supplied.

Training:

Training can be done on site or at Lexington facility. If CTW must travel, additional charges will result. Understand that the machine is done and ready when it leaves our dock so that it is possible to train in our facility knowing the machine will be easy to get running on site.

Support:

The LA48 comes with a 1 -Year phone and e-mail support contract as well as use of TeamViewer remote access ability for training and help. We want you to have every opportunity to use and get the most from the machine.

Warranty:

The LA48 comes with a 1 -Year limited warranty on any item based on failure outside of user misuse.

Delivery:

- Customer can opt to pick-up in Lexington, NC but then NC State tax applies
- Crate – (1 or 2)
- Shipping – to be determined
 - By ground transport in Continental US
 - International air freight shipping is preferred



Options available for the LA48:

- * Longer columns sold in +12" / 305 mm increments

- * Longer travel actuators.
 - 13 inches of full travel
 - 18 inches of full travel

- * Safety enclosure / cage
 - Hinged door mounted on the left of the enclosure / cage, closed with latch
 - option will change crating and shipping

- * CE addition for the enclosure / cage
 - Enclosure is locked and cannot be opened until machine is disabled
 - industry standard double redundant features

- * NIST traceable calibrations for force and displacement signals

- * Gas assist on the crossbar for a "zero-weight" feel when moving / loading damper
 - struts carry the load of the crossbar making it easier to handle

- * Fully automated crossbar raise / lower and clamp / unclamp
 - (2) speed movement - slow and fast
 - tablet interface as well as full computer control of crossbar
 - see additional information at end of document

- * Static Support for additional loading - used to enhance the actuator's ability to handle load
 - capable of providing 2,000 lbs / 8.8 kN of static force for springs / large rod forces
 - requires a change to the LA68 frame size to handle this option
 - capable of maintaining position at +/- 0.05 mm



Options continued:

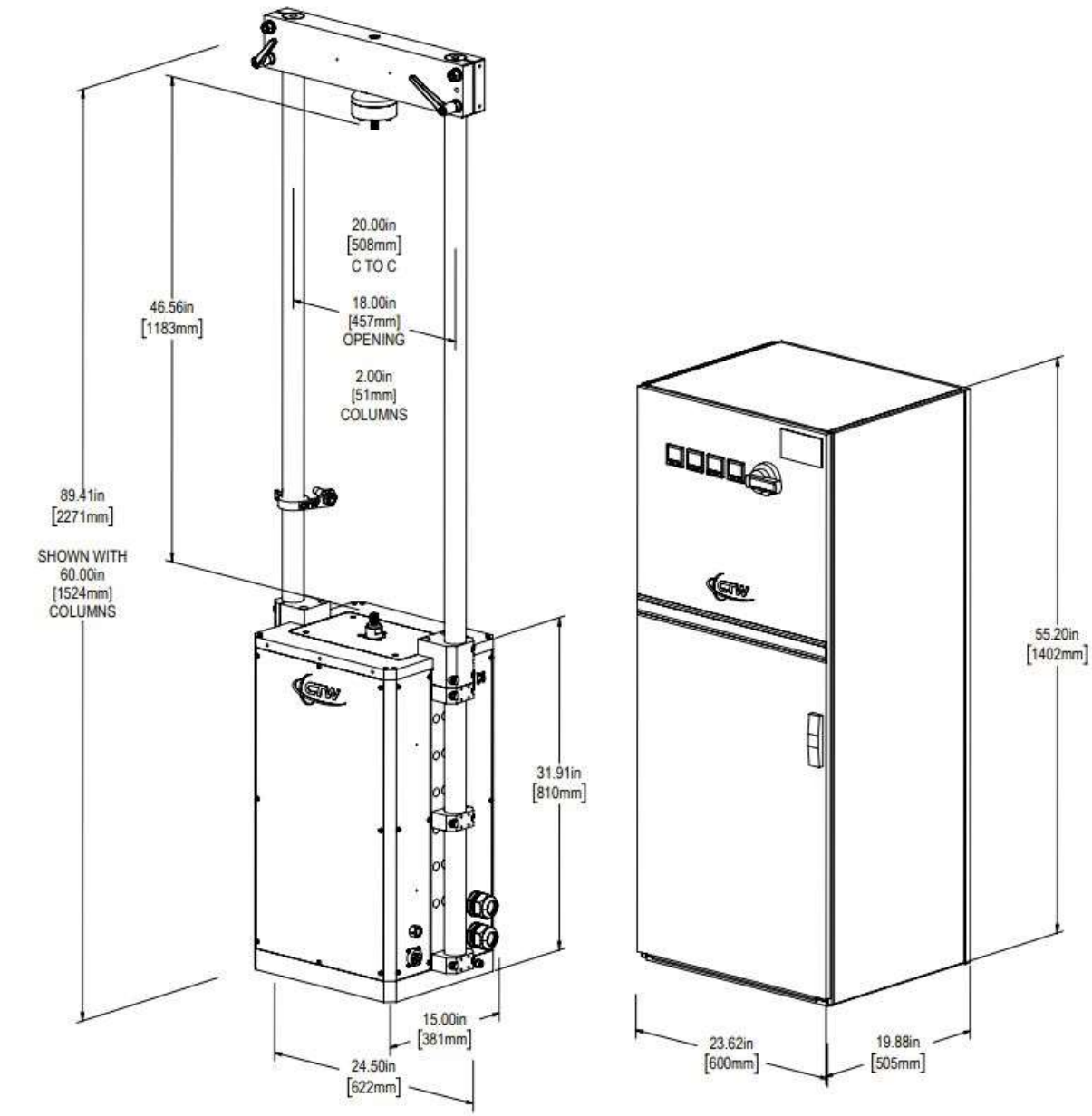
- * Side loading mechanism
 - pneumatic actuator applying up to 225 lbs. / 1,000 N
 - force driven by user within CTW Probe using analog out function

- * Additional channels (6) for extra signals / sensors to be collected during operation within CTW Probe
 - additional information at end of document

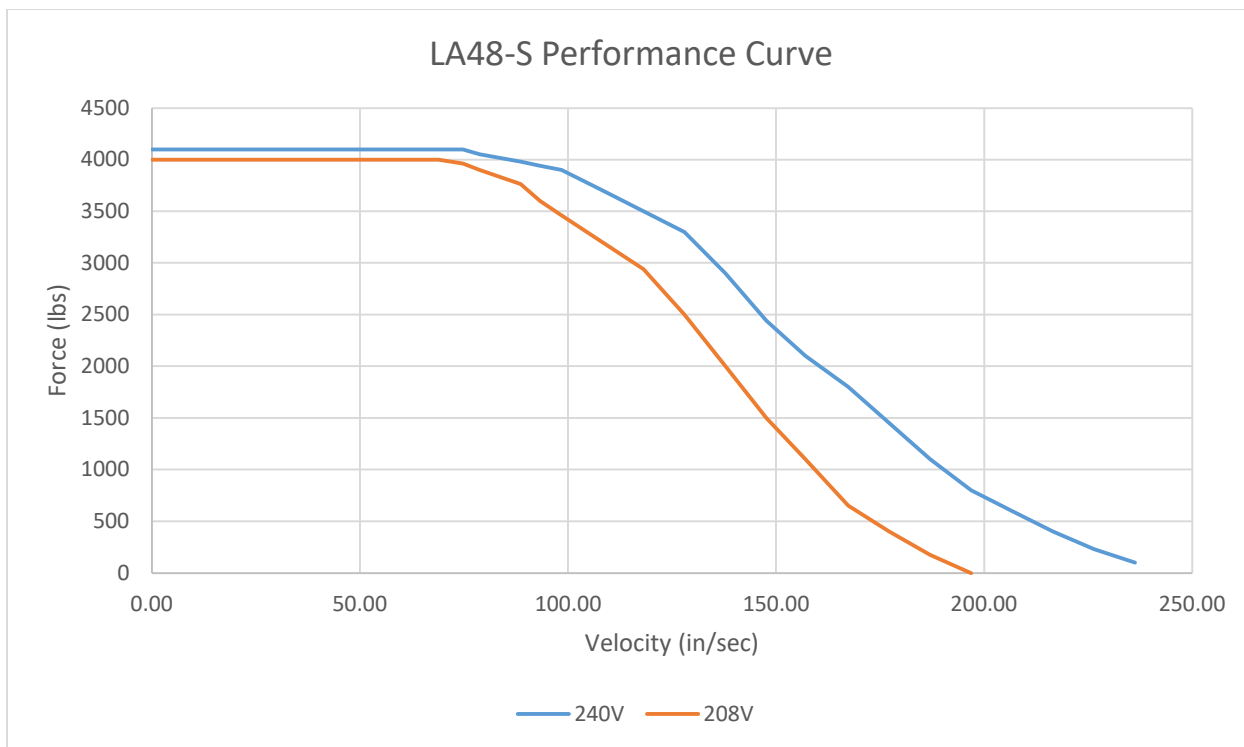
- * Digital IO for signaling external devices during the Test sequence
 - Used within a CTW Probe Test Sequence this can be used to turn on / off external devices
 - Includes 8 in / 8 out standard using CTW interface

- * Analog out of Displacement and force signals
 - User interface to gather real time signals

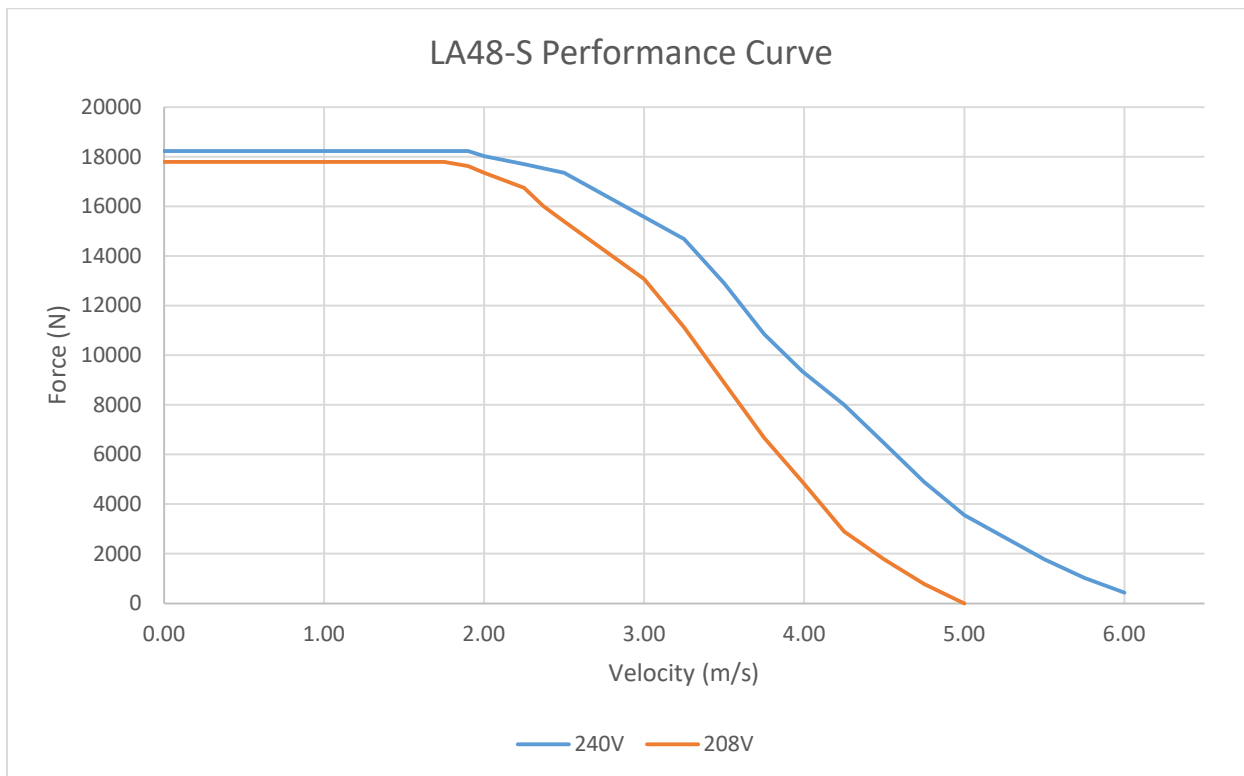
- * Analog out 0 - 5 VDC
 - command driven within CTW Probe software



General Dimensional Outline of LA28 / LA48



LA 48 Peak Power and Performance Curve – Imperial units

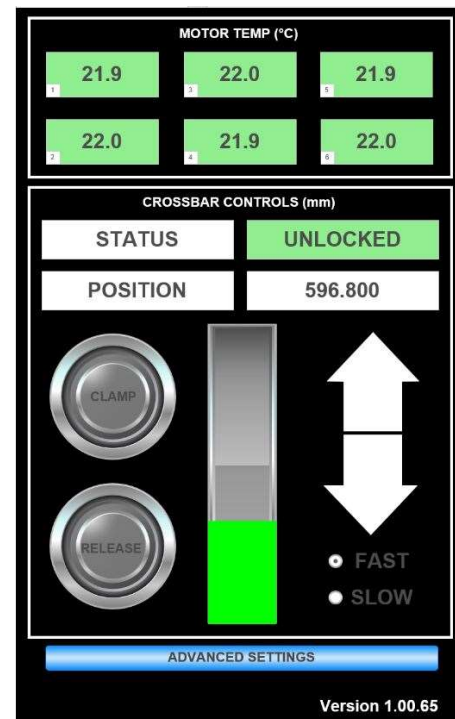


LA 48 Peak Power and Performance Curve – Metric units

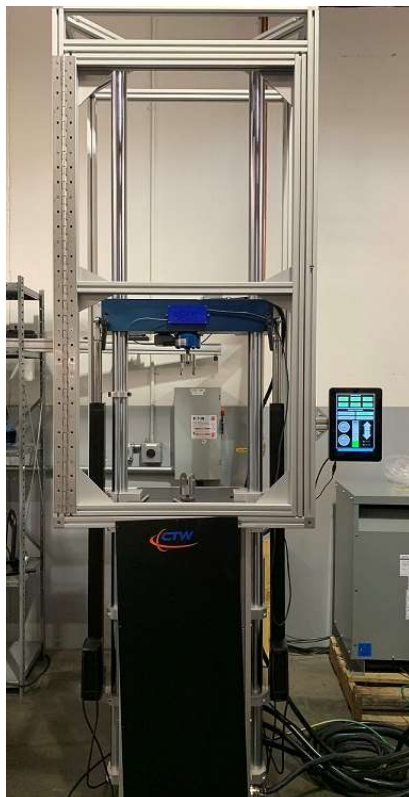
Option: Automated Crossbar overview

The User will interface with the crossbar with the following keypad with access to various functions.

- Motor Temperature monitor with active integrated cooling limits
- Crossbar Status Indicator
 - Clamp / Release
 - Locked / unlock
- Crossbar Position with User defined “zero”
- Two-Speed control of movement
 - Fast for large travel adjustments
 - Slow for damper mounting
- 1000 mm range of movement
- 900 lbf of force available to compress / extend the specimen / damper



Crossbar Keypad Interface



*Full
1000 mm
of travel*



Complete LA with Automated crossbar and Enclosure showing full system and 1000 mm range of travel

Option: 6 Additional Channel Input option

CTW Automation offers up to (6) additional channels for the User to collect signals beyond the standard offering for the machine. By creating an interface that is customizable per-channel, the User has the ability to customize for any given requirement and sensor.

Each channel uses its own board. These can be changed and/or switched out quickly to provide flexibility and customization.

Key features:

- 6 channels
- Simultaneous sample rate up to 4kHz
- Bridge Excitation/Signal Conditioning (regulated +/-10V or +/-20V) (load cells, strain gauges)
- Sensor signal conditioning: regulated +/-5V, 10V, 12V or +24V excitation. Switchable gain 1x, 2x, 4x, 10x
- Pass through: non-regulated +24V excitation, 1x gain, 4Khz anti-aliasing filter
- Can make custom boards upon request

