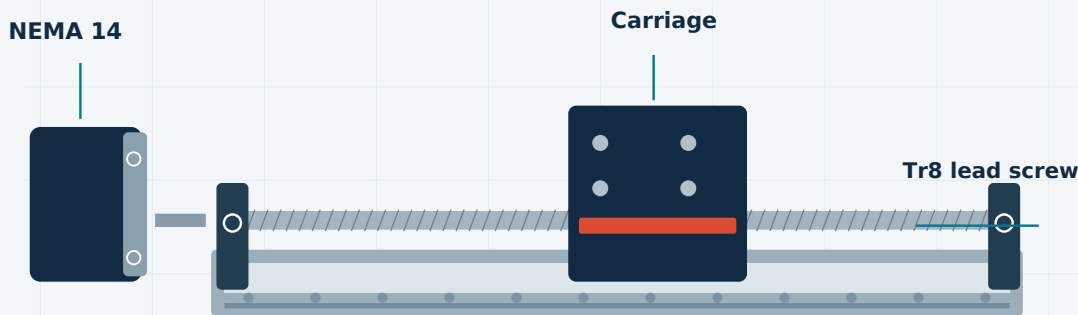


FSL30 Mini Linear Stage

Compact linear motion guide with one moving carriage and a NEMA 14 two-phase stepper motor.

Configuration covered: the open-frame FSL30 stage commonly offered with a Tr8x2 lead screw and a 35 x 34 mm NEMA 14 motor. Performance ratings below are published catalog/listing figures, not test certification for a particular serial-numbered unit.



01 Core configuration

30 mm

Nominal rail width

50-300

Effective stroke, mm

Tr8x2

Default lead-screw type

Motion principle: a screw-driven carriage moves along a compact aluminum guide. The motor rotates the lead screw; its lead converts rotary motion into linear travel. Offered screw options and available motor/bracket combinations may differ by order.

Rated Data and Drive Options

Values are conditional on the exact screw, motor, travel and installation orientation.

02 Published stage data - screw-driven configuration

Parameter	Published information
Effective stroke	50 to 300 mm
Number of carriages	1
Standard lead screw	Tr8x2; nominal 8 mm, lead 2 mm/rev
Alternative lead screws	Tr8x4; Tr8x12 (order-specific)
Repeat positioning accuracy	0.05 mm (published listing claim)
Maximum horizontal load	Approx. 3 kg to 4 kg; listings disagree
Maximum vertical load	1 kg (published listing claim)
Horizontal speed, loaded	70 mm/s (listed, not independently tested)
Vertical speed, loaded	50 mm/s (listed, not independently tested)
Maximum no-load speed	80 mm/s (listed, lead dependent)
Acoustic level	65 dB at a 1 m test distance (listed)
Nominal service life	10,000 h (seller estimate; conditions unspecified)

03 NEMA 14 motor - advertised configuration

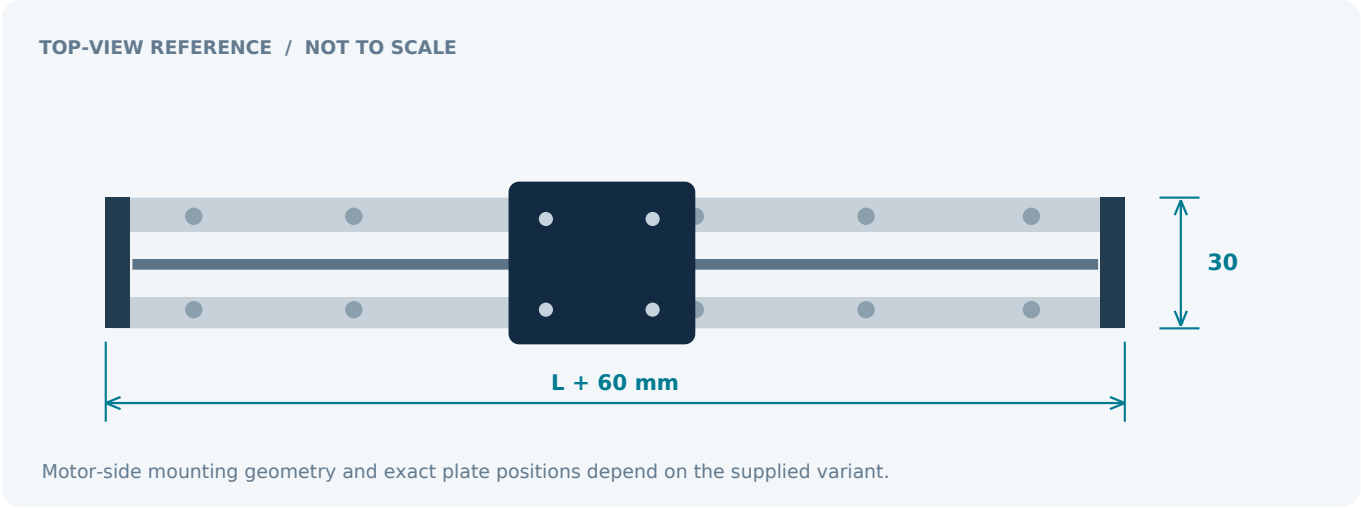
Motor characteristic	Advertised specification
Motor envelope	35 x 34 mm (listed body dimensions)
Rated phase current	0.95 A
Full-step angle	1.8 degrees (200 full steps/revolution)
Holding torque	60 mN.m (0.060 N.m)
Phase count	2

Not specified: winding resistance, phase inductance, wire colors/pinout, driver supply voltage, motor torque-speed curve, limit-switch availability and assembled envelope.

Dimensional Reference

All dimensions in mm. L denotes effective stroke. Reference diagram is not a fabrication drawing.

04 Stage reference geometry



05 Envelope and mounting-hole schedule

30 mm Nominal body width

L + 60 Stage length*

Stroke L	Rail length*	Base holes*	Pitch S*
50	110	4	50
100	160	4	100
150	210	4	100
200	260	6	100
250	310	6	100
300	360	8	100

* Dimensions are based on a published open-frame FSL30 drawing that may show a different motor size. Verify hole locations, counterbores and NEMA 14 overall length on the actual unit.

Integration and Application Notes

Essential calculations and checks for controller setup, installation and stage selection.

06 Screw-lead selection and commanded increments

Screw	Travel / rev	Full step (1.8 deg)	1/16 microstep
Tr8x2	2 mm/rev	0.010 mm/step	0.000625 mm
Tr8x4	4 mm/rev	0.020 mm/step	0.001250 mm
Tr8x12	12 mm/rev	0.060 mm/step	0.003750 mm

Calculated for a 200-step/revolution motor with ideal screw travel. Microstepping increases the number of command increments; it does not establish absolute accuracy, repeatability or load-dependent positioning resolution. Allow for screw backlash, compliance, friction and missed steps.

07 Motor speed versus axial speed

Formula: motor speed (rpm) = 60 x linear speed (mm/s) / screw lead (mm/rev).

Example: at 80 mm/s with a 2 mm lead, the motor would have to reach 2,400 rpm. The published stage speed should therefore be verified with the intended motor torque-speed curve, driver voltage and applied load.