

Elprico Elpricomvnaz21tsc-01

Elprico Linear Actuator with Nema17 Stepper Motor (400mm Stroke, 1204 Ball Screw) User Manual

Model: Elpricomvnaz21tsc-01

1. PRODUCT OVERVIEW

The Elprico Linear Actuator is a motor-driven guide rail system designed for high-precision linear motion. It is commonly utilized in linear reciprocating applications across various automation industries. Constructed from a high-quality aluminum alloy, this actuator offers excellent wear resistance and a long operational lifespan.

This specific model features an effective stroke of 400 mm and is equipped with a 1204 ball screw and a Nema17 stepper motor. Its precision manufacturing ensures high positioning accuracy and stable, reliable performance for demanding industrial tasks.



Figure 1.1: General view of the Elprico Linear Actuator with Nema17 Stepper Motor.

Linear Actuator

Motor driven guide rail achieves high precision linear motion. Made of high quality aluminum alloy material, wear resistant, durable with long lifespan.



Figure 1.2: Detailed view highlighting the motor-driven guide rail and ball screw mechanism.

2. SETUP

Proper setup is crucial for the optimal performance and longevity of your linear actuator. Follow these steps carefully:

1. **Unpacking and Inspection:** Carefully remove all components from the packaging. Inspect the linear actuator, Nema17 stepper motor, and any included accessories for visible damage. Report any damage to the supplier immediately.
2. **Mounting the Actuator:** Securely mount the linear actuator to a stable, flat surface using appropriate fasteners. Ensure the mounting surface can support the weight of the actuator and any attached load during operation. The actuator typically has mounting holes on its base.
3. **Connecting the Stepper Motor:** The Nema17 stepper motor is pre-attached to the actuator. Connect the motor's wiring to a compatible stepper motor driver. Refer to your stepper motor driver's manual for specific wiring diagrams (typically 4 or 6 wires). Ensure correct phase connections to avoid motor damage or incorrect operation.
4. **Power Supply Connection:** Connect the stepper motor driver to a suitable power supply. Verify that the

power supply voltage and current ratings meet the requirements of your stepper motor and driver. Incorrect power can lead to malfunction or damage.

5. **Controller Integration:** Integrate the stepper motor driver with your control system (e.g., PLC, microcontroller, CNC controller). Configure the controller to send appropriate step and direction signals to the driver for precise linear movement.



Figure 2.1: Side view showing the Nema17 stepper motor and its wiring for connection to a driver.

3. OPERATING INSTRUCTIONS

Once the linear actuator is properly set up and connected to your control system, you can begin operation. Always ensure safety precautions are in place before initiating movement.

- **Initial Movement Test:** Start with slow, controlled movements to verify correct wiring and functionality. Observe the actuator's movement direction in response to your control signals.
- **Speed and Acceleration:** Adjust the speed and acceleration parameters in your control software according to your application's requirements. Avoid excessively high acceleration rates, which can lead to missed steps or mechanical stress.
- **Load Capacity:** Do not exceed the specified load capacity of the actuator. Overloading can cause

premature wear, reduced accuracy, and potential damage to the ball screw and motor.

- **End Stops:** Implement software or hardware end stops in your control system to prevent the actuator from exceeding its physical stroke limits. This protects the mechanism from impact damage.
- **Continuous Operation:** For continuous operation, monitor the motor and driver temperatures to ensure they remain within their specified operating ranges. Adequate cooling may be required for high-duty cycle applications.

4. MAINTENANCE

Regular maintenance helps ensure the long-term reliability and performance of your linear actuator.

- **Cleaning:** Keep the guide rails and ball screw clean and free from dust, debris, and contaminants. Use a soft, lint-free cloth. Avoid abrasive materials or harsh chemicals.
- **Lubrication:** Periodically inspect the ball screw for adequate lubrication. Apply a thin layer of high-quality lithium-based grease or a recommended lubricant specifically designed for ball screws, if necessary. Consult the manufacturer's recommendations for lubrication frequency.
- **Fastener Check:** Regularly check all mounting bolts and fasteners for tightness. Vibrations during operation can cause fasteners to loosen over time.
- **Cable Inspection:** Inspect motor wiring and control cables for any signs of wear, fraying, or damage. Replace damaged cables immediately to prevent electrical issues.
- **Environmental Conditions:** Ensure the actuator operates within its specified environmental conditions (temperature, humidity). Protect it from excessive moisture or corrosive environments.

5. TROUBLESHOOTING

If you encounter issues with your linear actuator, refer to the following troubleshooting guide:

Problem	Possible Cause	Solution
Actuator does not move	<ul style="list-style-type: none">• No power to motor driver• Incorrect motor wiring• Controller not sending signals• Motor driver fault• Mechanical obstruction	<ul style="list-style-type: none">• Check power supply and connections• Verify motor wiring against driver manual• Confirm controller output signals• Check driver status indicators, reset if needed• Inspect for debris or binding
Erratic or inconsistent movement	<ul style="list-style-type: none">• Loose motor connections• Insufficient motor current• Excessive load• Missed steps due to high acceleration	<ul style="list-style-type: none">• Tighten all motor wiring connections• Adjust motor driver current settings• Reduce load or use a more powerful motor/driver• Decrease acceleration/deceleration rates

Problem	Possible Cause	Solution
Excessive noise or vibration	<ul style="list-style-type: none"> • Misalignment • Lack of lubrication • Loose mounting • Damaged ball screw or bearings 	<ul style="list-style-type: none"> • Check and correct alignment of actuator • Apply appropriate lubricant to ball screw • Tighten all mounting bolts • Inspect for wear; replace components if damaged
Overheating motor/driver	<ul style="list-style-type: none"> • Excessive current • High duty cycle without cooling • Poor ventilation 	<ul style="list-style-type: none"> • Reduce motor current if possible • Implement cooling solutions (fans, heatsinks) • Ensure adequate airflow around components

If the problem persists after attempting these solutions, contact technical support.

6. SPECIFICATIONS

Feature	Detail
Brand	Elprico
Manufacturer Reference	Elpricomvnaz21tsc-01
ASIN	B0899JJVDH
Material	Aluminum Alloy
Item Dimensions (L x W x H)	30 x 25 x 20 cm (11.8 x 9.8 x 7.9 inches)
Item Weight	2.51 Kilograms (5.53 lbs)
Effective Stroke	400 mm
Ball Screw Model	1204 (12mm diameter, 4mm lead)
Motor Type	Nema17 Stepper Motor
Bearing Type	Ball Bearing
Country of Origin	China
Available on Amazon.com.be since	July 27, 2022
Spare Parts Availability	Information unavailable on spare parts

7. WARRANTY INFORMATION

This Elprico Linear Actuator is covered by a standard manufacturer's warranty against defects in materials and workmanship. The specific terms and duration of the warranty may vary by region and retailer. Please retain your proof of purchase for warranty claims.

The warranty typically does not cover damage resulting from:

- Improper installation or setup.
- Misuse, abuse, or negligence.
- Operating outside specified environmental or load limits.
- Unauthorized modifications or repairs.
- Normal wear and tear.

For detailed warranty information, please refer to the documentation provided with your purchase or contact the seller.

8. SUPPORT

Should you require technical assistance, have questions about installation, operation, or maintenance, or need to report a product issue, please contact the seller or manufacturer directly.

When contacting support, please be prepared to provide the following information:

- Product Model: Elpricomvnaz21tsc-01
- ASIN: B0899JJVDH
- Date of Purchase
- A detailed description of the issue or question

For the most up-to-date contact information, please check the product packaging or the retailer's website where the product was purchased.