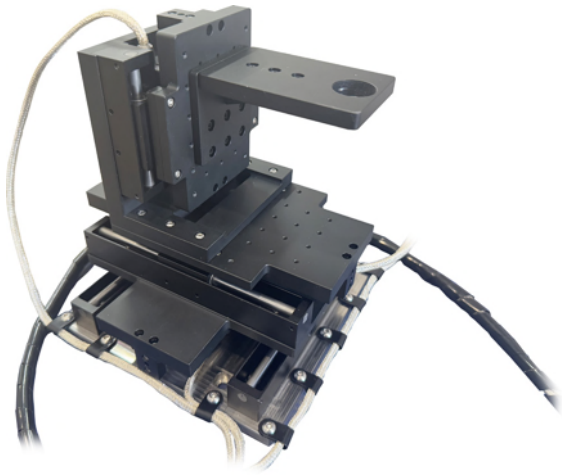




N31.XY100Z25 Linear Piezo Motor

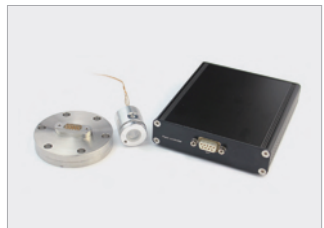
User Manual

Version: V1.0



This document describes the following products:

- N31.XY100Z25E
- N31.XY100Z25K



DECLARATION

Thank you for choosing CoreMorrow's products!

This user manual is applicable to N31.XY100Z25 Linear Piezo Motor. For your smooth and correct use of this product, please read this manual carefully before use. Please follow the instructions in the manual installation and use procedures. Improper operation may cause injury to the operator or damage to the product. Therefore, the entire installation and operation process should be completed by a professional with a certain foundation and understanding of the product principle, or under the guidance of a professional.

If the product is disassembled or modified without permission, our company will not be responsible for any consequences arising therefrom.

It is illegal to change the product model and other false sales of our products. Users are advised to be vigilant. Once you find out or be deceived, contact us directly, we will crack down on illegal activities and prevent deception and economic losses. CoreMorrow will certainly investigate legal responsibility of the illegal subject and related parties.

With the continuous development and innovation of technology, we will add the latest information to the manual as needed without notice. Please contact us if you need any information.

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1. Introduction >>

1.1 Purpose and content

- ▶ The manual is mainly for your smooth and correct use of piezo motor.
- ▶ The manual contains all necessary information for N31.XY100Z25 piezo motor.
- ▶ The manual describes the precautions during installation and use.

1.2 Symbol and meaning



DANGER: Improper handling may could cause injury to the operator.



Attention: Improper handling can cause damage to the equipment.

- ▶ No order between items.
 1. Please operating in order.
 - 2.

1.3 Expected reader

The manual default user has knowledge of piezo motor and controllers, and has a basis for its installation and use.

1.4 Manual lost replacement

If the manual is accidentally lost, please download it from www.coremorrow.com or contact our customer service department, we will send you the latest version of user manual.

2. Safety Guide

N31.XY100Z25 piezo motor is designed with advanced technology and safety standards, for safety and proper use of the product, please pay attention to following points when using:



Temperature changed and pressure will charge the piezo motor. Piezo motor will remain charged for a period of time disconnected from the controller, so the operator should pay attention when using it:

- ▶ Do not disassemble piezo motor;
- ▶ Discharge piezo motor before installation, it could be achieved by connecting to the controller;
- ▶ Do not pull out the controller during operation;
- ▶ Before using, please check whether the connecting wire of the product is in good condition, whether the product and the controller are effectively protected from grounding, in case of danger, please strictly regulate the operation during operation, do not touch it after power on.



In order to prevent damage to the product caused by improper operation, please pay attention to following points when using:

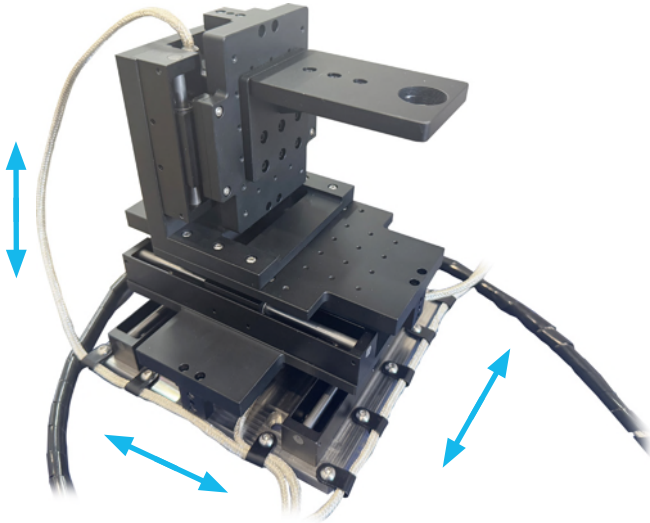
- ▶ Piezo motor is used as much as possible in dust-free, oil-free, lubricant-free environments;
- ▶ Since the product adopts flexible structure design, it is recommended that the load not exceed the bearing capacity of the product. Pay attention to the torque when loading. Do not twist or twist the load surface to avoid damage to the structure;
- ▶ Do not disassemble the product to avoid product damage;
- ▶ Avoid stretching and bending the cable interface to prevent damage to the cable;
- ▶ Please use the dedicated cable provided by us to connect the piezo motor and piezo controller;
- ▶ Please do not use cable extension wire, if need longer cable, please contact us.

3. Product Overview

3.1 Characteristics

- ▶ XYZ motion
- ▶ Displacement: XY 100mm Z 25mm
- ▶ Optional grating sensor
- ▶ Nanoscale resolution
- ▶ Load capacity up to 2.5kg

3.2 Motion Direction



3.3 Connector Pin Definition

The N31.XY100Z25E 3D piezo motor ships with a DB25 male connector as the default interface. This configuration is typically used when paired with the CoreMorrow E71. D12E-H piezo controller. Its appearance and corresponding pin definitions are as follows:



No.		Pin Definition
	1	Driving Output 4
14		-
	2	Driving Output 3
15		-
	3	Driving Output 2
16		-
	4	Driving Output 1
17		-
	5	Driving Output 1 GND
18		Driving Output 3 GND
	6	Driving Output 2 GND
19		Driving Output 4 GND
	7	-
20		-
	8	-
21		5V
	9	5V_GND
22		Differential input signal B+
	10	Differential input signal B-
23		Differential input signal A-
	11	Differential input signal A+
24		Differential input signal Z+
	12	Differential input signal Z-
25		CAL signal
	13	Differential input signal E-(LVDS)
Shell		GND (Protect)



4. Operating Environment

Operating environment requirements for the N31.XY100Z25 piezo motor:

Operating Environment	Description
Application	For indoor use only
Operating temperature	0~40°C
Storage temperature	-10~40°C
Transportation temperature	-10~40°C
Environmental requirement	Free of dust, clean, and without the presence of corrosive substances.
Relative humidity	< 60%

Note: If the ambient temperature exceeds the operating temperature range of this product, please contact our customer service representatives.

5. Installation and Operation

Before installation, first check the safety, such as whether the cable is damaged or broken, and whether the power supply has grounding protection.

5.1 Installation and announcement

Caution! During installation of the N31.XY100Z25, please tighten bolts slowly and avoid excessive torque to prevent damage to the mechanism.

1. Ensure the installation surface is relatively flat, and pay attention to the appropriate positioning of the cable outlet to prevent excessive bending of the cables. Avoid pulling or bending the cables.

2. Fix the piezo stage with screws and tighten it.

No.	Fixed mounting holes	Quantity	Installation torque
01	M6	4	< 5.0N·m

3. When installing the load, tighten it appropriately to ensure positioning accuracy. Tighten the load slowly without applying excessive torque to prevent damage to the mechanism. This application includes a objective lens; simply rotate it to the appropriate position during installation.

After securing the piezo motor and objective lens, connect the product cable to the corresponding controller port according to the wire markings near the connector head. Refer to the connector specifications.

Install the N31.XY100Z25 piezo motor horizontally. If installed in a non-horizontal orientation, excessive load weight may cause damage to the motor displacement motor.

5.2 Turn on the piezo controller

When plugging or unplugging cables, hold the connector by its center with your fingers and avoid pulling directly on the cable. Pulling on the cable may cause damage. (Note: Refer to the diagram below for the correct method of plugging and unplugging cables. The piezo controller shown in the diagram is for reference only.)



E71.D12E-H



Correct



Incorrect

Note:

- ▶ Connect the piezo motor to the piezo controller using the dedicated cable provided by CoreMorrow.
- ▶ Do not extend cables without authorization. Contact our customer service for longer cables if needed.
- ▶ Failure to connect the grounding protection wire may pose an electric shock hazard.
- ▶ Using piezo products in environments with increased electrical conductivity may cause damage due to electrical flashover.
- ▶ Continuous high-voltage operation may shorten the lifespan of piezo actuator.
- ▶ Connecting incorrect operating voltages may damage linear piezo motor.
- ▶ Uncontrolled vibration can cause irreversible damage to piezo products.

5.3 Operational Precautions

After confirming the startup status, perform the following piezo controller-related operations:

1. Before operation, carefully read the user manual for the selected piezo controller before starting it.
2. First perform a zero-setting on the piezo controller.
3. After confirming no abnormalities, input the required displacement for the piezo motor in the software.
4. Operate within the rated voltage range of the piezo motor.
5. After use, perform a voltage zero operation.

Please handle the product with care during operation to avoid bumping or knocking it, which may affect its performance or cause damage.

The product's resolution is not inherently limited; it depends on the performance of the piezo controller. To achieve optimal motion precision on the platform, we recommend using CoreMorrow's dedicated piezo controller. Refer to the piezo controller's user manual for specific operating procedures, and ensure you understand the correct operation before proceeding.

Note:

- ▶ Do not remove the grounding protection during operation. If temporary removal is necessary, ensure the grounding is reconnected before restarting.
- ▶ Do not exceed the specified maximum voltage for the drive.
- ▶ If abnormal noises or vibrations occur during use, immediately turn off the power and check the parameter settings.

5.4 Disassembly Precautions

- ▶ To discharge piezo products connected to a piezo controller:

Turn off the power switch of the corresponding piezo controller to ensure it has no output.

- ▶ To discharge piezo products not connected to a piezo controller:

Connect the piezoelectric product to a piezo controller that is turned off.

6. Transportation and Inspection

6.1 Transportation

Product is packed in carton. The transportation is carried out under the condition of packaging. This product can be transported by various means of transportation under normal conditions. During transportation, it should avoid direct rain and snow, avoid contact with corrosive substances, and avoid strong collision, try to avoid improper behavior such as squeezing, irregular placement.

6.2 Unpacking inspection

Improper external forces applied to the surface of piezo products may damage internal mechanisms such as flexible hinges. Tension at the cable exit point and bending of the connecting cable may prevent the piezo product from establishing a normal connection with the piezo controller, thereby causing it to malfunction.

- ▶ Before opening the package, please carefully check the packaging for damage, bruising, wetting, moisture, deformation, etc..
- ▶ When unboxing, do not use heavy tools or forceful methods to open the box. Prevent

the product from being scratched or damaged by blades or other sharp objects.

- ▶ When removing the product from the packaging box, do not pull on the product's cables to avoid damaging them due to improper force.
- ▶ Handle with care to avoid permanent damage from impacts.
- ▶ When holding the product, do not grip the moving platform surface to prevent internal structural damage from improper force.

7. Maintenance and processing

7.1 Problem Processing

- ▶ If the user has problems that could not be solved. Please record the fault situation and contact with us. The professional technical engineer would help solve the problem.
- ▶ Problems caused by improper operation are not covered by the warranty;
- ▶ CoreMorrow is not responsible for any problems caused by dismantling the piezo motor without permission.

7.2 Daily maintenance

- ▶ If the product is not used for a long time, please store it in an room environment with no dust, good ventilation, clean and non-corrosive substances.
- ▶ Please do not loosen the screws on the motor structure, avoiding to affect the accuracy.

Daily cleaning:

- ▶ Please disconnect the piezo motor to controller, then clean the surface of it.
- ▶ When cleaning, first wipe a small amount of detergent with a towel and gently wipe the surface of the piezo motor, then wash it with alcohol. Please do not use ultrasonic waves for cleaning.
- ▶ When cleaning the surface, try not to pick up the product. If it is necessary to pick up, please place a sponge under the product for protection, the product should not be too high from the sponge to prevent it from falling off.

8. Customer Service

If you have questions about the products you are currently using, please let us know the following information:

- ▷ Product model number and related number.
- ▷ Controller model for this product.
- ▷ Software driver version for this product.
- ▷ Computer operating system for installing supporting software.

9. Contact us

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