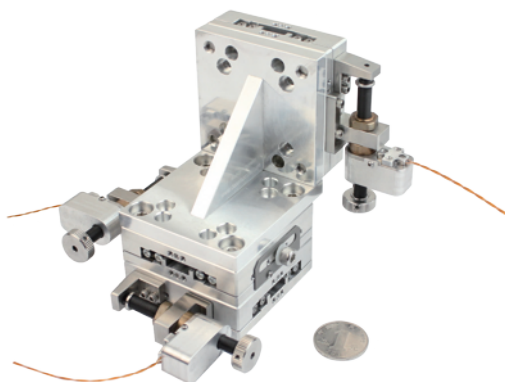


# Linear Piezo Nanopositioning Stage

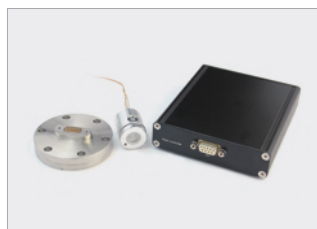
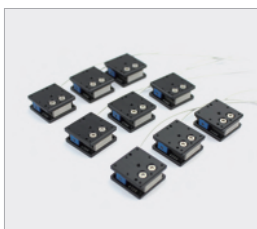
## User Manual

Version: V1.0



This document describes the following products:

- X65N81K26-B2
- XY65N81K26-B2
- XYZ65N81K26-B2



# DECLARATION

Thank you for choosing Coremorrow's products!

This user manual is applicable to linear piezo nanopositioning stage. 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 products.
- ▶ The manual contains all necessary information for linear piezo nanopositioning stage.
- ▶ 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 linear piezo nanopositioning stages and controllers, and has a basis for its installation and use.

### 1.4 Manual lost replacement

If the manual is accidentally lost, please contact our customer service department, we will send you the latest version of user manual.

## 2. Safety Guide

Linear piezo nanopositioning stage 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 product. It 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 stage;
- ▶ Discharge piezo stage 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 (up to 120V voltage) after power on.



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

- ▶ Linear piezo nanopositioning stage 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 linear piezo nanopositioning stage and piezo controller;
- ▶ Please do not use cable extension wire, if need longer cable, please contact us.

## 3. Product Overview

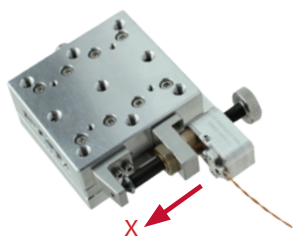
### 3.1 Product Introduction

This linear piezo nanopositioning stage is piezoelectric screw motion platform, with a combination of linear motor piezoelectric screws and a sliding stage, and the high-precision motion of the piezoelectric screw is used to control the movement of the sliding stage. Two dimensional or three-dimensional motion control can be formed with multiple piezoelectric screw motion platforms.

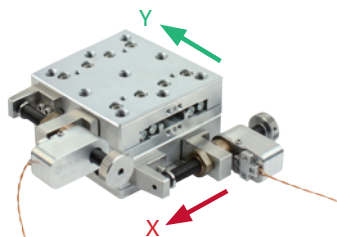
### 3.2 Product Features

- ▶ Travel up to 25.4mm/axis
- ▶ 1 to 3 axes motion
- ▶ Displacement increment <30nm
- ▶ Standard and vacuum versions are available

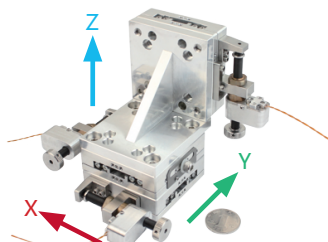
### 3.3 Motion Direction



(a) X65N81K26



(b) XY65N81K26



(c) XYZ65N81K26

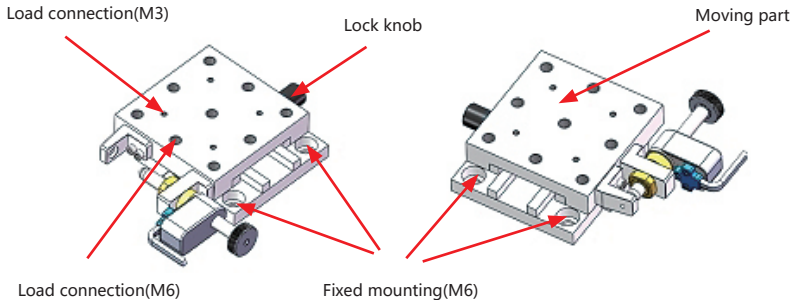
## 4. Operating Environment

- ▷ Operating temperature: 0~50°C
- ▷ Environment free of dust, clean, and non-corrosive substances
- ▷ Relative humidity: <60%

## 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

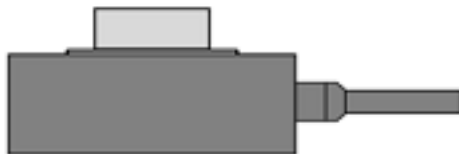


1. Gently push moving part to moving direction, turn the locking knob to tighten the moving part.
2. Fix the stage with M6 pan head screws.
3. Turn the screws to leak out the other two fixing holes, and the locking knob is turned to lock the moving part.
4. Fix the stage with M6 pan head screws.
5. Loosen the locking knob.
6. Install load and tighten properly to ensure positioning accuracy.
7. Connect the cable to corresponding interface of piezo controller according to the label on the connector.

## 5.2 Load

When installing the load, ensure that the load mass is less than the max load of piezo stage, and install the load as much as possible at the center of the moving surface.

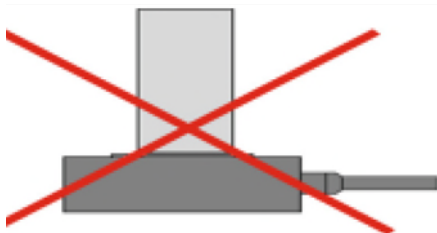
The correct placement of the load is shown below:



Load applied to the center of piezo stage

For protection, we don't recommend the load is too high. If it is used a higher load, please reduce the position center of the load gravity.

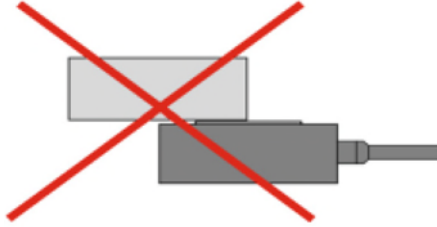
The error placement method is as follows:



Try not to let the load center of gravity exceed piezo stage

It is forbidden to load the load on one side of the piezo stage, which would cause serious damage to the product, as shown in the following figure:

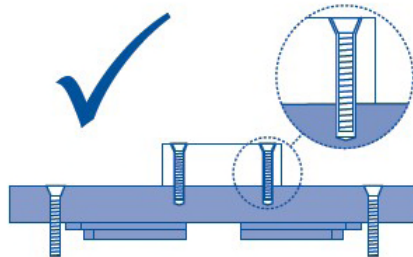




Do not load longer loads and add to the side of the piezo stage

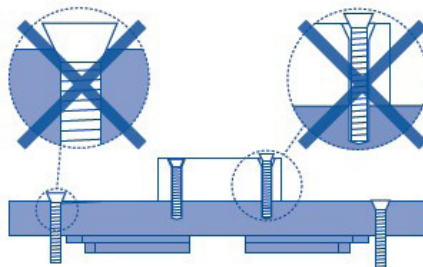
If the screws used in tightening and connecting are too long, the screws will not be installed or some of screws will leak out, which will scratch the piezo stage and affect the motion accuracy. If the screws are too short, the connection will not be compact and easy to loosen. Looseness could damage the internal structure of the piezo stage.

We recommend using the connection method shown below:



Correct connection

Please do not connect as shown below:



Incorrect connection

## Note:

- ▶ Slowly tighten the load when installing it, and the torque should not be too large to avoid damage to mechanism.
- ▶ Avoid stretching and bending cables.
- ▶ Please connect linear piezo nanopositioning stage and controller with special cable provided by CoreMorrow.
- ▶ Please do not extend the cable without authorization, please contact us if you need a longer cable.

## 5.3 Operating

Please confirm the following information before starting the power supply:

- ▶ The environment meets requirements of piezo products operating environment.
- ▶ The fixing screws must be tightened.

The above information is determined to perform controller related operations:

1. Please carefully read piezo controller user manual before operating, then start the controller;
2. Set the piezo controller to zero;
3. It could work normally within the rated voltage range of piezo stage.
4. Please set the piezo controller to zero after used.
5. If abnormal noise or oscillation occurs during use, immediately turn off the power and check parameter settings.

## 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

Please check below information:

- ▶ Before opening the package, please carefully check the packaging for damage, bruising, wetting, moisture, deformation, etc.
- ▶ Please check the parts on a case-by-case basis based on the supply contract and the packing list.
- ▶ Whether there is obvious damage on the surface of the product.
- ▶ Whether the product identification is clear and complete.
- ▶ Whether the connector is loose, the connection line is broken or not, etc.

If any of the above occurs, please make a detailed record and take a photo, and please contact us immediately.

### **Precautions:**

- ▶ Please handle gently when unpacking to avoid permanent damage to the products caused by bumps.
- ▶ Please do not use heavy tools or use rough methods to open them.
- ▶ Please do not discard all packaging materials for return shipments.



## 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 stage 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 stage structure, avoiding to affect the accuracy.

## **Daily cleaning:**

▶ Please disconnect the piezo stage 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 stage, then wash it with alcohol. Please do not use ultrasonic waves for cleaning.

## **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**

### **CoreMorrow Ltd.**

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**CoreMorrow Official and CTO WeChat are below:**

