

ZeroErr

eRob to PC Connector User Manual

Version 1.1



Build Robot Fast

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<https://en.zeroerr.cn>

What's New

0.1 eRob to PC Connector User Manual Version 1.1 Update

0.1.1 NEW Content

- (1) NEW full english format;
- (2) NEW Chapter [What's New](#);
- (3) NEW Chapter [Content Modification Markings](#);
- (4) NEW Chapter [Records of Revision](#);
- (5) NEW Chapter [Symbols and Abbreviations](#);
- (6) NEW Chapter [Functional Introduction](#): describe the function and performance characteristics of the device;
- (7) NEW Chapter [Installation and Wiring](#): illustrate the dimensions, interfaces, indicator LEDs, and other physical properties of the device;
- (8) NEW Chapter [eTuner Download and Installation](#): demonstrate the steps to download and install the eTuner software;
- (9) NEW Chapter [eTuner Software Connection and Test](#): demonstrate the connection and test run procedure of the eTuner software;
- (10) NEW Chapter [Warranty](#);
- (11) NEW Chapter [About Us](#).

0.1.2 Content Enhancement

- (1) Enhanced the name description of the device from “eRob USB-CAN Debugger” to “eRob to PC Connector”;

Content Modification Markings

0.2 New Content

The new content in this document of the current version is marked with a blue strip and ★ symbol.

Example:

★ Thank you for choosing ZeroErr's eRob series rotary actuator module. We appreciate your trust and confidence in our product. To ensure your satisfaction and enhance your user experience, we have carefully designed this user manual to provide you with all the necessary information for operating and maintaining your eRob rotary actuator module.

0.3 Enhanced Content

The enhanced content in document of the current version is marked with a green strip and Δ symbol.

Example:

Δ If you have any questions or encounter any issues while using eRob rotary actuator module, please do not hesitate to reach out to our customer support team. We are here to assist you and provide timely assistance to ensure that you have a smooth and enjoyable experience.

Record of Revisions

Version	Iteration	Description	Date
1.1	1	NEW full english format, NEW Chapters, Name changed.	2024/03/12

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Symbols and Abbreviations

CSP	cyclic synchronous position control mode
CSV	cyclic synchronous velocity control mode
DC	direct current
DIS	Draft International Standard
etc.	and so forth
ISO	International Organization for Standardization
PC	personal computer
PE	protective earth
PP	profile position control mode
PV	profile velocity control mode
PWR	power
RH	relative humidity
SYS	system
RX	receive
TX	transmit

Chapter 1 Functional Introduction

1.1 Functional Overview

The “eRob to PC Connector” (formally known as the eRob Debugger) is a dongle specifically designed to connect the eRob to a Windows PC, which enables our proprietary eTuner debugging and eRunner motion control software to communicate with the eRob.

(1) Connection with the eTuner Software:

- The “eRob to PC Connector” facilitates the connection between the eRob and the PC, enabling the eTuner debugging software to conduct trial runs of our company’s eRob module;
- It supports various functionalities such as PID adjustment, speed loop adjustment, position loop adjustment, status monitoring, and error handling with load;
- When the eRob and the user’s master station controller communicate via EtherCAT, the eTuner debugging software can be connected simultaneously for status monitoring. Additionally, it can utilize the built-in oscilloscope function to collect data such as position, speed, voltage, current, temperature, etc., and draw waveform curves;
- For more details, please refer to our relevant YouTube video: [eRob module unboxing](#).

(2) Connection with the eRunner Motion Control Software:

- The “eRob to PC Connector” enables connectivity between the eRob and the eRunner motion control software, allowing the transmission of standard CANopen motion control commands to control eRob movement.
- It supports various motion control commands such as position mode (PP, CSP), velocity mode (PV, CSV), etc.
- The connector can monitor communication commands, facilitating users in developing CANopen motion control command sets to control eRob movement.
- For more details, please refer to our relevant YouTube video: [eRunner Introduction](#).

Note: When testing with eRunner and eTuner software, the two software cannot be opened and run simultaneously. One software needs to be closed first before opening and running the other.

1.2 Performance Characteristics

- (1) The PC interface complies with USB 2.0 specifications and is compatible with USB 3.0;
- (2) Integrated with 1 CAN-bus interface, utilizing a plug-in terminal connection method;
- (3) Supports CAN 2.0A frame format, compliant with ISO/DIS 11898 standard;
- (4) The communication baud rate between CAN-bus and eRob modules is fixed at 1Mbps;
- (5) Powered by USB bus power (DC +5V, 130mA);
- (6) Integrated with CAN terminal resistor (120Ω), enabled via dip switch;
- (7) Supports Windows operating systems such as Win7, Win8, Win10, Win11, etc.
- (8) Operating environment.
 - Temperature: -20°C to +70°C.
 - Humidity: 15% to 90% RH, non-condensing.

Chapter 2 Installation and Wiring

This chapter outlines the methods for connecting the “eRob to PC Connector” to a computer and our company’s eRob modules, along with relevant precautions for initial use.

2.1 Dimension of the Connector

The outer dimensions of the “eRob to PC Connector” are as follows and shown in [Figure 2-1](#). The total weight of the “eRob to PC Connector” is approximately 90g.

$$L * W * H = 96mm * 58mm * 24mm$$

Symbol	Definition	Unit
L	length, including terminal block	mm
W	width	mm
H	height	mm

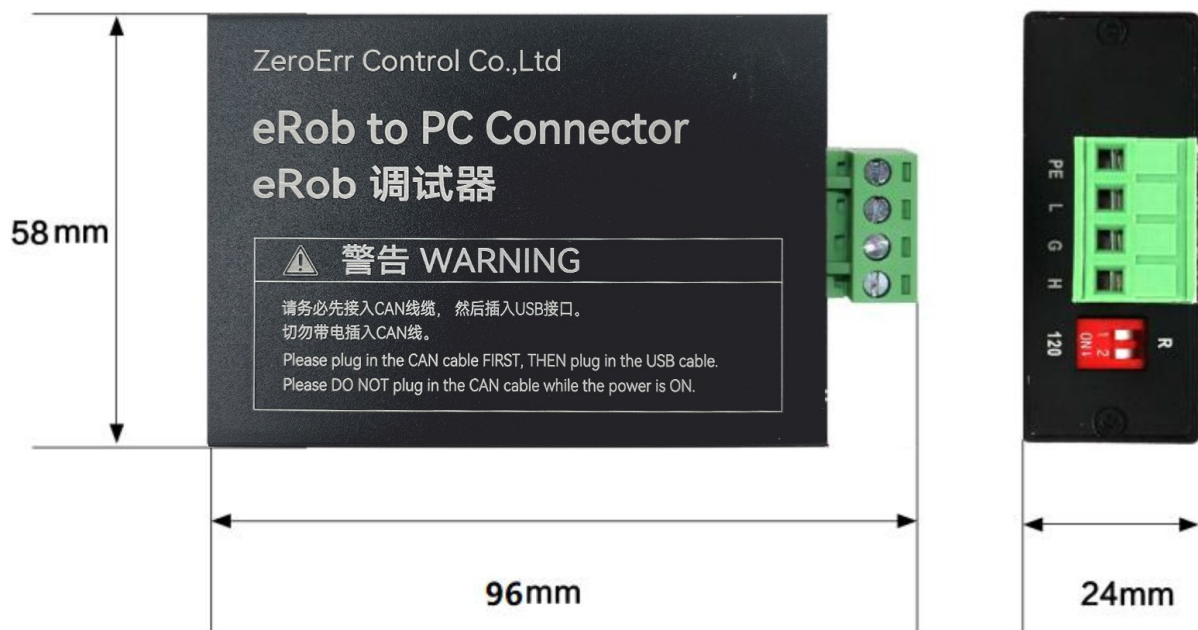


Figure 2-1 eRob to PC Connector Dimensions

2.2 Interface and Indicator LED Definition

The “eRob to PC Connector” is designed with a USB interface and a standard CAN-bus interface. The CAN-bus interface is accessible through a 4-pin plug-in terminal block, facilitating connection to the CAN communication interface of eRob modules. For detailed interface positions and definitions, refer to [Figure 2-2a](#) and [Figure 2-2b](#), along with [Table 2-1](#), [Table 2-3](#), and [Table 2-4](#). Furthermore, [Table 2-2](#) provides explanations for the indicator LEDs.



(a) USB Port (b) CAN-bus Port
Figure 2-2 “eRob to PC Connector” Port Illustration

Table 2-1 USB Port Definition

Port	Marking	Function
USB	USB	Power supply and data communication interface of the “eRob to PC Connector”, connects to the PC’s USB port via USB-B to USB-A cable.

Table 2-2 Indicator LED Status Definition

Indicator LED	Status	Definition
PWR	OFF	Power not supplied or power supply failure
	Always-ON	Power supply normal
SYS	OFF	Device initialization failed
	Always-ON	Device initialization successful, standby
	Blink	Device called by software on PC
RX	OFF	No data received on CAN bus
	Blink	Data being received on CAN bus
TX	OFF	No data transmitted on CAN bus
	Blink	Data being transmitted on CAN bus

Table 2-3 CAN-bus Port Definition

Port	Marking	Function
CAN	PE	Shielding Layer Connection
	L	CAN_L (CAN Low) Signal Line
	G	CAN_GND (CAN Ground/Earth) Connection
	H	CAN_H (CAN High) Signal Line

Table 2-4 CAN-bus Terminal Resistor

Port	Marking	Function
CAN-bus Terminal Resistor	R	<ul style="list-style-type: none"> CAN Terminal Resistor Enabled via dip switch Resistance: 120Ω



2.3 Wiring

2.3.1 Connection with eRob Module

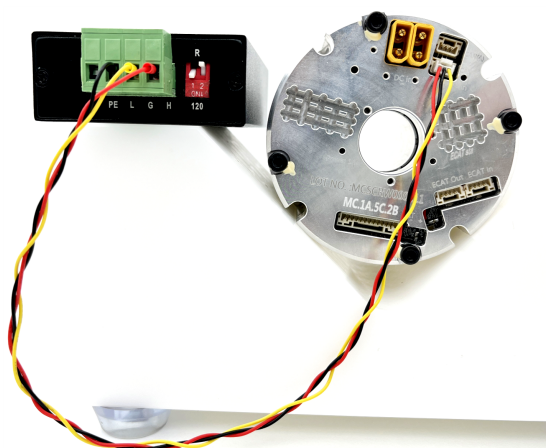
Connect the “eRob to PC Connector” to the eRob module’s CAN communication interface (as shown in [Figure 2-3a](#)).

- (1) Connect PE if necessary;
- (2) Connect L to the eRob’s CAN_L (black);
- (3) Connect G to the eRob’s CAN_GND (yellow);
- (4) Connect H to the eRob’s CAN_H (red);
- (5) Set one of the dip switches (1 or 2) of the CAN terminal resistor R to ON, leaving the other one OFF;
- (6) Connect the “eRob to PC Connector” to the eRob module.

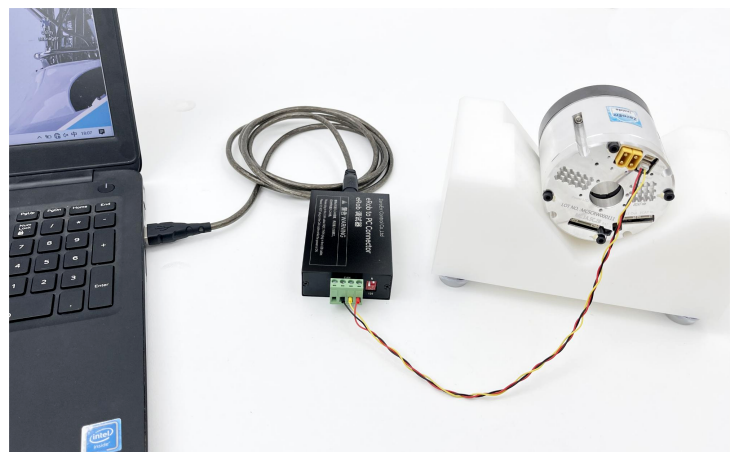
For the CAN communication connection methods and precautions for multiple eRob modules, please refer to [“eRob Rotary Actuator User Manual” Section 6.2](#).

NOTE:

- (1) Make sure to connect the CAN line to the eRob module first before connecting the “eRob to PC Connector” to the PC. Do not connect the CAN line while the eRob module or the “eRob to PC Connector” is powered;
- (2) For reliable connection and smooth operation, make sure to firmly connect the CAN line to the 4-pin terminal block of the “eRob to PC Connector” by crimping the wire to it’s core, not just the outer insulation sleeve;
- (3) The CAN communication line should adopt twisted-pair wiring with separate shielding;
- (4) The eRob modules use a fixed 1Mbps transmission rate. The communication distance between the two farthest nodes on the CAN bus can reach up to 25m.



(a) “eRob to PC Connector” and the eRob module



(b) “eRob to PC Connector” and PC

Figure 2-3 Connection Illustration

2.3.2 Connection with PC

The USB-A port on the PC is connected to the “eRob to PC Connector” via the accompanying USB-A to USB-B cable directly (as illustrated in [Figure 2-3b](#)). This cable supplies the “eRob to PC Connector” with +5V power.

Upon connection, both the “PWR” and “SYS” indicator LED illuminate and stay ON, signifying proper device functionality and readiness for operation. When data transmission occurs on the CAN bus, the “RX” and “TX” indicator lights flash accordingly, with detailed status indications as outlined in [Table 2-2](#).

Chapter 3 eTuner Download and Installation

Before proceeding with driver and software installation, please ensure that your Windows account has administrator privileges or sufficient permissions to install drivers and software. Failure to do so may result in installation failure.

To confirm the permissions of your Windows account, follow these steps: Control Panel > User Accounts.

3.1 Software Download

Please visit <https://en.zeroerr.cn/support/download/software> to download the software.

After downloading the eTuner debugging software, extract the compressed file. The software does not require installation, but please ensure that you install the “eRob to PC Connector” driver before using it.

3.2 Driver Installation

The “eRob to PC Connector” driver is located in the “Driver_installation” folder within the eTuner software folder. To begin the installation process, navigate to the following directory:

“eTuner_Vxx.xx\Driver_installation”. Double-click the driver program to initiate the driver installation process (as shown in [Figure 3-1](#)).

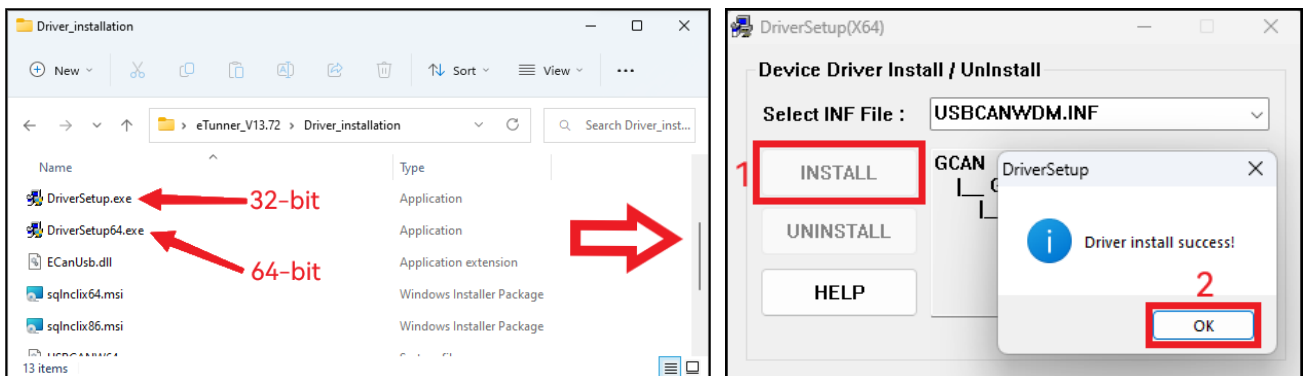
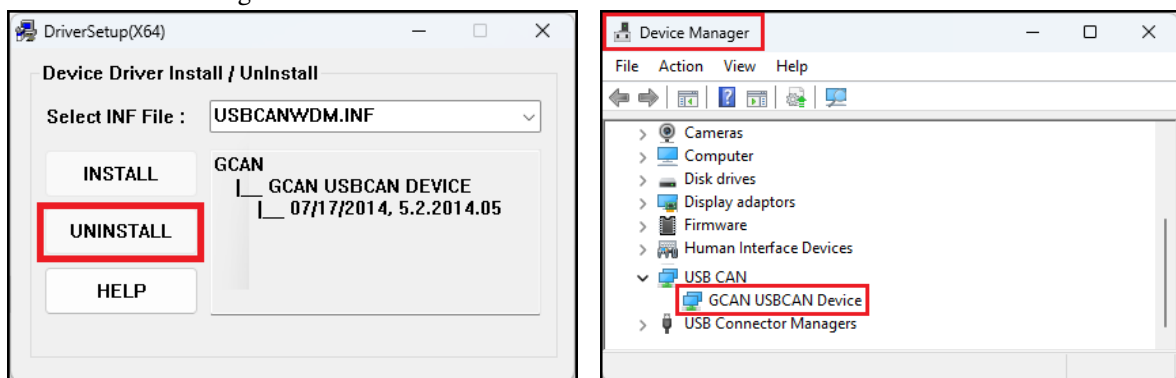


Figure 3-1 “eRob to PC Connector” Driver Installation Instruction



(a) Uninstal Driver

(b) Confirm Driver Installation Successful

Figure 3-2 Steps to Uninstall and Confirm Driver Installation

If the driver installation fails, click the “Uninstall” button (as shown in [Figure 3-2a](#)) to remove the driver. Afterward, restart your computer, connect the “eRob to PC Connector”, and follow the steps outlined in [Figure 3-1](#) to reinstall the “eRob to PC Connector” driver. Once the installation is successful, you will receive a notification. You can verify that the driver is functioning properly by checking the device manager on your computer, where it should show that the driver is installed correctly (as depicted in [Figure 3-2b](#)).

To proceed with the installation of the SQL program from the eTuner software package, please follow these steps (as shown in [Figure 3-3](#)):

- (1) Navigate to the “Driver_installation” folder located within the “eTuner_Vxx.xx” directory;
- (2) Locate the SQL program file within this folder;
- (3) Double-click on the SQL program file to initiate the installation process;
- (4) Follow the on-screen prompts to proceed with the default installation options;
- (5) If you receive a notification indicating that the program is already installed on your system, you may skip this step and proceed to the next instruction.

By following these steps, you will successfully install the SQL program as part of the eTuner software package. If you encounter any difficulties during the installation process, please contact our technical support team for assistance (otss@zeroerr.cn).

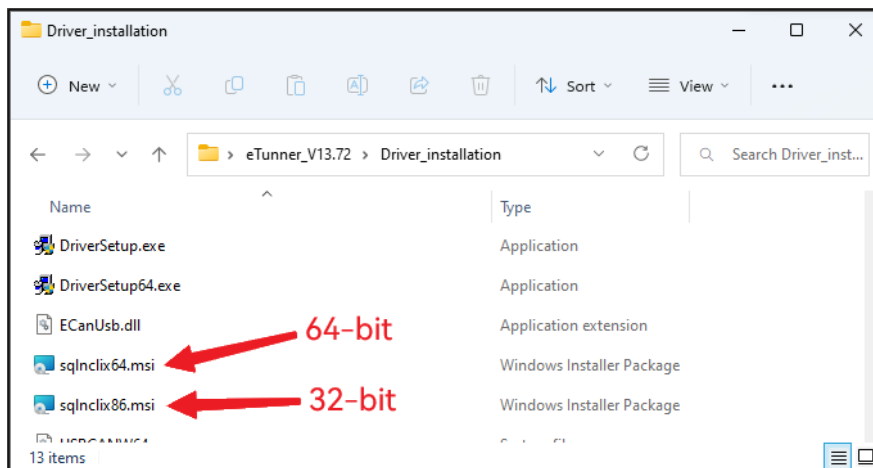
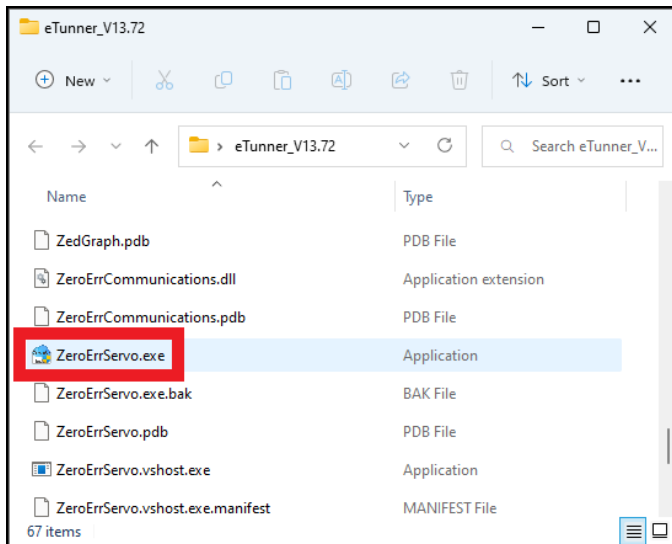
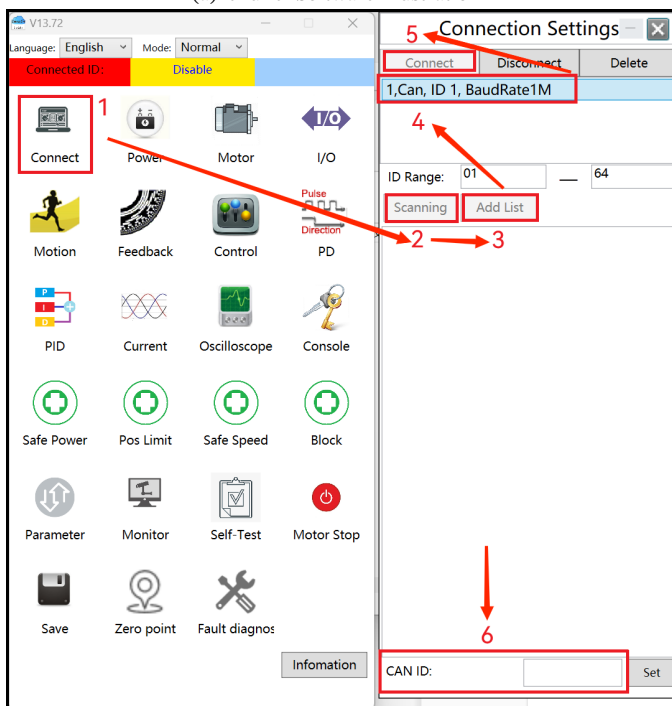


Figure 3-3 SQL Installation Instruction

Chapter 4 eTuner Software Connection and Test



(a) eTuner Software Illustration



(b) eTuner and eRob Module Connection Illustration
Figure 4-1 eTuner Software Illustration

To run the eTuner:

- (1) Navigate to the eTuner software folder and locate the application “ZeroErrServo.exe” (as illustrated in Figure 4-1a);
- (2) Double-click the application or right-click and select “Open” to initiate the eTuner software interface, as shown in Figure 4-1b;
- (3) After powering on the eRob module, wait for the “Run” indicator light to start blinking, indicating readiness.

To establish connection:

- (1) Click on “Connect” button in the main manual to open the “Connection Settings” interface;
- (2) Click on “Scanning” and wait for the scanning process to complete;
- (3) Click “Add List”;
- (4) Select the device from the list that has been added;
- (5) Click “Connect”;
- (6) Once connected successfully, the eRob’s CAN ID will be displayed.

Note: If the device is already added to the list, simply repeat steps 4, 5, and 6.

To proceed with the eRob trial run, please refer to the “eRob Rotary Actuator User Manual” Chapter 14. You can download the latest version of the manual by visiting our official website’s document download center, linked <https://en.zeroerr.cn/support/download>.

Declaration

Our product is not designed or intended for use outside the environmental limitations and operating parameters expressly stated on the product's datasheet. Products are not designed or intended for use in medical, military, aerospace, automotive or oil, gas applications or any safety-critical applications where a failure of the product could severe serious environmental or property damage, personal injury, or death. Any use in such applications must be specifically agreed to seller in writing and is subject to such additional terms as the seller may impose in its sole discretion. Use of products in such applications is at buyer's own risk, and buyer will indemnify and hold harmless seller and its affiliates against any liability, loss, damage, or expense arising from such use. Information contained in this datasheet was derived from product testing under controlled laboratory conditions and data reported thereon is subject to the stated, then to tolerances and variations, or if none are stated, then to tolerances and variations consistent with usual trade practices and testing methods. The product's performance outside of laboratory conditions, including when one or more operating parameters is at its maximum range, may not conform to the product's datasheet. Further, information in the product's datasheet does not reflect the performance of the product in any application, end-use or operating environment buyer or its customer may put the product to. Seller and its affiliates make no recommendation, warranty, or representation as to the suitability of the product for buyer's application, use, end-product, process, or combination with any other product or to any results buyer or its customer might obtain in their use of the product. Buyer should use its own knowledge, judgment, expertise, and testing in selecting the product for buyer's application, and-use and/or operating environment, and should not rely on any oral or written statement, representation, or samples made by seller or its affiliates for any purpose. Except for the warranties expressly set forth in the seller's terms and conditions of sale, seller makes no warranty express or implied with respect to the product, including any warranty of merchantability or fitness for any particular purpose, which are disclaimed and excluded. All sales are subject to seller's exclusive terms and conditions of sales which, where the seller is another person, are available on request, and in each case, are incorporated herein by reference, and are exclusive terms of sale. Buyer is not authorized to make any statements or representations that expand the environmental limitations and operating parameters of the products, or which imply permitted usage outside of that expressly stated on the datasheet or agreed to in writing by seller.

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ZEROERR CONTROL CO.,LTD

About Us



ZeroErr Control Co.,Ltd was founded in December 2016 in ShenZhen, China. ZeroErr stands for Zero Error Motion Control.

We design, develop and manufacture rotary actuators and encoders which are widely used in automation industry, collaborative robots, surgical robots and bionic robots. More than thousands of customer groups in the global use simple combinations with our products makes wide range of applications.

ZeroErr is committed to providing reliable quality standard production, cost-effective products and quick response technical support, enabling our customers to accelerate innovation, improve productivity and achieve extraordinary application performance.


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Global Support

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