

# General Vision Motion Control Overall Solution

General Development Platform & Industry Application

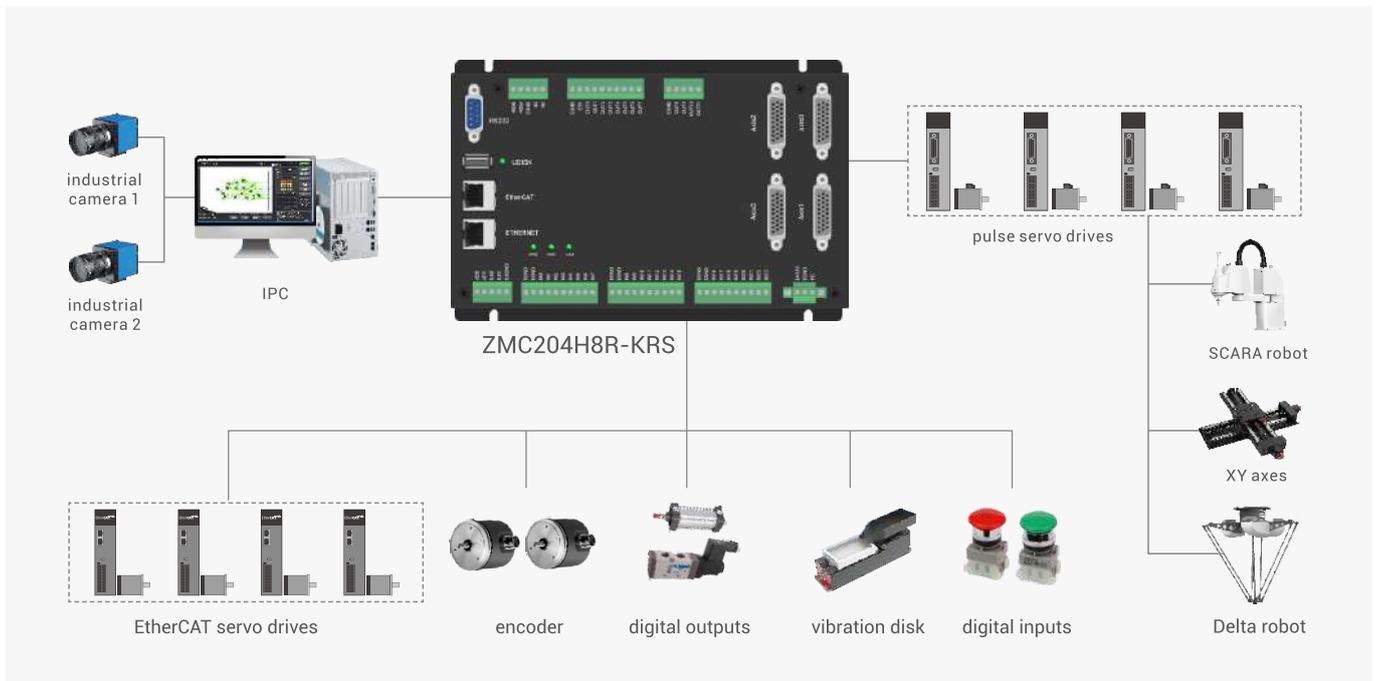


# DELTA Parallel Manipulator – Vision Flexible Sorting

DELTA robot is high-speed, precise, and stable, offering significant advantages in flexible vision-based feeding applications. Specifically, the parallel mechanism enables high-speed and high-accuracy for rapid pick-and-place operations. Additionally, it provides a large workspace and high flexibility, allowing it to accommodate materials of various sizes and shapes. And the integration of machine vision technology further enhances feeding accuracy and stability by enabling quick detection and recognition of materials.



## Solution – Hardware Structure



### Optimized Space

Highly-integrated, no need extra IPC: reducing cost, saving space, shortening project period, promoting processing speed.

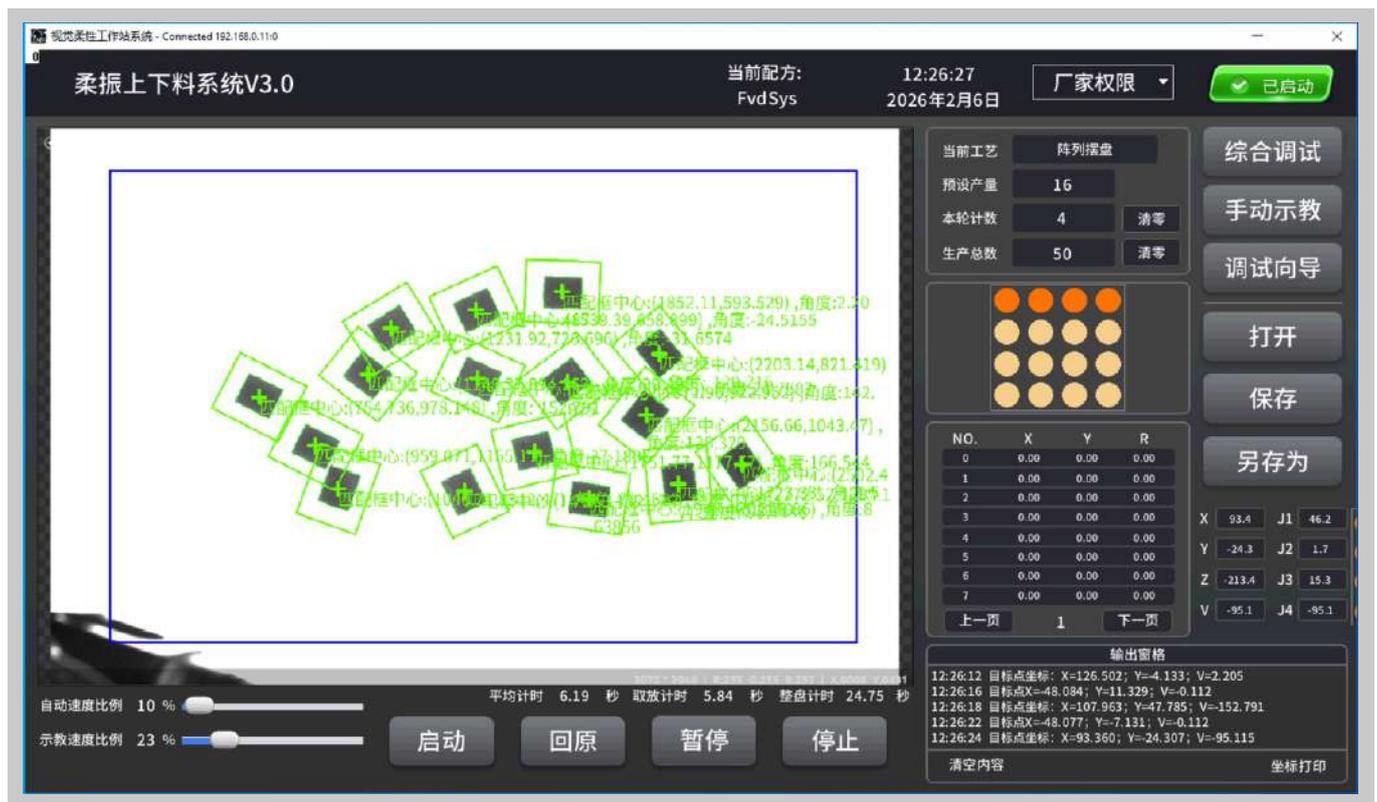
### Fast Speed

The 3-Axis parallel robot's structure is compact; the repeat position precision is high. And the picking speed is super-high: multi-beat / minute.

### Easy to Operate

Easy to understand & master interface, including tools, processes, etc., And there are expansion interfaces, you could add & modify functions by Basic.

# General Vision Flexible Loading Solution



Main Operation Interface



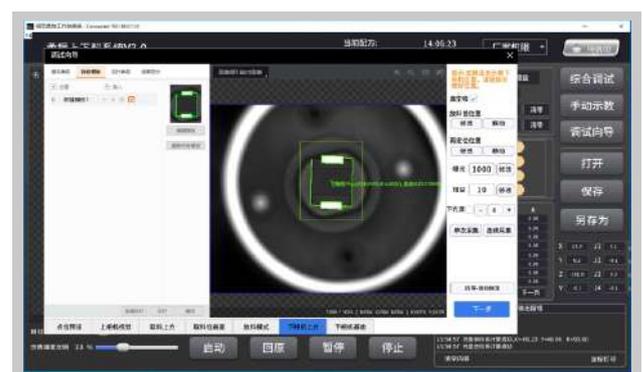
parameters & functions config



upper-camera vision config



comprehensive debugging



bottom-camera vision config

# SCARA Serial Manipulator – Vision Flexible Sorting

In response to market demand, Zmotion has developed the RTFuse flexible robotic loading and unloading solution based on its VPLC vision motion controller. By combining point teaching with RTFuse quick configuration, it can quickly develop loading and unloading equipment, effectively shortening project cycles. That is, operators can complete material changeovers in the shortest possible time by simply adjusting vision and motion control parameters, achieving high-speed, high-precision flexible robotic loading and unloading.



Mobile Phone Parts



Antenna spring



Insulating Pads



Conductive Patch

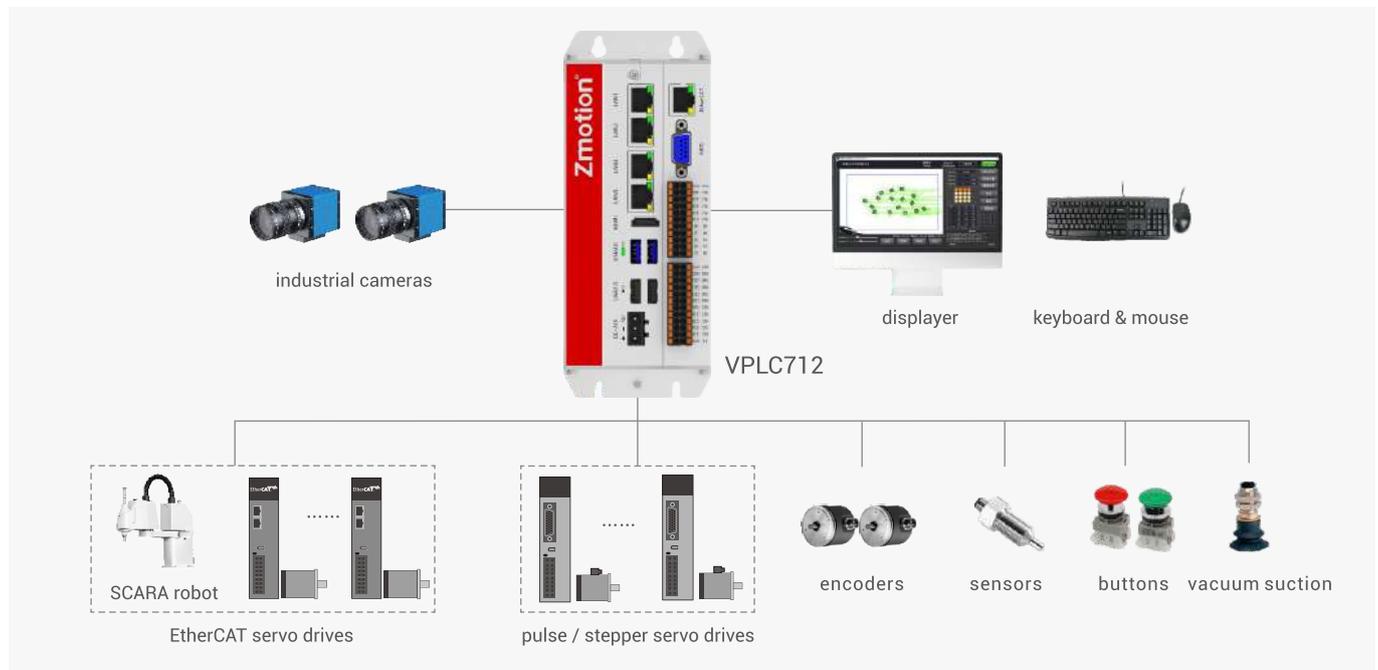


Silicone Buttons



Electronic Connectors

## Solution – Hardware Structure



### High-Integration

Integrate IO control, robot control, motion control, machine vision, and communication, etc., flexibly building a vibration loading and unloading solution that integrates motion and vision.

### High-Flexibility

Quick to change line/material without mechanical disassembly or assembly; easy to configure parameters to adapt to production plan changes; suitable for feeding various small parts scattered in a haphazard manner.

### High-Precision

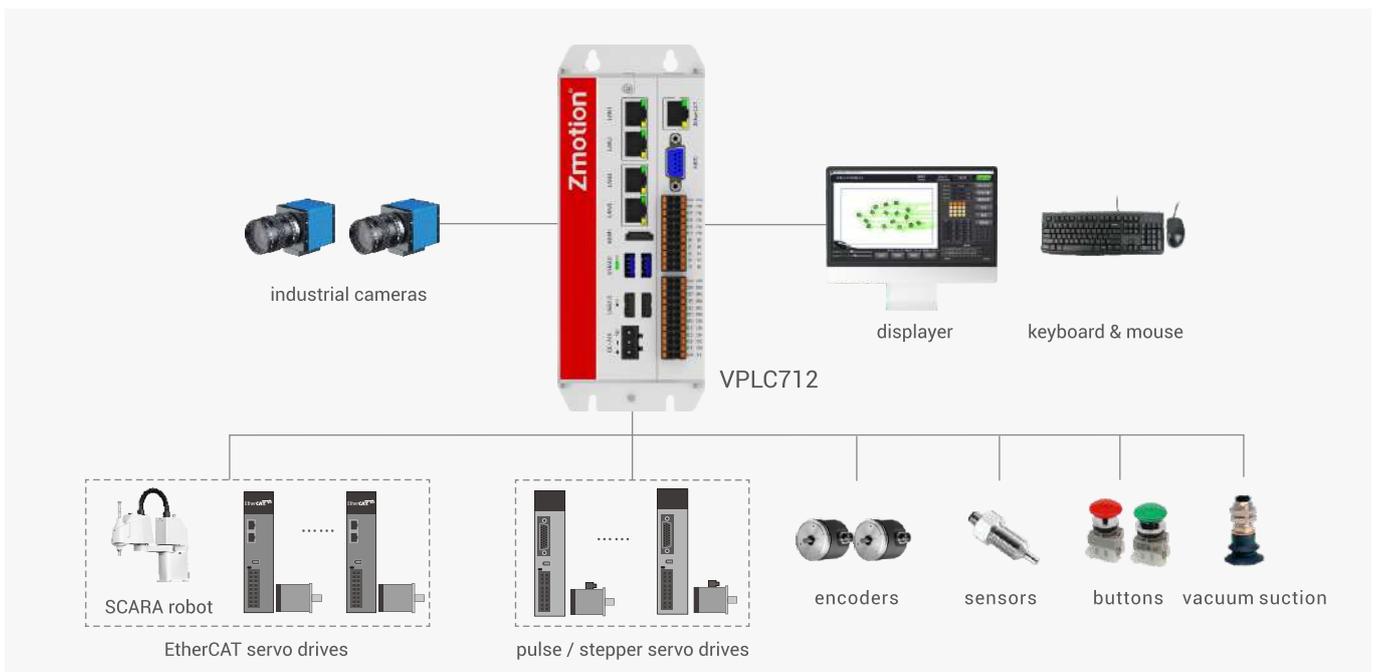
Recognize the material position by vision system, so no need to use fixed fixtures to specify the material feeding direction, and the material position of the vibratory feeder can be accurately located.

# Modular Multi-Nozzle – Vision Flexible Sorting

By employing machine vision positioning and XY/PPU module grasping, this solution can solve many problems in traditional vibratory feeder loading, like, disorder, scattering, scratches, and distinguishing front and back sides etc., it caters to the rapid changeover needs of multi-product manufacturers in current industrial automation production, replacing repetitive manual tasks such as tray placement. It is widely used in all kinds of industries that need auto loading & unloading, such as, automated production lines, electronics, pharmaceuticals, hardware, and so on, improving production efficiency and product quality while reducing worker workload and operational errors.



## Solution – Hardware Structure

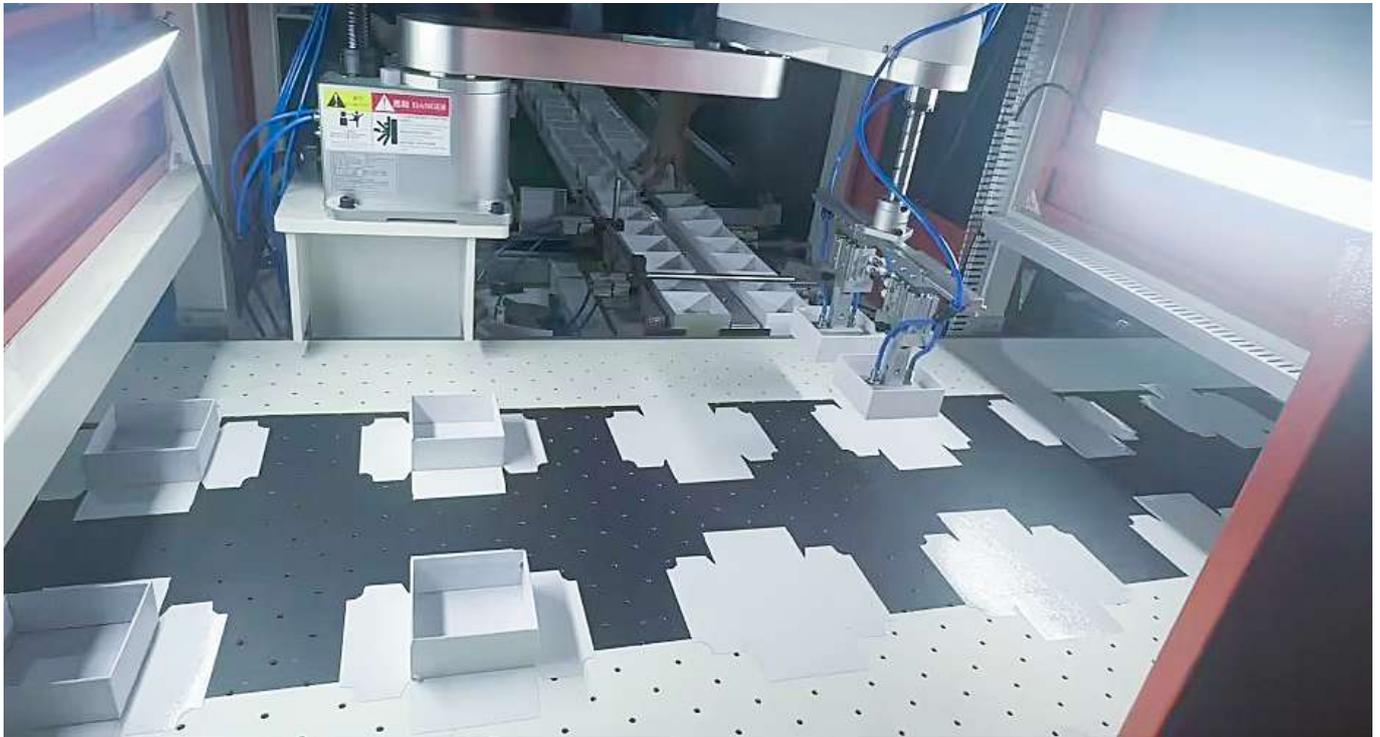


## Solution Advantages

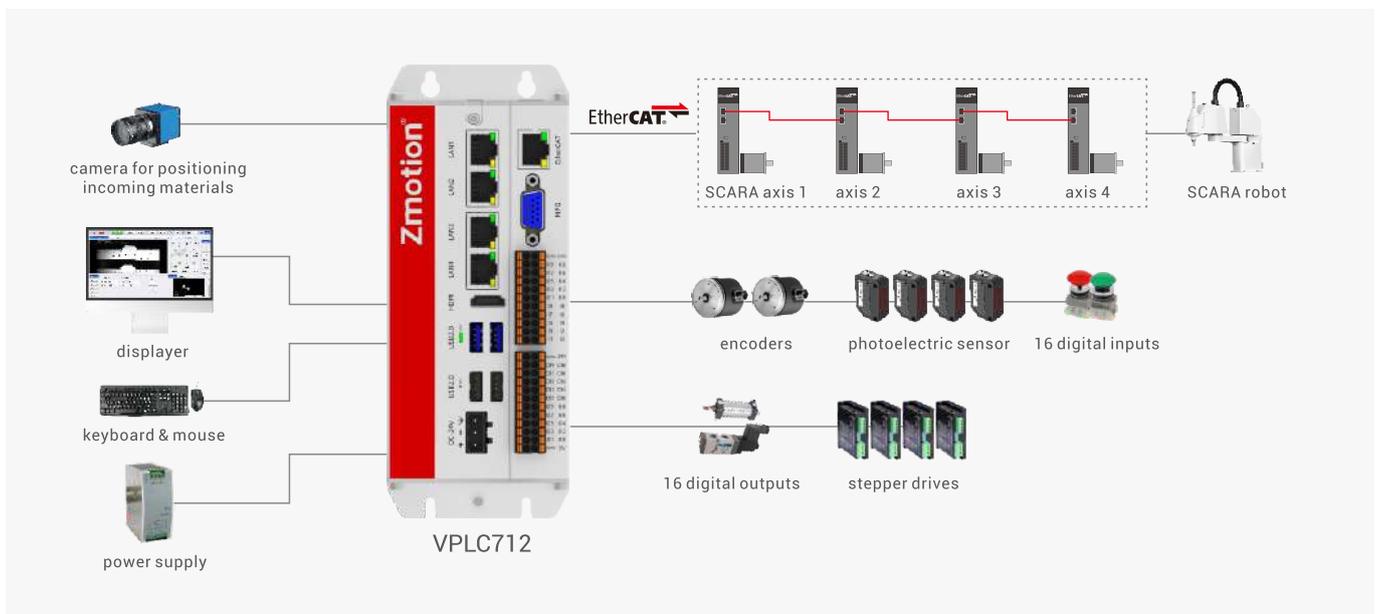
- integrate machine vision with motion control – hardware cost can be reduced; easy to do wiring, easy to check problems.
- support motion control real-time kernel MotionRT750 – vision and motion interaction speed & command calling speed will be faster, improving production capacity.
- rich communication interfaces: IO, RS232 / RS485, Ethernet – multiple soft vibratory disk control modes, flexible operations.
- support up to 50+ robot control algorithms, such as, SCARA, DELTA, 6-joint, collaborative robot, etc.
- support axis control expansion function – other axes can do auxiliary motions, saving hardware cost.
- support 4 hardware position comparison outputs PSO – achieve vision fly-shooting of bottom camera, increasing production capacity.

# SCARA Serial Manipulator – Vision Fitting for Top & Bottom Cover

A "top and bottom box" refers to a box style that has 2 covers, up and down, and the main raw materials are face paper and cardboard. Use a SCARA robot to precisely position and bond them together, then folding it, which is called "top & bottom covers fitting". This solution is widely used in the production of various packaging boxes, including high-end gift boxes, shoe boxes, shirt boxes, mobile phone boxes, cosmetic boxes, and wine boxes.



## Solution – Hardware Structure



### High-Integration

integrate IO control, robot control, motion control, machine vision, and communication, etc., flexibly building the cover fitting solution that integrates motion and vision.

### Specialization

use the single or dual camera to do positioning, that is, the camera takes a picture after the paper on the production line flows into place; after determining the position, the data is sent to the robot for calculation and bonding.

### High-Precision

support single-camera or dual-camera, with an overall accuracy of  $\pm 0.15\text{mm}$ ; it can correct wide-view distortion, significantly improving paper positioning accuracy.

# General Vision Top & Bottom Cover Fitting Solution



Main Operation Interface



draw template by vision box selection



material-fit positioning & compensation



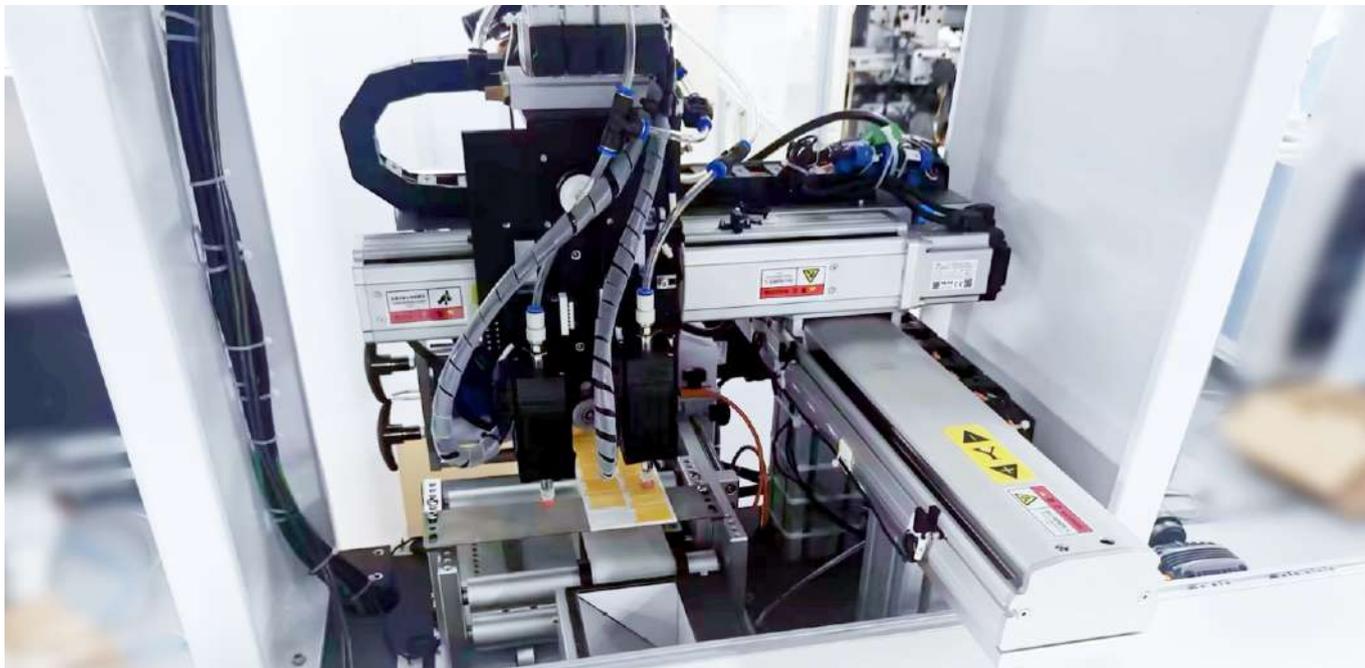
single/dual positioning selection



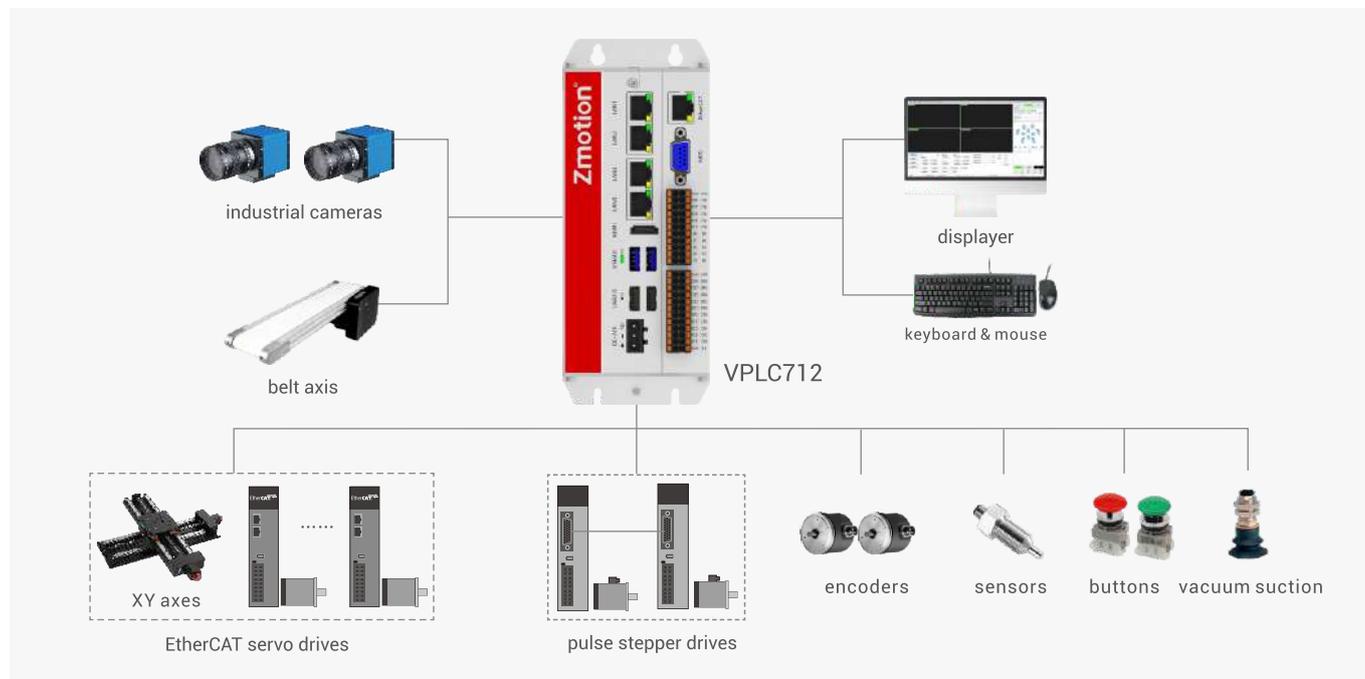
vision calibration by one click

## XYZR Module Belt Vision Labeling

Zmotion has researched & developed the vision alignment and placement solution: it puts the loose materials randomly above the conveyor belt, and makes it arrive at camera area to do vision positioning; then XYZR module moves to feeder position to capture the label, and moves to bottom camera for positioning; also, it provides vision deviation, calculating the alignment & fitting coordinates data; at last, to do labeling. During the motion, it supports continuous assembly line operations without fixed fixtures. In this way, this significantly improves production efficiency, reduces costs, and meets the diverse small-batch needs of the market.



## Solution – Hardware Structure



### High-Integration

integrate 2 module axes, 1 belt axis, 4 SCARA robot with IO control, reducing multi-controller interaction, the solution is simple.

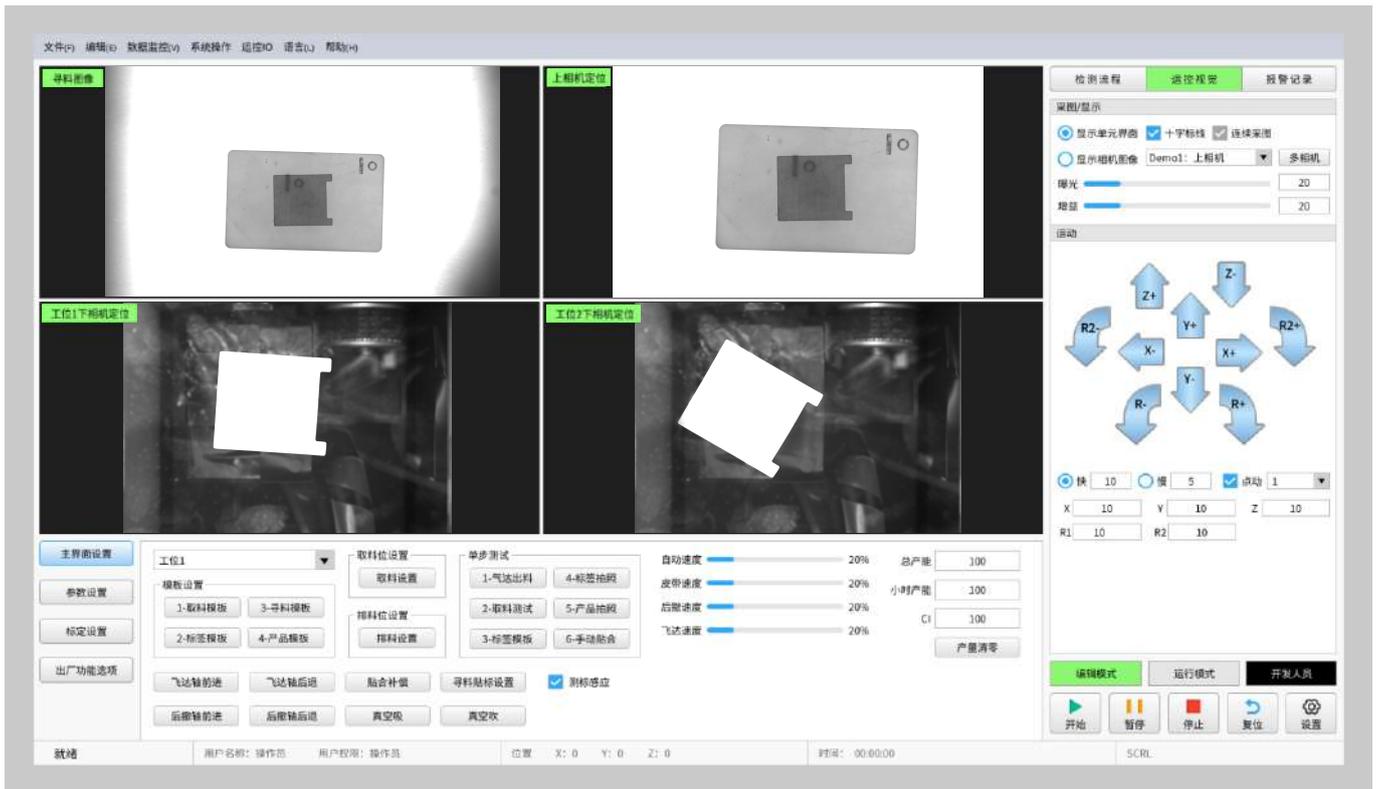
### Specialization

it is the motion control solution specialized for cover fitting, it can be used directly, no need to program again, efficient and easy.

### High-Precision

the accuracy of real-time dynamic fitting is 0.3mm (related to hardware structure).

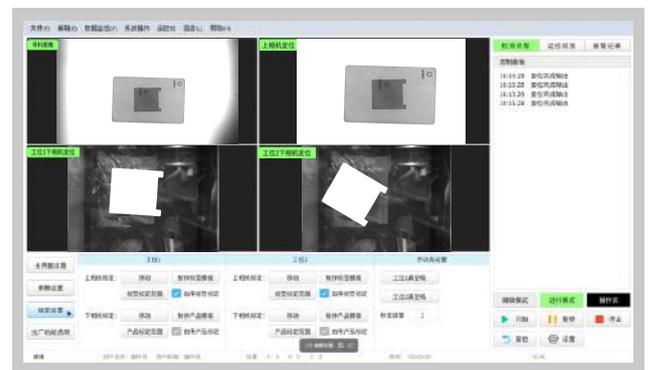
# XYZR Module Belt Vision Labeling Solution



Main Operation Interface



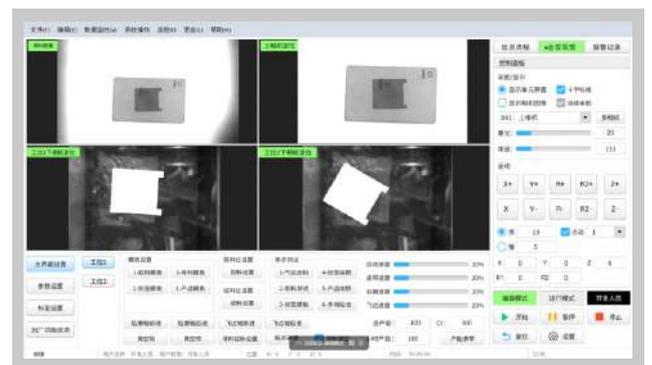
parameter configurations



calibration configurations

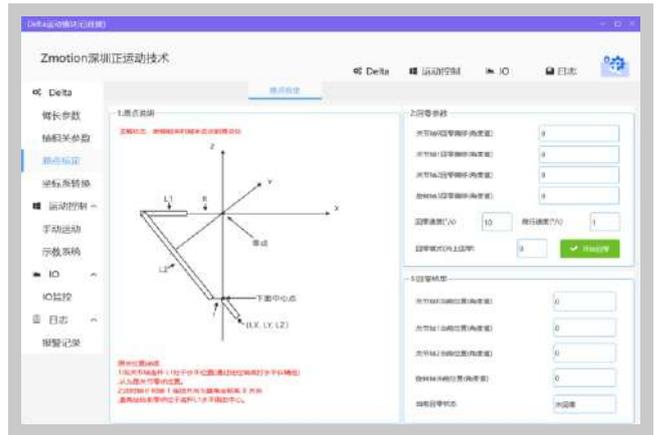


factory functions selection

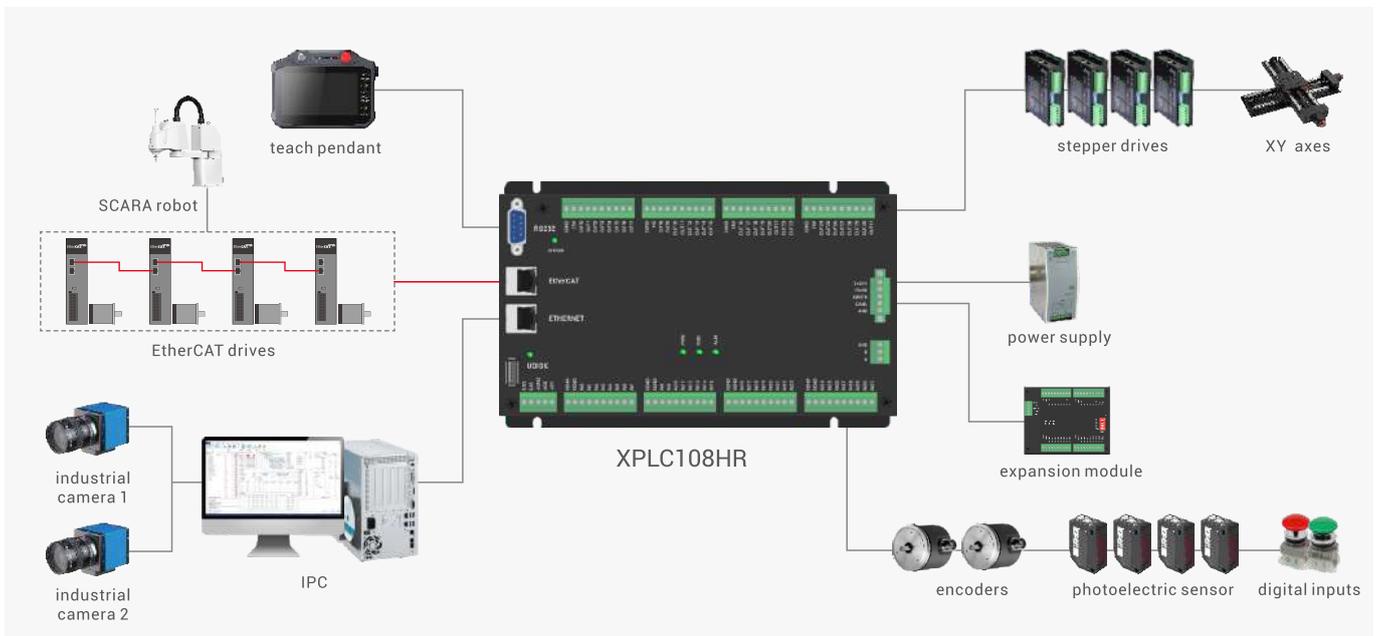


motion & vision interface

# Robot Motion Modules



# Solution – Hardware Structure



# Product Advantages

## One-Stop-Shop Configuration

it can configure robotic arm basic parameters, such as, axis No., acceleration & deceleration, joint-axis length, coordinates of building kinematics (forward & inverse).

## Non-Programming Robot Function

it provides robot specialized debug tool, which includes robot arm length, coordinate system, IO checking, robot calibration, etc., you could quick start your application.

## Robotic Arm API

for host computer programming, there is specialized API and customized communication function library, it is easy to build the needed actions.

## 更多正运动相关信息



关于我们



产品中心



行业应用



新闻中心



支持与服务



加入我们

## Shenzhen Zmotion Technology Co., Ltd

Tel: 0755-2606 6955

Fax: 0755-2606 6955

Website: [www.zmotionglobal.com](http://www.zmotionglobal.com)

Mobile Phone: +86 19925228195

Marketing: [zlm@zmotion.com.cn](mailto:zlm@zmotion.com.cn)

Engineering: [huanghao@zmotion.com.cn](mailto:huanghao@zmotion.com.cn)

Address: 3-7 floor, Building A1, Sunshine Industrial Zone, Hezhou Community, Baoan, Shenzhen, Guangdong, China

© All rights belong to Shenzhen Zmotion Technology Co.,Ltd



正运动技术



正运动小助手 (学习园地)