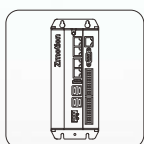
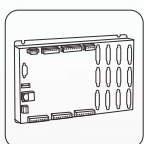


2025-2026

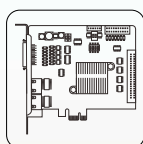
Zmotion Technology Product Catalog



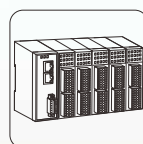
Machine Vision
Motion Controller



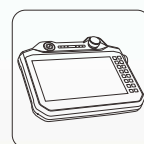
Motion
Controller



PCIe Motion
Control Card



Remote
IO Module



Teach
Pendant





Zmotion[®]
正运动技术

| Company Profile

Shenzhen Zmotion Technology Co., Ltd. was established in 2013. Zmotion focuses on motion-control technology, as well as the R&D, production and service of general-purpose motion-control hardware and software platforms. It consists of seasoned professionals from well-known enterprises and research institutions, including Huawei. Zmotion is one of China's fastest-growing industrial motion-control enterprises. It has in-depth mastery of core motion-control technology and real-time industrial control software technologies. Zmotion is a National-level High-Tech Enterprise, a Shenzhen SRDI (Specialized, Refined, Distinctive and Innovative) Enterprise, and one of the 5th-batch National SRDI "Little Giant" Enterprises.

Zmotion motion control products include 2-24 axes **embedded pulse motion controller**, 2-128 axes **embedded EtherCAT motion controller**, 2-24 axes network pulse motion control card, 2-128 axes **PCI EtherCAT & RTEX motion control card**, **PCIe / XPCIe EtherCAT motion control card**, and 2-240 axes **vision motion controller**, HMI (various resolutions supported) and all kinds of **expansion modules**.

Zmotion **MotionRT** is a fully in-house-developed real-time motion-control kernel. It has evolved from Generation 1 to the current Generation 7 in recent 10 years. MotionRT7 features real-time motion processing, RTBasic, RTPlc, RTHMI, G-code, EtherCAT control, vision control, and robot control. It supports embedded, Windows and Linux platforms. Developers can build programs easily and flexibly by calling its APIs. To deliver greater convenience for user application design, Zmotion continuously refines and iterates its product portfolio.

Zmotion vision motion controller superimposes machine vision functions based on motion functions, such as, vision positioning, vision measurement, contour matching and QR code/bar code detection. It extremely reduces barriers of machine vision application. And hardware is highly-integrated into a small volume. For software, easy to develop in one-stop-shop.

The advantage "**Easy to Use**" mentioned above is for all Zmotion motion control products, except development by all kinds of operation systems and language function libraries, there is one "All In One" industrial application development software "**RTSys**". Users can implement full development for motion, HMI and vision projects within RTSys. It provides real-time simulation and online trajectory debugging capabilities. And it can simulate in real-time and online track Debug. Lowering the development threshold, greatly shortening development cycles.

All Zmotion products follow the standard IPD-CMM development process and strictly comply with the ISO9001 quality management system. This system covers the full workflow: market requirement analysis, product definition, design and development, material sourcing, production and manufacturing, and customer service. The products deliver carrier-grade stability and reliability, along with outstanding compatibility and scalability.

Driven by continuous efforts from Zmotion and long-term support from partners, our products are widely adopted across diverse industrial fields, 3C electronics, semiconductors, laser processing, photovoltaic and lithium energy, robotics, printing and packaging, medical equipment, textile and apparel, automotive manufacturing, CNC machining.

Zmotion always puts quality first, prioritizes customer requirements, focuses on value creation, and pursues continuous improvement of product performance. We are dedicated to delivering high-value motion-control products, solutions and services for smart manufacturing.

| Corporate Culture

Mission

Let Chinese Motion Control Lead the World

Wish

Better Motion Control, Smarter Life

| Business Philosophy

Strive

As a Struggler

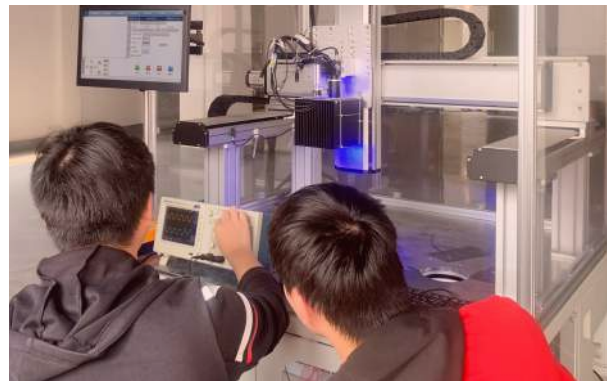
Keep Growing
Focus on Target
Adapt to Path
Create Tools



Service

Take Service as Soul

Less Service: Easy to Use
Better Service: Efficient Response
Reliable Service: High Performance



Study

Take Study as Routine

Study in Needs
Study in Competition
Study in Cooperation



Help

Support as Arm

Help Colleagues
Help Partners
Help You,
Achieve Us

Enterprise Qualification

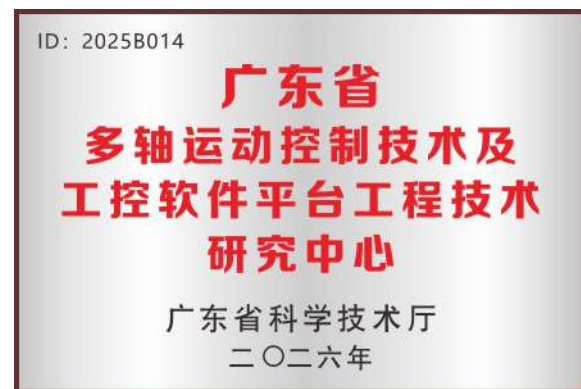


116⁺ Trademark Certification

75⁺ CE Certificates

60⁺ Software Certificates

40⁺ Patents



Development History

- IDE
RTSys



- Wide Temperature Controller
HXX Controller

- PCIe EtherCAT Control Card
PCIE464



2023

- Motion Controller
ZMC432M

- PCIe EtherCAT Card
PCIE464M

- Vision Motion Controller
VPLC712



2024

- MotionRT750
High-performance real-time motion control kernel under Windows / Linux
XPCIE2032H / XPCIE6032H



2025

- Windows Real-Time Motion Control Soft Kernel
MotionRT7

- Open Laser Scan Motion Controller
ZMC408SCAN-V22

- Auto Fast-Configurable Software
RTFuse

- PC-based Motion Control Card
XPCI / XPCIE

- Vision Motion Controller
VPLC710



2022

- Embedded Vision Motion Controller
VPLC532E

- ZHD500X HMI

- ZMIO310 Expansion Module



2021

- Embedded Vision Controller
VPLC516E

- 12-Axis EtherCAT Vertical PLC
XPLC312E

- 8-Axis EtherCAT Network Card
ECI2828-V2



2020

- Zmotion New Office in Chengdu
- Zmotion New Office in Wuhan

- Zmotion New Address
- Zmotion New Office in Xi'an
- Zmotion New Office in Dongguan

- New Product Series:
VPLC Machine Vision Motion Controller

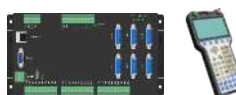
- 2-6 Axis Pulse Controller / Card
ZMC0XX Controller
ZMC1XX Controller
ZCAN Bus Expansion Module
ECI1000 Card



2013

- Zmotion Technology was Established

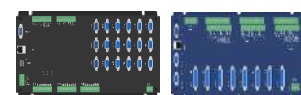
- 4-12 Axis Pulse Motion Controller
ZMC2XX Controller
ZHD300/ZHD300X Handheld HMI



2014

- 3-16 Axis Pulse Controller
ZMC3XX Controller

- 3-8 Axis Network Control Card
ECI2000 Card
ECI3000 Card



2015

- **EtherCAT Motion Controller**
ZMC600M

- **Analog Full-Closed Pulse Motion Controller**
ZMC532F / ZMC432U



2026

- **60-Axis EtherCAT & RTEX Motion Controller**
ZMC460N

- **20-Axis EtherCAT & RTEX Scan Controller**
ZMC420SCAN

- **4-Axis Network Motion Control Card**
ECI2418B

- **ZMIO300 Bus IO Expansion Module**



2019

- "Zmotion" Brand Upgraded
- Zmotion Obtained "ISO" Certificates
- Zmotion New Office in Xiamen
- Zmotion New Office in Qingdao

- **The First 64-Axis EtherCAT Motion Controller in China**
ZMC464

EtherCAT

- **The First Motion Control PLC in China**
(hybrid programming among RTBasic, RTPLC, RTHMI)
XPLC864-V2



2016

- Zmotion New Address

- **6-Axis Dual-Bus Motion Controller (EtherCAT & RTEX)**
ZMC306N

- **6/8 Axis EtherCAT Motion Control Type PLC**
XPLC006E-V2/XPLC864E-V2

- **EtherCAT Expansion Module for 8-Axis**
EIO24088-V2

- **Network IO Control Card**
ECI0032/ECI0064



2018

- Zmotion Technology Branch Established in Pune, India

- **6/32 Axis EtherCAT Motion Controller** ZMC406-V2/ZMC432-V2

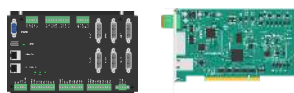
- **32-Axis RTEX Motion Controller** ZMC432N

- **64-Axis EtherCAT & RTEX PCI Motion Control Card** PCI464

- **12-Axis High-Performance Pulse Motion Controller** ZMC412

- **EtherCAT IO Expansion Module** EIO1616

- **ZHD400/ZHD400X HMI**



2017

- Be Awarded as "National High-Tech Enterprise"

- Zmotion New Office in Suzhou

- Zmotion New Office in Foshan

MotionRT Development History

Self R & D

Windows Motion Control Real-Time Soft Kernel

Cross-Platform

Motion Control Real-Time Soft Kernel



Real-Time Bus (EtherCAT/RTEX/XY2)

Real-Time HMI (RTHmi)

Real-Time PLC (RTPlc)

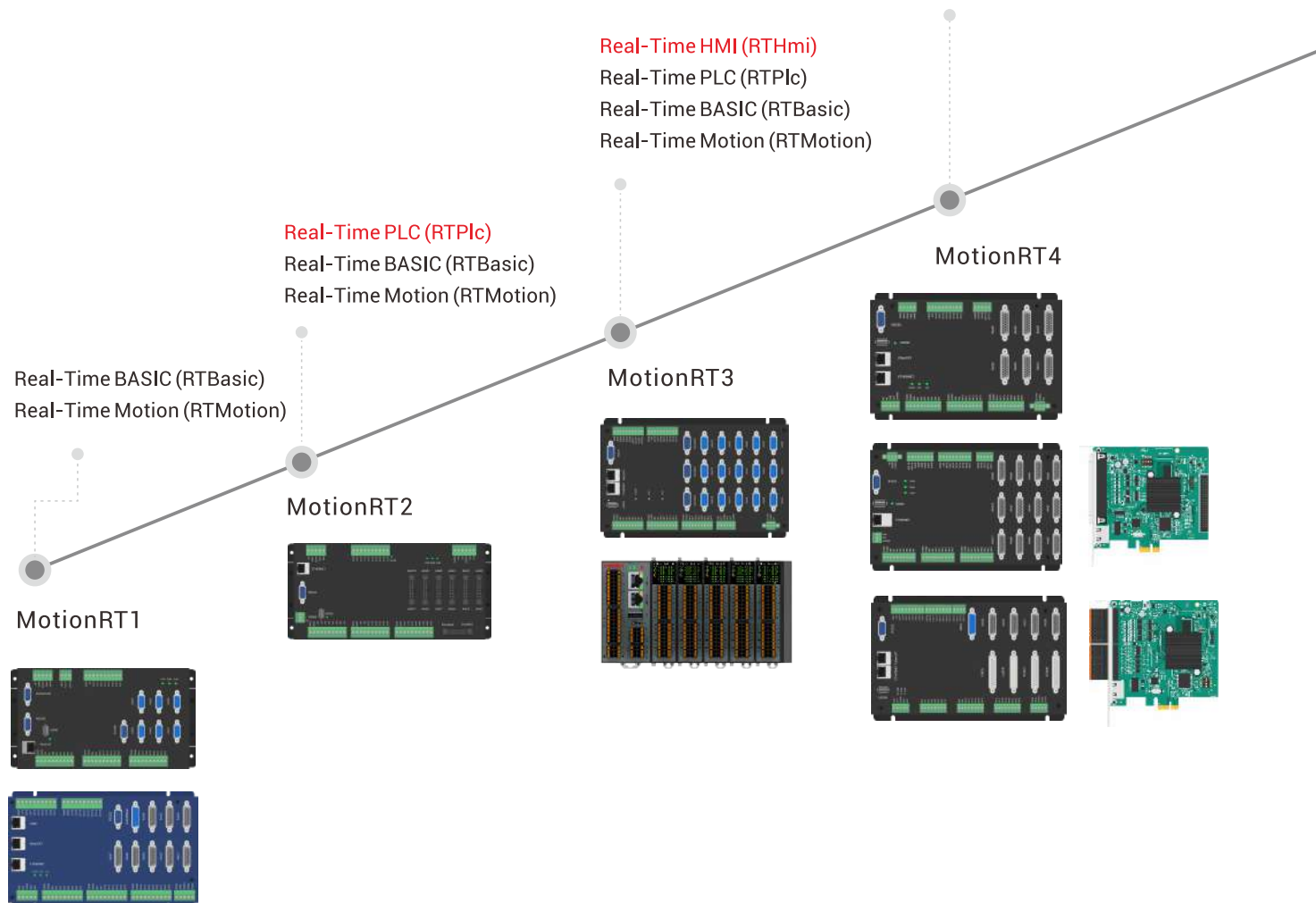
Real-Time BASIC (RTBasic)

Real-Time Motion (RTMotion)

G Code (RTCNC)

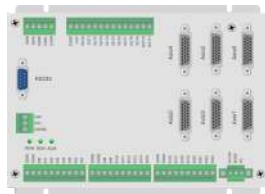
Laser Galvanometer (SCAN)

Robot Control (Robot)



Real-Time Linux (ARM)
Rapid Local Port "LOCAL"
Machine Vision (RTVision)
 Real-Time Bus (EtherCAT/RTEX/XY2)
 Real-Time HMI (RTHmi)
 Real-Time PLC (RTPlc)
 Real-Time BASIC (RTBasic)
 Real-Time Motion (RTMotion)
 G Code (RTCNC)
 Laser Galvanometer (SCAN)
 Robot Control (Robot)

MotionRT5



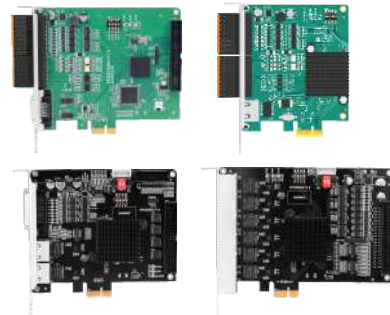
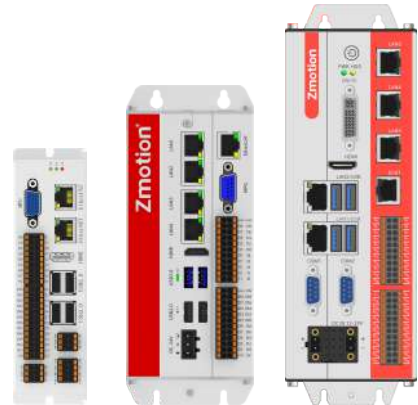
Real-Time Linux (x86)
 Rapid Local Port "LOCAL"
 Machine Vision (RTVision)
 Real-Time Bus (EtherCAT/RTEX/XY2)
 Real-Time HMI (RTHmi)
 Real-Time PLC (RTPlc)
 Real-Time BASIC (RTBasic)
 Real-Time Motion (RTMotion)
 G Code (RTCNC)
 Laser Galvanometer (SCAN)
 Robot Control (Robot)

MotionRT6



Real-Time Windows (x86)
 Rapid Local Port "LOCAL"
 Machine Vision (RTVision)
 Real-Time Bus (EtherCAT/RTEX/XY2)
 Real-Time HMI (RTHmi)
 Real-Time PLC (RTPlc)
 Real-Time BASIC (RTBasic)
 Real-Time Motion (RTMotion)
 G Code (RTCNC)
 Laser Galvanometer (SCAN)
 Robot Control (Robot)

MotionRT7

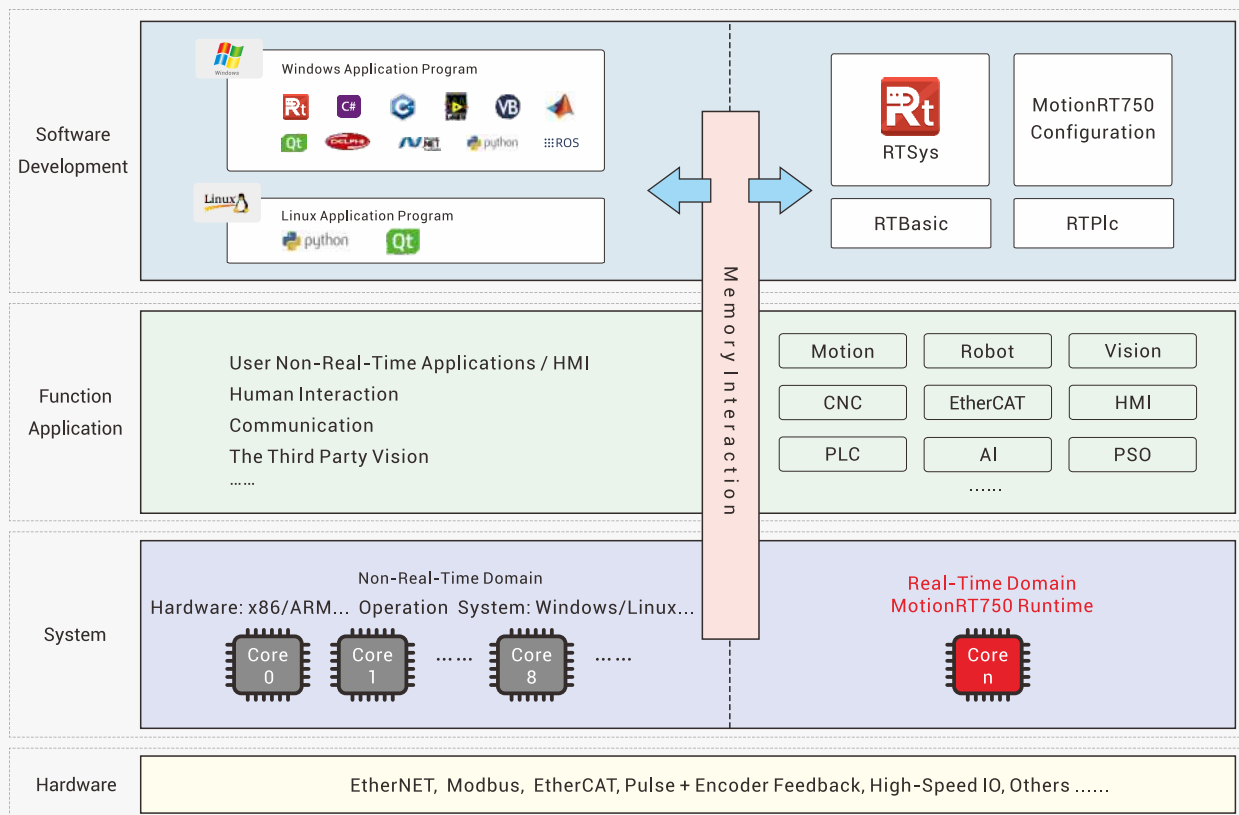




MotionRT750 Windows / Linux

Motion Control Real-Time Kernel: cross-platform & self R & D "x86 / ARM Windows / Linux real-time kernel (independent CPU)".

x86/ARM IPC



01

Stand-alone software installation, compatible with various Windows / Linux PCs.

02

Feature-compatible with other MotionRT versions. Code developed once can be rapidly ported to the embedded systems and various Linux platforms.

03

Unified function-library API with high-speed LOCAL interface. Motion function calls deliver us-level, more than ten times faster than normal PCI cards.

04

Machine vision integrated, enabling rapid development of various real-time applications.

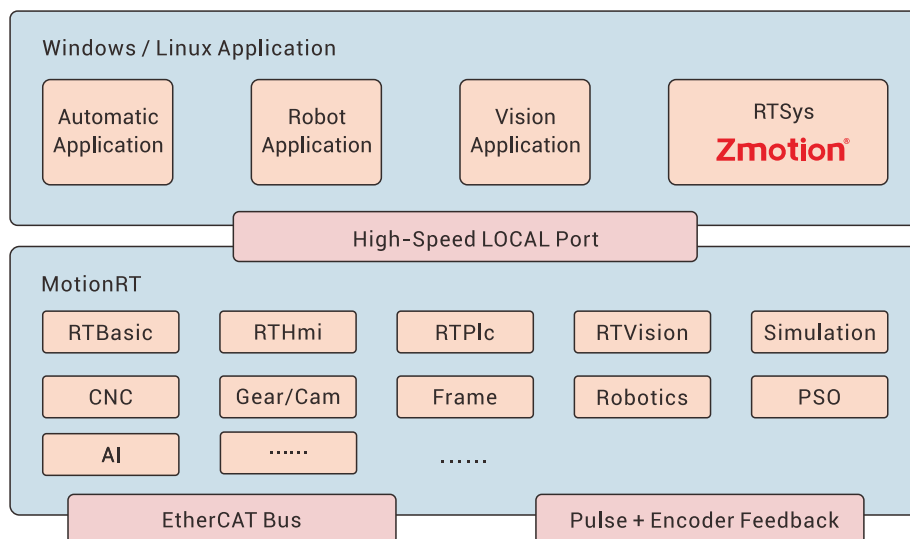
05

Self-developed bare-metal x86 motion-control real-time kernel. Minimum cycle: 50 μ s; redundancy mode: 125 μ s for 32 axes; multi-EtherCAT-channel synchronization: 500 μ s for 254 axes.

Software Structure

Motion control program, vision algorithm, and MotionRT7 motion control engine share the memory and interact data at a high-speed, greatly promoting the interaction efficiency between motion control and machine vision.

User customized functions merge with Gmc, Gear/Cam, Frame, Robotics, CNC and other algorithms to create one specialized control system for users.



Motion Control Functions

Motion Axes: EtherCAT, up to 240 axes

IOs: up to 4096 INs & 4096 OUTs by EtherCAT

Analogs: up to 512 ADs & 512 DAs by EtherCAT

Functional Features:

- point-point, interpolations (line, arc, helix), continuous motions
- electronic cam/gear, synchronous follow, position latch, axis superposition
- S curve & SS curve ACCEL and DECEL: smoother motion trajectory
- 1D/2D/3D high-speed PSO, fly-shooting, high-speed dispensing, laser
- users can customize motion control algorithms, robot algorithms

Machine Vision Functions support the-third-party vision



Vision Positioning



Blob Analysis



Vision Measurement



Detection & Identification

MotionRT750:

- Quick Start: no need to install
- Drive-operation authorization: trial available without formal licensing
- EtherCAT, functions, and parameters configurations
- Unified & complete SDK library
- ON, Connect, Simulate, etc.

Software

A X 6 4 - M O 8 - H W - Z V - R 6 - F - Y Y Y Y

①

②

③

④

⑤

⑥

⑦

① 64-Axis (4-254)

② Motion Control

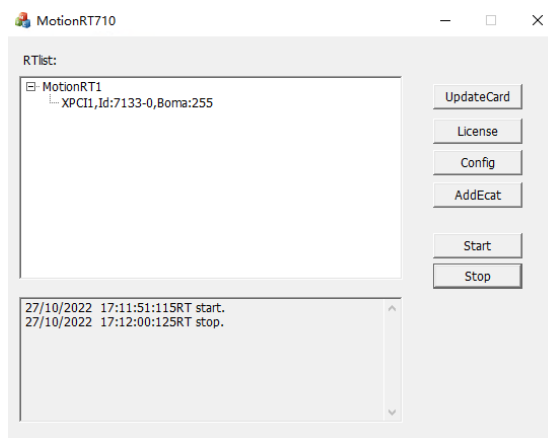
③ PSO

④ Vision Control

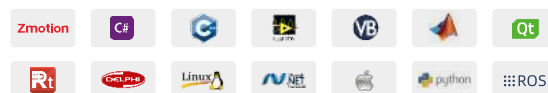
⑤ R1: normal robotic arm
R6: robotic arm of 6-joint / special structure

⑥ F: control cycle of 125us / 250us

⑦ YYYYY: customized function
NC xx Function / G Code
CNCxxx Function



High-Speed Connect



High Real-Time

max control cycle: 500us

EtherCAT synchronous cycle (125us~1ms)

32-Axis **125us** 64-Axis **250us**

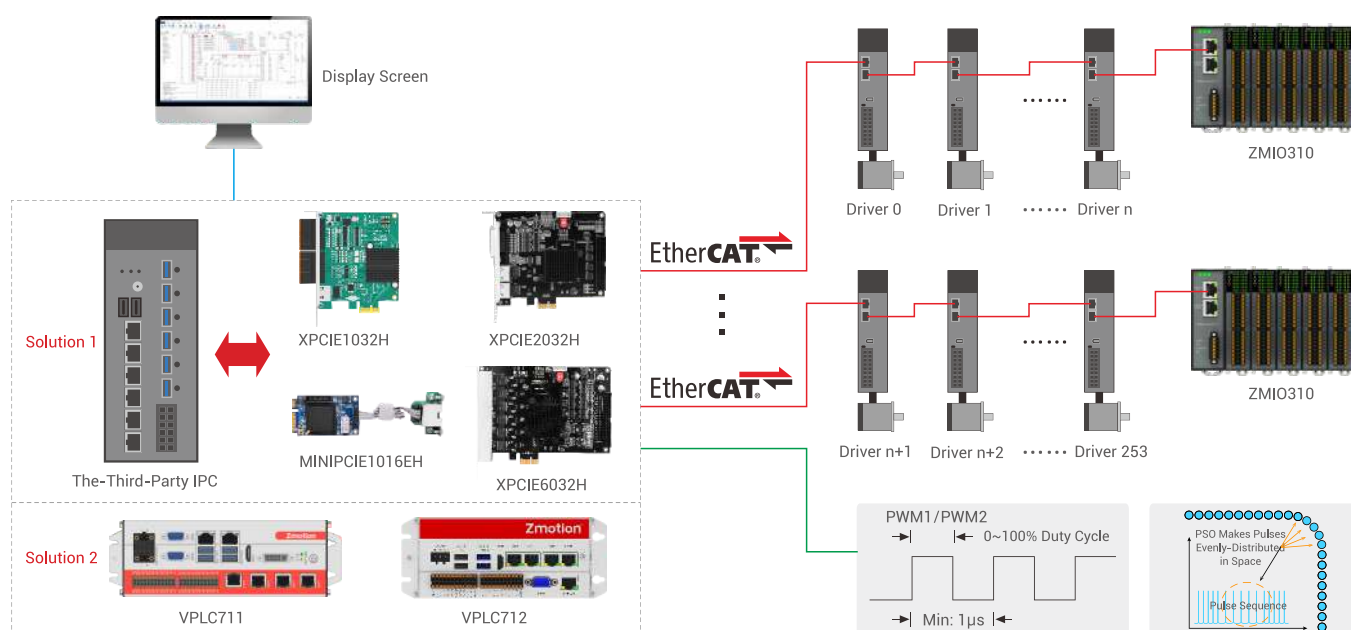
multiple EtherCAT isolated channel:

254-Axis **500us**

Isolated EtherCAT Master Stations (up to 6-channel -- XPCIE6032H)

Each EtherCAT Sync Period: 125us~1ms

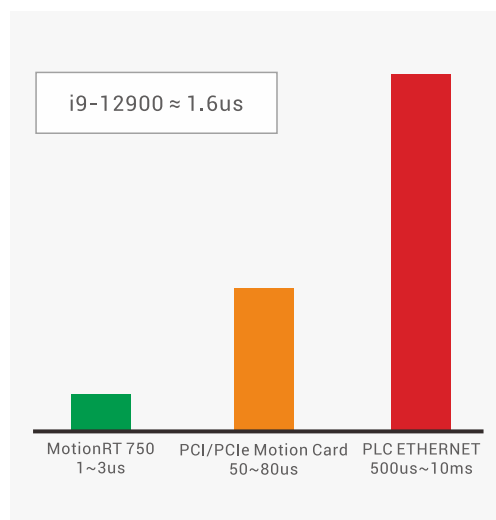
MotionRT750 Motion Control Real-Time Kernel EtherCAT Solution



High Integration

Instruction interaction speed reaches **us** level; CPU: Intel i9/i7/i5/i3/N97/N95

Note: instruction interaction speed relates to CPU, memory and others.

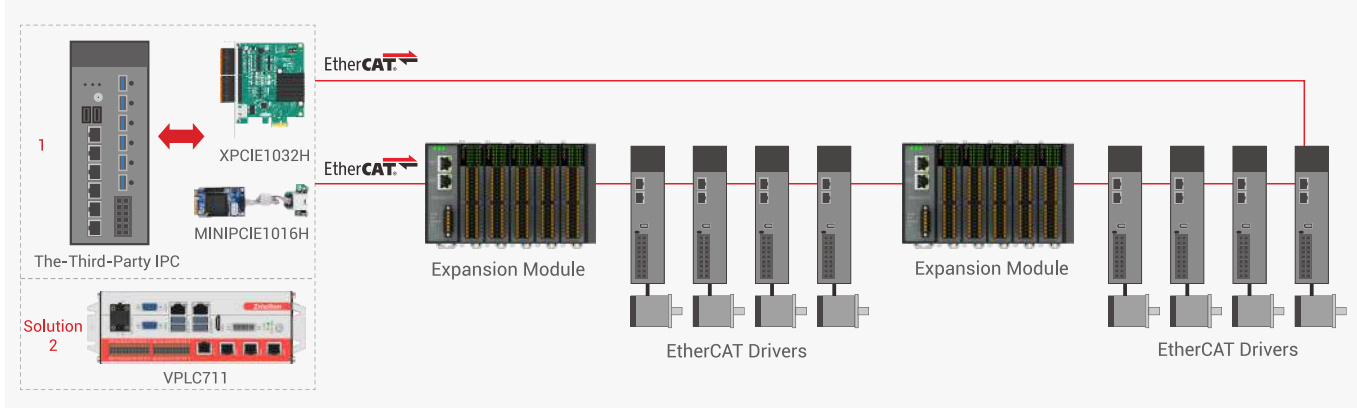


speed test & comparison of LOCAL, PCI / PCIe, PLC ETHERNET via PC development methods (C#, C++)

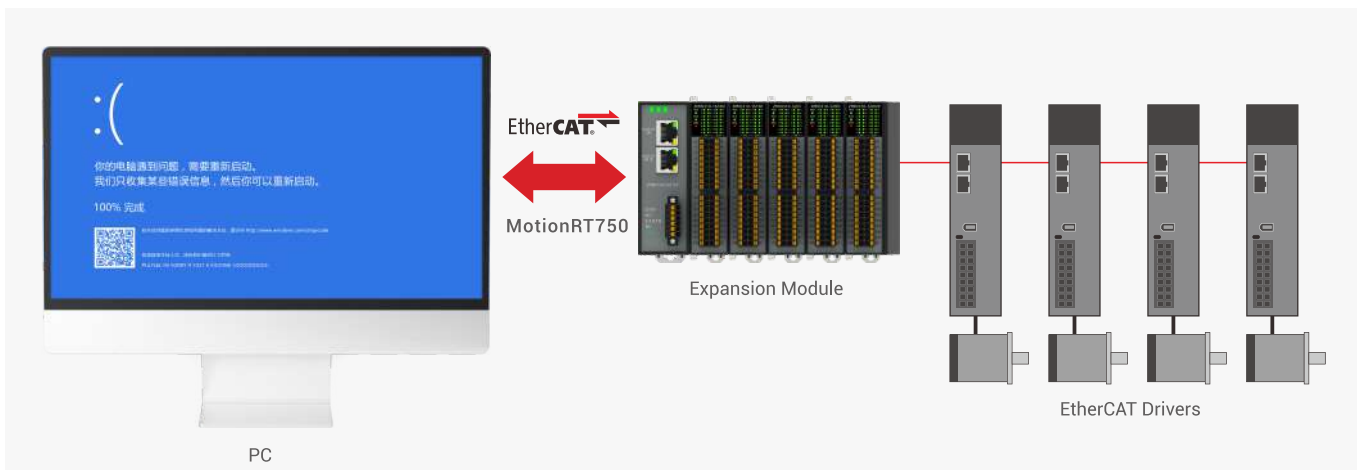
Average Value	C++ LOCAL	C# LOCAL	Normal PCI/PCIe	PLC ETHERNET
Cycle for Single Command (10k times)	1~3us	1~3us	50~80us	500us~10ms
Cycle for Single Command (100k times)	1~3us	1~3us	50~80us	500us~10ms
Cycle for Multi Command (10k times)	2~4us	2~4us	≈472us	500us~10ms
Cycle for Multi Command (100k times)	2~4us	2~4us	≈472us	500us~10ms

More Stable & Safer & More Reliable

EtherCAT Redundancy: auto-switch when power-off, reducing the stop risk; it can run stably(125us for 32-axis).

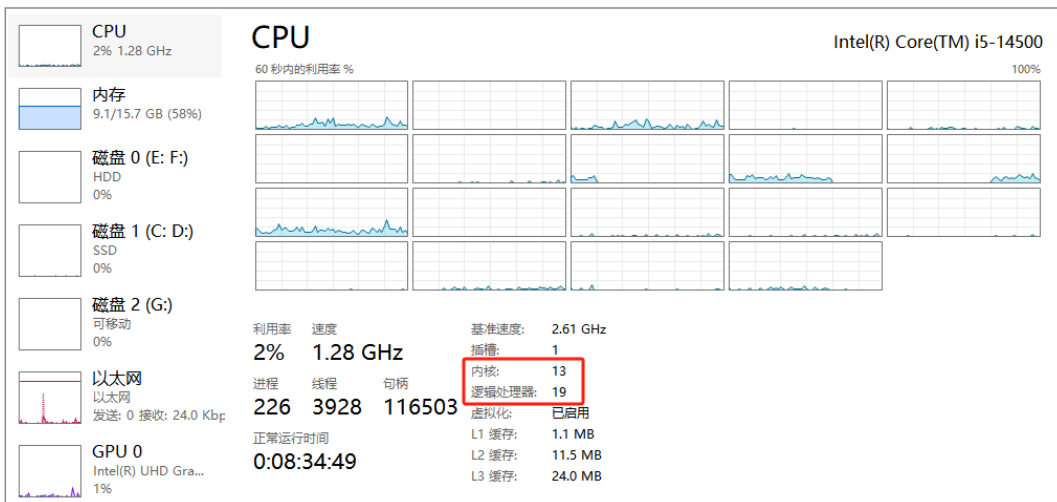


When Windows system encounters a blue-screen or crash, MotionRT750 real-time kernel continues normal operation. The E-stop button remains functional under blue-screen conditions to ensure operational safety.

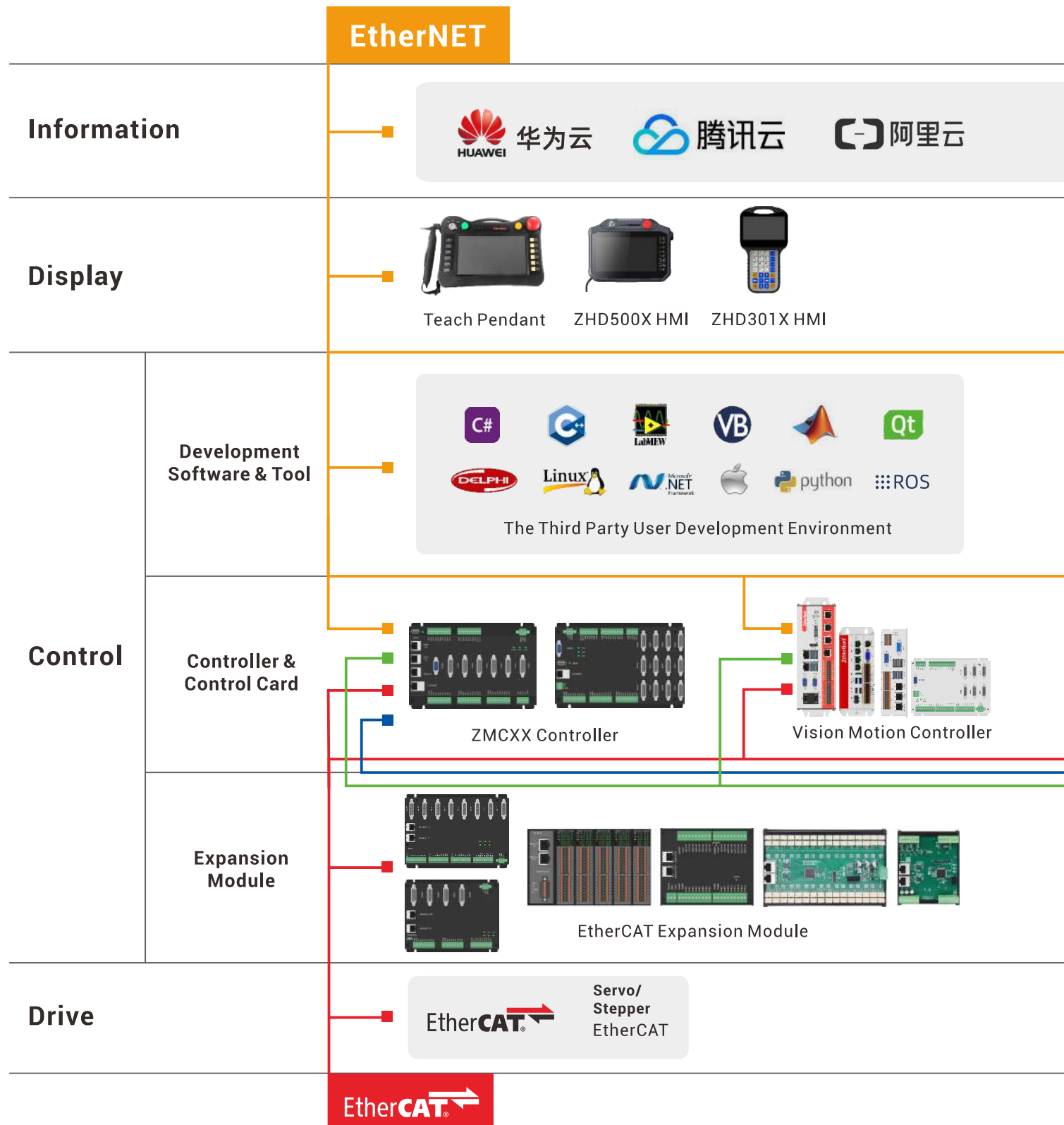


High-Performance

MotionRT750 enables CPU hyper-threading by default. With logical processors outnumbering physical cores, CPU hyper-threading maximizes CPU performance, eliminates unnecessary resource waste, and reduces costs while improving efficiency.



| System Diagram





HMI



PC

Zmotion®



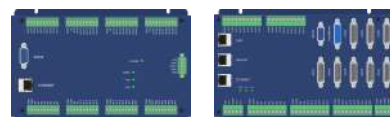
RTSys/ ZmotionCad / ZRobotView/
ZarDown/Zflash/ZmotionTwins/MotionRT7
Zmotion Development Environment & Tools



XPLCXX Controller



PCIE/XPCIE/PCI Serial Card



ECI Series Card



ZCAN Expansion Module

CAN



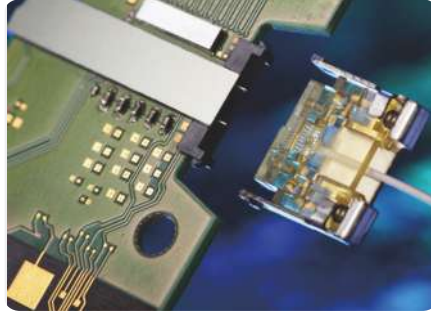
Servo/
Stepper
RTEX



| Applications & Solutions



▲ 3C Electronics



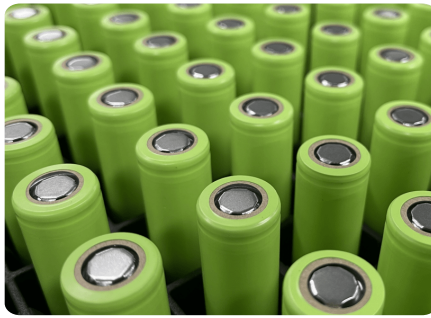
▲ Semiconductor



▲ Laser Processing



▲ Photovoltaic



▲ New Energy



▲ Automotive Equipment Manufacturing



▲ Printing & Packaging



▲ Textile & Garment Equipment



▲ CNC Processing



▲ Medical Equipment



▲ Industrial Robot



▲ Logistics

| Product Contents



Product Property

P17-28

- Functional Property 1
- Functional Property 2
- Functional Property 3

- Property 4
- Property 5
- Property 6
- Property 7

- Property 8
- Property 9
- Property 10
- Property 11



Software Introduction

P29-36

- Software Introduction
- Programming Language Introduction

- Development Debugging & Diagnosis
- Motion Commands Easy to Use
- Zmotion Open G Code "NC" Platform
- Zmotion CAD V2.0 Software Platform



Motion Controller

P37-52

- Pulse Controller Structure
- Bus Controller Structure

- ZMC0XX
- ZMC4XX
- ZMC432M
- ZMC4XX Laser Galvo

- XPLC220HS
- ZMC5XX
- ZMC6XX



Vision Motion Controller

P53-66

- Vision Motion Controller System Structure

- Vision Functions
- VPLC516E

- VPLC532E
- VPLC7XX (x86)
- VPLC716SCAN



EtherNET Motion Control Card

P67-78

- Pulse Card System Structure
- EtherCAT System Structure

- ECI IO Card
- ECI1000
- ECI2000

- ECI3000
- ECI382X



PC-based Motion Control Card

P79-92

- PC-based Motion Control Card System Structure

- PCIE Bus Motion Control Card
- PCI Bus Motion Control Card
- XPCIE Bus Motion Control Card
- XPCIE Laser Galvo Motion Control Card



IO Expansion Module

P93-97

- EtherCAT Module Framework
- ZCAN Module Framework
- ZMIO310 Module Framework

- EtherCAT Expansion Module
- ZCAN Expansion Module
- ZMIO310 Series Expansion Module



HMI

P98-101

- HMI



Reference & Learning

P102-103

- RTSys User Manual
- RTBasic Manual
- RTHMI Manual
- RTPLC Manual

- RTVision Manual
- PC Function Library Manual
- Zmotion Article
- Video

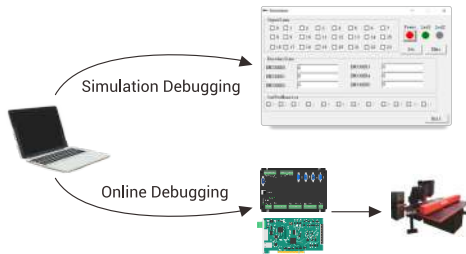
Product Property



Functional Property 1

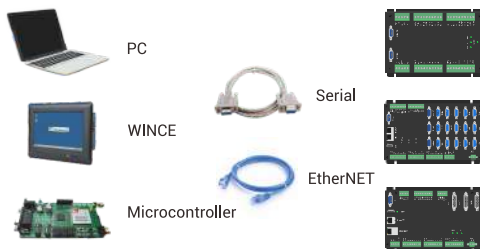
Do Better Motion Control

Convenient to debug, both online and simulation, like VC.



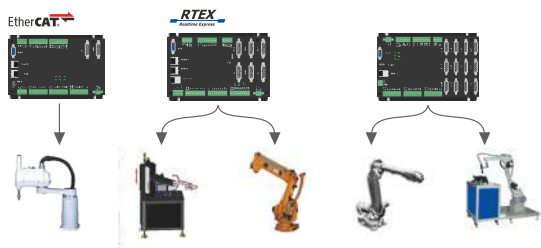
Online Control

To control via various operating systems or bare-metal terminals.



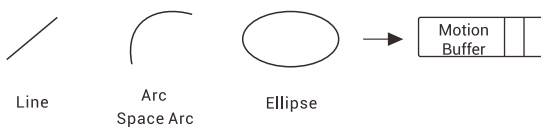
Robotic Arm Control

Support multiple manipulators; one controller can control several robots at the same time (stepper motors also can be applied through dedicated ACCEL & DECEL control).



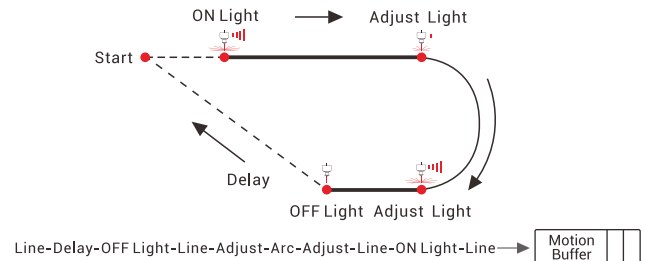
Interpolation / Continuous Interpolation

Support multiple kinds of interpolation, including hybrid continuous interpolation.



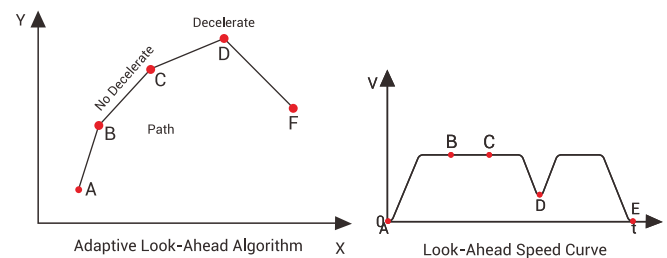
Synchronous Motion

Support synchronous motions (IO, PWM, DAC, system variables modification, etc.) -- easy & efficient



Adaptive Look-ahead

Auto look-ahead & configurable forced speed at special points; Look ahead: up to 16-axis interpolation (additional axes assignable to bypass speed planning & look-ahead).

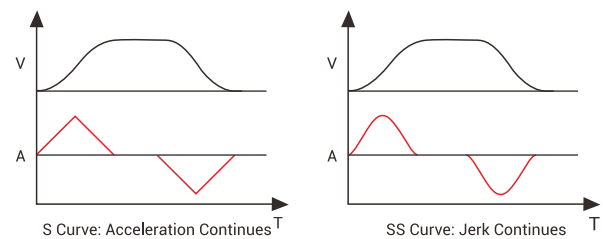


S / SS Curve Acceleration & Deceleration

Merge small segments to do acceleration and deceleration.

S Curve: continuous acceleration motion.

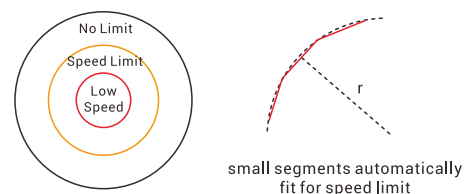
SS Curve: continuous jerk motion -- smoother motion & less shock



Speed Limit for Small Circle

Different arc radius, different speed limits.

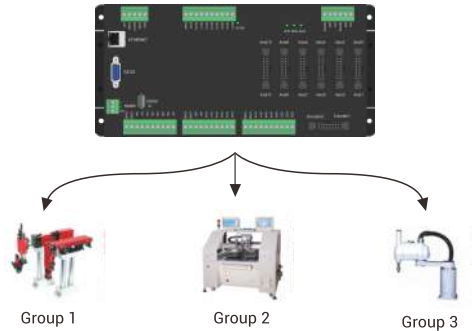
For small segments, it will automatically fit as the arc to do speed limit.



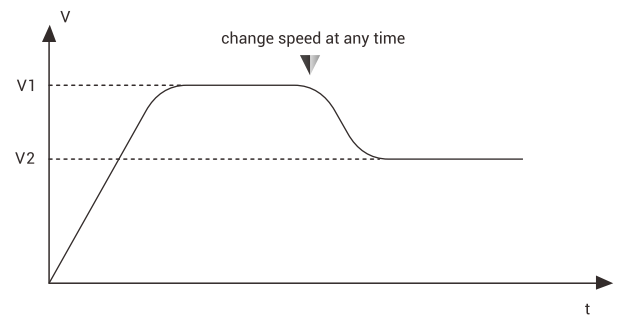
Functional Property 2

Multi-Machine Control

Each group's axes control one device independently.

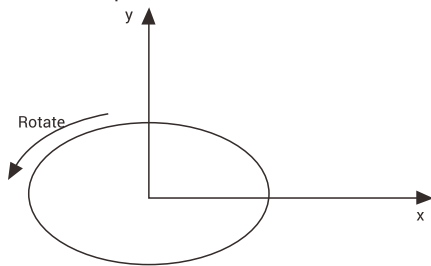


Dynamic Speed

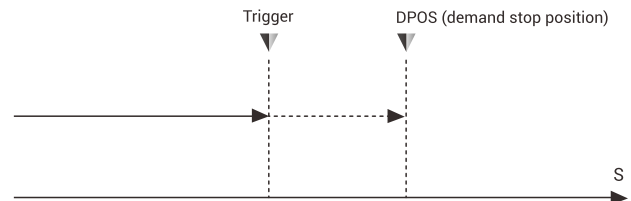


Turntable Control

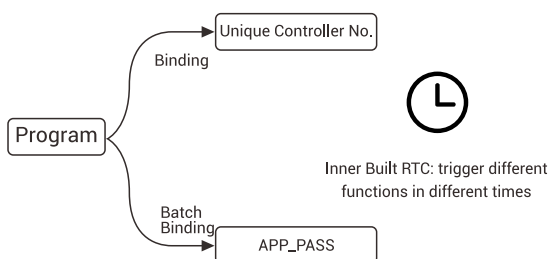
While the turntable is rotating, it can automatically do linear, circular interpolation at the same time.



Dynamic DPOS Configuration

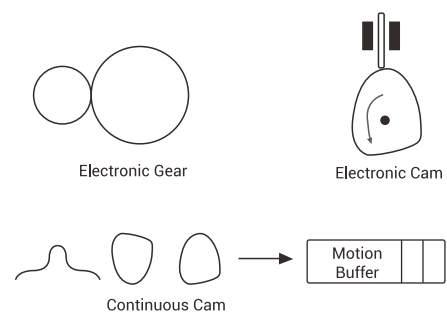


Safety



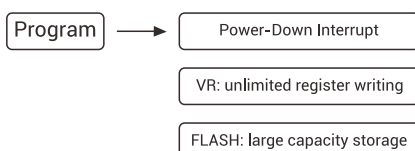
Electronic Cam

Support changeable continuous cam.



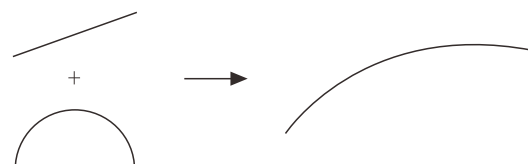
Power Failure Detection / Storage

Trigger power-off interrupt function in the instant of power-off.



Virtual Axis / Motion Superposition

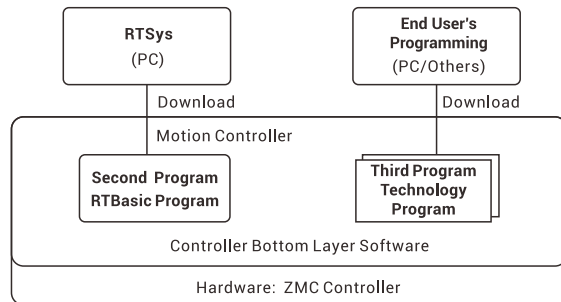
It can be combined as all kinds of complex motions.



Functional Property 3

Three-Stage Programming

RTBasic implements two-stage programming. It supports loading and executing large-size three-stage program files with RTBasic & G-code syntax; files can be imported via USB flash drive.



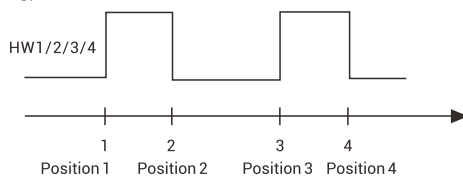
Customized Communication

MODBUS master & slave are built-in; communicating with special devices via customized protocol.



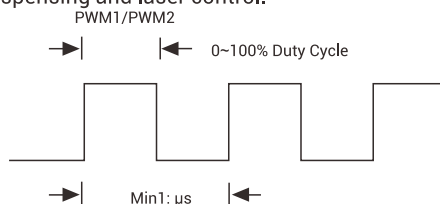
High-Speed Hardware Comparison Output

FPGA hardware comparator achieves hardware comparison output with unlimited capacity for camera high-speed photo (fly-shooting) and laser control.



Hardware PWM Output

FPGA hardware achieves high-precision PWM output for high-speed dispensing and laser control.



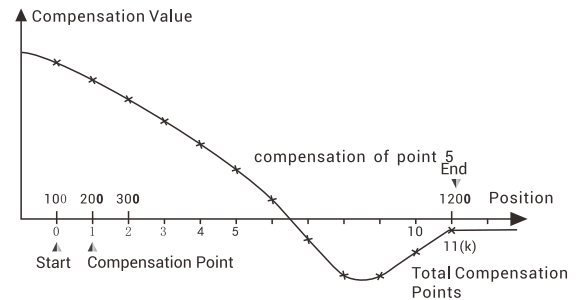
Teach Pendant

Network touch screen.
Support the third party's touch screen for teaching.



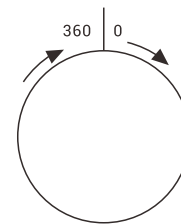
Backlash/Pitch Compensation

Achieve compensation by simple parameters configuration.



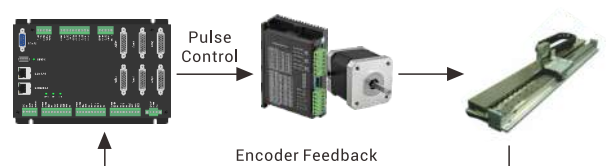
Position Cycle Mode

Set axis coordinates within one certain range.



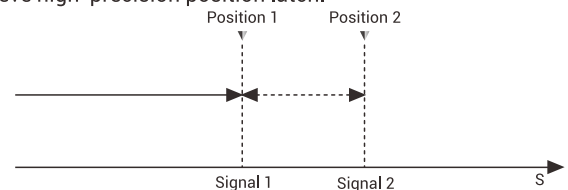
Pulse Full-Closed of Stepper Control (CL-Version)

Specialized pulse full-closed control mode, pulse and encoder share one axis No., and support pitch compensation.



Encoder Hardware Latch

Record now encoder position instantly by specialized IN to achieve high-precision position latch.



Others

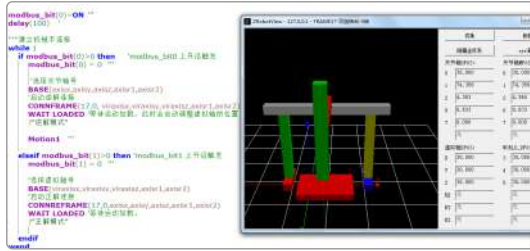
► Support IO expansion by EtherCAT & ZCAN

► Support EtherCAT
► Support RTEK

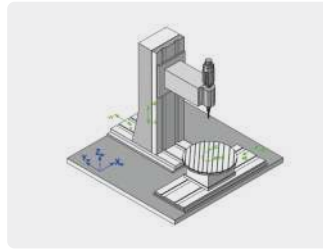


Functional Property 4

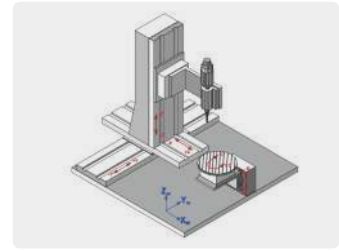
Robot Application on Axis 4 / Axis 5 RTCP



▲ Dual-Turntable



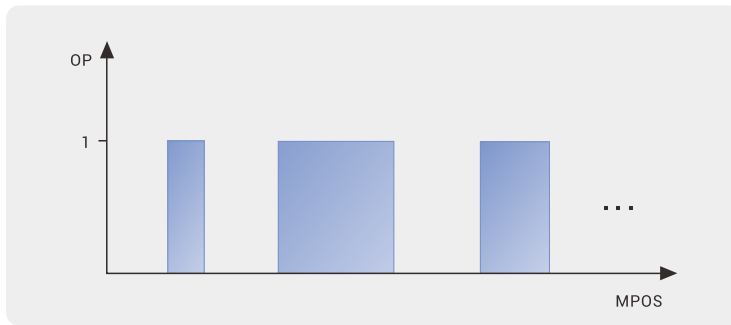
▲ Single-Turntable



▲ Dual-Turntable

Typical Applications: welding/dispensing/spraying/laser/woodworking, etc.

Position Synchronous Output (PSO) Application

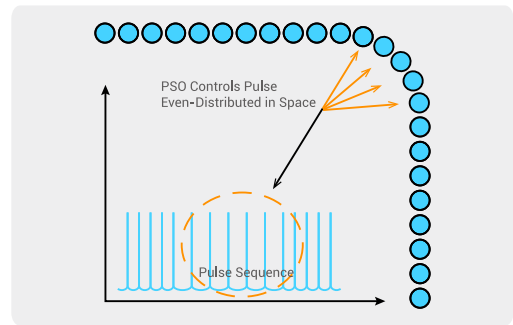


▲ HW_SWITCH Application

Any Initial Position: take real feedback of servo / grating as standard base.

Any Synchronous Width: minimal of one pulse width

Any synchronous Volume: write & clear synchronous output's buffer at any time.

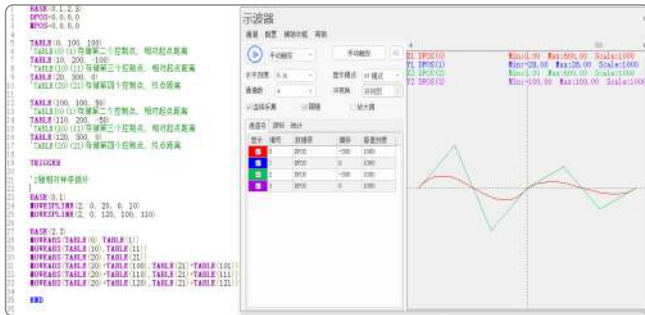


▲ PSO Laser Output & Motion Control

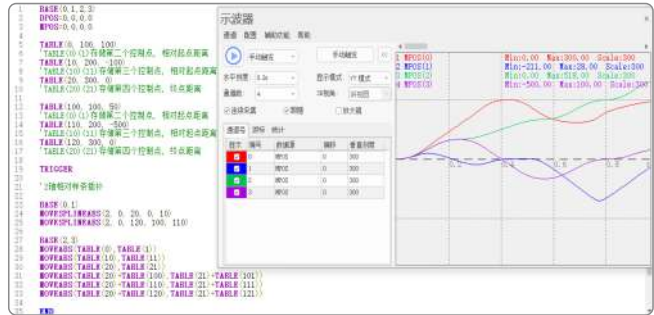
Typical Applications:

high-precision dispensing/laser/shooting (take photo by industrial camera), etc.

Spline Curve Interpolation



▲ MOVESPLINE

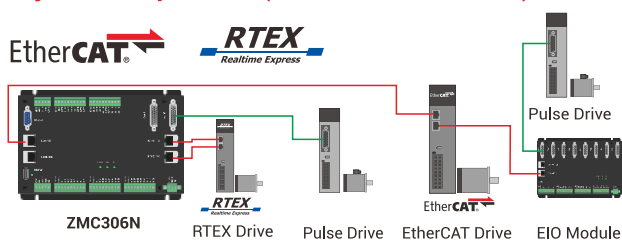


▲ MOVESPLINEABS

Spline Interpolation High-Precision High-Efficiency More Convenient

Typical Applications: High-Speed & High-Precision – metal process/wood process/high precision dispensing/laser

Hybrid Interpolation (Pulse,EtherCAT,RTEX)



High-Performance EtherCAT/RTEX

EtherCAT®

ZMC464 16-Axis (max 100µs) 64-Axis (max 500µs)
PCI464 16-Axis (max 100µs) 64-Axis (max 500µs)

RTEX®
Realtime Express

ZMC432N 32-Axis (max 500µs)
PCI464 32-Axis (max 500µs)

Functional Property 5

Support All Kinds of Operation Systems & Programming Languages



Support C Language Compiling & Real-Time Executing

For some controllers, inner C languages in RTSys can be used for programming and compiling.

- (1) promote program operation and calculation execution efficiency -- for high-speed applications
- (2) user can use own robotic arm algorithm model -- user system becomes more flexible and easier

No need to compile the code by external software: promote engineers' development efficiency & simplify project creating process and configuration process & enhance intelligent manufacturing

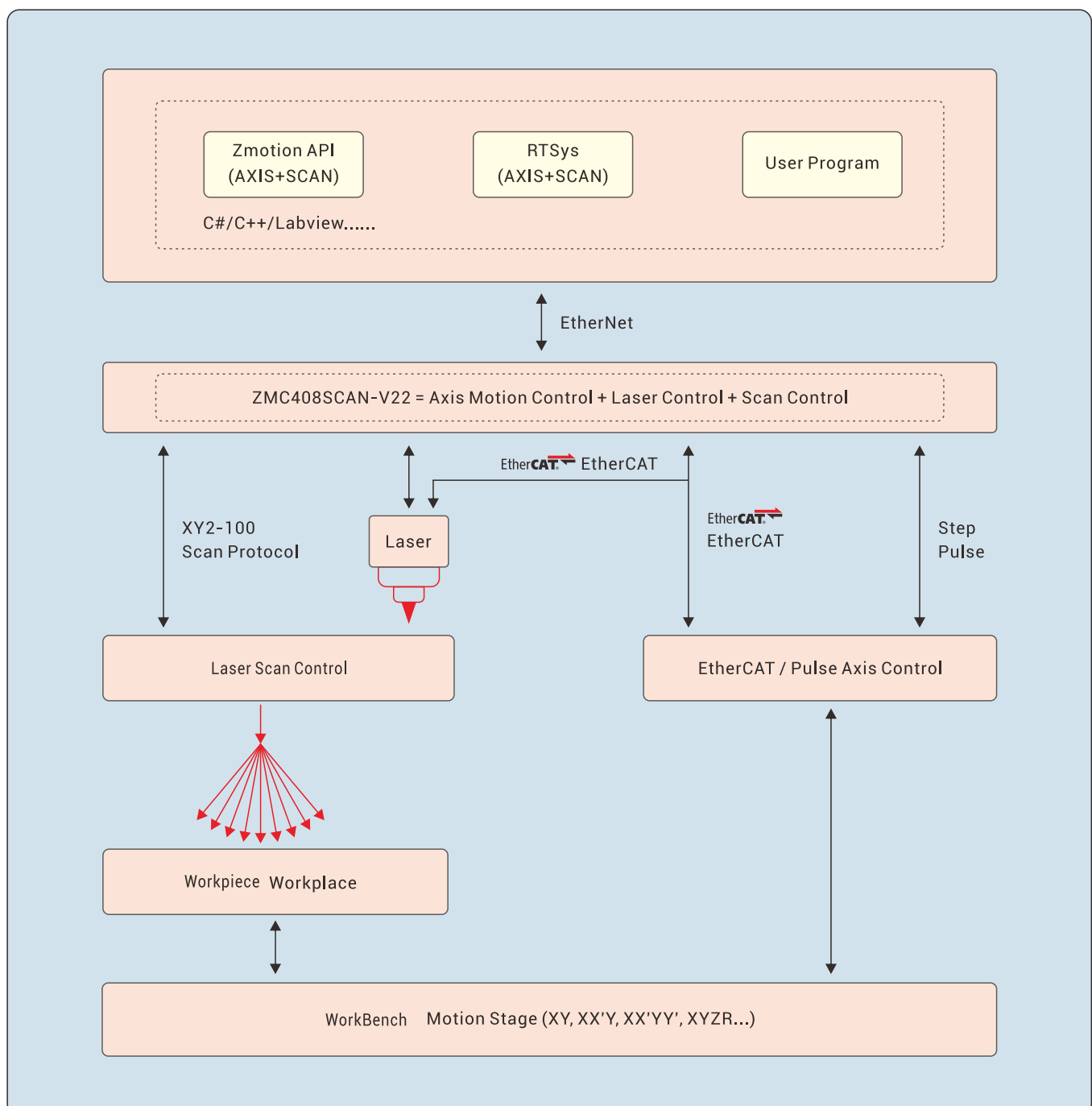


Functional Property 6

Laser Galvanometer Scan in Large Format

Advantages

- one controller integrates with laser control + scan control + axis control -- save hardware cost.
- use XY2-100 scan protocol, 2D / 3D laser scan are OK, and support axis control and scan linkage interpolation.
- open development ways: (C# / C++/LabVIEW.....), industry software can be created rapidly.
- support "open laser correction" -- higher laser precision
- control axis, scan, laser power synchronously -- higher efficiency
- axis and laser scan do synchronous motion -- solve the problem "splicing error in traditional large format"

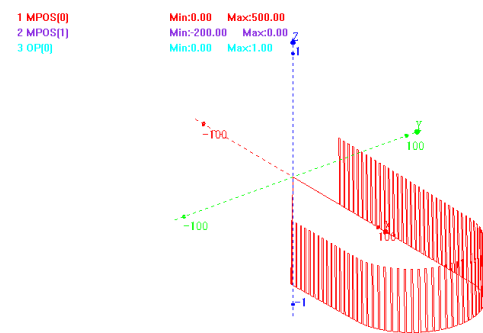
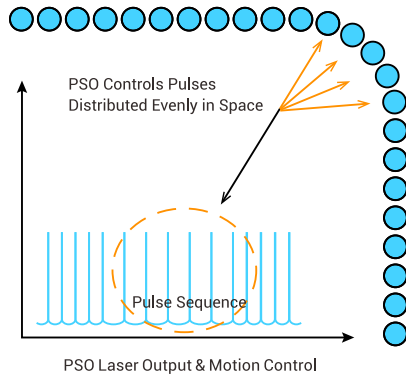


Functional Property 7

Open PSO Application in Laser Processing / Vision Fly-Shooting / Precision Dispensing

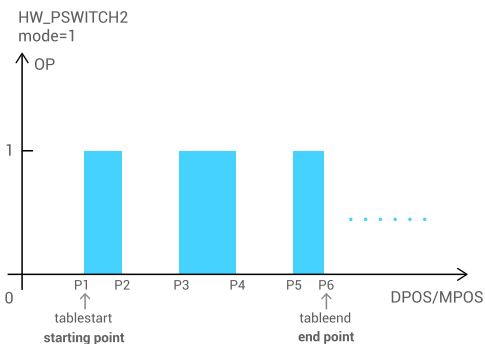
PSO: Position Synchronized Output. Laser is controlled precisely by triggering laser pulse at precise position to switch with fixed gap.

Real-time capture encoder feedback (/pulse) to do position comparison, and do phase synchronization with laser output signal. While moving, trigger laser output to ON & OFF at constant distance or custom distance, then make pulses be average in processed object, including acceleration, deceleration, and constant speed.



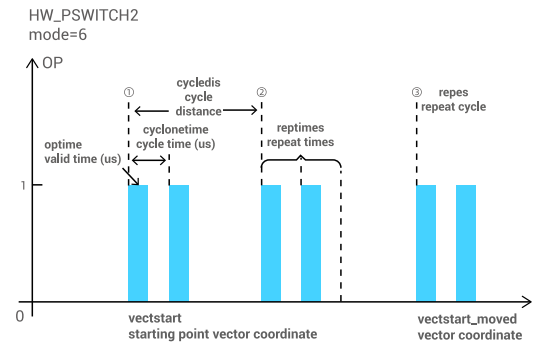
1. Custom Position Output

Invert electric level according to set position.



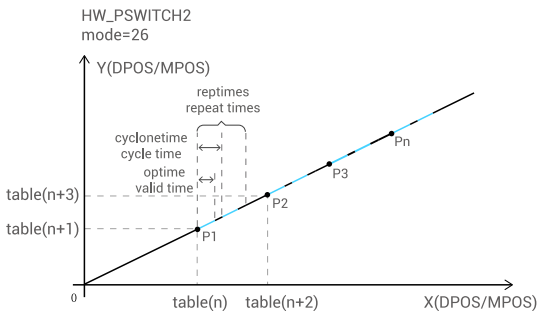
2. Period Output Mode with Fixed Distance

Set fixed distance, invert (once / N times) in each comparison position in cycle.



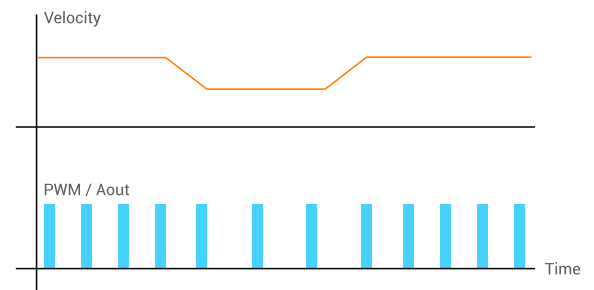
3. XYZ 3D Position Comparison Output

Support custom XY, and XYZ 3D position comparison output.



4. PWM, Analog, Speed Output Synchronously

PWM duty cycle, analog output, and speed of laser beam path change proportionally.



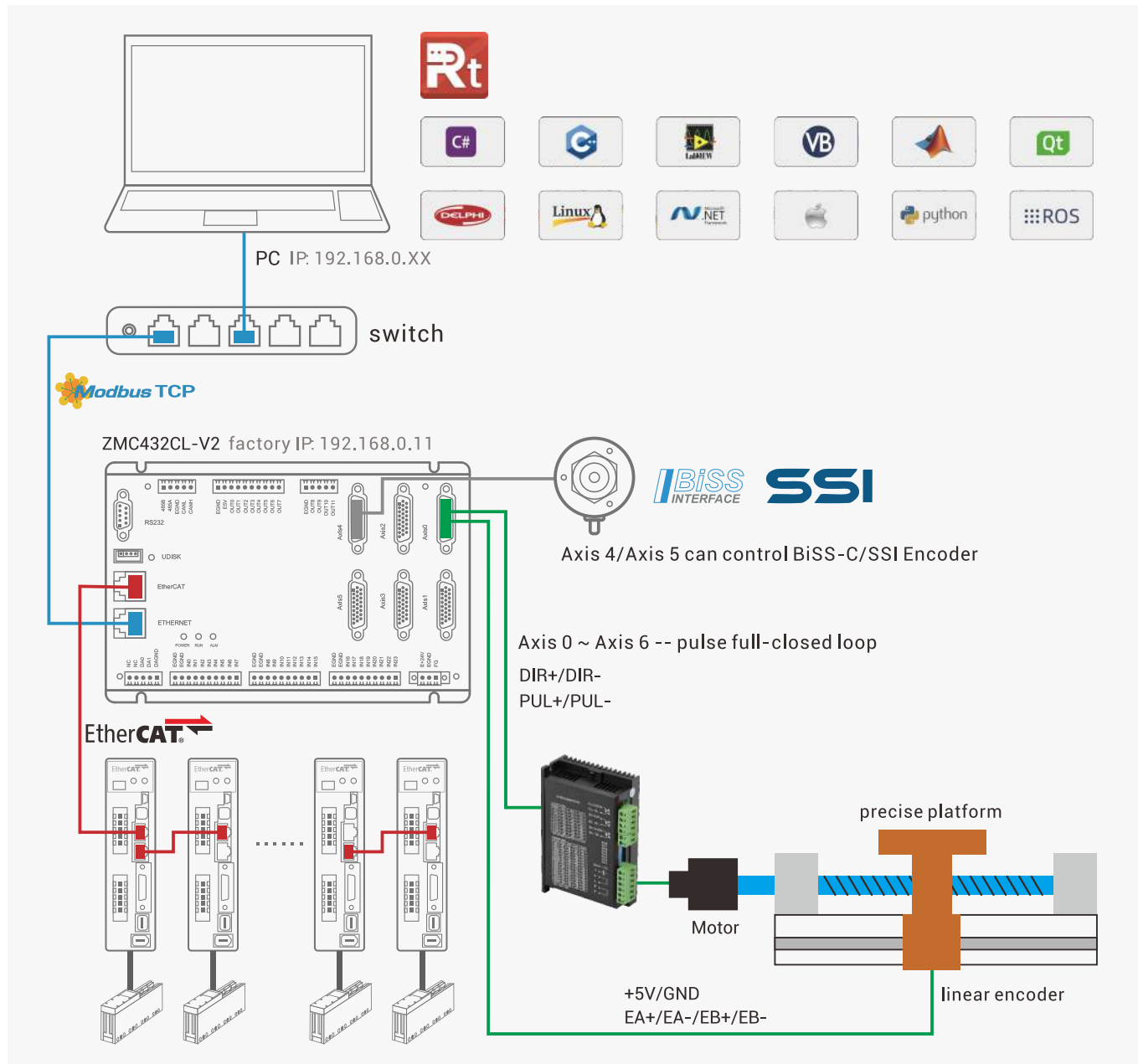
Applications:

Laser Scan Marking, large-Format Splicing Marking, Fly Marking, Large-Format Laser Cutting, Laser Fly Cutting, Laser Welding, Laser Drilling & Molding, Scan + Motion Axis Linkage Marking, Laser Cleaning, Laser Polishing, Laser Cladding, Laser Additive Manufacturing, Wafer Scribing & Marking, PCB & FPCB Drilling, 3D Processing, etc.

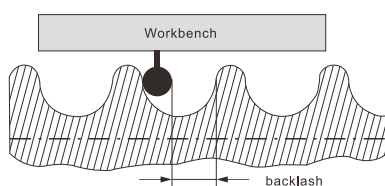


Functional Property 8

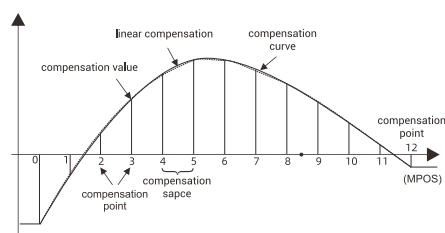
Pulse Full-Closed Loop (Stepper Control)



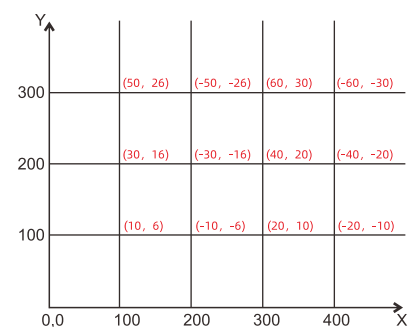
Backlash Compensation



Pitch Compensation

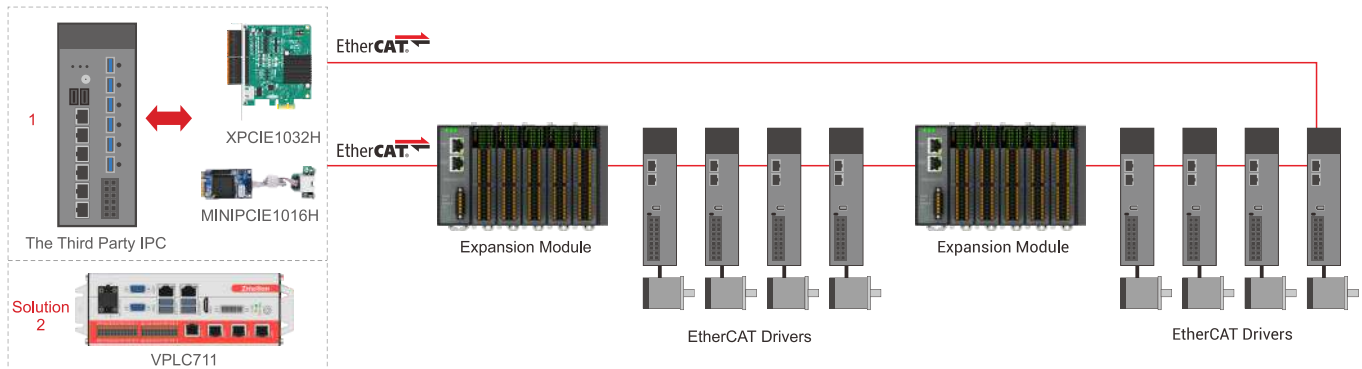


2D Dynamic Compensation

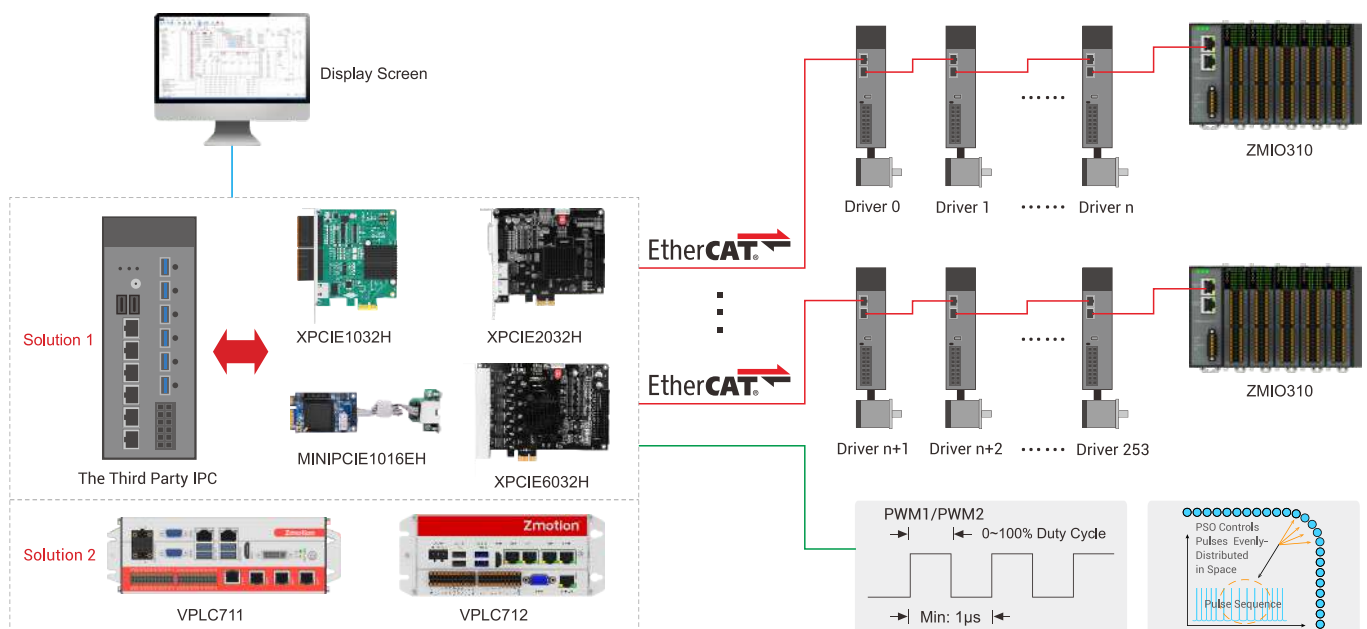


Functional Property 9

EtherCAT Redundancy Solution



MotionRT750 Motion Control Real-Time Kernel EtherCAT Solution



EtherCAT Hard-Time

- Multi-EtherCAT (max 254 axes): 500us
- Multi-EtherCAT under redundancy (max 32 axes): 125us
- Fastest cycle: 50us

Isolated Kernel Stable & Reliable

- Real-time program and non-real-time file run independently
- No influence on each other

Open API Efficient Development

- Provide the unified & open API (Windows / Linux).
- Cross-compilation for easy application porting across platforms.

Shared Memory Real-Time Interaction

- single-command call speed: us level

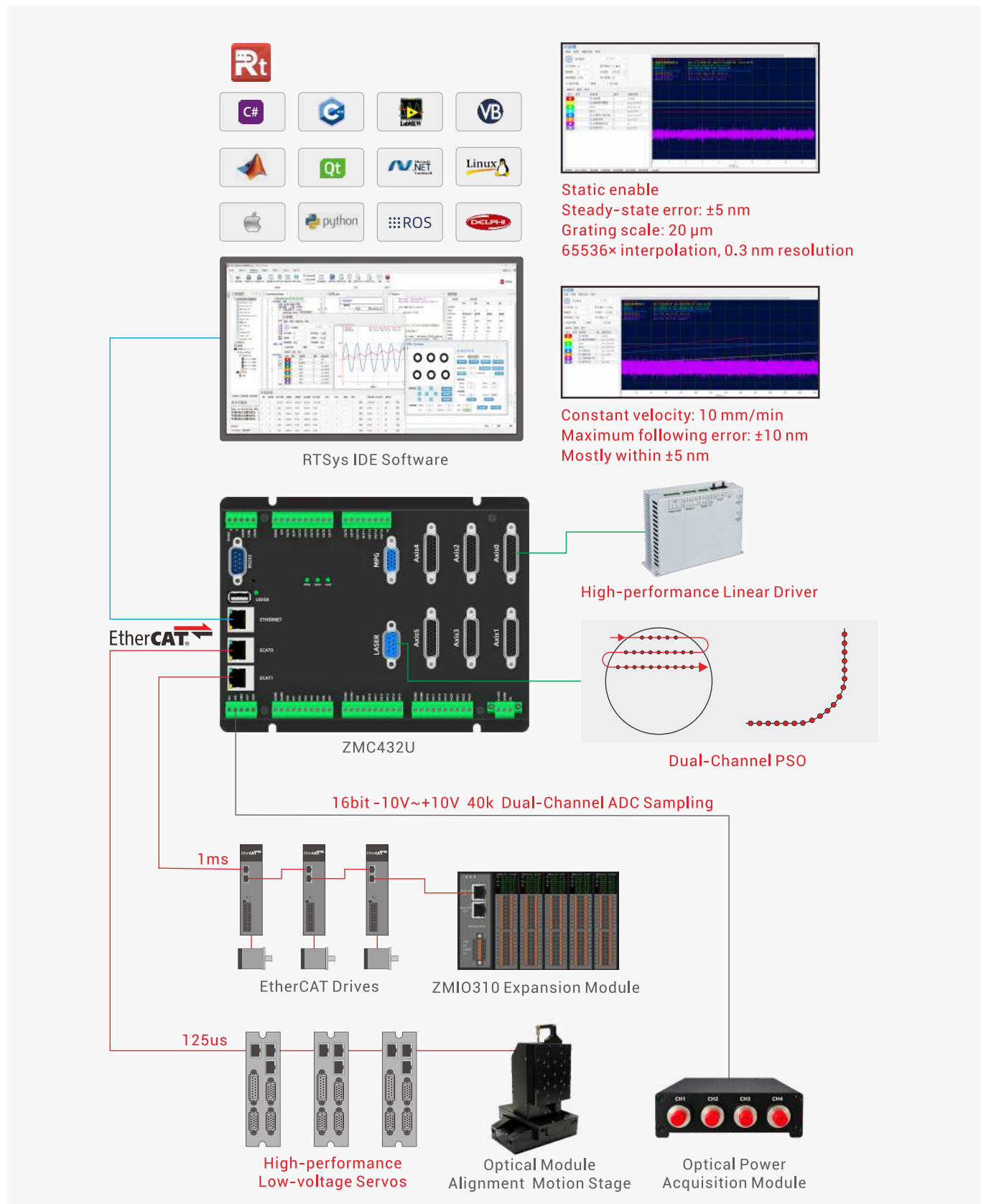
PLC ETHERNET
500us~10ms

PCI/PCIe Control Card
50~80us

MotionRT 750
1~3us

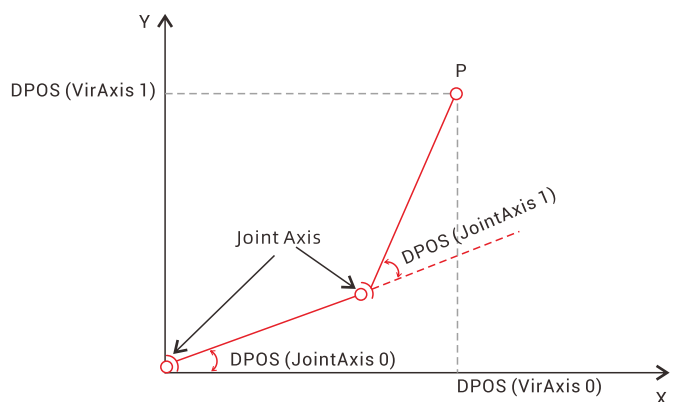
Functional Property 10

High-Precision Micro-Nano Machining Solution

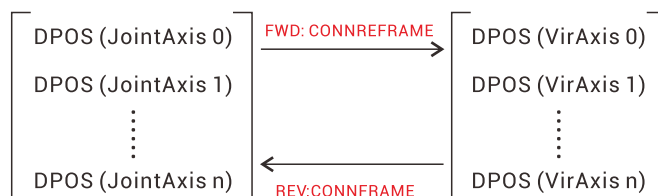


Functional Property 11

Manipulator Forward & Inverse Kinematics



Forward Kinematics: Joint Angles → Position + Pose

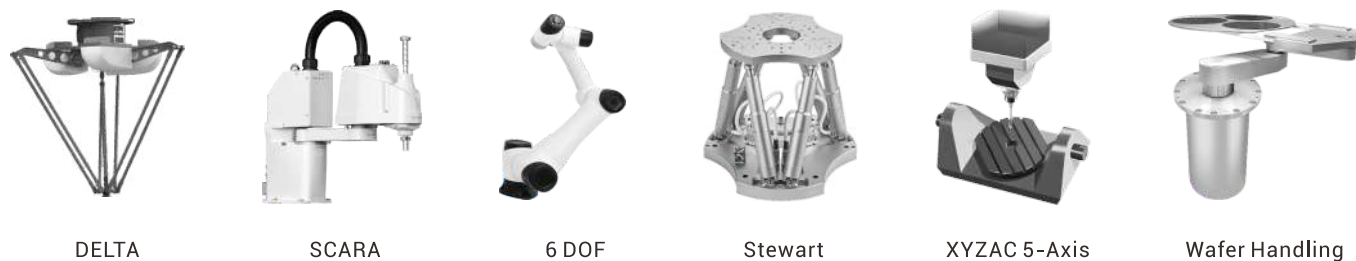


Inverse Kinematics: Position + Pose → Joint Angles

DPOS (VirAxis): virtual axis position coordinate (Cartesian coordinate system)

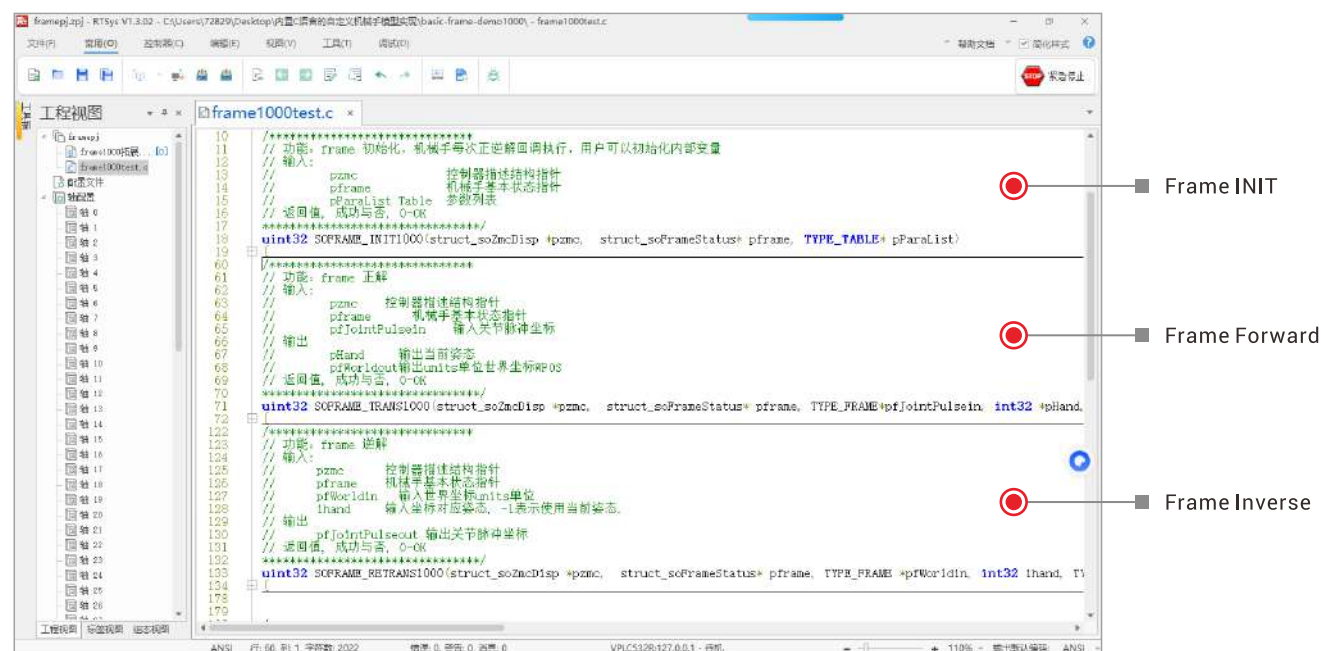
DPOS (JointAxis): rotation angle of joint axis

Various Manipulators

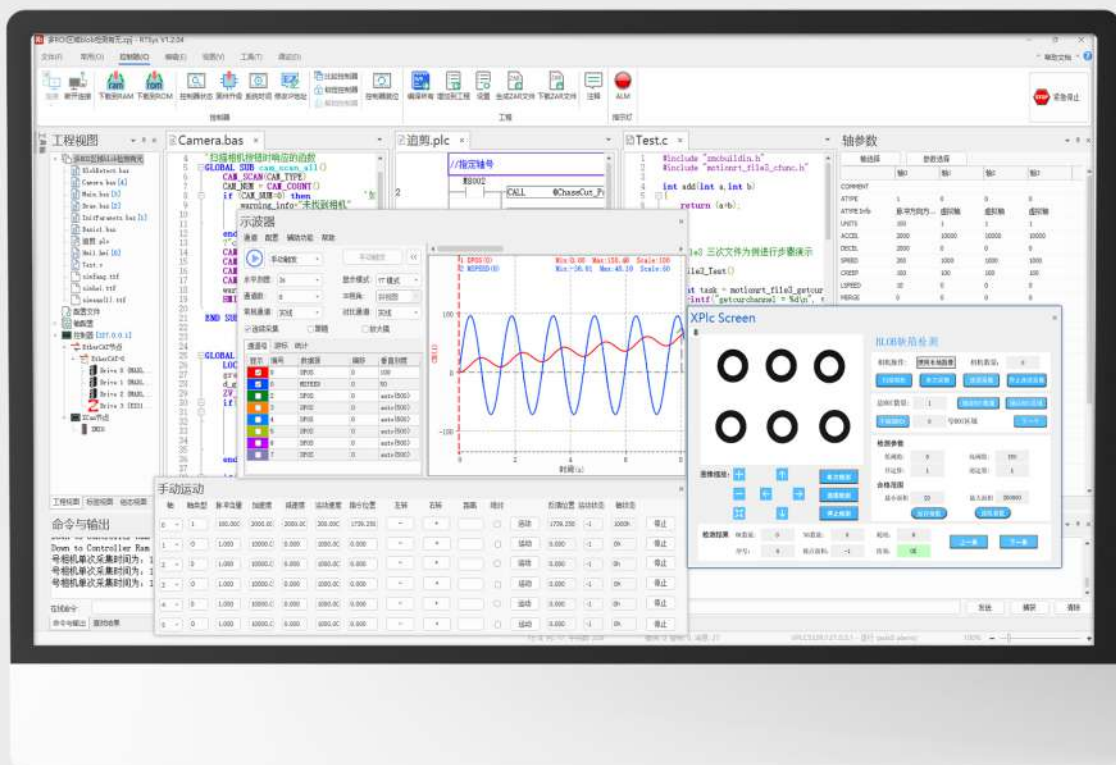


User Customized Manipulator Models

Zmotion controller has built-in manipulator types Frame1~Frame999; FRAME1000~FRAME65535 are customized.



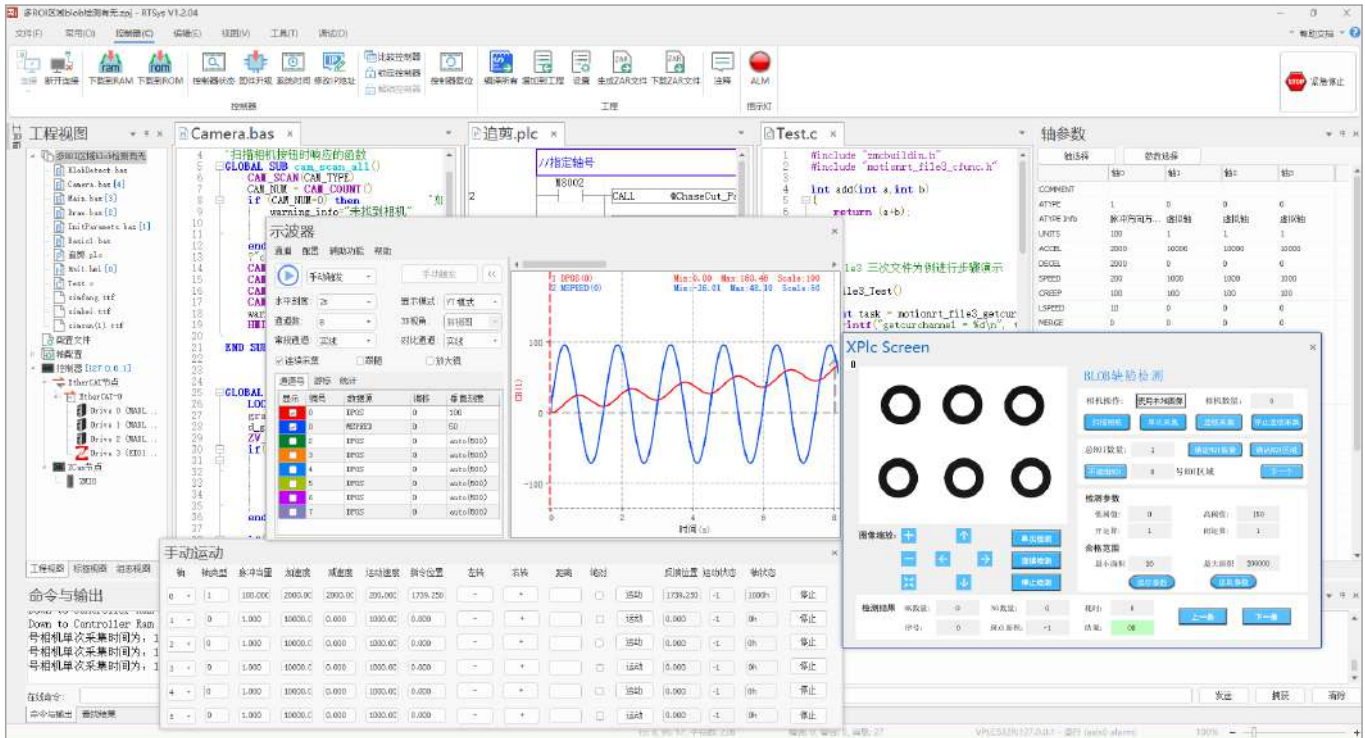
Software Introduction



Software IDE "RTSys" Introduction

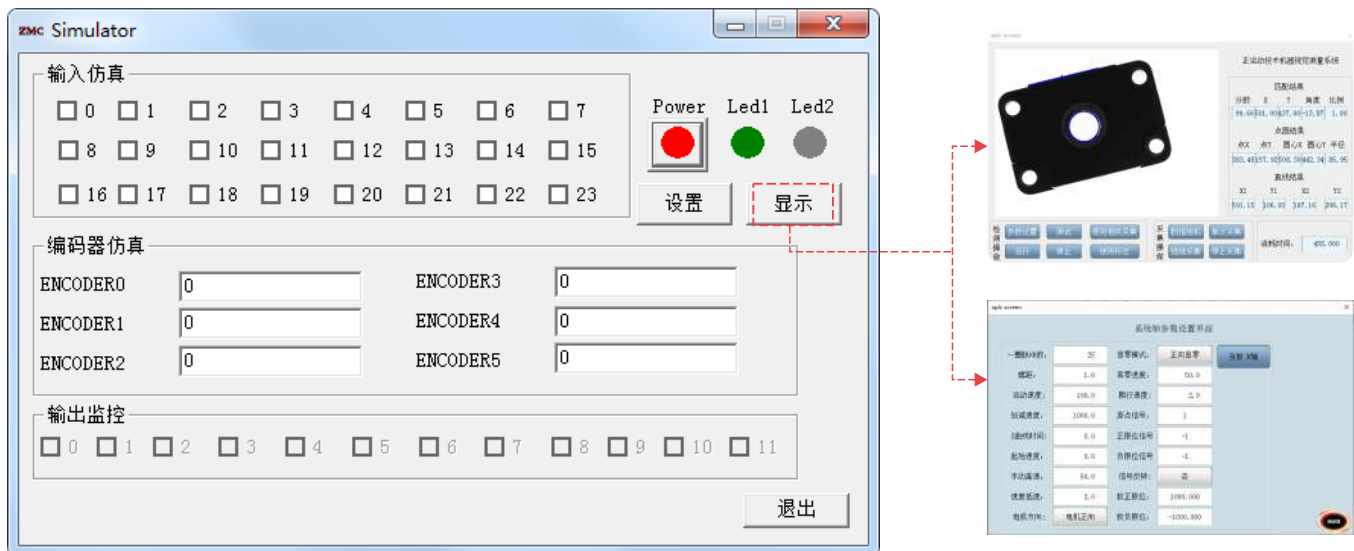
RTSys is one free PC development IDE software, updated from ZDevelop (initial software), which can program, debug, and diagnose Zmotion motion controllers. You can easy to edit codes and do configurations. And after quick-start your application, real-time debugging is supported. In addition, RTSys has Chinese & English by default.

"All In One" RTSys IDE Development Environment



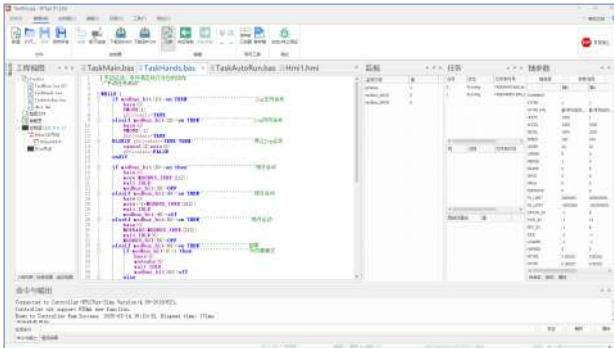
▲ Integrate with Basic, PLC, HMI, Vision

PC Simulation Operation

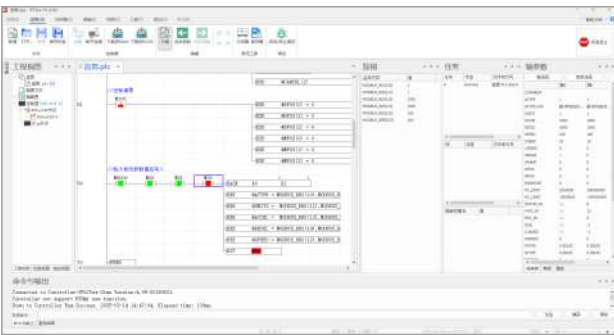


▲ Simulator IP: 127.0.0.1, no controller, it also can debug & diagnose program, including machine vision local image simulation & debugging.

Programming Languages



▲ RTBasic



▲ RTPIC



▲ RTHmi



▲ XPLC CNC Standard System

RTBasic

RTBasic is the main programming language for Zmotion motion controllers. It provides all standard program grammars: variable, array, condition judgement, loop, math algorithm. In addition, extended Basic commands & function provide powerful motion control functions: single-axis motion, multi-axis interpolation, synchronous / asynchronous motions, IO & AIO control, etc.

[Support "self-defined SUB"] -- edit some general functions as custom SUB. Except this, G code SUB is valid.

[Support "real-time & multi-task"] -- several Basic programs can be built and run, then complex applications become easier.

[Support "interrupt" function] -- for example, power-down interrupt, which can record the state when power off, namely, convenient to restore after powered on.

"More details, please refer to Zmotion RTBasic Programming Manual".

You also can learn and test some examples in RTSys (simulator).

RTPIC Ladder Diagram

RTPIC is the PLC language for Zmotion motion controller, LAD or instruction list can be used, and the usage is same as market common PLC commands. Therefore, it is easy to program for users who are familiar with PLC.

Support linkage programming between RTPIC and RTBasic .

RTHmi Configuration

RTHmi is used to develop motion controller corresponding human-interface.

And it can program together with RTBasic & RTPIC when the controller supports HMI function.

In addition, only one time upgrade, HMI program and controller program can be updated synchronously.

"More details, please refer to Zmotion RTHmi Programming Manual".

You also can learn and test some examples in RTSys (simulator).

CNC Standard System with User-Defined G-Codes

One open-source CNC standard system that is running on programmed RTHmi. You can edit technology program through G code directly. At the same time, you can customize / add required function.

Development Debug & Diagnosis

- ▶ watch controller running state
- ▶ support RTBasic, RTPLC and RTHMI
- ▶ support manual operation
- ▶ support online debug
- ▶ support simulation (controller & HMI)
- ▶ support multi-task running
- ▶ support oscilloscope
- ▶ support IN & OP
- ▶ support checking registers' data
- ▶ encrypt program, lock controller -- protect user's intellectual property

Quick & Easy Debugging



▲ Manual | quick to debug axis



▲ AD/DA | capture & control analog

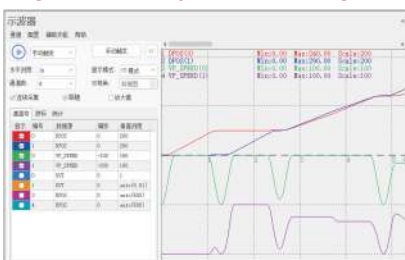


▲ IN | real-time watch IN, custom IO state



▲ OP | real-time watch OUT & output

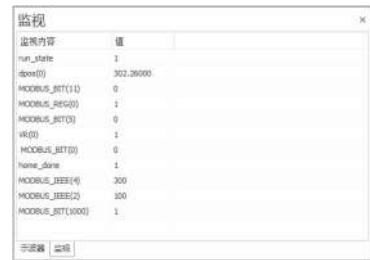
High-Efficiency & Quick Diagnosis



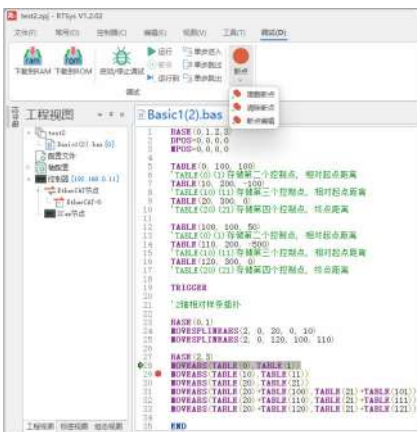
▲ Scope | real-time show 8 data & trajectory



▲ Register | check word/bit register values



▲ Variable | real-time watch variable & custom variable



▲ Debug | set breakpoints, etc.



▲ Task | real-time watch tasks



▲ Axis Parameters | real-time see axis parameters & states

Development Debug & Diagnosis

- ▶ watch controller running state
- ▶ support RTBasic, RTPLC and RTHMI
- ▶ support manual operation
- ▶ support online debug
- ▶ support simulation (controller & HMI)
- ▶ support multi-task running
- ▶ support oscilloscope
- ▶ support IN & OP
- ▶ support checking registers' data
- ▶ encrypt program, lock controller -- protect user's intellectual property

High-efficiency & Quick Diagnosis

Controller State

VirtualAxes:	64
RealAxes:	64
Tasks:	22
Files/3Files:	111/8
Modbus4x Bits:	8000
Modbus4x Regs:	60000
VR Regs:	8000
TABLE Regs:	320000
RomSize:	125000KB
FlashSize:	262144KB
SoftType:	VPLC5xx-Simu
RTVersion:	5.200-20190611
Build Date:	20240426
IpAddress:	127.0.0.1
HardVersion:	464-0
ControllerID:	1234
ZvlibVersion:	1.5.1-Beta Build(20231228)

▲ BasicInfo: controller basic information

Controller State

CanID	HexID	Address	MaxIn	MaxOut	MaxIn	MaxOut
local	464-0 (ZMC432)	24	27 (0-25)	15 (0-15)	0	2 (0-1)

▲ ZCanNodes | node configuration of local controller, IO & AIO by CAN expansion module

Controller State

SlotID	VendorID	DeviceID	Alias	Address	MaxIn	MaxOut	MaxIn	MaxOut
--------	----------	----------	-------	---------	-------	--------	-------	--------

▲ Slot0Nodes | node configuration of local controller, IO & AIO of EtherCAT/RTX drive expansion module

Quick to Upgrade Firmware & User Program

Update Firmware

TypeString: Hard Version:

SERIAL_NUMBER: Soft Version:

Zfm File:

▲ Update Firmware | easy to update firmware for new functions

ZMC TOOLS - ZarDown 连接成功

COM:

IP:

当前控制器信息:

类型	ZMC432	硬件版本	432-0	固件版本	4.60-20170522	编号	170900748
----	--------	------	-------	------	---------------	----	-----------

File 文件:

ZarDown

update success. 升级成功.

▲ Update User Program | ZDevelop generates compiled ZAR file, then users can remote update, also can protect source codes.

Multiple Encryption -- Protect Your Intellectual Property

01. program only can be downloaded (can't upload)
02. password: oversize character & store by irreversible algorithm

MakeZar

☐ BindAppPassword ☒ ***

☐ BindControllerID

Zar File:

Lock

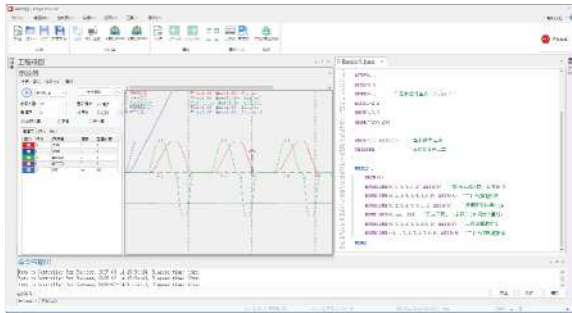
Warning: The password must be remembered.

Password: ☒ *****

Confirm:

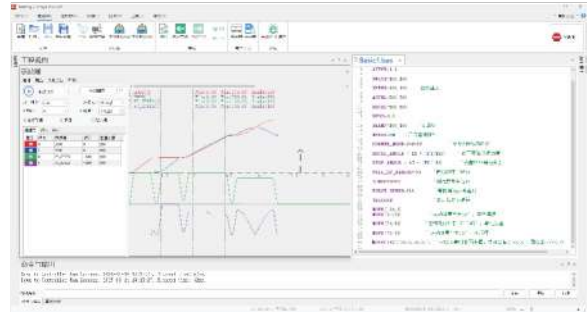
Motion Commands Easy to Use

All Kinds of CAM



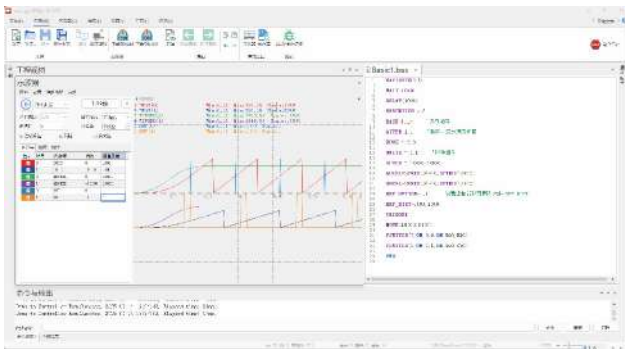
cam cambox movelink moveslink
flexlink movelink_modify

Look-Ahead Modes of Continuous Interpolation



merge corner_mode decel_angle stop_angle
force_speed zsmooth full_sp_radius

Software & Hardware Synchronized



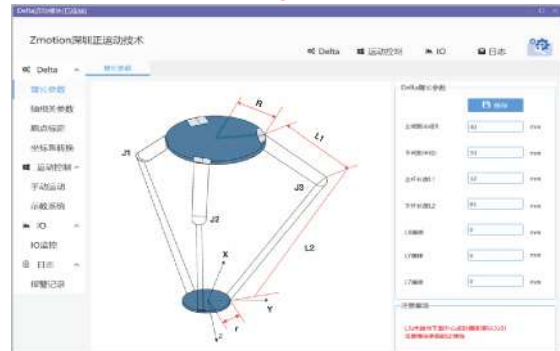
▲ software output synchronously

Software Synchronized Output

move_op move_op2
move_table move_delay
move_synmove move_aout
move_asynmove, move_task
moveop_delay, move_pwm

Hardware Latch Synchronously "regist"
Hardware Output Synchronously "hw_pswitch"
Hardware Timer "hw_timer"
Precision Position Output "move_op"

Robot Kinematics Algorithms

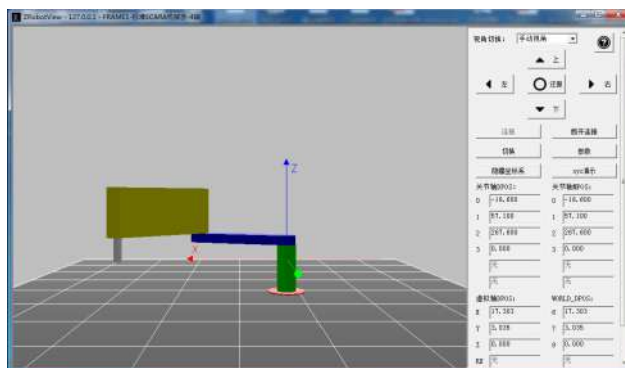


▲ 30+ robotic forward & inverse kinematics algorithms

30+ robotic forward & inverse kinematics algorithms
connframe/connreframe
delta2, delta3, scara, 6-joint robotic arm, etc.

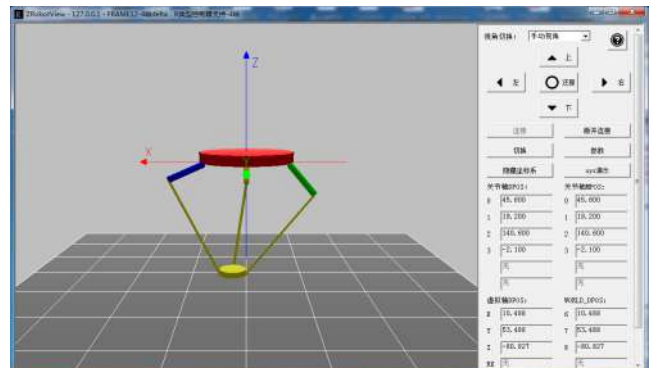


SCARA Robotic Arm



▲ ZRobotView SCARA Robotic Arm Simulation | standard 4-axis SCARA, lifting SCARA, special SCARA, 6 degrees of freedom/palletizing/collaborative/spraying robot, etc.

DELTA Robotic Arm



▲ ZRobotView Delta Robotic Arm Simulation | standard 4-axis Delta, 2-axis Delta, 3-axis Delta

Open G Code ZMotion NC Platform

Zmotion NC is one optional function for ZMC4XX and above controllers. It provides ISO standard G code commands and rich functions, like, multi-channel, cutter compensation, macro process, 3D simulation, preview, etc. And NC processing codes made by different CAD/CAM software are valid, UG, MasterCam, ArtCAM, etc. For G code files, it supports files with suffix ".cnc/.nc". Applications: engraving & milling machine, carving machine, drilling center, etc.

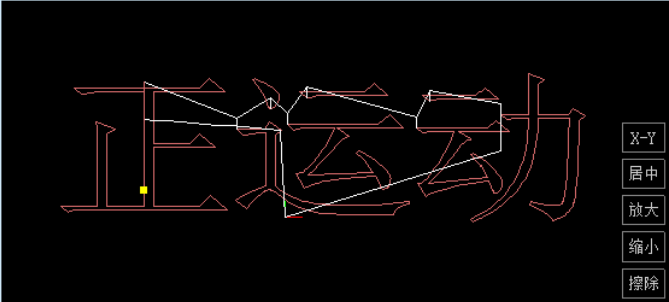
32
加工文件: 正运动.NC

运行中

AUTO模式

通道一

14:33:03



X-Y

居中

放大

缩小

擦除

机械坐标

X

-37.284

Y

-3.342

Z

19.300

程式坐标

X

-47.284

Y

-13.342

Z

-0.700

加工时间

0: 0: 7

F

600.000

mm/min

0.000

(实际)

S

1000.000

RPM

1000.000

(实际)

剩余距离

X

-0.001

Y

30.269

Z

0.000

<<

关闭模拟

暂停加工

恢复暂停

停止加工

系统复位

单步运行

>>

▶ other file formats can be expanded through "ZG_EXFILE" command.

CNC Parser: ISO Standard G Code Instruction Set

G00 X4.296 Y-7.427 Z3.23	;一般格式, 关键字之间以空格区分, “-”代表参数为负
	; “+”代表参数为正数, 默认省略
G00X4.296Y-7.427Z3.23	;无空格区分也可支持, 可观性差些
G00X4.296Y- 7.427Z3.23	;空格出现位置不影响最终识别的代码, 效果同上
G0 X4 Y5 Z3	;可省略关键字参数的前导0, 参数为整数时可不带小数
G0 X.4 Y-.5 Z3.	;可省略小数点前的0, 和小数点后的0
	;等同于 G00 X0.400 Y-0.500 Z3.000
g0 y4 z3 x5	;关键字不区分大小写, 同行关键字的顺序无意义
y4 z3 x5 g0	;但同行代码不能同时出现同组关键字, 如 G0、G1、G2
N160 G1 Z.444 F200.	;F200. 等同 F200.00, 表示XYZ轴进给速度

- Motion Related: G0, G1, G2, G3...
- Distance Mode: G90, G91
- Tool Tip Radius Compensation: G40, G41, G42
- Tool Length Compensation: G43, G44, G49
- Feed Mode: G94, G95
- Main-Axis Speed Mode: G96, G97
- M Related Functions: M0, M1, M2, M30
- ...

CNC Parser: Macro-Program

Support type B macro program, including macro variable, macro-operation instruction, macro-control commands.

macro.nc

total:31

line:16

length:17

page: 2 / 3

12 #1 = 0

13 WHILE [#1 LT 90] D02

14 #2 = 0

15 #7 = #22*SIN[#1]

16 #8 = #20*COS[#1]

17 #9 = #21*COS[#1]

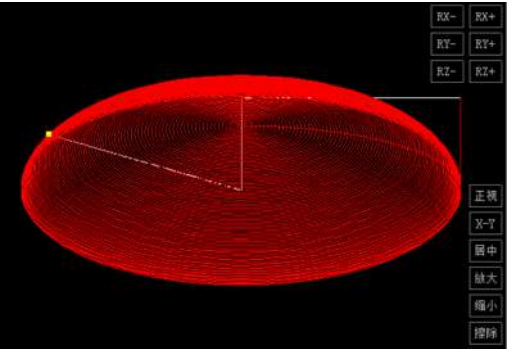
18 WHILE [#2 LE 360] D01

19 #3 = #8*COS[#2]

20 #4 = #9*SIN[#2]

21 G17 G1 X#3 Y#4 Z#7 F3000

22 #2 = #2+5



FX-

FX+

FY-

FY+

FZ-

FZ+

正视图

X-Y

居中

放大

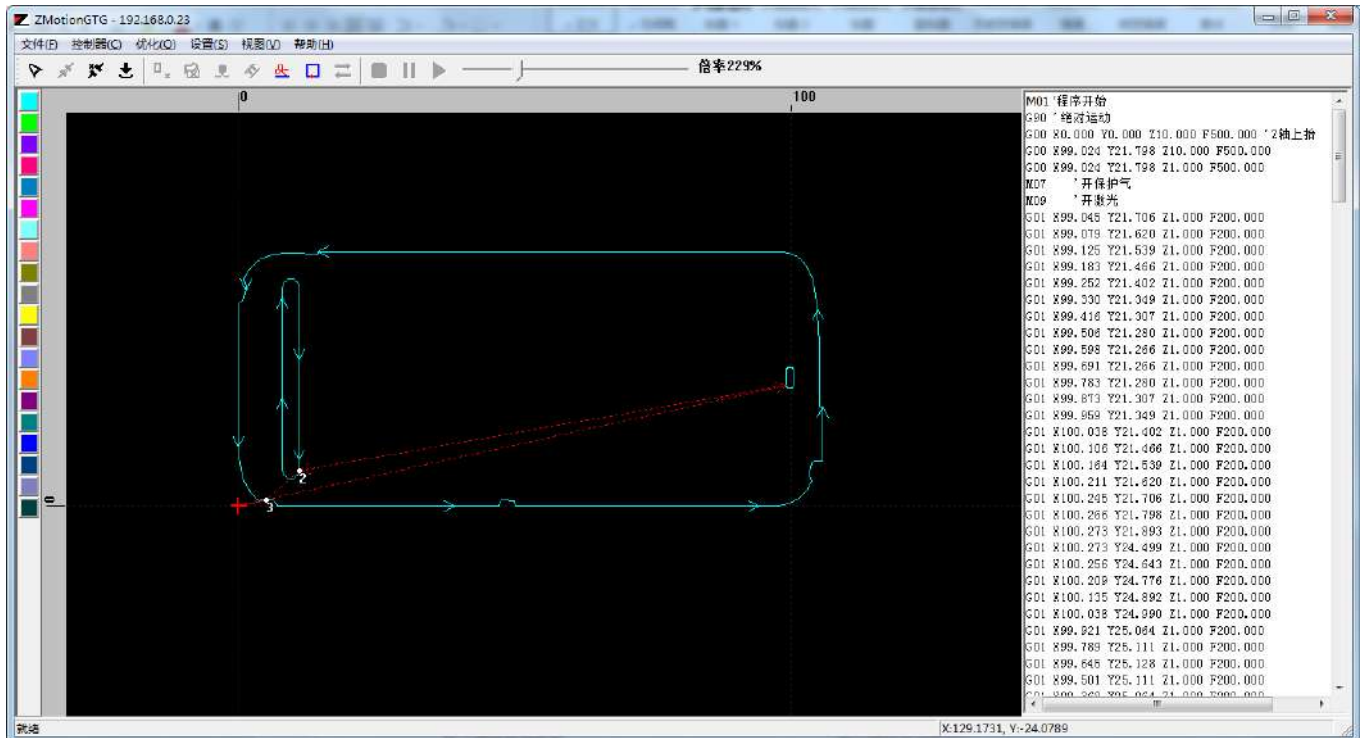
缩小

擦除

▲ processing code and processing picture of semi-ellipsoid sphere programmed by macro program.

ZMotion CAD V2.0 Software Platform

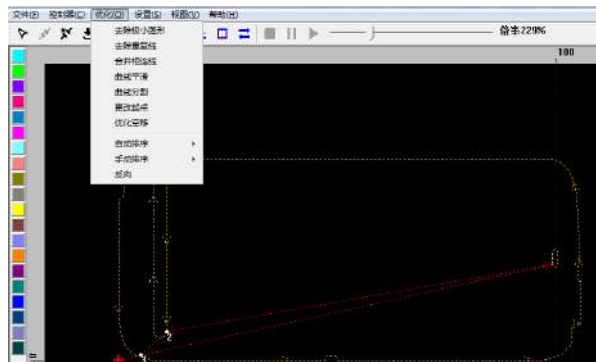
Zmotion CAD V2.0 is a tool software related to RTSys, which can import graphic files (DXF, PLT, AI) to transfer them into Basic codes / G codes for controller, then download codes into controller or import 3 file into controller, corresponding trajectory can be processed easily.



Optimize Graphic Automatically / Manually: Smooth Curve, Remove Small One, Remove Duplicate Lines, Merge Connected Lines, Sort, Optimize Empty Motion.



▲ Automatic Optimization



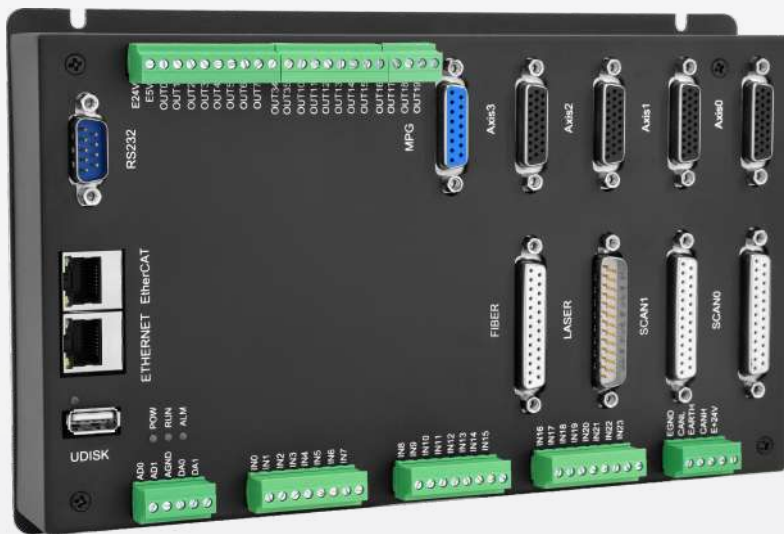
▲ Manual Optimization

Technology Parameters



- ▶ it can set processing path's origin.
- ▶ support simulation and information showing.
- ▶ heights of axis Z processing and empty motion can be set freely.
- ▶ absolute / relative control modes.
- ▶ it can add/delete action parameters (self-define) before/after processing.
- ▶ custom graph length precision unit, (reference 0.01-0.5)
- ▶ support look-ahead function, automatic apart arc as segments, corner deceleration, chamfering,

Motion Controller

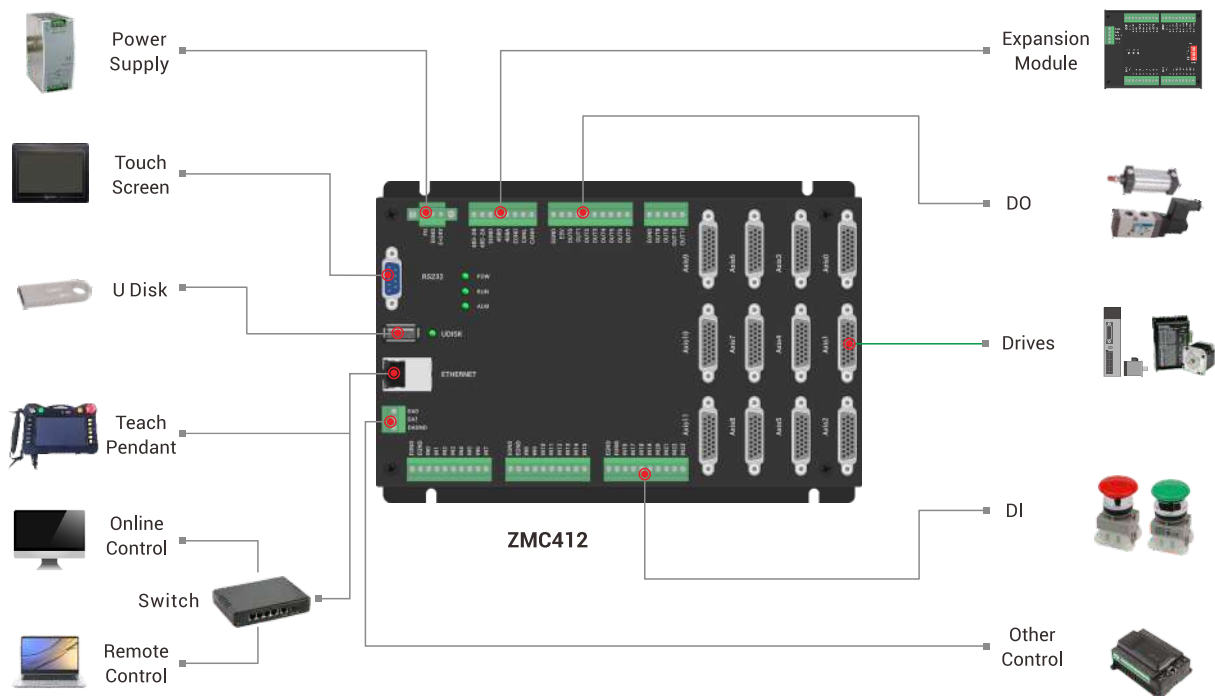


ZMC408SCAN-V22

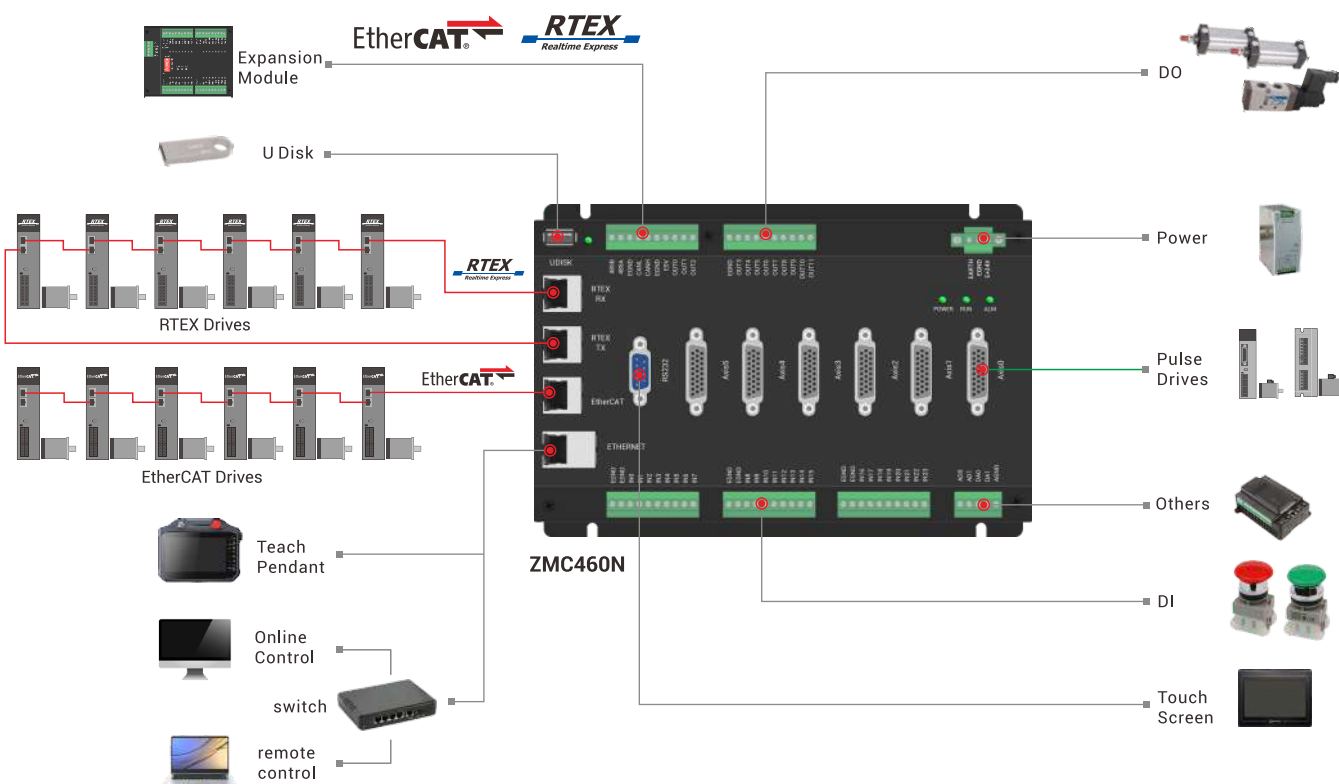


ZMC432M

Pulse Controller System Structure



Bus Controller System Structure





ZMC006CE-V2

ZMC0XX Controller

ZMC0XX economical multi-axis motion controller is a kind of pulse standalone motion controller. Support up to 6 axes for some simple trajectory control, such as, linear interpolation, circular interpolation, helical interpolation, etc.

Applications: pulse within 6-axis -- electronic semiconductor equipment (detection equipment, assembly equipment, locking equipment, soldering machine), dispensing equipment, assembly line, etc.

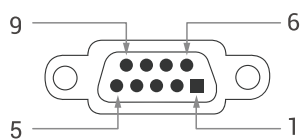
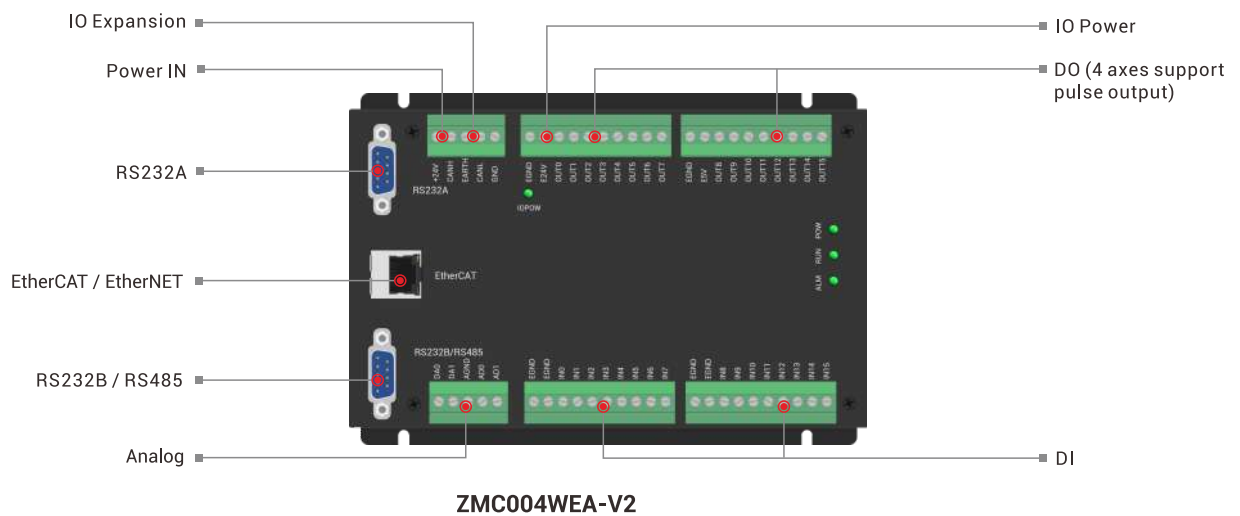
Functional Features

- Axis: up to 6-axis (include virtual-axis)
- I/O: up to 30 DIs & 14 DOs
- Communication: 2 RS232/RS485 (standard)
- Analog: 2 DAs, max 512 ADs & 512 DAs by ZCAN expansion
- Pulse Mode: directional + pulse/double pulse
- Functions:
 - 01. support encoder input, which can be configured as handwheel mode.
 - 02. support IO expansion by ZCAN, max 4096 INs & 4096 OUTs synchronously.
 - 03. axis position limit, origin signal can be configured as any IN.
 - 04. max output current is 300mA, which can directly drive some solenoid valve.
 - 05. electronic cam & gear, position latch, synchronous follow, virtual axis, etc.
 - 06. a variety of encryption methods to protect user's program.
- Performance:
 - 01. max output frequency can reach 5MHz.
 - 02. support up to 6 axes for linear / any circular / helical interpolation.

Models

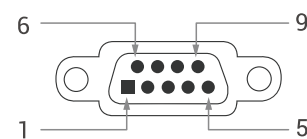
Models	Picture	Axis	En-coder	Pulse Frequency	I / O	AD	DA	Axis Motion Buffer	Space	Task	Power Down Store	232	485	ECAT	USB	Size (mm)	Functions
ZMC004BEA-V2		4	2	500k (single-ended)	16/16	2	2	32	380k	8	1024	2	1	1	-	177*122	point, line, arc, cam, continuous interpolation
ZMC004WEA-V2		4	2	500k (single-ended)	16/16	2	2	32	380k	8	1024	2	1	1	-	177*122	point, line, arc, cam, continuous interpolation
ZMC004CE-V2		4	1	5M	30/14	-	2	128	300K	10	1024	2	1	1	1	226*127	point, line, arc, cam, continuous interpolation
ZMC006CE-V2		6	1	5M	30/14	-	2	128	300k	10	1024	2	1	1	1	226*127	point, line, arc, cam, continuous interpolation

Interfaces



PIN No.	Encoder Method	Description
1	EA+	Encoder A +
2	EA-	Encoder A -
3	EB+	Encoder B +
4	EB-	Encoder B -
5	GND	Internal 0V
6	EZ+	Encoder Z +
7	EZ-	Encoder Z -
8	Internal +5V Power Supply	Internal +5V Power
9	-	-

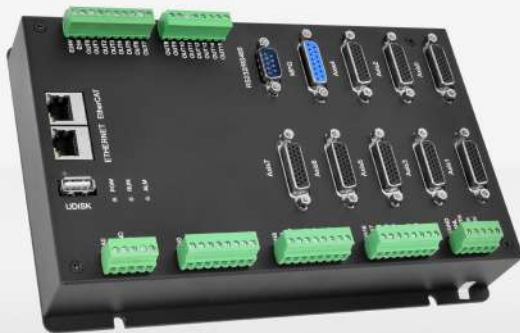
▲ Encoder Interface (DB9 Male Head) ZMC006CE-V2



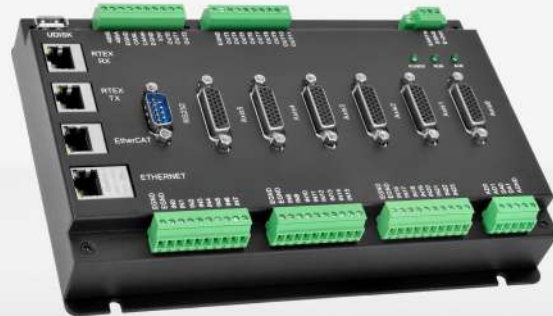
PIN No.	Pulse Method	Description
1	PUL+	Pulse Differential +
2	PUL-	Pulse Differential -
3	DIR+	Directional Differential +
4	DIR-	Directional Differential -
5	GND	Inner 0V
6	ALM(IN24-29)	General IN, Recommend for Drive Alarm
7	SERVON(OUT8-13)	General OUT, Recommend for Drive Enable
8	Internal +5V Power	Internal +5V Power
9	EGND	External Ground

▲ Pulse-Axis (DB9 Female Head) ZMC006CE-V2

Note: refer to "User Manual" for more models and details.



ZMC408CE



ZMC460N

ZMC4XX – Pulse

ZMC4XX high-performance multi-axis motion controller is a kind of pulse standalone motion controller. Itself supports max 12 axes, but 32 axes can be expanded to realize complex continuous trajectory control.

Applications: robot (SCARA, DELTA, 6 DOF, electronic semiconductor equipment (detection, assembly, locking, soldering), dispensing, laser, printing & packaging, textile & garment, stage entertainment equipment, medical equipment, assembly line, etc.

Functional Features

- Axis: up to 32-axis (include virtual-axis)
- I/O: up to 36 DIs & 24 DOs
- Communication: RS232, RS485, USB, EtherNET.
- Analog: 2 DAs, max 256 ADs & 128 DAs by ZCAN expansion
- Pulse Mode: directional + pulse / double pulse / quadrature pulse
- Functions:
 01. support encoder input, which can be configured as handwheel mode.
 02. support IO expansion by ZCAN, max 512 INs & 512 OUTs synchronously.
 03. axis position limit, origin signal can be configured as any IN.
 04. max output current is 300mA, which can directly drive some solenoid valve.
 05. electronic cam & gear, position latch, synchronization, virtual axis, comparison output.
 06. pulse closed-loop, pitch compensation, hardware comparison output (HW_PSWITCH2), hardware timer, precision output in motion, etc.
 07. support multi-file & multi-task, PC & controller's program work synchronously.
 08. a variety of encryption methods to protect user's program.
 09. support power failure detection & power failure storage.
 10. support several robotic arm algorithms (SCARA, DELTA).
 11. support 2 PWM outputs with 1M frequency.
- Performance:
 01. max output frequency can reach 10MHz.
 02. support up to 16 axes for linear/any circular/space arc/helical/elliptic interpolation.
 03. support multi-machine independent continuous interpolation.

ZMC4XX – Bus



ZMC4XX high-performance multi-axis standalone motion controller supports EtherCAT bus (N: dual-bus of EtherCAT & RTEX) and pulse. Itself supports max 64 axes EtherCAT (/60 axes RTEX) to realize complex continuous trajectory control.

Functional Features

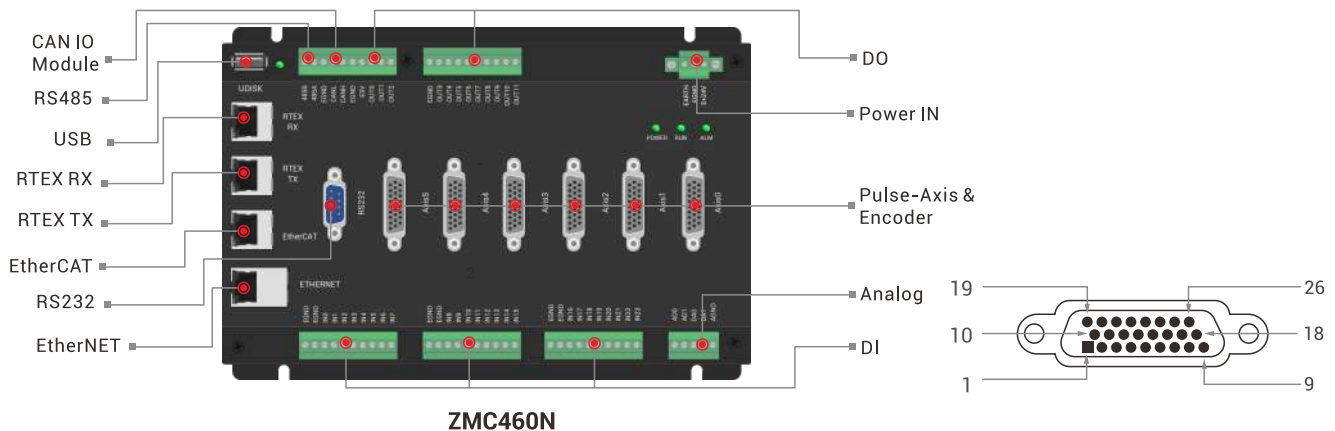
- Axis: up to 64-axis EtherCAT
- I/O: up to 40 DIs & 32 DOs
- Communication: RS232, RS485, USB, EtherNET, EtherCAT / EtherCAT & RTEX
- Analog: 2 DAs, max 256 ADs & 128 DAs by ZCAN expansion
- Pulse Mode: directional + pulse / double pulse / quadrature pulse
- Functions:
 01. support encoder input, which can be configured as handwheel mode.
 02. support IO expansion by ZCAN, max 512 INs & 512 OUTs synchronously.
 03. axis position limit, origin signal can be configured as any IN.
 04. max output current is 300mA, which can directly drive some solenoid valve.
 05. electronic cam & gear, position latch, synchronization, virtual axis, comparison out.
 06. support pulse closed-loop, pitch compensation, hardware comparison output (HW_PSWITCH2), hardware timer, precision output in motion, etc.
 07. support multi-file (62) & multi-task (22), PC program and controller inner program can work at the same time.
 08. a variety of encryption methods to protect user's program.
 09. support power failure detection & power failure storage.
 10. support several robotic arm algorithms (SCARA, DELTA).
 11. support 12 PWM outputs with 1M frequency.
- Performance:
 01. EtherCAT fastest refresh cycle (within 16-axis) is 100µs.
 02. max output frequency can reach 10MHz.
 03. support up to 16 axes for linear/any circular/arc/helical/elliptic interpolation.
 04. support multi-machine independent continuous interpolation.
 05. mix interpolation of EtherCAT/RTEX multi-bus-axis + pulse axis.

Models

Model	Picture	Axis	En-coder	Pulse Frequency	MPG	I / O	AD	DA	Axis Motion Buffer	Space	Task	Power Down Store	232	485	ETH	ECAT	RTEX	U SB	Size (mm)	Functions
ZMC404-V2		4	4	10M	-	24+6/12+6	-	2	4096	32M	22	8000	1	1	1	1	-	1	205*136	point, line, arc, cam, continuous interpolation, robotic arm commands
ZMC406-V2		6	6	10M	-	24+6/12+6	-	2	4096	32M	22	8000	1	1	1	1	-	1	205*136	point, line, arc, cam, continuous interpolation, robotic arm commands
ZMC408CE		8	8	10M	1	24+16/16+16	2	2	4096	32M	22	8000	1	1	1	1	-	1	221*144	point, line, arc, cam, continuous interpolation, robotic arm commands
ZMC412		12	12	10M	-	24+12/12+12	-	2	4096	32M	22	8000	1	2	1	-	-	1	250*164	point, line, arc, cam, continuous interpolation, robotic arm commands
ZMC416BE		15+1	3+1	10M	-	24+15/8+15	2	2	4096	64M	22	8000	1	1	1	1	-	1	241*149	point, line, arc, cam, continuous interpolation, robotic arm commands
ZMC432-V2		32	6+1	10M	-	24+12/12+12	-	2	4096	32M	22	8000	1	1	1	1	-	1	205*136	point, line, arc, cam, continuous interpolation, robotic arm commands
ZMC432H		32	6	10M	-	24+6/12+6	2	2	4096	32M	22	8000	1	1	1	1	-	1	205*136	point, line, arc, cam, continuous interpolation, robotic arm commands
ZMC432N		32	6	10M	-	24+3/12+33	-	2	4096	32M	22	8000	1	1	1	-	1	1	216*146	point, line, arc, cam, continuous interpolation, robotic arm commands
ZMC464		64	3+2	10M	-	24+3/12+3	-	2	4096	32M	26	8000	1	1	1	1	-	1	205*136	point, line, arc, cam, continuous interpolation, robotic arm commands
ZMC430N		30	6+4	10M	-	24+6/12+6	2	2	4096	32M	40	8000	1	1	1	1	0/1	1	216*143	point, line, arc, cam, continuous interpolation, robotic arm commands
ZMC460N		60	6+4	10M	-	24+6/12+6	2	2	4096	32M	40	8000	1	1	1	1	0/1	1	216*143	point, line, arc, cam, continuous interpolation, robotic arm commands
ZMC432CL-V2		32	6+1	10M	-	24+6/12+6	-	2	4096	32M	12	8000	1	1	1	1	-	1	205*136	point, line, arc, cam, continuous interpolation, robotic arm commands

Note: ZMC430, ZMC460 only support EtherCAT. ZMC430N, ZMC460N support EtherCAT and RTEX.

Interfaces



PIN No.	Signal	Description	PIN No.	Signal	Description
1	EGND	External Power Ground	14	OVCC	E+24V OUT (better only for servo IO)
2	IN24-29 / ALM	IN, recommended to drive alarm	15	Reserved	Reserved
3	OUT12-17 / ENABLE	OUT, recommended to drive enable	16	Reserved	Reserved
4	EA-	Encoder Input	17	EA+	Encoder Input
5	EB-	Encoder Input	18	EB+	Encoder Input
6	EZ-	Encoder Input	19	EZ+	Encoder Input
7	+5V	Power Output	20	GND	Internal Power Ground
8	Reserved	Reserved	21	GND	Internal Power Ground
9	DIR+	Servo / Stepper Directional Output	22	DIR-	Servo / Stepper Directional Output
10	GND	Internal Power Ground	23	PUL+	Servo / Stepper Pulse Output
11	PUL-	Servo / Stepper Pulse Output	24	GND	Internal Power Ground
12	Reserved	Reserved	25	Reserved	Reserved
13	GND	Internal Power Ground	26	Reserved	Reserved

▲ Pulse-Axis & Encoder (DB26 Female Head) ZMC4XX

Note: refer to "User Manual" for more models and details.



ZMC432M

ZMC432M Series

EtherCAT®

ZMC432 Mhigh-performance multi-axis motion controller is a EtherCAT vertical modular motion controller, which supports RTBasic, PLC programming. It supports 32 axes (EtherCAT + pulse $\leq$ 32) at most.

Valid Motion Control Functions: point, electronic cam, linear, circular, continuous interpolation, laser PWM, robot algorithm.

Applications: electronic semiconductor equipment (detection, assembly, locking, soldering), dispensing equipment, laser processing device, printing & packaging, textile & garment, medical equipment, assembly line, industrial robot, etc.

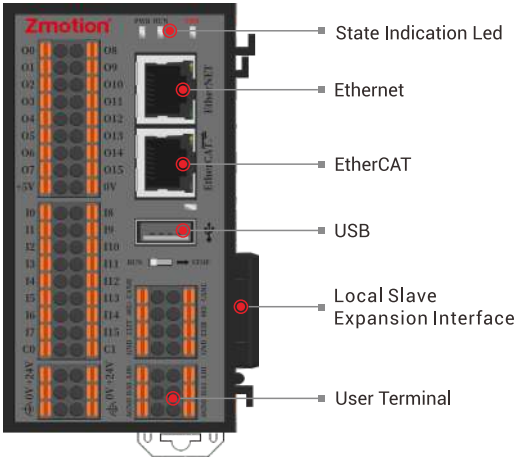
Functional Features:

- ▶ Axis: up to 32-axis motion control (EtherCAT + 8 single-ended pulse axes)
- ▶ I/O: 16 DIs & 16 Dos -- (4 single-ended encoder IN, 4 high-speed latch, 4 high-speed hardware position comparison output, 4 general PWM)
- ▶ Communication: RS232, RS485, EtherNET, EtherCAT
- ▶ Analog: 2 ADs, 2 DAs
- ▶ Pulse Mode: directional + pulse
- ▶ Functions
 01. max 4096 INs & 4096 OUTs are extend by CAN /EtherCAT synchronously.
 02. support encoder input, which can be configured as handwheel mode.
 03. axis position limit, origin signal can be configured as any IN.
 04. max output current is 300mA, which can directly drive some solenoid valve.
 05. electronic cam & gear, latch, synchronization, virtual axis, comparison out.
 06. support pulse closed-loop, pitch compensation, hard comparison output (HW_PSWITCH2), hardware timer, precision output in motion, etc.
 07. support multi-file (62) & multi-task (22), and PC program & controller inner program can work at the same time.
 08. a variety of encryption methods to protect user's program.
 09. support power failure detection & power failure storage.
 10. several robotic arm algorithms (SCARA, DELTA) of R model.
- ▶ Performance:
 01. EtherCAT fastest refresh cycle is 125 μ s.
 02. support hybrid interpolation of EtherCAT and pulse.
 03. U disk can read & write files, and upgrade program, then it is convenient to remote maintain.
 04. support PLC, RTBasic, RTHmi programming, and all kinds of PC programming languages are valid.
 05. support point, synchronous motion, motion superposition, electronic cam, linear, circular, continuous interpolation.

Models

Models	Picture	Axis	En-coder	Pulse Fre	I / O	AD	DA	Axis Motion Buffer	Space	Task	Power Down Store	232	485	ETH	ECAT	USB	Size (mm)	Functions
ZMC408M		8	4	500k	16/16	2	2	4096	32M	22	8000	1	1	1	1	1	95*46	point, line, arc, cam, continuous trajectory, robotic arm
ZMC432M-16		16	4	500k	16/16	2	2	4096	32M	22	8000	1	1	1	1	1	95*46	point, line, arc, cam, continuous trajectory, robotic arm
ZMC432M		32	4	500k	16/16	2	2	4096	128M	22	8000	1	1	1	1	1	95*46	point, line, arc, cam, continuous trajectory, robotic arm

Interfaces

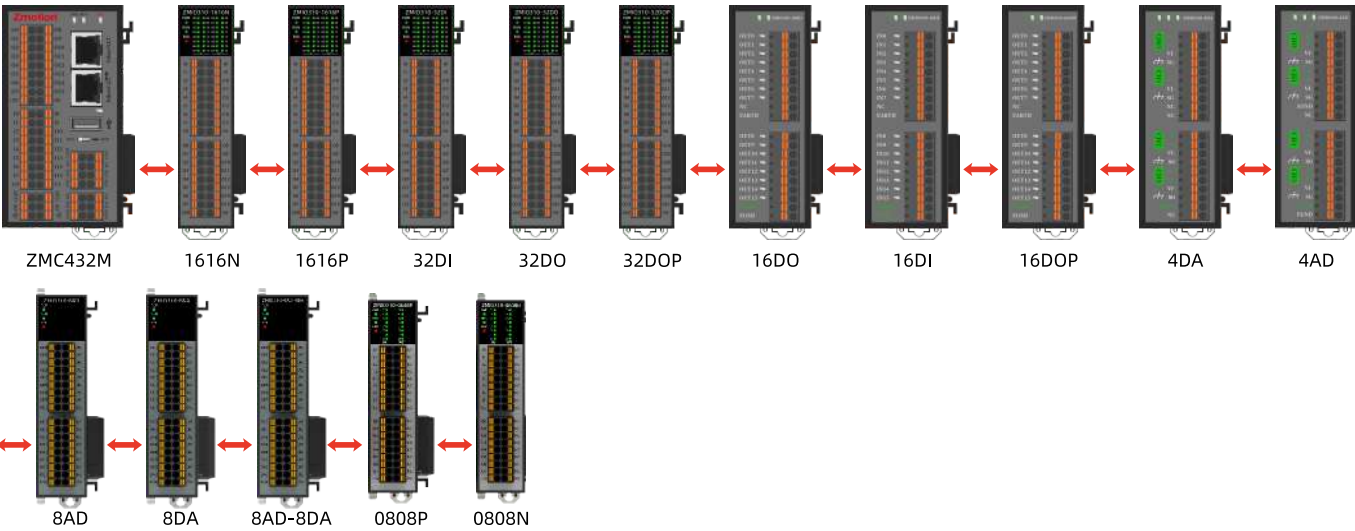


No.	Interfaces	Functions			
1	State Indication Led	PWR	Power Led	Green	power conducted – ON
		RUN	Running Led	Green	run normally – ON
		ERR	Error Led	Red	run error – ON
2	U Disk	standard USB, connect to U disk			
3	EtherNET	standard Ethernet, connect to PC / ethernet devices			
4	EtherCAT	standard EtherCAT, connect to EtherCAT slave station			
5	User Terminal	power, RS232, RS485, CAN, ADC, DAC, 16DI, 16DO			
6	Local Slave Port	connect to slave sub-expansion, not-hot-swappable			

Note: please check each controller user manual.

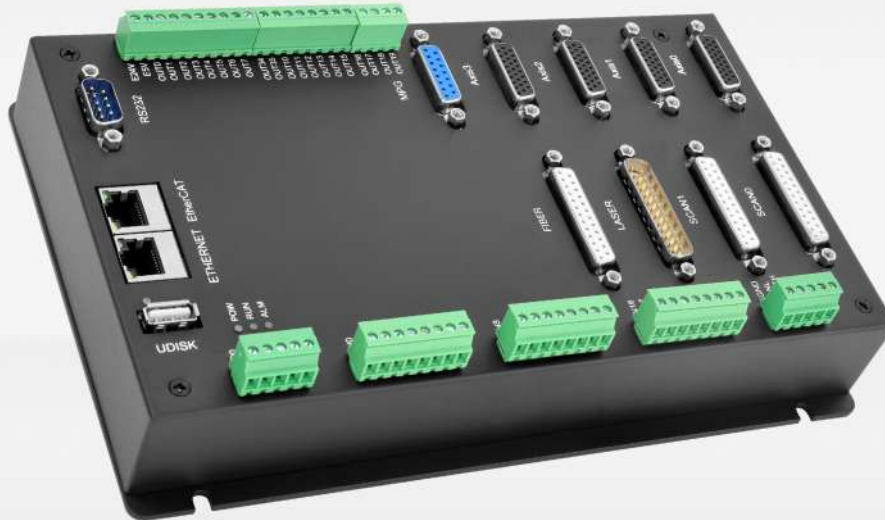
How to Install

Connect to ZMIO310 sub-expansion by local slave expansion interface.



Steps

- Open the gap clips of all modules.
- insert sub-expansion's master (front) interface to ZMC432M slave interface.
- Close the gap clips of all modules.



ZMC408SCAN-V22

Laser Galvo Controller – ZMC408SCAN-V22



ZMC408SCAN-V22 laser galvanometer motion controller integrates laser control, scan control, with bus-axis / pulse-axis control. The controller itself supports 2 groups of XY scan axes (with scan feedback), but 32 axes motion control can be reached for complex continuous trajectory control. Also support hybrid interpolation among axes of scan, bus, pulse.

Laser scan motion controller supports XY2-100 scan protocol, and it can adapt to different functions' lasers, Fiber, UV, Carbon Dioxide.

Applications: metal / non-metal large-format splicing & marking & cutting, ordinary scan marking & welding & cutting, linkage marking & cutting of motion axis + scan axis, laser drilling & forming, etc.

Functional Features

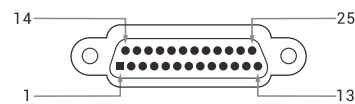
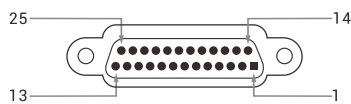
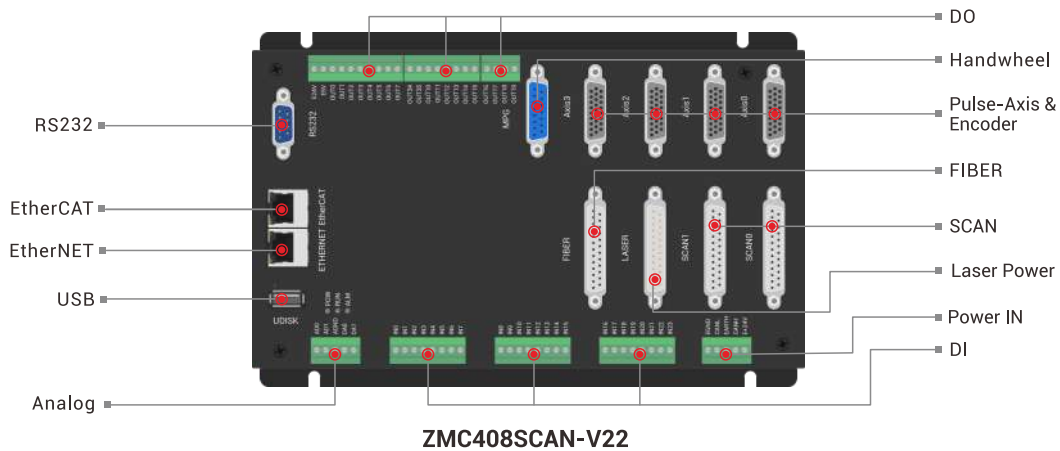
- Axis: up to 32 axes motion control
- I/O: up to 32 DIs & 28 Dos
- Communication: RS232, RS485, U Disk, Ethernet, EtherCAT
- Analog: 2 ADs & 2 DAs, max 1024 ADs & 1024 DAs, 1 specialized AD & 1 specialized DA
- Pulse Mode: directional + pulse / double pulse
- Scan: scan-axis interface, with XY2-100 protocol
- Functions:
 - 01. specialized MPG handwheel interface.
 - 02. specialized DB25 laser control interface
 - 03. more IOs by ZCAN / EtherCAT, max 4096 isolated INs & OUTs.
 - 04. support electronic cam & gear, position latch, synchronous follow, virtual axis, comparison output, etc.
 - 05. support linear, circular interpolation, continuous trajectory, robot.
 - 06. support 8 high-speed PWM outputs.
 - 07. support multi-file & multi-task, and synchronization of controller & PC programs
- Performance:
 - 01. the max pulse output frequency can reach 10MHz.
 - 02. support hybrid interpolation among scan, pulse, and bus axes.
 - 03. the fastest EtherCAT refresh cycle within 16 axes is 100µs.

Models

Model	Picture	Axis	Encoder	Scan Axes	Pulse Frequency	Laser	MPG	I / O	AD	DA	Axis Motion Buffer	Space	Task	Power Down Store	232	485	ETH	ECAT	Size (mm)
ZMC408SCAN		8	4	4	10M	1	1	24+8/20+8	2	2	4096	128M	12	8000	1	1	1	1	239*149
ZMC408SCAN-V22		8	4	4	10M	2	1	24+8/20+8	2	2	4096	128M	12	8000	1	1	1	1	239*149

ZMC408SCAN-V22 VS ZMC408SCAN: ZMC408SCAN EXIO is replaced by FIBER -- ZMC408SCAN-V22.

Interfaces



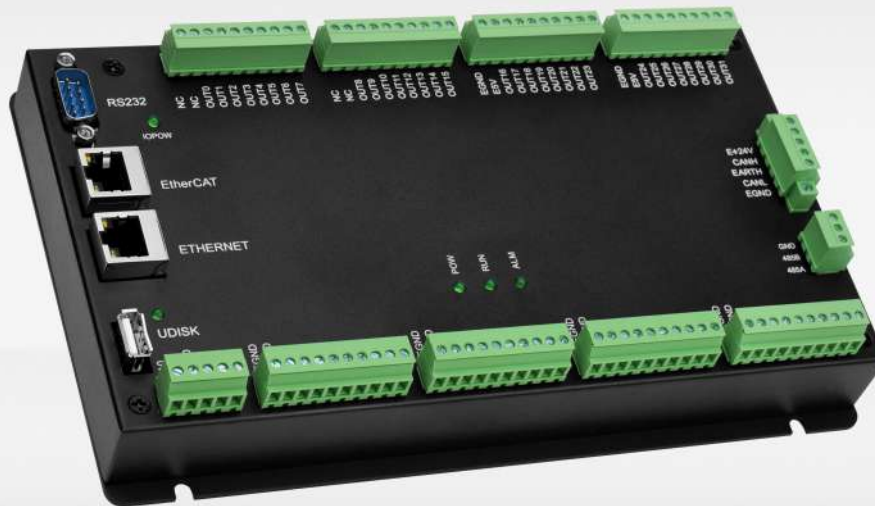
PIN No.	Name	Description
1 4 14	LAGND	Laser Analog Signal Reference Ground
2 3 13	NC	Reserved
5	Guide Control OUT32	PIN for Red Light Control OUT (24V)
6	ACON OUT33	PIN for Reserved OUT (24V)
7	LaserRequest OUT28	Laser Request OUT (24V)
8	Program start OUT29	Program Start OUT (24V)
9	ERST OUT30	Laser Reset OUT (24V)
10	LASER ON OUT31	Laser Enable OUT (24V)
11	PWM OUT9	Reserved for PWM, 24V Electric Level
12	Modulation-	Modulation Signal -
15	LASER_AD/NC AIN(2)	Reserved for Analog IN, 0-10V, 16-Bit Resolution (for special mode)
16	LASER_DA/NC AOUT(2)	
17	Error IN44	Laser Alarm IN (24V)
18	Emission EN IN45	Laser Emission IN (24V)
19	Pow Active IN49	Laser Main Power has ON (24V)
20	Power ON IN48	Laser System Powered On IN (24V)
21	Laser standby IN47	Laser in Standby IN (24V)
22	Ready IN46	Laser in Ready IN (24V)
23 25	EGND	Reference Ground of Each Digital IN & OUT
24	Modulation+ OUT8	Modulation Signal +, 24V Electric Level

▲ Laser Power Control Port (DB25 Male Head) ZMC408SCAN-V22

PIN No.	Name	Description
1	Clk-	Clock Signal-
14	Clk+	Clock Signal+
2	SYNC-	Synchronization Signal-
15	SYNC+	Synchronization Signal+
3	X-	Scan X Signal-
16	X+	Scan X Signal+
4	Y-	Scan Y Signal-
17	Y+	Scan Y Signal+
5	Z-	Scan Z Signal-
18	Z+	Scan Z Signal+
6	Y RETURN-	Scan Y Feedback Signal-
19	Y RETURN+	Scan Y Feedback Signal+
7	Z RETURN-	Scan Z Feedback Signal-
20	Z RETURN+	Scan Z Feedback Signal+
8	X RETURN-	Scan X Feedback Signal-
21	X RETURN+	Scan X Feedback Signal+
9	NC	-
22	NC	-
10	NC	-
23	GND	Signal Ground, Public End
11	GND	Signal Ground, Public End
24	GND	Signal Ground, Public End
12	NC	-
25	NC	-
13	NC	-

▲ SCAN (DB25 Female Head) ZMC408SCAN-V22

Note: refer to "User Manual" for more models and details.



XPLC220H

XPLC220HS

EtherCAT®

XPLC220HS multi-axis motion controller is one standalone controller that supports EtherCAT axes and pulse axes. Itself supports 20 axes (max 32 axes, including virtual axes) to realize motion control, such as, point, interpolations of linear, circular, helical, electronic cam, etc.

Applications: electronic semiconductor equipment (detection, assembly, locking, soldering), dispensing, printing & packaging, textile & garment, stage entertainment equipment, medical equipment, assembly line, etc.

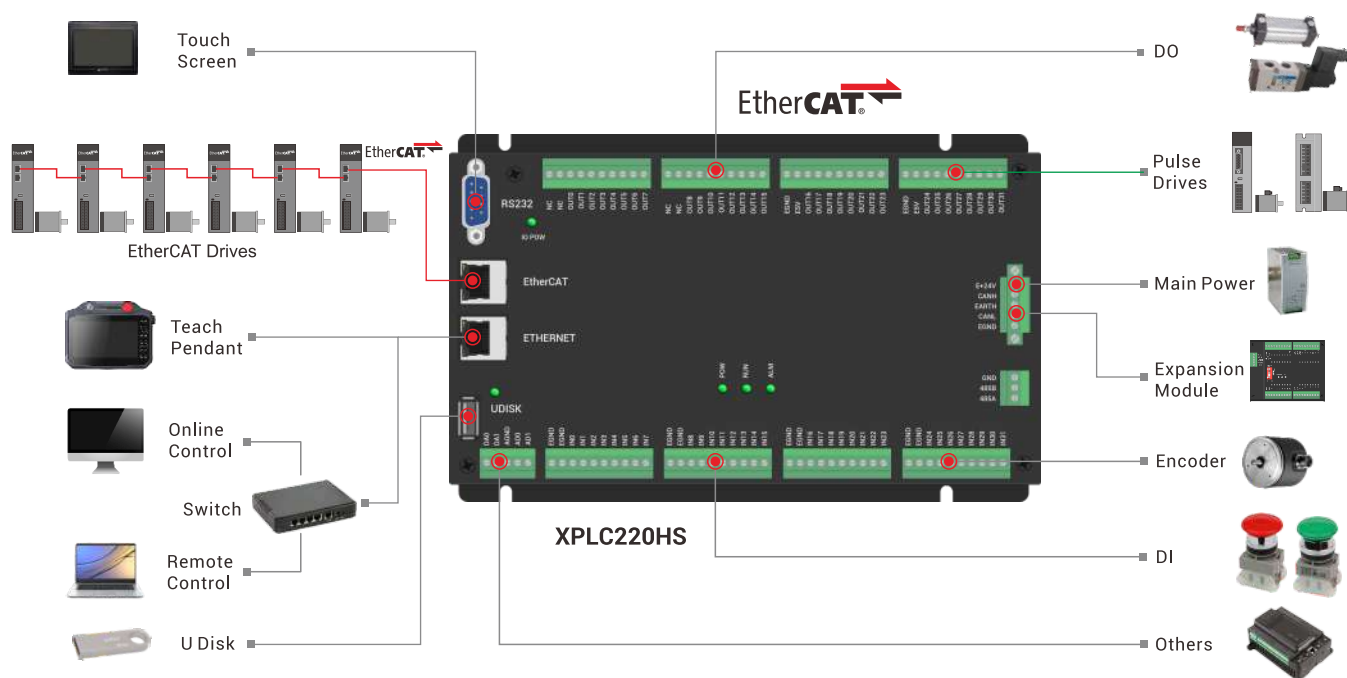
Functional Features

- Axis: up to 32-axis EtherCAT control (including virtual axes)
- I/O: 32 DIs & 32 DOs
- Communication: RS232, RS485, ETHERNET, EtherCAT, CAN
- Analog: 2 ADs & 2 DAs, max 512ADs & 512 DAs can be extended
- Pulse Mode: directional + pulse / double pulse
- Functions:
 01. support single-ended encoder, which can be set as handwheel mode.
 02. max 4096 isolated I/O can be extended via EtherCAT or CAN.
 03. axis position limit / home signal can be freely assigned to any input No.
 04. each DI delivers up to 500 mA, which can drive some solenoid valves directly.
 05. electronic cam, electronic gear, position latch, synchronous following.
 06. support multi-file & multi-task programing.
 07. PC program and controller inner program can work synchronously.
 07. a variety of program encryptions to protect intellectual property rights.
 08. support power-off detection, power-off storage.
- Performance:
 01. EtherCAT fastest refresh cycle: 1ms
 02. max pulse output frequency can reach 500kHz.

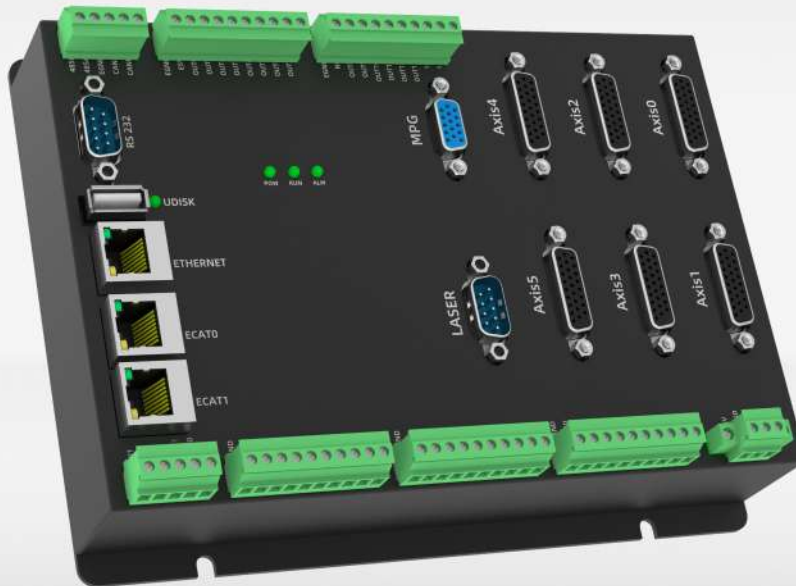
Models

Model	Picture	Axis	En-coder	Pulse Fre-quency	I / O	AD	DA	Axis Motion Buffer	Space	Task	Power Off Store	232	485	ETH	ECAT	USB	Size (mm)	FuncioIns
XPLC208HS		8	3	500k	32/32	2	2	1024	2M	14	1024	1	1	1	1	1	219*135	Point, Cam Line, Arc
XPLC216HS		16	3	500k	32/32	2	2	1024	2M	14	1024	1	1	1	1	1	219*135	Point, Cam Line, Arc
XPLC220HS		20	3	500k	32/32	2	2	1024	2M	14	1024	1	1	1	1	1	219*135	Point, Cam Line, Arc

System Structure



Dual-EtherCAT Motion Controller



ZMC564F

ZMC564F

ZMC564F high-performance multi-axis motion controller is one standalone controller that supports EtherCAT bus and pulse axis. Itself supports max 64 axes for complex continuous trajectory control.

Applications: SCARA robot, electronic semiconductor equipment (detection, assembly, locking, soldering), dispensing, printing & packaging, textile & garment, stage entertainment equipment, medical equipment, assembly line, etc.

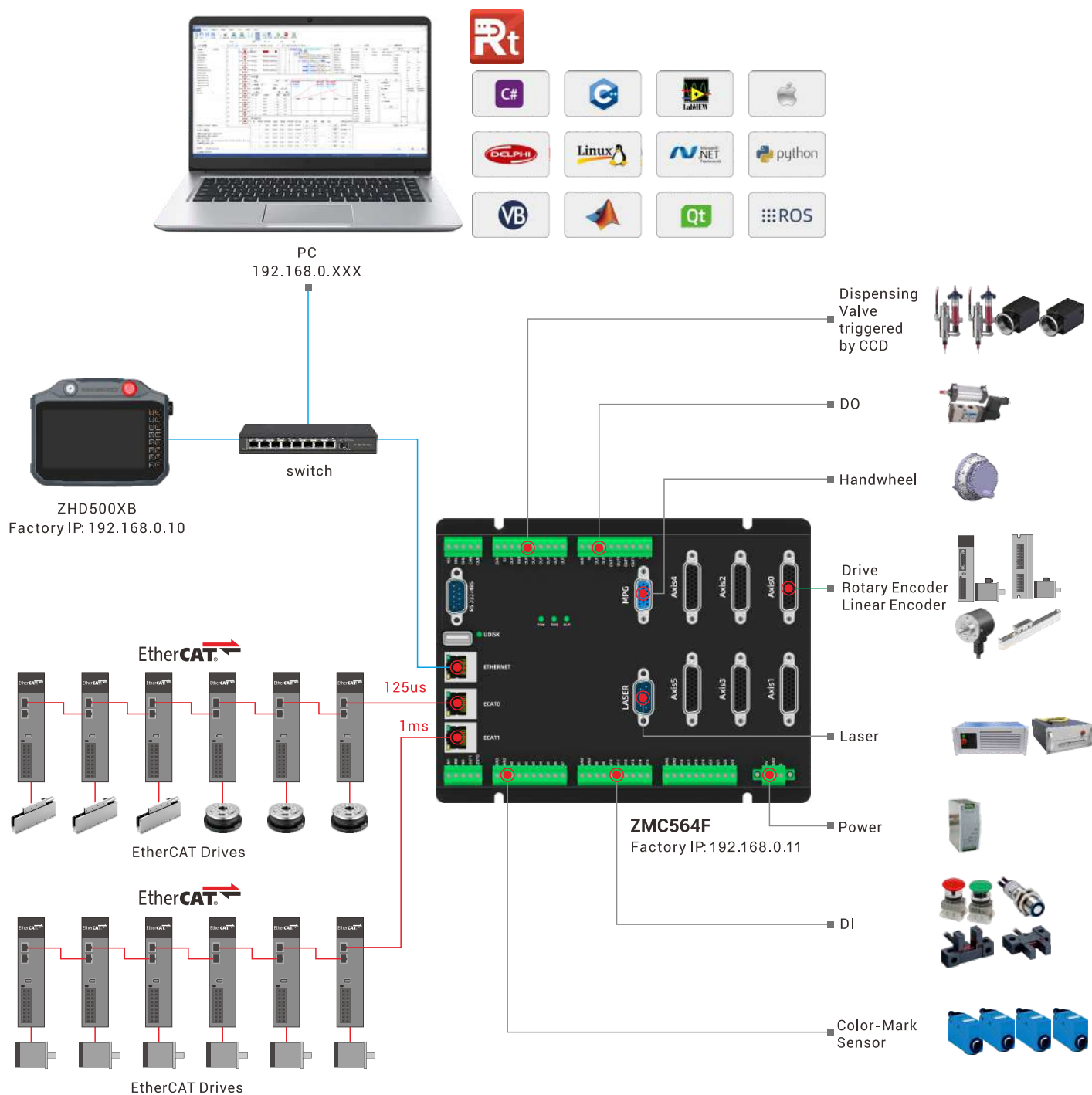
Functional Features

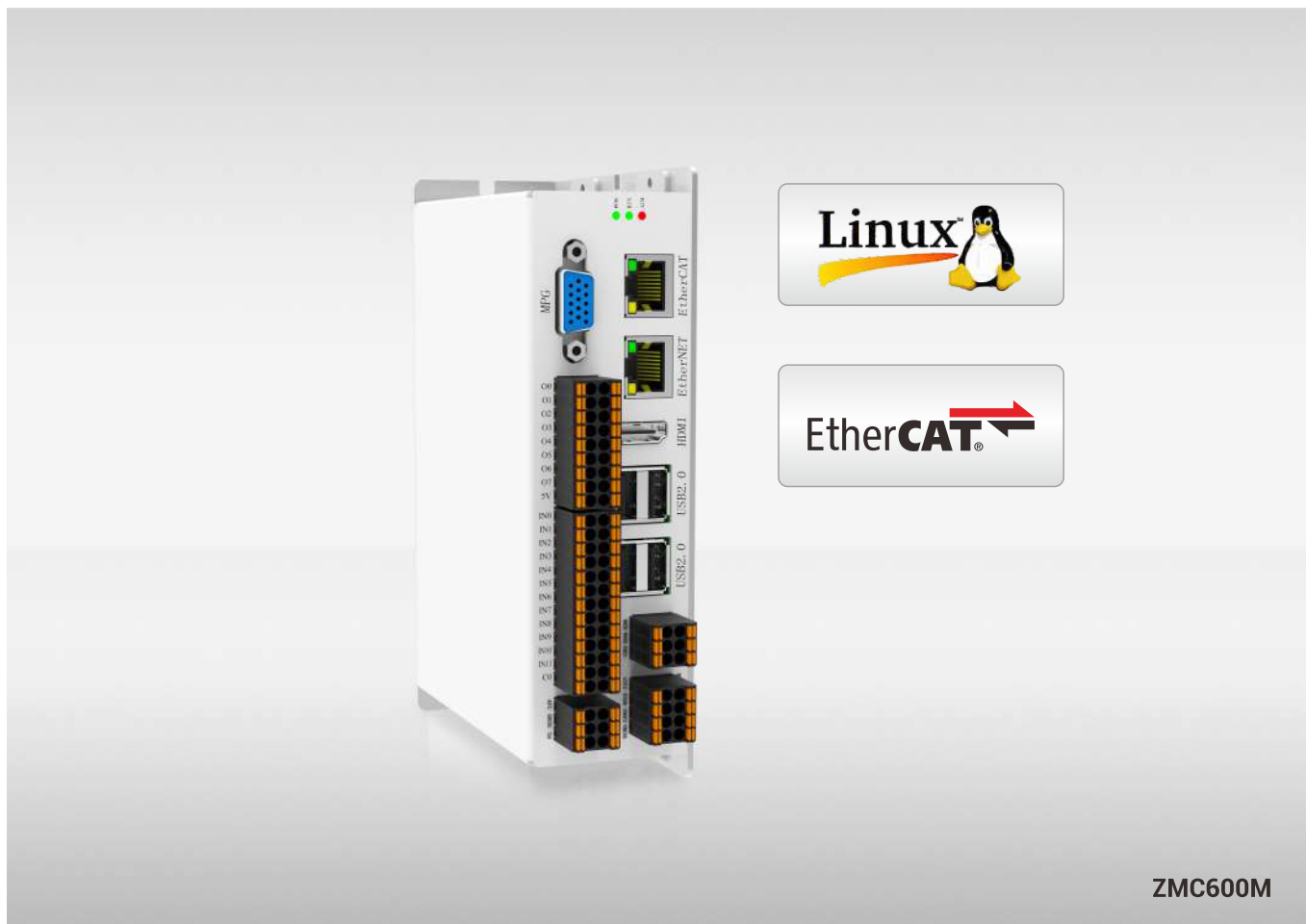
- Axis: up to 64-axis
- I/O: up to 24+12+12 DI & 16+12 DOs (4096 I/O can be extended)
- Communication: RS232, RS485, USB, EtherNET, EtherCAT.
- Analog: 2 ADs & 2 DAs, max 512ADs & 512 DAs can be extended
- Pulse Mode: directional + pulse / double pulse
- Functions:
 01. EtherCAT fastest refresh cycle is 125us.
 02. support EtherCAT, differential pulse axes, differential encoder interfaces.
 03. support MPG handwheel encoder.
 04. support dedicated pull-push output interfaces (5V/24V PWM).
 05. special motion control functions, high-speed latch, HW hardware comparison output, PWM, single-ended pulse axes.
 06. Basic motion control functions: point motion, electronic cam, linear interpolation, circular interpolation, continuous interpolation, robot algorithm.

Models

Model	Picture	Axis	En-coder	MPG	Pulse Fre	I / O	AD	DA	Axis Motion Buffer	Space	Task	Power Off Store	232	485	E TH	ECAT	LASER	U SB	Size (mm)	Functions
ZMC564F		64	6	1	10M	24+12+12/16+12	2	6	4096	15M	22	8000	1	1	1	2	1	1	196*149	point, line, arc, electronic cam, continuous motion robot algorithm

System Structure





ZMC600M

ZMC600M

EtherCAT®

ZMC600M high-performance multi-axis motion controller is one standalone controller that supports EtherCAT axes. Itself supports max 32 axes for complex continuous trajectory control.

Applications: robot (SCARA, DELTA, 6DOF), electronic semiconductor equipment (detection, assembly, locking, soldering), dispensing, printing & packaging, textile & garment, stage entertainment equipment, medical equipment, assembly line, etc.

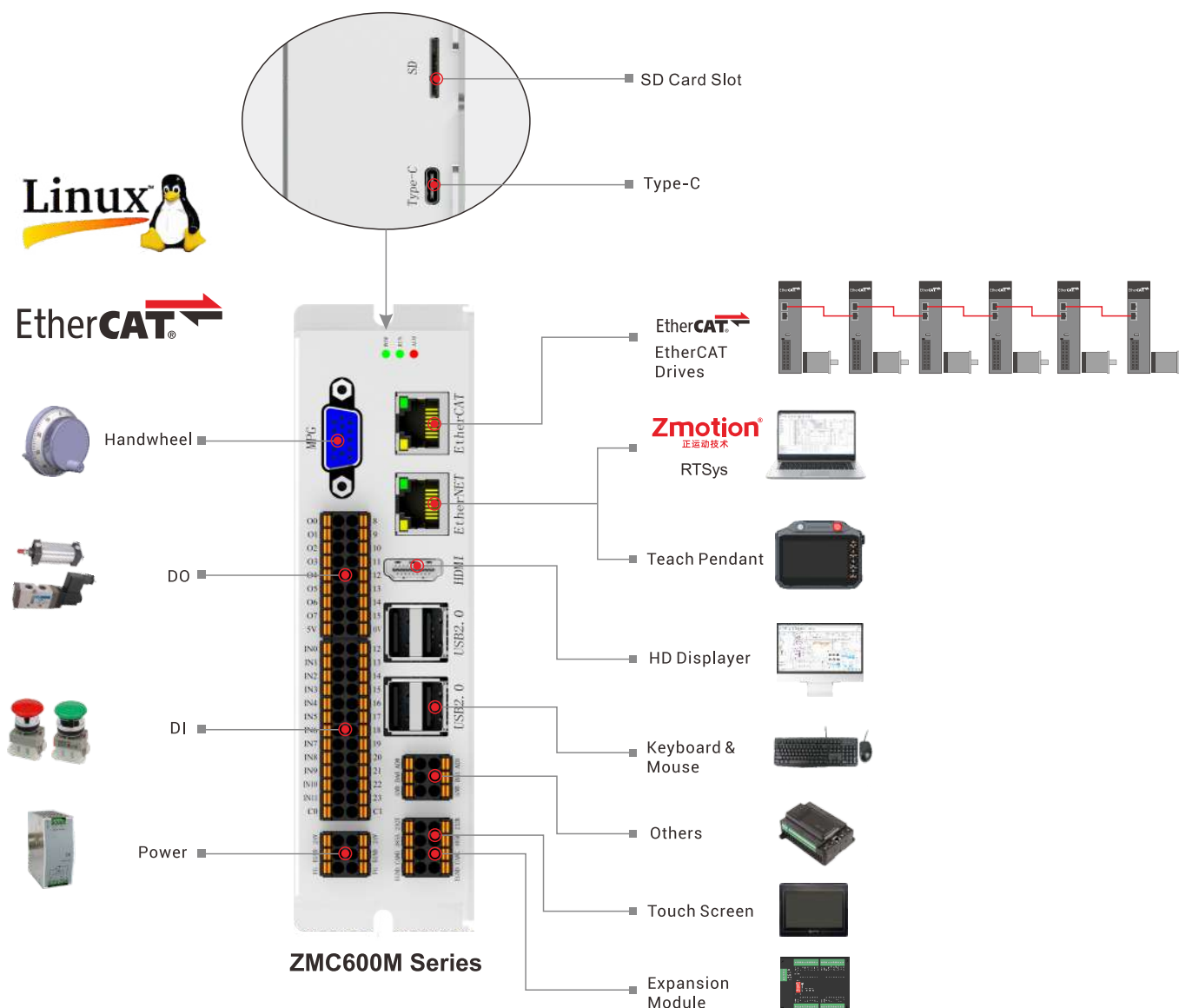
Functional Features

- Axis: up to 32-axis EtherCAT control
- I/O: 24 DIs & 16 DOs
- Communication: RS232, RS485, USB, EtherNET, EtherCAT, CAN
- Analog: 2 DAs, max 512ADs & 512 DAs can be extended
- Pulse Mode: directional + pulse / double pulse
- Functions:
 01. support Linux system
 02. support EtherCAT, differential pulse axes, differential encoder interfaces.
 03. support high-speed latch, PWM, HW.
 04. support pull-push 5V/24V output (special model).
 05. support point motion, electronic cam, linear interpolation, circular interpolation, continuous interpolation, robot algorithm.
 06. U disk is supported: file reading & writing, program upgrade, more\ convenient to do remote maintain.
 07. support multi-file & multi-task programming.
 08. PC program and controller inner program work at the same time.

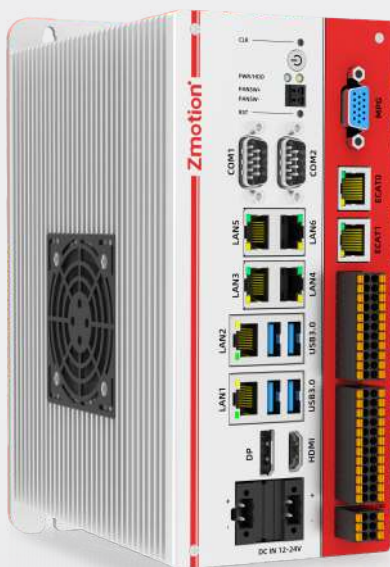
Models

Model	Picture	Axis	En-coder	Pulse Fre	AD	DA	PWM	I / O	Laser PWM	Axis Motion Buffer	Task	Power Off Store	232	485	ETH	ECAT	HDMI	USB 2.0	Type-C	SD Card Slot	Size (mm)	Functions
ZMC600M		32	3	10M	2	2	4	24/16	0	2048	28	8000	1	1	1	1	1	4	1	1	162*102	point, line, arc, electronic cam, continuous motion robot algorithm
ZMC600ML5		32	3	10M	2	2	4	24/16	2	2048	28	8000	1	1	1	1	1	4	1	1	162*102	point, line, arc, electronic cam, continuous motion robot, 5V push-pull
ZMC600ML24		32	3	10M	2	2	4	24/16	2	2048	28	8000	1	1	1	1	1	4	1	1	162*102	point, line, arc, electronic cam, continuous motion robot, 24V push-pull

System Structure

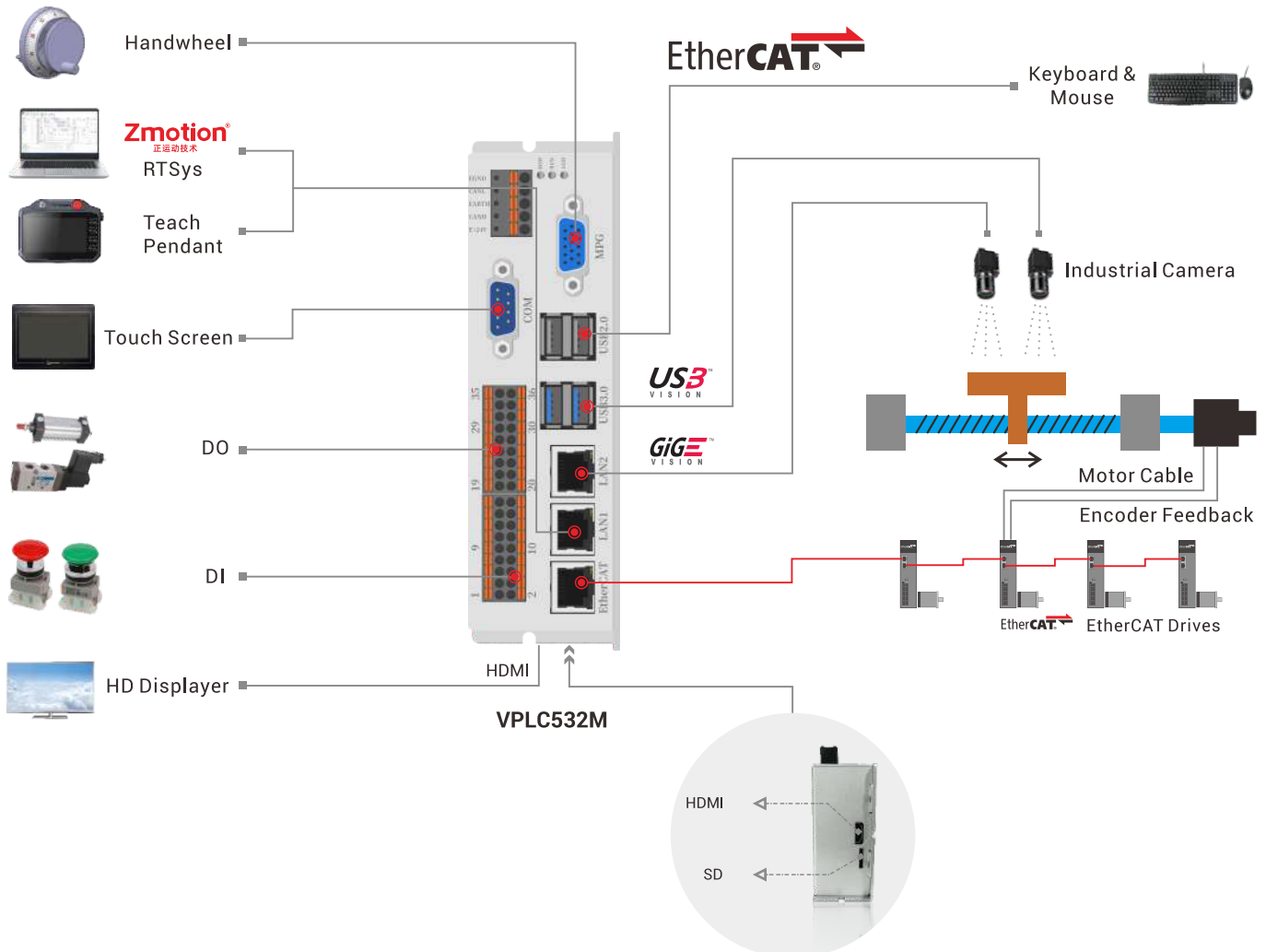


Vision Motion Controller



VPLC Series

VPLC532M System Structure



Support QT Programming

Machine Vision Functions

Positioning | Measurement | Detection | Identification

MotionControl Functions

Robot Algorithm | Vision Fly-Shooting PWM & Speed Synchronized

Position Precision Output PSO (1D/2D/3D)

Electronic Cam | Multi-Axis Interpolation | Small-Segment Look-Ahead

- one-stop-shop development by RTSys
- develop PLC, Basic, HMI, Motion, Vision, etc.
- replace PC+Windows+Vision algorithm+control card
- support mainstream cameras & EtherCAT servos
- easy to develop vision by Basic / PLC
- direct data interaction, faster one level than PCI/PCIe
- expand Basic commands by C, real-time & flexible

RTSys Features

- Integrate Basic, PLC, HMI, with machine vision.



RTSys is a one-stop-shop development software that integrates machine vision and motion control functions. It supports secondary development of RTBasic, RTPLC (ladder diagram), RTHMI, and machine vision RTVision. What's more, it supports rich functions for complex motion control development, like, hybrid programming, real-time simulation, online tracking & diagnosis & debugging, etc., and for vision control, it can rapidly realize vision positioning, measurement, identification, detection.

Easy & Quick Start



- Self R&D Industrial IDE Software.
- It also can simulate and debug local graphics when there is no controller.

Vision Functional Features



Vision Positioning



Blob Analysis



Vision Measurement

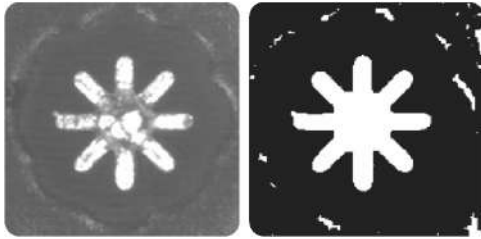


Detection & Recognition

Vision Function Description

Image Preprocessing

Highlight the feature to be detected, eliminate image noise & interference to extract, identify, detect the feature accurately. (binarization, histogram processing, geometric transformation, filtering, image enhancement, etc.)



Applications: scratch detection, contour extraction, blob analysis, etc.

Camera Calibration

The conversion between the image coordinates and the world coordinate system can be realized by coordinate calibration.



Applications: visual positioning's offset correction, length / area measurement, etc.

Vision Measurement

Measure the image's target or area feature, which mainly are length, circle, angle, arc, size measurement, etc.)



Applications: workpiece size measurement, assembly detection, etc.

Recognition & Detection

Recognize 1D bar code, 2D codes, characters in a specific area.



Applications: assembly line material testing, food package testing, product information acquisition and entry, etc.

Vision Positioning

By learning a specific template or fixed feature, then find which feature meets the conditions in the detection area, and return its coordinate (in the image).



Applications: assembly line positioning, robotic arm grasping, etc.

Blob Analysis

Binarize and segment the image in ROI area, then detect it in the connection area to obtain Blob spots.



Applications: product counting, product defect testing, etc.

Defect Detection

Defect defects on the surface of the workpiece, like, spots, pits, scratches, color error, etc.



Applications: phone glass cover scratch detection, metal surface scratch detection, etc.

Vision Fly-Shooting

(motion control) "precision output" & "PSO" + machine vision functions for vision fly-shooting -- "high-speed" & "high-precision" of intelligent equipment.



Applications: robotic visual sorting, visual loading & unloading, etc.



VPLC516E / VPLC532M



VPLC516E/VPLC532M is one EtherCAT vision motion controller. Itself supports max 16 axes, but can be expanded to 32 axes to achieve complex motion control and machine vision applications (motion: electronic cam, linear, circular, continuous processing, robotic arm, etc., vision: positioning, measurement, detection, identification).

Applications: 3C electronics, lithium batteries, printing & packaging, food & medicine, robot, assisting robots, semiconductors, laser, etc.

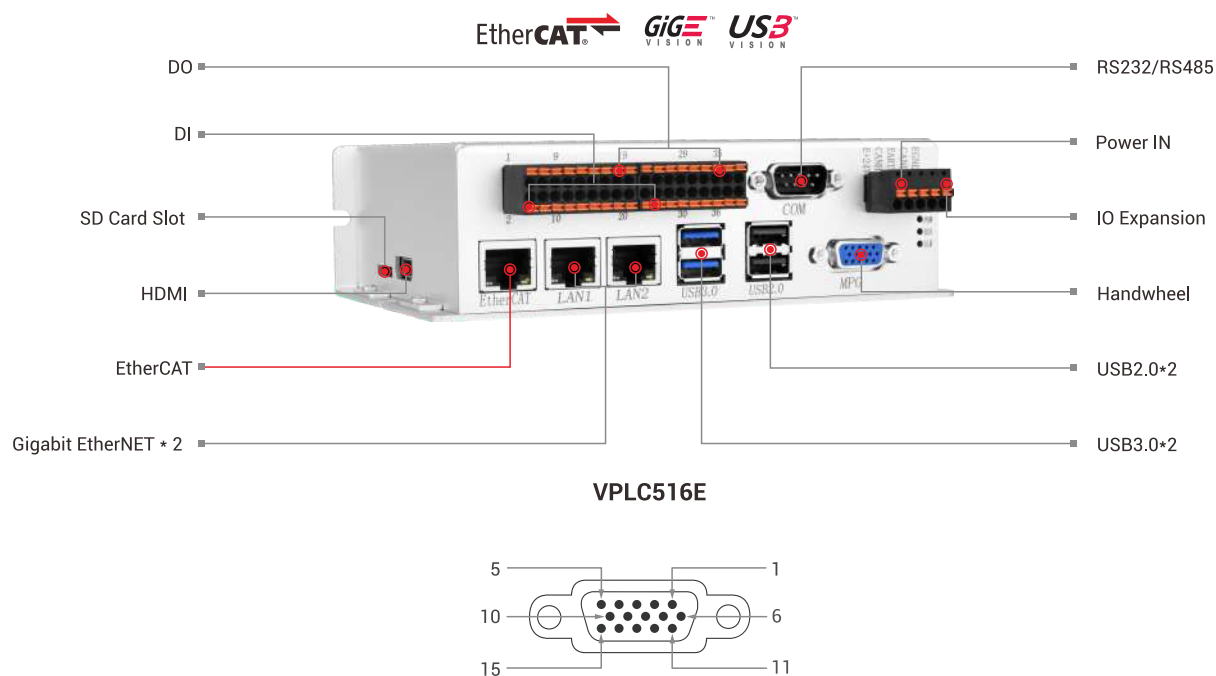
Functional Features

- Axis: up to 32 EtherCAT axes (include virtual-axis)
- I/O: 16 DI & 16 DO
- Communication: RS232, RS485, USB, EtherNET, EtherCAT, CAN
- Analog: max 512 ADs & 512 DAs by ZCAN expansion
- Pulse Mode: directional + pulse
- Functions:
 - 01. support vision fly-shooting.
 - 02. 1 "handwheel" interface (12 Ins).
 - 03. 2 camera interfaces (USB3.0 & GiGE).
 - 04. max 4096 INs & 4096 OUTs can be extended by EtherCAT.
 - 05. 2 precision outputs, for position synchronized output (PSO).
 - 06. support 30+ robot algorithms (Delta, SCARA, 6-joint, dual rotate, etc.).
 - 07. support electronic cam, line, arc, continuous processing, etc.
 - 08. a variety of encryption methods to protect user's program.
 - 09. support power failure detection & power failure storage.
 - 10. support RTBasic multi-file & multi-task programming.
- Performance:
 - 01. EtherCAT fastest refresh cycle (within 16-axis) is 1000μs.
 - 02. max pulse output frequency can reach 500kHz.
 - 03. support up to 16 axes for interpolations of line, arc, helical, ellipse.
 - 04. support multi-machine independent continuous interpolation.
 - 05. direct data interaction, faster one level than PCI/PCIE
 - 06. Linux system, replace "IPC + machine vision + motion control".

Models

Model	Picture	Axis	En-coder	Pulse Fre-quency	AD	DA	PWM	I/O	Axis Motion Buffer	Space	Task	Power Down Store	232	485	ETH	ECAT	HDMI	USB 2.0	USB 3.0	SD Card Slot	Size (mm)	Functions
VPLC516E-4		4	1+1	500k single ended	-	-	2	16/16	4096	64M	22	8000	1	1	2	1	1	2	2	1	162*47*119	point, line, arc, cam, continuous motion, robotic arm command
VPLC516E-6-8		6	1+1	500k single ended	-	-	2	16/16	4096	64M	22	8000	1	1	2	1	1	2	2	1	162*47*119	point, line, arc, cam, continuous motion, robotic arm command
VPLC516E-8		8	1+1	500k single ended	-	-	2	16/16	4096	64M	22	8000	1	1	2	1	1	2	2	1	162*47*119	point, line, arc, cam, continuous motion, robotic arm command
VPLC516E		16	1+1	500k single ended	-	-	2	16/16	4096	64M	22	8000	1	1	2	1	1	2	2	1	162*47*119	point, line, arc, cam, continuous motion, robotic arm command

Interfaces



PIN No.	Signal	Description	PIN No.	Signal	Description
1	H-5V	Supply Power for Handwheel	9	Hs3	Select Axis 3
2	HA-	Encoder A Signal	10	HS4	Select Axis 4
3	HB-	Encoder B Signal	11	EGND	External Power Ground
4	HEMGN	Emergency Stop	12	HS5	Select Axis 5
5	NC	-	13	HS2	Select Axis 2
6	HX1	Select X1 Ratio	14	HS1	Select Axis 1
7	HX10	Select X10 Ratio	15	Hs0	Select Axis 0
8	Hx100	Select X100 Ratio	-	-	-

▲ Handwheel Interface (DB15 Female Head) VPLC516E

Note: refer to "User Manual" for more models and details.



VPLC532E

VPLC532E



VPLC532E is one EtherCAT vision motion controller. Itself supports max 32 axes to achieve complex motion control and machine vision applications (motion: electronic cam, linear, circular, continuous processing, robotic arm, etc., vision: positioning, measurement, detection, identification).

Applications: 3C electronics, lithium batteries, printing & packaging, food & medicine, robot, assisting robots, semiconductors, laser, etc.

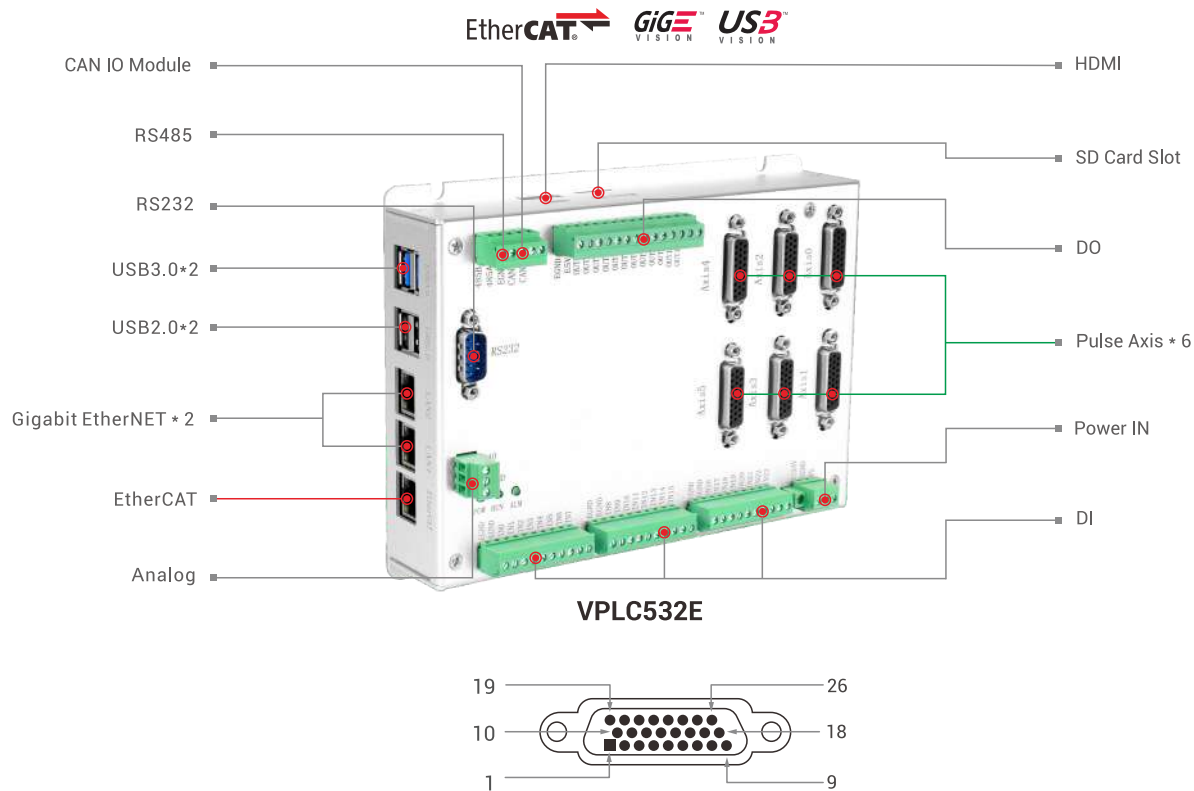
Functional Features

- Axis: up to 32 EtherCAT axes
- I/O: 24+6 DIs & 12+6 Dos
- Communication: RS232, RS485, USB, EtherNET, EtherCAT, CAN
- Analog: 2 DAs, max 512 ADs & 512 DAs by ZCAN expansion
- Pulse Mode: directional + pulse / dual pulse
- Functions:
 01. support vision fly-shooting.
 02. 6 pulse-axis interfaces on board.
 03. 2 camera interfaces (USB3.0 & GiGE).
 04. max 4096 INs & 4096 OUTs can be extended by EtherCAT.
 05. 2 precision outputs, for position synchronized output (PSO).
 06. support 30+ robot algorithms (Delta, SCARA, 6-joint, dual rotate, etc.).
 07. support electronic cam, line, arc, continuous processing, etc.
 08. a variety of encryption methods to protect user's program.
 09. support power failure detection & power failure storage.
 10. support RTBasic multi-file & multi-task programming.
- Performance:
 01. EtherCAT fastest refresh cycle (within 16-axis) is 1000µs.
 02. max pulse output frequency can reach 10MHz.
 03. support up to 16 axes for interpolations of line, arc, helical, ellipse.
 04. support multi-machine independent continuous interpolation.
 05. direct data interaction, faster one level than PCI/PCIE
 06. Linux system, replace "IPC + machine vision + motion control".

Models

Model	Picture	Axis	En- coder	Pulse Fre- quency	AD	DA	PWM	I / O	Axis Motion Buffer	Space	Task	Power Down Store	232	485	ETH	ECAT	HDMI	USB 2.0	USB 3.0	SD Card Slot	Size (mm)	Functions
VPLC532E -6-8		6	6	10M	-	2	4	24+6/12+6	4096	64M	26	8000	1	1	2	1	1	2	2	1	184*140	point, line, arc, cam, continuous motion, robotic arm command
VPLC532E -16		16	6	10M	-	2	4	24+6/12+6	4096	64M	26	8000	1	1	2	1	1	2	2	1	184*140	point, line, arc, cam, continuous motion, robotic arm command
VPLC532E		32	6	10M	-	2	4	24+12/12+12	4096	64M	26	8000	1	1	2	1	1	2	2	1	184*140	point, line, arc, cam, continuous motion, robotic arm command

Interfaces



PIN No.	Signal	Description	PIN No.	Signal	Description
1	EGND	External Power Ground	14	OVCC	E+24V Output (better only for Servo IO)
2	IN24-29/ALM	General IN, recommended to do Drive Alarm	15	OUT18-23/CLR	Digital OUT, better do Drive Alarm Clear
3	OUT12-17/ENABLE	General OUT, recommended to do Drive Enable	16	IN30-35/INP	Digital IN, better do on-position
4	EA-	Encoder Input	17	EA+	Encoder Input
5	EB-	Encoder Input	18	EB+	Encoder Input
6	EZ-	Encoder Input	19	EZ+	Encoder Input
7	+5V	Power Output	20	GND	Internal Power Ground
8	Reserved	Reserved	21	GND	Internal Power Ground
9	DIR+	Servo / Stepper Directional Output	22	DIR-	Servo / Stepper Directional Output
10	GND	Internal Power Ground	23	PUL+	Servo / Stepper Pulse Output
11	PUL-	Servo / Stepper Pulse Output	24	GND	Internal Power Ground
12	Reserved	Reserved	25	Reserved	Reserved
13	GND	Internal Power Ground	26	Reserved	Reserved

▲ Pulse & Encoder (DB26 Female Head) VPLC532E

Note: refer to "User Manual" for more models and details.



VPLC711 / VPLC716 / VPLC712 / VPLC713

VPLC7XX Controller



EtherCAT®



VPLC7XX is one IPC vision motion controller based on x86, and it matches with Zmotion researched (national produced) Windows real-time motion soft kernel "MotionRT", then VPLC7XX becomes real-time motion controller or real-time PLC. VPLC7XX supports EtherCAT. Motion control can be 4-240 axes, for linkage, up to 16 axes. And the minimal period is 250us. Moreover, it is with powerful functions (√high-speed & high-precision). Specifically, some required functions in automatic industry, high-speed DI/DO, pulse control, handwheel control, etc.

Applications: high-speed & high-precision -- semiconductor, 3C electronics, new energy, automobile production line, laser, etc.

VPLC711 Hardware Parameters

01. x86 high-performance CPU -- 64 axes synchronous motion (1ms) by EtherCAT
02. interfaces on board -- RS232, RS485, EtherNet*5, EtherCAT, USB3.0*4
03. 20 DI -- 4 (high-speed color patch latch), 2 (high-speed single-ended encoder)
04. 20 DO -- 4 (high-speed single-ended pulse), 4 groups of high-speed PWM
05. support DVI-D, HDMI display, and multiple net-ports' IP can be different.

► Motion Control Functions

point to point, electronic cam, linear interpolation, circular interpolation, continuous trajectory processing, robot.
high-speed PSO OUTs on the board, support 1D / 2D / 3D high-speed position synchronized output.
Applications can be vision fly-shooting, high-speed dispensing, laser.

► Machine Vision Functions



Positioning



Blob Analysis



Measurement

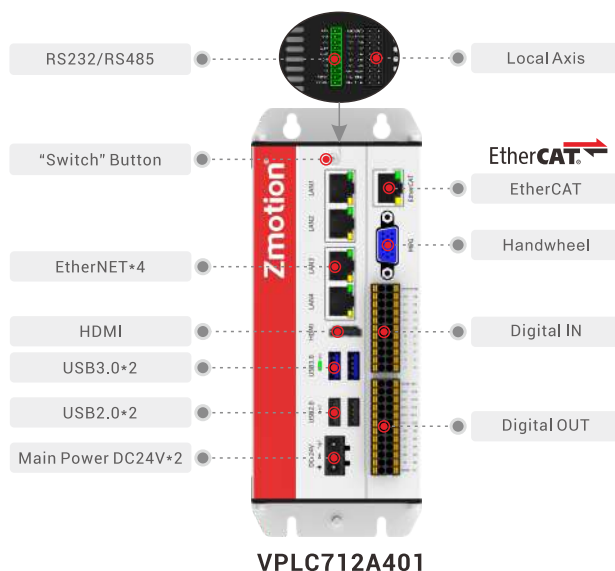
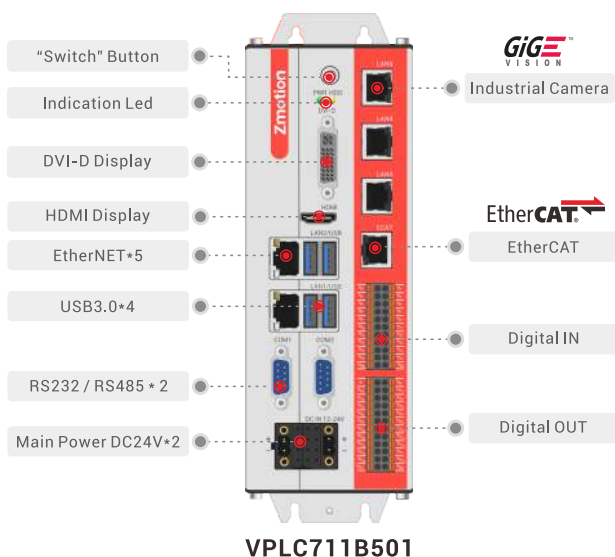


Detection & Recognition

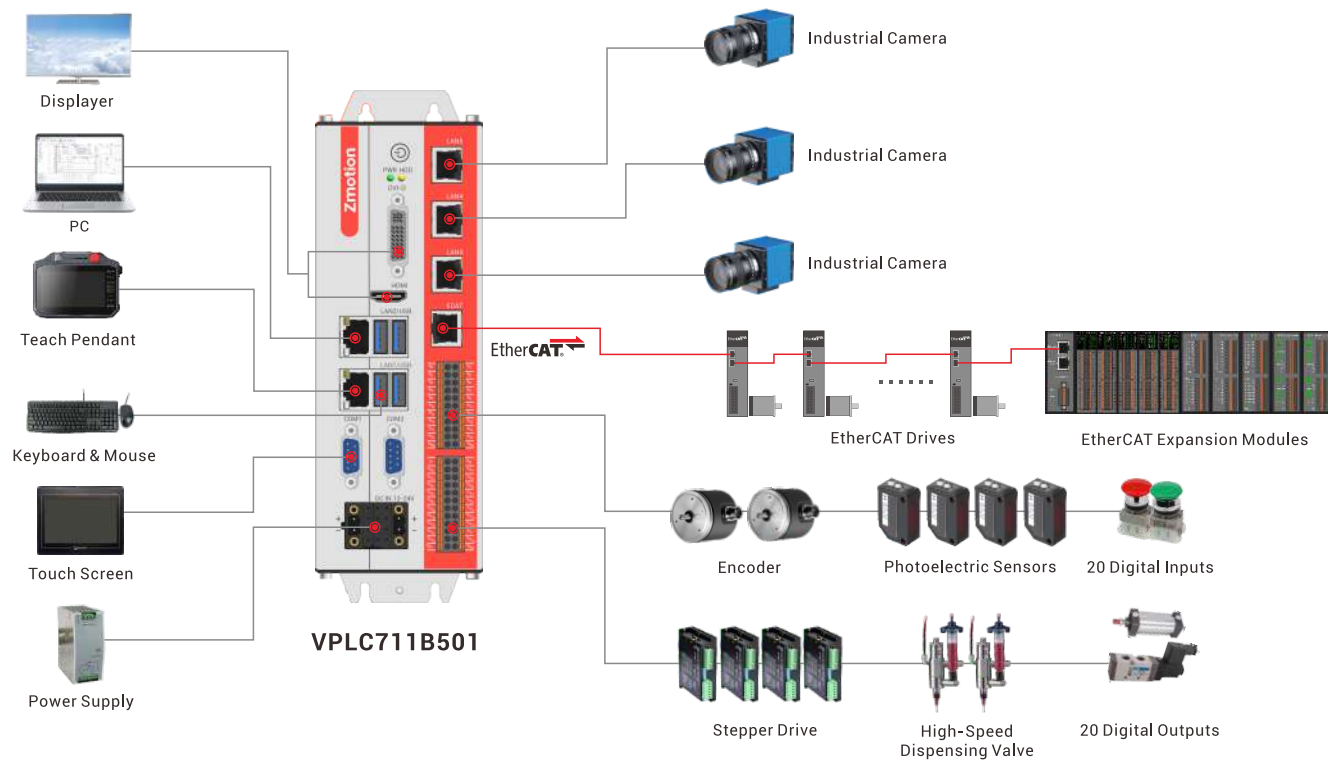
VPLC712 Hardware Parameters

01. x86 high-performance CPU -- 240 axes synchronous motion by EtherCAT
02. interfaces on board -- RS232, RS485, EtherNet, EtherCAT, USB2.0. USB4.0
03. 20 DI -- 4 (high-speed color patch latch), 2 (high-speed single-ended encoder)
04. 20 DO -- 4 (high-speed single-ended pulse), 4 groups of high-speed PWM
05. support HDMI display, and dual-Ethernet IP can be different.

Interfaces



Typical Application



Order Information

Hardware

VPLC711B501

VPLC711A401

① ②③④

VPLC713A2S 0000

① ②③④ ⑤

For Example:

VPLC712A401-AX64-MO8-HW-ZV-R6-YYY

- ① Product Series
- ② CPU Model
- ③ EtherNET Number
- ④ Hardware Version No.
- ⑤ Interface Board Model

Software

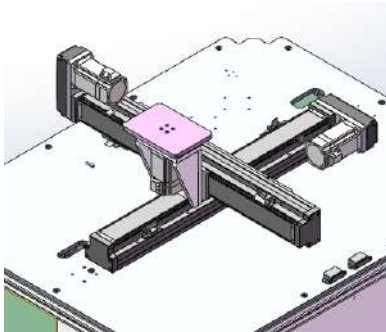
AX64 - MO8 - HW - ZV - R - F - YYYY

① ② ③ ④ ⑤ ⑥ ⑦

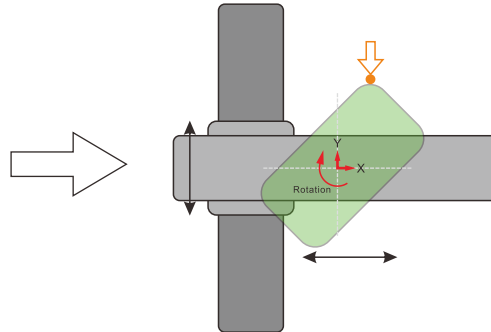
- ① 64 Axes (6-128)
- ② Motion Control
- ③ PSO
- ④ Vision Control
- ⑤ R1 Ordinary Robot
R6 6-Joint & Special Robots
- ⑥ F = Fast version, cycle of 125us / 250us
- ⑦ YYYY – User Customized Functions
NCxx Function / G Code Related
CNCxxx Function

VPLC711 XYR Motion Control Solution

XYR (XY+R) joint control is used for space trajectory. While axis R is turning, XY motion axes will follow with product's position and angle, that is, real-time adjust XY (when the product's position & angle are changed), then it can make XY end processing points be consistent with product's surface position and attitude all the time, namely, XYR synchronous motion is realized.



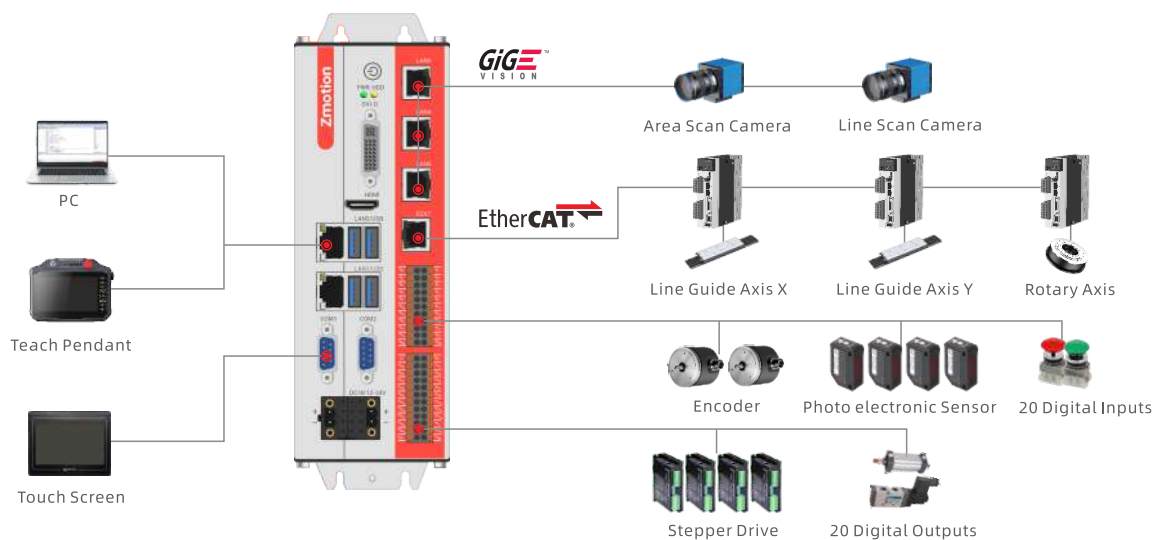
Standard XYR Structure



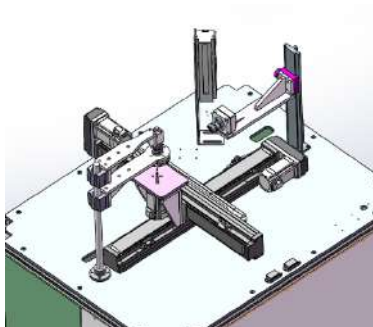
Processing Trajectory

Applications: mobile phone / tablet computer curve appearance defects detection, middle frame polishing, curve dispensing, square battery appearance detection, battery top cover laser welding, etc.

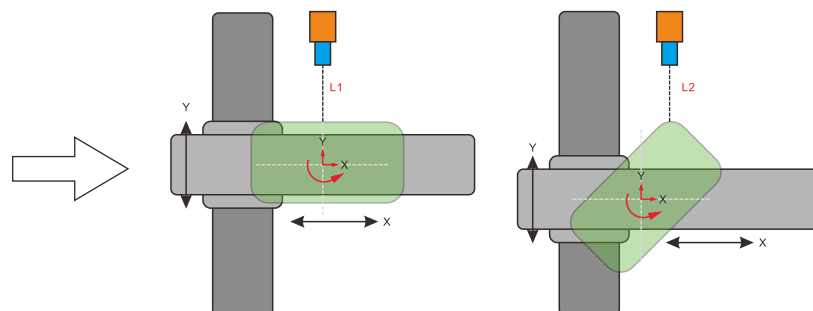
VPLC711 3D Curve Appearance Detection Solution



In XYR curve appearance detection, XYR axes makes the product do continuous motion, then put one line scan camera on the side to take photo for the frame, and sample photos at the curve with same space by 2D PSO function, at last, one clear frame image will be generated, next, it's time to do vision appearance defects detection.



XYR Curve Appearance Detection



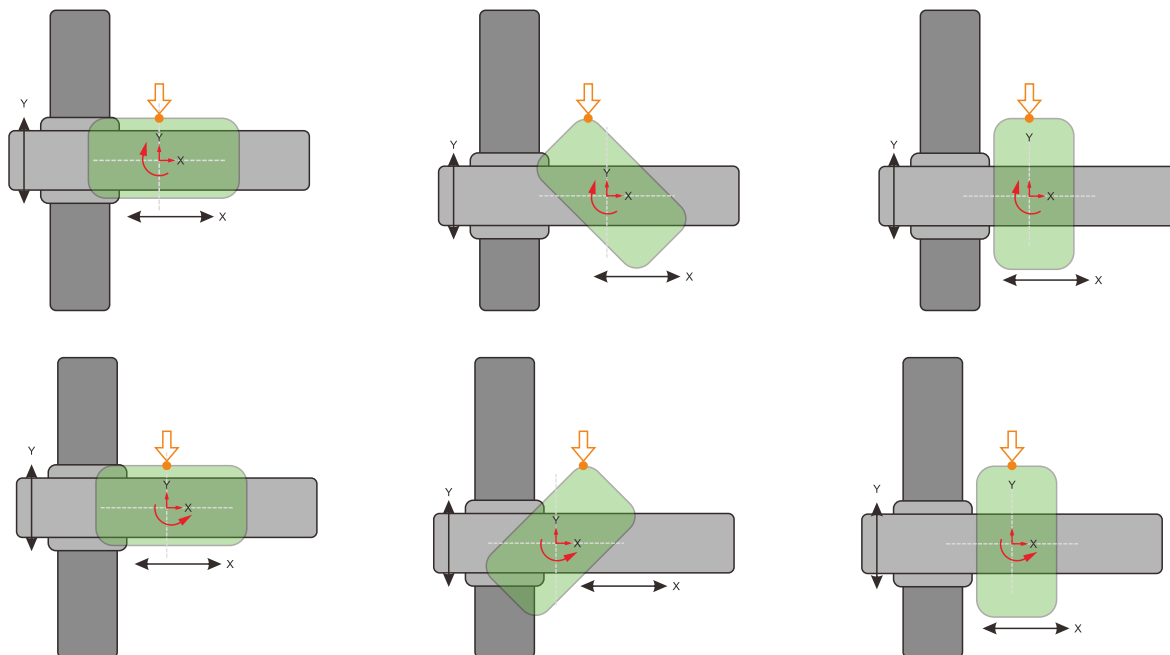
Appearance Line-Scan

Detection Processes:

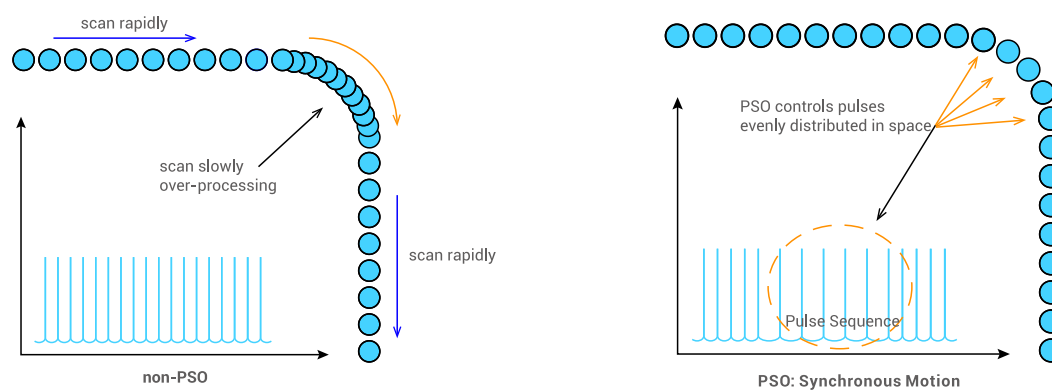
- (1) camera center line always is perpendicular to product surface (camera center line at curve is perpendicular to tangential direction).
- (2) the distance between camera and product keeps the same, in any position, $L1=L2$.

Trajectory Follow Control

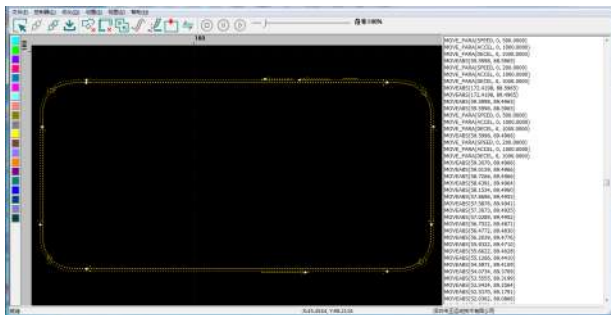
By high-precision single turntable XYR linkage algorithm, in rotation, XY axes follow and synchronize with the product's position and angle in X, Y directions in this way, the distance and angle from line-scan camera / tool to product's any distance and angle are the same.

**Hardware Position Comparison Output PSO**

By 2D hardware position comparison output PSO, line-scan camera can sample pictures at high-speed and with equal space, that is, make shooting and product motion trajectory synchronize precisely, then high quality image at circular or corner can be obtained.

**Rapid Path Planning**

a. support 2D CAD mapping, can be DXF, PLT, AI ,etc.



b. size parameters can be set directly, length, width, chamfer radius.

参数设置			
被检测物体长度:	0.00 mm	直线速度:	0.00 mm/s
被检测物体宽度:	0.00 mm	拐角速度:	0.00 mm/s
曲面半径:	0.00 mm		
当前位置			
X轴:	0.00	Y轴:	0.00
		R轴:	0.00
虚拟X轴:	0.00	虚拟Y轴:	0.00



VPLC716SCAN Series



Laser Galvo & Machine Vision Motion Controller

The VPLC716SCAN series "laser galvo & machine vision motion controller" is a standalone motion controller that integrates machine vision, laser control, galvo scanner control, EtherCAT & pulse control.

In motion control, it can drive up to 32 motion axes to execute sophisticated actions, including electronic cam, linear & circular & continuous interpolations, robotic manipulator control, etc., also can realize hybrid interpolation among EtherCAT axis, pulse axis, galvo axis;

In machine vision, it can achieve positioning, measurement, recognition and inspection via Zmotion vision algorithm;
In laser & galvo control, it has dedicated interfaces for laser and galvo scanner, using standard XY2-100 galvo protocol, suitable for offline & online vision laser marking, welding, cutting, and compatible with fiber, UV, CO₂ and other types of laser sources.

Functional Features

01. x86 high-performance CPU is used; 1ms EtherCAT sync cycle for 64-axis
02. Communication: RS232, RS485, ETHERNET, EtherCAT, USB2.0, USB3.0
03. 2-channel SCAN interfaces of XY2-100 protocol
04. 2-channel of dedicated laser interfaces (lasers of Fiber, Co₂, YAG)
05. support HDMI interface, and there are multi-Ethernet

Motion Control Functions

point motion, electronic cam, linear interpolation, circular interpolation, continuous interpolation, robot.

Machine Vision Functions



Positioning



Blob Analysis



Measurement



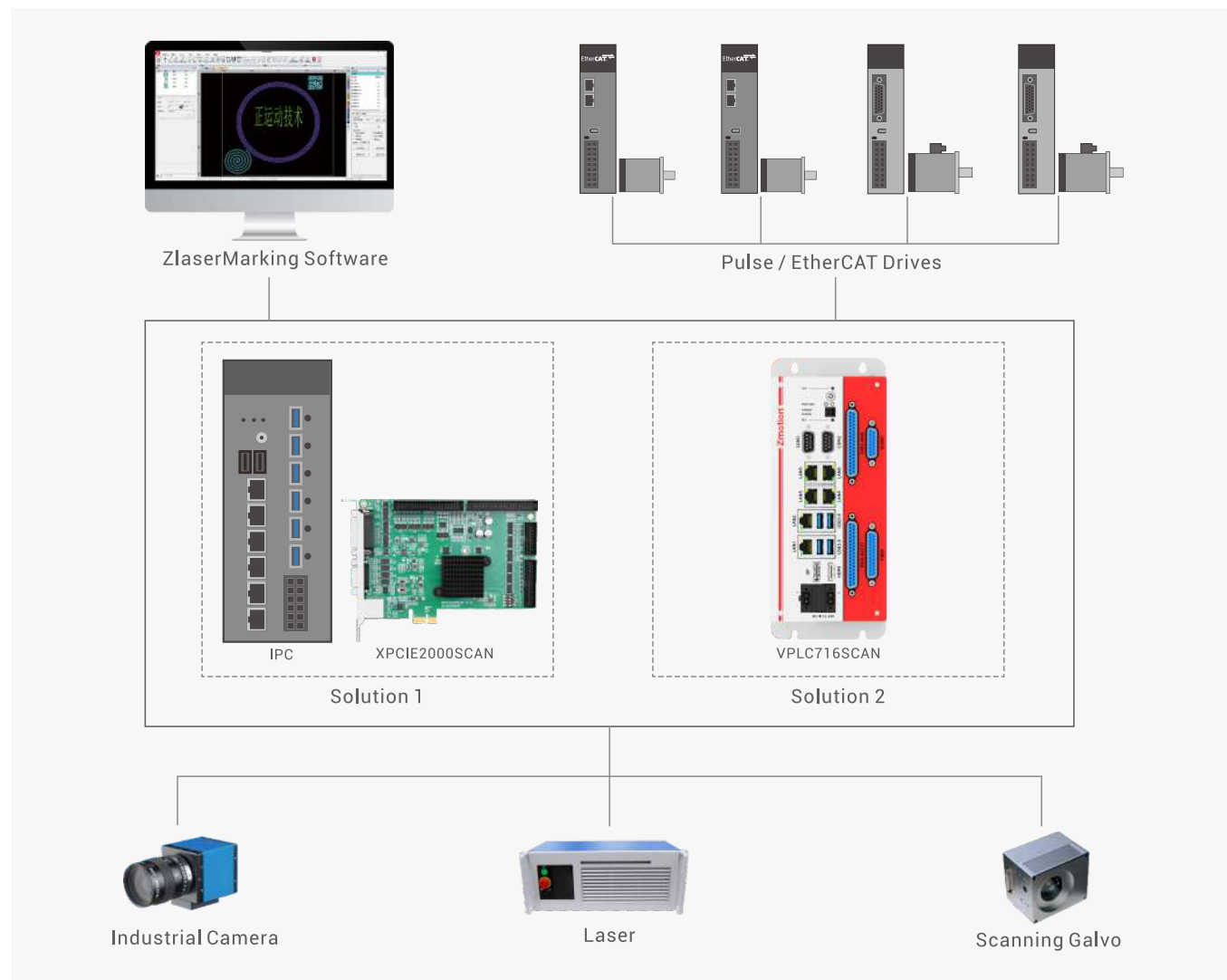
Detection

Infinite Field of View (IFOV) Coordinated Machining

"Infinite Field of View (IFOV)" uses the linked technology between scanning galvo and XY platform, which increases the processing efficiency and machining accuracy.

It overcomes the field-of-view limitation of traditional machining methods. By precisely coordinating the motion of the galvo scanner and XY stage, it delivers large-area, high-precision laser machining.

Hardware Structure



Solution Advantage

Processing Efficiency

Limited by the heavy mechanical load of the motion stage, large-range acceleration and deceleration is unfeasible, and high-speed corner movement easily causes mechanical jitter. In addition, the long-focal-length galvo scanner produces an oversized laser spot, which degrades machining accuracy. For this reason, large-format machining typically adopts a combined solution of galvo scanner and XY stage motion. Unlike segmented stitching processing, this continuous moving mode eliminates intermittent positioning gaps and significantly improves overall machining efficiency.

Processing Accuracy

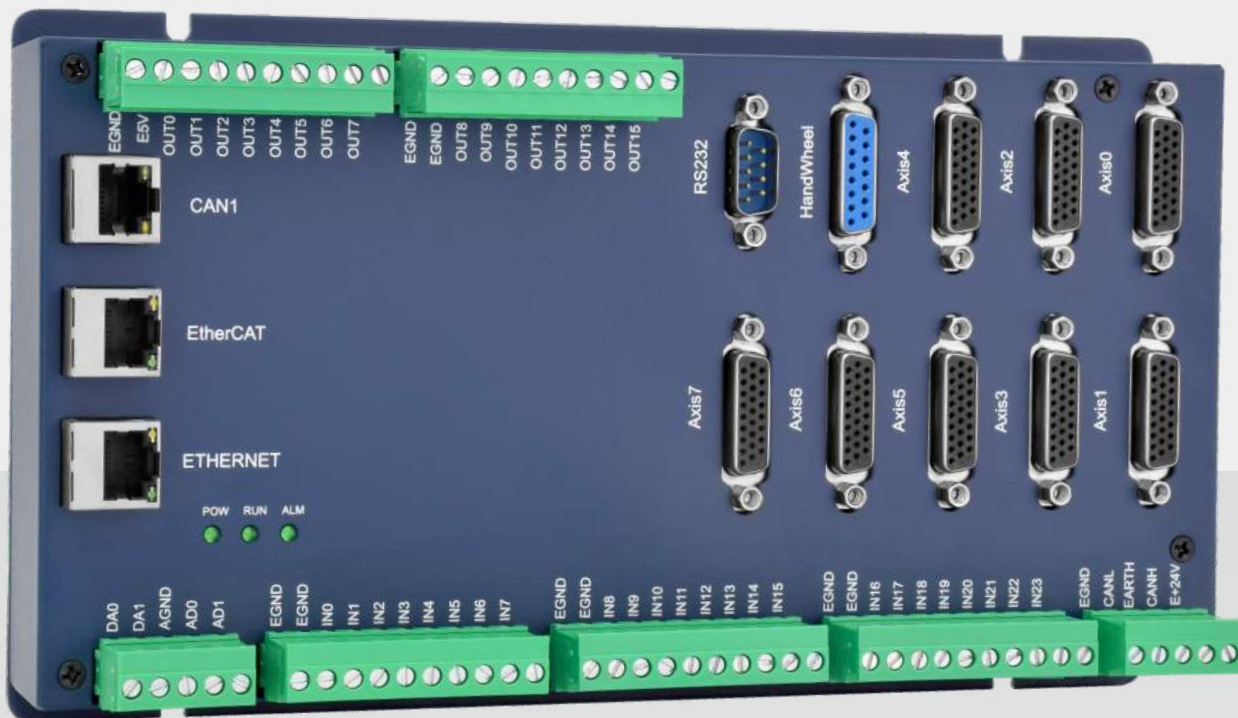
Compared with traditional stage stitching processing, the one-step forming machining avoids positioning errors caused by dividing the pattern into multiple segmented areas and stitching them sequentially. It eliminates inconsistent laser energy at stitching points during laser on/off switching, reduces seam misalignment, and effectively improves overall machining accuracy.

Machining Applications

Glass sandblasting, paint stripping, drilling
Large-format stainless steel, elevator door & nameplate marking
FPC and cover film cutting
ITO film cutting, LED paint stripping & cleaning

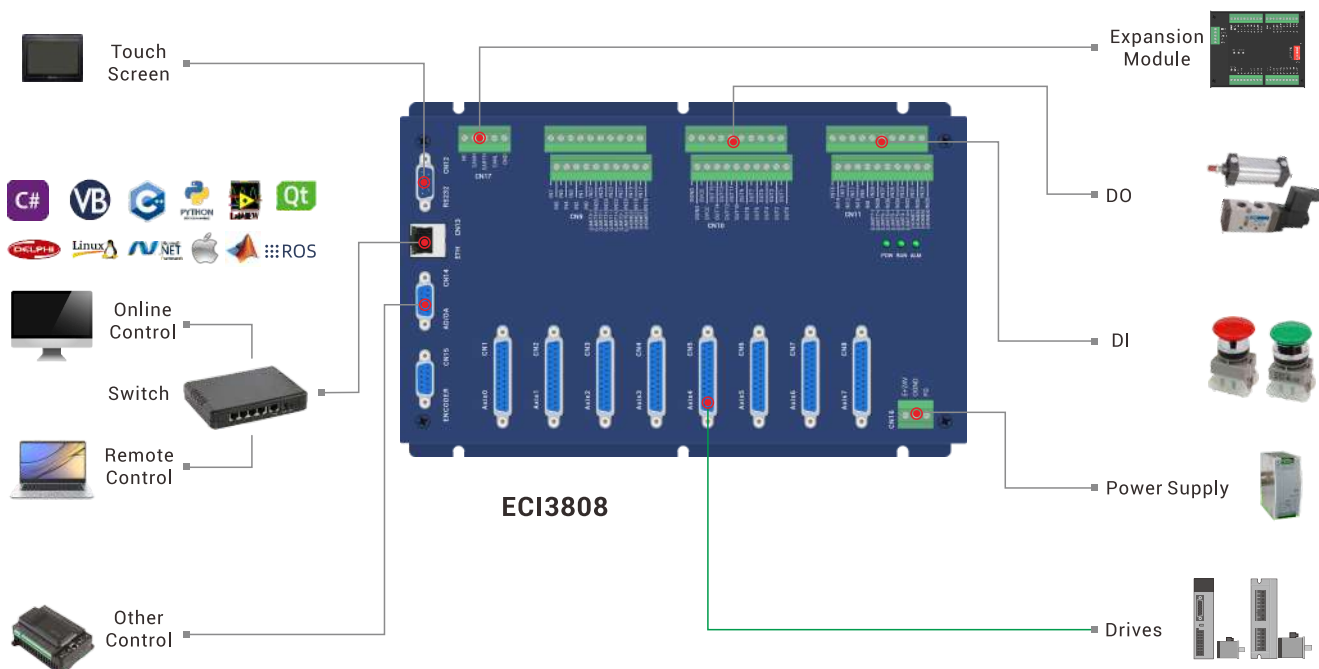


ETHERNET Motion Control Card

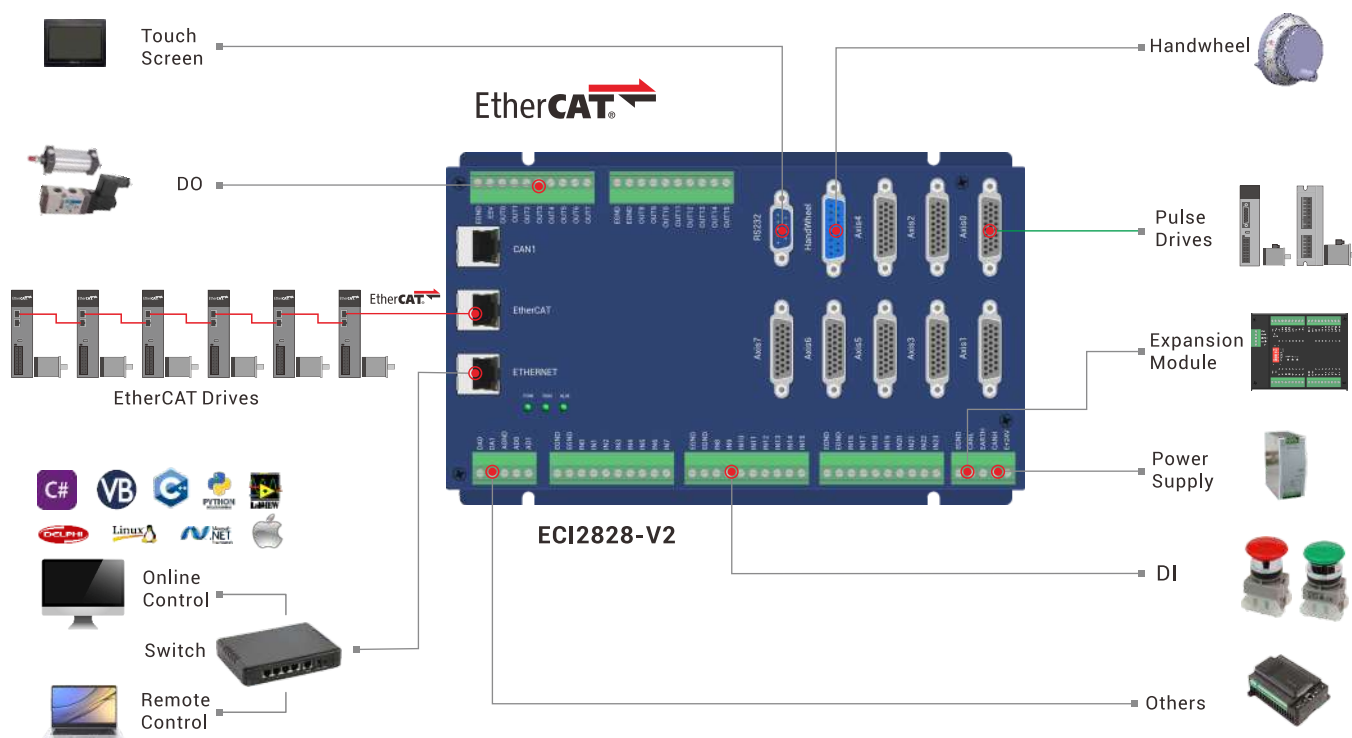


ECI2828-V2

Pulse & EtherNET Motion Control Card System Structure

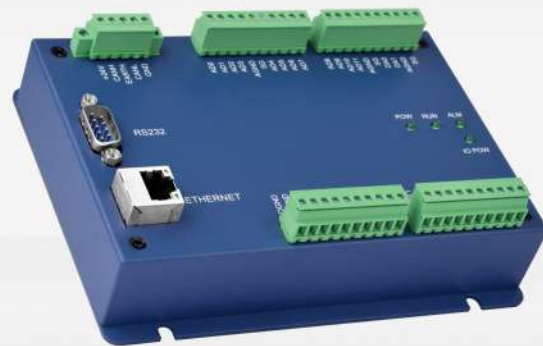


EtherCAT & EtherNET Motion Control Card System Structure





ECI0032



EtherNET High-Precision Data Acquisition Card

ECI0016PA

ECI Network IO Card

ECI IO Card: Network IO control card, which supports IO and AIO expansion.

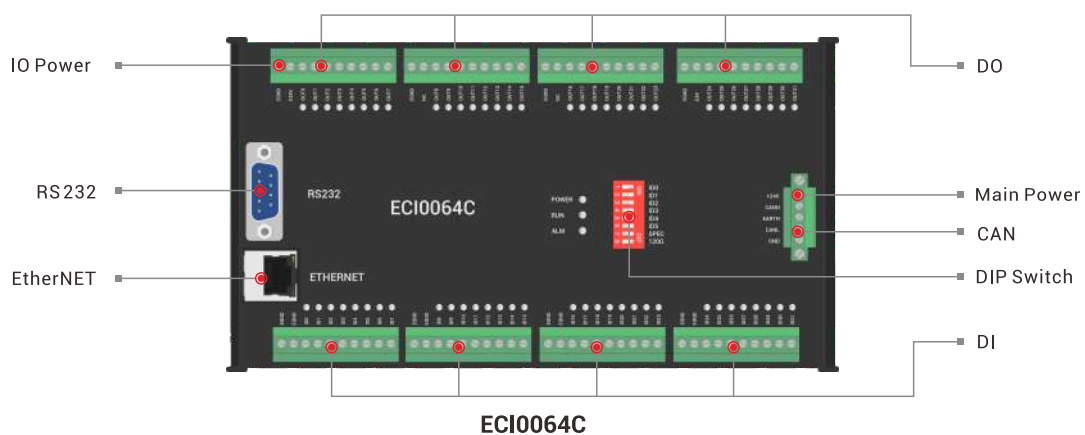
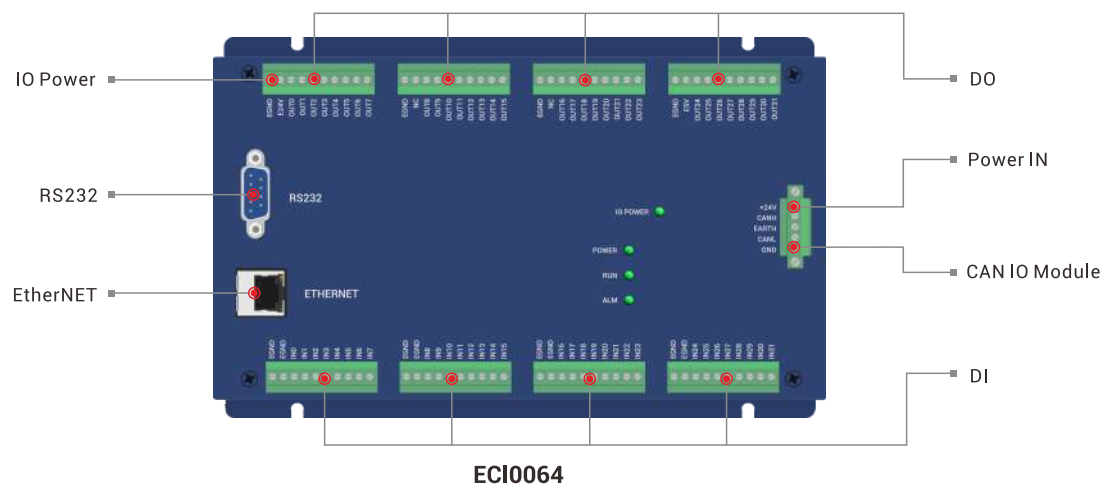
Functional Features

- I/O: 16 DIs & 16 DOs (ECI0032), 32 DIs & 32 DOs (ECI0064),
- Communication: RS232, EtherNET
- Analog: support ZCAN expansion, max 128 ADs & 64 DAs.
- Functions:
 01. 256 digital inputs and 256 digital outputs can be expanded by CAN at the same time.
 02. max output current can reach 300mA, which directly drive some solenoid valve.
 03. support multi-file programming, PC program and controller inner program can work simultaneously.
 04. a variety of encryption methods to protect your program.
 05. it can be used for ZCAN slave station expansion.

Models

Model	Picture	Axis	Encoder	I / O	AD	DA	Axis Motion Buffer	Space	Task	232	422	485	ETH	USB	Size (mm)	Functions
ECI0016PA		0	0	8/8	12 16bit	2 12bit	-	3k	3	1	-	-	1	-	150*114	8 IN & 8 OUT (with over-current protection)
ECI0032		0	0	16/16	-	-	-	3k	2	1	-	-	1	-	150*114	16 IN & 16 OUT (with over-current protection)
ECI0032B		0	0	16/16	-	-	-	3k	2	1	-	-	1	-	150*114	16 IN & 16 OUT (with over-current protection) can run offline
ECI0064		0	0	32/32	-	-	-	3k	1	1	-	-	1	-	192*129	32 IN & 32 OUT (with over-current protection)
ECI0064B		0	0	32/32	-	-	-	3k	2	1	-	-	1	-	192*129	32 IN & 32 OUT (with over-current protection) can run offline
ECI0064C		0	0	32/32	-	-	-	3k	1	1	-	-	1	-	194*110	32 IN & 32 OUT (with over-current protection) can run offline

Interfaces





ECI1408

ECI1000 Series Card

ECI1000 economical multi-axis motion control card is one pulse network card. Itself supports max 4 axes, 6 axes motion control can be extended to realize simple control, linear, circular, helical interpolation, etc.

Applications: within 6 pulse axes -- electronic semiconductor equipment (detection, assembly, locking, soldering), dispensing equipment, assembly line, etc.

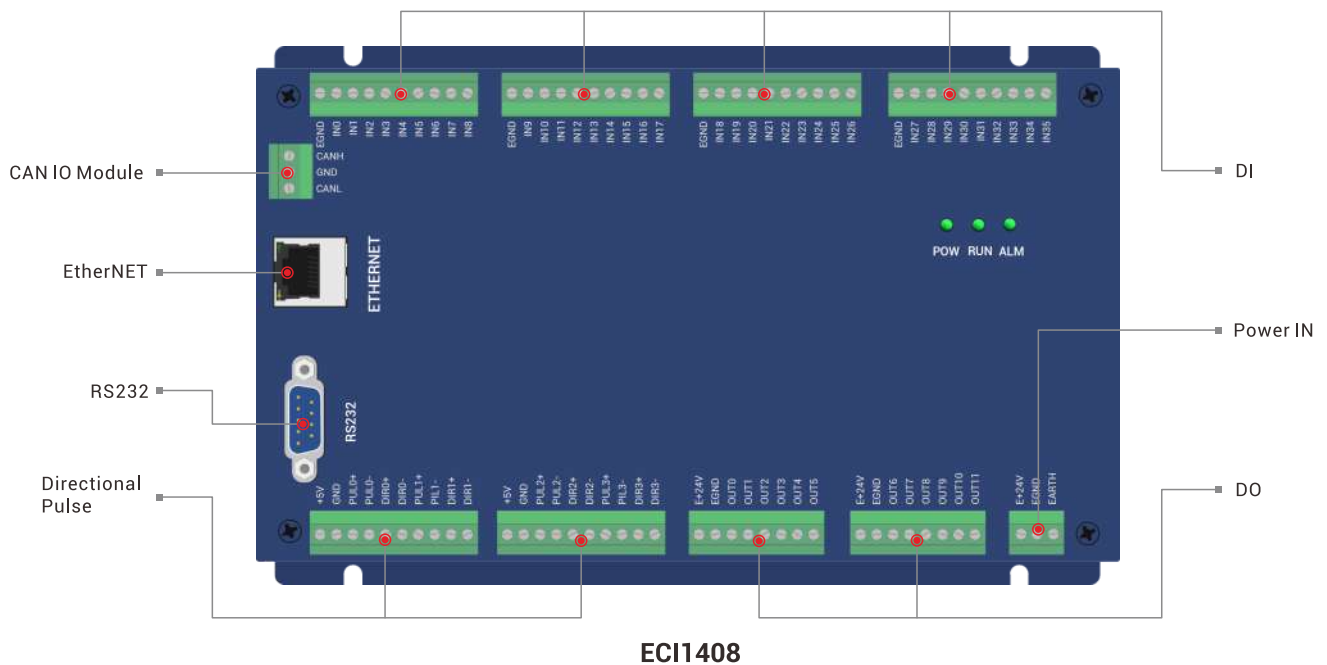
Functional Features

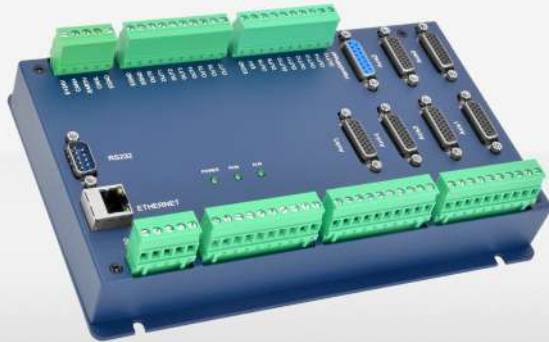
- Axis: up to 6-axis (include virtual-axis)
- I/O: up to 36 DIs & 12 Dos
- Communication: RS232, EtherNET
- Analog: support ZCAN expansion, max 128 ADs & 64 DAs
- Pulse Mode: directional + pulse / dual-pulse
- Functions:
 01. support encoder input, which can be configured as handwheel mode.
 02. max 256 INs & 256 OUTs can be expanded by CAN synchronously.
 03. axis position limit, origin signal can be configured as any IN.
 04. max output current is 300mA, it can directly drive some solenoid valve.
 05. support electronic cam & gear, position latch, synchronization, virtual axis
 06. support multi-file & multi-task.
 07. a variety of encryption methods to protect user's program.
- Performance:
 01. max pulse output frequency can reach 5MHz.
 02. support up to 6 axes for linear, circular, helical interpolation.
 03. support multi-machine independent continuous interpolation.

Models

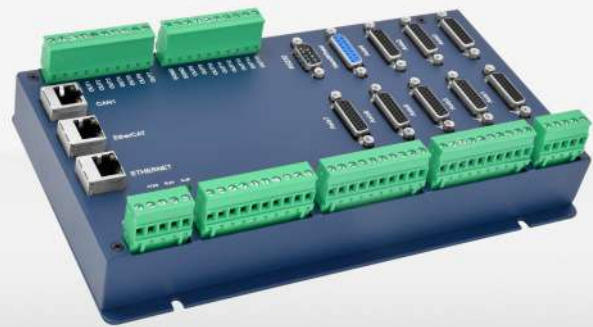
Model	Picture	Axis	Encoder	Pulse Frequency	I / O	AD	DA	Axis Motion Buffer	Space	Task	232	422	485	ETH	USB	Size (mm)	Functions
ECI1308		3	2 (24V)	5M	36/12	-	-	128	3k	1	1	-	-	1	-	205*138	point, line, arc, cam, continuous interpolation
ECI1408		4	2 (24V)	5M	36/12	-	-	128	3k	1	1	-	-	1	-	205*138	point, line, arc, cam, continuous interpolation

Interfaces





ECI2618B



ECI2828-V2

EtherCAT 

ECI2000 -- Pulse

ECI2000 economical multi-axis motion control card is one pulse and modular type network card. Itself supports max 6 axes, 12 axes motion control can be extended to realize simple control, linear, circular, helical interpolation, etc.

Applications: within 12 pulse axes -- electronic semiconductor equipment (detection, assembly, locking, soldering), dispensing equipment, assembly line, etc.

Functional Features

- Axis: up to 12-axis (include virtual-axis)
- I/O: up to 30 DIs & 20 DOs
- Communication: RS232, EtherNET
- Analog: support ZCAN expansion, max 128 ADs & 64 DAs
- Pulse Mode: directional + pulse / dual-pulse
- Functions:
 01. support encoder input, which can be configured as handwheel mode.
 02. max 256 INs & 256 OUTs synchronously can be expanded by ZCAN.
 03. axis position limit, origin signal can be configured as any IN.
 04. max output current is 300mA, it can directly drive some solenoid valve.
 05. support electronic cam & gear, position latch, synchronization, virtual axis.
 06. support multi-file & multi-task programming.
 07. a variety of encryption methods to protect user's program.
- Performance:
 01. max pulse output frequency can reach 10MHz.
 02. support up to 12 axes for linear, circular, helical interpolation.
 03. support multi-machine independent continuous interpolation.

ECI2000 -- EtherCAT

ECI2828-V2 Series economical multi-axis motion control card is one bus and modular type network card. Itself supports max 8 axes, 16 axes motion control can be extended to realize simple control, linear, circular, helical interpolation, etc.

Functional Features

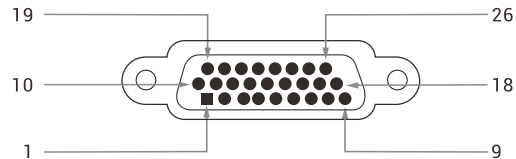
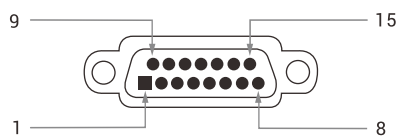
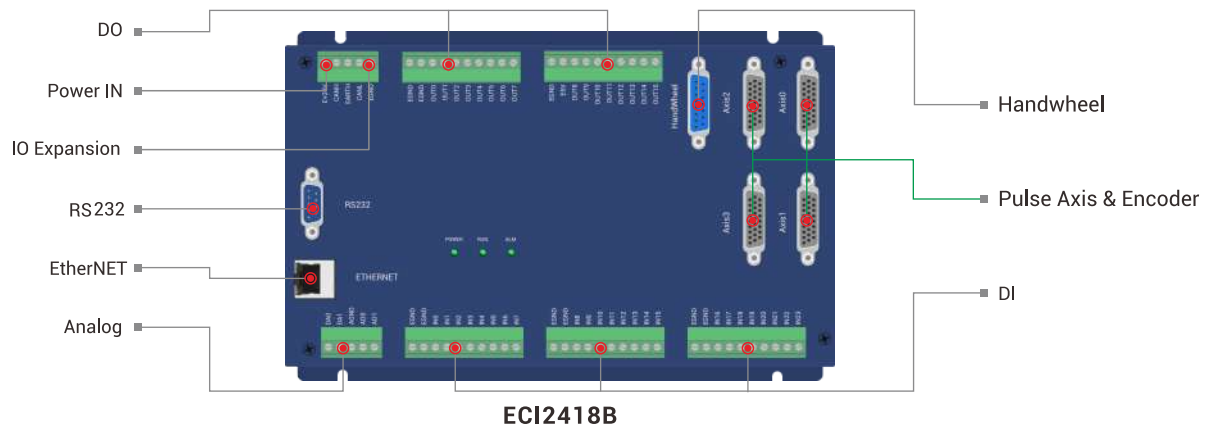
- Axis: up to 16-axis (include virtual-axis)
- I/O: up to 40 DIs & 32 DOs
- Communication: RS232, EtherNET, EtherCAT
- Analog: support ZCAN expansion, max 128 ADs & 128 DAs
- Pulse Mode: directional + pulse / dual-pulse
- Functions:
 01. support encoder input, which can be configured as handwheel mode.
 02. max 1024 INs & 1024 OUTs synchronously can be expanded by ZCAN.
 03. axis position limit, origin signal can be configured as any IN.
 04. max output current is 300mA, it can directly drive some solenoid valve.
 05. electronic cam & gear, position latch, synchronization, virtual axis.
 06. support multi-file & multi-task programming.
 07. a variety of encryption methods to protect user's program.
- Performance:
 01. max pulse output frequency can reach 10MHz.
 02. support up to 16 axes for linear, circular, helical interpolation.
 03. support multi-machine independent continuous interpolation.

Models

Model	Picture	Axis	En coder	MPG	Pulse Frequency	I / O	AD	DA	Axis Motion Buffer	Space	Task	232	ECAT	ETH	USB	Size (mm)	Functions
ECI2408		4	4	-	10M	24+4/8+4	-	-	128	4k	2	1	-	1	-	201*134	point, line, arc, cam, continuous interpolation
ECI2608		6	6	-	10M	24+6/8+6	-	-	128	4k	2	1	-	1	-	201*134	point, line, arc, cam, continuous interpolation
ECI2418B		4	4	1	10M	24+8/16+4	2	2	128	4k	3	1	-	1	-	220*139	point, line, arc, cam, continuous interpolation
ECI2618B		6	6	1	10M	24+12/16+6	2	2	128	4k	3	1	-	1	-	220*139	point, line, arc, cam, continuous interpolation
ECI2A18B		10	6	1	10M	24+12/16+6	2	2	128	4k	1	1	-	1	-	220*139	point, line, arc, cam, continuous interpolation
ECI2618BL5/L24		6	6	1	10M	24+12/16+6	2	2	128	4k	1	1	-	1	-	220*139	point, line, arc, cam, continuous interpolation
ECI2A18BL5/L24		10	6	1	10M	24+12/16+6	2	2	128	4k	1	1	-	1	-	220*139	point, line, arc, cam, continuous interpolation
ECI2828-V2		8	8	1	10M	24+16/16+16	2	2	512	128k	2	1	1	1	-	245*139	point, line, arc, cam, continuous interpolation

Note: models of ECI2418B, ECI2618B, ECI2A18B, ECI2618BL, ECI2828-V2 + HW means they support precision control, for fly-shooting, precision dispensing, etc.

Interfaces



PIN No.	Name	Description
1	H-5V	Power for Handwheel
2	HA-	Encoder A
3	HB-	Encoder B
4	HEMGN	Emergency Stop
5	NC	-
6	HX1	Select X1 Ratio
7	HX10	Select X10 Ratio
8	HX100	Select X100 Ratio
9	HSU	Select Axis 3
10	NC	-
11	EGND	External Power Ground
12	NC	-
13	HSZ	Select Axis 2
14	HSY	Select Axis 1
15	HSX	Select Axis 0

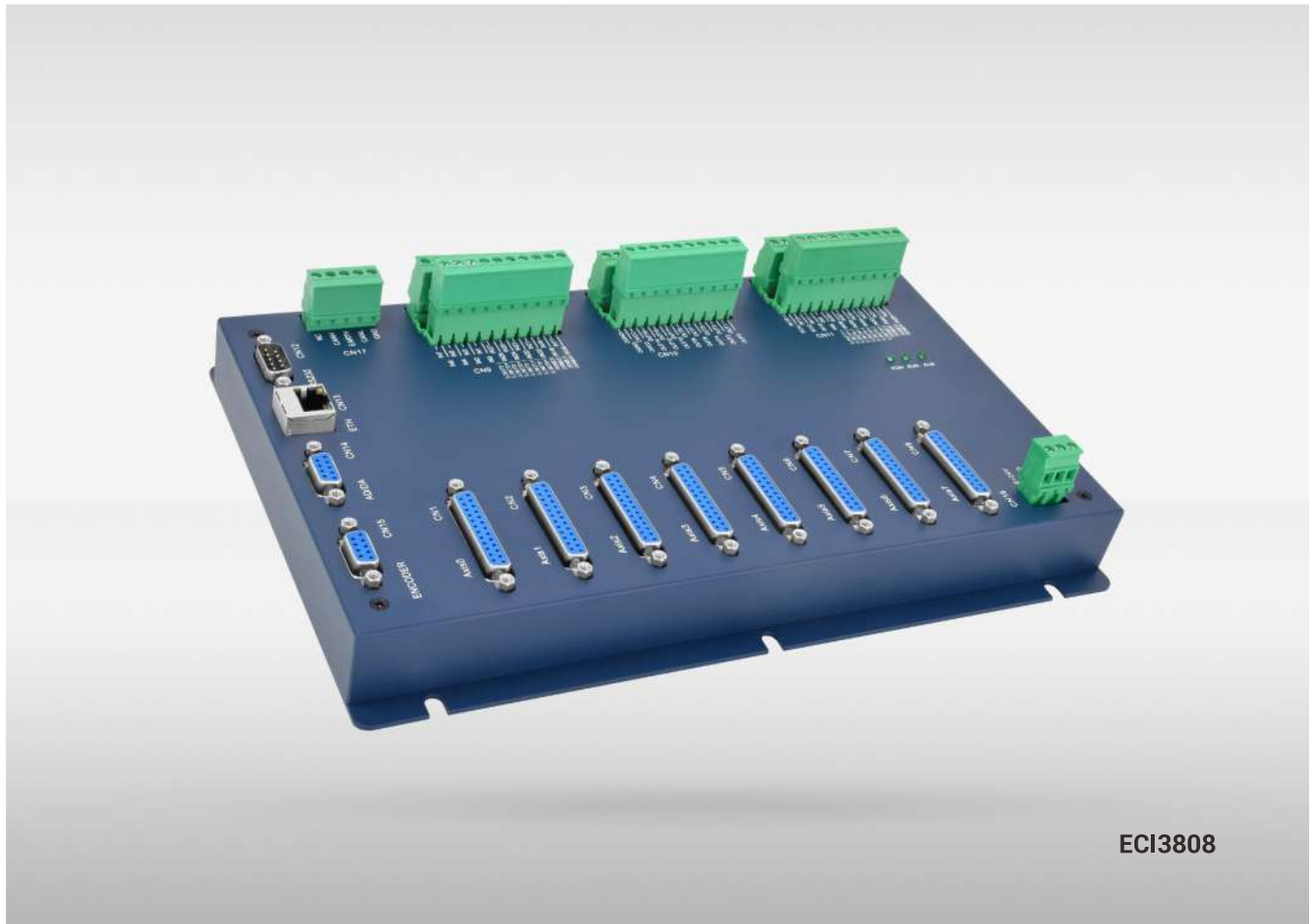
PIN No.	Name	Description
1	EGND	External Power Ground
2	IN24-29/ALM	IN, better do Drive Alarm
3	OUT16-21/ENABLE	OUT, better do Drive Enable
4	EA-	Encoder Input
5	EB-	Encoder Input
6	EZ-	Encoder Input
7	+5V	Power Output
8	Reserved	Reserved
9	DIR+	Servo/Stepper Directional Out
10	GND	Digital Ground
11	PUL-	Servo/Stepper Pulse Out
12	Reserved	Reserved
13	GND	Digital Ground

PIN No.	Name	Description
14	OVCC	+24V Out - better only Servo IO
15	Reserved	Reserved
16	IN30-35/INPOS	IN (better do on-position)
17	EA+	Encoder Input
18	EB+	Encoder Input
19	EZ+	Encoder Input
20	GND	Digital Ground
21	GND	Digital Ground
22	DIR-	Servo/Stepper Directional Out
23	PUL+	Servo / Stepper Pulse Output
24	GND	Digital Ground
25	Reserved	Reserved
26	Reserved	Reserved

▲ Handwheel (DB15 Female Head) ECI2418B / ECI2618B

▲ Pulse & Encoder (DB26 Female Head) ECI2418B / ECI2618B

Note: refer to "User Manual" for more models and details.



ECI3808

ECI3000 Series

ECI3000 economical multi-axis motion control card is one pulse type network card. Itself supports max 8 axes, 12 axes motion control can be extended to realize simple control, linear, circular, helical interpolation, etc.

Applications: within 10 pulse axes -- electronic semiconductor equipment (detection, assembly, locking, soldering), dispensing equipment, assembly line, etc.

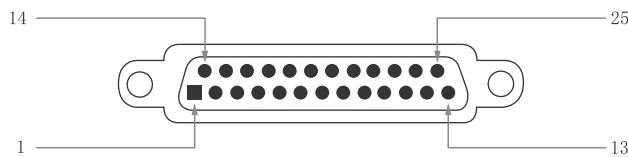
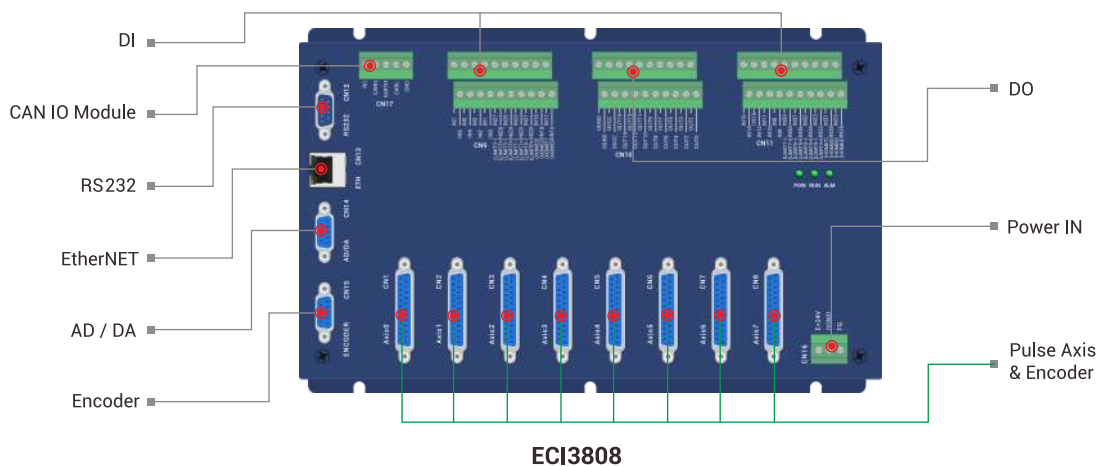
Functional Features

- Axis: up to 12-axis (include virtual-axis)
- I/O: up to 48 DIs & 32 Dos
- Communication: RS232, EtherNET
- Analog: up to 4 ADs & 2 DAs, max 128 ADs & 64 DAs by ZCAN
- Pulse Mode: directional + pulse / dual-pulse
- Functions:
 01. support encoder input, which can be configured as handwheel mode.
 02. max 256 INs & 256 OUTs synchronously can be expanded by ZCAN.
 03. axis position limit, origin signal can be configured as any IN.
 04. max output current is 300mA, which can directly drive some solenoid valve.
 05. support electronic cam, electronic gear, position latch, synchronous follow, virtual axis, etc.
 06. support multi-file & multi-task programming.
 07. a variety of encryption methods to protect user's program.
- Performance:
 01. max pulse output frequency can reach 10MHz.
 02. support up to 12 axes for linear, circular, helical interpolation.
 03. support multi-machine independent continuous interpolation.

Models

Model	Picture	Axis	En-coder	Pulse Frequency	I / O	AD	DA	Axis Motion Buffer	Space	Task	232	422	485	ETH	USB	Size (mm)	Functions
ECI3608		6	6+1	10M	40+6/16+12	4	2	128	4k	1	1	-	-	1	-	292*188	point, line, arc, cam, continuous interpolation, robotic arm commands
ECI3808		8	8+1	10M	40+8/16+16	4	2	128	4k	1	1	-	-	1	-	292*188	point, line, arc, cam, continuous interpolation, robotic arm commands

Interfaces



PIN No.	Name	Description
1	EGND	External Power Ground
2	IN40-47/ALM	General IN, better do Drive Alarm
3	OUT16 18.../ENABLE	OUT, better do Drive Enable
4	EA-	Encoder A -
5	EB-	Encoder B -
6	EZ-	Encoder Z -
7	Internal +5V Power	Internal +5V Power
8	Reserved	Reserved
9	DIR+	Directional Differential +
10	GND	Internal 0V
11	PUL-	Pulse Differential -
12	Reserved	Reserved

PIN No.	Name	Description
13	GND	Internal 0V
14	OVCC	+24V
15	OUT17 19.../CLR	OUT, better do Drive Alarm Clear
16	Reserved	Reserved
17	EA+	Encoder A +
18	EB+	Encoder B +
19	EZ+	Encoder Z +
20	GND	Internal 0V
21	GND	Internal 0V
22	DIR-	Directional Differential -
23	PUL+	Pulse Differential +
24	GND	Internal 0V
25	Reserved	Reserved

▲ Pulse & Encoder (DB25 Female Head) ECI3000 Series

Note: refer to "User Manual" for more models and details.



ECI382X

ECI382X Card -- EtherCAT

ECI382X economical multi-axis motion control card is one bus and modular type network card. There are 4-12 axes for point, linear, circular, helical interpolation, etc., and it supports PSO function for vision fly-shooting, dispensing control, laser energy control.

Applications: within 12 axes (pulse & bus) -- 3C electronics, semiconductor equipment, dispensing equipment, etc.

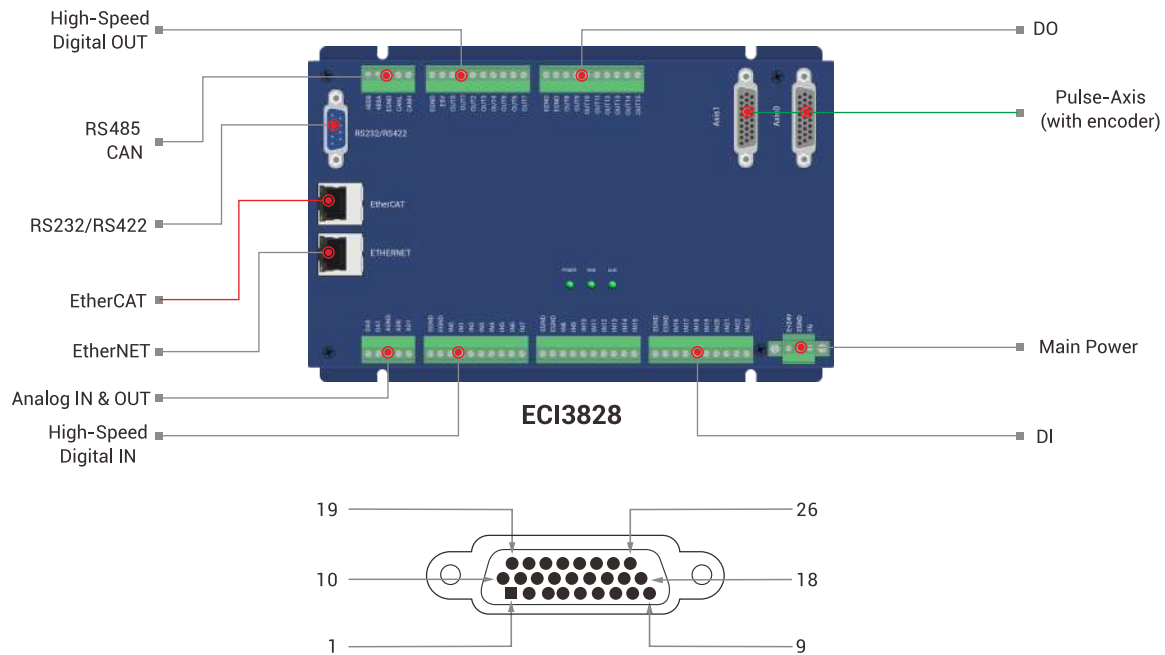
Functional Features

- Axis: 4-12 axes
- I/O: 26 DIs & 18 Dos
- Communication: RS232, EtherNET, EtherCAT
- Analog: 2 ADs & 2 DAs, max 256 ADs & 128 DAs after expansion
- Pulse Mode: directional + pulse / dual-pulse
- Functions:
 01. EtherCAT synchronized period is 1ms.
 02. support encoder input, which can be configured as handwheel mode.
 03. max 256 isolated INs & 256 isolated OUTs can be expanded by EtherCAT synchronously .
 04. max output current is 300mA, which can directly drive some solenoid valve.
 05. support electronic cam & gear, position latch, synchronous follow, virtual axis, etc.
 06. axis position limit, origin signal can be configured as any IN.
 07. a variety of encryption methods to protect user's program.
- Performance:
 01. max pulse output frequency can reach 10MHz.
 02. support up to 16 axes (include virtual-axis) for linear interpolation, circular, interpolation, helical interpolation, continuous interpolation.
 03. support 1D/2D/3D PSO function for vision fly-shooting, dispensing control, laser energy control.

Models

Model	Picture	Axis	En- coder	Total Axes	Pulse Fre quency	I / O	AD	DA	Axis Motion Buffer	Space	Task	232	422	485	ETH	Size (mm)	Functions
ECI3428		4	2+2	16	10M	24+2/16+2	2	2	512	128k	1	1	1	1	1	205*135	point, line, arc, cam, continuous interpolation,
ECI3628		6	2+2	16	10M	24+2/16+2	2	2	512	128k	1	1	1	1	1	205*135	point, line, arc, cam, continuous interpolation,
ECI3828		8	2+2	16	10M	24+2/16+2	2	2	512	128k	1	1	1	1	1	205*135	point, line, arc, cam, continuous interpolation,
ECI3A28		10	2+2	16	10M	24+2/16+2	2	2	512	128k	1	1	1	1	1	205*135	point, line, arc, cam, continuous interpolation,
ECI3C28		12	2+2	16	10M	24+2/16+2	2	2	512	128k	1	1	1	1	1	205*135	point, line, arc, cam, continuous interpolation,

Interfaces



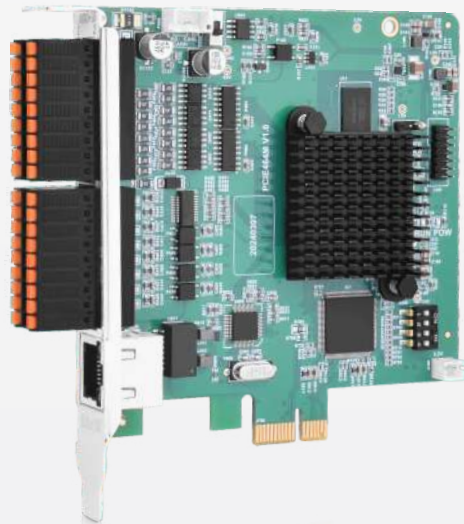
PIN No.	Name	Description
1	EGND	External Power Ground
2	IN24.../ALM	General IN, better do Drive Alarm
3	OUT16.../ENABLE	General OUT, better do Drive Enable
4	EA-	Encoder Input
5	EB-	Encoder Input
6	EZ-	Encoder Input
7	+5V	Internal +5V Power Output
8	Reserved	Reserved
9	DIR+	Servo/Stepper Directional Out
10	GND	Internal Power Ground
11	PUL-	Servo/Stepper Pulse Out
12	Reserved	Reserved
13	GND	Internal Power Ground

PIN No.	Name	Description
14	OVCC	E24V Output (better only for Servo IO)
15	Reserved	Reserved
16	Reserved	Reserved
17	EA+	Encoder Input
18	EB+	Encoder Input
19	EZ+	Encoder Input
20	GND	Internal Power Ground
21	GND	Internal Power Ground
22	DIR-	Servo/Stepper Directional Out
23	PUL+	Servo/Stepper Pulse Out
24	GND	Internal Power Ground
25	Reserved	Reserved
26	Reserved	Reserved

▲ Pulse & Encoder (DB26 Female Head)

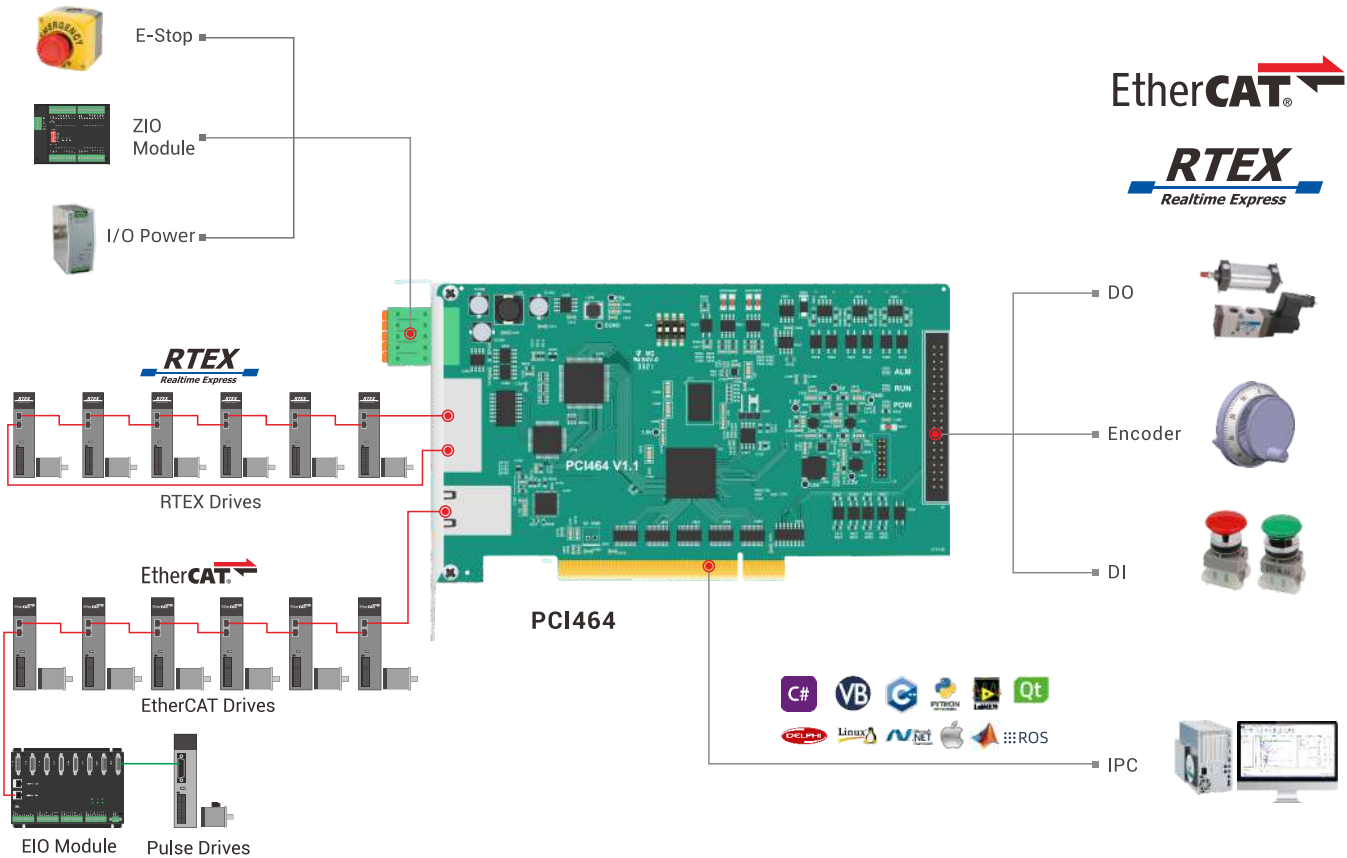
Note: refer to "User Manual" for more models and details.

PC-based Motion Control Card

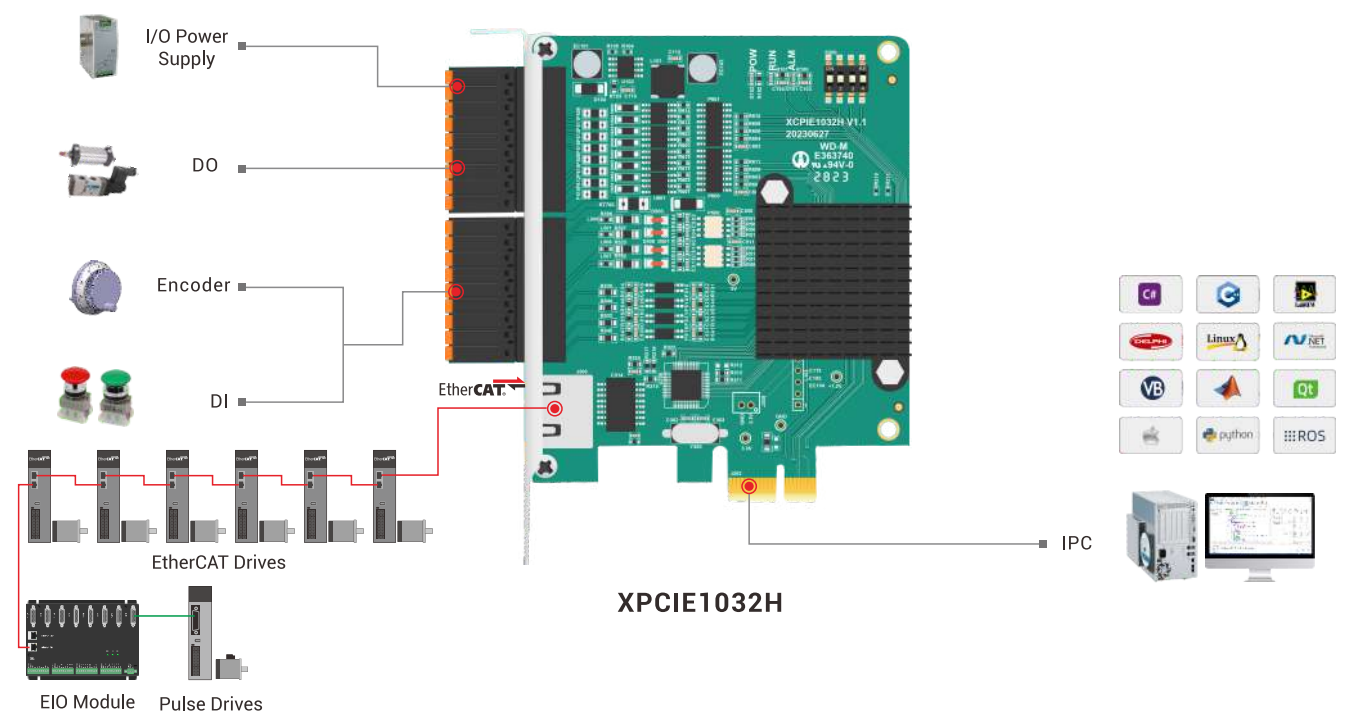


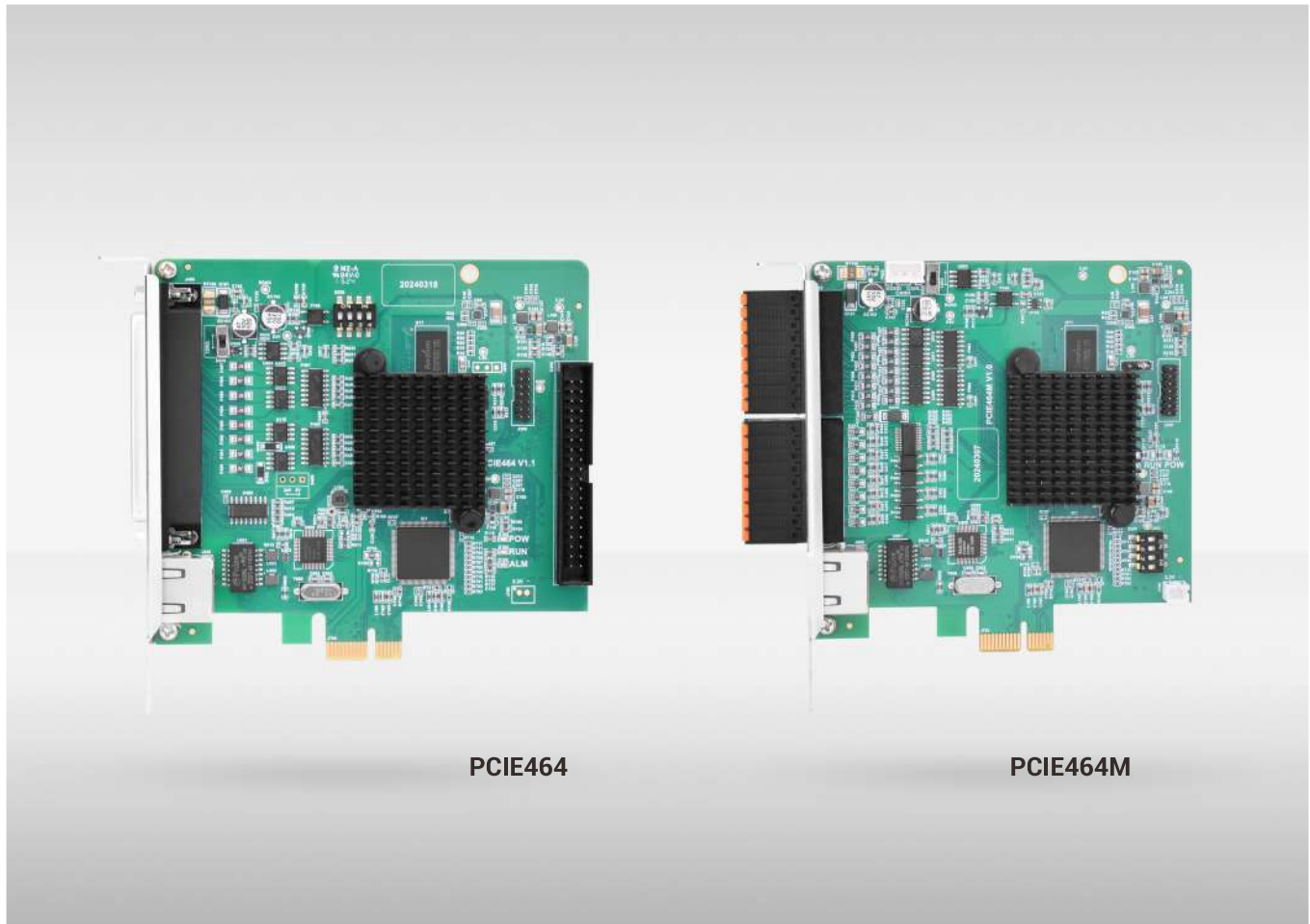
XPCIE1032H / PCIE464M / XPCIE2032H / XPCIE6032H

PCI Bus Control Card System Diagram



XPCIE EtherCAT Control Card System Diagram





PCIE464

PCIE464M

PCIE464 / PCIE464M

EtherCAT®

PCIE464 motion control card is one EtherCAT and pulse type card that is with PCIE interface. It can control several stepper motors or digital servo motors. And it can achieve many functions, multi-axis point motion, interpolation, handwheel control, encoder position detection, IO control, position latch, etc.

Applications: high-speed & high-precision -- 3C electronics, detection equipment, semiconductor equipment, SMT processing, laser, optical communication equipment, lithium & photovoltaic, etc.

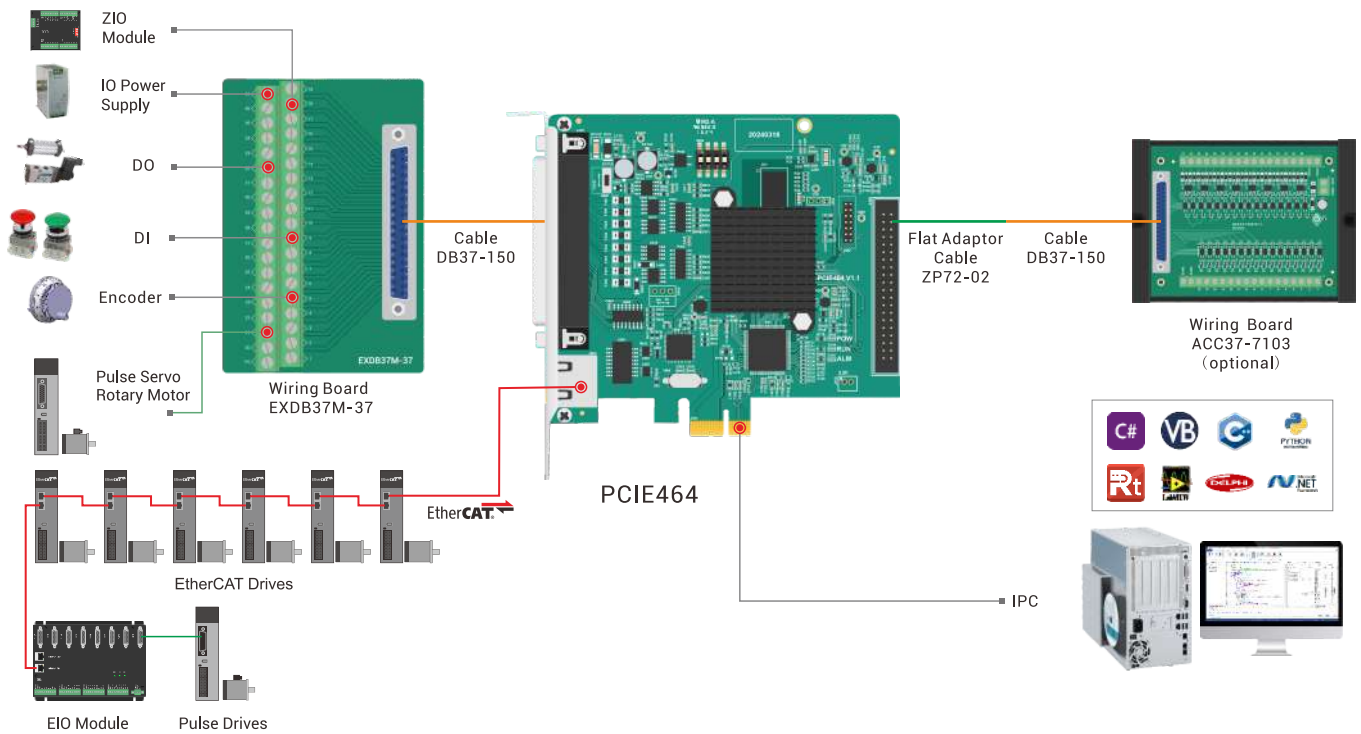
Functional Features

- Axis: 64 axes (EtherCAT)
- I/O: 8 DIs & 8 DOs (more IO, please use with ACC37 together)
- Communication: PCIe, EtherCAT
- Analog: max 128 ADs & 64 DAs after ZCAN expansion
- Pulse Mode: directional + pulse / dual-pulse
- Functions:
 01. support encoder input, which can be configured as handwheel mode.
 02. max 4096 INs & 4096 OUTs can be reached by EtherCAT / CAN.
 03. axis position limit, origin signal can be configured as any IN.
 04. max output current is 300mA, which can directly drive some solenoid valve.
 05. electronic cam & gear, position latch, synchronous follow, virtual axis, etc.
 06. support RTBasic multi-task running (real-time program).
 - support card inner C language real-time program running.
 07. PSO modes: high-speed vision fly shooting, dispensing, laser, etc.
 08. "power-off storage": encryption & protect user's program.
 09. valid operation systems: Windows7, Windows10, Windows11, Linux.
- Performance:
 01. 16-axis EtherCAT fastest refresh cycle is 100μs.
 02. max pulse output frequency can reach 10MHz.
 03. support max 16 axes for linear, circular, helical, elliptical interpolation.
 04. support multi-machine independent continuous interpolation.
 05. support hybrid interpolation of EtherCAT + pulse axes.

Models

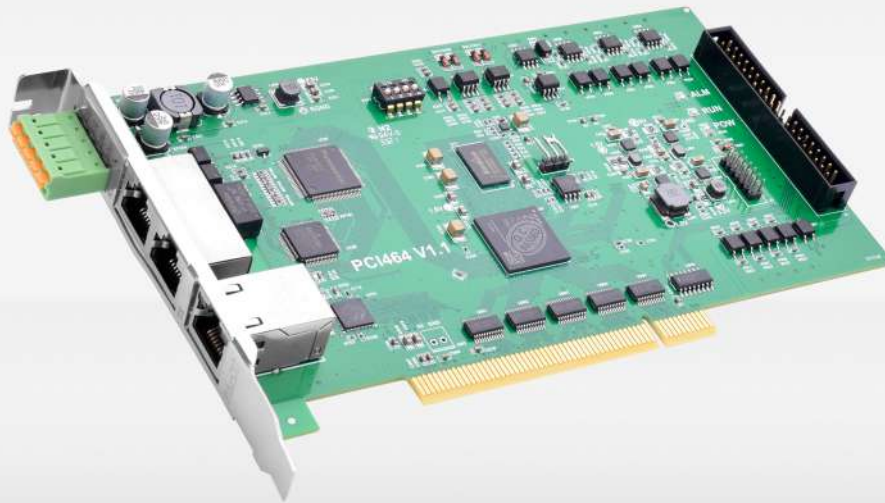
Model	Picture	Axis	En coder	Pulse Fre- quency	I / O	Program Space	PWM	High- Speed Latch	High- Speed HW	Motion Buffer	ECAT	Size (mm)	Functions
PCIE464-AX16		16	3	10M/500k	8+16/8+16	1920k	8	4	8	4096	1	144*120	point motion, cam, linear, circular, continuous interpolation, robotic arm.
PCIE464-AX32		32	3	10M/500k	8+16/8+16	1920k	8	4	8	4096	1	144*120	point motion, cam, linear, circular, continuous interpolation, robotic arm.
PCIE464-AX64		64	3	10M/500k	8+16/8+16	1920k	8	4	8	4096	1	144*120	point motion, cam, linear, circular, continuous interpolation, robotic arm.
PCIE464M-AX16		16	3	500kHz	16/16	1920k	4	4	12	4096	1	105*120	point motion, cam, linear, circular, continuous interpolation, robotic arm.
PCIE464M-AX32		32	3	500kHz	16/16	1920k	4	4	12	4096	1	105*120	point motion, cam, linear, circular, continuous interpolation, robotic arm.
PCIE464M-AX64		64	3	500kHz	16/16	1920k	4	4	12	4096	1	105*120	point motion, cam, linear, circular, continuous interpolation, robotic arm.

Interfaces



PCIE464 Motion Control Card Configuration Solution

Configuration	Name	Specification	Description	Image	Number
Optional Accessories for Expanding IO	Wiring Board	EXDB37M-37	DB 37 wiring board		1
	Shielded Cable	DB37-150	DB37 cable, chip male-to-male		2
	Wiring Board	ACC37-7103	16 IN & 16 OUT wiring board after changing from IDC40 to DB37		1
	Adapter Cable	ZP72-02	flat cable from 40P plug to DB37 female head		1



PCI464

PCI Bus Motion Control Card

EtherCAT®

RTEX
Realtime Express

PCI high-performance multi-axis card is one bus type control card (EtherCAT & RTEX). Itself supports max 64 axes to realize complex continuous trajectory control, like, linear, circular, helical, elliptical interpolation.

Applications: robot (SCARA, DELTA, 6 DOF), electronic semiconductor equipment (detection, assembly, locking, soldering), dispensing, laser, printing & packaging, textile & garment, stage entertainment equipment, medical equipment, assembly line, etc.

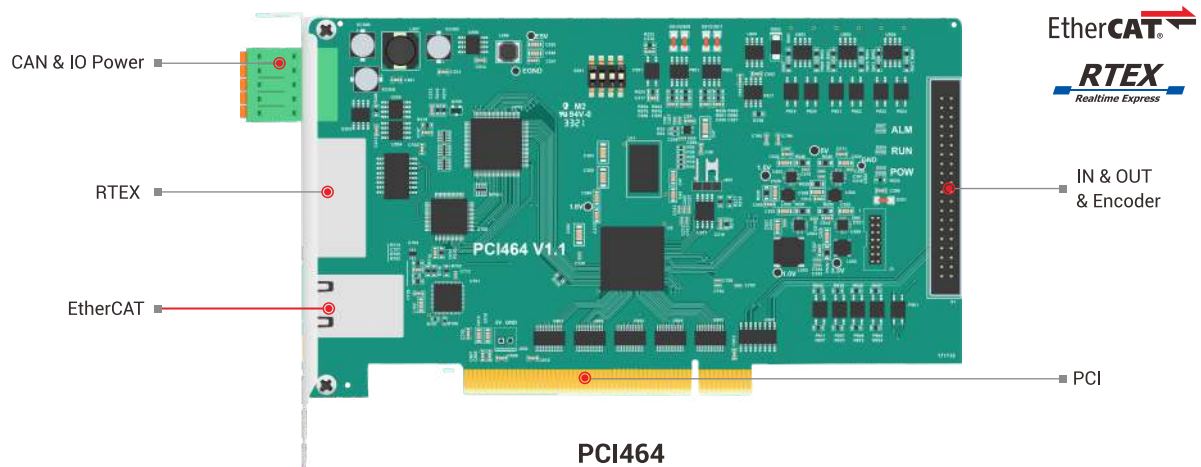
Functional Features

- Axis: 64 axes (EtherCAT), 32 axes (RTEX)
- I/O: 8 DIs & 8 DOs
- Communication: PCI, EtherCAT, RTEX
- Analog: max 128 ADs & 64 DAs after ZCAN expansion
- Functions:
 01. support encoder input, which can be configured as handwheel mode.
 02. max 4096 INs & 4096 OUTs can be reached by EtherCAT / CAN.
 03. axis position limit, origin signal can be configured as any IN.
 04. max output current is 300mA, which can directly drive some solenoid valve.
 05. electronic cam & gear, position latch, synchronous follow, virtual axis, etc.
 06. support pulse closed-loop, pitch compensation.
 07. support multi-file & multi-task programming.
 08. a variety of encryption methods to protect user's program
 09. support power failure detection & power failure storage.
- Performance:
 01. 16-axis EtherCAT fastest refresh cycle is 100μs.
 02. support max 16 axes for linear, circular, helical, elliptical interpolation.
 03. support multi-machine independent continuous interpolation.
 04. support hybrid interpolation of EtherCAT/RTEX + pulse axes.

Models

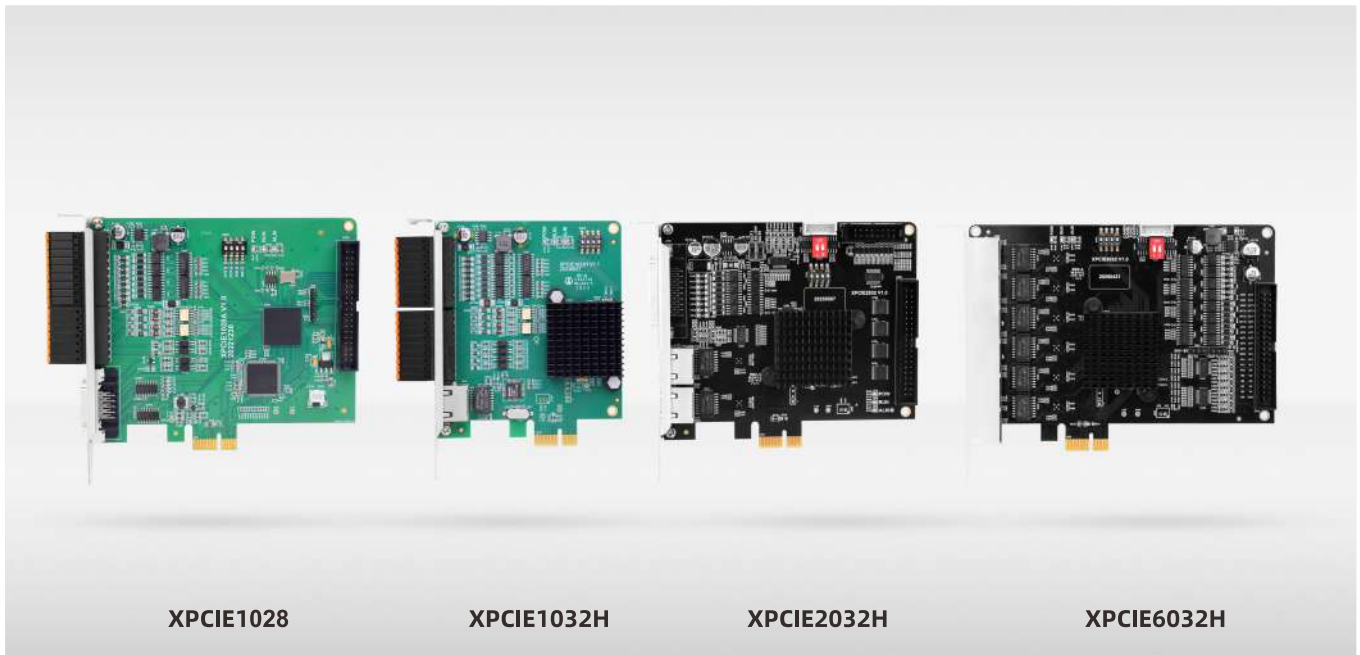
Model	Picture	Axis	Encoder	I / O	Axis Motion Buffer	Space	Task	Power Down Store	ECAT	RTEX	Size (mm)	Functions	Optional Accessories
PCI406E		6	1	8/8	512	1920k	22	8000	1	-	158*120	point, line, arc, cam, continuous interpolation, robot	adapter cable (ZP72-02) shielded cable (DB37-150) wiring board (EXDB37M-37)
PCI408E		8	1	8/8	512	1920k	22	8000	1	-	158*120	point, line, arc, cam, continuous interpolation, robot	adapter cable (ZP72-02) shielded cable (DB37-150) wiring board (EXDB37M-37)
PCI412E		12	1	8/8	512	1920k	22	8000	1	-	158*120	point, line, arc, cam, continuous interpolation, robot	adapter cable (ZP72-02) shielded cable (DB37-150) wiring board (EXDB37M-37)
PCI464-16		16	1	8/8	512	1920k	22	8000	1	1	158*120	point, line, arc, cam, continuous interpolation, robot	adapter cable (ZP72-02) shielded cable (DB37-150) wiring board (EXDB37M-37)
PCI464-32		32	1	8/8	512	1920k	22	8000	1	1	158*120	point, line, arc, cam, continuous interpolation, robot	adapter cable (ZP72-02) shielded cable (DB37-150) wiring board (EXDB37M-37)
PCI464		64	1	8/8	512	1920k	22	8000	1	1	158*120	point, line, arc, cam, continuous interpolation, robot	adapter cable (ZP72-02) shielded cable (DB37-150) wiring board (EXDB37M-37)

Interfaces



PCI464 Motion Control Card Configuration Solution

Configuration	Name	Specification	Description	Image	Number
Optional Accessories for Expanding IO	Wiring Board	EXDB37M-37	Db37 wiring board		1
	Adapter Cable	ZP72-02	flat cable from 40P plug to DB37 female head		1
	Shielded Cable	DB37-150	DB37 cable, chip male-to-male		1



XPCle PC-based Motion Control Card



XPCle economical motion control card is one EtherCAT and pulse type card that is with PCIE interface. Itself supports 6-64 axes to achieve linear, circular, helical interpolation, electronic cam, electronic gear, synchronous follow, virtual axis, robot etc.

Applications: high-speed & high-precision -- 3C electronics, detection equipment, semiconductor equipment, SMT processing, laser, optical communication equipment, lithium & photovoltaic, etc.

XPCIE1032H Function Features:

- Axis: max 64 axes (4 single-ended pulse outputs)
- I/O: 16 DIs / 16 Dos
- Pulse Mode: directional + pulse
- Pulse Frequency: 500KHz
- Functions:
 01. EtherCAT communication, lowest synchronous period is 500us.
 02. max 4096 isolated inputs and 4096 isolated outputs by EtherCAT modules.
 03. encoder position measurement can be set as handwheel input mode.
 04. electronic cam, electronic gear, synchronous follow, virtual axis, etc.
 05. support linear, circular, helical interpolation.
 06. support several PC development languages, C#/C++/LabVIEW, etc.
 07. support multi-file & multi-task programming.
 08. a variety of encryption methods to protect user's program
 09. 1D/2D/3D PSO function for vision fly-shooting, dispensing & laser energy control.

XPCIE1028 Function Features:

- Axis: 4 axes (1 differential pulse OUT + 3 single-ended pulse OUTs)
- I/O: 12+18 DIs / 16+18 Dos
- Pulse Mode: directional + pulse / dual-pulse
- Pulse Frequency: 10MHz/500KHz
- Functions:
 01. specialized for optical / disk screening machine.
 02. 16 hardware position comparison high-speed outputs for vision fly-shooting detection, screening (blowing and outputting).
 03. 8 high-speed latch INs to record materials' position.
 04. specialized axis interface is for controlling 10MHz pulse output and encoder measurement.
 05. support electronic cam, linear, circular, helical interpolation.

Software Part:

AX64 - M08 - HW - ZV - R6 - F - YYYY

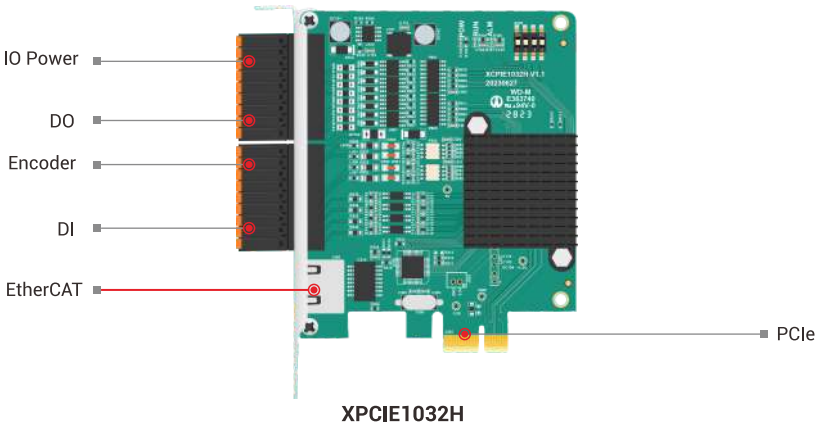
- | | | | |
|---|-------------------------------------|--|----------------------------|
| ① 64-Axis (6-128 axes) | ② motion control functions | ③ PSO function | ④ vision control functions |
| ⑤ R1: normal manipulator
R6: 6-joint / special structure manipulator | ⑥ F: control cycle of 125us / 250us | ⑦ YYYY: customer special function
NCxx function / G Godes function
CNCxxx function | |

Models

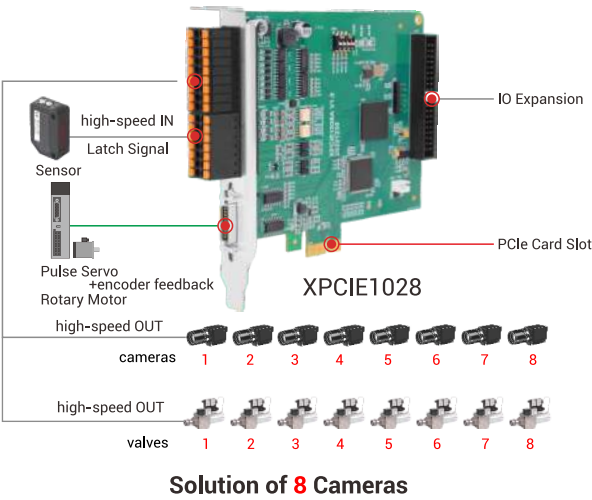
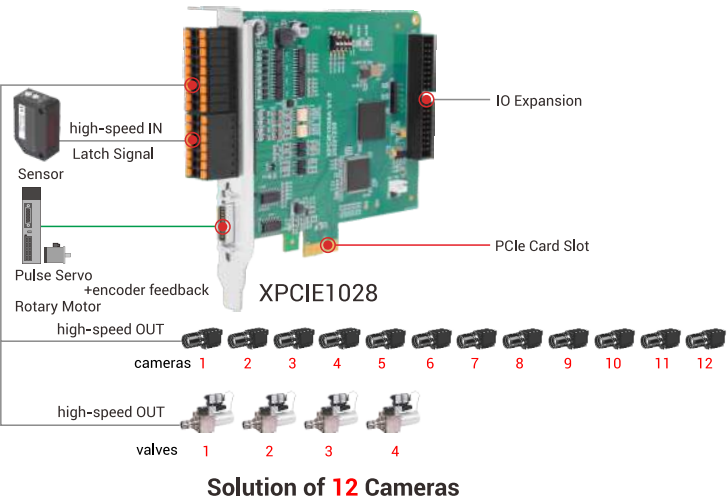
Model	Picture	Axis	Encoder	Pulse Frequency	I / O	PWM	High-Speed IN	High-Speed OUT	Motion Buffer	ECAT	Size (mm)	Functions
XPCIE1032H		64	2	500kHz	16/16	4	8	16	128	1	90*106	point, line, arc, cam, continuous interpolation, robot
XPCIE1028		4	2	10MHz 500kHz	12+18/16+18	4	8	16	128	-	120*106	point, line, arc, cam, continuous interpolation, robot

Note: above cards should be used together with MotionRT7 software. Please check manual for details.

Interfaces



XPCIE1028 Vision Screening Machine Solution



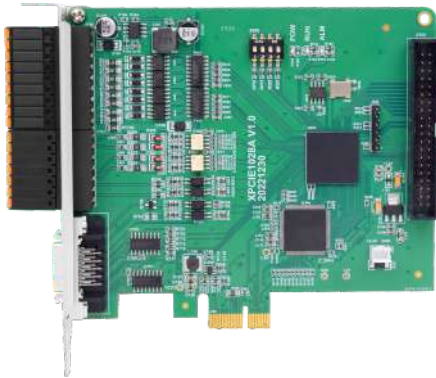
XPCIE1028 Motion Control Card Configuration Solution

Configuration	Name	Specification	Description	Image	Number
Optional Accessories for Expanding IO	Wiring Board	EXDB37M-37	Db37 wiring board		1
	Adapter Cable	ZP72-02	flat cable from 40P plug to DB37 female head		1
	Shielded Cable	DB37-150	DB37 cable, chip male-to-male		1

Provide Complete "Vision Screening Machine Motion Control Solution"

Break the Industry "Velocity" Bottleneck -- Reach **15000+pcs/min** IO Triggering Detection Speed!

XPCIE1028 motion control card can be used in full-automatic CCD optical screening machine. And Zmotion provides one complete debugging software specialized for screening machine, which can reach 15000+pcs/min IO triggering detection speed. It only needs to set parameters, and uses together with camera and vision processing software, then it can realize full-automatic CCD vision screening. In this way, development period is shortened, and cost is reduced.



XPCIE1028

PCIe Interface, Inner Data Interaction

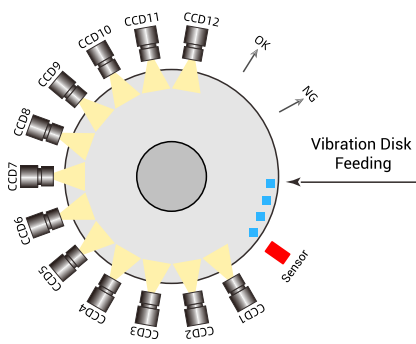


Functions Introduction

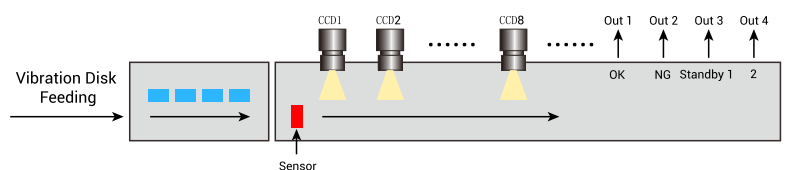


01. Channel: set how many cameras, air valves.
02. Operation Data: check how many detected & operated.
03. Communication Mode: set how to communicate with vision
04. Sample Space: set how long sample once
05. Heartbeat Detection: control vision & screening
06. Filtering Size: sense & filter materials' size
07. Camera Feedback IO & Report Actively: feedback the signal for control interaction after the signal is triggered by camera.
08. Fiber Offset Ratio: set the ratio of fiber physical distance offset
09. Debugging: manually debug -- operate turntable axis

Screening Machines

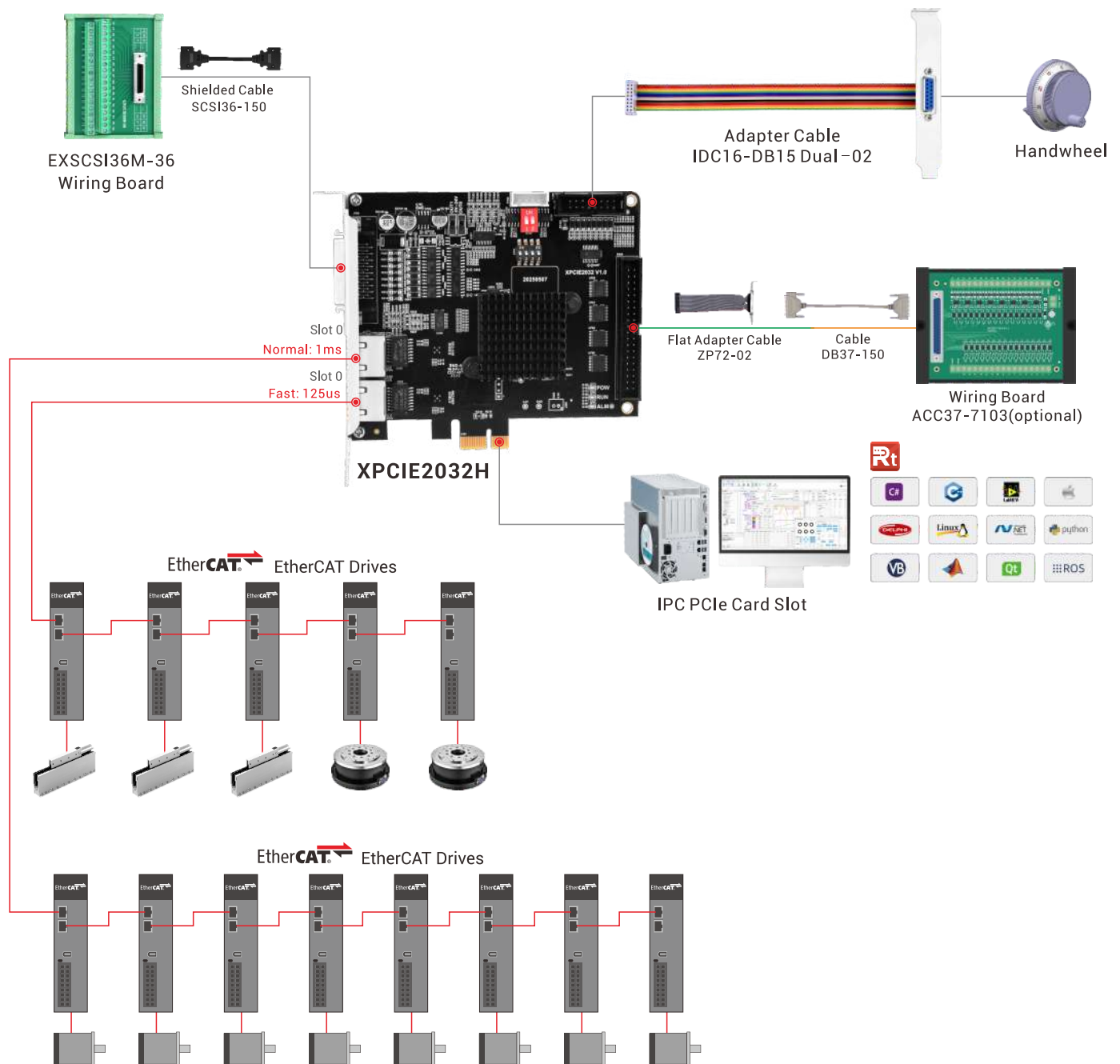


Disc High-Speed Screening



Assembly Line High-Speed Screening

Ultra-Speed Real-Time PC-based PCIe Motion Control Card -- XPCIE2032H



- 4-128 axes motion control
- 2 isolated EtherCAT master channels: sync cycle of 32 axes can reach 125us; support EtherCAT redundancy
- 16 + 16 DIs & 16 + 16 DOs are supported (optional), including 8 high-speed DIs and 16 high-speed DOs (4 single-ended pulse outputs, 16 hardware position comparison outputs PSO)
- linear interpolation, any space circular interpolation, helical interpolation, continuous interpolation, electronic cam, electronic gear, position latch, synchronous following, virtual axes
- support multi-file and multi-task programming via RTBasic
- there are various of encryption methods, protecting the customer's intellectual property rights.

Achieve EtherCAT Redundancy via 2 EtherCAT Slots

The diagram illustrates a system architecture for achieving EtherCAT redundancy using two EtherCAT slots. The central component is the **XPCIE6032H** expansion module, which is connected to a PC via a **Flat Adapter Cable ZP72-02** and a **Cable DB37-150**. The PC is connected to a **Wiring Board EXDB37M-37**, which provides various I/O functions: **DI**, **DO**, **Encoder**, **Pulse Servo**, **Rotary Motor**, and **I/O Power**. The PC is also connected to an **IPC PCIe Card Slot**, which is connected to an **Expansion Module**. The Expansion Module is connected to multiple **EtherCAT Drives**. The diagram also shows a list of supported software and hardware components, including **C#**, **Linux**, **VB**, **Qt**, **ROS**, and various sensors and actuators.

- 89

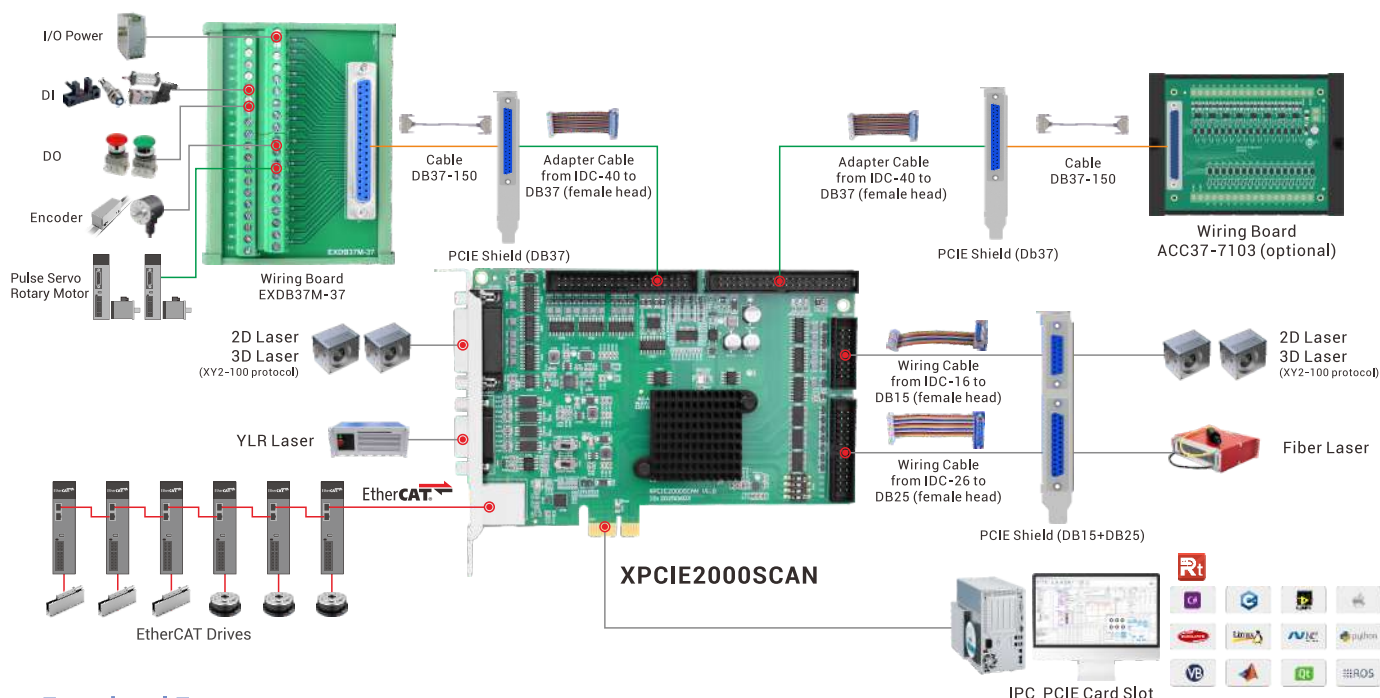


XPCIE2000SCAN

XPCie Laser Galvo Motion Control Card XPCIE2000SCAN

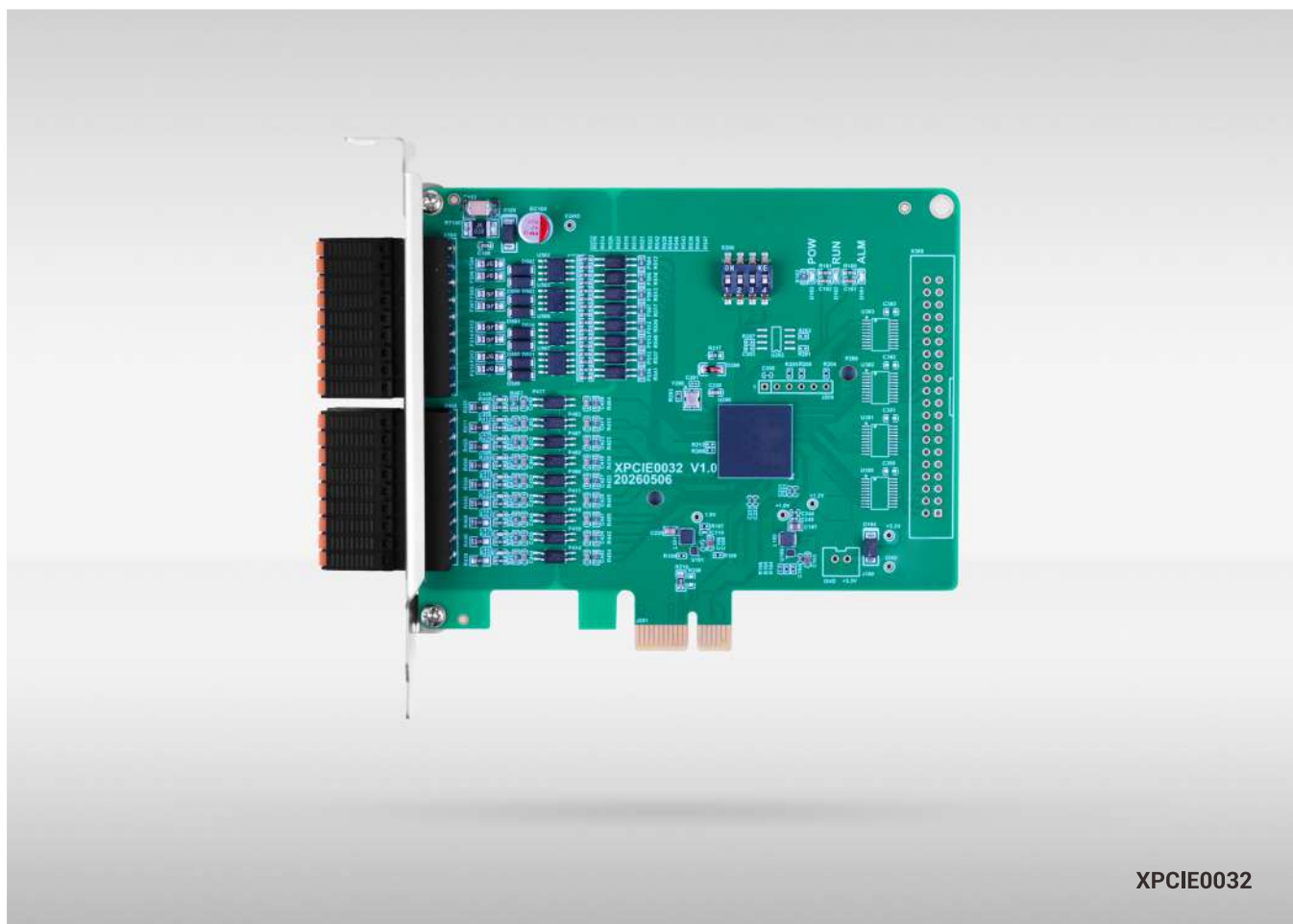
The XPCIE2000SCAN "laser galvo motion control card" supports both EtherCAT and pulse, with PCIe interface-type. It is specially designed for industrial applications integrating laser processing, galvo scanning, motion control. There are 4-254 axes control, which can realize abundant functions including multi-axis point-to-point motion, all kinds of interpolations, trajectory planning, handwheel control, encoder position detection, digital I/O control and position latch.

System Structure



Functional Features

01. interfaces: SCAN, LASER, FIBER, AXIS, EtherCAT
02. used together with MotionRT750
03. ultra-speed control cycle "125us" (PC performance & real-time should be good enough)
04. XY2-100 scanning galvo protocol
05. support encoder position measurement (hand-wheel input mode)
06. support special motion control, including HW, high-speed latch, PWM
07. support point-to-point, linear & circular & continuous interpolation, simple robot algorithm.
08. support pulse closed-loop, pitch compensation.



PC-based IO Control Card -- XPCIE0032

XPCIE0032 is a new PCIe-IO control card designed for industrial automation control. It features 16 DIs and 16 DOs. The inputs accept switching signals from various sensors, while the outputs can drive small switching devices such as solenoid valves, relays and air cylinders.

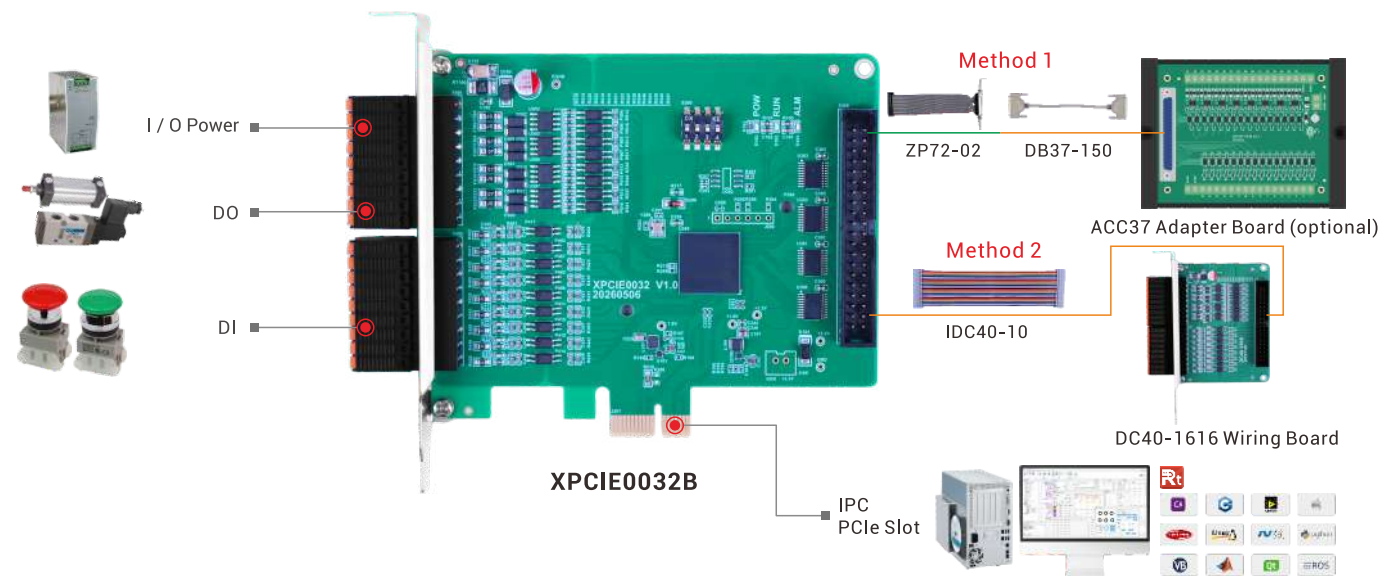
Functional Features

- ▶ I / O: 16 DIs & 16 DOs
- ▶ Functions:
 01. used together with MotionRT750
 02. the max output current of DO reaches 300mA, which can drive some valves directly
 03. support multi-file and multi-task programming via RTBasic
 04. there are various of encryption methods, protecting the customer's intellectual property rights

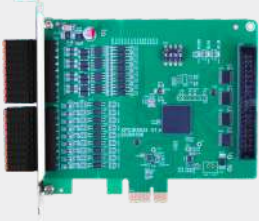
Models

Model	Picture	Axis	En-coder	Pulse Fre-quency	I / O	PWM	DI	DO	ECAT	Size (mm)	Functions
XPCIE0032		-	-	-	16/16	-	16	16	-	120*125	-
XPCIE0032B		4	4	<6kHz	16/16	4	16	16	-	120*125	Point Motion, Line, Arc, Cam Continuous Trajectory, Robotic Motion

System Structure



XPCIE0032B Motion Control Card Configurable Solutions

	Optional	Name	Model	Descriptions	Picture	Qty
	Optional Expansion I/O Accessories	Wiring Board	DC40-1616	Flat adapter cable and 40-pin IDC header connected to X300		1
		FC Colorful Cable	IDC40-10	40-pin X300 socket connects to DC40-1616 adapter board		1
		Wiring Board	ACC37-7103	IDC40 to DB37 breakout board with 16DI /16DO digital channels		1
		Shielded Cable	DB37-150	DB37 male-to-male cable		1
		Adapter Cable	ZP72-02	40-pin plug to DB37 female flat cable		1

IO & Axis Expansion Module

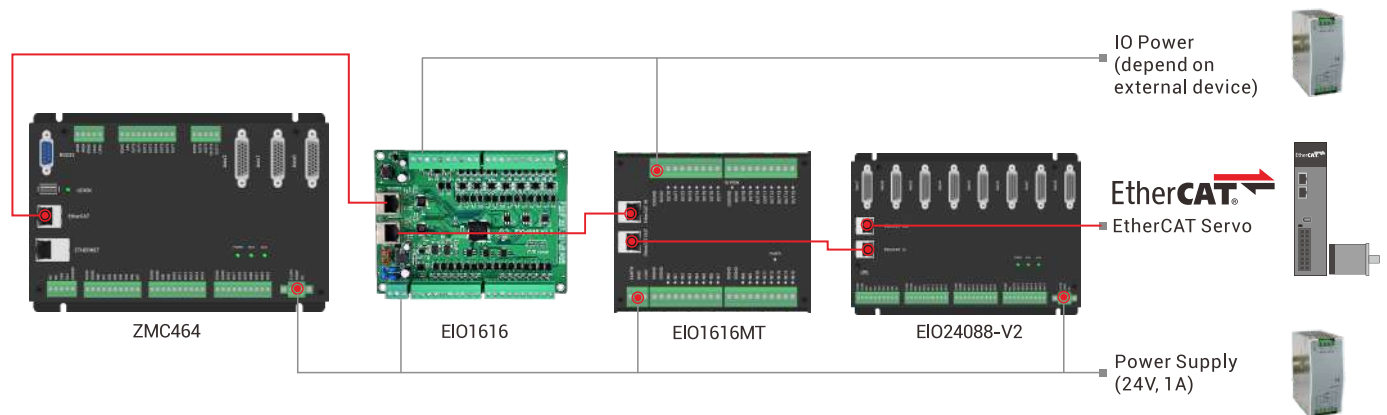


ZMC432M+ZMIO310

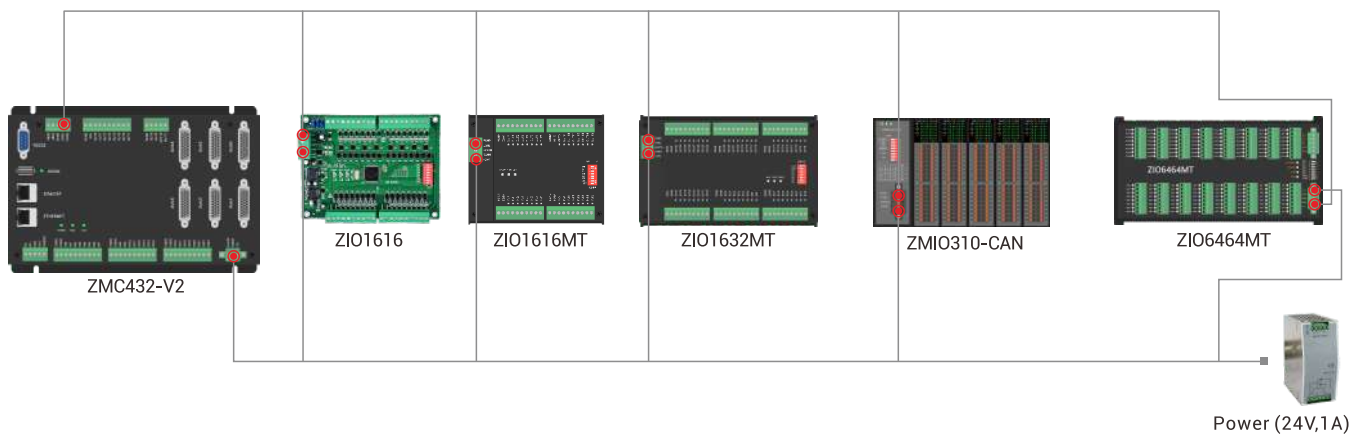


ZMIO310

EtherCAT Expansion Module



ZCAN Expansion Module



ZMIO310 Expansion Module





EtherCAT Expansion Module

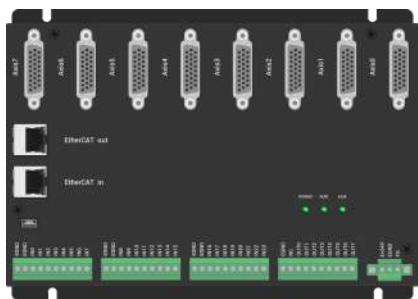
EtherCAT expansion modules, they can expand multiple pulse axes and IO.

Functional Features

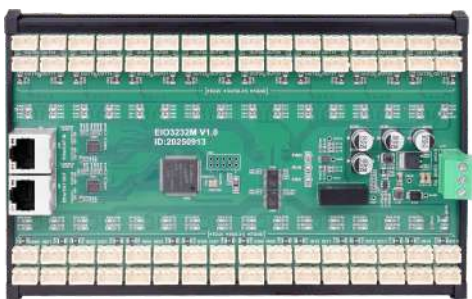
- Axis: 8 pulse axes can be expanded at most
- I/O: up 32 inputs & 32 outputs

Models

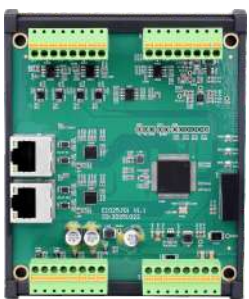
Model	Picture	Axis	Encoder	Total Axes	I / O	ECAT IN/ECAT OUT	Size (mm)	Functions
EIO1616MT		-	-	-	16/16	1/1	143*107	Module Model: EIO1616M Module with Cover: EIO1616MT
EIO16084		4	4	4	16/8	1/1	170*133	4-Axis Axis Expansion
EIO24088-V2		8	8	8	24/8	1/1	210*147	8-Axis Axis Expansion
EIO3232M		-	-	-	32/32	1/1	188*123	Module Model EIO3232M
EIO25J01		-	-	-	-	1/1	100*123	Analog Expansion Board



EIO24088-V2



EIO3232M



EIO25J01



ZCAN Expansion Module

ZCAN expansion module, they can expand 2 pulse axes (at most) and IO.

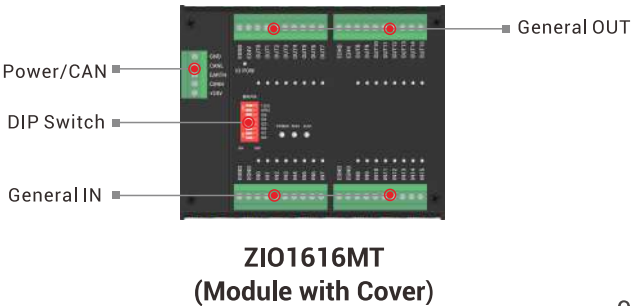
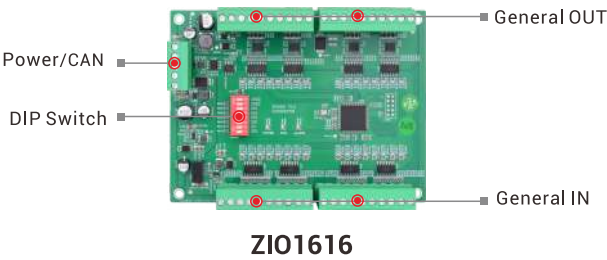
Functional Features

- Axis: 2 pulse axes can be expanded at most
- IO: 16 INs & 16 OUTs / 32 INs & 32 OUTs / 64 INs & 64 OUTs (PCB/module/cover type)

Models

Model	Picture	Axis	Encoder	Total Axes	I / O	AD	DA	Size (mm)	Functions
ZIO0808		-	-	-	8/8	-	-	98*72	Module Type: ZIO0808M
ZIO0016		-	-	-	0/16	-	-	98*72	Module Type: ZIO0016M
ZIO1608		-	-	-	16/8	-	-	126*99	Module Type: ZIO1608M
ZIO1616		-	-	-	16/16	-	-	142*107	Module Type: ZIO1616M
ZIO1616-PNP		-	-	-	16/16	-	-	142*107	Module Type: ZIO1616M-PNP
ZIO1632		-	-	-	16/32	-	-	192*107	Module Type: ZIO1632M
ZIO3232MT		-	-	-	32/32	-	-	192*109	-
ZIO6464MT		-	-	-	64/64	-	-	208*100	-
ZAI00802		-	-	-	-	8 (12bit)	2 (12bit)	120*72	Module Type: ZAI00802M
ZIO16082		2	2	2	16/8	-	-	126*106	Module Type: ZIO16082M

Interfaces





ZMIO310 EtherCAT Expansion Module



ZMIO310 ZCAN Expansion Module

ZMIO310 Expansion Module

ZMIO310 expansion module is one vertical module, it supports expanding IO and AIO. One coupler supports up to 16 sub-modules.

Functional Features

► IO: one single coupler supports 512 inputs / 512 outputs at most.

► AIO: one single coupler supports 32 ADs / 32 DAs at most.

Models

Model	Picture	DI	DO	AD	DA	Communication Interfaces	Size (mm)	Functions
ZMIO310-CAN		–	–	–	–	ZCAN	108*32*95mm	ZCAN Expansion Module
ZMIO310-ECAT		–	–	–	–	ECAT IN/ECAT OUT	108*32*95mm	ECAT Communication Module
ZMIO310-16DI		16	–	–	–	–	108*32*95mm	Input Sub-Module (NPN / PNP)
ZMIO310-16DO		–	16	–	–	–	108*32*95mm	Output Sub-Module (NPN)
ZMIO310-16DOP		–	16	–	–	–	108*32*95mm	Output Sub-Module (PNP)
ZMIO310-4AD		–	–	4	–	–	108*32*95mm	AD Sub-Module (16bit)
ZMIO310-4DA		–	–	–	4	–	108*32*95mm	DA Sub-Module (16bit)
ZMIO310-1616N		16	16	–	–	–	94*24*95mm	Input Sub-Module (NPN / PNP) Output Sub-Module (NPN)
ZMIO310-1616P		16	16	–	–	–	94*24*95mm	Input Sub-Module (NPN / PNP) Output Sub-Module (PNP)
ZMIO310-32DI		32	–	–	–	–	94*24*95mm	Input Sub-Module (NPN / PNP)
ZMIO310-32DO		–	32	–	–	–	94*24*95mm	Output Sub-Module (NPN)
ZMIO310-32DOP		–	32	–	–	–	94*24*95mm	Output Sub-Module (PNP)
ZMIO310-8AD-8DA		–	–	8	8	–	94*24*95mm	AD + DA Sub-Module (12bit resolution, 0-10V)
ZMIO310-8AD		–	–	8	–	–	94*24*95mm	AD Sub-Module (12bit resolution, 0-10V)
ZMIO310-8DA		–	–	–	8	–	94*24*95mm	DA Sub-Module (12bit resolution, 0-10V)
ZMIO310-0808P		8	8	–	–	–	94*24*95mm	Input Sub-Module (NPN / PNP) Output Sub-Module (NPN)
ZMIO310-0808N		8	8	–	–	–	94*24*95mm	Input Sub-Module (NPN / PNP) Output Sub-Module (PNP)
ZMIO310-8TC		–	–	–	–	–	94*24*95mm	8-Channel Thermocouple Temperature Measurement Module
ZMIO310-8PT		–	–	–	–	–	94*24*95mm	8-Channel Thermocouple Temperature Measurement Module

HMI



ZHD500XB 24V Power



ZHD301X



ZHD400X

HMI

ZHD HMI is one open teach pendant that supports "touch screen". Develop interface program by RTBasic and RTHMI in RTSys, and it supports online debugging.

Functional Features

- Button: up to 47 for ZHD300X
 - Communication: EtherNET
 - Protocol: MODBUS / customized
- Functions:
01. show controller inner program, and achieve data interaction.
 02. it is with "emergency stop" button.
 03. ZHD400X supports programming (touch screen type).
 04. ZHD400 can be used together with all kinds of controllers, but ZHD300X/ZHD400X/ZHD500X only match with controllers that support RTHMI function.

Models

Models	Image	Resolution	Size (mm)	Button	E-STOP	Protocol	Functional Descriptions
ZHD300X		480*272	280*131	47	YES	HMI Protocol	it supports touch screen, and can be used with buttons. But the controller must support RTHMI function, and the development software ZDevelop must be above V2.70.
ZHD301X		480*272	246*129	28	NO	HMI Protocol	it supports touch screen, and can be used with buttons., power is supplied by 24V. But the controller must support RTHMI function, and the development software ZDevelop must be above V3.10.
ZHD400		800*480	230*165	18	YES	MODBUS Protocol HMI Protocol	it supports MODBUS protocol, and can be used with button and touch.
ZHD400X		800*480	230*165	18	YES	HMI Protocol	it supports touch screen, and can be used with buttons. But the controller must support RTHMI function, and the development software ZDevelop must be above V2.70.
ZHD500XB		1024*600	313*237	16	YES	HMI Protocol	it supports touch screen, and can be used with buttons., power is supplied by 24V. But the controller must support RTHMI function, and the development software ZDevelop must be above V3.10.

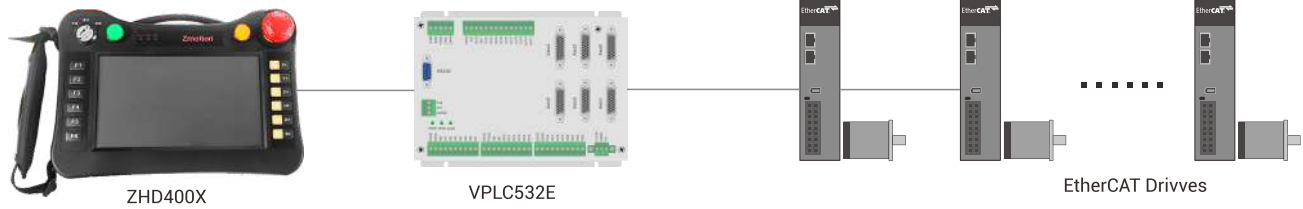
Interfaces

PIN No.	Name	Description
1	TX+	Send Data + (Tranceive Data+)
2	TX-	Send Data - (Tranceive Data-)
3	RX+	Receive Data + (Receive Data +)
4	n/c	-
5	n/c	-
6	RX-	Receive Data - (Receive Data -)
7	n/c	-
8	n/c	-
-	Red Line	24V
-	Black Line	0V
-	Yellow Line	Emergency Stop Signal

▲ RJ45 Crystal Head (ZHD300X, ZHD301X, ZHD400, ZHD400X, ZHD500XB)

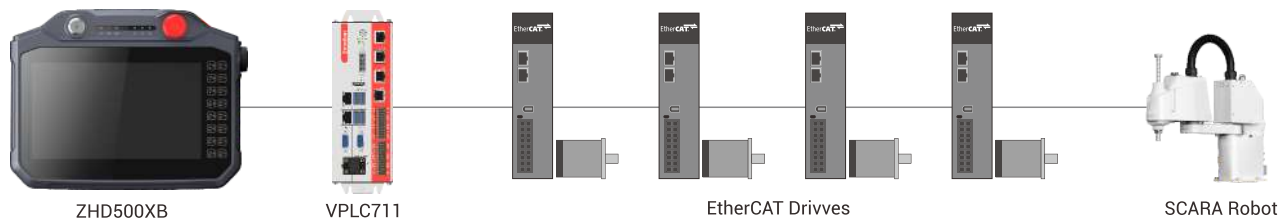
HMI Solutions

HMI Display Solution 1: Open CNC



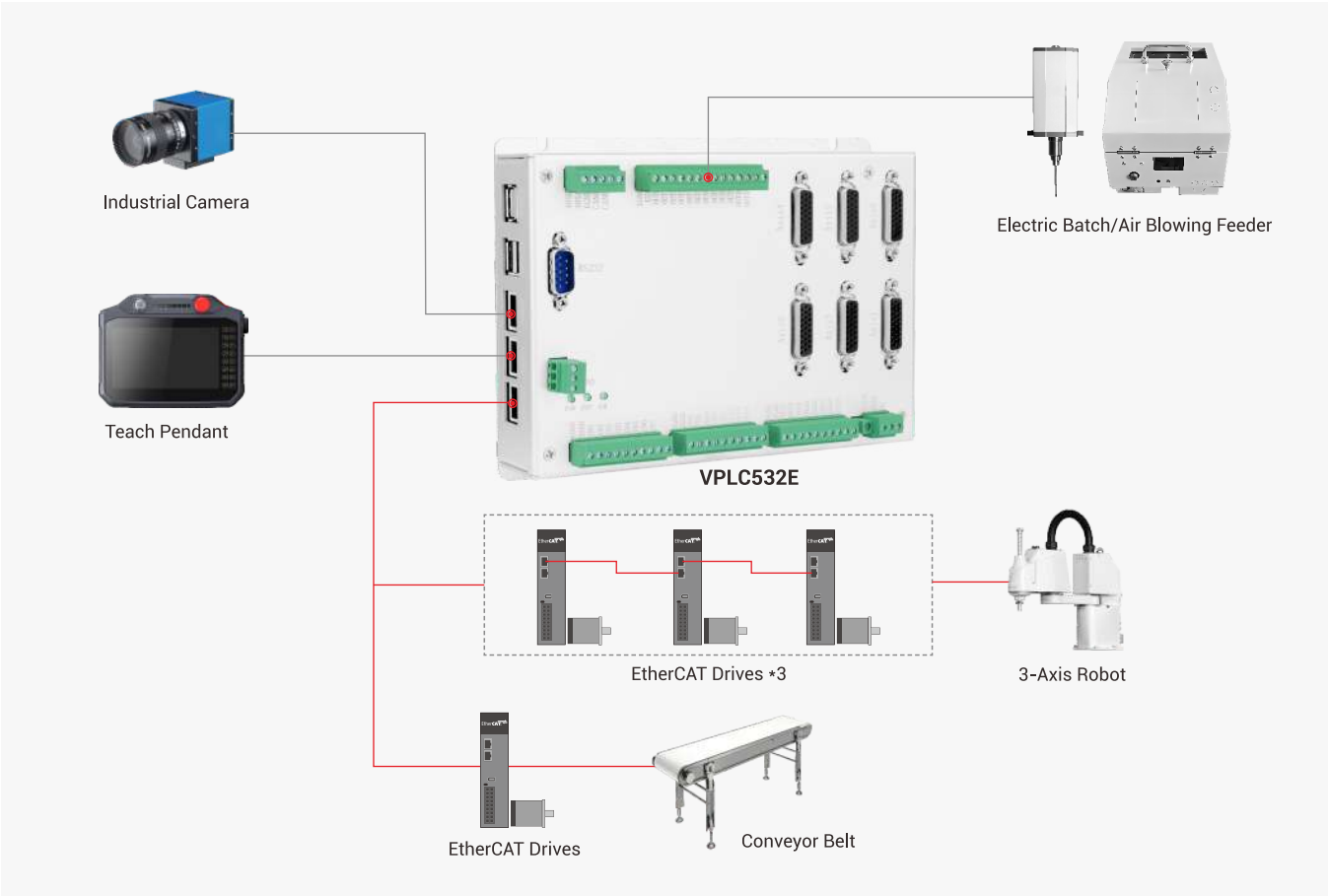
054 TEST NC		通道一	主界面	虚拟键盘	29:01:2024 09:17:15	超级用户
绝对坐标		机械坐标	相对坐标	自动 手动 回零		
X 0.000		X 0.000	X 0.000	MDI 寸动 手轮		
Y 0.000		Y 0.000	Y 0.000	单段 WFG		
Z 0.000		Z 0.000	Z 0.000	5+ 0.100 5-		
A 0.000		A 0.000	A 0.000	4+ Z+ Y+		
B 0.000		B 0.000	B 0.000	X- 低速 X+		
		剩余距离		Y- Z- 4-		
		X 0.000		正转 反转 停转		
		Y 0.000		冷却液 润滑油 照明 吹气		
		Z 0.000		复位 暂停 启动		
		A 0.000				
		B 0.000				
F 1000.0 mm/min 100 %		S 1000 RPM 100 %				
0.0 mm/min (实际)		0 RPM (实际)				
加工时间 0 : 0 : 0		工件数 0	T 0			
输入: [绿色背景]		就绪 回零		手动操作		警报
范围: [蓝色背景]						
<<	机台坐标/F1	程序编辑/F2	参数设定/F3	坐标/偏差/F4	加工监控/F5	维护/F6
					IO端口/F7	文件管理/F8
						>>

HMI Display Solution 2: Open SCARA



传感器跟随贴合系统V1.0		速度 0.0 个/分钟	当前产量 2627 个	累计产量 2618 个	产量清零	权限 厂家
X 699.86	清空轨迹	轨迹关	缩放	放大		
Y 0.00						
Z 0.00						
Rx 0.00						
附加轴速率 100 %						
机械手速率 39 %						
末端速度 0 mm/s						
运动行 0 行						
☒ 左补偿 ☐ 右补偿		上 下		机械手上电		
前 后		左 右		使能关闭		
逆 正				报警复位		
				皮带启停		
左纸面左右补偿 -0.200 mm		右纸面左右补偿 0.000 mm		纸盒高度: 60.00 mm		
左纸面前后补偿 -0.100 mm		右纸面前后补偿 0.000 mm		跟踪最大距离 300 mm		
左纸面补角度 0.000 度		右纸面补角度 0.600 度		贴合预留高度: 50 mm		
左纸面上下补偿 -0.100 mm		右纸面上下补偿 2.400 mm		超前移动距离: 0 mm		
主界面 模板创建 取料点位 IO界面 信号参数 传感器标定 设置 保存所有设置 点动						
当前皮带速度: 0.000 mm/s 自动调整速度: 39 % 手动 启动 真机 ☒ 模拟 消息						

HMI Display Solution 3: 3-Axis SCARA Intelligent Locking



管理员
正运动 · Zmotion

未上电

启动 停止 复位

设备参数

当前速度 0%

机种文件 工件

绑定条码 无

当前条码 无

锁付结果

序号	扭矩 (kgf.cm)	圈数(r)	状态	NG 次数	浮高 高度	锁付 高度	锁付 时间
9	1.18	1.89	OK	0	0.00	10.81	2.71
10	1.18	1.89	OK	0	0.00	10.81	2.71
11	1.18	1.89	OK	0	0.00	10.81	2.71
12	1.18	1.89	OK	0	0.00	10.81	2.71
13	1.18	1.89	OK	0	0.00	10.81	2.71
14	1.18	1.89	OK	0	0.00	10.81	2.71

重置

拍照照片

主Mark拍照点

副Mark拍照点

生产统计

产品总数	243	产品不良	0	产品良率	100%	节拍	2.47s
锁付总数	1944	锁付不良	6	锁付良率	99%	滑牙	1
抛料次数	6	拍照NG	13	扫码NG	0	浮高	5

生产监视

机种设置

视觉设置

工艺设置

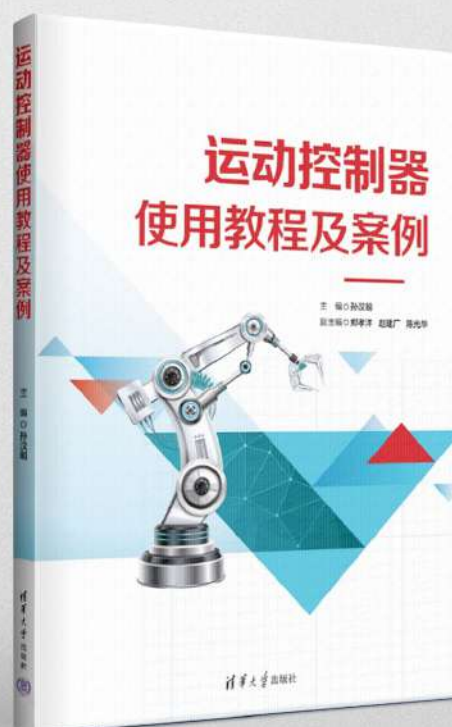
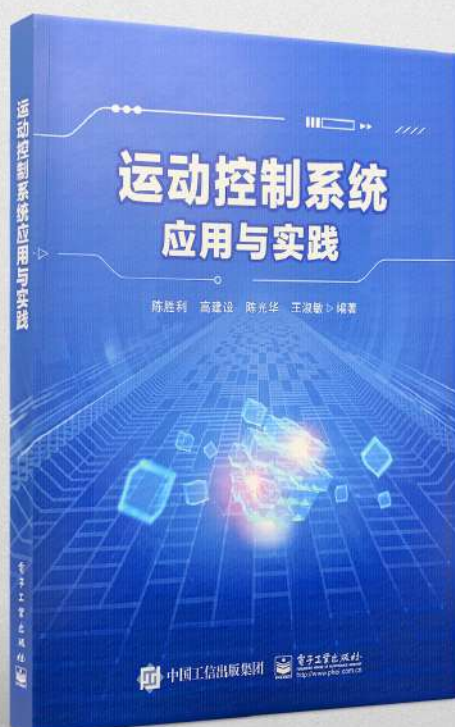
设备参数

IO状态

流程日志

高级设置

Reference and Learning





PC API Programming Manual



RTSys User Manual



RTBasic Programming Manual



RTHmi Programming Manual



RTPlc Programming Manual



Robot Programming Manual



Zmotion Technical Article



Zmotion Technical Video



All Information

Shenzhen Zmotion Technology Co., Ltd.

Tel 0755-2606 6955

Fax 0755-2606 6955

Website: www.zmotionglobal.com

Phone: +86 19925228195

Marketing: zlm@zmotion.com.cn

Technical Support: global_tech@zmotion.com.cn

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

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