

B SERIES UNIVERSAL CONTROLLER

B系列泛用型控制器

开放设计 无限可能
Open Designs Infinite Possibilities



Company Profile

公司简介

广州亿达科技有限公司旨在打造性能卓越的开放式数控系统，让自动化开发变得更简单。作为中国高性能控制器制造商之一，亿达科技专注于客户需求，不断突破技术研发边界，形成了完善的自动化关键技术生态系统，以行业广度和专业深度为客户提供具有差异化的解决方案和便捷服务，竭力让客户从产品中获得助力，快速成长，产生价值。

亿达科技以技术为本，始于数控，却不止数控。坚定立足于数控技术，积极探究运动控制器、边缘计算控制器、Open CNC开发平台、CAD/CAM技术、机器视觉技术、工业物联网技术等。领先行业的Open CNC开发平台，让机器设备的电控客制化开发变得成本更低、更简单；7个核心技术内嵌（运动控制、HMI、PLC、机器视觉、CAD/CAM、物联网、3D仿真），为客户提供最佳一站式解决方案。

凭借出色的开放式产品架构和多种技术集成能力，亿达科技在车床\铣床、磨床、弹簧机、刀具机、木工机械、绕线机、弯管机、3C电子等行业，积累了丰富的产品经验和客户基础，并持续创造卓越。

潜心笃志，匠心创变，厚发求精，共生共赢，崇德守信是亿达科技创立以来所秉持的经营理念和企业价值。一直以来，我们坚持初心，砥砺前行，为成为世界领先的开放式数控系统品牌不断努力。让中国智造，中国服务响彻全球。

Guangzhou Finger Technology Co., Ltd. is committed to creating high-performance open CNC systems, making automation development simpler. As one of China's leading high-performance controller manufacturers, Finger Technology focuses on customer needs and continually pushes the boundaries of technological innovation. The company has built a comprehensive automation ecosystem with key technologies, offering differentiated solutions and convenient services to clients. Finger strives to help customers gain value from its products, accelerate growth, and generate substantial returns.

Finger Technology is fundamentally driven by technology, originating from CNC but not confined to it. Firmly rooted in CNC technology, the company actively explores motion controllers, edge computing controllers, Open CNC development platforms, CAD/CAM technologies, machine vision technologies, and industrial Internet of Things (IoT) technologies. Its industry-leading Open CNC development platform makes the customized development of machine equipment electrical controls more cost-effective and simpler. With seven core technologies embedded (motion control, HMI, PLC, machine vision, CAD/CAM, IoT, and 3D simulation), Finger Technology provides customers with the best one-stop solutions.

Leveraging its outstanding open product architecture and diverse technology integration capabilities, Finger Technology has accumulated extensive product experience and a solid customer base in industries such as lathes, milling machines, grinding machines, spring machines, tool machines, woodworking machinery, winding machines, pipe bending machines, and 3C electronics, continuously achieving excellence.

Devotion to excellence, innovation with craftsmanship, pursuit of precision, symbiosis and win-win, and integrity are the core business philosophy and values upheld by Finger Technology since its establishment. We have always remained true to our original intention, striving forward with determination, and continuously working towards becoming the world's leading open CNC system brand, ensuring that Chinese manufacturing and Chinese services resonate globally.

企业愿景 Company Vision

让自动化开发变得更简单 Make automation development simpler.

企业使命 Company Mission

构建更开放、更便捷、更包容的控制器产品，竭力让客户从产品中获得助力，快速成长，产生价值，并成为世界领先的开放式数控系统品牌。
Build more open, convenient, and inclusive controller products. Strive to help customers gain support from products, grow rapidly, and create value. Become the world's leading brand in open CNC systems.

核心价值观 Core Values

求实诚信 Practical Integrity	坚持初心 Stay True to the Original Intention	破旧立新 Break Tradition, Embrace Newness	追求卓越 Pursue Excellence	携手并进 Progress Together
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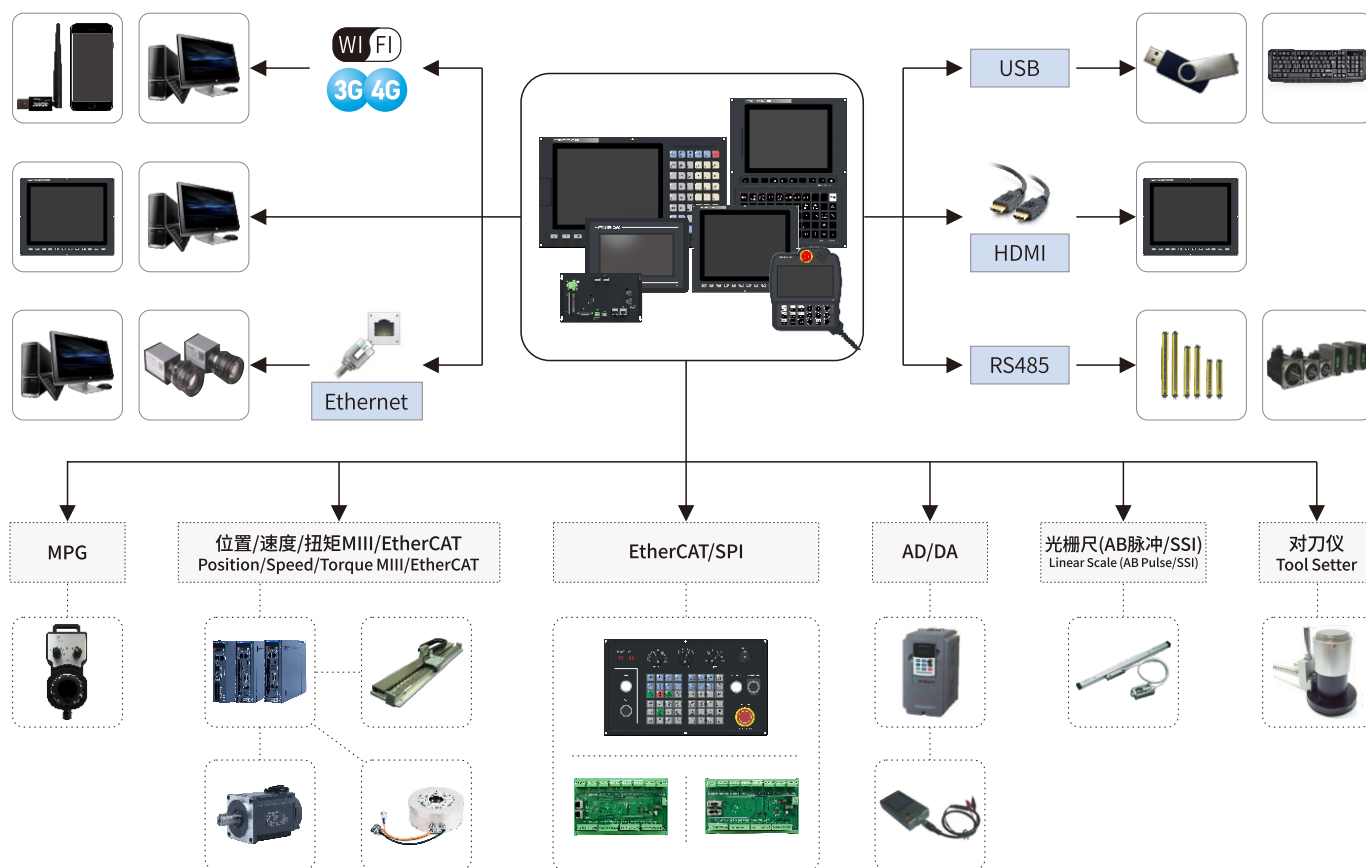
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High-Performance CNC Controller Architecture

高性能CNC控制器架构



► 更先进 More Advanced

- 集成重量级或轻量级CAD/CAM图形插件
Integrated heavyweight or lightweight CAD/CAM graphical plugins
- 全方位开放的CNC客制化设计理念
All-round open CNC customization design concept
- 集成基于脚本的开放式机器视觉系统
Integrated script-based open machine vision system
- MECHATROLINK-III / EtherCAT总线
MECHATROLINK-III / EtherCAT Bus Support

► 更泛用 More Versatile

- 支持SSI绝对型编码器
Support for SSI Absolute Encoders
- 泛用+数控专有HMI功能
Universal + CNC-Specific HMI Functionality
- 总线轴与泛用轴混合控制
Hybrid Control of Bus Axes and Universal Axes
- 模块化软件设计
Modular Software Design

► 更强大 More Powerful

- RT-Linux嵌入式控制系统平台
RT-Linux Embedded Control System Platform
- 全编译执行模块
Fully Compiled Execution Module
- 组态型物联网开发平台
Configurable IoT Development Platform
- 远程协助故障诊断与升级
Remote Assistance for Fault Diagnosis and Upgrades

► 更标准 More Standardized

- 全新Macro脚本编程IDE
Brand new Macro scripting IDE
- 基于JavaScript标准HMI脚本语言
Based on the standard HMI scripting language of JavaScript
- 基于ModBus和OPC-UA标准外设通讯模块
Based on the ModBus and OPC-UA standard peripheral communication modules
- 符合PLC Open IEC61131-3国际标准
Compliance with PLC Open IEC61131-3 International Standard

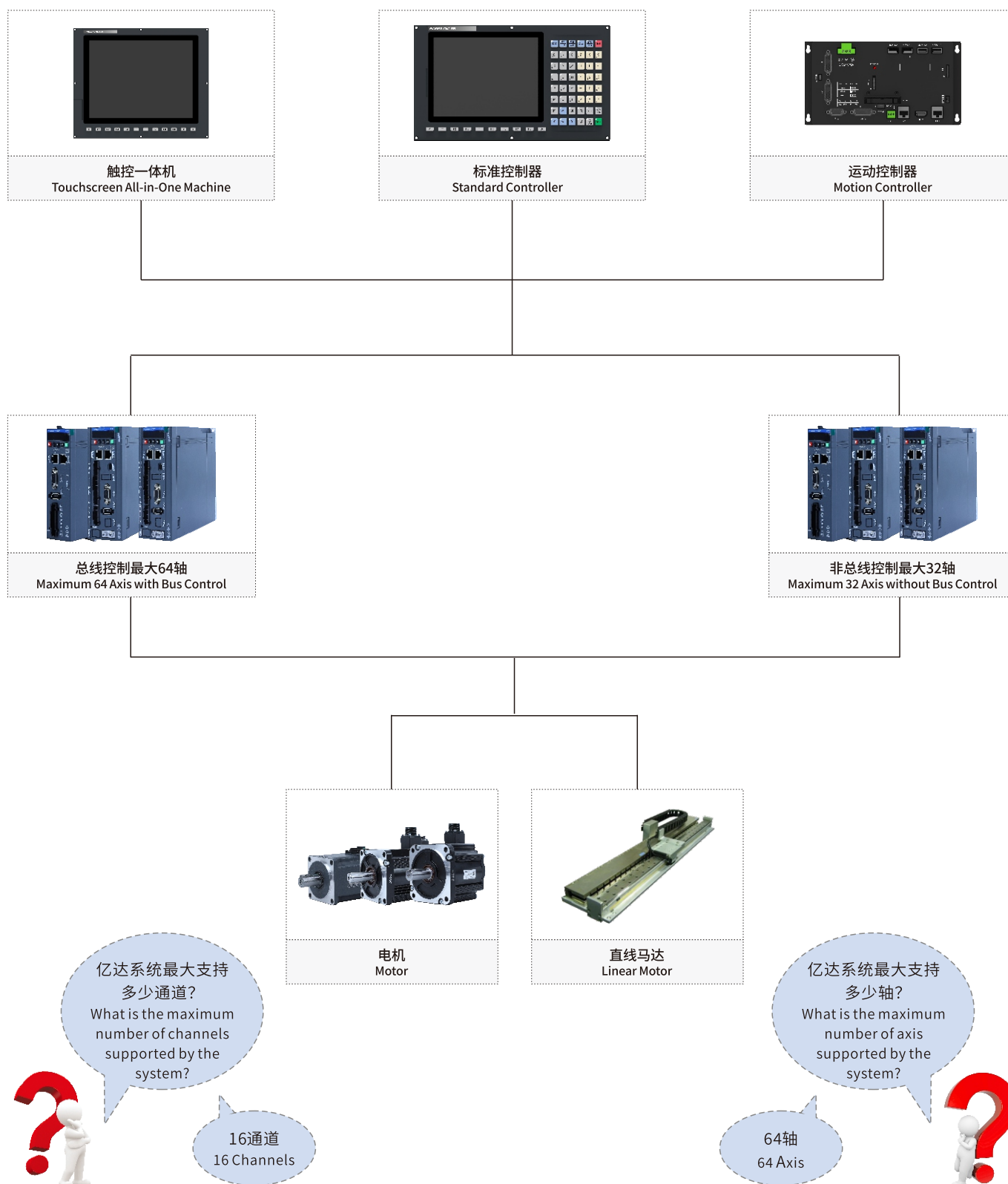
► 更高效 More Efficient

- 平台化设计理念
Platform-based Design Concept
- 64 Bit高速高精轮廓控制
64-Bit High-Speed High-Precision Profile Control
- PREFETCH 20000节/秒
PREFETCH 20000 blocks/second
- 对话式辅助程序编辑
RDialog-based Assistant Program Editing

► 更完善 More Comprehensive

- 最大16通道组合技术
Maximum 16-channel combination technology
- 指令在线帮助
Online instruction assistance
- 全面自动化解决方案
Comprehensive automation solutions
- 高速通道同步技术
High-speed channel synchronization technology

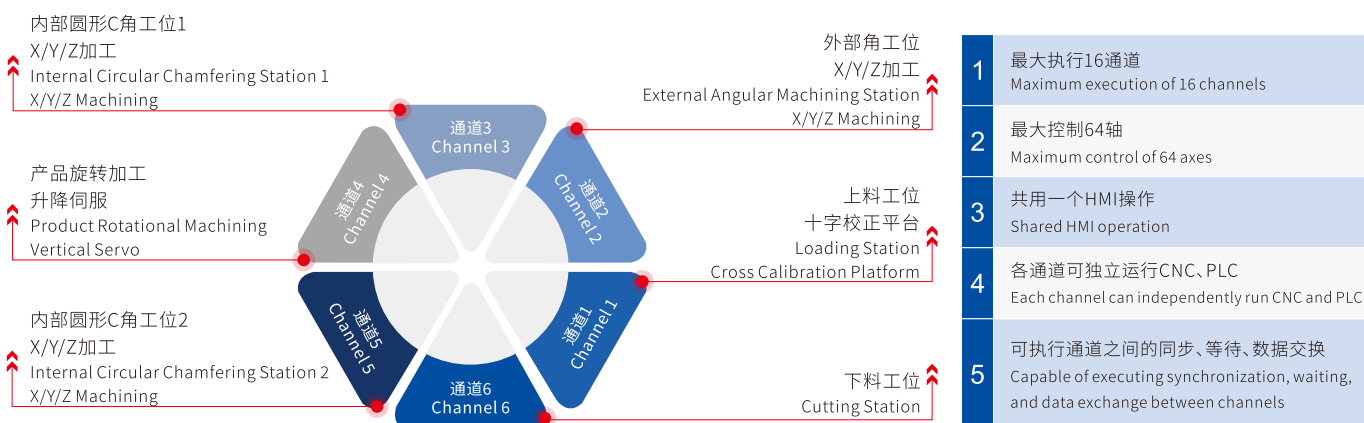
轴向控制方案



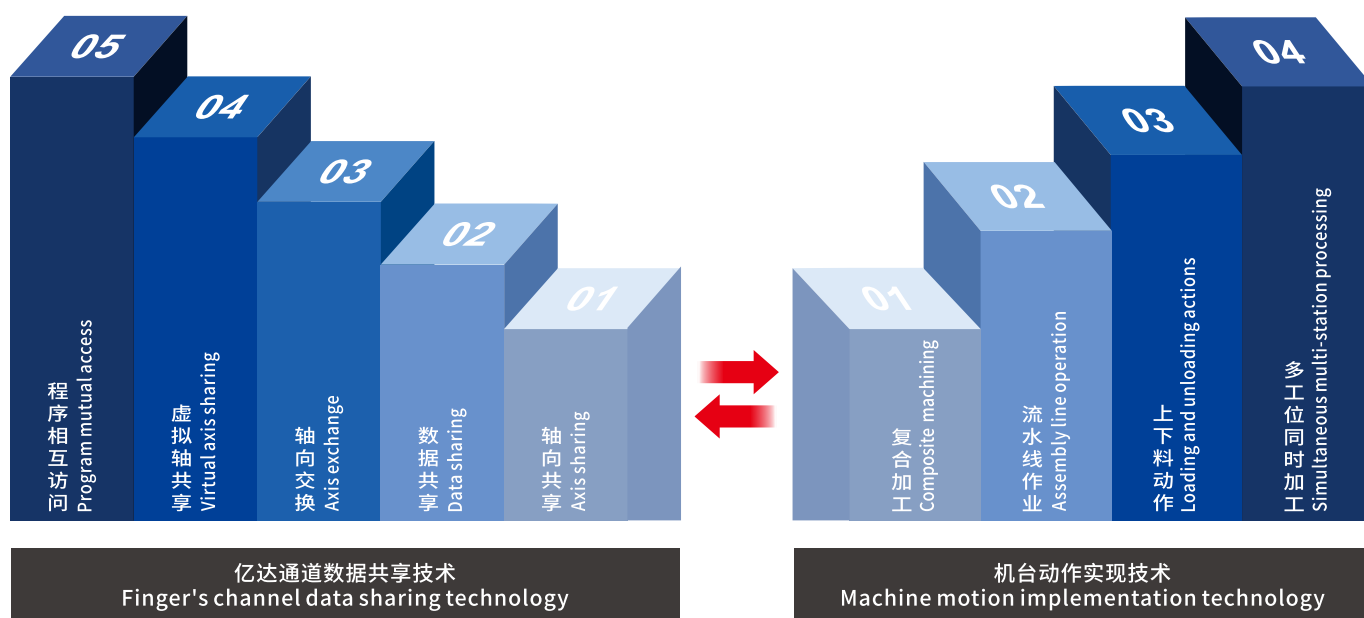
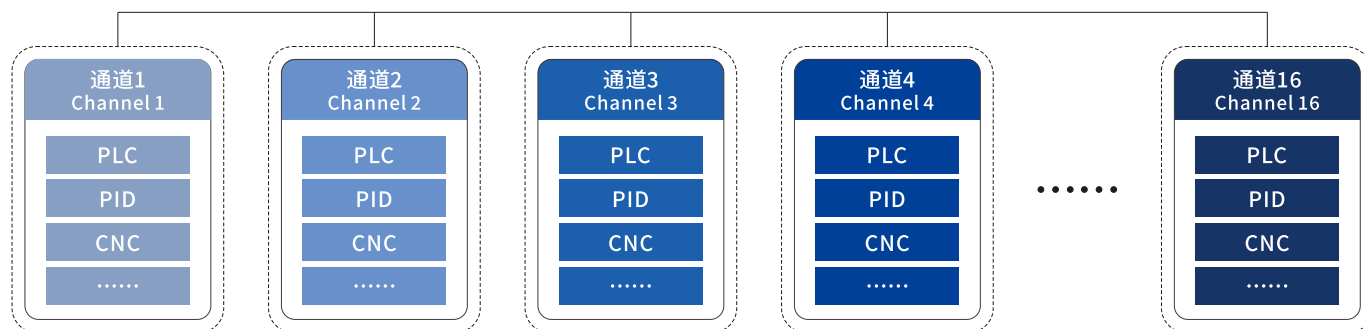
Flexible Compound Machining Functionality

灵活的复合加工功能

多通道组合技术 Multi-Channel Combination Technology



亿达B系列控制器 Finger B Series Controllers



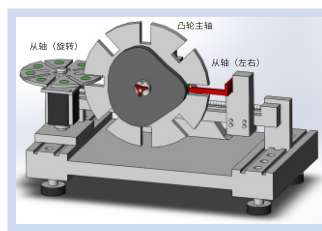
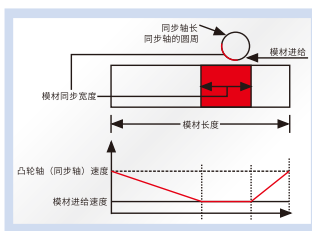
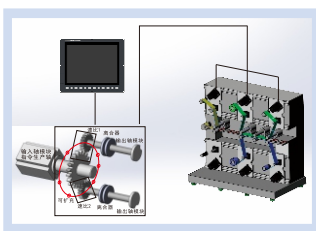
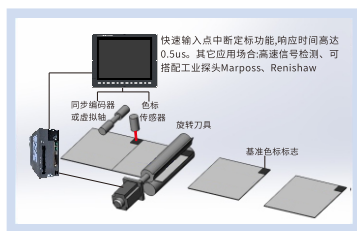
High-speed, High-precision Motion Control Positioning Functionality

高速高精运动控制及定位功能

≡ 同步控制 Synchronous Control

亿达控制器代替传统机械式凸轮，实现多轴同步控制，传动平稳、机械振动小、噪音低、使用寿命长。广泛用于圆刀机、追钻、贴标等行业。

Finger CNC controller replaces traditional mechanical cam systems to achieve multi-axis synchronous control, resulting in smooth transmission, reduced mechanical vibration, low noise, long service life, and is widely used in industries such as rotary cutters, drilling, and labeling.



≡ 绕线机案例 Winding Machine Case

01 操作简单 User-friendly Operation

模块化指令编程方式操作简单。单点测试运行，利于检验程序。

The modular instruction programming method makes operation simple. Single-point test run facilitates program verification.

03 精准张力控制 Precise Tension Control

支持伺服张力，伺服张力含PID调节、主比例，可混合使用。主比例可分为主动式非线性主比例和回馈线性主比例。

It supports servo tension control, including PID adjustment and master proportion, which can be used in combination. The master proportion can be divided into active non-linear master proportion and feedback linear master proportion.

02 安全方便 Safe and Convenient

实时监控轴向负载、剩余线重等，更加安全方便。Real-time monitoring of axial load and remaining wire weight makes it even safer and more convenient.

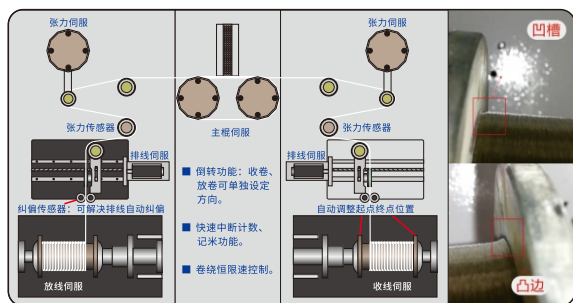


04 断电保持 Power-off Retention

提供专用型系统和伺服驱动，以及UPS模块，实现高速绕线过程中主电源断电，绕线运动按照设定的时间减速到0，避免撞针或撞机。

By providing dedicated systems and servo drives, along with UPS modules, we can achieve power-off retention during high-speed winding processes. In case of a main power failure, the winding motion will decelerate to zero according to the set time, avoiding needle or machine collisions.

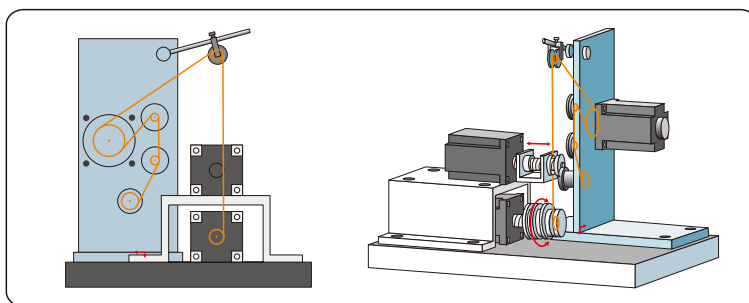
≡ 卷绕控制案例 Winding Control Case



1. 绕线自动补偿功能: 消除工字轮形状不规则或实际形状偏差导致排线两端的凸边或凹槽, 可解决因对边不准而产生的问题。
2. 可提供绕线自动补偿功能。

1. Automatic winding compensation: Eliminates irregular shapes of the pulley or deviations in the actual shape that result in convex or concave edges at both ends of the winding. It can solve the problems caused by inaccurate alignment of the edges.
2. Automatic winding compensation feature is available.

≡ 主动式张力案例 Active Tension Control Case

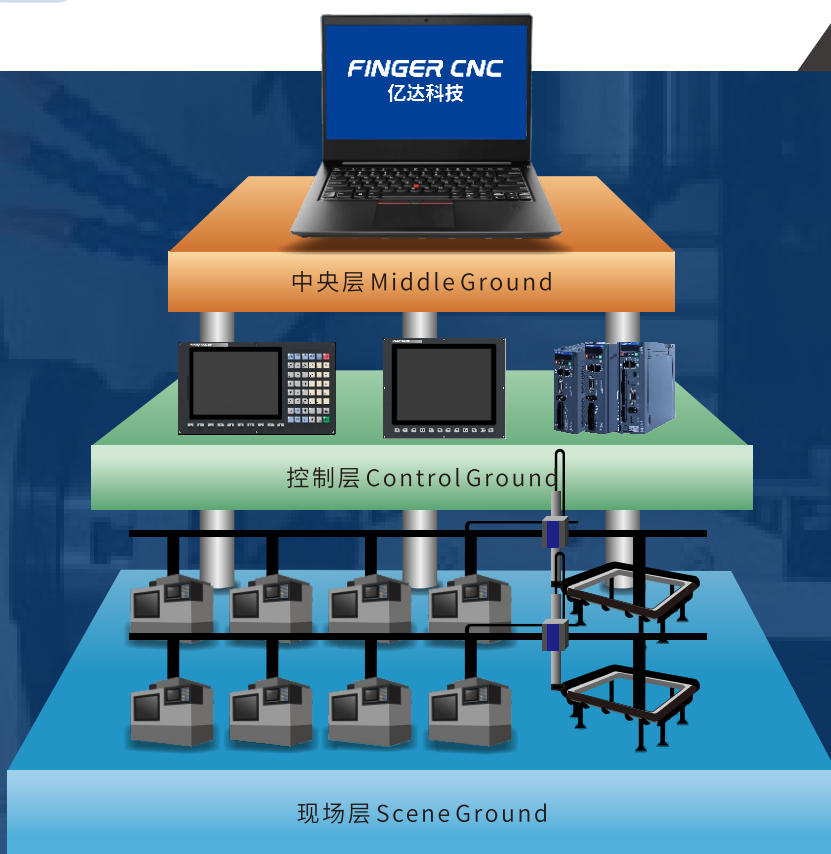


1. 亿达主动式张力控制, 根据张力传感器 (电位器、编码器) 反馈, 对从动轴进行张力控制。
2. 具有高响应、稳定性好, 张力控制精度在2g以内。
3. 灵活的参数, 对机台具有非常高的适应性。

1. Finger active tension control system uses feedback from tension sensors (potentiometers, encoders) to control the tension of the driven shaft.
2. It features high responsiveness, excellent stability, and the tension control precision is within 2g.
3. The system has flexible parameters, making it highly adaptable to different machines.

Production Line-level Application

产线级应用



大规模，超大规模生产线解决方案

Large-scale and super-large-scale production line solutions

支持分布式开发和部署平台，支持标准OPC-UA上层通讯协议，EtherCAT现场工业总线，至多可分布式部署20台大型控制器，集中中央层控制管理。Support for distributed development and deployment platforms, support for standard OPC-UA upper layer communication protocol, EtherCAT field industrial bus, up to 20 large-scale controllers can be deployed in a distributed manner. Centralized central layer control and management.

只需要学习一种开发平台

Only need to learn one development platform

统一开发平台，模块化设计，学习成本低，开发效率高，一次开发多场景部署。Unified development platform, modular design, low learning curve, high development efficiency, and easy deployment across multiple scenarios with a single development.

集成物联网技术

Integration of Internet of Things (IoT) technology

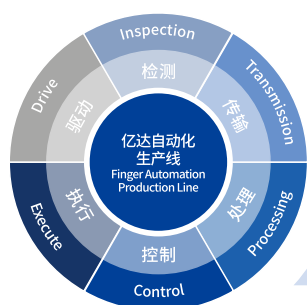
客制化数据收集，外部数据采集，上层数据转发，随时随地通知机床状态的邮件或短信功能。Customized data collection, external data acquisition, upper-level data forwarding, and the ability to send email or SMS notifications about machine tool status anytime, anywhere.

远程监控与服务

Remote monitoring and service

可提供跨平台的客制化远程操作，监控，调试，故障排查等服务，降低服务成本，提高服务效率，解决远程维保问题。

We offer cross-platform custom remote operation, monitoring, debugging, and troubleshooting services, reducing service costs and improving efficiency, resolving remote maintenance issues.



EtherCAT扩展模块
EtherCAT Expansion Modules

OPC-UA扩展
OPC-UA Extension

运动控制
Motion Control

HMI客制化
Customized HMI

分布式部署
Distributed Deployment

中央层控制
Centralized Control

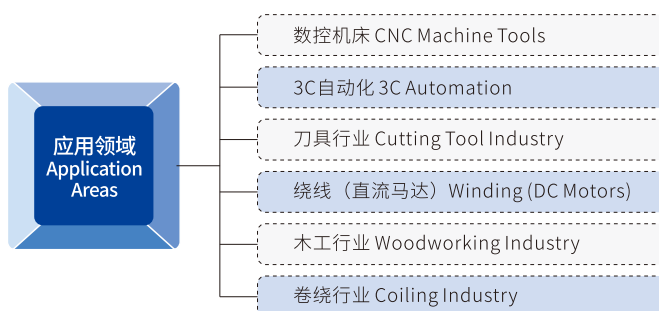
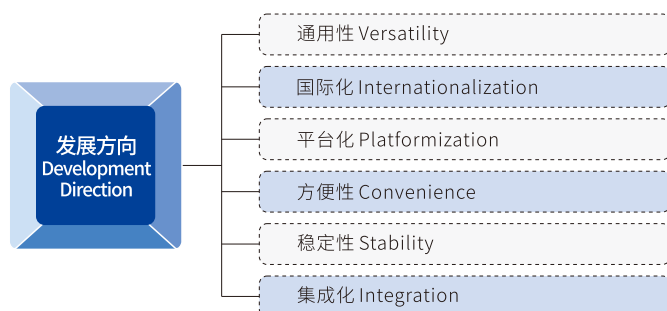
PLC逻辑控制
PLC Logic Control

CAD/CAM辅助
CAD/CAM Assistance

物联网支持
IoT Support

多通道交互
Multi-channel Interaction

≡ 亿达产线级应用 Finger Production Line-Level Application



Diverse Auxiliary Functions

多样化辅助功能

【坐标系功能】 Coordinate System Functionality

01

外部坐标系 External Coordinate System	G50外部坐标系 G50 External Coordinate System						
工件坐标系 Workpiece Coordinate System	多达54组工作坐标 Up to 54 sets of workpiece coordinates	G54	~	G59	~	G54.1 P1	~ G54.1 P48
局部坐标系 Local Coordinate System	G52局部坐标系 G52 Local Coordinate System						
刀具长度补偿 Tool Length Compensation	多达160组刀具 Up to 160 sets of tools	T1	~	T160			
刀具磨耗补偿 Tool Wear Compensation	多达160组刀具磨耗 Up to 160 sets of tool wear compensation	T1	~	T160			

【位置/速度/扭矩控制】 Position/Speed/Torque Control

02

1. 具备位置、速度、扭矩三种控制方式，运动控制过程中或停止状态，都可实现实时切换。

控制方式：

位置控制→扭矩控制→位置控制

速度控制→扭矩控制→速度控制

2. 应用行业：粉末成型机（电感）、焊机等。

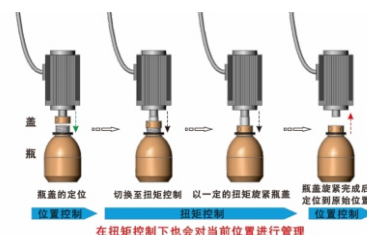
3. It supports three control modes: Position, Speed, and Torque. Real-time switching between these control modes is possible during motion or stop states.

Control Modes:

Position Control → Torque Control → Position Control

Speed Control → Torque Control → Speed Control

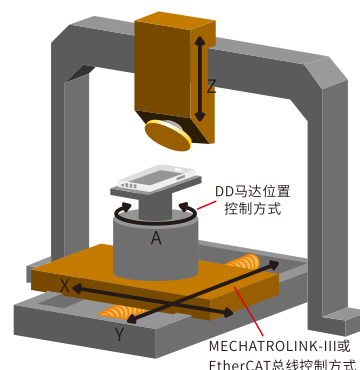
2. Application Industries: Powder Forming Machines (Inductors), Welding Machines, etc.



【总线轴和泛用轴混合使用】 Using a combination of Bus Axes and Generic Axes

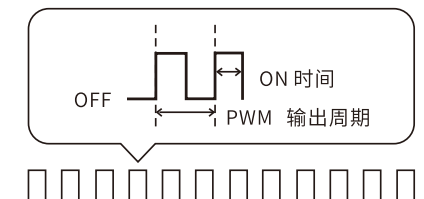
03

- 亿达控制器支持总线轴与泛用轴的混合使用，最大支持64个轴，每个轴都可独立设定为总线轴或泛用轴。
- 客户在马达选型上更灵活，根据实际需求选择，更具性价比。
- 泛用轴控制运算周期可达0.5ms~4ms，可搭配伺服、步进等马达使用，响应速度快，精度高；总线轴具有接线方便，在线修改伺服参数等优势。两者混合搭配使用，满足更多复杂工艺要求。
- Finger CNC controllers support a hybrid usage of Bus Axes and Generic Axes, with a maximum support of 64 axes. Each axis can be independently configured as a Bus Axis or a Generic Axis.
- Customers have greater flexibility in motor selection, allowing them to choose based on their actual needs, making it more cost-effective.
- The generic axis control cycle can range from 0.5ms to 4ms, and it can be paired with servos, steppers, and other motors. It provides fast response and high precision. On the other hand, bus axes offer the advantage of convenient wiring and the ability to modify servo parameters online. By using a combination of both, it can meet the demands of more complex processes.



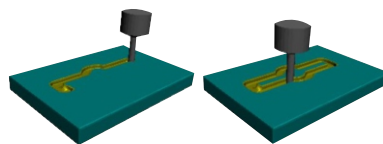
【 PWM控制 】 PWM Control

- 1.支持PWM 5V控制。
- 2.40MHz基频、12Bit分辨率，可应用于能量控制、压力控制、阀开度控制等，结合外部磁栅或光栅（编码器）做闭环控制等。
- 3.主要应用：激光切割能量控制、比例阀控制等。
- 1.Supports PWM 5V control.
- 2.With a 40MHz base frequency and 12-bit resolution, it can be applied to energy control, pressure control, valve opening control, etc., combined with external magnetic scales or grating scales (encoders) for closed-loop control.
- 3.Main applications include laser cutting energy control, proportional valve control, etc.



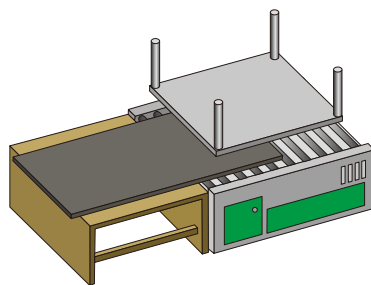
【 3D数控仿真 】 3D CNC Simulation

- 1.应用与模拟数控机床加工过程的虚拟技术，实现对数控机床操作全过程和加工运行环境的虚拟建模。
- 2.提高加工效率，降低加工成本。
- 3.减少调试加工风险，效果形象直观。
- 4.可测量实际设备无法测量的数据。
- 1.Utilizing virtual technology to simulate the entire process of CNC machine tool operations and the virtual modeling of machining environments.
- 2.Improving machining efficiency and reducing production costs.
- 3.Reducing the risk of trial machining and providing a more intuitive and visual effect.
- 4.Capable of measuring data that actual equipment cannot measure.



【 绝对值编码器通讯 】 Absolute Encoder Communication

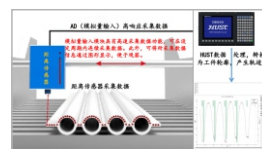
- 1.可通过配置并行或串行功能的绝对编码器，获取绝对位置信息，实现高精度反馈控制。
- 2.支持协议：SSI等。
- 3.应用行业：校平机、折弯机、双面铣（旋转工作台）、自动化流水线设备等。
- 1.By configuring parallel or serial function absolute encoders, it is possible to obtain absolute position information and achieve high-precision feedback control.
- 2.Supported protocols: SSI, etc.
- 3.Application industries: Calibration machines, bending machines, double-sided milling (rotating worktable), and automated assembly line equipment, etc.



【 开放式应用模组 】 Open Application Modules

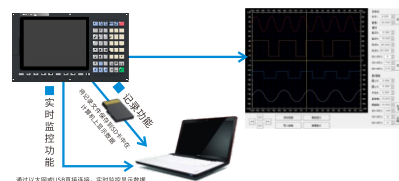
亿达控制器具备可扩充应用软件模组功能，根据客户实际需要，以插件形式扩充需要的应用模组。

Finger CNC controllers have expandable application software module functionality, allowing customers to expand the required application modules in plugin form according to their specific needs.



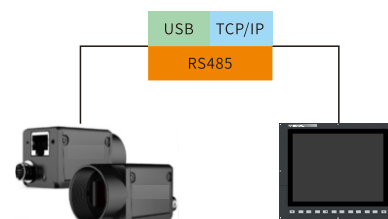
【 数据模拟显示 】 Data Simulation Display

- 1.只需进行参数设定，将变量数据进行收集，保存到系统内存或SD储存卡中，也可通过以太网或USB进行数据保存、分析、确认。
- 2.轻松确认对象变量数据发生的微小变化，便于故障排查、设备的调试。
1. Simply set the parameters to collect variable data and save it to the system memory or SD storage card. Data can also be saved, analyzed, and confirmed through Ethernet or USB.
2. Easily verify minor changes in object variable data, facilitating troubleshooting and equipment debugging.



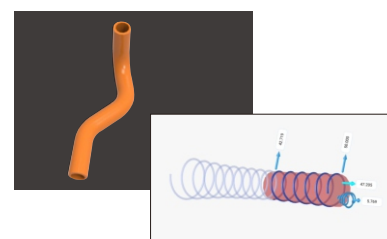
【视觉方案】 Vision Solution

1. 自动追踪工件位置, 实时采集位置信息, 更易实现产业自动化控制。
2. 直接对智能相机连线, 也可采用PC-BASE模式, 实现视觉定位, 飞拍等功能。
3. 连接多台 (8台) 视觉系统, 实现多台相机的图形整合, 数据分析。
1. Automatically tracks the position of the workpiece, captures real-time location information, and facilitates industrial automation control.
2. Directly connects to smart cameras or can be used in PC-BASE mode to achieve functions such as visual positioning and high-speed image capturing.
3. Connects multiple (up to 8) vision systems, enabling integration of images from multiple cameras and data analysis.



【三维图形转换及显示】 3D Graphics Transformation and Display

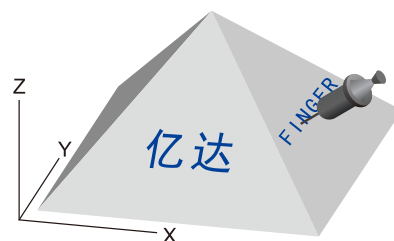
1. 根据不同的需求显示空间图形, 更加形象、直观。
2. 实现3D矢量图与笛卡尔直角坐标系之间的转换。
3. 可通过鼠标进行移动、旋转、放大、缩小等操作, 响应灵敏。
4. 多种视图可供选择, 方便校验查看。
1. Display spatial graphics based on different requirements, making it more visual and intuitive.
2. Achieve conversion between 3D vector graphics and Cartesian coordinate system.
3. Perform operations like moving, rotating, zooming, and scaling through the mouse with quick responsiveness.
4. Multiple viewing options available for convenient verification and examination.



【倾斜平面加工】 Tilted Plane Machining

针对模具或工作台不平导致的工件倾斜, 或者在倾斜平面上直接加工规划路径等。按照平面加工设计程序, 通过参数设置倾斜角度, 即可完成倾斜平面加工, 以方便在倾斜平面上加工平面CNC程序, 解决因机台装配、装夹倾斜带来的加工程序无法共用的问题。

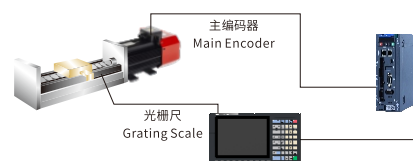
Tilted plane machining is used to address workpiece inclination caused by uneven molds or worktables, or to directly plan tool paths on tilted planes. By designing the program for plane machining and setting the tilt angle as a parameter, the tilted plane machining can be completed. This allows for the easy creation of CNC programs for machining on tilted planes, resolving the issue of non-reusable machining programs due to machine assembly or workpiece clamping inclination.



【全闭环控制】 Closed-loop Control

由系统整合电机编码器回授信号和光栅尺回授信号进行实时补偿, 降低机械间隙的影响, 确保机械终端定位精度。

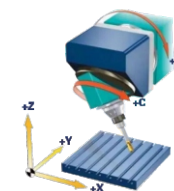
It is a closed-loop control system that integrates real-time compensation using feedback signals from motor encoders and grating scales to reduce the impact of mechanical backlash, ensuring precise positioning of the mechanical end points.



【刀尖点控制 (RTCP) 功能】 Tool Center Point Control (RTCP) Functionality

控制器提供三维刀长补偿, 客户只需在CAM软件上计算工件轮廓坐标点, 系统会自动计算刀尖点位置, 保证刀尖点在加工轮廓曲面上。

The controller offers three-dimensional tool length compensation, where customers only need to calculate the coordinates of the workpiece contour points in CAM software. The system will automatically compute the tool center point position to ensure that the tool center point stays on the machined contour surface.



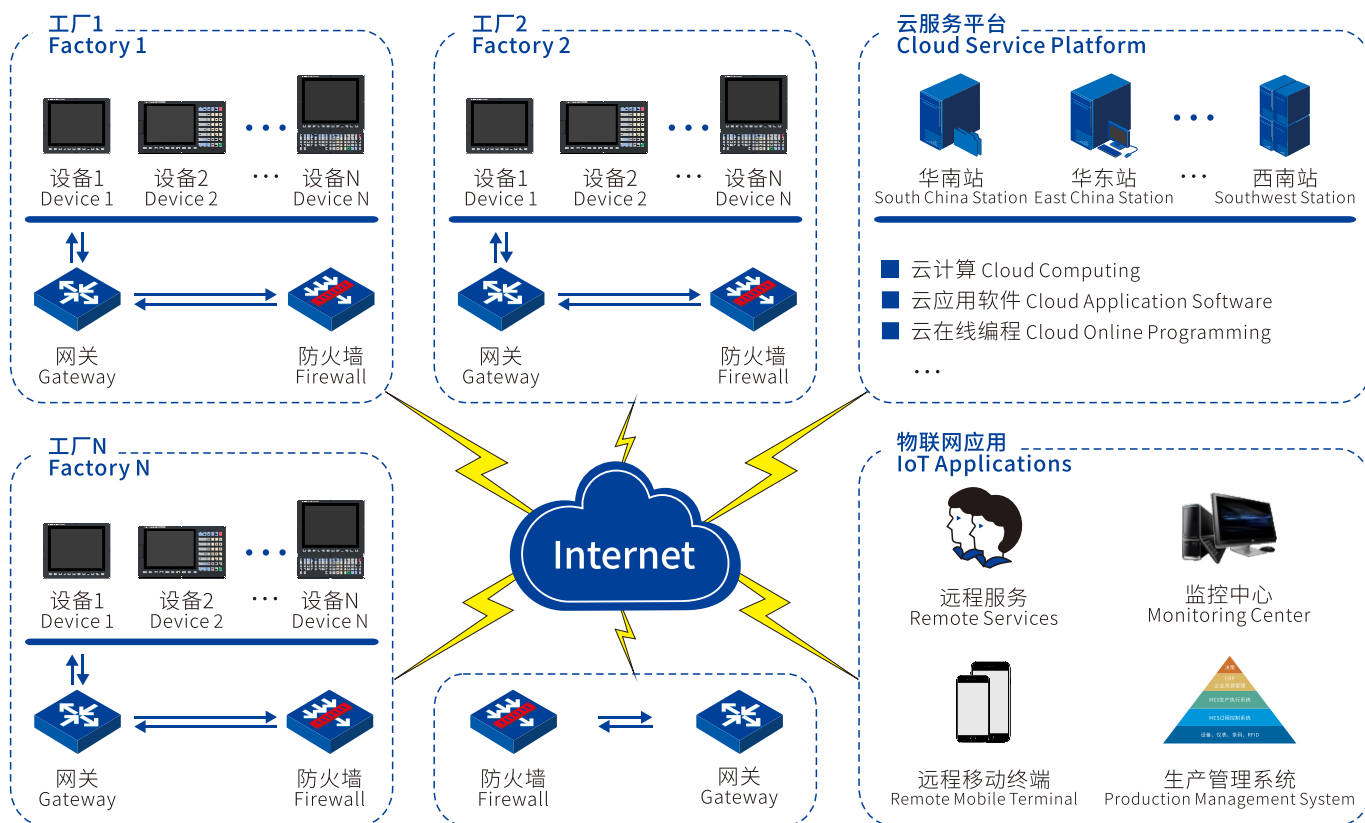
Remote Monitoring Management

远程监控与管理

≡ 远程监控与管理 Remote Monitoring And Management

亿达提供完善的CNC物联网系统，为局域网内现场监控，连线管理，与工厂MES实现互联互通，甚至远程广域网的手机APP监控，远程服务器监控管理，远程售后服务，远程升级，远程故障诊断等提供解决方案。

Finger CNC offers a comprehensive CNC Internet of Things (IoT) system, enabling on-site monitoring and network management within the local area network. It facilitates seamless integration with the factory Manufacturing Execution System (MES) for mutual communication. Additionally, the system supports remote monitoring through a mobile app across wide-area networks. It provides solutions for remote server monitoring and management, remote after-sales service, remote upgrades, remote fault diagnosis, and other functionalities.



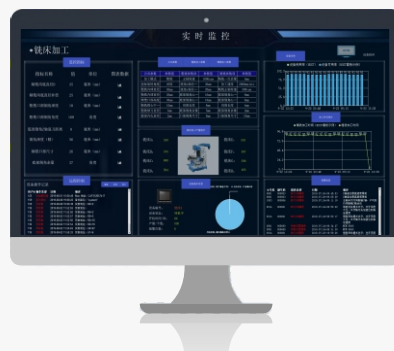
手机APP软件【实时/历史数据显示】

Mobile App Software [Real-time/Historical Data Display]



电脑监控看板【PC数据监控看板】

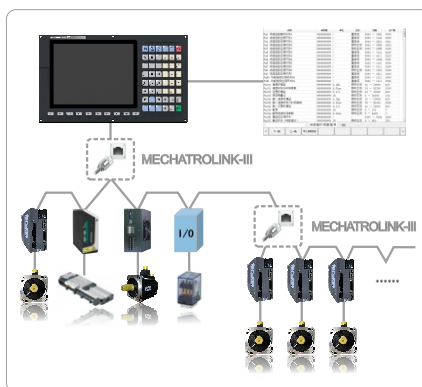
PC Monitoring Dashboard [PC Data Monitoring Dashboard]



≡ 总线控制 Bus Control



安川现场总线协议 Yaskawa Fieldbus Protocol
ASIC实现模式, 更稳定 ASIC Implementation Mode, More Stable
支持完整M-III总线功能 Supports Full M-III Bus Functionality
相比M-II总线, 速度快10倍 10 Times Faster Than M-II Bus





倍福现场总线协议 Beckhoff Fieldbus Protocol
带宽可变技术, 更灵活 Variable Bandwidth Technology, more Flexible
实时性: 通讯周期更短 Real-time Performance: Shorter Communication Cycle
支持Repeat技术, 更安全 Support For Repeat Technology, Enhancing Safety



工业以太网 Industrial Ethernet

采用标准以太网帧: IEEE 802.3, 如需路由可替换为UDP/IP, 不影响通讯。

Utilizes standard Ethernet frames: IEEE 802.3. If routing is required, it can be replaced with UDP/IP without affecting communication.

灵活性 Flexibility

支持各种拓扑结构, 如线型、星型、树型、总线型、可实现多层次拓扑; 可自由组合各种拓扑。

Supports various topologies, such as linear, star, tree, bus, and can achieve multi-level topology; Allows for flexible combinations of different topologies.

安全性 Security

为保证传输安全, (FSOE) Safetyover EtherCAT定了个安全性通讯层协议, 该协议由独立的TÜV认可。

To ensure secure transmission, the Safety over EtherCAT (FSOE) protocol has established a safety communication layer protocol that is independently TÜV certified.

精准同步 Precise Synchronization

通过分布时钟精准校准实现 <1ns的精准同步。

Achieve precise synchronization of <1ns through distributed clock accurate calibration.

速度更快 Faster speed

采用高速以太网, 全双工模式, 传输速率可达100Mbit/s。

Utilizing high-speed Ethernet in full-duplex mode, the transmission rate can reach up to 100Mbit/s.

更多轴数 More axis counts

最小1ms通讯周期, 最大理论轴数可达256个轴。

Minimum 1ms communication cycle, with a maximum theoretical axis count of up to 256 axes.

■ 控制器可连接网络, 通过手机APP远程查看设备信息, 监控实时产量。

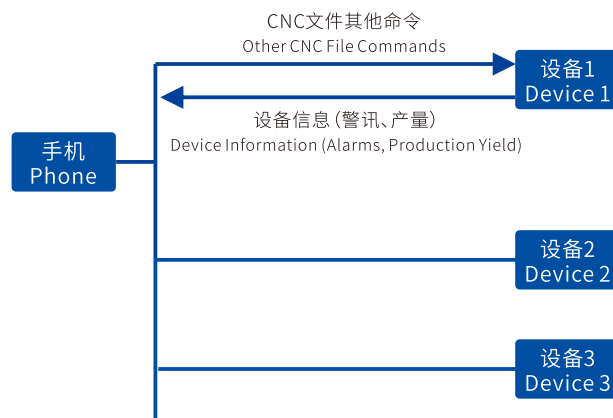
The controller can be connected to the network, allowing users to remotely view device information and monitor real-time production yield through a mobile app.

■ APP应用操作简单直观。

The app application is simple and intuitive to operate.

■ 一台手机可同时监控多台控制器, 实现远程传输文件、远程操作。

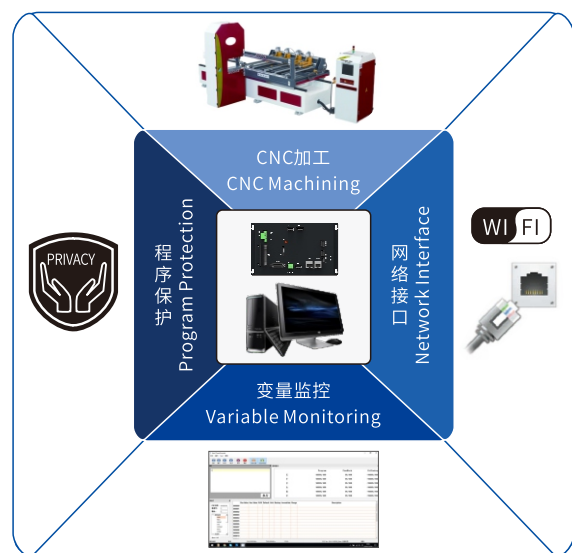
One mobile phone can simultaneously monitor multiple controllers, enabling remote file transfer and operations.



Comprehensive Development Platform

完善的开发平台

≡ PC上位机软件方案 PC SCADA Software Solution



安全性 Security

提供控制器物理IP, 实现软件到控制器绑定, 可以针对加工程序进行加密保护。

Provide controller physical IP to achieve software-to-controller binding, enabling encryption protection for machining programs.

完善性 Comprehensiveness

MDI、DNC、CNC三种程序执行方式选择, 更加灵活方便, 适用于不同方案。

MDI, DNC, and CNC are three program execution modes that provide greater flexibility and convenience, suitable for different scenarios.

便捷性 Convenience

完善的通讯库, 开发者可轻松的实现数据读写和文件传输等操作。

A comprehensive communication library allows developers to easily implement data reading, writing, and file transfer operations.

稳定性 Stability

以WIFI/网线直连方式, 标准TCP协议通讯连接, 实时读取、写入变量或参数, 实时监控控制器状态。

Real-time reading and writing of variables or parameters, as well as monitoring the controller's status, are achieved through a standard TCP communication connection using WIFI or direct connection via Ethernet cable.

≡ CAD/CAM及3D CAD/CAM & 3D

1. CAD/CAM相结合, 编辑与加工一体化;
2. 全流程刀轨仿真, 提前验证刀轨;
3. 零门槛, 上手即用;
4. 支持专业化订制, 摆脱功能冗杂的通用CAD。

1. Integration of CAD/CAM for seamless editing and machining.
2. Full-process tool path simulation to validate tool paths in advance.
3. User-friendly with easy learning curve.
4. Support for professional customization, eliminating unnecessary features of generic CAD software. controller binding, enabling encryption protection for machining programs.

≡ 二维CAD/CAM 2D CAD/CAM

简洁 Concise

- ※ 适合加工平面图形
Suitable for processing 2D graphics

编辑 Edit

- ※ 提供全面的2D图形编辑
Provides comprehensive 2D graphics editing

排料 Nesting

- ※ 一键排料, 减少浪费
One-click nesting to reduce waste

≡ 三维CAD/CAM 3D CAD/CAM

直观 Intuitive

- ※ 三维显示, 所见即所得
3D visualization, what you see is what you get

标注 Annotation

- ※ 提供尺寸标注, 快速定位图元
Provides dimension annotation and quick positioning of graphics elements

干涉 Interference

- ※ 刀具夹具实体显示, 避免干涉
Tool and fixture solid display to avoid interference

≡ 加工仿真 Machining Simulation

预览 Preview

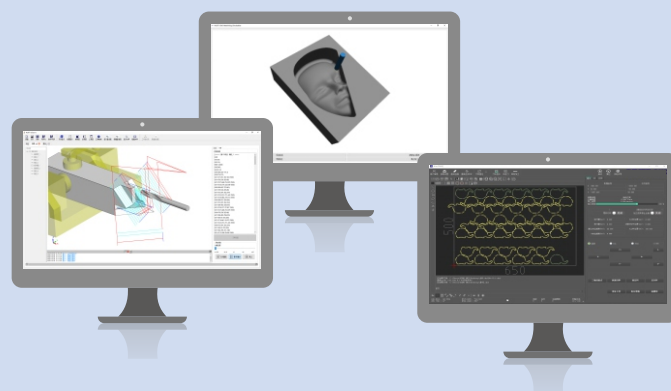
- ※ 提前预览, 掌控加工全过程
Advance preview, full control of the machining process

安全 Safety

- ※ 预知碰撞, 提高调试容错性
Collision detection in advance, improve debugging fault tolerance

高效 Efficiency

- ※ 节省加工时间, 提高调试效率
Save processing time and improve debugging efficiency



开放式平台

开放式宏程序设计-MACRO Open Macro Program Design - MACRO

兼容标准的CNC MACRO计算, 并开发指令重定义, 小数点重定义, 使非标运动客制化开发更方便。
Compatible with standard CNC MACRO calculations and developed instruction redefinition and decimal point redefinition, making non-standard motion customization development more convenient.
PREFETCH和REALTIME指令混合编程模式, 完美解决CNC MACRO不能实时化执行的缺点。
PREFETCH and REALTIME instruction hybrid programming mode perfectly solve the drawback of CNC MACRO's inability to execute in real-time.

		范例 Example
#*n	n为正整数 n is a positive integer	#*100
#*表达式 #* Expression	表达式为: Expression:	
	(1)数字 (1) Number	#*[100]
	(2)变量 (2) Variable	#*[#10]
	(3)运算式 (3) Arithmetic Expression	#*[#*1#2]
	(4)函数 (4) Function	#*[sin(#2)]

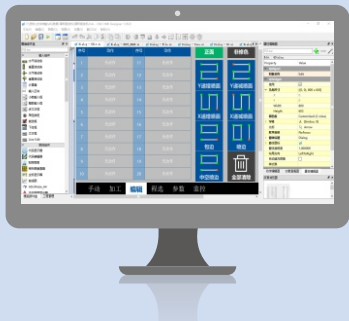
例程: 求1-100间奇数的和
Sample code: Calculate the sum of odd numbers between 1 and 100

```
O0095
#1=0;
#2=1;
WHILE[#2 LE 100]DO1;
#1=#1+#2;
#2=#2+2;
END 1;
M30;
```

解的初始值Initial value of the solution
加数的初始值Initial value of the addend
加数小于100时就执行循环体
Execute the loop body when the addend is less than 100
计算解Calculate the solution
下一个奇数The next odd number
跳转到循环体Jump to the loop body
程序结束Program ends

※ 注: *表示 “”、“v”、“V”、“u”、“U”、“s”、“S”、“r”、“R”、“m”、“M”、“b”、“B”、“c”、“C”中的任何一个字符。比如: #1、#v1、#V1、#u1、#U1、#s1、#S1、#r1、#R1、#m1、#M1、#b1、#B1、#c1、#C1
※ Note: * represents any character from “”, “v”, “V”, “u”, “U”, “s”, “S”, “r”, “R”, “m”, “M”, “b”, “B”, “c”, “C”. For example: #1, #v1, #V1, #u1, #U1, #s1, #S1, #r1, #R1, #m1, #M1, #b1, #B1, #c1, #C1.

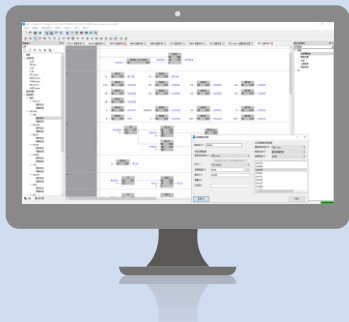
开放式画面编辑软件-HMI Open-ended Screen Editor Software-HMI



- ※ 性能卓越 Outstanding Performance
扩充人机属性, 模块化插件设计
Expanded human-machine attributes, modular plug-in design
- ※ 高级技术 Advanced Technology
内嵌宏指令编辑, 实现复杂人机逻辑
Embedded macro instruction editing, realizing complex HMI logic
- ※ 升级便捷 Convenient Upgrades
可拓展插件技术令组态升级更方便
Extensible plugin technology makes configuration upgrades more convenient
- ※ 操作统一 Unified Operation
HMI、CNC、PLC同一平台执行
Execution on the same platform for HMI, CNC, and PLC
- ※ 开发便捷 Convenient Development
CNC、PLC、系统内嵌模块
Embedded modules for CNC and PLC systems
- ※ 客制化设计 Customized Design
为客户提供简单、实用的界面开发平台
Providing customers with a simple and practical interface development platform

简单易用编辑软件-PLC Easy to use Editing Software-PLC

- ※ 操作方便 User-friendly Operation
编辑方式简单易用
Easy and user-friendly editing methods
- ※ 功能齐全 Fully-featured
支持梯形图、ST语言、C语言开发
Supports ladder diagram, ST language, and C language development
- ※ 模块化 Modularity
支持封装与调用自定义模块
Supports encapsulation and invocation of custom modules
- ※ 运行多样化 Versatility in Operation
支持多通道独立PLC运行
Supports independent PLC operation in multiple channels
- ※ 速度提升 Speed Improvement
提供系统功能快速调用接口
Provide quick access interfaces for system functions
- ※ 灵活运用 Flexible Application
支持调用系统内部模块
Support calling internal system modules



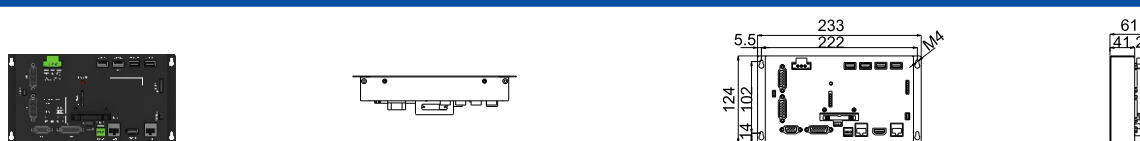
Appearance Display Installation Dimensions

外观展示及安装尺寸

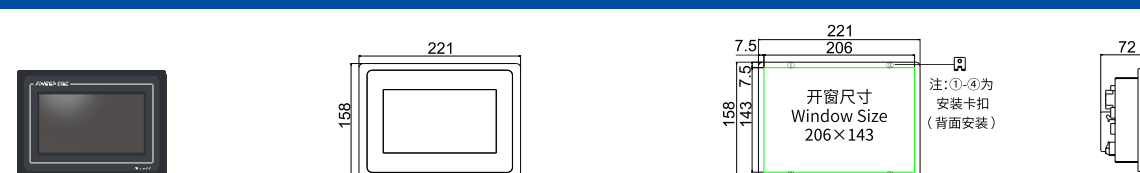
▶ 产品型号: NC-X0-B-N (运动控制器) Product Model: NC-X0-B-N (Motion Controller)



▶ 产品型号: NC-X0-B-M (运动控制器) Product Model: NC-X0-B-M (Motion Controller)



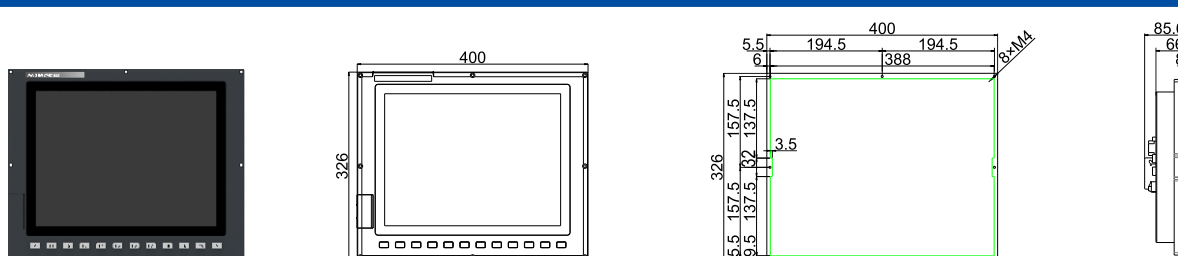
▶ 产品型号: NC-X1 (7寸宽屏) Product Model: NC-X1 (7-inch Wide Screen)



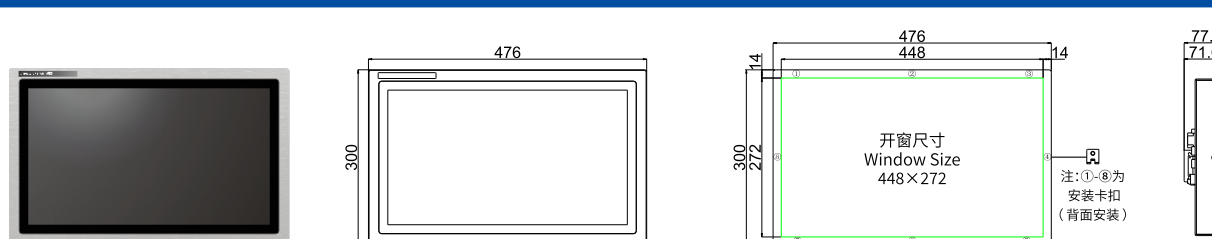
▶ 产品型号: NC-X3 (10.1寸宽屏) Product Model: NC-X3 (10.1-inch Wide Screen)



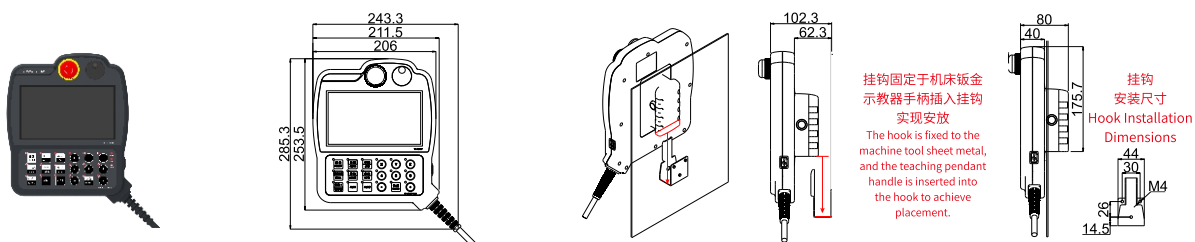
▶ 产品型号: NC-X5 (15寸运动触控一体机) Product Model: NC-X5 (15-inch Motion Touch Integrated Machine)



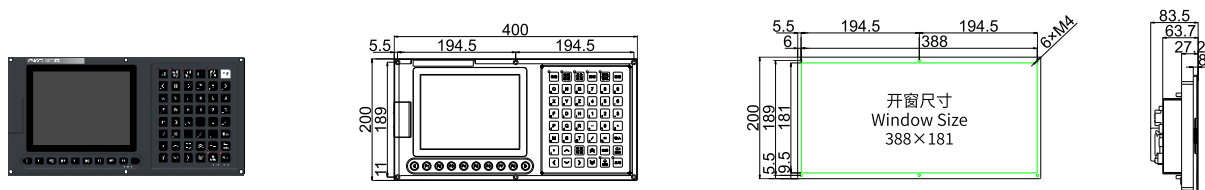
▶ 产品型号: NC-X8 (19寸运动触控一体机) Product Model: NC-X8 (19-inch Motion Touch Integrated Machine)



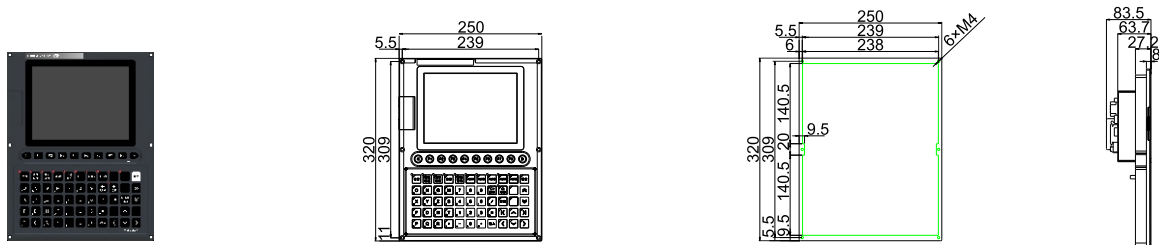
► 产品型号: TP-X1-B-N (7寸机械手控制器) Product Model: TP-X1-B-N (7-inch Robot Controller)



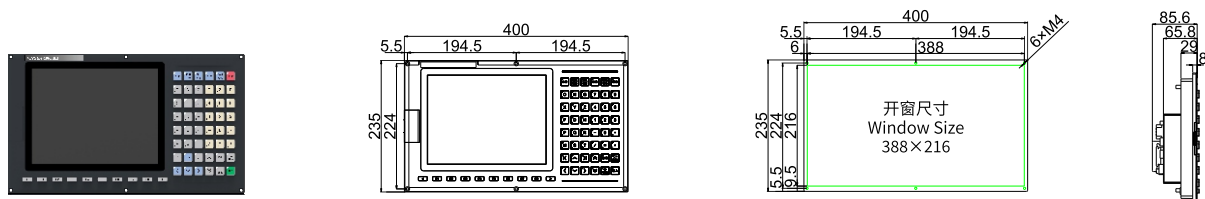
► 产品型号: B0x-NX2A1H (8寸横式) Product Model: B0x-NX2A1H (8-inch Horizontal)



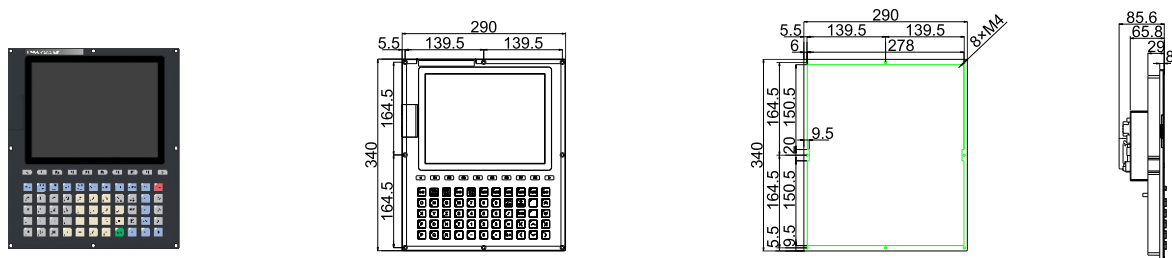
► 产品型号: B0x-NX2A1V (8寸立式) Product Model: B0x-NX2A1V (8-inch Vertical)



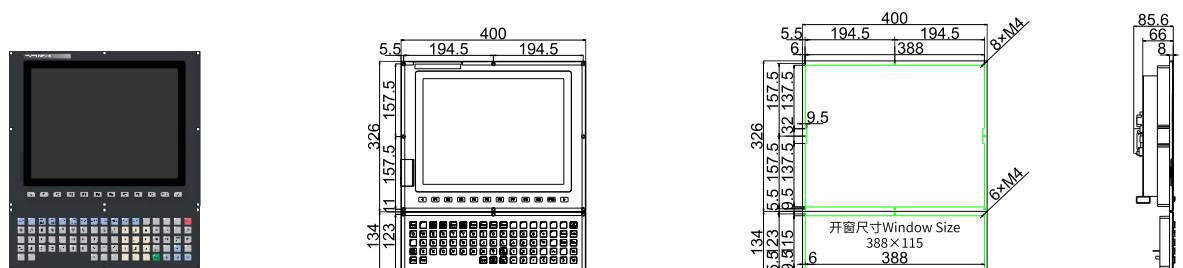
► 产品型号: B0x-NX4A1H (10.4寸横式) Product Model: B0x-NX4A1H (10.4-inch Horizontal)



► 产品型号: B0x-NX4A1V (10.4寸立式) Product Model: B0x-NX4A1V (10.4-inch Vertical)



► 产品型号: B0x-NX5A1V (15寸立式) Product Model: B0x-NX5A1V (15-inch Vertical)



Product Naming Rules and Accessory Specifications

产品命名规则及配件规格

产品料号 Product Part Number

B¹ **0x**² - **T**³ **X3**⁴ **A**⁵ **H**⁶ - **T**⁷ **200**⁸ - **F0**⁹ **A**¹⁰ **A1**¹¹ **P0**¹²

1	产品系列 Product Series	B: B系列 B: B Series		2	通讯方式 Communication Method	00: NO 00: NO	01: EtherCAT 01: EtherCAT	02: Mechatrolink-III 02: Mechatrolink-III	...	05: 移动式EtherCAT控制器 05: Mobile EtherCAT Controller			
3	触控标示 Touch Control Indication	N: 无触控 N: No Touch Control		T: 电阻屏 T: Resistive Touch Screen		C: 电容屏 C: Capacitive Touch Screen							
4	系统屏幕尺寸 System Screen Size	X0: 无屏幕 X0: No Screen	X1: 7寸 X1: 7-inch Screen	X2: 8寸 X2: 8-inch Screen	X3: 10.1寸 X3: 10.1-inch Screen	X4: 10.4寸 X4: 10.4-inch Screen	X5: 15寸 X5: 15-inch Screen	X6: 15.6寸 X6: 15.6-inch Screen	X7: 17寸 X7: 17-inch Screen	X8: 19寸 X8: 19-inch Screen	X9: 21.5寸 X9: 21.5-inch Screen		
5	系统款式 System Style	A: A系列塑胶面板 A: A Series Plastic Panel		B: A系列铁壳 B: A Series Metal Enclosure		C: C系列铝合金面板 C: C Series Aluminum Alloy Panel		A1: B系列塑胶面板 A1: B Series Plastic Panel		B1: B系列铁壳 B1: B Series Metal Enclosure	C1: B系列铝合金面板 C1: B Series Aluminum Alloy Panel		
		A2: B系列塑胶面板(车铣新面膜) A2: B Series Plastic Panel (Lathe-Mill New Faceplate)			B2: B系列铁壳(车铣新面膜) B2: B Series Iron Shell (Lathe-Mill New Faceplate)			C2: B系列铝合金面板(车铣新面膜) C2: B Series Aluminum Alloy Panel (Lathe-Mill New Faceplate)					
6	系统按键样式 System Button Style	N: 无按键 N: No Buttons		H: 横式 H: Horizontal	V: 立式 V: Vertical	C: 铁箱 C: Iron Enclosure	7	行业代码 Industry Code	T: 车床 T: Lathe	M: 铣床 M: Milling	W: 木工 W: Woodworking	SP: 弹簧机 SP: Spring Machine	ST: 紧凑型车床 ST: Compact Lathe
8	行业子代码 Industry Subcode	T2: 200车床 T2: 200 Lathe		M2: 200铣床 M2: 200 Milling Machine	SP1: 弹簧机 SP1: Spring Machine	ST4: 紧凑型400车床 ST4: Compact 400 Lathe	9	泛用轴数量 General Axis Quantity	F0: 无泛用轴(ECAT) F0: No General-Purpose Axis (ECAT)		F1: F2: 含2个泛用轴(Mill) F1: F2: Includes 2 General-Purpose Axes (Mill)		
10	通道数 Number of Channels	A: 1通道 A: 1-Channel		B: 2通道 B: 2-Channel	C: 3通道 C: 3-Channel	D: 4通道 D: 4-Channel	E: 5通道 E: 5-Channel	F: 6通道 F: 6-Channel					
		G: 7通道 G: 7-Channel		H: 8通道 H: 8-Channel	L: 9通道 L: 9-Channel	J: 10通道 J: 10-Channel	K: 11通道 K: 11-Channel	... Z: 26通道 ... Z: 26-Channel					
11	轴数 Number of Axes	A1: 1轴 A1: 1-Axes		A2: 2轴 A2: 2-Axes	...	B0: 10轴 B0: 10-Axes	B1: 11轴 B1: 11-Axes	C0: 20轴 C0: 20-Axes					
		C1: 21轴 C1: 21-Axes		M0: 120轴 M0: 120-Axes	M1: 121轴 M1: 121-Axes	...	M8: 128轴 M8: 128-Axes	...					
12	辅助面板信息 Auxiliary Panel Information	P0: 不带辅助面板 P0: Without Auxiliary Panel			P1: 带辅助面板 P1: With Auxiliary Panel								

▶▶产品型号 Product Model

NC - X1

【行业代码】NC:自动化 TP:工业示教器
[Industry Codes] NC: Automation TP: Industrial Teaching Pendant

【屏幕大小】X0:无屏幕 X1:7寸 X2:8寸 X3:10.1寸 X4:10.4寸 X5:15寸 X6:15.6寸 X7:17寸 X8:19寸 X9:21.5寸
[Screen Size] X0: No screen X1: 7 inch X2: 8 inch X3: 10.1 inch X4: 10.4 inch X5: 15 inch X6: 15.6 inch X7: 17 inch X8: 19 inch

产品型号 Product Model

NC - X1

【行业代码】NC: 自动化 TP: 工业示教器
[Industry Codes] NC: Automation TP: Industrial Teaching Pendant

【屏幕大小】X0: 无屏幕 X1: 7寸 X2: 8寸 X3: 10.1寸 X4: 10.4寸
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[Screen Size] X0: No screen X1: 7 inch X2: 8 inch X3: 10.1 inch
X4: 10.4 inch X5: 15 inch X6: 15.6 inch X7: 17 inch
X8: 19 inch

EtherCAT/16IN_16OUT/IO模块

EtherCAT/16IN_16OUT/IO Module



ESC-IO16

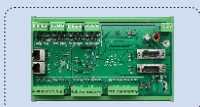
※ 长105*宽122*高55(mm)
※ (L)105mm*(W)122mm*(H)55mm

※ DC24V 电源输入(5.08 PITCH)
※ 提供电源反接保护
※ 16 INPUT / 16 OUTPUT
※ 单点最大输出2A
※ 可拆卸式欧规5.08 PITCH接线端子
※ INPUT(8PIN)/OUTPUT(4PIN) 防呆设计

※ DC24V power supply input (5.08 PITCH)
※ Provides reverse power protection
※ 16 INPUT / 16 OUTPUT
※ Single-point maximum output of 2A
※ Removable European standard 5.08 PITCH terminal block
※ INPUT (8PIN) / OUTPUT (4PIN) foolproof design

EtherCAT 24点输入/16点输出(晶体管)/2轴控制 IO运动模块

EtherCAT 24-point input / 16-point output (transistor) / 2-axis control IO Motion Module



ESC-I24O16A2

※ 长136*宽124*高41(mm)
※ (L)136mm*(W)124mm*(H)41mm

※ DC24V 电源输入(5.08 PITCH)
※ 提供电源反接保护
※ 24 INPUT / 16 OUTPUT
※ 2轴泛用型轴向控制
※ 支持DC时钟同步 / 支持Repeat
※ 单点最大输出2A
※ 可拆卸式欧规5.08 PITCH接线端子
※ INPUT(8PIN)/OUTPUT(4PIN) 防呆设计

※ DC24V power input (5.08 PITCH)
※ Provides reverse power protection
※ 24 INPUT / 16 OUTPUT
※ 2-axis general-purpose axis control
※ Supports DC clock synchronization / Supports Repeat
※ Single-point maximum output of 2A
※ Removable European-style 5.08 PITCH terminal block
※ INPUT (8PIN) / OUTPUT (4PIN) foolproof design

EtherCAT/32IN_32OUT/IO模块

EtherCAT/32IN_32OUT/IO Module



ESC-IO32

※ 长210*宽122*高55(mm)
※ (L)210mm*(W)122mm*(H)55mm

※ DC24V 电源输入(5.08 PITCH)
※ 提供电源反接保护
※ 32 INPUT / 32 OUTPUT
※ 单点最大输出2A
※ 可拆卸式欧规5.08 PITCH接线端子
※ INPUT(8PIN)/OUTPUT(4PIN) 防呆设计

※ DC24V power supply input (5.08 PITCH)
※ Provides reverse power protection
※ 32 INPUT / 32 OUTPUT
※ Single-point maximum output of 2A
※ Removable European standard 5.08 PITCH terminal block
※ INPUT (8PIN) / OUTPUT (4PIN) foolproof design

EtherCAT 6轴控制(脉冲/模拟量)运动模块

EtherCAT 6-axis control (Pulse/Analog) Motion Module



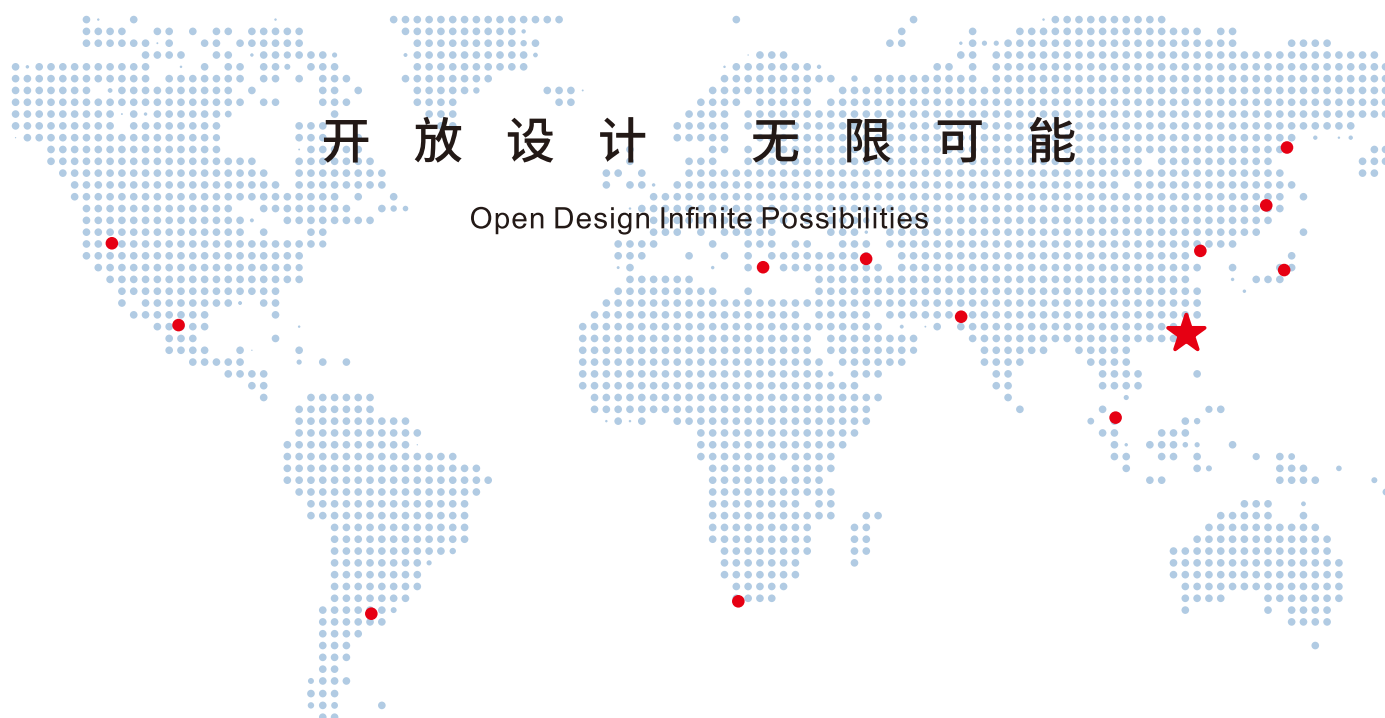
ESC-AXES6

※ 长153*宽121*高42(mm)
※ (L)153mm*(W)121mm*(H)42mm

※ DC24V 电源输入(5.08 PITCH)
※ 提供电源反接保护
※ 6轴控制
※ 输出点光耦隔离, FET输出, 单点最大1A
持续输出(瞬间最大允许9A)
※ 单点最大输出100mA
※ 可拆卸式欧规5.08 PITCH接线端子

※ DC24V power input (5.08 PITCH)
※ Provides reverse power protection
※ 6-Axis control
※ Output points optically isolated, FET output, maximum continuous output of 1A per point (maximum instantaneous allowable 9A)
※ Single-point maximum output of 100mA
※ Removable European-style 5.08 PITCH terminal block

参数名称 Parameter Name	运动触控一体机 Touch Integrated Machine
最大控制轴数 Maximum Control Axis Count	64轴 (脉冲/模拟量/MECHATROLINK-II/EtherCAT总线/PWM) 64 Axes (Pulse/Analog/MECHATROLINK-II/EtherCAT Bus/PWM)
最大主轴数 Maximum Spindle Count	10组 (模拟量开环、闭环/脉冲命令/MECHATROLINK-III/EtherCAT总线) 10 Sets (Analog Open Loop, Closed Loop/Pulse Command/MECHATROLINK-III/EtherCAT Bus)
最小运算周期 Minimum Operation Cycle	0.5ms 0.5ms
总线功能 Bus Functionality	支持MECHATROLINK-III/EtherCAT总线协议 Supports MECHATROLINK-III/EtherCAT Bus Protocol
控制方式 Control Mode	位置控制、速度控制(频宽可调)、扭矩控制 Position Control, Speed Control (Adjustable Bandwidth), Torque Control
屏幕尺寸 Screen Size	7寸/8寸/10.1寸/10.4寸/15寸/19寸 7 inches / 8 inches / 10.1 inches / 10.4 inches / 15 inches / 19 inches
电子凸轮、PID控制 Electronic Cam, PID Control	● (凸轮曲线数量不受限制, 每通道PID收放卷各16组) ● (Unlimited number of cam curves, 16 sets of PID feedforward/feedback control for each channel)
最大输入/输出 Maximum Input/Output	256/256 (1ms 64IN/OUT, 4ms 192 IN/OUT) 256/256 (1ms 64IN/OUT, 4ms 192 IN/OUT)
MES模块 MES Module	● (仅支持16BitMODBUS标准协议、自由协议、通讯库LIB模式) ● (Only 16Bit MODBUS standard protocol, custom protocol, and communication library (LIB) mode)
通讯协议 (主站、从站) Communication Protocol (Master, Slave)	MODBUS、TCP/IP、FTP MODBUS、TCP/IP、FTP
通讯协议接口 Communication Protocol Interface	USB 3.0*2/USB 2.0*2 USB 3.0 * 2 / USB 2.0 * 2
加减速类型 Acceleration/Deceleration Type	直线型、S型、Jerk Linear Type, S-Type, Jerk
AD/DA AD/DA	外扩模组板 (可扩展32组) 14BIT Expansion Module Board (Expandable up to 32 groups) 14-BIT
快速输入信号定长运动 Fixed-Length Motion with Rapid Input Signal	● (高精度响应周期0.5us误差) ● (Highly precise response cycle with an error of 0.5 microseconds)
PWM输出 PWM Output	5000kbps 5000kbps
串行绝对值编码器 Serial Absolute Encoder	SSI (6组, 最大可扩充至12组) SSI (6 Sets, Expandable up to 12 Sets)
DXF矢量图形导入 DXF Vector Graphics Import	●
网络服务器 Network Server	● (多从站功能) ● (Multi-slave Functionality)
WIFI通讯 WIFI Communication	● (选配) ● (Optional)
储存容量 Storage Capacity	8GB 8GB
内存 Memory	2GB 2GB
触摸功能 Touch Functionality	标配 Standard Configuration
鼠标、键盘 Mouse, Keyboard	●



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