# Industrial Edge Server & Controller

Enabling Software Defined Control

# Company Profile

Kyland Technology Co., Ltd. is focusing on the research and implementation of industrial control networking total solutions. We are a leading Chinese company of industrial networking technology innovation and exploration. Our mission is to build the next generation industrial control ecosystem based on thernet connectivity.

Kyland's primary R&D directions are industrial Ethernet communication technologies, IP-based industrial fieldbus technologies, network-based field controller technologies, cloud-based industrial controlling server technologies, network-based controlling precise time/clock technologies, control message communication security technologies.

Kyland has been involved in the 3 international standards for industrial automation: IEC61158, IEC62439, IEEEC37.238, and the Chinese national standard GBT 30094. With the well-known test and certificates such as KEMA, CE/FCC, UL508, ATEX/IECEx, Class1 Div.2, DNV...etc., our products have been deployes worldwide, and have been proven to meet the requirements of rigorous environments like nuclear power plants, substations, oil & gas fields, railway & public transportation, ITS, marine and military.

Customer Service and Quality Assurance are also the main focus of Kyland. We offer professional presales & post sales technical support and trainings for our clients. Moreover, our products are warranted for 5 years and free of replacement within 1 year. Only the material costs will be charged in the case of warranty expiry.



Intewell OS has been tested and certified by TÜV SÜD on 2022-01-28 for Safety and Security Parameters: SIL 3 IEC61508-3, SIL 4 EN 50128, ASIL DISQ 26262.

# INDUSTRIAL EDGE SERVER & CONTROLLER

# Industrial Edge Server

# NewPre3101/3102 Modular Edge Server

## High Reliability Industrial Design

- Heat-dissipation profiles special design, high-quality heat conducting materials, no fan design, -40~70°C wide temperature industrial design
- Meet EMC class 3 and IP40 protection level, meet harsh industrial application scenario requirements

## Powerful Extension Design

- Intel high-performance nine-generation Core processor, support Xeon E series processors
- Support large computing power independent graphics card, maximum support 300w, maximum support graphics card 300mm length, compatible with most low, medium and high grades graphics cards
- Rich I/O interface: 4x100/1000BASE-T(X), RJ45, HDMI, VGA, DP, 4xUSB3.1, 4xUSB3.0, 4xRS232/422/485, 1xCAN, 8 x DI, 8xDO
- Provide 16xPCIe and 1xPCIe expansion slots, support 4G/5G/WIFI extensions, meet multiple connection requirements.

## Industrial Control

- Pre-installed graphical control development platform MaVIEW, support IEC61131-3, C++ and MatLab/Simulink
- High real-time, support motion control, support CANopen and Modbus RTU, Modbus TCP, EtherCAT, EtherNet/IP, Profinet, AUTBUS, support custom serial port/CAN/TCP protocol, MQTT and other common industrial communication protocols.

## Visual Analysis

- Support 4 x Industrial GigE Vision video
- Maximum support 624 Tops computing for AI calculation
- Support deep integration of vision analysis and control services, as a standard function library, the machine vision algorithm is unified with the control development platform, which effectively ensures the real-time and stability of data communication

## Edge Intelligence

- Support data acquisition, data storage, model analysis and other big data processing, compatible with third-party applications based on Windows/Linux, support edge micro-cloud, edge cloud collaboration

## Specifications

| | | NewPre3101 | NewPre3102 |
|---|---|---|---|
| **Main System** | CPU | Intel CORE i7-9700TE | |
| | Memory | Dual slot design, maximum support 64GB DDR4 | |
| | Storage | Standard configuration 256GB mSATA<br>1 2.5 inch pullable hard disk box, 1 NVMePCIE hard slot. | |
| | Onboard GPU | Standard configuration onboard Intel® UHD Graphics 630 | |
| **Interface** | Network interface | 4x100/1000BASE-T(X), RJ45. Support PCIe module extension | |
| | USB | 4xUSB3.1, 4 x USB3.0. Support PCIe module extension | |
| | Serial port | 4xDB9, RS-232/422/485 can be configured in BIOS, isolation. Support PCIe module extension | |
| | CAN | 1xCAN. Support PCIe module extension | |
| | I/O | 8xDI, 8xDO, isolation. Support PCIe module extension | |
| | Display interface | Onboard 1xHDMI, 1xVGA, 1xmini DP | |
| | Audio interface | 1xMic in, 1xLine out | |
| **GPU Extension** | Extension slot | No | PCIex16*1, PCIex4*1 |
| | Graphics card | No | Max length 300mm, support max 300W |
| **Power Supply** | Input voltage | 12VDC(9~18VDC), Independent power supply for graphics card(12VDC) | |
| | Terminal block | 5-PIN 5.08 mm spacing plug-in terminal block | |
| | Consumption | <80W, Independent power supply for graphics card | |
| | Overload, reverse, redundancy | Support | |
| | Reverse protection | Support | |
| | Redundancy protection | Support | |
| | Isolation | Nonsupport | |
| **Mechanical Structure** | Enclosure | Metal | |
| | Heat dissipation | Natural cooling, no fan | Main machine without fan, graphics card with fan cooling |
| | IP class | IP40(main machine) | |
| | Dimensions(mm) | 85x220x250(WxHxD) | 185x220x311(WxHxD) |
| | Weight | 3Kg | 5Kg |
| | Mount | Desktop and wall mount | |
| **Environment** | Working temperature | -40 ~ 70℃ (main machine) | |
| | Storage temperature | -40 ~ 85℃ | |
| | Humidity | 5 ~ 95% No condensation | |
| **Standard** | EMI | FCC CFR47 Part 15, EN55022/CISPR22, Class A | |
| | EMC | IEC61000-4-2(ESD), Air: ±8KV; Contact: ±6kV  IEC61000-4-3(RS), 10V/m(80MHz ~ 2GHz)<br>IEC61000-4-4(EFT), DC Power Port: ±2kV,Singal Port: ±2kV  IEC61000-4-5(Surge), Power Port: ±1kV/DM, ±2kV/CM, Singal Port: ±1kV(line to line), Singal Port: ±2kV(line to earth)<br>IEC61000-4-6(CS), Signal ports: 0.15-80MHz at 10V/m, Powerports: 0.15-80MHz at 10V/m | |
| | Mechanical | IEC60068-2-6(vibration) IEC60068-2-27(impact) IEC60068-2-32(Free fall) | |

## Ordering Information

**NewPre3101-P\*-M\*-D\*-W\***

| Code Definition | Description |
|---|---|
| **P\*** | CPU, P342 is I7-9700TE |
| **M\*** | Memory, M4 is 16GB, M5 is 32GB, M6 is 64GB |
| **D\*** | Hard disk, D1 is 250/256GB, D2 is 500/512GB, D4 is 1TB |
| **W\*** | Wireless, W5 is 5G |

| Typical Part Number | Description |
|---|---|
| **NewPre3101-P342-M5-D4** | I7-9700TE processor, 32GB memory, 1TB hard disk |
| **NewPre3101-P342-M5-D4-W5** | I7-9700TE processor, 32GB memory, 1TB hard disk, support 5G |
| **NewPre3102-P342-M5-D4** | I7-9700TE processor, 32GB memory, 1TB hard disk, support graphics card expansion |
| **NewPre3102-P342-M5-D3** | I7-9700TE processor, 32GB memory, 512GB hard disk, support graphics card expansion |

## Expansion Card Ordering Information

| Slot 1 Optional Modules | |
|---|---|
| **NM-G1** | GPU expansion card, GTX1050TI, PCIex16 |
| **NM-G2** | GPU expansion card, RTX2060super, PCIex16 |
| **NM-G3** | GPU expansion card, RTX2080super, PCIex16 |
| **NM-G4** | GPU expansion card, RTX3080, PCIex16 |

| Slot 2~5 Optional Modules | |
|---|---|
| **NM-ETH** | 4x100/1000BASE-T(X), RJ45, PCIex1 |
| **NM-SER** | 2xDB9, RS-232/422/485, PCIex1 |
| **NM-WIFI** | Support IEEE802.11b/g/n, 2.4G, support AP and Station mode<br>Support IEEE802.11ac, 5.8G, support AP and Station mode<br>PCIex1 |

## Dimensions
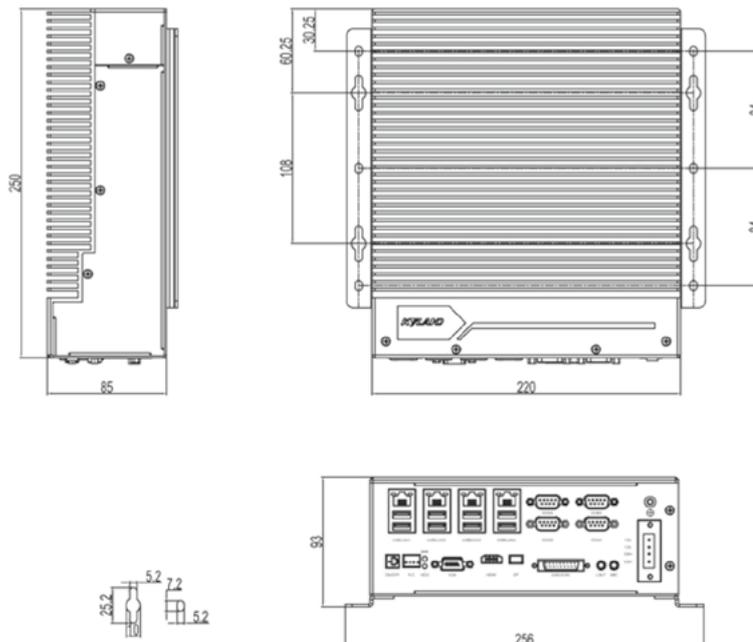
# NewPre3000 Standalone Edge Server

### Compact Design

- Compact design, compact and refined, support wall and DIN mount, industrial Class design, suitable for harsh working environment, wide temperature operation, IP30 protection

### Flexible and Open

- Support the deployment of up to 20 software-defined real-time systems on one CPU to replace PLC controllers, Real-time and non-real-time systems operate in isolation simultaneously
- Compatible based on Windows/Linux applications

### Rich I/O Interfaces

- Support 485, 232, CAN and Ethernet, Ring protocol, Integrated CANopen, Modbus RTU, Modbus TCP, EtherCAT, EtherNet/IP, Profinet, AUTBUS, Custom serial port/CAN/TCP protocol, OPC UA etc.

### Edge Intelligence

- Data analysis: support real-time data acquisition, process and storage
- Data storage: support distributed databases
- Analysis model: OEE analysis, performance analysis, energy consumption analysis, quality analysis, etc.

## ⯈⯈ Specifications

|  |  | NewPre3000-P322-M4-D1 | NewPre3000-P121-M3-D1 |
|---|---|---|---|
| **Main System** | CPU | Intel CORE i7-6822EQ | Intel ATOM E3950 |
|  | Memory | 16GB | 8GB |
|  | Storage | Standard configuration 256GB, SSD | Standard configuration 256GB, SSD |
| **Interface** | Display interface | 1xHDMI | |
|  | USB | 4xUSB3.0 | 2xUSB2.0, 2xUSB3.0 |
|  | Serial port | 1xRS485, 1xRS232, terminal block | |
|  | Network port | 6x100/1000BASE-T, RJ45 | 4x100/1000BASE-T, RJ45 |
|  | CAN | 1xCAN | 1xCAN |
|  | Extension interface | PCIex1*4 or PCIex4*1 | PCIex1*1 |
| **Power Supply** | Input | 24VDC(18~36VDC), terminal block, support PSU isolation and redundant input | |
|  | Consumption | 50W | 30W |
| **Mechanical Structure** | Mechanical structure | Aluminum enclosure | |
|  | IP Class | IP30 | IP40 |
|  | Dimensions(mm) | 140x170x88(WxHxD) | 140x170x80(WxHxD) |
|  | Weight | 2.2Kg | |
|  | Mounting | Wall mounting | |

| Environment | Working temperature | -20 ~ 60℃ | -20 ~ 75℃ |
|---|---|---|---|
| | Storage temperature | -40 ~ 85℃ | |
| | Humidity | 5 ~ 95% No condensation | |
| | Heat radiation | No fan | |
| Standard | EMI | FCC CFR47 Part 15, EN55022/CISPR22, Class A | |
| | EMC | IEC61000-4-2(ESD), Air: ±8KV; Contact: ±6kV<br>IEC61000-4-3(RS), 10V/m(80MHz ~ 2GHz)<br>IEC61000-4-4(EFT), DC Power Port: ±2kV, Singal Port: ±2kV<br>IEC61000-4-5(Surge), Power Port: ±1kV/DM, ±2kV/CM, Sin-gal  Port: ±1kV(line to line), Singal Port: ±2kV(line to earth)<br>IEC61000-4-6(CS), Signal ports: 0.15-80MHz at 10V/m, Power ports: 0.15-80MHz at 10V/m | |

## Ordering Information

| Typical Part Number | Description |
|---|---|
| NewPre3000-P322-M4-D1 | Intel CORE i7-6822EQ 4-core processor, basic frequency 2.0GHz, 16GB memory |
| NewPre3000-P121-M3-D1 | Intel ATOM E3950 4-core processor, basic frequency 1.6GHz, 8GB memory |

## Dimensions
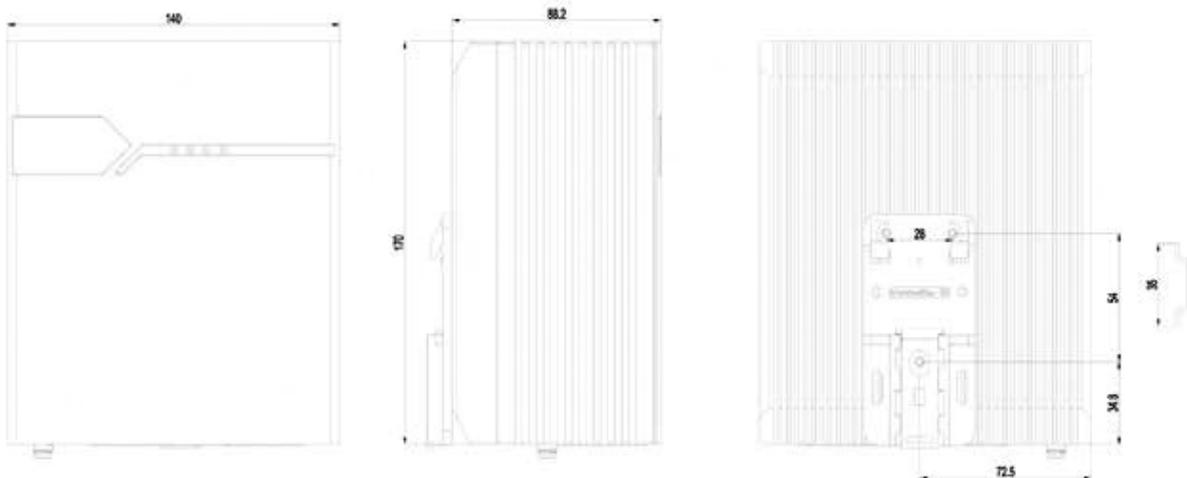
# NewPre2100 5G + Wi-Fi Edge Server



## Tiny And Mighty Design

- An ARM 4-core Cortex-A53 processor, 1.6 GHz basic frequency, 2GB DDR4 memory and 8GB eMMC FLASH, to provide computing resources for many industrial-level field applications such as edge node data acquisition, protocol conversion, real-time control, agile connectivity, machine vision, intelligent applications, security and privacy protection

## High Reliability Industrial Design

- Industrial no fan design, rail or wall mount, -40~75°C wide temperature operation, suitable for indoor and outdoor installation environment; meet the EMC 3 level, IP40 protection level

## Rich I/O interfaces

- Support 3G/4G/5G multiple network modes, support WI-FI, support 1x10GBase-X, SFP+; 6x10/100/1000Base-T(X), RJ45 interface, support 2x485/432/422, support 2xCAN, support 2xDI, 2xDO, 2xAI
- Support rapid customization of multiple interfaces

## Rapid Network Deployment

- It has rich intelligent communication interconnection function and supports static and dynamic routing protocols
- Support the establishment of dynamic VPN tunnels, easy to build a secure VPN network
- Support equipment management platform, efficiently manage a large number of remote devices with decentralized access

## Security

- Support user graded certification security
- Support firewall function to protect network security
- Support multiple VPN encryption modes such as IPSec, Open VPN to ensure data transmission security

## Easy To Use

- Equipment can be configured though local web and can be managed though cloud, easier to configure and deploy equipment

## Multi-protocol Conversion

- Build-in rich industrial protocols, support Modbus TCP, Modbus RTU, CANopen, S7, PPI, EtherCAT, EtherNet/IP, Profinet, OPC UA, MQTT etc.
- Support custom protocols, support third-party extensions
- It can be dynamically loaded as required, free conversion

## Hybrid Applications

- Support software defined control to realize PLC control, data analysis, machine vision applications.

## ➤➤ Specifications

| | | NewPre2100-P521-M1-DO-W3 | NewPre2100-P521-M1-DO-W0 |
|---|---|---|---|
| **Main System** | CPU | 4xCortex-A53, 1.6 GHz | |
| | Memory | 2GBDDR4 | |
| | Storage | 8GBeMMC<br>Support Micro SD extension, max support 128GB | |
| **Interface** | Network interface | 1x10GBase-X, SFP+ interface;<br>6x10/100/1000Base-T(X), RJ45 interface | |
| | USB | 2xUSB3.0 | |
| | Serial port | 2x485/422/232 | |
| | CAN | 2xCAN | |
| | IO | 2xAI, 2xDI, 2xDO | |
| | Console port | RJ45 | |
| **Power Supply** | Input voltage | 24DC(18-72VDC) | |
| | Terminal block | 5-pin 5.08mm spacing plug-in terminal | |
| | Consumption | <25W | |
| | Overload protection | Support | |
| | Reverse protection | Support | |
| | Redundant protection | Support | |
| **Mechanical Structure** | Enclosure | Metal | |
| | Heat radiation | Natural cooling, no fan | |
| | IP class | IP40 | |
| | Dimensions | 94x185x123(WxHxD) | |
| | Mountng | DIN or wall mounting | |
| **Environment** | Working temperature | -40 ~ 75℃ | |
| | Storage temperature | -40 ~ 85℃ | |
| | Humidity | 5 ~ 95% No condensation | |
| **Standard** | EMI | FCC CFR47 Part 15, EN55022/CISPR22, Class A | |
| | EMS | IEC61000-4-2(ESD), Air: ±8KV; Contact: ±6kV<br>IEC61000-4-3(RS), 10V/m(80MHz ~ 2GHz)<br><br>IEC61000-4-4(EFT), DC Power Port: ±2kV, Singal Port: ±2kV<br>IEC61000-4-5(Surge), Power Port: ±1kV/DM,±2kV/CM, Sin-gal  Port: ±1kV(line to line), Singal Port: ±2kV(line to earth)<br>IEC61000-4-6(CS), Signal ports: 0.15-80MHz at 10V/m, Power ports: 0.15-80MHz at 10V/m | |
| | Mechanical | IEC60068-2-6(vibration) IEC60068-2-27(impact) IEC60068-2-32(Free  fall) | |
| **5G** | Networking mode | SA, NSA | Do not support |
| | Network standard | 5G NR/LTE-FDD/LTE-TDD/WCDMA | Do not support |
| | Frequency range | Sub-6Ghz, millimeter waves | Do not support |
| | Antenna | SMA (outer thread inner hole) ,  4pcs | Do not support |
| | SIM card | Double cards, drawer type card socket | Do not support |
| **WI-FI** | Standard and Frequency | Support IEEE802.11b/g/n, 2.4G, and AP & Station mode, support IEEE802.11ac, 5.8G, and AP & Station mode | Do not support |
| | Secure encryption | Support WEP, WPA and WPA2 etc. | Do not support |
| | Transmitting power | 26dBm(11b), 21.5dBm(11g),<br>20dBm(11n), 16dBm(11ac) | Do not support |
| | Receiving sensitivity | <-72dBm@54Mpbs | Do not support |
| | Antenna | SMA (outer thread inner hole) , 1pc | Do not support |

## Ordering Information

| Part Number | Description |
|---|---|
| **NewPre2100-P521-M1-DO-W3-E7S222222-L2-L2** | 7 network ports, 2 232/485/422 ports, 2 CAN, 2DI, 2AI, support WIFI and 5G |
| **NewPre2100-P521-M1-DO-W0-E7S222220-L2-L2** | 7 network ports, 2 232/485/422 ports, 2 CAN, 2DI, 2AI |
| **NewPre2100-P521-M1-DO-W0-E4S220000-L2-L2** | 4 network ports, 2 232/485/422 ports, 2 CAN |

## Dimensions
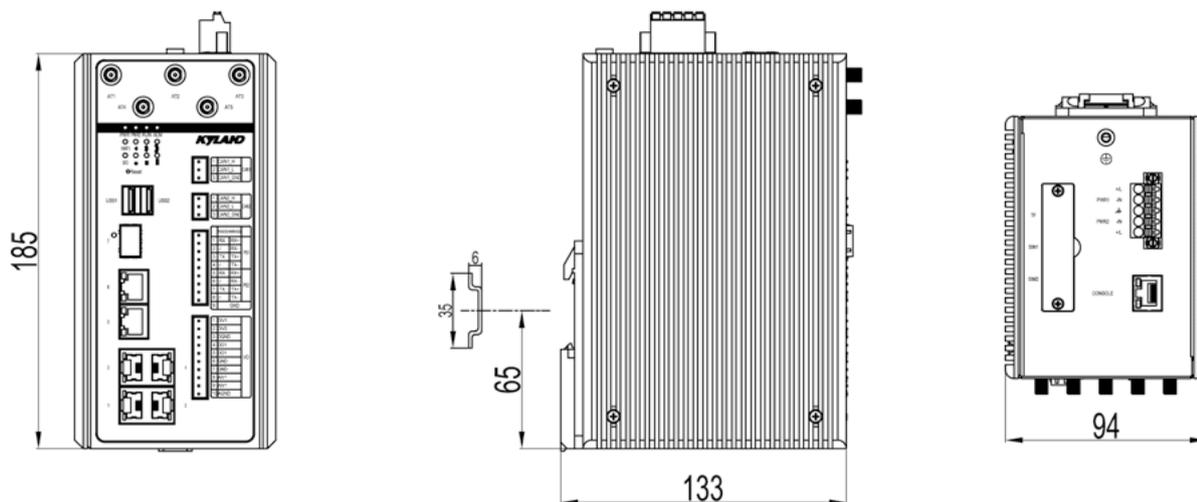
# NewPre3002/3003 Edge Server



## Compact Design

- Small and simple, supports wall mounting installation, industrial grade design for harsh environment, -20~75°C operating temperature, IP30

## Flexible and Open

- Supports up to 20 software defined control system to replace PLC (via Intewell)
- Compatible with Windows / Linux

## Rich I/O Interfaces

- Supports RS232, Ethernet, builds in Modbus RTU, Modbus TCP, EtherCAT, EtherNet/IP, PROFINET, AUTBUS and OPC UA...etc.

## Edge Intelligence

- Data analysis: supports real-time data acquisition, processing and storage
- Data storage: supports distributed database
- Analysis model: OEE analysis, performance analysis, energy consumption analysis, quality analysis...etc.

## ≫ Specifications

| | | NewPre3002 | NewPre3003 |
|---|---|---|---|
| **Main System** | CPU | Intel Core i3-9100T | Intel Core i5-9500T |
| | Memory | 16GB | |
| | Storage | Standard Configuration 256GB SSD | Standard Configuration 512GB SSD |
| **Interface** | Display | 1x DP, 1x VGA, supports VGA+DP independent display | |
| | USB | 4x USB3.1, 6 x USB2.0 | |
| | Serial | 2 x RS232, DB9 | |
| | Ethernet | 5 x 100/1000Base-T, RJ45 | |
| **Power Supply** | Input Voltage | 12VDC | |
| | Consumption | 50W | |
| **Mechanical Structure** | Enclosure | Aluminum Alloy | |
| | IP class | IP30 | |
| | Dimensions(mm) | 234.7 x 211 x 90.7 (W x H x D) | |
| | Mount | Wall mount | |

| Environment | Operating Temperature | -20~75℃ | |
|---|---|---|---|
| | Storage Temperature | -40~80℃ | |
| | Humidity | 5~95% Non-condensed | |
| | Heat dissipation | Fanless | |
| **Standard** | EMI | FCC CFR47 Part 15, EN55022/CISPR22, Class A | |
| | EMC | IEC 61000-4-2 (ESD), Air: ±8KV;Contact: ±6kV | |
| | | IEC 61000-4-3 (RS), 10V/m(80MHz~2GHz) | |
| | | IEC 61000-4-4 (EFT), DC Power Port: ±2kV, Singal Port: ±2kV | |
| | | IEC 61000-4-5 (Surge), Power Port: ±1kV/DM, ±2kV/CM, Singal Port: ±1kV(line to line), ±2kV(line to earth) | |
| | | IEC 61000-6 (CS), Signal ports: 0.15-80MHz at 10V/m, Power ports: 0.15-80MHz at 10V/m | |
| | Mechanical | IEC60068-2-6 (Vibration) IEC60068-2-27 (Shock) IEC60068-2-32 (Freefall) | |
| Ordering Information | | | |
| NewPre3002 | Intel Core i3-9100T, 16GB Memory, 256GB SSD | | |
| NewPre3003 | Intel Core i5-9500T, 16GB Memory, 512GB SSD | | |

## Ordering Information

| Typical Part Number | Description |
|---|---|
| **NewPre3002** | Intel Core i3-9100T, 16GB Memory, 256GB SSD |
| **NewPre3003** | Intel Core i5-9500T, 16GB Memory, 512GB SSD |

## Dimensions
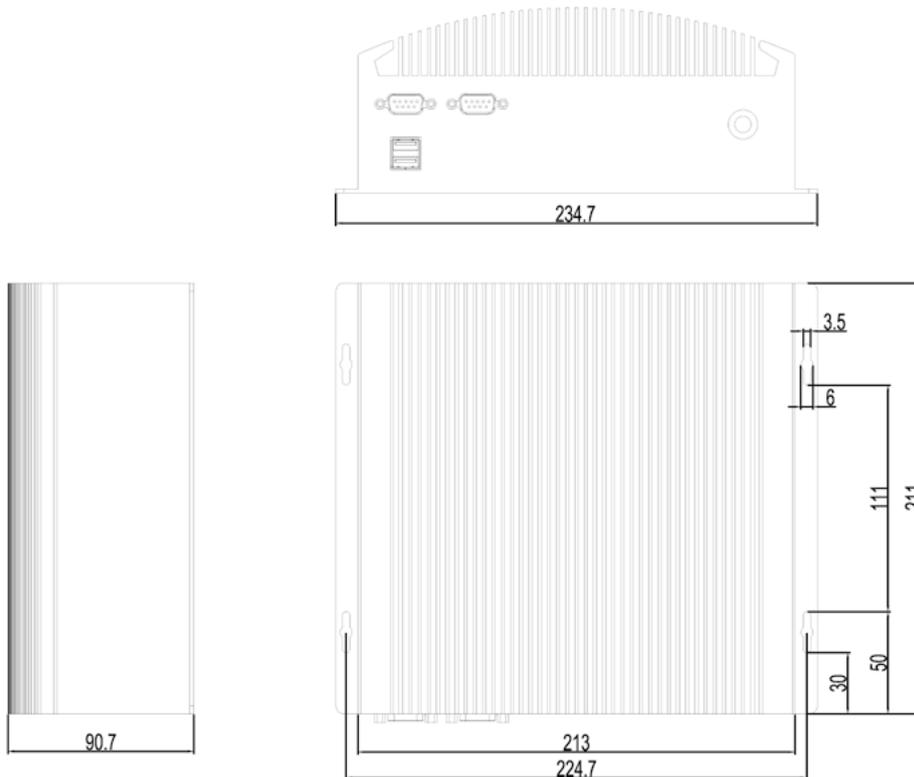
# Industrial  Edge I/O Server & Controller

# NewPre3200 Modular Edge I/O Server



## Tiny And Mighty Design

- High efficiency fan-less heat dissipation design, -40~70°C industrial wide temperature design
- Meet EMC class 3 and IP40 protection level, meet harsh industrial application scenario requirements
- 155mmx100mmx90mm, the little dimension is suitable for single-handed DIN rail installation

## Rich I/O Extension Cards

- Provide splice terminals, Extensible KYIO modules, included RCM, DI, DO, AI, AO, RTD, PI, PO modules
- Support 4G/5G/WIFI extension, meet multiple connection requirements

## Easy To Integrate

- An edge general controller instead of a conventional controller & Introduction vision machine vision industrial control computer & HMI industrial control computer & edge computing gateway, reduce the number of system equipment on site, reduce the area and power consumption of the system

- Pre-installed Intewell OS, provides the OS internal virtual data bus, supports machine vision, industry AI, PLC, motion control, man-machine monitoring, 5G and other real-time and non-real-time multi-service integration.
- Pre-installed graphical control development platform MaVIEW, support IEC61131-3, C++ and MatLab/Simulink
- High real-time, support minimum 50us cycle time to adapt to high real-time control
- Support motion control, support PLCopen single axis management, single axis motion, multi-axis electronic gear coupling, electronic cam, tappet and other functions, support multi-axis space arc, space straight line interpolation
- Support CANopen and Modbus RTU, Modbus TCP, EtherCAT, EtherNet/IP, Profinet, AUTBUS, support custom serial port/CAN/TCP protocol, MQTT and other common industrial communication protocols
- Support dual hot standby redundancy, redundant switching timeless than twice the operation period, effectively ensure stable operation of control system
- Compatible Window/Linux desktop OS and support third-party applications

## ⟫ Specifications

| | NewPre3200 | |
|---|---|---|
| **Main System** | CPU | Inter Corei7-8665UE, 4-core&8-thread, basic frequency 17GHZ |
| | Memory | 16GB, DDR4 SDRAM 2400 MHz |
| | Storage | Standard configuration 256GB CFast, support added mSATA hard disk |
| | Power-down hold-up Storage | 64KB optional |
| **Interface** | Display interface | Onboard 1xHDMI, support 1080P |
| | USB | 2xUSB2.0, 2xUSB3.1 |
| | Network port | i350, 4x100/1000BASE-T, RJ45 |
| | Extension slot | located on the right side of the power supply module, support Kyland KYIO module |

| Power Supply | Input | 24VDC(18 ~ 36 VDC)terminal block, support power supply isolation and redundant input |
|---|---|---|
| | Output | DC 24VDC, 12VDC, Backboard bus |
| | Consumption | <50W |
| Mechanical Structure | Mechanical structure | Aluminum enclosure |
| | IP Class | IP40 |
| | Dimensions(mm) | Computing module: 155x100x90(WxHxD) <br> PSU module: 58x100x90(WxHxD) |
| | Weight | 2.5kg |
| | Mounting | DIN rail mounting |
| Environment | Working temperature | -40 ~ 70ºC |
| | Storage temperature | -40 ~ 85ºC |
| | Humidity | 5 ~ 95% No condensation |
| | Heat radiation | No fan |
| Standard | EMI | FCC CFR47 Part 15,EN55022/CISPR22,Class A |
| | EMC | IEC61000-4-2(ESD), Air: ±8KV; Contact: ±6kV <br> IEC61000-4-3(RS), 10V/m(80MHz ~ 2GHz) <br> IEC61000-4-4(EFT), DC Power Port: ±2kV, Singal Port: ±2kV <br> IEC61000-4-5(Surge), Power Port: ±1kV/DM, ±2kV/CM, Singal <br> Port: ±1kV(line to line), Singal Port: ±2kV(line to earth) <br> IEC61000-4-6(CS), Signal ports: 0.15-80MHz at 10V/m, Powerports: 0.15-80MHz at 10V/m |
| | Mechanical | IEC60068-2-6(vibration) IEC60068-2-27(impact) IEC60068-2-32(Free fall) |

## NewPre3200-P*-M*-D*-N*

| Code Definition | Description |
|---|---|
| **P*** | CPU type, P341 is i7-8665UE |
| **M*** | Memory type, M4 is 16GB memory |
| **D*** | Hard disk type, D1 is 250/256GB hard disk |
| **N*** | NVRAM type, N0 is no NVRAM, N1 is 64KB NVRAM |

| Typical Part Number | Description | | |
|---|---|---|---|
| **NewPre3200-P341-M4-D1-N0** | Modular Edge Server with Software Defined Control, i7-8665UE, 16G memory, 256G hard disk | | |
| **NewPre3200-P341-M4-D1-N1** | Modular Edge Server with Software Defined Control, i7-8665UE, 16G memory, 256G hard disk, 64KB power down hold-up storage | | |
| **Optional Module KYIO** | | | |
| **KYDI-1601H** | 16-ch DI module | **KYAO-0801 H** | 8-ch current output module |
| **KYDO-1202 H** | 12-ch DC DO module | **KYAO-0802 H** | 8-ch voltage output module |
| **KYAI-0801 H** | 8-ch current input module | **KYRTD-0601 H** | 6-ch hot resistance input module |
| **KYAI-0802H** | 8-ch voltage input module | | |

## Dimensions
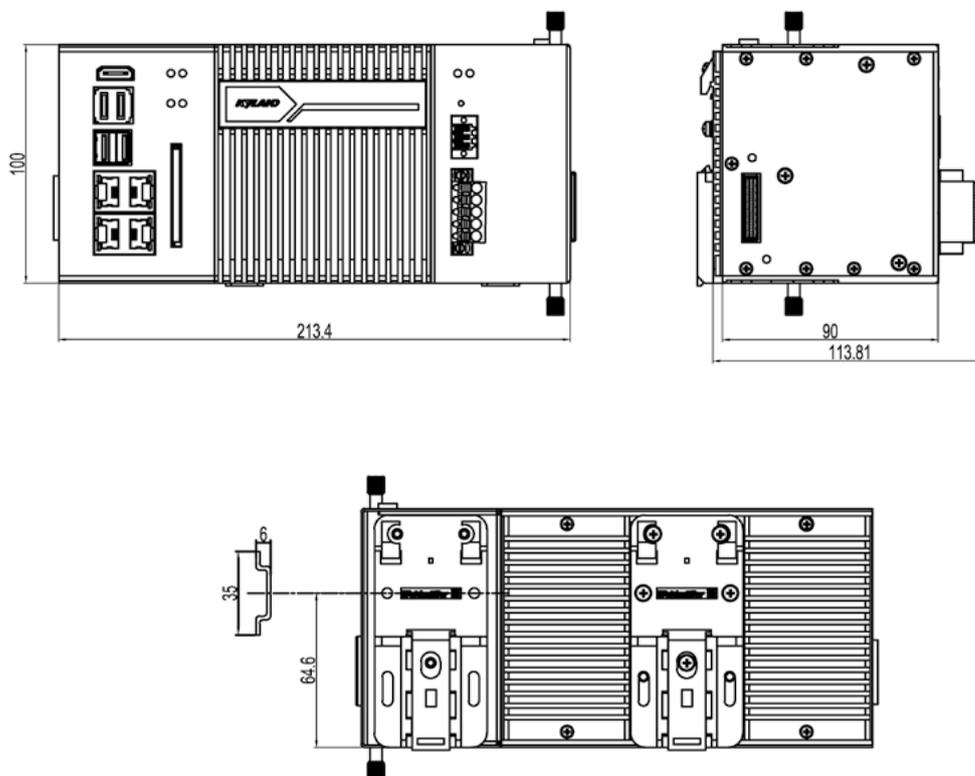
# KYC300 PLC & I/O Controller

### Rich I/O Interfaces

- Provide local DI, DO, AI, AO, high-speed pulse acquisition, PWM pulse output channels, provide 485 and Ethernet, support Modbus TCP/RTU and other common industrial communication protocols
- Motion control support. it integrates 12 pulse inputs and 4 pulse outputs to realize quickly equipment speed regulation, positioning functions

### Edge Intelligence

- Data analysis: support real-time data acquisition, process and storage
- Data storage: support distributed databases

- Analysis model: OEE analysis, performance analysis, energy consumption analysis, quality analysis, etc.

### Easy To Use

- Pre-installed graphical control development platform MaVIEW, Support IEC61131-3, support C++, MatLab/Simulink

### High Reliability

- Industrial grade design, suitable for the harsh environment, -40~75°C wide temperature operation, IP30 protection

## Specifications

| KYC300 | | |
|---|---|---|
| **Main System** | CPU | 300MHz |
| | Storage | 128MB |
| | Power down hold-up | 8KB |
| **Interface** | Network port | 2 x 10/100BASE-T, RJ45 |
| | Serial port | 1 x RS485 |
| | CAN | 1 x CAN |
| | Extension slot | Located the right side of the module, support Kyland KYIO module; |
| **IO Interface** | DI | 12 channels, support 24VDC digital input and high-speed pulse input, can be configured by software. High-speed pulse support 6 channels: Up to support 200kHz, support single channel or orthogonal pulse mode, supportX1 or X4 counting mode |
| | DO | 6 channels 24VDC active output |
| | AI | 4 channels, support 0~22mA, 0-5.12V, 0~10.24V, can be configured, channel accuracy ±0.25%@(-40~75oC ) |
| | AO | 2 channels current output, 0~22mA; 2 channels voltage output, support+5V, +10V, +10.8V, ±5V, ±10V, ±10.8V; Channel accuracy ±0.25%@(-40~75oC) |
| | PO | 4 channels, max output frequency 200kHz |
| | Local IO extension | Max10 modules |

| Power Supply | Power supply mode | Bus supply power, 12VDC |
|---|---|---|
| | Consumption at system side | Max 6W@12V |
| | Consumption at field side | Max 9.5W@24V |
| **Mechanical Structure** | Mechanical structure | Aluminum enclosure |
| | IP class | IP30 |
| | Dimensions | 130 x 100 x 60 (W x H x D) |
| | Weight | 800g |
| | Mounting | DIN rail mounting |
| **Environment** | Working temperature | -40 ~ 75ºC |
| | Storage temperature | -40 ~ 85ºC |
| | Humidity | 5~95% No condensation |
| | Heat radiation | No fan |
| **Standard** | EMI | IEC 61000-6-4/CISPR 22 |
| | EMC | IEC61000-4-2(ESD), ±6kV(contact), ±8kV(air), IEC61000-4-3(RS),10V/m(80MHz-1GHz) IEC61000-4-4(EFT), DC Power Port: ±1kV, Singal Port: ±1kV IEC61000-4-5(Surge), Power Port: ±1kV/DM, ±2kV/CM, Singal Port: ±1kV(line to line), Singal Port: ±2kV(line to earth) IEC61000-4-6(CS), Signal ports: 0.15-80MHz at 10V/m, Power ports: 0.15-80MHz at 10V/m IEC61000-4-8(Power frequency magnetic field), 30A/m |
| | Mechanical | Mechanical |

| Typical Part Number | Description | Power Supply Part Number | Description |
|---|---|---|---|
| **KYC300** | Kyland PLC controller module | **KYPM-DC24** | 24VDC PSU module (Required) |

| Typical Module KYIO | | | |
|---|---|---|---|
| **KYDI-1601** | 16 channels DI module | **KYAO-0801** | 8 channels current input module |
| **KYDO-1202** | 12 channels DC DO module | **KYAO-0802** | 8 channels voltage input module |
| **KYAI-0801** | 8 channels current input module | **KYRTD-0601** | 6 channels hot resistance input module |
| **KYAI-0802** | 8 channels voltage input module | | |

## Dimensions
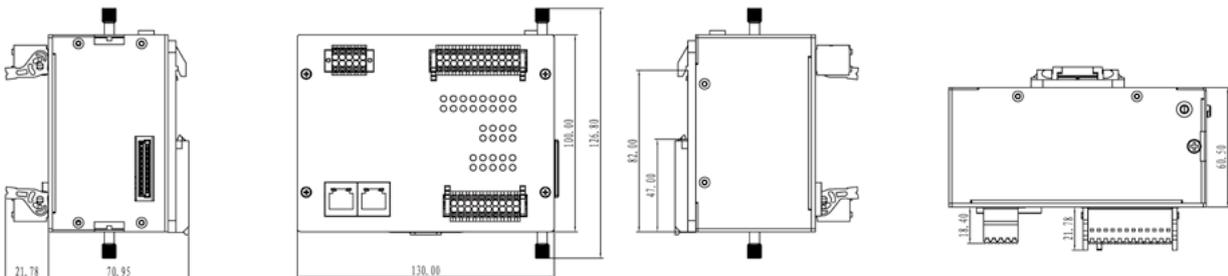
# KYIO Module

## RCM Module Specifications

| KYRCM | | |
|---|---|---|
| **Interface** | Network port | 1x10/100BASE-T,RJ45 |
| | Serial port | 1xRS485 |
| | CAN | 1xCAN |
| | Extension slot | Support Kyland KYIO module, up to support 10 extension modules: |
| **Communication** | Protocol | CANopen<br>Modbus RTU Master/Slave mode<br>Modbus TCP Slave mode |
| **Management and Maintenance** | Support WEB management | |

## Dimensions
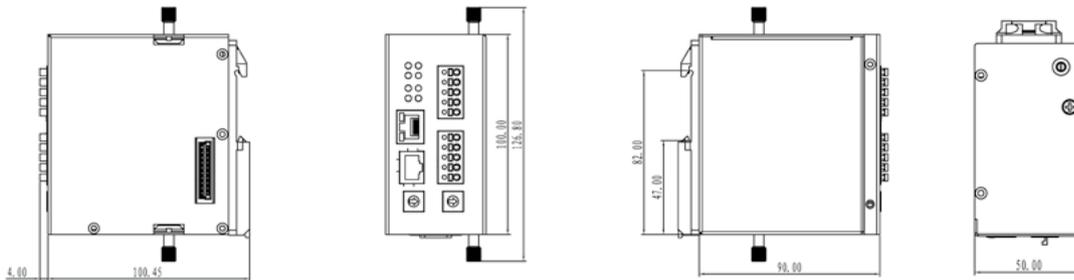
## PM Power Module Specifications

| KYPM-DC24 DC 24V Power Module | | |
|---|---|---|
| **Power Supply** | Power input | 24VDC (-15%~+20%) |
| | Power interface | Phoenix terminal block |
| | Bus output voltage | 12VDC |
| | Output current | 2.5A@12V |
| | Module consumption | 6W |

## Dimensions
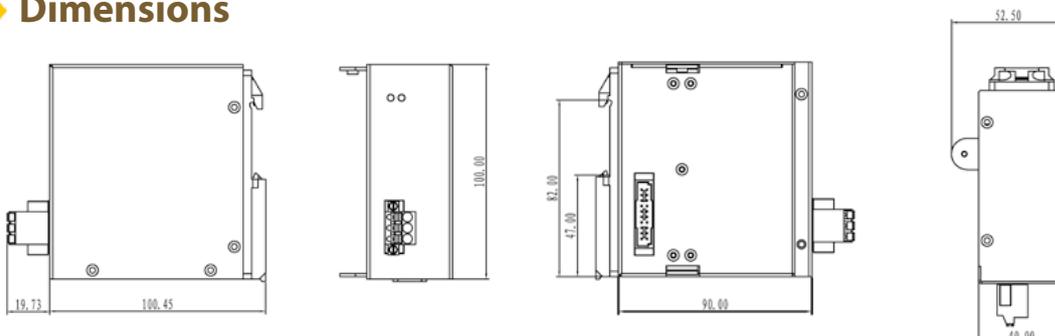
## ⟫ I/O Module Specifications

| KYDI-1601 | |
|---|---|
| **Channel Number** | 16 |
| **Signal Type** | 24VDC, support PNP and NPN |
| **Isolation Withstand Voltage** | 1500VDC@1min@5mA |
| **Voltage and Consumption at System Side** | 1.5W@12V±10% |
| **Voltage and Consumption at Filed Side** | 0.5W@24V, +20%/-15% |

| KYDO-1202 | |
|---|---|
| **Channel Number** | 12 |
| **Signal Type** | 24VDC, support PNP and NPN |
| **Isolation Withstand Voltage** | 1500VDC@1min@5mA |
| **Voltage and Consumption at System Side** | 1.5W@12V±10% |
| **Voltage and Consumption at Filed Side** | 0.5W@24V, +20%/-15% |

| KYAI-0801/0802 | |
|---|---|
| **Channel Number** | 8 |
| **Signal Type** | 0~22 mA/±10V |
| **Analog Accuracy** | $\pm0.1\%@(25℃)\pm0.3\%@(-40~75℃)$ |
| **Isolation Withstand Voltage** | 1500VDC@1min@5mA |
| **Voltage and Consumption at System Side** | 1.2W@12V±10% |
| **Voltage and Consumption at Filed Side** | 0.5W@24V, +20%/-15% |

| KYAO-0801/0802 | |
|---|---|
| **Channel Number** | 8 |
| **Signal Type** | 0~22 mA/±10V |
| **Analog Accuracy** | $\pm0.1\%@(25℃)\pm0.4\%@(-40~75℃)$ |
| **Isolation Withstand Voltage** | 1500VDC@1min@5mA |
| **Voltage and Consumption at System Side** | 1.2W@12V±10% |
| **Voltage and Consumption at Filed Side** | 0.5W@24V, +20%/-15% |

| KYRTD-0601 | |
|---|---|
| **Channel Number** | 6 |
| **Signal Type** | 0..500Ω range. Support PT100, Cu100, Ni120, Resistance acquisition, support 2/3/4 wires. |
| **Analog Accuracy** | 0~500Ω: $\pm0.1\%(10~45℃)$, $\pm0.4\%$ $(-40~85℃)$ |
| **Isolation Withstand Voltage** | 1500VDC@1min@5mA |
| **Voltage and Consumption at System Side** | 1.2W@12V±10% |
| **Voltage and Consumption at Filed Side** | 1.5W@24V, +20%/-15% |

## General Specifications

| | | |
|---|---|---|
| **Mechanical Structure** | Mechanical structure | Aluminum enclosure |
| | IP class | IP30 |
| | Dimensions | 40x100x90 (WxHxD); KYRCM: 50x100x90(WxHxD) |
| | Weight | 500g |
| | Mounting | DIN rail |
| **Environment** | Working temperature | -40 ~ 75℃ |
| | Storage temperature | -40 ~ 85℃ |
| | Humidity | 5 ~ 95% No condensation |
| **Standard** | EMI | IEC61000-6-4/CISPR 22 |
| | EMC | IEC61000-4-2(ESD), ±6kV(contact), ±8kV(air), IEC61000-4-3(RS),10V/m(80MHz-1GHz) IEC61000-4-4(EFT), DC Power Port: ±1kV, Singal Port: ±1kV IEC61000-4-5 (Surge), Power Port: ±1kV/DM, ±2kV/CM, Singal Port: ±1kV(line to line), Singal Port: ±2kV(line to earth) |
| | | IEC61000-4-6(CS), Signal ports: 0.15-80MHz at 10V/m, Powerports: 0.15-80MHz at 10V/m IEC61000-4-8(Power frequency magnetic field), 30A/m |
| | Mechanical | IEC60068-2-6(vibration) IEC60068-2-27(impact) IEC60068-2-32(Free fall) |

| Order Information | | | |
|---|---|---|---|
| **KYDI-1601** | 16 channels DI module | **KYAO-0802** | 8 channels voltage output module |
| **KYDO-1202** | 12 channels DC DO module | **KYRTD-0601** | 6 channels hot resistance input module |
| **KYAI-0801** | 8 channels current input module | **KYPRCM-0000** | Remotely IO communication module |
| **KYAI-0802** | 8 channels voltage input module | **KYPM-DC24** | 24VDC power module (Required) |
| **KYAO-0801** | 8 channels current output module | | |

## Dimensions
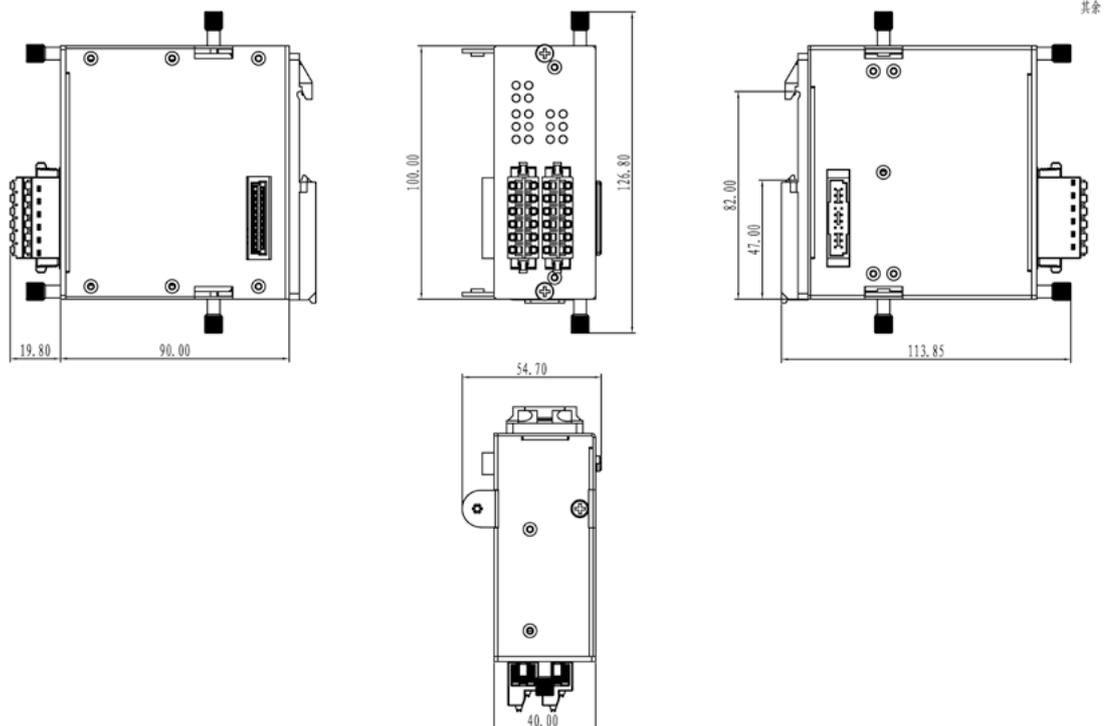
# Software

# Intewell
## Hybrid Operating System for Industrial Applications

Intewell is developed by Kedong (Guangzhou) Software Technology Ltd. (a wholly owned subsidiary of Kyland) for Industrial Applications. It is a micro-kernel based Operating System with modular design, so it can be easily customized for different applications. Intewell abstracts physical hardware and I/O interfaces so it can virtualize the machine (through the hypervisor). The hypervisor manages and allocates the system's resources, so that it can enable the system to host several instances simultaneously but still assure each instance and application real-time, secure, deterministic and reliable.

Intewell has been developed and evolved for more than 20 years and holds 60+ patents and 30+ copyrights. It is widely deployed to numerous mission critical industry sectors like smart manufacturing, railway, energy, robotics,...etc., and it's been proven reliable and secure in the long and sustaining applications.

## ▶▶ System Structure
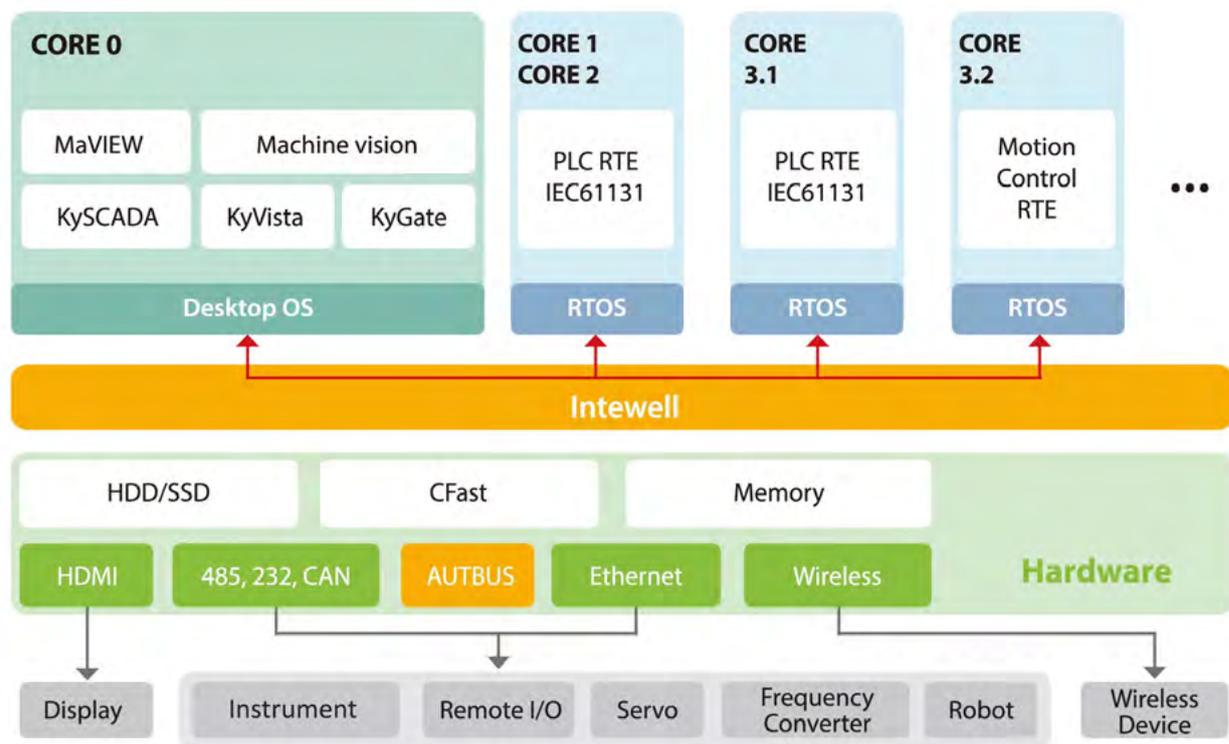


## ▶▶ Features

- Reliable: more than 20 years track record of operation
- Real-time: micro-second level response time
- Micro-kernel: virtualizes hardware resources and enables software-defined management
- Hybird: enables one-machine with multiple real-time and non-real-time instances hybrid operation, so it can integrate edge computing, motion control, data acquisition, AI,...etc. in one machine.

## ⟫ Specifications

| Function | | Description |
|---|---|---|
| **OS Feature** | CPU | Supports x86, ARM, MIPS |
| | Micro-kernel | Micro-kernel design with simple and neat footprints. Kernel codes within 10,000 lines. Easy to verify and validate the security and reliability |
| | Virtualization | Supprots Windows and Linux non-real-time instances |
| | | Supports up to 20 real-time instances and 3 non-real-time instances |
| | | Supports interal virtual data bus for cross-instance data communications |
| | Multi-core processor | Supports multi-core processor operation |
| | Operation mode | Supports AMP, SMP, BMP mode and 32bit/64bit operation |
| **Real-time Hypervisor** | Scheduling | Priority and Timing hybrid scheduling |
| | | Supports up to 256 priority |
| | Multi-task management | Preemptive scheduling and Timing scheduling |
| | | Supports up to 256 priority |
| | | Supports priority inheritance, priority ceiling to prevent priority reversal |
| | File System | Supports FAT16, FAT32, YAFFS, nfs |
| | | Supports flash, emmc, ram, USB, SATA…etc. media types |
| | | Supports file system corruption prevention after power outage |
| | POSIX | Compatible with POSIX 1003.1b (ISO/IEC 9945-1) |
| | Shell | Compatible with most Linux shell operations |
| | Network stack | Supprots IPv4/IPv6 and standard sockets |
| | | Supports static and dynamic routing |
| | | Supports ftp, telnet, tftp, httpd, sntp, snmp…etc. |
| | USB | Supports USB1.1, 2.0 |
| **Development Tools** | Intewell DEVELOPER | Supports virtual instance life cycle management, including instance create, allocate, deploy, terminate, power-on/off, reboot, sleep, suspend, resume and rebuild operations |
| | | Supports design, development, debugging, simulation, and deployment functions. Full GUI design, easy to use |
| | | Supports simulation tools for different CPU architectures |
| | Monitoring tool | Provies CPU usage, network traffic, file system  performance, signal usage, schedulling staus, process staus and message queue monitoring |
| **Ecosystem** | Industrial APP | Natively supports Kyland MaVIEW, KySCADA, KyGate, KyVista, KyMOM, AHM tools |
| | Industrial protocol | Supports Modbus TCP/RTU, CANopen, EtherCAT, EtherNet/ IP, PROFINET, AUTBUS, OPC |

## ⟫ Product Information

| | |
|---|---|
| **Intewell OS** | Intewell Operating System |
| **Intewell DEVELOPER** | Intewell IDE and Hypervisor tool |

# MaVIEW Control Development Platform

- Fully independent R&D, non-secondary development, no need third party authorization
- Ease of use: support drag-and-drop graphical programming, support IEC61131-3 programming language, provide offline simulation function, meet most automation engineers use habits
- Programming ecology: support C++ programming, support MatLab/Simulink
- Provide Lib developer tools to support engineers to develop their own desired libraries
- Cross-platform Support: IDE Support Windows, Linux and domestic Kirin OS
- TE Support RT Linux, Vxworks and domestic Independent Intewell OS
- Multi-protocol support: support Modbus TCP/RTU, CANopen, EtherCAT, Ethernet/IP, Profinet, custom serial port /TCP/CAN, OPC UA

## High Reliability

### Controller Redundancy

- Realize the synchronization of algorithm engineering and configuration file, timely synchronization of running data single cycle, and the synchronization of running step sequence of main and standby algorithm
- The real-time diagnosis of the main and standby controller and switch quickly according to the diagnosis result
- Redundant Controller Switching Time < 2 computing cycles

### Power Down Hold-up

- Check data that requires power down hold-up in configuration
- Support for periodically saving data that needs to be hold to storage without loss when power down

### Off-line Simulation

- Support variable monitoring list, free to add variable monitoring points
- Support the simultaneous assignment of multiple variables to quickly modify the assignment of variable points in the program
- Support variable graphics display, visual display of the project variable points real-time running state
- Support engineering algorithm variable monitoring, through the real-time value accurate judgment algorithm running condition and variable point real-time value monitoring

### Incremental Download

- Support online download mode without disturbance, only download modification and append part, add in the original database in incremental way, and the control scheme can be modified without stopping the operation of the controller
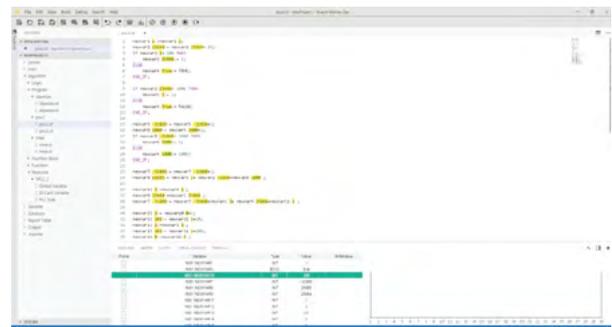
# Ease of Use

## Graphical Programming

- Provide the fully graphical device configuration management interface
- Provide the intuitive and tidy tabular variable configuration interface
- Provides the flexible and easy-to-use graphical language programming configuration interface
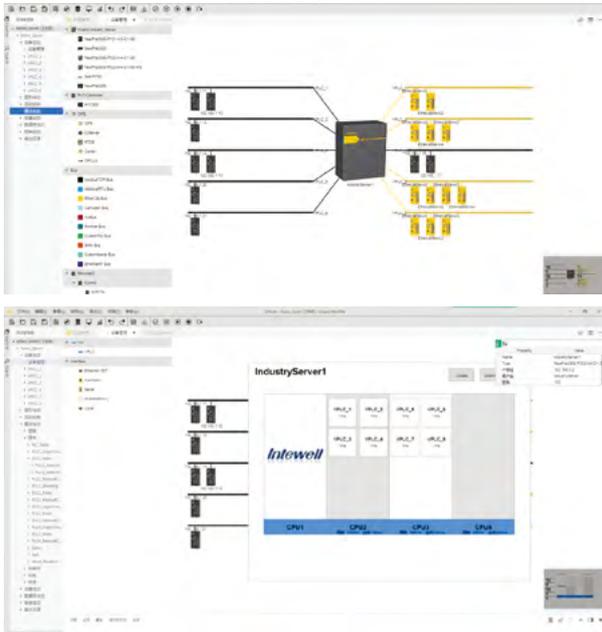




## Powerful Motion Control Function

- Support PLCopen single axis management, single axis motion, multi axis electronic gear coupling, electronic cam, tappet, etc.
- Support multi-axis space arc, space straight line interpolation
- Support up to 32 single axis controls, up to 10 electronic cam tables, cams table supports up to 512 points
- Integrate single axis basic information configuration, cam table node design, tappet node action design interface, information input and display intuitive and convenient
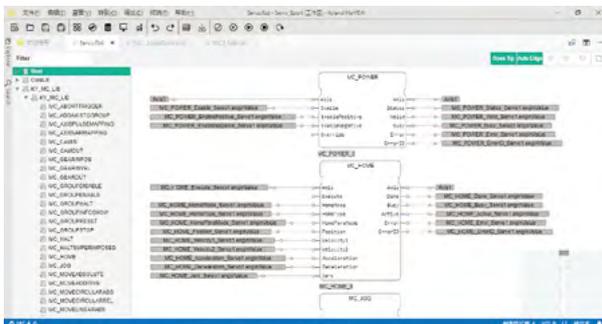


## IEC61131-3/C++ Programming

- Support ST (structured text), FBD (function block diagram), LD (ladder diagram) three programming languages
- Support common language elements as specified in the stan- dards: resources, tasks, global variables, POU program organization units (function, function block, program)
- Support basic data types, composite data types as specified in the standard (arrays, structures)
- Support basic functions and functional blocks specified in the standard, including math libraries, timing, counting, type conver- sion
- Multi-language interoperability, not only supports interoperability between the three languages, but also between C/C++ imple- mented functional blocks and the languages

## Library Development Tools

- Support the development of advanced programming language C/C++, suitable for control logic, can run in kernel in real-time, and run in the PLC inthe form of functional blocks
- Support MATLAB auxiliary MaVIEW function block algorithm mod- eling. Using MATLAB/Simulink powerful function to design and verify the custom algorithm, create the function block with the C++ source code derived from the MATLAB/Simulink, and call each other with other languages (ST, FBD, LD) to realize cross- language interoperability
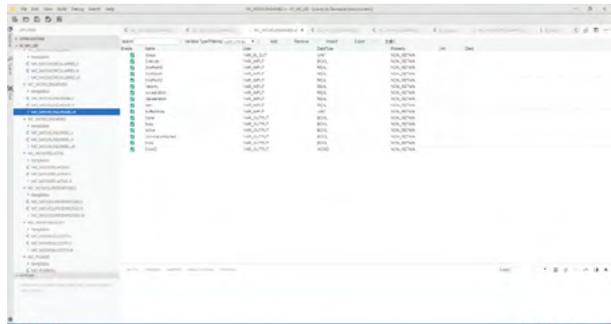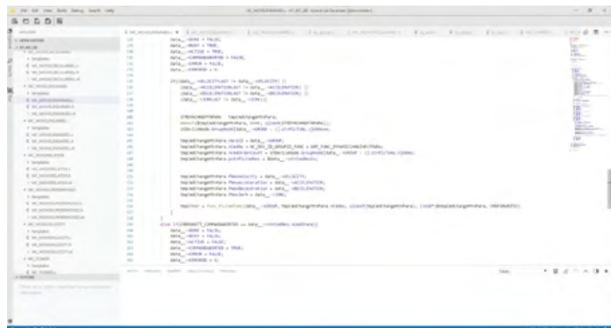
# Powerful Function

### High Real-time Task Scheduling

- Support cycle tasks, interrupt tasks and loop tasks, priority-based preemption



# Open Ecosystem

### IDE Cross-platform

- Windows series
- Linux series: Ubuntu, Fedora, CentOS
- Mac OS
- Kirin OS

### Cross Compiler

- X86
- MIPS
- ARM

### RTE Cross-platform

- RT Linux
- Vxworks
- Intewell

### Inter-station Communication

- Inter-station communication supports dual network transmission to ensure that the data can be reached and make the interstation communication function have more fault-tolerant
- Support single station to multistation data transmission and single station to receive data from multiple stations, thus making the configuration station more flexible and supporting up to 128 control stations for inter-station communication

### TSN Support

- Support IEEE802.1AS, synchronize local clocks with TSN system clocks to sub-microsecond levels
- Support OPC UA subscription publishing
- Support TSN accurate time scheduling, send the specific message acc- ording to the allocated time scheduling window

### Rich Protocol

- Support Modbus TCP, Modbus RTU, EtherCAT, CANopen, Profinet, AU- TBUS bus protocol, Ethernet/IP, OPC UA and other standard Protocols.
- Support custom protocols
- Support secondary development in accordance with module protocol development specifications

# KySCADA Data Acquisition and Monitoring Control Platform

- Independent research and development of data and control visualization related technology, the product has fully independent intellectual property rights
- Closely integrate with Kyland industrial server to provide users with software and hardware integrated on-site monitoring and management platform solution
- Seamless integrate with MaVIEW, the same configuration can be released to the operator station and central station
- Using real-time library to support the storage, compression and management of historical data
- Real-time database transfer is used for data interaction, and the data response time is millisecond
- Uplink and downlink data support expression
- Support Jave, C/C++, Python multilingual development interfaces for data preprocessing and control on the edge side
- Perfect security access: user roles and permissions, log management, operation query etc.
- Cross platform, support Fedora, Windows, CentOS, Ubuntu and other common OS
- Screen full configuration, status bar, menu bar, system login, logo, page jump arbitrary adjustment and layout
- Data simulation supports self-increase, self-decrease, random number, custom data changes in a variety of ways, for offline configuration and debugging

## Engineer Station

### Graphic Configuration

- Support for two-dimensional graphics configuration and editing
- Support component drag-and-drop, rotary operations
- Support element undo and resume operations
- Support component copy, paste, zoom operations
- Support element alignment, equal, equal high, box selection operations
- Support element binding, unbinding and grouping operations
- Support element property editing
- Support color change, blinking, display hide, output, enumerat- ed animation effect
- Support audio and video components
- Support component mouse event configuration
- Support two-dimensional graphics import, export
- Support component library import and export
- Support user extend component libraries
- Component libraries include basic graphics, industry libraries, charts, videos, pipelines, dashboards and other common controls

### Data Configuration

- Support real-time database management
- Support label data management
- Support virtual point data management
- Support snapshot data management
- Support alarm data management
- Support data visibility management

### Alarm Configuration

- Support user-defined expression alarm rules
- Support process alarm rule management
- Support system alarm rule management

### Report Configuration

- Support user-defined report statistics rules
- Support class reports, daily reports, weekly reports, etc. according to time granularity, while supporting free reports
- Support user-defined report formats (selected by default template)
- Support report printing, report export (EXCEL, PDF format)

### Print Configuration

- Support printer management
- Supports print format settings

## Operator Station

### Process Monitoring

- Support to browse all process flow charts
- Support real-time data and animation displa
- Support control orders issued
- Support component marking and search

### General View Monitoring

- Support to browse all general views
- Support general map skip to process flow chart, control group chart, etc.
- Support general view alarm display

### Control Group Monitoring
- Support to browse all control groups
- Support from control group picture to point detail, point trend chart, process flow chart, control logic diagram, alarm processing screen, etc.

### Alarm Monitoring
- Support real-time and historical alarms
- Support H, L, HH and LL Level Alarm Setting
- Support alarm suppression and release, alarm hiding and release operations
- Support alarm remarks query

### Report Management
- Support daily and weekly report viewing and printing
- Support report generation and saving

### System Management
- Support print settings
- Support user authority management
- Support log management

## Central Station

### System Management
- Support to add/delete/change/check user, password reset
- Support role and authority associations
- Support to add/delete/change/check organizational structure
- Support system configuration information
- Support log query

### Graphic Monitoring
- Support configuration list view
- Support configuration graphics monitoring
- Support data dynamic refreshing
- Support data control operations

### Alarm Monitoring
- Support real-time alarm information notify and view
- Support alarm list view and query
- Support view alarm details
- Support alarm confirmation, alarm add/delete operations
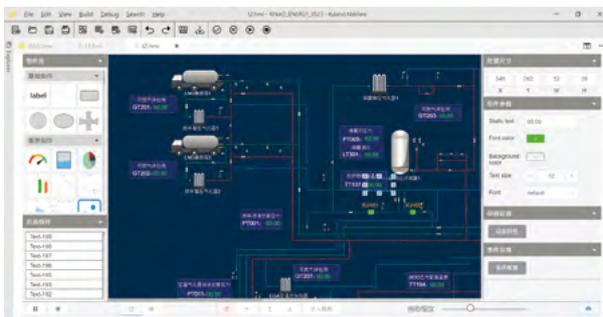
### Report View
- Support class reports, daily reports, weekly reports view and print
- Support report generation and saving

### History Data
- Support data point list history and query
- Support controls history view and query
- Support alarm history view and query
- Support report generation history view and query
- Support schedule execution history view and query
- Support log history view and query

### User Information Management
- Support to view user personal information, password changes, logout
- Support user exit login

## IOServer Data Gateway

### Data Parsing
- Support to establish a connection with Klyand PLC and parse according to the protocol format
- Support the third-party protocols and device data access

### Data Forwarding
- Support data write to real-time databases by calling real-time database API
- Support real-time data, cache data complement

### Automatically Add Database Points
- Automatically builds real-time database points according to configuration
- First implement the configuration point in the configuration file

### Redundancy
- One master and multi-slave

### Data Access
- Support MQTT data access
- Support Kyland controller protocol
- Support the third-party protocols

# NewPre + Intewell OS + MaVIEW IDE/RTE All-in-one Solutions