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WellinTech

KingIOServer

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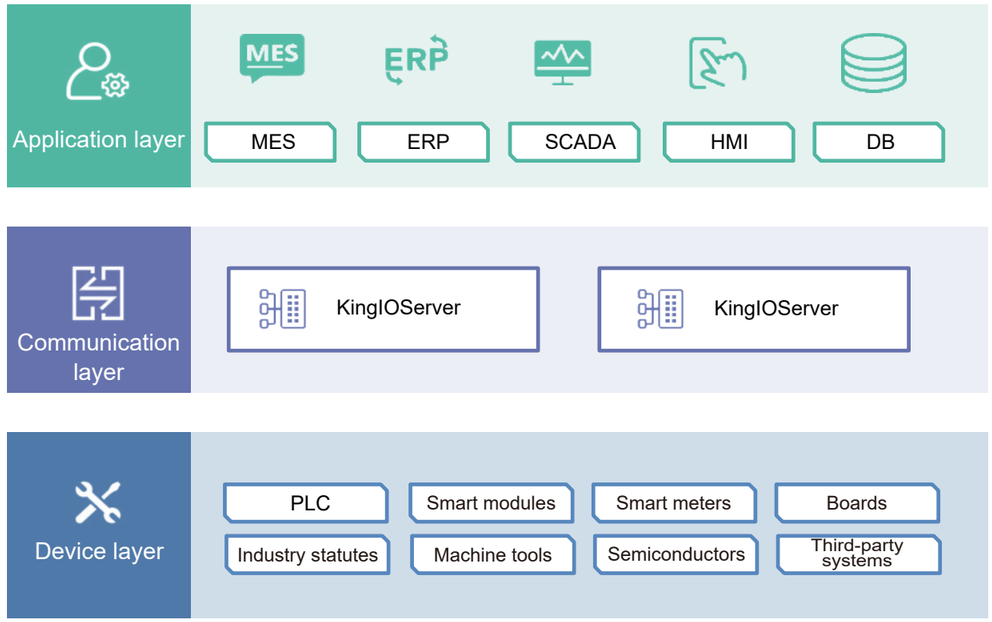
Product Profile

KingIOServer, a data acquisition and data connectivity product, is a distributed data acquisition product with independent intellectual property rights, developed by WellinTech Co.,Ltd. with more than 20 years of professional data acquisition experience.

KingIOServer supports data acquisition from more than 6,000 types of devices, making users communicate with industrial devices and applications through a single communication platform and providing reliable data supports for enterprises. It can provide a standard and unified data source for the third-party software or data acquisition supervisory platforms through OPC, Web services, ODBC and various industry protocols (Modbus, Power 101/104, CDT, 212, semiconductor, etc.).

KingIOServer aims at providing efficient and reliable acquisition product solutions, which can be widely used in municipal, oil and gas, electric power, mining, logistics, automotive, large equipment and other industries to provide raw data supports for SCADA/HMI, EMS, MES, ERP, third-party databases, etc.

Application scenarios



Product function

1. Real-time data acquisition

- ✓ Support more than 1600 manufacturers' devices at home and abroad
- ✓ Support more than 600 kinds of equipment drivers such as PLU, intelligent modules and board cards
- ✓ Support a variety of industry standard protocol communication, such as SECS/GEM, Lonworks, BACnet, IEC61850 and other dozens of industry standard protocols
- ✓ Support the communication links of different networks and media, such as TCP/IP, RS232/485, USB and WIFI, 5G, GPRS and other kinds of wired and wireless communication methods
- ✓ Support link and device activation status configuration
- ✓ Support for collecting data from third-party OPC (DA and UA) services

2. Data storage, disconnected caching and renewal

- ✓ Support the tag storage in multiple IOServer sites simultaneously
- ✓ Support the storage in multiple table structures: narrow table, wide table, existing table
- ✓ Support user-configurable table fields
- ✓ Support multiple storage modes: Update mode (real-time data), Insert mode (historical data)
- ✓ Support multiple trigger modes: timed storage, change storage, conditional storage, integral point storage

3. Data forwarding and protocol conver-

- ✓ Support standard OPC (DA and UA) interface
- ✓ Provide multi-language API interface and demo program: C++, C#
- ✓ Support standard protocol forwarding: Modbus, IECIOIx CDT, MQTT, HTTP, SECS/GEM and other protocol forwarding

4. OPC Function

- ✓ Support the communicate with third-party OPC DA clients as OPC DA service, without DCOM configuration
- ✓ Support the communication with third-party OPC DA service as OPC DA client
- ✓ Support the communication with third-party OPC UA client as OPC UA service
- ✓ Support the communication with third-party OPC UA service as OPC UA client through the anonymous, username and password

5. Redundancy

- ✓ Support 3 kinds of redundancy: dual IOServer, dual devices and dual networks
- ✓ Support multiple switching methods: cold switching, hot switching

Product advantages

1. Wide range of device support

KingIOServer provides a rich driver library covering more than 1600 manufacturers and 6000 kinds of devices in the market. By communicating and interacting with devices of different manufacturers and protocols, the data can be uniformly integrated into a single communication platform, which is convenient for users to manage the data.

Communication interface

Support RS-232/485, USB, CAN bus, Ethernet and other communication interfaces, laying the communication foundation for data interaction with most devices on the market

Industry standards

Support I EC10K IEC102, IEC103, IEC104, IEC61850, DNP3.0, HJ/IP, HJ/IP, HJ/IP, HJ/IP, HJ/IP, HJ/IP, HJ/IP, HJ/IP,DNP3.0, HJ/T212, BACnets SECS/GEM and other protocols, which can be widely used in municipal, water conservancy, environmental protection, power distribution buildings, semiconductors and other industries.

P L C

Support communication with most PLCs in the market, including Siemens, OMRON, Mitsubishi, Schneider, Rockwell, Keyence, HollySys, INOVANCE and many other Chinese and foreign manufacturers.

Smart meter

Support reading and writing operations for meters, flow meters, heat meters, wet/dry hygrometer, and other types of instrumentation to achieve unified management for field data.

Intelligent Module

Support communication with DTU module, RTU module, SMS module, alarm module, etc. via wired or wireless mode to realize the centralized control to intelligent modules via KingIOServer.

Intelligent Module

Support communication with boards from many manufacturers such as Altech, Advantech, ADLINK, ICP DAS, etc., including data acquisition cards, motion control cards, etc. It also supports for high-speed acquisition cards, with the frequency of 10mso.

IOT platform

The IOT platform supports data interaction with third-party IOT platforms through MQTT, HTTP Restful and other methods, and has successfully realized the interface with telecom CTWing and mobile OneNET and other IOT open platforms.

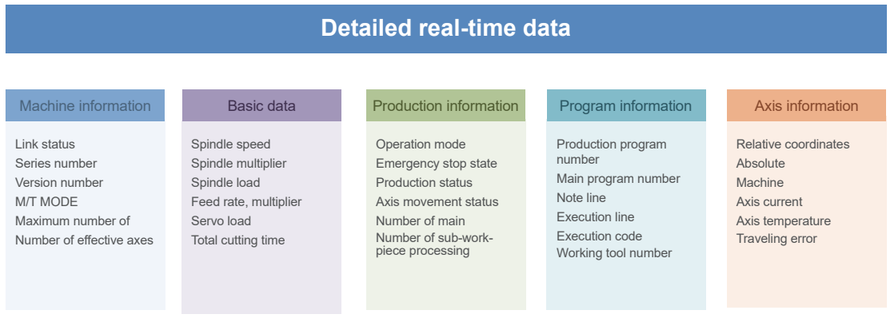
Customized Interfaces

Support customized interface development to meet the customization needs of users.

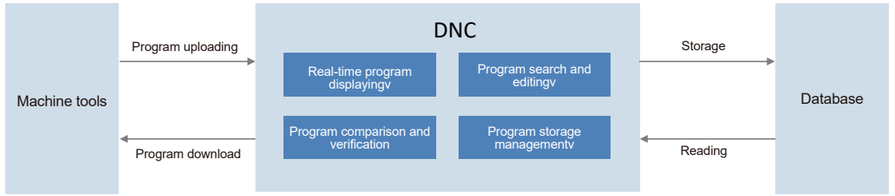
2. Support CNC machine tool equipment access

KingIOServer supports communication with many machine tools such as Fanuc, Mitsubishi and Mazak. It supports the access of MDC (Manufacturing Data Collection System) system and DNC (Distributed Numerical Control System) system.

MDC is mainly used for real-time data acquisition and storage. Through KingIOServer, the real-time working status of all machine tools can be monitored, and the statistical reports such as daily, monthly and annual reports can be generated from the machine monitoring data, so that the machine utilization rate can be easily and quickly calculated and the enterprise managers can understand the utilization of the equipment at the first time.

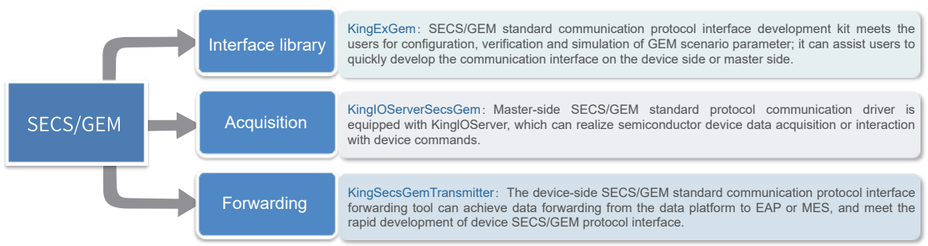


DNC is mainly used for the management of CNC programs. KingIOServer supports two-way transmission of CNC programs (upload and download), real-time display of CNC programs, CNC program editing and comparison, database storage management of CNC program and many other functions. It can effectively reduce the time between equipment and computer, and improve the productivity.



3. Support the access to SECS/GEM protocol of semiconductor

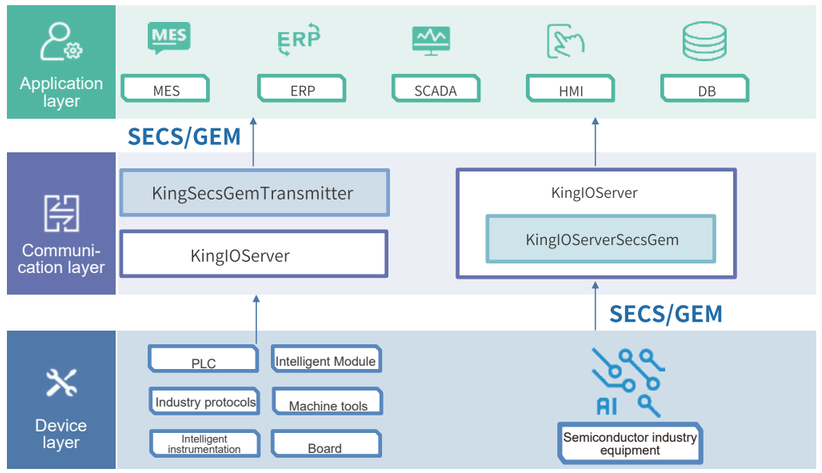
SECS/GEM,the connectivity standard developed by the Semiconductor Equipment and Materials International (SEMI), is the most widely used standard for many types of semiconductor devices. It defines messages, state machines, and application scenarios that enable factory software to control and monitor production equipment. We provide solutions for communication between the device side and the host side of the SECS/GEM standard protocol.



Features:

1. Meet the rapid development needs of SECS/GEM communication standard interface
2. Provide the convenient configuration, verification and simulation solutions for SECS/GEM scenarios
3. Implement the GEM protocol forwarding of OPCDA or OPCUA data source
4. Provide the customization service of SEMI standard communication interface
5. Support the rapid acquisition of semiconductor device data by SECS/GEM communication standard
6. Provide consulting services for development of SECS/GEM standard communication interface.

Application scenarios:



4. Seamlessly connect to OPC protocols

WellinTech, as a member of OPC Foundation, is committed to providing clients with quality products that follow the standard OPC protocol. Support OPC UA unified architecture specification and a large number of OPC Classic specifications, including OPC Data Access (OPC DA), OPC Alarm and Event (OPC AE).

OPC DA

OPC real-time data access specification

Support automatic enumeration server tags, self-diagnosis and self-restoration of connection status, reading and writing back tags in synchronous/asynchronous mode, acquisition through polling/subscription, etc., to ensure real-time data transmission.

OPC AE

OPC real-time data access specification

Supports on-demand notification functions for various events such as emergencies, operations of operators, information messages, etc. Ensure users can timely get the alarm events in site.

OPC UA

OPC real-time data access specification

Support the anonymous, username password, certificate and other connection methods as well as None, Basicl28Rsal5, Basic256, Basic256Sha256 and other security policies to provide data to the site more securely, reliably and conveniently.

5. Provide rich open interfaces

KingIOServer features the secure and reliable real-time industrial data access capability, which can provide reliable data sources for MES, MOM, ERP and other systems. Users can obtain KingIOServer data through system integration or secondary development, which can be easily and quickly integrated into third-party systems to improve data utilization.

01

Multiple database storage

It supports MySQL, SQL Server, ORACLE, Redis and other database storage, and can change the storage, set the time for storage and collect the storage.It has the ability of disconnected caching and renewal to ensure data integrity.

02

Multi-language API interface

Support access through C++ and C# interfaces. KingIOServer provides complete interface documentation and demos to assist users to complete interface calls.

03

Proprietary protocol forwarding

Support the forwarding of Modbus, IEC101, IEC104, HJ/T212, SECS/GEM and other proprietary protocols.Data can be sent to the unified data supervisory platform in the form of standard industry protocols to achieve unified data management.

04

Standard OPC Server interface

Support seamless connection to any OPC UA and OPC DA client applications, enabling users to securely access industrial data.

05

IT interface forwarding

Support MQTT/REST protocol forwarding, which can directly stream real-time industrial control data to big data and analysis software, to ensure the business intelligence and operational excellence.

06

Customized interface development

Support the development of customized interfaces and data formats to meet users' customized forwarding needs, enabling users to choose the right vendor and communication method for their systems.

6. Support multiple redundancy schemes

To effectively reduce data loss, increase system reliability and facilitate system maintenance, KingIOServer provides comprehensive redundancy functions, including: dual IOServer redundancy, dual device redundancy and dual network redundancy.

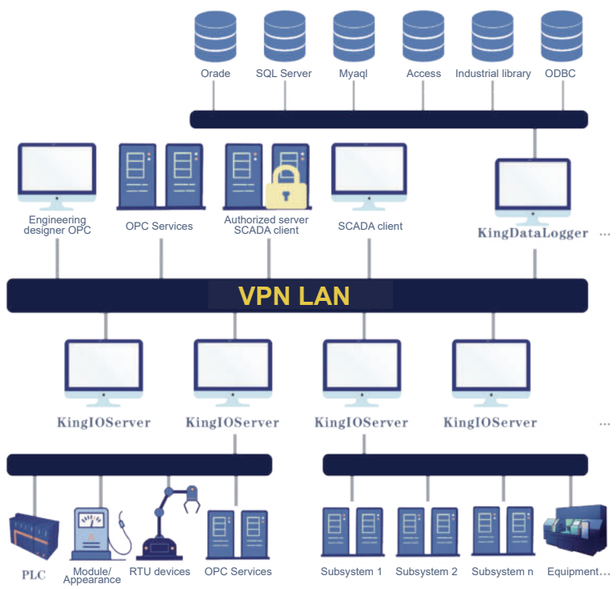
IOServer redundancy	The IOServer of master and slave connects to the network through TCP\IP that is a backup mechanism. When the master IOServer fails, the slave IOServer can be activated in time to enhance the security of data acquisition and achieve the purpose of real-time monitoring of master status.
NIC redundancy	The IOServer of master and slave connects to the network through TCP\IP that is a backup mechanism. When the master IOServer fails, the slave IOServer can be activated in time to enhance the security of data acquisition and achieve the purpose of real-time monitoring of master status.
Device redundancy	The IOServer of master and slave connects to the network through TCP\IP that is a backup mechanism. When the master IOServer fails, the slave IOServer can be activated in time to enhance the security of data acquisition and achieve the purpose of real-time monitoring of master status.

7. Perfect user management system

- KingIOServer has a complete user management system;
- It supports various access rights for visitors, ordinary users and administrators;
- The users with different rights can be managed separately;
- Effectively avoid accidents caused by malicious tampering of collected data.

8. Support for distributed deployment

In order to reduce the load on the operating environment and improve the system performance, KingIOServer supports deployment to different computer nodes. When a single node goes down, it does not affect the normal operation of other services and improves availability, thus perfectly solving the scale and performance requirements of large monitoring systems.



9. Complete driver development system

KingIOServer has a complete driver development system to ensure that the provided driver products can run stably in each production site. In addition, users can complete the driver development work independently through the driver development package provided by WellinTech, so as to complete the independent control.

Stable acquisition performance

The driver products provided by WellinTech have been tested in a large number of industrial control scenarios and can ensure stable operation on site.

Complete R&D process

Template development and automated testing ensure that the driver follows strict design, development and testing specifications from requirement research to product delivery.

Support for user-driven development

Provide template driver development package KingDriverDeveloper and perfect development training service, users can complete the driver development work independently to achieve the purpose of independent control.

Provide customized services

According to the users' requirements, the development team can provide customized development services for driver interface.

Product performance

Multiple KingIOServer application projects can be operated simultaneously per PC;

Each KingIOServer application project can operate 60,000 points stably;

Each KingDataLogger application project can store 20,000 data per second to the database;

Support simultaneous connection of 8 API client;

As OPC DA server, support simultaneous connection of 8 OPC DA clients and 3000 points of tags;

As OPC DA client, support the connection of 8 OPC DA servers and 10,000 points of tags;

As OPC AE client, can connect to 5 OPC AE servers;

As OPC UA server, support simultaneous connection of 8 OPC UA clients and 20,000 points of tags;

As OPC UA client, support the connection of 15 OPC UA servers and 20,000 points of tags;

As an MQTT client, can forward 20,000 points of data per second;

As an HTTP server, support 10 connections and can forward 20,000 points of data per second.

System requirements

- ✓ The OS languages supported: Simplified Chinese and English
- ✓ The OS bits supported: 32-bit, 64-bit

Operating system

Window system:

- Windows 7 Ulitime
- Windows 8 Professional
- Windows 10 Professional
- Windows Server 2008 R2 Standard
- Windows Server 2012 R2 Enterprise Edition
- Windows Server 2016 R2 Enterprise Edition (Recommended)
- Windows Server 2019 R2 Enterprise Edition

Linux system:

- Centos Service Operating System
- Ubuntu Service Edition operating system
- Kylin (NeoKylin, Kylin) Service Operating System
- Unity Service Operating System
- Debian Service Operating System
- Loongson Service Operating System

In addition to the above supported operating systems, WellinTech can also provide customized Linux OS adaptation services upon request.

Case sharing

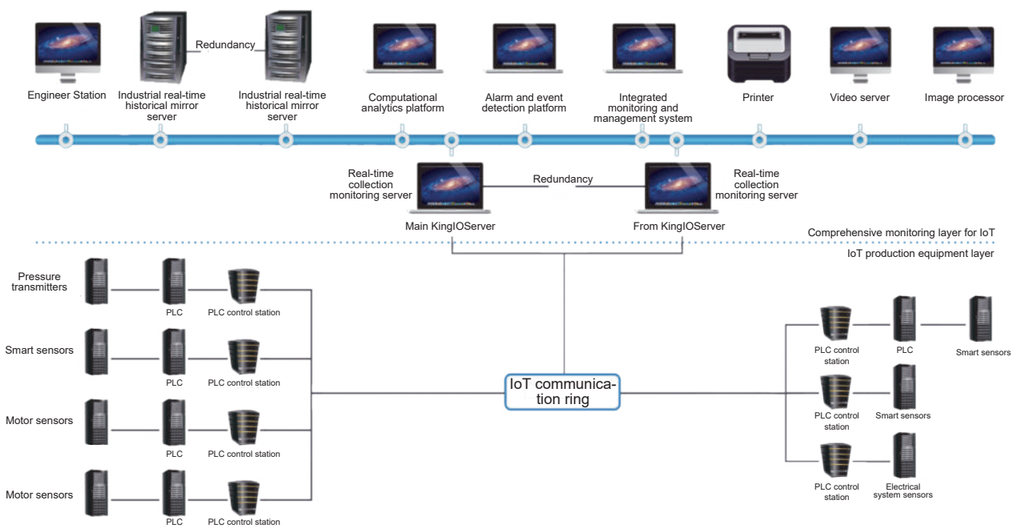
Intelligent Industrial IoT Solution

Project background

The intelligent industrial IOT information processing platform covers the whole process monitoring and control from raw material inlet to product delivery, including: raw material identification, production process control, production environment monitoring, and product identification. It incorporates the following three sub-systems:

- RFID-based factory logistics management system
- IOT-based production process control system
- IOT-based production environment sensing system

System structure



Features and requirements

- Multiple terminals in the bottom layer, with the integration of PLC and RFID card reader of LS, OMRON, YASKAWA, KEYENCE and other manufacturers
- The upper layer industry applications are complex and require extremely accurate data response time, with millisecond accuracy and 99.9% reliability requirements. The platform needs to maintain a large amount of shared data and control data
- Provide various interfaces compatible with different terminal devices and intelligent sensors

Solution highlights

- Integration: The KingIOServer dual machine redundancy architecture realizes the data sharing and application integration between different application subsystems and device interface protocols;
- Openness: KingHistorian real-time database and KingSCADA monitoring platform provide standard data interfaces such as ODBC, OLEDB and OPC, providing various ways to connect production data with other applications, and unified system resources and shared resources for application development;
- Extension: It not only completes the remote monitoring of the production process of each sub-system of the plant, but also extends the enterprise scheduling management scheme, completing the management for production equipment, production process, materials, safety and energy consumption at the scheduling level in conjunction with production reality.

Data acquisition solution of a large coal mining group

Project background

The platform solves the real-time second-level data acquisition of the whole production process of 13 mines and 11 coal washing plants and provides various ways of real-time data services to the outside world. 2 sets of 100,000 points KingIOServer (redundancy) are deployed in each mine, with rich drivers to meet the various kinds of equipment on site, and can accommodate 800,000 measurement points for storage at the same time, which is the first in China's coal industry.

Features and requirements

- An integrated mine control platform that integrates industrial data acquisition, storage, configuration, big data analysis, mine production business management and other production control operations;
- Real-time and historical data service capability for all mine data;
- Mine data modeling and measurement point management module that supports simultaneous online operation and maintenance of multiple staff.

Solution highlights

- The project covers a wide range of protocols and devices such as IEC103, IEC104, EIP， electric cart, robots, etc., and has the capability of unlimited expansion and integration
- Continuous on-demand storage of full mine data, accommodating 800,000 measurement points simultaneously
- Real-time and historical data service capability for all mine data
- Establishment of a group production database, laying a solid foundation for later data mining and other construction of smart mines

System structure