

Application of NSC200NT in power automation project

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Abstract: NSC200NT provides customers with modern and remote supervision and supervision and supervision and control supervision, while ensuring the safety and reliability of the power system. In enterprise production, it realizes real-time monitoring, data acquisition and analysis of power system operation, fault alarm and event records, and has rich graphics display, man-machine interactive operation, data statistics and reporting features, improves the efficiency of the electrical system, and reduces the labor intensity of workers, so that enterprise economic benefit is remarkable.

1. Introduction

With the continuous development of our social productivity and the continuous progress of science and technology, all walks of life have moved toward greater development space. The application of computer distribution control in power automation system has become an inevitable trend in the development of power enterprises. The application and reasonable computer distributed control technology in the power automatic system can promote the enterprise's economic interests while promoting the enterprise's development space. The current computer distribution control mainly has two applications in power systems: First, industrial control machine and programmable logic controller and relay protection configuration and power intelligent instrument; Second, industrial control machine and communication management machine and relay protection configuration, power intelligent instrument. Both of these methods have added intermediate links, communication management machines and programmable logic controllers, which has led to a large amount of funding for the communication equipment of the overall system and reduced reliability. The following is an exploration of the better application of computer distributed control in power systems that integrate with engineering practice.

2. Power automation system

The power automation system integrates computer technology, communication technology, automatic control technology, management information system and other technologies. It integrates protection, measurement and control, and communication, and is technically advanced. Compared with traditional technologies, it can ensure the safe operation of the power system more steadily. Significant savings on the user's project investment.

2.1 System configuration

In order to carry out remote management and monitoring of the power equipment of the whole system, the upper computer must use the Yanxiang 810A industrial control machine with strong interference. External equipment interconnects bus serial port card connection used for communication between upper and lower computers. Since most of the equipment in the power system uses its local network bus or RS-485 to implement communications. In order to be compatible with many power devices, you can plan to use a Zhouligong programmable logic controller-98202I programmable logic controller serial interface card and use a MOXA CP-132

programmable logic controller serial interface card. It is all configured in the programmable logic controller slot of the industrial controller.

The specific capabilities of the field-bus upper computer software system include sending control and related data messages and absorbing sampling data transmitted by the on-site equipment. At the same time, the data information transmitted from the site is systematically explored, displayed, printed, stored, and the last step is to compile data reports of different types.

2.2 Structure of the system

Its system structure is specifically divided into two categories, namely, one, supervision and testing application software; Second, operating system platform. In addition, the planning of human-computer interaction interfaces that monitor application software is based on the design of everything achieved. Specifically, the site parameter equipment interface, data collation interface, detection system main interface and other interface planning design; The operating system platform devotes its required operating conditions and external hardware devices as a way to exchange information for monitoring applications. The following are the planning and design for the interface modules, data processing, and data collection of external devices.

3. NSC200NT system

The system is based on the Client/Server architecture, namely the server system and the client system. The server is the core of the system. The preprocessor and the dispatcher workstation city system client integrate the two parts through the network. The basic tasks of the server are data maintenance and data processing, and respond to client requests and send data. The client is responsible for providing user interfaces such as graphics, animations, Tables, etc.. Servers and clients can have their own hardware platforms, or they can share hardware platforms.

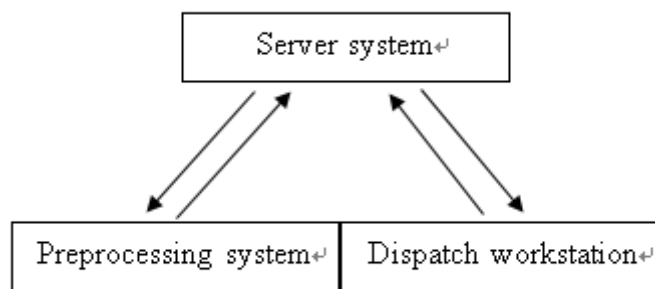


Fig. 1 Logic composition of NSC200NT

The NSC200NT system uses the Windows 2000 Server operating system as the operating platform, 32-bit multi-task priority preemption large-scale network operating platform, embedded network functions, supports TCP/IP, IPX/SPX, DECnet, etc., and can be connected to any network type. Other systems, A large-scale real-time wide area network system can be established, and the performance and reliability of the system can be improved by using two or even three networks.

The NSC200NT hardware configuration is very flexible. First, various levels of computers that support the Windows 2000 Server operating system platform can be used. The entire system can be composed entirely of PCs, or it can be composed entirely of workstations, or it can be composed of PCs and workstations to form heterogeneous systems. NSC200NT is based on communication between network processes, allowing servers and clients to run on a wide area network system as small as one machine. Servers usually use two machines to heat up each other. Through routers, NSC200NT can interconnect with any other system on the WAN, configure MODEM, and access system data through the telephone network.

1) Harmonized, equipment-oriented database management system for commercial and real-time

The database model of the system adopts the model of the commercial relational database system and a real-time database system. The system uses a commercial relational database to record the disk database image, historical sampling data and other system data of the real-time database

system. The real-time database management system in the NSC200NT server environment is responsible for the loading, maintenance, and disk mirroring of the real-time database system.

2) Graphical interface and configuration interface visual image

The graphics editor is powerful and simple to operate. Each screen can have 16 layers and planes according to actual needs. Each window can copy the screen and simplify the production of graphics.

3) Intelligent alarm, provide a variety of inquiries, confirmation methods

User login record, incident alarm record, return record, control operation record, system operation record, etc..

4) Provides powerful scripting language

It provides a programming environment similar to the ordinary Basic language. In the form of a high-level language, user processes and special operating procedures are compiled to complete a variety of complex process controls and operations. The interior provides a variety of functions. The reference amount can be a constant, a real-time quantity, a historical quantity, a time quantity, and other forms. It supports numerical calculations and logical calculations and performs grammatical checks and other functions.

5) Smart operating ticket

Different enterprises make operating ticket templates according to the operating specifications of the enterprise. When opening a new operating ticket, only the information in the operating ticket template that needs to be modified can be edited to generate a new operating ticket.

4. Examples of enterprises

The ion membrane power automation system consists of a single network, a single front-loading machine, and a four-monitoring computer. The network architecture belongs to the hierarchical distributed network monitoring system and logically divides the ion membrane power control system into two layers, namely the station control layer and the interval layer.

The preposition machine is the core part of the control system. It processes all kinds of electrical signals transmitted by the interval unit and transmits them to the computer background through the network. The C320 series of cards are responsible for transmitting various signals to the preprocessor in multiple RS232 ports; The NSC 60 converter realizes the conversion of RS485 and RS232, and satisfies multiple communication methods between interval units; The monitoring room computer uses the Windows 7 operating system, and the operator realizes the measurement, control and enterprise scheduling of the ion membrane power system through the NSC200NT system; According to the requirements of enterprises can form various enterprise reports, automatic printing; The picture image is intuitive, the operation is simple, and the portability is good; The monitoring system has established a real-time database and a historical database. The electrical state, switching state, and the alarm are realized through computer display flash, text, and sound. The fault screen is automatically ejected.

In addition, protection management machines and web browsers are configured according to needs. The data and wiring charts of the ion membrane electronic system can be connected to the local area network at any time to facilitate the company's leadership and employees to view and understand the system's operating information.

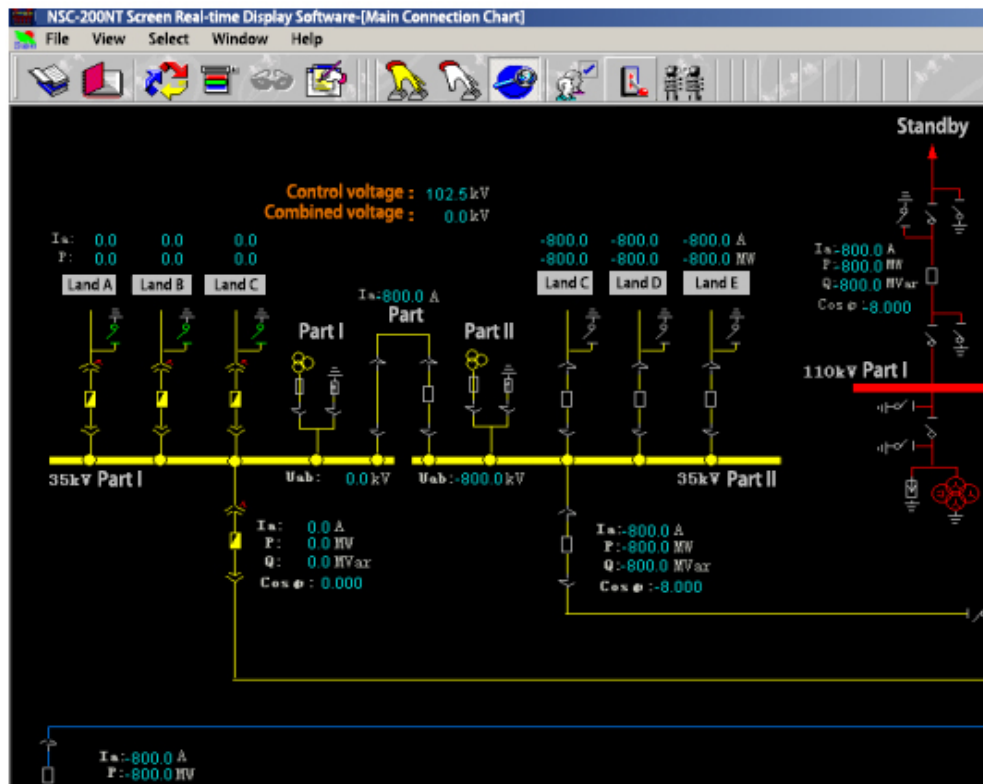


Fig. 2 Ion membrane project monitoring screen

Controller part program:

LDN	M4.0	LPP	
TON	T32, +1000	A	M0.0
A	T32	EU	
=	M4.0	XORB	2, MB0
LD	SM0.0	LD	SM0.0
LPS		LPS	
A	SM0.5	A	I2.0
EU		=	V133.4
XORB	1, MB0	LRD	
LPP		A	I2.1
A	M0.0	=	V133.5
EU		LRD	
XORB	2, MB0	A	I2.7
LD	SM0.0	=	V133.6
LPS		LPP	
A	SM0.5	A	I3.0
EU		=	V133.7
XORB	1, MB0		

5. Conclusion

Friendly interface, convenient operation, and maintenance, good openness, with long-term event record query and option query function, event sequence record resolution accurate to millisecond level. Users can easily generate and modify graphics, curves, reports, and messages online.

The NSC20NT system has improved the degree of automation of the enterprise's power system, reduced the manpower cost, and fully considered the compatibility and feasibility of the extension of the later renewal project. This has certain advantages in the same type of power automation system. At the same time, it is also the only way for the factory to realize Intelligence.

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