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ORIGINAL ARTICLE

PLC Characteristic

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PLC English full title Programmable Logic Controller, Chinese full title as the programmable logical controller, the definition is: One kind of digital operation operation's electronic system, for designs specially in the industry environment application. It uses a kind of programmable memory, uses in its internally stored program, the actuating logic operation, the sequential control, fixed time, counting and arithmetic operation and so on face user's instruction, and through digital either simulation type input/output control each type machinery or production process.

1 Reliability is high, antijamming ability.

Depending on the nature is the electric control equipment's essential performance. Because PLC uses the modern large scale integrated circuit technology, used

the strict technique of production manufacture, the internal circuit has adopted the advanced antijamming technology, had the very high reliability. For example the Mitsubishi Corporation produces F series PLC mean time between failure reaches as high as for 300,000 hours. Some use redundancy CPU PLC average trouble-free operating time is longer. From the PLC outside the aircraft electric circuit, uses the PLC constitution control system, compares with the same level scale following the electrical pick-off system, the electrical wiring and the switch contact reduced to several hundreds even several thousands 1, the breakdown also greatly reduces. In addition, PLC has the hardware fault self-measuring ability, presents when the breakdown may send out the warning information promptly. In the application software, the application may also enroll the periphery component's breakdown from the diagnostic program, causes in the system also obtains the breakdown

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besides the PLC electric circuit and the equipment from the diagnosis protection. Thus, the overall system has the extremely high reliability also not to feel strange.

2 Necessary complete, the function is perfect, serviceable.

PLC develops today, had already formed the large, medium and small each scale serialized product. May use in each scale the industrial control situation. Besides the logical processing function, modern PLC mostly has the consummation data operation ability, may use in each kind of numerical control domain. In recent years the PLC function unit emerged massively, causes PLC to seep the position control, the temperature control, CNC and so on each industrial control. In addition the PLC traffic capacity's enhancement and the man-machine contact surface technology's development, uses PLC to compose each kind of control system becomes very easy.

3 Easy to study easily to use, the depth is welcome the engineers and technicians.

PLC takes the general industrial control computer, is faces Industrial and mining establishment's labor to control the equipment. Its connection is easy, the programming language accepts easy for the engineers and technicians. The trapezoidal chart language's graphics symbol and the turn of expression and the relay circuit diagram is quite close, only uses PLC the few switch quantity logical control instruction to be possible to realize the relay electric circuit's function conveniently. For not the familiar electronic circuit, did not understand the computer principle and the assembly language person uses the computer to be engaged in the industrial control to open gate of the convenience. The

4 System's design, the construction work load are small, maintain conveniently, easy to transform.

PLC replaces the wiring logic with the stored logic, reduced the control device exterior wiring greatly, causes control system design and the construction cycle is the reduction greatly, simultaneously maintains also becomes easy. Causes the identical equipment possibly to become more importantly after the alter procedure change production process. This very suitable multi-varieties, small batch production situation. The

5 Volume is small, the weight is light, the energy consumption is low.

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Take subminiature PLC as the example, recently produced the variety base size is smaller than 100mm, the weight is smaller than 150g, the power loss only counts the tile. Because the volume small very easy to load in the machinery, realizes the integration of machinery ideal control device. Since long, PLC is in the industrial automation control domain throughout the main battlefield, has provided the very reliable control application for various automation control device. It can provide safe reliable and the quite perfect solution for the automated control application, suits in the current Industrial enterprise to the automated need. Since the 1980s, as a result of the computer technology and microelectronic technology's rapidly expand, the enormous impetus PLC development, the PLC function which caused strengthened day by day. If PLC may carry on the simulation quantity control, the position control and the PID control and so on, easy to realize the flexible manufacture system. The long-distance correspondence function realizes causes PLC even more powerful. At present, in the advanced countries, PLC has become the industrial control the standard equipment, has covered all Industrial enterprise nearly using the surface. PLC is one kind of solid state electronic installation, it uses the procedure which stores to control machine's movement or the craft working procedure. PLC is uses for to substitute for traditional the black-white control, compares with it, PLC is more outstanding than in the performance the black-white control logic, the reliability is specially high, the design construction cycle is short, the debugging revises, moreover the volume to be small conveniently, the power loss is low, the use maintenance is convenient. Therefore, this article has studied based on the programmable controller (PLC) electric motor synthesis monitoring and protective system's method. Makes the electric motor movement the three-phase asynchronous machine. Because the three-phase asynchronous motor rotor's rotational speed is lower than the rotary field the rotational speed, the rotor winding has the relative motion with the magnetic field, but the induced emf and the electric current, and have the electromagnetism torque with the magnetic field interaction, realizes the energy evolution. Compares with the single-phase asynchronous motor, the three-phase asynchronous motor performance characteristic is good, and may save each material. The crooked substructure's difference, the three-phase asynchronous motor may divide into the

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cage type and wind thread the type two kinds. The cage type rotor's asynchronous motor structure is simple, the movement is reliable, the weight is light, the price was cheap, obtained the widespread application, its major object was the velocity modulation difficulty. The regulating rheostat resistance may improve electric motor's starting ability and adjust electric motor's rotational speed. The three-phase asynchronous motor will change the voltage not to change the rotational speed, commonly used changes the number of pole pairs. Changes the three-phase power source's frequency. Change sliding, above two common velocity modulation method. The change number of pole pairs needs to look that the electrical machinery is whether appropriate, if in were diode's electrical machinery cannot change, after another was the change, its output correspondingly will also change, was not the stepless change. The change sliding use scope speaks the dot, only uses, in compares the high efficiency to wind thread on the electrical machinery, the small electrical machinery's rotor does not wind thread, changed the rotor induced emf the frequency to change electric motor's rotational speed. Moreover the simple the means are change into the electric motor the slippery difference electrical machinery, might the stepless speed regulation, because in the velocity modulation process, the electrical machinery rotational speed was invariable, like this output the rotational speed to be possible to move has not affected very lowly to the electrical machinery.