Mining explosion-proof and intrinsically safe high voltage vacuum soft starter

QJGR-150,300,400,500,630/10(6)

Main application
This equipment is suitable for coal mines with explosive gases (methane) and coal dust to soft start and soft stop the high-voltage motor of rated three-phase AC voltage of 10kV, 6kV, rated current of 150A, 200A, 300A, 400A, 500A, 630A below. The device can use a variety of curve options in heavy load and harsh conditions in accordance with the requirements of users, to ensure small starting current, gentle starting speed, stable and reliable starting performance, the small impact to power grid and equipment of the device. The high-voltage soft start is a kind of high-tech products which combines control, photoelectric, power electronics, high-voltage technology. There are only a few countries in production in foreign, and the brand is not too much. The three famous brands of high-voltage soft starter in the world now are originated from the United States BENSHAW, MOTORTNICS and Israeli Soken. To ensure that each pair of tubes in the series withstands the same voltage when use, there also need static average voltage, dynamic average voltage, DV/DT absorption and other technical measures to ensure the safety of thyristors in the circuit. It must be strictly guaranteed the conduction time of three pairs of thyristor trigger in series is absolutely consistent in the high-voltage thyristor trigger center, all adopt strong pulse starting mode, requiring the front of pulse rise time \( \leq 1\mu S \), the pulse amplitude should be high enough and with sufficient trigger current. Therefore, in order to protect the expensive high-voltage thyristor series group, all adopt very professional and highly reliable trigger technology. But in the low-voltage soft start due to low trigger requirements and cost constraints, all adopt common trigger circuit, so compared to the low voltage soft start the reliability of high-voltage soft start is much higher. Generally, it is not easily damaged in when normal use. The high-voltage soft starter is made of multiple
thyristors in parallel, can meet the different current and voltage requirements, the trigger angle which controls the thyristor can control the size of the output voltage. When the motor starts, the soft protector increases the motor’s terminal voltage in accordance with the pre-set starting curve to make the motor smoothly accelerate to reduce the electrical and mechanical impact to the grid, the motor itself, and the connected equipment. When the motor reaches the normal speed, the bypass contactor is switched on. After the motor starts, the soft starter keeps monitoring the motor and provide various fault protection. When soft stop, firstly, smoothly reduce the terminal voltage of motor according to the pre-set shut down curve until the motor downtime. The soft stop can solve the pump water hammer phenomenon caused by sudden shutdown, mechanical impact and other related issues. At present, our company has successfully developed QJGR series mining explosion-proof and intrinsically safe high-voltage vacuum soft starter based on Israeli Suoken technology, with the largest model QJGR630/10(6) in domestic, to provide a safe and reliable start protection for ultra large load motor in the coal mine. And adopts Siemens PLC as the core to upgrade the control circuit, can achieve the system network more easily, adopt 7-inch large-scale touch screen to dynamically display data, humanized operation keys of the keyboard , intrinsically safe control design, which enhances the product grade and using security. Ahead of the industry level, providing customers with high-quality, high-grade, cost-effective high-voltage soft start series equipment.

Applications
In a variety of applications, together with the high-voltage motor can form the best collaborative high-performance drive device with each other. The device can be widely used in petrochemical, steel smelting, coal mine, power plants, sewage treatment plants and other relatively harsh environments, mainly to drive high-pressure pumps, fans, compressors, grinding machines, belt conveyor, high-voltage motor and other equipment.

Function characteristics
• Good start and stop features: torque control, current control, and pump control
• Advanced motor protection
• Simple test and maintenance–can use the low voltage motor to test at the site
• Thyristor control system
• Electronic voltage detection system
• Fiber control (use for testing the main voltage)
• Friendly operation interface – LCD displays various kinds of language
• 7-inch touch display screen, can real-time upload the animation
• Adopt digital microprocessor to manage the data and communication
• Adopt the signal classification processing and isolation technology, to make the system has strong anti-interference ability
• Adopt advanced optical fiber transmission control technology, to achieve the trigger and detection of high voltage thyristor security isolation of high and low voltage control circuit
• Adopt high-frequency power isolating and transmitting technology and the electronic EVT (electronic voltage mutual inductor technology)
• Perfect protective function
• With PLC as control core, can achieve network with the ground center and remote control function
• Keyboard operation, considerate to the users, and humanized design to enhance product grade
• Communication module: PROFIBUS, Modbus TCP/IP, DEVICENET, and so on