

JKCN系列电力电容器投切装置

JKCN series switching device for power capacitor

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概述 General Description

JKCN 系列电力电容器机电一体化智能复合投切装置(以下简称投切装置), 主要用于交流50Hz-60Hz额定电压为220V或380V的低电压无功补偿系统中接通和分断电力电容器。其主要特点是投入无涌流、运行低功耗及无噪音、稳定、可靠。

功能特点 Function features

JKCN复合开关是由三个独立的复合开关组成的, 适用于低压无功补偿电容组的通断控制。复合开关的基本工作原理是将可控硅与磁保持继电器并接。使复合开关在接通和断开的瞬间具有可控硅过零投切的优点, 而在正常接通期间又具有接触器开关无功耗的优点。

- 1、过零投切:** 复合开关的基本工作原理是将可控硅开关与磁保持继电器并接, 实现电压过零导通和电流过零断开, 使复合开关在接通和断开的瞬间具有可控硅开关无涌流的优点, 而在正常接通期间又具有物理开关无功耗的优点。其实现方法是: 投入时在电压过零瞬间控制可控硅先导通, 稳定后再将磁保持继电器吸合导通; 而切除时是先将磁保持继电器断开, 可控硅延时过零断开, 从而实现电流过零切除。
- 2、采用单片机控制投切并智能监控可控硅、磁保持继电器以及输入电源和负载的运行状况, 从而具备完善的保护功能:**
 - 电压故障缺相保护: 系统电压缺相供电时, 开关拒绝闭合;
 - 电源电压缺相保护: 工作电源缺相供电时, 开关拒绝闭合;
 - 自诊断故障保护: 系统自动监控可控硅、磁保持继电器的运行状态, 若其出现故障, 则拒绝闭合或自动退投断开;
 - 停电保护: 接通后遇突然停电时, 自动跳闸断开。
- 3、无谐波注入:** 由于导通瞬间是由可控硅过零触发, 延时后由磁保持继电器吸合导通, 而继电器工作时不会产生谐波。
- 4、功耗小:** 由于采用了磁保持继电器, 控制装置只在投切动作瞬间耗电, 平时不耗电; 且由于磁保持继电器的接触电阻小, 因而不发热, 这样就不用外加散热片或风扇, 降低了成本。彻底避免了可控硅的烧毁现象, 同时也对同机运行的其它电器不造成危害, 真正达到了节能降耗的目的。
- 5、输入信号与复合开关光电隔离:** 抗干扰能力强, 工作安全可靠。

JKCN series intelligent blend switching device for power capacitor (hereinafter called switching device), is mainly used for switching on/off low voltage power capacitor of reactive power compensating system with AC 50Hz-60Hz, rated voltage 220V or 380V. The character: no switching surge current, low loss, no noise, stability, reliability.

JKCN blend switching device composed of three pcs of independent combination switches, is suitable for switching on/off the low voltage reactive power compensating capacitor bank. The working theory is that its controllable silicon shunt connected with magnetic positioned relay, this will realize that the switching device make or break the capacitor at the moment of ratings through zero via controllable silicon, and during closing it does not have power loss same as contactor.

- 1. Switch under zero rating:** The working theory is that its controllable silicon shunt connected with magnetic positioned relay, this will realize that the switching device make the capacitor at the moment of voltage through zero and break the capacitor at the moment of current through zero via controllable silicon, and consequently it will not happen to surge current, during its closing, it has no electric power loss. Operating methods: during switching on, at the moment of voltage through zero the controllable silicon circuit is closed at first, after stabilized the magnetic positioned relay is absorbed to be closed; during switching off, at first break the magnetic positioned relay, the controllable silicon circuit delay to open at the moment of current through zero.

- 2. Chipset used for switching on/off and intelligently monitor the controllable silicon, magnetic positioned relay and input power source and load running status, has complete protection functions:**

Voltage fault phase failure protection: when system voltage supplied under phase failure, the switching device can't be closed. Power supply phase failure protection: when working power source supply under phase failure, the switching device can't be closed.

Self detected fault protection: the system can automatically monitor the working status of controllable silicon circuit, magnetic

positioned relay. Once fault occur, it will prevent closing or automatically switching off.
Protection power cut: when closed but power cut suddenly, it will automatically trip.

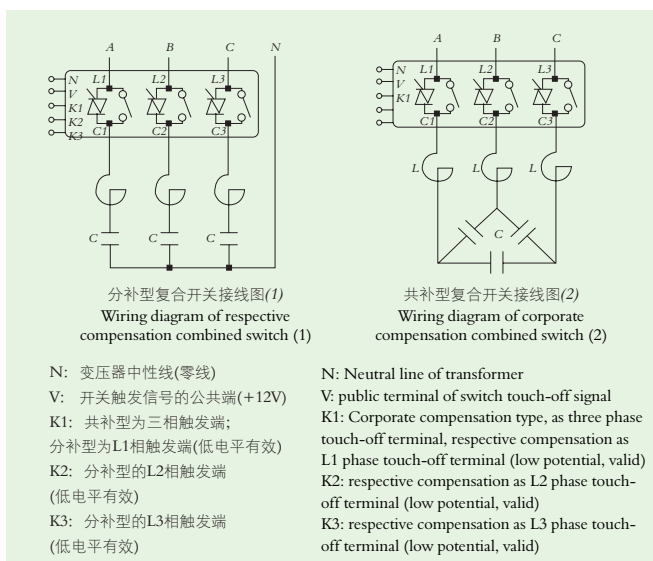
- No harmonic wave input:** due at the moment of closing it controlled by the controllable silicon circuit via touch-off under ratings through zero, and after delayed magnetic positioned relay absorbed and make closing, and during working the relay will not come out the harmonic wave.
- Low loss:** cause magnetic positioned relay used, the control device will consume the electricity only at the moment of switching on/off, during working period, it has no loss, more due the contacting resistance of relay is small, it will not become heat, certainly it does not need radiating plates or fan, saving the cost. Completely it avoid the controllable silicon circuit being burnt, and it does not influence on other electric apparatus, at finally it realize the purpose of energy saving and reducing cost
- The input signal is isolated from combined switch by photoelectric:** high interference resistant, safe reliable operation

技术参数 Main Technical Parameter

- 额定工作电压: 380V, 220V/AC 20%
- 额定频率: 50Hz 5
- 控制容量: (三相 \leq 30Kvar: Δ 型接法)(单相 \leq 10Kvar: Y形接法)
- 电路功耗: \leq 1.5VA
- 外形尺寸: 126mm 156mm 128mm
- 每次接通与关断间隔: \geq 1秒
- 连续两次接通间隔: \geq 100秒
(注: 当开关接通电源或断开后再导通须延时100秒(内定))
- 启动电压: 流 8-18V
- 电压畸变率: \leq 5%
- 使用寿命: 10万次
- 响应时间: \leq 1000ms
- 导通阻抗: \leq 0.003 Ω □
- 固定尺寸: 77mm 138mm
- 输入阻抗: \geq 5.1K Ω
- 工作电源: 220V
- 最大额定电流: 45A
- 接触压降: \leq 100mV
- 接点耐压: \geq 1600V
- 绝缘等级: 在正常大气条件下, \geq 10M□

- rated working voltage:** 380V, 220V/AC 20%
- rated frequency:** 50Hz 5
- controlled capacity:** (three phases \leq 30Kvar: Δ Delta connection)
(single phase \leq 10Kvar: Y Star connection)
- circuit loss:** \leq 1.5VA
- outline dimension:** 126mm 156mm 128mm
- interval between each switching on/off:** \geq 1s
- Interval between two operations of switching on:** $>$ 100s (NB: when switch device is just energized or closed after opening, it shall delay 100s (fixed))
- starting voltage:** DC 8-18V
- distortion rate of voltage:** \leq 5%
- working life :** 100,000 times / 100 thousand times
- response time:** \leq 1000ms
- closing resistance:** \leq 0.003 Ω □
- fixed size:** 77mm 138mm
- input resistance:** \geq 5.1K Ω
- working power source voltage:** 220V
- maxi rated current:** 45A
- voltage drop on contact:** \leq 100mV
- withstand voltage of contact:** \geq 1600V
- insulation level:** under normal ambient conditions, \geq 10M□

接线图 Connection diagram



安装尺寸图 Installation dimensions

