

VPN-12系列智能型固封式真空断路器

VPN-12 Series Intelligent Solid-Insulation-Embedded Pole Vacuum Circuit Breaker



产品特点

- ▶ 采用帝森克罗德模块化弹簧操作机构技术，实现机构免维护；
- ▶ 采用合资真空灭弧室固封极柱，确保质量稳定，性能优越；
- ▶ 引进马来西亚锌钴合金六价铬钝化表面处理工艺，抗盐雾试验水平达300小时；
- ▶ 采用德国INA定制的铜基高压合金无油轴承，实现传动自润滑；
- ▶ 机构寿命30000次；
- ▶ 采用帝森克罗德在线监测技术，对断路器机械特性进行在线监测，超限自动报警（选配）。

Product Features

- ▶ Tysen-KLD online monitoring technology is used for online monitoring of the mechanical properties of the circuit breaker, so that automatic alarm is given when limit is exceeded;
- ▶ Tysen-KLD modular spring operating mechanism technology is used to realize maintenance-free of mechanism;
- ▶ Vacuum interrupter solid-insulation-embedded pole manufactured by joint venture is used to ensure stable quality and excellent performance;
- ▶ The passivation surface treatment process of zinc-cobalt alloy hexavalent chromium in Malaysia shall be introduced, and the level of salt spray resistance test is up to 300 hrs;
- ▶ The German INA customized copper-based high-pressure alloy oil-free bearings are used to achieve self-lubrication of drive mechanism;
- ▶ Mechanical life of 30,000 cycles.

质量稳定，性能优越

产品结构 Product Structure

概述

VPN-12真空断路器是引进帝森克罗德技术研发而成，产品广泛应用于电网、发电厂、变电站、工业及其他行业。

产品可以单独使用，也可用于中置式开关柜和固定式开关柜。并可方便与其他断路器实现手车互换，具有广泛的兼容性和互换性。

结构形式

VPN-12智能型真空断路器总体结构为操动机构与一次导电回路前后布置形式。主导电回路部分为三相固封落地式结构，在线监测显示器一般安装于开关柜仪表板上，并通过断路器与柜体二次插件传输数据。

操作机构

VPN-12智能型真空断路器采用帝森克罗德研发的模块化弹簧操作机构，具有体积小，综合刚度强的特点，机构储能采取齿轮传动方式，产品所有金属件的防腐均采用马来西亚锌钴合金六价铬钝化表面处理工艺，抗盐雾试验水平达到300小时。

固封极柱

VPN-12智能型真空断路器采用合资固封极柱产品，其特征为：绝缘强度高，受环境因素影响小，导体间接触面少，回路电阻低；同时由于合资产品的技术优势及严格的质量管理体系，确保了产品质量的稳定和真空灭弧室的优越性能。

在线监测

VPN-12智能型真空断路器采用帝森克罗德在线监测技术，对断路器的机械特性进行实时监测，根据设定参数，在监测的相关技术参数逾限时自动报警，提醒维修人员及时检修，防止断路器带故障运行。

Overview

The VPN-12 vacuum circuit breaker is made upon research and development of imported technology from Tysen-KLD. The product is widely used in power grids, power plants, substations, industry and other sectors.

The product can be used alone, or alternatively incorporated in the mid-set switchgear and fixed switchgear. It can facilitate the handcart interchangeability with other circuit breakers, and have wide range of compatibility and interchangeability.

Structure Type

The VPN-12 intelligent vacuum circuit breaker is in overall structure of front-and-rear arrangement of the actuator and the primary conductive circuit. The main conductive circuit part is in floor-standing structure of three-phase solid-insulation-embedded pole. The online monitoring monitors are normally mounted on the instrument panel of switchgear, and transmit data through secondary plug-in component between circuit breakers and cubicle.

Operating Mechanism

The VPN-12 intelligent vacuum circuit breaker is installed with the modular spring-operated mechanism developed by Tysen-KLD, featuring compact size and great composite stiffness. The energy storage of the mechanism takes the form of gear transmission, and all metal parts of products are preserved using passivation surface treatment process of zinc-cobalt alloy hexavalent chromium in Malaysia, and the level of salt spray resistance test is up to 300 hrs.

Solid-Insulation-Embedded Pole

The VPN-12 intelligent vacuum circuit breaker is used with solid-insulation-embedded pole products, of which features are: high dielectric strength, little influence by environmental factors, smaller contact surface areas between conductors, and low loop resistance; at the same time technical advantages and strict quality management system on products of joint venture. All these features support quality stability of the products and excellent performance of the vacuum interrupter.

Online Monitoring

The VPN-12 intelligent vacuum circuit breaker is applied with Tysen-KLD online monitoring technology to achieve real-time monitoring on the mechanical properties of the circuit breaker, which gives automatic alarm according to the relevant technical parameters monitored according to the parameters set, to alert the maintenance personnel for timely maintenance and prevent the circuit breakers from faulty operation.

使用环境条件

- ▶ 环境温度：
 - 最高温度：+45℃
 - 最低温度：-25℃（允许在-30℃储运）
- ▶ 环境湿度：
 - 日平均相对湿度：≤ 95%
 - 月平均相对湿度：≤ 90%
 - 日平均气压：≤ 2.2 x 10⁻³ MPa
 - 月平均气压：≤ 1.8 x 10⁻³ MPa
- ▶ 海拔高度：1000m（1000~4000m可定制）；
- ▶ 地震烈度不超过8级；
- ▶ 使用场所无滴水、无易燃和爆炸危险、无严重污秽、无化学腐蚀性气体以及无剧烈震动。

Environmental Conditions for Use

- ▶ Ambient temperature:
 - Maximum temperature: + 45 °C
 - Minimum temperature: -25 °C (allowable for storage and transportation at -30 °C)
- ▶ Environmental Humidity:
 - Daily average relative humidity: ≤95%
 - Monthly average relative humidity: ≤90%
 - Daily average air pressure: ≤2.2 x 10⁻³ MPa
 - Monthly average air pressure: ≤1.8 x 10⁻³ MPa
- ▶ Altitude: 1, 000m (1, 000~4, 000m can be customized);
- ▶ Earthquake intensity not more than M8;
- ▶ The place of use must not have any dripping, combustion and explosive hazards, severe contamination, chemical corrosive gases and severe vibration.



主要规格及技术参数 Main Specifications and Technical Parameters

断路器主要规格及技术参数

Main Specifications and Technical Parameters of Circuit Breaker

序号 No.	名称 Description	单位 Unit	参数 Parameters		
1	额定电压 Rated voltage	kV	12		
2	额定工频耐受电压相间、相对地/断口 (1min) Rated power frequency withstand voltage (1 min)	kV	42/48		
3	额定雷电冲击电压相间、相对地/断口 (峰值) Rated lightning impulse/fracture withstand voltage (peak)	kV	75/85		
4	额定频率 Rated frequency	Hz	50		
5	额定电流 Rated current	A	630-2500	630-3150*	1250-4000*
6	额定短路开断电流 Rated short-circuit breaking current	kA	20 25	31.5	40
7	额定短路关合电流 Rated short-circuit making current	kA	50 63	80	100
8	额定峰值耐受电流 Rated peak withstand current	kA	50 63	80	100
9	额定热稳定电流 (有效值) Rated thermal stability current (effective value)	kA	20 25	31.5	40
10	额定短路持续时间 Rated short-circuit duration	s	4		
11	额定短路开断电流次数 Rated operations of short-circuit breaking current	次 Number of cycles	30	30	20
12	机械寿命 Mechanical life		30000		30000
13	额定单个/背对背电容器组开断电流 Rated single/back to back capacitor bank breaking current	A	630/400 (800/400 for 40kA)		
14	相间距 Phase-to-phase spacing	mm	210 275		
15	动、静触头允许磨损累积厚度 Allowable wearing accumulation thickness of dynamic and static contacts	mm	3		
16	三相分、合闸不同期性 Time interval between opening of first and last phase of three phase circuit-breaker	ms	≤ 2		
17	分闸时间 Opening time	ms	20-50		
18	合闸时间 Closing time	ms	35-70		
19	额定操作顺序 Rated operating sequence		0.3s 180s 0—CO—CO		180s 180s 0—CO—CO
20	操动机构抗腐蚀能力 (盐雾试验) Actuator corrosion resistance (salt spray test)	h	300		

注: *3150A及以上需要强制风冷。数据以最终出厂产品为准

Note: *3150A requires forced air cooling. Data shall be prevailed by the final manufactured products.