



Sunlight Creates Value. **Mindian Electric**

阳光创造价值 一 民电

民电电气有限公司

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CREATE SUPERIOR QUALITY

Pursue Customer Satisfaction

民电电气有限公司是一家极具多元化战略的新能源成长型公司。公司自创建以来一直专注于国家电网及新能源电气产业的创新与升级,是一家无区域国家高新技术型企业,也是国内新能源电气行业脱颖而出的佼佼者。

民电新能源电气产品涵盖新能源高低压成套设备、智能高低 压电气元件,光伏新能源配套系统、风能配电设备、光伏直流连 接器、直流线缆、汽车充电桩及储能能源系列产品。

为应对当前的气候变化议题,我国提出"二氧化碳排放力争于 2030 年前达到峰值,努力争取 2060 年前实现碳中和"的战略方针。在今年的政府工作报告中,"做好碳达峰、碳中和工作"被列为 2021 年重点任务之一;"十四五"规划也将加快推动绿色低碳发展列入其中,加快城乡智能电网和新能源电网的建设成为新的趋势。民电电气以此为契机,全面提升新能源高低压电器产品的技术含量。民电电气持续不断地在光伏预制舱、新能源升压箱变、一二次融合环网箱、智能光伏并网柜、智能风能变电站、汽车充电桩等研究领域均取得重大突破。其中汽车充电桩、直流断路器、直流智能万能式断路器、光伏智能小型重合闸断路器、光伏智能直流汇流箱、风能万能式断路器等配套产品达到国内前沿水平,在国家电网、南方电网、国家综合能源、国电投、中电投的合作项目中得到广泛应用与一致好评。

公司具备强大的自主创新能力,拥有多项核心技术,获得多项发明专利。公司已通过 ISO9001:2008、14000、OHSAS18000等认证。其中光伏配套用光伏并网箱、直流汇流箱、直流断路器、直流熔断器,直流隔离开关,光伏连接器、汽车充电桩在同行业中率先通过 TUV、CE、CB、Nemko、VDE、CCC、CQC、金太阳、SAA等认证。

产品源于前沿的设计理念、精良的生产装备、严格的检测手段、完善的质保体系和快速的信息反馈及优秀的售后服务。为用户提供优质的产品和服务是民电持之以恒的追求。

民电电气坚持"追求卓越"的精神,正紧紧围绕着"专业研发, 专业营销"的经营战略,力求将企业打造成具有新能源综合竞争 实力的跨国企业集团。 Mindian Electric Co., Ltd. is a new energy growth company with a highly diversified strategy. Since its establishment, the company has been dedicated to the innovation and upgrading of the State Grid and the new energy electrical industry. It is a non-regional national high-tech enterprise and also a leading player in the domestic new energy electrical industry.

The new energy electrical products of Mindian cover new energy high and low voltage complete sets of equipment, intelligent high and low voltage electrical components, photovoltaic new energy supporting systems, wind energy distribution equipment, photovoltaic DC connectors, DC cables, electric vehicle charging piles and energy storage series.

To address the current issue of climate change, China has put forward a strategic guideline of striving to peak carbon dioxide emissions before 2030 and achieve carbon neutrality before 2060. In this year's government work report, "doing a good job in carbon peaking and carbon neutrality" was listed as one of the key tasks for 2021. The 14th Five-Year Plan also includes accelerating the promotion of green and low-carbon development. Speeding up the construction of smart grids and new energy grids in urban and rural areas has become a new trend. Taking this as an opportunity, Mindian Electric has comprehensively enhanced the technological content of its new energy high and low voltage electrical products. Mindian Electric has continuously made significant breakthroughs in research fields such as photovoltaic prefabricated cabins, new energy stepup box-type transformers, primary and secondary integrated ring main units, intelligent photovoltaic grid-connected cabinets, intelligent wind energy substations, and vehicle charging piles. Among them, the supporting products

such as EV charging piles, DC circuit breakers, DC intelligent universal circuit breakers, photovoltaic intelligent small reclosing circuit breakers, photovoltaic intelligent DC combiner boxes, and wind energy universal circuit breakers have reached the advanced level in China and have been widely applied and highly praised in the cooperative projects of State Grid, China Southern Power Grid, National Integrated Energy, State Power Investment Corporation, and China Power Investment Corporation.

The company has a strong independent innovation capability, possesses multiple core technologies and has obtained a number of invention patents. The company has passed certifications such as ISO9001:2008, 14000, and OHSAS18000. Among them, the photovoltaic grid-connected box, DC combiner box, DC circuit breaker, DC fuse, DC disconnector, photovoltaic connector and vehicle charging pile have been the first to pass certifications such as TUV, CE, CB, Nemko, VDE, CCC, CQC, Golden Sun and SAA in the industry.

The product is derived from advanced design concepts, sophisticated production equipment, strict testing methods, a complete quality assurance system, rapid information feedback and excellent after-sales service. Providing users with first-class products and services is the persistent pursuit of Mindian.

Mindian Electric adheres to the spirit of "pursuing excellence" and is closely focusing on the business strategy of "professional research and development, professional marketing", striving to build the enterprise into a multinational enterprise group with comprehensive competitive strength in the new energy field.





在浩瀚的商业浪潮中,"专业筑基,品质兴企"不仅是我们的企业信条,更是我们砥砺前行的指南针。我们深知,专业是企业立足市场的基石,唯有深耕细作,方能铸就坚不可摧的竞争力。

因此,我们不断精进技术,优化流程,确保每一项服务、每一件产品都蕴含着深厚的专业底蕴。



Quality Enterprise Development

专业筑基 品质兴企







Therefore, we constantly improve our technology and optimize our processes to ensure that every service and every product is infused with profound professional expertise.







Certificate

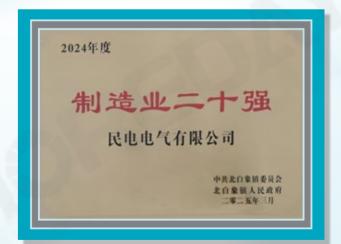
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Certificate

资质证书

民电电气有限公司(加盖公章)开关柜(总部委托省公司组织实施)资质业 结凭证单



民电电气有限公司(组织机构代码/统一社会信用代码,91330382686673380T)于2025年02月 10日 13时28分39秒,在国网电子商务平台生成此资质业绩凭证,并将其用于投标,提供招标方评审使用。

* 资质业绩凭证单说明如下:

资质业绩凭证单是指在供应商资质库中生成,并用于投标的一种电子凭证。

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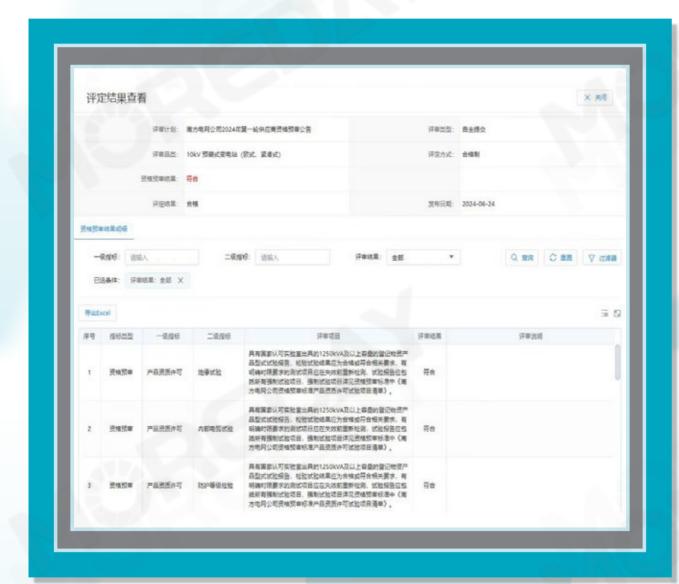




Certificate

资质证书

南网预审-10kV 预装式变电站(欧式、紧凑式)



www.moreday.com.cn



南网预审 -10kV 固定式高压开关柜



Certificate

资质证书





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TEST REPORT













MINDIAN 民电

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检测报告

Test Report

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PRODUCT

www.moreday.com.cn

Catalogue

高压开关柜系列	
High-voltage switchgear series	
HXGN-12 环保气体封闭开关设备(标准化环网柜)	
Environmental friendly gas-enclosed switchgear (standardized ring net cabinet)	01
HXG □ -12(SF6) 全绝缘全封闭环网开关设备(标准化环网柜)	03
Fully insulated fully enclosed ring net switchgear (standardized ring net cabinet) HXG □ -24(SF6) 全绝缘全封闭环网开关设备 (标准化环网柜)	
Fully insulated fully enclosed ring net switchgear (standardized ring net cabinet)	05
GTHXGN-12 固体绝缘环网开关设备	
Solid insulation ring net switchgear	07
MDKBW-12 户外高压环网箱 (一二次融合标准化环网箱)	09
Outdoor high-voltage ring net box (Primary-secondary integrated and standardized)	07
MDKBW-12 户外高压环网箱(开闭所) Outdoor high-voltage ring net box (switch station)	11
XGN □ -12/24 金属封闭环网开关设备	
Metal-enclosed ring net switchgear	13
GIS-40.5 气体绝缘金属封闭开关柜	
SF6 Gas-insulated metal-enclosed switchgear	15
KYN28-12 新型铠装移开式交流金属封闭开关设备	17
New armored removable AC metal - enclosed switchgear	17
KYN28-24 新型铠装移开式交流金属封闭开关设备 New armored removable AC metal - enclosed switchgear	19
KYN61-40.5 铠装金属封闭开关设备	
Armored metal-enclosed switchgear	21
低压开关柜系列	
Low-voltage switchgear series	
MLS 小型化低压开关柜	
Miniaturized low-voltage switchgear	23
MDGCS 低压抽出式开关设备	25
Low-voltage withdrawable switchgear	23
MDGCK 低压抽出式开关设备 Low-voltage withdrawable switchgear	27
MDMNS 低压抽出式开关设备	
Low-voltage withdrawable switchgear	29
MDGGD 交流低压配电开关设备	-
AC low-voltage distribution switchgear	31
MDGDF 低压固定分隔式开关柜	33
Low-voltage fixed compartments switchgear SLVA 国网标准化低压开关柜	
SLVA 国网标准化10压升大性 State Grid standardized low-voltage switchgear	35
JP 户外综合配电箱	
Outdoor integrated distribution box	37
BXD2/BXS2 电表箱	20
Electricity meter box	39
PXD2/PXS2 电表箱	41
Electricity meter box SXD2/SXS2 电表箱	
Electricity meter box	43
DZX 表前端子箱	
Meter front terminal switch box	45

产品目录



箱式变电站系列			
Box-type substation series			
10kV 国网标准型预装式变电站 (紧凑型) State Grid standard prefabricated substation (Compact type)			4
10kV 国网标准型预装式变电站 (非金属型) State Grid standard prefabricated substation (Non-metallic type)			4
10kV 国网标准型预装式变电站 (金属型) State Grid standard prefabricated substation (Metal type)			5
ZGSM 组合式变电站 (美式) Combined substation (American style)			5
电缆分接箱系列		高压开关系列	
Cable distribution box series		High-voltage switch series	
DFW-12kV 欧式电缆分接箱 European style cable junction Box	55	ZW20-12 一二次融合柱上断路器 Primary and secondary integrated pole-mounted circuit breaker	6
DFW-35kV 欧式电缆分接箱 European style cable junction Box	57	ZW32-12 —二次融合标准化柱上断路器(深度融合) Standardized pole-mounted circuit breaker with primary and secondary integration (deep integration)	6
DFW 低压电缆分支箱 Low-voltage cable distribution box	59	GW9 户外高压交流隔离开关 Outdoor high-voltage AC disconnector	6
变压器 / 其他			
F 41 1 F 1			
Transformer/Others			
SC(B) 干式电力变压器 Dry-type power transformer			6
SCBH 干式非晶合金变压器			
Dry-type amorphous alloy transformer			6
S20 油浸式电力变压器 Oil-immersed power transformer			7
SBH 油浸式非晶合金变压器			
Oil-immersed amorphous alloy transformer			7
SB20 三角形立体卷铁芯电力变压器 Triangular three-dimensional wound core power transformer			7
10kV 柱上台成套设备 Pole-mounted table complete equipment set			7
电缆保护管			
Cable protection pipe			7
GZDW 直流电源屏 DC power supply panel			8
输电线路系列			
Transmission line series			
MDS-PMG-100M 输电线路智能多目视频在线监测装置 Intelligent Multi-Eye Video Online Monitoring Device for Power Tra	nemiesio	n l ines	8
MDS-PIMG-DSC 输电线路故障智能诊断系统 Intelligent Diagnostic System for Transmission Line Faults			8
MDS-PMG-QX 输电线路杆塔倾斜在线监测装置			
Transmission line tower tilt online monitoring device			8
MDS-PMG-FB200 输电线路微波覆冰在线监测装置 Transmission line microwave ice-covering online monitoring device	2		8

HXGN-12

环保气体封闭开关设备(标准化环网柜)

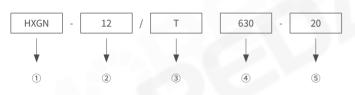


概述 /Overview

10kV 标准化环保环网柜是以干燥空气作为绝缘和开断介质的 12kV 50Hz 三相交流户内高压开关设备。

10kV standardized environmental friendly ring net cabinet is a 12kV, 50Hz three-phase AC indoor high-voltage switchgear that uses dry air as insulation and breaking medium.

型号及含义 /Model and meaning



序号 serial number	项目 Project	
1	环保气体绝缘 Environmental friendly gas insulation	
2	额定电压 Rated voltage (kV)	
3	弹簧 spring	
4	额定电流 Rated current (A)	
(5)	短时耐受电流 Short-time withstand current	

设备性能特点 /Equipment performance characteristics

10kV 标准化环保环网柜设备具有以下几个显著特点:

安全可靠:

一次带电部分全密封, 且具有完善的机械和电气联锁系统;

结构紧凑:

最小的单元宽度为 420mm;

扩展灵活:

模块化设计、单元间采用扩展母线连接,可自由组合;

环境适应能力强:

全绝缘、全密封结构,不受气候和环境的影响,可装于潮湿、多沙多尘等地区。

10kV standardized environmental protection ring cabinet equipment has the following characteristics:

Safe and reliable:

The primary live part is fully sealed, and has a perfect mechanical and electrical interlocking system;

Compact structure:

The smallest unit width is 420mm;

Extensible and flexible:

Modular design, extended busbar connection between units, can be freely combined:

Strong environmental adaptability:

Fully insulated, fully sealed structure, not affected by climate and environment, can be installed in wet, sandy and dusty areas.

Environmental friendly gas-enclosed switchgear (standardized ring net cabinet)

HXGN-12

环保气体封闭开关设备 (标准化环网柜)

基本功能单元 /Basic functional unit

功能单元代号 Functional unit code	功能单元名称 Functional unit name
С	负荷开关单元 Load switching unit
CPT	带开关电压互感器单元 Voltage transformer unit with switch
Т	组合电器单元 Combined electrical unit
V	真空断路器单元 Vacuum circuit breaker unit

HXG □ **-12(SF6)**

全绝缘全封闭环网开关设备 (标准化环网柜)

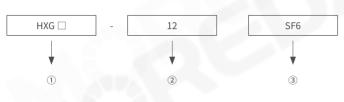


概述 /Overview

HXG □ -12(SF6) 系列环网开关设备是我公司采用三维计算机仿真技术,运用国际领先的制造设备及工艺,开发制造的新型 SF6 气体绝缘的中压开关设备,气箱采用前沿的激光切割与全自动机械焊接技术制造而成。

The HXG □ -12(SF6) series ring main unit switchgear is a new type of medium-voltage switchgear with SF6 gas insulation developed and manufactured by our company by adopting 3D computer simulation technology and using world-class manufacturing equipment and processes. The gas box is manufactured by advanced laser cutting and fully automatic mechanical welding technologies.

型号及含义 /Model and meaning



序号 serial number	项目 Project
1	全绝缘全封闭环网开关设备 Fully insulated fully enclosed ring net switchgear
2	额定电压 (kV) Rated voltage (kV)
3	六氟化硫 Sulfur hexafluoride

主要技术参数 /Main technical parameters

项目 Project	单位 Unit	C 柜 Cabinet	V 柜 Cabinet		F 柜 Cabinet
额定电压 Rated voltage	kV	12			
额定电流 Rated current	Α	630/1250	630/1250		125
温升试验 Temperature rise test		1.1lr			
额定工频 1min 耐受电压 (相对地) Rated power frequency 1-minute withstand voltage (relative to ground)	kV	42			
额定雷电冲击耐受电压峰值 (相对地) Peak rated lightning impulse withstand voltage (relative to ground)	kV	75			
额定短路开断电流 Rated short-circuit breaking current	kA		25		31.5
额定短路关合电流 Rated short-circuit closing current	kA	63	63		
额定短路耐受电流及持续时间 Rated short-circuit withstand current and duration		25kA/4s	25kA/4s		
额定峰值耐受电流 Rated peak withstand current	kA	63	63		
SF6 气体额定充气压力 (20℃) Rated filling pressure of SF6 gas (20℃)	MPa	a.0.035(630A)		b.0.4(1250A)	
年泄漏率 Annual leakage rate		a. ≤ 0.1‰ (630A	4)	b. ≤ 0.5‰ (1250)A)
Pナ+ウ体がR Dooks at in a mond a		IP41(柜体外壳 (cabinet shell)		
防护等级 Protection grade		IP67(气箱 gas b	oox)		

Fully is ulated fully enclosed ring net switchgear (standardized ring net cabinet)

HXG _ -12(SF6)

全绝缘全封闭环网开关设备 (标准化环网柜)



主要特点 /Main Feature

- ◆ 固定单元柜和可扩展单元组合两类;
- ◆ 完善的"五防"联锁装置,杜绝人为误操作;
- ◆ 可靠的安全泄压通道,保障操作人员人身安全;
- ◆ 可根据用户的不同需求配置电动、远控及监测装置
- ◆ 主回路及开关本体密封在 304# 不锈钢箱体里,做到免维护及不受外界环 ^{接影响。}
- ◆ 开关柜安装方便,并能够适合空间狭小及环境恶劣的地方。

- ◆ There are two types: fixed unit cabinets and expandable unit combinations.
- ◆ The perfect "five-prevention" interlock device to prevent human misoperation.
- ◆ Reliable safety pressure relief channels ensure the personal safety of operators;
- ◆ Electric, remote control and monitoring devices can be configured according to different needs of users.
- ◆ The main circuit and the switch body are sealed in a 304# stainless steel box, achieving maintenance-free operation and being unaffected by the external environment.
- ◆ The switch cabinet is easy to install and can be suitable for places with limited space and harsh environment.

HXG □ **-24(SF6)**

全绝缘全封闭环网开关设备 (标准化环网柜)

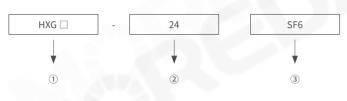
MINDIAN 民电

概述 /Overview

HXG □ -24(SF6) 系列环网开关设备是我公司采用三维计算机仿真技术,运用国际领先的制造设备及工艺,开发制造的新型 SF6 气体绝缘的中压开关设备,气箱采用前沿的激光切割与全自动机械焊接技术制造而成。

The HXG \square -24(SF6) series ring main unit switchgear is a new type of medium-voltage switchgear with SF6 gas insulation developed and manufactured by our company by adopting 3D computer simulation technology and using world-class manufacturing equipment and processes. The gas box is manufactured by advanced laser cutting and fully automatic mechanical welding technologies.

型号及含义 /Model and meaning



序号 serial number	项目 Project	
①	全绝缘全封闭环网开关设备 Fully insulated fully enclosed ring net switchgear	
2	额定电压 (kV) Rated voltage (kV)	
3	六氟化硫 Sulfur hexafluoride	

主要技术参数 /Main technical parameters

项目 Project	单位 Unit	C 柜 Cabinet	V 柜 Cabinet	F 柜 Cabinet
额定电压 Rated voltage	kV	24		
额定电流 Rated current	Α	630	630	125
温升试验 Temperature rise test		1.1lr		
额定工频 1min 耐受电压 (相对地) Rated power frequency 1-minute withstand voltage (relative to ground)	kV	65		
额定雷电冲击耐受电压峰值 (相对地) Peak rated lightning impulse withstand voltage (relative to ground)	kV	125		
额定短路开断电流 Rated short-circuit breaking current	kA		25	31.5
额定短路关合电流 Rated short-circuit closing current	kA	63	63	
额定短路耐受电流及持续时间 Rated short-circuit withstand current and duration		25kA/4s	25kA/4s	
额定峰值耐受电流 Rated peak withstand current	kA	63	63	
SF6 气体额定充气压力 (20℃)Rated filling pressure of SF6 gas (20℃)	MPa	0.035		
年泄漏率 Annual leakage rate		≤ 0.5‰		
n÷+h·ht/m D		IP41(柜体外壳 cab	inet shell)	
防护等级 Protection grade		IP67(气箱 gas box))	



HXG _ -24(SF6)

全绝缘全封闭环网开关设备 (标准化环网柜)





- ◆ 固定单元柜和可扩展单元组合两类:
- ◆ 完善的"五防"联锁装置,杜绝人为误操作;
- ◆ 可靠的安全泄压通道,保障操作人员人身安全;
- ◆ 可根据用户的不同需求配置电动、远控及监测装置
- ◆ 主回路及开关本体密封在 304# 不锈钢箱体里,做到免维护及不受外界环 ^{接影响。}
- ◆ 开关柜安装方便,并能够适合空间狭小及环境恶劣的地方。

- ◆ There are two types: fixed unit cabinets and expandable unit combinations.
- ◆ The perfect "five-prevention" interlock device to prevent human misoperation.
- ◆ Reliable safety pressure relief channels ensure the personal safety of operators;
- ◆ Electric, remote control and monitoring devices can be configured according to different needs of users.
- ◆ The main circuit and the switch body are sealed in a 304# stainless steel box, achieving maintenance-free operation and being unaffected by the external environment.
- ◆ The switch cabinet is easy to install and can be suitable for places with limited space and harsh environment.

GTHXGN-12 固体绝缘环网开关设备

民电

概述 /Overview

GTHXGN-12 固体绝缘开关设备全面引进前沿的生产设备及制造技术,实现本地化生产,大大降低了制造成本,缩短了交货周期,推出后深受用户好评。

The GTHXGN-12 solid-insulated switchgear fully introduces advanced production equipment and manufacturing technology, realizes local production, greatly reduces manufacturing costs, shortens the delivery cycle, and has been highly praised by users since its launch.

型号及含义 /Model and meaning



序号 serial number	项目 Project	
1	固体 Solid cabinet	
2	户内固定式箱型 Indoor fixed box type	
3	额定电压 Rated voltage (kV)	

符合标准 /Conform to the standard

O/GDW 730-2012《12KV 固体绝缘环网柜技术条件》:

GB1984《交流高压断路器》;

GB3804 3.6KV-40KV《交流高压负荷开关》;

GB1958《交流高压隔离开关和接地开关》

GB4208《外壳防护等级 IP 代码》

GB 16926 高压交流负荷开关 - 熔断器组合电器:

GB/T15166.2 高压交流熔断组第 2 部分: 限流熔断路;

GB/T7354《局部放电测量》;

GB/T11022《高压开关设备及控制设备标准的共同技术条件》:

GB3906《3.6-40.5KV交流金属封闭开关设备和控制设备》。

Q/GDW 730-2012 "Technical Conditions for 12KV Solid Insulation Ring Main Units"

MINDIAN

GB1984 "AC High Voltage Circuit Breakers"

GB3804 3.6KV-40KV "AC High Voltage Load Switch"

GB1958 "AC High Voltage Disconnectors and Grounding Switches"

GB4208 "IP Code for Enclosure Protection Grades"

GB 16926 High-voltage AC load switch-fuse combined electrical apparatus GB/T15166.2 High Voltage AC fuse Circuit - Part 2: Current-limiting Fuse Circuit GB/T7354 "Partial Discharge Measurement"

GB/T11022 "Common Technical Conditions for High-Voltage Switchgear and Controlgear Standards"

GB3906 "3.6-40.5KV AC Metal-enclosed Switchgear and Controlgear"



GTHXGN-12

固体绝缘环网开关设备

正常使用条件/Normal use conditions

◆ 环境温度: -45℃ ~+45℃:

◆ 湿度:最大平均相对湿度,日平均≤95%、月平均≤90%;

◆ 海拔高度: ≤ 4000 米;

◆ 抗震能力: 8度;

◆ 防护等级: 带电体密封 IP67, 熔断器筒 IP67, 开关柜外壳 IP3X。

- ◆ Ambient temperature: -45°C to +45°C
- ◆ Humidity: Maximum average relative humidity, daily average ≤ 95%, monthly
- ◆ Altitude: ≤ 4000 meters;
- ◆ Seismic resistance capacity: 8 degrees;
- ◆ Protection grade: Live body seal IP67, fuse barrel IP67, switch cabinet enclosure IP3X

MDKBW-12

户外高压环网箱(一二次融合标准化环网箱)

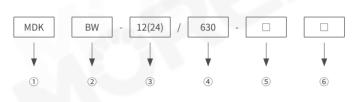
MINDIAN[®] 民电

概述 /Overview

MDKBW-12 户外高压环网箱(标准化)是采用和借鉴国外的前沿技术,将 12/24kV 开关柜、断路器、负荷开关、电流电压互感器、12/24kV 电源PT、开闭所 FTU,RTU、通信控制终端(CCu).12/24kV 计量及自动抄表、USP电源及指示仪表等安装调试好装入一个可移动、密封防潮的不锈钢箱体内,从而实现了城市配电网中一、二次系统的集成化、装配的模块化,缩短了建设周期,大大地提高了城市电网运行的可靠性。

The MDKBW-12 outdoor high-voltage ring net box (standardized) adopts and draws on advanced foreign technologies. The 12/24kV switch cabinet, circuit breaker, load switch, current and voltage transformer, 12/24kV power supply PT, switch station FTU,RTU, communication control terminal (CCu), 12/24kV metering and automatic meter reading, USP power supply and indicating instruments, etc. were installed and debugged, and then placed in a movable, sealed and moisture-proof stainless steel box, thus achieving the goal The integration of primary and secondary systems and the modularization of assembly in urban distribution networks have shortened the construction period and greatly enhanced the reliability of urban power grid operation.

型号及含义 /Model and meaning



序号 serial number	项目 Project
1	户外高压环网箱 (标准化) Outdoor high-voltage ring net box (standardized)
2	设计序号 Design serial number
3	额定电压 Rated voltage (kV)
4	额定电流 Rated current (A)
(5)	进线回路数 Number of incoming circuits
6	出线回路数 Number of outgoing circuits

主要特点 /Main Feature

产品采用气体绝缘,可配断路器、负荷开关、组合电器等一次方案。该产品 是根据最新配网自动化标准进行一二次融合设计,集成 DTU 和智能传感、 在线检测等智能组件,适合各种配网自动化系统应用。

- ◆环境适应能力强
- ◇全工业级设计,严酷等级达到户外IV级
- ◇良好的电磁兼容设计,内部测试满足IV级要求:
- ◇现场安装、调试方便:
- ◇后期维护方便、费用少,提供远程维护。
- ◆功能丰富, 性能卓越
- ◇多种通讯口,双以太网、4串口、支持光纤、无线路由通信
- ◇支持目前流行规约,GB101、GB104、cDT、MODBUS等;
- ◇支持通信对时,≤5S,守时精度≤2S/天;
- ◇支持国网通信数据加密 (168 号文):
- ◇控制 4 路、6 路、8 路开关设备,及隔离开关和接地刀闸;

- ◇支持环境温度湿度监控:
- ◇具备谐波分析功能;支持"三遥"功能、模拟量精度达到 0.2/0.5 级
- ◇具备多种保护功能,短路过流、单相接地
- ◇ 80 点故障录波和故障报文上传;
- ◇支持多种电压 / 功率操作电源, 电池活化; ◇支持电磁互感器或电子式互 感哭接 λ·
- ◆智能化:集成配网自动化智能终端,能实现配网自动化、馈线自动化等智能配知的能
- ◆集成化:一二次融合设计,一次开关设备融合了二次智能组件,一体化设计,方便集成与运维。
- ◆小型化:结构紧凑,操作简便,主配我公司生产的气体绝缘开关柜、固体 绝缘开关柜设备。
- ◆多样化: 断路器、负荷开关、组合电器等多种方案自由组合, 满足不同需求。



MDKBW-12

户外高压环网箱 (一二次融合标准化环网箱)



The product adopts gas insulation and can be equipped with circuit breakers, load switches, combined electrical appliances and other one-time solutions. This product is designed based on the latest distribution network automation standards through the integration of primary and secondary elements. It combines DTU, intelligent sensing, online detection and other intelligent components, and is suitable for various distribution network automation system applications.

Strong environmental adaptability

- ♦ Fully industrial-grade design, with a severity level reaching outdoor Grade IV Good electromagnetic compatibility design, internal testing meets Level IV
- ♦ Convenient for on-site installation and commissioning:

The later maintenance is convenient and low-cost, and remote maintenance is provided

- ♦ Rich in functions and excellent in performance
- Multiple communication ports, dual Ethernet, 4 serial ports, support for optical fiber and wireless routing communication; Supports currently popular protocols such as GB101, GB104, cDT, MODBUS, etc.
- $^{\diamond}$ Supports communication time synchronization, with a time accuracy of \leq 5 seconds and a timekeeping accuracy of \leq 2 seconds per day.
- ♦ Support State Grid communication data encryption (Document No. 168);

- ♦ Control 4-channel, 6-channel and 8-channel switchgear, as well as disconnectors and grounding switches;
- Support environmental temperature and humidity monitoring;
 It has the function of harmonic analysis; Supports the "three-remote"
- function and the analog quantity accuracy reaches 0.2/0.5 grade. ♦ It is equipped with multiple protection functions, including short-circuit
- It is equipped with multiple protection functions, including short-circuit overcurrent and single-phase grounding.
- 80-point fault recording and fault message upload;
- ♦ Supports multiple voltage/power operating power supplies and battery activation; Support the connection of electromagnetic transformers or electronic transformers:
- ◆ Intelligence: Integrate intelligent terminals for distribution network automation, which can realize intelligent distribution network functions such as distribution network automation and feeder automation.
- ◆ Integration: Primary and secondary fusion design. The primary switchgear integrates secondary intelligent components. The integrated design facilitates integration and operation and maintenance.
- ◆ Miniaturization: Compact structure and simple operation, mainly equipped with gas-insulated switchgear and solid-insulated switchgear equipment produced by our company.
- ◆ Diversification: Various schemes such as circuit breakers, load switches, and combined electrical appliances can be freely combined to meet different demands.

MDKBW-12

户外高压环网箱 (开闭所)

MINDIAN 民电

概述 /Overview

型号及含义 /Model and meaning

该系列户外高压环网箱适用于交流 50Hz、额定电压 12kV、电绩进出线的户外配电网中,广泛用于工业园区、居民小区、商业中心以及矿区、机场、铁路、港区、电站等配电网,特别适用城市电网改造工程。

This series of Outdoor high-voltage ring net box are suitable for outdoor distribution networks with an AC frequency of 50Hz, a rated voltage of 12kV, and power line input and output. They are widely used in distribution networks of industrial parks, residential areas, commercial centers, as well as mining areas, airports, railways, ports, power stations, etc., and are particularly suitable for urban power grid renovation projects.

序号 serial number	项目 Project		
1	户外高压环网箱(开闭所) Outdoor high-voltage ring net box (standardized)		
2	进线回路数 Number of incoming circuits		
3	出线回路数 Number of outgoing circuits		
4	带开关型方案代号,缺省表示普通型 Scheme code with switch type, default indicates the common type		
⑤	额定电流 Rated current (A)		
6	额定电压 Rated voltage (kV)		

方案号 (可省略) Plan Number (optional)

主要特点 /Main Feature

- ◆全绝缘、全密封、免维护。可靠的人身安全保障。
- ◆简化城市电缆网络系统,节省投资。
- ◆户外型、防尘、防潮、抗洪水、耐腐蚀,环境适应性强,组合灵活,进出 线从二路到八路,能满足各种接线要求。
- ◆体积小、结构紧凑、外型美观大方、安装简单,免维修;且有带电显示器,可带短路指示器,可带避雷器。占地小、高度低、外型美观,能与周围环境协调一致;接线方案灵活多样、安装操作极方便。
- ◆ 200A 电缆头可带负荷插拔、同时具备隔离开关的功能,可安装短路故障指示器,迅速确定故障位置。

可以通过负荷开关或断路器与电缆接头的任意组合,提高了线路运行、维护和检修时的灵活性,减少线路停电时间,提高供电可靠性。能代替部分环网柜或开闭所,减少系统综合造价。

- Fully insulated, fully sealed and maintenance-free. Reliable personal safety quarantee.
- Simplify the urban cable network system and save investment.
- ◆ Outdoor type, dust-proof, moisture-proof, flood-resistant, corrosion-resistant, strong environmental adaptability, flexible combination. The incoming and outgoing lines range from two to eight, which can meet various wiring requirements.
- ◆ Small in size, compact in structure, elegant and generous in appearance, simple in installation and maintenance-free; It also has an electrified display, which can be equipped with a short-circuit indicator and a lightning arrester. It occupies a small area, has a low height, an attractive appearance and can be in harmony with the surrounding environment. The wiring schemes are flexible and diverse, and the installation and operation are extremely convenient.
- ◆ The 200A cable head can be plugged and unplugged under load and has the function of a disconnector. A short-circuit fault indicator can be installed to quickly determine the fault location.

The flexibility of line operation, maintenance and repair can be enhanced through any combination of load switches or circuit breakers with cable joints, reducing the power outage time of the line and improving the reliability of power supply. It can replace part of the ring main unit or switch station, reducing the comprehensive cost of the system.



MDKBW-12

户外高压环网箱(开闭所)

主要技术参数 /Main technical parameters

项目 Project	单位 Unit	参数 Parameters
额定电压 Rated voltage	kV	12
额定电流 Rated current	А	630
额定频率 Rated frequency	Hz	50
1min 工频耐受电压 1-minute power frequency withstand voltage	kV	42
雷电冲击耐受电压 Lightning impulse withstand voltage	kV	75
防护等级 Protection grade		IP54
外形尺寸 (长宽高)External dimensions (length, width, height)	mm	650×1150×880~1300×1500×1200

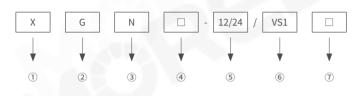
XGN □ -12/24 金属封闭环网开关设备 MINDIAN[®] 民电

概述 /Overview

XGN □ -12/24(SF6) 交流金属封闭环网开关设备(以下简称环网开关设备)是我们在引进国外前沿技术并按照国内农电及城网改造之要求而自行设计、研制成功的新一代高压电器产品。各项技术性能指标全IEC62271-200:2003和 GB3906 标准。

The XGN □ -12/24(SF6) metal-enclosed ring main unit switchgear (hereinafter referred to as the ring main unit switchgear) is a new generation of high-voltage electrical products that we have independently designed and developed by introducing advanced foreign technology and in accordance with the requirements of domestic rural power and urban power grid renovation. All technical performance indicators comply with the standards of IEC62271-200:2003 and GB3906.

型号及含义 /Model and meaning



序号 serial number	项目 Project
1	箱式开关设备 Box switchgear
2	固定式 Fixed type
3	户内 Indoor
4	设计序号 Design Number
(5)	电压等级 Voltage level (kV)
6	开关设备内主开关为 VS1 开关 Cabinet main switch for the VS1

技术参数 /Technical parameters

项目 Project	单位 Unit	参数 Parameter
额定电压 Rated voltage	kV	12/24
额定频率 Rated frequency	Hz	50
断路器开关设备额定电流 Circuit breaker cabinet rated current	Α	630,1250
断路器开关设备最大短时耐电电流 The maximum short circuit current of the circuit breaker cabinet	kA/S	40, 4S
主回路、接地回路额定峰值耐受电流 Main circuit, ground loop rated peak withstand current	kA	50/80
主回路、接地回路额定短路关合电流 Main circuit, ground loop rated short circuit closing current	kA	50/80
满容量开断数 Full capacity breaking number	次 Time	30
额定短路开断电流 Rated short circuit breaking current	kA	20, 25, 31.5, 40
机械寿命 Mechanical life	次 Time	2000/10000



XGN □ -12/24

金属封闭环网开关设备

正常使用条件/Normal use conditions

- ◆ 环境温度: 上限 +40℃, 下限 -25℃;
- ◆ 海拔高度:海拔高度不超过 2000m;
- ◆ 相对温度: 日平均值不大于 95%; 月平均值不大于 90%;
- ◆ 周围环境: 周围空气不受腐蚀气体或可燃性气体、水蒸气等明显污染;
- ◆ 无经常性的剧烈振动。

- ◆ Ambient temperature: upper limit +40 °C, the lower limit of -25 °C;
- ◆ Altitude: altitude does not exceed 2000m;
- ◆ Relative temperature: daily average of not more than 95%; monthly average of not more than 90%:
- ◆ The surrounding Environment: The surrounding air is not polluted by corrosive gases, flammable gases, water vapor, etc;
- ◆ No frequent severe vibration.

GIS-40.5

气体绝缘金属封闭开关柜

MINDIAN[®] 民电

概述 /Overview

型号及含义 /Model and meaning

GIS-40.5 型气体绝缘金属封闭开关柜适用于三相交流、额定电压 40.5kV 的单母线及单母线分段供电系统,用于接受和分配电能并对线路进行控制和保护。产品的真空断路器、三工位开关等高压元件全部密封安装于激光焊接的不锈钢气箱内,气箱内充入微正压的 SF6 气体,产品运行不受外界环境的影响,结构紧凑,特别适合潮湿、高海拔、污秽严重等恶劣环境场所的使用。产品可广泛应用于电力系统、发电、城网地铁、轨道交通、石化、冶金等行业、满足用户的各种需求。

The GIS-40.5 type gas-insulated metal-enclosed switchgear is suitable for three-phase AC, single-busbar and single-busbar section-segmented power supply systems with a rated voltage of 40.5kV. It is used to receive and distribute electrical energy and control and protect the lines. All high-voltage components of the product, such as vacuum circuit breakers and three-station switches, are sealed and installed in a stainless steel gas box welded by laser. The gas box is filled with SF6 gas at a slight positive pressure. The operation of the product is not affected by the external environment. It has a compact structure and is particularly suitable for use in harsh environments such as high humidity, high altitude, and severe pollution. The products can be widely applied in industries such as power systems, power generation, urban metro networks, rail transit, petrochemicals, and metallurgy, meeting various user demands.

序号 serial number	项目 Project
1	气体绝缘开关设备 Gas Insulated Switchgear
2	额定电压 (kV)Rated voltage (kV)

执行标准 /enforce standards

GB/T 3906-2020《3.6kV-40.5kV 交流金属封闭开关设备和控制设备》

GB/T 1984-2014《高压交流断路器》

GB/T 1985-2014《高压交流隔离开关和接地开关》

DL/T 404-2018 《3.6kV-40.5kV 交流金属封闭开关设备和控制设备》

DL/T 402-2016 《高压交流断路器》

DL/T 486-2010 《高压交流隔离开关和接地开关》

IEC 62271-200-2011《额定电压 1 kV 以上 52kV 及以下的交流金属封闭开

关设备和控制设备》

IEC 62271-100-2012《高压交流断路器》

IEC62271-102-2012《高压交流隔离开关和接地开关》

GB/T 3906-2020 "3.6kV-40.5kV AC Metal-enclosed Switchgear and Controlgear" GB/T 1984-2014 "High Voltage AC Circuit Breakers"

GB/T 1985-2014 "High Voltage AC Disconnectors and Grounding Switches" DL/T 404-2018 "3.6kV-40.5kV AC Metal-enclosed Switchgear and Controlgear" DL/T 402-2016 "High Voltage AC Circuit Breaker"

DL/T 486-2010 "High Voltage AC Disconnectors and Grounding Switches" IEC 62271-200-2011 "AC Metal-enclosed Switchgear and Controlgear with Rated Voltages above 1 kV and below 52kV"

IEC 62271-100-2012 "High Voltage AC Circuit Breakers"

lec 62271-102-2012 "High Voltage AC Disconnectors and Grounding Switches"

SF6 G insulated metal-enclosed switchgear

GIS-40.5

气体绝缘金属封闭开关柜

正常使用条件/Normal use conditions

◆ 环境温度: 户内: -10℃~+40℃。户外: -30℃~+40℃;

◆ 海拔高度: ≤ 1000 米;

◆ 相对湿度: 日平均≤ 95%, 月平均≤ 90%;

◆ 污秽等级: 适用于Ⅲ级及以下污秽环境;

◆ 抗震能力:水平加速度≤ 0.3g。

- ◆ Ambient temperature: Indoor: -10°C to +40°C . Outdoor: -30°C to +40°C
- ◆ Altitude: ≤ 1000 meters
- Relative humidity: Daily average ≤ 95%, monthly average ≤ 90%;
- Pollution grade: Applicable to pollution environments of grade III and below;

CH (0)

Seismic resistance capacity: Horizontal acceleration ≤ 0.3g.

KYN28-12

新型铠装移开式交流金属封闭开关设备

MINDIAN[®] 民电

概述 /Overview

KYN28-12(Z) (GZS1) 型铠装移开式交流金属封闭开关设备 (以下简称"开关设备") 它适用于三相交流 50Hz 电力系统,用于接受和分配电能并对电路实行控制、保护及监测。

本产品符合标准 GB3906《3~35kV交流金属封闭开关设备》、GB/T11022《高压开关设备和控制设备标准共用技术要求》、IEC60298《额定电压 1kV 及以上交流金属封闭开关设备和控制设备》。

The KYN28-12(Z) (GZS1) type armored Armored removable AC metal-enclosed switchgear (hereinafter referred to as "switchgear") is suitable for three-phase AC 50Hz power systems and is used to receive and distribute electrical energy and to control, protect and monitor circuits.

This product complies with the following standards: GB3906 "3~35kV AC Metalenclosed Switchgear", GB/T11022 "Common Technical Requirements for High Voltage Switchgear and Controlgear", and IEC60298 "AC Metal-enclosed Switchgear and Controlgear with Rated Voltage of 1kV and Above".

型号及含义 /Model and meaning

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1)	2	3	4	(5)	6

序号 serial number	项目 Project
1	金属铠装式 Metal armored
2	移开式 Removable
3	户内 indoor
4	设计序号 Design Number
(5)	额定电压 Rated voltage (kV)
6	真空断路器 Vacuum circuit breaker

技术参数 /Technical parameters

项目 Project		单位 Unit	参数 Parameter
额定电压 Rated voltage	额定电压 Rated voltage		3.6、7.2、12
额定频率 Rated frequency		Hz	50
断路器额定电流 Rated current	of circuit breaker	Α	630、1250、1600、2000、2500、3150、4000
开关设备额定电流 Rated curre	nt of switchgear	Α	630、1250、1600、2000、2500、3150、4000
额定短时耐受电流 (4S)Rated s	hort-time withstand current (4S)	kA	20、25、31.5、40
额定峰值耐受电流 (峰值)Rate	d peak withstand current (peak)	kA	50、63、80、100
额定短路开断电流 Rated short	-circuit breaking current	kA	20、25、31.5、40
额定短路关合电流 (峰值)Rate	d short-circuit closing current (peak value)	kA	50、63、80、100
额定绝缘水平 1min 工频耐受电压 Rated insulation level	极间、极对地间 Between the poles and between the poles and the Earth	kV	24、32、42
1-minute power frequency withstand voltage	断口间 Between the fracture surfaces	kV	24、32、42
雷电冲击 耐受电压 (峰值) Lightning impulse withstand	极间、极对地间 Between the poles and between the poles and the Earth	kV	40、60、75
voltage (peak value)	断口间 Between the fracture surfaces	kV	46、70、85
防护等级 Protection grade			外壳为 IP4X,隔室间、断路器室门打开时为 IP2X。 The enclosure is IP4X, and when the compartments and circuit breaker compartment doors are open, they are IP2X.



KYN28-12

新型铠装移开式交流金属封闭开关设备

使用条件 /Conditions of Use

- ◆ 周围空气温度: 最高温度 +40°C, 最低温度 -15°C;
- ◆ 相对湿度: 日平均相对湿度: ≤95%, 日平均水蒸气压力不超过2.2KPa; 月平均相对湿度≤90%; 月平均水蒸气压力不超过1.8KPa;
- ◆ 海拔高度: ≤ 1000m:
- ◆ 地震强度: 不超过8级;
- ◆ 周围空气应不受腐蚀性或可燃气体、水蒸气等明显污染;
- ◆ 无剧烈振动场所;
- ◆ 超出 GB3906 规定的正常条件下使用时,由用户和本公司协商。

- \bullet Ambient air temperature: the maximum temperature +40 $^{\circ}\text{C}$, the minimum temperature of –15 $^{\circ}\text{C}$;
- ◆ Relative humidity: daily average relative humidity: ≤ 95%, the average daily water vapor pressure does not exceed 2.2Kpa; monthly average relative humidity ≤ 90%; monthly average water vapor pressure does not exceed 1.8Kpa;
- ◆ Altitude: ≤ 1000m;
- Earthquake intensity: no more than 8;
- ◆ The surrounding air should not be corrosive or combustible gas, water vapor and other obvious pollution;
- No violent vibration places;
- when used under conditions beyond the normal conditions specified in GB3906, the user and our company shall negotiate a rectification plan.

KYN28-24

新型铠装移开式交流金属封闭开关设备

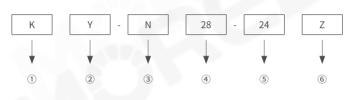
MINDIAN[®] 民电

概述 /Overview

KYN28-24 铠装移开式交流金属封闭开关设备(以下简称开关设备),适用于户内三相 50/60Hz、额定电压 24kV 的电力系统中,主要应用于发电厂,变电所、工矿企业及高层建筑中,作为接受和分配电能并对电路实行控制、保护和监测

The KYN28-24 Armored removable AC metal-enclosed switchgear (hereinafter referred to as the switchgear) is suitable for indoor three-phase 50/60Hz, rated voltage 24kV power systems. It is mainly applied in power plants, substations, industrial and mining enterprises, and high-rise buildings to receive and distribute electrical energy and to control, protect and monitor circuits.

型号及含义 /Model and meaning



序号 serial number	项目 Project
1	金属铠装式 Metal armored
2	移开式 Removable
3	户内 indoor
4	设计序号 Design Number
(5)	额定电压 (kV) Rated voltage (kV)
6	真空断路器 Vacuum circuit breaker

技术参数 /Technical parameters

项目 Project		单位 Unit	参数 Parameter
额定电压 Ra	额定电压 Rated voltage		24
额定频率 Ra	额定频率 Rated frequency		50
额定电流 Ra	ated current	А	630、1250、1600、2000、2500、3150
额定短路开	额定短路开断电流 Rated short-circuit breaking current		20
额定短路关	额定短路关合电流 (峰值)Rated short-circuit closing current (peak value)		50
雷电冲击耐受电压(峰值) 额定绝缘 Lightning impulse withstand voltage (peak value)		kV	相间相对地: 60; 隔离断口: 79 Alternating to ground: 60; Isolation fracture: 79
水平 Rated insulation	1min 工频耐受电压 (有效值) 1 min power frequency withstand voltage (effective value)	kV	相间相对地: 125; 隔离断口: 145 Alternating to ground: 125; Isolation fracture: 145
level	辅助控制回路工频耐受电压 Auxiliary control circuit power frequency withstand voltage	V	2000



KYN28-24

新型铠装移开式交流金属封闭开关设备

使用条件 /Conditions of Use

- ◆ 环境条件:最高温度 +40℃,最低温度 -15℃,且在 24h 内测得的平均值 不超过 35℃;
- ◆ 温度条件如下: 日相对湿度的平均值不超过 95%; 月相对湿度的平均值不超过 90%; 日水蒸气压力的平均值不超过 2.2kPa; 月水蒸气压力的平均值不超过 1.8kPa;
- ◆ 海拔不超过 1000m
- ◆ 周围空气没有明显地收到尘埃、烟、腐蚀性或可燃性气体、蒸汽或盐雾的运动:
- ◆ 来自开关设备和控制设备外部的振动或地动是可以忽略的;
- ◆ 在二次系统中感应的电磁干扰的幅值不超过 1.6kV。

- ullet Environmental conditions: Maximum temperature +40 $\,^{\circ}$ C , minimum temperature -15 $\,^{\circ}$ C, and the average value measured within 24 hours does not exceed $25\,^{\circ}$ C:
- ◆ The temperature conditions are as follows: The average daily relative humidity does not exceed 95%; The average monthly relative humidity does not exceed 90%. The average daily water vapor pressure does not exceed 2.2kPa.
- ◆ The average monthly water vapor pressure does not exceed 1.8kPa.
- ◆ The altitude does not exceed 1000 meters;
- ◆ The surrounding air has not been significantly contaminated by dust, smoke, corrosive or flammable gases, vapors or salt spray.
- ◆ The vibration or ground motion from outside the switchgear and controlgear can be ignored.
- ◆ The amplitude of the induced electromagnetic interference in the secondary system does not exceed 1.6kV.

KYN61-40.5

铠装金属封闭开关设备



概述 /Overview

础上设计改进的开关设备。它适应于三相交流 50Hz 电力系统,用于接受和 分配电能并对电路进行控制、保护及监测。

KYN61-40.5 铠装式金属封闭开关设备 (简称开关柜)系我厂在原产品的基 KYN61-40.5 armored metal-enclosed switchgear (referred to as switchgear) is a switchgear designed and improved by our factory based on the original product. It is suitable for three-phase AC 50Hz power systems and is used to receive and distribute electrical energy, as well as control, protect and monitor

型号及含义 /Model and meaning



序号 serial number	项目 Project
1	金属铠装式 Metal armored
2	移开式 Move away
3	户内 indoor
4	设计序号 Design Number
(5)	额定电压 Rated voltage (kV)
6	真空断路器 Vacuum circuit breaker
7	额定电流 Rated current(kA)
8	额定短路开断电流Rated short-circuit breaking current (kA)

技术参数 /Technical parameters

项目 Project		单位 Unit	参数 Parameters
额定电压 Rated	额定电压 Rated voltage		40.5
额定绝缘水平	1min 工频耐受电压 1-minute power frequency withstand voltage	kV	95(隔离断口 115 Isolation fracture 115)
Rated insulation level	雷电冲击耐受电压 (峰值) Lightning impulse withstand voltage (peak value)	kV	185(隔离断口 115 Isolation fracture 115)
额定频率 Rated	额定频率 Rated frequency		50
主母线额定电流 Rated current of the main busbar		А	630 ~ 2500 3150 %
额定短路开断电	额定短路开断电流 Rated short-circuit breaking current		31.5
额定短时耐受电	流 (4s)Rated short-time withstand current (4s)	kA	25
额定峰值耐受电	流 Rated peak withstand current	kA	31.5



KYN61-40.5

铠装金属封闭开关设备

使用条件 /Conditions of Use

- ◆ 环境温度: 不高于 +40℃, 不低于 -25℃;
- ◆ 海拔高度: 不高于 1000m;
- ◆ 相对湿度: 日平均不大于 95%; 月平均不大于 90%;
- ◆ 没有易燃性气体、爆炸危险、严重污秽、化学腐蚀及经常性剧烈震动的
- ◆ Ambient temperature: Not higher than +40°C, not lower than -25°C;
- ◆ Altitude: Not higher than 1000m;
- ◆ Relative humidity: The daily average shall not exceed 95%; The monthly average is no more than 90%.
- ◆ There are no places with flammable gases, explosion hazards, severe pollution, chemical corrosion or frequent violent vibrations.

MLS 小型化低压开关柜



概述 /Overview

MLS 是采用标准模件由工厂组装的数字化智能柜,适用于交流 50H、额定工作电压 <690V、额定工作电流 <5000A 的供配电系统中,作为电能分配、转换、控制和无功功率补偿之用。

系统包括以下部分

动力中心: 主进线柜,模块化设计,额定电流可达 5000A;

马达控制中心:可采用插拔式和抽屉式单元,适用于馈线及马达控制回路;

元器件: 空气断路器 EnteliGuardTM G、M-Pact: 塑壳断路器 Record Plus 等。

MLS is a digital intelligent cabinet assembled in a factory using standard modules. It is suitable for power supply and distribution systems with an AC capacity of 50 hours, a rated working voltage of less than 690V, and a rated working current of less than 5000A, and is used for power distribution, conversion, control, and reactive power compensation.

The system consists of the following parts

Power center: Main incoming line cabinet, modular design, rated current up to 5000A;

Motor control center: It can adopt plug-in and drawer-type units, suitable for feeder lines and motor control circuits.

Components: Air circuit breaker EnteliGuardTM G, M-Pact: Molded case circuit breaker Record Plus, etc.

使用条件 /Conditions of Use

- ◆ 额定丁作电压: 主电路 400V.480V.690V:
- ◆ 辅助电路: AC220,AC380,DC110,DC220;
- ◆ 额定绝缘电压: 主电路 690V,1000V;
- ◆ 额定冲击耐受电压 (1.2/50uS): 主电路 6,8kV;
- ◆ 额定工作电流 (IP4X* 时): 主母线 < 5000A, ≤ 3600A (MLS 双面柜); 垂直母线 1000, 1250, 1600A(抽出式), < 2500A(插拔式 MCCB);
- ◆ 额定短时耐受电流: 主母线 50,65,80,100(kA/1 秒); 垂直母线 50,65,80,90(kA/1 秒):
- ◆ 额定峰值耐受电流: 主母线 105,143,176,220(kA/0.1 秒); 垂直母线 105, 143,176,198(kA/0.1 秒);
- 注: 当防护等级为 IP55 时, 主母线额定工作电流≤ 2500A;

- ◆ Rated working voltage: 400V,480V,690V for the main circuit;
- ◆ Auxiliary circuits :AC220,AC380,DC110,DC220
- ◆ Rated insulation voltage: 690V for the main circuit, 1000V;
- ◆ Rated impulse withstand voltage (1.2/50uS): 6,8 kV for the main circuit;
- ◆ Rated working current (at IP4X*): Main busbar < 5000A, ≤ 3600A (MLS double-sided cabinet); Vertical busbars 1000,1250,1600A(pull-out type),< 2500A(pluq-and-pull type MCCB);
- Rated short-time withstand current: Main busbar 50,65,80,100(kA/1 second);
 Vertical busbars: 50,65,80,90(kA/1 second);
- ◆ Rated peak withstand current: Main busbar 105,143,176,220(kA/0.1 second); Vertical busbar 105,143,176,198(kA/0.1 second);

Note: When the protection grade is IP55, the rated working current of the main busbar is ≤ 2500 A.



MLS

小型化低压开关柜

使用条件 /Conditions of Use

- ◆ 环境温度:环境温度不高于 40° C、不低于 -5° C,且在 24h 内测得的平均 值不超过 35° C;
- ◆ 温度范围: 在 -25℃至 +55℃之间适用于运输和储存过程, 在短时间内 (<24h) 可达到 +70℃;
- ◆ 环境湿度: 空气清洁,在 Z 高温度 +40℃时其相对湿度不超过 50%,较低温度时,允许有较大的相对湿度。例如 +20℃时为 90%,但考虑到由于温度的变化有可能会偶然地产生适度的凝露:
- ◆ 海拔高度:高度不超过 2000 米:
- ◆ 环境污染等级:3级;
- ◆ 如选用某些电器元件不能符合上述工作条件时,由制造厂与用户协商解 油·
- ◆ 当使用条件与上述工作条件不符时,由用户向制造厂提出,协商解决。

- ullet Ambient temperature: The ambient temperature shall not exceed 40 °C and shall not be lower than -5°C , and the average value measured within 24 hours shall not exceed 35°C .
- ullet Temperature range: It is suitable for transportation and storage processes within the range of -25°C to +55°C, and can reach +70°C for a short period of time (<2/kh)
- ullet Environmental humidity: The air is clean. At the maximum temperature of +40°C , its relative humidity does not exceed 50%. At lower temperatures, a higher relative humidity is allowed. For example, it is 90% at +20°C , but considering that moderate condensation may occur occasionally due to temperature changes;
- ◆ Altitude: The altitude does not exceed 2000 meters.
- ◆ Environmental pollution level: Level 3
- ♦ If certain electrical components selected cannot meet the above working conditions, the manufacturer shall negotiate and solve the problem with the user.
- ◆ When the usage conditions do not conform to the above-mentioned working conditions, the user shall raise the issue to the manufacturer and negotiate a solution.

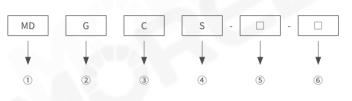
MDGCS 低压抽出式开关设备



概述 /Overview

MDGCS 低压抽出式开关设备适用于发电厂、石油、化工、冶金、纺织、高层建筑等行业的配电系统。在大型发电厂、石化系统等自动化程度高,要求与计算机接口的场所,作为三相交流频率为50(60)Hz,额定工作电压为380V(400V),(660V),额定电流为4000A及以下的发、供电系统中的配电、电动机集中控制、无功功率补偿使用的低压成套配电装置。

型号及含义 /Model and meaning



MDGCS low-voltage withdrawable switchgear is suitable for power distribution systems in power plants, petroleum, chemical, metallurgy, textile, high-rise buildings and other industries. In large-scale power plants, petrochemical systems and other places that require high degree of automation and computer interface, as a three-phase AC frequency of 50 (60) Hz, rated working voltage of 380V (400V), (660V), and rated current of 4000A and below Low-voltage complete set of power distribution equipment used in power distribution, centralized motor control, and reactive power compensation in power generation and power supply systems.

序号 serial number	项目 Project
1	企业代号 Enterprise code
2	封闭式开关设备 Enclosed switch cabinet
3	抽出式 Withdrawable
4	电气系统 Electrical System
(5)	辅助电路方案号 Auxiliary circuit scheme number
6	主电路方案号 Main circuit scheme number

技术参数 /Technical parameters

项目 Project		参数 Parameter	
主电路额定电压 (V)Rated voltage of main circuit (V)		交流 380(400)、(660) AC 380 (400), (660)	
辅助电路额定电压 (V)Auxiliary circuit ra	ted voltage (V)	交流 220、380(400) AC 220, 380 (400)	直流 DC 110/220
额定频率 (Hz)Rated frequency (Hz)		50(60)	
额定绝缘电压 (V)Rated insulation voltage	ge (V)	660(1000)	
额定电流 (A) Rated current (A)	水平母线、垂直母线 (MCC) Horizontal Busbar, vertical Busbar (MCC)	≤ 4000、1000	
母线额定短时耐受电流 (kA/1s)Rated short-time withstand current of busbar (kA/1s)		50, 80	
母线额定峰值耐受电流 (kA/0.1s)Rated peak withstand current of busbar (kA/0.1s)		105, 176	
工频试验电压 (W1min) Power frequency test voltage (V/1min)	主电路、辅助电路 Main circuit, auxiliary circuit	2500、1760	
母线 Busbar	三相四线制、三相五线制 Three-phase four-wire system, three-phase five-wire system	A, B, C, PEN, A, B, C, PE, N	
防护等级 Protection level		IP30, IP40	



MDGCS

低压抽出式开关设备

使用条件 /Conditions of Use

- ◆ 周围空气温度不高于 +40℃,不低于 -5℃,并且 24h 平均温度不高于 +35℃:
- ◆ 周围空气清洁,相对湿度在最高温度为 +40℃时不超过 50%,在较低温度时允许有较高的相对湿度,例如 +25℃时为 90%,但应考虑到由于温度变化可能会偶然产生适度的凝露;
- ◆ 户内使用,海拔高度不超过 2000m;
- ◆ 在无显著摇动和冲击震动的地方;
- ◆ 污染等级: 3级;
- ◆ 抗震烈度: 8度:

- \bullet The ambient air temperature is not higher than +40°C , not lower than -5°C , and the average temperature of 24h is not higher than +35°C ;
- $lack \$ The surrounding air is clean, the relative humidity does not exceed 50% when the highest temperature is +40°C , and higher relative humidity is allowed at lower temperatures, such as 90% at +25°C , but the possibility of temperature changes should be considered May occasionally produce moderate condensation;
- lacktriangle For indoor use, the altitude does not exceed 2000m;
- In a place without significant shaking and shock;
- ◆ Pollution degree: Level 3;
- ◆ Seismic intensity: 8 degrees;

MDGCK 低压抽出式开关设备

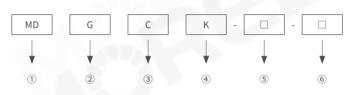


概述 /Overview

MDGCK 低压抽出式开关设备由动力配电中心 (PC) 开关设备和电动机控制中心 (MCC) 二部分组成,适用于发电厂,变电站,工矿企业等电力用户作为交流 50Hz, 最大工作电压至 660V, 最大工作电流至 3150A 的配电系统中,作为动力配电,电动机控制及照明等配电设备的电能转换分配控制之用。

The MDGCK low-voltage withdrawable switchgear consists of two parts: the power distribution center (PC) switchgear and the motor control center (MCC). It is suitable for power users such as power plants, substations, and industrial and mining enterprises as a power distribution system with an AC frequency of 50Hz, a maximum working voltage of up to 660V, and a maximum working current of up to 3150A. It is used for the conversion, distribution and control of electrical energy in power distribution equipment such as motor control and lighting.

型号及含义 /Model and meaning



序号 serial number	项目 Project
1	企业代号 Enterprise code
2	封闭式开关设备 Enclosed Switchgear
3	抽出式 Withdrawable
4	电气系统 Electrical System
(5)	辅助电路方案号 Auxiliary circuit scheme number
6	主电路方案号 Main circuit scheme number

技术参数 /Technical parameters

项目 Project		参数 Parameter		
额定工作频率 (Hz)Rated working frequency (Hz)		50		
额定工作电压 (V)Rated working voltage	ge (V)	380, 660		
额定绝缘电压 (V)Rated insulation volta	age (V)	660		
额定工作电流 (A) 水平母线、垂直母线 Rated working current (A) Horizontal bus, vertical bus		630-3150、600		
额定短时耐受电流 水平母线、垂直母线 Rated short-time withstand current Horizontal bus, vertical bus		80kA(有效值)/1 秒、50kA(有效值)/1 秒 80kA (effective value)/1 second, 50kA (effective value)/1 second		
额定峰值耐受电流 Rated peak withstand current	水平母线、垂直母线 Horizontal bus, vertical bus	176kA/0.1s、110kA/0.1s		
主电路接插件 (A)Main circuit connecto	or (A)	200, 400		
辅助电路接插件 (A)Auxiliary circuit cor	nnector (A)	10		
工频耐压 1 分钟 (V)Power frequency w	vithstand voltage for 1 minute (V)	2500		
防护等级 Protection level		IP40		
操作方式 Operation method		就地,远方,自动 On-site, remote, automatic		



MDGCK

低压抽出式开关设备

使用条件 /Conditions of Use

- ◆ 周围空气温度不高于 +40℃, 不低于 -5℃, 并且 24h 平均温度不高于 +35℃:
- ◆ 周围空气清洁,相对湿度在最高温度为 +40℃时不超过 50%,在较低温度时允许有较高的相对湿度,例如 +25℃时为 90%,但应考虑到由于温度变化可能会偶然产生适度的凝露;
- ◆ 户内使用,海拔高度不超过 2000m;
- ◆ 在无显著摇动和冲击震动的地方;
- ◆ 污染等级: 3 级;
- ◆ 抗震烈度: 8度:

- \bullet The ambient air temperature is not higher than +40°C , not lower than -5°C , and the average temperature of 24h is not higher than +35°C ;
- $lack \$ The surrounding air is clean, the relative humidity does not exceed 50% when the highest temperature is +40°C , and higher relative humidity is allowed at lower temperatures, such as 90% at +25°C , but the possibility of temperature changes should be considered May occasionally produce moderate condensation;
- lacktriangle For indoor use, the altitude does not exceed 2000m;
- In a place without significant shaking and shock;
- ◆ Pollution degree: Level 3;
- ◆ Seismic intensity: 8 degrees;

MDMNS

低压抽出式开关设备

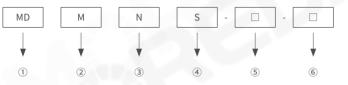


概述 /Overview

MDMNS 系统是我公司引进瑞士 ABB 公司制造技术的产品,为工厂组装式低压开关柜装置,技术标准符合 GB7251.1, IEC439-1, VDE0660 第 500 部分,BS5486 第 1 部分,UTE63-410,作为船用的产品还符合 LIOYD'S REGISTER 船用标准。

The MDMNS system is a product introduced by our company from the manufacturing technology of Swiss ABB. It is a factory-assembled low-voltage switchgear device. The technical standards comply with GB7251.1, IEC439-1, VDE0660 Part 500, BS5486 Part 1, and UTE63-410. As Marine products, they also comply with LIOYD's REGISTER Marine standards.

型号及含义 /Model and meaning



序号 serial num	项目 ber Project
1	企业代号 Enterprise code
2	封闭式开关设备 Enclosed Switchgear
3	抽出式 Withdrawable
4	电气系统 Electrical System
(5)	辅助电路方案号 Auxiliary circuit scheme number
6	主电路方案号 Main circuit scheme number

基本参数 /Basic parameters

电气性能

- ◆ 额定绝缘电压: 690V/AC;
- ◆ 额定工作电压: 400V/AC;
- ◆ 额定冲击耐受电压: 8kV;
- ◆ 额定频率: 50~60Hz;
- ◆ 主母线最大工作电流: 6300A;
- ◆ 主母线短时耐受电流: 100kA;
- ◆ 主母线峰值耐受电流: 220kA:
- ◆ 配电母线 (垂直母线)最大工作电流: 1200(2000A);
- ◆ 配电母线 (垂直母线)短时峰值电流: 176kA;
- ◆ 防护等级: IP30~IP54。

Electrical performance

- ◆ Rated insulation voltage: 690V/AC;
- ◆ Rated working voltage: 400V/AC;
- ◆ Rated impulse withstand voltage: 8kV;
- ◆ Rated frequency: 50~60Hz;
- ◆ The maximum working current of the main busbar: 6300A;
- ◆ Short-time withstand current of main busbar: 100kA;
- ◆ Peak withstand current of main busbar: 220kA;
- ◆ Maximum working current of distribution Busbar (vertical Busbar): 1200 (2000A);
- Short-time peak current of distribution Busbar (vertical Busbar): 176kA;
- ◆ Protection level: IP30~IP54.



MDMNS

低压抽出式开关设备

使用条件 /Conditions of Use

- ◆ 周围空气温度不高于 +40℃,不低于 -5℃,并且 24h 平均温度不高于 +35℃:
- ◆ 周围空气清洁,相对湿度在最高温度为 +40℃时不超过 50%,在较低温度时允许有较高的相对湿度,例如 +25℃时为 90%,但应考虑到由于温度变化可能会偶然产生适度的凝露;
- ◆ 户内使用,海拔高度不超过 2000m;
- ◆ 在无显著摇动和冲击震动的地方;
- ◆ 污染等级: 3级;
- ◆ 抗震烈度: 8 度

- \bullet The ambient air temperature is not higher than +40°C , not lower than -5°C , and the average temperature of 24h is not higher than +35°C ;
- ullet The surrounding air is clean, the relative humidity does not exceed 50% when the highest temperature is +40°C, and higher relative humidity is allowed at lower temperatures, such as 90% at +25°C, but the possibility of temperature changes should be considered May occasionally produce moderate condensation:
- For indoor use, the altitude does not exceed 2000m;
- ◆ In a place without significant shaking and shock;
- ◆ Pollution degree: Level 3;
- ◆ Seismic intensity: 8 degrees;

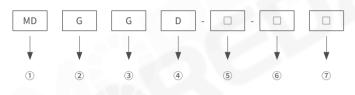
MDGGD 交流低压配电开关设备



概述 /Overview

MDGGD 型交流低压配电开关设备适用于发电厂、变电站、厂矿企业等电力用户的交流 50Hz, 额定工作电压 380V, 额定工作电流至 3150A 的配电系统,作为动力、照明及配电设备的电能转换、分配与控制之用。

型号及含义 /Model and meaning



The MDGGD type AC low-voltage distribution switchgear is suitable for the AC 50Hz, rated working voltage 380V, and rated working current up to 3150A distribution systems of power users such as power plants, substations, and industrial and mining enterprises. It is used for the conversion, distribution and control of electric energy for power, lighting and distribution equipment.

序号 serial number	项目 Project
1	企业代号 Enterprise code
2	交流低压配电开关设备 AC low-voltage power distribution cabinet
3	电器元件固定安装、固定接线 Fixed installation and fixed wiring of electrical components
4	电力用开关设备 Power cabinet
(5)	设计序号:分断能力为 15kA;分断能力为 30kA;分断能力为 30kA;分断能力为 50kA Design serial number: breaking capacity is 15kA; breaking capacity is 30kA; breaking capacity is 50kA
6	主电路方案号 Main circuit scheme number
7	辅助电路方案代号 Auxiliary circuit scheme code

技术参数 /Technical parameters

型믁 Model	额定电压 (V) Rated voltage (V)	额定电流 Rated cu	(A) urrent (A)	额定短路开断电流 (kA) Rated short circuit Breaking current (kA)	额定短时耐受电流 (1s)(kA) Rated short-time withstand current(1s)(kA)	额定峰值耐受电流 (kA) Rated peak withstand current (kA)
MDGGD1	380	А	1000	15	15	30
MDGGD1	380	В	600(630)	15	15	30
MDGGD1	380	С	400	15	15	30
MDGGD2	380	А	1500(1600)	30	30	63
MDGGD2	380	В	1000	30	30	63
MDGGD2	380	С	600	30	30	63
MDGGD3	380	Α	3150	50	50	105
MDGGD3	380	В	2500	50	50	105
MDGGD3	380	С	2000	50	50	105



MDGGD

交流低压配电开关设备

使用条件 /Conditions of Use

- ◆ 周围空气温度不高于 + 40°C,不低于 -5°C,24h 内的平均温度不得高于 + 35°C:
- ◆ 户内安装使用,使用地点的海拔高度不得超过 2000m;
- ◆ 周围空气相对湿度在最高温度为 +40℃时不超过 50%,应在较低温度时允许有较大的相对温度 (例如 +2℃时为 90%) 考虑到由于温度 的变化可能
- ◆ 设备安装时与垂直面的倾斜度不超过 5°;
- ◆ 设备应安装在无剧烈震动和冲击的地方,以及不足以使电器元件受到腐蚀的场所:
- ◆ 用户有特殊要求时可与制造厂协商解决。

- ◆ The ambient air temperature shall not be higher than + 40°C, nor lower than -5°C, and the average temperature within 24 hours shall not be higher than + 35°C.
- ◆ For indoor installation and use, the altitude of the usage site shall not exceed 2000m;
- ◆ The relative humidity of the surrounding air shall not exceed 50% when the maximum temperature is +40°C. A larger relative humidity should be allowed at lower temperatures (for example, 90% at +2C°C), considering the influence that condensation may occur occasionally due to temperature changes.
- ◆ The inclination of the equipment installation to the vertical plane shall not exceed 5°
- ◆ The equipment should be installed in a place free from severe vibration and shock, as well as in a place where the electrical components are not corroded.
- $\ \, \ \, \ \, \ \, \ \, \ \,$ When users have special requirements, they can negotiate and solve them with the manufacturer.

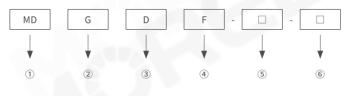
MDGDF 低压固定分隔式开关柜



概述 /Overview

MDGDF 低压固定分隔式开关柜适用于三相交流 50、60Hz,额定工作电压 380V、660V,额定电流 4000A 及以下的三相四线制及三相五线制电力系统,广泛应用于发电厂、变电站、工矿企业、大楼宾馆、机场、码头以及广播电视等通信中心,输配电、电能转换及电能消耗的动力配电中的 PC 和电动机控制中心 MCC 的低压成套配置装置。

型号及含义 /Model and meaning



The MDGDF low-voltage fixed compartments switchgear is suitable for three-phase AC 50, 60Hz, rated working voltage 380V, 660V, and rated current 4000A and below three-phase four-wire and three-phase five-wire power systems. It is widely used in power plants, substations, industrial and mining enterprises, buildings, hotels, airports, docks, and communication centers such as radio and television stations. Low-voltage complete set configuration devices for PCS and motor control centers (MCC) in power distribution for power transmission and distribution, power conversion and power consumption.

序号 serial number	项目 Project
1)	企业代号 Enterprise code
2	低压固定式开关柜 Low-voltage fixed switchgear
3	电器元件固定安装、固定接线 Fixed installation and wiring of electrical components
4	分隔式 compartment type
(5)	主电路方案号 Main circuit scheme number
6	辅助电路方案号 Auxiliary circuit scheme number

技术参数 /Technical parameters

项目 Project		单位 Unit	参数 Parameter	
主电路额定电压 Rated voltage of main circuit		V	交流 AC 380	
辅助电路额定电压 Auxiliary cire	cuit rated voltage	V	交流 AC 220、380(400) 直流 DC 110,220	
额定频率 Rated frequency		Hz	50	
额定绝缘电压 Rated insulation	voltage	V	交流 AC 660	
额定电流	水平母线 Horizontal busbar	Α	3150、2500、2000、1600、1000	
Rated current	垂直母线 (MCC)Vertical busbar (MCC)	А	1000	
母线额定短时耐受电流 Rated short-time withstand current of busbar		KA/1S	50	
母线额定峰值耐受电流 Rated peak withstand current of busbar		KA/0.1S	105	
工频试验电压 主电路 Main circuit,		V/1min	2500	
Power frequency test voltage	辅助电路 Auxiliary circuit	V/1min	1760	
母线 Busbar	三相四线制 Three-phase four-wire system		A.B.C.PEN	
	三相五线制 Three-phase five-wire system		A.B.C.PE.N	
防护等级 Protection level			IP30	



MDGDF

低压固定分隔式开关柜

使用条件 /Conditions of Use

- ◆ 安装地点: 户内;
- ◆ 周围空气温度:不高于+55℃,不低于-15℃,最大日温差25K;湿度:日相对湿度平均值≤95%,月相对湿度平均值≤90%;
- ◆ 海拔高度: 不得超过 2000 米;
- ◆ 耐受地震能力: 8级;
- ◆ 应安装在无剧烈震动和冲击以及不足以使电器元件受到腐蚀的场所。
- ◆ Installation location: Indoors:
- ♦ Ambient air temperature: not higher than +55°C, not lower than -15°C, with a maximum daily temperature difference of 25K; Humidity: The average daily relative humidity is ≤ 95%, and the average monthly relative humidity is ≤ 90%.
- ◆ Altitude: Not more than 2000 meters;
- Seismic tolerance capacity: Magnitude 8;
- It should be installed in a place free from severe vibration and shock and where the electrical components are not corroded.

SLVA 国网标准化低压开关柜

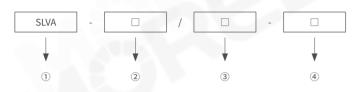


概述 /Overview

SLVA 是 Standardized Low-Voltage Assemblies 的英文缩写,即:标准化低压开关柜,标准化低压开关柜是按照国网标准化要求设计的低压成套开关设备,适用于 0.4 kV 电压系统,作为各种发电、输电、配电、电能转换和电能消耗设备的控制设备,能广泛应用于各工矿企业、大楼宾馆、市政建设等低压配电系统中。

SLVA is the abbreviation of Standardized Low-Voltage Assemblies in English, namely: Standardized low-voltage switchgear is a set of low-voltage switchgear designed in accordance with the requirements of State Grid standardization. It is suitable for 0.4kV voltage systems and serves as a control device for various power generation, transmission, distribution, power conversion and power consumption equipment. It can be widely applied in low-voltage distribution systems of various industrial and mining enterprises, buildings, hotels, municipal construction, etc.

型号及含义 /Model and meaning



序号 serial number	项目 Project
1	产品名称代号 Product name code
2	水平母线额定电流 Rated current of horizontal busbar
3	标准化定制方案单柜编号 Standardized customized solution single cabinet number
4	补偿容量 / 紧凑型结构标识 (如有) Compensation capacity/compact structure identification (if any)

产品特点 /Product Features

- ◆ 精简分类、统一标准, 打破原有柜型分类, 统一结构, 实现柜体并柜统一;
- ◆ 差异兼顾,主要部件、柜体形式布局采用近几年广泛且能够代表未来发展方向的方案。同时考虑到去差异化配置,将小型化柜型、SVG 补偿、通讯接口作为可选方案供使用者选择;
- ◆ 适当超前、一步到位,针对开关柜额定电流序列、防护等级、无功功率补偿装置、应急电源接口、核相装置、馈线负荷监测进行了适当超前设计、以适应配电网未来的级改造需求,达到设备投运后一步到位的目标,避免频繁升级改造:
- ◆ 简化运维、提升效率,针对开关柜的结构布局,尺寸设计、绝缘防护以及柜门铰链的安装方式细节方面进行了统一和优化设计,方便运维人员巡视、操作、减少周期性运维项目,进一步提升工作效率。
- Streamline classification, unify standards, break the original classification of cabinet types, unify the structure, and achieve unified consolidation of cabinet bodies:
- ◆ Taking differences into account, the layout of main components and cabinet forms adopts the schemes that have been widely used in recent years and can represent the future development direction. Meanwhile, considering the dedifferentiation configuration, the miniaturized cabinet type, SVG compensation, and communication interface are offered as optional solutions for users to
- ◆ Appropriate advancement and one-step completion. Appropriate advanced designs have been carried out for the rated current series of switch cabinets, protection levels, reactive power compensation devices, emergency power interfaces, phase verification devices, and feeder load monitoring to meet the future level transformation requirements of the distribution network, achieving the goal of one-step completion after the equipment is put into operation and avoiding frequent upgrades and renovations.
- ◆ Simplify operation and maintenance and improve efficiency. Unified and optimized designs have been carried out for the details of the structural layout, size design, insulation protection and installation method of the cabinet door hinges of the switch cabinet, facilitating the inspection and operation of operation and maintenance personnel, reducing periodic operation and maintenance items, and further improving work efficiency.



SLVA

国网标准化低压开关柜

使用条件 /Conditions of Use

- ◆ 周围空气: 温度不离于 +40℃, 不低于 -5℃, 并且 24h 内其平均温度不离于 +35℃。
- ◆ 大气条件: 空气清洁,相对湿度在最高温度为 +40℃时不超过 50%,在较低温度时允许有较高的相对湿度。
- ◆ 海拔高度不超过 2000m。
- ◆ 如果上述使用条件不能满足时,应由用户和制造厂协商解决。
- ◆ 当本装置使用于海上石油钻采平台和核电站时,应另行签订技术协议。
- \bullet Surrounding air: The temperature is not less than +40°C , not lower than -5°C , and the average temperature within 24 hours is not less than +35°C .
- ◆ Atmospheric conditions: The air is clean. The relative humidity does not exceed 50% when the maximum temperature is +40°C. A higher relative humidity is allowed at lower temperatures.
- ◆ The altitude does not exceed 2000 meters.
- ◆ If the above-mentioned usage conditions cannot be met, they should be resolved through consultation between the user and the manufacturer.
- When this device is used in offshore oil drilling and production platforms and nuclear power plants, a separate technical agreement should be signed.

JP 户外综合配电箱

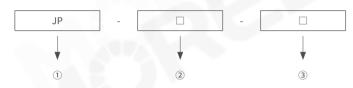


概述 /Overview

JP 系列户外综合配电箱,是集计量、出线、无功补偿等多功能于一体达到户外综合配电装置,具有短路、过载、过电压、漏电保护等功能,体积小、外型美观、经济实用,安装于户外柱上变压器的电杆上,是城乡电网改造的新一代理想配电产品。

The JP series outdoor comprehensive distribution box is an outdoor comprehensive distribution device integrating multiple functions such as metering, outgoing lines, and reactive power compensation. It features short-circuit, overload, overvoltage, and leakage protection. Compact in size, aesthetically pleasing in appearance, and economical and practical, it is installed on the poles of outdoor pole-mounted transformers and represents a new generation of ideal distribution products for urban and rural power grid renovations.

型号及含义 /Model and meaning



序号 serial number	项目 Project
1	综合配电箱 Integrated distribution box
2	变压器容量 Transformer capacity
3	主回路方案号 Main circuit scheme number

技术参数 /Technical parameters

项目 Project	单位 Unit	参数 Parameters
变压器容量 Transformer capacity	kVA	30-400
额定工作电压 Rated working voltage	V	AC400
辅助回路工作电压 Auxiliary circuit working voltage	V	AC220, AC380
额定频率 Rated frequency	Hz	50
额定电流 Rated current	А	≤ 630
额定漏电动作电流 Rated leakage operating current	mA	30~300 可调 Adjustable
防护等级 Protection grade		IP54





户外综合配电箱

使用条件 /Conditions of Use

- ◆ 环境温度: -25℃~+40℃;
- ◆ 空气相对湿度: 日平均值不大于 90%, 月平均值不大于 90%;
- ◆ 海拔高度: 不大于 2000m;
- ◆ 安装在无剧烈震动和冲击、无腐蚀性气体的场所。

- ◆ Ambient temperature: -25°C to +40°C
- Relative humidity of air: The daily average value shall not exceed 90%, and the monthly average value shall not exceed 90%;
- ◆ Altitude: No more than 2000m;
- ◆ It should be installed in a place free from severe vibration and shock and corrosive gases.

BXD2/BXS2



概述 /Overview

BXD2/BXS2 电表箱是一种安装单相与三相电度表配电箱,内部电器开关元 The BXD2/BXS2 electricity meter box is a distribution box for single-phase and 件全部选用模数开关,主要用于民间建筑、工矿企业、高业网配电系统。由 于箱体的尺寸规格, 多样可以按客户要求定做。

结构特点,箱体选用优质板材折弯焊接制作,门上开有抄表窗口, 表层静 电喷涂处理,外形美观,坚固耐用。

three-phase electricity meters. All the electrical switch components inside are selected as analog switches. It is mainly used in the power distribution systems of civil buildings, industrial and mining enterprises, and industrial power grids. Due to the diverse size specifications of the box body, it can be customized according to customer requirements.

Structural features: The box body is made of high-quality plates through bending and welding. There is a meter reading window on the door. The surface is treated with electrostatic spraying, presenting a beautiful appearance and being sturdy and durable.

使用环境 /Usage environment

- ◆ 使用温度: 周围空气温度上限为 +60°C: 下限为 -25°C; 24h 的平均值不超过 35°C。
- 注: 如使用环境的空气温度高于 +60℃或低于 -25℃,应根据产品样本,说明书中给出的数据或与制造厂协商使用。
- ◆ 大气条件: 大气相对湿度在周围空气空气温度为 +40℃时不超过 50%: 在较低的温度下可以有较高的相对湿度,最湿月的月平均最大相对湿度为 90% 同时该月的月平均最低温度为 2℃, 并考虑到因温度变化生在产品表面的凝露。
- ◆ 海拔: 安装地点的海拔高度不超过 2000m(海拔超过 2000m 时请与制造厂协商使用)。
- ◆ 风速:安装地点的风速不超过 35/ms。
- ◆ 冰厚: 箱体为户外安装时, 箱体表面的覆冰厚不的超过 10mm。
- ◆ 污秽等级: 污秽等级为3级。
- ◆ 安装环境条件:
- ◇ 无显著摇动和冲击振动的地方;
- ◇ 在无爆炸危险的介质中,且介质中无足以腐蚀金属和破坏绝缘的气体与尘埃;
- ◇ 适应于墙壁电杆落地等安装场所;
- ◇ 地震强烈度不高于八度;
- ◆ 储运和运输条件: 产品在运输过程中应轻搬轻纺, 不应倒放, 应避免剧烈碰撞。
- ◆ 防护等级: 防护等级为 IP34。







BXD2/BXS2

电表箱

- ◆ Operating temperature: The upper limit of the ambient air temperature is +60°C; the lower limit is -25°C. The average value over 24 hours does not exceed 35°C. Note: If the air temperature of the usage environment is higher than +60°C or lower than -25°C, it should be used in accordance with the data provided in the product sample and manual or in consultation with the manufacturer.
- ◆ Atmospheric conditions: The relative humidity of the atmosphere shall not exceed 50% when the ambient air temperature is +40°C. At lower temperatures, there can be a higher relative humidity. The average maximum relative humidity of the wettest month is 90%, and the average minimum temperature of the month is 2°C, taking into account the condensation on the product surface due to temperature changes.
- ◆ Altitude: The altitude of the installation site shall not exceed 2000m. (If the altitude exceeds 2000m, please negotiate with the manufacturer for use.)
- ◆ Wind speed: The wind speed at the installation site shall not exceed 35/ms.
- ◆ Ice thickness: When the box is installed outdoors, the ice thickness on the surface of the box shall not exceed 10mm.
- ◆ Contamination level: The contamination level is level 3.
- Installation environmental conditions:
- Places without significant shaking and shock vibration;
- ♦ In a medium without explosion hazards, and there are no gases or dust in the medium that are sufficient to corrode metals and damage insulation;
- ♦ It is suitable for installation sites such as wall-mounted utility poles and floor-standing ones.
- ♦ The intensity of the earthquake shall not exceed eight degrees.
- Storage, transportation and handling conditions: During transportation, the products should be handled and spun gently. They should not be placed upside down and violent collisions should be avoided.
- ◆ Protection grade: The protection grade is IP34.

包表箱

MINDIAN[®] 民电

概述 /Overview

PXD2/PXS2 电表箱是一种安装单相与三相电度表配电箱,内部电器开关元件全部选用模数开关,主要用于民间建筑、工矿企业、高业网配电系统。由于箱体的尺寸规格,多样可以按客户要求定做。

结构特点,箱体选用优质板材折弯焊接制作,门上开有抄表窗口, 表层静电喷涂处理、外形美观、坚固耐用。

The PXD2/PXS2 electricity meter box is a distribution box for single-phase and three-phase electricity meters. All the electrical switch components inside are selected as analog switches. It is mainly used in the power distribution systems of civil buildings, industrial and mining enterprises, and industrial power grids. Due to the diverse size specifications of the box body, it can be customized according to customer requirements.

Structural features: The box body is made of high-quality plates through bending and welding. There is a meter reading window on the door. The surface is treated with electrostatic spraying, presenting a beautiful appearance and being sturdy and durable.

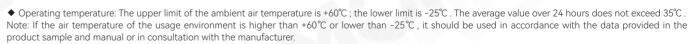
使用环境 /Usage environment

- ◆ 使用温度: 周围空气温度上限为 +60°C: 下限为 -25°C; 24h 的平均值不超过 35°C。
- 注: 如使用环境的空气温度高于 +60℃或低于 -25℃,应根据产品样本,说明书中给出的数据或与制造厂协商使用。
- ◆ 大气条件: 大气相对湿度在周围空气空气温度为 +40℃时不超过 50%: 在较低的温度下可以有较高的相对湿度,最湿月的月平均最大相对湿度为 90% 同时该月的月平均最低温度为 2℃,并考虑到因温度变化生在产品表面的凝露。
- ◆ 海拔:安装地点的海拔高度不超过 2000m(海拔超过 2000m 时请与制造厂协商使用)。
- ◆ 风速:安装地点的风速不超过 35/ms。
- ◆ 冰厚: 箱体为户外安装时, 箱体表面的覆冰厚不的超过 10mm。
- ◆ 污秽等级: 污秽等级为3级。
- ◆ 安装环境条件:
- ◇ 无显著摇动和冲击振动的地方;
- ◇ 在无爆炸危险的介质中, 且介质中无足以腐蚀金属和破坏绝缘的气体与尘埃;
- ◇ 适应于墙壁电杆落地等安装场所;
- ◇ 地震强烈度不高于八度;
- ◆ 储运和运输条件: 产品在运输过程中应轻搬轻纺, 不应倒放, 应避免剧烈碰撞。
- ◆ 防护等级: 防护等级为 IP34。









- $lack \Delta$ Atmospheric conditions: The relative humidity of the atmosphere shall not exceed 50% when the ambient air temperature is +40°C. At lower temperatures, there can be a higher relative humidity. The average maximum relative humidity of the wettest month is 90%, and the average minimum temperature of the month is 2°C, taking into account the condensation on the product surface due to temperature changes.
- ◆ Altitude: The altitude of the installation site shall not exceed 2000m. (If the altitude exceeds 2000m, please negotiate with the manufacturer for use.)
- ◆ Wind speed: The wind speed at the installation site shall not exceed 35/ms.
- Ice thickness: When the box is installed outdoors, the ice thickness on the surface of the box shall not exceed 10mm.
- $\ \, \bullet \,$ Contamination level: The contamination level is level 3.
- ◆ Installation environmental conditions:
- Places without significant shaking and shock vibration;
- ♦ In a medium without explosion hazards, and there are no gases or dust in the medium that are sufficient to corrode metals and damage insulation;
- ♦ It is suitable for installation sites such as wall-mounted utility poles and floor-standing ones.
- The intensity of the earthquake shall not exceed eight degrees.
- Storage, transportation and handling conditions: During transportation, the products should be handled and spun gently. They should not be placed upside down and violent collisions should be avoided.
- ◆ Protection grade: The protection grade is IP34.



电表箱

MINDIAN 民电

概述 /Overview

SXD2/SXS2 电表箱是一种安装单相与三相电度表配电箱,内部电器开关元 The SXD2/SXS2 electricity meter box is a distribution box for single-phase and 件全部选用模数开关,主要用于民间建筑、工矿企业、高业网配电系统。由 于箱体的尺寸规格, 多样可以按客户要求定做。

结构特点,箱体选用优质板材折弯焊接制作,门上开有抄表窗口, 表层静 电喷涂处理,外形美观,坚固耐用。

three-phase electricity meters. All the electrical switch components inside are selected as analog switches. It is mainly used in the power distribution systems of civil buildings, industrial and mining enterprises, and industrial power grids. Due to the diverse size specifications of the box body, it can be customized according to customer requirements.

Structural features: The box body is made of high-quality plates through bending and welding. There is a meter reading window on the door. The surface is treated with electrostatic spraying, presenting a beautiful appearance and being sturdy and durable.

使用环境 /Usage environment

- ◆ 使用温度: 周围空气温度上限为 +60°C: 下限为 -25°C; 24h 的平均值不超过 35°C。
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- ◆ 大气条件: 大气相对湿度在周围空气空气温度为 +40℃时不超过 50%: 在较低的温度下可以有较高的相对湿度,最湿月的月平均最大相对湿度为 90% 同时该月的月平均最低温度为 2℃, 并考虑到因温度变化生在产品表面的凝露。
- ◆ 海拔: 安装地点的海拔高度不超过 2000m(海拔超过 2000m 时请与制造厂协商使用)。
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- ◆ 冰厚: 箱体为户外安装时, 箱体表面的覆冰厚不的超过 10mm。
- ◆ 污秽等级: 污秽等级为3级。
- ◆ 安装环境条件:
- ◇ 无显著摇动和冲击振动的地方;
- ◇ 在无爆炸危险的介质中,且介质中无足以腐蚀金属和破坏绝缘的气体与尘埃;
- ◇ 适应于墙壁电杆落地等安装场所;
- ◇ 地震强烈度不高于八度;
- ◆ 储运和运输条件: 产品在运输过程中应轻搬轻纺, 不应倒放, 应避免剧烈碰撞。
- ◆ 防护等级: 防护等级为 IP34。







SXD2/SXS2

电表箱

- ◆ Operating temperature: The upper limit of the ambient air temperature is +60°C; the lower limit is -25°C. The average value over 24 hours does not exceed 35°C. Note: If the air temperature of the usage environment is higher than +60°C or lower than -25°C, it should be used in accordance with the data provided in the product sample and manual or in consultation with the manufacturer.
- ◆ Atmospheric conditions: The relative humidity of the atmosphere shall not exceed 50% when the ambient air temperature is +40°C. At lower temperatures, there can be a higher relative humidity. The average maximum relative humidity of the wettest month is 90%, and the average minimum temperature of the month is 2°C, taking into account the condensation on the product surface due to temperature changes.
- ◆ Altitude: The altitude of the installation site shall not exceed 2000m. (If the altitude exceeds 2000m, please negotiate with the manufacturer for use.)
- ◆ Wind speed: The wind speed at the installation site shall not exceed 35/ms.
- ◆ Ice thickness: When the box is installed outdoors, the ice thickness on the surface of the box shall not exceed 10mm.
- ◆ Contamination level: The contamination level is level 3.
- Installation environmental conditions:
- Places without significant shaking and shock vibration;
- ♦ In a medium without explosion hazards, and there are no gases or dust in the medium that are sufficient to corrode metals and damage insulation;
- ♦ It is suitable for installation sites such as wall-mounted utility poles and floor-standing ones.
- ♦ The intensity of the earthquake shall not exceed eight degrees.
- Storage, transportation and handling conditions: During transportation, the products should be handled and spun gently. They should not be placed upside down and violent collisions should be avoided.
- ◆ Protection grade: The protection grade is IP34.

DZX 表前端子箱

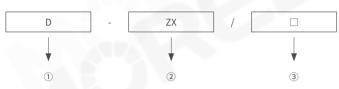


概述 /Overview

DZX 表前端子箱是用户用电计量箱前端的一个总配电箱,一般紧靠安装于计量箱的旁边。用于计量箱安装位置空间受限,计量箱无法设计总开关位置或进线位置。正常运行时可借助手动或自动开关接通或分断电路。

The DZX meter front terminal switch box is a main distribution box at the front of the user's electricity meter box, which is usually installed next to the meter box. It is used when the installation space of the meter box is limited and the meter box cannot be designed to be equipped with a main switch position or an incoming line position. During normal operation, the circuit can be connected or segmented with the help of a manual or automatic switch.

型号及含义 /Model and meaning



序号 serial number	项目 Project
1	企业代号 Enterprise code
2	表前端子箱 Terminal box in front of the meter
3	带开关 With a switch

技术参数 /Technical parameters

项目 Project	单位 Unit	参数 Parameters
额定工作电压 Rated working voltage	V	AC400
额定绝缘电压 Rated insulation voltage	V	AC690V
额定频率 Rated frequency	Hz	50
主母线额定电流 Rated current of the main busbar	А	250
主母线额定耐受电流 Rated withstand current of the main busbar	kA	10~35
外箱材质 Outer box material		不锈钢板 Stainless steel plate、SMC
户内型 / 户外型 Indoor type/outdoor type		户外型 Outdoor type
外壳防护等级 Enclosure protection grade		IP44





表前端子箱





- ◆ 周围空气温度: 最高温度 +40℃,最低温度 -5℃;24 小时内平均温度不得高于 +35℃;
- ◆ 周围空气相对湿度在最高温度为 +40℃时不超过 50%,在较低温度时允许有较大的相对湿度,如 +20℃时为 90%,应考虑到由于温度的变化可能会偶然产 生凝霜的影响;
- ◆ 海拔高度: 户内使用地点不得超过 2000m;
- ◆ 装置安装时与垂直面的倾斜度不超过 5%;
- ◆ 装置应安装在无剧烈震动和冲击以及不足以使电器元件受到不应有腐蚀的场所。
- ♦ Ambient air temperature: Maximum temperature +40°C , minimum temperature -5°C ; The average temperature within 24 hours shall not exceed +35°C .
- ◆ The relative humidity of the surrounding air shall not exceed 50% when the maximum temperature is +40 °C . A higher relative humidity is allowed at lower temperatures, such as 90% at +20°C . The influence of occasional frost formation due to temperature changes should be taken into account.
- ◆ Altitude: The indoor usage location shall not exceed 2000m;
- ◆ The inclination of the device during installation to the vertical plane shall not exceed 5%.
- ◆ The device should be installed in a place free from severe vibration and shock, and where the electrical components are not subject to undue corrosion.

10kV

国网标准型预装式变电站(紧凑型)

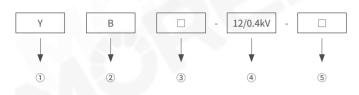
MINDIAN[®] 民电

概述 /Overview

产品结构为目字形排列,供电方式为终端型或环网型。从左到右依次为高压室、变压器室、低压室。还可根据市场智能变电站的需要增设计量室、数据采集室、DTU室,整体箱变总计 6 个功能室,结构紧凑,功能全面。

产品容量范围: 630kVA 及以下容量可满足 2650*1350*2100mm (长*宽*高) 尺寸要求、630kVA 以上产品可根据实际情况调整。

型号及含义 /Model and meaning



The product structure is arranged in a grid pattern, and the power supply mode is terminal type or ring network type. From left to right, they are the high-voltage room, the transformer room and the low-voltage room in sequence. According to the needs of the market for smart substations, a metering room, a data acquisition room and a DTU room can also be added. The total number of functional rooms in the box substation is six, with a compact structure and comprehensive functions.

Product capacity range: Capacities of 630kVA and below can meet the size requirements of 2650*1350*2100mm (length * width * height). For products above 630kVA, adjustments can be made according to actual conditions.

序号 serial number	项目 Project
1	预装式 Pre-installed
2	一体化变电站 Integrated substation
3	设计序号 Design Number
4	额定电压 (高压 / 低压) Rated voltage (High-voltage / low-voltage)
(5)	变压器容量 Transformer capacity

产品优点 /Product advantages

- ◆ 箱变尺寸小, 节省占地面积, 节省土建成本;
- ◆ 高压保护全面, 分为终端型和环网型供电方式, 适用范围较广;
- ◆ 整体箱变共分为 6 个功能室,满足智能化预装式变电站的要求
- ◆ 变压器放置于整体封闭的箱壳内, 噪音及辐射较小;
- ◆ 箱变整体防护等级较高,可适用于盐雾及灰尘较大场所。
- $\ensuremath{\blacklozenge}$ The box-type transformer is small in size, saving floor space and reducing civil construction costs.
- ◆ Comprehensive high-voltage protection, divided into terminal type and ring network type power supply modes, with a wide range of applications;
- lacktriangle The entire box-type substation is divided into $\acute{6}$ functional rooms, meeting the requirements of intelligent prefabricated substations.
- $\ensuremath{\blacklozenge}$ The transformer is placed in an overall enclosed box shell, with relatively low noise and radiation.
- \spadesuit The box-type transformer has a relatively high overall protection level and can be applied in places with heavy salt spray and dust.

执行标准 /Enforce standards

GB/T17467 《高压/低压预装式变电站》 GB/T6451 《油浸式电力变压器技术参数和要求》

10 千伏高压 / 低压预装式变电站标准化设计定制方案 (2018 版)

GB/T17467 "High Voltage/Low Voltage Prefabricated Substations"
GB/T6451 "Technical Parameters and Requirements for Oil-Immersed Power Transformers"

Standardized Design Customization Scheme for 10-Kilovolt High/Low Voltage Prefabricated Substations (2018 Edition)



10kV

国网标准型预装式变电站(紧凑型)

产品特点 /Product Features

- ◆ 本产品结合了组合式变压器(美式箱变)及高压 / 低压预装式变电站(欧式箱变)的优点进行整合的一种新型产品。
- ◆ 美式箱变的优点是结构紧凑、尺寸小。
- ◆ 欧式箱变的优点是高压保护功能全面,缺点是占地面积太大,不适用空间紧凑的地方。
- ◆ 10kV 紧凑型预装式变电站既具有美式箱变结构紧凑,尺寸小的特点,又有欧式箱变的高压保护功能全面的特点。
- ◆ This product is a new type of product that integrates the advantages of combined transformers (American-style box transformers) and high/low voltage prefabricated substations (European-style box transformers).
- ◆ The advantages of American-style box-type transformers are compact structure and small size.
- ◆ The advantage of the European-style box transformer is its comprehensive high-voltage protection function. The disadvantage is that it occupies too much space and is not suitable for places with compact space.
- ◆ The 10kV compact prefabricated substation not only has the characteristics of compact structure and small size of the American box-type substation, but also has the feature of comprehensive high-voltage protection function of the European box-type substation.

10kV

国网标准型预装式变电站(非金属型)

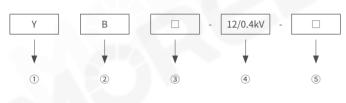
MINDIAN[®] 民电

概述 /Overview

产品结构为目字形排列,供电方式为终端型或环网型。从左到右依次为高压室、变压器室、低压室。还可根据市场智能变电站的需要增设计量室、数据采集室、DTU室,整体箱变总计 6 个功能室,结构紧凑,功能全面。

The product structure is arranged in a grid pattern, and the power supply mode is terminal type or ring network type. From left to right, they are the high-voltage room, the transformer room and the low-voltage room in sequence. According to the needs of the market for smart substations, a metering room, a data acquisition room and a DTU room can also be added. The total number of functional rooms in the box substation is six, with a compact structure and comprehensive functions.

型号及含义 /Model and meaning



序号 serial number	项目 Project
1	预装式 Pre-installed
2	一体化变电站 Integrated substation
3	设计序号 Design Number
4	额定电压 (高压 / 低压) Rated voltage (High-voltage / low-voltage)
(5)	变压器容量 Transformer capacity

产品优点 /Product advantages

- ◆ 箱变尺寸小, 节省占地面积, 节省土建成本;
- ◆ 高压保护全面, 分为终端型和环网型供电方式, 适用范围较广;
- ◆ 整体箱变共分为 6 个功能室,满足智能化预装式变电站的要求
- ◆ 变压器放置于整体封闭的箱壳内, 噪音及辐射较小;
- ◆ 箱变整体防护等级较高,可适用于盐雾及灰尘较大场所。
- ◆ The box-type transformer is small in size, saving floor space and reducing civil construction costs.
- ◆ Comprehensive high-voltage protection, divided into terminal type and ring network type power supply modes, with a wide range of applications;
- ◆ The entire box-type substation is divided into 6 functional rooms, meeting the requirements of intelligent prefabricated substations.
- ◆ The transformer is placed in an overall enclosed box shell, with relatively low noise and radiation
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10kV

国网标准型预装式变电站(非金属型)

产品特点 /Product Features

- ◆ 满足 10 千伏高压 / 低压预装式变电站标准化设计定制方案(2018 版)设计规范的要求,生产变电站样机通过国家权威机构的试验,并在中国电科院备案的产品。
- ◆ 箱体材质的特点分为金属型和非金属型。
- ◆ 箱变尺寸的特点是外部结构尺寸和内部结构尺寸统一。
- ◆ Meet the requirements of the design specification of the standardized design customization Scheme for 10-kilovolt high/Low Voltage prefabricated substations (2018 Edition), and produce substation prototypes that have passed the tests of national authoritative institutions and been filed with the China Electric Power Research Institute.
- ◆ The characteristics of the box material are divided into metallic type and
- ◆ The characteristic of the box transformer size is that the external structural size and the internal structural size are unified.

10kV

国网标准型预装式变电站(金属型)

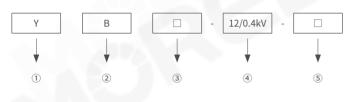
MINDIAN[®] 民电

概述 /Overview

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The product structure is arranged in a grid pattern, and the power supply mode is terminal type or ring network type. From left to right, they are the high-voltage room, the transformer room and the low-voltage room in sequence. According to the needs of the market for smart substations, a metering room, a data acquisition room and a DTU room can also be added. The total number of functional rooms in the box substation is six, with a compact structure and comprehensive functions.

型号及含义 /Model and meaning



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- ◆ 整体箱变共分为 6 个功能室,满足智能化预装式变电站的要求;
- ◆ 变压器放置于整体封闭的箱壳内, 噪音及辐射较小;
- ◆ 箱变整体防护等级较高,可适用于盐雾及灰尘较大场所。

执行标准 /Enforce standards

GB/T17467《高压/低压预装式变电站》 GB/T6451《油浸式电力变压器技术参数和要求》 10千伏高压/低压预装式变电站标准化设计定制方案(2018版)

- $\ensuremath{\blacklozenge}$ The box-type transformer is small in size, saving floor space and reducing civil construction costs.
- ◆ Comprehensive high-voltage protection, divided into terminal type and ring network type power supply modes, with a wide range of applications;
- ◆ The entire box-type substation is divided into 6 functional rooms, meeting the requirements of intelligent prefabricated substations.
- ◆ The transformer is placed in an overall enclosed box shell, with relatively low noise and radiation
- ◆ The box-type transformer has a relatively high overall protection level and can be applied in places with heavy salt spray and dust.

GB/T17467 "High Voltage/Low Voltage Prefabricated Substations"

GB/T6451 "Technical Parameters and Requirements for Oil-Immersed Power Transformers"

Standardized Design Customization Scheme for 10-Kilovolt High/Low Voltage Prefabricated Substations (2018 Edition)

State oricated prefabricated substation (Metal type)

10kV

国网标准型预装式变电站(金属型)

产品特点 /Product Features

- ◆ 满足 10 千伏高压 / 低压预装式变电站标准化设计定制方案(2018 版)设计规范的要求,生产变电站样机通过国家权威机构的试验,并在中国电科院备案的产品。
- ◆ 箱体材质的特点分为金属型和非金属型。
- ◆ 箱变尺寸的特点是外部结构尺寸和内部结构尺寸统一。
- ◆ Meet the requirements of the design specification of the standardized design customization Scheme for 10-kilovolt high/Low Voltage prefabricated substations (2018 Edition), and produce substation prototypes that have passed the tests of national authoritative institutions and been filed with the China Electric Power Research Institute.
- ◆ The characteristics of the box material are divided into metallic type and
- ◆ The characteristic of the box transformer size is that the external structural size and the internal structural size are unified.

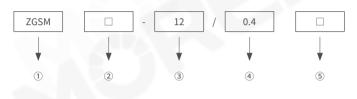
ZGSM 组合式变电站(美式)

MINDIAN[®] 民电

概述 /Overview

本产品是吸收国外前沿技术,结合国内实际情况研制开发的,整台产品具有体积小、安装维护简便、低噪音、低损耗、防盗、过负荷能力强、全保护等特点。适用于新建小区、绿化带、公园、车站宾馆、工地、机场等场所。ZGSM-12/0.4组合式箱式变电站(美式),适用于10kV环网供电,双电源供电或终端供电系统中,作为变电、计量、补偿控制和保护装置。

型号及含义 /Model and meaning



This product is developed by absorbing advanced foreign technologies and combining domestic actual conditions. The entire product features a compact size, easy installation and maintenance, low noise, low loss, anti-theft, strong overload capacity and full protection. It is applicable to newly-built residential areas, green belts, parks, stations, hotels, construction sites, airports and other places.

The ZGSM-12/0.4 combined box-type substation (American style) is suitable for 10kV ring network power supply, dual power supply or terminal power supply systems, and serves as a power transformation, metering, compensation control and protection device.

序号 serial number	项目 Project
1	预装式变电站 (美式) Prefabricated substation (American style)
2	设计序号 Design serial number
3	高压侧额定电压 Rated voltage on the high-voltage side (kV)
4	低压侧额定电压 Rated voltage on the low-voltage side (kV)
(5)	变压器容量 Transformer capacity (kVA)

技术参数 /Technical parameters

项目 Project	单位 Unit	参数 Parameters
额定电压 Rated voltage	kV	10/0.4(高压 / 低压 high-voltage/Low-voltage)
最高工作电压 Maximum operating voltage	kV	12(高压侧 high-voltage side)
额定频率 Rated frequency	Hz	50
额定容量 Rated capacity	kVA	50-1600
1 分钟工频耐压 One-minute power frequency withstand voltage	kV	35
雷电冲击电压 Lightning impulse voltage	kV	75
冷却方式 Cooling method		油浸自冷 Oil-immersed self-cooling
高压后备熔断器开断电流 The high-voltage backup fuse breaks the current	kA	50
插入式熔断器开断电流 The plug-in fuse breaks the current	kA	2.5
环境温度 Ambient temperature	°C	-35~+40
线圈允许温升 The coil allows for temperature rise	°C	65
无载调压 No-load voltage regulation		±5%或 or ±2×2.5%
噪声等级 Noise level	db	50
防护等级 Protection grade		IP43



ZGSM

组合式变电站(美式)

使用条件 /Conditions of Use

- ◆ 海拔高度不超过 1000m;
- ◆ 环境温度: -35℃~+40℃;
- ◆ 相对湿度: 日平均值不大于95%, 月平均值不大于90%;
- ◆ 安装场所:无火灾、爆炸危险、化学腐蚀性气体及通风良好的场所,地面倾角不大于3°。

The altitude does not exceed 1000 meters;

- ◆ Ambient temperature: -35°C to +40°C
- Relative humidity: The daily average value shall not exceed 95%, and the monthly average value shall not exceed 90%;
- ◆ Installation site: A place free from fire, explosion hazards, chemically corrosive gases and with good ventilation. The ground inclination Angle shall not be greater than 3°.

DFW-12kV

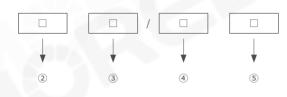
欧式电缆分接箱



概述 /Overview

欧式电缆分接箱是近年来广泛用于电力配网系统中的电缆化工程设备,它的主要特点是双向开门、利用穿墙套管作为连接母排,具有长度小、电缆排列清楚、三芯电缆不需要大跨度交叉等显著优点。其所采用的电缆接头符合DIN47636标准。一般采用额定电流 630A 螺栓固定连接式电缆接头。

型号及含义 /Model and meaning



European-style cable distribution boxes are widely used cable engineering equipment in power distribution network systems in recent years. Their main features include bidirectional doors and the use of wall-penetrating bushings as connection busbars. They have significant advantages such as short length, clear cable arrangement, and no need for large-span cross-connections for three-core cables. The cable joints it adopts comply with the DIN47636 standard. Generally, cable joints with a rated current of 630A and bolted fixed connection are adopted.

序号 serial number	项目 Project
1	电缆分接线 Cable distribution line
2	电压等级 (kV) Voltage level (kV)
3	回路数 (一相中进出线总数) Number of circuits (total number of incoming and outgoing lines in Phase One)
4	A 为带避雷器缺省为不带 "A" means with a lightning arrester. By default, it is not equipped

技术参数 /Technical parameters

项目 Project	参数 Parameters
额定电压 Rated voltage	12kV
额定电流 Rated current	630A
动稳定电流 Dynamic stable current	50kA/0.3s
热稳定电流 Thermal stable current	20kA/3s
1min 工频耐压 1-minute power frequency withstand voltage	42kV
15 分钟直流耐压 15 minutes of DC withstand voltage	52kV
雷电冲击耐压 Lightning impulse withstand voltage	105kV
箱体防护等级 Box protection grade	IP33



DFW-12kV

欧式电缆分接箱

使用条件 /Conditions of Use

- ◆ 环境温度: 最高气温: +40℃. 最低气温 -30℃:
- ◆ 风速: 相当 34m/s(不大于 700Pa);
- ◆ 湿度: 日相对湿度平均值不大于 95%, 月相对湿度平均值不大于 95%;
- ◆ 防震: 水平加速度不大于 0.4m/s^2 , 垂直加速度不大于 0.15m/s^2 安装地 点倾斜度: 不大于 3° ;
- ◆ 安装环境: 周围空气不受腐蚀性、可燃性气体、 水蒸气等明显污染,安装地点无剧烈震动。
- ullet Ambient temperature: Maximum temperature: +40°C , minimum temperature: -30°C ·
- ◆ Wind speed: Equivalent to 34m/s(not greater than 700Pa);
- ◆ Humidity: The average daily relative humidity shall not exceed 95%, and the average monthly relative humidity shall not exceed 95%.
- ◆ Anti-vibration: The horizontal acceleration is no more than 0.4m/s ², the vertical acceleration is no more than 0.15m/s ², and the inclination of the installation site is no more than 3°.
- Installation environment: The surrounding air is not significantly polluted by corrosive, flammable gases, water vapor, etc., and there is no severe vibration at the installation site.

DFW-35kV

欧式电缆分接箱

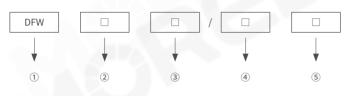


概述 /Overview

欧式电缆分接箱是近年来广泛用于电力配网系统中的电缆化工程设备,它的主要特点是双向开门、利用穿墙套管作为连接母排,具有长度小、电缆排列清楚、三芯电缆不需要大跨度交叉等显著优点。其所采用的电缆接头符合DIN47636标准。一般采用额定电流 630A 螺栓固定连接式电缆接头。

European-style cable distribution boxes are widely used cable engineering equipment in power distribution network systems in recent years. Their main features include bidirectional doors and the use of wall-penetrating bushings as connection busbars. They have significant advantages such as short length, clear cable arrangement, and no need for large-span cross-connections for three-core cables. The cable joints it adopts comply with the DIN47636 standard. Generally, cable joints with a rated current of 630A and bolted fixed connection are adopted.

型号及含义 /Model and meaning



序号 serial number	项目 Project
1	电缆分接线 Cable distribution line
2	电压等级 (kV) Voltage level (kV)
3	回路数 (一相中进出线总数) Number of circuits (total number of incoming and outgoing lines in Phase One)
4	A 为带避雷器缺省为不带 "A" means with a lightning arrester. By default, it is not equipped

技术参数 /Technical parameters

项目 Project	参数 Parameters
额定电压 Rated voltage	35kV
额定电流 Rated current	630A
动稳定电流 Dynamic stable current	50kA/0.3s
热稳定电流 Thermal stable current	20kA/3s
1min 工频耐压 1-minute power frequency withstand voltage	80kV
15 分钟直流耐压 15 minutes of DC withstand voltage	125kV
雷电冲击耐压 Lightning impulse withstand voltage	185kV
箱体防护等级 Box protection grade	IP33



DFW-35kV

欧式电缆分接箱

使用条件 /Conditions of Use

- ◆ 环境温度: 最高气温: +40℃. 最低气温 -30℃:
- ◆ 风速: 相当 34m/s(不大于 700Pa);
- ◆ 湿度: 日相对湿度平均值不大于 95%, 月相对湿度平均值不大于 95%;
- ◆ 防震: 水平加速度不大于 0.4m/s^2 , 垂直加速度不大于 0.15m/s^2 安装地 点倾斜度: 不大于 3° ;
- ◆ 安装环境: 周围空气不受腐蚀性、可燃性气体、 水蒸气等明显污染,安 装地点无剧烈震动。
- \bullet Ambient temperature: Maximum temperature: +40°C , minimum temperature: -30°C ;
- ◆ Wind speed: Equivalent to 34m/s(not greater than 700Pa);
- ◆ Humidity: The average daily relative humidity shall not exceed 95%, and the average monthly relative humidity shall not exceed 95%.
- ullet Anti-vibration: The horizontal acceleration is no more than 0.4m/s 2 , the vertical acceleration is no more than 0.15m/s 2 , and the inclination of the installation site is no more than 3°.
- Installation environment: The surrounding air is not significantly polluted by corrosive, flammable gases, water vapor, etc., and there is no severe vibration at the installation site.

DFW 低压电缆分支箱



概述 /Overview

型号及含义 /Model and meaning

DFW-12 低压电缆分支箱箱体采用 DFW 复合材料经高温模压成型,具有良好的抗冲击、抗弯曲强度、抗老化、耐磨擦、耐腐蚀、耐电弧、高阻燃、绝缘强度高、安装便利等优点,能够满足户外工程项目中各种恶劣环境和场所的需要,适用于城乡电网改造、市政工程、居民小区及高层建筑等公共场所的输配电,作为控制和保护之用。

0.4kV

The box body of the DFW-12 low-voltage cable branch box is made of DFW composite material through high-temperature molding. It has the advantages of good impact resistance, bending strength, anti-aging, wear resistance, corrosion resistance, arc resistance, high flame retardancy, high insulation strength, and convenient installation. It can meet the needs of various harsh environments and places in outdoor engineering projects. It is applicable to the power transmission and distribution in public places such as urban and rural power grid renovation, municipal engineering, residential communities and high-rise buildings, and is used for control and protection.

序号 serial number	项目 Project
1)	电缆分支箱 Cable distribution line
2	户外 Outdoor
3	F 为防洪型,不带 F 为不防洪型 F represents the flood control type. Without F, it is the non-flood control type
4	额定电压 (kV)Rated voltage (kV)
(5)	额定电流 (A)Rated current (A)
6	分支数 Number of branches

产品特点 /Product Features

- ◆ 结构紧凑、体积小;
- ◆ 良好的自然通风系统;
- ◆ 照明用电中, 可实现单极分断
- ◆ 保护等级高。
- ◆ 外壳不锈钢。

- ◆ Compact structure and small volume;
- Good natural ventilation system;
- ◆ In lighting power consumption, single-pole breaking can be achieved;
- ◆ High protection level.
- ◆ The shell is made of stainless steel.

Low-voltage cable distribution box

DFW

低压电缆分支箱

使用条件 /Conditions of Use

- ◆ 周围环境温度不高于 +45℃、不低于 -35℃, 24h 的平均温差不得大于 35℃
- ◆ 使用地点的海拔高度不超过 5000m;
- ◆ 周围空气相对湿度在最高温度为 +45℃时不超过 50%,在较低温度使用时允许有较大的相对湿度 (+22℃时为 80%) 应考虑到由于温度的变化可能会偶然产生凝露的影响;
- ◆ 设备应安装在无剧烈震动和冲击的地方,以及不足使电器元件受到腐蚀的场所·
- ◆ 特殊环境条件下使用, 应由用户和我公司协商解决。

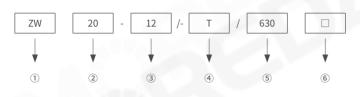
- \bullet The ambient temperature shall not be higher than +45 $\,\,^{\circ}\!\text{C}$ or lower than -35 $\,\,^{\circ}\!\text{C}$, and the average temperature difference within 24 hours shall not be greater than 35°C .
- ◆ The altitude of the usage site shall not exceed 5,000 meters.
- ♦ The relative humidity of the surrounding air shall not exceed 50% when the maximum temperature is +45 °C . When used at a lower temperature, a higher relative humidity is allowed (80% at +22°C). The influence of possible occasional condensation due to temperature changes should be taken into account.
- ◆ The equipment should be installed in a place free from severe vibration and shock, as well as in a place where electrical components will not be corroded.
- Under special environmental conditions, the issue should be resolved through consultation between the user and our company.



概述 /Overview

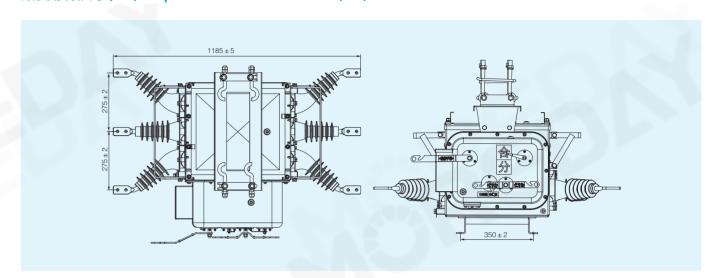
一二次融合柱上断路器由真空断路器本体、馈线终端、电源电压互感器、 电流互感器、零序电压传感器、连接电缆等构成。 The primary and secondary integrated pole-mounted circuit breaker is composed of the vacuum circuit breaker body, feeder terminal, power voltage transformer, current transformer, zero-sequence voltage sensor, connecting cables, etc.

型号及含义 /Model and meaning



序号 serial number	项目 Project
1	户外真空断路器 Outdoor vacuum circuit breaker
2	设计序号 Design serial number
3	额定电压 Rated voltage (kV)
4	弹簧机构 Spring mechanism
⑤	额定电流 Rated current (A)
6	额定短路开断电流 Rated short-circuit breaking current (kA)

外形及安装尺寸 (mm)/Shape and installation dimensions(mm)



Prima and secondary integrated pole-mounted circuit breaker

ZW20-12

一二次融合柱上断路器

使用条件 /Conditions of Use

- ◆ 内置零序电压传感器,采集线路上的零序电压,提高馈线终端的判断接 地执暗的准确性
- ◆ 电压互感器双绕组和配置线损模块,采集线路上的线损。
- ◆ 馈线终端具备馈线自动化功能, 快速隔离故障。

- ◆ Built-in zero-sequence voltage sensor collects the zero-sequence voltage on the line to improve the accuracy of judging ground faults at the feeder terminal.
- ◆ The dual windings of the voltage transformer and the configuration of the line loss module collect the line loss on the line.
- ◆ The feeder terminal is equipped with the function of feeder automation and can quickly isolate faults.

ZW32-12

一二次融合标准化柱上断路器(深度融合)

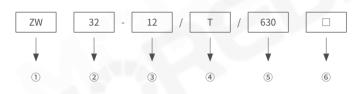
MINDIAN[®] 民电

概述 /Overview

一二次融合标准化柱上断路器(深度融合)由真空断路器本体、馈线终端、电源电压互感器、固封极柱、连接电缆等构成。产品符合《12千伏一二次融合柱上断路器及配电自动化终端(FTU)标准化设计方案(2021版)》。

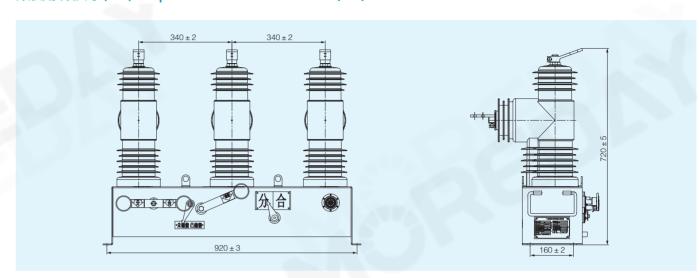
The primary and secondary integrated standardized pole-mounted circuit breaker (deep integration) is composed of the vacuum circuit breaker body, feeder terminal, power voltage transformer, solid-sealed pole column, connecting cable, etc. The product complies with the "Standardized Design Scheme for 12-Kilovolt Primary and Secondary Integrated Pole-mounted Circuit Breakers and Distribution Automation Terminals (FTU) (2021 Edition)".

型号及含义 /Model and meaning



序号 serial number	项目 Project
1	户外真空断路器 Outdoor vacuum circuit breaker
2	设计序号 Design serial number
3	额定电压 Rated voltage (kV)
4	弹簧机构 Spring mechanism
(5)	额定电流 Rated current (A)
6	额定短路开断电流 Rated short-circuit breaking current (kA)

外形及安装尺寸 (mm)/Shape and installation dimensions (mm)



Standard pole-mounted circuit breaker with primary and secondary integration (deep integration)

ZW32-12

一二次融合标准化柱上断路器 (深度融合)

产品特点 /Product Features

◆ 小型化设计:

电流传感器与电压传感器一体化;统一的电气接口,以适应自动检测的要求。

◆ 高精度:

内置电流传感器与电压传感器,采样电流和电压信号精度高。

◆ 互换性:

统一互感器的外形、安装尺寸,机构壳体的安装尺寸,连接端子的安装尺寸; 提升柱上断路器的运维便利性。

◆ 兼容性·

终端外观结构为罩式结构,通过统一定义的航插接口连接到开关设备。

◆ 可靠性·

可根据实际运行的工况,灵活配置运行参数及控制逻辑,实现单相接地、相间短路故障处理。

Miniaturized design

The current sensor and the voltage sensor are integrated. Unified electrical interfaces to meet the requirements of automatic detection.

High precision

It is equipped with built-in current sensors and voltage sensors, ensuring high accuracy in sampling current and voltage signals.

◆ Interchangeability:

Unify the shape and installation dimensions of the transformer, the installation dimensions of the mechanism shell, and the installation dimensions of the connection terminals; Enhance the convenience of operation and maintenance of the pole-mounted circuit breaker.

◆ Compatibility:

The terminal's appearance structure is a cover type structure and is connected to the switchgear through a uniformly defined air plug interface.

Reliability:

According to the actual operating conditions, the operating parameters and control logic can be flexibly configured to achieve the handling of single-phase grounding and interphase short-circuit faults.

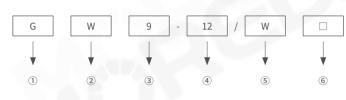




概述 /Overview

GW9-12(W) 系列户外高压交流隔离开关,为单极结构的高压开关设备,在 户外 12kV 线路网络中有电压无负载情况下,分、合电路之用。设有固定拉 钩和自锁装置,采用绝缘勾棒操作灵活可靠。其中防污型户外高压隔离开关 可满足严重污秽地区用户的要求,可以有效地解决隔离开关在运行中出现的 污闪问题。

型号及含义 /Model and meaning



The GW9-12(W) series outdoor high-voltage AC disconnector is a single-pole high-voltage switchgear. It is used to open and close circuits in an outdoor 12kV line network when there is voltage but no load. It is equipped with a fixed pull hook and a self-locking device, and uses insulated hook rods for flexible and reliable operation. Among them, the anti-fouling outdoor high-voltage disconnector can meet the requirements of users in severely polluted areas and effectively solve the pollution flashover problem that occurs during the operation of the disconnector.

序号 serial number	项目 Project
1	隔离开关 Disconnector switch
2	户外 Outdoor
3	设计序号 Design serial number
4	额定电压 Rated voltage (kV)
(5)	防污型(普通不标) Anti-fouling type (not shown if not applicable)
6	额定电流 Rated current (A)

技术参数 /Technical parameters

项目 Project			单位 Unit	参数 Parame	ters		
额定电压 Rated voltage			kV	10		15	
最高工作电压 Maximum operating voltage			kV	12		17.5	
AT-1-1515 1 -	1min 工频耐受电压 (有效值)	对地 To the ground	kV	42		55	
额定绝缘水平 Rated	11 1 1 (DMC 1)	断口 Fracture surface	kV	48		65	
insulation level	雷电冲击耐受电压(峰值)	对地 To the ground	kV	75		105	
ICVCI	Lightning impulse withstand voltage (peak value)	断口 Fracture surface	kV	85		120	
额定频率 Rated frequency			Hz	50			
额定电流 Rated current		А	200	400	630	1250	
4 秒额定短时耐受电流 4-second rated short-time withstand current			kA	6.3	12.5	20	31.5
额定峰值耐受电流 Rated peak withstand current		kA	16	31.5	50	80	
爬电距离 Creepage distance			mm	300		380	
机械寿命 Mechanical life			次 Time	2000		2000	



GW9

户外高压交流隔离开关

使用条件 /Conditions of Use

- ◆ 环境温度: -40°C ~+40°C。
- ◆ 海拔高度: 普通型不超过 2000 米; 高原型不超过 4000 米。
- ◆ 风压: 不超过 700Pa(相当于风速 34m/s)。
- ◆ 防污等级: ||级、||级。
- ◆ 地震烈度: 不超过8度。
- ◆ 覆冰厚度: 不超过 10mm。
- ◆ 无火灾、爆炸、化学腐蚀及经常性剧烈震动的场所。
- ◆ 超出以上条件的要求,由用户同制造单位协商。

- ◆ Ambient temperature: -40°C to +40°C.
- ◆ Altitude: No more than 2000 meters for the common type; The plateau type does not exceed 4,000 meters.
- ◆ Wind pressure: No more than 700Pa (equivalent to a wind speed of 34m/s).
- Anti-pollution grade: Grade II, Grade III.
 Seismic intensity: No more than 8 degrees.
- ◆ Ice coating thickness: No more than 10mm.
- ◆ Places free from fire, explosion, chemical corrosion and frequent violent
- ◆ For requirements exceeding the above conditions, the user shall negotiate with the manufacturing unit.

SC(B) 干式电力变压器

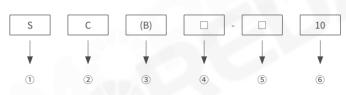


概述 /Overview

本产品具有广泛的使用领域,尤其适合使用在防火要求高的场所,如矿井、油田、地铁、发电厂、学校、医院、商业中心、高层建筑及一切户内配置系统中。

This product has a wide range of applications, especially suitable for use in places with high fire protection requirements, such as mines, oil fields, subways, power plants, schools, hospitals, commercial centers, high-rise buildings and all indoor configuration systems.

型号及含义 /Model and meaning



序号 serial number	项目 Project
①	三相 Three-phase
2	成形固体浇注 Forming solid casting
3	低压箔式线圈 Low-voltage foil coil
4	设计序号 Design serial number
(5)	额定容量 Rated capacity (kVA)
6	高压侧电压等级 High-voltage side voltage level (kV)

结构特征 /Structural characteristics

◆ 铁芯

铁芯采用高导磁优质晶粒取向冷扎硅钢片,45°全斜步进接缝,铁芯采用特殊的方管拉板结构,芯柱采用绝缘带绑扎,铁芯表面采用特殊树脂涂覆以防潮防锈,有效降低了空载损耗、空载电流和铁芯噪音。

安全、难燃防火、无污染、可直接安装在负荷中心。

免维护、安装简便、综合运行成本低。

防潮性能好,可在 100% 湿度下正常运行,停运后不经预干燥即可投入运行。

损耗低、局部放电量低、噪音小、散热能力强、配备有完善的温度保护控制系统、为变压器安全运行提供可靠保障。

可靠性高。据对已经投入运行的产品的运行研究、产品的可靠性指标已经达到国际水平。

◆ 箔式线圏

低压绕组采用整段铜箔,连同F级的匝绝缘在专用低压箔绕机上绕制。箔式线圈较好地解决了低电压,大电流线圈线绕产品短路应力大,安匝不平衡,散热效果差,存在绕制螺旋角,人工焊接质量不稳定的突出问题。同时我公司绕组端部用树脂灌封,固化成形,防潮防污。

◆ 温控装置

变压器采用 BWDK 系列信号温度计、测温元件埋设在低压线圈上半部、可自动检测并巡回显示三相线圈各自的工作湿度。并且有超温报警和跳闸功能。



SC(B)

干式电力变压器

◆ Core

The core is made of high-permeability, high-quality grain-oriented cold-rolled silicon steel sheets with 45° full-slope step joints. The core adopts a special square tube pull plate structure, and the core column is bound with insulating tape. The surface of the core is coated with special resin to prevent moisture and rust, effectively reducing no-load loss, no-load current and core noise.

Safe, flame-retardant and fireproof, pollution-free, and can be directly installed at the load center.

Maintenance-free, easy to install and with low overall operating costs.

It has excellent moisture-proof performance and can operate normally at 100% humidity. After shutdown, it can be put back into operation without pre-drying. Low loss, low partial discharge, low noise, strong heat dissipation capacity, and equipped with a complete temperature protection control system provide reliable quarantee for the safe operation of the transformer.

High reliability. According to the operation research of the products that have been put into operation, the reliability indicators of the products have reached the international level.

◆ Foil coil

The low-voltage winding is made of a whole section of copper foil, along with F-class turn insulation, wound on a dedicated low-voltage foil winding machine. Foil coils have effectively addressed the prominent issues of large short-circuit stress, unbalanced ampere-turns, poor heat dissipation effect, and the existence of winding helix angles and unstable manual welding quality in low-voltage and high-current coil wound products. Meanwhile, the ends of the windings in our company are encapsulated with resin and cured to form, which is moisture-proof and stain-proof.

◆ Temperature control device

The transformer adopts the BWDK series signal thermometer. The temperature measurement element is buried in the upper half of the low-voltage coil, which can automatically detect and display the working humidity of each three-phase coil in a loop. And it has the functions of over-temperature alarm and circuit breaker tripping.

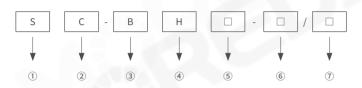
SCBH 干式非晶合金变压器



概述 /Overview

本公司运用成熟技术开发设计的 SCBH15、SCBH17、SCBH19 型非晶合金 干式变压器,性能优越,产品安全、可靠、环保,可深入负荷中心,适应高 密度负荷的现代化大城市发展的需要。该产品大幅度降低了空载损耗、负载 损耗、是当今世界最前沿的干式变压器。

型号及含义 /Model and meaning



The SCBH15, SCBH17 and SCBH19 type amorphous alloy dry-type transformers developed and designed by our company with mature technology feature superior performance, safety, reliability and environmental friendliness. They can be deeply embedded in the load center and meet the development needs of modern large cities with high-density loads. This product significantly reduces no-load loss and load loss, and it is the most advanced dry-type transformer in the world today.

序号 serial number	项目 Project
1)	三相 Three-phase
2	环氧树脂浇注型 Epoxy resin cast
3	铜箔低压线圈 Copper LV winding
4	非晶合金铁芯 Amorphous Iron-core
(5)	性能水平代号 performance level code-name
6	额定容量 Rated capacity (kVA)
7	电压等级 Voltage grade (kV)

产品特点 /Characteristics of the product

本铁芯由非晶合金带材卷制而成,采用矩形截面,三相五柱结构或三相三柱结构,空载损耗比普通的干式变压器降低四分之三,节能效果显著。 低压线圈采用铜箔绕制,高压线圈采用环氧树脂经真空浇注而成或者选用 Nomex 绝缘材料,采用连续式结构,并经 VPI 真空加压设备多次浸渍 H 级无溶剂 绝缘、高温烘焙固化,机械强度高,散热效果好,承受短路能力强。

- ◆ 阻燃、防爆、不污染、防火等级高。
- ◆ 噪音低、体积小、安装简单、免维护。
- ◆ 局部放电量小、绝缘水平高、产品使用寿命长。
- ◆ "三防"能力极佳, 无龟裂现象。
- ◆ 本产品寿命期后能分解回收, 永不污染环境。
- ◆ 过载能力强,120% 负载下可长期安全运行。



SCBH

干式非晶合金变压器

The core is rolled from amorphous alloy strip, rectangular cross-section, three-phase five-pillar structure or three-phase three-pillar structure, no-load loss is three-quarters lower than ordinary dry-type transformer, energy-saving effect is remarkable.

Low-voltage coils are wound with copper foil, high-voltage coils are made of epoxy resin by vacuum casting or Nomex insulating materials, continuous structure, and by VPI vacuum pressurised equipment many times impregnated with H-class solvent-free insulation, high-temperature baking and curing, high mechanical strength, good heat dissipation, and strong ability to withstand short circuit.

- ◆ Being flame-resistant, explosion-proot does not pollute, fire protection rank is high
- ◆ The noise is low, volume is small, installment is simple, exempts the maintenance.
- ◆ Partial discharge capacity is small, insulation level is high, and product service life is long.
- ◆ "three-protection " ability is extremely good, non-chap phenomenon.
- ◆ This product can be decomposed and recycled after the life of the product, never polluting the environment.
- ◆ Overload capacity, under 1 20% load may operate for a long-term and safely.

S20 油浸式电力变压器

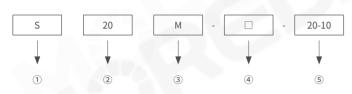


概述 /Overview

作电压 10kV、20kV 及以下的电力系统中,作为石油、冶金、化工、 纺织、 轻工等企业及粉尘较大场所的配电变压器。

S20-M-30~2500/20-10 型全密封油浸式变压器适用于交流 50Hz、额定工 The S20-M-30~2500/20-10 fully sealed oil-immersed transformer is suitable for power systems with an AC frequency of 50Hz and a rated working voltage of 10kV, 20kV and below. It serves as a distribution transformer in enterprises such as petroleum, metallurgy, chemical industry, textile, and light industry, as well as in places with significant dust.

型号及含义 /Model and meaning



序号 serial number	项目 Project
1	三相 Three-phase
2	设计序号 Design serial number
3	全密封 Fully sealed
4	额定容量 (kVA)Rated capacity (kVA)
(5)	高压侧电压等级 (kV)High-voltage side voltage level (kV)

结构特征 /Structural characteristics

◆ 铁芯

铁芯采用高导磁优质晶粒取向冷扎硅钢片,45°全斜步进接缝,铁芯采用特殊的方管拉板结构,芯柱采用绝缘带绑扎,铁芯表面采用特殊树脂涂覆以防潮防锈 有效降低了空载损耗、空载电流和铁芯噪音。

安全、难燃防火、无污染、可直接安装在负荷中心。

免维护、安装简便、综合运行成本低。

防潮性能好,可在100%湿度下正常运行,停运后不经预干燥即可投入运行。

损耗低、局部放电量低、噪音小、散热能力强、配备有完善的温度保护控制系统、为变压器安全运行提供可靠保障

可靠性高。据对已经投入运行的产品的运行研究、产品的可靠性指标已经达到国际水平。

低压绕组采用整段铜箔,连同 F 级的匝绝缘在专用低压箔绕机上绕制。箔式线圈较好地解决了低电压,大电流线圈线绕产品短路应力大,安匝不平衡,散热 效果差,存在绕制螺旋角,人工焊接质量不稳定的突出问题。同时我公司绕组端部用树脂灌封,固化成形,防潮防污。

◆ 温控装置

变压器采用 BWDK 系列信号温度计、测温元件埋设在低压线圈上半部、可自动检测并巡回显示三相线圈各自的工作湿度。并且有超温报警和跳闸功能。



S20

油浸式电力变压器

The core is made of high-permeability, high-quality grain-oriented cold-rolled silicon steel sheets with 45° full-slope step joints. The core adopts a special square tube pull plate structure, and the core column is bound with insulating tape. The surface of the core is coated with special resin to prevent moisture and rust, effectively reducing no-load loss, no-load current and core noise.

Safe, flame-retardant and fireproof, pollution-free, and can be directly installed at the load center.

Maintenance-free, easy to install and with low overall operating costs.

It has excellent moisture-proof performance and can operate normally at 100% humidity. After shutdown, it can be put back into operation without pre-drying. Low loss, low partial discharge, low noise, strong heat dissipation capacity, and equipped with a complete temperature protection control system provide reliable guarantee for the safe operation of the transformer.

High reliability. According to the operation research of the products that have been put into operation, the reliability indicators of the products have reached the international level.

◆ Foil coil

The low-voltage winding is made of a whole section of copper foil, along with F-class turn insulation, wound on a dedicated low-voltage foil winding machine. Foil coils have effectively addressed the prominent issues of large short-circuit stress, unbalanced ampere-turns, poor heat dissipation effect, and the existence of winding helix angles and unstable manual welding quality in low-voltage and high-current coil wound products. Meanwhile, the ends of the windings in our company are encapsulated with resin and cured to form, which is moisture-proof and stain-proof.

The transformer adopts the BWDK series signal thermometer. The temperature measurement element is buried in the upper half of the low-voltage coil, which can automatically detect and display the working humidity of each three-phase coil in a loop. And it has the functions of over-temperature alarm and circuit breaker tripping.

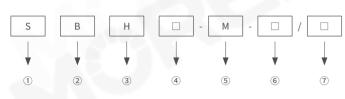
SBH 油浸式非晶合金变压器



概述 /Overview

变压器可把电网电压变换成系统或负载所需要的电压,实现电能的传递与分配。本变压器可取代硅钢片铁芯的变压器而广泛使用于户外的配电系统。本产品的大量入网运行可取得良好的节能效果并可减少对大气的污染。本产品特别适用于电能不足和负荷波动大以及难以进行日常维护的地区。由于变压器采用全密封结构,绝缘油和绝缘介质不受大气污染,因而可在潮湿的环境中运行,是城市和农村广大配电网络中理想的配电设备。

型号及含义 /Model and meaning



This transformer can transform the grid voltage into the voltage required by the system or load, and realize the transmission and distribution of electric energy. This transformer is widely used in outdoor power distribution systems because it can replace transformers with silicon steel cores. The large-scale grid operation of this product can achieve good energy-saving effects and reduce air pollution. This product is particularly suitable for areas with insufficient power, large load fluctuations, and difficulty in daily maintenance. Since the transformer adopts a fully sealed structure, the insulating oil and insulating medium are not polluted by the atmosphere, so it can operate in a humid environment. It is an ideal distribution equipment in the vast distribution network in cities and rural areas.

序号 serial number	项目 Project
1	三相 Three-phase
2	铜箔低压线圈 Copper LV winding
3	非晶合金铁芯 Amorphous Iron-core
4	性能水平代号 performance level code-name
(5)	密封式 /Omniseal type
6	额定容量 Rated capacity (kVA)
7	电压等级 Voltage grade (kV)

符合标准 /Conform to the standard

GB 1094.1-2013 电力变压器第一部分总则

GB 1094.2-2013 电力变压器第二部分温升

GB 1094.3-2003 电力变压器第三部分绝缘水平和绝缘试验

GB 1094.5-2008 电力变压器第五部分承受短路的能力

GB/T1094.10-2003 电力变压器第十部分声级测定

GB/T6451-2015 油浸式电力变压器技术参数和要求

GB20052-2013 三相配电变压器能效限定值及能效等级及委托技术要求

GB 1094.1-2013 电力变压器第一部分总则

GB 1094.2-2013 电力变压器第二部分温升 GB 1094.3-2003 电力变压器第三部分绝缘水平和绝缘试验

GB 1094.5-2008 电力变压器第五部分承受短路的能力

GB/T1094.10-2003 电力变压器第十 部分声级测定

GB/T6451-2015油浸式电力变压器技术参数和要求 GB20052-2020三相配电变压器能效限定值及能效等级及委托技术要求 GB 1094.1-2013 power transformer part I general provisions

GB 1094.2-2013 temperature rise of the second part of power transformer

GB 1094.3–2003 power transformer part iii insulation level and insulation test The fifth part of GB 1094.5–2008 power transformer is capable of withstanding short circuit.

GB/ t1094.10-2003 power transformer part x sound level measurement

Technical parameters and requirements of GB/ t6451–2015 oil-immersed power transformer

Gb20052-2013 energy efficiency limit value and energy efficiency grade of three-phase distribution transformer and technical requirements for entrustment

GB 1094.1-2013 power transformer part I general provisions

GB 1094.2-2013 temperature rise of the second part of power transformer

GB 1094.3–2003 power transformer part iii insulation level and insulation test The fifth part of GB 1094.5–2008 power transformer is capable of withstanding short circuit.

GB/t1094.10-2003 power transformer part x sound level measurement Technical parameters and requirements of GB/t6451-2015 oil-immersed power

GB20052-2020 energy efficiency limit value and energy efficiency grade of three-phase distribution transformer and technical requirements for entrustment



SBH

油浸式非晶合金变压器

产品特点 /Product Features

- ◆ 节能产品、空载损耗比 S9 型变压器降低 75% 左右;
- ◆ 损耗低、发热少、温升低,运行稳定;
- ◆ 结构前沿合理、抗短路能力强;
- ◆ 超载能力强、安全可靠、耐腐蚀性能强、免维护。

- Energy Saving, No-load Loss Is 75% Less Than S9 Series;
- ullet Low loss, less heat, low temperature rise, stable operation;
- ◆ Advanced Structure, High Anti Short Circuit;
- ◆ High Overload Ability, Safe And Reliable, High Resistant To Corrosion, Maintenance-free.

MINDIAN 用

三角形立体卷铁芯电力变压器

概述 /Overview

- ◆ 电力变压器是应用极为广泛的电力基础产品。几十年来,我国和世界各 地均长期延用叠片式电力变压器,其性能一直没有得到根本性改善。我司研 制的 S13-M-RL、S11-M-RL 系列立体三角形铁芯电力变压器是继插片式、 卷铁芯电力变压器之后的又一代革命性变压器。是一种结构更合理、性能更 优良、节能更显著的新型节能变压器。
- ◆ 随着第二次城乡电网建设与改造以及各项电力工程纷纷上马, 如何提高 电力变压器的技术含量,更好地贯彻国家节能降耗和环保有关政策,积极推 广节能、低耗、环保适用的新产品已经成为摆在我们面前的重要课题。我司 生产的立体三角形卷铁芯电力变压器是一种使用传统材料,但运行噪音更低、 降低损耗和节约材料更出色,完全符合国际和国内低碳经济和节能减排的方 针和政策。该产品已纳入国家能效电厂选用的第一批节能产品,国家资源节 约和环境保护中央预算投资项目: 国家经贸委、原国电公司先后发文推广这 一节能产品; 沈变所也将三角形铁芯变压器作为叠片式、平面卷铁芯电力变 压器的更新换代产品进行推广。
- ◆ Power transformers are widely used basic power products. For decades, laminated power transformers have been in use both in China and around the world, and their performance has never been fundamentally improved. The S13-M-RL and S11-M-RL series of three-dimensional triangular core power transformers developed by Our company are another revolutionary generation of transformers following the plug-in type and wound core power transformers. It is a new type of energy-saving transformer with a more reasonable structure. better performance and more significant energy saving.
- ◆ With the second round of urban and rural power grid construction and renovation as well as the successive launch of various power projects, how to enhance the technical content of power transformers, better implement the relevant national policies on energy conservation, consumption reduction and environmental protection, and actively promote new energy-saving, lowconsumption, environmentally friendly and applicable products has become an important issue before us. The three-dimensional triangular wound core power transformer produced by Our company is made of traditional materials, but it operates with lower noise, reduces losses and saves materials more effectively. It fully complies with the international and domestic low-carbon economy and energy conservation and emission reduction policies and guidelines. This product has been included in the first batch of energy-saving products selected by national energy efficiency power plants. Central Budgetary investment Projects for National resource conservation and Environmental Protection The State Economic and Trade Commission and the former State Power Investment Corporation have successively issued documents to promote this energysaving product. Shenyang Transformer Institute also promotes triangular core transformers as the updated products of laminated and planar wound core

与众不同的"芯"/ A distinctive "core"

- ◆ 三角形铁芯不需切割,且无冲孔,消除了传统变压器的横向、纵向接缝,减少了磁阻;铁芯柱横截面呈圆形,铁芯的填充系数最大,三角形立体结构使 它的三相磁回路相等并且最短、实现了人们梦寐以求的理想变压器的铁芯结构。
- ◆ 三角形立体卷铁芯是由窄到宽,再由宽到窄的连续钢带,先绕制三只横截面为半圆形的内铁芯,再把三只内铁芯立体拼装在一起,构成三个铁芯柱横截 面近似圆形的三角形立体卷铁芯。三相磁回路完全对称相等,缩短了铁轭,芯柱填充系数高,它的结构是公认的理想电力变压器结构,这是平面卷铁芯无法 比拟的,试验表明三角形立体卷铁芯电力变压器各项测试数据更优于平面卷铁芯电力变压器,三角形立体卷铁芯是电力变压器铁芯结构上的一次重大突破和 飞跃! 它的诞生被誉为"电力变压器铁芯的一次革命"。因此三角形立体卷铁芯电力变压器是公认的节能、环保、超静音的绿色电力变压器

The triangular core does not need to be cut and has no punching, eliminating the transverse and longitudinal seams of traditional transformers and reducing magnetic resistance. The cross-section of the core column is circular, and the filling coefficient of the core is the largest. The triangular three-dimensional structure makes its three-phase magnetic circuits equal and the shortest, achieving the ideal core structure of the transformer that people have been dreaming of. The triangular three-dimensional wound core is a continuous steel strip that gradually widens from narrow to wide and then from wide to narrow. First, three inner cores with semi-circular cross-sections are wound, and then the three inner cores are three-dimensionally assembled together to form a triangular threedimensional wound core with approximately circular cross-sections of three core columns. The three-phase magnetic circuits are completely symmetrical and equal, the yoke is shortened, and the core column filling coefficient is high. Its structure is recognized as the ideal structure for power transformers, which is incomparable to the planar wound core. Tests show that the test data of the triangular three-dimensional wound core power transformer are superior to those of the planar wound core power transformer. The triangular three-dimensional wound core represents a significant breakthrough and leap in the structure of power transformer cores! Its birth is hailed as "a revolution in the core of power transformers". Therefore, the triangular three-dimensional wound core power transformer is recognized as an energy-saving, environmentally friendly and ultra-quiet green power transformer



SB20

三角形立体卷铁芯电力变压器



10kV 柱上台成套设备



概述 /Overview

型号及含义 /Model and meaning

10kV 柱上台成套设备是国家电网为落实 10kV 柱上台成套化采购工作要求,进一步深化完善配电网 工程典型设计,国网运检部在深入调研和广泛征求意见的基础上,组织修编的。公司通过研究及引进新型一体式组合补偿模块,完全替代了老的复合开关+电容的投切方式,不仅降低了公司的生产成本,也提高了生产效率,使我公司在国家电网投标中,更占据一份优势。

400kVA

The 10kV pole–mounted table complete set of equipment was organized and edited by the State Grid Operation and Inspection Department, based on indepth research and extensive solicitation of opinions, in order to implement the 10kV pole–mounted complete set procurement requirements and further deepen and improve the typical design of distribution network projects. The company has completely replaced the old switching method of composite switches plus capacitors through research and introduction of new integrated combined compensation modules, which not only reduces the company's production costs, but also improves production efficiency, giving our company an advantage in the State Grid's bidding.

序号 serial number	项目 Project
1	设计方案 Design scheme
2	安装方式 Installation method
3	侧装: C; 正装: Z Side-mounted: C Formal attire: Z
4	导轨类型 (电缆 :L/ 导线 :X) Guide rail type (Cable :L/ Wire :X)
(5)	额定容量 Rated capacity (kVA)
(A)	B线长度 Wire length

产品特点 /Product Features

- ◆ 性价比高, 降低电
- ◆ 网投资成本,提高设备投资效益;
- ◆ 集成化程度高, 占地面积小, 设计布点及施工安装难度小;
- ◆ 停送电操作等运行维护方便。

- ◆ High cost performance and reduced electricity consumption
- ◆ Network investment cost and improve the efficiency of equipment investment:
- ◆ It has a high degree of integration, occupies a small area, and has low difficulty in design layout and construction installation.
- ◆ The operation and maintenance such as power cut-off and supply are

标准参数表 Standard parameter table

变压器容量 Transformer capacity (kVA)	高压 High voltage (kV)	高压分接范围 High-voltage tapping range (%)	低压 Low- voltage (kV)	联结组标号 Connection group label	空载损耗 No-load loss (kW)	负载损耗 Load loss (kW)	空载电流 No-load current (%)	短路阻抗 Short-circuit impedance (%)
50	10/10.5	0/10.5 ±2×2.5	0.4	Dyn11	0.043	0.91	0.5	4.0
100					0.075	1.58	0.45	
200					0.120	2.73	0.4	4.0
400					0.20	4.52	0.35	



10kV

柱上台成套设备

噪声水平 /Noise level

变压器容量 (kVA) Transformer capacity (kVA)	轨距 Gauge A×B(mm×mm)	噪声水平,声功率级 / 声压级 (dB) Noise level, sound power level/sound pressure level
50	400×400	≤ 50/43
100	550×550	≤ 52/44
200	660×820	≤ 56/47
400	660×820	≤ 58/48

MINDIAN[®] 民电

电缆保护管

概述 /Overview

电缆保护管是指为了防止电缆受到损伤,敷设在电缆外层,具有一定机械强度的金属保护管。电缆保护管主要安装在通讯电缆与电力线交叉的地段,防止电力线发生断线造成短路事故,引起通讯电缆和钢丝绳带电,以保护电缆、交换机、机芯板,以至整机不被烧坏,对电力线磁场干扰也起到一定的隔离作用。

特点 /Feature

电缆保护管具备以下特点:

- ◆ 电缆保护管载流量高、热阻系数低。
- ◆ 电缆保护管使用时,与电缆间的摩擦系数低,电缆穿过时更方便。
- ◆ 电缆保护管加长了井距,减低了工井数量,降低了工程成本。

Cable protection pipe refers to a metal protective pipe with certain mechanical strength that is laid on the outer layer of the cable to prevent it from being damaged. Cable protection pipes are mainly installed at the intersection of communication cables and power lines to prevent short-circuit accidents caused by power line breaks, which could lead to the electrification of communication cables and steel wire ropes. This protects cables, switches, core boards, and the entire machine from being burned out, and also plays a certain isolation role against magnetic field interference from power lines.

The cable protection pipe has the following features:

- ◆ The cable protection pipe has a high current-carrying capacity and a low thermal resistance coefficient.
- When the cable protection pipe is in use, the friction coefficient with the cable is low, making it more convenient for the cable to pass through.
- ◆ The cable protection pipe lengthens the well spacing, reduces the number of working Wells and lowers the project cost.

产品类型 /Product Type

电缆保护管按适用范围不同分为 A 类、B 类、C 类三类:

- ◆ A 类适用城乡电力电缆建设、交通路桥、工业园区电缆工程地下电缆保护管。
- ◆ B 类适用人行道和绿化带等非机动车道直埋敷设,也适用于有重载车辆通过的机动车道混凝土包封敷设。
- ◆ C 类适用高速公路, 一、二级公路和重载车辆通过路段的直埋敷设。

Cable protection pipes are classified into three types according to their application scopes: Type A, Type B and Type C.

- ◆ Class A is applicable to underground cable protection pipes for urban and rural power cable construction, transportation Bridges and roads, and industrial park cable projects.
- ◆ Class B is applicable to the direct burial laying of non-motor vehicle lanes such as sidewalks and green belts, and also to the concrete encapsulation laying of motor vehicle lanes where heavy vehicles pass.
- ◆ Class C is applicable to direct burial laying on expressways, first and secondclass roads, and sections where heavy vehicles pass.



电缆保护管

适用场所 /Applicable place

在建筑电气工程中, 电缆保护管的使用范围如下:

- ◆ 当电缆穿过建筑物、隧道的楼板或墙壁时或电缆埋设在室内地下时需套装保护管。
- ◆ 电缆从沟道引至电杆、设备,要在室内行人容易接近的地方、距地面高度 2m 以下的一段电缆装设保护管。
- ◆ 电缆敷设于道路下面或横穿道路时需套装保护管:
- ◆ 从桥架上引出的电缆,或者装设桥架有困难及电缆比较分散的地方,均 在敷设的电缆上套装保护管。

In building electrical engineering, the application scope of cable protection pipes is as follows:

- When cables pass through the floor slabs or walls of buildings or tunnels, or when cables are buried underground indoors, protective pipes need to be installed.
- ◆ When cables are led from the trench to the poles and equipment, protective pipes should be installed on a section of the cable that is easily accessible to pedestrians indoors and at a height of less than 2 meters above the ground.
- When cables are laid under the road or cross the road, protective pipes need to be fitted.
- For the cables led out from the cable tray, or where it is difficult to install the cable tray and the cables are relatively scattered, protective pipes shall be installed on the laid cables.

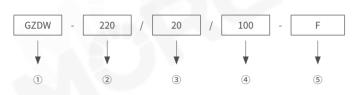




概述 /Overview

型号及含义 /Model and meaning

GZDW 直流电源屏,适用于不同电压等级的变电站、发电厂、工矿企业电气化铁路及高层建筑等领域、可作为高压开关、继电保护、自动装置的操作电源盒控制电源。系统采用一体化设计思想,由监控模块、整流模块、绝缘监测模块、开关量监测模块、降压模块等构成,具有技术前沿、配置合理、监测智能化、操作简单等特点。可与上位机通讯,方便地实现"遥测、遥控、遥信、遥调"四遥功能,是无人值守的理想直流设备。



GZDW DC supply panel is suitable for substations, power plants, electrified railways of industrial and mining enterprises and high-rise buildings of different voltage levels. It can be used as the operating power box control power supply of high-voltage switches, relay protection and automatic devices. The system adopts an integrated design concept and consists of a monitoring module, a rectifier module, an insulation monitoring module, a switch quantity monitoring module, a step-down module, etc. It has the characteristics of advanced technology, reasonable configuration, intelligent monitoring and simple operation. It can communicate with the host computer and conveniently realize the four remote functions of "telemetry, remote control, remote communication and remote adjustment". It is an ideal unmanned DC equipment.

序号 serial number	项目 Project
1	直流电源屏 DC Power Supply Panel
2	标称输出电压 Nominal Output Voltage
3	标称输出电流 Nominal Output Current
4	电池容量: 双电池组 ×2 Battery capacity: double battery pack ×2
(5)	屏柜 F: 分屏柜, Y: 一体柜 Panel cabinet F: split-Panel cabinet. Y: integrated cabinet

产品特点 /Product Features

- ◆ 两路交流输入自动切换, 确保系统正常运行;
- ◆ 超宽的电压输入范围,电网适用性强,可用于环境相对恶劣的场所;
- ◆ 采用高频开关电源技术,模块化设计,N+1 热备份,可靠性高;
- ◆ 整流模块可以带电热插拔, 日常维护方便快捷;
- ◆ 充电模块采用国际全新软件开关技术, 转换效率高, 电磁干扰小;
- ◆ 硬件低差自主均流技术, 模块间输出电流不平衡度典型值 ±3%;
- ◆ 监控可选用液晶屏、触摸屏、界面友好丰富、操作简单方便;
- ◆ 监控实时对系统运行实施全面监测和控制,可进行系统设置、信息查询,也可通过后台监控和远程监控对系统实施"遥测、遥控、遥信、遥调"四遥功能 实现无人值守:
- ◆ 监控可自动对蓄电池电压、充放电电流及蓄电池温度补偿精确管理,具有过欠压、过温告警及故障告警,确保蓄电池工作在最佳状态,延长蓄电池的使用寿命;
- ◆ 具备手动、自动调压功能及支路绝缘检测功能;
- ◆ 可靠的防雷和高度的绝缘防护措施,确保系统和人身安全;
- ◆ 提供 RS232、RS485 两种通讯接口,和 RTU、CDT、MODBUS 三种通讯规约选择
- ◆ 备有扩展接口可接入外部其它设备。





直流电源屏



- ◆ Automatic switching of two AC inputs to ensure normal operation of the system;
- Ultra-wide voltage input range, strong grid applicability, can be used in places with relatively harsh environments;
- ◆ Adopting high-frequency switching power supply technology, modular design, N+1 hot backup, high reliability;
- ◆ The rectifier module can be hot-swapped with electricity, and the daily maintenance is convenient and quick;
- ◆ Charging module adopts international new software switching technology, high conversion efficiency and low electromagnetic interference;
- ◆ Hardware low-difference autonomous current equalisation technology, typical value of output current imbalance between modules ±3%;
- ◆ Monitor can choose LCD screen, touch screen, friendly and rich interface, simple and convenient operation;
- ♦ Monitor real-time system operation to implement comprehensive monitoring and control, system settings, information query, but also through the background monitoring and remote monitoring of the system to implement the 'telemetry, remote control, telecommunication, remote control' four remote functions, to achieve unattended:
- ◆ The monitor can automatically manage the battery voltage, charging and discharging current and battery temperature compensation accurately, with over-under-voltage, over-temperature alarm and fault alarm, to ensure that the battery works in the best state and prolong the service life of the battery;
- ◆ With manual and automatic voltage regulation function and branch circuit insulation detection function;
- Reliable lightning protection and high degree of insulation protection measures to ensure system and personal safety;
- Provide RS232, RS485 two kinds of communication interface, and RTU, CDT, MODBUS three kinds of communication statute selection;
- ◆ Equipped with expansion interface to access other external devices.

MDS-PMG-100M

输电线路智能多日视频在线监测装置



概述 /Overview

电网公司提出了对跨越高速铁路、高速公路、重要输电通道区段的监控管理要求,探讨防止电力线路免遭外力破坏、杆塔倾斜、防盗等的对策方案,遏止各类因素导致的事故,确保电网的安全运行,成为线路管理和维护单位急需解决的问题。同时传统的无线视频监控装置由于对施工现场缺乏智能预警的功能,智能可视化巡视装置,可以解决不能及时发现的外力破坏、杆塔倾斜、防盗预警等问题,大幅降低由此引起的停电事故,减少由此带来的经济损失,同时更加合理有效的配置人员,保障线路的安全运行。输电线路智能多目视频监控装置,搭载水平360°、垂直+90°旋转全向云台摄像头,成就全景视野监视,实时视频浏览,三摄视频,无论日夜,任何视角,即点即看,适配轻量级、低功耗AI算法,实现线路通道隐忠及杆塔本体缺陷的前端智能识别。

Power grid company put forward across the high-speed railway, highway, important transmission channel section of the monitoring and management requirements, to explore the prevention of power lines from external damage, tower tilt, anti-theft countermeasures, etc., to curb all kinds of factors leading to accidents, to ensure the safe operation of the power grid, line management and maintenance units have become an urgent need to solve the problem. At the same time, the traditional wireless video monitoring device due to the lack of intelligent early warning function of the construction site, intelligent visual inspection device, can solve the external damage that can not be detected in a timely manner, tower tilting, anti-theft early warning and other issues, significantly reduce the power outage caused by this accident, reduce the resulting economic losses, and at the same time more reasonable and effective deployment of personnel to ensure the safe operation of the line Transmission line intelligent multi-eye video monitoring device, equipped with horizontal 360 , vertical +90 ° rotating omni-directional PTZ camera, achievement panoramic field of view monitoring, real-time video browsing, triple-camera video, no matter day or night, any viewpoint, that is to say, point and look, adapted to the lightweight, low-power Al algorithms, to achieve the front-end intelligent identification of the line channel hidden loyalty and the defects of the pole

产品特点 /Product Features

- ◆ 采用工业级高清双侧两目摄像机及云台摄像机一体化设计:
- ◆ 双侧线路通道同时拥有白天和夜视两个镜头, 能够 24 小时采集高清全彩图像数据
- ◆ 双侧摄像头角度均支持手动调节,支持垂直方向调节,以便适应上下坡的安装环境
- ◆ 监测白天的线路通道摄像机像素不低于 1600 万, 图像分辨率不低于 4608×3456;
- ◆ 监测夜晚的线路通道摄像机采用 1/1.8 星光级相机,像素不低于 200 万,图像分辨率不低于 1920×1080;
- ◆ 云台摄像机,光学变倍摄像机像素不低于 200 万,图像分辨率不低于 1920*1080,光学变倍数≥ 20 倍;
- ◆ 抗电磁干扰能力强, 适合电力行业等复杂环境;
- ◆ 低功耗设计,支持宽电压输入,适合太阳能供电;
- ◆ 高温 70°C、低温 -40°C; 防护性能满足 IP66;
- ◆ 支持国网、南网传输协议,监拍装置可内置安全加密芯片,实现对数据的加密传输,保障数据的安全性



MDS-PMG-100M

输电线路智能多目视频在线监测装置

- ◆ Adopting industrial-grade HD dual-side two-eye camera and PTZ camera integrated design;
- Bilateral line channel has both daytime and night vision lenses, capable of collecting HD full-colour image data 24 hours a day;
- Both sides of the camera angle support manual adjustment, support vertical direction adjustment, in order to adapt to the installation environment of up and downhill;
- ◆ The line channel camera for monitoring the daytime has no less than 16 million pixels and the image resolution is no less than 4608 x 3456;
- ◆ The line channel camera for monitoring the night time adopts 1/1.8 starlight level camera with pixels not less than 2 million and image resolution not less than 1920×1080;
- ◆ PTZ camera, optical zoom camera pixels not less than 2 million, image resolution not less than 1920 * 1080, optical zoom ≥ 20 times;
- Strong anti-electromagnetic interference ability, suitable for the power industry and other complex environments;
- $\bullet \ \, \text{Low power consumption design, support wide voltage input, suitable for solar power supply;}$
- ◆ High temperature 70°C, low temperature -40°C; protection performance meets IP66;
- Supporting the transmission protocol of the State Grid and South Grid, the monitoring device can be built-in security encryption chip to achieve encrypted transmission of data to protect the security of data;

MDS-PIMG-DSC

输电线路故障智能诊断系统



概述 /Overview

输电线路故障智能诊断系统由分布式故障诊断装置和系统主站两部分组成。 分布式故障诊断装置分布安装于输电线路的导线上,监测输电线路故障发生 时刻的故障行波电流与工频故障电流,同时采集这些信号并通过 4G 网络上 传到系统主站。系统主站使用数学模型对装置上传的故障信息报文进行分析、 比对、判断,分析的结果存储在服务器中数据库中,并通过短信将报警信息 发送给专工。可以通过浏览器登录到系统主站查看故障点的信息和故障波形。 The transmission line fault intelligent diagnosis system consists of two parts: distributed fault diagnosis device and system master station. The distributed fault diagnosis device is installed on the conductors of the transmission line to monitor the fault travelling wave current and industrial frequency fault current at the moment of the transmission line fault, and at the same time, collects these signals and uploads them to the system master station through 4G network. The system master uses mathematical models to analyse, compare and judge the fault information telegrams uploaded by the device, and the results of the analysis are stored in the database in the server, and the alarm information is sent to the specialist worker via SMS. You can log in to the system main station through the browser to view the information of the fault point and the fault waveform.

系统原理 /System principle

◆ 基于工频故障电流的故障区段判定

当输电线路杆塔部署分布式故障诊断装置时,若第 m 基至第 n 基杆塔间发生故障导致线路跳闸,可通过相位比对实现故障区段定位。此时,故障测点的工频故障电流相位与正常测点呈现 180°反相特性。利用这种相位反相关系,可准确判定故障发生的具体区段。

◆ 故障区段内的行波精确定位

将行波定位范围限定至特定区段后,由地形起伏和导线弧垂引起的定位误差将呈比例减小。系统采用分布式行波波速动态测量技术实现同步定位——通过框邻装置检测同一行波波头的时间差实时计算波速,有效消除波速估算误差对定位精度的影响,从而将故障定位精度提升一个数量级。

▶ 复杂网络结构的适应性方案

针对多分支线路拓扑,在分支节点处加装分布式故障诊断装置,将复杂网络解耦为若干单支路线性结构,延续"工频区段粗定位+行波精确定位"的二级定位策略:首先通过工频相位特征分析确定故障分支区段,继而在缩小的目标范围内实施行波精确定位,实现复杂网络故障的精准定位。



MDS-PIMG-DSC

输电线路故障智能诊断系统

◆ Fault section determination based on industrial frequency fault current

When the distributed fault diagnostic device is deployed on transmission line towers, if a fault occurs between the mth base and the nth base tower resulting in line tripping, the fault section localisation can be achieved through phase comparison. At this time, the phase of the industrial frequency fault current at the fault measurement point shows 180° inverse phase characteristics with the normal measurement point. Using this phase inversion relationship, it can accurately determine the specific section where the fault occurs.

◆ Precise positioning of travelling wave in fault area

After limiting the travelling wave positioning range to a specific section, the positioning error caused by terrain undulation and wire sag will be reduced proportionally. The system adopts distributed travelling wave speed dynamic measurement technology to achieve synchronous positioning – the wave speed is calculated in real time by the time difference between neighbouring devices detecting the same travelling wave head, which effectively eliminates the influence of wave speed estimation error on positioning accuracy, and thus improves the fault positioning accuracy by one order of magnitude.

◆ Adaptive solution for complex network structure

For multi-branch line topology, distributed fault diagnostic devices are installed at branch nodes to decouple the complex network into a number of single-branch linear structures, and continue the secondary positioning strategy of 'IF segment coarse positioning + travelling wave precise positioning': firstly, the IF phase characteristics analysis is used to determine the faulty branch segments, then the travelling wave precise positioning is implemented in the narrowed down target range, so as to achieve accurate positioning of faults in the complex network.

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输电线路杆塔倾斜在线监测装置



概述 /Overview

输电线路杆塔倾斜在线监测装置是针对监测输电线路采空区、沉降区和不良地质区段的杆塔倾斜状况而设计的监测装置,前端装置采用倾斜传感器实时监测线路杆塔横向倾斜、纵向倾斜等数据,并通过 4G/GPRS/ FI/OPGW 光纤网络将监测数据实时传送到监测中心。本监测装置系我司自主研发、生产,严格遵循国家电网、南方电网相关《输电线路状态监测装置通用技术规范》,并取得相应型式试验报告、拥有大量在线使用工程案例。

Transmission line tower tilt online monitoring device is designed for monitoring the tower tilt condition of the transmission line in the hollow area, subsidence area and bad geological section, the front-end device adopts tilt sensors to monitor the data of lateral tilt and vertical tilt of the line tower in real time, and transmits the monitoring data to the monitoring centre in real time through the 4G/GPRS/FI/OPGW fiber optic network. The monitoring device is independently developed and produced by our company, which strictly follows the 'General Technical Specification for Transmission Line Condition Monitoring Devices' of the State Grid and the Southern Power Grid, and obtains the corresponding type test report, and has a large number of on-line use engineering cases.

产品特点 /Product Features

- ◆ 嵌入式设计、体积小、功耗低、高可靠:
- ◆ 内置 4G/3G/GPRS/CDMA 无线网络通讯控制协议及 TCPP 协议:
- ◆ 支持动态或固定 IP 地址方式, 支持域名解析, 多种触发启动模式;
- ◆ 两路数字量输入/输出,支持外部开关量触发
- ◆ 能传感、自动采集杆塔纵向和横向倾斜角度,进行相应存储,并将测量结果通过通信网络传输到数据集中器或数据处理系统
- ◆ 能响应数据处理系统的召测命令,进行杆塔纵向和横向倾斜角度的采集和传送;
- ◆ 能根据数据处理系统的指令,改变采集方式、自动采集时间间隔等参数:
- ◆ 加入安全芯片,可对数据进行加密,并接入各省公司平台。



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输电线路杆塔倾斜在线监测装置

- Embedded design, small size, low power consumption and high reliability;
- ◆ Built-in 4G/3G/GPRS/CDMA wireless network communication control protocol and TCPP protocol;
- Support dynamic or fixed IP address mode, domain name resolution, and multiple trigger start modes;
- ◆ Two digital input/output channels, supporting external switch triggering;
- Can sense and automatically collect the tower's longitudinal and transverse tilt angles, store them accordingly, and transmit the measurement results to a data concentrator or data processing system via a communication network.;
- ◆ Capable of collecting and transmitting tower longitudinal and transverse tilt angles in response to a call for measurement from the data processing system.
- Can change the acquisition mode, automatic acquisition interval and other parameters according to the instructions of the data processing system.
- ◆ Incorporate a security chip to encrypt data and access the platforms of provincial companies.

MDS-PMG-FB200

输电线路微波覆冰在线监测装置



概述 /Overview

输电线路微波覆冰在线监测装置主机将团像视频、覆冰厚度、气象数据等战路数据经过数字化压缩编码后,通过 4G/3G 无线网络或电力专网发送到监控中心,在监控中心上对数据信号进行解码,即可将图像视频、覆冰厚度、气象数据等线路數据通过数字和图表形式直观显示在屏幕上。维护监控人员通过数据监控客户端实时浏览观测各监控点的现场情况,并通过对从现场发送来的图像视频、覆冰厚度、气象数据等数据进行分析比对,如出现异常的预警信息、即立刻作出相应的应急处理、以确保高压线路的安全运行。

Transmission line microwave ice-covering online monitoring device host will be grouped like video, ice thickness, meteorological data and other war data after digital compression coding, through the 4G/3G wireless network or power network sent to the monitoring centre, in the monitoring centre on the data signal decoding, you can image video, ice thickness, meteorological data and other line data through the form of digital and graphical intuitively displayed on the screen. Maintenance and monitoring personnel through the data monitoring client real-time browsing observation of the monitoring point of the scene, and through the image sent from the scene of video, ice thickness, meteorological data and other data to analyse and compare, such as the emergence of abnormal early warning information, that is, immediately to make the appropriate emergency response to ensure that high-voltage line safety operation.

产品特点 /Product Features

- ◆ 能按设定时间间隔自动采集图像、覆冰数据的采集、测量:
- ◆ 采集间隔: 大于 10min, 小于 40min, 默认 20min;
- ◆ 能响应远程指令受控按设置启动采集功能;
- ◆ 可采集电池电压信息:
- ◆ 具备良好的同步机制, 保证各参数采集时刻的同步性;
- ◆ 对采集数据合理性检查分析进行预处理, 自动识别并剔除干扰数据:
- ◆ 对原始采集量计算以分析功能, 得出模拟导线等值覆冰厚度;
- ◆ 能循环存储至少 30 天的等值覆冰厚度等状态量数据;
- ◆ 具备身份认证、完善的更新机制与方式, 可远程更新程序;
- ◆ 能按远程指令进入远程调试模式, 并输出相关调试信息;
- ◆ 加入安全芯片, 可对数据进行加密, 并接入各省公司平台。



MDS-PMG-FB200

输电线路微波覆冰在线监测装置

- ◆ Can automatically collect images, ice-covered data collection, measurement according to the set time interval;
- ◆ Acquisition interval: greater than 10min, less than 40min, default 20min;
- ◆ Can respond to the remote command controlled by the settings to start the acquisition function;
- Can collect battery voltage information;
- Have a good synchronisation mechanism to ensure the synchronisation of each parameter acquisition moment;
- Pre-processing of the collected data to check and analyse the reasonableness of the collected data, and automatically identify and eliminate the interfering data;
- Calculate and analyse the original collection quantity, and derive the equivalent ice thickness of the analogue conductor;
- Can cycle storage at least 30 days of equivalent ice thickness and other state data;
- $\bullet \ \ \text{With identity authentication, perfect update mechanism and method, can remotely update the programme; }$
- ◆ It can enter the remote debugging mode according to the remote command and output the relevant debugging information;
- ◆ Join the security chip, can encrypt the data, and access to the platform of each provincial company.