



伏打电气(杭州)有限公司
VODO Electric Hangzhou Co., Ltd.

电话/Tel: (86)571-89988665

传真/Fax: (86)571-88797261

邮箱/Email: vodo_china@126.com

地址/Add: 中国·杭州留学人员创业园泰嘉国际中心4F

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伏打电气



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VODO Enterprise

伏打电气

Since 1973, VODO has specialised in the design, manufacture and marketing of energy efficiency equipment: measurement and control equipment for electricity, supply quality, industrial electrical protection, reactive energy compensation and harmonic filtration.

自1973年以来，伏打一直致力于节能设备的设计、制造和销售：电力测量和控制设备、供电质量、工业电气保护、无功能量补偿和谐波过滤。

VODO's production capacity is based on Spain's core technology centre.

伏打的生产能力基于西班牙的核心技术中心。

VODO has committed itself to following the latest technological advances in order to add them to its products. It has its own test technology and laboratories that enable it to guarantee the quality of all its products.

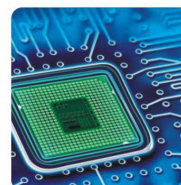
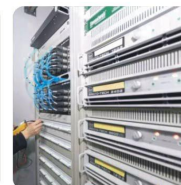
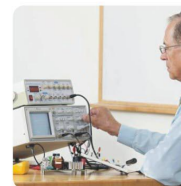
伏打致力于跟踪最新的技术进步，以便将其添加到产品中。它拥有自己的测试技术和实验室，能够保证所有产品的质量。

The company is present in more than 100 countries, with offices in Argentina, Mexico, Germany, China, Singapore, India, Portugal, Czech Republic, etc.

公司遍布100多个国家，在阿根廷、墨西哥、德国、中国、新加坡、印度、葡萄牙、捷克共和国等地设有办事处。



Two of the production centres of VODO



Own technology

自身技术

VODO has an R+D+i team composed of more than 60 engineers that design new products to satisfy the market demand, incorporating the most advanced technologies.

VODO拥有一支由60多名工程师组成的研发团队，他们结合最先进的技术，设计出满足市场需求的新产品。

Testing laboratory

测试实验室

VODO has its own laboratories to perform electromagnetic compatibility tests (EMC/EMI), calibration tests and an official metrological verification laboratory to guarantee the quality of all its products.

VODO有自己的实验室来执行电磁兼容性测试（EMC/EMI）、校准测试和产品验证实验室，以确保其所有产品的质量。

Innovation with new products

新产品创新

VODO has a commitment to innovation. In order to bring out products with the latest technology and the best added value.

VODO致力于创新，以推出最新技术和最佳附加值的产品。

Production capacity

生产能力

All of our production centres use state-of-the-art technology to guarantee a high production capacity.

我们所有的生产中心都使用最先进的技术来保证高生产能力。

Service support

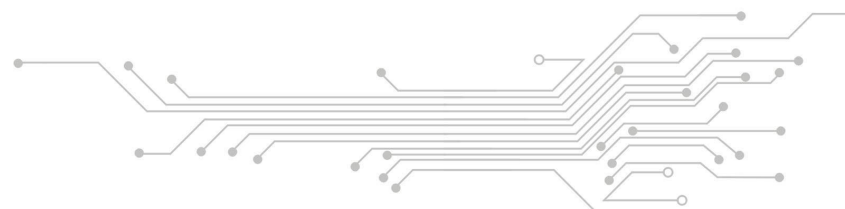
服务支持

To meet market needs regarding energy efficiency, VODO has a large team of engineers and production centres, equipped with the most up-to-date technology.

为了满足市场对能源效率的需求，VODO拥有一支庞大的工程师团队和生产中心，配备了最新的技术。

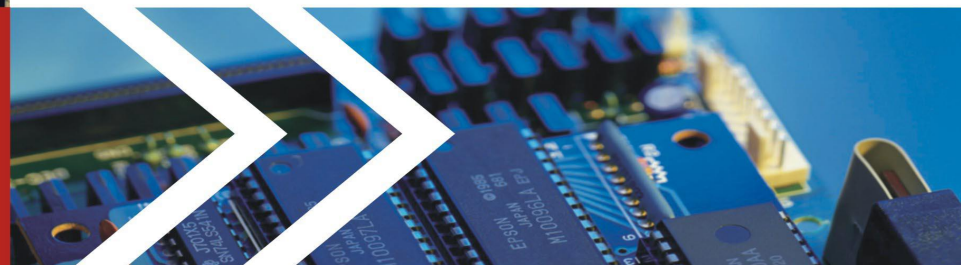


VODO
伏打电气



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Low voltage capacitor 低压电容器



Equipment description 产品说明

The VODO-FP tubular capacitor range is composed of capacitors with a tubular casing, of the drytype, covering a wide range of power and voltage ratings, at 50 and 60 Hz. The design, manufacturing and testing processes of VODO-FP tubular capacitors guarantee the production of top quality and long lasting capacitors. VODO-FP capacitors are composed of basic units, which are introduced in a cylindrical metallic casing that is filled in with a gel, fulfilling the dielectric and mechanical housing functions.

VODO-FP管式电容器系列由具有管式外壳的干式电容器组成，在50和60赫兹下，其功率和电压额定值范围很广。VODO-FP管式电容器的设计、制造和试验过程，保证了产品的高质量和持久性。VODO-FP电容器由基本单元组成，它们被引入圆柱形金属外壳中，填充有氮气，满足电介质和机械外壳功能。

Its application is based on the compensation in installations with fixed and variable loads (capacitor banks). 其应用基于固定和可变负载（电容器组）装置的补偿。

advanced technique; Environmentally Friendly Nitrogen Filling、Explosion-proof Safety、Built-in Discharge Resistance
先进技术：环保氮气填充、防爆安全、内置放电电阻。

Outstanding characteristics: Anti-inrush current impact 300 times rated current、Self-repairing function under high temperature and pressure、Small size and light weight
性能优秀：抗涌流冲击300倍额定电流、高温高压条件下的自愈功能、体积小、重量轻

Model description 型号说明

VODO-FP-480 / 25

Rated capacity 额定容量: 25kvar

Rated voltage 额定端电压: AC480V

Tubular Power capacitor 管式电力电容器

VODO enterprise 伏打企业



Product characteristics 技术特点

Structural process: VODO-FP capacitor uses polypropylene film, flame-retardant nitrogen gas as protective gas, and metal coating technology under high vacuum, which greatly improves the suppression of high current and ensures the stability of capacitor. It has excellent self-healing function. Thick edges and unique thin film cutting technology (combination of ripple and smooth cutting) can produce the largest effective surface for surface metal spraying or bonding treatment, which means high surge current suppression ability, and also fully and effectively solve the edge contact problem caused by edge shrinkage effect of winding thin film.

结构工艺: VODO-FP电容器采用聚丙烯膜，采取阻燃的氮气作为保护气体，附加高真空下的金属镀膜工艺，极大的提高了抑制大电流和保证电容器稳定性发挥起到重要的作用，如此具有十分优越的自愈性功能体现。厚边和独特的薄膜切割技术（波纹及平滑切割组合）可产生最大的有效表面用于表面金属喷漆或接合处理，这意味着高浪涌电流抑制能力，亦此也充分有效的解决了由于绕组薄膜边缘收缩效应引起的边缘接触问题。

Vacuum filling: When the winding unit is heated, it dries in a certain time, and the filling gas is completed in a specific vacuum condition. First, air and humidity are discharged from the capacitor to avoid the oxidation and partial discharge of the electrodes. Then, the capacitor is sealed in a steel container to ensure the excellent stability and long service life of the capacitor.

真空灌注: 当绕组单元加热的情况下，在一定的时间内干燥，灌注气体在特定的真空条件下完成，首先，空气和湿气从电容器内部排出，从而避免电极的氧化和局部放电，然后，电容器被密封在钢质容器中，从而保证电容器具有极好的稳定性和长使用寿命。

Self-healing: When capacitors are overheated, overloaded or near their service life, they are likely to break down. This will produce an arc, which will evaporate the metallized layer in the breakdown zone in a very short time, and at the same time, the gas pressure generated at high temperature will blow the gasified metallized layer out of the breakdown zone, thus forming an insulating zone without metallized layer in the breakdown zone. During or after the breakdown process, the capacitor can still work normally, and the capacitance loss caused by self-healing is less than 1.00pF, so the absolute value can be checked by a precise measuring instrument.

自愈合: 当电容器在由于过热、过载或临近使用寿命期限时极有可能发生击穿现象。这就会产生电弧，它会在极短时间内把击穿区的金属化层蒸发，而此时在高温产生的气压同时又将气化的金属化层吹出击穿区，这样就在击穿区形成了一个没有金属化层的绝缘区，在击穿发生过程或发生后，电容器仍能正常工作，其自愈合引起的容量损失少于100pF，如此需通过精密的测量仪器才能校验绝对值。

Overvoltage protection: When a capacitor breaks down due to overheating, overload or near service life, the length of the capacitor changes due to the bending of the top cover or the stretching of the expansion concave edge. When the expansion exceeds the limit, the Internal Overvoltage separator connection line immediately separates.

过压保护: 当电容器在由于过热、过载或临近使用寿命期限而发生击穿现象时，由于顶盖弯曲或膨胀凹边拉伸引起了电容器长度改变，当膨胀超过限度时，内部过压分离器连接线即刻分离。

Selection table 选型规格表

↓ Faston terminal系统电压230V, 单相电容器, 280V, 50Hz					
Type 类型	Qn 额定容量	Loss 损耗W/Kvar	dia × alt 尺寸mm	install 安装	Service life 平均使用寿命
VODO-FP-280/3	3 kva r	≤0.25	76 × 110mm	M12 × 16mm	130000h
VODO-FP-280/5	5 kva r	≤0.25	76 × 150mm	M12 × 16mm	130000h
VODO-FP-280/7.5	7.5kvar	≤0.25	76 × 200mm	M16 × 25mm	130000h
VODO-FP-280/10	10kvar	≤0.25	76 × 200mm	M16 × 25mm	130000h

↓ Faston terminal系统电压400V, 三相电容器, 480V, 50Hz					
Type 类型	Qn 额定容量	Loss 损耗W/Kvar	dia × alt 尺寸mm	install 安装	Service life 平均使用寿命
VODO-FP-480/15	15kvar	≤0.25	76 × 278mm	M12 × 16mm	130000h
VODO-FP-480/20	20kvar	≤0.25	86 × 278mm	M12 × 16mm	130000h
VODO-FP-480/25	25kvar	≤0.25	96 × 278mm	M16 × 25mm	130000h
VODO-FP-480/30	30kvar	≤0.25	106 × 278mm	M16 × 25mm	130000h
VODO-FP-480/35	35kvar	≤0.25	116 × 278mm	M16 × 25mm	130000h
VODO-FP-480/40	40kvar	≤0.25	126 × 278mm	M16 × 25mm	130000h

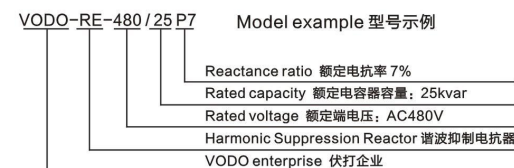
↓ Faston terminal系统电压400V, 三相电容器, 525V, 50Hz					
Type 类型	Qn 额定容量	Loss 损耗W/Kvar	dia × alt 尺寸mm	install 安装	Service life 平均使用寿命
VODO-FP-525/15	15kvar	≤0.25	81 × 278mm	M12 × 16mm	130000h
VODO-FP-525/20	20kvar	≤0.25	91 × 278mm	M12 × 16mm	130000h
VODO-FP-525/25	25kvar	≤0.25	101 × 278mm	M16 × 25mm	130000h
VODO-FP-525/30	30kvar	≤0.25	111 × 278mm	M16 × 25mm	130000h
VODO-FP-525/35	35kvar	≤0.25	121 × 278mm	M16 × 25mm	130000h
VODO-FP-525/40	40kvar	≤0.25	131 × 278mm	M16 × 25mm	130000h

↓ Faston terminal系统电压690V, 三相电容器, 830V, 50Hz					
Type 类型	Qn 额定容量	Loss 损耗W/Kvar	dia × alt 尺寸mm	install 安装	Service life 平均使用寿命
VODO-FP-830/15	15kvar	≤0.25	93 × 278mm	M12 × 16mm	130000h
VODO-FP-830/20	20kvar	≤0.25	93 × 278mm	M12 × 16mm	130000h
VODO-FP-830/25	25kvar	≤0.25	113 × 278mm	M16 × 25mm	130000h
VODO-FP-830/30	30kvar	≤0.25	113 × 278mm	M16 × 25mm	130000h
VODO-FP-830/35	35kvar	≤0.25	143 × 278mm	M16 × 25mm	130000h
VODO-FP-830/40	40kvar	≤0.25	143 × 278mm	M16 × 25mm	130000h

尺寸变化恕不另行通知, 以实际交货产品为准, 如需更多详细技术资料, 请致电VODO!

VODO

Low voltage Reactor 低压电抗器



Equipment description 产品说明

VODO-RE Series Low Reactors for Static Harmonic Suppression Filters, with a special design for their use in static capacitor banks. The best operation of the set requires the reactors to be connected within the triangle composed by the capacitor-reactor set. The company has a standard range of 400 V rejection reactors with P=7%, with a resonance frequency of 189 Hz for 50 Hz networks (or on demand 227 Hz for 60 Hz networks). In addition, reactors can be manufactured on demand for static capacitor banks adapted to any value of the power rating, voltage and frequency.

VODO-RE系列低压抑制谐波用电抗器, 采用特殊设计, 用于静态电容器组。该装置的最佳运行要求将电抗器连接在由电容器-电抗器装置组成的三角形内。本公司有400V电网的标准抑制电抗器, P=7%, 50 Hz网络的共振频率为189 Hz (或60 Hz网络的按需227 Hz)。此外, 电抗器可以根据需要制造适合任何额定功率、电压和频率值的静态电容器组。

VODO-RE Low-powered reactors, RE type, are built with plates with low losses and are coiled with copper wire. The connection is achieved with the adequate terminals. In the case of higher power ratings, RE reactors are used, with a magnetic plate nucleus and multiple steel cores, which offer excellent characteristics and a low loss ratio. The coils are made with an aluminium band (or copper band, on demand). The input and output connections run through a plate. Both type reactors have a vacuum varnish sealing to increase the insulation and reduce the levels of noise.

VODO-RE系列低压抑制谐波用电抗器是用低损耗的金属板建造的, 并用铜线缠绕。通过适当的端子实现连接。在额定功率较高的情况下, 采用VODO-RE电抗器, 具有一个磁性板核和多个钢芯, 具有优良的特性和低损耗比, 线圈由铝带 (或铜带, 根据需要) 制成, 输入和输出连接穿过一块板, 采用真空清漆密封, 以增加绝缘和降低噪音水平。

The rejection reactors of the VODO-RE series have been specially designed for their use in capacitor banks in installations with a high harmonic content. The reactors must be connected in series to each capacitor for the adequate protection of capacitors, the static operations module and to avoid the resonance effects in the installation.

VODO-RE系列的电抗器是专门设计用于高谐波含量工况中。为了对电容器、静态操作模块进行充分的保护, 并避免安装过程中的共振效应, 必须将电抗器串联到每个电容器上。

Technical parameter 性能参数		
Working voltage 额定电压	AC230V~830V	
设计类型	三相/单相	
电感公差	~3~3% (三相平均值)	
Rated Frequency 额定频率	50Hz	
Terminal structure 端子结构	端子台, 可定制	
Coil material 线圈材料	铜/铝	
Core material 铁芯材质	低损耗矽钢片	
Safeguard 安全保护	125℃温控开关	
Insulating grease 绝缘脂	聚酯树脂, F级/H级	
Insulation grade 绝缘等级	B级/H级	
Protection level 防护等级	IP00 (室内安装)	
Harmonic 允许的谐波负载 (连续工作)	U3=0.5%Un、U5=6%Un、U7=5%Un、U11=3.5%Un、U13=3%Un	
Insulation 绕组对铁芯的绝缘电压	3KV	
Ambient temperature 环境温度	-5℃~+45℃	
Service life 使用寿命	>200000h	
Altitude 海拔高度	≤4000m	
Aelative humidity 相对湿度	≤95%	

Selection table 选型规格表

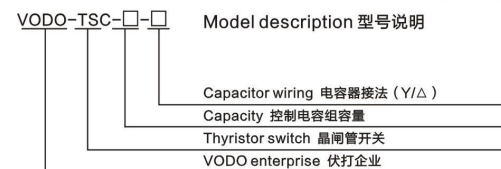
↓ 系统电压230V, 单相电抗器, 50Hz, 电容器电压280V, 调谐系数p7%					
Type 类型	Qn 匹配电容	Inductance 电感量	Material 线圈	L×W×H 外形尺寸mm	E×F 安装尺寸
VODO-RE280-3P7	3kvar	0.21mH	铝	115×130×135mm	90×70mm
VODO-RE280-5P7	5kvar	0.35mH	铝	115×140×135mm	90×80mm
VODO-RE280-7.5P7	7.5kvar	0.525mH	铝	132×150×145mm	110×90mm
VODO-RE280-10P7	10kvar	0.7mH	铝	132×160×145mm	120×90mm

↓ 系统电压400V, 三相电抗器, 50Hz, 电容器电压480V, 调谐系数p7%					
Type 类型	Qn 匹配电容	Inductance 电感量	Material 线圈	L×W×H 外形尺寸mm	E×F 安装尺寸
VODO-RE480-15P7	15kvar	10.5mH	铝	180×160×150mm	100×95mm
VODO-RE480-20P7	20kvar	14mH	铝	208×170×195mm	100×95mm
VODO-RE480-25P7	25kvar	17.5mH	铝	225×185×207mm	120×110mm
VODO-RE480-30P7	30kvar	21mH	铝	225×185×207mm	120×110mm
VODO-RE480-35P7	35kvar	24.5mH	铝	268×200×225mm	135×115mm
VODO-RE480-40P7	40kvar	28mH	铝	268×200×225mm	135×115mm
VODO-RE480-50P7	50kvar	35mH	铝	268×210×242mm	135×120mm
VODO-RE480-60P7	60kvar	42mH	铝	268×220×259mm	135×120mm
VODO-RE480-70P7	70kvar	49mH	铝	311×220×276mm	145×130mm
VODO-RE480-80P7	80kvar	56mH	铝	311×220×293mm	145×130mm

↓ 系统电压400V, 三相电抗器, 50Hz, 匹配电容器电压525V, 调谐系数p14%					
Type 类型	Qn 匹配电容	Inductance 电感量	Material 线圈	L×W×H 外形尺寸mm	E×F 安装尺寸
VODO-RE525-15P14	15kvar	17.58mH	铝	250×150×215mm	200×95mm
VODO-RE525-25P14	25kvar	10.57mH	铝	250×180×215mm	200×115mm
VODO-RE525-50P14	50kvar	5.26mH	铝	310×205×320mm	260×145mm

VODO

Thyristor switch 晶闸管投切开关



Equipment description 产品说明

VODO-TSC thyristor switch is an electronic power device that can switching capacitors quickly. It is also called thyristor switch. It mainly consists of high-power thyristor, isolation circuit, trigger circuit, synchronous circuit and protection circuit. The utility model has the advantages of zero-crossing voltage input, no inrush current, zero-crossing voltage cut-off, no high voltage, no additional harmonics and no noise in all waveguides.

VODO-TSC晶闸管开关, 是一种能够对电容器进行快速投切的电子型功率器件, 也可称可控硅开关。其主要由大功率晶闸管、隔离电路、触发电路、同步电路及保护电路构成。具有电压过零时刻投入, 不产生涌流; 电压过零时刻切除, 不产生高压; 全波导通不产生附加的谐波, 无噪声等优点。

Technical parameter 性能参数	
Working voltage 工作电压	AC220V±15%
Rated current 额定电流	≤150A
Control voltage 控制电压	DC12V/10mA
Rated Frequency 额定频率	50Hz
Reverse Voltage 反向耐压	≥2200V
Current inrush 投入涌流	<1.8In
Switching time 投切时间	≤10ms
Ambient temperature 环境温度	-25℃~+90℃
Service life 使用寿命	100万次
Altitude 海拔高度	≤4000m
Aelative humidity 相对湿度	≤90%
Power network harmonic 电网谐波	Voltage harmonic distortion rate电压谐波畸变率≤5%



Low Voltage Power Factor Regulator

低压无功补偿程控器



VODO- SMART, Three-phase power factor regulators. Regulation, measurement, leakage control communications and LCD screen display.

VODO- SMART, 三相无功补偿程控器。调节、测量、控制、通信和LCD液晶显示

VODO-Smart is a regulator that ensures excellent preventive maintenance by means of programming its alarms and the options for testing the capacitor status, offering maximum supervision and safety of your compensation unit, LCD screen display.

VODO-Smart是一种功率因数调节器，通过对其警报和测试电容器状态的选项进行编程，从而确保出色的预防性维护，为补偿装置提供最大的监督 and 安全性，大屏幕液晶画面显示。

Selection table 选型规格表

Model 型号	Power supply 电源	Measurement 测量范围	(V)Control 控制输出	Communication 通信	Size (mm) W×H×D 开孔尺寸 (mm) 宽×高×深
VODO-Smart12	AC220V±20%	AC380V±20%	12组	RS485	138×138mm
VODO-Smart18	AC220V±20%	AC380V±20%	18组	RS485	138×138mm
VODO-Smart24	AC220V±20%	AC380V±20%	24组	RS485	138×138mm
VODO-Smart30	AC220V±20%	AC380V±20%	30组	RS485	138×138mm



Low Voltage Power Factor Regulator

低压无功补偿程控器



VODO-Max, Power factor regulators measurement, leakage control and Digital tube display.

VODO Max, 三相功率因数调节器。调节、测量、控制和LED数码管显示

VODO-Max is a regulator that ensures excellent preventive maintenance by means of programming its alarms and the options for testing the capacitor status, offering maximum supervision and safety of your compensation unit, Digital tube display.

VODO-Max是一种功率因数调节器，通过对其报警和测试电容器状态的选项进行编程，从而确保出色的预防性维护，为补偿装置提供最大的监督 and 安全性，数码管显示。

Selection table 选型规格表

Model 型号	Power supply 电源	Measurement 测量范围	(V)Control 控制输出	Communication 通信	Size (mm) W×H×D 开孔尺寸 (mm) 宽×高×深
VODO-Max12P	AC220V±20%	AC380V±20%	12组	RS485	113×113mm
VODO-Max12	AC220V±20%	AC380V±20%	12组	RS485	138×138mm
VODO-Max18	AC220V±20%	AC380V±20%	18组	RS485	138×138mm
VODO-Max24	AC220V±20%	AC380V±20%	24组	RS485	138×138mm
VODO-Max30	AC220V±20%	AC380V±20%	30组	RS485	138×138mm



Multifunction active filter

多功能有源滤波器



VODO-AFQ-□-□-□-□-□	Model description 型号说明
Application type 类型 (APF即A, SVG即S)	
Installation mode 安装方式 (R机架式/H壁挂式)	
Connection mode 电网类型 (3W三相三线/4W三相四线)	
Rated capacity 额定容量	
Grid voltage 电网电压	
Multifunction active filters 多功能有源滤波器	
VODO enterprise 伏打企业	

The VODO-AFQ cabinet series parallel multifunction active filter is the most complete solution for solving Quality problems related to industrial, commercial or services installations with presence of harmonics, consumption of reactive power (usually capacitive) and also phase unbalance. This VODO-AFQ is meant rack mounting into market standard cabinets, designed to facilitate its installation. If higher capacities are required, the system can be expanded with VODO-AFQ racks in parallel.

VODO-AFQ系列多功能有源滤波器是解决工业、商业或服务设施存在谐波、无功功率消耗（通常为电容性）以及相位不平衡等质量问题的最完整的解决方案。VODO-AFQ的模块化设计适用于市场标准的机柜中，亦可挂壁安装使用。如果需要更高的容量，系统可以通过并联VODO-AFQ进行扩展使用。

Technical parameter 性能参数

Rated voltage 额定电压	AC380V~AC750V±10%
Rated frequency 额定频率	50Hz/60Hz±2%
Connection mode 电网类型	三相三线/三相四线
Capacity 有效容量	25~150A/kvar
Harmonic compensation order 谐波补偿阶次	2~50次
Power factor correction 功率因数校正	-1~+1
Parallel expansion 最大功率扩展	8台（并联）
Power waste 额定功耗	<2kw
Efficiency 设备效率	≥98%
Signal communication 通信接口	RS485
Altitude 海拔高度	<1000m, 降容运行1.7%每100m可达2000m
Ambient temperature 运行环境温度	-10℃~+55℃
Ambient humidity 环境湿度	<95%RH, 无凝结
Vibration 振动	<5.9米/秒² (0.6g)
Protection level 防护等级	IP4X
Cooling mode 冷却方式	Intelligent air cooling智能风冷
Installation mode 安装方式	Rack/ Wall mounted机架式/壁挂式
Interference level 无线电干扰水平	EN55011, Group 1, Class A
Immune interference level 无线电干扰免疫水平	EN61000-4-2 and EN61000-4-5



Medium Voltage Power Factor Controller

中压无功补偿程控器



VODO- SMART-H, Three-phase power factor regulators. Regulation, measurement, leakage control communications and LCD screen display.

VODO- SMART-H, 三相功率因数调节器。调节、测量、控制、通信和LCD液晶显示

VODO-SMART-H is a medium-voltage power factor regulator. Through AC sampling technology, LCD liquid crystal display and four-quadrant analysis technology, the functions of real-time data acquisition, communication, historical data storage, fault alarm, harmonic analysis of power grid and reactive power compensation are realized.

VOD VODO-SMART-H是一种中压功率因数调节器，通过交流采样技术、LCD液晶显示，四象限分析等技术，实现了实时数据采集、通讯、历史数据存储、故障报警、电网谐波分析、无功补偿等功能。

Function 功能

Harmonic Detection of Voltage and Current and Real-time Waveform Display Function of Three-phase Voltage and Current.

电压、电流谐波检测及三相电压、电流实时波形显示功能。

Overvoltage, undervoltage, harmonic overshoot and other protection functions

过压、欠压、谐波越限等保护功能。

Event Alarm Recording and Integer Data Recording Functions

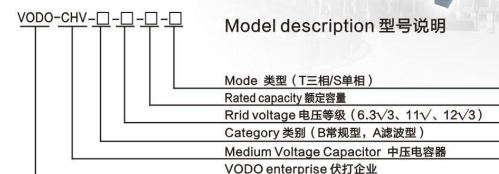
事件报警记录、整点数据记录功能。

Technical parameter 性能参数

Rated voltage 工作电源	AC85V~265V ±5%、DC110V~230V ±5%
Use input 取样输入	电压0~220V, 电流0~5A
Adoption of sensitivity 采样灵敏度	≥50mA
measurement accuracy 测量精度	I/U: ±1%, cosφ: 1.5%, Q: ±2.5%
Output capability 输出能力	DC12V, ≤50mA
Compensation speed 补偿速度	≥1s
Control route 控制路数	≤8路
Control mode 控制方式	自动/手动
Communication interface 通信接口	RS485串口
Communication protocol 通信协议	MODBUS
Altitude 海拔高度	≤2500m
Ambient temperature 环境温度	-40℃~+70℃
Relative humidity 相对湿度	在20℃时≤90%，在温度较低时，允许有较高的相对湿度
Use environment 使用环境	周围介质无爆炸危险、无足以损坏绝缘及腐蚀金属的气体，无导电尘埃

Medium Voltage Capacitor

中压电容器



The VODO-CHV Medium Voltage capacitors are composed of different capacitive elements. These basic units are connected in series and parallel with the purpose of obtaining the power at the necessary voltage. All elements are protected with an internal fuse that will be disconnected in case of a fault, isolating the basic unit damaged. The protection with internal fuses will increase the security of the system and continuity of the service.

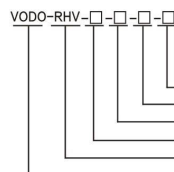
VODO-CHV中压电容器由不同的电容元件组成。这些基本单元是串联和并联的，目的是在必要的电压下获得功率。所有元件均采用内部保险丝进行保护，一旦发生故障，保险丝将断开，从而隔离基本单元受损。内部保险丝的保护将提高系统的安全性和运行的连续性。

Technical parameter 性能参数

Rated voltage 额定电压	1Kv~24Kv
Rated frequency 额定频率	50Hz/60Hz
Connection mode 电网类型	三相/单相
Capacity 额定容量	50~1000kvar
Medium 介质	浸渍的全膜电介质
Tangent value of medium 介质损耗正切值	≤0.02%
Insulating oil 绝缘油	不含氧化联苯
Capacitance deviation 电容偏差	-3%~+5%
Temperature grade 温度级别	-25/D
Protect 保护装置	内置熔断器
Discharge resistance 放电电阻	剩余电压75V/10min
Operating voltage 连续运行电压	1.0Un
Long-term overvoltage 长期过电压最高值	<1.1Un
Steady-state overcurrent 稳态过电流 (包括谐波电流)	<1.3In
Altitude 海拔高度	<2000m (可定制)
Ambient temperature 运行环境温度	-40℃~+50℃
Protection level 防护等级	IP00
Cooling mode 冷却方式	cooling风冷
Installation mode 安装方式	垂直/水平, 户内或户外



Medium voltage reactor 中压电抗器



Model description 型号说明

Mode 类型 (T三相/S单相)
Ratclance ratio 电抗率 (6%、12%)
Rrid voltage 电压等级 (6.3KV、10KV、20KV、35KV)
Category 类别 (B形规范, A滤波型)
Medium Voltage Capacitor 中压电容器
VODO enterprise 伏打企业

The reactive power compensation device composed of VODO-RHV medium voltage reactor and VODO-CHV medium voltage capacitor group can effectively suppress high-order harmonics, limit switching inrush current and operating overvoltage, improve power factor of transmission line, reduce reactive power loss, and provide stable and reliable power supply quality. The coil is made of high strength double glass wire and high quality insulating material (interlayer insulation). Vacuum pouring of epoxy resin and advanced vacuum pouring system equipment ensure excellent insulation performance and high mechanical strength.

VODO-RHV中压电抗器与VODO-CHV中压电容器组成的无功补偿装置,能有效抑制高次谐波,限制开关涌流和操作过电压,提高输电线路功率因数,降低无功损耗,供电质量稳定可靠。线圈采用高强度双玻璃丝线、优质绝缘材料(层间绝缘)绕制而成。由环氧树脂真空浇注,并用先进真空浇注系统设备,保证绝缘性能优良,机械强度高特点。

Technical parameter 性能参数

Rated voltage 额定电压	6Kv、10Kv、20KV、35KV
Rated frequency 额定频率	50Hz/60Hz
Connection mode 电网类型	三相/单相
Capacity 额定容量	50~3000kvar (匹配电容器组容量)
Tuning coefficient 调谐系数	6%、12%
Steady-state overcurrent 稳态过电流 (包括谐波电流)	<1.45In
Operating voltage 连续运行电压	1.0Un
Long-term overvoltage 长期过电压最高值	≤1.1Un
Sound level measurement 声级测定	正常情况下, >55dB
Withstand voltage 外施耐压	对地、对相42KVAC@1min, 无击穿、散落
Altitude 海拔高度	<2000m (可定制)
Ambient temperature 运行环境温度	-40℃~+50℃
Protection level 防护等级	IP00
Cooling mode 冷却方式	cooling风冷
Installation mode 安装方式	垂直/水平, 户内或户外

Harmonic Protector 谐波保护器



VODO-HP3 harmonic protector can absorb harmonic interference of various frequencies and energies above 1KHz, absorb harmonic, and automatically eliminate random high-order harmonic and high-frequency noise, pulse spike, surge and other interference to electrical equipment.

VODO-HP3 谐波保护器能吸收大于 1KHz 以上的各种频率、各种能量的谐波干扰,吸收谐波,自动消除对用电设备产生的随机高次谐波和高频噪声、脉冲尖峰、电涌等干扰。

VODO-HP3 harmonic protector can purify the power supply, protect the electrical equipment and power factor compensation equipment, and prevent the wrong tripping of the protective device, so as to protect the safe and efficient operation of the equipment.

VODO-HP3谐波保护器能够净化电源、保护用电设备和功率因数补偿设备、防止保护装置的误跳闸,从而保护设备安全、高效地运行。

It can absorb high-frequency harmonics, high-frequency noise, pulse spikes, surges and other disturbances.

对高次谐波、高频噪声、脉冲尖峰、电涌等干扰有极高的吸收作用。

Track the voltage and current waveforms at any time to correct the voltage and current waveforms which are distorted by harmonics.

随时跟踪电压、电流波形,矫正因谐波影响而产生畸变的电压、电流波形。

It can protect switching overvoltage and lightning overvoltage.

对操作过电压及雷击过电压有保护作用。

It reduces the failure rate of electrical equipment and overcomes the high frequency interference caused by harmonic pollution.

减少了用电设备的故障率,全面克服了由于谐波污染引起的高频干扰。

Technical parameter 性能参数

Rated voltage 额定电压	0.4kV
Rated frequency 额定保护频率	1~120KHz
Connection mode 最大电流脉冲值	三相/单相
Maximum operating voltage 最大连续工作电压	700V (相电压)
Maximum peak voltage 最大峰值电压	700V (相电压)
Clamp voltage value 钳位电压值	对于 3000V 的脉冲电压,可限制 410V 以下
Anti-surge Current 抗浪涌电流	对于 300V 的脉冲电压,脉冲电流不超过 1000A
Connection mode 接线方式	星型
Insulation resistance 绝缘电阻	>5MΩ
Filter leakage current 滤波泄漏电流	1.2mA
Altitude 海拔高度	≤3500m (可定制)
Ambient temperature 运行环境温度	-10℃~+60℃
Protection level 防护等级	IP00
Cooling mode 冷却方式	cooling风冷
Atmospheric pressure 大气压力	52~110Kpa
Power waste 功耗	<1W