

JD Series Selection Manual
JD系列产品选型手册

数字电力调整器

Digital Thyristor Power Regulator



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V2005110

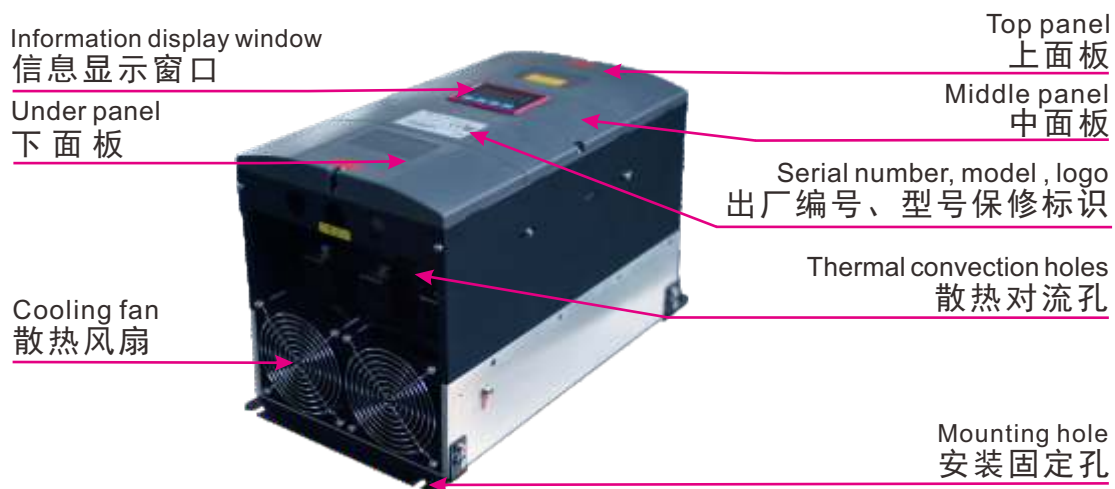
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Appearance 外观说明



Product Features 产品特点

Thyristor power regulator is one kind of digital power controller, which is based on power semiconductor module (SCR) and the digital processor core technology. It is also called Voltage Regulation for short. As a result of phase angle control and zero crossing control technology, the products has intelligence integration of voltage and power regulation significant features.

可控硅电力调整器是一种以电力半导体模块（晶闸管）为基础，以数字处理器技术为核心的数字电力功率控制器。简称调压调功器。由于采用了移相控制和周波控制技术，故产品具有智能一体化调压调功的显著特点。

JD series of power regulator make it realized to precise regulate the load by accuracy controlling the voltage, current, power. The product adopt high-speed microprocessor technology, while assisted by advanced energy-saving algorithms, to make products more energy-saving environmental protection.

JD 系列电力调整器通过对电压、电流、功率的精确控制，从而实现了负载的精密调节作用。产品采用了高速微处理器技术，同时借助先进的节能算法，使产品更加节能环保。

Integration of voltage and zero crossing control technology.
一体化调压控制和周波控制技术。

Manual / Automatic control, constant current control, constant pressure control, constant power control.
手动/自动控制、恒流控制、恒压控制、恒功率控制。

Product Features

产品特点

- Complete over-current, over-voltage alarm and fault detection function.
具有完善的过流、过压报警及故障检测功能。
- Input control of universal signals, can be adapted to various control signal inputs: 4-20mA, 0-5V, 1-5V, 0-10V, 2-10V, 0-10mA, PWM signals, Manual potentiometer given.
万能信号输入控制，可适应各种控制信号输入：4-20mA，0-5V，1-5V，0-10V，2-10V，0-10mA，PWM信号，手动电位器给定。
- Power-on slow start, slow start-up time can be set to 1-60 seconds. And slow shutoff function.
上电缓启动功能，缓启动时间可设置0-300秒。同时具有缓关断功能。
- Adaptive main power frequency, frequency ranges 47-63Hz. Can be widely used in various generator frequency unstable workplaces, ensure the safety and reliability of the system.
自适应主电源频率，频率范围47-63Hz。可广泛应用于各种发电机频率不稳工作场合，保证系统的安全可靠性。
- Communication with MODBUS RTU, also it is equipped with optional PROFIBUS DP bus, to achieve the DCS field bus control.
具有MODBUS RTU 通讯功能，同时可增配PROFIBUS DP总线选件,实现DCS现场总线控制。
- With the SCR over-temperature detection, power supply phase lack protection, current limit and over-current protection of precision transformer function. And fault emergency stop function.
具有SCR超温检测、电源缺相保护、精密互感器限流过流保护功能。同时具有故障紧急停止功能。
- The load can work in the 30-1140 V (1140 V products need to install high-voltage isolated driver board).
负载工作电压范围30-1140V (1140V产品需加装高压隔离驱动板)。
- Linear process control, drift-free output. Using INTEL company dedicated power processing CPU, to ensure system reliability.
线性化程序控制，输出无温漂。采用INTEL公司专用电源处理CPU，保证系统的可靠性。



JD-1PH
单相型










JD-2PH
三相两控型



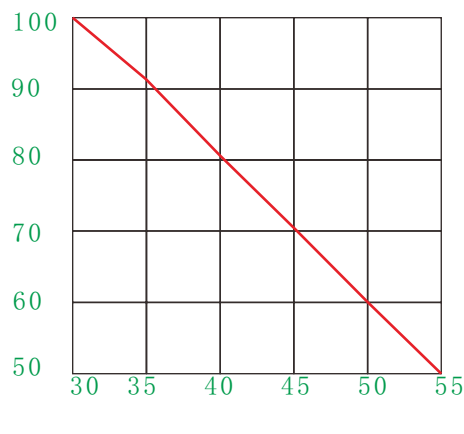
JD-3PH
三相型

Installation Notes and Conditions of Usage

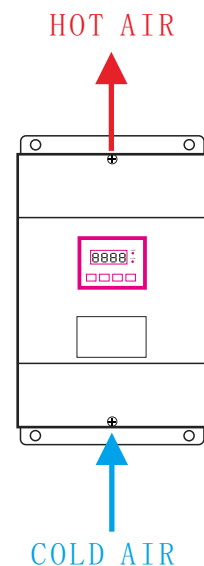
安装注意事项及使用条件

-  Power regulator will produce internal heat during operation. Please install it vertically and both sides of the gap to be set aside, to avoid the rapid aging and damage of power module caused by adverse thermal.
电力调整器使用时，内部会产生热量，安装时请垂直安装且两旁需预留空隙，避免因散热不良引起的电力模块的快速老化和损坏。
-  Air flow vents is required to control cabinet. Please follow the principle of hot air from bottom to top to install exhaust vents or install convection fan. Cabinet air-conditioning cooling can be considered if conditions allow.
控制柜须有空气对流通风孔，请依照热气由下往上的原理安装通风孔或加装抽气对流风扇。有条件可以考虑选用机柜空调散热。
-  Do not install it in high-temperature environments and poorly ventilated situations, otherwise use it less than 70% of rated capacity.
请勿安装于高温环境和通风不良的场合，否则请低于额定容量的70%使用。
-  Avoid installing It in a steam or acid, alkali, corrosive gases situations and so on.
避免安装于有水蒸汽或酸、碱、腐蚀性气体等场合。
-  Humidity: 90% RH or less(No condensation).
环境湿度：90%RH以下（不结露）。
-  Ambient temperature: $-10^{\circ}\text{C}\sim 45^{\circ}\text{C}$.
环境温度： $-10^{\circ}\text{C}\sim 45^{\circ}\text{C}$ 。
-  Before power on, the high-power controller should check whether the distribution system has the surge protection measures stipulated by the national standard to avoid unnecessary losses.
大功率控制器在通电前，应检查配电系统是否有国家标准规定的防浪涌保护措施，避免通电产生不必要的损失。

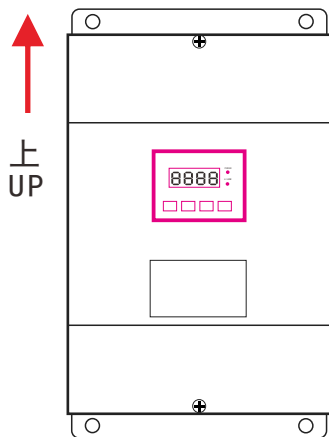
Rated Capacity %
额定容量%



Airflow direction
散热气流方向



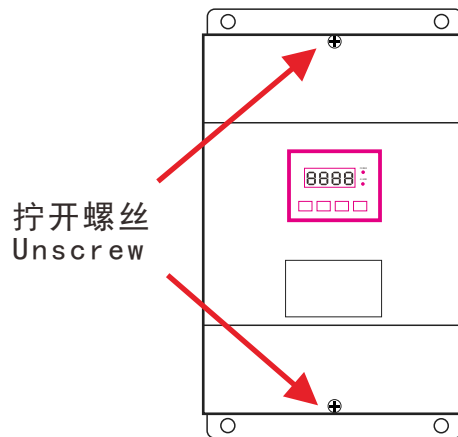
Installation Steps 安装步骤说明



(1)

Vertical installation
Reserved spaces

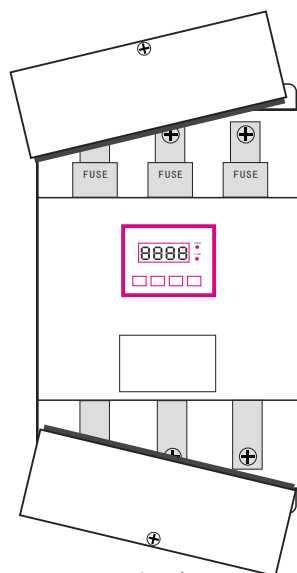
垂直安装
预留空隙



(2)

Open the
top cover

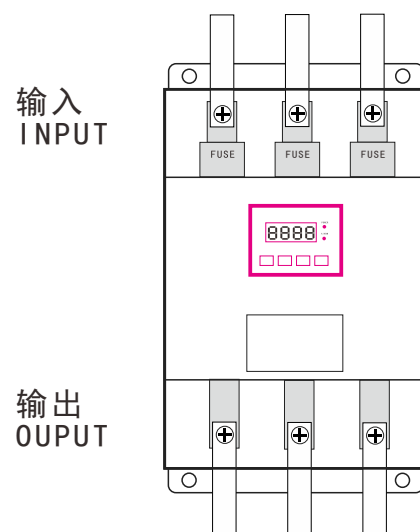
打开上盖



(3)

Lift the top cover
obliquely

斜上方提起上盖



(4)

Insert the line hardware
Tighten wiring nuts

插入线路金具
拧紧接线螺母

产品选型表

JD 系列	3PH	三相全控型。调压、调功、整流、励磁	
	2PH	三相两控型。应用阻性负载周波过零控制	
	1PH	单相系列电力调整器。调压、调功、整流、励磁	
控制输入 信号代码	4mA20	4-20毫安电流信号输入	
	0mA20	0-20毫安电流信号输入	
	0mA10	0-10毫安电流信号输入	
	0V5	0-5伏电压信号输入	
	1V5	1-5伏电压信号输入	
	0V10	0-10伏电压信号输入	
	2V10	2-10伏电压信号输入	
	M	手动信号给定	
*	特殊订制信号输入		
额定电流代码	20	20A	
	80	80A	
	130	130A	
	280	280A	
	330	330A	
	450	450A	
	550	550A	
	750	750A	
	1000	1000A	
	3000	3000A	
负载接法代码	3D	负载接法为三相三角形	
	3S	负载接法为三相星形连接，中性点悬空	
	4S	负载接法为三相星形连接，中性点接零线	
	6D	负载接法为三相六线内三角形连接	
	DC	直流输出型	
保护类型选择代码	N	无反馈保护	
	F	电流反馈保护	
通讯显示选择代码	N	无通讯显示功能	
	S	S为带数码显示, S2为MODBUS RTU通讯及显示, SF为PROFIBUS DP通讯	
负载侧电压代码	100	100V	
	220	220V	
	380	380V	
	440	440V	
	480	480V	
	660	660V	
	690	690V	
	1140	1140V, 需加装隔离触发板, 产品实际尺寸会增大	
负载侧电源频率代码	50	50Hz	
	60	60Hz	
主控制器供电电压代码	380	380V AC	
	220	220V AC	
	110	110V AC	
	24DC	24V DC	
	N	N为主板内部集成供电, K2为主板供电出厂接好, 都无需给主板提供电源.	
负载控制模式代码	P	移相触发调节, 电压连续变化。出厂默认配置	
	Z	过零触发调节, 周波控制, 可选定周期和变周期	
	V	恒压给定控制	
	I	恒流给定控制	
	VI	恒功率控制	
缓启动时间代码	10	出厂默认10秒, 可设定为0-300秒	

例如: JD-3PH-4MA20-300A-3D-F-S-380-50-380-P-10-XXX

↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑

型号 控制信号 接线方式 通讯/显示 频率 调压/调压 特殊功能备注

三相三控系列 300安 电流反馈 负载电压 控制器电压 缓启动时间

Product Selection Table

JD series	3PH	Three-phase fully controlled,voltage regulating,power regulating,rectification,excitation	
	2PH	Three-phase two control.Application of resistive load cycle zero-crossing control	
	1PH	Single-phase series power regulator, voltage regulating, power regulating, rectification, excitation	
Control input signal code	4mA20	4-20mA Current signal input	
	0mA20	0-20mA Current signal input	
	0mA10	0-10mA Current signal input	
	0V5	0-5V Voltage signal input	
	1V5	1-5V Voltage signal input	
	0V10	0-10V Voltage signal input	
	2V10	2-10V Voltage signal input	
	M	Manual signal given	
*	Special custom signal input		
Rated current code	20	20A	
	80	80A	
	130	130A	
	280	280A	
	330	330A	
	450	450A	
	550	550A	
	750	750A	
	1000	1000A	
3000	3000A		
Load connection code	3D	Load connection : Three-phase delta	
	3S	Load connection : Three-phase star, floating neutral	
	4S	Load connection : Three-phase star, neutral connection	
	6D	Load connection : Three-phase six-wire delta connection	
	DC	DC Output-mode	
Selection code of the protection type	N	Without feedback	
	F	Feedback protection	
Communication display selection code	N	Without communication display	
	S	S for digital display, S2 for MODBUS RTU communication and display, SF for PROFIBUS DP communication	
Load side voltage code	100	100V	
	220	220V	
	380	380V	
	440	440V	
	480	480V	
	660	660V	
	690	690V	
	1140	1140V, Need to install isolation trigger plate, the product actual size will increase	
The load side power frequency code	50	50Hz	
	60	60Hz	
Main controller power supply code	380	380V AC	
	220	220V AC	
	110	110V AC	
	24DC	24V DC	
	N	N for the motherboard integrated power supply, K2 power supply for the motherboard factory	
Load control mode code	P	Phase-shift trigger regulation,voltage changes continuously. Factory default configuration	
	Z	Zero trigger regulation, frequency control. Fixed cycle & changeable cycle can be selected	
	V	Constant voltage for given control	
	I	Constant current for given control	
	VI	Constant power for given control	
缓启动时间代码			
Slow start time code	10	Factory default 10 seconds, can be set to 0-60 seconds	

For example, JD-3PH-4MA20-300-3D-F-S-380-50-380-P-10



Control Mode and Application Load

控制方式及适用负载

控制方式 Control mode	输出波形 Output wave		
	10% 输出 Output	50% 输出 Output	80% 输出 Output
移相控制 Phase angle control			
周波控制 Zero crossing control			

Phase angle control: Smooth continuous phase trigger control . Stable output , current does not fluctuate, but prone to harmonics.

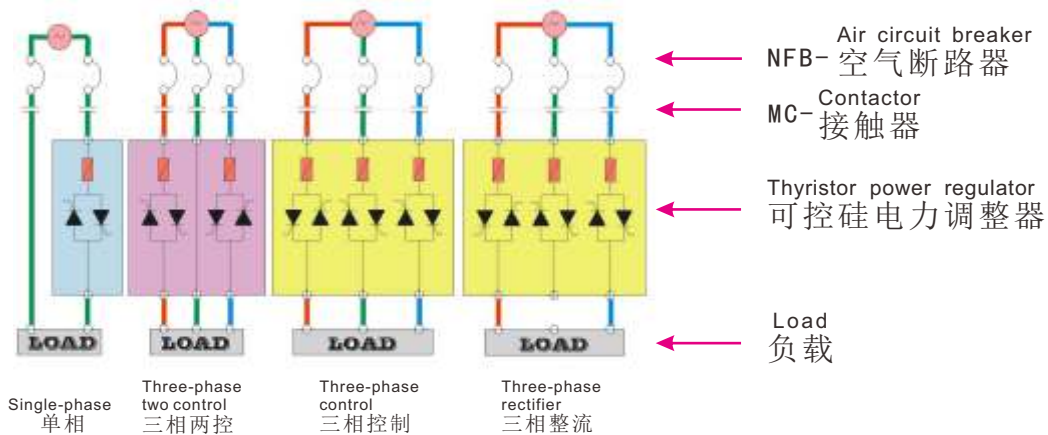
- 移相控制：平滑连续移相触发控制，输出稳定，电流不波动，但容易产生谐波。
Applicable load: Fixed resistance load, variable resistance load, inductive load, IR lamp.
适用负载：定阻性负载、变阻性负载、感性负载、IR灯管。

Zero crossing control : Zero trigger control, no harmonic interference, but the output current prone to fluctuate.

- 周波控制：过零触发控制方式，不产生谐波干扰，但输出电流容易波动。
Applicable load: Fixed resistance load.
适用负载：定阻性负载。

Wiring and Layout Considerations

配线及布局注意事项



- Main circuit: Power line-Air circuit breaker-Contactor-Regulator-Load.
主回路：电源进线-空气断路器-接触器-电力调整器-负载。

- All connecting nuts must be tightened, to avoid arcing burned connector.
所有连接线螺母一定要锁紧，以避免跳火烧坏接头。

Air Switch: Can cut off the power, to protect the equipment and personal safety in the repair and maintenance.

- 空气开关：可切断电源，在维修和保养时保护设备和人身安全。
- Contactor: Can cut off power supply automatically, when the power regulator malfunctions, it will protect the equipment from accident.
接触器：可自动切断电源，当电力调整器发生故障时，会保护设备避免发生事故。

Terminal Wiring 端子接线说明

SK1



10P terminal
10P端子

1	2	3	4	5	6	7	8	9	10
C1	C2	Gnd	R1	R2	VO	US	RS	DX+	DX-
自动信号输入 Automatic signal input	自动信号输入 Automatic signal input	基准信号地 Gnd Reference signal	手动自动转换 Manual automatic conversion	开关转换中间点 Switch conversion mid-point	自动转换接点 Automatic contacts	基准电压信号 Reference voltage signal 5V	方式转换开关 Mode switch	复位 / 缓启动 Reset / Slow start	485 通讯 485 Communication
+	-							+	-

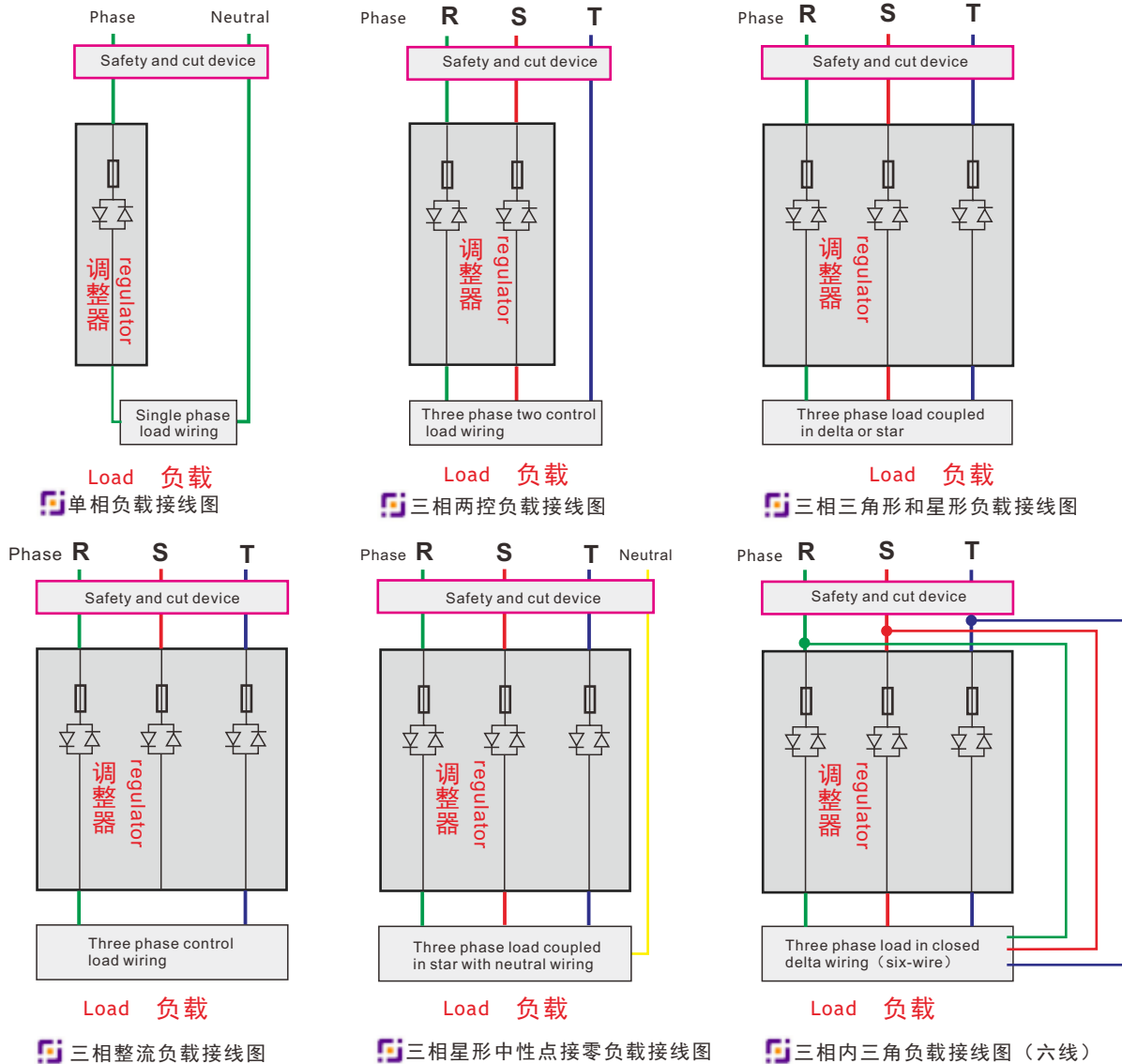
SK2



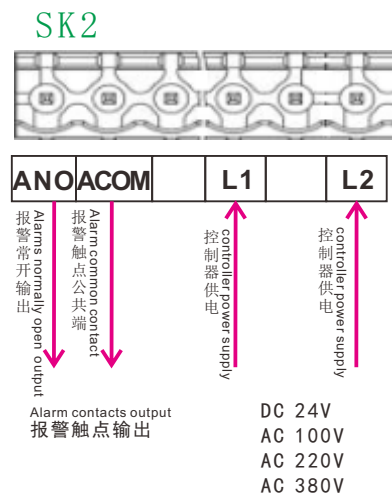
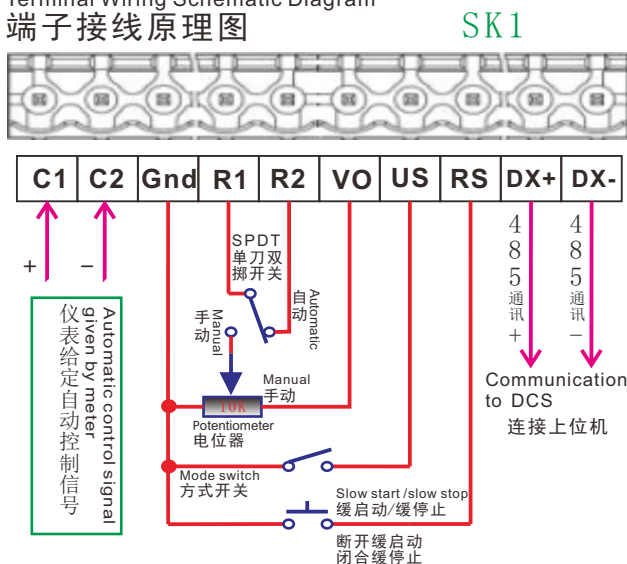
6P terminal
6P端子

1	2	3	4	5	6
ANO	ACOM		L1		L2
故障常开输出 Alarm normally open output	常开触点 Normally open contact	公共触点 Public Contact	控制器供电 Controller power supply		控制器供电 Controller power supply
NO	COM				

Load and the Controller Wiring Diagram 负载接线图和控制器接线图



Terminal Wiring Schematic Diagram 端子接线原理图



Please declare the controller supply voltage and frequency in order, the default is 380V power supply, 50 Hz.
订货时声明控制器供电电压及频率，默认380伏供电，50赫兹。

Product Parameters

产品参数

JD-1PH Single-phase thyristor power regulator and the rectifier power supply size
JD-1PH单相电力调整器及整流电源尺寸

JD-1PH									
Rated current 额定电流	Dimensions 外形尺寸 (mm)			Mounting Hole Size 安装孔尺寸 (mm)		Mounting Screws 安装螺丝	Wiring Screws 接线螺丝	Weight 净重 (kg)	Cooling 冷却方式
	Length A(长)	Width B(宽)	Height C(高)	Width F(长)	Length E(宽)				
0-60A	290*140*180mm			270*108mm		M8	M8	5	Self-cooling 自冷
61-200A	290*140*225mm			270*108mm		M8	M8	7	Fan-cooling 风冷
201-249A	407*150*240mm			长394mm		M6	M8	8	Fan-cooling 风冷
250-399A	484*150*240mm			长471mm		M6	M10 M8	9	Fan-cooling 风冷
400-700A	562*189*252mm			长547mm		M8	M10	15	Fan-cooling 风冷
>700A	Customized according to the actual 根据实际定制							我公司全系列产品均采用德国西门康SKKT-16E系列可控硅	

JD-2PH Three-phase two control thyristor power regulator and the rectifier power supply size
JD-2PH三相两控电力调整器及整流电源尺寸

JD-2PH									
Rated current 额定电流	Dimensions 外形尺寸 (mm)			Mounting Hole Size 安装孔尺寸 (mm)		Mounting Screws 安装螺丝	Wiring Screws 接线螺丝	Weight 净重 (kg)	Cooling 冷却方式
	Length A(长)	Width B(宽)	Height C(高)	Width F(长)	Length E(宽)				
0-30A	290*140*180mm			270*108mm		M8	M8	6	Self-cooling 自冷
31-120A	290*140*225mm			270*108mm		M8	M8	8	Fan-cooling 风冷
121-200A	423*140*265mm			403*120mm		M8	M8	11	Fan-cooling 风冷
210-350A	446*262*283mm			413*222mm		M10	M10 M8	21	Fan-cooling 风冷
351-450A	515*262*292mm			483*222mm		M10	M10	27	Fan-cooling 风冷
451-800A	580*375*365mm			545*308mm		M10	M10	38	Fan-cooling 风冷
>800A	Customized according to the actual 根据实际定制							我公司全系列产品均采用德国西门康SKKT-16E系列可控硅	

Product Parameters

产品参数

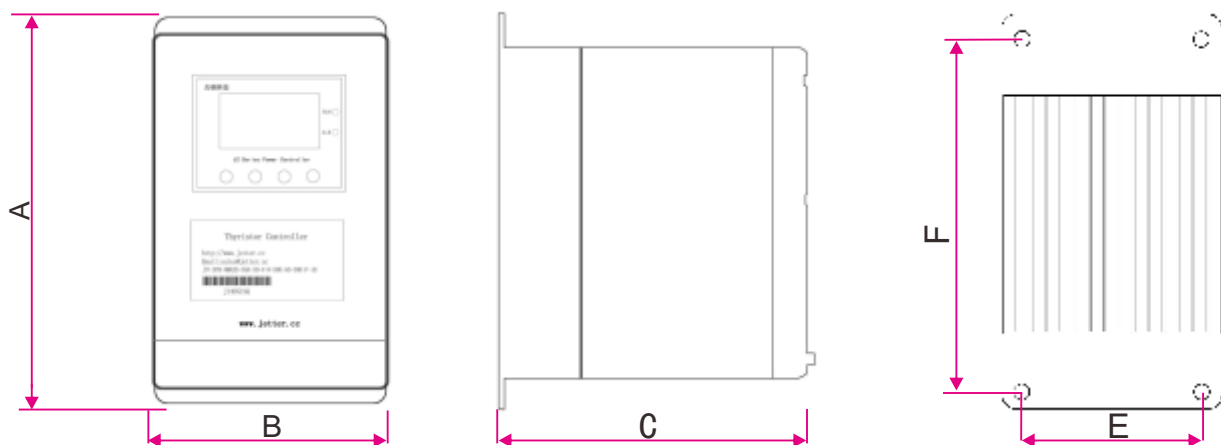
JD-3PH									
Rated current 额定电流	Dimensions 外形尺寸 (mm)			Mounting Hole Size 安装孔尺寸 (mm)		Mounting Screws 安装螺丝	Wiring Screws 接线螺丝	Weight 净重 (kg)	Cooling 冷却方式
	Length A(长)	Width B(宽)	Height C(高)	Width F(长)	Length E(宽)				
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210-350A	446*262*283mm			413*222mm		M10	M10 M8	21	Fan-cooling 风冷
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>800A	Customized according to the actual 根据实际定制 我公司全系列产品均采用德国西门康SKKT-16E系列可控硅								

The above list is the actual size of product. In order to avoid the rapid aging and damage to the power module due to adverse thermal, and extend the service life. Please make sure that both sides of the gap to be set aside to emit heat timely during installation.

上述列表为产品的实际尺寸，但是为了避免散热不良引起的电力模块的快速老化及损害，延长使用寿命，请在安装机器时，机器两旁预留一定的空隙，以便及时散热。

Product Dimensions

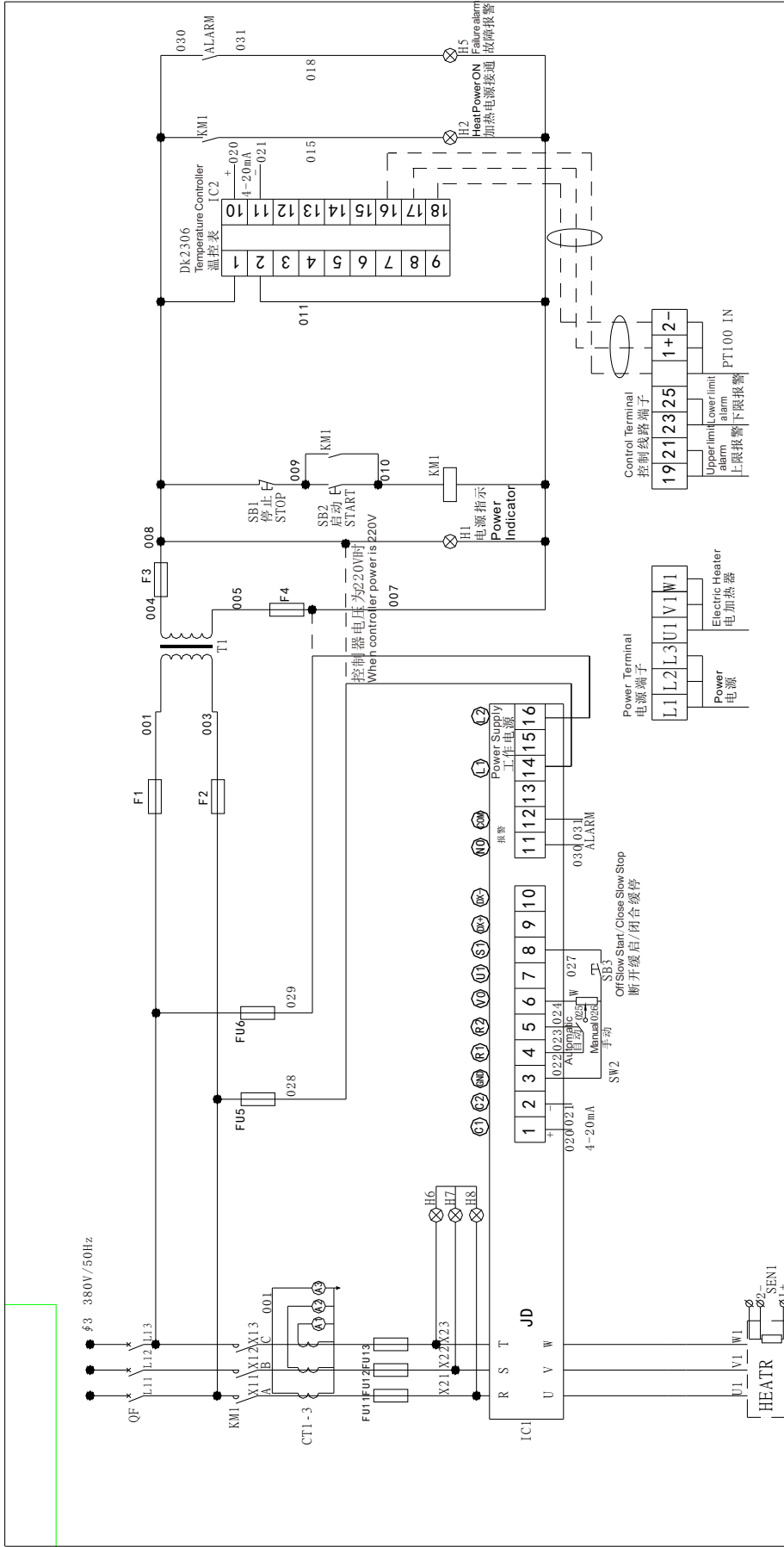
产品尺寸示意图



Product Pictures
产品图片示例



Appendix: Electric Heating Wiring Diagram Examples
附录：电加热接线实例图



2	KM1	接触器 空气断路器	11	SB1	停止按钮
1	QF	空气断路器	10	T1	隔离变压器
序号	代号	名称	序号	代号	名称

9	F1, F2, F3, F4	Normal Fuse 普通熔断器	18		Temperature Controller 温控表
8	FU5, FU6	Fuse 熔断器	17		Indicator 指示灯
7	HEATR	Heater Load 电加热器负载	16	Dk-2306	测温传感器
6	JD3K@	Thyristor Power Regulator 电力调整器	15	H	报警
5	Fu11, Fu12, Fu13	High Speed Fuse 快速熔断器	14	SEN1	启动按钮
4	A1, A2, A3	Ammeter 电流表	13	ALARM	
3	CT1-3	Current Transformer 电流互感器	12	SB2	

图号	图名	比例
日期	共 1 张	第 1 张

Electric heating control wiring diagram
电加热器控制接线图

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