

HPO Series Functional Solid State Relay

HPO系列功能型固态继电器

4-32VDC Control | Z/R Trigger
Alarm Output | Overheat Alarm



7 Key Features | 七大核心特性



1. 4-32VDC宽电压控制
4-32VDC wide control voltage



2. 反并联可控硅输出
Anti-parallel thyristor output



3. DBC陶瓷组件技术
DBC ceramic substrate technology



4. 额定电流最大100A
Rated current up to 100A



5. 浪涌电压最大1600Vpk
Surge voltage up to 1600Vpk



6. 绝缘耐压2500Vrms
2500Vrms baseplate insulation



7. 过温与负载故障报警
Overheat and load fault alarms



Product Overview | 产品概述

HPO 面板安装固态继电器广泛应用于各类自动化设备、医疗器械、轨道交通设备。产品采用 DBC 陶瓷基板技术，使散热性能达到最优，输出端荷载能力高达 100A，并带有过温及负载故障报警功能，适用于密集安装固态继电器的场合。

The HPO panel-mount solid state relay is used in automation equipment, medical equipment and rail transit systems. It uses DBC ceramic substrate technology for optimized heat dissipation, supports output load current up to 100A, and integrates overheat and load fault alarms for dense SSR installations.



Ordering Code | 型号说明

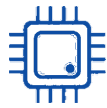
HPO	48	Z	25
产品系列 Product Series	电压代码 Voltage Code	触发代码 Trigger Code	额定电流 Rated Current
HPO: HPO功能型 固态继电器 HPO: functional solid state relay	48: 48-530VAC 负 载电压范围 48: 48-530VAC load voltage range	Z: 过零型输出 Z: zero-cross output	25: 25A 额定负载 电流 25: 25A rated load current



Typical Applications | 典型应用

 自动化设备 Automation Equipment	 医疗器械 Medical Equipment	 轨道交通设备 Rail Transit Equipment
 工业加热控制 Industrial Heating Control	 包装机械 Packaging Machinery	 测试设备 Testing Equipment





特性与安装 / Characteristics & Integration

通用数据表 | General Data

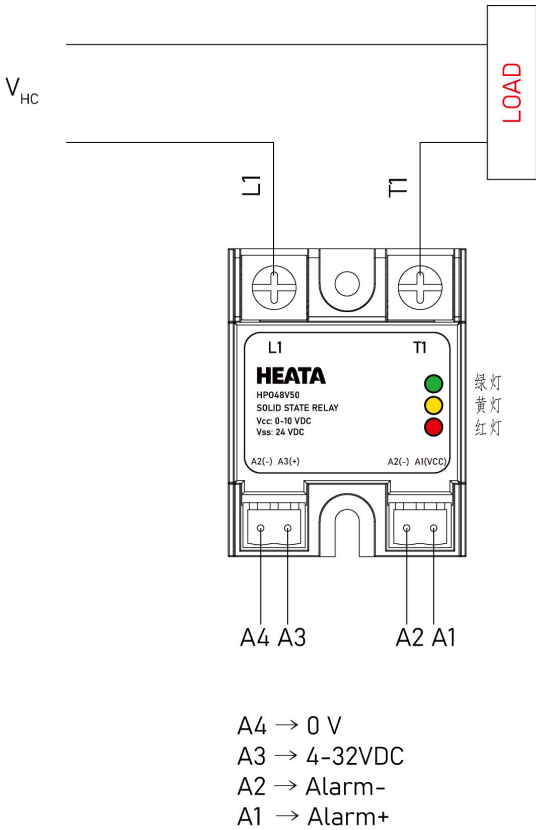
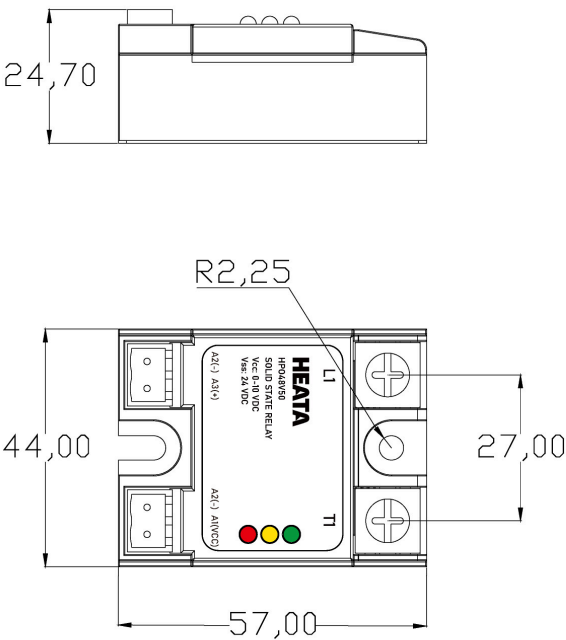
输入/输出绝缘耐压 / Input-output dielectric strength	4000Vrms (50/60Hz)
输入输出/底板绝缘耐 压 / I/O-baseplate dielectric strength	2500Vrms (50/60Hz)
绝缘电阻 / Insulation resistance	10 ⁹ ohm @ 500VDC
最大电容 / Maximum capacitance	8pF
工作温度 / Operating temperature	-40 to 80 °C
储藏温度 / Storage temperature	-40 to 100 °C
湿度 / Humidity	45%-85% RH
重量 / Weight	75g
外壳材料 / Housing material	PC100

系列型号表 | Series Model Matrix

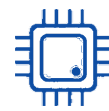
型号 Model	额定电流 Rated Current	负载电压范围 Load Voltage Range	控制电压范围 Control Voltage Range	输出 / 触发 Output / Trigger
HPO48Z25	25A	48-530VAC	4-32VDC	过零输出 Zero-cross output
HPO48Z50	50A	48-530VAC	4-32VDC	过零输出 Zero-cross output
HPO48Z75	75A	48-530VAC	4-32VDC	过零输出 Zero-cross output
HPO48Z100	100A	48-530VAC	4-32VDC	过零输出 Zero-cross output
HPO48R25	25A	48-530VAC	4-32VDC	随机输出 Random output
HPO48R50	50A	48-530VAC	4-32VDC	随机输出 Random output
HPO48R75	75A	48-530VAC	4-32VDC	随机输出 Random output
HPO48R100	100A	48-530VAC	4-32VDC	随机输出 Random output

外形尺寸 | Mechanical Dimensions

单位 / Unit: mm

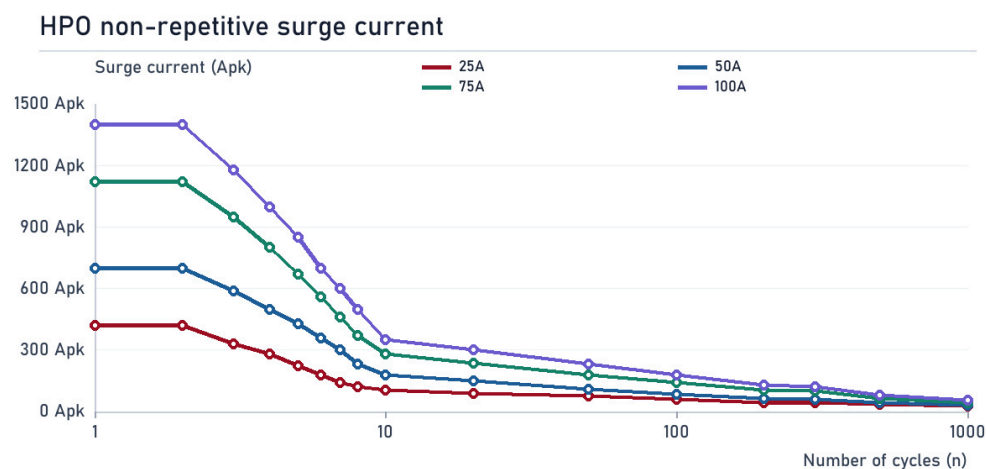


绿灯：收到控制电压且继电器工作时亮，未工作时熄灭。
红灯：负载端温度异常时亮，正常工作时熄灭。
黄灯：负载端报警时亮，包括电源丢失或负载异常，正常工作时熄灭。

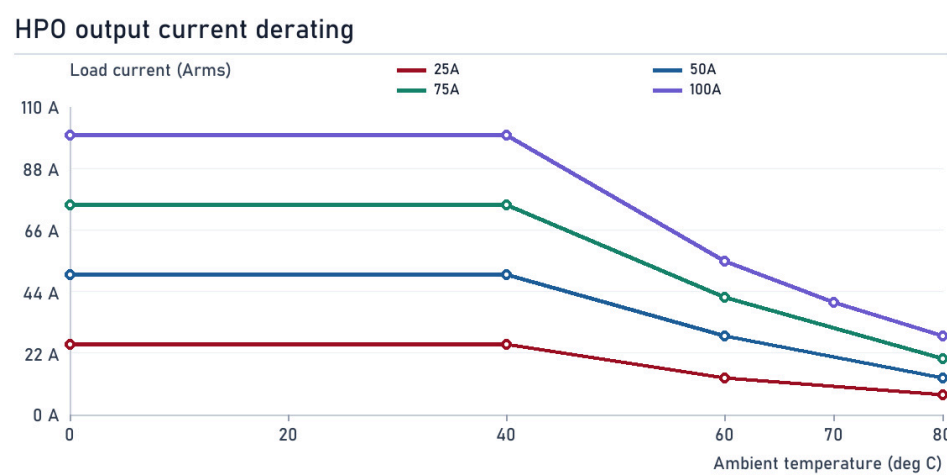


控制、浪涌与温度曲线 | Control, Surge & Thermal Curves

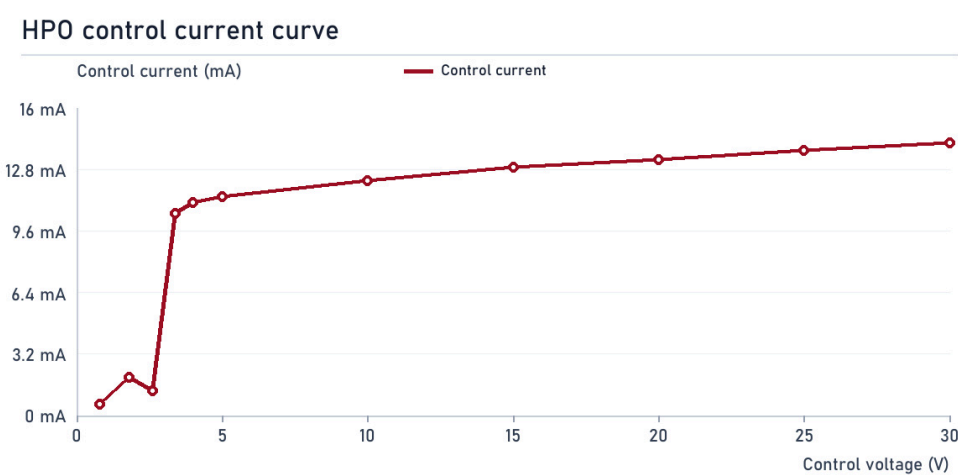
● 非重复浪涌电流曲线 / Non-repetitive surge current curve

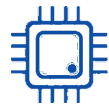


● 输出电流与温度曲线 / Output current temperature derating



● 控制电流曲线 / Control current curve





安全与注意事项 | Safety & Application Notes

项目 Item	说明 Description
认证 Certification	CE 认证 CE certification
短路保护 Short-circuit protection	在电源侧安装快速熔断器，避免短路损坏 Install fast fuse at power side to prevent short-circuit damage
接触安全 Touch safety	断电并待温度下降后方可触碰 Touch only after temperature drops and after power is fully disconnected
高温降额 High-temperature derating	高环境温度下需降额使用，参照温度曲线 Derate at high ambient temperature; refer to the temperature curve
散热安装 Thermal mounting	继电器需牢固安装到散热器，并均匀涂覆导热硅脂 Secure relay to heat sink and apply thermal grease uniformly

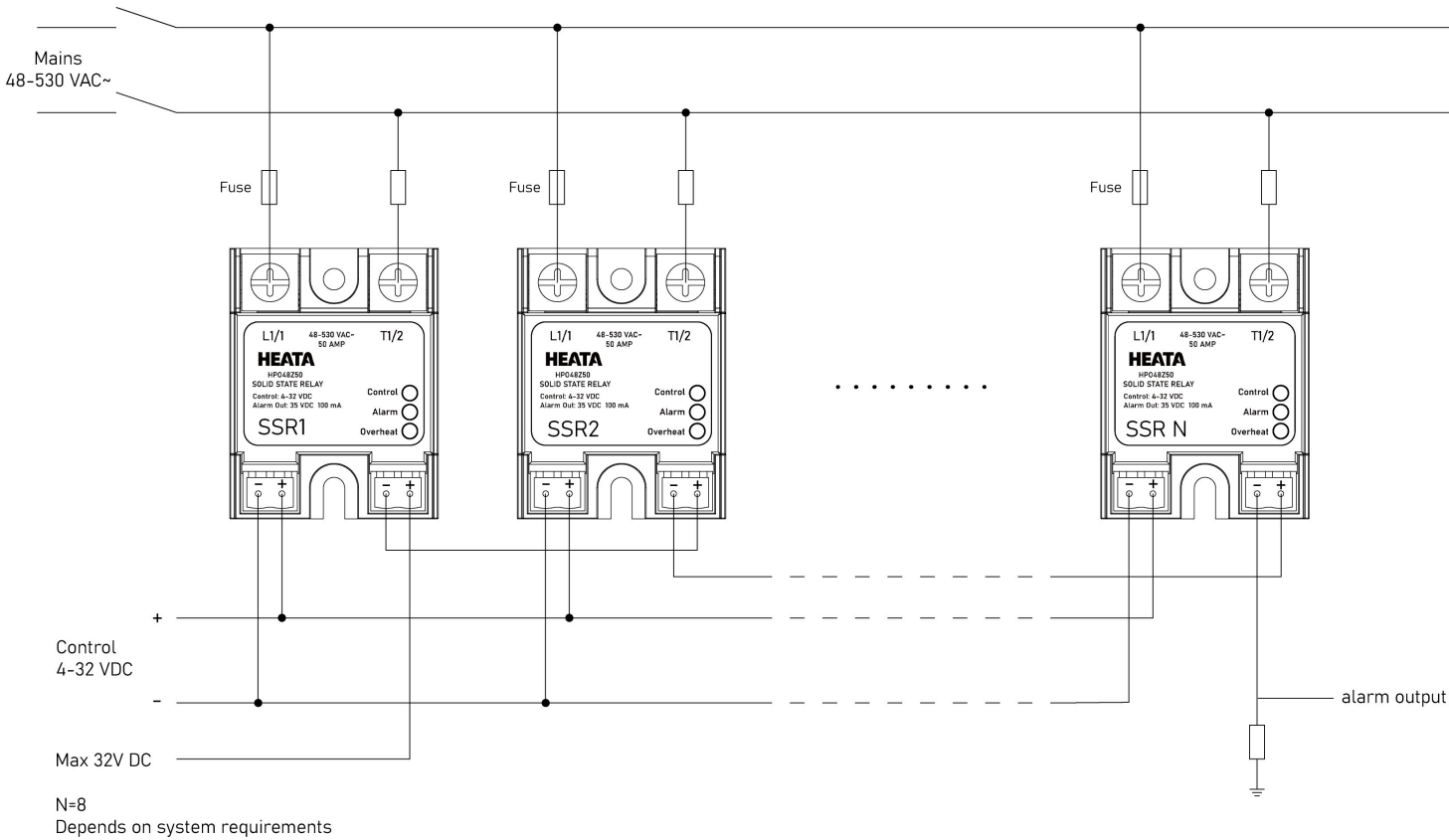


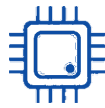
报警与接线说明 | Alarm & Wiring Notes

项目 Item	说明 Description
负载端 Load terminals	L1/1, T1/2 L1/1, T1/2
控制端 Control input	控制电压正端为A3，负端为A4，4-32VDC Control voltage positive terminal is A3, negative terminal is A4, 4-32VDC
状态输出 Status output	报警输出正端为A1，负端为A2，Max. 32VDC Alarm output positive terminal is A1, negative terminal is A2, Max. 32VDC
控制LED Control LED	绿色亮：收到控制电压且继电器工作；熄灭：未工作 Green on: control voltage received and relay operating; off: not operating
断线报警 Load fault alarm	黄色亮：负载端报警，包括电源丢失或负载异常；熄灭：正常 Yellow on: load terminal alarm, including supply loss or load abnormality; off: normal
过温报警 Overheat alarm	红色亮：负载端温度异常；熄灭：正常 Red on: load terminal temperature abnormal; off: normal
电源丢失 Supply loss	L1/1 电压丢失超过 1 s 时报警 LED 亮，供电恢复后熄灭 L1/1 voltage loss for more than 1 s turns alarm LED on; restored supply turns it off
负载异常 Load abnormality	T1/2 开路触发报警；继电器短路时 LED 保持点亮 T1/2 open circuit triggers alarm; relay short circuit keeps the LED on



接线示意图 | Wiring Diagram





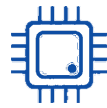
性能 / Performance

输出参数表 | Output Parameters

项目 Item	HPO48Z25/R25	HPO48Z50/R50	HPO48Z75/R75	HPO48Z100/R100
负载电流 [Arms] Load current [Arms]	25	50	75	100
工作电压范围 [VAC] Operating voltage range [VAC]	48-530	48-530	48-530	48-530
电压代码范围 [VAC] Voltage code range [VAC]	38: 48-440; 48: 48-530; 60: 48-660	38: 48-440; 48: 48-530; 60: 48-660	38: 48-440; 48: 48-530; 60: 48-660	38: 48-440; 48: 48-530; 60: 48-660
浪涌电压 [Vpk] Surge voltage [Vpk]	38: 800; 48: 1200; 60: 1600	38: 800; 48: 1200; 60: 1600	38: 800; 48: 1200; 60: 1600	38: 800; 48: 1200; 60: 1600
电压上升率 dV/dt [V/us] Voltage rise rate dV/dt [V/us]	500	500	500	500
最大漏电流 [mArms] Max. leakage current [mArms]	1	1	1	1
浪涌电流 [Apk] Non-repetitive surge current [Apk]	250	500	750	1000
输出压降 [Vpk] On-state voltage drop [Vpk]	1.2	2.5	3.5	3.5
最大1/2周期 I2t [A2sec] Max. 1/2-cycle I2t [A2sec]	625	1250	1875	2500
最大开启时间 [cycle / msec] Max. turn-on time [cycle / msec]	Z: 1/2; R: 1	Z: 1/2; R: 1	Z: 1/2; R: 1	Z: 1/2; R: 1
最大关闭时间 [cycle] Max. turn-off time [cycle]	1/2	1/2	1/2	1/2
工作频率范围 [Hz] Operating frequency range [Hz]	47-63	47-63	47-63	47-63

输入参数表 | Input Parameters

项目 Item	参数 Rating
控制电压 [VDC] Control voltage [VDC]	4-32
确保导通电压 [VDC] Guaranteed ON Voltage [VDC]	3.5
确保关断电压 [VDC] Guaranteed OFF Voltage [VDC]	1
确保开启电流 [mA] Guaranteed turn-on current [mA]	10
状态输出 [VDC, A] Status output [VDC, A]	Max. 32, 0.1
面板指示 Panel indicators	Control / Alarm / Overheat LEDs



热度数据 | Thermal Data

项目 Item	参数 Rating
输出电流温度降额 Output current derating	Refer to output current temperature curve
工作温度 [°C] Operating temperature [°C]	-40 to 80
储藏温度 [°C] Storage temperature [°C]	-40 to 100
湿度 Humidity	45%-85% RH



温度降额表 | Thermal Derating Table

型号 Model	0 °C	40 °C	60 °C	70 °C	80 °C
HPO48Z25/R25	25	25	13	-	7
HPO48Z50/R50	50	50	28	-	13
HPO48Z75/R75	75	75	42	-	20
HPO48Z100/R100	100	100	55	40	28

说明 / Note: Values are allowable load current Arms from the reference output-current temperature curve.