

绝缘监测仪
Insulation Monitoring Device

ST3.2-V1.8.0

简介

产品主要应用于交流、直流母线IT系统绝缘检测；该绝缘仪采用低频信号注入法原理，对母线绝缘进行实时监测。

应用行业：新能源、电力、通讯、船舶、医疗等各电源系统

产品特点

- ★ 动力系统有电或无电工况下都可进行绝缘监测；
- ★ 低频信号注入法，技术成熟可靠；
- ★ 可监测一段独立母线；
- ★ 可设定1级报警、2级报警电阻阈值；
- ★ 产品通过命令控制可实现启停功能，以避免与同类设备同时监测；
- ★ 提供2路继电器干接点输出,1路全隔离RS485串口通讯接口，标准Modbus_RTU通讯协议；
- ★ 绝缘电阻检测最高可达50MΩ。



技术指标

功能项目参数	参数范围	精度	备注
系统应用电压	0-1500V DC/1000V AC(50~60HZ)		
最大检测电阻范围	50MΩ		默认：50MΩ
电阻测量范围	< 1MΩ	±10K	开路、单端漏电
	1MΩ-50MΩ	±15%	
1级报警电阻阈值	10KΩ~50MΩ可设		默认:50KΩ
2级报警电阻阈值	50KΩ~50MΩ可设		默认:120kΩ (不得小于一级报警阈值)
1级报警恢复电阻	10kΩ ~ 50MΩ可设		默认:50kΩ
2级报警恢复电阻	50 kΩ ~ 50MΩ可设		默认:120kΩ (不得小于一级报警阈值)
监测周期	默认：10s,分布电容≤1uF		可通过串口命令修改 (具体请查阅协议文件)
产品启停模式	停止检测;启动检测		通过串口命令实现 (具体请查阅协议文件)
校验位	奇/偶/无校验可设		默认：无校验
波特率	2400/4800/9600/bps		默认:9600bps
测量内阻	≥1000 kΩ		
干接点输出特性	常开触点，30VDC/5A,250VAC/5A		
绝缘耐压	输入对供电电源/输出（继电器/485） 6KVAC 1min		
工作电源	12~24VDC,85~170mA		供电功耗建议≥3W
工作环境	工作温度：-40~80℃,0~100%RH		无凝霜，无凝露
	存储温度：-40~80℃,0~100%RH		无凝霜，无凝露
	允许海拔：≤5000m,54~106Kpa		
包装尺寸/重量	包装尺寸：145*100*65mm	重量：≤300g (含包装材料)	

★ 指示灯说明

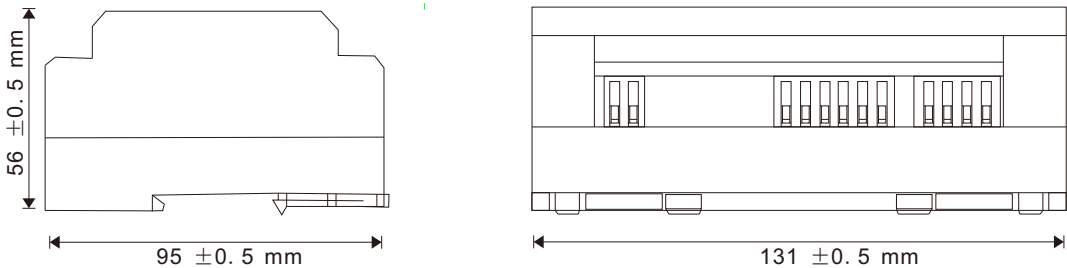
RUN(绿色): 产品通讯正常时慢闪烁；通讯异常时常亮；
ALM(红色): 绝缘电阻低于一级报警阈值时常亮，高于恢复阈值时灭；
绝缘电阻低于二级报警阈值时闪烁，高于恢复阈值时灭；



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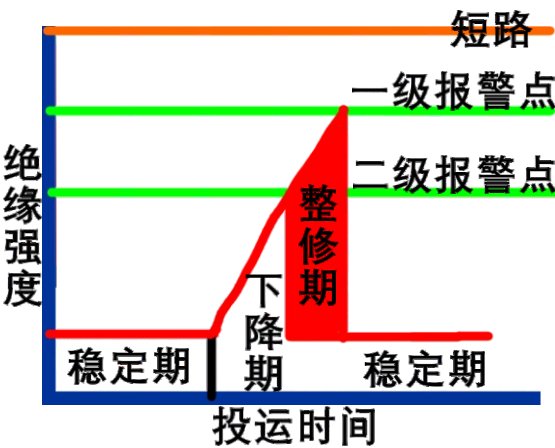
安装尺寸图、端子定义



35mm标准导轨安装

标识	说明	备注
PE	大地	系统电压输入 0-1500VDC 0-1000VAC
HM1+	正母线	
HM1-	负母线（交流信号）	
+	电源正端	供电电源 (12-24VDC)
-	电源负端	
A	RS485-A	通讯端口
B	RS485-B	
A2	RS485-A	通讯端口 (非标配，默认无)
B2	RS485-B	
120Ω	通讯终端电阻	同A或A2短接
K1	继电器常开触点	可通过串口命令闭合或断开 绝缘一级报警输出
COM1		
K2	继电器常闭触点	绝缘仪本身故障报警输出
COM2		

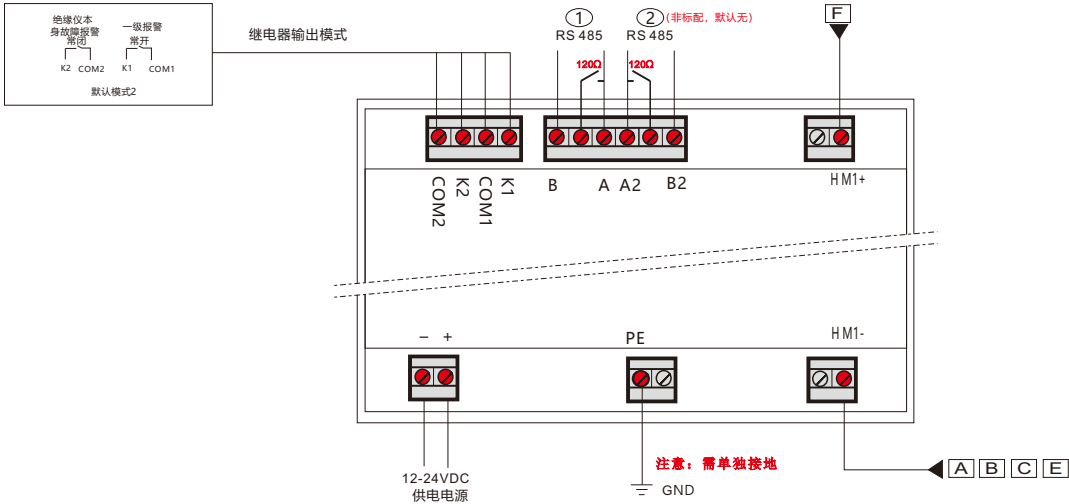
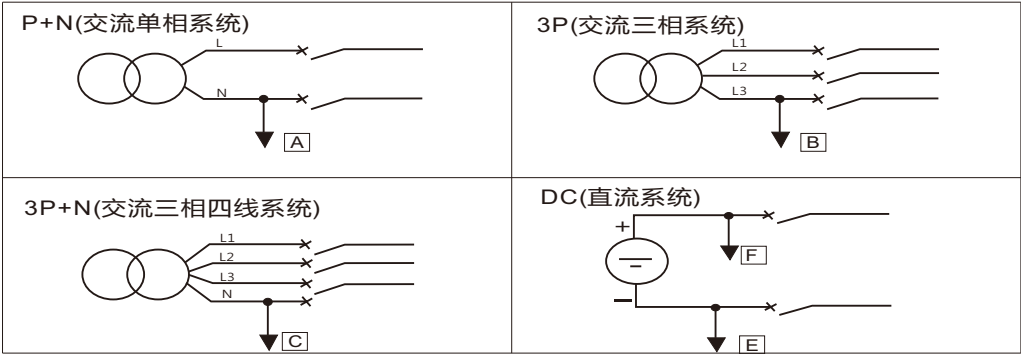
绝缘下降描述图



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接线应用说明



端口	线径	剥线长度	工具尺寸	扭矩
+/-A/B/K2/COM2/K1/COM1	0.2 - 2.5 mm ² (24 - 14 AWG)	7mm (0.28 in) ± 1 mm (0.040 in)	3 mm (1/8 in)	0.4Nm (3.54 in lb)
HM1+/HM1-/PE	0.82 - 2.5 mm ² (18 - 14 AWG)	7mm (0.28 in) ± 1 mm (0.040 in)	3 mm (1/8 in)	0.4Nm (3.54 in lb)

注意: HM1+/HM1- 线材应满足系统应用电压要求

温馨提示

- ★ 一条独立回路系统里只能安装一台绝缘监测设备, 大于1台时将影响产品的测量。
- ★ 产品监测的是整个回路的绝缘, 应用环境的改变可能存在不确定的干扰。
- ★ 建议在产品HM1+、HM1-、PE侧加浪涌保护器。
- ★ 配套设备进行绝缘耐压测试时, 绝缘监测仪供电电源需要断开, 测试电压大于500V该产品需要脱离系统。
- ★ 产品供电电源具备短路保护和反接保护。
- ★ 确保现场地网系统接地良好及绝缘仪PE端口单独接地且接地良好, 绝缘监测仪在接地不合格的情况下存在易损坏风险。



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PRODUCT INTRODUCTION

This product is mainly used for insulation detection of AC and DC bus IT systems. The insulation monitor adopts the low-frequency signal injection principle to perform real-time monitoring of bus insulation.

Application Industries: New energy, electric power, communication, marine, medical and other power supply systems

PRODUCT DESCRIPTION

- ★ Insulation monitoring is available for the power system in energized and de-energized modes;
- ★ Low-frequency signal injection method, mature and reliable technology;
- ★ Capable of monitoring a single independent busbar;
- ★ Support setting resistance thresholds for Level 1 and Level 2 alarms;
- ★ Start/stop function controllable via commands to avoid simultaneous monitoring with similar devices;
- ★ Equipped with 2-channel relay dry contact outputs and 1-channel fully isolated RS485 serial communication port, supporting standard Modbus-RTU protocol;
- ★ Max. insulation resistance detection up to 50 MΩ.



TECHNICAL DATA

Project	Settings range	Error	Remarks
Nominal system voltage Un	0-1500VDC /0-1000VAC (50Hz/60Hz)	0.2%	
Testable Resistance	Adjustable value ranges of 50MΩ		Default: 50MΩ
Testable Resistance	0Ω-1000KΩ	±10KΩ	Open or Single-ended insulation decline
	> 1000KΩ	±15%	
Alarm 1(K1+LED(ALM)Solid on)	10KΩ~50MΩ		Default :50KΩ
Alarm 2(LED(ALM)flashing)	50KΩ~50MΩ		Default :120kΩ greater than First-level Alarm range
Alarm 1 Cancellation	10kΩ ~ 50MΩ		Default :50kΩ
Alarm 2 Cancellation	50 kΩ~ 50MΩ		Default :120kΩ greater than Secondary alarm range
Response time	Adjustable value ranges of 5~120s		Default: 10s Ce≤1uF
Product Start-Stop Mode	Stop Detection/Start Detection		Implemented via serial port commands
parity bit	odd/even/No		Default: No
Baud Rate	2400/4800/9600bps		Default:9600bps
Internal d.c. resistance Ri	≥1000kΩ		
changeover contacts	30VDC/2A, 250VAC/5A		
Dielectric Strength	Input to Power Supply / Output (Relay / Rs485): 6000 VAC, 1 min withstand		
Power	12-24VDC		Power consumption ≤3W
Environmental parameters	Operating temperature: -40~80°C,0~100%RH		No frost, no condensation
	Storage temperature : -40~80°C,0~100%RH		No frost, no condensation
	Permissible Altitude: ≤5000m,54~106Kpa		
Package Dimensions / Weight	weight:≤300g Packing size:145*100*65mm		

★ Indicator Light Description

RUN(GREEN): Normal flash during normal communication; steady light for communication fault.
ALM(RED): Steady light when insulation resistance below Level 1 alarm threshold;
light off when above recovery threshold.;
Flashes when insulation resistance below Level 2 alarm threshold;
light off when above recovery threshold.

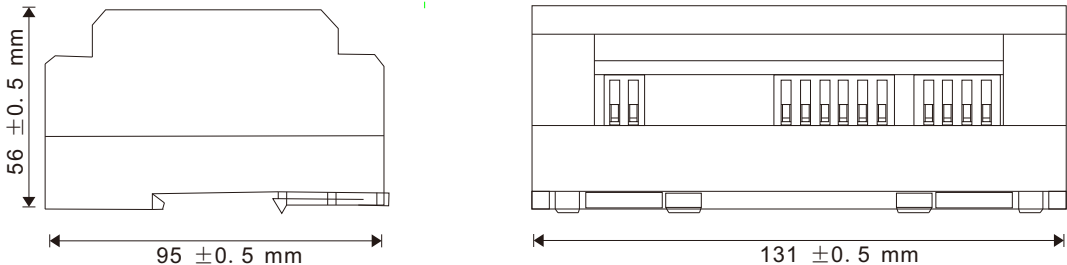


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PRODUCT DIMENSION MAP

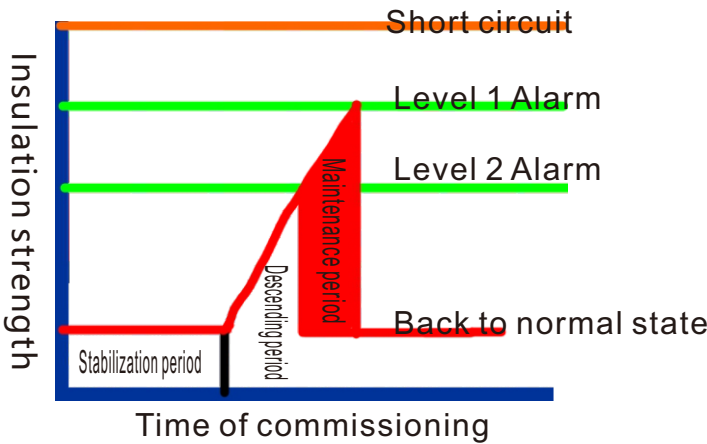


35 mm standard DIN rail mounting

WIRING DIAGRAM

Identifier	Interpretation	Remarks
PE		0-1500VDC or 0-1000VAC,50Hz/60Hz
H M1+		
H M1-		
+	Power	12-24V DC
—	Power	
A	RS 485-A	
B	RS 485-B	
A2	RS 485-A	Not standard not supplied by default.
B2	RS 485-B	
120Ω	Terminal resistance	Short to Terminal A or A2
K1	N/O	Alarm 1 LED(ALM)Light up
COM1		
K2	N/C	Fault alarm output of insulation monitor itself
COM2		

Insulation Degradation Curve



The insulation resistance gradually enters descending period after long-time operation, triggering Level 1 Alarm when reaching the threshold. After overhaul, the insulation value returns to normal.

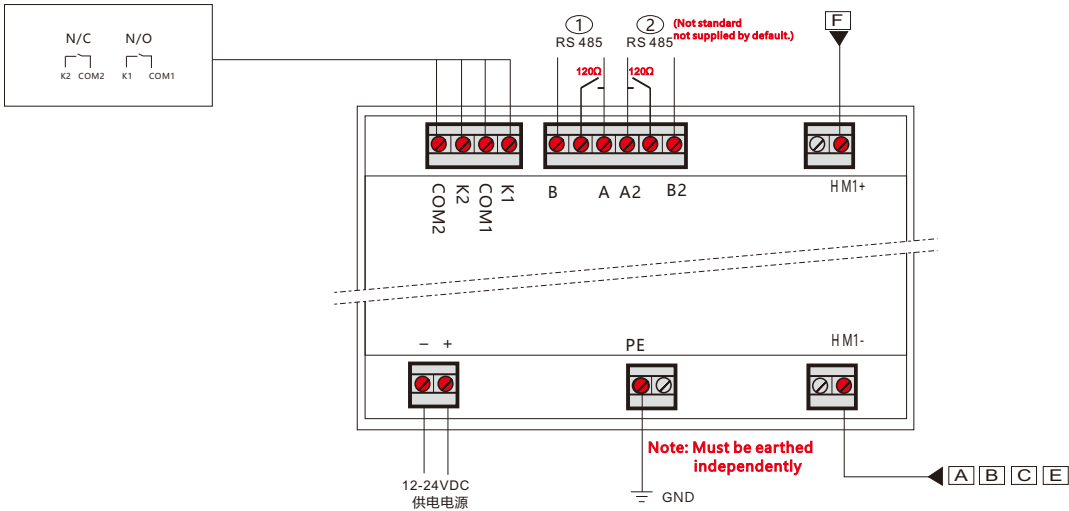
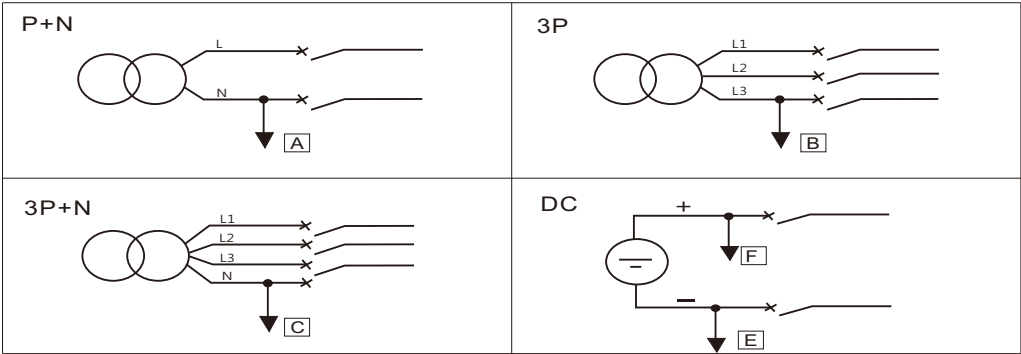


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Monitor electrical system



PortS	Wire Gauge	Stripping length	Tool Size	Screw torque
+/-A/B/K2/COM2/K1/COM1	0.2 - 2.5 mm2 (24 - 14 AWG)	7mm (0.28 in) ± 1 mm (0.040 in)	3 mm (1/8 in)	0.4Nm (3.54 in lb)
HM1+/HM1-/PE	0.82 - 2.5 mm2 (18 - 14 AWG)	7mm (0.28 in) ± 1 mm (0.040 in)	3 mm (1/8 in)	0.4Nm (3.54 in lb)

Note HM1+/HM1- Cables shall meet the system operating voltage requirements.

Tip

- ★ Only one insulation monitor can be installed in a single isolated circuit system; installing multiple units will interfere with measurement accuracy.
- ★ The product monitors insulation of the entire circuit. Changes in application environment may cause unpredictable interference.
- ★ Surge protective device is recommended to be installed on Hm1+, HM1- and PE terminals of the product.
- ★ Disconnect this device from the system when performing insulation withstand voltage test on supporting equipment.
- ★ The power supply of the product is equipped with short-circuit protection and reverse polarity protection.
- ★ Ensure good earthing of the on-site earth grid system. The PE terminal of the insulation monitor shall be separately earthed with qualified earthing. The insulation monitor is susceptible to damage if earthing is non-compliant.

