

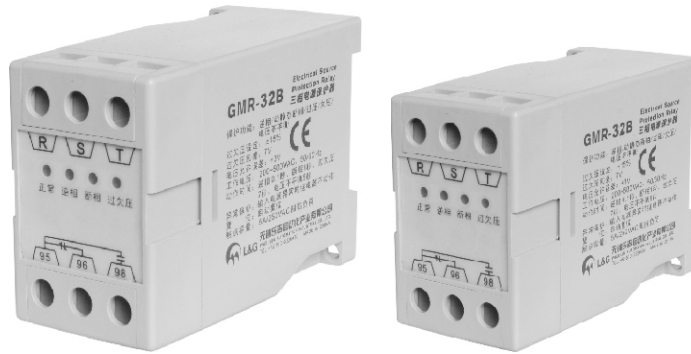
Technology Create Value

电子式电源保护器数据手册
Electronic Source Protection Relay Datasheet



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- | | |
|----------------|-----------------------------------|
| ● 密集型设计 | Compact design |
| ● 多保护功能 | Multiple protection function |
| ● 宽工作电压 | Wide operation voltage range |
| ● 动作分别指示 | Action indicated separately |
| ● 过欠压可调 | Over/under voltage are adjustable |
| ● CE标记和IEC安全标准 | CE certification and IEC standard |

产品介绍 Brief For Product

GMR-32B系列是采用单片集成设计而成的新型电源保护器，对在额定电压500V以下的电路中为三相电机或其他设备在开机前逆相或运行中出现动静断相、过压、欠压、三相电压不平衡的现象进行保护，其不受负载电流大小、负载性质、线路和电流不平衡的影响。产品具有过欠压保护精确，故障显示明确，故障判断准确、工作电压范围宽等特点。能够在极其恶劣的环境（如温度、湿度、电磁干扰）下长期稳定工作。

产品符合：IEC60947-1:2007//IEC60947-5-1:2003//IEC61000// Q/320217DCG01-2008标准

GMR-32B series is a new electrical source protection relay using micro-control electric circuit. Under 500V, it can protect the motor or other equipment when phase reverse happens before starting and dynamic/static phase loss, over/under-volt and phase imbalance happens during operating. The protecting function can't be affected by load current, load characteristics, circuit and asymmetry. The product has the features of protection precise, fault indication definite, fault judgment accurate and operating voltage scale wide etc. The product can long term stable work in the very bad environment (such as temperature, humidity, the electromagnetism disturbance).

The product measure up IEC60947-1:2007//IEC60947-5-1:2003//IEC61000// Q/320217DCG01-2008

特点 Features

- ※ 逆相/断相/过电压/欠电压/三相电压不平衡
- ※ Phase reverse//Phase loss//Over-volt// Under-volt//Phase imbalance
- 逆相保护：R、S、T相序错误时，逆相灯亮
- Phase reverse protection: Any one of R、S、T phases connection sequence is wrong, the phase reverse indicator light will be lighted.
- 动、静态断相保护：R、S、T任一相丢失，断相灯亮，并优先
- Dynamic/static phase loss protection: Any one phase occurs loss, the phase loss indicator light will be lighted. Be priority.
- 过欠压保护：高于或低于电压保护设定值，过欠压灯亮
- O/U voltage protection: The voltage is higher or lower than the setting value, the o/u voltage indicator light will be lighted.
- 三相电压不平衡：三相电压不平衡率 $\{(U_{max}-U_{min}) \div U_{ave}\} 100\%$ 大于10%，断相灯亮，并优先
- Phase imbalance protection: The deviation $\{(U_{max}-U_{min}) \div U_{ave}\} 100\%$ is over 10%, the phase loss indicator light will be lighted. Be priority.



保护功能 Protection

保护项目 Protection	类型 type	动作时间 Action time	动作条件 Action condition
逆相 Phase reverse		<0.5S	逆相Phase reverse
动静态断相 Dynamic/static phase loss		<1S	断相Phase loss
过欠压 Over/Under voltage	-	<7S	运行电压>设定电压 Operating volt is over setting volt
	T	<30S	运行电压>设定电压 Operating volt is over setting volt
电压不平衡 Phase imbalance		<5S	电压不平衡率大于10% Voltage deviation is over 10%
异常保护 Fail-safe		输入电源异常时继电器不动作 Input power fail, relay not act	

规格及技术指标 Specifications And Technical Data

额定电压	3 x 208, 3 x 460 V>(* 3-phase mains with earth)
过欠电压范围	-15% / +15%
工作电压	200-500V
工作电压频率	50 / 60 Hz ± 10%
电源电流波动范围	No
产品功耗	1.8 VA in
允许电源瞬时残失	10 ms
选择相与相基准电压值	208 - 220 - 380 - 400 - 415 - 440 - 460 V
最大测量的周期时间	150 ms/True GMR-32B measurement
相不平衡率范围	10 to 40% of fixed Un
重复误差	± 0.5%
测量电压波动带来的误差	< 2% across the whole range
测量温度波动带来的误差	< 0.2%/° C
极限恢复(相故障)	70%
动作延时	0.1 to 10 s (0, +10%)
测量误差	± 2%
复位时间	1500 ms
上电初始时间	<2000ms
报警后最大动作时间	< 200 ms
继电器输出	1 single pole changeover relay
触点最大负荷	250 VAC, 5A
电气寿命	1 x 10 ⁶
触点分断能力	2500 VA
最大工作能力	360 days operations/hour at full load
使用类别 IEC 60947-5-1	AC 12, AC 13, AC 14, AC 15, DC 12, DC 13, DC 14
机械寿命	30 x 10 ⁶
介电性能 IEC 60664-1/60255-5	外壳与线路间:4000V/60Hz/1min
	线路间:2500v/60Hz/1min
爬电距离标准值 IEC 60664-1/60255-5	Phase-Phase 500V 6mm
电气间隙标准值 IEC 60664-1/60255-5	Phase-Phase 500V 6mm
绝缘电阻 IEC 60664-1 / 60255-5	> 500 MΩ / 500 V
静电放电 IEC61000-4-2	空气中放电: 10kv, 端子放电: 8kv
电磁辐射干扰IEC61000-4-3	10V/M, 150MHZ和550MHZ, 便携式无线电发射机
电磁放电IEC61000-4-4	4kv, 1min
浪涌 IEC61000-4-5	150ms, 4KV(0°, 90°, 180°, 270°)
电快速脉冲IEC61000-4-12	±4KV, 100kHz
传导发射IEC55011	Class A
正常电源指示灯	Green LED
故障指示灯	Phase reverse red LED phase loss red LED over- under volt yellow LED
按装方式	On 35 mm symmetrical DIN rail, IEC/EN 60715
按装位置	任意位置
工作温度 IEC60068-2	-30~+65°C
湿度IEC60068-2-30	2x24hr cycle 95%RH max.without condensation55°C
防护等级 IEC60529	Terminal block:IP20 Casing:IP30
最大扭矩 IEC60947-1	0.6Nm-1/5.3-8.8 Lbf.In
标志	CE(LVD)73/23/EEC-EMC89/336/EEC
产品标准	NF EN60255-6/CEI60255-6/IEC60947-2007
产品重量	120g
认证	CE
符合环境要求	1.ROHS 2. NO



选型表-1 Multiple protection-1

Protection	GMR-32	GMR-32B1A	GMR-32B1B	GMR-32B1	GMR-32B1C	GMR-32B1D	GMR-32B1F	GMR-32B1E	GMR-32B1G	GMR-32B
Phase reverse	●	●	●	●	●	●	●	●	●	●
Phase loss	●	●	●	●	●	●	●	●	●	●
Asymmetry	●	●	●	●	●	●	●	●	●	●
Over voltage		●	●	●	●	●	●	●	●	●
Under voltage		●	●	●	●	●	●	●	●	●
Asymmetry fixed (20%)		●	●	●	●	●	●	●	●	●
Asymmetry adjustable (5-15%)										
Over-under volt setting +/-10%		●		●	●	●	●	●	●	
Over-under volt setting +/-12%										
Over-under volt setting +/-15%			●							●
Phase-phase nominal voltage Un 220V		●	●							
Phase-phase nominal voltage Un 380V				●						●
Phase-phase nominal voltage Un 400V					●					
Phase-phase nominal voltage Un 415V						●				
Phase-phase nominal voltage Un 440V							●			
Phase-phase nominal voltage Un 460V								●		
Phase-phase nominal voltage Un 200V									●	

Multiple protection-2

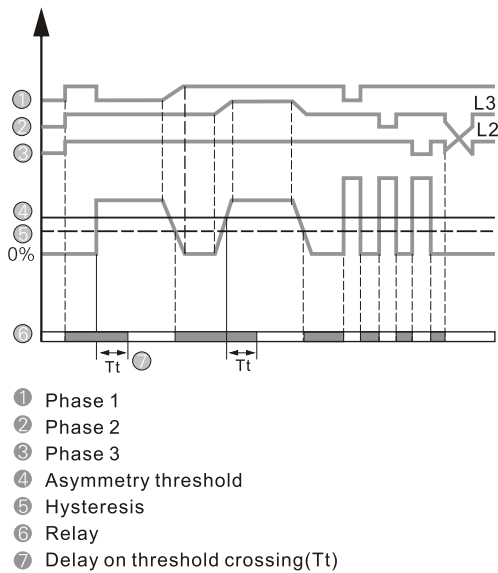
Protection	GMR-32B3	GMR-32BC	GMR-32BD	GMR-32BF	GMR-32BE	GMR-32BG				
Phase reverse	●	●	●	●	●	●				
Phase loss	●	●	●	●	●	●				
Asymmetry	●	●	●	●	●	●				
Over voltage	●	●	●	●	●	●				
Under voltage	●	●	●	●	●	●				
Asymmetry fixed (20%)	●	●	●	●	●	●				
Asymmetry adjustable (5-15%)										
Over-under volt setting +/-10%										
Over-under volt setting +/-12%	●									
Over-under volt setting +/-15%		●	●	●	●	●				
Phase-phase nominal voltage Un 220V										
Phase-phase nominal voltage Un 380V	●									
Phase-phase nominal voltage Un 400V		●								
Phase-phase nominal voltage Un 415V			●							
Phase-phase nominal voltage Un 440V				●						
Phase-phase nominal voltage Un 460V					●					
Phase-phase nominal voltage Un 200V						●				

Overview

- 3-phase network control relays monitor:
- The correct sequence of phases L1, L2, L3
 - Total phase loss
 - Undervoltage and overvoltage from 10 to 15 % of Un
 - Asymmetry rate from 5 to 15% of Un
 - LEDs are used for fault signalling.

If a fault persists for longer than the threshold crossing delay configured by the user, the output relay opens and the LED is extinguished.

SMR-series automatic defrost logic diagram



- ① Phase 1
- ② Phase 2
- ③ Phase 3
- ④ Asymmetry threshold
- ⑤ Hysteresis
- ⑥ Relay
- ⑦ Delay on threshold crossing(Tt)

Operating principle

SMR: Phase controller with voltage regeneration +Asymmetry + Under/Overvoltage Voltage selector switch:

Set the selector switch to the 3-phase network voltage Un.

The position of this selector switch is only taken into account when the unit is powered up. If the switch position changes while the unit is operating, all the LEDs flash but the product continues to work normally with the voltage selected on energisation prior to the change of position.

The LEDs return to their normal state if the switch is reset to its initial position defined before the last energisation.

The relay monitors its own supply voltage.

The relay controls:

- correct sequencing of the three phases
 - failure of one of the three phases (U measured < 0.7 x Un).
 - asymmetry, adjustable from 5 to 15% of Un,
 - and the under and over voltage drift adjustable from 10 to 15% of Un (-7 to -12% across the 3 x 208 V range, -2 to -17% across the 3 x 220 V range due to the minimum voltage 183 V; +2 to +10 % across the 3 x 480 V range due to the maximum voltage 528 V).
- In the event of a phase sequence or failure fault, the relay opens instantaneously.

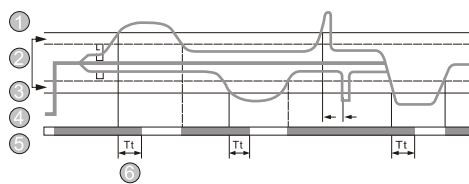
In the event of an asymmetry or voltage fault, the relay opens at the end of the time delay set by the user.

When the unit is powered up with a measured fault, the relay stays open.

Asymmetry is defined as follows: $(V_{rms\ max.} - V_{rms\ min.}) / V_{rms\ mains}$.

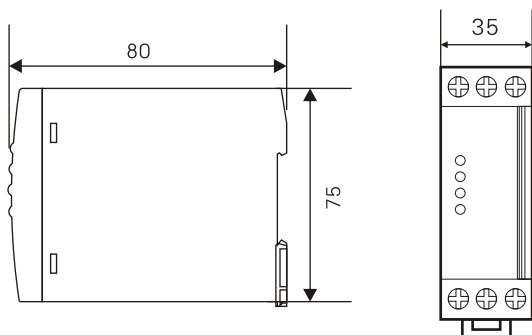
Vrms mains corresponds to the voltage selected by the switch on the front face.

SMR- Under and overvoltage in window mode

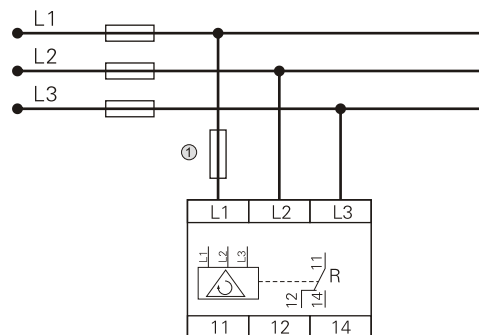


- ① Overvoltage
- ② Hysteresis
- ③ Undervoltage
- ④ Phases L1, L2, L3
- ⑤ Relay
- ⑥ Delay on threshold crossing crt

Dimensions(mm)



Connections



① 100 mA fast-blow fuse