



Reyrolle
Protection
Devices

7PG222 - GF

Surgeproof intertrip receive relays

Answers for energy

SIEMENS

7PG222 – GF

Surgeproof intertrip receive relays



Description

Type GF relays are designed to meet the demand for a simple surge-proof intertrip receive relay.

Experience has shown that although longitudinal voltages can be of the order of 5kV, transverse voltages across the pilot cores are of much lower magnitude. It follows that although it is necessary to have a high insulation level to earth.

It may not always be necessary to employ a relay with full surgeproof capability such as the type BD. Type GF relays are designed to cater for less onerous conditions.

GF relays comprise an attached armature element delayed on pick-up and with non-linear shunt resistor and a series resistor. They are surge proof up to 500V rms 50Hz (steady state or switched).

GF relays are rated for 60V d.c., when required to operate at higher supply voltages an external dropper resistor is supplied,

Application

Under fault conditions an interconnected power system may feed fault-current from more than one source, and in order to isolate the fault it becomes necessary to initiate the tripping of remote circuit breakers.

The above requirement is particularly important when protecting feeder-transformers connected to the system without circuit breakers. In the event of a transformer fault, tripping of the local low voltage circuit breaker will not remove the fault from the system and it becomes essential to trip the remote high voltage circuit breaker. Intertripping can use various information links however, type GF relays are for use with pilot wires.

Complete reliability of the intertrip signal in the presence of interference is of the utmost importance particularly during internal fault conditions when this interference may be severe. Simple systems using d.c. relays may be adequate for pilot wire lengths of up to 2km, however it should be noted that receive relays must not be unduly sensitive to the capacitive energy stored in the pilot wires. A d.c. relay system may also be used for longer lengths of pilot wire provided that precautions are taken to avoid spurious operation due to either induced voltage or to differences in earth potential at the send and receive ends.

The effects of induced voltage are most significant under earth fault conditions when both transverse and longitudinal voltages appear across the conductors of the pilot cable when fault current returns through the earth path and the earth wire. The degree of induction depends upon earth resistivity, the disposition of auxiliary conductors relative to primary conductors, the presence of the earth wire and the screening effects present in both primary and auxiliary conductors.

	GF2	GF3
Insulation level:		
coil to contacts	15kV	5kV
coil to frame	15kV	5kV
contacts to frame	2kV	5kV
Contact arrangement		
3 NO	Yes	Yes
2 NO + 1 NC	Yes	Yes
Flag	No	Yes

Technical information

Ratings;

60V d.c. or 125V d.c. or 220V d.c.
(125V and 220V with external dropper resistor)

Burden (Watts)

60V rating 8W 125V rating 14.6W. 220V rating 29W.

Operation (60V rating)

Pick-up (min) 37%
Drop-off (max) 7%

Timing (60V rating)

Operating 60V (100%) 45mS
Operate 48V (80%) 50mS
Drop-off 60mS approximately

Surge Proof Up to 500V

INSULATION (a.c. volts r.m.s.)

Coil Circuit to contacts:

15kV (GF2) and 5kV (GF3)

Coil circuits to frame:

15kV (GF2) and 5kV (GF3)

Contacts to frame:

2kV (GF2) and 5kV (GF3)

Indication

Type GF3 is fitted with a hand reset flag.

Contact Arrangement

GF2 - 3 normally open or 2 normally open and 1 normally closed self reset.

GF3 - 3 normally open or 2 normally open and 1 normally closed self reset.

Contact Rating

Making and carrying a maximum of 1500V A a.c. or 1500W d.c. within the undermentioned limits:

Voltage: 660V

Current: 3A continuously, 8A for 3 seconds or 16A for 1 second.

Breaking: 300VA a.c. or 75W d.c. (Inductive) within the limits of 250V and 5A.

Case Dimensions

GF2 Size 1V Vedette flush mounting.

GF3 Size 2/3V or 1V Vedette flush or surface mounting, or E2 Epsilon case.

External dropper resistors
These are supplied for back of panel mounting.

For GF2 relays resistors are in a box 165mm wide x 397mm high x 152mm projection, insulated to a level of 15kV.

For GF3 relays two resistors are supplied each 43mm wide x 136mm high x 105mm projecting. These should be mounted sufficiently clear of all other equipment so as to maintain a 5kV insulation level.

Ordering Information - 7PG22 – GF

Product description	Variants	Order No.
GF Intertrip receive relay.	<p><u>Relay type</u> GF - Intertrip receive</p> <p><u>Model type</u> GF2 - Intertrip receive GF3 - Intertrip receive</p> <p><u>Type of flag</u> No flag Hand reset flag</p> <p><u>Contact arrangement – NO</u> 2 NO 3 NO</p> <p><u>Contact arrangement NC</u> 0 NC 1 NC</p> <p><u>Number of contacts</u> Three</p> <p><u>Contact type</u> NO (Standard) / NC (Standard)</p> <p><u>Insulation level</u> 5kV 15kV</p> <p><u>Housing size</u> Case size E2 (4U high) Case size C1 Vedette</p> <p><u>Rating</u> 60V DC 125V DC ¹⁾ 240V DC ¹⁾</p>	<p>7 P G 2 2 □ □ - □ □ □ □ □ - □ □ □ 0</p> <p>↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑</p> <p>2 2 0 2 U 3 1 1 1 A 0 1 C B D A A B 3 0 1 2 A U D E F</p>

¹⁾ Relay rated at 60V dc, for higher ratings external resistors are required
 GF2 - 125V dc, includes resistor box assembly VCE:2750H30010; 240V dc, includes resistor box assembly VCE:2750H30020
 GF3 - 125V dc, includes two resistors VCE:2101H10102; 240V dc, includes two resistors VCE:2101H10252, also includes perspex cover VCE:410A23995 (1 per resistor)

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