MULTI FUNCTION GROUND FAULT RELAY [GFR]-5C,10C

DGF-M10

Features

1. Multi-ground fault relay(GFR) is multi-functional and is able to detect multiple ground faults of monitoring circuit and is displayed leakage in the circuit and fault current when earthing.
2. It is installed 8 bit MCU with A/D conventer and is configured to perform advanced functions for high relability.
3. It is a collective device that is intergrated many ground fault detector of conventional single unit.
4. It is capable to detect from minor grounding fault current(0.1A) to medium level fault current (10A)
5. It is configured to have operating time taps for adjustment of time setting is easy for protection coordination of distribution circuit
6. As wide display and indicators, it is able to enhance checking up and performance.
7. Watch dog function assures error - free operation.
8. The memory stores the last record of ground fault current of each circuit to facilitate following up in the event of accidents.
9. The ABS casing newly adopted offers improved durability and extended life of product.
10. All GFRs are tested EMC to ensures and high frequency & surge do not interfere design performance of GFR.

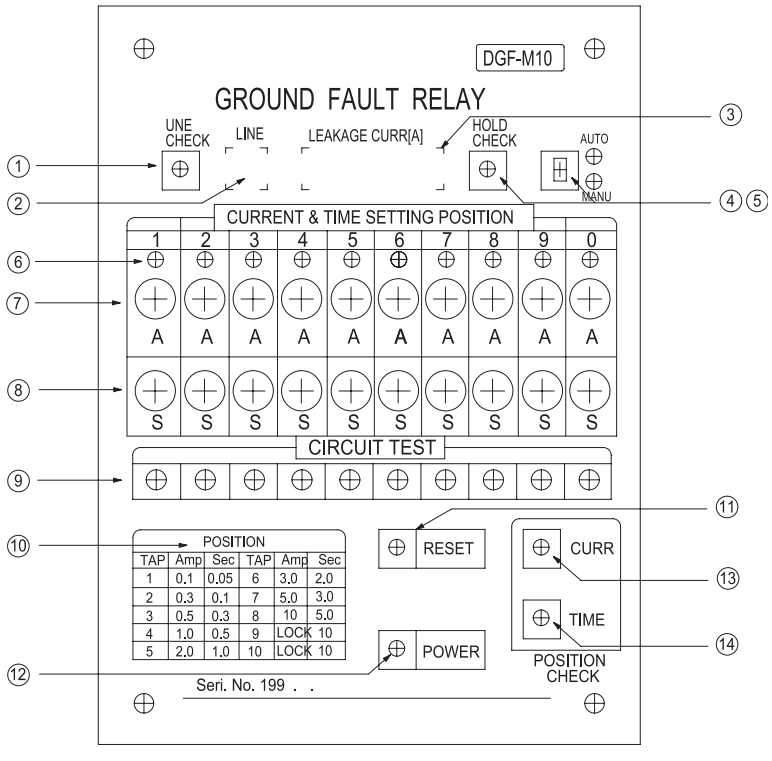
Rating & Specification

Items	DGF-M10(For 10 Circuits)	DGF-M05(For 5 Circuits)
Usage	for protection against minor and major ground Leakage faults	
Control Power Voltage	AC 110/220V Operrable in Common or AC 240V	
Frequency	50/60㎐ Operable in common	
Operating current setting	9steps, of 0.1, 0.3, 0.5, 1, 2, 3, 5, 10 and Lock T:70% to 100% of current setting	
Operating Time setting	9steps, of 0.05, 0.1, 0.3, 0.5, 1, 2, 3, 5, 10sec T:±10% for 0.05 T=0.1±25㎳	
Ground Fault Detection Circuit	10Circuits	5Circuits
Operating status Indicator	LED (Red) and Digtal Display one for each Circuit	
Resetting	Auto/Manual	
Ambient Temperature	-10℃~+50℃	
Vibration Resistance	Energized:Full vibration width 4㎜, 1000rpm, 10min Deenergized:Full vibration width 4㎜, 1000rpm, 10min	
Impact Resistance	Impact strength of 300㎳ applied to 3 axial directions of right & left. up & down, and behind & forward	
Common frequency dielecric resistance	Opn Cirr-Casing : AC 2000V Opn Cir-OOpn Cir : AC 2000V Test Cir-Terminals : AC 1000V	60㎐, 1min
Insulating Resistance	Opn cir-Casing 10㏁ or more Pon cir-Opn Cir : 10㏁ or more Test Cir-Terminals : 10㏁ or more	by DC 500V megger
Power Consumption	7VA	5VA
Contact Capacity	AC 125V 5A/DC 30V 5A	
Weight	2.0㎏	1.7㎏
ZCT(input)	ZCT Rating 200㎃/100㎷ (ZR, ZS, ZB type)	

GFR

Model	DGF-M05T	DGF-M10T	DGF-M05	DGF-M10
DRB-005, 010	Combination		None(Direct)	
Contact	1a		1a & (5C or 10C)	
Contact Capacity	ARB(Contact)AC 250V/10A		AC 250V/10A	
Purpose	Trip(MCCB) or Alarm		Trip(MCCB) & Alarm	

Front plate



1. Line check button
2. Monitored circuit indicator(Digital)
3. Earth leakage level indicator
4. Hold check
5. Auto/check
6. Ground fault indicator for each circuit
7. Ground fault sensing current setting switch
8. Operating time setting switch
9. Self-test button for each circuit
10. Sensing current and operating time
11. Reset button
12. Power lamp
13. Sensing current setting check button
14. Operating time setting check button

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Performance Features

1. Multi-ground fault relay monitors a number of circuits collectively and carries built-in functional arrangement for ground leakage level indication and fault current level indication.

2. It performs monitoring of all circuits consequently by the command of MCU.

3. In case a ground fault current developed, it induces a voltage in ZCT which is fed to ground fault current detection circuit as an input.

4. After Input signal(voltage) is amplified, and then it is supplied to CPU for processing.

5. CPU converts input by A/D converter for comparison to set value of sensing current. And, if it is found more exceeding the setting value, it is performed as followings.
   1) Turns on ground fault indicator lamp upon the elapse of setting interval of operating time.
   2) Activates GFR or the circuit.
   3) Indicates level of ground fault current on ground fault current indicator in numeral value.

   ※Note : If Auto/Manual switch is set to Auto position the warning lamp(Red LED) turns on, and the fault is repaired, all operating indication of the circuit will disappear automatically.

6. Identification of indications : When leakages occur in plural number of circuits on sometime, ground fault indicator lamps for applicable circuits will light up at once. But ground fault circuit number indicator and ground fault current level indicator will display the value of first circuit detected. The values of other fault circuits can be checked by pressing circuit test button of respective circuit. If it is the auto reset mode, fault current has been cleared. Such fault current can be read out from the memory by pressing hold check button.

7. Reset If Auto/Manual switch is set to manual position after the ground fault is repaired, press reset button to initialize the performance or else fault indication will be kept on.

Outline Information

1. Line Check Button
   When the switen is pressed, one by one time monitored circuit number is changed to next circuit number and ground fault current level of the circuit is displayed.
2. Monitored Circuit Indicator(Digital)
   It indicates monitored circuit number in numberals.
3. Earth Leakage Level Indicator
   The level of earth leakage or fault current is displayed.
4. Hold Check Switch(Stored memory of fault current level)
   Pressing hold check switch, earth leakage level indicator is displayed fault current of each circuit.
5. Auto./Manual Switch
   If the switch is set to auto position, warning lamp(Red LED) turns on to warn the status of the switch setting.
6. Ground Fault Indicator Lamp
   The lamp of leaking circuit turns on when self-test button of the same leaking circuit is pressed.
7. Ground Fault Sensing Current Setting Switch
   Select suitable step of sensing current between 0.1 and 10A rating as being reqired by characteristics of a line.
   ※Note : The relay does not operate in case of lock position
8. Operating Time Setting Switch
   The switch is used to set required interval of operating time from 0.05 to 10 seconds.
9. Self-Test Button
   If the button of a circuit is pressed, the status of circuit is simulated to real ground fault and ground fault indicator lamp turns on to alarm fault status.
10. Sensing Current and Operating Time Reference Table
    It is a table of current and time values that can be quoted for current and time setting as the reference.
11. Reset Button
    The button, if pressed, is intialized entire relay function.
12. Power Lamp(Green LED)
    It turns on when the power of AC110/220V(or AC 240V)is regularly supplied.
13. Sensing Current Setting Check Button
    The button is used to display ground fault sensing current setting for checking purpose.
14. Operating Time Setting Check Button
    The button is used to display operating time setting of circuit for checking purpose.

Checking Items Before Installation

Check up following points befor installation in order to ensure satisfactory performance of GFR.

1. Connect AC220V power lines to terminals Po and P1 of GFR.
   ※Note : Operating power is set to AC 220V at factory when delivered.
   If AC 110V is used, slide the power voltage selector switch to AC 110V position.
2. When the power os connected, power lamp(Green LED) turns on to indicate power suppy.
3. Check up digital displays by pressing circuit test switch.
   The circuit number on display changes by advancing one circuit at each of pressing the button and ground fault current level indicator will remain displaying 999 all the while of testing.
   After an elapse of about 25 seconds or so without pressing test button further, the indication will disappear automatically.
4. Check up operating time settings of each circuit by pressing operating time check switch.
5. Check up fault sensing current setting by pressing ground fault sensing setting switch.
6. Check up internal circuits by pressing self– test button of each circuit.
   If the button is pressed of a circuit, relay of the circuit and ground fault indicator lamp(RED LED) and circuit indicator relay activate to show status of circuits.(The value of digital display represent assumed state of grounding fault).
7. Carry out the test of item 6 after auto/manual switch is set mannual position.
8. Return to the initial status by pressing the reset switch after finishing the above test.

Checking Items for Installation

1. Fabricate relay mounting panel of a suitable size and fix it on which GFR be installed. Then install ZCT on the circuits being monitored.
   ① Install ZCT of adequatable for the load (For selection of ZCT specification and current rating. use ZCT manufactured by us for ELD.)
   ② Ensuring GFR is in stalled at 10cm or more distance where there are large current bus and strong magnet field.
   ③ Install GFR on load circuit of single phase and three phase power without exception.
   ④ check confinuity between GFR and ZCT by pressing self–test button of each circuit line. The receiver is in nomal status if ground fault current level indicator shows a value in numerals Below of 18 if the connection of GFR and ZCT is correctly made, and a value of 18 if they are disconnected.
2. Connections to terminals on the back of GFR.(Refer to external wiring diagram)
   ① One of two ZCT terminals(no ploarities) Shal be connected to relay terminal of each circuit ①, ②, ③, ④, ⑤, ⑥, ⑦, ⑧, ⑨ and ⑩ and the other terminal to common terminal ⓩ of GFR.
   ② With GFR, terminals ⓐ through ⓙ are 'a' contacts for external relays, and terminal COM is 'contact' for external relays.
   The terminals could be used for control of circuit breakers, external alarm buzzer, and leakage fault in dication on central control board.
   ③ Terminals Ta and Tc are provided to use the contacts for external indicators(buzzer, lamp).
   ④ Terminal (E) is for grounding which is connedted to the ground terminal of distribution board. (Refer to external wiring diagram for connections).
   ⑤ The control power of relay should be connected an independent sonrce which is not distributed from main source.

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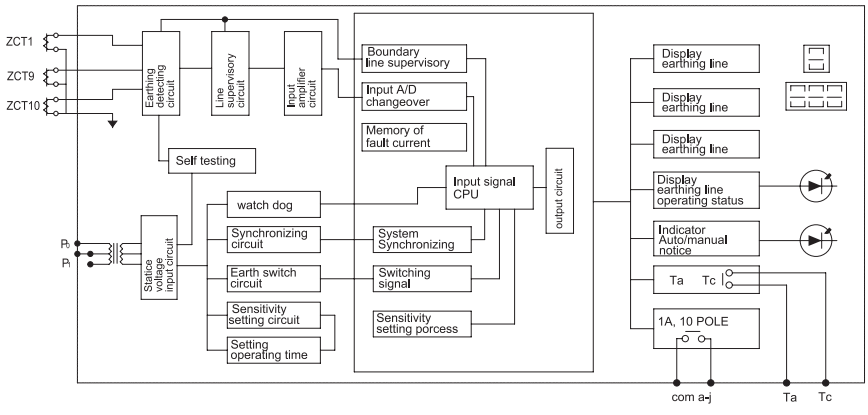
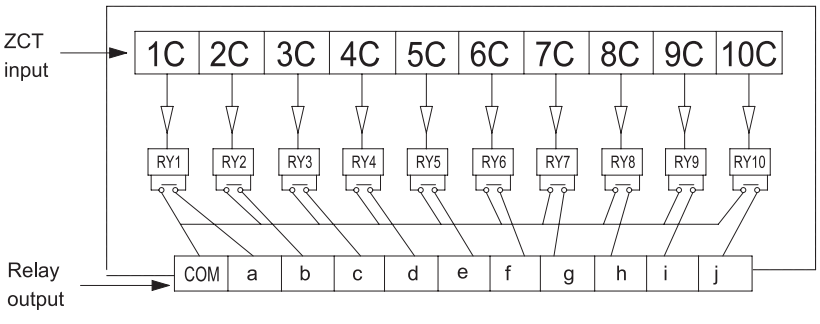
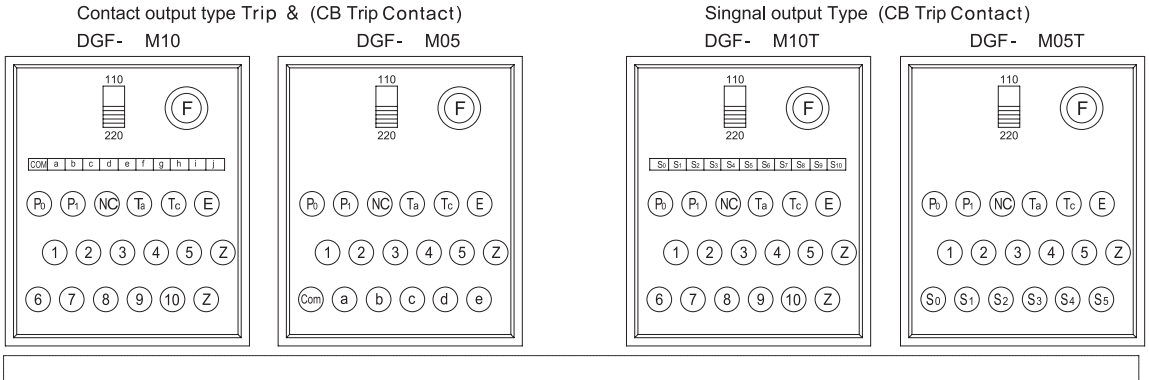
Internal block diagram



External contacts wiring diagram(Trip contacts)



External terminal arrangement



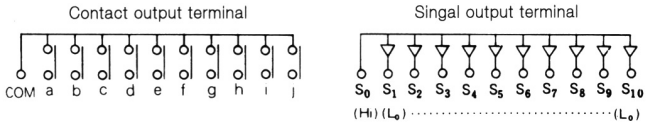
AUX RELAY BOARD[ISOLATION]-5C,10C

Features

Aux relay board is a power relay which controls output power according to the input signals of industrial uses, and consists of set type relays controlling MCCB or MC coils.

- Ensure to use Aux Relays (DRB-010. 005) when DGF-M10, M05 are used to drive MCCB and trip rather than the using them as central control board lamp indication.
- It is insulated completely between and among input, output, and power lines.
- Single board is capable to control 5or 10 circuits
- Formerly exposed aux relays are now internally located in order to prevent mal-functioning caused by moisture hazardous to insulation.

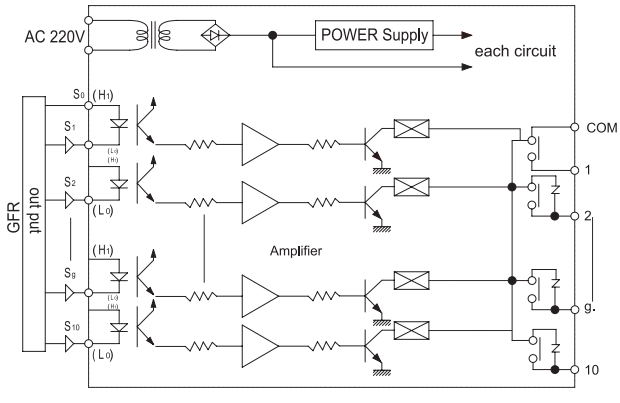
GFR output



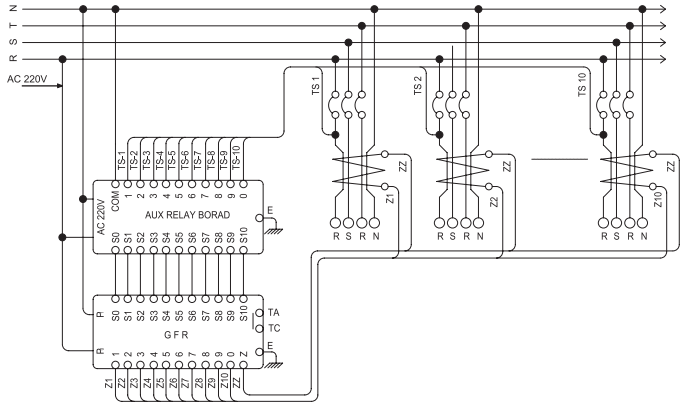
Rated Specification

MODEL	DRB-010(10C), DRB-005(5C)
Rated Voltage	AC 110V/220V
Rated Frequency	50/60Hz
Relay Contact Rating	AC 250V, 10A

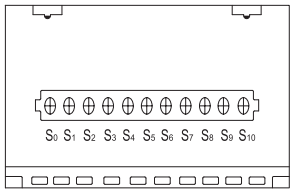
Inetrnal block diagram



External wiring diagram

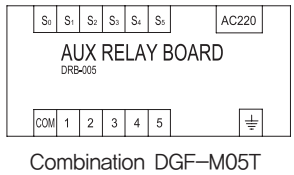


Terminal arrangement



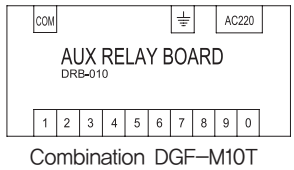
* S0 (+) Commom 입력
  S1 ~ S10(-) DC5V 입력

•5C



Combination DGF-M05T

•10C



Combination DGF-M10T

External dimension