GE
Grid Solutions



CDG 11

Overcurrent and Earthfault Relay

A non-directional heavily damped induc-tion disc relay which has an adjustable inverse time/current characteristic with a definite minimum time. The relay has a high torque movement combined with low burden and low overshoot. The relay disc is so shaped that as it rotates the driving torque increases and offsets the changing restraining torque of the control spring. This feature combined with the high torque of the relay ensures good contact pressure even at currents near pick-up. Damping of the disc movement is by removable high retentively permanent magnet

The unique method of winding the oper-ating coil ensures that the time / current characteristics are identical on each of the seven current taps. Selection of the re-quired current setting is by means of a plug setting bridge which has a single insulated plug. The maximum current tap is auto-matically connected when the plug is with-drawn from the bridge, allowing the set-ting to be changed under load without risk of open circuiting the current transformers.

The IDMT relay has an auxiliary unit which is powered by a secondary winding on the electromagnet through a rectifier and as such a separate auxiliary supply is not re-quired. The disc unit operates and closes its contacts, the auxiliary element connected across the secondary winding on the elec-tromagnet operates, one normally open contact of the auxiliary element reinforces the disc contact. Two other contacts of the auxiliary element are brought out to the terminals of the relay (Refer Figure 4)

The relay operating time can be adjusted by movement of the disc backstop which is controlled by rotating a knurled moulded disc at the base of the graduated time mul-tiplier scale.

A high-set instantaneous overcurrent / earth fault unit, type CAG 17 can be fitted in the same case to provide instantaneous protection under maximum short circuit conditions and to improve discrimination on time graded protective systems.

For full details of the high-set instantaneous unit refer to relevant publications.
Type CDG 21 relay is a single pole type CDG 11 relay with a high-set instantane-ous unit. Type CDG 31 is a triple pole ver-sion of the type CDG 11 with three over-current units or two overcurrent units and one earthfault unit in the centre. Type CDG 61 relay is triple pole version ot type CDG 21 relay.

Application

Selective phase and earthfault protection, in time graded systems for AC machines, transformers, feeders, etc.

Customer Benefits

- Ideal for IDMT O/C & E/F with or without high set application for feeders and Transformers
- Draw out type case-easy for maintenance
- Self powered no separate auxiliary supply required
- Operation annunciation in the form of flag
- Low transient over reach for high set instantaneous unit
- Environmental friendly Electro phoratic painting process
- Completely dust proof with IP5X protection class

Features

- Identical time / current characteristics on all taps
- Self-powered, no necessity for separate auxiliary supply
- High torque, ensuring consistent timing even under adverse conditions
- Very low overshoot
- Simple construction, easily accessible
- Comprehensive range of high – set unit ratings
- Dust-proof draw out case and tropicalised finish

Imagination at work

Technical Data

Current Rating

1 A or 5 A

Settings

- 50-200% in seven equal steps of 25%
- 20-80% in seven equal steps of 10%'
- 10-40% in seven equal steps of 5%
- Other setting ranges available on request.

Starting Current

103-105% of current setting

Starting Current

Not more than 130% of current setting.

Instantaneous Highest Settings

E/F :100-800%
O/C :250- 200%

Time Settings

Operating Time

0-3 Seconds or 0-1.3 seconds at 10 times
Current Setting
Resetting time
Resetting time

with time multiplier at 1.0

4 seconds for 1.3 seconds relay
9 seconds for 3 seconds relay.

Overshoot

Overshoot time on removal of 20 times setting currents.
• Less than 0.065 seconds for 1.3 seconds relay
• Less than 0.04 seconds for 3 seconds relay.

Thermal Rating

Maximum continuous current rating for 60°C coil temperature.

Operating Coil tap	1	2	3	4	5	6	7
Time current setting	4.5	3.7	3.2	2.7	2.6	2.4	2.2

Withstand 20 times maximum setting current for 3 seconds

Accuracy

Error class index
E 7.5 as per BS 142-1966
7.5 as per IS 3231-1965
equency radiations. Time grading unaffected by such small error, since all relays are
Frequency Error
Timing error less than 8% for 2 Hz frequency radiations. Time grading unaffected by such small error, since all relays are similary affected.

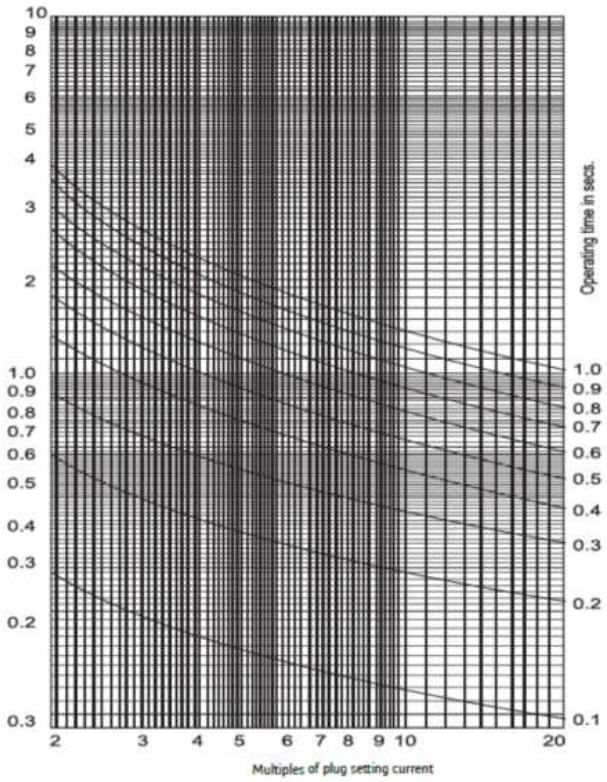


Figure 1:Time - Current Characteristic Inverse time relay CDG11 1.3 Sec.



CDG 11 drawn out from the case

Temperature Error

For 10 times setting current, at ambient temperature between +45 °C and – 5°C, percentage timing errors are as follow :
• 3 seconds relay – 3% and +4%
• 1.3 seconds relay : - 4% and +4%

Auxillary Units and Operation Indicators

Self powered auxillary unit will have following contact combinations :
1. S/R – 2 N/O Or
2. H/R – 2 N/O + 2 N/C

Contact Ratings Auxiliary Unit Contact

Make and carry for 0.5 second 7500 VA with maxima of 30 amps / 660 volts ac / dc.

Insulation

The relay meets the requirements of IS 3231 – 1965 / ICE 265-6 series C 2 kV for 1 minute.

External and Internal Circuit Connections

See Figure 4

Burdens

3 VA nominal
2 VA on the lowest tap
3.5 VA on high-set tap
Typical impedance / current curves given in Figure 3

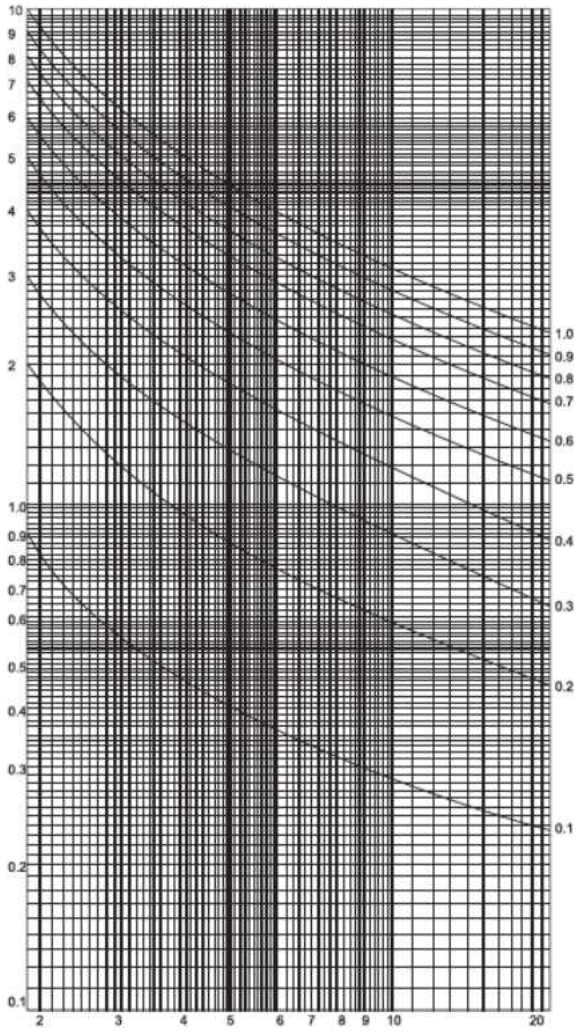


Figure 2:Time - Current Characteristic Inverse time relay CDG11 3 Sec

Relay	Case size	Maximum overall dimensions			Approximate gross weight kg
		Height in mm	Width in mm	Depth in mm	
CDG 11/21	1 D Vert.	233	170	203	6.0
CDG 31/61	3D Horz.	233	454	203	15.5
	3D Vert.	524	170	203	15.0

* Add 76 mm for maximum length of termanal studs, alternatively, 29 mm for terminal screws
The approximate gross weights given above are inclusive of cartons, mounting appendages and terminal delails.
The relays comply fully with the requirements of IS 3231 – 1965 and are suitable for use in normal tropical environments

Case and Finish

1D vertical of 3D vertical, horizontal case suitable for flush or projection mounting and finished eggshell black and tropicalised. Suitable trip isolating switch and CT shorting switches provided on the cradle assembly / case.

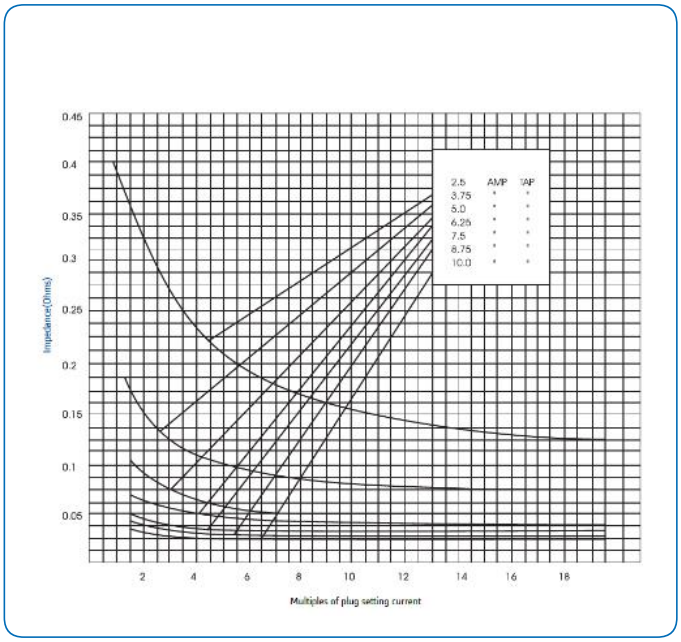


Figure 3:Impedance/Current Curves for type CDG relays 2.5-10 AMP 3 VA 50 Cycle Multi-stand Coil.154

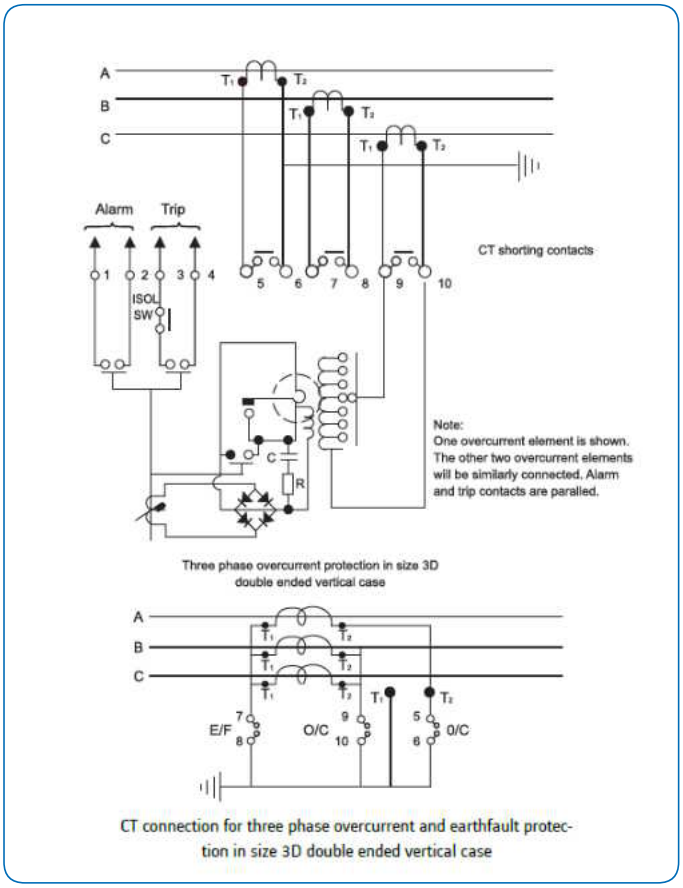


Figure 4: Typical external and internal connections for type CDG 31 Relay

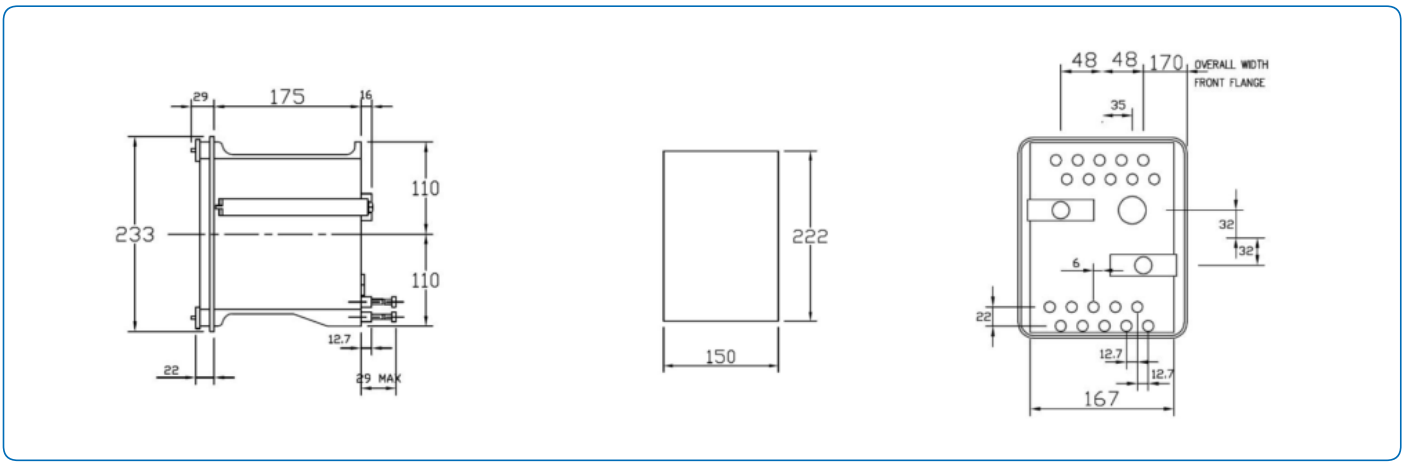


Figure 5 : Case and panel cut-out dimensions for case 1D (all dimensions in mm)

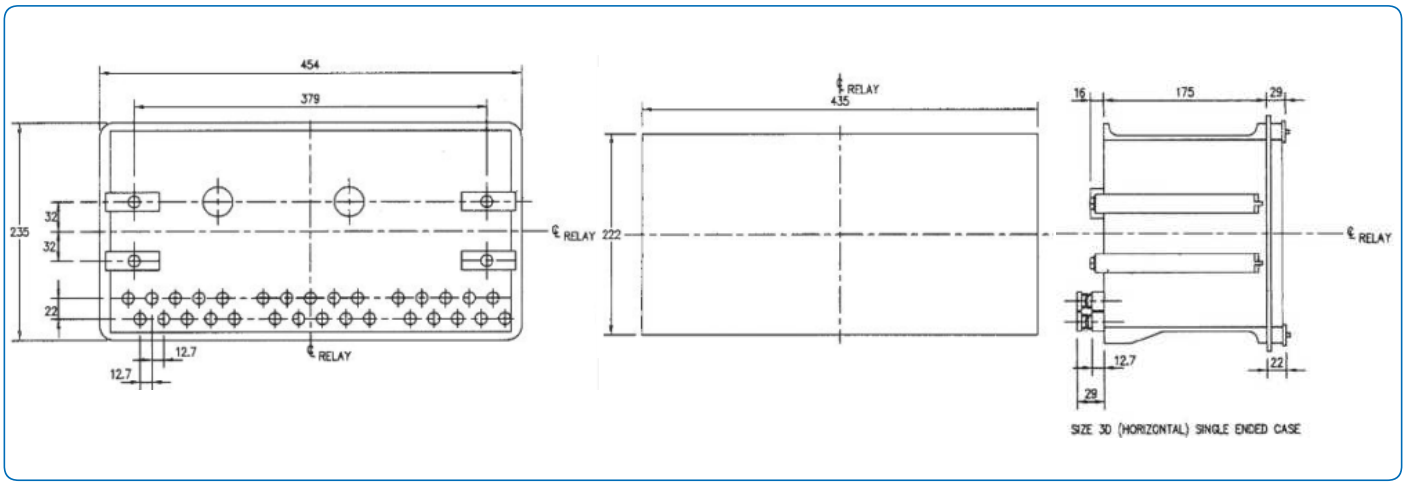


Figure 6 : Case and panel cut-out dimensions for case 3D hor drawout (all dimensions in mm)

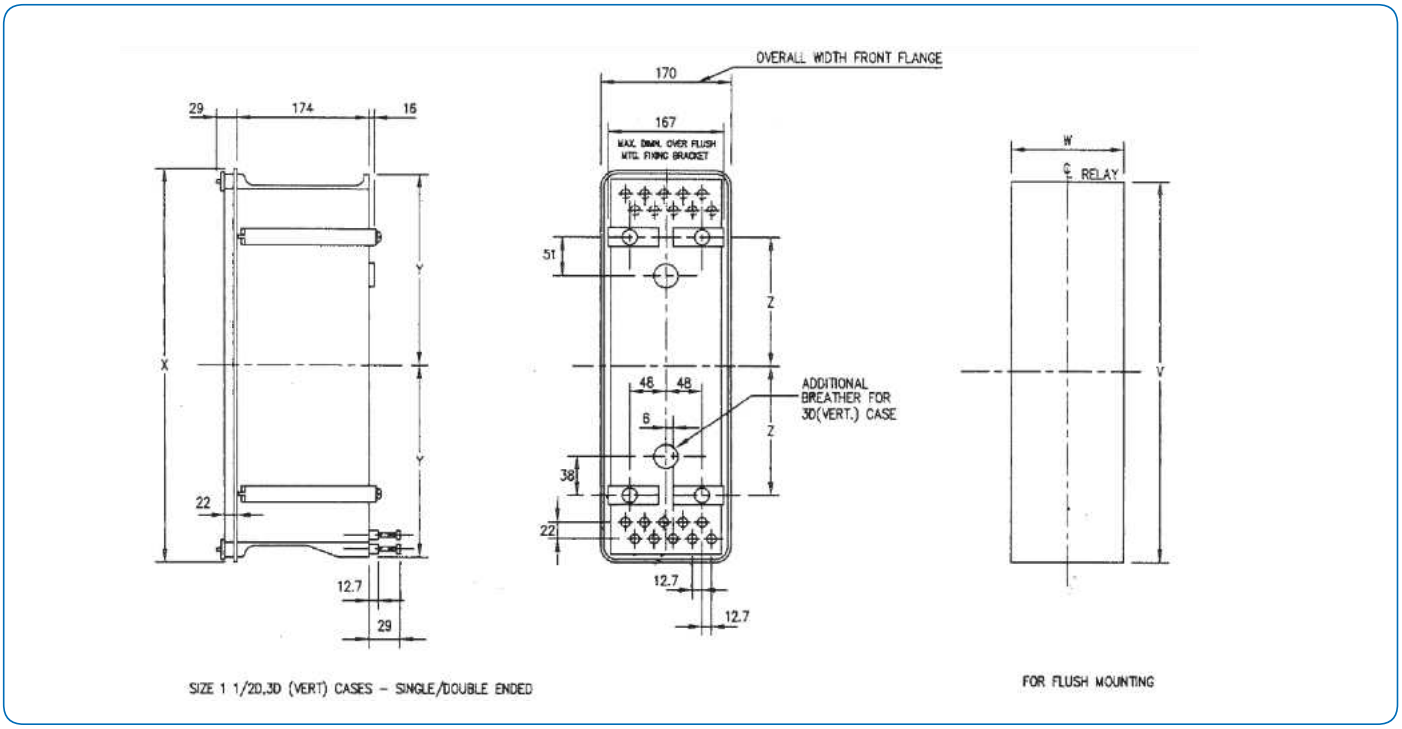


Figure 7 : Case and panel cut-out dimensions for case 3D vert drawout (all dimensions in mm)

Information Required With Order

1. Type of relay (CDG 11, 21, 31 or 61) and system frequency.
2. Current transformer secondary rating.
3. Current setting range.
4. Characteristic (0.3.0 sec. or 0.1.3 sec. at 10 times current settomg)
5. Operation indicator inscription, if required.
6. Auxiliary contacts-hand or self reset.
7. Current setting range of high set unit, if required.
8. Case size
9. Type of mounting flush or projection.

For more information please contact
GE
Grid Solutions

Worldwide Contact Center

Web: www.GEGridSolutions.com/contact
Phone: +44 (0) 1785 250 070

GEGridSolutions.com

IEC is a registered trademark of Commission Electrotechnique Internationale.

GE and the GE monogram are trademarks of General Electric Company.

GE reserves the right to make changes to specifications of products described at any time without notice and without obligation to notify any person of such changes.

CDG11-Brochure-EN-2020-06-Grid-GA-1696. © Copyright 2020, General Electric Company. All rights reserved.

Imagination at work