

GEC Measurements

Types CDV22 and CDV62

The type CDV relay is a voltage controlled inverse time overcurrent relay incorporating an instantaneous under-voltage unit, for fault and overload protection of generators. Types CDV22 and CDV62 are single and triple pole versions respectively.

The relay has two operating characteristics determined by the operation of the instantaneous under-voltage unit, monitoring the busbar voltage. On overloads, when the busbar voltage is usually near normal, the relay operates on a long IDMT characteristic to match the thermal characteristic of the generator. Under fault conditions, when the busbar voltage falls, the relay operates on a standard IDMT characteristic and can be time graded with other IDMT relays in the system. The setting is reduced to allow operation on the low value of sustained fault current encountered especially on machines operating without automatic voltage regulation.

CONSTRUCTION AND OPERATION

Basically the relay is an induction disc unit type CDG11 (see R-5090) with wound shading coils shunted by a resistor giving the long time characteristic.

When the busbar voltage falls under fault conditions, a contact on the under-voltage unit short circuits the shading coils, increasing the torque on the disc $2\frac{1}{2}$ times, adjusting the setting current by a factor of 0.4.

There are two standard types of CDV relay.

Type A relays change characteristic at 60% normal voltage and are used where the alternator neutral is solidly earthed. The instantaneous voltage control unit is connected between phase and neutral and the relay operates on both phase and earth faults.

Type B relays change characteristic at 30% normal voltage and are used where the alternator neutral is earthed via a resistor. The instantaneous voltage control unit is connected between phases and the relay operates on overload and phase faults only.

CURRENT SETTINGS

Equally Spaced Tap Ranges

10-40%, 20-80% or 50-200% of 0.5, 1.0 or 5.0 amps, 50 or 60Hz, adjustable in seven equal steps.

Graded Tap Ranges

10-40%, 20-80% or 50-200% of 0.5, 1.0 or 5.0 amps and 30-120% or 80-320% of 5 amps, 50 or 60Hz, adjustable in seven unequal steps as follows: 25%, 30%, 37.5%, 50%, 60%, 75% and 100% of top tap value.

Starting current: 105%—110% of current setting

Closing current: 120%—130% of current setting

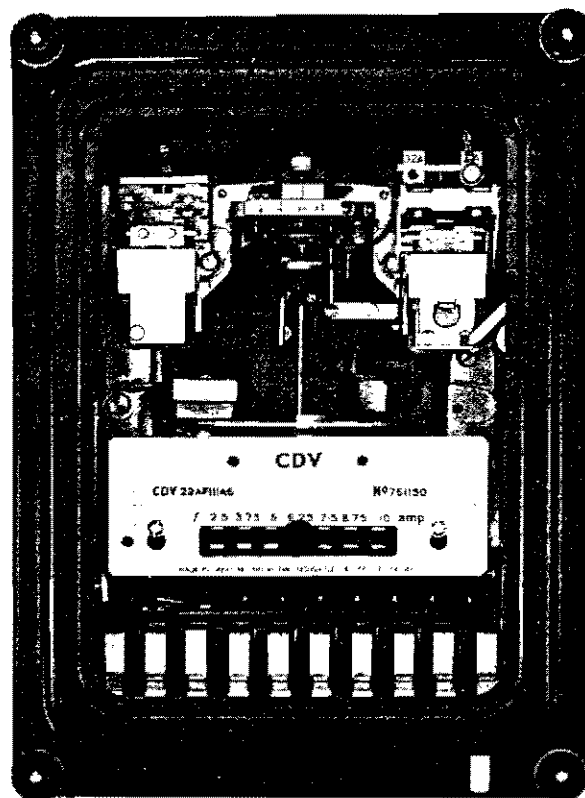
Resetting current: 90% of current setting

BURDEN

Current coil at current setting: 11—15VA at 50 Hz
13—16VA at 60 Hz

Voltage coil, at current voltage: 6VA

Auxiliary unit: 3 watts



Type CDV22 relay

VOLTAGE SETTINGS

	Nominal rating (volts)	Withstand continuously (volts)	Change characteristic (volts)	Reset (volts)
Type A	63.5	76	40	55
	250*	300	150	220
Type B	110	132	33	55
	440	528	140	220

ACCURACY

The relays are calibrated at 50 or 60 Hz and 20°C and fall into error class index E7.5 as given in B.S.142:1966.

THERMAL RATING

Tap		Continuous rating		Maximum current for full operating time on overload at time multiplier setting 1.0	
1 amp relay	5 amp relay	1 amp relay	5 amp relay	1 amp relay	5 amp relay
amps	amps	amps	amps	amps	amps
0.5	2.5	0.9	4.5	14	70
0.75	3.75	1.11	5.6	13	65
1.0	5.0	1.28	6.4	12	60
1.25	6.25	1.35	6.75	11	55
1.5	7.5	1.56	7.8	10	50
1.75	8.75	1.68	8.4	9.4	47
2.0	10.0	1.76	8.8	8.6	43

The relays will withstand 16 times rated current (C.T. secondary) for three seconds.

AUXILIARY UNIT AND OPERATION INDICATOR

An auxiliary attracted armature unit with a hand reset operation indicator, for either shunt reinforcing or series seal in is fitted as standard.

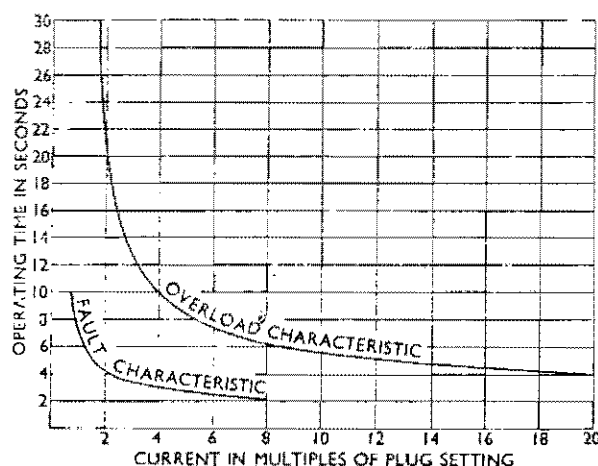
Standard Coil Ratings: Voltage operated (shunt) auxiliary units: 30, 110, 125 or 220 volts d.c. continuously rated.

Current operated (series) auxiliary units:

Minimum operating current in amps (two taps)	0.5 second current rating in amps	Coil resistance in ohms
0.1 and 0.3	18 and 22	9.2 and 2.1
0.2 and 2.0	22 and 92	6.0 and 0.125
0.6 and 2.4	92 and 188	0.29 and 0.031

Other coil ratings can be supplied for both types of auxiliary unit.

Contacts: Two pairs of electrically separate, normally open self or hand reset contacts are fitted which will make and carry 7500 VA for 0.5 second with maxima of 30 amps and 660 volts a.c. or d.c.



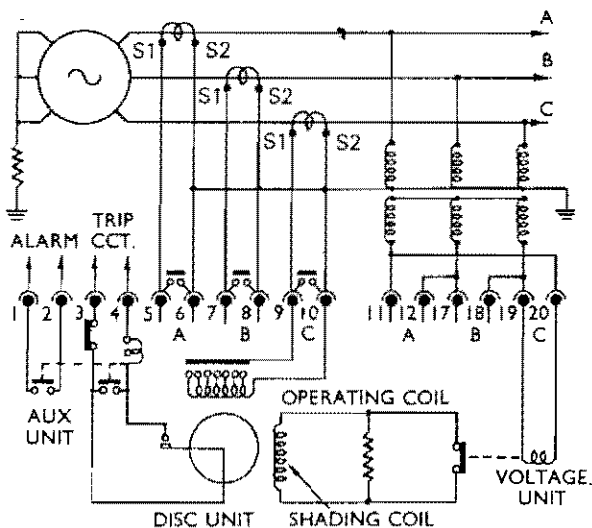
Time-current characteristics at time multiplier setting 1.0

INSULATION

The relay will withstand 2.5 kV a.c. r.m.s. 50 Hz for 1 minute between all circuits and earth and between electrically separate circuits. It will also withstand 1.25 kV r.m.s. 50 Hz for 1 minute between normally open contacts.

CASES

The relays are supplied in drawout cases available for flush or projecting mounting, and finished phenolic black as standard. Relays for use in exceptionally severe environments can be finished to BS.2011.20/50/56 at extra cost; standard relays are finished to BS.2011.20/40/4 and are satisfactory for normal tropical use.



NOTE:-
ALL THREE ELEMENTS
ARE THE SAME AND ONLY
ONE IS SHOWN. ALARM AND
TRIP CIRCUITS ARE PARALLELED

Internal circuit diagram and typical application circuit of type CDV62 type B relay for phase fault and overload protection of generator earthed via a resistor.

CASE DIMENSIONS

Relay Type	Case Size	Maximum Overall Dimensions		
		Height mm	Width mm	Depth* mm
CDV22	1D	237	173	198
CDV62	3D Vert.	527	174	199
	3D Horiz.	238	458	199

*Add 21mm for maximum length of M5 terminal studs.

Dimensioned drawings of case outlines, panel cut-outs and mounting details are available on request.

INFORMATION REQUIRED WITH ORDER

Relay type
Current setting range
Current transformer secondary rating
Voltage rating
Trip circuit (series seal in or shunt reinforcing)
Trip circuit current (series seal in)
Trip circuit voltage (shunt reinforcing)
Operation indicator inscription if required
Auxiliary contacts (hand or self reset)
Case mounting

Our policy is one of continuous product development and the right is reserved to supply equipment which may vary slightly from that described.

GEC Measurements

The General Electric Company, p.l.c., of England

St. Leonards Works Stafford ST17 4LX England

Telephone: 0785 3251 Telex: 36240 Cables: Measurements Stafford Telex

Publication R-5121A