



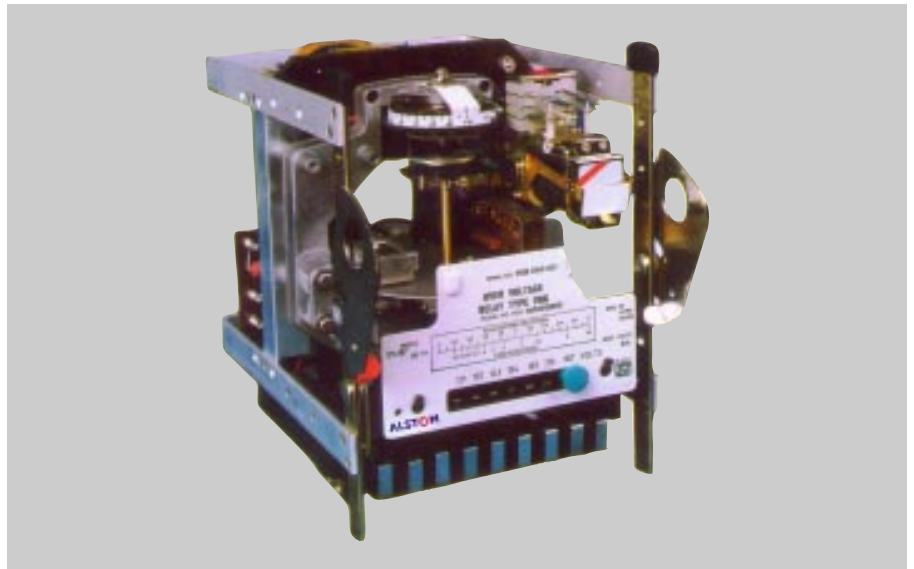
## **Type VDG11 Over Voltage Relay**

**ALSTOM**

# Type VDG 11

## Inverse Time Over Voltage Relay

VDG 11 relay  
withdrawn from case



### Features

- Self-powered, no need for separate auxiliary supply.
- Identical time/voltage characteristic on all taps.
- Frequency compensated.
- Simple construction, easily accessible.
- Dust-tight drawout case and tropicalised finish.

### Application

Inverse time over-voltage protection of ac circuits, capacitors and machines such as generators and synchronous motors.

### Description

The voltage input to the relay is fed to the coil of an induction disc element through an input transformer. The required voltage setting is selected by means of taps on the primary of the input transformer.

The secondary of the transformer is also connected to an auxiliary unit through the disc element contact. Hence there is no necessity to provide a separate auxiliary supply. The output of the auxiliary unit may be wired to trip the breaker.

The induction disc element is heavily damped, frequency compensated and has adjustable inverse time/voltage characteristics. 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 voltages near pick-up. Damping of the disc movement is by a removable high retentivity permanent magnet.

The unique method of winding the operating coil ensures that the time/voltage characteristics are identical on each of the seven voltage taps.

The relay operating time can be adjusted by movement of the disc backstop, controlled by rotating a knurled moulded disc at the base of the graduated time multiplier scale.

Type VDG 11 is a single pole relay and is available in single pole version only.

### Technical data

#### Voltage rating

110, 240/250 or 440V ac 50 Hz.

For 240/250 and 440 volts relays, external voltage transformers are supplied.

#### Voltage setting

110 - 170% of rated voltage, adjustable in steps of 10%.

#### Resetting voltage

90% or more of the voltage setting.

## Time settings

Operating time

0 - 7.0s at 1.5 times voltage setting.

Time/voltage characteristics at time multiplier setting 1.0 is given in Figure 1.

## Resetting time

10s at time multiplier setting 1.0 when voltage is reduced to zero.

## Burden

5VA at voltage setting.

The burden at rated voltage is as follows:

Relay setting (%)	110	120	130	140	150	160	170
Burden at rated voltage (VA)	3.4	2.8	2.4	2.0	1.8	1.6	1.4

Voltage transformer requirements will be given on request.

## Dimensions and weights

Relay	Case size	Maximum overall dimensions			Approximate gross weight Kg.
		Height mm	Width mm	Depth* mm	
VDG 11	1 D Vert.	233	170	203	6.0
External transformer		149	133	102	4.0

\* Add 76 mm for maximum length of terminal studs, alternatively, 29 mm for terminal screws.

The approximate gross weights given above are inclusive of cartons, mounting appendages and terminal details.

The relays comply fully with the requirements of IS 3231 and are suitable for use in normal tropical environments.

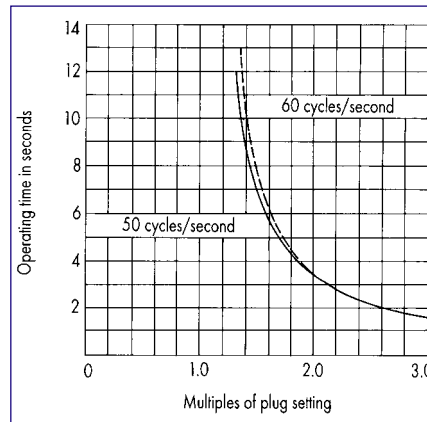


Figure 1:  
Time/voltage characteristic  
at time multiplier setting 1.0

## Thermal rating

The relay will withstand the voltage setting continuously for 60°C rise in coil temperature.

## Accuracy

Pick-up:

Error class Index E 5.0 as per BS 142; 5.0 as per IS 3231 at the voltage setting and pick-up variation of 7% (max.) between 40 and 70 Hz.

Operating time:

±7.5% at 1.5 times voltage setting.

## Contacts

One changeover and one normally open self reset contacts.

or

Two normally open and two normally closed hand reset contacts.

## Contact rating

- Disc contact rating :  
2500VA make and carry for 0.5s with maxima of 10A and 660V ac or dc
- Auxiliary contact rating:  
7500VA make and carry for 0.5s with maxima of 30A and 660V ac or dc.

## Insulation

The relay meets the requirements of IS 3231/IEC 255-5 Series C - 2 kV for 1 minute.

## External and internal circuit connections

Typical connections are shown in Figure 2.

## Case

Size 1D vertical drawout, suitable for flush mounting, finished eggshell black and tropicalised. Suitable trip isolating switch is provided on cradle assembly.

## Information required with order

1. System frequency and application
2. Voltage rating (110, 240/250 or 440V ac)
3. Auxiliary contacts - hand or self reset

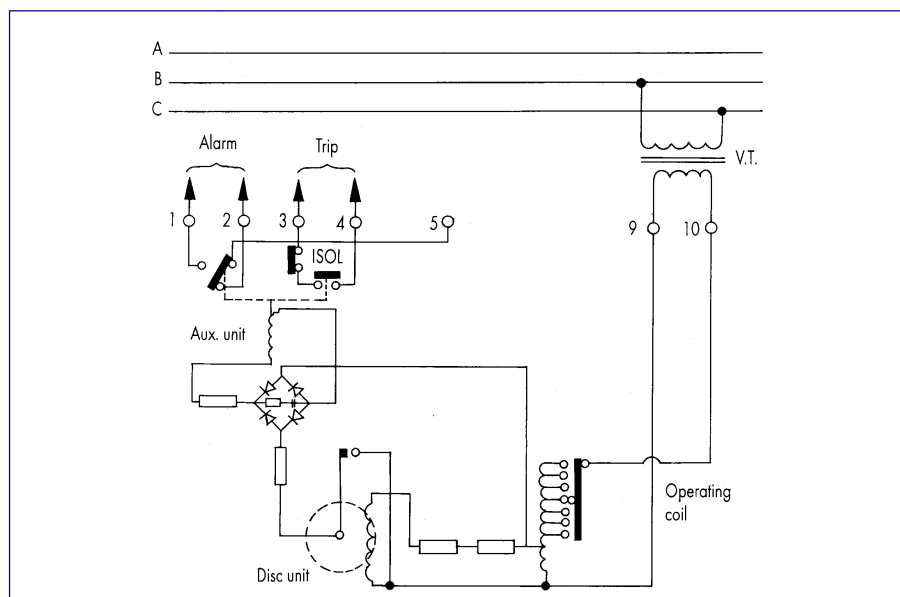


Figure 2:  
Typical external and internal connections  
for type VDG 11 relay



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