

GEC Measurements

Types VDG11, 12

Type VDG11 and 12 relays are frequency compensated induction disc units with adjustable inverse time/voltage characteristics.

Type VDG11 is an overvoltage relay used for the protection of a.c. circuits and machines such as synchronous motors. If the supply to an off-load synchronous motor fails and the busbars supplying the motor are lightly loaded, the motor voltage could rise instantaneously due to the open circuit regulation of the machine. Over-voltage protection is also applied to motors supplying high inertia loads. Other loads such as lifts and compressors cause the motor to decelerate on loss of supply and for these applications the under-frequency relay type FMG is generally preferable (see Data Sheet MS/5088).

Type VDG12 is a neutral displacement relay for detection of earth faults on transformers or generators which are earthed at the neutral through a voltage transformer.

Taps on the operating coil and a series resistance are connected to a link board and provide a constant inductance/resistance ratio for frequency compensation on each voltage setting.

Adjustment of the time setting is made by rotating a knurled moulded disc against a graduated time multiplier scale.

VOLTAGE SETTINGS

Type VDG11

110–170% of 110 volts a.c. at 50 or 60 Hz, adjustable in seven equal steps

Type VDG12

10 and 20% of 110 volts a.c., or
20 and 50% of 110 volts a.c. (with externally mounted resistor) at 50 or 60 Hz

An external voltage transformer can be supplied with both types to enable operation on 230/250 or 440/480 volts a.c.

Resetting voltage

90% of voltage setting

TIME SETTING

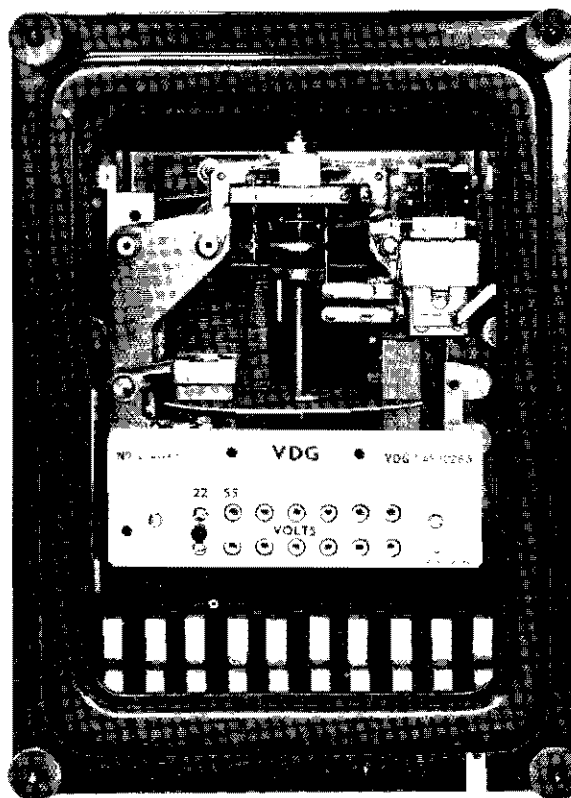
0–7 seconds at 1.5 times voltage setting
(see characteristic overleaf)

Resetting time

10 seconds with time multiplier set at 1.0

FREQUENCY ERROR

The maximum pickup variation between 40 and 70 Hz is 7%



Type VDG12 relay

BURDEN

At voltage setting: 5VA for both types

At normal voltage: Type VDG11

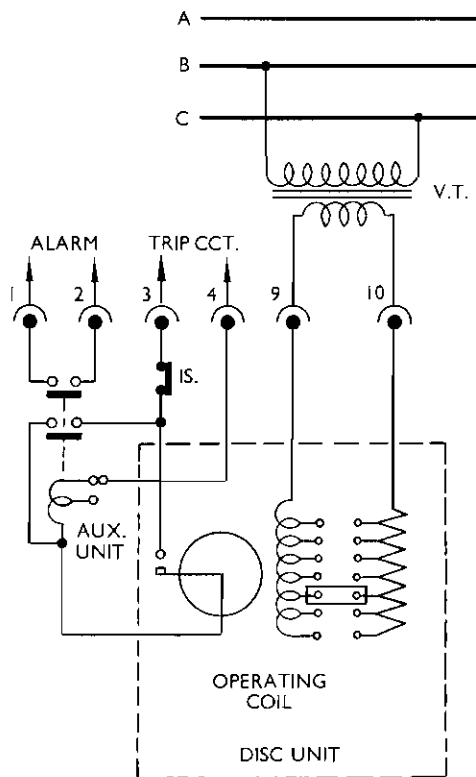
Relay setting (%)	110	120	130	140	150	160	170
VA at normal voltage	4.5	3.8	3.2	2.8	2.4	2.2	1.4

At normal voltage: Type VDG12

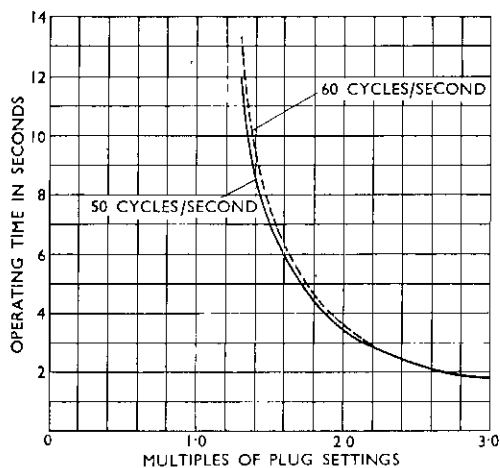
	10/20% version		20/50% version	
Relay setting (%)	10	20	20	50
VA at normal voltage	500	125	125	20

VOLTAGE WITHSTAND

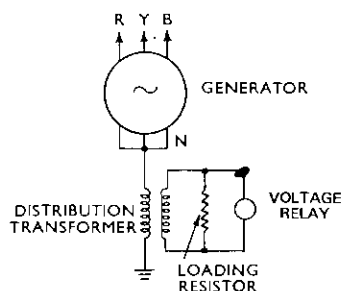
	10/20% version		20/50% version	
Type VDG12 only	50 Hz	60 Hz	50 Hz	60 Hz
For duration of operating time	110	115	190	200
Continuously	—	—	110	115



Typical application and internal circuit diagram of VDG11 relay



Time/voltage characteristic. Time multiplier setting=1.0



Typical application diagram of VDG12 relay

AUXILIARY UNITS AND OPERATION INDICATORS

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, 50, 110, 125, 220 or 250 volts d.c. at a nominal burden of 3 watts continuously.

The series seal in unit has two current taps. Standard ratings are as follows:

Minimum operating current (amps)	0.1/0.3	0.2/2.0	0.6/2.4
Coil resistance (ohms)	9.2/2.1	6.0/0.125	0.29/0.031

Other coil ratings are available with both types of auxiliary unit.

Contacts

Two pairs of electrically separate normally open self or hand reset contacts are fitted, rated to make and carry 7500 VA for 3.0 second with maxima of 30 amps and 660 volts a.c. or d.c.

INSULATION

The relay will withstand 2 kV 50 Hz for one minute between all terminals connected together and the case and between all terminals not intended to be connected together, and 1 kV 50 Hz for one minute between all normally open contacts.

CASE

The relays are supplied in a size 1 drawout case available for flush or projecting mounting, finished phenolic black as standard. Relays for use in exceptionally severe environments can be finished to B.S.2011: 20/50/56 at extra cost; standard relays are finished to B.S.2011: 20/40/4 and are satisfactory for normal tropical use.

	Maximum overall dimensions					
	Height		Width		Depth	
	in.	mm	in.	mm	in.	mm
Relay case	9 $\frac{3}{16}$	233	6 $\frac{1}{16}$	170	7 $\frac{3}{8}$	197
External resistor	3 $\frac{7}{16}$	87	7 $\frac{1}{16}$	198	2 $\frac{5}{16}$	58
External transformer	4 $\frac{3}{8}$	121	3 $\frac{5}{8}$	92	3 $\frac{3}{8}$	95

*Add 2 in. (51 mm) for maximum length of 2 BA terminal studs.

INFORMATION REQUIRED WITH ORDER

Relay type
Supply frequency
Voltage setting (VDG12)
External transformer requirements
Trip circuit (shunt reinforcing or series seal in)
Trip circuit current (series seal in)
Trip circuit voltage (shunt reinforcing)
Auxiliary contacts (hand or self reset)
Operation indicator inscription if required
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.

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