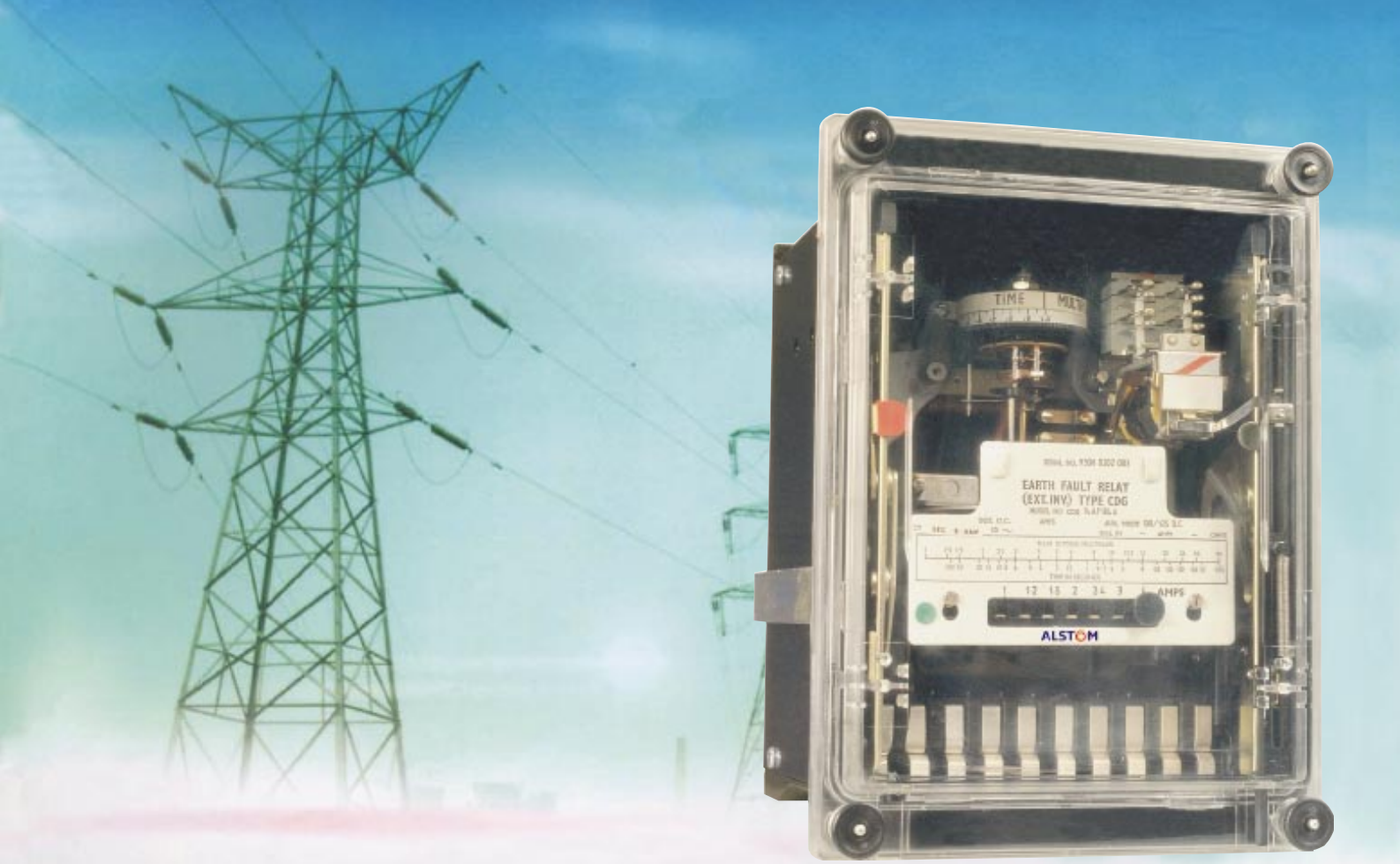
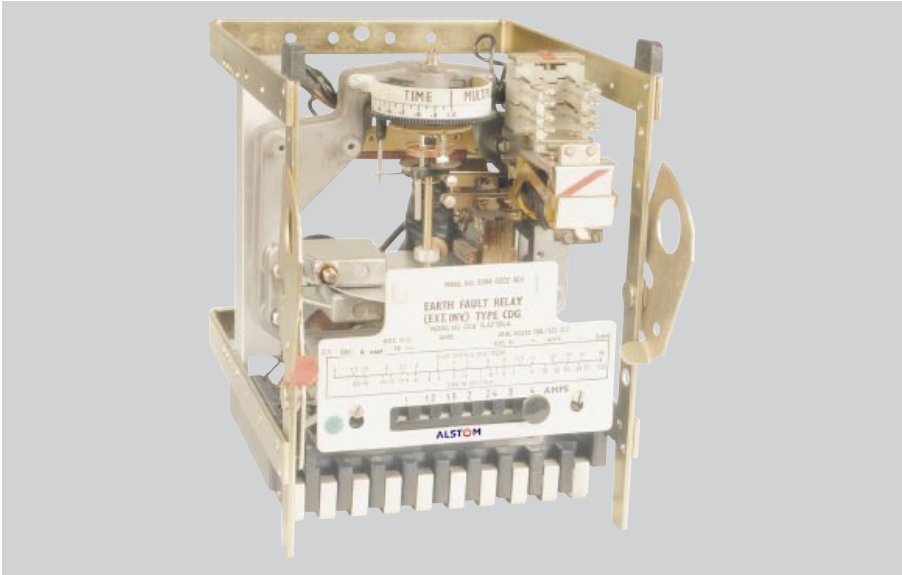



# Type CDG 14

## Overcurrent and Earthfault Relay

ALSTOM

# Type CDG 14
# Overcurrent and Earthfault Relay




CDG 14
withdrawn from case

## Features

- Identical time/current characteristics on all taps.
- High torque, ensuring consistent timing even under adverse conditions.
- Very low overshoot.
- Simple construction, easily accessible.
- Comprehensive range of auxiliary and highset unit ratings.
- Dust tight drawout case and tropicalised finish.

## Application

Selective phase and earthfault protection in time graded systems for transformers and ac machines. The relay characteristics match the thermal characteristics of the protected apparatus very closely thus affording a high degree of overload protection. The long time characteristics on the relay allow better time grading with fuses.

## General description

A non-directional heavily damped induction disc relay which has an adjustable extremely inverse time/current characteristic. The relay has a high torque movement combined with low burden and low overshoot. This feature combined with the high torque of the relay ensures good contact even at currents near pickup. 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/current characteristics are identical on each of the seven current taps. Selection of the required current setting is by means of a plug setting bridge which has a single insulated plug. The maximum current tap is automatically connected when the plug is withdrawn from the bridge, allowing the setting to be changed under load without risk of open circuiting the current transformers.

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 multiplier scale.

A highset instantaneous overcurrent unit, type CAG 13, 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.

Type CDG 24 relay is a single pole type CDG 14 relay with a highset instantaneous unit. Type CDG 34 is a triple pole (horizontal and vertical) version of the type CDG 14 with three overcurrent units or two overcurrent units and one earthfault unit in the centre. Type CDG 54 relay is a triple pole type CDG 34 relay with highset instantaneous units on the two outer elements. Type CDG 64 relay is a triple pole version of type CDG 24 relay.

# Technical data

## Accuracy

The relay conforms to error class index E 7.6 as per BS 142-1966 and 7.5 as per IS 3231-1965, at ten times reference current setting.

## Frequency error

A frequency variation of 2 Hz gives timing errors of less than 8%. The time grading of a protective system would be unaffected by this small error since all the relays would be similarly affected.

## Temperature error

For an overload equal to ten times the current setting, the percentage timing errors at ambient temperatures of +45°C and –5°C are respectively –3% and +5%.

## Auxiliary units and operation indicators

The relay has an auxiliary shunt seal-in unit fitted with three pairs of self reset contacts. Alternatively, two pairs of hand reset contacts can be provided on a shunt reinforcing unit. The relay is also fitted with an operation indicator which is hand reset by means of a push-rod protruding through the relay case.

Auxiliary units may be either series connected (current operated) or shunt connected (voltage operated). The series connected auxiliary unit operates in series with a circuit breaker trip coil or tripping relay. It has two current taps which are marked with the minimum current in amps. required for operation and are selected by screw connections on the unit.

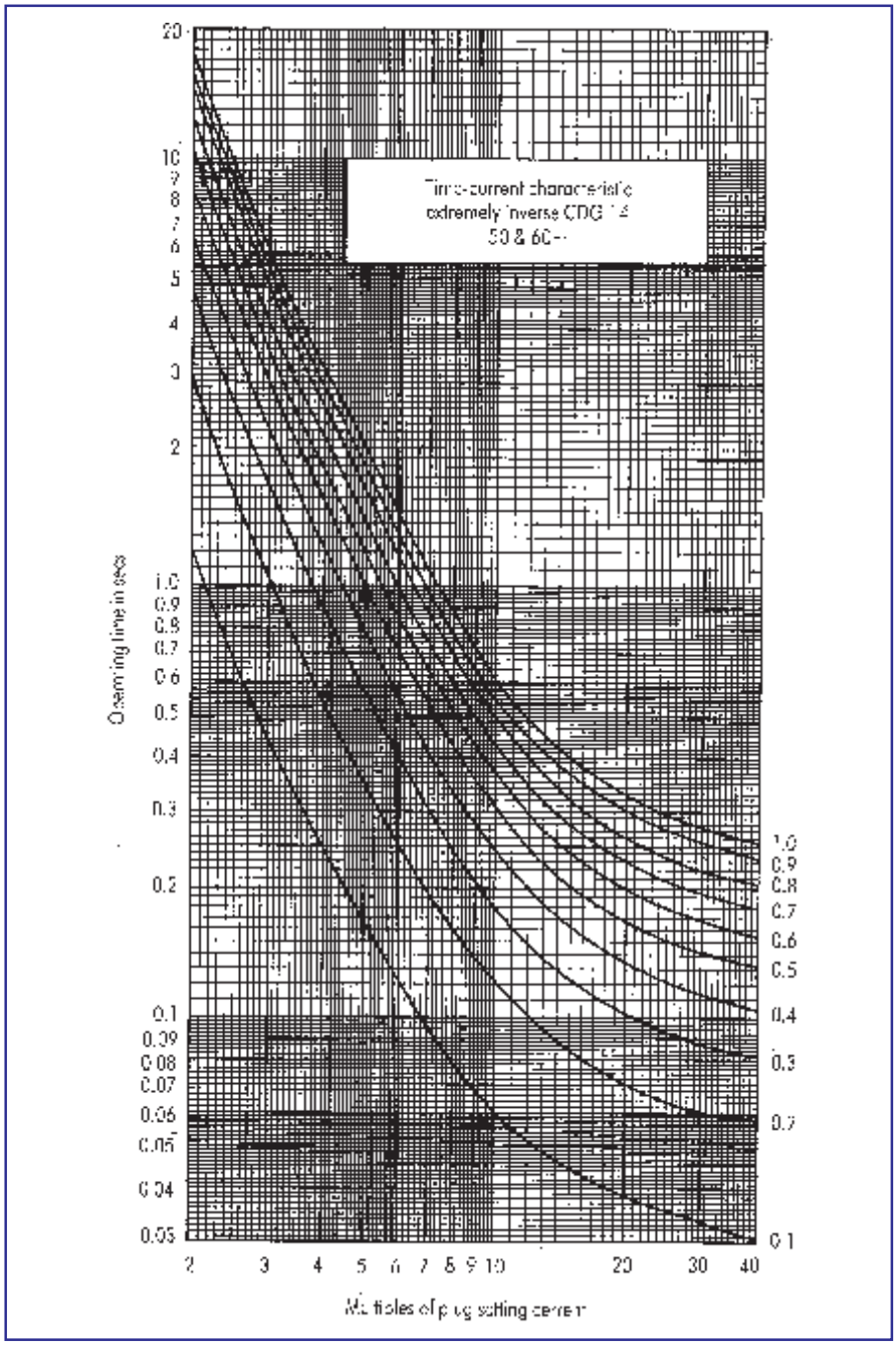



Figure 1:
Multiples of plug setting current

## Coil ratings

### Voltage operated (shunt) auxiliary units

30, 110 or 220V dc with a nominal burden of 3W.

Shunt auxiliary units for ac and under-voltage tripping can also be supplied.

### Current operated (series) auxiliary units

0.2/2.0 amp. (two taps) minimum operating current. The current rating of the auxiliary unit is 22 amps. for 0.5 second at 0.2 amp. tap and 92 amps. for 0.5 second at 2.0 amp. tap.

Other coil ratings are available on request.

## Contact ratings

The single disc contact will make and carry for 0.5 second 2500VA with maxima of 10 amps. and 660 volts, ac or dc.

The two pairs of electrically separate, self or hand reset contacts provided on the auxiliary unit will make and carry for 0.5 second 7500VA with maxima of 30 amps. and 660 volts, ac or dc.

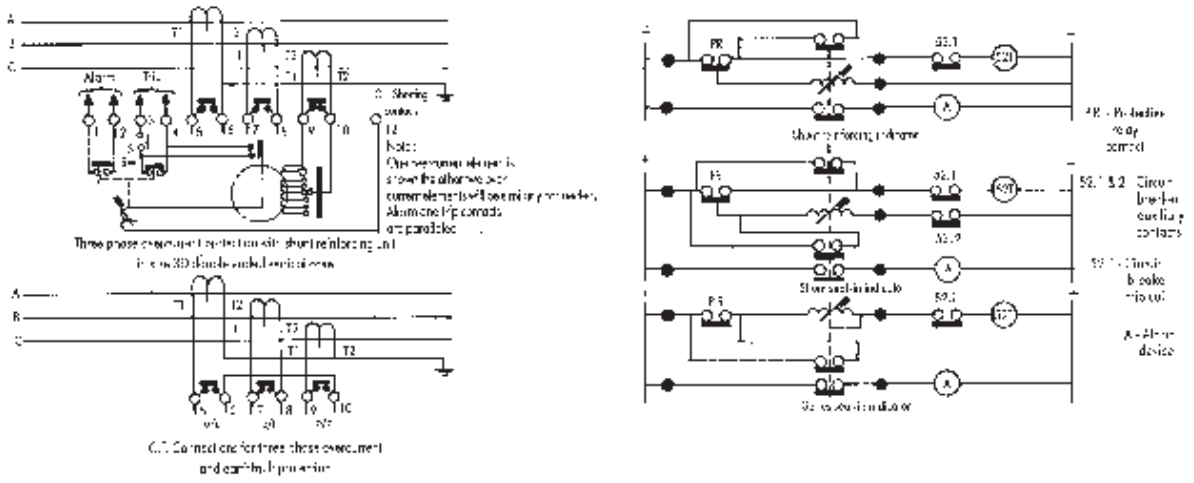


Figure2:
Typical external and internal connections
for type CDG 34 relay

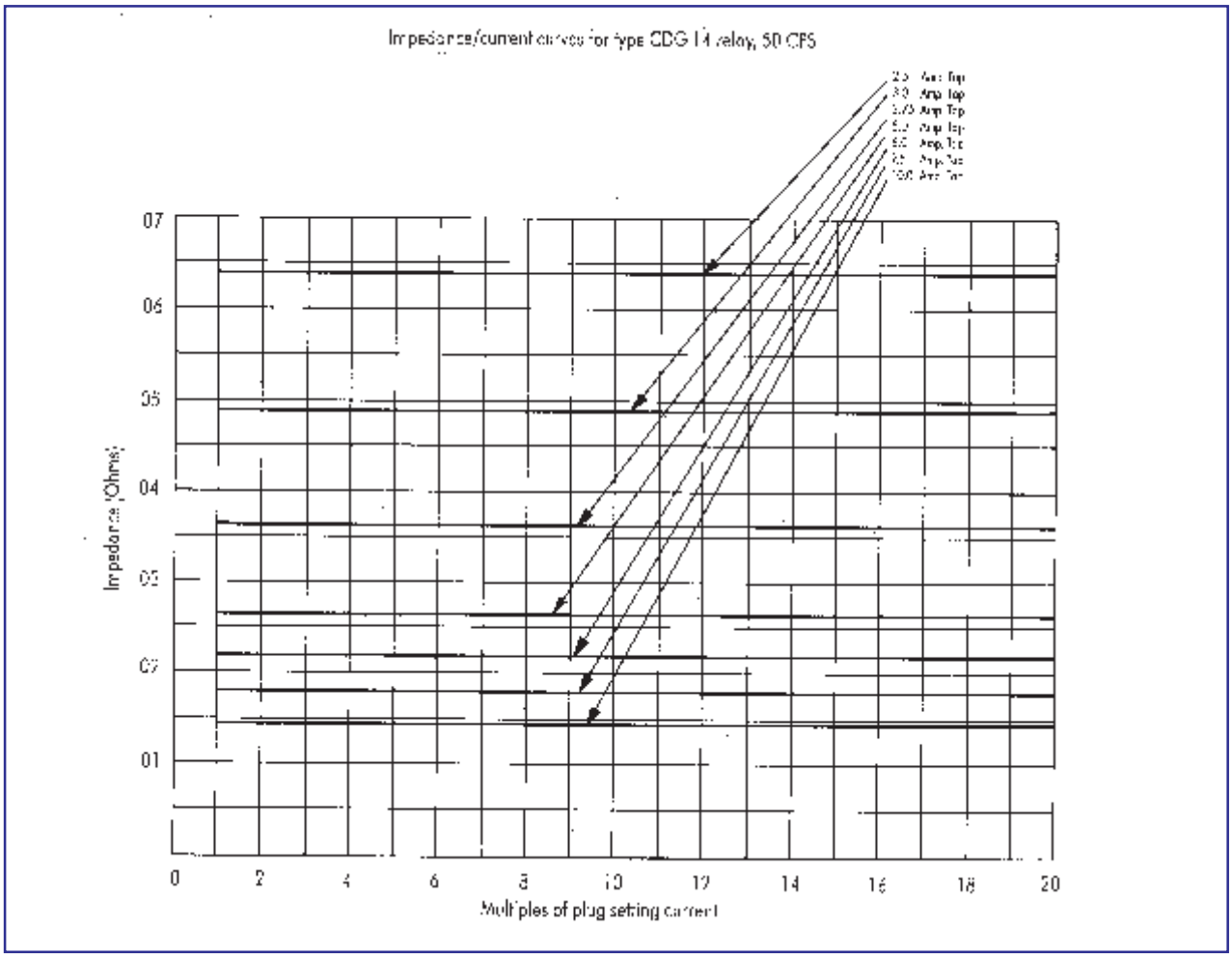



Figure 3:
Impedance/current curves for type CDG 14 relay.
50 C.P.S.

### Insulation

The relay will withstand 2.5 KV ac rms 50 Hz for one second between all circuits and the case and between all circuits not intended to be connected together. It will also withstand 1.25 KV ac rms 50 Hz for one second between mating contacts in open position.

### External and internal circuit connections

Typical external and internal connections for type CDG 34 three phase overcurrent alternatively combined overcurrent and earthfault protection with shunt reinforcing, shunt seal-in or series seal-in operation indicators are shown in Figure 3.

## Information required with order

1. Current transformer secondary rating
2. Auxiliary voltage
3. Auxiliary contacts-self or hand reset

**ALSTOM Limited** Pallavaram Works: 19/1, GST Road, Pallavaram, Chennai-600 043. India.
Tel: 91-044-2368621 Fax: 91-044-2367276 Email: plw.applications@alstom.sprintrpg.eml.vsnl.net.in.



**PR:014:0799:A**

Printed in India.