

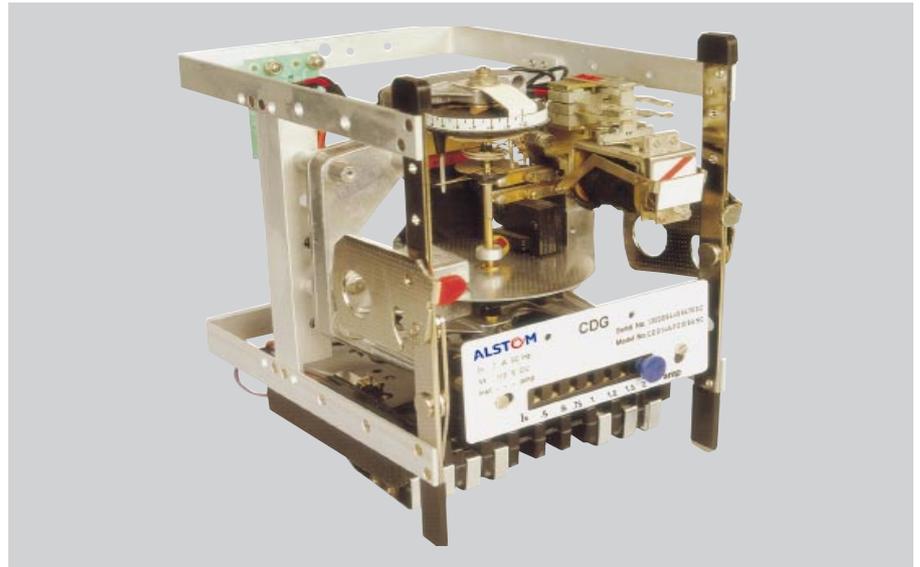
Type CDG 14
Extremely Inverse Time Overcurrent
and Earth Fault Relay

ALSTOM

Type CDG 14

Extremely Inverse Time Overcurrent and Earth Fault Relay

CDG 14
drawn out from the case



The type CDG 14 relay is a heavily damped induction disc unit with an extremely inverse definite minimum time/current characteristic. The relay gives selective phase and earth fault overcurrent protection in time graded systems to transformers, ac machines and fuses (see Application Sheet R-5087)

The operating coil is wound to give time/current curves of the same shape on each of the seven current taps which are selected by a plug setting bridge. The highest current tap is automatically selected when the plug is removed, so that adjustments can be made on load without open-circuiting the current transformer.

The relay has a high torque movement to ensure consistent timing even under adverse conditions, and a low burden and overshoot. Adjustment of the time setting is made by rotating a knurled moulded disc against a graduated time multiplier scale.

A high set overcurrent unit (type CAG) can be fitted in the same case to provide instantaneous protection under maximum short circuit conditions (see Application Sheet R-5087).

The type CDG 24 relay is a CDG 14 with an instantaneous unit. The type CDG 34 relay is a triple pole version (with three overcurrent units or two overcurrent units and one earth fault unit in the centre) of the type CDG 14.

Current settings

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 amp 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

103-110% of current setting.

Closing current

Less than 130% of current setting.

Resetting current

The maximum current up to which disc will completely reset is 90% of current setting.

Time settings

0-0.6 second at 10 times current setting (see characteristics fig.2).

Resetting time

45 seconds with the time multiplier set at 1.0.

Overshoot

0.05 second on removal of a current equal to 20 times current setting

Burdens

0.5VA at current setting on lowest tap. 1.5VA at current setting on highest tap. Impedance details for coils can be supplied on request.

Thermal rating

The relay will withstand twice the setting current continuously and 20 times the maximum setting current for 3 seconds.

Accuracy

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

Frequency error

Less than 8% for frequency variation of 2Hz; the time grading of a protective system would be unaffected by the error since all the relays would be similarly affected.

Temperature error

For an overload equal to 10 times the current setting, the percentage timing errors at +45°C and -5°C are respectively -3% and +5%.

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.

Contacts

Two electrically separate normally-open self or hand reset contacts are fitted which will make and carry 7500VA for 0.5 second with maxima of 30 amps and 660 volts ac or dc in the case of shunt seal and maxima of 15 amps and 660 volts ac or dc in the case of series seal.

AC Trip circuit

Where a tripping supply is not available, a modified relay can be supplied which trips the circuit breaker directly using current from the line transformer. The ac tripping circuit incorporates a current transformer and an instantaneous unit which will safely control ac trip coil currents up to 150 amps at 150 volts. Applications where the trip current exceeds this value can also be catered for.

Standard coil ratings

Voltage operated (shunt) auxiliary units: 30, 110, 125 or 220 volts dc at a nominal burden of 3 watts 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.

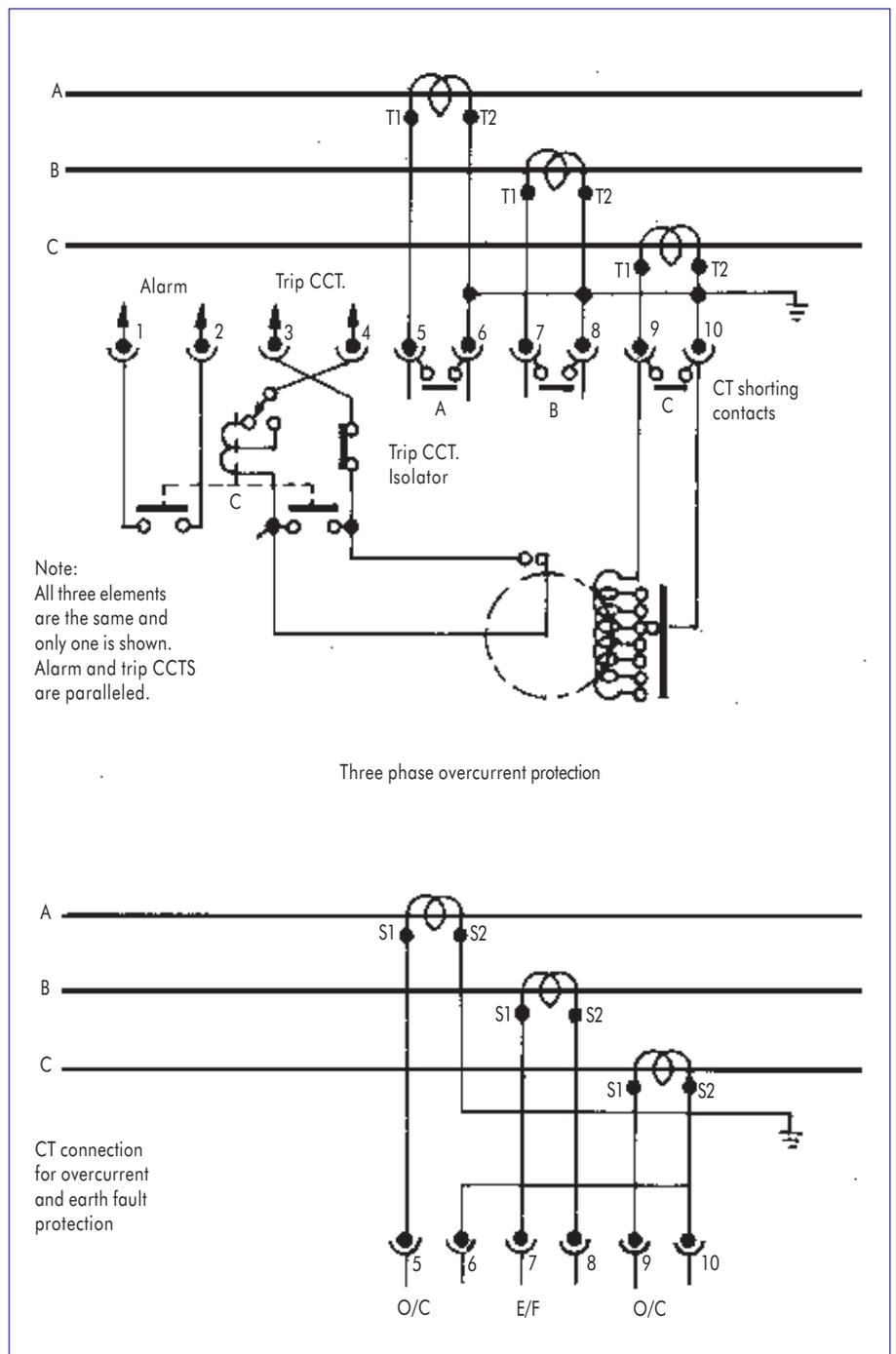


Figure 1:
Typical application and internal circuit diagram of CDG 34 relay with series seal in.

Technical data for CAG 13

Current rating

1A or 5A.

Settings

500 – 2000% }
400 – 1600% } at rated current –
200 – 800% } continuously
100 – 400% } adjustable

Resetting current

The relay will reset at approximately 15% of current setting.

Operating time

Approximately 10 milli seconds at 5 times current setting.

Burdens

1.4 VA at lowest current setting
to

18 VA at highest current setting.

VA burdens given above are applicable to all setting ranges.

Thermal rating

The relay will withstand 1.5 times the minimum current setting continuously and 12 times the maximum current setting for 3 seconds.

Accuracy

The relay conforms to error class index E 10.0 as per B.S.142:1966.

Operation indicator

The relay is fitted with an operation indicator which is hand reset by means of a push-rod protruding through the relay case.

Contacts

2 make self reset.

Technical data for CAG 19

Current rating

1A or 5A.

Settings

500 - 2000% }
400 - 1600% } at rated current –
200 - 800% } continuously
100 - 400% } adjustable

Resetting current

Not less than 80% of current setting.

Operating time

Less than 30 milli seconds at 5 times setting current.

Resetting time

Within 30 milli seconds when resetting to no current.

Transient overreach

Less than 1% for system angles upto 88° on all settings.

Burden

1.0 VA on lowest setting }
3.0 VA on highest setting } at
setting
current

Thermal rating

Continuous : Maximum setting current

Short time : 20 x max. setting current for
3 seconds

Accuracy

Error class index : E 5 as per BS.142:1966

Contacts

2 make self reset.

Cases

Relays are supplied in drawout cases designed for either flush or projecting mounting. Case wrappers are manufactured from hot dipped galvanised steel with a black pvc outer coating.

Relays comply with 56 day humidity requirements as specified in IEC68. Climatic category 20/50/56.

Insulation

The relay will withstand 2.0 kV rms, 50Hz for one minute between all terminals connected together and the case, between all terminals not intended to be connected together and 1.0 kV rms, 50Hz for one minute between all normally open contacts.

Information required with order

1. Relay type.
2. Current setting range.
3. Current transformer secondary rating.
4. Trip current (series seal in, shunt reinforcing or ac).
5. Trip circuit current (series seal in).
6. Trip circuit voltage (shunt reinforcing).
7. Operation indicator inscription if required.
8. Auxiliary contacts (hand or self reset).
9. Details of instantaneous unit (CAG) if required.
10. Case mounting.

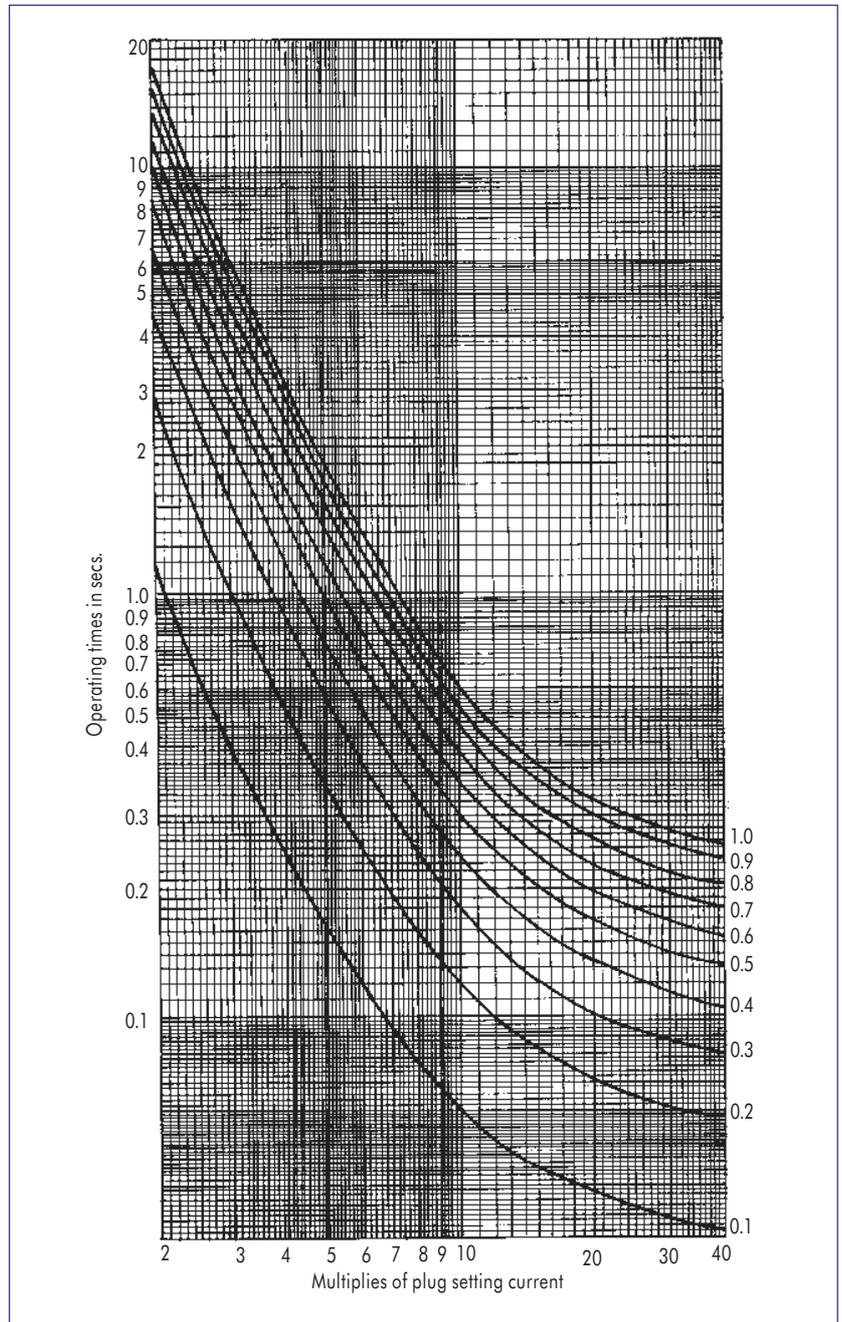


Figure 2:
Time-current characteristic.
Extremely inverse CDG 14

Case dimensions

Relay	Case	Maximum overall dimensions		
		Height (mm)	Width (mm)	Depth* (mm)
CDG 14 CDG 24	1D	237	173	218
CDG 24 (double-pole)	2D (Vert)	425	174	218
CDG 34	3D (Vert)	527	174	218
	3D (Horiz.)	238	458	218

* Add 7 mm for maximum length of M5 terminal screws. Dimensioned drawings of case outlines, panel cut-outs and mounting details are available on request.



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.

© 1998 ALSTOM Limited

Our policy is one of continuous development. Accordingly the design of our products may change at any time. Whilst every effort is made to produce up to date literature, this brochure should only be regarded as a guide and is intended for information purposes only. Its contents do not constitute an offer for sale or advice on the application of any product referred to in it.
ALSTOM Limited cannot be held responsible for any reliance on any decision taken on its contents without specific advice.