

NEW ELEC

MOTOR PROTECTION & CONTROL TECHNOLOGY

GA PLUS

Earth Leakage Protection Relay



A South African Company to be Proud of

About

The NewElec GA Earth Leakage relay provides earth leakage protection also known as ground fault protection designed to protect personnel and equipment by rapid disconnection of main supply to faulted equipment a unique feature is the integrated distinguishing between Earth leakage and Earth fault routing trips to incoming circuit breaker rather than the fault level limited main circuit contactor. Pioneers of the harmonic suppression circuit characteristics, the GA Earth Leakage protection relay enables more sensitive earth leakage protection of high kilowatt motors started direct-on-line as well as variable speed drive applications without nuisance tripping, this is achieved utilising band pass filters as well as incorporation of a screen winding on the CBCT to ensure even flux distribution under high starting current conditions

The GA Plus comes fitted with an integrated earth leakage test push button connected to the test winding on the CBCT allowing one to test functionality of GA Plus and trip circuits a rear accessed RS232 interface allowing customers to configure output trip relay configuration options, including Latched or Non-latching main trip contact, Fail-safe or Non Fail-safe options, as well as 110V-220V or 380V-525V A.C. auxiliary supply voltages.

The trip contact current rating is a sturdy 6A at 220V and 3A at 525V A.C. A latched 'contactor trip' change-over contact can only be reset by pressing the control panel mounted pushbutton.

Sensitivities range from 30mA to 1000mA with user selectable instantaneous or IDMT curve selection while using the same earth leakage core.

Features Include:

- Fail-safe or non fail-safe option
- Earth Leakage Protection
- Earth Fault Protection
- 110V / 220V A.C.or 380V / 525V A.C. supply
- Latching or non-latching trip contact
- Instantaneous or IDMT curve selection
- Latched 'contactor trip' C/O contact
- Harmonic Suppression
- Adaptor plate to fit 71 x 94mm cut-out
- Intergrated Earth Leakage Test Push button
- User programmable options
(MA selection, Latching or Non-Latching, Failsafe or Non-Failsafe, 110/220V or 380/525V)



Ordering Details

GA 1 - P L U S - 0 2 5 0 - 3 - 4 - 5

1 - Model

GA Standard = 0
GA ELX Model = A

2 - Range

0030 = 030mA sensitivity
0250 = 250mA sensitivity
0375 = 375mA sensitivity
0500 = 500mA sensitivity
1000 = 1000mA sensitivity

3 - Main Trip Contact

Non fail-safe = 0
Fail-safe = B

4 - Latching or Non-Latching Main Trip

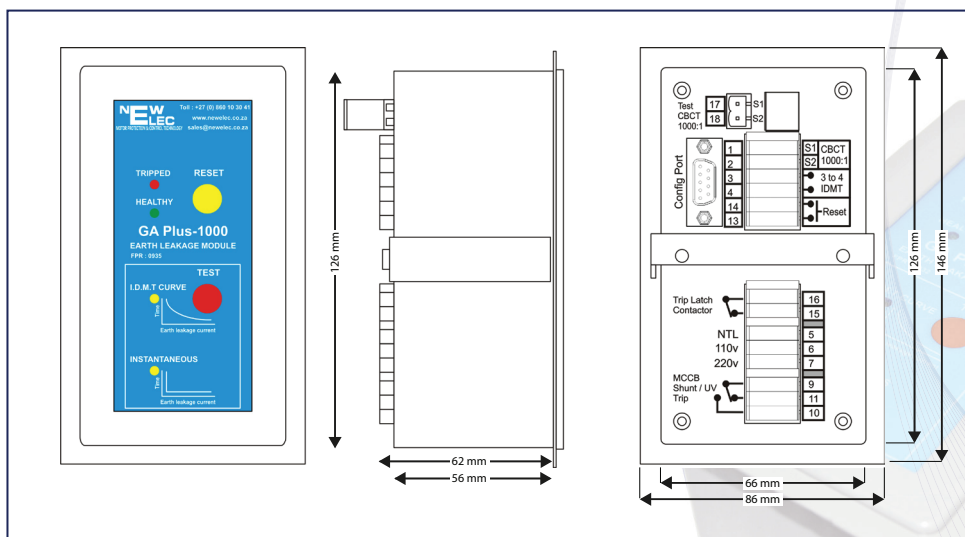
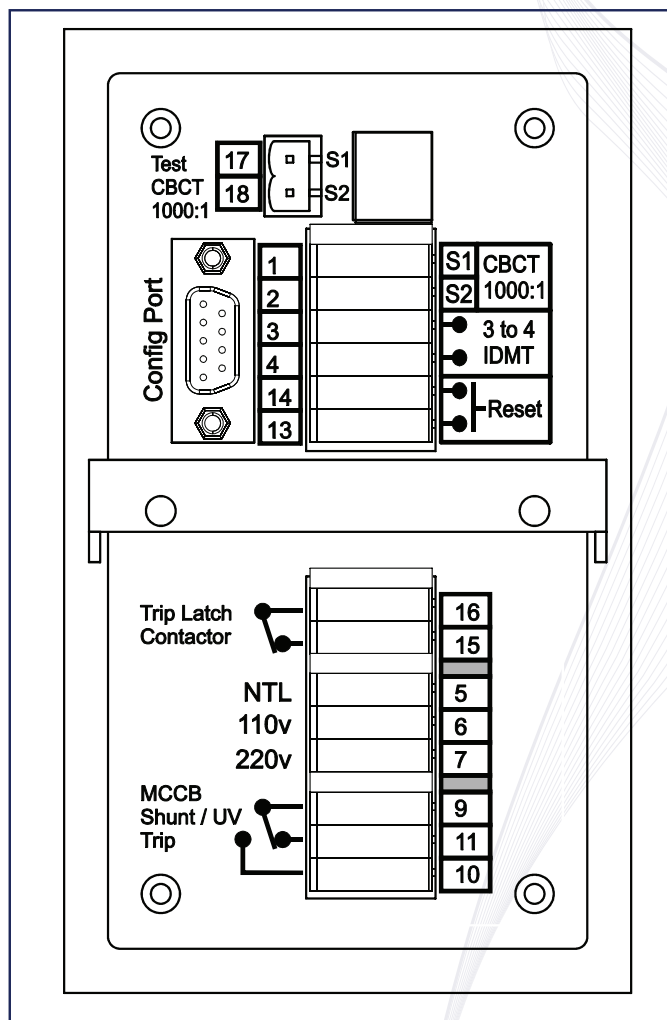
Non-latching = 0
Latching = C

5 - Auxiliary Supply Voltage

110V / 220V A.C. = 0
380V / 525V A.C. = D

Example:

GA-A-0500-B-0-D



Technical Specifications

Overload Ratings

Primary Current

50 Amps	: Continuous
500 Amps	: 1 second

Calibration Levels

GA 30	: 30mA ± 10%
GA 250	: 250mA ± 5%
GA 375	: 375mA ± 5%
GA 500	: 500mA ± 5%
GA 1 000	: 1 000mA ± 5%

Trip Delay Curves

Instantaneous	
Minimum Time	: 0,150 seconds
Accuracy	: ± 0,010 seconds
	As per Trip Curves
IDMT	: GA-CRV.CDR
Accuracy	: ± 5%
Characteristic	: Standard inverse
Time Multiplier	: 0,1

Auxiliary Supply

Range	: 110 or 220V A.C. : 380 or 525V A.C.
Tolerance	: 85 to 120% of range
Burden	: 2VA
Frequency	: 45 to 65Hz

Measurement Filter

Cut-off Frequency	: 50Hz
Attenuation	: -24 db/octave

Output Relays Main Trip

Contacts	: 1 x set Changeover
Rating	: 6 Amps 250V A.C.
Operation	: 3 Amps 250V A.C.
Trip Latch	: 1 x set Changeover
Rating	: 6 Amps 220V A.C.

Environmental Specifications

Isolation To IEC 60255-5 App A

2kV between separate circuits
1kV across N/O contacts

Impulse

To IEC 60255-5 App D
Transient 2,5kV between separate circuits

Annex B - Residual Current Protection (Earth Leakage)

Annex B of SANS IEC 60947-2 defines the integration of residual current protection into circuit-breakers, typically MCCBs (Moulded Case Circuit Breakers).

Key points:

- Devices are designated as RC (Residual Current) or RCD (Residual Current Device) functions within MCCBs.
- Protection levels include 30 mA (personal), 100-500 mA (fire), and up to 1 A (equipment safety).
- Time delays can be introduced for selectivity and discrimination.
- Time-delayed RCDs (Type S) must trip within defined maximum times depending on IDeltan levels:
- 30 mA: ≤ 300 ms (personal protection)
- 100 mA: ≤ 500 ms
- 300 mA: ≤ 600 ms
- 500 mA-1 A: ≤ 1 s
- Test procedures include injection of defined current pulses to verify tripping within limits.

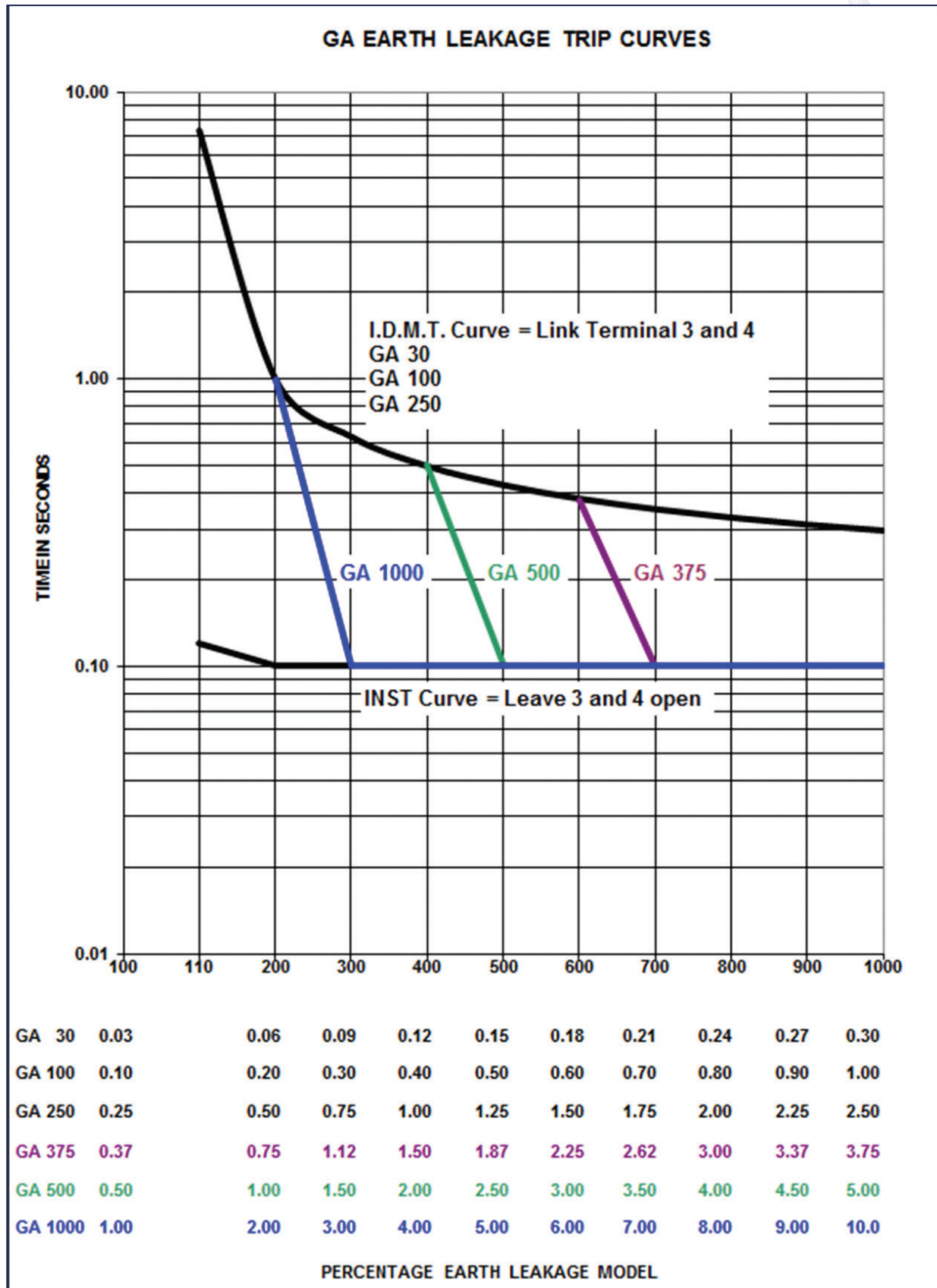
Annex H - Selectivity and Discrimination

Annex H covers the rules and guidelines for selectivity (discrimination) between two or more devices in series (e.g., MCCB + downstream RCCB or MCB).

Key points:

- Selectivity ensures only the downstream breaker trips during a fault, preserving upstream continuity.
- Types of selectivity:
- Total selectivity: full discrimination up to a specified fault current level.
- Partial selectivity: discrimination guaranteed only up to a specific fault level.
- Time-current coordination:
- Use time-delayed devices upstream (e.g., S-type) and fast-response devices downstream.
- Ensure at least 300 ms time delay margin between stages.
- Coordination tables from manufacturers define exact fault levels and time margins for compatible devices.
- Selectivity is critical in installations with multiple levels of distribution or critical loads.

Thermal Curves



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