



ZS Earth Leakage Circuit Breaker

Protection against the hazard of earth leakage can be provided by circuit breakers incorporating Earth Leakage protection

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ZS Earth Leakage Circuit Breaker (Residual Current Device)

Protection against the hazard of earth leakage can be provided by circuit breakers incorporating Earth Leakage protection (ELCBs). Prior to the Terasaki “ZS” MCCB / ELCB being introduced, ELCBs available to Australia and New Zealand had been of the combination type only, where the circuit breaker is mechanically and electrically coupled to an Earth Leakage module. Earth Leakage modules increase the overall dimension of the device. Overall power consumption also increases, which can also affect enclosure sizing due to heating effects.

Terasaki have developed the integral ZS ELCB, based on the TemBreak 2 MCCB range. The Earth Leakage function is an integrated feature of the device, and has the following advantages:

- Switchboard manufacturers can use standard MCCB assemblies for dimensions and mounting.
- No ampere derating is necessary.
- Reduced electrical and mechanical connection complexity, leading to higher reliability and lifespan.
- Easy to replace standard Terasaki MCCB's with ZS ELCB's due to common dimensions.
- Suits MCCB chassis.



MCCB



Earth Leakage module

Combination ELCB



The Terasaki ZS ELCB includes an Earth Leakage function within a standard MCCB.

Integral ELCB

Drawbacks of combination type ELCBs

- **Increased dimensions:** a combination ELCB requires more space than standard MCCB's. This requires the switchboard builder to provide a larger enclosure space allocation. The switchboard cost can be higher.
- **Power consumption:** The heating effect of the additional load of the Earth Leakage module sometimes requires larger enclosures to be used, especially for multiple ELCB applications.
- The initial cost of the combination is higher. The user must pay for an MCCB, and Earth Leakage module.
- The Combination ELCB is generally not suited to standard chassis mounting. The Earth Leakage module must be supported by a custom bracket. This adds further cost to the user.
- As the combination mechanically and electrically connects together it is possible for connections to fail.

Innovative Integral ZS ELCB

The ZS ELCB is the first integral MCCB / ELCB which complies with AS/NZS 60947.2 and IEC 60947.2 Annex B Circuit Breakers Incorporating Residual Current Protection.

Specifications:

- Same outline dimensions as a standard MCCB
- Current Ratings from 12.5 A to 250 A
- Operational voltage up to 550 V AC
- 65 kA fault interruption rating
- Switched or unswitched neutral pole
- Adjustable EL current: 30 mA to 3 A
- Adjustable EL time delay: 0 to 700 ms
- Adjustable thermal trip 63% to 100% of I_n
- Type A device: EL trips for AC and pulsating DC current
- Harmonics inhibition. Suitable for VSD applications
- MCCB chassis mounting
- Accepts MCCB auxiliaries, alarms, captive locks, other accessories
- Includes remote trip as standard (1000 mm wire leads)
- Cause of trip / PTA, relay output option (TCU)

Other applications:

- Captive padlocking and heavy duty padlockable handles available.
- Selectivity and Cascade with upstream or downstream devices.
- Type 2 motor start coordination with DOL motor starters up to 110 kW, AC3.



ZS ELCB SETTING DIALS



PADLOCKING OPTION



TCU OPTION (T2M1166CBA)

The TemBreak 2, ZS ELCB market acceptance in Australia and New Zealand

NHP's core business commitments are to our customers and the innovation of our products. We believe the ZS ELCB delivers innovative protection from earth leakage, overloads, and short-circuits in a package for switchboard manufacturers and end-users which offers convenience and cost saving, compared to other comparable solutions.

Key users include the mining industry, heavy industry, and commercial building sector.



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