Technical appendix

Zone selective interlocking (ZSI)

Operating principle
- A fault occurs at point A. Downstream device no. 2 clears the fault and sends a signal to upstream device no. 1, which maintains the short-time tripping delay tsd or the ground-fault tripping delay tg to which it is set.
- A fault occurs at point B. Upstream device no. 1 detects the fault. In the absence of a signal from a downstream device, the set time delay is not taken into account and the device trips according to the zero setting. If it is connected to a device further upstream, it sends a signal to that device, which delays tripping according to its tsd or tg setting.

Note:
On device no. 1, the tsd and tg tripping delays must not be set to zero because this would make discrimination impossible.

Connections between control units
A logic signal (0 or 5 volts) can be used for zone selective interlocking between the upstream and downstream circuit breakers.
- ETA 5.0, 6.0

An interface is available for connection to previous generations of trip units.

Wiring
- maximum impedance: 2.7 Ω / 300 metres
- capacity of connectors: 0.4 to 2.5 mm²
- wires: single or multicore
- maximum length: 3000 metres
- limits to device interconnection:
  - one of the common ZSI - OUT (Z1) and the output ZSI - OUT (Z2) can be connected to a maximum of 10 inputs;
  - a maximum of 100 devices may be connected to the common ZSI - IN (Z3) and to an input ZSI - IN CR (Z4) or GF (Z5).

Test
The portable test kit may be used to check the wiring and operation of the zone selective interlocking between a number of circuit breakers.

Caution.
If the protection function is not used on circuit breakers equipped for ZSI protection, a jumper must be installed to short terminals Z3, Z4 and Z5. If the jumper is not installed, the short-time and ground-fault tripping delays are set to zero, whatever the position of the adjustment dial.

Terminals Z1 to Z5 correspond to the identical indications on the circuit-breaker terminal blocks.

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