



Understanding the Difference Between Type A and Type B Earth Leakage Relays

In modern electrical installations, safety and reliability are paramount. Earth leakage relays (ELRs) play a critical role in detecting leakage currents and preventing electric shocks, equipment damage and fire hazards. However, selecting the correct type of ELR i.e. **Type A** or **Type B** is essential for ensuring proper protection in different applications.

Protecting Electrical Systems with the Right Earth Leakage Relay

Type A Earth Leakage Relays

Designed for Alternating and Pulsating DC Currents

Type A Earth Leakage Relays are primarily used in applications where there is a need to detect alternating current (AC) leakage as well as pulsating direct current (DC) leakage. These relays are suitable for installations where:

- The presence of rectifiers or inverters may cause pulsating DC components
- Loads such as computers, LED lighting, and single-phase variable speed drives (VSDs) are in use
- There is a risk of fault currents that include AC and unidirectional pulsating DC currents

Key Features of Type A Relays

- Detects AC leakage and pulsating DC fault currents
- Provides protection for modern loads with power electronics
- Suitable for residential, commercial, and light industrial applications

Type B Earth Leakage Relays

Designed for AC, Pulsating DC, and Smooth DC Currents

Type B Earth Leakage Relays go beyond the capabilities of **Type A** relays, detecting all types of leakage currents, including smooth DC leakage that may occur in complex electrical systems. These relays are essential for:

- Applications with three-phase variable speed drives (VSDs) and frequency inverters
- Electric vehicle (EV) charging stations where leakage currents include smooth DC components
- Photovoltaic (PV) solar inverters and industrial equipment utilizing DC power

Key Features of Type B Relays

- Detects AC, pulsating DC and smooth DC fault currents
- Provides enhanced safety for advanced power electronics and renewable energy applications
- Required in certain industrial and EV charging applications to meet regulatory standards

How to Choose the Right Earth Leakage Relay

Selecting between **Type A** and **Type B** ELRs depends on the nature of the electrical installation:

- **For standard AC loads and simple power electronics** – **Type A** is generally sufficient
- **For advanced industrial systems, renewable energy, and EV chargers** – **Type B** is recommended to ensure full protection against all types of leakage currents

Ensure Compliance and Safety

Proper selection of [Earth Leakage Relays](#) is crucial for compliance with electrical safety standards, such as IEC 60947-2 and IEC 60755. Choosing the right type not only enhances system safety but also improves operational reliability.

