5.5 Use in IT systems

Use of the 3VL molded case circuit breakers in IT systems

The 3VL molded case circuit breakers up to size VL1250 have been tested in accordance with IEC / EN 60947-2, Annex H (testing sequence for molded case circuit breakers for IT systems) up to a maximum voltage (U_i max.) of 690 V AC. The 3VL8 and 3VL7 (1250 A) cannot be used in an IT system.

The 3VL molded case circuit breakers for system protection from SIEMENS, optionally available with thermal overload and electromagnetic short-circuit releases, or electronic trip units, are suitable for use in IT systems. The molded case circuit breakers also meet the requirements of IEC 60947-2 Annex H (EN 60947-2, Annex H). The respective options are required here, and the necessary safety clearances (ventilation clearances) must be observed.

Selection criteria for molded case circuit breakers

The devices are always dimensioned and selected independently of the relevant system type. The circuit breaker is always selected in accordance with the maximum short-circuit current in the IT system. The device is selected in accordance with the relevant I_{cu} values of the 3VL molded case circuit breaker. The neutral conductor is not grounded by definition in the IT system.

The system operator ensures that no double ground fault can occur on the input or output side of the molded case circuit breaker. In this case, the switching capacity of the IT systems remains unchanged.

If this is not guaranteed, the values in accordance with the standard IEC 60947-2 Annex H apply for single-pole short-circuits.

Fault situation

The most critical fault for molded case circuit breakers in ungrounded IT systems is a double ground fault on the infeed and load side of the molded case circuit breaker. If this fault occurs, the entire phase-to-phase voltage is applied via one pole of the molded case circuit breaker.

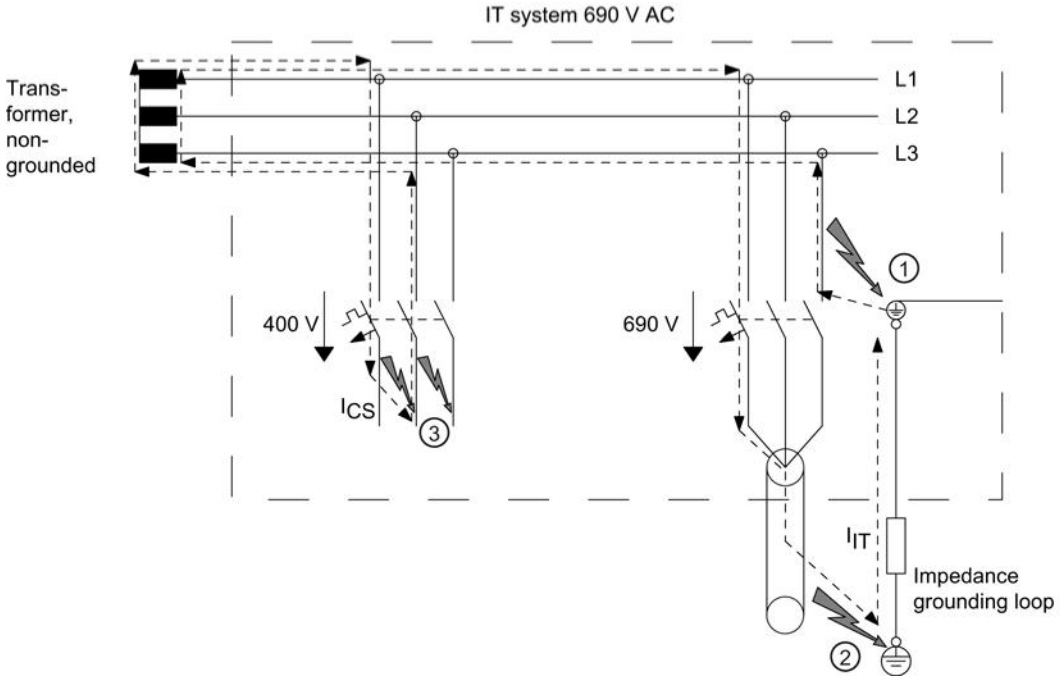

Figure 5-2 Double ground fault (ground fault and short-circuit to frame)

Explanation of the illustration

- Faults ① and ② simultaneously:
  - Double ground fault on the load and infeed side
  - Single-pole short-circuit, the full phase-to-phase voltage of 690 V is applied to main contact L1
  - Selection of the molded case circuit breaker according to their suitability as defined in IEC 60947-2, Annex H
- Fault ③
  - 2 or 3-pole short-circuit
  - Multi-pole short-circuit, a voltage of 690 V /V 1.73 = 400 V is applied at the main contacts
  - The design of the molded case circuit breaker is in accordance with I_{cu}/I_{cs}

See also

Standards and specifications (Page 308)