

Self-protected distribution transformers (TPC)

ABB offers self-protected transformers with high voltage (HV) fuses in the transformer tank. The unit can be equipped with protection to withstand steep waves from transients, and tested according to SFS 2646. TPC are tested in accordance with HN 52-S-24, IEC 60076-13, SFS 2646 standards.



TPC transformers provide a built in cut off protection system inside the transformer. The system was designed and patented by ABB. It protects people and environment from transformer failures, clears all internal and downstream faults (as a back-up protection) without any external manifestation. It is equipped with HV fuses, which activate disconnectors in case of internal faults and transformer control device (TCD): oil level, internal pressure control device. TPC always creates three-phase disconnection in case of any fault detection. With TPC protection, you get a more reliable protection for the electrical system as a whole and for the transformer in particular.

Benefits from using TPC:

Reduce environmental impact of the possible transformer failures

- Risk of fire hazard is minimized
- Risk of transformer explosion eliminated
- Possible oil leakage is detected by the protection and leads to transformer disconnection

Improve safety for maintenance crew

- Faults are cleared inside the transformer tank

Integration

- High integration of protection to secure safety of system

Coordination

- Protection coordination to secure selectivity of the TPC system (interaction with customer required)

Flexibility

- Different selection of the fuses gives possibility to keep TPC functionality in case of various network protection schemes
- Could be produced without oil level sensor

Safety

- Design and system focused on safety of network, environment and people

Savings

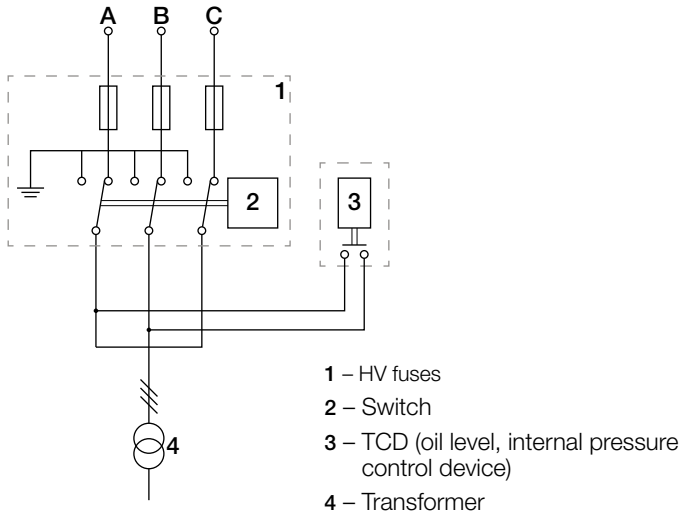
- High degree of protection integration allows to consider substation simplification

Quality

- Improve the quality of the energy delivery by reducing the shut-down time

The transformer can also be also equipped with a protection to withstand steep waves from transients in the network.

TPC functionality diagrams



Technical specification:

Rated power	50 - 400 kVA
Voltage	12/24 kV
Impedance voltage	4 %
Connection group	Dyn11 or Yzn11
Cooling	oil-immersed ONAN
Surface protection	galvanized and/or painted
Tested	IEC 60076-13, HN 52-S-24
Optional	SFS 2646

TPC standard equipment:

High voltage (HV) bushing	plug-in, porcelain, synthetic
Low voltage (LV) bushing	porcelain, synthetic
Voltage class	LI125AC50, AC10
Voltage regulation	$\pm 2 \times 2.5 \%$ (or other)
Protection devices	TCD – oil and pressure control device

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