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# **ELECTRIC SWITCH BOX FOR AUTOTRANSFORMER**



## Field of Application

The electric switch box is intended to the safe operation of power autotransformers and it is used for the supply, protection, control and signaling of the 200 MVA, 220 kV/110 kV autotransformers, with the possibility to be extended also to other classes of transformers and autotransformers.

## Main Technical Characteristics

- operating voltages: 380 V / 50 Hz; 220 V A.C.; 220 V D.C.
- environmental temperature: - 33<sup>0</sup>C to + 45<sup>0</sup>C
- overall dimensions: L x w x h ≈ 1750 x 1330 x 360 mm
- net weight: 230 kg

## Constructive-functional description

The electric switch box is composed of a closed metallic box, where the equipment for the cooling, protection, control, signaling and measurement circuits afferent to the autotransformer is mounted. The metallic box is provided with an additional covering, sun-blind type, and inside it is arranged a closed space where the jumper-boards are mounted.

The electric switch box is provided with additional connecting circuits, allowing the inter-connection with a microprocessor-based equipment for power transformer protection and operation monitoring. For damping the vibrations, the electric switch box is mounted on autotransformer by means of 4 dampers with rubber insertion. For the good operation of the electric apparatus from the box under extreme environmental conditions, there is provided:

- natural ventilation, by means of two ventilating slots, at high environmental temperatures;
- heating by a thermostat resistance, at low environmental temperatures.

The autotransformer cooling is done by means of 6 cooling batteries with forced circulation of oil (oil pumps) and air blowing (fans). The cooling system is composed of three cooling units, controlled according to the beneficiary's request. The electric switch box provides the autotransformer control under two operating conditions:

**Manual duty:** *the start/stop command of the battery groups from the autotransformer cooling system is manually carried out, individually for each group separately. This command can be carried out locally, from the autotransformer electric switch box, or remotely, from the control room, by means of the switches placed in the electric switch box.*

**Automatic duty:** *the cooling units starting is done thus: one unit is set in operation simultaneously with the autotransformer starting, and the other ones are setting in operation as the winding temperature is increasing. Under this duty it is necessary to make a permutation between the succession of the cooling units starting, in order to homogenize the wear of the electric motors afferent to the oil pumps and fans. This permutation is carried out according to a well settled cycle, by means of a switch placed in the control room.*

### Advantages:

- Safe operation and prolongation of the autotransformer life.
- Due to its modular construction, the equipment can be easily adapted to the customer's requirements, any configuration being available at request.