ELETRAFO

TRASFORMATORI ELETTRICI

MANUAL FOR INSTALLATION AND MAINTENANCE OF TRANSFORMERS WITH AIR COOLING

INDEX

0 SAFETY INSTRUCTIONS

1 INTRODUCTION
1.1 Nameplate data
1.2 Reference standards

2 ACCESSORIES
2.1 Normal accessories
2.2 Accessories on request

3 TRANSPORT
3.1 Reception
3.2 Stock

4 INSTALLATION
4.1 Positioning
4.2 Connection
4.3 Checks and commissioning

5 MAINTENANCE

ELETRAFO

TRASFORMATORI ELETTRICI

0.1 Safety instructions

Read these instructions for use and maintenance carefully before moving or putting the transformer into operation.
Any work operation must take place without the presence of power supply.
The transformer must always be connected to a power supply network equipped with the protective conductor for the earth connection.
Do not access the transformer area, or remove protective parts without having removed the voltage.
All transformer connection and commissioning operations must only be carried out by specialized personnel with qualifications and skills in electrical engineering according to the EN 60204-1 standard gere attentamente le presenti istruzioni d'uso e manutenzione prima spostare o mettere in esercizio il trasformatore.

1 Introduction

These instructions refer to transformers with natural air cooling, having the following characteristics:
- Rated operating power from 30 KVA to 200 KVA
- Maximum voltage less than or equal to 1000 V

In the following construction versions:
- Both single-phase and three-phase version
- Openwork execution (IP00)
- Execution in protective case (IPxx)

1.1 Nameplate data

The reference electrical characteristics are shown on the plate located on each transformer, and are as follows:
- Nominal power that can deliver in VA (Sn)
- Type of service in% (Id 100% = continuous service)
- Number of phases of the power supply system (Ph)
- Frequency range in Hz, which the power supply network must have
- Nominal voltage (s) to primary in V (PRI)
- Secondary full load voltage (s) in V (SEC)
- Nominal current (s) that can be supplied to the secondary in A
- Short circuit voltage in% (Uk)
- Connection group and relative phase shift index (eg Gr: Dy11, only for three-phase transf.)
- Insulation class (F / H)
- Max ambient temperature ° C (Ta 40 ° C unless otherwise requested)
- Transformer code (Code) *
- Serial number, which uniquely identifies the transformer (Matr) *
- Test date (M / Y)
- Graphic symbol of the type of transformer
- Reference standards

* The code and the serial number are also reported on other accompanying documents (DDT, declaration of conformity and test report)

1.2 Reference standads

CEI 14-8 (CT 14 fasc. 5069 C)	Dry power transformers
EN61558-2-1	Special requirements for transf. of separation
EN61558-2-4	Pre Special requirements for transf. of isolation

2 Accessories

2.1 Normanl accessories

- Terminal block for connecting the transformer to the power supply network (primary) and for connecting the load to the same (secondary). They can be of various types, depending on the amperometric capacity and customer needs.
- Earth terminal integral with the fixing armatures; allows the connection of non-live parts to the system's ground network.
- The armatures that close the core, in the lower part, are provided with 4 slots for fixing the transformer to the equipment.
- Rating plate, in compliance with the reference standards.
- Lifting eyebolts.

2.2 Accessories on request

- Metallic protective case with different degree of protection (IPxx); complete with brackets for fixingtothe floor, lifting eyebolts, removable cover to access the transformer, slits for air circulation andremovable doors for cable entry.
- Thermometric probes. They can be of different types, such as simple thermal pads (Klixon) with normally closed contact that is activated when the calibration temperature is reached, or sensors that can be connected to control units (PT100)
- Fuse holder bases with relative protection fuse, mounted directly on the transformer structure.
- Sliding wheels for both openwork and protection boxes

3 Transport

3.1 Reception

The transformers are shipped from the factory ready to be installed.
To reduce the risk of damage during transport, they are adequately protected and fixed to a transport pallet. It is advisable to lift and move it using vehicles equipped with shovels (palet) and paying attention to the balance of the weight in order to avoid the possible overturning of the same.
If eyebolts are used, excessive swinging must be avoided and the lifting ropes must not form an angle greater than 60° between them.
The displacement of the open version transformers (IP00) must be carried out taking care not to damage the windings and not to compromise the connections from the coils to the terminal blocks.
An accurate visual check is recommended that the transformer has not been damaged during transport or lifting, with particular reference to the coils and terminal blocks.

3.2 Stock

The storage of a dry transformer before final installation must be done in a covered, dry and dust-free room and located in a place protected from any mechanical shocks.

4 Installation

4.1 Positioning

The transformer can be placed inside a cabinet with other electrical equipment, therefore always check the existence of good ventilation of the protective container in order to dissipate by convention (naturally or through fans for air circulation) the heat due to the losses of all the components contained in it.
When the transformer is supplied in a protective case, the sizing takes into account the losses and the degree of protection (IPxx). The only caution is not to place it in particularly small rooms.
Always fix the transformer firmly on a rigid base, using the holes present on the lower armatures or on the fixing brackets of the enclosures.
Based on the degree of protection (IPxx), pay due attention to the possible presence of liquids, as well as flammable anesthetic mixtures with air or oxygen.

4.2 Connection

Connect the ground terminal of the non-live metal parts to the system ground network, as well as the power supply network to the primary terminals and the load to the secondary terminals; for the connections, use suitable terminals according to the nature and amperometric capacity of the terminal blocks.
Connect any thermometric probes present to the relative control devices.

4.3 Checks and commissionig

Check the locking of the terminals of all the connections made as per the table:

Screw	M8	M10	M12	M14
tightening torque [Kgm]	1.25	2.5	4.5	7.0

If there are adjustment sockets, check that the selected socket is the right one.
Visually check the general condition of the transformer and that there are no forgotten working tools on the windings.
To commission, proceed in the following order:

- Close the power switch
- Check the secondary voltage with no load connected
- Close the switch to power the load
- Check the currents of the various circuits with an ammeter clamp

5 Maintenance

Generally, transformers with natural cooling in air do not require particular maintenance interventions and the frequency of these interventions is dictated by the environmental conditions in which it is located and by the work load factor. In principle, after one year from commissioning, follow the guide below:

- Cable tightening to terminal blocks. Even after an exceptional event with torque wrench and tightening torque specified in paragraph 4.3.
- Terminal board check of any auxiliary circuits.
- In the presence of temperature probes (PT100) simulate an intervention by checking the internal functions of the relays.
- Cleaning of dust and other deposits. Annually and / or in the event of a shutdown with dry compressed air at low pressure.