

GENERAL GUIDELINES for the Transportation, Storage, Installation, Maintenance, Dismounting, Disposal and Recycling of **INDOOR INSTRUMENT TRANSFORMERS**



1) PURPOSE OF THE GUIDELINES

The aim of this guide is to provide an idea over the transportation, storage, installation, maintenance, dismounting, disposal and recycling guidelines for the instrument transformers manufactured by ALCE Electric Industries Corp.



Possible damage to the equipment and/or devices leading to risk of death and /or possible damage and hazard to the environment .



Possible damage to health of the working personnel .



Risk of possible death or permanent injury to the working personnel.

2) GENERAL

ALCE guarantees that the instrument transformers (IT's) carrying ALCE markings are manufactured, handled and stored according to the relevant standards specified by the purchaser. Consequently, it is essential that the purchaser should perform all the transportation (unless mentioned otherwise), storage, erection, operation and maintenance activities in accordance with the instructions provided by ALCE and as directed in relevant standards.

IT's are used:

- to convert large currents and/or voltages in the primary circuit to an appropriate level for secondary circuit equipment (relays and meters)
- to insulate primary and secondary circuit from each other to protect the secondary equipment from the harmful effects of large currents and/or voltages appearing during the operation



The use of IT's for other purposes than the described above, is forbidden if not agreed with the manufacturer and will result in the termination of the guarantee period.



The use of other apparatus (for connecting other devices, electromagnetic and/or electrostatic field regulation or insulation purposes) is not advised prior consulting the manufacturer. Not complying with these may result in the termination of the guarantee period. The manufacturer assumes no liability for the misused IT's or any other damages inflicted by the misused IT's.

3) TRANSPORTATION & STORAGE

A special agreement should be made between the purchaser and ALCE Electric Industries Corp., if the service conditions can not be guaranteed during transport and storage.

The transformers are delivered in wooden boxes or fastened to transport pallets. If the IT's are not going to be installed immediately after the delivery, the purchaser should handle and store the IT's in an appropriate manner. During transportation and storage, the transformers must be protected against direct sunshine.

ALCE recommends the IT's should be kept in their original packaging, in a roofed storage area where the ambient air is in between $-40\text{ }^{\circ}\text{C}$ and $+70\text{ }^{\circ}\text{C}$ (1K5 according to IEC 60721-3-1 1997). The ambient air should not be significantly polluted. Moreover, the humidity limits should be within the specified limits of the relevant standards. Due to atmospheric conditions, condensation may occur from time to time. Condensation may be prevented by suitable ventilation and heating systems.



Due to excess weight (marked ($m \geq 25\text{ kg}$)), special safety measures should be taken before handling some type of IT'

4) INSTALLATION

Inspection Before Installation

Before installation, the transformers should be inspected for any physical damage that may have occurred during the transportation or storage. Due to unusual storage conditions condensation may occur. Even though cast resin transformers are relatively impervious to moisture, insulation tests might indicate the possibility of the entrance of moisture into the molded transformer. If this is the case, refer to your sales representative or ALCE directly in order to resolve the matter.

Installation

The full assembly of the delivered IT's are completed at the ALCE factory. The mounting position of the indoor transformer is up to the purchaser and can be chosen freely.

The transformers should be fixed firmly using the mounting base with four screws (M10 or M12 depending on the type) and washers in accordance with the starting torques. Fastening must be done on a smooth surface.



Prior connecting the primary terminals, the instrument transformer shall be properly grounded using the M8 screw on the base plate.



Due to dangerous voltage levels, any installation and/or maintenance servicing must be carried out by qualified personnel.

Current Transformers

Primary connections

There are M10 or M12 (depending on type) screws with washers used for fastening the primary conductors to the terminals. They should be tightened firmly in accordance with the starting torques provided in the catalogues. For primary reconnectable current transformers, the ratio can be reconnected by changing position of nickel plated copper links fixed by M8 screws without removing the already fitted primary conductors. In low current ratio, both of the nickel plated copper links shall be mounted as shown in Fig.1(a) for all times.

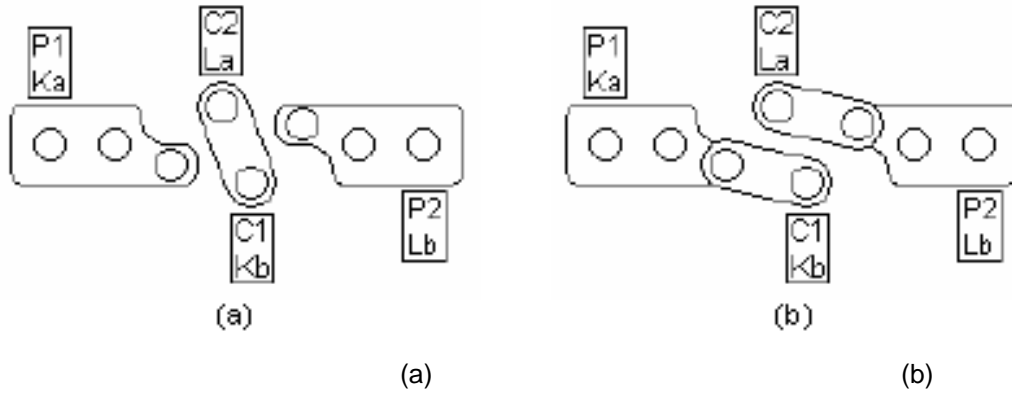


Figure CT-1 Reconnectable current transformer
(a) low current ratio, (b) high current ratio.

Secondary connections



Secondary circuits of the current transformers **shall never** be open circuited.

Secondary circuits shall never be open-circuited in current transformers. For that reason, before connecting the primary make sure that either the secondaries are connected to measuring devices (Figure CT-2) or short-circuited (Figure CT-3). Moreover, make sure that one side of each secondary winding is **always grounded** for safety.

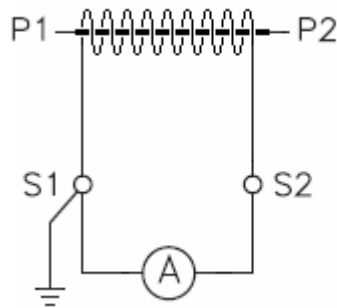


Figure CT-2

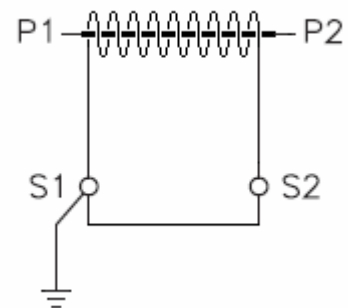


Figure CT-3

For the current transformers with tapped and/or reconnectable secondaries, **unused terminals must be left open** (Figure CT-4). The current transformers which have capacitive divider tap (Ck) must be connected to the indicator. If the tap will be unused then it must be grounded as well.

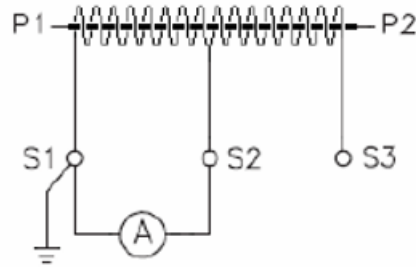


Figure CT-4

Voltage Transformers

Primary Connections

There are M10 or M12 (depending on type) screws with washers used for fastening the primary conductors to the terminals. They should be tightened firmly in accordance with the starting torques provided in the catalogues.

The voltage transformers designed to operate between two phases, each terminal should be properly connected to the relevant phase (Figure VT-1). For single phase transformers, the terminal of the primary "N" must be grounded in the grounded (neutral) systems (Figure VT-2).

Secondary Connections



Secondary circuits of the voltage transformers **shall never** be short circuited.

In order to prevent the thermal destruction of a voltage transformer, the secondary circuits of a voltage transformer shall never be short circuited. When the secondary terminals are connected to a measuring or protection device, one of the terminals must always be grounded for safety (Figure VT-1 and Figure VT-2). If the secondary windings of a voltage transformer will not be used, then it must be left open circuited and one of the terminals must be connected to ground (Figure VT-3).

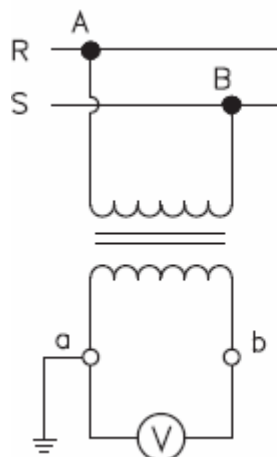


Figure VT-1

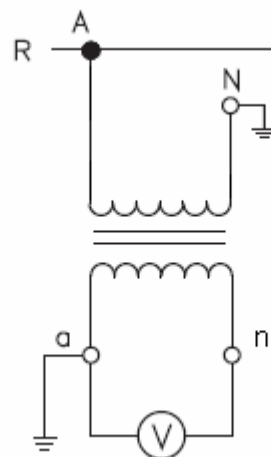


Figure VT-2

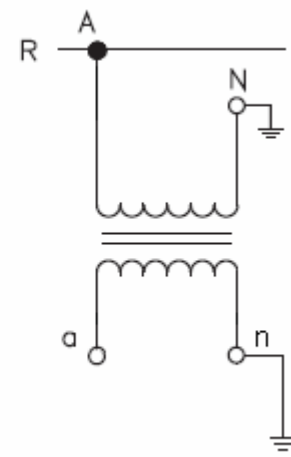


Figure VT-3

The secondary terminal cover box (IP20) for indoor use is made from plastic. The cover is provided with either three detachable threaded inserts PG16 or one detachable threaded insert PG21 depending on the type of the instrument transformer.

Terminals are wired and marked according to the purchaser's request and are provided with M5 screws for secondary wiring connection and with through going holes for direct grounding of the secondary circuit by M5 screws. The terminal cover is sealable.

5) MAINTENANCE



Due to dangerous voltage levels, any installation and maintenance servicing must be carried out by qualified personnel.

Before performing any maintenance servicing on the transformers, make sure that the transformer is **deenergized** both from the primary and secondary windings. After taking the necessary precautions (**by grounding the busbars**) brush off the excessive dust or other kind of pollution. Polluted transformers can be cleaned with spirit or toluene. Minor surface damages can be removed with sandpaper.



Repairing greater surface damages and traces of acs must be requested from the manufacturer.

6) DISMOUNTING



Due to dangerous voltage levels, any installation and maintenance servicing must be carried out by qualified personnel .



Due to excess weight in some types, special safety measures should be taken before handling the transformers marked ($m \geq 25$ kg).

Before dismantling the instrument transformers, make sure that the transformer is **deenergized**, both from the primary and secondary windings. After taking the necessary precautions (**by grounding the busbars**), unscrew the M10 or M12 screws (depending on the type) used for fastening the primary conductors to the terminals. When the IT is freed from the busbars, unscrew the four screws fastening the transformer using the base plate. Take the necessary precautions as the IT's are generally heavy instruments.

7) RECYCLING, DISPOSAL and the IMPACT on the ENVIRONMENT

The IT's contain recyclable parts such as copper and steel. The recycling procedures should be applied to copper and steel parts in accordance with the local laws.



Incinerating the disposable parts may generate toxic and harmful gases. Incineration process should be carried out by certified incineration plants.

It is to the best knowledge of ALCE that, the disposal of the non-recyclable parts in trash or landfills can be carried out safely. However, it is the responsibility of the end-user to check the local laws, regulations, and policies in the action of recycling and disposal of instrument transformers. ALCE will gladly and properly recycle and dispose the used instrument transformers for its customers.

ALCE products comply principle of the life cycle. On the scope of lifecycle management, we consider,

- Design Stage - Disposal of our products have been considered during the design stage in terms of minimal impact to environment.
- Purchasing of Raw Materials
- Production
- Storage and transportation
- Disposal process

The raw materials used in our products are purchased in accordance with national and international regulations (Reach-RoHS etc.). TDS and MSDSs are reviewed by our Health, Safety and Environment Department. No prohibited materials are used on the product during production and environmental Occupational Health and Safety rules are complied with.

National and international regulations are also taken into account during the storage and transportation of the our products.

Our products are analyzed to see the hazardous to the end user and disposal and are not classified as hazardous waste.

ALCE knows that it is safe to throw away or bury non-recyclable parts.

The end user is responsible for sending instrument transformers / insulators to right place according to national laws, regulations and recycling policies at the end of life of our product