

# Medical Isolated Power Systems



IT Systems are distribution systems which are preferred less compared to Grounded Systems at Industrial Institutions. The main reason for this is to maintain the installation integrity. But due to the electrical security that it provides, IT Systems are preferred to be used at the supply of the critical divisions in the Institutions. The main difference that discriminates IT systems from Grounded Systems (PN or PP) is the non-presence of the Institution Grounding. This is obtained by isolation transformer and each load that is connected to this distribution system has its own individual grounding. These systems are mainly used in the supply of the rooms like surgery rooms at the hospitals.

### Benefits of the Isolation System;

- In the event of first isolation failure, energy blackout does not happen. The security equipment controls the system continuously therefore the energy blackout is prevented.
- The Medical Devices continue their normal operations.
- Fault Currents are reduced to non-critical levels which means the leakage current that is present within the room is reduced from mA levels to  $\mu$ A levels.
- A possible inconvenience in the surgery room is prevented where energy is reserved and blackout does not happen.

### System Contents ;

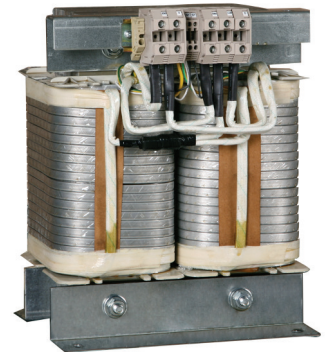
- Isolation, Load & Temperature Monitoring Device (ILT-107-V.4)
- ILT-107-V.4 is a multi-functional device produced for electrical control at Isolation Systems. The following parameters can be observed with ILT-107-V.4 at IT Systems ;
- The insulation resistance of a one- or multiple-phase (for a maximum of 3) AC 230 V IT • system
- The insulation resistance of an AC 24 V IT system (OP lamps with 1 or 2 one-phase • circuits)
- The load current of one- or multiple-phase transformers up to 8 kVa (through • converters)
- The temperature of the transformer (through a PTC or break contact).
- It monitors all measuring lines. Its built-in full-graphics display allows you intuitive menu-led operation while providing you with the details of all operating and fault messages. You can also edit all of the parameter-isable unit settings with a menu system and the parameters are stored in the non-volatile EEPROM.

### Alarm Announcer ( BMT14)

This terminal is used for displaying operating and fault signals in the IT networks in areas used for medical purposes in conformity with DIN VDE 0100 T710-2002:11. The unit also has a disinfection-friendly foil surface. The unit's intuitive menu control makes it easy to use. It can also create individualized alarm texts with configuration software, making it possible to switch up other trades.

The large-scale fully graphic display is lighted, allowing a clearly structured display of the information from several systems. Large programmable multifunction buttons enable you to control the display. Manual test and service functions can be initiated on the system bus. The electrical unit's technical data and operating states are transmitted through the CAN bus.

It also shows the operating states on the (red, green and yellow) LED's in addition to the text display. The unit can be upgraded to include digital inputs and outputs by adding a piggyback printed circuit board. The operating and alarm terminals can monitor one another during operation if two or more BMT14 units are used and they indicate the breakdown of a BMT14 unit.



### Isolation Transformer

Isolation Transformers are the main devices of Isolated Systems. With the help of isolation transformer, the supplied room is isolated from the Grounded System. Consequently the leakage current within the room is reduced from mA levels to  $\mu$ A levels. Besides there is also one advantage that is; in case of initial Phase-Ground short circuit, there shall be no blackout. The hospital isolation transformers that supply the mission-critical locations shall have the following important electrical features ;

The nominal power of the transformer shall be maximum 10 kVA.

- It shall be Single Phase. In case of it being 3 Phase then the L-L Voltage should be 250 • VAC.
- The Short Circuit Voltage shall comply the  $U_k < \% 3$  condition.
- No Load Condition Current shall comply the  $I_0 < \% 3$  condition.
- The Initial Current value shall be less than  $8I_n$