

CTL DECISION SHEET (DSH)

Standard(s) (incl. year)	Subclause(s)	Tracking No.	Year
IEC 60335-2-29:2002/ AMD1:2004/ AMD2:2009 IEC 60335-2-29:2016	22.26	2126	2019
Category			
HOUS			
Subject	Keywords	Developed by	Approved at
Connection between output circuit and accessible metal parts or earthing terminal	- Connection - Output circuit - Earthing	ETF 1	2019 CTL Plenary Meeting

Question

According to sub-clause 22.26 of IEC 60335-2-29, it is not allowed to connect the output circuit of a battery charger to accessible metal parts or an earthing terminal:

22.26 Replacement:

The output circuit shall be supplied through a **safety isolating transformer** and shall not be connected to **accessible metal parts** or an earthing terminal. The insulation between parts operating at **safety extra-low voltage** and **live parts** shall comply with the requirements for double insulation or reinforced insulation.

Compliance is checked by inspection and by the tests specified for **double insulation** or **reinforced insulation**.

Fig. 1

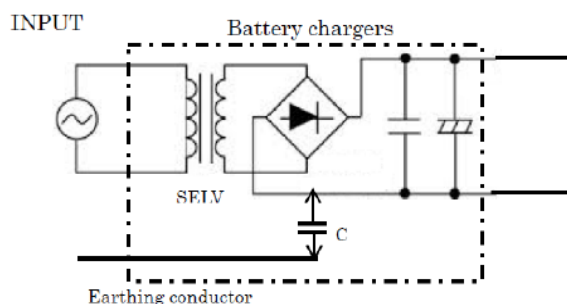


Fig1: Only the output circuit is connected to earth through a capacitor.

Fig. 2

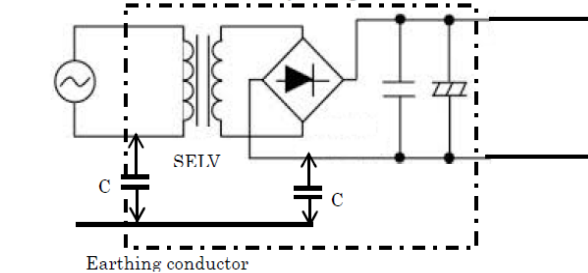


Fig2: Both the input and output circuit are connected to earth through a capacitor.

If the circuit is connected to earth as described in Fig.1 or Fig.2 by means of a capacitor for functional reason, what is required with respect to the capacitor?

Decision

SELV outputs shall not be earthed. As safety extra low voltage can be touched, supplementary insulation is necessary between the output and earth.

Explanatory notes

Insulation between input or output circuit and earth is, in general, required to be basic insulation for protective earth such that the insulation between the input and output circuit is still double insulation, therefore one of the insulations must meet the requirements for supplementary insulation. If the earth is a functional earth, then Clause 22.53 is applicable.

Consideration was made for the following points;

- 1) Connection between the output circuit and accessible metal parts or an earthing terminal of battery chargers is prohibited by clause 22.26 of IEC 60335-2-29.
- 2) Insulation between earthing conductor and input or output circuit for the purpose of EMC suppression is not always clarified in the standard. (Differentiation between protective earth and functional earth)
- 3) Requirement of 19.20 of IEC 61558-1 (Separation between SELV, PELV and other circuit).

The decision is based on the comment from TC61 Bled meeting held on June 2019.