

CTL DECISION SHEET (DSH)

Subclause(s)	Tracking No.	Publication date
5.5.2.2	DSH 2200	2022
Keywords		Developed by
- Opening of a fuse		ETF 2
- Limits of accessible voltage		
	5.5.2.2 Keywords - Opening of a fuse	5.5.2.2 DSH 2200 Keywords - Opening of a fuse

Question

Many AC mains supplied products contain a fuse within the filter circuit. Sub-clause 5.5.2.2 addresses the capacitor voltage being accessible after disconnection of a connector. The voltage measured after 2s shall comply with:

- ES1 limits under NORMAL OPERATING CONDITIONS for an ORDINARY PERSON, and
- ES2 limits under SINGLE FAULT CONDITIONS for both an ORDINARY PERSON and an INSTRUCTED PERSON.

Per 5.5.2.2 «If a switch (for example, the mains switch) has an influence on any test result, it is placed in the most unfavorable position.»

However the standard does not specifically address the situation when a fuse has operated as a consequence of a single fault within the equipment, or have been removed by an ordinary person.

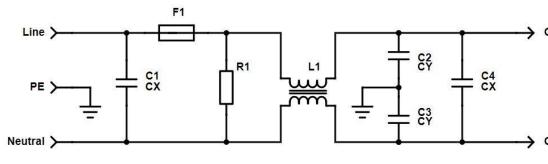
Questions 1:

Since a fuse can open as a consequence of a single fault or be removed by the operator, should the measurement according to 5.5.2.2 be carried out with a fuse open?

Question 2:

If the answer to question 1 is yes, which limit applies to the accessible voltage after opening of the fuse?

Example:





Decision
1): Yes, if the opening or removal of a fuse can influence the result of the measurement.
2): The ES2 voltage limit applies to the capacitor voltage that becomes accessible after disconnection of a connector because if the fuse can be removed by an odirnary person it is considered as an Abnormal operation condition and because opening of a fuse is a consequence of a single fault.
Explanatory notes
It was common practice to consider the opening of a fuse in the legacy standards IEC 60950-1 and IEC 60065. Although not ideal design pratice sometimes a fuse separates a bleeder resistor from a X-capacitor. Therefore the consequence of a fuse opening needs to be taken into account (see example).