

CTL DECISION SHEET

Standard(s): IEC 60335-1:2001; Amendment 1 and 2	Sub-clause(s): 19.11.1/2/3/4 and 22.46	No.	Year
		DSH 730	2009
Category: HOUS		Developed by: ETF1	
Subject: Abnormal operation and construction	Key words: - PEC - Software types	Decision approved at the 2009 CTL Plenary Meeting	

Question:

(1) In the construction shown in the figure, NTC1+micro+T1 operate as a thermostat for the heating element, R. The heating element does not have integral protection. During the application of the requirements in clause 19.11.2, transistor T1 is shorted and NTC2+micro+T2 operates as a thermal cut-out to comply with sub-clause 19.13.

- a.- Are NTC2+micro+T2 considered as a PEC?
- b.- If so, are the clauses 19.11.3 (additional fault), 19.11.4 (immunity) and 22.46 (software classification) applicable?
- c.- Considering that the thermostat software and the thermal cut-out software are separate parts of code, what software classes are applicable to the thermostat and the thermal cut-out?

(2) For the same construction, the manufacturer changes the parameters of NTC2 in such a way that NTC2+micro+T2 do not operate as a thermal cut-out but as redundant thermostat at the same temperature as the normal thermostat. Under the same conditions of the test in clause 19.11.2, short circuiting of T1, the heating element operates as in normal operation to comply with sub-clause 19.13.

- d- Are the electronic circuit or some of its parts considered as a PEC?
- e.- If so, are the clauses 19.11.3 (additional fault), 19.11.4 (immunity) and 22.46 (software classification) applicable?
- f- Considering that the thermostats have separated software, what software classes are applicable?

Decision:

- (1)
- a- Yes
 - b- All sub-clauses are applicable
 - c- Taking into account that short circuit of T2 has to be considered in 19.11.2, then the thermostat is considered as a PEC too. Software class for T2 shall be at least B, and the software class for T1 is class A, B or C.
- (2)
- d- Yes, the temperature control of the circuit (T1+T2+micro+NTC1+NTC2) is considered as a PEC
 - e- All sub-clauses are applicable
 - f- Both software have to be class B

Explanatory Notes:

The figure is just a simplified schematic to help define the tests that have to be applied. This decision is to the draft of the 5th edition of IEC60335-1,61/3725/CDV, although the reference to the software classes are deleted.

