



# INSTITUTE OF TESTING AND CERTIFICATION (INDIA) PVT. LTD.

Clause	Requirement – Test	Results – Remarks	Verdict
<b>5</b>	<b>Marking and documentation</b>		
<b>5.1</b>	<b>Marking</b>		
5.1.1	General		
	Markings shall be visible from the exterior, or be visible after removing a cover or without the aid of a tool.		P
5.1.2	Identification		
a)	the name or trade mark of the manufacturer	Provided	P
b)	a model number, name or other means to identify the equipment.	Provided	P
5.1.3	Mains supply		
	The equipment shall be marked with the following information:		
a)	nature of supply		-
1)	a.c.: rated mains frequency or range of frequencies;	Provided (Frequency- 50hz)	P
2)	d.c.: symbol 1 of table 1;		N/A
b)	the rated value(s) of the supply voltage(s) or the RATED range of supply voltage(s)	Provided (Voltage: 220 Volt, 50 Hz)	
c)	The maximum rated power in watts or volt-amperes , or the maximum rated input current.	Provided	P
d)	Equipment which the operator can set for different rated supply voltages shall be provided with means for the indication of the voltage.		N/A
e)	Accessory mains socket-outlets accepting standard mains plugs shall be marked with the voltage if it is different from the mains supply voltage.	Provided	P
5.1.4	Fuses		

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	For any fuse which may be replaced by an operator, shall be a marking beside the fuseholder		P
5.1.5	Terminals, connections and operating devices		
5.1.5.1	General		
5.1.5.2	Terminals for connection to the mains supply shall be identifiable.		
a)	Functional earth terminals with symbol 5 of table 1.		N/A
b)	Protective conductor terminals with symbol 6 of table 1.	Provided	P
c)	TERMINALS of control circuits which are permitted by 6.6.3 to be connected to ACCESSIBLE conductive parts, with symbol 7 of Table 1		N/A
d)	Terminals supplied from the interior of the equipment and which are hazardous live.		N/A
5.1.6	Switches and circuit-breakers		
	If the power supply switch or circuit-breaker is used as the disconnecting device		
	Symbols 9 and 10 shall not be used for switches other than the power supply switch.	Symbol 9 & 10 for switch is provided	P
	Push-button switch is used as the power supply switch, symbols 9 and 15 of table 1 may be used to indicate the on-position, or symbols 10 and 16 to indicate the off-position, with the pair of symbols (9 and 15, or 10 and 16) close together.		N/A
5.1.7	Equipment protected by double insulation or reinforced insulation		
	Equipment protected throughout by double insulation or reinforced insulation shall be marked with symbol 11 of table 1.		N/A

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1)	The protective conductor and terminal shall have at least the current rating of the measuring terminals.		N/A
2)	The protective bonding shall not be interrupted by the presence of any switching or interrupting device.	In compliance	P
i)	Functional earth terminals shall allow a connection with is independent form the connection of the protective conductor.		N/A
j)	If the protective conductor terminal is a binding screw, it shall be of a suitable size for the bond wire.		N/A
k)	The contact pressure required for a bonding connection shall not be capable of being reduced by deformation of materials forming part of the connection.		P
6.5.2.4	Impedance of protective bonding of plug-connected equipment		
	The impedance between the protective conductor terminal and each accessible part for which protective bonding is specified shall not exceed 0.1Ω.		P
	If the equipment has a non-detachable power cord, the impedance between the protective conductor plug pin of the MAINS cord and each accessible part for which protective bonding is specified shall not exceed 0.2Ω.		P
		(Refer Table A)	
6.5.2.5	Impedance of protective bonding of permanently connected equipment		N/A

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	performed at 2 000 m. For other test site altitudes, the corrections of Table 10 are applied for CLEARANCES but not for tests of solid insulation.		
6.8.2	Humidity preconditioning		
	The equipment is subjected to humidity preconditioning before voltage tests.		-
	This treatment is need not to be applied to parts that are clearly unlikely to be influenced by humidity and temperature.		N/A
	Preconditioning : Humidity : 93 % RH $\pm$ 3% RH Temperature: 40° C $\pm$ 2° C. Duration: 48 h.		P
6.8.3	Test procedures		
6.8.3.1	The a.c. voltage test		P
		Refer to table C) Tested at 1500 V AC for 1 min	
	The waveform of the power frequency test voltage shall be substantially sinusoidal.		P
	No flashover of CLEARANCES or breakdown of solid insulation shall occur during the test.	No flashover/breakdown observed	P
6.8.3.2	The 1 min d.c. voltage test		
	The d.c. test voltage shall be substantially free of ripple.		N/A
	No flashover of CLEARANCES or breakdown of solid insulation shall occur during the test.	AC voltage operated Equipment	N/A
6.8.3.3	The impulse voltage withstand test		
	The test shall be conducted for five impulses	(Refer to table C)	P

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<b>17</b>	<b>Risk assessment</b>		
	If examination of the equipment shows that hazards not fully addressed in Clauses 6 to 16 (see 1.2.1) might arise, then risk assessment is required. It shall be carried out and documented to achieve at least a tolerable risk by an iterative process covering the following.		N/A
a)	RISK analysis		
	RISK analysis is the process to identify HAZARDS and to estimate the RISKS based on the use of available information.		N/A
b)	RISK evaluation		
	Each RISK analysis requires a plan to evaluate the estimated severity and likelihood of a RISK, and to judge the acceptability of the resulting RISK level.		N/A
c)	RISK reduction		
	If the initial RISK level is not acceptable, steps shall be taken to reduce the RISK. The process of RISK analysis and RISK evaluation shall then be repeated, including checking that no new RISKS have been introduced.		N/A

Clause	Requirement – Test	Results – Remarks	Verdict
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**Table A**

6.5.2.4	Impedance of PROTECTIVE BONDING of plug –connected equipment				P
ACCESSIBLE part under test	Test Current (A)	Test current Duration (minute)	Maximum allowed resistance ( $\Omega$ )	Measured Resistance( $\Omega$ )	
Between earthing terminal and earthed metal part	25A	1 minute	0.2 $\Omega$	49.5m $\Omega$	

**Table B**

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<b>6.7</b>	<b>Insulation Requirement (Creepage and Clearance Distance )</b>		
<b>Pollution degree ....</b>	1		
<b>Minimum Required values for Clearance Distance</b>	1.5 mm		
<b>Minimum Required values for Creepage Distance</b>	1.5 mm		
<b>Insulation Type</b>	Basic		
<b>Location</b>	<b>Measured Value (mm)</b>		
	Clearance Distance	Creepage Distance	Verdict
Mains: L & N	>1.5mm	>1.5mm	P
Supplementary Information: None			

**Table C**

<b>6.8.3.1</b>	<b>A.C. Voltage Test</b>			<b>P</b>
	<b>For Basic Insulation</b>			
<b>Test voltage applied between</b>	<b>Voltage</b>	<b>Duration</b>	<b>Flashover/Breakdown (Yes/No)</b>	
Between mains supply and enclosure	1500V	1min.	No	
<b>6.8.3.3</b>	<b>Impulse voltage withstand test</b>			
	<b>V rms.</b>	220		
<b>Test voltage applied between</b>	<b>Voltage</b>	<b>Pulses</b>	<b>Flashover/Breakdown (Yes/No)</b>	
Between mains supply and enclosure	2 500	Five positive & five negative	No	

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