Laboratory	**UL India Lab, UL India Pvt. Ltd., Laboratory Building, Kalyani Platina Campus, Sy. No. 129/4, EPIP Zone, Phase-II, Whitefield, Bangalore, Karnataka** **Location 1: Laboratory Building, Kalyani Platina Campus, Sy. No. 129/4, EPIP Zone, Phase-II, Whitefield, Bangalore, Karnataka** **Location 2: OAK Building, Kalyani Platina Campus, Sy. No 129/4, EPIP Zone, Phase-II , Whitefield, Bangalore, Karnataka**
Accreditation Standard	**ISO/IEC 17025: 2005**
Discipline	**Electrical Testing**
Certificate Number	**T- 1431**
Last Amended on	**18.10.2016**

Issue Date **05.08.2016**

Valid Until **04.08.2018**

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		LOCATION: 1		
I.	**DOMESTIC ELECTRICAL APPLIANCES**			
1.	**Microwave Oven, Blenders, Food mixers, food processors, Mincers appliances**	Marking test	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 7 IEC 60335-2-25 (Edition 6.2): 2015-11, Clause. 7 IS 302-1: 2008, Clause. 7 IS 302-2-25: 2014, Clause. 7	Qualitative
		Protection against electric shock	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 8 IEC 60335-2-25 (Edition 6.2): 2015-11, Clause. 8 IS 302-1: 2008, Clause. 8 IS 302-2-25: 2014, Clause. 8	Qualitative
		Power Input and current	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 10 IEC 60335-2-25 (Edition 6.2): 2015-11, Clause. 10 IS 302-1: 2008, Clause. 10 IS 302-2-25: 2014, Clause. 10	1 V to 600 V AC/DC 1 A to 20 A AC/DC max 0.1 W to 12 kW 1.5 g to 1000 g
		Heating test/Temperature rise	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 11 IEC 60335-2-25 (Edition 6.2): 2015-11, Clause. 11 IS 302-1: 2008, Clause. 11 IS 302-2-25: 2014, Clause. 11	2 °C to 400 °C 0.3 Ω to 60 MΩ

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Microwave Oven, Blenders, Food mixers, food processors, Mincers appliances	Leakage Current (At operating Temperature)	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 13 IEC 60335-2-25 (Edition 6.2): 2015-11, Clause. 13 IS 302-1: 2008, Clause. 13 IS 302-2-25: 2014, Clause. 13	0.1 mA to 10 mA
		Electric Strength (At operating temperature)	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 13 IEC 60335-2-25 (Edition 6.2): 2015-11, Clause. 13 IS 302-1: 2008, Clause. 13 IS 302-2-25: 2014, Clause. 13	0.1 V to 10 kV AC/DC
		Transient Voltage	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 14 IEC 60335-2-25 (Edition 6.2): 2015-11, Clause. 14 IS 302-1: 2008, Clause. 14 IS 302-2-25: 2014, Clause. 14	1 V to 600 V AC/DC 1 A to 20 A AC/DC max 0.1 W to 12 kW 1.5 g to 1000 g
		Moisture resistance	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 15 IEC 60335-2-25 (Edition 6.2): 2015-11, Clause. 15 IS 302-1: 2008, Clause. 15 IS 302-2-25: 2014, Clause. 15	(-)20 °C to 150 °C 30 % to 98 % RH

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Microwave Oven, Blenders, Food mixers, food processors, Mincers appliances	Leakage current (After Humidity test)	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 16 IEC 60335-2-25 (Edition 6.2): 2015-11, Clause. 16 IS 302-1: 2008, Clause. 16 IS 302-2-25: 2014, Clause. 16	0.1 mA to 10 mA
		Electrical strength (After Humidity Test)	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 16 IEC 60335-2-25 (Edition 6.2): 2015-11, Clause. 16 IS 302-1: 2008, Clause. 16 IS 302-2-25: 2014, Clause. 16	0.1 V to 10 kV AC/DC
		Overload protection test	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 17 IEC 60335-2-25 (Edition 6.2): 2015-11, Clause. 17 IS 302-1: 2008, Clause. 17 IS 302-2-25: 2014, Clause. 17	1 V to 600 V AC/DC 1 A to 20 A AC/DC max
		Endurance	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 18 IEC 60335-2-25 (Edition 6.2): 2015-11, Clause. 18 IS 302-1: 2008, Clause. 18 IS 302-2-25: 2014, Clause. 18	1 V to 600 V AC/DC 1 A to 20 A AC/DC max 1,00,000 cycles

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	Microwave Oven, Blenders, Food mixers, food processors, Mincers appliances	Abnormal operation	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 19 IEC 60335-2-25 (Edition 6.2): 2015-11, Clause. 19 IS 302-1: 2008, Clause. 19 IS 302-2-25: 2014, Clause. 19	2 °C to 400 °C 0.3 Ω to 60 MΩ
		Stability and Mechanical hazards	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 20 IEC 60335-2-25 (Edition 6.2): 2015-11, Clause. 20 IS 302-1: 2008, Clause. 20 IS 302-2-25: 2014, Clause. 20	0.15 J to 1 J 5 º to 90 º
		Mechanical Strength	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 21 IEC 60335-2-25 (Edition 6.2): 2015-11, Clause. 21 IS 302-1: 2008, Clause. 21 IS 302-2-25: 2014, Clause. 21	0.2 J to 1 J 1 N to 300 N

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Microwave Oven, Blenders, Food mixers, food processors, Mincers appliances	Construction	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 22	0.22 º to 10 º 1 N to 50 N
			IEC 60335-2-25 (Edition 6.2): 2015-11, Clause. 22 IS 302-1: 2008, Clause. 22 IS 302-2-25: 2014, Clause. 22	0.1 mm to 10 mm
		Internal Wiring (Flexing)	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 23	0.5 kgf to 50 kgf
			IEC 60335-2-25 (Edition 6.2): 2015-11, Clause. 23 IS 302-1: 2008, Clause. 23 IS 302-2-25: 2014, Clause. 23	
		Cord grip and Cord guard	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 25	1 V to 600 V AC/DC 1 A to 20 A AC/DC max
			IEC 60335-2-25 (Edition 6.2): 2015-11, Clause. 25 IS 302-1: 2008, Clause. 25 IS 302-2-25: 2014, Clause. 25	0.1 Hz to 50 Hz 0.02 mm to 20 mm

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	Microwave Oven, Blenders, Food mixers, food processors, Mincers appliances	Terminal for external conductors	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 26 IEC 60335-2-25 (Edition 6.0): 2010-09 IS 302-1: 2008, Clause. 26 IS 302-2-25: 2014, Clause. 26	0.02 mm to 50 mm
		Provision for earthing	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 27 IEC 60335-2-25 (Edition 6.2): 2015-11, IS 302-1: 2008, Clause. 27 IS 302-2-25: 2014, Clause. 27	1 A to 60 A 0.5 s to 600 s 0.01 Ω to 0.60 Ω
		Screws and Connections	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 28 IEC 60335-2-25 (Edition 6.2): 2015-11, IS 302-1: 2008, Clause. 28 IS 302-2-25: 2014, Clause. 28	2 kgf cm to 26 kgf cm
		Creepage distances and clearances	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 29 IEC 60335-2-25 (Edition 6.2): 2015-11, Clause. 29 IS 302-1: 2008, Clause. 29 IS 302-2-25: 2014, Clause. 29	0.2 mm to 20 mm

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Microwave Oven, Blenders, Food mixers, food processors, Mincers appliances	Resistance to Heat, Fire and Tracking (Glow wire Test)	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 30 IEC 60335-2-25 (Edition 6.2): 2015-11, Clause. 30 IS 302-1: 2008, Clause. 30 IS 302-2-25: 2014, Clause. 30	10 °C to 850 °C
		Resistance to Heat, Fire and Tracking (Needle flame Test)	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 30 IEC 60335-2-25 (Edition 6.2): 2015-11, Clause. 30 IS 302-1: 2008, Clause. 30 IS 302-2-25: 2014, Clause. 30	35 mm (Needle burner) 0.4 s to 60 s 2 mm,12 mm 100 °C to 700 °C 0.58 g copper slug Propane Gas 99 % purity
		Resistance to Heat, Fire and Tracking (Ball pressure test)	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 30 IEC 60335-2-25 (Edition 6.2): 2015-11, IS 302-1: 2008, Clause. 30 IS 302-2-25: 2014, Clause. 30	1 °C to 150 °C 1 N to 20 N 0.01 mm to 10 mm

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	Microwave Oven, Blenders, Food mixers, food processors, Mincers appliances	Resistance to rusting	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 31 IEC 60335-2-25 (Edition 6.2): 2015-11, IS 302-1: 2008, Clause. 31 IS 302-2-25: 2014, Clause. 31	15 °C to 35 °C 1 °C to 100 °C 90 % RH Max 10 min
		Radiation hazards	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 32 IEC 60335-2-25 (Edition 6.0): 2010-09 IS 302-1: 2008, Clause. 32 IS 302-2-25: 2014, Clause. 32	10 V CD N Method 0.1 mW/cm2 to 12.5mW/cm2
		Marking	IEC 60335-1 (Edition 5.2): 2016, Clause. 7 IEC 60335-2-14 (Edition 6.0): 2016-06, Clause. 7	Qualitative
		Protection against access to live parts	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 8 IEC 60335-2-14 (Edition 6.0): 2016-06, Clause. 8	Qualitative

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Microwave Oven, Blenders, Food mixers, food processors, Mincers appliances	Power Input and current	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 10	1 V to 600 V AC/DC 1 A to 20 A AC/DC max 0.1 W to 12 kW 1.5 g to 1000 g
			IEC 60335-2-14 (Edition 6.0): 2016-06, Clause. 10	1 V to 600 V AC/DC 1 A to 20 A AC/DC max 0.1 W to 12 kW 1.5 g to 1000 g
		Heating /Temperature rise	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 11 IEC 60335-2-14 (Edition 6.0): 2016-06, Clause. 11	2 °C to 400 °C
		Leakage Current (At operating Temperature)	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 13 IEC 60335-2-14 (Edition 6.0): 2016-06, Clause. 13	0.1 mA to 10 mA
		Electric Strength (At operating temperature)	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 13 IEC 60335-2-14 (Edition 6.0): 2016-06, Clause. 13	0 .1 kV to 10 kV AC/DC

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Microwave Oven, Blenders, Food mixers, food processors, Mincers appliances	Transient Voltage	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 14 IEC 60335-2-14 (Edition 6.0): 2016-06, Clause. 14	1 V to 600 V AC/DC 1 A to 20 A AC/DC max 0.1 W to 12 kW 1.5 g to 1000 g
		Moisture resistance/Spill Over test	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 15 IEC 60335-2-14 (Edition 6.0): 2016-06, Clause. 15	(-)20 °C to 150 °C 30 % to 95 % RH
		Leakage current (After Humidity test)	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 16 IEC 60335-2-14 (Edition 6.0): 2016-06, Clause. 16	0 .1 mA to 10 mA
		Electrical strength (After Humidity Test)	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 16 IEC 60335-2-14 (Edition 6.0): 2016-06, Clause. 16	0.1 kV to 10 kV AC/DC
		Overload protection of transformers and associated circuits	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 17 IEC 60335-2-14 (Edition 6.0): 2016-06, Clause. 17	1 V to 600 V 1 A to 20 A

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Microwave Oven, Blenders, Food mixers, food processors, Mincers appliances	Abnormal operation	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 19 IEC 60335-2-14 (Edition 6.0): 2016-06, Clause. 19	1 V to 600 V 1 A to 20 A
		Stability and Mechanical hazards	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 20 IEC 60335-2-14 (Edition 6.0): 2016-06, Clause. 20	0.15 J to 1 J 0 to 90 º
		Mechanical Strength	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 21 IEC 60335-2-14 (Edition 6.0): 2016-06, Clause. 21	0.15 J to 1 J
		Construction	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 22 IEC 60335-2-14 (Edition 6.0): 2016-06, Clause. 22	0.22 º to 10 º 1 N to 50 N 0.1 mm to 10 mm
		Internal Wiring (Flexing)	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 23 IEC 60335-2-14 (Edition 6.0): 2016-06, Clause. 23	0 to 50 kgf

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Microwave Oven, Blenders, Food mixers, food processors, Mincers appliances	Supply connection, and external flexible cables and Cord	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 25	1 V to 600 V AC/DC
			IEC 60335-2-14 (Edition 6.0): 2016-06, Clause. 25	1 A to 20 A AC/DC max 0.1 Hz to 50 Hz 0.02 mm to 20 mm
		Terminal for external conductors	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 26 IEC 60335-2-14 (Edition 6.0): 2016-06, Clause. 26	0.02 mm to 50 mm
		Provision for earthing	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 27 IEC 60335-2-14 (Edition 6.0): 2016-06, Clause. 27	1 A to 60 A 5 s to 600 s
		Screws and Connections	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 28 IEC 60335-2-14 (Edition 6.0): 2016-06, Clause. 28	2 kgf cm to 26 kgf cm.
		Creepage distances and clearances	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 29 IEC 60335-2-14 (Edition 6.0): 2016-06, Clause. 29	0.1 mm to 10 mm

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Microwave Oven, Blenders, Food mixers, food processors, Mincers appliances	Resistance to Heat, Fire and Tracking (Glow wire Test)	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 30 IEC 60335-2-14 (Edition 6.0): 2016-06, Clause. 30	10 °C to 850 °C
		Resistance to Heat, Fire and Tracking (Needle flame Test)	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 30 IEC 60335-2-14 (Edition 6.0): 2016-06, Clause. 30	35 mm (Needle burner) 0.4 s to 60 s 2 mm,12 mm 100 °C to 700 °C 0.58 g copper slug Propane Gas 99 % purity
		Resistance to Heat, Fire and Tracking (Ball pressure test)	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 30 IEC 60335-2-14 (Edition 6.0): 2016-06, Clause. 30	1 °C to 150 °C 1 N to 20 N 0.01 mm to 10 mm 0.5 min to 60 min
		Resistance to rusting	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 31 IEC 60335-2-14 (Edition 6.0): 2016-06, Clause. 30	15 °C to 35 °C 1 °C to 100 °C 30 % to 90 % RH 1 min to 10 min

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Microwave Oven, Blenders, Food mixers, food processors, Mincers appliances	Radiation hazards	IEC 60335-1 (Edition 5.2): 2016-05, Clause. 32 IEC 60335-2-14 (Edition 6.0): 2016-06, Clause. 30	Qualitative
II.	**TRANSMISSION LINE EQUIPMENT AND ACCESSORIES**			
1.	**LT panel, Distribution board and bus duct**	Dielectric Properties	IEC 61439-1 (Edition 1.0): 2009-01 IEC 61439-5 (Edition 2.0): 2011-08 Clause. 9.1, 10.9, 11.9	500 V to 3.8 kV AC/DC Power frequency, 200 mA capacity Upto 3.8 kV AC/DC 55 mA, 10 s to 60 s Upto 14 kV, 1.2/50 µs Impulse
		Temperature Rise limit	Clause. 9.2, 10.10	Upto 2000 A AC single phase / three phase, Upto 5000 A AC Single Phase 50 Hz Continuous
		Short Circuit Protection and Short Circuit Withstand	Clause. 9.3	200 A to 10 kA, 690 V, 0.1 s

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	LT panel, Distribution board and bus duct	Resistance to corrosion (Damp Heat and Salt mist for	IEC 61439-1 (Edition 1.0): 2009-01	Damp heat – 10 °C to 50 °C, 95 % RH
		enclosures and metallic parts)	IEC 61439-5 (Edition 2.0): 2011-08 Clause. 10.2.2	Salt Mist Upto 35 °C
		Verification of Thermal Stability of Enclosures	Clause. 10.2.3.1	10 °C to 75 °C
		Verification of resistance of insulating materials to normal heat	Clause. 10.2.3.2	10 °C to 75 °C
		Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects	Clause. 10.2.3.3	100 °C to 960 °C
		Mechanical impact	Clause. 10.2.6	0.2 J to 1 J
		Degree of protection of assemblies	Clause. 10.3	IP11 to IP67
		Verification of resistance to static load	IEC 61439-1 (Edition 1.0): 2009-01 IEC 61439-5 (Edition 2.0): 2011-08 Clause. 10.2.101.1.1	5 N to 1200 N

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	LT panel, Distribution board and bus duct	Verification of resistance to shock load	Clause. 10.2.101.1.2	5 kg to 50 kg
		Test applicable to PE ND As designed for operation at ambient temperatures of between 40 °C and –25 °C	Clause. 10.2.101.2.1	From 40 °C to (-)25 °C
		Test applicable to PE ND As designed for operation in an arctic climate	Clause. 10.2.101.2.2	Temperature -0 Down to (-)55 °C Force – Upto 1500 N
		Verification of mechanical strength of doors	Clause. 10.2.101.3	5 N to 500 N
		Verification of resistance to axial load of metal inserts in synthetic material	Clause. 10.2.101.7	5 N to 800 N
		Verification of resistance to mechanical shock impacts induced by sharp edged Objects	Clause. 10.2.101.8	Mass 5 kg, Qualitative
		Marking	Clause. 10.2.7	Qualitative
		Clearances and Creepage Distances	Clause. 10.4	1 mm to 300 mm

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	LT panel, Distribution board and bus duct	Mechanical Operations	Clause. 10.13	Qualitative
		Dielectric Properties	IEC 61439-1 (Edition 1.0): 2009-01 IEC 61439-2 (Edition 2.0): 2011-08 Clause. 9.1, 10.9, 11.9	500 V to 3.8 kV AC/DC Power frequency, 200 mA capacity Upto 3.8 kV AC/DC 55 mA, 10 s to 60 s Upto 14 kV, 1.2/50 µs Impulse
		Temperature Rise limit	Clause. 9.2, 10.10	Upto 2000 A AC single phase / three phase, Upto 5000 A AC Single Phase 50 Hz Continuous
		Short Circuit Protection and Short Circuit Withstand	Clause. 9.3	200 A to 10 kA, 690 V, 0.1 s
		Resistance to corrosion (Damp Heat and Salt mist for enclosures and metallic parts)	Clause. 10.2.2	Damp heat - 10 °C to 50 °C, 95 % RH Salt Mist Upto 35 °C
		Verification of Thermal Stability of Enclosures	Clause. 10.2.3.1	10 °C to 75 °C

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	LT panel, Distribution board and bus duct	Verification of resistance of insulating materials to normal heat	Clause. 10.2.3.2	10 °C to 75°C
		Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects	Clause. 10.2.3.3	100 °C to 960 °C
		Mechanical impact	Clause. 10.2.6	0.2 J to 1 J
		Degree of protection of assemblies	Clause. 10.3	IP11 to IP67
		Marking	Clause. 10.2.7	Qualitative
		Clearances and Creepage Distances	Clause. 10.4	1 mm to 300 mm
		Mechanical Operations	Clause. 10.13	Qualitative
		Dielectric Properties	IEC 61439-1 (Edition 1.0): 2009-01	500 V to 3.8 kV, 50 Hz
			IEC 61439-6 (Edition 1.0): 2012-05 Clause. 9.1, 10.9, 11.9	1 kV to 8 kV, 1.2/50 µs Impulse

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	LT panel, Distribution board and bus duct	Temperature Rise limit	Clause. 9.2, 10.10	Upto 2000 A AC single phase / three phase, Upto 5000 A AC Single Phase 50 Hz Continuous
		Short Circuit Protection and Short Circuit Withstand	Clause. 9.3	200 A to 10 kA, 690 V, 0.1sec
		Resistance to corrosion (Damp Heat and Salt mist for enclosures and metallic parts)	Clause. 10.2.2	Damp heat – 10 °C to 50 °C, 95 % RH Salt Mist Upto 35 °C
		Verification of Thermal Stability of Enclosures	Clause. 10.2.3.1	10 °C to 75 °C
		Verification of resistance of insulating materials to normal heat	Clause. 10.2.3.2	10 °C to 75 °C
		Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects	Clause. 10.2.3.	100 °C to 960 °C
		Mechanical impact	Clause. 10.2.6	0.2 J to 1 J

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	LT panel, Distribution board and bus duct	Degree of protection of assemblies	Clause. 10.3	IP11 to IP67
		Ability to withstand mechanical loads	Clause. 10.2.101	10 N to 150 N
		Resistance of the enclosure to crushing	Clause. 10.2.101.3	10 N to 150 N
		Thermal cycling test	Clause. 10.2.102	Upto 80 °C
		Marking	Clause. 10.2.7	Qualitative (Visual)
		Clearances and Creepage Distances	Clause. 10.4	1 mm to 300 mm
		Mechanical Operations	Clause. 10.13	Qualitative test
2.	**Compression and mechanical connectors**	Heat Cycle test	IEC 61238-1, (Edition 2): 2003-05 Clause. 6.3	10 A to 2000 A
		Electrical Resistance Measurement	Clause. 6.2.1	1 mΩ to 10 Ω
		Short Circuit test	Clause. 6.3.4	200 A to 10 kA, 690 V, 0.1 s

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	Compression and mechanical connectors	Tensile Force – Mechanical Tests	Clause. 7	5 N to 9800 N
3.	**Rewirable type electric fuses**	Visual examination	IS 2086: 1993 (RA 2004) (Edition 4.1) Clause. 9.1	Qualitative
		Test for dimensions	Clause. 9.2	1 mm to 300 mm
		Test for mechanical endurance	Clause. 9.3	Qualitative
		Test for Mechanical Strength	Clause. 9.4	75 g to 200 g
		Test for withdrawal force	Clause. 9.5	5 N to 160 N
		Test for temperature-rise	Clause. 9.6	10 A to 400 A AC single phase / three phase, 100 A to 5000 A AC Single Phase 50 Hz Continuous
		Insulation resistance	Clause. 9.7	100 kΩ to 2000 MΩ
		High Voltage Test	Clause. 9.8	0.5 kV to 3.8 kV
		Test for breaking capacity	Clause. 9.9	200 A to 10 kA at 690 V

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Rewirable type electric fuses	Test for water absorption	Clause. 9.10	Qualitative
		Temperature cycle test (for ceramic material)	Clause. 9.11.1	From 0 to 100 °C
III.	**SWITCHGEAR EQUIPMENT**			
1.	**Electronics relay, Pneumatic relay**	Input test	UL508 (17th Edition): 2005	Upto 600 V AC/DC
			IEC 60947-1 (5th Edition): 2007-06	3 A Max
		Temperature test	UL508 (17th Edition): 2005	Upto 150 A AC single phase / three phase,
			IEC 60947-1 (5th Edition): 2007-06	50 Hz Continuous
		Overload test	UL508 (17th Edition): 2005	Upto 30 A, 280 V AC, UPF
			IEC 60947-1(5th Edition): 2007-06	Upto 30 A, 48 V DC
		Endurance test	UL508 (17th Edition): 2005	Upto 600 A, 690 V AC, 0.1 PF to 1.0 PF
			IEC 60947-1(5th Edition): 2007-06	Upto 30 A, 48 V DC

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Electronics relay, Pneumatic relay	Dielectric voltage withstand test	UL508 (17th Edition): 2005	Upto 3.8 kV AC/DC
			IEC 60947-1(5th Edition): 2007-06 Clause. 7.2.3	Power frequency , 200 mA capacity Upto 3.8 kV AC/DC 55 mA 10 s to 60 s
		Crossover potential test I	UL508 (17th Edition): 2005 IEC 60947-1(5th Edition): 2007-06	Upto 600 V AC/DC, Upto 400 Hz
		Under/over voltage test	UL508 (17th Edition): 2005 IEC 60947-1(5th Edition): 2007-06	Upto 600 V AC/DC, Upto 400 Hz
		Crossover potential test II	UL508 (17th Edition): 2005 IEC 60947-1(5th Edition): 2007-06	Upto 600 V AC/DC, Upto 400 Hz
		Tripping limits and characteristics	IEC 60947-2 (Edition 4.1): 2009-05 Clause. 8.3.3.1	10 A to 2000 A AC single phase / three phase, 100 A to 5000 A AC Single Phase 50 Hz Continuous

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Electronics relay, Pneumatic relay	Dielectric properties	Clause. 8.3.3.2	500 V to 3.9 kV AC/DC Power frequency , 200 mA capacity 500 V to 3.9 kV AC/DC 55 mA, 10 s to 60 s
		Mechanical operation and operational performance capability	Clause. 8.3.3.3	From 9 A to 315 A, Upto 690 V
		Verification of dielectric withstand	Clause. 8.3.3.5	500 V to 3.9 kV AC/DC Power frequency , 200 mA capacity 500 V to 3.9 kV AC/DC 55 mA, 10 s to 60 s
		Verification of temperature-rise	Clause. 8.3.3.6	10 A to 2000 A ac single phase / three phase, 100 A to 5000 A AC Single Phase 50 Hz Continuous

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Electronics relay, Pneumatic relay	Overload performance (where applicable)	Clause. 8.3.3.4	From 9 A to 315 A, Upto 690 V
		Rated service short-circuit breaking capacity	Clause. 8.3.4	200 A to 10 kA, 690 V
		Operational performance capability	Clause. 8.3.3.3	9 A to 315 A, Upto 690 V,
2.	**Switch Fuse Units**	Temperature-rise	IEC 60947-3 (Edition 3.1): 2012-04 Clause. 8.3.3.1	10 A to 2000 A AC single phase / three phase, 100 A to 5000 A AC Single Phase 50 Hz Continuous
		Temperature-rise Verification	Clause. 8.3.3.6	10 A to 2000 A AC single phase / three phase, 100 A to 5000 A AC Single Phase 50 Hz Continuous
		Dielectric properties	Clause. 8.3.3.2	500 V to 3.9 kV AC/DC Power frequency , 200 mA capacity 500 V to 3.9 kV AC/DC 55 mA, 10 s to 60 s

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Switch Fuse Units	Leakage current	Clause. 8.3.3.5	0.05 mA to 5 mA
		Rated making and breaking capacities (overload)	Clause. 8.3.3.3	1 A to 600 A, 690 V AC, UPF 1 A to 30 A, 48 V DC
		Operational performance	Clause. 8.3.4	9 A to 2500 A, 690 V, three phase, 50 Hz, 0.35 pf to 1.0 pf
		Rated short-time withstand current	Clause. 4.3.6.1	200 A to 10 kA, 690 V, 0.1 s
		Rated short-circuit making capacity	Clause. 4.3.6.2	200 A to 10 kA, 690 V
		Rated conditional short-circuit current	Clause. 4.3.6.4	200 A to 10 kA, 690 V
		Strength of actuator Mechanism	Clause. 8.3.3.7	10 N to 600 N
		Overload test	Clause. 8.3.7.1	1 A to 600 A, 690 V AC, UPF 1 A to 30 A, 48 V DC
		Mechanical operation test	Clause. 8.1.3.2	N A

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
3.	**Contactors and Auxiliary Contacts**	Verification of temperature rise	IEC 60947-4-1 (Edition 1): Amd. 1, Amd. 2: 1990-07-15 IEC 60947-4-1 (Edition 2): Amd. 1, Amd. 2: 2000-11-28 IEC 60947-4-1: 2002 Amd. 2: 2005 IEC 60947-4-1 (Edition 3): 2009 IS/IEC 60947 (Part 4/ Sec I): 2000 Clause. 9.3.3.3	Upto 2000 A ac single phase / three phase, 50 Hz Continuous
		Temperature Test	UL 508, (Edition 17) Revisions through and Including Sept 19, 2008	Upto 2000 A AC single phase / three phase, 50 Hz Continuous
		Verification of operation and operating limits	IEC 60947-4-1 (Edition 1): Amd. 1, Amd. 2: 1990-07-15 IEC 60947-4-1 (Edition 2): Amd. 1, Amd. 2: 2000-11-28 IEC 60947-4-1: 2002- Amd. 2: 2005 IEC 60947-4-1 (Edition 3): 2009 IS/IEC 60947 (Part 4/Sec I): 2000 Clause. 9.3.3.1 and 9.3.3.2	Upto 660 V AC / DC : Upto 2000 A AC single phase (-)5, 20, 40 °C

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Contactors and Auxiliary Contacts	Overvoltage and Under voltage Test	UL 508, (Edition 17) Revisions through and Including Sept 19, 2008	Upto 660 V AC / DC (-)5, 20, 40 °C
		Verification of mechanical properties of terminals	IEC 60947- 4-1 (Edition 1): Amd. 1, Amd. 2: 1990-07-15 IEC 60947- 4-1 (Edition 2): Amd. 1, Amd. 2: 2000-11-28 IEC 60947- 4-1: 2002- Amd. 2: 2005 IEC 60947- 4-1 (Edition 3): 2009 IS 60947 (Part 4/Sec I): 2000 IEC 60947-1 Clause. 8.2.4	Torque Upto 50 Nm
		Secureness and Pullout Test (Mechanical sequence) Verification of the performance of terminal assemblies	UL 1059 (Edition 4): 2006 Revisions including Dec 15, 2006	Torque Upto 100 Nm Mass 22.7 kg Force Upto 600 N
		Strain relief test	UL 508 (Edition 17): 2008 Revisions through and Including Sept 19, 2008	Upto 100 °C Upto 600 N 1 min

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Contactors and Auxiliary Contacts	Verification of degrees of protection of enclosed contactors and starters	IEC 60947- 4-1 (Edition 3): 2009 IS 60947 (Part 4/Sec I): 2000 IEC 60947-1 Annexure C	IP66
		Verification of dielectric properties	IEC 60947- 4-1 (Edition 1): Amd. 1, Amd. 2: 1990-07-15 IEC 60947- 4-1 (Edition 2): Amd. 1, Amd. 2: 2000-11-28 IEC 60947- 4-1: 2002 Amd. 2: 2005 IEC 60947- 4-1 (Edition 3): 2009 IS 60947 (Part 4/Sec I): 2000 Clause. 9.3.3.4	Upto 3.9 kV AC / DC, Power frequency Upto 15 kV, 1.2/50 µs Impulse
		Dielectric Voltage-Withstand Test	UL 508 (Edition 17): 2008 Revisions through and including Sept 19, 2008	Upto 3.9 kV AC / DC, Power frequency Power frequency , 200 mA capacity Upto 10 kV AC/DC 55 mA

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Contactors and Auxiliary Contacts	Verification of ability to withstand overload currents	IEC 60947- 4-1 (Edition 1): Amd. 1, Amd. 2: 1990-07-15 IEC 60947- 4-1 (Edition 2): Amd. 1, Amd. 2: 2000-11-28 IEC 60947- 4-1: 2002 Amd. 2: 2005 IEC 60947- 4-1 (Edition 3): 2009 IS 60947 (Part 4/Sec I): 2000 Clause. 9.3.5	Upto 700 A AC
		Crossover lead di-electric test I	UL 508 (Edition 17): 2008 Revisions through and Including Sept 19, 2008	Upto 600 V AC, Upto 400 Hz 300 V DC,
		Crossover lead di-electric test II	UL 508 (Edition 17): 2008 Revisions through and Including Sept 19, 2008	Upto 600 V AC, Upto 400 Hz 300 V DC,
		Calibration test (Overload relays)	UL 508 (Edition 17): 2008Revisions through and Including Sept 19, 2008	Upto 2000 A
		Breakdown of component test	UL 508 (Edition 17): 2008 Revisions through and Including Sept 19, 2008	Upto 600 V AC, 300 V DC,

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Contactors and Auxiliary Contacts	Secondary circuit test	UL 508 (Edition 17): 2008 Revisions through and including Sept 19, 2008	Upto 100 V, 200 V A
		Leakage current test	UL 508 (Edition 17): 2008 Revisions through and including Sept 19, 2008	Upto 10 mA
		Verification of rated making and breaking capacities, change-over ability and reversibility, where applicable	IEC 60947- 4-1 (Edition 3): 2009 IS 60947 (Part 4/Sec I) : 2000 Clause. 9.3.3.5	Upto 2500 A, 690 V, three phase, 50 Hz, 0.35- UPF
		Overload Test	UL 508 (Edition 17): 2008 Revisions through and Including Sept 19, 2008	Upto 2500 A, 600 V, three phase, 50 Hz, 0.35 to 1.0
		Verification of conventional operational performance	IEC 60947- 4-1 (Edition 3): 2009 IS 60947 (Part 4/Sec I): 2000 Clause. 9.3.3.6	Upto 2500 A, 690 V, three phase, 50 Hz, 0.35 to 1.0
		Endurance Test	UL 508 (Edition 17): 2008 Revisions through and Including Sept 19, 2008	Upto 2500 A, 600 V, three phase, 50 Hz, 0.35 to 1.0
		Performance under short-circuit conditions	IEC 60947- 4-1 (Edition 3): 2009 IS 60947 (Part 4/Sec I): 2000 Clause. 9.3.4	200 A to 10 kA, 690 V

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
4.	**Auxiliary Contacts, Add on Blocks, Frontle Blocks, Manual Push Buttons**	Verification of operation and operating limits	IEC 60947-5-1 (Edition 2): Amd. 1, Amd. 2: 1997-10-30 IEC 60947-5-1 (Edition 3): 2003 IS 60947 (Part 5/Sec I): 2003 Clause. 8.3.3.2	Upto 600 V AC/ DC : Upto 100 A ac single / 3 phase (-)5, 20, 40 °C
		Overvoltage and Under voltage Test	UL 508 (Edition 17): 2008 Revisions through and Including Sept 19, 2008	Upto 660 V AC / DC (-)5, 20, 40 °C
		Verification of temperature rise	IEC 60947-5-1 (Edition 2): Amd. 1, Amd. 2: 1997-10-30 IEC 60947-5-1 (Edition 3): 2003-11-12 IS 60947 (Part 5/Sec 1): 2003 Clause 8.3.3.3	Upto 50 A AC single phase / three phase, 50 Hz
		Temperature Test	UL 508 (Edition 17): 2008 Revisions through and Including Sept 19, 2008	Upto 50 A AC single phase / three phase, 50 Hz
		Verification of dielectric properties	IEC 60947-5-1 (Edition 2): Amd. 1, Amd. 2: 1997-10-30 IEC 60947-5-1 (Edition 3): 2003-11-12 IS 60947 (Part 5/Sec 1): 2003 Clause. 8.3.3.4	Upto 3.9 kV AC/DC Power frequency , 200 mA capacity Upto 15 kV, 1.2/50 µs Impulse

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Auxiliary Contacts, Add on Blocks, Frontle Blocks, Manual Push Buttons	Dielectric Voltage-Withstand Test	UL 508 (Edition 17): 2008 Revisions through and Including Sept 19, 2008	Upto 3.9 kV AC/DC Power frequency , 200 mA capacity
		Verification of rated making and breaking capacities under normal conditions	IEC 60947-5-1 (Edition 2): Amd. 1, Amd. 2: 1997-10-30 IEC 60947-5-1 (Edition 3): 2003-11-12 IS 60947 (Part 5/Sec 1): 2003 Clause. 8.3.3.5.2	AC: 110 V to 600 V, 100 A DC: 120 V to 600 V, 10 A
		Verification of mechanical properties of terminals	IEC 60947-5-1 (Edition 2): Amd. 1, Amd. 2: 1997-10-30 IEC 60947-5-1 (Edition 3): 2003-11-12 IS 60947 (Part 5/Sec 1): 2003 IEC 60947-1 Clause. 8.2.4	Torque Upto 15 Nm
		Secureness and Pullout Test (Mechanical sequence)	UL 1059 (Edition 4): 2006 Revisions including Dec15, 2006	Torque Upto 15 Nm
		Verification of the performance of terminal assemblies	IEC 60947-1 Clause. 8.2.4	Mass 9 kg Force Upto 50 N
		Measurement of clearances and creepage distances	IEC 60947-5-1 (Edition 2): Amd. 1, Amd. 2: 1997-10-30 IEC 60947-5-1 (Edition 3): 2003-11-12 IS 60947 (Part 5/Sec 1): 2003 Clause. 7.1.3	1 mm to 300 mm

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Auxiliary Contacts, Add on Blocks, Frontle Blocks, Manual Push Buttons	Spacings	UL 508 (Edition 17): 2008 Revisions through and including Sept 19, 2008	1 mm to 300 mm
		Verification of limitation of rotation of a rotary switch	IEC 60947-5-1 (Edition 2): Amd. 1, Amd. 2: 1997-10-30 IEC 60947-5-1 (Edition 3): 2003-11-12 IS 60947 (Part 5/Sec 1): 2003 Clause. 8.2.6	50 N
		Verification of degrees of protection of enclosed contactors and starters	IEC 60947-5-1 (Edition 3): 2003 IS 60947 (Part 5/Sec 1): 2003 Annex C of IEC 60947-1	IP11 to IP67
		Verification of actuation force or moment	IEC 60947-5-1 (Edition 3): 2003-11-12 IS 60947 (Part 5/Sec I): 2003 Clause. 8.2.5	10 N
		Overload and Endurance, Pilot duty	UL 508 (Edition 17): 2008 Revisions through and including Sept 19, 2008	Upto 660 V, 12 A Upto 132 V, 60 A
		Verification of rated making and breaking capacities under abnormal conditions : Overload and endurance tests	IEC 60947-5-1 (Edition 2): Amd. 1, Amd. 2: 1997-10-30	AC – 110 V to 600 V, 100 A

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Auxiliary Contacts, Add on Blocks, Frontle Blocks, Manual Push Buttons	(Auxiliary devices)	IEC 60947-5-1 (Edition 3): 2003-11-12 IS 60947 (Part 5/Sec 1): 2003 Clause. 8.3.3.5.3	DC – 120 V to 600 V, 10 A
		Breakdown of component test	UL 508 (Edition 17): 2008 Revisions through and including Sept 19, 2008	Upto 600 V AC, 300 V DC,
		Performance under conditional short-circuit current	IEC 60947-5-1 (Edition 3): 2003-11-12 IS 60947 (Part 5/Sec 1): 2003 Clause. 8.3.4	Upto 10 kA, 690 V
5.	**Electrical Connector, Terminal Blocks for copper conductors, fuse terminal blocks**	Dielectric Tests	IEC 60947-7-1 (Edition 1): Amd. 1: 1989-11-15 IEC 60947-7-1 (Edition 2): 2002-07-23 IEC 60947-7-1 (Edition 3): 2009-04-20	Upto 3.8 kV AC/DC Power frequency , 200 mA capacity Upto 3.8 kV AC/DC 55 mA Upto 15 kV, 1.2/50 µs Impulse
		Dielectric Voltage-Withstand Test	UL 1059(Edition 4): 2006 Revisions including Dec 15, 2006 Clause. 24	Upto 3.9 kV

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Electrical Connector, Terminal Blocks for copper conductors, fuse terminal blocks	Verification of Voltage drop	IEC 60947-7-1 (Edition 1): Amd. 1: 1989-11-15 IEC 60947-7-1 (Edition 2): 2002-07-23 IEC 60947-7-1 (Edition 3): 2009-04-20 Clause. 7.2.4	Upto 600 A AC and 100 A DC source
		Voltage drop test	UL 1059 (Edition 4): 2006 Revisions including Dec 15, 2006 Clause. 50.2	Upto 100 A DC
		Temperature rise	IEC 60947-7-1 (Edition 1): Amd. 1: 1989-11-15 IEC 60947-7-1 (Edition 2): 2002-07-23 IEC 60947-7-1 (Edition 3): 2009-04-20 Clause. 7.2.1	Upto 600 A AC single phase / three phase, 50 Hz Continuous (-)100 °C to 400 °C
		Temperature test	UL 1059 (Edition 4): 2006 Clause. 31	Upto 600 A AC single phase / three phase,
		(It is same as temperature rise test)	Revisions including Dec 15, 2006	50 Hz – Continuous

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Electrical Connector, Terminal Blocks for copper conductors, fuse terminal blocks	Verification of mechanical Characteristics	IEC 60947-7-1 (Edition 1): 1989-11-15 Amd. 1 IEC 60947-7-1 (Edition 2): 2002-07-23 IEC 60947-7-1 (Edition 3): 2009-04-20 Clause. 8.3.3	Upto 20 N
		Secureness and Pullout Test	UL 1059 (Edition 4): 2006 Revisions including Dec 15, 2006	Torque Upto 100 Nm
		(Mechanical sequence)		Mass 22.7 kg
		Verification of the performance of terminal assemblies		Force Upto 600 N
		Verification of creep age and clearances	IEC 60947-7-1 (Edition 1): 1989-11-15 Amd. 1 IEC 60947-7-1 (Edition 2): 2002-07-23 IEC 60947-7-1 (Edition 3): 2009-04-20 Clause. 8.4.2	1 mm to 300 mm
		Spacings	UL 1059 (Edition 4): 2006 Revisions including Dec 15, 2006 Clause. 47	1 mm to 300 mm
		Solid wire tightening test	UL 1059 (Edition 4): 2006 Revisions including Dec 15, 2006	Upto 15 Nm

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Electrical Connector, Terminal Blocks for copper conductors, fuse terminal blocks	Tab pull test	UL 1059 (Edition 4): 2006 Revisions including Dec 15, 2006 Clause. 14	Upto 50 N
		Mold stress relief test	UL 1059 (Edition 4): 2006 Revisions including Dec 15, 2006 Clause. 16	Upto 100 °C
		Verification of thermal Characteristics	IEC 60947-7-1 (Edition 2): 2002-07-23 IEC 60947-7-1 (Edition 3): 2009-04-20 Clause. 8.5	(Needle flame test 12 mm flame height)
		Short time current sequence test	UL 1059 (Edition 4): 2006 Revisions including Dec 15, 2006	Upto 600 A AC source
		Aging test	IEC 60947-7-1 (Edition 1): 1989-11-15 Amd. 1	Upto 100 °C
		(for screwless-type terminal blocks only)	IEC 60947-7-1 (Edition 2): 2002-07-23 IEC 60947-7-1 (Edition 3): 2009-04-20 Clause. 8.4.7	
		Heat cycling test (Spring force type terminal block)	UL 1059 (Edition 4): 2006 Revisions including Dec 15, 2006	Upto 600 A AC source

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Electrical Connector, Terminal Blocks for copper conductors, fuse terminal blocks	Verification of thermal Characteristics	IEC 60947-7-1 (Edition 1): 1989-11-15 Amd. 1 IEC 60947-7-1 (Edition 2): 2002-07-23 IEC 60947-7-1 (Edition 3): 2009-04-20 Clause. 8.5	Qualitative
		Conditioning test (Spring force type terminal block)	UL 1059 (Edition 4): 2006 Revisions including Dec 15, 2006	Upto 600 A
		Dielectric Tests	IEC 60947-7-2 (Edition 3.0): 2009 Clause. 7.2.2	500 V to 3.9 kV AC/DC Power frequency , 200 mA capacity 500 V to 3.9 kV AC/DC 55 mA Upto 15 kV, 1.2/50 µs Impulse
		Temperature rise	Clause. 7.2.1	10 A to 600 A AC single phase / three phase, 50 Hz – Continuous
		Verification of Voltage Drop	Clause. 7.2.4	10 A to 600 A AC single phase / three phase, 50 Hz Continuous

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Electrical Connector, Terminal Blocks for copper conductors, fuse terminal blocks	Short-time withstand current	Clause. 4.3.2	200 A to 10 kA at 690 V, 0.1 s
		Verification of mechanical characteristics	Clause. 8.3.3	1 N to 20 N
		Verification of mechanical characteristics	IEC 60947-7-3 (Edition 2.0): 2009 Clause. 8.3.3	1 N to 20 N
		Attachment of the fuse terminal block on its support	Clause. 8.3.3	1 N to 20 N
		Mechanical properties of clamping units of a fuse terminal block	Clause. 8.3.3	Qualitative
		Testing for damage to and accidental loosening of conductors of a fuse terminal block (flexion test)	Clause. 8.3.3	(0.5 kg to 50 kg)
		Pull-out test	IEC 60947-1 Clause. 8.3.3.3	5 N to 600 N
		Verification of rated cross-section and rated connecting capacity	Clause. 8.3.3.4	Qualitative

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
6	**MCB**	Mechanism	IEC 60898-1: 2003 (Edition 1.2) (include Amd. 1: 2002 + Amd. 2: 2003) IS/IEC 60898-1: 2002 Clause. 8.1.2	Qualitative
		Clearances and creepage distances	IEC 60898-1: 2003 (Edition 1.2) (include. Amd. 1: 2002 + Amd. 2: 2003) IS/IEC 60898-1: 2002 Clause. 8.1.3	1 mm to 300 mm
		Non-interchangeability	IEC 60898-1: 2003 (Edition 1.2) (include. Amd. 1: 2002 + Amd. 2: 2003) IS/IEC 60898-1: 2002 Clause. 8.1.6	Qualitative
		Test of dielectric properties	IEC 60898-1: 2003 (Edition 1.2) (include. Amd. 1: 2002 + Amd. 2: 2003) IS/IEC 60898-1: 2002 Clause. 9.7	Upto 2.5 kV AC / DC, Power frequency, 200 mA capacity Upto 2.5 kV AC/DC, 55 mA Upto 6.2 kV, 1.2/50 µs Impulse

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	MCB	Dielectric voltage - Withstand	UL 1077 (Edition 6): 2009 Including Revisions through Oct 5, 2009	100 V to 2.5 kV AC / DC, Power frequency, 200 mA capacity Upto 2.5 kV AC/DC, 55 mA
		Indelibility of marking	IEC 60898-1: 2003 (Edition 1.2) (include. Amd. 1: 2002 + Amd. 2: 2003) IS/IEC 60898-1: 2002 Clause. 9.3	Qualitative
		Test of reliability of screws, current-carrying parts and connections	IEC 60898-1: 2003 (Edition 1.2) (include. Amd. 1: 2002 + Amd. 2: 2003) IS/IEC 60898-1: 2002 Clause. 9.4	Upto 5 Nm
		Test of reliability of terminals for external conductors	IEC 60898-1: 2003 (Edition 1.2) (include. Amd. 1: 2002 + Amd. 2: 2003) IS/IEC 60898-1: 2002 Clause. 9.5	Upto 100 N
		Test of protection against electric shock	IEC 60898-1: 2003 (Edition 1.2) (include. Amd. 1: 2002 + Amd. 2: 2003) IS/IEC 60898-1: 2002	12 mm Probe 40 V to 240 V

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	MCB	Resistance to mechanical impact	IEC 60898-1: 2003 (Edition 1.2) (include. Amd. 1: 2002 + Amd. 2: 2003) IS/IEC 60898-1: 2002 Clause. 9.13.2	Upto 50 N Mechanical impact only
		Test of resistance to heat	IEC 60898-1: 2003 (Edition 1.2) (Include. Amd. 1: 2002 + Amd. 2: 2003) IS/IEC 60898-1: 2002 Clause. 9.14	Upto 125 °C Ball Pressure test
		Test of temperature-rise and measurement of power	IEC 60898-1: 2003 (Edition 1.2) (Include. Amd. 1: 2002 + Amd. 2: 2003) IS/IEC 60898-1: 2002	Upto 125 A AC single phase / three phase, 50 Hz – Continuous
		Temperature Test	UL 1077 (Edition 6): 2009 Including Revisions through Oct 5, 2009	Upto 125 A AC single phase / three phase, 50 Hz – Continuous
		Resistance to abnormal heat and to fire	IEC 60898-1: 2003 (Edition 1.2) (include. Amd. 1: 2002 + Amd. 2: 2003) IS/IEC 60898-1: 2002 Clause 9.15	100 °C to 960 °C Glow wire test only

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	MCB	Resistance to rusting	IEC 60898-1: 2003 (Edition 1.2) (include. Amd. 1: 2002 + Amd. 2: 2003) IS/IEC 60898-1: 2002 Clause. 9.16	Upto 125 °C
		Resistance to mechanical shock	IEC 60898-1: 2003 (Edition 1.2) (Include. Amd. 1: 2002 + Amd. 2: 2003) IS/IEC 60898-1: 2002 Clause. 9.13	20 N
		Test of resistance to heat	IEC 60898-1: 2003 (Edition 1.2) (Include. Amd. 1: 2002 + Amd. 2: 2003) IS/IEC 60898-1: 2002 Clause. 9.14	10 °C to 125 °C Ball Pressure test
		28 day test AC	Clause. 9.9	Upto 125 A
		Test of tripping characteristic	Clause. 9.10	Upto 2500 A AC (-)5,40 and 25 °C
		Calibration, recalibration test	UL 1077 (Edition 6): 2009 Including Revisions through Oct 5, 2009	Upto 2500 A AC -5,40 and 25 °C

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	MCB	Test of mechanical and electrical endurance	IEC 60898-1: 2003 (Edition 1.2) (include. Amd. 1: 2002 + Amd. 2: 2003) IS/IEC 60898-1: 2002 Clause. 9.11	Upto 125 A, 480 V
		Overload Test	UL 1077 Ed. 6, Including Revisions through Oct 5, 2009	Upto 125 A, 690 V, three phase 50 Hz, 0.35 to UPF
		Performance at reduced short-circuit currents	IEC 60898-1: 2003 (Edition 1.2) (include. Amd. 1: 2002 + Amd. 2: 2003) IS/IEC 60898-1: 2002 Clause. 9.12	Upto 10 kA, 690 V
		Short circuit performance at 1500 A	IEC 60898-1: 2003 (Edition 1.2) (include. Amd. 1: 2002 + Amd. 2: 2003) IS/IEC 60898-1: 2002 Clause. 9.12.11.3	690 V, 1500 A
		Service short-circuit capacity (ics)	IEC 60898-1: 2003 (Edition 1.2) (include. Amd. 1: 2002 + Amd. 2: 2003) IS/IEC 60898-1: 2002 Clause. 9.12.11.4.2	Upto 10 kA, 690 V

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	MCB	Performance at rated short-circuit capacity (icn)	IEC 60898-1: 2003 (Edition 1.2) (Include. Amd. 1: 2002 + Amd. 2: 2003) IS/IEC 60898-1: 2002 Clause. 9.12.11.4.3	Upto 10 kA, 690 V
7.	**RCCB**	Marking	IEC 61008-1: 2002 Edition 2.1 (Include. Amd. 1: 2002) IEC 61008-1: 2010 (Edition 3.0) IS 12640 (Part 1): 2008 Clause. 6	Qualitative
		Mechanism	Clause. 8.1.2	Qualitative
		Clearance and creepage distances	Clause. 8.1.3	1 mm to 300 mm
		Non-interchangeability	Clause. 8.1.6	Qualitative
		Indelibility of marking	Clause. 9.3	1 min
		Test of reliability of screws, current-carrying parts and connections	Clause. 9.4	Upto 5 Nm
		Test of reliability of terminals for external conductors	Clause 9.5	Upto 100 N
		Test of protection against electric shock	Clause. 9.6	12 mm Probe 40 V to 240 V

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	RCCB	Verification of Resistance to Mechanical impact	Clause. 9.12	Upto 50 N
		Test of resistance to heat	Clause. 9.13	Upto 150 °C
		Dielectric properties	Clause. 9.7	Upto 3.9 kV AC / DC, Power frequency, 200 mA capacity Upto 10 kV AC/DC, 55 mA Upto 15 kV, 1.2/50 µs Impulse Insulation resistance 500 V DC
		Test of temperature-rise	Clause. 9.8	Upto 125 A AC single phase / three phase, 50 Hz – Continuous
		Verification of mechanical and electrical endurance	Clause. 9.10	Upto 125 A,440 V
		Resistance to abnormal heat and to fire	Clause. 9.14	100 °C to 960 °C
		Verification of trip-free mechanism	Clause. 9.15	(Upto 125 A ,690 V,three phase 50 Hz)

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	RCCB	Verification of the operation of the test device at the limits of rated voltage	Clause. 9.16	(Upto 125 A ,690 V, three phase 50 Hz,
		Verification of the behaviour of RCCBs functionally dependent on line voltage	Clause. 9.17	Qualitative
		Verification of behaviour of RCCBs in case of current surges caused by impulse voltages	Clause. 9.19	Ring wave Surge : Upto 200 A (0,5 µs/ 100 kHz) Current Surge : Upto 3000 A (8/20 µs)
		Verification of resistance of the insulation against high impulse voltages	Clause. 9.20	Voltage Surge : Upto 8 kV (1,2/50 µs)
		Verification of the correct operation at residual currents with d.c. components	IEC 61008-1: 2002 Edition 2.1 (include. Amd. 1: 2002) IEC 61008-1: 2010 (Edition 3.0) IS 12640 (Part 1): 2008 Clause. 9.20	Upto 300 mA
		Verification of reliability	Clause. 9.22	Upto 300 mA
		Climatic test	Clause. 9.22.1	Upto 300 mA

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	RCCB	Test for Reliability at 40 °C	Clause. 9.22.2	Upto 125 A AC single phase/three phase, 50 Hz Continuous 0 to 40 °C
		Verification of ageing of electronic components	Clause. 9.23	Upto 50 °C Upto 300 mA
8.	**RCBO**	Marking	IEC 61009-1: 2003 Edition 2.1 (Include. Amd. 1: 2002) Clause. 6	Qualitative
		Mechanism	IEC 61009-1: 2010 (Edition 3.0) IS 12640 (Part 2): 2008 Clause. 8.1.2	Qualitative
		Clearance and creepage distances	Clause. 8.1.3	1 mm to 300 mm
		Non-interchangeability	Clause. 8.1.6	Qualitative
		Indelibility of marking	Clause. 9.3	60 s
		Test of reliability of screws, current-carrying parts and connections	Clause. 9.4	Upto 50 Nm
		Test of reliability of terminals for external conductors	Clause. 9.5	Upto 50 N

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	RCBO	Test of protection against electric shock	Clause. 9.6	12 mm Probe 40 V to 240 V
		Verification of Resistance to Mechanical impact	Clause. 9.13	Upto 50 N
		Test of resistance to heat	Clause. 9.14	Upto 125 °C
		Clearance and creepage distances	Clause. 8.1.3	1 mm to 300 mm
		Dielectric properties	Clause. 9.7	Upto 3 kV AC / DC, Power frequency, 200 mA capacity Upto 3 kV AC/DC, 55 mA Upto 8 kV, 1.2/50 µs Impulse Insulation resistance 500 V DC
		Test of temperature-rise	Clause. 9.8	Upto 125 A AC single phase / three phase, 50 Hz – Continuous
		Verification of mechanical and electrical endurance	Clause. 9.10	Upto 125 A,440 V includes standard requirement

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	RCBO	Resistance to abnormal heat and to fire	Clause. 9.15	100 °C to 960 °C Glow wire test
		Verification of Resistance to Mechanical impact	Clause. 9.13	Upto 50 N Mechanical (Impact test only
		Verification of trip-free mechanism	Clause. 9.11	Upto 690 V, 50 Hz,
		Verification of the operation of the test device at the limits of rated voltage	Clause. 9.16	Upto 125 A, 480 V three phase,50 Hz
		Verification of the behaviour of RCBOs functionally dependent on line voltage	Clause. 9.17	Qualitative
		Verification of behaviour of RCBOs in case of current surges caused by impulse voltages	Clause. 9.19	Ring wave Surge : Upto 200 A (0,5 µs/100 kHz) Current Surge : Upto 3000 A (8/20 µs)
		Verification of resistance of the insulation against high impulse voltages	Clause. 9.20	Voltage Surge : Upto 8 kV (1,2/50 µs)
		Verification of the correct operation at residual currents with D.C. components	Clause. 9.21	10 mA to 300 mA

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	RCBO	Verification of reliability	Clause. 9.22	10 mA to 300 mA
		Climatic test	Clause. 9.22.1	Upto 300 mA, 60 °C
		Test for reliability at 40 °C	Clause. 9.22.2	Upto 125 A AC single phase/three phase, 50 Hz Continuous (-)10 °C to 40 °C
		Verification of ageing of electronic components	Clause. 9.23	(-)10 °C to 70 °C Upto 300 mA
		Performance at service short-circuit capacity	Clause. 9.12.11.4 b	Upto 10 kA, 690 V
		Verification of the Coordination at the rated Conditional short-circuit current (Inc)	Clause. 9.12.11.4 c	Upto 10 kA, 690 V
		Verification of the rated making and breaking capacity (IM)	Clause. 9.12.13	Upto 10 kA, 690 V

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
9.	**Electronic air break switches**	Electric strength test	AS/ NZS 3133: 2013+ Amd. 1 Clause. 13.4 Clause. 13.4	0.1 kV to 3 kV AC/DC
		Insulation resistance test	AS/ NZS 3133: 2013+ Amd. 1 Clause. 13.3	0.02 MΩ to 500 MΩ 250 V to 500 V DC
		Endurance test	AS/ NZS 3133: 2013+ Amd. 1 Clause. 13.5	1 A to 600 A, 690 V AC 1 A to 30 A, 48 V DC
		Heating test/Temperature rise	AS/ NZS 3133: 2013+ Amd. 1 Clause. 13.2	2 °C to 100 °C 0.3 MΩ to 60 MΩ
		Humidity test	AS/ NZS 3133: 2013+ Amd. 1 Clause. 13.1.10	From 70 °C to 20 °C 30 % to 98 % RH
		Leakage current	AS/ NZS 3133: 2013+ Amd. 1 Clause. A4.2	0.05 mA to 3 mA
		Impulse test	AS/ NZS 3133: 2013+ Amd. 1 Clause. A4.3	Upto 8 kV, 1.2/50 µs Impulse
		Degree of protection of assemblies	AS/ NZS 3133: 2013+ Amd. 1 Clause. 13.12	IP11to IP20
		Mechanical strength of actuating member	AS/ NZS 3133: 2013+ Amd. 1 Clause. A4.4	Force Upto 60 N

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
10.	**Residual Current device**	Insulation resistance test	AS/ NZS 3190: 2011 Clause. 8.2	0.02 MΩ to 500 MΩ 250 V to 500 V DC
		Electric strength test	AS/ NZS 3190: 2011 Clause. 8.3	0.1 kV to 3 kV AC/DC
		Impulse test	AS/ NZS 3190: 2011 Clause. 8.5	Upto 8 kV, 1.2/50 µs Impulse
		Current surge test	AS/ NZS 3190: 2011 Clause. 8.6	Current Surge : Upto 3000 A (8/20 µs)
		Earthing connection	AS/ NZS 3190: 2011 AS/ NZS 3100: 2009, Clause. 8.5	60 A 12 V AC / DC
		Cord anchorage	AS/ NZS 3190: 2011 AS/ NZS 3100: 2009, Clause. 8.6	Force Upto 60 N
		Screw thread and fixings	AS/ NZS 3190: 2011 AS/ NZS 3100: 2009, Clause. 8.7	0.2 kgf cm to 10 kgf cm
		Heating test	AS/ NZS 3190: 2011 Clause. 8.7	Upto 125 A AC single phase / three phase,
		Tripping test	AS/ NZS 3190: 2011 Clause. 8.8	50 Hz – Continuous

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Residual Current device	Endurance test	AS/ NZS 3190: 2011 Clause. 8.14	1 A to 50 A, 690 V AC 1 A to 30 A, 48 V DC
		Short-time through-current withstand test	AS/ NZS 3190: 2011 Clause. 8.15	200 A to 10 kA at 690 V
		Climatic test	AS/ NZS 3190: 2011 Clause. A2	Upto 70 °C Upto 300 mA
		Verification of ageing of electronic components	AS/ NZS 3190: 2011 Clause. 8.19	Upto 70 °C Upto 300 mA
		Reliability	AS/ NZS 3190: 2011 Clause. 8.18	Upto 300 mA
		Insulation resistance test	IEC 60669-1 I NT 1: 2012 (Edition 3.2) IEC 60669-1: 2007-01-01 (Edition 3.2) IEC 60669-2-1: 2015-03-01 (Edition 3.0) IEC 60669-2-3: 2006-08-01 (Edition 1.0) IEC 60669-2-4: 2004-05-01 (Edition 1.0) IEC 60669-2-5: 2013-10-01 (Edition 1.0) IEC 60669-2-6: 2012-01-01 (Edition 1.0) Clause. 16	0.02 MΩ to 500 MΩ 250 V to 500 V DC

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Residual Current device	Electric strength test	IEC 60669-1 I NT 1: 2012 (Edition 3.2) IEC 60669-1: 2007-01-01 (Edition 3.2) IEC 60669-2-1: 2015-03-01 (Edition 3.0) IEC 60669-2-3: 2006-08-01 (Edition 1.0) IEC 60669-2-4: 2004-05-01 (Edition 1.0) IEC 60669-2-5: 2013-10-01 (Edition 1.0) IEC 60669-2-6: 2012-01-01 (Edition 1.0) Clause. 16	0.1 kV to 3 kV AC/DC
		Impulse test	IEC 60669-1 I NT 1: 2012.02.01 (Edition 3.2) IEC 60669-1: 2007-01-01 (Edition 3.2) IEC 60669-2-1: 2015-03-01 (Edition 3.0) IEC 60669-2-3: 2006-08-01 (Edition 1.0) IEC 60669-2-4: 2004-05-01 (Edition 1.0) IEC 60669-2-5: 2013-10-01 (Edition 1.0) IEC 60669-2-6: 2012-01-01 (Edition 1.0) IEC 60669-2-1 Clause. 26.1.2	Upto 8 kV, 1.2/50 µs Impulse

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Residual Current device	Current surge test	IEC 60669-1 I NT 1: 2012 (Edition 3.2) IEC 60669-1: 2007-01-01 (Edition 3.2) IEC 60669-2-1: 2015-03-01 (Edition 3.0) IEC 60669-2-3: 2006-08-01 (Edition 1.0) IEC 60669-2-4: 2004-05-01 (Edition 1.0) IEC 60669-2-5: 2013-10-01 (Edition 1.0) IEC 60669-2-6: 2012-01-01 (Edition 1.0) IEC 60669-2-1 Clause. 26.1.2	Current Surge : Upto 3000 A (8/20 µs)
		Earthing connection	IEC 60669-1 I NT 1: 2012 (Edition 3.2) IEC 60669-1: 2007-01-01 (Edition 3.2) IEC 60669-2-1: 2015-03-01 (Edition 3.0) IEC 60669-2-3: 2006-08-01 (Edition 1.0) IEC 60669-2-4: 2004-05-01 (Edition 1.0) IEC 60669-2-5: 2013-10-01 (Edition 1.0)	60 A

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Residual Current device	Earthing connection	IEC 60669-2-6: 2012-01-01 (Edition 1.0) IEC 60669-2-1 Clause. 11	60 A
		Cord anchorage	IEC 60669-1 I NT 1: 2012 (Edition 3.2) IEC 60669-1: 2007-01-01 (Edition 3.2) IEC 60669-2-1: 2015-03-01 (Edition 3.0) IEC 60669-2-3: 2006-08-01 (Edition 1.0) IEC 60669-2-4: 2004-05-01 (Edition 1.0) IEC 60669-2-5: 2013-10-01 (Edition 1.0) IEC 60669-2-6: 2012-01-01 (Edition 1.0) IEC 60669-1 Clause. 11	12 V AC / DC Force Upto 60 N
		Screw thread and fixings	IEC 60669-1 I NT 1: 2012 (Edition 3.2) IEC 60669-1: 2007-01-01 (Edition 3.2) IEC 60669-2-1: 2015-03-01 (Edition 3.0) IEC 60669-2-3: 2006-08-01 (Edition 1.0) IEC 60669-2-4: 2004-05-01 (Edition 1.0)	0.2 kgf cm to 10 kgf cm

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Residual Current device	Screw thread and fixings	IEC 60669-2-5: 2013-10-01 (Edition 1.0) IEC 60669-2-6: 2012-01-01 (Edition 1.0) IEC 60669-1 Clause. 22	0.2 kgf cm to 10 kgf cm
		Heating test	IEC 60669-1 I NT 1: 2012 (Edition 3.2) IEC 60669-1: 2007-01-01 (Edition 3.2) IEC 60669-2-1: 2015-03-01 (Edition 3.0) IEC 60669-2-3: 2006-08-01 (Edition 1.0) IEC 60669-2-4: 2004-05-01 (Edition 1.0) IEC 60669-2-5: 2013-10-01 (Edition 1.0) IEC 60669-2-6: 2012-01-01 (Edition 1.0) IEC 60669-1 Clause. 17	Upto 50 A AC single phase / three phase,

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Residual Current device	Endurance test	IEC 60669-1 I NT 1: 2012 (Edition 3.2) IEC 60669-1: 2007-01-01 (Edition 3.2) IEC 60669-2-1: 2015-03-01 (Edition 3.0) IEC 60669-2-3: 2006-08-01 (Edition 1.0) IEC 60669-2-4: 2004-05-01 (Edition 1.0) IEC 60669-2-5: 2013-10-01 (Edition 1.0) IEC 60669-2-6: 2012-01-01 (Edition 1.0) IEC 60669-1 Clause. 18	1 A to 50 A, 690 V AC 1 A to 30 A, 48 V DC
		Short-time through-current withstand test	IEC 60669-1 I NT 1: 2012 (Edition 3.2) IEC 60669-1: 2007-01-01 (Edition 3.2) IEC 60669-2-1: 2015-03-01 (Edition 3.0) IEC 60669-2-3: 2006-08-01 (Edition 1.0) IEC 60669-2-4: 2004-05-01 (Edition 1.0) IEC 60669-2-5: 2013-10-01 (Edition 1.0) IEC 60669-2-6: 2012-01-01 (Edition 1.0) IEC 60669-2-1 Clause. 101	200 A to 10 kA at 690 V

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Residual Current device	Touch current test	IEC 60669-1 I NT 1: 2012 (Edition 3.2) IEC 60669-1: 2007-01-01 (Edition 3.2) IEC 60669-2-1: 2015-03-01 (Edition 3.0) IEC 60669-2-3: 2006-08-01 (Edition 1.0) IEC 60669-2-4: 2004-05-01 (Edition 1.0) IEC 60669-2-5: 2013-10-01 (Edition 1.0) IEC 60669-2-6: 2012-01-01 (Edition 1.0) IEC 60669-2-5 Clause. 10.202	0.1 mA to 10 mA
		Marking test	IEC 60669-1 I NT 1: 2012 (Edition 3.2) IEC 60669-1: 2007-01-01 (Edition 3.2) IEC 60669-2-1: 2015-03-01 (Edition 3.0) IEC 60669-2-3: 2006-08-01 (Edition 1.0) IEC 60669-2-4: 2004-05-01 (Edition 1.0) IEC 60669-2-5: 2013-10-01 (Edition 1.0) IEC 60669-2-6: 2012-01-01 (Edition 1.0) IEC 60669-1 Clause. 8	0.1 s to 60 s

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Residual Current device	Protection against access live parts	IEC 60669-1 I NT 1: 2012 (Edition 3.2) IEC 60669-1: 2007-01-01 (Edition 3.2) IEC 60669-2-1: 2015-03-01 (Edition 3.0) IEC 60669-2-3: 2006-08-01 (Edition 1.0) IEC 60669-2-4: 2004-05-01 (Edition 1.0) IEC 60669-2-5: 2013-10-01 (Edition 1.0) IEC 60669-2-6: 2012-01-01 (Edition 1.0) IEC 60669-1 Clause. 10	Qualitative
IV.	**DOMESTIC ELECTRONIC APPLIANCE & ACCESSORIES**			
1.	**Electrical and Electronic (Static) Energy Meters/Prepayment Meters and Tariff and Load Control Equipment (Energy meter)**	Impulse Voltage Test	IS 13779: 1999 (RA 2002), with Amd. 1,2,3 & 4, Clause. 12.7.6.2 IS 14697: 1999 (RA 2004), Clause. 12.7.6.2 CBIP 325: 2015, Clause. 5.4.6.2 IEC 62052-11 (1st Edition): 2003-02 Clause. 7.3.2	0.5 kV to 6 kV, 1.2/50 µs

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Electrical and Electronic (Static) Energy Meters/Prepayment Meters and Tariff and Load Control Equipment (Energy meter)	AC High Voltage test	IS 13779: 1999 (RA 2002) with Amd. 1,2,3 & 4, Clause. 12.7.6.3 IS 14697: 1999 (RA 2004) Clause. 12.7.6.3 CBIP 325: 2015, Clause. 5.4.6.2 IEC 62052-11 (1st Edition): 2003-02, Clause. 7.3.3 IEC 62053-21 (1st Edition): 2003-01, Clause. 7.4 IEC 62053-22, (1st Edition): 2003-01, Clause. 7.4 IEC 62053 -23, (1st Edition): 2003-01, Clause. 7.4	1.0 kV to 5 kV AC/DC, 50/60 Hz, 0 to 60 s
		Insulation Resistance test	IS 13779: 1999 (2007) with Amd. 1,2,3 & 4, Clause. 12.7.6.4 IS 14697: 1999 (RA 2004), Clause. 12.7.6.4 CBIP 325: 2015, Clause. 5.4.6.2	10 MΩ to 2000 MΩ 250 V to 1000 V DC

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Electrical and Electronic (Static) Energy Meters/Prepayment Meters and Tariff and Load Control Equipment (Energy meter	Test on Limits of error	IS 13779: 1999 (RA 2002) (2007) with Amd. 1, 2, 3 & 4, Clause. 11.1 IS 14697: 1999 (RA 2004), Clause. 11.1 CBIP 325: 2015, Clause. 5.4.6.2 IEC 62053-21, (1st Edition): 2003-01, Clause. 8.1 IEC 62053-22 (1st Edition): 2003-01, Clause. 8.1,8.5 IEC 62053 -23 (1st Edition) 2003-01, Clause. 8.1, 8.5	Single phase & Three Phase 57.7 V to 380 V, 120 A, 50 Hz
		Test of Meter Constant	IS 13779: 1999 (RA 2002) with Amd. 1,2,3 & 4, Clause. 12.15 IS 14697: 1999 (RA 2004), Clause. 12.14 CBIP 325: 2015, Clause. 5.6.6 IEC 62053-22 (1st Edition): 2003-01, Clause. 8.4 IEC 62053-23 (1st Edition): 2003-01, Clause. 8.4	Single phase & Three Phase 57.7 V to 380 V, 120 A, 50 Hz

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Electrical and Electronic (Static) Energy Meters/Prepayment Meters and Tariff and Load Control Equipment (Energy meter	Interpretation of test results	IS 13779: 1999 (RA 2002) with Amd. 1, 2, 3 & 4, Clause. 12.16 IS 14697: 1999 (RA 2004), Clause. 12.15 IEC 62053-21 (1st Edition): 2003-01, Clause. 8.6 IEC 62053-22 (1st Edition): 2003-01, Clause. 8.6 IEC 62053 -23 (1st Edition): 2003-01, Clause. 8.6	Single phase & Three Phase 57.7 V to 380 V, 120 A, 50 Hz
		Test of Starting Condition	IS 13779: 1999 (RA 2002) with Amd. 1, 2, 3 & 4, Clause. 12.14 IS 14697: 1999 (RA 2004), Clause. 12.13 CBIP 325: 2015, Clause. 5.6.5 IEC 62053-21 (1st Edition): 2003-01, Clause. 8.3 IEC 62053-22 (1st Edition): 2003-01, Clause. 8.3 IEC 62053 -23 (1st Edition): 2003-01, Clause. 8.3	Single phase & Three Phase 57.7 V to 380 V, 120 A, 50 Hz

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Electrical and Electronic (Static) Energy Meters/Prepayment Meters and Tariff and Load Control Equipment (Energy meter	Test of No Load Condition	IS 13779: 1999 (RA 2002) with Amd. 1, 2, 3& 4, Clause. 12.13 IS 14697: 1999 (RA 2004), Clause. 12.12 CBIP 325: 2015, Clause. 5.6.4 IEC 62053-21 (1st Edition): 2003-01, Clause. 8.3 IEC 62053-22 (1st Edition): 2003-01, Clause. 8.3 IEC 62053 -23 (1st Edition): 2003-01, Clause. 8.3	Single phase & Three Phase 57.7 V to 380 V, 120 A, 50 Hz
		Ambient temperature influence	IS 13779: 1999 (RA 2002) with Amd. 1, 2, 3 & 4, Clause. 12.12 IS 14697: 1999 (RA 2004), Clause. 12.11 CBIP 325: 2015, Clause. 5.6.3 IEC 62053-21 (1st Edition): 2003-01, Clause. 8.2 IEC 62053-22 (1st Edition): 2003-01, Clause. 8.2 IEC 62053 -23 (1st Edition): 2003-01, Clause. 8.2	Single phase & Three Phase 57.7 V to 380 V, 120 A, 50 Hz Ambient to 150 °C / 0.1 °C resolution Chamber- 62 mm x 62 mm x 62 mm 100 mm x 100 mm x 80 mm

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Electrical and Electronic (Static) Energy Meters/Prepayment Meters and Tariff and Load Control Equipment (Energy meter	Repeatability of error	IS 13779: 1999 (RA 2002) with Amd. 1, 2, 3 & 4, Clause. 12.17 IS 14697: 1999 (RA 2004), Clause. 12.16 CBIP 325: 2015, Clause. 5.6.9	Single phase & Three Phase 57.7 V to 380 V, 120 A, 50 Hz
		Influence Quantities Voltage Variation	IS 13779: 1999 (RA 2002) with Amd. 1, 2, 3& 4, Clause. 12.11, (Table 17)	Single phase & Three Phase 57.7 V to 380 V, 120 A, 50 Hz
		Frequency Variation	IS 14697: 1999 (RA 2004), Clause. 12.10	
		Waveform 10 % of third harmonic	CBIP 325: 2015, Clause. 5.6.2	
		Reverse Phase Sequence Voltage unbalance	IEC 62053-21 (1st Edition): 2003-01, Clause. 8.2	
		DC component in ac current circuit	IEC 62053-22 (1st Edition): 2003-01, Clause. 8.2	
		Continuous magnetic induction of external origin		

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Electrical and Electronic (Static) Energy Meters/Prepayment Meters and Tariff and Load Control Equipment (Energy meter	Magnetic induction of external orign-0.5 mT	IEC 62053 -23 (1st Edition): 2003-01, Clause. 8.2	
		Influence Quantities	IS 14697: 1999 (RA 2004), Clause. 12.10 (Table 13)	Single phase & Three Phase 57.7 V to 380 V, 120 A, 50 Hz
		Auxiliary Voltage		
		Phase of Auxiliary Supply voltage by 120 °		
		Test of Power Consumption test	IS 13779: 1999 (RA 2002) with Amd. 1, 2, 3 & 4, Clause. 12.7.1 IS 14697: 1999 (RA 2004) , Clause. 12.7.1 CBIP 325: 2015, Clause. 5.4.1 IEC 62053-21 (1st Edition): 2003-01, Clause. 7.1 IEC 62053-22 (1st Edition): 2003-01, Clause. 7.1 IEC 62053 -23 (1st Edition): 2003-01, Clause. 7.1	For Voltage Consumption: Upto 600 V,(P A09) For Current Consumption: Upto 120 A(EMZ01)

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Electrical and Electronic (Static) Energy Meters/Prepayment Meters and Tariff and Load Control Equipment (Energy meter	Influence of Supply voltage	IS 13779: 1999 (RA 2002) with Amd. 1, 2, 3 & 4, Clause. 12.7.2 IS 14697: 1999 (RA 2004), Clause. 12.7.2 CBIP 325: 2015, Clause. 5.4.2 IEC 62052-11 (1st Edition): 2003-02, Clause. 7.1.2 IEC 62053-21, (1st Edition): 2003-01, Clause. 8.2 IEC 62053-22 (1st Edition): 2003-01, Clause. 8.2 IEC 62053 -23 (1st Edition): 2003-01, Clause. 8.2	240 Vac, 110 Vac, Pulse time: 50 ms, 1 s, 20 ms, 1 min
		Test of Influence Short time Over currents	IS 13779: 1999 (RA 2002) with Amd. 1, 2, 3 & 4, Clause. 12.7.3 IS 14697: 1999 (RA 2004) , Clause. 12.7.3 CBIP 325: 2015, Clause. 5.4.3 IEC 62053-21 (1st Edition): 2003-01, Clause. 7.2 IEC 62053-22 (1st Edition): 2003-01, Clause. 7.2 IEC 62053 -23 (1st Edition): 2003-01, Clause. 7.2	Output Current Range: 50 A to 3000 A, 5 V, Time Setting: 10 ms to 1000 ms.

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Electrical and Electronic (Static) Energy Meters/Prepayment Meters and Tariff and Load Control Equipment (Energy meter	Test of Influence of Self Heating	IS 13779: 1999 (RA 2002) with Amd. 1, 2, 3 & 4, Clause. 12.7.4 IS 14697: 1999 (RA 2004), Clause. 12.7.4 CBIP 325: 2015, Clause. 5.4.4 IEC 62053-21 (1st Edition): 2003-01, Clause. 7.3 IEC 62053-22 (1st Edition): 2003-01, Clause. 7.3 IEC 62053 -23 (1st Edition): 2003-01, Clause. 7.3	Single phase & Three Phase 57.7 V to 380 V, 120 A, 50 Hz
		Test of Influence of Heating	IS 13779: 1999 (RA 2002) with Amd. 1, 2, 3 & 4, Clause. 12.7.5 IS 14697: 1999 (RA 2004), Clause. 12.7.5 CBIP 325: 2015, Clause. 5.4.5 IEC 62052-11 (1st Edition): 2003-02, Clause. 7.2	Single phase & Three Phase 57.7 V to 380 V, 120 A, 50 Hz Ambient to 70 °
		Test of Immunity to earth fault	IS 13779: 1999 (RA 2002) with Amd. 1, 2, 3 & 4, Clause. 12.8 IEC 62052-11 (1st Edition): 2003-02, Clause. 7.4	Single phase & Three Phase 57.7 V to 380 V, 120 A, 50 Hz

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Electrical and Electronic (Static) Energy Meters/Prepayment Meters and Tariff and Load Control Equipment (Energy meter	Dry Heat test	IS 13779: 1999 (RA 2002) with Amd. 1, 2, 3& 4, Clause. 12.6.1 IS 14697: 1999 (RA 2004), Clause. 12.6.1 CBIP 325: 2015, Clause. 5.3.1 IEC 62052-11 (1st Edition): 2003-02, Clause. 6.3.1	Ambient to 150 °C/ 0.1 °C resolution Chamber Size: 100 mm x 100 mm x 80 mm
		Cold	IS 13779: 1999 (RA 2002) with Amd. 1, 2, 3 & 4, Clause. 12.6.2 IS 14697: 1999 (RA 2004), Clause. 12.6.2 CBIP 325: 2015 Clause. 5.3.2 IEC 62052-11 (1st Edition): 2003-02, Clause. 6.3.2	(-)40 °C to ambient / 0.1 °C resolution Chamber Size: 100 mm x 100 mm x 80 mm
		Damp Heat Cyclic	IS 13779: 1999 (RA 2002) with Amd. 1, 2, 3 & 4, Clause. 12.6.3 IS 14697: 1999 (RA 2004), Clause. 12.6.3 CBIP 325: 2015, Clause. 5.3.3 IEC 62052-11, (1st Edition): 2003-02, Clause. 6.3.3	(+)20 °C to (+)100 °C/ 0.1 °C resolution , 30 % to 98 %RH Chamber Size: 100 mm x 100 mm x 80 mm

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Electrical and Electronic (Static) Energy Meters/Prepayment Meters and Tariff and Load Control Equipment (Energy meter	Spring Hammer	IS 13779: 1999 (RA 2002) with Amd. 1, 2, 3& 4, Clause. 12.3.3 IS 14697: 1999 (RA 2004), Clause. 12.3.3 CBIP 325: 2015, Clause. 5.2.1 IEC 62052-11 (1st Edition): 2003-02, Clause. 5.2.2.1	0.1 Nm to 2 Nm
		Protection against penetration of dust and water	IS 13779: 1999 (RA 2002) with Amd. 1, 2, 3& 4, Clause. 12.5 IS 14697: 1999 (RA 2004), Clause. 12.5 CBIP 325: 2015, Clause. 5.2.5 IEC 62052-11 (1st Edition): 2003-02, Clause. 5.9.	IPX1 to IPX7 IP1X to IP6X Pressure– 0.5 kg/cm^2 to 2.5 kg/cm^2
		Resistance of Heat and fire	IS 13779: 1999 (RA 2002) with Amd. 1, 2, 3& 4, Clause. 12.4 IS 14697: 1999 (RA 2004), Clause. 12.4 CBIP 325: 2015, Clause. 5.2.4 IEC 62052-11 (1st Edition): 2003-02, Clause. 5.8	550 °C to 960 °C and 60 s

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Electrical and Electronic (Static) Energy Meters/Prepayment Meters and Tariff and Load Control Equipment (Energy meter	Heat Deflection	IS 13779: 1999 (RA 2002) (1st Revision), (2nd Reprint): 2007 includes Amd. 1, 2, 3 & 4, Clause. 6.4 IS 14697: 1999 (RA 2004), Clause. 6.4 CBIP 325: 2015, Clause. 4.2.2.3 IEC 62052-11 (1st Edition): 2003-02, Clause. 5.4	(-)10 °C to 150 °C, 0.16 mm to 200 mm
		Clearances and Creepage distances	IS 13779: 1999 (RA 2002) with Amd. 1, 2, 3 & 4, Clause. No. : 6.6 IS 14697: 1999 (RA 2004), Clause. 6.6 CBIP 325: 2015, Clause. 4.2.2.5 IEC 62052-11 (1st Edition): 2003-02, Clause. 5.6	0.16 mm to 200 mm
		General and Construction requirements	IS 13779: 1999 (RA 2002) with Amd. 1, 2, 3 & 4, Clause. 6.0 IS 14697: 1999 (RA 2004), Clause. 6.0 CBIP 325: 2015, Clause. 4.2 IEC 62052-11 (1st Edition): 2003-02, Clause. 5.0	0.16 mm to 200 mm

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Electrical and Electronic (Static) Energy Meters/Prepayment Meters and Tariff and Load Control Equipment (Energy meter	Marking of Meters	IS 13779: 1999 (RA 2002) with Amd. 1, 2, 3 & 4, Clause. 7.0 IS 14697: 1999 (RA 2004), Clause. 7.0 CBIP 325: 2015, Clause. 4.2.2.11 IEC 62052-11 (1st Edition): 2003-02, Clause. 5.12	Qualitative
		Conformance to protocol implementation as per DLMS/COSEM base standard, IEC 62056 by CTT tool	IEC 62056 , IS 15959: 2011, Amd. 1: 2014, Amd. 2: 2015 Annexure K-1 (a) , Category A, B, C and C3	As defined in standard
		Conformance to Protocol Implementation of specific requirements related to : All Mandatory Parameters All data Types All Application Associations with Specified Services Association objects with access rights and OBIS Codes Events related to DLMS objects with event identifiers	IEC 62056 , IS 15959: 2011, Amd. 1: 2014, Amd. 2: 2015 Annexure K-1 (b) , Category A, B, C and C3	As defined in standard

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
V.	**ROTATI NG ELECTRICAL MACHINES**			
1.	**Induction Motors: Single Phase**	No Load	IS 996: 2009 Clause. 16.3.1 (a)	100 rpm to 3200 rpm 7.5 W to 5000 W 15 V to 600 V 0.5 A to 20 A
		Dimensions	IS 996: 2009 Clause. 9	4.0 mm to 200 mm 0.5 mm to 1000 mm
		Torque	IS 996: 2009 Clause. 12.1.1, 12.4, IS 7572: 1974	1 kg to 50 kgm
		Momentary overload	IS 996: 2009 Clause. 12.1.2	1kg to 50 kgm 5 s to 15 s
		Breakaway starting current (Locked rotor)	IS 996: 2009 Clause. 12.3	7.5 W to 5000 W 15 V to 600 V 0.5 A to 100 A 1 kg to 50 kgm
		Temperature	IS 996: 2009 Clause. 12.2, IS 7572: 1974	0.1 °C to 400 °C
		Insulation resistance	IS 996: 2009 Clause. 12.6	0.02 MΩ to 500 MΩ 250 V to 1000 V DC

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Induction Motors: Single Phase	High voltage	IS 996: 2009 Clause. 12.7, IS 7572: 1974	0.2 kV to 5 kV AC/DC Power frequency , 200 mA capacity 0.2 kV to 10 kV AC/DC 1 mA to 55 mA
		Leakage current	IS 996: 2009 Clause. 12.9	0.05 mA to 3 mA
2.	**Induction Motors (3 Phase)**	Winding Resistance	IS 325: 1996 Amd. 3: 2011 Clause. 22.3.1. (b)	0.2 mΩ to 2000 Ω
		No Load	IS 325: 1996 Amd. 3: 2011 Clause. 23.1	7.5 W to 4000 W 100 rpm to 3600 rpm 15 V to 600 V 0.5 A to 20 A
		Reduced voltage running up (Squirrel Cage Motor)	IS 325: 1996 Amd. 3: 2011 Clause. 23.2	15 V to 600 V 50 Hz 15 V to 600 V 60 Hz 100 rpm to 3600 rpm
		Locked rotor	IS 325: 1996 Amd. 3: 2011 Clause. 23.4, IS 4029: 1967 Clause. 7.3	15 V to 600 V 0.5 A to 100 A 1 kg to 50 kgm

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Induction Motors (3 Phase)	Full load	IS 325: 1996 Amd. 3: 2011 Clause. 23.5, IS 4029: 1967	15 V to 600 V 0.5 A to 100 A 100 rpm to 3600 rpm 0.1 PF to 1 PF 0.1 Nm to 28 Nm
		Temperature rise	IS 325: 1996 Amd. 3: 2011 Clause. 14, IS 12802: 1989	0.1 °C to 200 °C
		Momentary overload	IS 325: 1996 Amd. 3: 2011 Clause. 13.1	1 kg to 50 kg m 5 s to 15 s
		Insulation resistance	IS 325: 1996 Amd. 3: 2011 Clause. 25, IS 4722: 1992 Clause. 30.2	0.02 MΩ to 2000 MΩ 250 V to 1000 V DC
		High voltage	IS 325: 1996 Amd. 3: 2011 Clause. 24, IS 4029: 1967	0.2 kV to 5 kV AC/DC Power frequency , 200 mA capacity 0.2 kV to 10 kV AC/DC 1 mA to 55 mA
		Over speed	IS 325: 1996 Amd. 3: 2011 Clause. 26	100 rpm to 4320 rpm 5 s to 120 s

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