Laboratory	**Phoenix Contact (India) Pvt. Ltd., A-58/2, Okhla Industrial Area, Phase-II, New Delhi**
Accreditation Standard	**ISO/IEC 17025: 2017**
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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection

ELECTRICAL TESTING

I.	**SWITCH GEAR EQUIPMENT**			
1.	**Low voltage switchgear and control gear Ancillary equipment- Terminal block for copper conductor**	Product information	CL No. 5 of IEC 60947-7-1:2009	Qualitative
		Constructional Requirements	CL No. 7 of IEC 60947-7-1:2009	Upto 200mm 1 g to 3 kg
		Terminal Identification and Marking		Qualitative
		Attachment of the terminal block on its support	CL No. 8.3.2 of IEC 60947-7-1:2009	0.2 Nm to 40 Nm 1 mm to 20.5 mm
		Mechanical strength of clamping unit	CL No. 8.2.4.1, 8.2.4.2 of IEC 60947-1:2007 CL No. 8.3.3.1 of IEC 60947-7-1:2009	0.2 Nm to 40 Nm
		Flexion test	CL No. 8.3.3.2 of IEC 60947-7-1:2009	100 g to 22.7 kg
		Pull Out test	CL No. 8.3.3.3 of IEC 60947-7-1:2009	Upto 200 N Upto 3 kN
		Rated cross section and rated connection capacity	CL No. 8.3.3.4 CL No. 8.3.3.5 of IEC 60947-7-1:2009	2.0 mm X 1.2 mm to 26.5 mm X 24.0 mm 0.7 mm to 20.5 mm
		Ageing test	CL No. 8.4.7 of IEC 60947-7-1:2009 CL No. D 8.4.7 of IEC 60947-7-7-1:2009	(-) 40°C to 180°C Upto 100 mV Upto 200N Upto 3kN
		Clearance and creepage distances	CL No. 8.4.2.2 & CL No. 8.4.2.3 of IEC 60947-7-1:2009	0.001 mm to 200 mm
		Impulse withstand voltage test	CL No. 8.4.3 of IEC 60947-7-1:2009 CL No. 8.3.3.4.1	500 V to 20 kV (1.2/50 microsecond)

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			IEC 60947-1:2007	
		Insulation Test	CL No. 8.4.3 of IEC 60947-7-1:2009 CL No. 8.3.3.4.1 IEC 60947-1:2007	500 V to 10 kV
		Voltage drop	CL No. 8.4.4 of IEC 60947-7-1:2009 CL No. D8.4.4 of IEC 60947-7-1:2009	0.0001 mV to 100 mV
		Temperature rise test	CL No. 8.4.5 of IEC 60947-7-1:2009 CL No.D8.4.4 of IEC 60947-7-1:2009	0.1 °C to 300 °C
		Thermal Shock	CL No. 8.4.6 of IEC 60947-7-1:2009 CL No.D8.4.6 of IEC 60947-7-1:2009	1 A to 2000A
		Needle Flame test	IEC 60695-11-5:2004	10 °C to 1000 °C
		Service life test	CL No. D8.5.1 of IEC 60947-7-1:2009	0.2 Nm to 40 Nm
2.	**Low voltage switchgear and control gear Ancillary equipment –PCB terminal block for copper conductors**	Product Information	CL No. 5 IEC 60947-7-4:2013	Qualitative
		Constructional requirements	CL No. 7 IEC 60947-7-4:2013	1 mm to 200 mm 1 g to 3 kg (0.001 g)
		Terminal Identification and Marking		Qualitative
		Attachment of the PCB terminal block on its support	CL No. 8.3.2 of IEC 60947-7-4 :2013	0.2 Nm to 40 Nm
		Flexion test	CL No. 9.6 of IEC 60999-1(1999)	100 g to 22.7 kg
		Pull out test	CL No. 9.6 of IEC 60999-1(1999)	0 to 200 N 0 to 3 KN

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Maximum cross section and connection capacity	CL No. 8.3.4 of IEC 60947-7-4:2013	22.0 mm X1.2 mm to 26.5 mm X 24.0 mm 0.7 mm to 20.5 mm
		Maximum cross section (special test with gauges)	CL No. 8.3.4 of IEC 60947-7-4:2013	2.0 mm X 1.2 mm to 26.5 mm X 24.0 mm 0.7 mm to 20.5 mm
		Clearance and creep age distances	CL No. 8.4.2.2 & CL No. 8.4.2.3 of IEC 60947-7-4:2013	Upto 200 mm
		Impulse withstand voltage test	CL No. 8.4.3 of IEC 60947-7-4:2013	500 V to 20 kV (1.2/50 microsecond)
		Insulation Test	CL No. 8.4.3 of IEC 60947-7-4:2013	500 V to 10 kV
		Contact resistance	CL No. 8.4.4 of IEC 60947-7-4:2013	Upto 10 mΩ
		Temperature rise test	CL No. 8.4.5 of IEC 60947-7-4:2013 IEC 60512-5-2:2002	0.1°C to 300 °C
		Thermal Shock	CL No. 8.4.6 of IEC 60947-7-4:2013	1 A to 2000 A
		Ageing test climatic sequence & Corrosion test of SO_2	Cl no. 8.4.7 of IEC 60947-7-4:2009 Test 11 of IEC 60512-11-10 Test 11 I of IEC 60512-11-09 ISO 6988	Upto 10 mΩ (-) 40°C to 180°C (0.1°C) ambient to 300°C 0.2 dm^3
		Glow wire test	IS 11000(Part 2/Sec1): 2008 IEC 60695-2-10-2000 IEC 60695-2-11-2000 IEC 60947-7-4	500 °C to 960 °C
		Needle flame test	IS 11000(Part 2/Sec2): 2008	10 °C to 1000 °C

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			IEC 60695-11-5:2004	
3.	**Terminal blocks for 600V and less**	Wiring terminal	Section 7 UL 1059 December 8,2017	Upto 400 A 100 g to 22.7 kg 0.2 Nm to 25 Nm 0.1 °C to 300 °C
		Spacing	Section :8 UL 1059 December 8,2017	Upto 200 mm
		Temperature rise	Section :11 UL 1059 December 8,2017	0.1 °C to 300 °C
		Dielectric voltage withstand test	Section :12 UL 1059 December 8,2017	500 V to 20 kV
		Solid wire tightening test	Section :13 UL 1059 December 8,2017	0.2 Nm to 25 Nm
		Tab pull test	Section :14 UL 1059 December 8,2017	Upto 200 N Upto 3 kN
		Verification of performance of terminal assemblies	Section :15 UL 1059 December 8,2017	0.2 Nm to 25 Nm
		Mold stress relief test	Section :16 UL 1059 December 8,2017	25 °C to 200 °C
		Rating	Section :17 UL 1059 December 8,2017	Qualitative
		Marking	Section :18 UL 1059 December 8,2017	Qualitative
4.	**Terminal blocks for 601 V to 1500V**	Wiring terminal	Section 20 UL 1059 December 8,2017	Upto 400A 100 g to 22.7 kg 0.2 Nm to 25 Nm 0.1°C to 300 °C
		Spacing	Section :8 UL 1059 December 8,2017	Upto 200mm
		Temperature rise	Section :23 UL 1059 December 8,2017	0.1 °C to 300 °C
		Solid wire tightening test	Section :23 UL 1059 December 8,2017	0.2 Nm to 25 Nm

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Tab pull test	Section :23 UL 1059 December 8,2017	Upto 200 N Upto 3 kN
		Verification of performance of terminal assemblies	Section :23 UL 1059 December 8,2017	0.2 Nm to 25 Nm
		Mold stress relief test	Section :23 UL 1059 December 8,2017	25 °C to 200 °C
		Dielectric voltage withstand test	Section :24 UL 1059 December 8,2017	500 V to 20 kV
		Rating	Section :25 UL 1059 December 8,2017	Qualitative
		Marking	Section :26 UL 1059 December 8,2017	Qualitative
		Secureness and pull out test	Section :29 UL 1059 December 8,2017	Upto 200 N Upto 3 kN
		Conditioning	Section 30 UL 1059 December 8,2017	Qualitative
		Temperature rise	Section :31 UL 1059 December 8,2017	0.1 °C to 1000 °C
		Dielectric voltage withstand test	Section :32 UL 1059 December 8,2017	500 V to 20 kV
		Heat Cycling test	Section:33 UL 1059 December 8,2017	0.1°C to 200 °C
		Marking	Section :35 UL 1059 December 8,2017	Qualitative
		Wiring terminal	Section 36 UL 1059 December 8,2017	Upto 400 A 100 g to 22.7 kg 0.2 Nm to 25 Nm 0.1 °C to 300 °C
		Spacing	Section :36 UL 1059 December 8,2017	Upto 200 mm
		Secureness and pull out test	Section :38 UL 1059 December 8,2017	Upto 200 N Upto 3 kN

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Conditioning	Section 39 UL 1059 December 8,2017	Qualitative (Visual)
		Temperature rise	Section :40 UL 1059 December 8,2017	0.1 °C to 1000 °C
		Dielectric voltage withstand test	Section :41 UL 1059 December 8,2017	500 V to 20 kV
		Heat Cycling test	Section:42 UL 1059 December 8,2017	0.1 °C to 200 °C Upto 200 N Upto 3kN
		Rating	Section :43 UL 1059 December 8,2017	Qualitative
		Marking	Section :44 UL 1059 December 8,2017	Qualitative
5.	**Protective conductor terminal block**	Material	Section:6 UL 1059 December 8,2017	Qualitative
		Wiring terminal	Section 45 UL 1059 December 8,2017	Upto 400A 100 g to 22.7 kg 0.2 Nm to 25 Nm 0.1 °C to 300 °C
		Spacing	Section :45 UL 1059 December 8,2017	Upto 200mm
		Temperature rise	Section :45 UL 1059 December 8,2017	0.1 °C to 300 °C
		Dielectric voltage withstand test	Section :45 UL 1059 December 8,2017	500 V to 10 kV
		Solid wire tightening test	Section :45 UL 1059 December 8,2017	0.2 Nm to 25 N m
		Tab pull test	Section :45 UL 1059 December 8,2017	Upto 200 N Upto 3 KN
		Performance of terminal assemblies	Section :45 UL 1059 December 8,2017	0.2 Nm to 25 Nm
		Mold stress relief test	Section :45 UL 1059 December 8,2017	25 °C to 200 °C

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Rating	Section :45 UL 1059 December 8,2017	Qualitative
		Marking	Section :45 UL 1059 December 8,2017	Qualitative
		Connection and support	Section :46 UL 1059 December 8,2017	0.2 Nm to 25 Nm
		Spacing	Section :47 UL 1059 December 8,2017	Upto 200mm
		Identification	Section :48 UL 1059 December 8,2017	Qualitative
		Protective conductor mounting rails	Section :49 UL 1059 December 8,2017	Qualitative
		Short time current sequence(commercial and Industrial application)	Section :50 UL 1059 December 8,2017	Upto 400 A Upto 100 mV 1 A to 2000 A
		Short time current sequence (Service application)	Section :51 UL 1059 December 8,2017	1 to 2000 A
		Rating	Section :52 UL 1059 December 8,2017	Qualitative
		Marking	Section :53 UL 1059 December 8,2017	Qualitative
6.	**Equipment wiring terminal for use with aluminium and/or copper conductor**	Mechanical sequence	Section :7.4/8.4/9.4 of UL 486 E April 28, 2010	Upto 200 N Upto 3 kN
7.	**Circuit breakers for overcurrent protection for household and similar installations:**	Indelibility of marking	CL No. 9.3 of IEC 60898:2015-03	Qualitative
		Reliability of screws, current carrying parts and connection	CL No. 9.4 of IEC 60898:2015-03	0.2 Nm to 40 Nm

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Circuit breakers for A.C. operation	Reliability of screws, type terminals for external conductors	CL No. 9.5 of IEC 60898:2015-03	Upto 200 N Upto 3 kN
		Protection against electric shock	CL No. 9.6 of IEC 60898:2015-03	Upto 50 N
		Resistance to heat	CL No. 9.14 of IEC 60898:2015-03	Ambient to 180°C Ball diameter: 5mm
		Glow wire test	CL No. 9.15 of IEC 60898:2015-03	500 °C to 960 °C
		Di-electric properties	CL No. 9.7of IEC 60898:2015-03	(-) 40° C to 180°C Upto 90% RH Upto 1 TΩ 500 V to 20 kV 500 V to 10 kV
		Temperature rise	CL No. 9.8of IEC 60898:2015-03	0.1 °C to 300 °C
		28 days test	CL No. 9.9of IEC 60898:2015-03	Upto 30 V Upto 24 Hour
		Test of tripping characteristics	CL No. 9.10 of IEC 60898:2015-03	1 A to 2000A Upto 24Hr (-) 40 °C to 180 °C
		Test of time current characteristic	CL No. 9.10.2 of IEC 60898:2015-03	1 A to 2000A
		Test of instantaneous tripping ,of correct opening of the contacts and of the trip free function	CL No. 9.10.3 of IEC 60898:2015-03	1 A to 2000A
		Test of effect of single-pole loading on the tripping characteristic of multipole circuit-breakers	CL No. 9.10.4of IEC 60898:2015-03	1 A to 2000A
		Test of effect of ambient temperature on the tripping characteristics	CL No. 9.10.5 of IEC 60898:2015-03	1 to 2000A Upto 24Hour (-) 40 °C to 180 °C

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
8.	**Low voltage switchgear and control gear assemblies**	Protection against electric shock Protection against unintentional direct contact with hazardous live parts	EN 50274:2002	20 N/ 50 mm
II.	**ENVIRONMENTAL TEST FACILITY**			
1.	**Electronic/Electrical products Terminal blocks, Switch gears**	Glow wire test	IS 11000(Part 2/Sec1): 2008 IEC 60695-2-10-2000 IEC 60695-2-11-2000	500 °C to 960 °C
		Needle flame test	IS 11000 (Part 2/Sec2): 2008 IEC 60695-11-5:2004	10 °C to 1000 °C
		Vibration test (Sinusoidal)	IEC 60068-2-6:2007-12 IS 9000: (Part 8): 1981 IEC 61373:2010-05	Maximum Acceleration: 10g Maximum displacement: 0.75mm
		Vibration broadband random and guidance	IEC 60068-2-64:2008 IEC 61373:2010-05 DIN EN 50155:2008-03	Max Acceleration: 3.5 g Frequency Range: 5 Hz to 500 Hz
		Shock test (Half Sine)	IS 9000: (Part-7) Section 1 :2006 IEC 60068-2-27:2008 IEC 61373:2010-05 DIN EN 50155:2008-03	Maximum Acceleration: 30 g Time: 6 millisec & 11millisec
		Special test in saturated atmosphere containing Sulfur dioxide (SO_2)	DIN 50018:2013-05	0.2 l to 2 l
		Cold test	IEC 60068-2-1:2007	(-) 50 °C to 25 °C
		Dry heat teat	IEC 60068-2-2:2007	25 °C to 300 °C
		Damp heat, cyclic (12 h + 12 h cycle)	IEC 60068-2-30:2005	25 °C to 65 °C RH: 50% to 90%

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Composite temperature/ humidity cyclic test	IEC 60068-2-38:2009	25 °C to 65 °C RH: 50% to 90%
		Damp heat, steady state	IEC 60068-2-78:2012	25 °C to 65 °C RH 50% to 90%
		Rough handling shocks, Primarily for equipment-type specimens	IEC 60068-2-31:2008	5 RPM to 10 RPM

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection

ELECTRONIC TESTING

I.	**ELECTRONIC COMPONENTS & EQUIPMENT SUB ASSEMBLIES**			
1.	**Connector for Electronic Equipment's**	Constructional Requirements	CL No. 6 IEC 61984 :2008-10	Qualitative (Visual)
		Marking and Identification	CL No. 6.2 IEC 61984:2008-10	Qualitative (Visual)
		Protection against electric shock	CL No. 6.4,7.3.6,7.3.7 IEC 61984:2008-10 CL No.5 IEC 60529:1989(1999-11)	20 N, 50 mm
		Pre Conditioning	CL No. 7.1.6 IEC 61984:2008-10	Qualitative
		Visual Examination tests	CL No. 7.2.1 IEC 61984:2008-10 IEC 60512-1:2001	Qualitative (Visual)
		Torque Test	CL No. 7.2.3 IEC 61984:2008-10 CL No. 9.6 IEC 60999-1 :1999	0.2 Nm to 6 Nm
		Connection capacity test	CL No. 9.1 IEC 60999-1:1999	a X b Gauge (2.0mm X 1.2 mm to 4.3 mm X 4.0 mm) Ø Gauge (0.7 mm to 9.3 mm)
		Flexion Test	CL No. 9.4 IEC 60999-1:1999	100 g to 22.7 kg
		Pull out test	CL No. 9.5 IEC 60999-1:1999	Upto 3 kN
		Insertion and Withdrawal	IEC 60512-13-2:2006	Upto 3 kN
		Contact retention in insert	IEC 60512-15-1:2008 IEC 60512-1-1:2002	Upto 3 kN

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Provision against incorrect mating Polarisation & Coding	CL No. 6.3 IEC 61984:2008-10 IEC 60512-13-5 :2006	Upto 3 kN
		Temperature rise	CL No. 7.3.8 IEC 61984:2008-10 IEC 60512-5-1:2002 IEC 60512-5-2:2002	0.1 °C to 100 °C
		Contact Resistance	IEC 60512-2-2:2003-05	0.5 milliohm to 10 milliohm
		Mechanical Operation	CL No. 7.3.9 IEC 61984:2008-10 IEC60512-9-1:2010	Upto 3 kN 0.5 milliohm to 10 milliohm 100 Ohm to 2 X 10^15 Ohm Upto 10 kV
		Insulation Resistance	IEC 60512-3-1:2002	1000 Ohm to 2 X 10^15 Ohm
		Impulse Withstand	CL No. 7.3.12 IEC 61984:2008:10 IEC 60060-1:2010	500 V to 20 kV (1.2/50 microsecond)
		Voltage proof	CL No. 7.3.12 IEC 61984:2008:10 IEC 60512-4-1:2003	500 V to 10 kV
		Cold Test	CL No. 6.6.3, 6.8, 6.15, 6.18.3 IEC 61984:2008:10 IEC 60512-11-10:2002 IEC 60512-1-1:2002	Upto (-) 50°C
		Dry heat	CL No.6.6.3,6.8,6.15, 6.18.3 IEC 61984:2008:10 IEC 60512-11-9:2002 IEC 60512-1-1:2002	1 °C to 300 °C

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Corrosion test of SO_2	CL No. 7.3.14 IEC 61984:2008:10 IEC 6988:1985 IEC 60512-1-1:2002	0.20dm^3

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CHEMICAL TESTING

I.	**INKS, DYES & PIGMENTS**			
1.	**Printing Ink & Printed Material**	Immersion test for 168 hours (in Ethanol, Acetone, Sodium Hydroxide 0.1 M, Sodium chloride 10 %)	ISO 175: 2010	Qualitative
		Immersion test for 168 hours (in Methyl Ethyl Ketone)	UL-969: 2017	Qualitative
		Immersion test for 48 hours (in Fuel Oil No.1, Fuel Oil No. 2 & Lubricating Oil)	UL-969: 2017	Qualitative
		Ten day oven test (High Temperature test)	UL-969: 2017	Qualitative
		Wipe resistance of Print (Using Ethanol, Acetone, Iso-propyl alcohol, 0.1 M Sodium hydroxide, n-hexane)	IEC 61010-1:2010	Qualitative
		Wipe resistance of Print (Using water & Petroleum Ether)	IEC 62208: 2011	Qualitative