



सत्यमेव जयते



NABL ACCREDITED
LABORATORY No.
20001, T-1872

फॉर्म सं० : टीआरएफ-2014 Form No.: TRF-2014

जारी सं०. 02, मई-2016 Issue 02, May 2016

परीक्षण रिपोर्ट सं०. /Certificate No.

ई.के.प.प्र.(उ.) /90 (4)-2के

ERTL(N)/90(4)-2K. 00327

दिनांक /Date : 7/1/19

परीक्षण रिपोर्ट TEST REPORT



भारत सरकार

Government of India

इलेक्ट्रॉनिकी और सूचना प्रौद्योगिकी मंत्रालय

Ministry of Electronics & Information Technology

मानकीकरण परीक्षण एवं गुणवत्ता प्रमाणन निदेशालय

Standardisation, Testing and Quality Certification Directorate

इलेक्ट्रॉनिकी क्षेत्रीय परीक्षण प्रयोगशाला (उत्तर)

ELECTRONICS REGIONAL TEST LABORATORY (NORTH)

(एन ए बी एल द्वारा प्रत्यापित प्रयोगशाला)

[NABL Accredited Laboratory]

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ज्ञापन MEMORANDUM

1. यह परीक्षण रिपोर्ट इलेक्ट्रॉनिकी क्षेत्रीय परीक्षण प्रयोगशाला (उत्तर) (इ.क्षे.प.प्र.(उ.)) मा.प.गु.प्र. निदेशालय, इलेक्ट्रॉनिकी व सूचना प्रौद्योगिकी विभाग, संचार व सूचना प्रौद्योगिकी मंत्रालय, भारत सरकार द्वारा जारी की गई है।
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2. यह रिपोर्ट प्रयोगशाला में जमा किये गए विशेष उत्पाद के अशांकन के परिणाम का रिकार्ड है। यह अन्य उन उत्पादों पर भी लागू नहीं है तो उस विशेष उत्पाद के समान घोषित किये गए हैं।
This Report is the record of results of testing pertaining to the particular product submitted to the laboratory for testing and do not apply to other products even though declared to be identical.
3. इ.क्षे.प.प्र. (उ.) जारी परीक्षण रिपोर्ट आंशिक रूप में केवल निदेशक इ.क्षे.प.प्र. (उ.) की लिखित अनुमति एवं स्वीकृति के उपरान्त ही दुबारा जारी किया जा सकता है।
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This results reported, in this test report are valid at the time of and under the static condition of measurement.
5. मापन आंकड़ों में परिवर्तन के लिये इ.क्षे.प.प्र. (उ.), नई दिल्ली, उत्तरदायी नहीं होगी।
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To help us improve our services, you are requested to please provide us your feedback/suggestion, either in the feedback form available in customer service call center.



TEST REPORT

IEC 60127- 6

Fuse-holders for miniature cartridge fuse-links

Report Reference No. :	ERTL(N)/90(4)-2018-19/Q0327
Date of issue :	07/01/2019
No. of Pages	22
Testing Laboratory :	Electronics Regional Test Laboratory (North),
Address..... :	S-Block, Okhla Industrial Area, Phase-II, New Delhi-110020
Applicant's name :	M/s Protectron Electromech Pvt. Ltd.
Address..... :	No. 44, 29th Cross, 7th Main Road, BSK Industrial Area, BSK 2nd Stage, Bangalore – 560070
Test specification:	
Standard :	IEC 60127-6, Edition 2.0 2014-09
Test procedure..... :	FS Compliance
Non-standard test method..... :	N/A
Test Report Form No. :	IEC60127_6A
Test Report Form(s) Originator :	ERTL(North), Delhi, India
Master TRF..... :	Dated 2015-10
Test item description..... :	Panel Mount Fuse Holder
Trade Mark..... :	
Manufacturer..... :	M/s Protectron Electromech Pvt. Ltd. No. 44, 29th Cross, 7th Main Road, BSK Industrial Area, BSK 2nd Stage, Bangalore – 560070
Model/Type reference :	P8028-A2-2
Ratings..... :	10A, 250V
Test item particulars :	
Classification of installation and use	Panel Mount Fuse Holder for 6.3mm x 32mm fuse links as per IEC 60127-2
Terminal	Screw / Solder / Quick-connect/ other solder less terminal
Type	Unexposed / Exposed
Mounting	Panel Mounted /Base / Printed Circuit Board
Fastening (on panel)	Fixing nut / snap in
Fastening (on PCB)	Solder / Plug in
Insertion of fuse carrier	Screw / Bayonet / plug in
Class of Construction	<input type="checkbox"/> Class I <input checked="" type="checkbox"/> Class II
Protection against electric shock Category :	Without integral protection (- PC1) /with integral protection (PC2) /with enhanced protection (- PC3)
Pollution degree (PD)	<input type="checkbox"/> PD-1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD-3
Over voltage category (OVC)	<input type="checkbox"/> OVC I <input type="checkbox"/> OVC II <input checked="" type="checkbox"/> OVC III
Summary of testing:	Fuse-holders designed for panel mounting complies to all relevant requirements of IEC 60127-6, 2014

Tested by: *Deepika*
 DEEPIKA GAHLOT
 SCIENTIST 'B'

TRF No. IEC60127_6A
 Approving Authority
 MANOJ KUMAR
 SCIENTIST 'C'





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Tests performed (name of test and test clause):
6. Marking
9. Protection against electric shock
10. Clearances and creepage distances
11. Electrical requirements
11.1.2 Humidity preconditioning
11.1.3 Measurement of insulation resistance
11.1.4 Dielectric strength test
11.2 Contact resistance
12. Mechanical requirements
13. Thermal requirements
14. Endurance
15.1 Resistance to rusting

Testing	
Date of receipt of test item	09/10/2018
Date(s) of performance of tests	09/10/2018 to 27/12/2018
Laboratory conditions:	
Ambient Temperature	15-35°C
Ambient Humidity	45-75% RH
Sample Conditions	Good
Date (s) of performance of tests :	
General remarks:	

The test results presented in this report relate only to the object tested.
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"(see Enclosure #)" refers to additional information appended to the report.
 "(see appended table)" refers to a table appended to the report.

Throughout this report a comma (point) is used as the decimal separator.

General product information : Panel Mount Fuse Holder for 6.3mm x 32mm fuse links as per IEC 60127-2. Fuse holder fasten on panel by Fixing nut and fuse inserted by screw cap.

PHYSICAL DATA

INSULATOR BODY	:	BAKELITE
TERMINALS	:	COPPER ALLOY, TIN-PLATED
CAP DESIGN	:	SCREW-IN
FUSE LINK SIZE	:	6.30x32mm
PANEL THICKNESS	:	2.0-4.0mm MAX

ELECTRICAL DATA

MAXIMUM RATED VALUE	:	10A 250V AC
DIELECTRIC WITHSTANDING	:	2K VAC, 3K VDC
INSULATION RESISTANCE	:	1000 MΩ AT 500VDC
CONTACT RESISTANCE	:	20 mΩ MAX

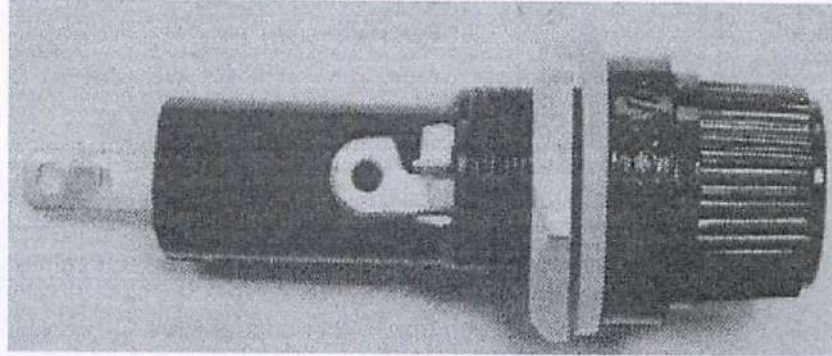
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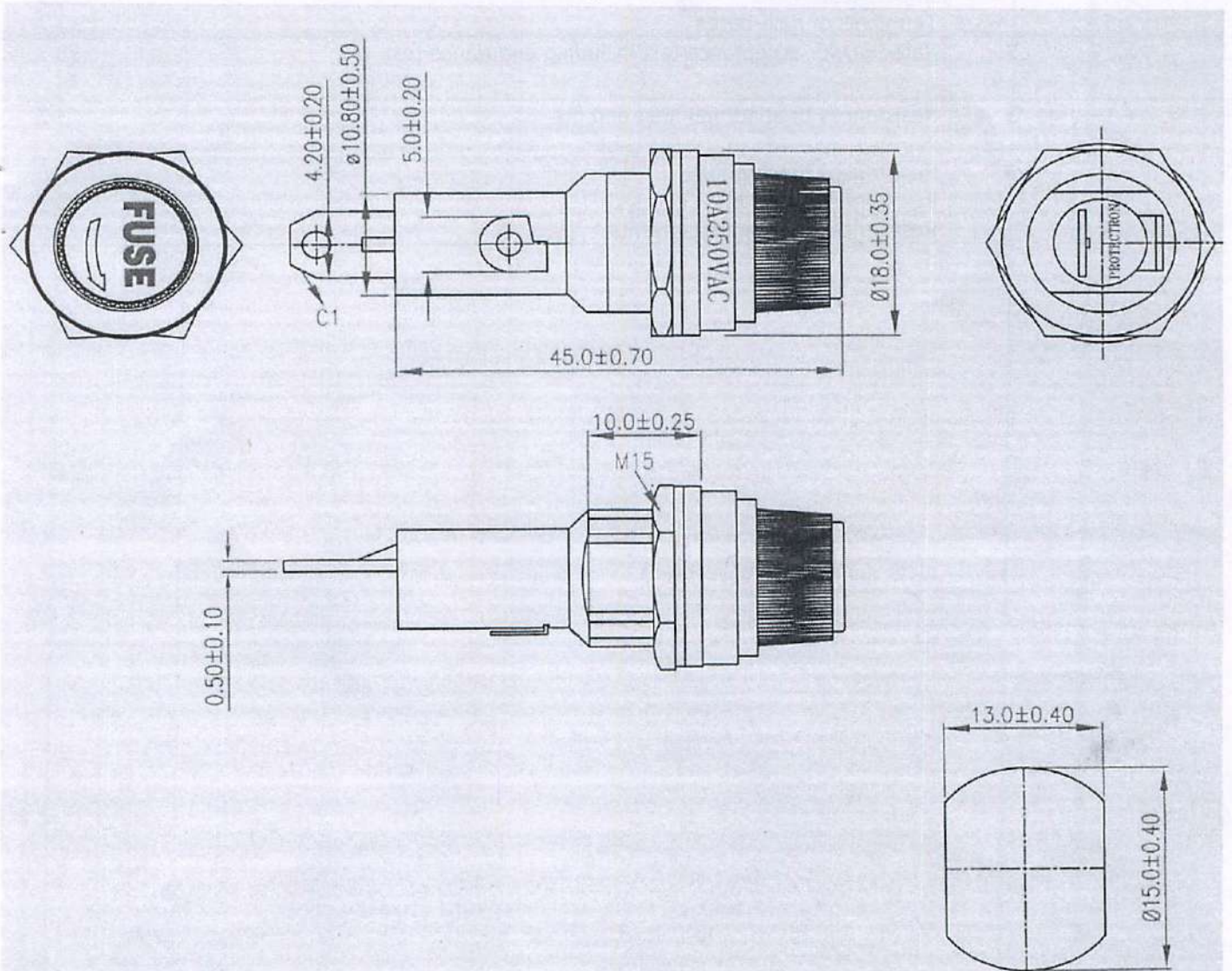
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Photograph of Fuse Holder



Marking & Details on Fuse Holder



RECOMMENDED PCB LAYOUT

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TEST PLAN

Test Group	Test No.	No. of samples	Parameters	Sub-clause
0		15 (1-15)	Marking	6
1	1.1	3 (1-3)	Protection against electric shock	9
	1.2		Clearance, creepage distance	10
	1.3		Insulation resistance, dielectric strength, impulse withstand voltage	11.1
	1.4		Mechanical strength of the fuse-holder fastening on panels	12.6
2	2.1	3 (4-6)	Contact resistance	11.2
	2.2		Compatibility between fuse-holder and fuse-link	12.3
	2.3		Mechanical strength of the connection between fuse-base and fuse-carrier	12.4
	2.4		Impact test	12.5
	2.5		Terminals of fuse-bases	12.7
3	3.1	3 (7-9)	Rated power acceptance test including endurance test	13.1 14
4	4.1	3 (10-12)	Resistances to abnormal heat and fire	13.2
5	5.1	3 (13-15)	Resistances to vibration	12.8
	5.2		Resistance to rusting	15.1
	5.3		Resistances to cleaning solvents	15.2

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**TEST FOR GROUP - 0
(SAMPLE NO. 1 - 15)**

6	MARKING		P
	Name or trade mark of the manufacturer		P
	Catalogue or type reference	P8028-A2-2	P
	Additional marking	See Below	---
	Rated voltage in Volts	250VAC	P
	Power acceptance in watts together with the rated current in amperes (...)	10A	P
	Additional marking is not placed on the front of the fuse-holder	In compliance	P
	Marking easily legible and indelible; test of indelibility with water & petroleum spirit	In compliance	P
	Colour coding: if colour coding is used, it is in accordance with Appendix A (IEC 60127-1)	No colour coding	N/A

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TEST FOR GROUP 1 (SAMPLE NO. 1 - 3)			
9	PROTECTION AGAINST ELECTRIC SHOCK		---
9.1	Category PC1:		N/A
	Additional means are provided to protect against electric shock		N/A
9.2	Category PC2	In compliance	P
9.2.1	The fuse-holder so designed that	See Below	P
	- live parts not accessible when the fuse-holder is properly assembled and correctly installed on the front panel of equipment with fuse-carrier and gauge No. 3 or No. 6 according table 3 or table 4 inserted into the fuse-base	Compliance verified with Gauge No. 6	P
	- live parts not accessible either during insertion or removal of the fuse-carrier by hand or with the aid of a tool or after the fuse-carrier has been removed	In compliance	P
9.2.2	Compliance with standard test finger	In compliance	P
9.3	Category PC3		N/A
	- live parts not accessible when the fuse-holder is properly assembled and correctly installed on the front panel of equipment with fuse-carrier and gauge No. 3 or No. 6 according table 3 or table 4 inserted into the fuse-base		N/A
	- live parts not accessible either during insertion or removal of the fuse-carrier by hand or after the fuse-carrier has been removed		N/A
	Compliance with a rigid test wire of 1 mm diameter		N/A
10	CLEARANCES AND CREEPAGE DISTANCES		P
10.1	GENERAL		
10.3	Clearances	In compliance	P
	Minimum clearances with regard to the rated voltage, the overvoltage category and the specified degree of pollution shall not be less than as specified in Table 9 / Table 10	In compliance (refer appended table)	P
	Impulse voltage test , 11.1.2 if minimum clearance less than as specified table 9/ table 10.		N/A
	Clearances shall not be smaller according to Table F.2 (IEC 60664-1:2007)	In compliance	P
	Rated voltage below 125V , comply to impulse voltage as per Table 8		N/A
10.4	Creepage distances	In compliance	P
	Minimum creepage distances with regard to the rated voltage, pollution degree, insulation material are not be less than as specified Table 11	In compliance (refer appended table)	P
	Rated voltage below 125V, comply to impulse voltage as per Table 11		N/A
11	ELECTRICAL REQUIREMENTS		P
11.1	Insulation resistance, dielectric strength and impulse withstand voltage		P
11.1.1	Mounting		P
a)	Fuse-holder for panel or base mounting: Mounted on a metal plate with the thickness (s) specified by the manufacturer. A test gauge according table 9 and with or without the fuse-carrier inserted into the fuse-base.	Fuse-holder for panel mounting	P
	Fuse-holder with screw-in fuse-carrier. Fitted in normal way with following torque:	Fuse-holder with screw-in fuse-carrier	P
	Diameter of fuse-carrier:	Torque:	----
	Up to and including 16 mm	0,268 Nm	In compliance
	Over 16 mm, up to and including 25 mm	0,402 Nm	N/A
b)	Fuse-holder for PC board, mounted on a test PC board according to annex A.	Fuse-holder for panel mounting	N/A
	If also for panel use, with a front panel metal plate of thickness (s)	..... mm	N/A
	A test gauge according to table 12 and with or without the fuse-carrier inserted into the fuse-base		N/A
	Fuse-holder for PC board mounting by soldering (through-hole types) have a pin-spacing of n x mm	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
11.1.2	Humidity preconditioning	In compliance	P
	Mounted fuse-bases according to clause 11.1.1 and separate, not inserted fuse-carriers are submitted to the humidity preconditioning	In compliance	P
	relative humidity between 91 % and 95 %	In compliance	P
	temperature t = (40 ±2) °C	In compliance	P
	kept in the chamber for 48 h	In compliance	P
11.1.3	Measurement of insulation resistance between	In compliance	P
	DC Test voltage of 2X·U _N (min. 100 V) for one minute	500Vdc	P
	For Unexposed fuse-holder		N/A
	...the terminals		N/A
	≥ 10 MΩ for functional, basic or supplementary insulation		N/A
	≥ 20 MΩ for reinforced or double insulation		N/A
	...the terminals and the metal mounting or frontpanel plate		N/A
	≥ 10 MΩ for functional, basic or supplementary insulation		N/A
	≥20 MΩ for reinforced or double insulation		N/A
	...the terminals and any other metal parts which may be in contact with the mounting plate, e.g. base fixing devices		N/A
	≥ 10 MΩ for functional, basic or supplementary insulation		N/A
	≥ 20 MΩ for reinforced or double insulation		N/A
	...the terminals and a metal foil covering the whole of the accessible surface		N/A
	≥ 10 MΩ for functional, basic or supplementary insulation		N/A
	≥ 20 MΩ for reinforced or double insulation		N/A
	Fuse-holder with a rated voltage of < 125 V are in accordance with the requirements of Table 12.		N/A
	For Exposed fuse-holder	In compliance	P
	...the terminals		P
	≥10 MΩ for functional, basic or supplementary insulation		N/A
	≥ 20 MΩ for reinforced or double insulation	1.6GΩ 1.6GΩ 1.7GΩ	P
	...the terminals and the mounting plate	In compliance	P
	≥10 MΩ for functional, basic or supplementary insulation		N/A
	≥ 20 MΩ for reinforced or double insulation	1.9GΩ 1.9GΩ 1.8GΩ	P
	Fuse-holder with a rated voltage of < 125 V are in accordance with the requirements of Table 12..		N/A
11.1.4	Dielectric strength test	In compliance	P
11.1.5	AC Test voltage as per Table 12 for one minute applied between		---
	For Unexposed fuse-holder		N/A
	...the terminals		N/A
	for functional, basic or supplementary insulation	.....V	N/A
	for reinforced or double insulation	.....V	N/A
	...the terminals and the metal mounting or front-panel plate		N/A
	for functional, basic or supplementary insulation	.....V	N/A
	for reinforced or double insulation	.....V	N/A
	...the terminals and any other metal parts which may be in contact with te mounting plate, e.g. base fixing devices		N/A
	for functional, basic or supplementary insulation	.....V	N/A
	for reinforced or double insulation	.....V	N/A
	...the terminals and a metal foil covering the whole of the accessible surface		N/A
	for functional, basic or supplementary insulation	.....V	N/A
	for reinforced or double insulationV	N/A
	No breakdown or flashover shall occur		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	For Exposed fuse-holder	In compliance	P
	...the terminals		P
	for functional, basic or supplementary insulation	.....V	N/A
	for reinforced or double insulation	3000 V	P
	...the terminals and the mounting plate		P
	for functional, basic or supplementary insulation	.....V	N/A
	for reinforced or double insulation	3000 V	P
	No breakdown or flashover shall occur	No breakdown or flashover occurred	P
	Fuse-holder with a rated voltage of < 125 V are in accordance with the requirements of Table 12.		N/A
	Impulse Withstand Voltage Test	In compliance	P
	Impulse withstand voltage as per Table 8	Specified as OVC- III	P
	Three impulses of each polarity	Withstand impulse Test	P
	For Unexposed fuse-holder , between		N/A
	...the terminals		N/A
	for functional, basic or supplementary insulation	.....V	N/A
	for reinforced or double insulation	.....V	N/A
	...the terminals and the metal mounting or front-panel plate		N/A
	for functional, basic or supplementary insulation	.....V	N/A
	for reinforced or double insulation	.....V	N/A
	...the terminals and any other metal parts which may be in contact with the mounting plate, e.g. base fixing devices		N/A
	for functional, basic or supplementary insulation	.....V	N/A
	for reinforced or double insulation	.....V	N/A
	.the terminals & a metal foil covering the whole of the accessible surface		N/A
	for functional, basic or supplementary insulation	.....V	N/A
	for reinforced or double insulation	.....V	N/A
	No breakdown or flashover shall occur		N/A
	For Exposed fuse-holder , between	In compliance	P
	...the terminals	In compliance	P
	for functional, basic or supplementary insulation	.....V	N/A
	for reinforced or double insulation	6000 V	P
	...the terminals and the mounting plate	In compliance	P
	for functional, basic or supplementary insulation	.....V	N/A
	for reinforced or double insulation	6000 V	P
	No breakdown or flashover shall occur	No breakdown or flashover occurred	P
	Fuse-holder with a rated voltage of < 125 V are in accordance with the requirements of Table 12.		N/A
12.6	Mechanical strength of the fuse-holder fastening on panels		P
12.6.1	Fixing nut fastening		P
	The fuse-base was mounted with supplied fixing elements, including gasket, on a steel-plate according to the manufacturer's instructions	In compliance	P
	The fixing nut of a one-hole mounted fuse-base was screwed on and off five times with following torque:	In compliance	P
	Thread diameter:	Torque:	P
	Up to and including 12 mm	0,6 Nm	P
	greater than 12 mm, up to and including 18 mm	1,2 Nm	N/A
	greater than 18 mm, up to and including 30 mm	2,4 Nm	N/A
	After the test, no changes which would impair its further use	In compliance	P

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Clause	Requirement + Test	Result - Remark
12.6.2	Fixing screw fastening	N/A
	Fixing screws, bolts or nuts of a multi-hole mounted fuse-base were screwed on and off five-times with following torque:	N/A
	Thread diameter:	Torque:
	2 mm	0,25 Nm
	2,5 mm	0,4 Nm
	3 mm	0,5 Nm
	3,5 mm	0,8 Nm
	4 mm	1,2 Nm
	5 mm	2,0 Nm
	6 mm	2,5 Nm
	≥ 8 mm	3,5 Nm
	After the test, no changes which would impair its further use.	N/A
12.6.3	Snap-in fastening	Fixing by nut on Panel
12.6.3.2	Tests and requirements	N/A
12.6.3.2.1	Verification of Mechanical strength of the fuse-holder fastening on panels	N/A
1	They was performed with an engaged snap-in fastening and the fuse-holder has lie flat on the surface of the mounting plate.	N/A
	The thickness of the mounting plate and the diameter of the mounting-hole corresponding to the specifications of the manufacturer	N/A
	The mounting plate was positioned in any convenient orientation	N/A
12.6.3.2.2	Insertion force F1	N/A
2	Insertion Force ≤ 20N or as specified by manufacturer	..... N
12.6.3.2.3	Withdrawal force F2	N/A
3	Withdrawl Force increased from N to 50N	N/A
12.6.3.2.4	Acceptance criteria in the above tests	N/A
4	Cracks, chipping and breakage of the fuse-holder base due to the mechanical stress of F1 and F2 shall not appear	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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**TEST FOR GROUP 2
(SAMPLE NO. 4-6)**

11.2	Contact resistance		P
	If fuse link , IEC 60127-2	See below (mΩ)	P
	- average value shall not exceed 5mΩ	3.94 | 4.06 | 4.07	P
	- individual value shall not exceed 10mΩ	4.78 | 4.91 | 4.70	P
	If fuse link , IEC 60127-3		N/A
	- average value shall not exceed 10mΩ	.....mΩ	N/A
	- individual value shall not exceed 15mΩ	.....mΩ	N/A
12	MECHANICAL REQUIREMENTS	In compliance	P
12.3	Compatibility between fuse-holder and fuse-link	In compliance	P
	The maximum gauge No. 1 or gauge No. 4 according table 3 or table 4 was inserted in and withdrawn from the fuse-holder and fuse-carrier, if any, 10 times	Compliance verified with Gauge No. 4 according table 3	P
	For fuse-holders having screw-in fuse-carriers: These carriers was fitted in the normal way for each operation with following torque:	In compliance	P
	Diameter of fuse-carrier:	Torque (2/3 of values specified in Table 13):	---
	Up to and including 16 mm	0,268 Nm	P
	Over 16 mm, up to and including 25 mm	0,402 Nm	N/A
	For fuse-holders having bayonet fuse carriers there are no special torque requirements.		N/A
	- No visible damage - No looseing of parts - In the most unfavourable position, the minimum gauge No. 2 or gauge No. 5 shall not fall from the fuse- carrier.		N/A
11.2	Contact resistance		P
	If fuse link , IEC 60127-2	See below (mΩ)	P
	- average value shall not exceed 5mΩ	4.02 | 4.17 | 4.19	P
	- individual value shall not exceed 10mΩ	4.88 | 4.89 | 4.74	P
	If fuse link , IEC 60127-3		N/A
	- average value shall not exceed 10mΩ		N/A
	- individual value shall not exceed 15mΩ		N/A
	The screw-in fuse-carrier: Was screwed in with following torque(2/3 of value in Table 13):	In compliance	P
12.4	Mechanical strength of the connection between fuse-base and fuse-carrier	In compliance	P
12.4.1	Screw and bayonet connections	In compliance	P
	For the following test the fuse-carrier is fitted with the maximum gauge No. 1 or gauge No. 4 according to table 3 and inserted in the fuse-base, mounted according to 12.1.	In compliance	P
12.4.1 a	Torque test on fuse-carriers	In compliance	P
	Fuse-carrier was screwed on five times with following torque:	In compliance	P
	up to and including 16 mm	0,4 Nm	P
	Greater than 16 mm, up to and including 25 mm	0,6 Nm	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
12.4.1b	Tensile test on fuse-carriers	Incompliance	P
	Screw-in or bayonet fuse-carrier: Was subjected for 1 min to following axial pull:	Incompliance	P
	Diameter of fuse-carrier:	Axial pull:	Incompliance
	Up to and including 16 mm	25 N	Incompliance, dia. of fuse carrier 7.35mm
	Over 16 mm, up to and including 25 mm	50 N	N/A
	For fuse-holders where fuse-carriers are flush with the fuse: The axial pull test is not required.		N/A
	During and after the tests: - the fuse-carrier has securely held in the fusebase. - do not show any damage impairing its further use.	Incompliance	P
12.4.2	Plug-in connections		N/A
	Insertion & withdrawl forces: 10 times as specified by manufacturer		N/A
	Contact resistance		N/A
	If fuse link , IEC 60127-2		N/A
	- average value shall not exceed	5mΩ	N/A
	- individual value shall not exceed	10mΩ	N/A
	If fuse link , IEC 60127-3		N/A
	- average value shall not exceed	10mΩ	.....mΩ
	- individual value shall not exceed	15mΩ	.....mΩ
12.5	Impact test (for panel mounted fuse holders only)		P
	The front of the fuse-holder is then subjected to 3 blows with a springoperated hammer with impact energy of 0,35 ± 0,03 J	Withstand the test	P
	After test, - no serious damage - live parts have not become exposed - no distortion as to impair compliance with clause10 If doubt, compliance with 11.1,5	In compliance	P
12.7	Terminals of fuse-base		P
12.7.1	Terminals with screw- type clamping or Screwless clamping		N/A
	Test and requirements: According IEC 60999-1		N/A
12.7.2	Terminals for soldering	In compliance	P
12.7.2.1	Tag terminals	In compliance	P
	Designed for being soldered with a soldering iron	In compliance	P
12.7.2.1.1	Size	Min. Hole dia. 1.4mm Observed dia. 1.99mm	P
	Terminals of the fuse-base allows connection of rigid conductors, solid or stranded and flexible conductors as per Table 17	And it can accomodate max. Cross section of conductor 1.5mm ²	P
	soldering terminals shall have hole to pass the conductor	In compliance	P
12.7.2.1.3 a)	Robustness of termination	In compliance	P
	Test Ua1 of IEC600 68-2-21 : axial force of 20 N	In compliance	P
	No damage which would impair normal operation	In compliance	P
	Bending test according to test Ub of IEC 60068-2-21	method 2 used	P
	If applicable method 1, otherwise method 2		P
	No damage which would impair normal operation	In compliance	P

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Clause	Requirement + Test	Result - Remark	Verdict
12.7.2.	Solderability, wetting (soldering iron method) :	In compliance	P
1.3 b)	Test Ta, IEC 60068-2-20	In compliance	P
	accelerated ageing 155°C , 4h/16h	Accelerated ageing 155°C , 4h	P
	Method 2 Soldering iron size "B"	Method 2, Soldering iron size "B" Bit dia. 3mm	P
	Temperature 350°C, Immersion time: 2-3s	In compliance	P
	- the solder have wetted the test area	In compliance	P
	- no droplets		
12.7.2.	Resistance to soldering heat, soldering iron method	In compliance	P
1.3 c)	Test Tb of IEC 68-2-20:	In compliance	P
	Method 2 Soldering iron size "B"	In compliance	P
	Temperature 350°C / 370°C , Immersion time: 10s	In compliance	P
	No damage which would impair normal operation	In compliance	P
12.7.2.	Wire and pin terminals		N/A
2			
12.7.2.	General		N/A
2.1	For use with printed boards or other applications		N/A
12.7.2.	Size		N/A
2.2	No special requirements		N/A
12.7.2.	Robustness of termination:		N/A
2.3 a)	Test Ua1 of IEC 60068-2-21 : axial force of 20 N		N/A
	No damage which would impair normal operation		N/A
	Bending test according to test Ub of IEC 60068-2-21		N/A
	If applicable method 1, otherwise method 2		N/A
	No damage which would impair normal operation		N/A
12.7.2.	Solderability, wetting, solder bath method		N/A
2.3 b)	Test Ta, IEC 60068-2-20		N/A
	accelerated ageing 155°C , 4h/16h		N/A
	Method 1		N/A
	Immersion temperature and Immersion time as per Table1		N/A
	The dipped coating surface shall be covered with a solder coating with no more than small amount of scattered imperfections such as pin holes or unwetted areas . These imperfections shall not be concentrated in one area.		N/A
12.7.2.	Resistance to soldering heat, solder bath method:		N/A
2.3 c)	Test Ta, IEC 60068-2-20		N/A
	Method		N/A
	Immersion temperature : 260°C and Immersion time : 5 s		N/A
	No damage which would impair normal operation		N/A
12.7.3	Quick-connect male tab terminals		N/A
12.7.3.	Size		N/A
2	Dimensions according to:IEC 61210.		N/A
12.7.3.	Robustness of termination		N/A
3	Tensile test		N/A
	Test Ua1 of IEC 600 68-2-21		N/A
	Tensile force F1 , Table18 (IEC 60127-6)		N/A
	Compressive test		N/A
	Compressive force F2 , Table18 (IEC 60127-6)		N/A
	No damage which would impair normal operation		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
12.7.4	Quick connect male tab terminals combined with solder tag terminals		N/A
12.7.2.1	Tag terminals		N/A
	Designed for being soldered with a soldering iron		N/A
12.7.2.1.	Size		N/A
1	Terminals of the fuse-base allows connection of rigid conductors, solid or stranded and flexible conductors as per Table 17		N/A
	soldering terminals shall have hole to pass the conductor		N/A
12.7.2.1.	Robustness of termination		N/A
3 a)	Test Ua1 of IEC600 68-2-21 : axial force of 20 N		N/A
	No damage which would impair normal operation		N/A
	Bending test according to test Ub of IEC 60068-2-21		N/A
	If applicable method 1, otherwise method 2		N/A
	No damage which would impair normal operation		N/A
12.7.2.1.	Solderability, wetting (soldering iron method) :		N/A
3 b)	Test Ta, IEC 60068-2-20		N/A
	accelerated ageing 155°C , 4h/16h		N/A
	Method 2 Soldering iron size "B"		N/A
	Temperature 350°C, Immersion time:: 2-3s		N/A
	- the solder have wetted the test area		N/A
	- no droplets		N/A
12.7.2.1.	Resistance to soldering heat, soldering iron method		N/A
3 c)	Test Tb of IEC 68-2-20:		N/A
	Method 2 Soldering iron size "B"		N/A
	Temperature 350°C / 370°C , Immersion time: 10s		N/A
	No damage which would impair normal operation		N/A
12.7.3	Quick-connect male tab terminals		N/A
12.7.3.	Size		N/A
2			N/A
	Dimensions according to:IEC 61210.		N/A
12.7.3.	Robustness of termination		N/A
3			N/A
	Tensile test		N/A
	Test Ua1 of IEC 600 68-2-21		N/A
	Tensile force F1 , Table18 (IEC 60127-6)		N/A
	Compressive test		N/A
	Compressive force F2 , Table18 (IEC 60127-6)		N/A
	No damage which would impair normal operation		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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**TEST FOR GROUP 3
(SAMPLE NO. 7 - 9)**

13	THERMAL REQUIREMENTS	In compliance	P
13.1	Rated power acceptance test	In compliance	P
13.1.1	General	In compliance	P
13.1.2	Mounting As specified in 13.1.2	Panel Mounting In compliance	P P
13.1.3	Dummy Fuse- links Fuse-link with defined resistance Table 19 / Table 20	A2/4010 40 mΩ	P P
13.1.4	Temperature measurement as per Figure 11 ,(°C)	T_{A1} 23°C 23°C 23°C	P
	Ambient Temp. near Fuse Holder inside the Panel T_{A2}	23.5 23.5 23.5	P
	Temp. on Screw Cap T_{S1}	30.3 30.4 30.4	P
	Temp. on Fuse Holder Enclosure inside the Panel T_{S2}	33.7 33.8 33.8	P
	Temp. on Fuse Holder Terminals T_{T1}	44.3 44.5 44.5	P
	Maximum allowable temperature as per Table 21	85°C	P
13.1.5	Power acceptance at $T_{A1} : 23^{\circ}\text{C}$ Power acceptance at higher ambient temperature T_{A1} , assigned by the manufacturer T_{A1} :	$T_{A1} : 23^{\circ}\text{C}, 4 \text{ W}$	P
13.1.7	Test current (AC/DC)	10 A	P
	Temperature stability reached	In compliance	P
14	ENDURANCE		P
14.1	GENERAL		P
	fuse holders shall be sufficiently resistance to heat & to mechanical stress		P
14.2	Rated power acceptance test , 13.1, for 500h fuse-holder shall be in a satisfactory condition. It shall not have suffered any deformation that would impair its correct operation		P
11.1.3	Measurement of insulation resistance between	In compliance	P
	DC Test voltage of $2X \cdot U_N$ (min. 100 V) for one minute	500Vdc	P
	For Unexposed fuse-holder		N/A
	...the terminals		N/A
	≥ 10 MΩ for functional, basic or supplementary insulation		N/A
	≥ 20 MΩ for reinforced or double insulation		N/A
	...the terminals and the metal mounting or frontpanel plate		N/A
	≥ 10 MΩ for functional, basic or supplementary insulation		N/A
	≥ 20 MΩ for reinforced or double insulation		N/A
	...the terminals and any other metal parts which may be in contact with the mounting plate, e.g. base fixing devices		N/A
	≥ 10 MΩ for functional, basic or supplementary insulation		N/A
	≥ 20 MΩ for reinforced or double insulation		N/A
	...the terminals and a metal foil covering the whole of the accessible surface		N/A
	≥ 10 MΩ for functional, basic or supplementary insulation		N/A
	≥ 20 MΩ for reinforced or double insulation		N/A
	Fuse-holder with a rated voltage of < 125 V are in accordance with the requirements of Table 12.		N/A
	For Exposed fuse-holder	In compliance	P
	...the terminals		P
	≥ 10 MΩ for functional, basic or supplementary insulation		N/A
	≥ 20 MΩ for reinforced or double insulation	1.4GΩ 1.4GΩ 1.5GΩ	P

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	...the terminals and the mounting plate	In compliance	P
	≥10 MΩ for functional, basic or supplementary insulation		N/A
	≥ 20 MΩ for reinforced or double insulation	1.8GΩ 1.8GΩ 1.9GΩ	P
	Fuse-holder with a rated voltage of < 125 V are in accordance with the requirements of Table 12..		N/A
11.1.4	Dielectric strength test	In compliance	P
	AC Test voltage as per Table 12 for one minute applied between	In compliance	P
	For Unexposed fuse-holder		N/A
	...the terminals		N/A
	for functional, basic or supplementary insulation	.....V	N/A
	for reinforced or double insulation	.....V	N/A
	...the terminals and the metal mounting or front-panel plate		N/A
	for functional, basic or supplementary insulation	.....V	N/A
	for reinforced or double insulation	.....V	N/A
	...the terminals & any other metal parts which may be in contact with te mounting plate, e.g. base fixing devices		N/A
	for functional, basic or supplementary insulation	.....V	N/A
	for reinforced or double insulation	.....V	N/A
	...the terminals & a metal foil covering the whole of the accessible surface		N/A
	for functional, basic or supplementary insulation	.....V	N/A
	for reinforced or double insulation	.....V	N/A
	No breakdown or flashover shall occur		N/A
	For Exposed fuse-holder	In compliance	P
	...the terminals		P
	for functional, basic or supplementary insulation	.....V	N/A
	for reinforced or double insulation	3000 V	P
	...the terminals and the mounting plate		P
	for functional, basic or supplementary insulation	.....V	N/A
	for reinforced or double insulation	3000 V	P
	No breakdown or flashover shall occur	In compliance	P
	Fuse-holder with a rated voltage of < 125 V are in accordance with the requirements of Table 12.		N/A
12.3	Compatibility between fuse-holder and fuse-link		P
	The maximum gauge No. 1 or gauge No. 4 according table 3 or table 4 was inserted in & withdrawn from the fuse-holder and fuse-carrier, if any, 10 times	Gauge No. 4 used	P
	For fuse-holders having screw-in fuse-carriers :These carriers was fitted in the normal way for each operation with following torque:	In compliance	P
	Diameter of fuse-carrier: Torque (2/3 as specified in Table 13):	In compliance	P
	Up to and including 16 mm 0,268 Nm	In compliance	P
	Over 16 mm, up to & including 25 mm 0,402 Nm		N/A
	For fuse-holders having bayonet fuse carriers there are no special torque requirements.	Fuse-holders having screw-in fuse-carriers	N/A
	- No visible damage - No loseing of parts - In the most unfavourable position, the minimum gauge No. 2 or gauge No. 5 shall not fall from the fuse- carrier.		N/A

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11.2	Contact resistance				P	
	If fuse link , IEC 60127-2	See below (mΩ)			P	
	- average value shall not exceed	10mΩ	5.55	5.56	5.75	P
	- individual value shall not exceed	15mΩ	6.09	6.19	6.19	P
	If fuse link , IEC 60127-3				N/A	
	- average value shall not exceed	10mΩmΩ		N/A	
	- individual value shall not exceed	15mΩmΩ		N/A	

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**TEST FOR GROUP 4
(SAMPLE NO. 10-12)**

13.2	Resistance to abnormal heat and fire		P
13.2.1	Needle-flame test according to IEC 60695-11-5 Duration of application of flame: (10 ± 1)s No ignition of the tissue paper or scorching of white pine board	In compliance	P
13.2.2	Glow wire ignition test GWIT & GWFI as per IEC 60695-2-12 & IEC 60695-2-13 respectively GWIT : 775°C GWFI : 850°C	In compliance In compliance Withstood GWFI In compliance	P P N/A P

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**TEST FOR GROUP 5
(SAMPLE NO. 13 - 15)**

12.8	Resistance to Vibration test Fc of IEC 60068-2-6	In compliance	P
12.8.1	Mounting The fuse-holder mechanically connected to the test apparatus according IEC 68-2-47 by ist normal mounting method	In compliance	P
12.8.3	Measurement and requirements	In compliance	P
12.8.3.1	Severity (minimum level) - Frequency range: 10 to 55 Hz - Displacement amplitude 0,35 mm or acceleration 5 g - Number of sweep cycles: 5 in each axis	In compliance In compliance In compliance In compliance	P P P P
12.8.3.2	Axis of vibration 3 mutually perpendicular axes	In compliance In compliance	P P
12.8.3.3	Functional checks During vibration, the electrical continuity between the contacts not interrupted	In compliance	P
12.8.2.4	Final measurements the fuse-holder shows no serious damage in the sense of the standard	In compliance	P
11.2	Contact resistance		P
	If fuse link , IEC 60127-2	See below (mΩ)	P
	- average value shall not exceed 5mΩ	4.07 4.24 4.02	P
	- individual value shall not exceed 10mΩ	4.78 4.98 4.61	P
	If fuse link , IEC 60127-3		N/A
	- average value shall not exceed 10mΩ		N/A
	- individual value shall not exceed 15mΩ		N/A
15	ADDITIONAL REQUIREMENTS		P
15.1	Resistance to rusting Ferrous parts are adequately protected against rusting Traces of rust on sharp edges and any yellowish film removable by rubbing are ignored	In compliance In compliance Traces of rust neither on spring nor on fixing nut	P P P
15.2	Resistance to cleaning solvents (fuse holders for PC board mounting only) Test according to IEC600 68-2-45 clause 3.1.1, cleaning solvents cleanig solvent : propan-2-ol (isopropyl alcohol) or similar solvent except for solvent containing freon. Solvent temperature : (23 ± 5)°C Duration of immersion (5 ± 0,5)min Conditioning : Method 2 (without rubbing) Recovery time: not less than 1 h Final measurement : -visual inspection		N/A N/A N/A N/A N/A N/A
11.1.4	Dielectric strength test AC Test voltage as per Table 12 for one minute applied between For Unexposed fuse-holder ...the terminals for functional, basic or supplementary insulation for reinforced or double insulation ...the terminals and the metal mounting or front-panel plate for functional, basic or supplementary insulation for reinforced or double insulation		N/A N/A N/A N/A N/A N/A N/A N/A

Tested by: *Deepika*
DEEPIKA GAHLOT
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TRF No. IEC60127_6A
Approving Authority
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VED PRAKASH
SCIENTIST 'B'



NABL ACCREDITED LABORATORY

फार्म सं० : टीआरएफ-2014 Form No. : TRF-2014

जारी सं०. 02, मई-2016 Issue 02, May 2016

परीक्षण/TESTING

इलेक्ट्रीकल प: 001/Electrical T0001

इलेक्ट्रीकल प: 1572/Electronics T1572

अंशांकन/CALIBRATION :

विद्युत तकनीकी: अ: 0001/Electrotechnical: C0001

यांत्रिक अ: 0177/Mechanical: C0177

प्रकाशमय अ: 0588/Optical: C0588 CC2137

तापीय अ: 1287/Thermal: C0178

प्रदत्त सेवाओं की एक झलक/OUR SERVICES AT GLANCE

परीक्षण सेवायें

TESTING SERVICES:

कम्पोनेन्ट परीक्षण / COMPONENT TESTING

- एक्टिव - (आई सी डिस्क्रीट व सेमिकन्डक्टर डिवाइस)
Active - (IC discrete & Semiconductor devices)
- पैसिव (आर, एल सी रिले) / Passive (R, L, C, Relays)
- बैटरी परीक्षण / Battery testing
- स्क्रीनिंग / Screening

उपकरण परीक्षण / EQUIPMENT TESTING

- एनर्जी मीटर 1 फेज, 3 फेज / Energy meters, 1φ, 3φ
- बलास्ट व सी एक एल लैम्प / Ballast and CFL Lamps
- पावर इलेक्ट्रॉनिक्स (यूपीएस, इन्वर्टर, स्टेबिलाइजर)
Power Electronics (UPS, Inverter, Stabilizers)
- उपभोक्ता इलेक्ट्रॉनिक्स / Consumer Electronics
- सूचना प्रौद्योगिक उत्पाद व ऑटो टैक्सी मीटर
IT Products & Auto/Taxi meters

प्रकारणमय विश्वसनीयता

ENVIRONMENTAL/RELIABILITY

- जलवायु परीक्षण (-70 सी से 300 सी) आर एच 95%
Climatic Test: (-70C to 300C) RH-95%
- कंपन: साइन व रेनडम / Vibration: Sine & Random
- क्षमता: 350 केजीएफ से 5000 केजीएफ
Capacity: 350 kgf to 5000 KgF
- ड्यूरैबिलिटी परीक्षण: बंप व शाक टेस्ट इत्यादि
Durability Test: Bump and shock Test etc.

- वाक इन चेंबर: शुष्क ताप, आर्द्र व शीत तापमान के लिए उपलब्ध
(नाप: 3.8*2.2*2.4 मी)
Walk in Chamber available for dry heat, damp and cold temp. (size: 3.8*2.2*2.4M)

ई एम आर्इ / ई एम सी / EMI/EMC

- ईएनसी मापन के लिये एक तीली सूचीबद्ध साइट
FCC listed site for EMC Measurement
- रेडियेटेड एमिशन के लिये एनेकोइक चेंबर
Anechoic Chamber for Radiated emission
- आर एस मापन के लिये जी टैन सील 3जी एच जेड तक
GTEM cell upto 3-GHz for RS Measurement
- सी ई अंकन एफसीसी सूचीबद्धता और ईएनसी अंकन का परीक्षण
Testing for CE Marking, FCC listing and EMC mark

सेफ्टी परीक्षण / SAFETY

- घरेलू उपकरण / House hold Appliances
- चिकित्सा से सम्बन्धित उपकरण / Medical Equipment
- सूचना प्रौद्योगिकी उत्पाद / IT Products
- उपभोक्ता उत्पाद / Consumer Products
- नशील व कम वोल्टता आधारित
Machines & low voltage Directive
- ल्यूमिनरी / Luminary
- कम्पोनेन्ट व डिवाइस / Components & devices
- सीई, सासी, सोनकेप इत्यादि अंकन के लिए उत्पादों का परीक्षण
Testing of products for CE Marking, SASO, SONCAP etc.

विकसन सहायता

DEVELOPMENTAL ASSISTANCE

- उत्पाद विकसन/परीक्षण मूल्यांकन की सुविधा
Providing facilities for product development / evaluation in testing.

अंशांकन सेवायें

CALIBRATION SERVICES :

- इलेक्ट्रोटेक्निकल, यांत्रिक और तापीय इन हाउस और आन साइट अंशांकन के क्षेत्र में राष्ट्रीय मानकों की सुनिश्चित प्रत्ययता
With assured traceability to national standard in electro-technical as well as thermal and mechanical in house and on-site calibration.

एच पी सी सी (उच्च सूक्ष्म अंशांकन केन्द्र)

- HPCC (High Precision Calibration Centre)
- प्रकाशीय अंशांकन / Optical Fibre Calibration
- तापमान के प्राथमिक मानक (फिक्सड प्वाइंट सेल)
Primary Standard for Temperatures (Fixed Point Cell)
- दबाव का प्राथमिक मानक (डेड वेट टेस्टर) रेंज (3 बार-100 बार)
अनिश्चितता 70-130 पी पी एम
Primary Standard for Pressure (Range: 3 bar - 100 bar) uncertainty - 70-130 ppm.

- प्रतिरोध एसी/डी सी, करंट, वोल्टेज, आवृत्ति और पावर/एनर्जी (50 पी पी एन) / Resistance, Voltage, Current, Freq. and Power Energy (50 ppm)

- कैलिब्रेटर अंशांकन, ऑप्टो इलेक्ट्रॉनिक/फाइबर ऑप्टिक इक्विपमेंट / Calibrator Calibration, Opto Electronic / Fibre optic equipment

- आर एल सी मानक / R.L.C. Standard

- आर एफ अंशांकन 40 गीगा हर्ट्ज
RF Calibration upto 40 GHz

- तापमान, दबाव, मास, डायेंशन
Temperature, Pressure, Mass and Dimension.

अन्य सेवायें / OTHER SERVICES

- आईटी प्रमाणन / IT Certification
- सॉफ्टवेयर परीक्षण / Software Testing
- वेब डिजाइन प्रमाणन / Web Design Certification
- प्रशिक्षण (कॉम्प्लायंस परीक्षण, अंशांकन, क्यूएनएस व आईटी आदि) Trainings, (Compliance testing, Calibration, QMS & IT etc.)

हमारे प्रत्यायन OUR ACCREDITATIONS

राष्ट्रीय NATIONAL

- ☞ राष्ट्रीय परीक्षण और अंशशोधन प्रयोगशाला प्रत्यायन बोर्ड (एन.ए.बी.एल) मार्त द्वारा आई.एस.ओ./आई.ई.सी. 17025:2005 के अनुसार प्रत्यायित प्रयोगशाला।
Accredited Laboratory under National Accreditation Board for Testing and Calibration Laboratory (NABL India), as per ISO/IEC 17025:2005.
- ☞ विशेष उत्पादों के लिये भारतीय मानक ब्यूरो के द्वारा स्वीकृत प्रयोगशाला।
Recognized Laboratory of Bureau of Indian Standards for specific products (Energy meters, Taximeters, Electronic Ballast) etc.
- ☞ सी बी आई पी द्वारा एनर्जी मीटर के परीक्षण के लिये स्वीकृत प्रयोगशाला।
Approved Laboratory for testing energy meters by CBIP.
- ☞ उपभोक्ता गतिविधि विभाग - भार व मापन, नई दिल्ली द्वारा भारोत्तोलक मशीन के परीक्षण के लिये स्वीकृत प्रयोगशाला।
Approved laboratory for testing weighing machine by Department of Consumer Affairs-Weight and Measure, New Delhi.
- ☞ सेफ्टी परीक्षण (एस मार्क) हेतु, सेफ्टी प्रमाणन योजना के अंतर्गत एस.टी.क्यू.सी. निदेशालय द्वारा मान्यता प्राप्त।
Approved by STQC Directorate under Safety Certification Scheme of Safety testing (S Mark).

अन्तर्राष्ट्रीय INTERNATIONAL

- ☞ एफ सी सी (फेडरल कम्यूनिकेशन कमीशन) यूएसए. द्वारा ई एम आई/ ई एम सी परीक्षण के लिए पंजीकृत प्रयोगशाला।
Registered with FCC (Federal Communications Commission), USA for EMI/EMC testing.

Testing / Calibration Lab Recognised By:

- SONCAP, SASO for Safety Testing
- DGS & D for Equipment Testing
- DG of Civil Aviation for Calibration

परीक्षण/अंशंकन प्रयोगशाला मान्यता प्राप्त:

- सोनकैप सासो (सेफ्टी परीक्षण के लिए)
- डी.जी.एस. एवं डी. (उपकरण परीक्षण हेतु)
- महानिदेशक नागरिक उड़डयान (अंशंकन हेतु)



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Details of Test Equipment used

Sl.	Nomenclature	Make	Model/ Type No.	Calibration Validity
01	Digimatic Caliper	Mitutoyo, Japan	CD-6"CSX	03/07/2019
02	AC Power Source	Extech	6730	18/01/2019
03	Test Probe of Ø12mm & Length 80mm	In-house Fabricated	-----	Traceability unscheduled
04	Climatic Chamber	Weiss-Tech	C-340-40	21/11/2018
05	Climatic Chamber	Hot-Pack	1523	02/07/2019
06	Hipot Analyzer	Chroma	19055	09/02/2019
07	Glow Wire Tester	Friborg,	GW1000/4	19/12/2018
08	Adjustable Impact Hammer	Friborg	-----	31/08/2019
09	Digital Multimeter	Rishabh	Rishmulti-18S	02/11/2019
10	Mobile Corder	Yokogawa	MV-230	23/10/2019
11	Temp. Controlled Soldering Iron	ERSA	-----	23/10/2019
12	Torque Meter	Tohnichi	2-OT	21/08/2019
13	Digital Force Gauge	Chattilon	DRC-200N	31/07/2019
14	Needle Flame Burner	In-house	----	02/11/2019
15	Vibration Test System	Arun Hurley	PA500SM	07/09/2019
16	Dc POWER Supply 10V, 500A	AHR	-----	Traceability unscheduled
17	Impulse Tester	EM Test	VSS500N	23/05/2019
18	Climatic Chamber	Pacific Dynamic	PEDC-3.6-S	10/02/2019

- This Test Report pertains to item tested for the parameter(s) mentioned in the test results .
- Uncertainty has been taken into consideration while declaring the result of the parameter(s).
- The Item meet the requirements of the applicable standard / specification
- Any other remarks (if any) :Nil

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07/01
Tested by:
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TRF No. IEC60127_6A
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Manoj Kumar
07/01

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Government of India
Ministry of Electronics & Information Technology
Standardisation Testing & Quality Certification Directorate
ELECTRONICS REGIONAL TEST LABORATORY (NORTH)
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Clause	Requirement + Test	Result - Remark	Verdict

10.3	TABLE: Clearances(mm)								N/A
	Overvoltage category			II				N/A	
	Rated voltage (V)		Pollution Degree		Type of insulation				N/A
	Functional, basic or supplementary Insulation	Reinforced or double insulation	2	3	Basic mm	Functional mm	Supplementary mm	Reinforced/ double mm	Verdict/ Remark
	32	32	0.2	0.8	--	--	--	--	--
	63	--	0.2	0.8	--	--	--	--	--
	125	63	0.5	0.8	--	--	--	--	--
	250	125	1.5	1.5	--	--	--	--	--
	--	250	3.0	3.0	--	--	--	--	--
Supplementary Information		Considered for Overvoltage category III							

10.3	TABLE: Clearances(mm)								P
	Overvoltage category			III				P	
	Rated voltage (V)		Pollution Degree		Type of insulation				P
	Functional, basic or supplementary Insulation	Reinforced or double insulation	2	3	Basic	Functional	Supplementary	Reinforced/ double	Verdict/ Remark
	125	--	1.5	1.5	--	--	--	--	--
	250	125	3.0	3.0	--	--	--	--	--
	--	250	5.5	5.5	--	--	--	@	P
@ 7.5mm between terminal and accessible mounting metal plate		14.4 mm between terminals from inside							

10.4	TABLE: Creepage distances (mm)								P	
Rated voltage (V)	Creepage distance		Pollution degree				Type of insulation			P
	2		3							
	Material group		Material group				(mm)			Verdict
	(mm)		(mm)							
	I	II	IIIa/IIIb	I	II	IIIa/IIIb	B*)	S*)	R*)	
32	0.53	0.53	0.53	1.3	1.3	1.3	--	--	--	--
63	0.63	0.9	1.25	1.6	1.8	2.0	--	--	--	--
125	0.75	1.05	1.5	1.9	2.1	2.4	--	--	--	--
250	1.25	1.8	2.5	3.2	3.6	4.0	--	--	@	P
* B=Basic, S=Supplementary and R=Reinforced										
@ 7.5 mm between terminal and accessible mounting metal plate		14.4 mm between terminals from inside								

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Clause	Requirement + Test	Result - Remark	Verdict
	...the terminals and any other metal parts which may be in contact with te mounting plate, e.g. base fixing devices		N/A
	for functional, basic or supplementary insulation	.....V	N/A
	for reinforced or double insulation	.....V	N/A
	...the terminals and a metal foil covering the whole of the accessible surface		N/A
	for functional, basic or supplementary insulation	.....V	N/A
	for reinforced or double insulation	.....V	N/A
	No breakdown or flashover shall occur		N/A
	For Exposed fuse-holder		N/A
	...the terminals		N/A
	for functional, basic or supplementary insulation	.....V	N/A
	for reinforced or double insulation		N/A
	...the terminals and the mounting plate		N/A
	for functional, basic or supplementary insulation		N/A
	for reinforced or double insulation		N/A
	No breakdown or flashover shall occur		N/A
	Fuse-holder with a rated voltage of < 125 V are in accordance with the requirements of Table 12.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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11.2	TABLE : Contact Resistance											P	
	1.		2.		3.		4.		5.		Average	Max.	
Sample	mΩ	(mΩ)	mΩ	(mΩ)	mΩ	(mΩ)	mΩ	(mΩ)	mΩ	(mΩ)	mΩ	(mΩ)	
4	3.32	4.12	3.34	3.89	4.56	3.76	4.43	4.78	3.62	3.59	3.94	4.78	
5	3.34	4.38	3.49	4.40	4.48	3.82	4.91	4.19	3.37	4.22	4.06	4.91	
6	3.19	4.32	4.55	4.70	4.52	3.49	3.19	4.61	3.69	4.39	4.07	4.70	

GROUP 2

After Compatibility between fuse-holder and fuse-link (12.3)

11.2	TABLE : Contact Resistance											P	
	1.		2.		3.		4.		5.		Average	Max.	
Sample	mΩ	(mΩ)	mΩ	(mΩ)	mΩ	(mΩ)	mΩ	(mΩ)	mΩ	(mΩ)	mΩ	(mΩ)	
4	3.35	4.32	3.38	3.92	4.59	3.96	4.47	4.88	3.68	3.67	4.02	4.88	
5	3.38	4.41	3.53	4.45	4.68	3.89	4.89	4.49	3.67	4.27	4.17	4.89	
6	3.21	4.35	4.58	4.74	4.62	3.69	3.49	4.71	3.99	4.49	4.19	4.74	

GROUP 3

After Rated power acceptance test including endurance test(13.1 and 14)

11.2	TABLE : Contact Resistance.											P	
	1.		2.		3.		4.		5.		Average	Max.	
Sample	mΩ	(mΩ)	mΩ	(mΩ)	mΩ	(mΩ)	mΩ	(mΩ)	mΩ	(mΩ)	mΩ	(mΩ)	
7	5.34	5.47	5.43	5.47	5.56	6.09	5.43	5.48	5.67	5.59	5.55	6.09	
8	6.19	5.32	5.55	5.70	5.52	5.49	5.15	5.61	5.69	5.39	5.56	6.19	
9	5.33	6.18	6.09	5.44	5.48	5.82	5.91	6.19	5.57	5.44	5.75	6.19	

GROUP 5

After Resistance to Vibration (12.8)

11.2	TABLE : Contact Resistance.											P	
	1.		2.		3.		4.		5.		Average	Max.	
Sample	mΩ	(mΩ)	mΩ	(mΩ)	mΩ	(mΩ)	mΩ	(mΩ)	mΩ	(mΩ)	MΩ	(mΩ)	
13	3.39	4.65	3.37	4.77	3.41	4.64	3.49	4.69	3.57	4.78	4.07	4.78	
14	4.34	4.76	3.19	4.40	4.48	3.82	4.91	4.98	3.27	4.22	4.24	4.98	
15	3.19	4.32	4.18	4.20	4.60	3.49	3.48	4.61	3.72	4.39	4.02	4.61	

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