सत्यमेव जयते

NABL ACCREDITED LABORATORY No ~~T-0001, T-1572~~ T-5618

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ई.क्षे.प.प्र.(उ.) /90 (4) -2के .....
ERTL(N)/90(4)-2K..... 00326
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.)] एसटीक्यूसी निदेशालय, इलेक्ट्रॉनिकी एवं सूचना प्रौद्योगिकी विभाग, संचार एवं 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 प्रतिरूप के परीक्षण का रिकार्ड है। यह अन्य उत्पादों पर भी लागू नहीं है भले वह 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. It does not apply to other products even though declared to be identical.

3. इ.क्षे.प.प्र. (उ.) नई दिल्ली परीक्षण रिपोर्ट आंशिक रूप में केवल निदेशक इ.क्षे.प.प्र. (उ.) की लिखित अनुमति एवं स्वीकृति के उपरान्त ही पुनः उत्पादित किया जा सकता है।
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4. परीक्षण रिपोर्ट में दिए परिणाम केवल मापने के समय एवं मापन स्थिति के संदर्भ में वैध होंगे।
The results reported in this test report are valid at the time of and under the stated condition of measurement.

5. मापन क्षेत्रों में परिवर्तन के लिये इ.क्षे.प.प्र. (उ.), नई दिल्ली, उत्तरदायी नहीं होगी।
ERTL (N), New Delhi shall not be liable for any change in the measurement data.

6. यह परीक्षण रिपोर्ट किसी भी कानूनी उद्देश्य में प्रयोग किये जाने के लिए नहीं है तथा इसे न्यायालय में प्रस्तुत नहीं किया जा सकता।
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8. किसी विवाद के निपटान के मामले में निदेशक इ.क्षे.प.प्र. (उ.) नई दिल्ली का निर्णय ही अन्तिम व मान्य होगा।
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9. सामान्यतः ग्राहक की सहमति के बिना उसके द्वारा प्रयोगशाला को दी गई स्वामित्व सम्बन्धित जानकारी, किसी अन्य पक्ष को नहीं दी जाती, जब तक कि सक्षम अधिकारी जनहित में उस जानकारी को दिये जाने के लिए संतुष्ट न हो।
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11. प्रयोगशाला के द्वारा दी जाने वाली सेवाओं में सुधार के लिए कृपया अपनी प्रतिक्रिया एवं सुझाव संलग्न फार्म में [illegible]/रिपोर्ट के साथ संलग्न प्रतिक्रिया फार्म में अथवा ई-मेल/फैक्स/पत्र के द्वारा प्रदान करें। आपके द्वारा दी गई फीडबैक सम्बन्धी सूचना गोपनीय रखी जाएगी।
To help us improve our services, you are requested to please provide us your feedback/suggestion [illegible]

Government of India
Ministry of Electronics & Information Technology
Standardisation Testing & Quality Certification Directorate
ELECTRONICS REGIONAL TEST LABORATORY (NORTH)
New Delhi-110020

TEST REPORT
IEC 60127- 6
Fuse-holders for miniature cartridge fuse-links

Report Reference No. ..... :	**ERTL(N)/90(4)-2018-19/Q0326**
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 ..... :	P
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-A1-4**
Ratings ..... :	**10A, 250V**
Test item particulars	P8028-A1-4
Classification of installation and use	**Panel mount Fuse Holder for (5x 20)mm 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	☐ ~~Class I~~ ☒ **Class II**
Protection against electric shock Category :	~~Without integral protection (PC1) /~~ with integral protection (**PC2**) ~~/ with enhanced protection (PC3)~~
Pollution degree (PD)	☐ ~~PD 1~~ ☒ **PD 2** ☐ ~~PD 3~~
Over voltage category (OVC)	☐ ~~OVC I~~ ☐ ~~OVC II~~ ☒ **OVC III**
Summary of testing:	Fuse-holders designed for panel mounting complies to all relevant requirements of IEC 60127-6, 2014

Tested by:
DEEPIKA GAHLOT
SCIENTIST 'B'

Deepika 07/01

TRF No. IEC60127_6A

Approving Authority
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SCIENTIST 'C'

Manoj Kr 07/01

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08-1-2019

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 31/12/2018
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 5mm x 20mm 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	:	5.20x20mm
PANEL THICKNESS	:	1.5-3.0mm 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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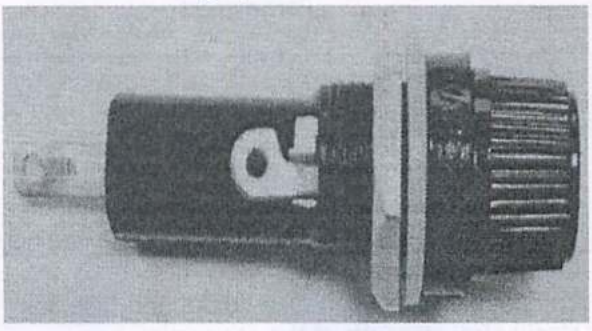
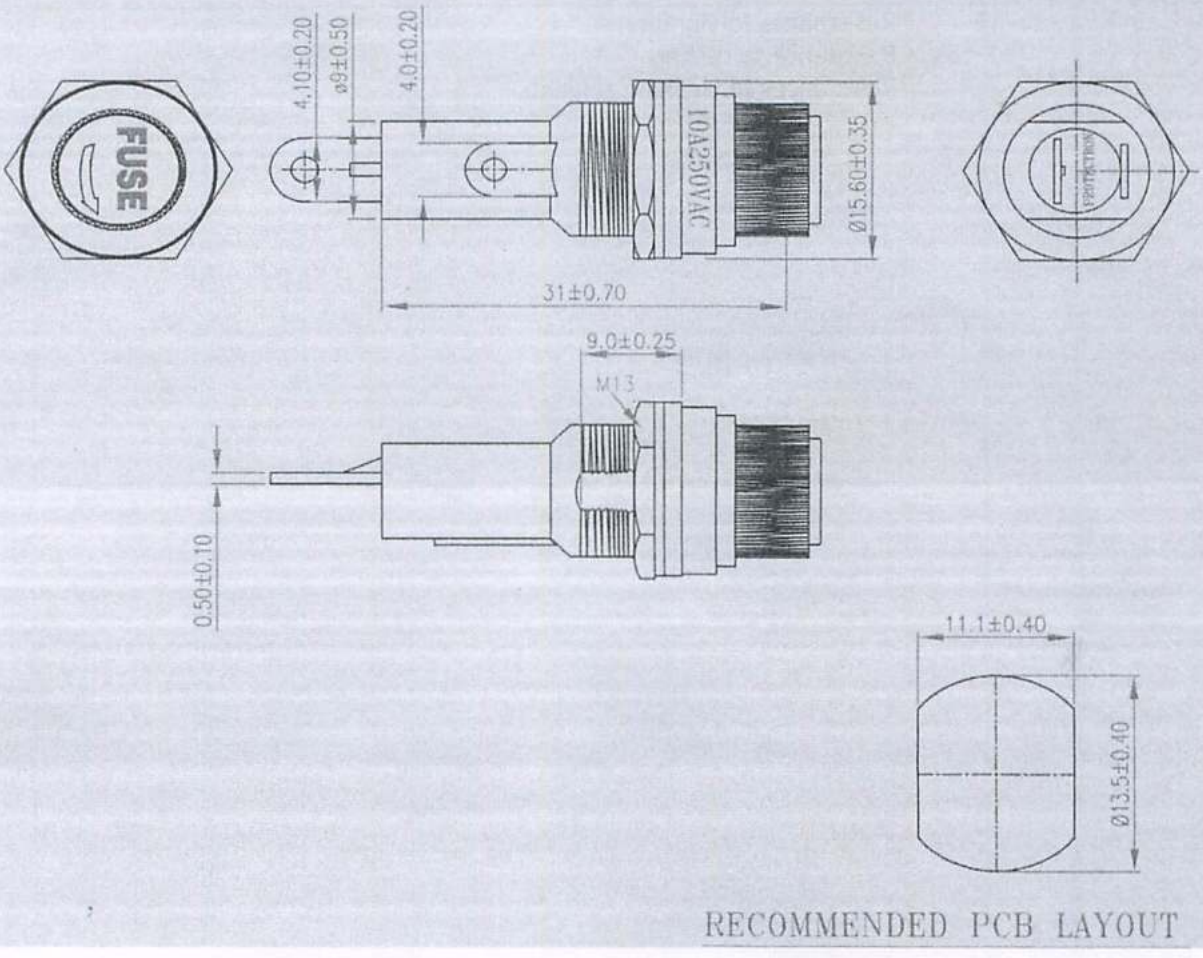
Photograph of Fuse Holder



Marking & Details on Fuse Holder

DESCRIPTION : PANEL MOUNT FUSE HOLDER SCREW TYPE FOR 5.20X20mm FUSE

PART NO: P8028-A1-4



RECOMMENDED PCB LAYOUT

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Clause	Requirement + Test	Result - Remark	Verdict

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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Clause	Requirement + Test	Result - Remark	Verdict
	TEST FOR GROUP - 0 (SAMPLE NO. 1 - 15)		
6	**MARKING**		**P**
	Name or trade mark of the manufacturer		P
	Catalogue or type reference	P8028-A1-4	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

Clause	Requirement + Test	Result - Remark	Verdict
	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. 3	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 assmbled 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 Table11	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	P
	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 ×	**..... mm**	N/A

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SCIENTIST 'B' 08.1.19

Clause	Requirement + Test	Result - Remark			Verdict
11.1.2	**Humidity preconditioning**	In compliance			P
	Mounted fuse-bases according to clause 11.1.1 and seperate, not inserted fuse-carriers are submitted to the humidity preconditing	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 $2X \cdot U_N$ (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 accordiance 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	1.8GΩ	1.8GΩ	1.8GΩ	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 accordiance 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 insulation	V			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 occured	P
	Fuse-holder with a rated voltage of < 125 V are in accordiance 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 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 , 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 comlpiance	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 occured	P
	Fuse-holder with a rated voltage of < 125 V are in accordiance 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:	In compliance	P
	Up to and including 12 mm	0,6 Nm	In compliance	**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**

Tested by:
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07/01

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Clause	Requirement + Test		Result - Remark	Verdict
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		N/A
	2,5 mm	0,4 Nm		N/A
	3 mm	0,5 Nm		N/A
	3,5 mm	0,8 Nm		N/A
	4 mm	1,2 Nm		N/A
	5 mm	2,0 Nm		N/A
	6 mm	2,5 Nm		N/A
	≥ 8 mm	3,5 Nm		N/A
	After the test, no changes which would impair its further use.			N/A
12.6.3	**Snap-in fastening**		Fixing by nut on Panel	N/A
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
	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
	Insertion Force ≤ 20N or as specified by manufacturer		..... N	N/A
12.6.3.2.3	**Withdrawal force F2**			N/A
	Withdrawl Force increased from N to 50N			N/A
12.6.3.2.4	**Acceptance criteria in the above tests**			N/A
	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
	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 4.08 4.12	**P**
	- individual value shall not exceed 10mΩ	4.76 4.82 4.72	**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 amy, 10 times	Compliance verified with Gauge No. 1 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 specfied in Table 13):		---
	Up to and including 16 mm / 0,268 Nm	In compliance	**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	4.12 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	In compliance, dia. of fuse carrier 7.0mm	P
	Greater than 16 mm, up to and including 25 mm / 0,6 Nm		N/A
12.4.1 b)	**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	**P**

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Clause	Requirement + Test		Result - Remark	Verdict
	Up to and including 16 mm	25 N	Incompliance, dia. of fuse carrier 7.0mm	P
	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	N/A
	- individual value shall not exceed	15mΩ	.....mΩ	N/A
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		In compliance	P
	If doubt, compliance with 11.1,5			N/A
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. 1.66mm	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
12.7.2.1.3 b)	**Solderability, wetting (soldering iron method) :**		In compliance	P
	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

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Clause	Requirement + Test	Result - Remark	Verdict
	- the solder have wetted the test area - no droplets	In compliance	P
12.7.2.1.3 c)	**Resistance to soldering heat, soldering iron method**	In compliance	P
	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
12.7.2.2	**Wire and pin terminals**		N/A
12.7.2.2.1	**General**		N/A
	For use with printed boards or other applications		N/A
12.7.2.2.2	**Size**		N/A
	No special requirements		N/A
12.7.2.2.3 a)	**Robustness of termination:**		N/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
12.7.2.2.3 b)	**Solderability, wetting, solder bath method**		N/A
	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
12.7.2.2.3 c)	**Resistance to soldering heat, solder bath method:**		N/A
	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
12.7.3.2	**Size**		N/A
	Dimensions according to:IEC 61210.		N/A
12.7.3.3	**Robustness of termination**		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
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
12.7.2.1.1	**Size**		N/A
	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
12.7.2.1.3 a)	**Robustness of termination**		N/A
	Test Ua1 of IEC600 68-2-21 : axial force of 20 N		N/A
	No damage which would impair normal operation		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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. 1.3 b)	**Solderability, wetting (soldering iron method) :**		N/A
	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 - no droplets		N/A
12.7.2. 1.3 c)	**Resistance to soldering heat, soldering iron method**		N/A
	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. 2	**Size**		N/A
	Dimensions according to:IEC 61210.		N/A
12.7.3. 3	**Robustness of termination**		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

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	Genaral		In compliance			P
13.1.2	Mounting		Panel Mounting			P
	As specified in 13.1.2		In compliance			P
13.1.3	Dummy Fuse- links		A1/2510			P
	Fuse-link with defined resistance Table 19 / Table 20		25 mΩ			**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}	23.4	23.3	23.4	P
	Temp. on Screw Cap	T_{S1}	30.4	30.2	30.5	P
	Temp. on Fuse Holder Enclosure inside the Panel	T_{S2}	33.6	33.8	33.7	P
	Temp. on Fuse Holder Terminals	T_{T1}	44.4	44.5	44.5	P
	Maximum allowable temerature as per Table 21		85°C			P
13.1.5	Power accptance at T_{A1} : 23°C Power acceptance at higher ambient temperature T_{A1}, assigned by the manufacturer T_{A1}:		**T_{A1} : 23°C, 2.5 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 accptance 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 accordiance 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		1.5GΩ	1.4GΩ	1.5GΩ	P

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Clause	Requirement + Test	Result - Remark	Verdict
	...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 accordiance 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 accordiance 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 amy, 10 times	Gauge No. 1 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 specfied 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 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

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Clause	Requirement + Test		Result - Remark			Verdict
11.2	**Contact resistance**					P
	If fuse link , IEC 60127-2		See below (mΩ)			P
	- average value shall not exceed	10mΩ	5.59	5.61	5.88	**P**
	- individual value shall not exceed	15mΩ	6.29	6.32	6.44	**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

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Clause	Requirement + Test	Result - Remark	Verdict
	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	In compliance	**P**
	No ignition of the tissue paper or scorching of white pine board	In compliance	**P**
13.2.2	Glow wire ignition test	In compliance	**P**
	GWIT & GWFI as per IEC 60695-2-12 & IEC 60695-2-13 respectively	In compliance	**P**
	GWIT : 775°C	Withstood GWFI	**N/A**
	GWFI : 850°C	In compliance	**P**

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Clause	Requirement + Test	Result - Remark	Verdict
	TEST FOR GROUP 5 (SAMPLE NO. 13 - 15)		
12.8	**Resistance to Vibration**		P
	test Fc of IEC 60068-2-6	In compliance	P
12.8.1	**Mounting**	In compliance	P
	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)**	In compliance	P
	- Freqency range: 10 to 55 Hz	In compliance	P
	- Displacement amplitude 0,35 mm or acceleration 5 g	In compliance	P
	- Number of sweep cycles: 5 in each axis	In compliance	P
12.8.3.2	**Axis of vibration**	In compliance	P
	3 mutually perpendicular axes	In compliance	P
12.8.3.3	**Functional checks**	In compliance	P
	During vibration, the electrical continuity between the contacts not interrupted	In compliance	P
12.8.2.4	**Final measurements**	In compliance	P
	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 4.22 4.10	P
	- individual value shall not exceed 10mΩ	4.77 4.97 4.64	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**	In compliance	P
	Ferrous parts are adequately protected against rusting	In compliance	P
	Traces of rust on sharp edges and any yellowish film removable by rubbing are ignored	Traces of rust neither on spring nor on fixing nut	P
15.2	**Resistance to cleaning solvents (fuse holders for PC board mounting only)**		N/A
	Test according to IEC600 68-2-45 clause 3.1.1, cleaning solvents		N/A
	cleanig solvent : propan-2-ol (isopropyl alcohol) or similar solvent exept for solvent containing freon.		N/A
	Solvent temperature : (23 ± 5)°C		N/A
	Duration of immersion (5 ± 0,5)min		N/A
	Conditioning : Method 2 (without rubbing) Recovery time: not less than 1 h		N/A
	Final measurement : -visual inspection		N/A
11.1.4	**Dielectric strength test**		N/A
	AC Test voltage as per Table 12 for one minute applied between		N/A
	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

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Clause	Requirement + Test	Result - Remark	Verdict
	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 accordiance with the requirements of Table 12.		N/A

11.2 TABLE : Contact Resistance — P

Sample	1. mΩ)	1. (mΩ)	2. mΩ)	2. (mΩ)	3. mΩ)	3. (mΩ)	4. mΩ)	4. (mΩ)	5. mΩ)	5. (mΩ)	Average mΩ)	Max. (mΩ)
4	3.35	4.32	3.34	3.89	3.56	**4.76**	3.43	4.78	3.68	4.59	**3.94**	**4.76**
5	3.38	4.42	3.49	4.45	3.48	**4.82**	3.91	4.92	3.67	4.27	**4.08**	**4.82**
6	3.29	4.37	4.55	**4.72**	3.52	4.49	3.27	4.61	3.69	4.69	**4.12**	**4.72**

GROUP 2

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

11.2 TABLE : Contact Resistance — P

Sample	1. mΩ)	1. (mΩ)	2. mΩ)	2. (mΩ)	3. mΩ)	3. (mΩ)	4. mΩ)	4. (mΩ)	5. mΩ)	5. (mΩ)	Average mΩ)	Max. (mΩ)
4	3.35	4.32	3.38	3.92	4.59	3.96	4.47	**4.88**	3.68	4.67	**4.12**	**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

Sample	1. mΩ)	1. (mΩ)	2. mΩ)	2. (mΩ)	3. mΩ)	3. (mΩ)	4. mΩ)	4. (mΩ)	5. mΩ)	5. (mΩ)	Average mΩ)	Max. (mΩ)
7	5.34	5.47	5.43	5.48	5.56	**6.29**	5.41	5.58	5.62	5.69	**5.59**	**6.29**
8	5.29	**6.32**	5.55	5.70	5.52	5.49	5.25	5.67	5.39	5.89	**5.61**	**6.32**
9	5.37	6.28	5.19	6.44	5.48	5.89	5.94	6.29	5.57	6.39	**5.88**	**6.44**

GROUP 5

After Resistance to Vibration (12.8)

11.2 TABLE : Contact Resistance. — P

Sample	1. mΩ)	1. (mΩ)	2. mΩ)	2. (mΩ)	3. mΩ)	3. (mΩ)	4. mΩ)	4. (mΩ)	5. mΩ)	5. (mΩ)	Average MΩ)	Max. (mΩ)
13	*3.39*	*4.56*	*3.42*	***4.77***	*3.41*	*4.61*	*3.51*	*4.72*	*3.57*	*4.76*	***4.07***	***4.77***
14	*4.36*	*4.79*	*3.32*	*4.44*	*3.54*	*4.89*	*3.95*	***4.97***	*3.42*	*4.56*	***4.22***	***4.97***
15	*3.43*	*4.36*	*4.28*	*4.32*	*4.62*	*3.59*	*3.48*	***4.64***	*3.84*	*4.45*	***4.10***	***4.64***

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**

@ 8.62 between terminal and accessible nut
16.4 between terminals

10.4	**TABLE: Creepage distances (mm)**									P
Rated voltage (V)	Creepage distance Pollution degree									
	2			3			Type of insulation			P
	Material group			Material group						
	(mm)			(mm)			(mm)			
	I	II	IIIa/IIIb	I	II	IIIa/IIIb	B*)	S*)	**R*)**	Verdict
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

@ 8.62 between terminal and accessible nut
16.4 between terminals

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 ∅12mm & 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

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

Deepika 07/01

Tested by:
DEEPIKA GAHLOT
SCIENTIST 'B'

TRF No. IEC60127_6A

Approving Authority
MANOJ KUMAR Manoj Kr 07/01
SCIENTIST 'C'

Issued by:
VED PRAKASH
SCIENTIST 'B'

08-1-19

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OUR ACCREDITATIONS

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NATIONAL

- राष्ट्रीय परीक्षण और अंशशोधन प्रयोगशाला प्रत्यायन बोर्ड (एनएबीएल) भारत द्वारा आईएसओ/आईईसी 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 लिए भारतीय मानक ब्यूरो के द्वारा स्वीकृत प्रयोगशाला।
  Recognised Laboratory of Bureau of Indian Standards for specific products (Energy meters, Test wires, Electronic Ballast) etc.

- सी पी आर आई द्वारा एनर्जी मीटर के परीक्षण के लिए स्वीकृत प्रयोगशाला।
  Approved Laboratory for testing energy meters by CPRI.

- उपभोक्ता मामले विभाग – माप व मानक, नई दिल्ली द्वारा इलेक्ट्रोनिक मशीन के परीक्षण के लिए 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 एसटीक्यूसी निदेशालय द्वारा मान्यता प्राप्त।
  Approved by STQC Directorate under Safety Certification Scheme for Safety testing (S Mark).

अन्तर्राष्ट्रीय
INTERNATIONAL

- एफ सी सी (फेडरल कम्युनिकेशन 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:

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

परीक्षण / अंशशोधन प्रयोगशाला मान्यता प्राप्त:

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- डीजीएस एंड डी (उपकरण परीक्षण हेतु)
- सिविल विमानन महानिदेशक (अंशशोधन हेतु)

Report No. : [illegible] Date : 22 May 2015

[illegible]/CALIBRATION :
[illegible]
[illegible]
[illegible]
[illegible]

[illegible]/TESTING
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