

60

IEC 60269-1			
Clause	Requirement + Test	Result - Remark	Verdict

Annex E	Particular requirements for fuse-bases with screwless-type terminals for external cooper conductors		
E.6	MARKING		N/A
	In addition to cl.6, following requirement apply	-	N/A
	universal terminals – no marking		N/A
	non-universal terminals	-	N/A
	Markings appeared on fuse-base or on the smallest package or in technical information		N/A
	Marking indicating the length of insulation to be removed before insertion of the conductor into terminal is shown on the fuse-base		N/A
	Maximum number of conductors which may be clamped		N/A
E.7.	STANDARD CONDITIONS FOR CONSTRUCTION		N/A
	Clause 7 applies with the following modifications ..	-	N/A
E.7.1	Fixed connections including terminals		N/A
	Terminals resisted the mechanical loads that occur when equipment is used in accordance with its intended purpose		N/A
	Connection or disconnection of conductors are made		N/A
	- by the use of general purpose tool or by convenient device integral with terminal		N/A
	- by simple insertion (for rigid conductors). For disconnection of conductors an operation other than a pull only is necessary		N/A
	Universal terminals accepted rigid (solid or stranded) and flexible unprepared conductors		N/A
	Non-universal terminals accepted the types of conductors declared by the manufacturer		N/A
E.7.2	Dimensions of connectable conductors are given in table E.1		N/A
E.7.3	Nominal cross-sections to be clamped are defined in table E.2		N/A
E.7.4	Insertion and disconnecting of conductors are made in accordance with the manufacturers instructions		N/A
E.7.5	Design and construction of terminals		N/A
	Terminals are designed and constructed so that....	-	N/A
	- each conductor is clamped individually		N/A
	- during operation of connection or disconnection conductors can be connected or disconnected either at the same time or separately		N/A

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TRF No. IEC60 269_1B

ВЯРНО С ОРИГИНАЛА

200

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40

IEC 60269-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- inadequate insertion of the conductor is avoided		N/A
	It is possible to clamp securely any number of conductors up to maximum provided for		N/A
E.7.6	Resistance to ageing		N/A
	Terminals are resistant to ageing		N/A
E.8	TESTS		N/A
E.8.1	Test of reliability of terminals		N/A
E.8.1.1	Reliability of screwless system		N/A
	smallest diameter of conductor (mm) : -		-
	Connection and subsequent disconnection are made 5 times		N/A
	largest diameter of conductor (mm) : -		-
	Connection and subsequent disconnection are made 5 times		N/A
	After tests the terminal not be damaged in such a way as to impair its further use		N/A
E.8.1.2	Test of reliability of connection		N/A
	Conductor is either pushed as far as possible into the terminal or is inserted so that adequate connection is obvious		N/A
	After test no wire of conductor escaped outside the terminal		N/A
E.8.2	Tests of reliability of terminals for external conductors: mechanical strength		N/A
	Pull force (N) : -		-
	minimum and maximum cross-sectional area (mm ²): -		-
	Pull is applied without jerks for 1 min		N/A
	During test the conductor not slip out of the terminal		N/A
E.8.3	Cycling test		N/A
	new copper conductors with cross section according to table 17 (mm ²) : -		-
	number of samples : -		N/A
	rated current of the fuse-base (A) : -		N/A
	192 temperature cycles (duration of each cycle is approximately 1h)		N/A
	Air temperature in the cabinet is raised to 40°C in approximately 20 min. It is maintained of this value for approximately 10 min		N/A

TRF No. IEC60 269_1B

ВЯРНО С ОРИГИНАЛА



241

IEC 60269-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Samples are then allowed to cool down in approximately 20 min to temperature of approximately 30°C. They are kept at this temperature for approximately 10 min.		N/A
	for measuring the voltage drop, allowed to cool down further, to temperature of 20°C		N/A
	Maximum voltage drop not exceed smaller of two following values	-	N/A
	- either 22,5 mV	-	N/A
	- or 1,5 times value measured after 24 th cycle	-	N/A
	After test an inspection with naked eye, by normal or corrected vision, show no changes evidently impairing further use, such as cracks, deformations or the like		N/A

TRF No. IEC60 269_1B

ВЯРНО С ОРИГИНАЛА

242



40

СПИСЪК НА ИЗПИТАНИЯТА

/с Доклад No. 2.03.02619.1.0 / DF-SA / 60269-1 / РМХ-10/

На продукт: РМХ-10 (за предпазители 10 x 38)

Производител: DF Electric, Испания

Съгласно IEC 60269-1: 2006

Тест по подточка съгласно стандарта:

- 8.1.4 Размери
- 8.2 Изолационни свойства
- 8.3 Температура покачване и приемлив разход на енергия
- 8.5 Устойчивост на пиков ток
- 8.8 Степен на защита
- 8.9 Устойчивост на топлина
- 8.10 Невлошаване на контактите
- 8.11.1 Механично разтягане
- 8.11.2.1 Свобода от сезонно напукване
- 8.11.2.2 Устойчивост на ненормално нагряване и огън
- 8.11.2.3 Устойчост на ръждяване

3

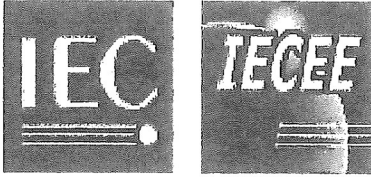
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ВЯРНО С ОРИГИНАЛА





Test Report issued under the responsibility of:



**TEST REPORT
IEC 60269-2**

Low-voltage fuses

Part 2: Supplementary requirements for fuses for use by authorized persons (fuses mainly for industrial application) - Examples of standardized systems of fuses A to J

Report Number: 2.03.02619.1.0/DF-S.A/60269-2/PMX-10
Date of issue: 16.01.2014
Total number of pages: 75

Applicant's name: DF S.A
Address: Silici, 67-69
08940 CORNELLA DE LLOBREGAT (Barcelona)
SPAIN

Test specification:

Standard: IEC 60269-2 (Fourth edition): 2010
see also IEC 60269 – 1:2006 (fourth edition)+A1:2009
Test procedure.....: CB Scheme
Non-standard test method.....: N/A

Test Report Form No.....: IEC60269_2B
Test Report Form(s) Originator.....: EZU
Master TRF: Dated 2011-04

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This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

Test item description: Low-voltage fuse-holders for cylindrical fuse-links

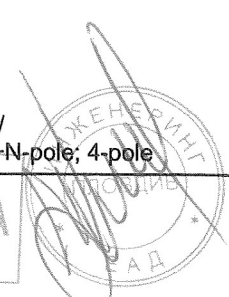
Trade Mark:

Manufacturer.....: DF S.A

Model/Type reference: PMX-10 (For 10x38 fuse-links)

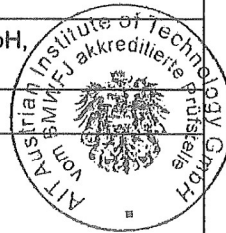
Ratings: 690V a.c. and 24V d.c./ 32A/ 50Hz and DC/
1-pole; N-pole; 1+N-pole; 2-pole; 3-pole; 3+N-pole; 4-pole

ВЯРНО С ОРИГИНАЛА



244

Testing procedure and testing location:		
<input checked="" type="checkbox"/>	CB Testing Laboratory:	
	Testing location/ address	AIT Austrian Institute of Technology GmbH, A-1210, Vienna, Giefinggase 2
<input type="checkbox"/>	Associated CB Laboratory:	
	Testing location/ address	---
	Tested by (name + signature)	Raheb Hanna, MSc
	Approved by (name + signature)	Ing.J.Ainetter
		на основание чл. 36а, ал. 3 от ЗОП
<input type="checkbox"/>	Testing procedure: TMP	
	Testing location/ address	---
	Tested by (name + signature)	---
	Approved by (name + signature)	---
<input type="checkbox"/>	Testing procedure: WMT	
	Testing location/ address	---
	Tested by (name + signature)	---
	Witnessed by (name + signature)	---
	Approved by (name + signature)	---
<input type="checkbox"/>	Testing procedure: SMT	
	Testing location/ address	---
	Tested by (name + signature)	---
	Approved by (name + signature)	---
	Supervised by (name + signature) ...	---
<input type="checkbox"/>	Testing procedure: RMT	
	Testing location/ address	---
	Tested by (name + signature)	---
	Approved by (name + signature)	---
	Supervised by (name + signature) ...	---



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List of Attachments (including a total number of pages in each attachment): ---	
Summary of testing:	
Tests performed (name of test and test clause): A type test was performed according to <ul style="list-style-type: none"> ▪ Table 612 of IEC 60269-2 fulfilling the requirements of both of the following editions of IEC 60269-2: <ul style="list-style-type: none"> ▪ IEC 60269-2:2010, Edition 4.0 and ▪ IEC 60269-2:2013, Edition 5.0 	Testing location: AIT Austrian Institute of Technology GmbH Business Unit Electric Energy Systems Power Service Center Giefinggasse 2 1210 Vienna
The low-voltage fuse-holders for cylindrical fuse-links <ul style="list-style-type: none"> ▪ PMX-10 have passed the type test successfully.	The AIT Austrian Institute of Technology GmbH is a recognized CB Testing Laboratory under the responsibility of OVE as the National Certification Body.
Summary of compliance with National Differences ---	

C

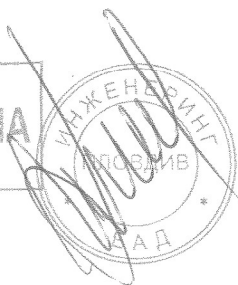
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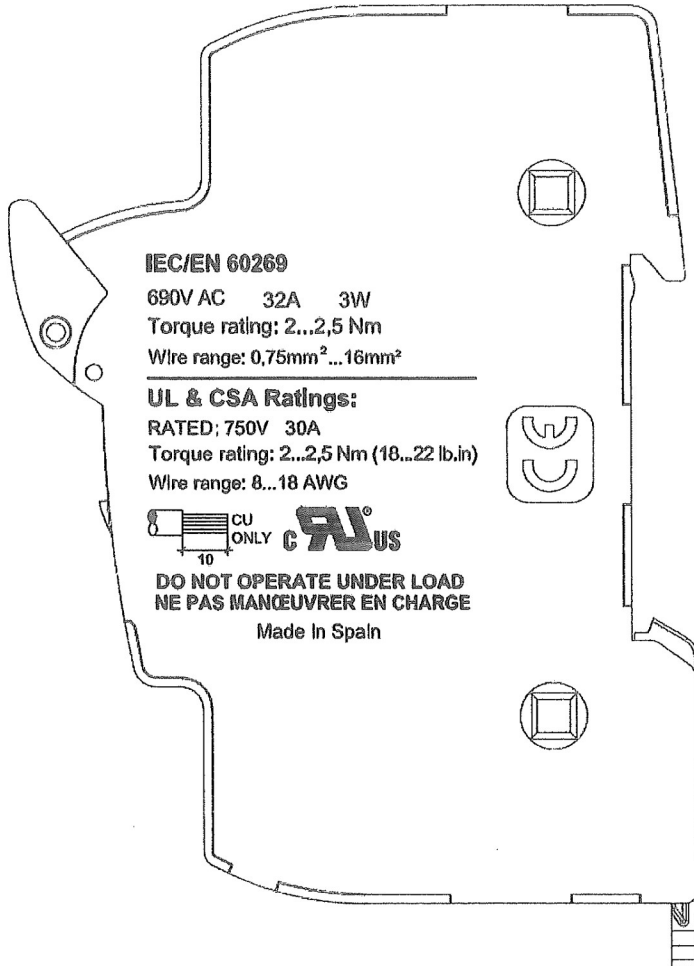
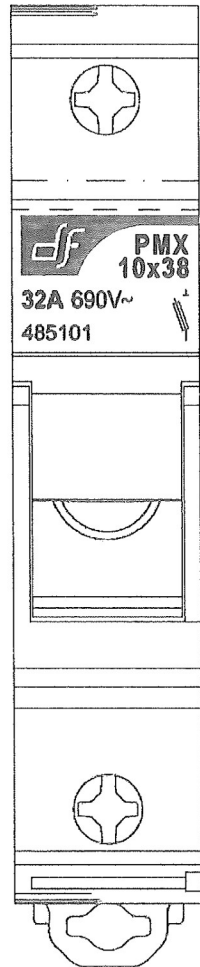
TRF No. IEC60269_2B

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246

Copy of marking plate

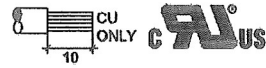


IEC/EN 60269

690V AC 32A 3W
Torque rating: 2...2,5 Nm
Wire range: 0,75mm²...16mm²

UL & CSA Ratings:

RATED: 750V 30A
Torque rating: 2...2,5 Nm (18...22 lb.in)
Wire range: 8...18 AWG



**DO NOT OPERATE UNDER LOAD
NE PAS MANŒVRER EN CHARGE**

Made in Spain

The catalogue number (and voltage as appropriate) changes according to the specific version.

TRF No. IEC60269_2B



244

Remark for use of the fuse-holders:

The maximum power dissipation of the fuse-links suitable for use with the fuse-holders is 3W. Fuse-links with rated voltage 690V of the appropriate size (10x38) may have a power dissipation exceeding this value.

It has to be taken into consideration that the maximum power dissipation of

3W

will not be exceeded for use in uninterrupted duty.

ВЯРНО С ОРИГИНАЛА



Remark to test performance:

The low-voltage fuse-holders for cylindrical fuse-links PMX-10 single phase and multi-pole are identical in the type of construction, dimensions and in any other manner, except marking.
(Multi-pole units can be made of connection accessories)

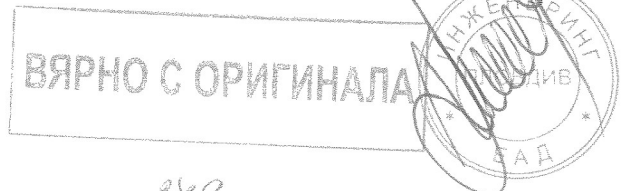
Some tests are covered by performing the appropriate tests under more severe conditions.

Catalogue number	485101	485102	485103	485104	485105	485106	485107
Test according to subclause	1-pole	N-pole	1+N-pole	2-pole	3-pole	3+N-pole	4-pole
8.5.5.1 Peak withstand current of a fuse-base	Tested	Covered	Covered	Tested	Covered	Covered	Tested
8.9 Resistance to heat	Tested	Covered	Covered	Tested	Covered	Covered	Tested
8.10 Non-deterioration of contacts	Covered	Tested	Covered	Tested	Covered	Tested	Covered
8.11.1.1 Mechanical strength of fuse-holders	Tested	Covered	Covered	Tested	Covered	Covered	Covered

Auxiliary components:

Cat. No.	485108	485109	485110	485111	485112	485113	485114	485116
	1-pole with indicator	1+N-pole with indicator	2-pole with indicator	3-pole with indicator	3+N-pole with indicator	4-pole with indicator	1-pole with 24 VDC indicator	2-pole with 24 VDC indicator

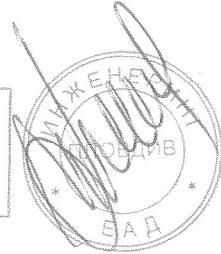
Auxiliary components are not part of the type test but PMX10 with indicator for 690Va.c and 24Vd.c. were tested of functioning. Furthermore they were tested 1h at 1,05*Un to check, if the diode or the resistor of the indicator were still working over a longer time.



Test item particulars:	
Classification of installation and use.....:	Acc. to IEC 60269-1 and IEC 60269-2
Supply Connection.....:	Acc. to IEC 60269-2
Fuse system.....:	F
Possible test case verdicts:	
- test case does not apply to the test object.....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing:	
Date of receipt of test item.....:	04/2013
Date (s) of performance of tests.....:	04/2013 to 10/2013
General remarks:	
<p>The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the issuing testing laboratory. "(see Enclosure #)" refers to additional information appended to the report. "(see appended table)" refers to a table appended to the report.</p>	
Throughout this report a <input checked="" type="checkbox"/> comma / <input type="checkbox"/> point is used as the decimal separator.	
Manufacturer's Declaration per sub-clause 6.2.5 of IEC 60269-2:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided.....:	
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable	
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies).....: DF S.A Silici, 67-69 08940 CORNELLA DE LLOBREGAT (Barcelona) SPAIN	

TRF No. IEC60269_2B

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250

40

General product information:

**Low-voltage fuse-holders for cylindrical fuse-links
for use by authorized persons**

**type
PMX-10**

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TRF No. IEC60269_2B

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ВЯРНО С ОРИГИНАЛА
КЕНЕРАНС
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БАД

251

IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

Requirements IEC 60269-1			N/A
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FUSE SYSTEM A – FUSES WITH FUSE-LINKS WITH BLADE CONTACTS (NH FUSE SYSTEM)

5	CHARACTERISTICS OF FUSES		N/A
5.2	Rated voltage (V) as specified	-	N/A
5.3.1	Rated current (A) of the fuse-link in accordance with specified values	-	N/A
5.3.2	Rated current (A) of the fuse-holder and the size of the fuse-link.....	-	N/A
5.5	Rated power (W) dissipation of fuse-link see Figure 101.....	-	N/A
	Rated acceptable power (VA) dissipation of fuse-bases given in Figure 102	-	N/A
5.6	Limits of time-current characteristics		N/A
5.6.1	Time-current characteristics, time-current zones and overload curves	-	N/A
5.6.2	Conventional times and current see Table 101 ..	-	N/A
5.6.3	Gates	-	N/A
5.7.2	Rated breaking capacity (A).....	-	N/A

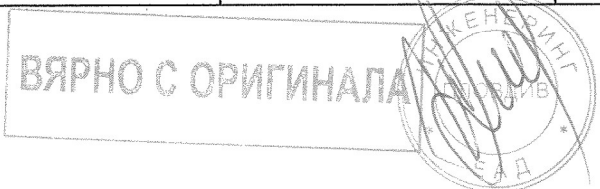
6	MARKING		N/A
	Markings are legible		N/A
6.1	Fuse-holders marked by:		N/A
	- IEC 60269-2	-	N/A
	- size.....	-	N/A
	Marking of rated current and rated voltage are discernible from the front		N/A
6.2	Fuse-links marked by:		N/A
	- IEC 60269-2	-	N/A
	- size or reference	-	N/A
	- rated breaking capacity	-	N/A
	Marking of rated current and rated voltage are discernible from the front		N/A
	Fuse-links marked as described in Table 104	-	N/A

ВЯРНО С ОРИГИНАЛА



IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

7	STANDARD CONDITIONS FOR CONSTRUCTION		N/A
7.1	Mechanical design		N/A
	The dimensions of the fuse-links given in Figure 101		N/A
	Dimensions:		N/A
	dimension marking a ₁ : prescribed (mm); measured (mm)	-	N/A
	dimension marking a ₂ : prescribed (mm); measured (mm)	-	N/A
	dimension marking a ₃ : prescribed (mm); measured (mm)	-	N/A
	dimension marking a ₄ : prescribed (mm); measured (mm)	-	N/A
	dimension marking b ₁ min: prescribed (mm); measured (mm)	-	N/A
	dimension marking b ₂ min: prescribed (mm); measured (mm)	-	N/A
	dimension marking b ₃ max: prescribed (mm); measured (mm)	-	N/A
	dimension marking b ₄ min: prescribed (mm); measured (mm)	-	N/A
	dimension marking c ₁ : prescribed (mm); measured (mm)	-	N/A
	dimension marking c ₂ : prescribed (mm); measured (mm)	-	N/A
	dimension marking d: prescribed (mm); measured (mm)	-	N/A
	dimension marking e ₁ max: prescribed (mm); measured (mm)	-	N/A
	dimension marking e ₂ max: prescribed (mm); measured (mm)	-	N/A
	dimension marking e ₃ : prescribed (mm); measured (mm)	-	N/A
	dimension marking e ₄ : prescribed (mm); measured (mm)	-	N/A
	dimension marking f: prescribed (mm); measured (mm)	-	N/A
	dimension marking z: prescribed (mm); measured (mm)	-	N/A



TRF No. IEC60269_2B

253

470

IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

	The dimensions of the fuse-base given in Figure 102		N/A
	Dimensions:		N/A
	dimension marking g: prescribed (mm); measured (mm) : -		N/A
	dimension marking h: prescribed (mm); measured (mm) : -		N/A
	dimension marking n ₁ max: prescribed (mm); measured (mm) : -		N/A
	dimension marking n ₂ max: prescribed (mm); measured (mm) : -		N/A
	dimension marking p ₁ max: prescribed (mm); measured (mm) : -		N/A
	dimension marking p ₂ : prescribed (mm); measured (mm) : -		N/A
	dimension marking r min: prescribed (mm); measured (mm) : -		N/A
	dimension marking s max: prescribed (mm); measured (mm) : -		N/A
	dimension marking t min: prescribed (mm); measured (mm) : -		N/A
	dimension marking v: prescribed (mm); measured (mm) : -		N/A
	dimension marking w ₁ : prescribed (mm); measured (mm) : -		N/A
	dimension marking w ₂ : prescribed (mm); measured (mm) : -		N/A
	dimension marking x min: prescribed (mm); measured (mm) : -		N/A
	dimension marking y: prescribed (mm); measured (mm) : -		N/A
	dimension marking z max: prescribed (mm); measured (mm) : -		N/A
	dimension marking a min: prescribed (mm); measured (mm) : -		N/A
	dimension marking b min: prescribed (mm); measured (mm) : -		N/A
	dimension marking c min: prescribed (mm); measured (mm) : -		N/A

ВЕРНО С ОРИГИНАЛА

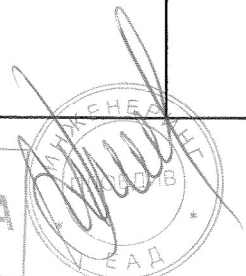
IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

	dimension marking d : prescribed (mm); measured (mm) : -		N/A
	dimension marking e : prescribed (mm); measured (mm) : -		N/A
7.1.2	Connections, including terminals cross-sectional ranges (Table 105) : - torques to be applied (Table 111) (lug terminal) : -		N/A
7.1.3	Contact surfaces should be silver plated : -		N/A
	If no test according to 8.10 are passed with dummies described in 8.10.1		N/A
7.1.6	Dynamic short-circuit withstand shall meet cut-off currents (Table 112) : -		N/A
7.1.7	Construction of fuse-link		N/A
	Blade contacts made of solid material : -		N/A
	If any other construction, manufacturer demonstrate that construction adequate..... : -		N/A
	Endplates not permitted to protrude radially from insulation body : -		N/A
	preferable to insulate the gripping lugs from live parts		N/A
	Fuse-links has an indicator : -		N/A
	Electrically conductive parts of indicator not ejected from the fuse-link during operation..... : -		N/A
7.2	Insulating properties		N/A
	Creepage distances and clearances of fuses and fuse-accessories meet requirements of IEC 60664-1 for overvoltage category III and pollution degree 3 : -		N/A
	Insulating parts of fuse-base supporting live parts meet the test at PTI 400 according to IEC 60112 (test solution A) : -		N/A
7.7	I ² t characteristics		N/A
	maximum pre-arcing I ² t (Table 7 of IEC 60269-1) : -		N/A
	rated currents lower than 16 A (Table 106) : -		N/A
	maximum operating I ² t for "aM" fuse-links (Table 107) test No. 2 of the largest rated current of each homogeneous series (Table 20 of IEC 60269-1)..... : -		N/A

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TRF No. IEC60269_2B

ВЯРНО С ОРИГИНАЛА



IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

7.8	Overcurrent discrimination of "gG" fuse-links (see 8.7.4, Table 108) : -		N/A
7.9	Protection against electric shock		N/A
	increased by means of partition walls and covers of fuse-contacts : -		N/A
	operation by authorized persons, instructed in electrical matters, using replacement handles according to this fuse system : -		N/A
8	TESTS		N/A
	IEC 60269-1 applies with the following supplementary requirements		N/A
8.1.4	Arrangement of fuse and dimensions		N/A
	Requirements of 7.2 verified on fuse-bases : -		N/A
	Creepage distances and clearances of fuse-links according to 7.2 are verified : -		N/A
	Clearances verified on fuse-link inserted into model fuse-base according to Figure 111..... : -		N/A
8.1.6	Testing of fuse-holders		N/A
	In addition to test given in IEC 60269-1 tested according to Table 109 : -		N/A
8.2.2.1	Points of application of test voltage		N/A
	In addition to IEC 60269-1 e) between isolated metal gripping-lugs and terminals of test fuse-bases : -		N/A
8.2.3.2	Value of test voltage		N/A
	rated impulse withstand voltage in Table 110..... : -		N/A
8.2.3.3	Test method		N/A
	5 impulses of both polarities and of shape 1,2/50 μ s and rated withstand voltage level according to Table 110 : -		N/A
	minimum period between impulses are 1 s : -		N/A
8.2.4	Acceptability of test results		N/A
8.2.4.3	No flash-over or puncture shall occur during test ... : -		N/A
8.2.5	Resistance to tracking		N/A
	insulating parts supporting live parts of fuse-links and fuse-bases tested according to IEC 60112 (test solution A) : -		N/A

ВЯРНО С ОРИГИНАЛА



IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

	Five specimens tested and passed at PT1 400 :		N/A
8.3	Verification of temperature rise and power dissipation		N/A
8.3.1	Arrangement of the fuse		N/A
	Tightened by torque (Nm) :	-	—
8.3.2	Measurement of the temperature rise		N/A
	Protective covers and fuse-carriers as provided by manufacturer mounted :	-	N/A
8.3.4.1	Temperature rise of the fuse-holder		N/A
	Dummy (Figure 105) Point at which temperature rise is measured (Figure 106)		N/A
8.3.4.2	Power dissipation of a fuse-link (Figure 106)		N/A
8.4.3.1	Verification of conventional non-fusing and fusing current		N/A
	non-fusing current test – second test specimen are used for b)		N/A
8.4.3.5	Conventional cable overload protection test (for "gG" fuse-links only)		N/A
	Details of special test are given in Annex A		N/A
Annex AA	Special test for cable overload protection		N/A
	For fuses with $I_n > 16$ A of the sizes 000, 00, 0, 1 and 2 :	-	N/A
AA.1	Arrangement of the fuse		N/A
	Three fuse-links in fuse-bases mounted in a box ... :	-	N/A
	Ambient air temperature outside the fuse box shall be (30^{+5}_0) °C :	-	N/A
AA.2	Test method and acceptability of test results		N/A
	1,13 I_n flowed through the fuse-links for conventional time (see Table 2 of IEC 60269-1) ... :	-	N/A
	None of fuse-links operated :	-	N/A
	Test current raised without interruption within 5 s to 1,45 I_n :	-	N/A
	One fuse-link operated within conventional time :	-	N/A

ВЯРНО С ОРИГИНАЛА



IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict
8.5.5.1	Verification of the peak withstand current of a fuse-base		N/A
	not be carried out , if this has already been verified during the breaking capacity test of fuse-links with the highest rating of the size	-	N/A
8.5.5.1.1	Arrangement of the fuse		N/A
	single-phase type, 8.5.1 of IEC 60269-1		N/A
	peak values of the test currents (Table 112)	-	
	maximum values (see 8.5.5.1.3).....	-	
	dummy fuse-link (Figure 101)	-	
8.5.5.1.2	Test method		N/A
	fuse-base 1 (Figure107)		N/A
	resilient spring travel is limited to elastic range.....	-	
	contacts opened up three times	-	
	fuse-base 2 (see 8.11.1.2)		N/A
	F_{max} according to Table 118		
8.5.5.1.3	Acceptability of test results		N/A
	fuse-links not be ejected		N/A
	no signs of arcing or welding or other damage		N/A
8.5.8	Acceptability of test results		N/A
	Fuse or circuit-breaker not operate during this test		N/A
8.7.4	Verification of overcurrent discrimination		N/A
	verified by I^2t values evaluated from the recorded test results		N/A
	Arrangement of the samples as for the breaking capacity test		N/A
	two samples tested at the r.m.s. prospective test current I , corresponding to minimum pre-arcing I^2t		N/A
	the other samples tested at the r.m.s. prospective test current I , corresponding to operating I^2t		N/A
	test voltage (V)	-	-
	The values of I^2t lie within corresponding limits specified in Table 113.....	-	N/A
8.9	Verification of resistance to heat		N/A
	Tests apply to fuse-link and fuse-base		N/A
	Fuse-holder with fuse-links having maximum power dissipation are cyclically loaded as pre-treatment... :	-	N/A

ВЯРНО С ОРИГИНАЛА

258

60

IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

	After cooling to normal temperature breaking capacity tested at I_1 (see 8.5)..... :	-	N/A
	Fuse-links with organic material Fuse-holder with fuse-links having maximum power dissipation are cyclically loaded as pre-treatment....		N/A
	After cooling to normal temperature breaking capacity tested at I_1 and I_5 (see 8.5)..... :	$I_1 = -$ $I_5 = -$	N/A
8.9.1	Fuse-base		N/A
	test below apply if it is not obvious that components are not affected adversely by given temperature and withdrawal forces		N/A
8.9.1.1	Test arrangement		N/A
	Figure 105 and 108		N/A
	Test se-up in heating chamber		N/A
8.9.1.2	Test method		N/A
	Temperature of $(80^{+5}_0)^{\circ}\text{C}$ for 2 h		N/A
	160% rated current for 2 h..... :	-	N/A
	Test voltage	-	—
	3 min after switching off tensile force F_{max} (see Table 118) exerted for 15 s	$F_{\text{max}} = -$	N/A
8.9.1.3	Acceptability of test results		N/A
	Contact pieces not have moved to affect the further use		N/A
	Dimensions of Figure 102 are considered		N/A
	Insulating mounting part no broken and no show any signs of cracks		N/A
8.9.2	Fuse-links with gripping lugs of moulded material or of metal fixed in moulded material		N/A
8.9.2.1	Test arrangement		N/A
	Figure 108		N/A
8.9.2.2	Test method		N/A
	Temperature of $(80^{+5}_0)^{\circ}\text{C}$ for 2 h		N/A
	150% rated current for conventional time	-	N/A
	Test voltage	-	—

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ВЯРНО С ОРИГИНАЛА

ИНЖЕНЕРНО-ТЕХНИЧЕСКИЙ ЦЕНТР
ПРОЕКТИВНО-ИССЛЕДОВАТЕЛЬСКИЙ ЦЕНТР
РАД

IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

	3 min after fuse-link operated or conventional time expired tensile force F_{max} (see Table 118) exerted for 15 s		N/A
8.9.2.3	Acceptability of test results		N/A
	Gripping lugs remain fully operational		N/A
	Dimensions of Figure 101 (d and c_2) not be exceeded by more than 2 mm		N/A
8.10	Verification of non-deterioration of contacts and direct terminal clamps		N/A
8.10.1	Arrangement of the fuse		N/A
	Figure 105		N/A
	for lug terminals, torque in Table 111..... : -		—
	Insulation of conductors removed over the whole length : -		N/A
	All covers of contacts and terminals are removed		N/A
8.10.1.2	Direct terminal clamps		N/A
	Test performed on 10 direct terminal clamps of five fuse-bases		N/A
	Distance between fuse-base centres of at least three times e_2 (see Figure 101)		N/A
	Torque of tightened of screws : -		—
	Conductor cross-section : -		—
8.10.2	Test method		N/A
	Test current (A) for load period : -		N/A
	Duration (s) of load period : -		N/A
	Duration (s) of no-load period : -		N/A
	Test voltage (V) : -		—
	a) Test of 50 cycles, measured values did not exceed the limits given in subsequent parts of IEC 60269		N/A
	b) Test of 250 cycles, measured values did not exceed the limits given in subsequent parts of IEC 60269		N/A
	c) Test of 500 cycles, measured values did not exceed the limits given in subsequent parts of IEC 60269		N/A

ВЯРНО С ОРИГИНАЛА



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IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

	d) Test of 750 cycles, measured values did not exceed the limits given in subsequent parts of IEC 60269		N/A
8.10.2.1	Contacts		N/A
	Points between voltage drop is measured (A and B in Figure 106)		N/A
	Withdrawal force (Table 118); measured force after 250 cycles (N) : -		N/A
	Withdrawal force (Table 118); measured force after 750 cycles (N) : -		N/A
	If measured values too low, test of 8.5.5.1 : -		N/A
8.10.2.2	Direct terminal clamps		N/A
	Points between voltage drop is measured (Figure 110)		N/A
	Test sequence for all types conductors (see Table 116)		N/A
	Verification of temperature rise (see 8.3.4.1) (see figure 110) : -		N/A
8.10.3	Acceptability of test results		N/A
8.10.3.1	Contacts		N/A
	Limit value after 250 th cycle ≤ 15%		N/A
	Limit value after 500 th cycle ≤ 30%		N/A
	Limit value after 750 th cycle ≤ 40%		N/A
	Difference between last and first measurement of temperature rise less than 20 K : -		N/A
8.10.3.2	Direct terminal clamps		N/A
	Permissible tolerance for resistance R _{cl0} for Al conductors : R _{cl 0 max} ≤ 2 R _{cl 0 min} : -		N/A
	Permissible changes of the resistance from R _{cl 50} to R _{cl 750} : see Table 117 : -		N/A
	Copper or cleaned aluminium conductors : -		N/A
	Uncleaned aluminium conductor : -		N/A
	Change from 50 th to 250 th cycle		N/A
	Change after 250 th to 500 th cycle		N/A

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ВЯРНО С ОРИГИНАЛА

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201

IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

	Change after 500 th to 750 th cycle		N/A
	Change between 50 th to 750 th cycle		N/A
	Temperature rise at test spot F < 75K		N/A
8.11	Mechanical and miscellaneous tests		N/A
8.11.1.1	Mechanical strength of fuse-holders		N/A
	Test set-up subjected to temperature rise test at rated current :	-	N/A
	fuse-link or fuse-carrier are withdrawn and inserted into fuse-base 100 times :	-	—
	All parts are intact and function normally		N/A
	Test set-up subjected to further temperature rise test at rated current (values obtained are not more than 5 K or 15 % above the values from temperature-rise test prior)..... :	-	N/A
8.11.1.2	Mechanical strength of the fuse-base		N/A
	Test-link inserted three times in the fuse-base : (Dimensions of blade contacts see Figure 101) (Withdrawal force F within limits in Table 118)	-	N/A
	Steel screws are fastened three times at the terminals, torque of 1,2 times value specified by manufacturer or value of Table 111 :	-	N/A
	Contact pieces not have moved to affect the further use		N/A
	Insulating mounting part no broken and no show any signs of cracks		N/A
8.11.1.8	Impact resistance of gripping-lugs of moulded material or of metal fixed in moulded material		N/A
8.11.1.8.1	Test arrangement		N/A
8.11.1.8.2	Facility is given in Figure 109 :	-	N/A
	One fuse-link ...(150±5)°C for 168 h		—
	Another one-15°C for 72 h		—
	One impact on each of gripping-lugs		N/A
8.11.1.8.3	Acceptability of test results		N/A
	No damage capable of hindering their further use		N/A
	No bent out by more than 3 mm		N/A
	Coupling with a handle (Figure 103) not are hindered		N/A

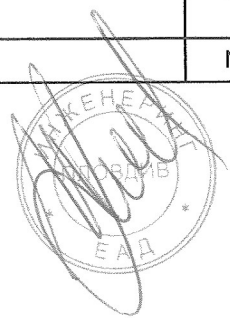
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IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

8.11.2.3	Verification of resistance to rusting		N/A
8.11.2.3.1	According to ISO 6988 cyclic moist atmosphere containing 0,2% SO ₂ (SFW 0,2 S) for 1 cycle		N/A
8.11.2.3.2	Optional test (severe environmental conditions)		N/A
	Fuse-links and fuse-bases for used in environment of pollution degree ≥3 tested with SFW 2,0 S for 5 cycles : -		N/A
	They marked accordingly : -		N/A
8.11.2.4	Non-deterioration of insulating parts of fuse-link and fuse-base		N/A
8.11.2.4.1	Test method		N/A
	Period 168 h : -		—
	for equipment comprising moulded elements to support live parts (150±5)°C		—
	for covers (100±5)°C		—
	Period greater than 1 h : -		—
	for sealing compounds; stability of marking (150±5)°C		—
	After cooling to ambient temperature the following are tested.		N/A
	Fuse-links: breaking capacity with I ₁ and I ₂ : -		N/A
	Fuse-base: mechanical strength in accordance with 8.11.1.2		N/A
8.11.1.2	Mechanical strength of the fuse-base		N/A
	Test-link inserted three times in the fuse-base : - (Dimensions of blade contacts see Figure 101) (Withdrawal force F lied within limits in Table118)		N/A
	Steel screws are fastened three times at the terminals, torque of 1,2 times value specified by manufacturer or value of Table 111 : -		N/A
	Contact pieces not have moved to affect the further use		N/A
	Insulating mounting part no broken and no show any signs of cracks		N/A
8.11.2.4.2	Acceptability of test results		N/A

ВЯРНО С ОРИГИНАЛА



TRF No. IEC60269_2B

63

IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

	Not have changed of positions of fuse-base contacts to correct functioning		N/A
	No fracture nor any signs of fracture on insulating body with terminals		N/A
	Mechanical strength of cemented joints not impaired		N/A
	Sealing compounds not shifted to extent permitting live parts to exposed		N/A
	Fuse-links operate correctly		N/A
	Marking are durable and easily legible		N/A

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TRF No. IEC60269_2B

ВЯРНО С ОРИГИНАЛА



264

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IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

Requirements IEC 60269-1			N/A
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FUSE SYSTEM B – FUSES WITH STRIKER FUSE-LINKS WITH BLADE CONTACTS (NH FUSE SYSTEM)

5	CHARACTERISTICS OF FUSES		N/A
5.2	Rated voltage (V) as specified	-	N/A
5.3.1	Rated current (A) of the fuse-link in accordance with specified values	-	N/A
5.3.2	Rated current (A) of the fuse-holder and the size of the fuse-link	-	N/A
5.5	Rated power (W) dissipation of fuse-link	-	N/A
	Rated acceptable power (VA) dissipation of fuse-holder	-	N/A
5.6	Limits of time-current characteristics		N/A
5.6.1	Time-current characteristics, time-current zones and overload curves	-	N/A
5.6.2	Conventional times and current.....	-	N/A
5.6.3	Gates	-	N/A
5.7.2	Rated breaking capacity (A)	-	N/A

6	MARKING		N/A
	Markings are legible		N/A
6.1	Fuse-holder marked by:		N/A
	- IEC 60269-2	-	N/A
	- size.....	-	N/A
	Marking of rated current and rated voltage are discernible from the front		N/A
6.2	Fuse-links marked by:		N/A
	- IEC 60269-2	-	N/A
	- size or reference.....	-	N/A
	- rated breaking capacity	-	N/A
	Marking of rated current and rated voltage are discernible from the front		N/A
	Fuse-links marked as described in Table 104	-	N/A

ВЯРНО С ОРИГИНАЛА



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60

IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

7	STANDARD CONDITIONS FOR CONSTRUCTION		N/A
7.1	Mechanical design		N/A
	The dimensions of the fuse-links given in Figure 201		N/A
	Dimensions:		N/A
	dimension marking a ₁ : prescribed (mm); measured (mm)	-	N/A
	dimension marking a ₂ : prescribed (mm); measured (mm)	-	N/A
	dimension marking a ₃ : prescribed (mm); measured (mm)	-	N/A
	dimension marking a ₄ : prescribed (mm); measured (mm)	-	N/A
	dimension marking b min: prescribed (mm); measured (mm)	-	N/A
	dimension marking c ₁ : prescribed (mm); measured (mm)	-	N/A
	dimension marking c ₂ : prescribed (mm); measured (mm)	-	N/A
	dimension marking d: prescribed (mm); measured (mm)	-	N/A
	dimension marking e ₁ max: prescribed (mm); measured (mm)	-	N/A
	dimension marking e ₂ max: prescribed (mm); measured (mm)	-	N/A
	dimension marking e ₃ : prescribed (mm); measured (mm)	-	N/A
	dimension marking e ₄ : prescribed (mm); measured (mm)	-	N/A
	dimension marking f: prescribed (mm); measured (mm)	-	N/A
	dimension marking k: prescribed (mm); measured (mm)	-	N/A
	dimension marking l: prescribed (mm); measured (mm)	-	N/A
	dimension marking m: prescribed (mm); measured (mm)	-	N/A
	The dimensions of the fuse-base given in Figure 202		N/A
	Reference A / Reference B		N/A

ВЯРНО С ОРИГИНАЛА



IEC 60269-2

Clause	Requirement + Test	Result - Remark	Verdict
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	Dimensions:		N/A
	dimension marking h: prescribed (mm); measured (mm)	-	N/A
	dimension marking n ₁ max: prescribed (mm); measured (mm)	-	N/A
	dimension marking n ₂ max: prescribed (mm); measured (mm)	-	N/A
	dimension marking p ₁ max: prescribed (mm); measured (mm)	-	N/A
	dimension marking p ₂ : prescribed (mm); measured (mm)	-	N/A
	dimension marking r min: prescribed (mm); measured (mm)	-	N/A
	dimension marking s max: prescribed (mm); measured (mm)	-	N/A
	dimension marking t min: prescribed (mm); measured (mm)	-	N/A
	dimension marking v: prescribed (mm); measured (mm)	-	N/A
	dimension marking w ₁ : prescribed (mm); measured (mm)	-	N/A
	dimension marking w ₂ : prescribed (mm); measured (mm)	-	N/A
	dimension marking x min: prescribed (mm); measured (mm)	-	N/A
	dimension marking y: prescribed (mm); measured (mm)	-	N/A
	dimension marking z max: prescribed (mm); measured (mm)	-	N/A
	dimension marking j1 min: prescribed (mm); measured (mm)	-	N/A
	dimension marking j2 max: prescribed (mm); measured (mm)	-	N/A
	dimension marking j3 : prescribed (mm); measured (mm)	-	N/A
	dimension marking j4 : prescribed (mm); measured (mm)	-	N/A

TRF No. IEC60269_2B

ВЯРНО С ОРИГИНАЛА



264

40

IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

	fuse-base can receive any fuse-link with striker of the same reference complying with this fuse system : -		N/A
	minimum clearances between the surface from protruding of striker considered as live part and all metallic parts comply with IEC 60664-1 : -		N/A
7.1.2	Connections, including terminals cross-sectional ranges (Table 105) : - torques to be applied (Table 111) (lug terminal) : -		N/A
7.1.3	Contact surfaces should be silver plated : -		N/A
	If no test according to 8.10 are passed with dummies described in 8.10.1		N/A
7.1.7	Construction of fuse-link		N/A
	Blade contacts made of solid material : -		N/A
	If any other construction, manufacturer demonstrate that construction adequate..... : -		N/A
	Endplates not permitted to protrude radially from insulation body : -		N/A
	preferable to insulate the gripping lugs from live parts		N/A
	Fuse-links has an indicator..... : -		N/A
	Electrically conductive parts of indicator not ejected from the fuse-link during operation..... : -		N/A
7.2	Insulating properties and suitability for insulation		N/A
	Creepage distances and clearances of fuses and fuse-accessories meet requirements of IEC 60664-1 for overvoltage category III and pollution degree 3 : -		N/A
	Insulating parts of fuse-base supporting live parts meet the test at PTI 400 according to IEC 60112 (test solution A) : -		N/A
7.7	I ² t characteristics		N/A
	maximum pre-arcing I ² t (Table 7 of IEC 60269-1) : -		N/A
	rated currents lower than 16 A (Table 106) : -		N/A
	maximum operating I ² t for "aM" fuse-links (Table 107) test No. 2 of the largest rated current of each homogeneous series (Table 20 of IEC 60269-1).... : -		N/A

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TRF No. IEC60269_2B

ВЯРНО С ОРИГИНАЛА

268

60

IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

7.8	Overcurrent discrimination of "gG" fuse-links (see 8.7.4, Table 108)	-	N/A
7.9	Protection against electric shock		N/A
	increased by means of partition walls and covers of fuse-contacts	-	N/A
	operation by authorized persons, instructed in electrical matters, using replacement handles according to this fuse system	-	N/A
8	TESTS		N/A
	IEC 60269-1 applies with the following supplementary requirements		N/A
8.1.6	Testing of fuse-holders		N/A
	In addition to test given in IEC 60269-1 tested according to Table 109	-	N/A
8.3	Verification of temperature rise and power dissipation		N/A
8.3.1	Arrangement of the fuse		N/A
	Tightened by torque (Nm)	-	—
8.3.2	Measurement of the temperature rise		N/A
	Protective covers and fuse-carriers as provided by manufacturer mounted	-	N/A
8.3.4.1	Temperature rise of the fuse-holder		N/A
	Dummy (Figure 105) Point at which temperature rise is measured (Figure 106)		N/A
8.3.4.2	Power dissipation of a fuse-link (Figure 106)		N/A
8.4.3.6	Operation of indicating devices and strikers, if any		N/A
	After operation, striker remained captive		N/A
	Size : Reference A / Reference B		N/A
	S_{0max} / S_1	-	N/A
	F_{min} / F_{max}	-	N/A
8.5.5.1	Verification of the peak withstand current of a fuse-base		N/A

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ВЯРНО С ОРИГИНАЛА

40

IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

	not be carried out , if this has already been verified during the breaking capacity test of fuse-links with the highest rating of the size	-	N/A
8.5.5.1.1	Arrangement of the fuse		N/A
	single-phase type, 8.5.1 of IEC 60269-1		N/A
	peak values of the test currents (Table 112)	-	
	maximum values (see 8.5.5.1.3).....	-	
	dummy fuse-link (Figure 101)	-	
8.5.5.1.2	Test method		N/A
	fuse-base 1 (Figure107)		N/A
	resilient spring travel is limited to elastic range.....	-	
	contacts opened up three times	-	
	fuse-base 2 (see 8.11.1.2)		N/A
	F_{max} according to Table 118		
8.5.5.1.3	Acceptability of test results		N/A
	fuse-links not be ejected		N/A
	no signs of arcing or welding or other damage		N/A
8.7.4	Verification of overcurrent discrimination		N/A
	verified by I^2t values evaluated from the recorded test results		N/A
	Arrangement of the samples as for the breaking capacity test		N/A
	two samples tested at the r.m.s. prospective test current I , corresponding to minimum pre-arcing I^2t	1) - 2) -	N/A
	the other samples tested at the r.m.s. prospective test current I , corresponding to operating I^2t	3) - 4) -	N/A
	test voltage (V)	-	-
	The values of I^2t lie within corresponding limits specified in Table 113.....	-	N/A
8.9	Verification of resistance to heat		N/A
	Tests apply to fuse-link and fuse-base		N/A
	Fuse-holder with fuse-links having maximum power dissipation be cyclically loaded as pre-treatment....	-	N/A

ВЯРНО С ОРИГИНАЛА

TRF No. IEC60269_2B

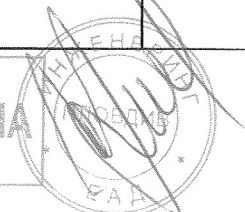
270

40

IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

	After cooling to normal temperature breaking capacity tested at I_1 (see 8.5)..... :	-	N/A
	Fuse-links with organic material Fuse-holder with fuse-links having maximum power dissipation be cyclically loaded as pre-treatment.... :	-	N/A
	After cooling to normal temperature breaking capacity tested at I_1 and I_5 (see 8.5)..... :	-	N/A
8.9.1	Fuse-base		N/A
	test below apply if it is not obvious that components are not affected adversely by given temperature and withdrawal forces		N/A
8.9.1.1	Test arrangement		N/A
	Figure 105 and 108		N/A
	Test setup in heating chamber		N/A
8.9.1.2	Test method		N/A
	Temperature of $(80^{+5})^{\circ}\text{C}$ for 2 h		N/A
	160% rated current for 2 h..... :	-	N/A
	Test voltage :	-	—
	3 min after switching off tensile force F_{max} (see Table 118) exerted for 15 s	-	N/A
8.9.1.3	Acceptability of test results		N/A
	Contact pieces not have moved to affect the further use		N/A
	Dimensions of Figure 202 are considered		N/A
	Insulating mounting part no broken and no show any signs of cracks		N/A
8.9.2.1	Test arrangement		N/A
	Figure 108		N/A
8.9.2.2	Test method		N/A
	Temperature of $(80^{+5})^{\circ}\text{C}$ for 2 h		N/A
	150% rated current for conventional time :	-	N/A
	Test voltage :	-	—
	3 min after fuse-link operated or conventional time expired tensile force F_{max} (see Table 118) exerted for 15 s		N/A

ВЯРНО С ОРИГИНАЛА

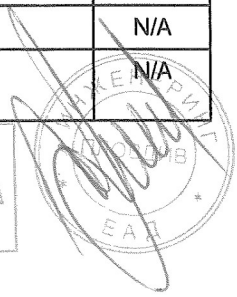


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IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

8.9.2.3	Acceptability of test results		N/A
	Gripping lugs remain fully operational		N/A
	Dimensions of Figure 201 (d and c ₂) not be exceeded by more than 2 mm		N/A
8.11.1.1	Mechanical strength of fuse-holders		N/A
	Test set-up subjected to temperature rise test at rated current :	-	N/A
	fuse-link or fuse-carrier are withdrawn and inserted into fuse-base 100 times :	-	—
	All parts are intact and function normally		N/A
	Test set-up subjected to further temperature rise test at rated current (values obtained are not more than 5 K or 15 % above the values from temperature-rise test prior)..... :	-	N/A
8.11.1.2	Mechanical strength of the fuse-base		N/A
	Test-link inserted three times in the fuse-base : (Dimensions of blade contacts see Figure 201) (Withdrawal force F lied within limits in Table118)	-	N/A
	Steel screws are fastened three times at the terminals, torque of 1,2 times value specified by manufacturer or value of Table 111 :	-	N/A
	Contact pieces not have moved to affect the further use		N/A
	Insulating mounting part no broken and no show any signs of cracks		N/A
8.11.1.8	Impact resistance of gripping-lugs of moulded material or of metal fixed in moulded material		N/A
8.11.1.8.1	Test arrangement		N/A
8.11.1.8.2	Facility is given in Figure 109 :	-	N/A
	One fuse-link ...(150±5)°C for 168 h		—
	Another one-15°C for 72 h		—
	One impact on each of gripping-lugs		N/A
8.11.1.8.3	Acceptability of test results		N/A
	No damage capable of hindering their further use		N/A
	No bent out by more than 3 mm		N/A
	Coupling with a handle (Figure 103) not are hindered		N/A

ВЯРНО С ОРИГИНАЛА



TRF No. IEC60269_2B


272

IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

8.11.2.4	Non-deterioration of insulating parts of fuse-link and fuse-base		N/A
8.11.2.4.1	Test method		N/A
	Period 168 h	-	—
	for equipment comprising moulded elements to support live parts (150±5)°C		—
	for covers (100±5)°C		—
	Period greater than 1 h	-	—
	for sealing compounds; stability of marking (150±5)°C		—
	After cooling to ambient temperature the following are tested.		N/A
	Fuse-links: breaking capacity with I ₁ and I ₂	-	N/A
	Fuse-base: mechanical strength in accordance with 8.11.1.2		N/A
8.11.1.2	Mechanical strength of the fuse-base		N/A
	Test-link inserted three times in the fuse-base : (Dimensions of blade contacts see Figure 101) (Withdrawal force F lied within limits in Table118)	-	N/A
	Steel screws are fastened three times at the terminals, torque of 1,2 times value specified by manufacturer or value of Table 111	-	N/A
	Contact pieces not have moved to affect the further use		N/A
	Insulating mounting part no broken and no show any signs of cracks		N/A
8.11.2.4.2	Acceptability of test results		N/A
	Not have changed of positions of fuse-base contacts to correct functioning		N/A
	No fracture nor any signs of fracture on insulating body with terminals		N/A
	Mechanical strength of cemented joints not impaired		N/A
	Sealing compounds not shifted to extent permitting live parts to exposed		N/A
	Fuse-links operate correctly		N/A
	Marking are durable and easily legible		N/A

 TRF No. IEC60269_2B

ВЯРНО С ОРИГИНАЛА



273

60

IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

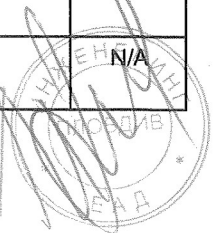
FUSE SYSTEM C – FUSE-RAILS (NH FUSE SYSTEM)

5	CHARACTERISTICS OF FUSES		
5.2	Rated voltage (V) as specified	-	N/A
5.3.2	Rated current (A) of fuse-rails (see Figure 301)	-	N/A
5.5.1	Rated power (W) acceptance of fuse-rails (see Figure 301)	-	N/A

6	MARKING		
	Markings are legible		N/A
6.1	Fuse-holder marked by:		
	- IEC 60269-2.....	-	N/A
	- size.....	-	N/A
	Marking of rated current and rated voltage are discernible from the front		N/A
6.2	Fuse-links marked by:		
	- IEC 60269-2.....	-	N/A
	- size or reference	-	N/A
	- rated breaking capacity	-	N/A
	Marking of rated current and rated voltage are discernible from the front		N/A
	Fuse-links are marked as described in Table 104..:		N/A

7	STANDARD CONDITIONS FOR CONSTRUCTION		
7.1	Mechanical design		N/A
	Reference A / Reference B /Reference C		N/A
	dimension marking c max: prescribed (mm); measured (mm)	-	N/A
	dimension marking d ₁ : prescribed (mm); measured (mm)	-	N/A
	dimension marking d ₂ min: prescribed (mm); measured (mm)	-	N/A
	dimension marking h ₁ min: prescribed (mm); measured (mm)	-	N/A
	dimension marking h ₂ max: prescribed (mm); measured (mm)	-	N/A
	dimension marking m ₁ : prescribed (mm); measured (mm)	-	N/A

ВЯРНО С ОРИГИНАЛА



40

IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict
	dimension marking m ₂ : prescribed (mm); measured (mm)	-	N/A
	dimension marking m ₃ max: prescribed (mm); measured (mm)	-	N/A
	dimension marking m ₄ : prescribed (mm); measured (mm)	-	N/A
	dimension marking m ₅ : prescribed (mm); measured (mm)	-	N/A
	dimension marking n ₂ max: prescribed (mm); measured (mm)	-	N/A
	dimension marking r min: prescribed (mm); measured (mm)	-	N/A
	dimension marking s max: prescribed (mm); measured (mm)	-	N/A
	dimension marking t min max: prescribed (mm); measured (mm)	-	N/A
	dimension marking v: prescribed (mm); measured (mm)	-	N/A
	dimension marking z max: prescribed (mm); measured (mm)	-	N/A
7.1.2	Connections, including terminals cross-sectional ranges (Table 301) : torques to be applied (Table 111) (lug terminal) :	- -	N/A
7.2	Insulating properties		N/A
	Creepage distances and clearances of fuses and fuse-accessories meet requirements of IEC 60664-1 for overvoltage category III and pollution degree 3 . . :	-	N/A

8 TESTS			
	IEC 60269-1 applies with the following supplementary requirements		N/A
8.1.6	Testing of fuse-holders		N/A
	Tested according to Table 302..... :	--	N/A
8.3	Verification of temperature rise and power dissipation		N/A
8.3.1	Arrangement of the fuse		N/A
	Tightened by torque (Nm)	-	—

ВЯРНО С ОРИГИНАЛА

TRF No. IEC60269_2B

245

IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

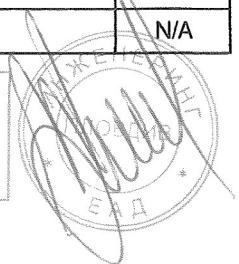
8.3.2	Measurement of the temperature rise		N/A
	Protective covers and fuse-carriers as provided by manufacturer mounted :	-	N/A
8.5.5.1	Verification of peak withstand current of a fuse-base		N/A
	Covered by verification of non-deterioration of contacts according to 8.10		N/A
8.5.5.1.1	Arrangement of the fuse		N/A
	three-phase type, 8.5.1 of IEC 60269-1		N/A
	cut-off currents are below the values given in Table 112 :	-	
	Test set-up is given in figure 302 :	-	
	Cross-section of busbars (Figure 302) :	-	
8.5.5.1.2	Test method		N/A
	fuse-base 1 (Figure 107)		N/A
	resilient spring travel is limited to elastic range..... :	-	
	contacts opened up three times :	-	
	fuse-base 2 (see 8.11.1.2)		N/A
	F_{max} according to Table 118		
8.10	Verification of non-deterioration of contacts and direct terminal clamps		N/A
8.10.1	Arrangement of the fuse		N/A
	Figure 301 and Figure 302		N/A
	for lug terminals, torque in Table 111..... :	-	—
	Insulation of conductors removed over the whole length :	-	N/A
8.10.1.2	Direct terminal clamps		N/A
	Test performed on 9 terminal clamps of three fuse-rails		N/A
	Distance between fuse-rails centres of at least three times e_2 (see Figure 101)		N/A
	Torque of tightened of screws :	-	—
	Conductor cross-section :	-	—
8.10.2	Test method		N/A
	Test current (A) for load period :	-	N/A
	Duration (s) of load period :	-	N/A
	Duration (s) of non-load period :	-	N/A

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TRF No. IEC60269_2B

ВЯРНО С ОРИГИНАЛА

246



50

IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

	Test voltage (V) :	-	—
	a) Test of 50 cycles, measured values did not exceed the limits given in subsequent parts of IEC 60269		N/A
	b) Test of 250 cycles, measured values did not exceed the limits given in subsequent parts of IEC 60269		N/A
	c) Test of 500 cycles, measured values did not exceed the limits given in subsequent parts of IEC 60269		N/A
	d) Test of 750 cycles, measured values did not exceed the limits given in subsequent parts of IEC 60269		N/A
8.10.2.1	Contacts		N/A
	Points between voltage drop is measured (A and B in Figure 106)		N/A
	Withdrawal force (Table 118); measured force after 250 cycles (N) :	-	N/A
	Withdrawal force (Table 118); measured force after 750 cycles (N) :	-	N/A
	If measured values too low, test of 8.5.5.1 :	-	N/A
8.10.2.2	Direct terminal clamps		N/A
	Points between voltage drop is measured (Figure 110)		N/A
	Test sequence for all types conductors (see Table 116)		N/A
	Verification of temperature rise (see 8.3.4.1) (see figure 110)..... :		N/A
8.10.3	Acceptability of test results		N/A
8.10.3.1	Contacts		N/A
	Limit value after 250 th cycle ≤ 15%		N/A
	Limit value after 500 th cycle ≤ 30%		N/A
	Limit value after 750 th cycle ≤ 40%		N/A
	Difference between last and first measurement of temperature rise less than 20 K :	-	N/A

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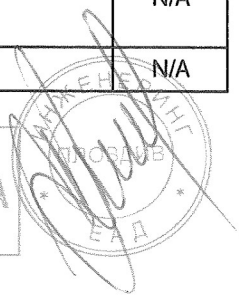
ВЯРНО С ОРИГИНАЛА



IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

8.10.3.2	Direct terminal clamps		N/A
	Permissible tolerance for resistance R_{cl0} for Al conductors : $R_{cl0\ max} \leq 2 R_{cl0\ min}$	-	N/A
	Permissible changes of the resistance from $R_{cl\ 50}$ to $R_{cl\ 750}$: see Table 117	-	N/A
	Copper or cleaned aluminium conductors	-	N/A
	Uncleaned aluminium conductors		N/A
	Change from 50 th to 250 th cycle		N/A
	Change after 250 th to 500 th cycle		N/A
	Change after 500 th to 750 th cycle		N/A
	Change between 50 th to 750 th cycle		N/A
	Temperature rise at test spot F < 75K		N/A
8.11.1.1	Mechanical strength of fuse-holders		N/A
	Test set-up subjected to temperature rise test at rated current	-	N/A
	fuse-link or fuse-carrier are withdrawn and inserted into fuse-base 100 times	-	—
	All parts are intact and function normally		
	Test set-up subjected to further temperature rise test at rated current (values obtained are not more than 5 K or 15 % above the values from temperature-rise test prior).....	-	N/A
8.11.1.2	Mechanical strength of the fuse-base		N/A
	Contact force are tested on all three phases of a new fuse-rail	-	N/A
	Test-link inserted three times in the fuse-base (Dimensions of blade contacts see Figure 101) (Withdrawal force F lied within limits in Table118)	-	N/A
	Steel screws are fastened three times at the terminals, torque of 1,2 times value specified by manufacturer or value of Table 111		N/A
	Contact pieces not have moved to affect the further use		N/A
	Insulating mounting part no broken and no show any signs of cracks		N/A
8.11.2.3	Verification of resistance to rusting		N/A

ВЯРНО С ОРИГИНАЛА



IEC 60269-2

Clause	Requirement + Test	Result - Remark	Verdict
8.11.2.3.1	According to ISO 6988 cyclic moist atmosphere containing 0,2% SO ₂ (SFW 0,2 S) for 1 cycle		N/A
8.11.2.3.2	Optional test (severe environmental conditions)		N/A
	Fuse-links and fuse-bases for used in environment of pollution degree ≥3 tested with SFW 2,0 S for 5 cycles	-	N/A
	They marked accordingly	-	N/A
8.11.2.4	Non-deterioration of insulating parts of fuse-link and fuse-base		N/A
8.11.2.4.1	Test method		N/A
	One fuse-rail is tested	-	—
	Period 168 h	-	—
	for equipment comprising moulded elements to support live parts (150±5)°C		—
	for covers (100±5)°C		—
	Period greater than 1 h.....	-	—
	for sealing compounds; stability of marking(150±5)°C		—
	After cooling to ambient temperature the following are tested.		N/A
	Fuse-links: breaking capacity with I ₁ and I ₂	-	N/A
	Fuse-base: mechanical strength in accordance with 8.11.1.2		N/A
8.11.1.2	Mechanical strength of the fuse-base		N/A
	Test-link inserted three times in the fuse-base (Dimensions of blade contacts see Figure 101) (Withdrawal force F lied within limits in Table118)	-	N/A
	Steel screws are fastened three times at the terminals, torque of 1,2 times value specified by manufacturer or value of Table 111	-	N/A
	Contact pieces not have moved to affect the further use		N/A
	Insulating mounting part no broken and no show any signs of cracks		N/A
8.11.2.4.2	Acceptability of test results		N/A
	Not have changed of positions of fuse-base contacts to correct functioning		N/A

ВЯРНО С ОРИГИНАЛА

279

60

IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

	No fracture nor any signs of fracture on insulating body with terminals		N/A
	Mechanical strength of cemented joints not impaired		N/A
	Sealing compounds not shifted to extent permitting live parts to exposed		N/A
	Fuse-links operate correctly		N/A
	Marking are durable and easily legible		N/A

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ВЯРНО С ОРИГИНАЛА



 TRF No. IEC60269_2B

280

IEC 60269-2

Clause	Requirement + Test	Result - Remark	Verdict
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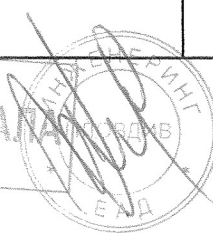
FUSE SYSTEM D – FUSE-BASES FOR BUSBAR MOUNTING (40 mm SYSTEM) (NH FUSE SYSTEM)

5	CHARACTERISTICS OF FUSES		
5.2	Rated voltage (V) as specified	-	N/A
5.3.2	Rated current (A) of tandem fuse-base size 00 is 63A for each outlet.....	-	N/A
5.5.2	Rated acceptable power dissipation (W) of tandem fuse-bases is 7,5 W per outlet	-	N/A

6	MARKING		
	Markings are legible		N/A
6.1	Fuse-holder marked by:		
	- IEC 60269-2.....	-	N/A
	- size.....	-	N/A
	Marking of rated current and rated voltage are discernible from the front		N/A
6.2	Fuse-links marked by:		
	- IEC 60269-2.....	-	N/A
	- size or reference.....	-	N/A
	- rated breaking capacity	-	N/A
	Marking of rated current and rated voltage are discernible from the front		N/A
	Fuse-links are marked as described in Table 104..		N/A

7	STANDARD CONDITIONS FOR CONSTRUCTION		
	Dimensions of fuse-bases for 40 mm busbar system given in Figures 401, 402 and 403		N/A
	Fig. 401 / Fig. 402 / Fig. 403		—
	dimension marking a: prescribed (mm); measured (mm)	-	N/A
	dimension marking v: prescribed (mm); measured (mm)	-	N/A
	dimension marking r min: prescribed (mm); measured (mm)	-	N/A
	dimension marking g: prescribed (mm); measured (mm)	-	N/A
	dimension marking h: prescribed (mm); measured (mm)	-	

 TRF No. IEC60269_2B

ВЯРНО С ОРИГИНАЛА

 281

IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict
	dimension marking k: prescribed (mm); measured (mm)	-	N/A
	dimension marking e _i : prescribed (mm); measured (mm)	-	N/A
	dimension marking l: prescribed (mm); measured (mm)	-	N/A
7.1.2	Connections, including terminals cross-sectional ranges (Table 401)	-	N/A
7.1.5	Construction of a fuse-base for busbar mounting		N/A
	Busbar mounted fuse-bases according to Fig. 401, Fig 402 and Fig 403 have partition walls between adjacent live parts	-	N/A
	Partition walls can subsequently fixed	-	N/A
	Possibility to insert fuse-links into fuse-bases and to pull them out by means of replacement handle according to Figure 103	-	N/A
	Possibility to fix fuse-bases for busbar mounting by means of special clamps	-	N/A
	Constructional means provided to ensure fuse-base retained on busbars without fastening and contacting screws tightened	-	N/A
	Clamping screws of clamping means, terminal screws accessible from the front	-	N/A
	Contact pieces capable of accepting blade contacts of fuse-links according to Figure 101	-	N/A
	Dimensions not given in Figures 401, 402 and 403 see Figure 102	-	N/A
7.2	Insulating properties and suitability for insulation		N/A
	Creepage distances and clearances of fuses and fuse-accessories meet requirements of IEC 60664-1 for overvoltage category III and pollution degree 3. :	-	N/A
	Insulating parts of fuse-base supporting live parts meet the test at PTI 400 according to IEC 60112 (test solution A)	-	N/A

ВЯРНО С ОРИГИНАЛА



[Signature] TRF No. IEC60269_2B

282

10

IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

8	TESTS		
	IEC 60269-1 applies with the following supplementary requirements		N/A
8.3	Verification of temperature rise and power dissipation		N/A
8.3.1	Arrangement of the fuse		N/A
	Test arrangement as specified Fig. 404 and 405		N/A
	For contact-making fastening of fuse-base achieved by screws, torque given in Table 402	-	—
8.3.2	Measurement of the temperature rise		N/A
	Protective covers and fuse-carriers as provided by manufacturer mounted	-	N/A
8.3.4.1	Temperature rise of the fuse-holder		N/A
	Dummy (Figure 407) Point at which temperature rise is measured (Figure 106)		N/A
8.3.4.2	Power dissipation of a fuse-link (Figure 106)		N/A
8.5.5.1.1	Arrangement of the fuse		N/A
	Test arrangement specified in Figure 406	-	N/A
	Test in a single-pole arrangement		N/A
	Cross-sections of busbars see Figure 406 or manufacturer's instructions	-	N/A
	For tandem fuse-bases ranges of cut-off currents given by Table 403	-	N/A
8.9.1	Fuse-base		N/A
8.9.1.1	Test arrangement		N/A
	Test arrangement for tandem fuse-bases given in Figure 405		N/A
	Dummy fuse-link described in Figure 407		N/A
	For contact-making fastening of fuse-base achieved by screws, torque given in Table 402		N/A
	Test se-up in heating chamber		N/A
8.9.1.3	See 8.9.1.3 section A with references to Figures 401 and 403		N/A

TRF No. IEC60269_2B

ВЯРНО С ОРИГИНАЛА



283

IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

	test below apply if it is not obvious that components are not affected adversely by given temperature and withdrawal forces		N/A
8.9.1.2	Test method		N/A
	Temperature of (80 ⁺⁵)°C for 2 h		N/A
	160% rated current for 2 h..... :	-	N/A
	Test voltage :	-	—
	3 min after switching off tensile force F _{max} (see Table 118) exerted for 15 s		N/A
8.9.1.3	Acceptability of test results		N/A
	Contact pieces not have moved to affect the further use		N/A
	Dimensions of Figures 401 and 403 are considered		N/A
	Insulating mounting part no broken and no show any signs of cracks		N/A
8.10	Verification of non-deterioration of contacts and direct terminal clamps		N/A
8.10.1	Arrangement of the fuse		N/A
	Dummy fuse-link described in Figure 407		N/A
	Torque of contact making fastening for fuse-bases on 40mm busbar systems see Table 402		—
8.10.1.2	Direct terminal clamps		N/A
	Test performed on 10 direct terminal clamps of five fuse-bases		N/A
	Distance between fuse-base centres of at least three times e ₂ (see Figure 101)		N/A
	Torque of tightened of screws :	-	—
	Conductor cross-section :	-	—
8.10.2	Test method		N/A
	As far as single contact concerned, tap points for resistance measurement lied as close as possible to contact area		N/A
	Test current (A) for load period :	-	N/A
	Duration (s) of load period :	-	N/A
	Duration (s) of non-load period :	-	N/A

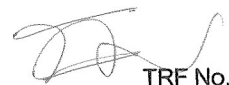
ВЯРНО С ОРИГИНАЛА



126

IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

	Test voltage (V)	-	—
	a) Test of 50 cycles, measured values did not exceed the limits given in subsequent parts of IEC 60269		N/A
	b) Test of 250 cycles, measured values did not exceed the limits given in subsequent parts of IEC 60269		N/A
	c) Test of 500 cycles, measured values did not exceed the limits given in subsequent parts of IEC 60269		N/A
	d) Test of 750 cycles, measured values did not exceed the limits given in subsequent parts of IEC 60269		N/A
8.10.2.1	Contacts		N/A
	Points between voltage drop is measured (A and B in Figure 106)		N/A
	Withdrawal force (Table 118); measured force after 250 cycles (N)		N/A
	Withdrawal force (Table 118); measured force after 750 cycles (N)		N/A
	If measured values too low, test of 8.5.5.1	-	N/A
8.10.2.2	Direct terminal clamps		N/A
	Points between voltage drop is measured (Figure 110)		N/A
	Test sequence for all types conductors (see Table 116)		N/A
	Verification of temperature rise (see 8.3.4.1) (see figure 110)		N/A
8.10.3	Acceptability of test results		N/A
8.10.3.1	Contacts		N/A
	Limit value after 250 th cycle ≤ 15%		N/A
	Limit value after 500 th cycle ≤ 30%		N/A
	Limit value after 750 th cycle ≤ 40%		N/A
	Difference between last and first measurement of temperature rise less than 20 K	-	N/A
8.10.3.2	Direct terminal clamps		N/A

 TRF No. IEC60269_2B

ВЯРНО С ОРИГИНАЛА



285

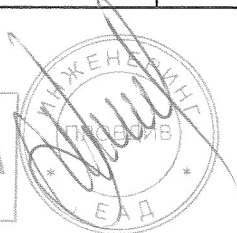
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IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

	Permissible tolerance for resistance R_{cl0} for Al conductors : $R_{cl0 \max} \leq 2 R_{cl0 \min}$	-	N/A
	Permissible changes of the resistance from R_{cl50} to R_{cl750} : see Table 117	-	N/A
	Copper or cleaned aluminium conductors	-	N/A
	Uncleaned aluminium conductors	-	N/A
	Change from 50 th to 250 th cycle	-	N/A
	Change after 250 th to 500 th cycle	-	N/A
	Change after 500 th to 750 th cycle	-	N/A
	Change between 50 th to 750 th cycle	-	N/A
	Temperature rise at test spot F < 75K	-	N/A
8.11	Mechanical and miscellaneous tests	-	N/A
8.11.1.1	Mechanical strength of fuse-holders	-	N/A
	Test set-up subjected to temperature rise test at rated current	-	N/A
	fuse-link or fuse-carrier are withdrawn and inserted into fuse-base 100 times	-	—
	All parts are intact and function normally	-	N/A
	Test set-up subjected to further temperature rise test at rated current (values obtained are not more than 5 K or 15 % above the values from temperature-rise test prior).....	-	N/A
8.11.1.2	Mechanical strength of the fuse-base	-	N/A
	Test-link inserted three times in the fuse-base (Withdrawal force F lied within limits in Table 404)	-	N/A
	Contact force tested on all outlets of one unused fuse-base	-	N/A
	Steel screws are fastened three times at the terminals, torque of 1,2 times value specified by manufacturer or value of Table 111	-	N/A
	Contact pieces not have moved to affect the further use	-	N/A
	Insulating mounting part no broken and no show any signs of cracks	-	N/A
8.11.2.4	Non-deterioration of insulating parts of fuse-link and fuse-base	-	N/A

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IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

8.11.2.4.1	Test method		N/A
	Three fuse-bases or one tandem fuse-base tested		N/A
	Period 168 h	-	—
	for equipment comprising moulded elements to support live parts (150±5)°C		—
	for covers (100±5)°C		—
	Period greater than 1 h.....	-	—
	for sealing compounds; stability of marking(150±5)°C		—
	After cooling to ambient temperature the following are tested.		N/A
	Fuse-links: breaking capacity with I ₁ and I ₂	-	N/A
	Fuse-base: mechanical strength in accordance with 8.11.1.2		N/A
8.11.1.2	Mechanical strength of the fuse-base		N/A
	Test-link inserted three times in the fuse-base (Withdrawal force F lied within limits in Table 404)	-	N/A
	Contact force tested on all outlets of one unused fuse-base	-	N/A
	Steel screws are fastened three times at the terminals, torque of 1,2 times value specified by manufacturer or value of Table 111	-	N/A
	Contact pieces not have moved to affect the further use		N/A
	Insulating mounting part no broken and no show any signs of cracks		N/A
8.11.2.4.2	Acceptability of test results		N/A
	Not have changed of positions of fuse-base contacts to correct functioning		N/A
	No fracture nor any signs of fracture on insulating body with terminals		N/A
	Mechanical strength of cemented joints not impaired		N/A
	Sealing compounds not shifted to extent permitting live parts to exposed		N/A
	Fuse-links operate correctly		N/A
	Marking are durable and easily legible		N/A

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IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

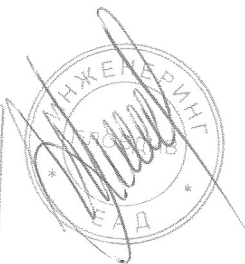
**FUSE SYSTEM E – FUSES WITH FUSE-LINKS FOR BOLTED CONNECTIONS
(BS BOLTED FUSE SYSTEM)**

5	CHARACTERISTICS OF FUSES		
5.3.1	Rated current (A) of the fuse-link given in Figures 501 and 502.....:	-	N/A
5.3.2	Rated current (A) of the fuse-holder given in Figure 503.....:	-	N/A
5.5	Max. power (W) dissipation of fuse-link within specified limits given in Figure 501	-	N/A
	Rated power acceptable (W) dissipation of a fuse-holder within specified limits given in Figure 503	-	N/A
5.6	Limits of time-current characteristics		N/A
5.6.1	Time-current zones given in Figure 504 and 505 ...:	-	N/A
	Tolerances on time current characteristics not deviate for more ±10% (for current)		N/A
5.6.2	In addition to values IEC 60269-1 see Table 501 ...:	-	N/A
5.6.3	For "gG" fuse-links the gates in accordance with Table 502 and IEC 60269-1	-	N/A
5.7.2	Rated breaking capacity equal to 80 kA a.c		N/A
	Rated breaking capacity equal to 40 kA d.c		N/A

6	MARKINGS		
	Markings are legible		N/A
6.1	Fuse-holder marked by:		
	- size.....:	-	N/A
	Marking of rated current and rated voltage are discernible from the front		N/A
6.2	Fuse-links marked by:		
	- size or reference.....:	-	N/A
	- rated breaking capacity	-	N/A

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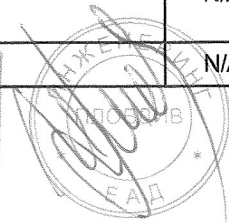
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IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

7	STANDARD CONDITIONS FOR CONSTRUCTION		N/A
7.1	Mechanical design		N/A
	The dimensions of the fuse-links given in Figure 501		N/A
	Fuse-link size		N/A
	dimension marking a max: prescribed (mm); measured (mm)	-	N/A
	dimension marking b max: prescribed (mm); measured (mm)	-	N/A
	dimension marking d max: prescribed (mm); measured (mm)	-	N/A
	dimension marking e max: prescribed (mm); measured (mm)	-	N/A
	dimension marking f max: prescribed (mm); measured (mm)	-	N/A
	dimension marking g nom: prescribed (mm); measured (mm)	-	N/A
	dimension marking h nom: prescribed (mm); measured (mm)	-	N/A
	dimension marking j min: prescribed (mm); measured (mm)	-	N/A
	dimension marking k max: prescribed (mm); measured (mm)	-	N/A
	dimension marking l nom: prescribed (mm); measured (mm)	-	N/A
	dimension marking m max: prescribed (mm); measured (mm)	-	N/A
	The dimensions of the fuse-base in tolerances given in Figure 503		
	Fuse-link accommodated size / max rated current	-	N/A
	dimension marking A max: prescribed (mm); measured (mm)	-	N/A
	dimension marking B max: prescribed (mm); measured (mm)	-	N/A
	dimension marking B1max: prescribed (mm); measured (mm)	-	N/A
	dimension marking C max: prescribed (mm); measured (mm)	-	N/A
	dimension marking D: prescribed (mm); measured (mm)	-	N/A
7.2	Insulating properties and suitability for insulation		N/A

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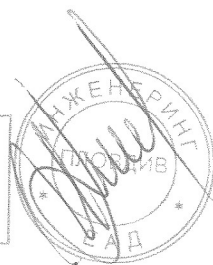
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IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Creepage distances and clearances of fuse parts meet requirements of IEC 60664-1 for overvoltage category III and pollution degree 3		N/A
7.9	Degree of protection against electric shock of standardized fuse-holder IP not lower than IP2x	IP	N/A

8	TESTS		N/A
	IEC 60269-1 applies with the following supplementary requirements		N/A
8.3	Verification of temperature rise and power dissipation		N/A
8.3.1	The test arrangement for verification of temperature rise and power dissipation as specified (Figure 506)		N/A
8.3.3	Measurement of the power dissipation of the fuse-link		N/A
	The points of measurement as specified (Figure 506)		N/A
8.4	Verification of operation		N/A
8.4.1	The test arrangement of the fuse-link given in Figure 506		N/A
8.5	Verification of breaking capacity		N/A
8.5.1	The test arrangement of the fuse-link given in Figure 507		N/A
8.5.8	Acceptability of test results		N/A
	Additionally to 8.5.8 of IEC 60269-1: the fuse-links operated without the melting of the fine fuse-wire and without mechanical damage to the rig		N/A
8.9	Verification of resistance to heat		N/A
	Tests apply to fuse-link and fuse-base		N/A
	Fuse-holder with fuse-links having maximum power dissipation be cyclically loaded as pre-treatment.....		N/A
	After cooling to normal temperature breaking capacity tested at I ₁ (see 8.5).....		N/A
	Fuse-links with organic material		N/A
	Fuse-holder with fuse-links having maximum power dissipation be cyclically loaded as pre-treatment.....		N/A

ВЯРНО С ОРИГИНАЛА



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IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

	After cooling to normal temperature breaking capacity tested at I_1 and I_5 (see 8.5).....:	-	N/A
8.10	Verification of non-deterioration of contacts		N/A
8.10.1	Arrangement of the fuse		N/A
	Dummy fuse-link comply with dimensions Fig 501 for references accommodated in standardized fuse-holders Fig 503		N/A
	Power dissipation of dummy fuse-links equal to rated power dissipation of fuse-holder given in Fig 503 when tested in standardized power dissipation rig given in Fig 506		N/A
	Dummy fuse-link not operate during passage of overload current I_{nf}		N/A
8.10.2	Test method		N/A
	Test current: conventional non-fusing current		N/A
	Load period: 25% of conventional time		N/A
	No-load period: 10% of conventional time		N/A
	Test voltage lower rated voltage may be used		N/A
8.10.3	Acceptability of the results		N/A
	Temperature rise after 250 cycles not exceed temperature rise at beginning + 15K	-	N/A
	Temperature rise after 750 cycles not exceed temperature rise at beginning + 20K	-	N/A
8.11	Mechanical and miscellaneous tests		N/A
8.11.1.1	Mechanical strength of fuse-holders		N/A
	Test set-up subjected to temperature rise test at rated current	-	N/A
	fuse-link or fuse-carrier are withdrawn and inserted into fuse-base 100 times	-	-
	All parts are intact and function normally		N/A
	Test set-up subjected to further temperature rise test at rated current (values obtained are not more than 5 K or 15 % above the values from temperature-rise test prior).....	-	N/A

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IEC 60269-2

Clause	Requirement + Test	Result - Remark	Verdict
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FUSE SYSTEM F – FUSES WITH FUSE-LINKS HAVING CYLINDRICAL CONTACT CAPS
(NF CYLINDRICAL FUSE SYSTEM)

5	CHARACTERISTICS OF FUSES		P
5.2	Rated voltage (V)	690Va.c. or 24Vd.c.	P
5.3.1	Rated current (A) of the fuse-link in accordance with Table 601	-	N/A
5.3.2	Rated current (A) of the fuse-holder in accordance with Table 602	32A	P
5.5	Max. rated power (W) dissipation of the fuse-link within specified limits of Table 603	-	N/A
	Rated acceptable power (W) dissipation of the fuse-bases given in Table 604	3W	P
5.6	Limits of time-current characteristics		N/A
5.6.1	When applicable time-current zones given in Fig 104 of fuse system A	-	N/A
5.6.2	Conventional times and currents are given in Table 605	-	N/A
5.6.3	For gG fuse-link the gates given in Table 606	-	N/A
5.7.2	Min. rated breaking capacity (A) see Table 607	-	N/A

6	MARKING		P
	Markings are legible		P
6.1	Fuse-holder marked by:		P
	- IEC 60269-2	IEC 60269	P
	- size.....	10x38	P
6.2	Fuse-links marked by:		N/A
	- IEC 60269-2	-	N/A
	- size or reference.....	-	N/A
	- rated breaking capacity	-	N/A
	Fuse-links are marked as described in Table 608....		N/A

ВЯРНО С ОРИГИНАЛА



IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

7	STANDARD CONDITIONS FOR CONSTRUCTION		P
7.1	Mechanical design		P
	The dimensions of the fuse-links given in Figure 601		N/A
	Size:		N/A
	dimension marking a: prescribed (mm); measured (mm)	-	N/A
	dimension marking b max: prescribed (mm); measured (mm)	-	N/A
	dimension marking c: prescribed (mm); measured (mm)	-	N/A
	dimension marking d min: prescribed (mm); measured (mm)	-	N/A
	dimension marking r: prescribed (mm); measured (mm)	-	N/A
	The dimensions of the fuse links with striker in tolerances given in Figure 602		N/A
	dimension marking S ₀ max: prescribed (mm); measured (mm)	-	N/A
	dimension marking S ₁ : prescribed (mm); measured (mm)	-	N/A
	diameter marking Ø 3 to 6: prescribed (mm); measured (mm)	-	N/A
	diameter marking Ø 8: prescribed (mm); measured (mm)	-	N/A
	The dimensions of the fuse-bases in tolerances given in Figure 603		P
	Size:		P
	dimension marking G ₁ max: prescribed (mm); measured (mm)	13 max.; 10,5 measured	P
	dimension marking H ₁ min: prescribed (mm); measured (mm)	15,5 min.; 18,5 measured	P
	dimension marking L: prescribed (mm); measured (mm)	19,3 ^{0/+0,8} ; 20,0 measured	P
	dimension marking G ₂ max: prescribed (mm); measured (mm)	;31,5 max.; 31,4 measured	P
	dimension marking H ₂ min: prescribed (mm); measured (mm)	;34,5 min. 39,0 measured	P
7.1.2	The terminals capable to accept rigid copper conductors of cross-sectional areas (mm ²) as stated in Table 609	0,75mm ² to 16 mm ²	P

ВЯРНО С ОРИГИНАЛА

IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

7.2	Insulating properties and suitability for insulation		P
	Creepage distances and clearances of fuse parts meet requirements of IEC 60664-1 for overvoltage category III and pollution degree 3	Overvoltage category: III Pollution degree: 3 > 10mm	P
7.7	Maximum pre-arcing I ² t given in Table 7 of IEC 60269-1 and for value lower than 16A in Table 610	-	N/A
	maximum operating I ² t for "aM" fuse-links (Table 611) test No. 2 of the largest rated current of each homogeneous series (Table 20 of IEC 60269-1) ...	-	N/A
7.8	Fuse-links gG in series rated current ratio 1:1,6 and rated current ≥16A discriminate up to values specified in 8.7.4	-	N/A
7.9	Protection against electric shock can be increased by means of partition walls and covers of fuse-contacts.....	-	N/A

8	TESTS		
	IEC 60269-1 applies with the following supplementary requirements		P
8.1.6	Testing of fuse-holders		P
	In addition to test given in IEC 60269-1 tested according to Table 612	Yes	P
8.3.1	The screws of the terminals are to be fastened by an applying torque (Nm) in accordance with Table 613 :	2,0Nm	P
8.3.4.1	Dummy fuse with dimensions of Fig 601	Size 10x38	P
	Rated power dissipation see table 604	3W	P
8.3.4.2	Points of measurement marked S in Fig 601	3W	P
8.4.3.6	Operation of indicating devices and strikers, if any		N/A
	before operation dimension marking S ₀ not exceed 1(mm); measured (mm)	-	N/A
	after operation dimension marking S ₁ : between 7 and 10 (mm); measured (mm)	-	N/A
	Force of striker at least 2,5 N and not exceed 20 N at end of travel	-	N/A
	After operation, striker remained captive		N/A
	Fuse-link with striker may have no indicating device other than striker		N/A

ВЯРНО С ОРИГИНАЛА



IEC 60269-2					
Clause	Requirement + Test	Result - Remark			Verdict
8.5.5.1	Verification of the peak withstand current of a fuse-base				P
	Peak withstand current of fuse-base in accordance with values given in Table 614	5kA ... 6kA			P
8.5.5.1.1	Test in single-phase type				P
	Test set-up for fuse-base in accordance to 8.5.1 of IEC 60269-1				P
8.5.5.1.2	Peak values attained lie in the ranges in Table 614				P
	Maximum values may be exceeded as long as requirements 8.5.5.1.3 met	PMX-10 1P	PMX-10 2P	PMX-10 4P	P
		6,52kA _{max}	7,20kA _{max}	10,29kA _{max}	
8.5.5.1.3	Fuse-link not ejected				P
	No signs of arcing or welding, no damage to prevent further use of fuse-base				P
8.7.4	Verification of overcurrent discrimination				N/A
	verified by I ² t values evaluated from the recorded test results				N/A
	Arrangement of the samples as for the breaking capacity test				N/A
	two samples tested at the r.m.s. prospective test current I, corresponding to minimum pre-arcing I ² t				N/A
	the other samples tested at the r.m.s. prospective test current I, corresponding to operating I ² t				N/A
	test voltage (V)				—
	The values of I ² t lie within corresponding limits specified in Table 615.....				N/A
8.9	Verification of resistance to heat				P
	Fuse-holder with fuse-links having maximum power dissipation are cyclically loaded as pre-treatment....	100h ON PERIOD: 1h at 32A*1,05 = 33,6A OFF PERIOD: 1h*0,1= 6min			P
	After cooling to normal temperature breaking capacity tested at I ₁ (see 8.5).....	I ₁ = 65kA			P

ВЯРНО С ОРИГИНАЛА



IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

	Fuse-links with organic material Fuse-holder with fuse-links having maximum power dissipation are cyclically loaded as pre-treatment... :		N/A						
	After cooling to normal temperature breaking capacity tested at I_1 and I_5 (see 8.5)..... :	-	N/A						
8.10	Verification of non-deterioration of contacts		P						
8.10.1	Arrangement of the fuse		P						
	Dummy fuse links Figure 601..... :	10x38	P						
	rated power dissipation Table 604..... :	3W							
8.10.2	Test method	The measurement was made at the terminals.	P						
	Test current (A) for load period..... :	40A	P						
	Duration (s) of load period..... :	1h * 0,25 = 15min = 900s	P						
	Duration (s) of no-load period..... :	1h * 0,10 = 6min = 360s	P						
	Test voltage (V)..... :	5V	—						
8.10.3	Acceptability of test results		P						
	Temperature rise after 250 cycles not exceed temperature rise at beginning + 15K	<table border="1"> <tr> <td>PMX-10 N-pole</td> <td>PMX-10 2P</td> <td>PMX-10 3P+N</td> </tr> <tr> <td>4K_{max.}</td> <td>12 K_{max.}</td> <td>10K_{max.}</td> </tr> </table>	PMX-10 N-pole	PMX-10 2P	PMX-10 3P+N	4K _{max.}	12 K _{max.}	10K _{max.}	P
PMX-10 N-pole	PMX-10 2P	PMX-10 3P+N							
4K _{max.}	12 K _{max.}	10K _{max.}							
	Temperature rise after 750 cycles not exceed temperature rise at beginning + 20K		N/A						
8.11.1.1	Mechanical strength of fuse-holders		P						
	Test set-up subjected to temperature rise test at rated current..... :	32A	P						
	fuse-link or fuse-carrier are withdrawn and inserted into fuse-base 100 times..... :	fuse-link	—						
	All parts are intact and function normally		P						
	Test set-up subjected to further temperature rise test at rated current (values obtained are not more than 5 K or 15 % above the values from temperature-rise test prior)..... :	<table border="1"> <tr> <td>PMX-10 1P</td> <td>PMX-10 2P</td> </tr> <tr> <td>2k</td> <td>3k</td> </tr> </table>	PMX-10 1P	PMX-10 2P	2k	3k	P		
PMX-10 1P	PMX-10 2P								
2k	3k								

ВЯРНО С ОРИГИНАЛА

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IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

**FUSE SYSTEM G – FUSES WITH FUSE-LINKS WITH OFFSET BLADE CONTACTS
(BS CLIP-IN FUSE SYSTEM)**

5	CHARACTERISTICS OF FUSES		
5.2	Rated voltage (V) of fuse-link size E1	-	N/A
	Rated voltage (V) of fuse-link size F1/F2/F3	-	N/A
5.3.1	Rated current (A) of the fuse-link given in Figure 701	-	N/A
5.3.2	Rated current (A) of the fuse-holder given in Figure 702	-	N/A
5.5	Max. rated power (W) dissipation of the fuse-link given in Figure 701 when measured on standard rig Figure 705	-	N/A
	Rated acceptable power (W) dissipation of the fuse-holders given in Figure 702	-	N/A
5.6.1	Time-current zones given in Fig 703 and 704 ...:	-	N/A
	Tolerances on time current characteristics not deviate by more than ±10% (for current)		N/A
5.6.2	In addition to values IEC 60269-1 see Table 701 for "gG" fuse-link		N/A
5.6.3	For "gG" fuse-links the gates given in Table 702 ...:		N/A
5.7.2	Rated breaking capacity (kA)	-	N/A

6	MARKINGS		
	Markings are legible		N/A
6.1	Fuse-holder marked by:		
	- size	-	N/A
6.2	Fuse-links marked by:		
	- size or reference	-	N/A
	- rated breaking capacity	-	N/A

ВЯРНО С ОРИГИНАЛА



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60

IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

7	STANDARD CONDITIONS FOR CONSTRUCTION		N/A
7.1	Mechanical design		N/A
	The dimensions of the fuse-links given in Figure 701		N/A
	Size:		—
	dimension marking a max: prescribed (mm); measured (mm)	-	N/A
	dimension marking b max: prescribed (mm); measured (mm)	-	N/A
	dimension marking d : prescribed (mm); measured (mm)	-	N/A
	dimension marking e : prescribed (mm); measured (mm)	-	N/A
	dimension marking f : prescribed (mm); measured (mm)	-	N/A
	dimension marking n : prescribed (mm); measured (mm)	-	N/A
	The dimensions of the fuse-holders given in Figure 702		
	dimension marking A max: prescribed (mm); measured (mm)	-	N/A
	dimension marking B max: prescribed (mm); measured (mm)	-	N/A
	dimension marking C max: prescribed (mm); measured (mm)	-	N/A
7.1.2	The terminals capable to accept rigid copper conductors of cross-sectional areas (mm ²) as stated in Table 703	-	N/A
7.2	Insulating properties and suitability for insulation	-	N/A
	Creepage distances and clearances of fuse- accessories meet requirements of IEC 60664-1 for overvoltage category III and pollution degree 3	-	N/A
7.7	Pre-arcing I ² t given in Table 7 of IEC 60269-1 and for value lower than 16A in Table 704	-	N/A
7.9	Degree of protection against electric shock of standardized fuse-holder IP not lower than IP2x :	-	N/A

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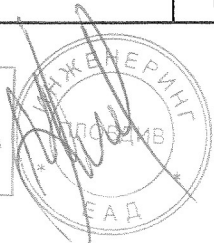


IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

8	TESTS		
	IEC 60269-1 applies with the following supplementary requirements		N/A
8.3.3	Fuse-link mounted on test rig shown in Fig. 705 The points of measurement as specified Figure 705		N/A
8.3.4.1	Dummy fuse-link with dimensions of Fig 701 ...:	-	N/A
	Fuse-holder with dimensions of Fig 702	-	N/A
	Power (W) dissipation of dummy fuse-link as rated acceptable power dissipation given in Fig 702 ..:	-	N/A
8.4.1	Test arrangement of fuse-link given in Figure 705		N/A
8.5.1	Arrangement of the fuse		N/A
	Conductor for connection of fuse-holder have a cross-section appropriate to fuse-holder terminal given in Table703	-	N/A
8.7.4	Verification of overcurrent discrimination		N/A
	For rated current $\geq 16A$ see 8.7.4 IEC 60269-1		N/A
	For rated current $< 16A$ determined from manufacturer's data and verified by 8.7.1 of IEC 60269-1		N/A
8.9	Verification of resistance to heat		N/A
	Fuse-holder with fuse-links having maximum power dissipation are cyclically loaded as pre-treatment ..:	-	N/A
	After cooling to normal temperature breaking capacity tested at I_1 (see 8.5).....:	-	N/A
	Fuse-links with organic material Fuse-holder with fuse-links having maximum power dissipation are cyclically loaded as pre-treatment ...		N/A
	After cooling to normal temperature breaking capacity tested at I_1 and I_5 (see 8.5).....:	-	N/A
8.10	Verification of non-deterioration of contacts		N/A
8.10.1	Arrangement of the fuse		N/A
	Dummy fuse links Figure 701.....:	-	N/A
	rated power dissipation Figure 702	-	N/A
8.10.2	Test method		N/A
	Test current (A) for load period	-	N/A
	Duration (s) of load period	-	N/A

TRF No. IEC60269_2B

ВЯРНО С ОРИГИНАЛА



4

IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

	Duration (s) of no-load period	-	N/A
	Test voltage (V)	-	—
8.10.3	Acceptability of test results		N/A
	Temperature rise after 250 cycles not exceed temperature rise at beginning + 15K		N/A
	Temperature rise after 750 cycles not exceed temperature rise at beginning + 20K		N/A
8.11.1.1	Mechanical strength of fuse-holders		N/A
	Test set-up subjected to temperature rise test at rated current	-	N/A
	fuse-link or fuse-carrier are withdrawn and inserted into fuse-base 100 times	-	—
	All parts are intact and function normally		N/A
	Test set-up subjected to further temperature rise test at rated current (values obtained are not more than 5 K or 15 % above the values from temperature-rise test prior)	-	N/A

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ВЯРНО С ОРИГИНАЛА



60

IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

**FUSE SYSTEM H – FUSES WITH FUSE-LINKS HAVING “gD” AND “gN” CHARACTERISTICS
(CLASS J, CLASS T AND CLASS L TIME DELAY AND NON TIME DELAY FUSE TYPES)**

5	CHARACTERISTICS OF FUSES		N/A
5.2	Rated voltage is 600 V a.c.:	-	N/A
5.3.1	Rated current (A) of the fuse-link in accordance with IEC 60269-1, Fig 801, 802 and Fig 805	-	N/A
5.3.2	Rated current (A) of the fuse-holder in accordance with Fig 803, 804 and 806	-	N/A
5.5	Max. rated power (W) dissipation of the fuse-link given in Fig 801, 802 and Fig 805	-	N/A
	Rated power (W) acceptance of the fuse-holder		N/A
	Rated acceptable power (W) dissipation of the fuse-base not less than max rated power dissipation for the fuse-link of same rating	-	N/A
5.6.1	Time-current zones given in Fig 810, Fig 811, Fig 812, Fig 813, Fig 814 and Fig 815		N/A
	Tolerances on time current characteristics not deviate for more ±10% (for current)		N/A
5.6.2	See Table 801 for “gD” and “gN” fuse-links	-	N/A
5.6.3	For “gD” and “gN” fuse-links the gates given in Table 802	-	N/A
5.7.2	Rated breaking capacity (kA)	-	N/A

6	MARKINGS		N/A
	Markings are legible		N/A
6.1	Fuse-holder marked by:		
	- size.....:	-	N/A
6.2	Fuse-links marked by:		
	- size or reference.....:	-	N/A
	- rated breaking capacity	-	N/A

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IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

7	STANDARD CONDITIONS FOR CONSTRUCTION		N/A
7.1	Mechanical design		N/A
	The dimensions of the fuse-links given in Figure 801 and 802		
	Class J fuse-links (1-600 A) : Fig 801		N/A
	dimension marking a: prescribed (mm); measured (mm)	-	N/A
	dimension marking b: prescribed (mm); measured (mm)	-	N/A
	dimension marking c: prescribed (mm); measured (mm)	-	N/A
	dimension marking d: prescribed (mm); measured (mm)	-	N/A
	dimension marking e min: prescribed (mm); measured (mm)	-	N/A
	dimension marking f: prescribed (mm); measured (mm)	-	N/A
	dimension marking g : prescribed (mm); measured (mm)	-	N/A
	dimension marking h : prescribed (mm); measured (mm)	-	N/A
	Class L fuse-links (700-6000 A) : Fig 802		N/A
	dimension marking a: prescribed (mm); measured (mm)	-	N/A
	dimension marking b max: prescribed (mm); measured (mm)	-	N/A
	dimension marking c: prescribed (mm); measured (mm)	-	N/A
	dimension marking d: prescribed (mm); measured (mm)	-	N/A
	The dimensions of the fuse-base and contacts in tolerances given in Fig. 803 and Fig 804		
	Fuse-base and contacts for Class J fuse-links (1-600A) : Fig 803		N/A
	dimension marking a min: prescribed (mm); measured (mm)	-	N/A
	dimension marking b: prescribed (mm); measured (mm)	-	N/A

TRF No. IEC60269_2B

ВЯРНО С ОРИГИНАЛА

302

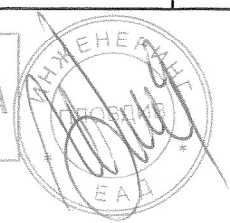


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IEC 60269-2			
Clause	Requirement + Test	Result - Remark	Verdict

	dimension marking c min: prescribed (mm); measured (mm)	-	N/A
	dimension marking d: prescribed (mm); measured (mm)	-	N/A
	dimension marking e min: prescribed (mm); measured (mm)	-	N/A
	dimension marking f min: prescribed (mm); measured (mm)	-	N/A
	dimension marking g max: prescribed (mm); measured (mm)	-	N/A
	dimension marking h : prescribed (mm); measured (mm)	-	N/A
	dimension marking i : prescribed (mm); measured (mm)	-	N/A
	dimension "diameter of stud": prescribed (mm); measured (mm)	-	N/A
	Fuse-base and contacts for Class L fuse-links (700-6000 A) : Fig 804	-	N/A
	dimension marking a: prescribed (mm); measured (mm)	-	N/A
	dimension marking b min: prescribed (mm); measured (mm)	-	N/A
	dimension marking c: prescribed (mm); measured (mm)	-	N/A
	The dimensions of the fuse-links given in Figure 805		
	Class T fuse-links (1-1200 A) : Fig 805		N/A
	dimension marking a: prescribed (mm); measured (mm)	-	N/A
	dimension marking b: prescribed (mm); measured (mm)	-	N/A
	dimension marking c: prescribed (mm); measured (mm)	-	N/A
	dimension marking d: prescribed (mm); measured (mm)	-	N/A
	dimension marking e min: prescribed (mm); measured (mm)	-	N/A
	dimension marking f: prescribed (mm); measured (mm)	-	N/A

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TRF No. IEC60269_2B