



EMC TEST REPORT

EU EMC-DIRECTIVE 2014/30/EU

PROJECT NO.: 96161075

Registration NO.: SP1001GZ1612093

EN 60269-1:2007+A2:2014,

EN 61000-3-2:2014, EN 61000-3-3:2013

FUSE BASE

ZHEJIANG LIAOYUAN ELECTRIC APPARATUS CO.,LTD.

Date of Report: December 12, 2016

Sapo Certification & Testing Laboratory Limited

Web: www.sapo.org.uk

E-mail: sapo@sapo.org.uk



SAPO CERTIFICATION & TESTING LABORATORY

Testing laboratory

Location

SAPO CERTIFICATION & TESTING LABORATORY LIMITED

CHANCERY HOUSE, CHANCERY LANE, LONDON, UNITED KINGDOM, WC2A 1QU

Web: www.sapo.org.uk E-mail: sapo@sapo.org.uk

Details of applicant

Name : ZHEJIANG LIAOYUAN ELECTRIC APPARATUS CO., LTD.
ADD : NO.41-43, CHANGCHENG ROAD, LIUSHI, YUEQING,
ZHEJIANG, CHINA

Details of manufacturer

Name : ZHEJIANG LIAOYUAN ELECTRIC APPARATUS CO., LTD.
ADD : NO.41-43, CHANGCHENG ROAD, LIUSHI, YUEQING,
ZHEJIANG, CHINA

Test item

Description of test item : FUSE BASE
Type identification : RT18-63X
Specification : Ue:380;Ui:600V
63A

Test Standards

EN 60269-1:2007+A2:2014,
EN 61000-3-2:2014, EN 61000-3-3:2013

AUDIT INFORMATION:		
Description of Test	Standard No.	EN 60269-1:2007+A2:2014, EN 61000-3-2:2014, EN 61000-3-3:2013
Test Engineer by	Michael	Signature <i>Michael</i>
Reviewer by	Jack .H	Signature <i>Jack</i>
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EN 60269-1:2007+A2:2014,
EN 61000-3-2:2014, EN 61000-3-3:2013



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Test item particulars -- FUSE BASE

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 : 2016-12-05
Date(s) of performance of tests : 2016-12-05~2016-12-12

General remarks:

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.

Test product information:

Type identification : RT18-63X
Specification : **Ue:380;Ui:600V**
63A

Test Result:

Pass

FOR FURTHER DETAILS, PLEASE REFER TO THE FOLLOWING PAGES



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Electro - Magnetic Compatibility

Test - Result

☒ 1st test

☐ test after modification

☐ production test

Test Emission / Immunity			Done	Test passed	Test failed
Emission	Emission requirements	EN 60269-1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Emission	Conducted Emission	EN 60269-1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emission	Radiated Emission	EN 60269-1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Harmonics	Current Harmonics	EN61000-3-2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Flicker	Voltage Fluctuations	EN61000-3-3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Immunity	Immunity requirements	EN 60269-1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ESD	Radiated Immunity	EN61000-4-2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
RF-Field	Radiated Immunity	EN61000-4-3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Burst	Electrical Fast Transients	EN61000-4-4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Surge	Transients comm.&diff.mode	EN61000-4-5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
RF-com.mode	RF continues conducted	EN61000-4-6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Magn.-Field	Magn.-Field Immunity	EN61000-4-8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V-dips	Voltage dips and Interruption	EN61000-4-11	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comment : The equipment under test was a sample device without active electronic elements (IC's)

Remarks : **Please take running production control**

Sapo can carry out running production test for you.

EN 60269-1:2007+A2:2014,
EN 61000-3-2:2014, EN 61000-3-3:2013



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Test equipment utilized

Electro - Magnetic Compatibility

Radiated Emission Test Site: 966

966 Chamber Test Site G

No.	EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL. DUE
01	EMI Test Receiver	R&S	ESCI	100005	18/07/2016	17/07/2017
02	Amplifier	HP	HP8447E	2945A02715	18/07/2016	17/07/2017
03	Antenna	Sunol Sciences Corporation	JB3	A021907	18/07/2016	17/07/2017
04	Cable	TIME MICROWAVE	LMR-400	N-TYPE04	18/07/2016	17/07/2017
05	System-Cont roller	CC-C-1F	MF7802080	N/A	N/A	N/A
06	Turn Table	EMCO	2081-1.21	N/A	N/A	N/A
07	Antenna Tower	CT	N/A	N/A	N/A	N/A
08	DECOUPLING NETWORK	FISCHER CUSTOM	F-201-DCN-5 -6MM	12	18/07/2016	17/07/2017

Conducted Emission Test Site: 843

Conducted Emission Test Site G

No.	EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL. DUE
09	EMI Test Receiver	R&S	ESCI	100005	18/07/2016	17/07/2017
10	LISN	AFJ	LS16	16010222119	18/07/2016	17/07/2017
11	LISN	messtec	AN3016	04/10040	18/07/2016	17/07/2017

Power Disturbance Test Site: 843 Chamber

No.	EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL. DUE
12	EMI Test Receiver	R&S	ESCS30	100343	18/07/2016	17/07/2017
13	ABSORBING CLAMP	FCC	F-201-23mm	160	18/07/2016	17/07/2017
14	CABLE	TIME MICROWAVE	LMR-400	N-TYPE04	18/07/2016	17/07/2017

Power Harmonic & Voltage Fluctuation/Flicker Measurement (61000-3-2&-3-3)

No.	EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL. DUE
15	Harmonic & Flicker Tester	SCHAFFNER	NSG 1007-5-400	54789	18/07/2016	17/07/2017

EN 60269-1:2007+A2:2014,
EN 61000-3-2:2014, EN 61000-3-3:2013



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EN 61000-3-2 & EN 61000-3-3
(POWER HARMONICS & VOLTAGE FLUCTUATION / FLICKER)

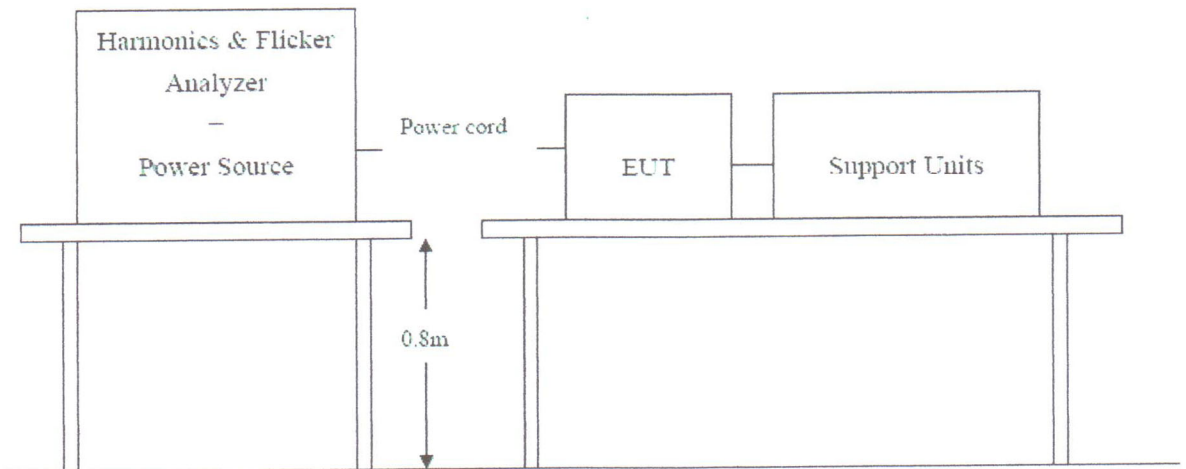
POWER HARMONICS MEASUREMENT

Port : FUSE BASE (RT18-63X)
Basic Standard : EN 61000-3-2:2014
Limits : CLASS B
Temperature : 25°C
Humidity : 55%

VOLTAGE FLUCTUATION/FLICKER MEASUREMENT

Port : FUSE BASE (RT18-63X)
Basic Standard : EN 61000-3-3: EN 61000-3-3:2013
Limits : § 5 of EN 61000-3-3:2013
Temperature : 25°C
Humidity : 55%

Block Diagram of Test Setup:





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Result:

Harmonics - Class-B per Ed. 2.2 (2016-12) (Run time)

EUT: FUSE BASE (RT18-63X)

Test category: Class-B per Ed. 2.2 (2016-12) (European limits) Test Margin: 100

Test date: 2016-12-10

Start time: 14:15:01 End time: 15:17:06

Test duration (min): 2.5

Comment: RT18-63X

Customer: ZHEJIANG LIAOYUAN ELECTRIC APPARATUS CO., LTD.

Test Result: **Pass**

Source qualification: Normal

Current & voltage waveforms

Harmonics and Class B limit line European Limits

Test result: Pass Worst harmonic was #15 with 4.84% of the limit.



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CURRENT TEST RESULT SUMMARY (RUN TIME)

EUT: FUSE BASE (RT18-63X)

Test category: Class-A per Ed. 2.2 (2016-12) (European limits)

Test date: 2016-12-10 Start time: 15:15:01 End time: 15:17:06

Test duration (min): 2.5 Data file name: H-1601301.vogz_data

Comment: RT18-63X

Customer: ZHEJIANG LIAOYUAN ELECTRIC APPARATUS CO.,LTD.

Test Result: **Pass** Source qualification: Normal

THC(A): 0.06 I-THD(%): 200.08 POHC(A): 0.008 POHC Limit(A): 0.362

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.001	1.210	0.1	0.001	1.450	0.08	Pass

VOLTAGE SOURCE VERIFICATION DATA (RUN TIME)

EUT: FUSE BASE (RT18-63X)

Test category: Class-A per Ed. 2.2 (2016-12) (European limits)

Test date: **2016-12-10** Start time: 14:15:01 End time: 15:17:06

Test duration (min): 2.5 Data file name: H-1501214.vogz_data

Comment: RT18-63X

Customer: ZHEJIANG LIAOYUAN ELECTRIC APPARATUS CO.,LTD.

Test Result: **Pass** Source qualification: Normal

Highest parameter values during test:

Voltage (Vrms): 380.19 Frequency(Hz): 50.00

I_Peak (Amps): 63.024 I_RMS (Amps): 63.023

I_Fund (Amps): 63.058 Crest Factor: 63.075

Power (Watts): 23700.6W Power Factor: 0.99

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.241	0.454	50.59	OK



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FLICKER TEST SUMMARY PER EN61000-3-3 (RUN TIME)

EUT: **FUSE BASE** (RT18-63X)

Test category: All parameters (European limits)

Test date: 2016-12-10 Start time: 3:47:52 PM End time: 3:58:02 PM

Test duration (min): 10

Comment: RT18-63X

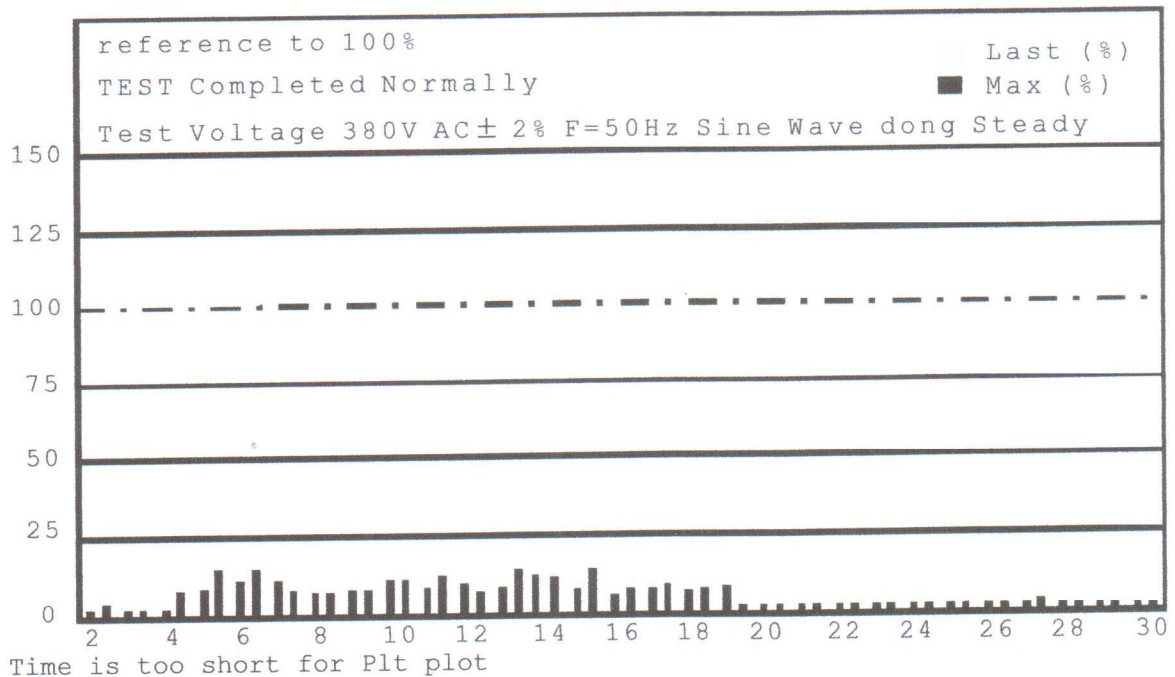
Customer: ZHEJIANG LIAOYUAN ELECTRIC APPARATUS CO., LTD.

Test Result: **Pass**

Status: Test Completed

PSTI AND LIMIT LINE

EUROPEAN LIMITS



Parameter values recorded during the test:

Vrms at the end of test (Volt): 380.84

Highest dt (%): 0.00

Time(mS) > dt: 0.0

Highest dc (%): 0.00

Highest dmax (%): 0.00

Highest Pst (10 min. period): 0.001

Highest Plt (2 hr. period): 0.001

Test limit (%): 3.30 Pass

Test limit (mS): 500.0 Pass

Test limit (%): 3.30 Pass

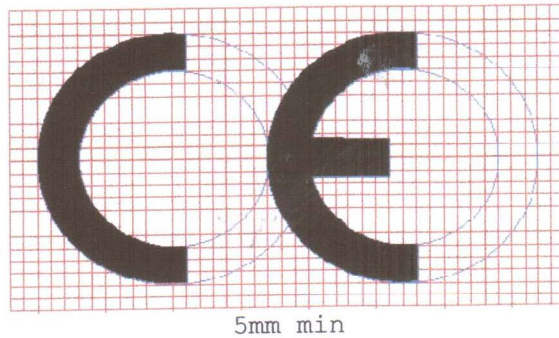
Test limit (%): 4.00 Pass

Test limit: 1.000 Pass

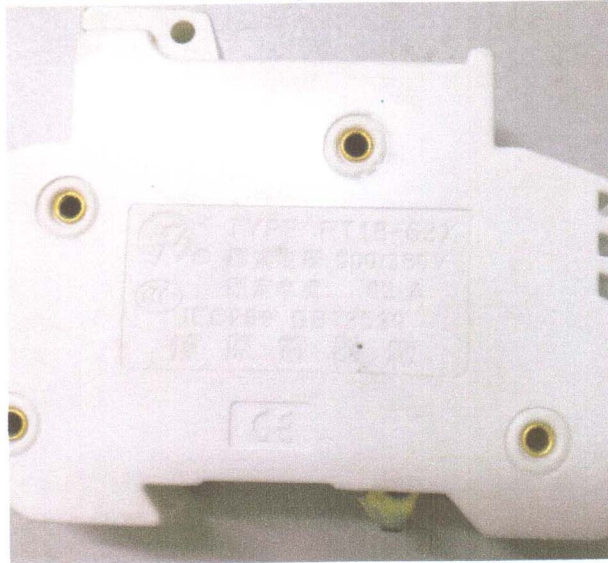
Test limit: 0.650 Pass

PRODUCT LABELING

CE Mark Label Specification



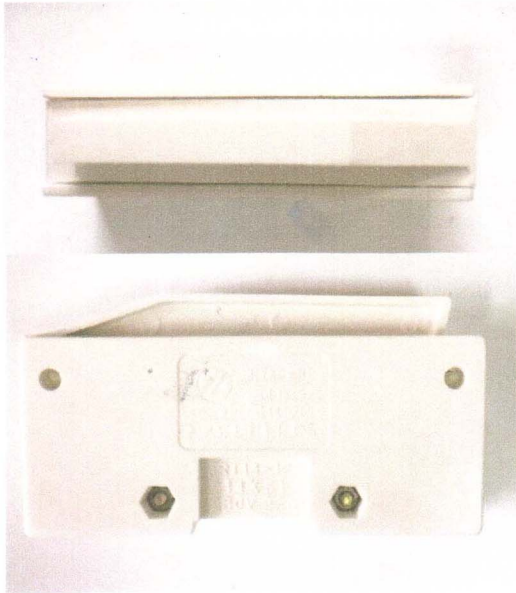
Specifications: Text is Black or white in color and is left justified. Labels are printed in indelible ink on permanent adhesive backing or silk-screened onto the EUT or shall be affixed at a conspicuous location on the EUT.



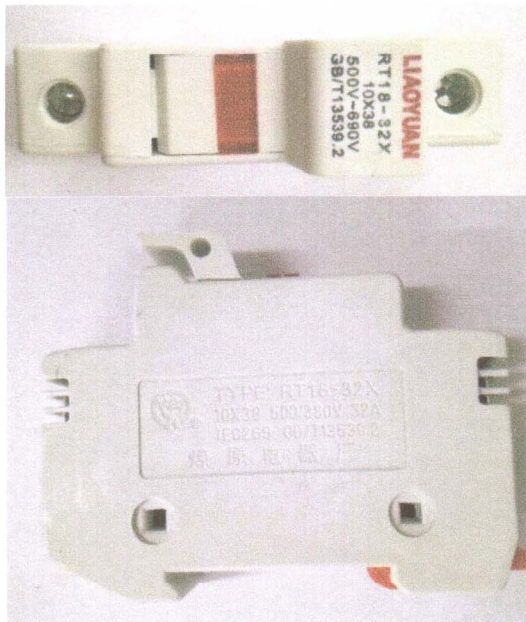


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EUT PHOTOGRAPHS
RT14-32 14*51



RT18-32X 10*38



EN 60269-1:2007+A2:2014,
EN 61000-3-2:2014, EN 61000-3-3:2013

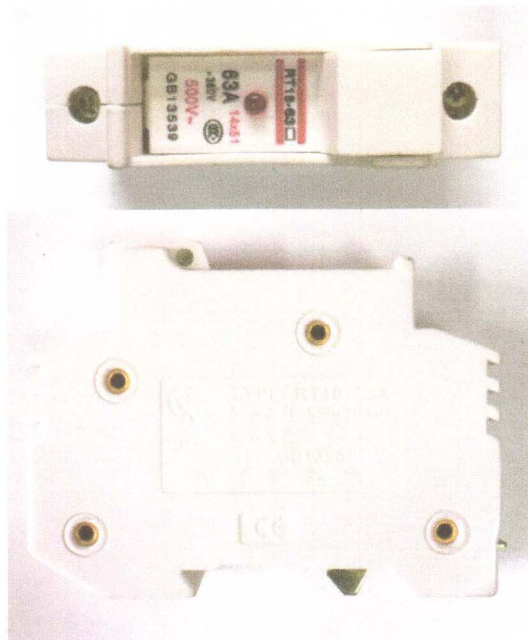


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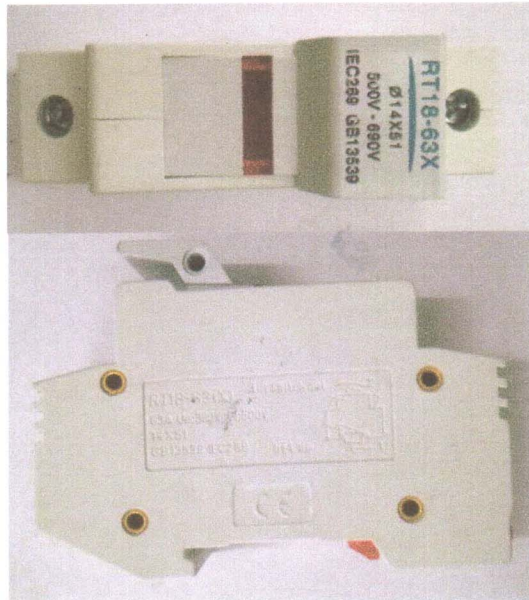
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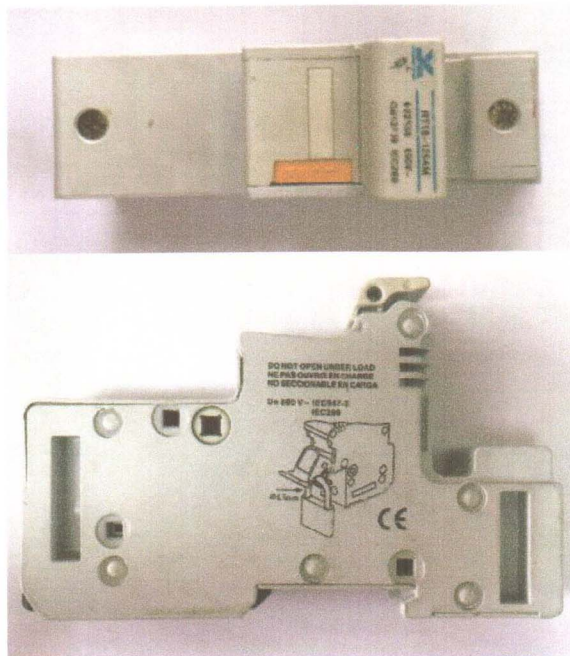
RT18-63X 14*51



RT18-63X 14*51



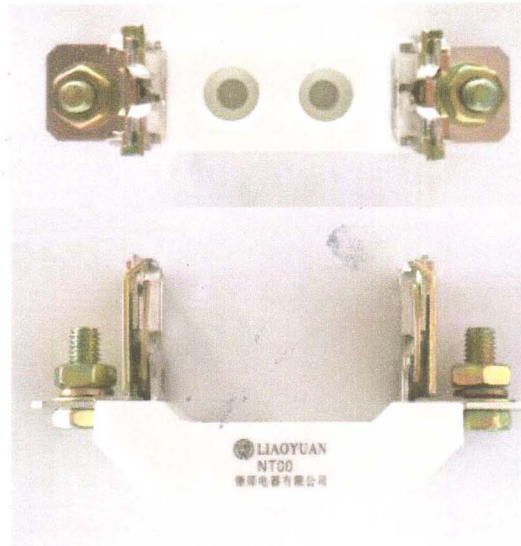
RT18-125 22*58



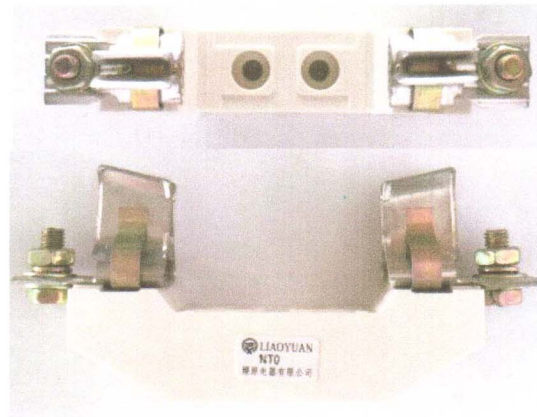


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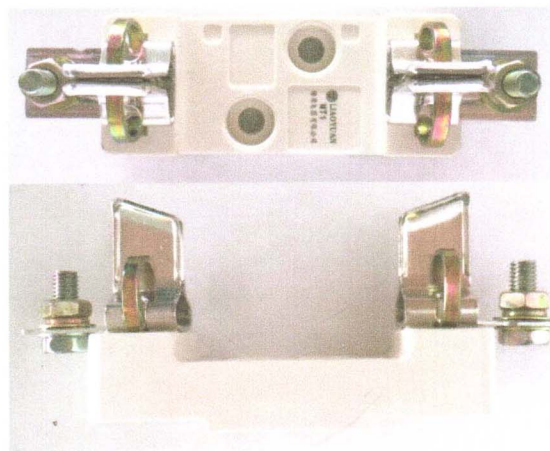
NT00 (NH00) 30-160A



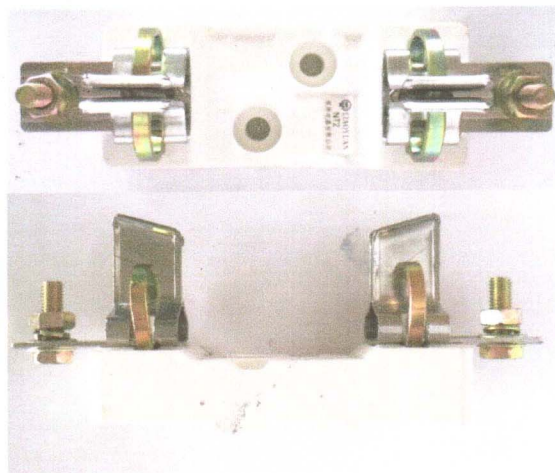
NT0 (NH0) 60-160A



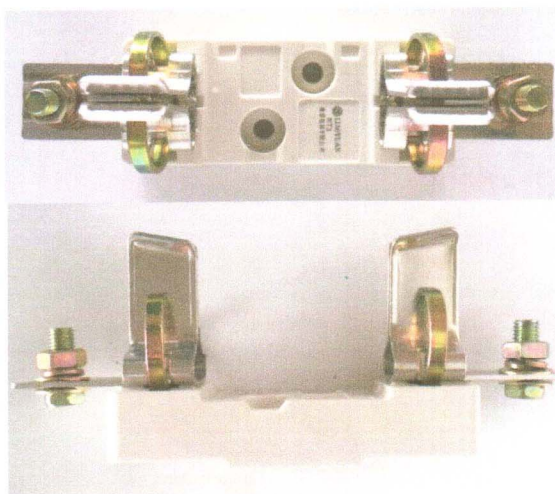
NT1 (NH1) 63-250A



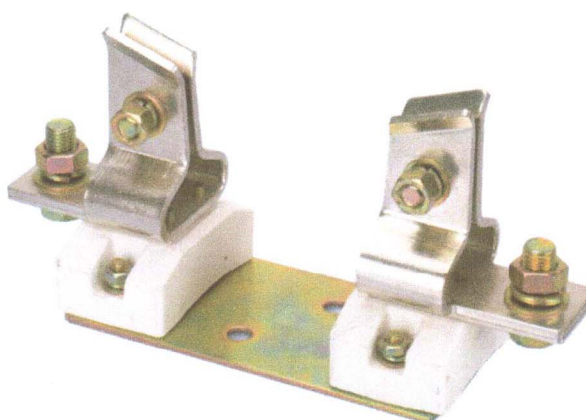
NT2 (NH2) 200-400A



NT3 (NH3) 400-630A



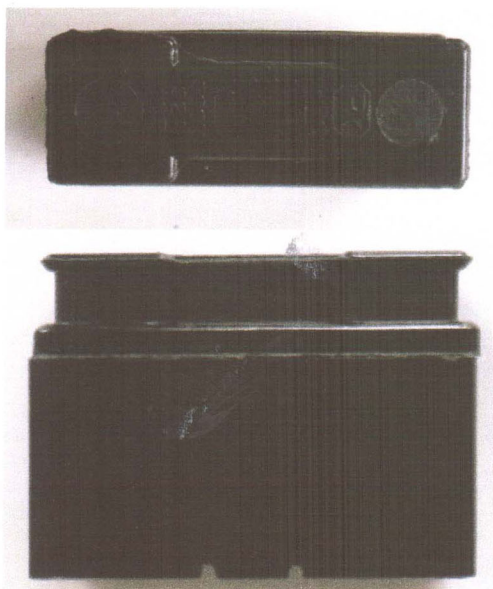
NT4 (NH4) 630-1000A



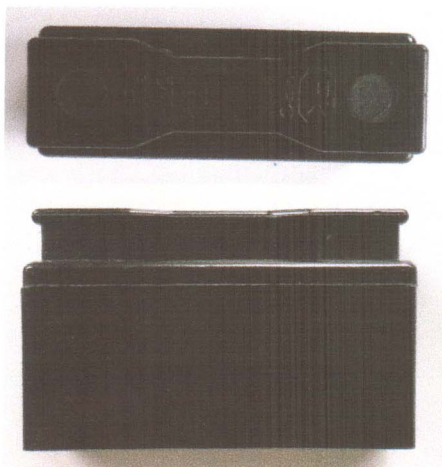


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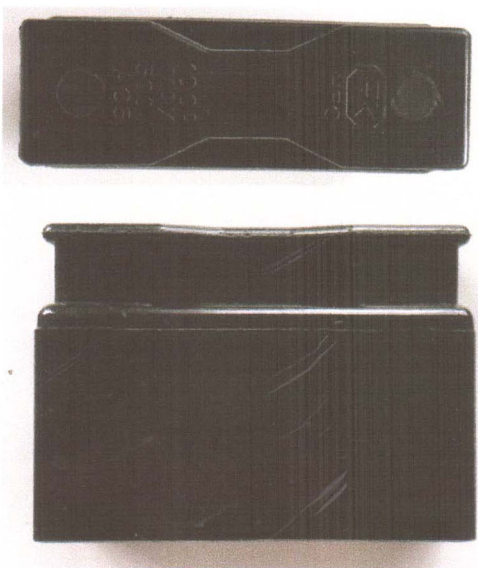
HRC-32



HRC-63

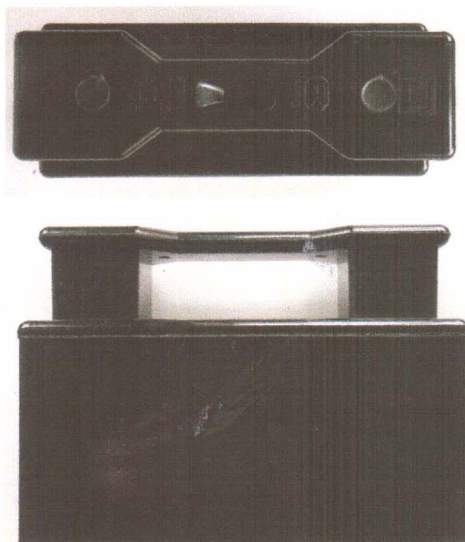


HRC-100

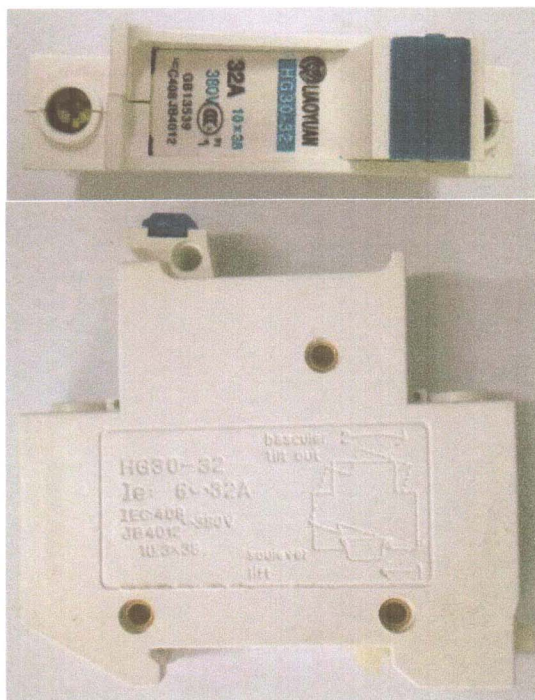


EN 60269-1:2007+A2:2014,
EN 61000-3-2:2014, EN 61000-3-3:2013

HRC-200



HG30-32





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DECLARATION

1. The test is sub-contracted to a laboratory which complies with the requirement of IOS/IEC 17025:2005
2. The results only related to the items tested.
3. This report shall not be published as advertisement without the approval of SAPO.
4. This report shall not be copied partly without the written approval of SAPO.

** End of Report **