

Technical Report No.: 704102147511-02

Date: 2024-02-02

Client:	Name:	Shanghai Liangxin Electrical Co., Ltd
	Address:	No.2000 South ShenJiang Road Pudong New District 200137 Shanghai PEOPLE'S REPUBLIC OF CHINA
	Contact person:	N/A
Manufacturer:	Name:	Same as client
	Address:	Same as client
	Contact person:	N/A
Factory:	Name:	Liangxin Electrical (Haiyan) Co.,Ltd.
	Address:	No.1799 Changqian Road, Xitangqiao Street, Haiyan County 314399 Jiaxing City, Zhejiang Province People's Republic of China
	Contact person:	N/A
Test object:	Product:	Switch-disconnectors, Disconnecter
	Model:	NDG3A-2000/3, NDG3A-2000/4, NDG3A-1800/3, NDG3A-1800/4, NDG3A-1600/3, NDG3A-1600/4, NDG3A-3200Z/2
	Trade mark:	N/A
Test specification:	EN IEC 60947-1:2021, EN IEC 60947-3:2021	
Purpose of examination:	<ul style="list-style-type: none"> • <input type="checkbox"/> Testing for compliance with specified requirements to assess conformity with the German Product Safety Act – ProdSG (27 July 2021) • <input checked="" type="checkbox"/> Testing for compliance with specified requirements to assess conformity with the essential safety and health requirements of the following European Directives: <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Low Voltage Directive 2014/35/EU <input type="checkbox"/> Machinery Directive 2006/42/EC <input type="checkbox"/> Machinery Regulation (EU) 2023/1230 <input type="checkbox"/> General Product Safety Directive 2001/95/EC <input type="checkbox"/> General Product Safety Regulation (EU)2023/988 <input type="checkbox"/> Radio Equipment Directive 2014/53/EU Art. 3.1(a) <input type="checkbox"/> Battery Regulation (EU) 2023/1542 • Testing and evaluation according to the test specification 	

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No. 151 Heng Tong Road Shanghai 200070



Tel: +86 21 6141 0123

Test result: The test results show that the presented product is in compliance with the above listed test specifications.

Any use for advertising purposes must be granted in writing. This technical report may only be quoted in full. This report is the result of a single examination of the object in question. It does not imply a general statement regarding the quality of products from regular production. For further details please see testing and certification regulation, chapter A-3.4.

1. Description of the test object

1.1 Picture(s)



See photo documentation

1.2 Function

Manufacturer's specification for intended use:

The switch-disconnectors are applicable to AC,DC electric systems, the rated voltage AC380V/400V/415V, AC660V/690V,DC500V and the rated current 1600A, 1250A, 1000A, 500A, 1800A, 2000A which are used for power supply and as isolating circuits or infrequent make-break operation.

The disconnector is applicable to DC electric systems, the rated voltage DC1500V and the rated current 3200A which is used in the open position, complies with the requirements specified for the isolating function.

1.3 Consideration of the foreseeable use

- ☐ Not applicable
- ☒ Covered through the applied standard
- ☐ Covered by the following comment*
- ☐ Covered by attached risk analysis

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*

1.4 Technical Data

Model	NDG3A-2000/3, NDG3A-2000/4, NDG3A-1800/3, NDG3A-1800/4, NDG3A-1600/3, NDG3A-1600/4, NDG3A-3200Z/2
Rated Voltage (V)	Refer to table 1
Rated Frequency (Hz)	50/60 Hz for AC
Rated Current (A)	Refer to table 1
Protection Class	<input type="checkbox"/> Class I; <input type="checkbox"/> Class II; <input type="checkbox"/> Class III
Degree of Protection	IP 20 (on operating surface) <input checked="" type="checkbox"/> Stationary
Construction	<input type="checkbox"/> Portable <input type="checkbox"/> Hand-held <input type="checkbox"/> Open-frame <input type="checkbox"/> Non detachable cord
Supply connection	<input type="checkbox"/> Permanent connection to fixed wiring <input type="checkbox"/> Appliance inlet <input checked="" type="checkbox"/> continuous operation;
Operation mode	<input type="checkbox"/> Intermittent operation; <input type="checkbox"/> Short time operation;
Rated insulation voltage (Ui):	Refer to table 2
Rated impulse withstand voltage (Uimp):	12kV
Conventional free air thermal current (Ith):	Refer to table 2
Rated short-time withstand current (Icw):	Refer to table 2
Rated short-circuit making capacity (Icm):	Refer to table 2
Rated conditional short-circuit current (Iq)	Refer to table 2
Utilization Category:	Refer to table 1
Number of poles:	3P, 4P, 4P appearance (Disconnecter only for 4P appearance)

2. Order

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No. 151 Heng Tong Road Shanghai 200070

2.1 Date of Purchase Order, Customer's Reference

2024-01-24

2.2 Test Sample(s)

- Reception date(s): 2024-01-09
- Location(s) of reception: Suzhou Electrical Apparatus Science Research Institute Co., Ltd.(EETI)/ No.7 Yonghe Street, Binhe Road, New District, Suzhou, China
- Condition of test sample(s): Good

2.3 Testing

- Testing date(s): 2024-01-09 to 2024-01-15
- Location(s) of testing: Suzhou Electrical Apparatus Science Research Institute Co., Ltd.(EETI)/ No.7 Yonghe Street, Binhe Road, New District, Suzhou, China

2.4 Points of Non-Compliance or Exceptions of the Test Procedure

- None

3. Test Results

☒ Decision rule according to ILAC-G8:09/2019 clause 4.2.1 Binary statement for simple acceptance rule or IEC Guide 115:2023, clause 4.3.3 Simple acceptance was applied.

☐ Decision rule according to customer's requirements was applied. It is:

☐ Decision rule according to ILAC-G8:09/2019 clause 4.2.2 Binary statement with guard band - guard band length = 95 % extended measurement uncertainty, was applied.

☐ Decision rule (based on ILAC-G8:09/2019 clause 4.2.3 Non-binary statement with guard band, guard band length = 95 % extended measurement uncertainty) for an upper specification limit (A lower limit or specification with an up-per and a lower limit is treated similarly.):

- Compliance with the requirement: If a specification limit is not breached by a measurement result plus the expanded uncertainty with a 95% coverage probability, then compliance with the specification will be stated (e. g. Pass).
- Non-compliance with the requirement: If a specification limit is exceeded by the measurement result minus the expanded uncertainty with a 95% coverage probability, then non-compliance with the specification will be stated (e. g. Fail).

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- Inconclusive result: If a measurement result plus/minus the expanded uncertainty with a 95 % coverage probability overlaps the limit it will be stated that it is not possible to state compliance or non-compliance.

☐ There are no statements to conformity or no results with measurand stated in this report, no decision rule has been applied.

3.1 Positive Test Results

Test specification(s)	Report no. / Rev. No.	Date	Remark
Electrical safety:	03601-A-23CB0179-S	2024-01-15	
PAH:	704102147511-02	2024-01-29	

According to the endorsement notice on relevant standard, the text of international standard EN IEC 60947-1:2021, EN IEC 60947-3:2021 was approved by CENELEC as a European standard without any modification.

The test report is based on CB report issued by CQC, details see below:

Test certificate No.:	CN59931-M1
Test report No.:	03601-A-23CB0179-S
Test laboratory:	Suzhou Electrical Apparatus Science Research Institute Co., Ltd.(EETI)/No.7 Yonghe Street, Binhe Road, New District, Suzhou,China

3.2 Points of Non-Compliance according to the test specification

☒ None

4. Test History

Report no. / Rev. No.	Date	History
704102147511-00	2021-07-30	Original report.
704102147511-01	2023-06-06	Standard update
704102147511-02	2024-02-02	Add product name, model, parameter, type explanation, removed suppliers of contacts, change the name and address of the production enterprise.

5. Remarks

5.1 General

The user manual has been examined according to the minimum requirements described in the product standard. The manufacturer is responsible for the accuracy of further particulars as well as of the composition and layout.

5.2 Factory surveillance cycle

Your production facility is currently on the following surveillance cycle.

- ☒ Annual (12 month)
- ☐ Bi-Annual (6 month)
- ☐ Quarterly (3 month)
- ☐

5.3 Additional information for routine tests to be performed by the factory(ies)

Routine tests for electrical appliances / equipment:

Routine test requirements for production are described in EN IEC 60947-1:2021, EN IEC 60947-3:2021

☒ Required

☐ Not Required

Reason for non-requirement:

☐ Class III product

☐ Other:

Test Details:

Test Points:

Test Values / Limit(s):

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<input type="checkbox"/> Dielectric Strength	L/N – body & Earthing contact	2000 Vac, 2s
<input type="checkbox"/> Ground Continuity	Earthing terminal- mental enclosure & Earthing contact	25A, 2s, <0.05 Ohm (Ω)
<input type="checkbox"/> Insulation Resistance	BI: L/N – Chassis	Vdc R > 2 MOhm (M Ω)
	RI: L/N – Secondary	Vdc
<input type="checkbox"/> Leakage Current	Ground - PE	mA
<input type="checkbox"/> Touch Current		mA
<input type="checkbox"/> Polarity		
<input type="checkbox"/> Other:		
<input checked="" type="checkbox"/> Mechanical operation	Clause 9.1.3.2	The correct mechanical operation of the equipment by five closing and opening operations.
<input checked="" type="checkbox"/> Dielectric Strength	Clause 9.1.3.3	2Ue with a minimum of 1000V RMS,60s

5.4 The co-license certificate application is based on the following main license certificate: N/A

Certificate No.: xxx xx xx xxxxx xx;
 Report No.: xx.xxx.xx.xxxxx.xx
 License holder: xxx
 Model No.: xxx (for model xxx in co-license)

5.5 When the product is placed on the market, it must be accompanied with safety Instructions written in official language of the country. The instructions shall give information regarding safe operation, installation and maintenance

5.6 When measurement results are close to limit value of specified requirement, manufacturer shall take actions during the production process to keep the limit, especially if the result of a measurement is in a bandwidth within $\pm 10\%$ to the limit value.

5.7 According to the German product safety law (ProdSG), the name and contact address of manufacturer or if he is not based in the European Economic Area, an EU-based authorized representative or importer shall be affixed to the product or, where that is not possible, to its packaging before the product is placed on the market;

For EU directives and regulations which have been harmonized with (EU) 2019/1020 in its Annex I, the name, registered trade name or registered trade mark, and contact details, including the postal address of the economic operator (EU manufacturer, EU importer, EU authorised representative, or EU fulfilment service provider where no other economic operator as mentioned



in the first 3 options) shall be indicated on the product or on its packing, the parcel or an accompanying document.

- 5.8** The economic operator has to ensure the appliance placing on the EU market conforms to the applicable EU directives and regulations which provide the affixing of the CE marking, such as LVD, EMC, RoHS, ErP, and so on.
- 5.9** The economic operator have to ensure the appliance contain no toxic substances in contact with food and no toxic hazard can be caused by the appliance, and conforms to EU Regulation (EC) 1935/2004 and German Food and Commodities Law, LFGB §30 & 31
- 5.10** All applicable hazards from EU directive LVD 2014/35/EU are covered by harmonized standard.

6. Documentation

File	File name	Date
Data form (CDF):	704102147511-02	2024-01-29
Photo documentation:	704102147511-02	2024-01-29

7. Summary

"The test specification(s) is (are) met"

TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch
TÜV SÜD Group

Tested by: Yi Wang, Project Handler

printed name, function & signature

Approved by: Chiyi ZHUANG, Designated Reviewer

printed name, function & signature



--- End of Report ---

Appendix:

Table 1

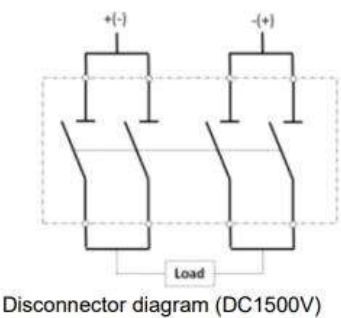
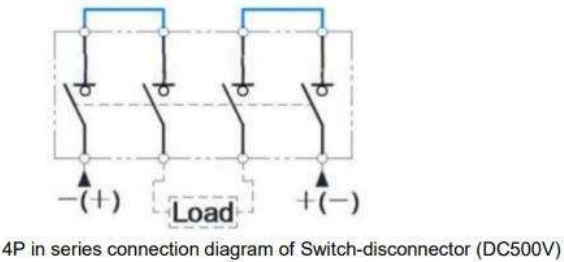
Model	Ue	Ie	Utilization Category	Name of product
NDG3A-1600/3, NDG3A-1600/4	AC380V/400V/415V	1600A	AC-21A, AC-21B, AC-22A, AC-22B	Switch- disconnectors
		1250A	AC-23A, AC-23B	
	AC660V/690V	1000A	AC-21A, AC-21B, AC-22A, AC-22B	
		500A	AC-23A, AC-23B	
NDG3A-1600/4	DC500V	1250A	DC-21A, DC-21B, DC-22A, DC-22B, DC-23A,	
			DC-23B	
NDG3A-1800/3, NDG3A-1800/4	AC380V/400V/415V	1800A	AC-21A, AC-21B, AC-22A, AC-22B	
		1250A	AC-23A, AC-23B	
	AC660V/690V	1000A	AC-21A, AC-21B, AC-22A, AC-22B	
		500A	AC-23A, AC-23B	
NDG3A-1800/4	DC500V	1250A	DC-21A, DC-21B, DC-22A, DC-22B, DC-23A,	
			DC-23B	
NDG3A-2000/3, NDG3A-2000/4	AC380V/400V/415V	2000A	AC-21A, AC-21B	
NDG3A-3200Z/2	DC1500V	3200A	DC-20A, DC-20B	Disconnecter



Table 2

Model	Ue	Icw	Icm	Iq	Ui	Ith
NDG3A-1600/3, NDG3A-1600/4	AC380V/400V/415V	50kA/1s	75kA	100kA	1000V	2000A
	AC660V/690V	35kA/1s	42kA	/		
NDG3A-1600/4	DC500V	15kA/1s	15kA	/		
NDG3A-1800/3, NDG3A-1800/4	AC380V/400V/415V	50kA/1s	75kA	100kA		
	AC660V/690V	35kA/1s	42kA	/		
NDG3A-1800/4	DC500V	15kA/1s	15kA	/		
NDG3A-2000/3, NDG3A-2000/4	AC380V/400V/415V	50kA/1s	75kA	100kA		
NDG3A-3200Z/2	DC1500V	50kA/1s	/	150kA	1500V	3200A

DC connection method:



IEC

IECEE



TM

Ref. Certif. No.

CN59931-M1

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT
(IECEE) CB SCHEME

CB TEST CERTIFICATE

Product

Switch-disconnector, Disconnector

Name and address of the applicant

Shanghai Liangxin Electrical Co.,Ltd.
No.2000,Shenjiang South Road, Pudong New District, Shanghai City,
P.R.China

Name and address of the manufacturer

Shanghai Liangxin Electrical Co.,Ltd.
No.2000,Shenjiang South Road, Pudong New District, Shanghai City,
P.R.China

Name and address of the factory

Note: When more than one factory, please report on page 2

Liangxin Electrical (Haiyan) Co.,Ltd.
No.1799 Changqian Road, Xitangqiao Street, Haiyan County, Jiaxing
City, Zhejiang Province, P.R.China

Ratings and principal characteristics

See the Appendix

Trademark / Brand (if any)

Nader

Customer's Testing Facility (CTF) Stage used

N/A

Model / Type Ref.

NDG3A-2000,NDG3A-1800,NDG3A-1600,NDG3A-3200Z;

Additional information (if necessary may also be reported on page 2)

Original CB certificate No. is CN59931, dated 2023-05-23. The
issuance of the M1 certificate is to change parameters.A sample of the product was tested and found
to be in conformity with

IEC 60947-1:2020;IEC 60947-3:2020

As shown in the Test Report Ref. No. which
forms part of this Certificate

03601-A-23CB0179-S

This CB Test Certificate is issued by the National Certification Body

CHINA QUALITY CERTIFICATION CENTRE

Section 9, No. 188 Nansihuan Xilu, Beijing 100070 P. R. China

Tel: +86-10-83886666 Fax: +86-10-83886282

website: <http://www.cqc.com.cn>

Date: Jan.18,2024

Signature:

谢肇煦

Xie ZhaoXu

CB 0075058

NDG3A-2000,NDG3A-1800,NDG3A-1600,NDG3A-3200Z, among them:

Switch-disconnector: NDG3A-2000,NDG3A-1800,NDG3A-1600,

Disconnector: NDG3A-3200Z

Ui: Switch-disconnector:1000V; Disconnector:1500V;Uimp:12kV;

Ith: Switch-disconnector:2000A; Disconnector:3200A;

Ue:AC380/400/415V,AC660/690V, DC500V (4P appearance,4P in series) ,DC1500V
(Disconnector);

NDG3A-1600/3, NDG3A-1600/4:

Ue:AC380V/400V/415V;

Ie:1600A(AC-21A,AC-21B,AC-22A,AC-22B),1250A(AC-23A,AC-23B);

Ue:AC660V/690V;Ie:1000A(AC-21A,AC-21B,AC-22A,AC-22B),500A(AC-23A,AC-23B);

Ue:DC500V(4P appearance, 4P in series);

Ie:1250A(DC-21A,DC-21B,DC-22A,DC-22B,DC-23A,DC-23B);

NDG3A-1800/3, NDG3A-1800/4:

Ue:AC380V/400V/415V;

Ie:1800A(AC-21A,AC-21B,AC-22A,AC-22B),1250A(AC-23A,AC-23B);

Ue:AC660V/690V;Ie:1000A(AC-21A,AC-21B,AC-22A,AC-22B),500A(AC-23A,AC-23B);

Ue:DC500V(4P appearance, 4P in series);

Ie:1250A(DC-21A,DC-21B,DC-22A,DC-22B,DC-23A,DC-23B);

NDG3A-2000/3, NDG3A-2000/4:

Ue:AC380V/400V/415V;Ie:2000A(AC-21A,AC-21B);

NDG3A-3200Z: Ie:DC-20A,DC-20B:3200A(DC1500V, 2P product, 4P appearance) ;

Icw: Switch-disconnector:35kA/1s(AC660V/690V),

50kA/1s(AC380V/400V/415V);15kA/1s(DC500V);

Disconnector:50kA/1s(DC1500V) ;

Icm(peak): 42kA(AC660V/690V), 75kA(AC380V/400V/415V); 15kA(DC500V);

Iq: Switch-disconnector:100kA(AC380V/400V/415V); Disconnector: 150kA(DC1500V);

Utilization category:

Switch-disconnector:AC-21A,AC-21B,AC-22A,AC-22B,AC-23A,AC-23B,

DC-21A,DC-21B,DC-22A,DC-22B,DC-23A,DC-23B;

Disconnector:DC-20A, DC-20B;

Page 1 of 2

Additional information (if necessary)

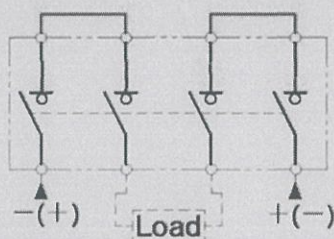
Date: Jan.18,2024

Signature:

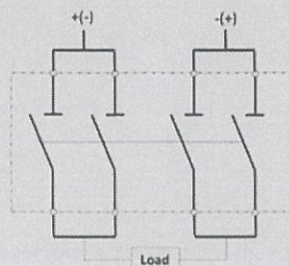
谢肇煦

Xie ZhaoXu

Number of poles:3P,4P (Disconnecter only 4P appearance) ; Rated frequency:50/60Hz;
Degree of protection:IP20(Only Operation Surface);
DC connection method:



4P in series connection diagram of Switch-disconnector (DC500V)



Disconnecter diagram (DC1500V)

Additional information (if necessary)

Date: Jan.18,2024

Signature:

谢肇旭

Xie ZhaoXu



Test Report issued under the responsibility of:



TEST REPORT

IEC 60947-3

Low-voltage switchgear and controlgear Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units

Report Number..... : 03601-A-23CB0179-S

Date of issue : 2024-01-15

Total number of pages : 27

Name of Testing Laboratory
preparing the Report : Suzhou Electrical Apparatus Science Research Institute Co., Ltd.
(EETI)

Applicant's name : Shanghai Liangxin Electrical Co., Ltd.

Address : No. 2000, Shenjiang South Road, Pudong New District, Shanghai
City, P.R.China.

Test specification:

Standard : IEC 60947-3:2020 in conjunction with IEC 60947-1:2020

Test procedure..... : CB-Scheme

Non-standard test method..... : N/A

TRF template used..... : IECEE OD-2020-F1:2020, Ed.1.3

Test Report Form No. : IEC60947_3G

Test Report Form(s) Originator.... : LCIE

Master TRF : Dated 2020-07-24

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

General disclaimer:

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 CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test item description :	Switch-disconnector, Disconnector	
Trade Mark(s)	Nader	
Manufacturer	Shanghai Liangxin Electrical Co., Ltd. No. 2000, Shenjiang South Road, Pudong New District, Shanghai City, P.R.China.	
Model/Type reference	NDG3A-2000,NDG3A-1800,NDG3A-1600,NDG3A-3200Z	
Ratings	See page 7	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input checked="" type="checkbox"/> CB Testing Laboratory:	Suzhou Electrical Apparatus Science Research Institute Co., Ltd.(EETI)	
Testing location/ address	No.7 Yonghe Street, Binhe Road, New District, Suzhou, China.	
Tested by (name, function, signature)	Fang Gang (Team leader)	
Approved by (name, function, signature) ...	Sun Aqin(Supervisor)	
<input type="checkbox"/> Testing procedure: CTF Stage 1:		
Testing location/ address		
Tested by (name, function, signature)		
Approved by (name, function, signature) ...		
<input type="checkbox"/> Testing procedure: CTF Stage 2:		
Testing location/ address		
Tested by (name + signature)		
Witnessed by (name, function, signature) . :		
Approved by (name, function, signature) ...		
<input type="checkbox"/> Testing procedure: CTF Stage 3:		
<input type="checkbox"/> Testing procedure: CTF Stage 4:		
Testing location/ address		
Tested by (name, function, signature)		
Witnessed by (name, function, signature) . :		
Approved by (name, function, signature) ...		
Supervised by (name, function, signature) :		

List of Attachments (including a total number of pages in each attachment):

Attachment 1: photos of the product (2 pages- 31 to 32)

Summary of testing:**Tests performed (name of test and test clause):**

Test sequence I sample:#01
 Temperature-rise (clause 9.3.4.2)
 Test of dielectric properties (clause 9.3.4.3)
 Strength of actuator mechanism (clause 9.3.4.8)

Test sequence II sample: #02
 Operational performance test (clause 9.3.5.2)
 Dielectric verification (clause 9.3.5.3)
 Leakage current (clause 9.3.5.4)
 Temperature-rise verification (clause 9.3.5.5)

Test sequence III sample:#03
 Short-time withstand current test (clause 9.3.6.2)
 Dielectric verification (clause 9.3.6.4)
 Leakage current (clause 9.3.6.5)
 Temperature-rise verification (clause 9.3.6.6)

Test sequence IV #04
 Fuse protected short-circuit withstand (clause 9.3.7.3)
 Dielectric verification (clause 9.3.7.4)
 Leakage current (clause 9.3.7.5)
 Temperature-rise verification (clause 9.3.7.6)

Sample specifications:

#01-#04: NDG3A-3200Z 3200A

Remark: This test report is based on test report 03601-A-23B0339-S and 03601-A-23B0526-S, all the test results are copied from the two test reports.

Testing location:

No.7 Yonghe Street, Binhe Road, New District, Suzhou, China

Summary of compliance with National Differences (List of countries addressed): N/A**Statement concerning the uncertainty of the measurement systems used for the tests**

(may be required by the product standard or client)

☐ **Internal procedure used for type testing through which traceability of the measuring uncertainty has been established:**

Procedure number, issue date and title:

Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.

☒ **Statement not required by the standard used for type testing**

Copy of marking plate

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.



Test item particulars :	
- method of operation..... :	Semi-independent manual operation
- suitability for isolation	Suitable
- degree of protection..... :	IP20(Only Operation Surface)
- number of poles..... :	3P,4P (Disconnecter only 4P appearance)
- kind of current..... :	AC, DC
-in the case of a.c., number of phases and rated frequency..... :	3 50/60Hz
- number of positions of the main contacts (if more than two)..... :	N/A
-breaking arrangement for fused devices	N/A
Rated and limiting values, main circuit..... :	
- rated operational voltage U_e (V)..... :	AC380/400/415V,AC660/690V, DC500V (4P appearance,4P in series) ,DC1500V (Disconnecter)
- rated insulation voltage U_i (V)	Switch-disconnector:1000V; Disconnecter:1500V
- rated impulse withstand voltage U_{imp} (kV)	12kV
- conventional free air thermal current I_{th} (A)	Switch-disconnector:2000A; Disconnecter:3200A
- conventional enclosed thermal current I_{the} (A)..... :	-
- rated operational current I_e (A)..... :	See table1 on page 8
- rated uninterrupted current I_u (A)..... :	N/A
- rated frequency (Hz)	50/60Hz
- utilization category	Switch-disconnector:AC-21A,AC-21B,AC- 22A,AC-22B,AC-23A,AC-23B,DC-21A,DC- 21B,DC-22A,DC-22B,DC-23A,DC-23B; Disconnecter:DC-20A, DC-20B
Short-circuit characteristic..... :	
- rated short-time withstand current I_{cw} (kA)..... :	Switch-disconnector:35kA/1s(AC660V/690V), 50kA/1s(AC380V/400V/415V);15kA/1s(DC500V); Disconnecter:50kA/1s(DC1500V)
- rated short-time making capacity I_{cm} (kA)..... :	42kA(AC660V/690V), 75kA(AC380V/400V/415V); 15kA(DC500V)
- rated conditional short-circuit current	Switch- disconnector:100kA(AC380V/400V/415V); Disconnecter: 150kA(DC1500V)
Control circuits..... :	N/A
Auxiliary circuits..... :	N/A
Relays and releases..... :	N/A
Co-ordination with short-circuit protective devices..... :	

- kind of protective device.....:	Switch-disconnector:2 × gG800A
	Disconnecter 2 × aR1600A (Type:Ar,In:1600A)

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 : 2024-01-09

Date (s) of performance of tests : /

General remarks:

"(see Enclosure #)" refers to additional information appended to the report.

"(see appended table)" refers to a table appended to the report.

Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

Manufacturer's Declaration per sub-clause 6.2.5 of IEC60068-2-1:

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.....:

☐ Yes

☒ Not applicable

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies) Liangxin Electrical (Haiyan) Co., Ltd.

No.1799 Changqian Road, Xitangqiao Street,
Haiyan County, Jiaying City, Zhejiang Province,
P.R.China.

General product information:

NDG3A-2000,NDG3A-1800,NDG3A-1600,NDG3A-3200Z, among them:

Switch-disconnector: NDG3A-2000,NDG3A-1800,NDG3A-1600,

Disconnector: NDG3A-3200Z

Ui: Switch-disconnector:1000V; Disconnector:1500V;Uimp:12kV;

Ith: Switch-disconnector:2000A; Disconnector:3200A;

Ue:AC380/400/415V,AC660/690V, DC500V (4P appearance,4P in series) ,DC1500V (Disconnector);

NDG3A-1600/3, NDG3A-1600/4:

Ue:AC380V/400V/415V;

Ie:1600A(AC-21A,AC-21B,AC-22A,AC-22B),1250A(AC-23A,AC-23B);

Ue:AC660V/690V;Ie:1000A(AC-21A,AC-21B,AC-22A,AC-22B),500A(AC-23A,AC-23B);

Ue:DC500V(4P appearance, 4P in series);

Ie:1250A(DC-21A,DC-21B,DC-22A,DC-22B,DC-23A,DC-23B);

NDG3A-1800/3, NDG3A-1800/4:

Ue:AC380V/400V/415V;

Ie:1800A(AC-21A,AC-21B,AC-22A,AC-22B),1250A(AC-23A,AC-23B);

Ue:AC660V/690V;Ie:1000A(AC-21A,AC-21B,AC-22A,AC-22B),500A(AC-23A,AC-23B);

Ue:DC500V(4P appearance, 4P in series);

Ie:1250A(DC-21A,DC-21B,DC-22A,DC-22B,DC-23A,DC-23B);

NDG3A-2000/3, NDG3A-2000/4:

Ue:AC380V/400V/415V;Ie:2000A(AC-21A,AC-21B);

NDG3A-3200Z: Ie:DC-20A,DC-20B:3200A(DC1500V, 2P product, 4P appearance) ;

Icw: Switch-disconnector:35kA/1s(AC660V/690V),
50kA/1s(AC380V/400V/415V);15kA/1s(DC500V);

Disconnector:50kA/1s(DC1500V) ;

Icm(peak): 42kA(AC660V/690V), 75kA(AC380V/400V/415V); 15kA(DC500V);

Iq: Switch-disconnector:100kA(AC380V/400V/415V); Disconnector: 150kA(DC1500V);

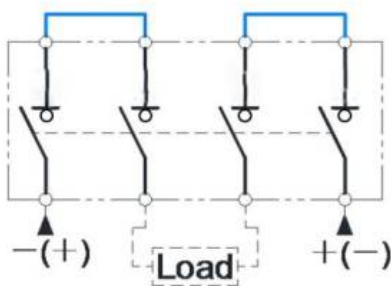
Utilization category: Switch-disconnector:AC-21A,AC-21B,AC-22A,AC-22B,AC-23A,AC-23B,
DC-21A,DC-21B,DC-22A,DC-22B,DC-23A,DC-23B;

Disconnector:DC-20A, DC-20B;

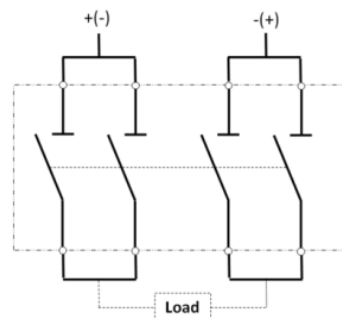
Number of poles:3P,4P (Disconnector only 4P appearance) ; Rated frequency:50/60Hz;

Degree of protection:IP20(Only Operation Surface);

DC connection method:



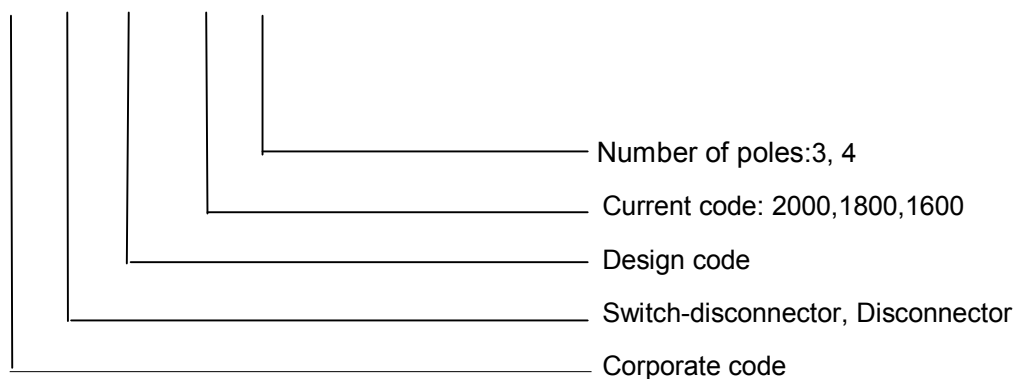
4P in series connection diagram of Switch-disconnector (DC500V)



Disconnector diagram (DC1500V)

Type explanation

ND G 3A — □ / □



ND G 3A — □ □ / 2

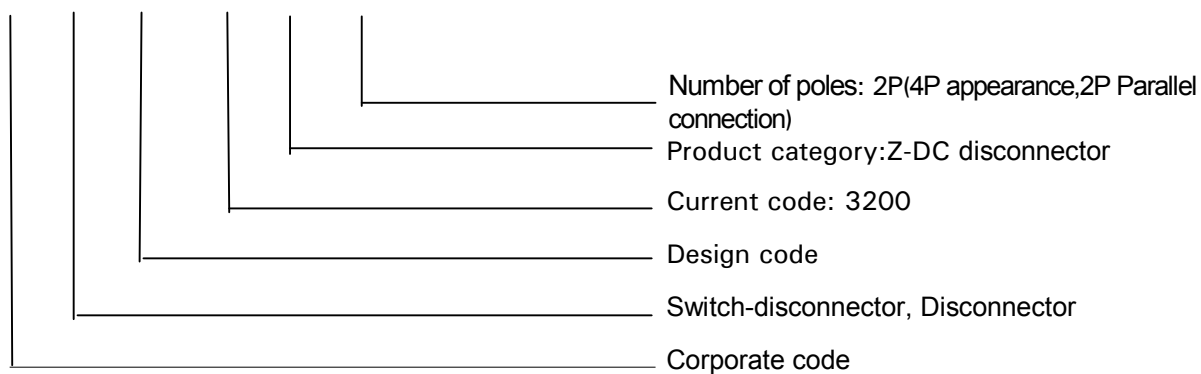


TABLE 1

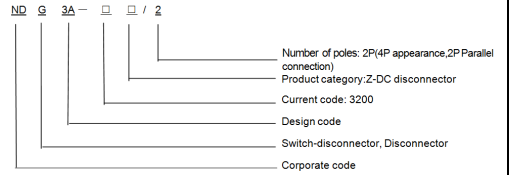
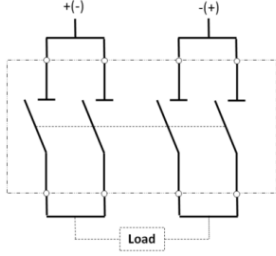
Ith	A		2000			3200
Curr ent code			1600	1800	2000	3200
Ie(A)	380V/400V/ 415 VAC	AC-21A/AC-21B	1600/1600	1800/1800	2000/2000	/
		AC-22A/AC-22B	1600/1600	1800/1800	/	/
		AC-23A/AC-23B	1250/1250	1250/1250	/	/
	660V/690 VAC	AC-21A/AC-21B	1000/1000	1000/1000	/	/
		AC-22A/AC-22B	1000/1000	1000/1000	/	/
		AC-23A/AC-23B	500/500	500/500	/	/
	500 VDC	DC-21A/DC-21B	1250/1250	1250/1250	/	/
		DC-22A/DC-22B	1250/1250	1250/1250	/	/
		DC-23A/DC-23B	1250/1250	1250/1250	/	/
	1500 VDC	DC-20A/DC-20B	/	/	/	3200

Remarks:

This test report must be read in conjunction with the latest test report 03601-A-23CB0027-S.

The latest CB certificate No. is CN59931.

The latest test report 03601-A-23CB0027-S, dated 2023-05-19 was modified on 2024-01-12 to include the following changes:

Serial No.	Item	Before change	After change
1	Changes of factory name and address	Shanghai Liangxin Electrical Co., Ltd. No. 2000 Shenjiang South Road, Pudong New District, Shanghai, P.R.China.	Liangxin Electrical (Haiyan) Co., Ltd. No.1799 Changqian Road, Xitangqiao Street, Haiyan County, Jiaxing City, Zhejiang Province, P.R.China.
2	Change of product name	Switch-disconnectors	Switch-disconnector, disconnector
3	Model type and related data added	No Disconnector	NDG3A-3200Z(disconnector); Ue:DC1500V; Ui:1500V; Ith:3200A; Utilization category:DC-20A,DC-20B; Ie:DC-20A,DC-20B:3200A(DC1500V, 2P product, 4P appearance) ; Icw:50kA/1s(DC1500V); Iq:150kA(DC1500V).
4	Type explanation added	/	
5	Special structure description added	/	<p>Explanation of the difference between the switch-disconnector and the disconnector:</p> <p>The internal structure of the switch-disconnector and the disconnector is the same, with only the nameplate and wiring method different. The use category of the disconnector is DC-20A/B, and the wiring method is to use conventional 4P products in parallel and then in series. The switch-disconnectors and the disconnector are distinguished by model. The switch-disconnectors are NDG3A-2000, NDG3A-1800, and NDG3A-1600, while the disconnector is NDG3A-3200Z;</p> <p>Add disconnector diagram:</p> 
6	General assembly drawing changed		
7	Suppliers of contacts removed		