
	<p style="text-align: center;">SPECIFICAȚIA TEHNICĂ DESCĂRCĂTOARELE CU OXIZI METALICI</p>	
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Anexa 5

FIȘA TEHNICĂ DESCARCATOARE CU OXIZI METALICI 10 kV				
Nr crt.	Caracteristica	U.M	Date tehnice solicitate	Date tehnice garantate (oferta furnizor)
<b>PRODUCĂTOR - NANYANG JINNIU ELECTRIC CO., LTD</b>				
<b>TIP - YH10W3-15</b>				
<b>ȚARA DE ORIGINE - South of Zhongyuan road Tongbai Nanyang city, Henan province of China 474750</b>				
<b>CANTITATEA SPRE ACHIZIȚIE</b>		<b>un</b>	<b>66</b>	<b>66</b>
<b>1</b>	<b>CONDIȚII IMPUSE DE SISTEMUL ENERGETIC</b>			
1.1	Tensiunea nominală a sistemului	kV	10	10
1.2	Tensiunea cea mai ridicată a rețelei	kV	12	12
1.3	Frecvența nominală	Hz	50	50
1.4	Modul de conectare a neutrlui rețelei		izolat	isolated
1.5	Durata defectelor cu pământul	ore	minimum 2	minimum 2
1.6	Curentul de scurtcircuit a rețelei la locul de montaj	kA	20	20
1.7	Valoarea și durata maxima a supratensiunilor temporare 0,82-0,8 din tensiunea maximă între faze timp	s	1 - 10	1 - 10
<b>2</b>	<b>CONDIȚII CLIMATERICE ȘI DE MEDIU</b>			
2.1	Temperatura mediului ambiant	°C	-40 / +40	-40 / +40
2.2	Radiația solară maxima	kW/m <sup>2</sup>	1,1	1,1
2.3	Locul de montaj		exterior	exterior
2.4	Altitudine	m	≤1000	≤1000
2.5	Umiditatea relativă a aerului	%	100	100
2.6	Grosimea stratului de gheață	mm	24	24
2.7	Clasa seismică conform MSK 64		8	8
<b>3</b>	<b>CARACTERISTICI ELECTRICE</b>			
3.1	Tensiunea nominală (Ur)	kV	≥ 15	≥ 15
3.2	Tensiunea de funcționare continuă (Uc)	kV	≥ 12	≥ 12
3.3	Stabilitatea la supratensiuni temporare			
	la 1 secundă	kV	≥ 1,31 Uc	≥ 1,31 Uc
	la 10 secunde	kV	≥ 1,25 Uc	≥ 1,25 Uc
3.4	Curentul nominal de descărcare (unda 8/20μs)	kA	≥ 10	≥ 10
3.5	Curentul nominal de descărcare la impuls de comutație	kA	≥ 1	≥ 1

FIȘA TEHNICĂ DESCARCATOARE CU OXIZI METALICI 10 kV				
Nr crt.	Caracteristica	U.M	Date tehnice solicitate	Date tehnice garantate (oferta furnizor)
3.6	Curentul de mare amplitudine (unda 4/10 uș)	kA	≥100	≥100
3.7	Clasa descărcătorului		SM	SM
3.8	Capacitatea de descărcare repetitivă Qrs	C	≥1,6	≥1,6
3.9	Energie de stabilitate termică Wth	kj/kVxUr	≥7	≥7
3.9	Tensiunea reziduală la impuls de trăsnet 8/20uș la 10 kA	kV	≤ 40	≤ 40
3.10	Tensiunea reziduală la impuls de comutație 30/60 uș la 500A	kV	≤32	≤32
3.11	Nivelul descărcărilor parțiale la 1,05 Un	pC	≤10	≤10
<b>4</b>	<b>CONDIȚII CONSTRUCTIVE SOLICITATE</b>			
4.1	Tipul constructiv		cu ZnO fără eclatoare	With ZnO without spark plugs
4.2	Protecția anticorozivă părților metalice		Da	Yes
4.3	Carcasă cu izolație din cauciuc siliconic		Da	Yes
4.4	Linia de fugă specifică	cm/kV	≥2,25	≥2,25
4.5	Momentul minim de rupere continuu	Nm	≥250	≥250
4.6	Momentul minim de rupere temporar	Nm	≥250	≥250
4.7	Tipul racordului		flexibil	flexible
4.8	Cleme de racordare la circuit incluse		Da	Yes
4.9	Fixarea pe suport		legat la pământ	Grounded
<b>5</b>	<b>ÎNCERCĂRI</b>			
5.1	Încercări de tip conform IEC 60099 și capitolul 5 al ST		Da	Yes
5.2	Încercări individuale conform IEC 60099 și capitolul 5 al ST		Da	Yes
5.3	Încercări de tip și individuale vor fi efectuate în laboratoare certificate conform ISO/IEC 17025		Da	Yes
<b>6</b>	<b>CONDIȚII DE ASIGURARE A CALITĂȚII ȘI PROTECȚIA MEDIULUI</b>			
6.1	Condiții de asigurare a calității protecției mediului sănătății și securității în muncă conform ISO 9001, ISO 14001, OHSAS 18001 și standardelor de calitate, mediu, și sănătate în muncă asociate lor		Da	Yes
<b>7</b>	<b>CONDIȚII DE FIABILITATE</b>			
7.1	Durata minimă de viața garantată	ani	30	Yes

 <b>MOLDELECTRICA</b>	<b>SPECIFICAȚIA TEHNICĂ DESCĂRCĂTOARELE CU OXIZI METALICI</b>	
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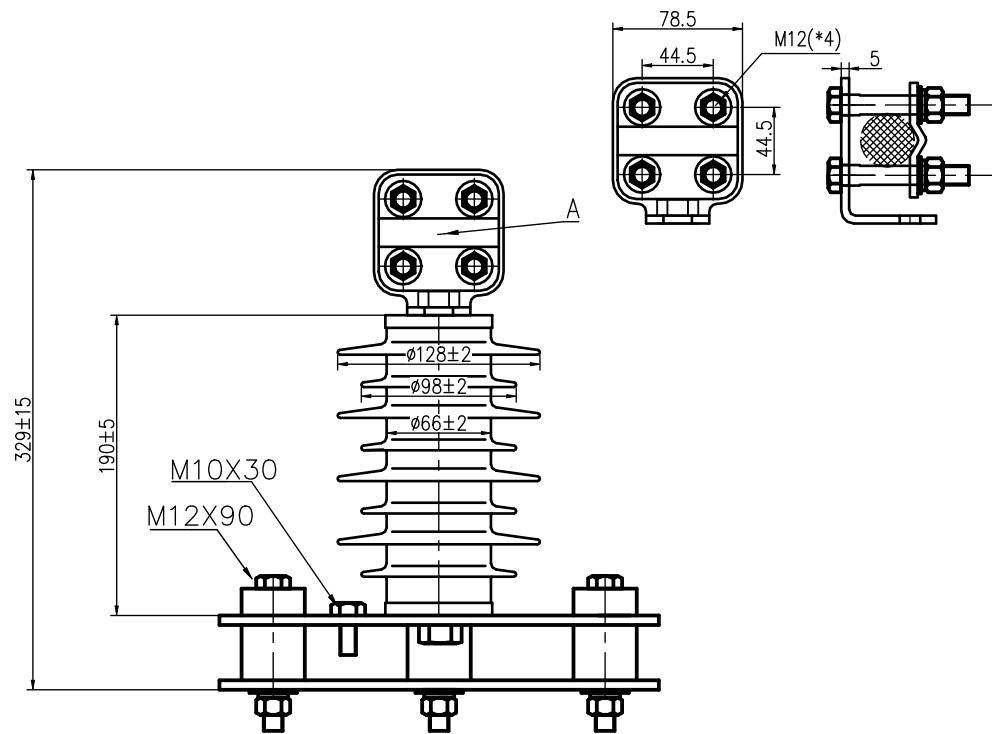
Anexa 4

FIȘA TEHNICĂ DESCARCATOARE CU OXIZI METALICI 35 kV				
Nr crt.	Caracteristica	U.M	Date tehnice solicitate	Date tehnice garantate (oferta furnizorului)
<b>PRODUCĂTOR - NANYANG JINNIU ELECTRIC CO., LTD</b>				
<b>TIP - YH10W3-52</b>				
<b>ȚARA DE ORIGINE - South of Zhongyuan road Tongbai Nanyang city, Henan province of China 474750</b>				
<b>CANTITATEA SPRE ACHIZIȚIE</b>		<b>un</b>	<b>54</b>	<b>54</b>
<b>1</b>	<b>CONDIȚII IMPUSE DE SISTEMUL ENERGETIC</b>			
1.1	Tensiunea nominală a sistemului	kV	35	35
1.2	Tensiunea cea mai ridicată a rețelei	kV	40,5	40,5
1.3	Frecvența nominală	Hz	50	50
1.4	Modul de conectare a neutrului rețelei		izolat	Isolated
1.5	Durata defectelor cu pământul	ore	minimum 2	Min 2
1.6	Curentul de scurtcircuit a rețelei la locul de montaj	kA	20	20
1.7	Valoarea și durata maxima a supratensiunilor temporare 0,82-0,8 din tensiunea maximă între faze timp	s	1-10	1-10
<b>2</b>	<b>CONDIȚII CLIMATERICE ȘI DE MEDIU</b>			
2.1	Temperatura mediului ambiant	°C	-40 / +40	-40 / +40
2.2	Radiația solară maxima	kW/m <sup>2</sup>	1,1	1,1
2.3	Locul de montaj		exterior	exterior
2.4	Altitudine	m	≤1000	≤1000
2.5	Umiditatea relativă a aerului	%	100	100
2.6	Grosimea stratului de gheață	mm	24	24
2.7	Clasa seismică conform MSK 64		8	8
<b>3</b>	<b>CARACTERISTICI ELECTRICE</b>			
3.1	Tensiunea nominală (Ur)	kV	≥ 52	≥ 52
3.2	Tensiunea de funcționare continuă (Uc)	kV	≥ 40.5	≥ 40.5
3.3	Stabilitatea la supratensiuni temporare			
	la 1 secundă	kV	≥ 1,31 Uc	≥ 1,31 Uc
	la 10 secunde	kV	≥ 1,25 Uc	≥ 1,25 Uc
3.4	Curentul nominal de descărcare (unda 8/20μs)	kA	≥10	≥10

3.5	Curentul nominal de descărcare la impuls de comutație	kA	$\geq 1$	$\geq 1$
3.6	Curentul de mare amplitudine (unda 4/10 uş)	kA	$\geq 100$	$\geq 100$
3.7	Clasa descărcătorului		SM	SM
3.8	Capacitatea de descărcare repetitivă Qrs	C	$\geq 1,6$	$\geq 1,6$
<b>FIŞA TEHNICĂ DESCARCATOARE CU OXIZI METALICI 35 kV</b>				
<b>Nr crt.</b>	<b>Caracteristica</b>	<b>U.M</b>	<b>Date tehnice solicitate</b>	<b>Date tehnice garantate (oferta furnizorului)</b>
3.9	Energie de stabilitate termică Wth	kJ/kVxUr	$\geq 7$	$\geq 7$
3.10	Tensiunea reziduală la impuls de trăsnet 8/20uş la 10 kA	kV	$\leq 136$	$\leq 136$
3.11	Tensiunea reziduală la impuls de comutație 30/60 uş la 500A	kV	$\leq 108$	$\leq 108$
3.12	Nivelul descărcărilor parțiale la 1,05 Un	pC	$\leq 10$	$\leq 10$
<b>4</b>	<b>CONDIȚII CONSTRUCTIVE SOLICITATE</b>			
4.1	Tipul constructiv		cu ZnO fără eclatoare	With ZnO without spark plugs
4.2	Protecția anticorozivă părților metalice		Da	Yes
4.3	Carcasă cu izolație din cauciuc siliconic		Da	Yes
4.4	Linia de fugă specifică	cm/kV	$\geq 2,25$	$\geq 2,25$
4.5	Momentul minim de rupere continuu	Nm	$\geq 250$	$\geq 250$
4.6	Momentul minim de rupere temporar	Nm	$\geq 250$	$\geq 250$
4.7	Tipul racordului		flexibil	Flexible
4.8	Cleme de racordare la circuit incluse		Da	Yes
4.9	Fixarea pe suport		legat la pământ	Grounded
<b>5</b>	<b>ÎNCERCĂRI</b>			
5.1	Încercări de tip conform IEC 60099 și capitolul 5 al ST		Da	Yes
5.2	Încercări individuale conform IEC 60099 și capitolul 5 al ST		Da	Yes
5.3	Încercări de tip și individuale vor fi efectuate în laboratoare certificate conform ISO/IEC 17025		Da	Yes
<b>6</b>	<b>CONDIȚII DE ASIGURARE A CALITĂȚII ȘI PROTECȚIA MEDIULUI</b>			
6.1	Condiții de asigurare a calității protecției mediului sănătății și securității în muncă conform ISO 9001, ISO 14001, OHSAS 18001 și standardelor de calitate, mediu, și sănătate în muncă asociate lor		Da	Yes
<b>7</b>	<b>CONDIȚII DE FIABILITATE</b>			
7.1	Durata minimă de viața garantată	ani	30	30

Furnizor

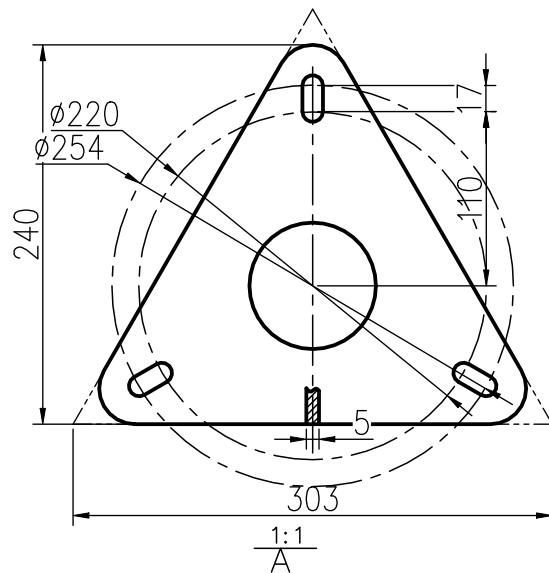
Semnătura



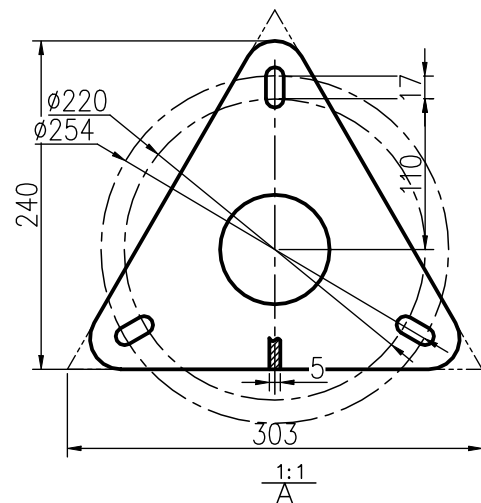
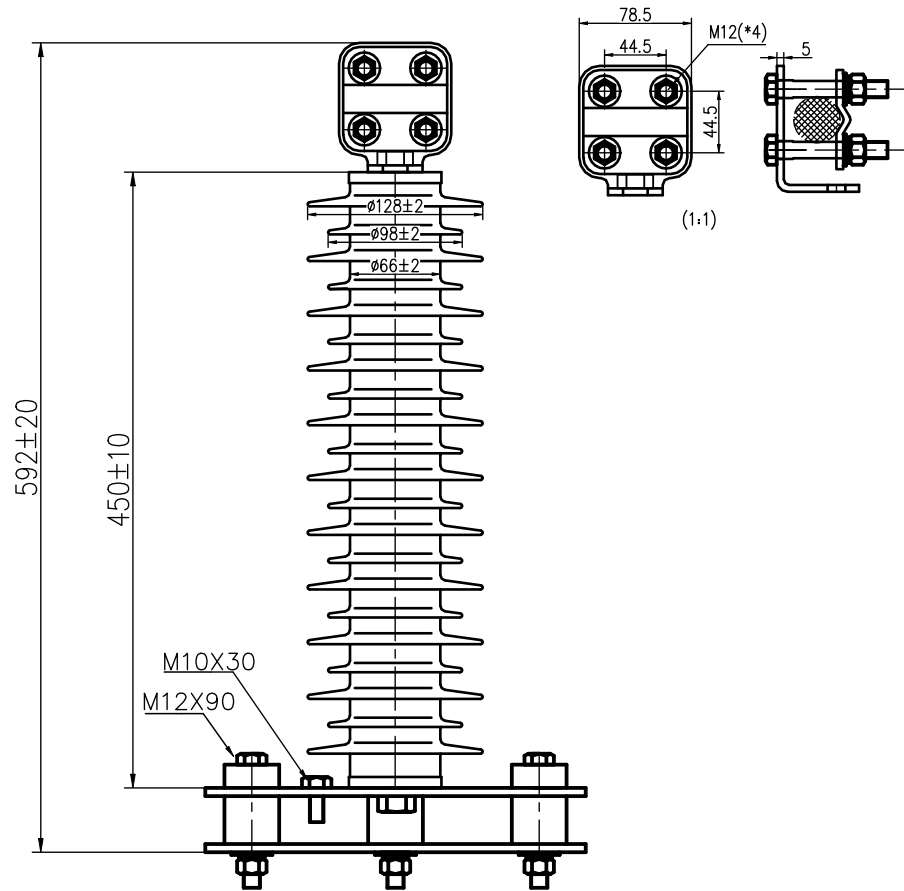
### Technical specification

1. Continuous operating voltage  $U_c$  12kV
2. Rated voltage  $U_r$  15kV
3. Residual voltage  $U_{res} \leq 40$  kV
4. Creepage distance 500mm
5. Nominal discharge current  $I_n$  10 kA
6. High impulse current 100 kA
7. Class 3

Manufacture standard: IEC60099-4,2014



Remark:			Metal Oxide Lightning Arrester	
			YH10W3-15	
	signature	日期Date	unit: mm	
Design		19-04-2024		
Check		19-04-2024	1	
Approve		19-04-2024	outline Drawing	



### Technical specification

1. Continuous operating voltage  $U_c$  40.5kV
2. Rated voltage  $U_r$  52kV
3. Residual voltage  $U_{res} \leq 136$  kV
4. Creepage distance 1320mm
5. Nominal discharge current  $I_n$  10 kA
6. High impulse current 100 kA
7. Class 3

Manufacture standard: IEC60099-4,2014

Remark:			Metal Oxide Lightning Arrester	
			YH10W3-52	
			unit: mm	
Design	signature	Date		
Check		19-04-2024		
Approve		19-04-2024	Outline Drawing	
			1	

# The Certificate Of Quality Management System

Certificate No.: 36719QZ0079R1M


## Nanyang Jinniu Electric Co., Ltd

Registered Address: South section of Zhongyuan Road, Industrial Cluster Area, Tongbai County Zip Code: 474750  
Office Address: South section of Zhongyuan Road, Industrial Cluster Area, Tongbai County, Nanyang city, Henan province Zip Code: 474750  
Production address: South section of Zhongyuan Road, Industrial Cluster Area, Tongbai County, Nanyang city, Henan province Zip Code: 474750  
Uniform social credit code: 9141133068316840XF

According to your organization's application, our company carried out audit and certification in accordance with the requirements for Quality Management System (GB/T19001-2016/ISO9001:2015), it accords with the Requirements through assessment. The scope of the certified QMS is:

Design, development, and production of Metal Oxide Varistors,  
Metal Oxide surge arresters and surge arrester core.

Initial date: Apr 12, 2019    Recertification renewal date: Dec 07, 2021    The certificate is valid until: Dec 06, 2024

First S.A.		Second S.A.	Labelling	Third S.A.	Labelling
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The certified organization must accept at least one surveillance audit annually and a qualified mark shall be attached onto the certificate, within validity period of the certificate, then the certificate can be maintained valid.  
For more details of this certificate, please login CNCA's website: [www.cnca.gov.cn](http://www.cnca.gov.cn).  
For the validity of the certificate, please scan the QR codes ride for accurate information.



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国际互认  
管理体系  
MANAGEMENT SYSTEM  
CNAS C233-M



ZHONG BIAO HUA YUAN (BEIJING) CERTIFICATION CENTER CO., LTD.

Address: 4th Floor, Building No. 22, 10th District, No. 188 South Sihuan West Road, Fengtai District, Beijing

P.C.: 100070 Tel.: 010-53393099 Mailbox: cshy03\_2018@163.com

Website: <http://www.cshychina.com>

# The Certificate Of Environmental Management System

Certificate No.: 36720E0173R1M

**Nanyang Jinniu Electric Co., Ltd**

Registered Address: South section of Zhongyuan Road, Industrial Cluster Area, Tongbai County Zip Code: 474750  
Office Address: South section of Zhongyuan Road, Industrial Cluster Area, Tongbai County, Nanyang city, Henan province Zip Code: 474750  
Production address: South section of Zhongyuan Road, Industrial Cluster Area, Tongbai County, Nanyang city, Henan province Zip Code: 474750  
Uniform social credit code: 9141133068316840XF

According to your organization's application, our company carried out audit and certification in accordance with the requirements for Environmental Management System(GB/T24001-2016/ISO14001:2015), it accords with the requirements through assessment. The scope of the certified EMS is:

**Design, development, and production of Metal Oxide Varistors, Metal Oxide surge arresters and surge arrester core and related environmental management activities**

Initial date: Jun 23,2020    Recertification date: Jun 15,2023    The certificate is valid until: Jun 18,2026

First S.A.	Labelling	Second S.A.	Labelling	Third S.A.	Labelling
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The certified organization must accept at least one surveillance audit annually and a qualified mark shall be attached onto the certificate, within validity period of the certificate, then the certificate can be maintained valid.  
For more details of this certificate, please login CNCA's website: [www.cnca.gov.cn](http://www.cnca.gov.cn).  
For the validity of the certificate, please scan the QR codes ride for accurate information.



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**ZHONG BIAO HUA YUAN(BEIJING)CERTIFICATION CENTER CO., LTD.**

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Website: <http://www.cshychina.com>



# Occupational Health and Safety Management System Certificate

Certificate No.: 36720S0175R1M

**Nanyang Jinniu Electric Co., Ltd**

Registered Address: South section of Zhongyuan Road, Industrial Cluster Area, Tongbai County Zip Code: 474750  
Office Address: South section of Zhongyuan Road, Industrial Cluster Area, Tongbai County, Nanyang city, Henan province Zip Code: 474750  
Production address: South section of Zhongyuan Road, Industrial Cluster Area, Tongbai County, Nanyang city, Henan province Zip Code: 474750  
Uniform social credit code: 9141133068316840XF

According to your organization's application, our company carried out audit and certification in accordance with the requirements for Occupational Health and Safety Management System (GB/T45001-2020/ISO 45001:2018), it accords With the Requirements through assessment. The scope of the certified OHSMS is:

**Design, development, and production of Metal Oxide Varistors, Metal Oxide surge arresters and surge arrester core and related occupational health and safety management activities**

Initial date: Jun 23, 2020 Recertification date: Jun 15, 2023 The certificate is valid until: Jun 18, 2026

First S.A.	Labelling	Second S.A.	Labelling	Third S.A.	Labelling
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The certified organization must accept at least one surveillance audit annually and a qualified mark shall be attached onto the certificate, within validity period of the certificate, then the certificate can be maintained valid.  
For more details of this certificate, please login CNCA's website: [www.cnca.gov.cn](http://www.cnca.gov.cn).  
For the validity of the certificate, please scan the QR codes ride for accurate information.



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MANAGEMENT SYSTEM  
CNAS C233-M



**ZHONG BIAO HUA YUAN(BEIJING)CERTIFICATION CENTER CO., LTD.**

Address: 4th Floor, Building No. 22, 10th District, No. 188 South Sihuan West Road, Fengtai District, Beijing

P.C.:100070 Tel.:010-53393099 Mailbox: cshy03\_2018@163.com

Website: <http://www.cshychina.com>

## DECLARATION OF CONFORMITY

Issuer's name and address: **NANYANG JINNIU ELECTRIC CO., LTD**  
**Add: South of Zhongyuan road Tongbai Nanyang city,**  
**Henan province of China 474750**

Object of the declaration Name: **MV SURGE ARRESTERS** Type:  
**SM (Ur from 15 kV and 220 kV)**

Other information:

Št. dokumenta	Naslov dokumenta	Izdajatelj/datum
190038B	Power frequency voltage versus time	XIHARI / 31.07.2019
190038B	Short circuit tests	XIHARI / 31.07.2019
190038B	Long term stability at Uc	XIHARI / 31.07.2019
190038B	Heat dissipation behaviour	XIHARI / 31.07.2019
190038B	Insulation withstand tests	XIHARI / 31.07.2019
190038B	Test of the bending moment	XIHARI / 31.07.2019
190038B	Test of bending moment, part b (SSL)	XIHARI / 31.07.2019
190038B	Repetitive charge transfer rating disconnecting device	XIHARI / 31.07.2019
190038B	Residual voltage tests	XIHARI / 31.07.2019
190038B	Time versus current test	XIHARI / 31.07.2019
190038B	Repetitive charge transfer rating	XIHARI / 31.07.2019
190038B	Accelerated light ageing	XIHARI / 31.07.2019
190038B	Operating duty test	XIHARI / 31.07.2019
190038B	Weather ageing test	XIHARI / 31.07.2019

The object of the declaration described above is in conformity with the requirements of the following standards:

**IEC 60099-4:2014,**

Signed for and on behalf of:  
**Joe Qiao**

Function:  
**Export.Dept. Manager**

Place and date of issue

**China, 22. 04. 2024**

  
 Signature:

*Joe Qiao*



## NANYANG JINNIU ELECTRIC CO., LTD

Add: South of Zhongyuan road Tongbai Nanyang city, Henan province of China 474750

Tel: +86 0377 68356606 Fax: +86 0377 68356606 Email: export006@nyjnpower.com

[www.nyjnpower.com](http://www.nyjnpower.com)

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### WARRANTY PERIOD OF OFFERED PRODUCTS

Date: 22.04.2024

We state that our MV voltage surge arresters SM type (YH10W3-15 and YH10W3-52 ) have warranty period of 36 months.

Name of company: NANYANG JINNIU ELECTRIC CO., LTD

Address of company: Add: South of  
Zhongyuan road  
Tongbai  
Nanyang city,  
Henan province  
of China 474750

Signature of authorized person:

*Joe Qiao*



# Installation and Maintenance Manual for Surge Arrester

Power safety-our responsibility

———JINNIU ELECTRIC

Dco no:JN/QEOR-XS-14

Prepared by: Huang Yang

Reviewed by: Huang Long

Approved by: Jin Guoqing

Release Date:January 15, 2019

Effective date:January 15, 2019

Revision date: February 20,2023

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## 1 Purpose / function

Polymeric Gapless Metal Oxide Surge Arrester is mainly used for protection AC electrical equipment with corresponding voltage levels from atmospheric overvoltage and operational over-voltage damage. Product execution standard: IEC60099-4-2014 AC gapless metal oxide lightning arrester.

## 2 Description

- Structure

Surge arrester is composed of upper cap, arrester body and lower cap, please refer to the drawing No. 1.

- Functioning

In the arrester body, there is fitted with Non-linear arrestors (blocks), having excellent Volt-Ampere performance, fulfil limitation to over-voltage. Arrester body is made of silicon rubber, with features of fully sealed, good anti-pollution and anti-explosion performance, small, and light.

### 2.1 Purposes of use/ technical data

- Dimensions: 270 × Φ60
- Coating: grey
- Specified performance data / performance characteristic features
 

1) System Rated Voltage (rms)	22kV
2) Rated Voltage of Surge Arrester (rms)	30kV
3) Continuous Operating Voltage (rms)	24kV
4) Rated Frequency	50Hz
5) Nominal Discharge Current	10kA
6) Lightning Impulse Withstand Residual Voltage	≥85.5kV
7) 2ms Rectangular Discharge Current	600A
8) 4/10 High Current Discharge (Peak Value)	100kA
9) Partial Discharge Level	≤10PC
10) Insulating withstand Pollution Capability	2.5cm/kV

### Operating data

- Suitable for outdoor and indoor application
- Ambient temperature: -40℃~+40℃
- Altitude: Up to 2000 meter above sea level

- 
- Frequency: 48~62Hz
  - Max. wind speed: 35m/s
  - Earthquake intensity: Up to 8 degree
  - The long-term voltage exerted on the surge arrester should not exceed continuous operating voltage (Uc).
  - Chemical and biological effects:  
The surrounding should be free of corrosive gas, such as high-acidity and alkali, keep surge arrester free from chemical corrosion.
  - Dirt, dust:  
Anti-dirt/dust: class 3
  - Mechanical loads:  
Level pull should be less than 294N.
  - Material information:  
ZnO Non-linear arrestors\ Polymeric Gapless;

## 2.2 Technical description

Surge arrester consists of surge arrester unit (main part), connecting terminal and mounting clamp or insulation base. Inside of surge arrester is assembled with varistors without gap, which has excellent voltage-ampere characteristics. Housing of surge arrester is made of silicon rubber which has good hydrophobe performance, so it makes surge arrester small, light, anti-pollution and anti-explosion.

ZnO varistor has excellent voltage-ampere characteristics. When over-voltage occurred, the resistant value of varistor will be very low and it will absorb over-voltage energy to limit the voltage in a permissible range, which can provide reliable protection for electrical equipments. Whereas, when surge arrester operating under the Normal conditions, the varistor will present great resistant and the leakage current through the surge arrester will be very low to keep the insulation from the power system.

## 2.3 Documentation for hard- and software components

No.



### 3 Safety instructions

#### 3.1 Safety relevant terms

No.

#### 3.2 Reference to qualified staff and special education

No.

#### 3.3 Safety relevant tightening torque

Location	Screws size	Tightening torque (Nm)	Wrench size (SW)	Remark
Transmission and distribution lines	M10	20	17	
	M12	25	19	

Table 3.1 Sample safety relevant tightening torque

#### 3.4 Electrostatic sensitive device (ESD)

No.

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## 4 Instruction manual

### Before-operation and RoutineTest

1. Polymer housing of surge arrester is not suitable for cleaning frequently.
2. Surge arrester should be checked and tested carefully before installation, as well as every one or two years after operation, test result should be recorded, including time, temperature, relative humidity, air pressure, installation place, rated voltage, and other technical data. Detail testing items as follows:
  - (1) Visual checking: Check the appearance of polymer housing if has crack or not, to see whether it has satisfied sealing performance.
  - (2) Power frequency reference voltage test: Apply power frequency voltage to both ends of the lightning arrester (the fluctuation of power frequency voltage shall not exceed 1.5%). When the current flowing through the lightning arrester stabilizes at 1mA, read the voltage value, which should not be less than 30kV.
  - (3) Internal partial discharge test: The test shall be performed on the complete arrester or, for a multi-unit arrester, on the individual units of the arrester. The test sample may be shielded against external partial discharges. The power-frequency voltage shall be increased to the rated voltage of the sample, held for 2 s to 10 s, and then decreased to 1.05 times the continuous operating voltage of the sample. At that voltage, the partial discharge level shall be measured according to IEC-60270. The measured value for the internal partial discharge shall not exceed 10 PC.
3. Power frequency discharge voltage test and power frequency withstand voltage test are not allowed for the surge arresters.

#### 4.1 Operation

Surge Arrestor will run without any artificial operation after proper installation.

#### 4.2 Control of operation

None

## 5 Assembly and commissioning

### 5.1 Transportation / shipment / storage

#### 5.1.1 Transportation / shipment

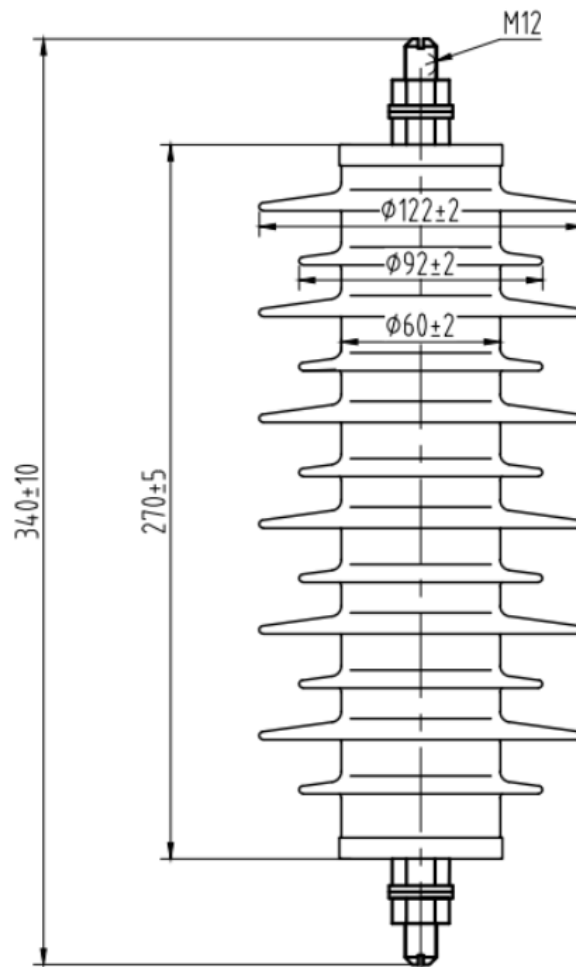
Surge arrester should be avoid of intense collision and sharp material during loading, unpacking, transportation as well as installation.

#### 5.1.2 Storage

The surrounding should be free of corrosive gas, such as high- acidity and alkali, keep surge arrester free from chemical corrosion.

### 5.2 Installation

Installation dimensions, please refer to drawing No. 1, Surge arresters should be installed vertically or suspended.



### 5.3 Commissioning

Surge Arrester will run without any commissioning after proper installation.

#### 5.3.1 Check-up before commissioning

Surge Arrester will run automatically without any debug or commissioning.

#### 5.3.2 Commissioning

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Surge Arrestor will run automatically without any debug or commissioning.

### **5.3.3 Decommissioning**

Surge Arrestor will run automatically without any debug or commissioning.

## **5.4 Maintenance**

### **5.4.1 Maintenance steps**

There is no need to repair except the routine test.

### **5.4.2 Maintenance plan**

There is no need to repair except the routine test.

### **5.4.3 Maintenance works**

There is no need to repair except the routine test.

### **5.4.4 Revisions**

There is no need to revise for Surge Arrestor during its life long.

## **5.5 Trouble shooting, exchange concept / maintenance**

### **5.5.1 Trouble shooting**

Replace the surge arrestor with a new one when it is destroyed and also when the specifications couldn't meet the requirement.

### **5.5.2 Disassembly**

Disassembly the destroyed surge arrestor directly because it is stand-alone. When disassembly you can directly loosen the screw on the cap and the bottom of the arrestor.

### **5.5.3 Exchange concept**

When you want to replace the destroyed surge arrestor you should disassembly the whole arrestor directly and replace it with a new one.

### **5.5.4 Dismantling**

Disassembly the whole destroyed surge arrestor directly because it is stand-alone. There is no need to dismantling.

### **5.5.5 Maintenance**

Replace the destroyed surge arrestor with a new one. The destroyed arrestor will be discarded without any maintenance.

### **5.5.6 Assembly**

Surge arrestor is stand-alone equipment. After assembly in factory it can be installed to use without any assembly before installation.

### **5.5.7 Reinstalling**

Just replace the old surge arrestor with a new one when necessary without any special notice.

### **5.5.8 Setting values and tolerances**

There is no need for surge arrestor to set values and tolerances.

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### 5.5.9 Return to service / Function test

#### Before-operation and Routine Test

1. Polymer housing of surge arrester is not suitable for cleaning frequently.
2. Surge arrester should be checked and tested carefully before installation, as well as every one or two years after operation, test result should be recorded, including time, temperature, relative humidity, air pressure, installation place, rated voltage, and other technical data. Detail testing items as follows:
  - (1) Visual checking: Check the appearance of polymer housing if has crack or not, to see whether it has satisfied sealing performance.
  - (2) Power frequency reference voltage test: Apply power frequency voltage to both ends of the lightning arrester (the fluctuation of power frequency voltage shall not exceed 1.5%). When the current flowing through the lightning arrester stabilizes at 1mA, read the voltage value, which should not be less than 30kV.
  - (3) Internal partial discharge test: The test shall be performed on the complete arrester or, for a multi-unit arrester, on the individual units of the arrester. The test sample may be shielded against external partial discharges. The power-frequency voltage shall be increased to the rated voltage of the sample, held for 2 s to 10 s, and then decreased to 1.05 times the continuous operating voltage of the sample. At that voltage, the partial discharge level shall be measured according to IEC-60270. The measured value for the internal partial discharge shall not exceed 10 PC.
3. Power frequency discharge voltage test and power frequency withstand voltage test are not allowed for the surge arresters.

### 5.6 Special tools, devices, measuring and test device

#### 5.6.1 Special tools

None

##### 5.6.1.1 Components for coats of paint

None

##### 5.6.1.2 Lubricant

None

##### 5.6.1.3 Other utilities

None

#### 5.6.2 Device

No special devices.

##### 5.6.2.1 Chemical cleaning agent

No chemical cleaning agent. When clean it just use a piece of cloth moisten with water.

##### 5.6.2.2 Components for coats of paint

No coats of paint for components.

**5.6.2.3 Lubricant**

No lubricant.

**5.6.2.4 Other utilities**

No other utilities.

**5.6.3 Measuring and test devices**

D.C. reference voltage test instrument FMO

**5.6.4 Wearing und spare parts**

None

**5.6.5 Operating materials**

None

**5.7 Waste management concept**

The residue of destroyed surge arrestor is harmless and can not be reclaimed so just dispose it as the general castoff.

**6 List of abbreviations and index**

**6.1 List of abbreviations**

None

**6.2 Index**

None