



SHIHLIN ELECTRIC
士林電機

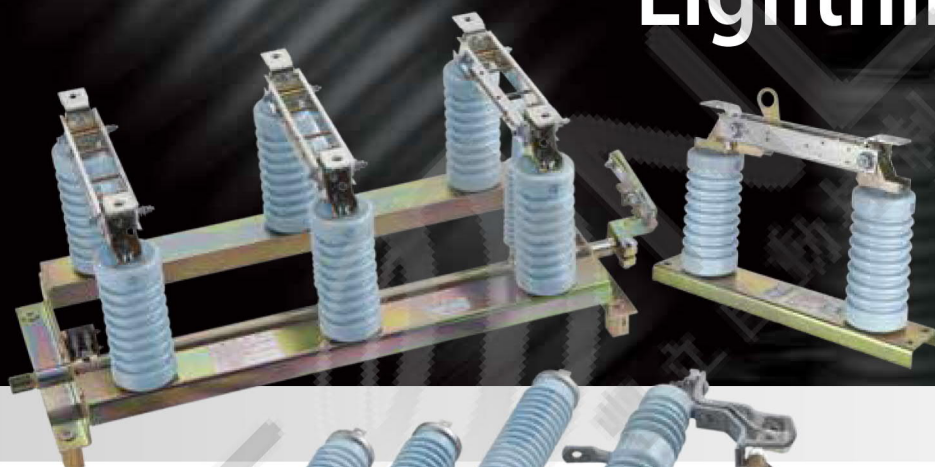
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分段開關 / 避雷器 / 熔絲鏈開關

Disconnecting Switches/ Lightning Arresters/ Fuse Cutout



工廠驗證



INTEGRATION OF POWER SYSTEM

二、氧化鋅避雷器 ZnO Lightning Arrester

(1) 前言 Introduction

本公司生產之配電用無間隙氧化鋅型避雷器，責務電流容量5kA及10kA係與美國奇異公司技術合作生產，美國自1976年開始使用於電力系統，證明對於配電線路突波電流之保護非常理想。

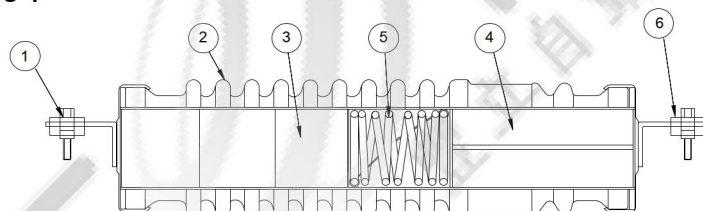
The gapless ZnO-type lightning arrester which duty current 5kA and 10kA used in distribution is a result of our Company's R&D Team in technical cooperation with General Electric in the United States. As a matter of fact, this item has been long used in the electric system in the United States ever since 1976 and has proven perfect in protecting the distribution circuit from surge current.

(2) 優點 Advantages

- 提供優良的衝擊電壓保護特性。
- 提供穩定之氧化鋅素子、無續流、無間隙、對雷擊迅速反應。
- 具有完全防潮設施，全數做氣密檢驗，耐污染性高。
- 全數做洩漏電流檢驗，具有高安全性。
- 提供廣範圍之50/60Hz過電壓保護能力。
- 勿須檢查及保養，適合長時間使用。
- 隔離器裝置提供(10kA型)，當避雷器遇到超過額定之長時間連續突波時之保護功能，能使避雷器本體與配電線路隔離。
- Excellent in withstanding surge voltage.
- Stable ZnO element; non-continuous current; gapless; and instant response to lightning shock.
- Damp proof; air-tight test guaranteed and highly resisting pollution.
- Leakage test guaranteed and absolutely safe.
- Guaranteed safety in the range of 50/60Hz.
- Free check and maintenance after long-period use.
- Disconnecter is provided (10kA), which separates the lightning arrester body and the distribution circuit whenever the item meets the exceeding shock of continuous overrated surge current.

(3) 構造 Construction

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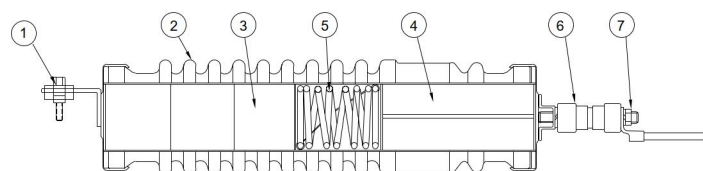


- | | |
|----------------|--------------------------|
| (1) 電源側接線端子 | (1) Line Terminal. |
| (2) 瓷器罩管 | (2) Porcelain Insulator. |
| (3) 氧化鋅(ZnO)素子 | (3) ZnO Element. |
| (4) 間隙管 | (4) Gap Tube. |
| (5) 彈簧 | (5) Spring. |
| (6) 接地側接線端子 | (6) Earthing Terminal. |

圖1 ZnO避雷器構造圖(5kA)

Fig.1 Structure of the ZnO lightning arrester(5kA)

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- | | |
|----------------|--------------------------|
| (1) 電源側接線端子 | (1) Line Terminal. |
| (2) 瓷器罩管 | (2) Porcelain Insulator. |
| (3) 氧化鋅(ZnO)素子 | (3) ZnO Element. |
| (4) 間隙管 | (4) Gap Tube. |
| (5) 彈簧 | (5) Spring. |
| (6) 隔離器 | (6) Disconnecter. |
| (7) 接地側接線端子 | (7) Earthing Terminal. |

圖2 ZnO避雷器構造圖(10kA)

Fig.2 Structure of the ZnO lightning arrester (10kA)

(4) 特性 Characteristics

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本產品(5kA)之設計及試驗符合美國電子及電機工程師學會IEEE Std C62.11及國際電工標準IEC 60099-4之標準。責務電流容量5kA避雷器保護特性、絕緣特性如表一

The design and functions of this invention meet the standards of IEEE Std C62.11 & IEC 60099-4.

The features of protection and insulation for duty current 5kA arrester are indicated in Table 1:

表一 (Table 1.) (5kA)

額定 電壓 Rated Voltage (kV) RMS	最大連續 運轉電壓 Maximum Continuous Operating Voltage(kV)	最大等效定峻度波 頭保護水準 Max Front of Wave Protective Level 0.5μs (kV Crest)	最大放電阻抗電壓(kV波峰值) 電流波形8x20 μs Max Discharge Voltage (kV Crest) Using an 8x20 μs Current Wave			放電電流耐量 Withstand Discharge Current 4~6x10~15 μs (kA 波峰值) (kA Crest)	衝擊電壓 1.2x50 μs 全波 Impulse Voltage 1.2x50 μs Full Wave (kV 波峰值) (kV Crest)	60Hz電壓 Power-Frequency Voltage (kV RMS)	
			2.5kA	5kA	10kA			乾燥 (1分鐘) Dry(1Min)	注水 (10秒鐘) Wet(10Sec)
4.5	3.82	24	18.6	19.8	21.6	65	60	21	20
9	7.65	36	27.9	29.7	32.4	65	75	27	24
12	10.20	48	37.2	39.6	43.2	65	85	31	27
15	12.75	60	46.5	49.5	54.0	65	95	35	30
18	15.30	72	55.8	59.4	64.8	65	125	42	36

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本產品(10kA)之設計及試驗符合美國電子及電機工程師學會IEEE Std C62.11之標準。責務電流容量10kA避雷器保護特性、絕緣特性如表二

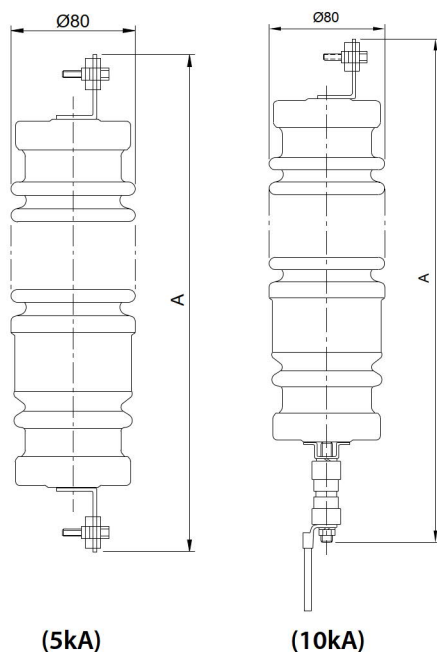
The design and functions of this invention meet the standards of IEEE Std C62.11

The features of protection and insulation for duty current 10kA arrester are indicated in Table 2:

表二 (Table 2.) (10kA)

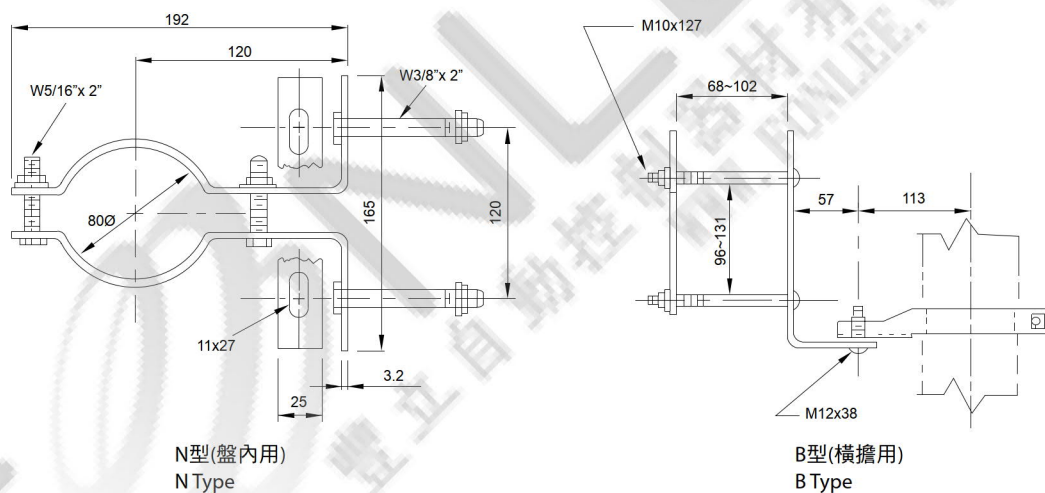
額定 電壓 Rated Voltage (kV) RMS	最大連續 運轉電壓 Maximum Continuous Operating Voltage(kV)	最大等效定峻度波 頭保護水準 Max Front of Wave Protective Level 0.5μs (kV Crest)	最大放電阻抗電壓(kV波峰值) 電流波形8x20 μs Max Discharge Voltage (kV Crest) Using an 8x20 μs Current Wave			放電電流耐量 Withstand Discharge Current 4~6x10~15 μs (kA 波峰值) (kA Crest)	衝擊電壓 1.2x50 μs 全波 Impulse Voltage 1.2x50 μs Full Wave (kV 波峰值) (kV Crest)	60Hz電壓 Power-Frequency Voltage (kV RMS)	
			5kA	10kA	20kA			乾燥 (1分鐘) Dry(1Min)	注水 (10秒鐘) Wet(10Sec)
4.5	3.82	25	20.5	22.5	25.7	100	60	21	20
9	7.65	40	30	35	40	100	75	27	24
12	10.20	46	37.4	41	46.7	100	85	31	27
15	12.75	56	45.6	50	57	100	95	35	30
18	15.30	67	54.7	60	68.5	100	125	42	36
24	20.40	92	78.2	85	93.5	100	150	70	60
27	22.00	100.8	82.1	90	102.5	100	150	70	60

(5) 外形尺寸 Outline Dimension



電壓 Voltages (kV)	變化尺寸 Operating Size(A)	
	5kA	10kA
4.5	288	325
9	318	355
12	398	435
15	398	435
18	485	522
24	--	645
27	--	645

(6) 附件 - 壓束板與安裝架組 Accessories-Install Device



(7) 避雷器選擇 Selection

(1) 士林氧化鋅型避雷器記號說明:

(2) 額定電壓選擇:

系統線對地電壓不得超過表一或表二之最大連續運轉電壓值

(1) Shihlin Zno-type Lightning Arrester Type Code:

(2) Selection of rated voltages:

The max. system line-to-earth voltage should not exceed the max. continuous operating voltage value listed in Table 1. or Table 2.

