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分段開關 / 避雷器 / 熔絲鏈開關

Disconnecting Switches/ Lightning Arresters/ Fuse Cutout

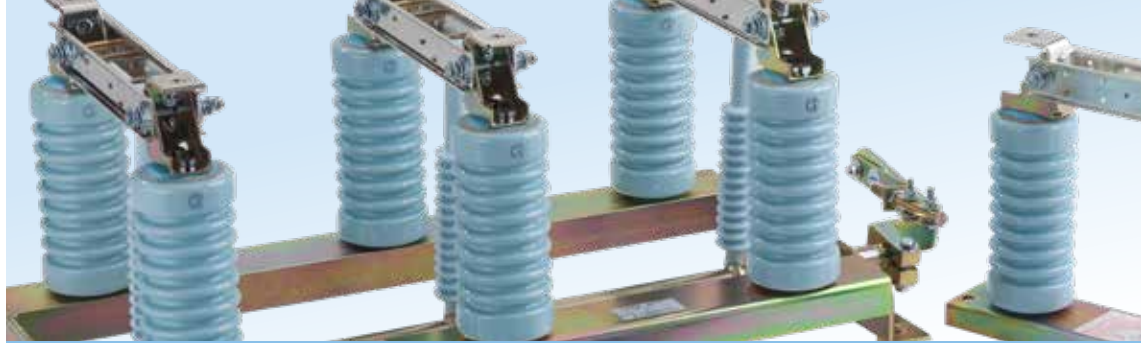


工廠驗證



INTEGRATION OF POWER SYSTEM





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三、熔絲鏈開關 Fuse Cutout

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一、分段開關 Disconnecting Switches

(1) 特性 Characteristics

- 本分段開關適合於周圍溫度40℃以下使用。
- 在線路無負載的情況下才可以啟開操作。
- 啟閉時安全操作棒應沿開關安裝方向垂直操作。
- This disconnecting switch is suitable for operation at an ambient temperature 40℃ or less.
- Switch on operation only when there is no load on current.
- To switch off, operate the switch stick in a vertical direction.

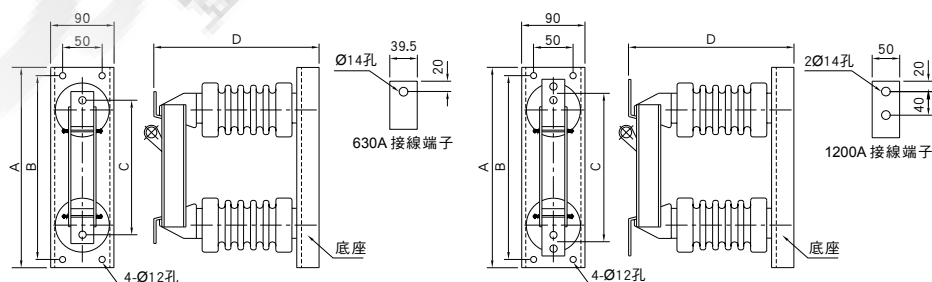
(2) 規格 Specification

場所 Place	型式 Type	額定電壓 Rated Voltage (kV)	額定電流 Rated Current (A)	1秒電流 1sec Current Rating (kA)	絕緣強度·耐壓值(kV) Insulation Withstand Test Voltage (kV)		
					衝擊波(標準波型)B.I.L Impulse 1.2x50 μs (Crest)	商用週波Power-Frequency	
						乾燥(1分鐘) Dry (1 min)	注水(10秒鐘) Wet (10 sec)
屋內 (Indoor)	SDS-HE6N SDS-HE6B	15	630	25	95	35	—
	SDS-HE12N SDS-HE12B		1200	40			—
	SDS-HF6N SDS-HF6B	25	630	25	125	60	—
	SDS-HF12N SDS-HF12B		1200	40			—
	SDS-3HE6N SDS-3HE6B	15	630	25	95	35	—
	SDS-3HE12N SDS-3HE12B		1200	40			—
	SDS-3HF6N SDS-3HF6B	25	630	25	125	60	—
	SDS-3HF12N SDS-3HF12B		1200	40			—
屋外 (Outdoor)	SDS-DE6	15	630	25	110	50	45

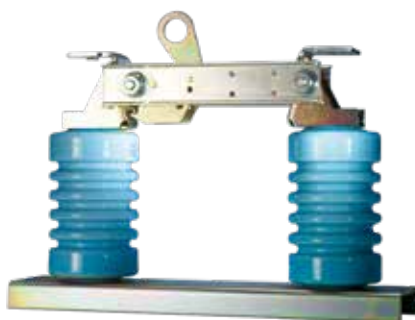
註： 1. N為代表瓷礙子型，B為代表樹脂礙子型
2. 附電氣連鎖型於型式後方加(E)

Note： 1. N is porcelain insulator type, B is epoxy insulator type.
2. The type back add to (E) for with electric interlock.

單相
屋內用 Indoor Use

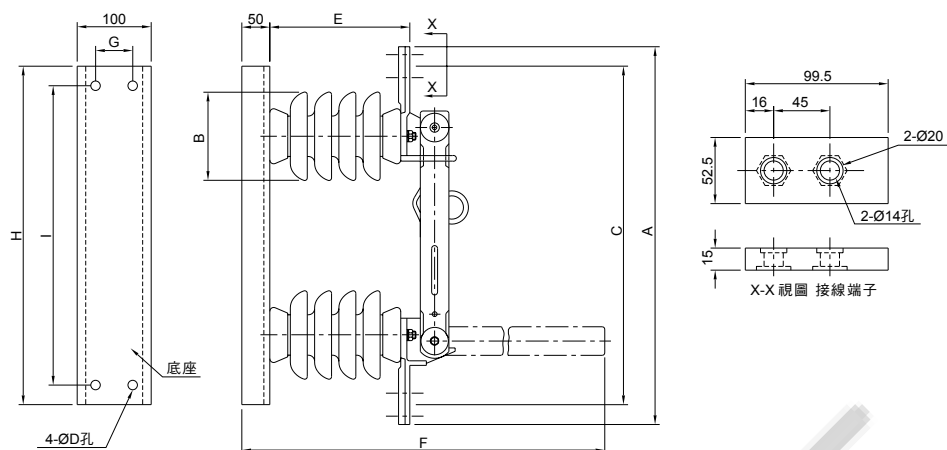


單位Unit：mm



型式規格 Specification		變化尺寸 Dimension				重量 Weight(kg)	備註Note
		A	B	C	D		
SDS-HE6N	15kV 630A	400	370	260	262	7.8	瓷礙子型Porcelain Insulator Type
SDS-HE12N	15kV 1200A	400	370	290	264	9.2	
SDS-HF6N	25kV 630A	450	422	310	316	9.7	
SDS-HF12N	25kV 1200A	450	422	340	318	11.2	
SDS-HE6B	15kV 630A	400	370	260	248	5	樹脂礙子型Epoxy Insulator Type
SDS-HE12B	15kV 1200A	400	370	290	250	6.5	
SDS-HF6B	25kV 630A	450	422	310	316	7	
SDS-HF12B	25kV 1200A	450	422	340	318	8.5	

屋外用 Outdoor Use



單位Unit : mm

型式規格 Specification	變化尺寸 Dimension	A	B	C	D	E	F	G	H	I	重量Weight(kg)
SDS-DE6 15kV, 630A		580	142	510	14	190	590	50	610	540	15

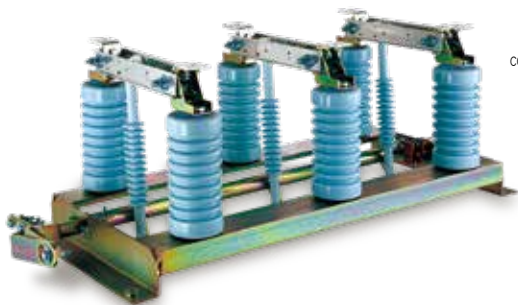
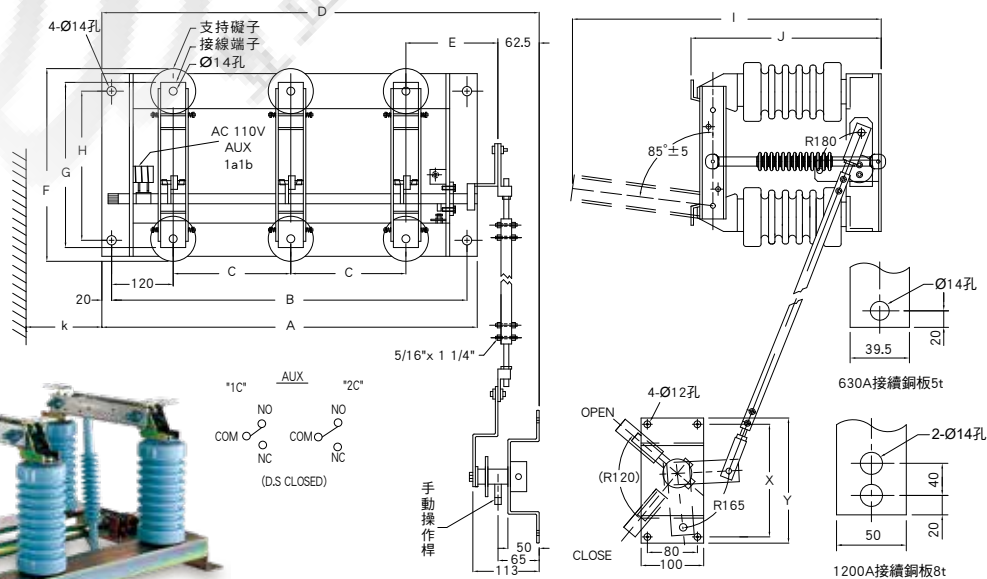
三相連動

屋內用 Indoor Use

單位Unit : mm

型式規格 Specification	變化尺寸 Dimension	A	B	C	D	E	F	G	H	I	J	K	重量Weight(kg)	備註Note
SDS-3HE6N 15kV 630A													35	瓷碍子型Porcelain Insulator Type
SDS-3HE12N 15kV 1200A		720	680	220	818	175	335	300	248	485	310	30	36	
SDS-3HF6N 25kV 630A													37	
SDS-3HF12N 25kV 1200A		880	840	300	1043	240	387	352	300	605	364	130	38	
SDS-3HE6B 15kV 630A													27	樹脂碍子型Epoxy Insulator Type
SDS-3HE12B 15kV 1200A		720	680	220	818	175	335	300	248	471	296	30	28	
SDS-3HF6B 25kV 630A													29	
SDS-3HF12B 25kV 1200A		880	840	300	1043	240	387	352	300	591	364	130	30	

	X	Y
附電氣連鎖 With Electric Interlock	232	252
無電氣連鎖 Non Electric Interlock	180	200



15/25kV, 630/1200A

注意：附電氣連鎖之線圈無法長時間激磁，操作完DS後須將鎖定梢再插入操作盤中，以避免連鎖線圈長時間激磁造成燒毀。

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。

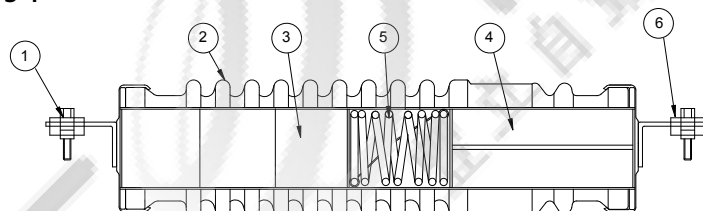
The gapless ZnO-type lightning arrester which duty current 5kA and 10kA used in distribution is a result of our Company's R&D Team in technical cooperation with General Electric in the United States. As a matter of fact, this item has been long used in the electric system in the United States ever since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

3-1

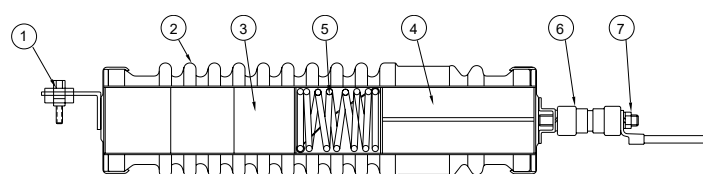


- | | |
|----------------|--------------------------|
| (1) 電源側接線端子 | (1) Line Terminal. |
| (2) 瓷器罩管 | (2) Porcelain Insulator. |
| (3) 氧化鋅(ZnO)素子 | (3) ZnO Element. |
| (4) 間隙管 | (4) Gap Tube. |
| (5) 彈簧 | (5) Spring. |
| (6) 接地側接線端子 | (6) Earthing Terminal. |

圖1 ZnO避雷器構造圖(5kA)

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

3-2



- | | |
|----------------|--------------------------|
| (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

4-1

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

4-2

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

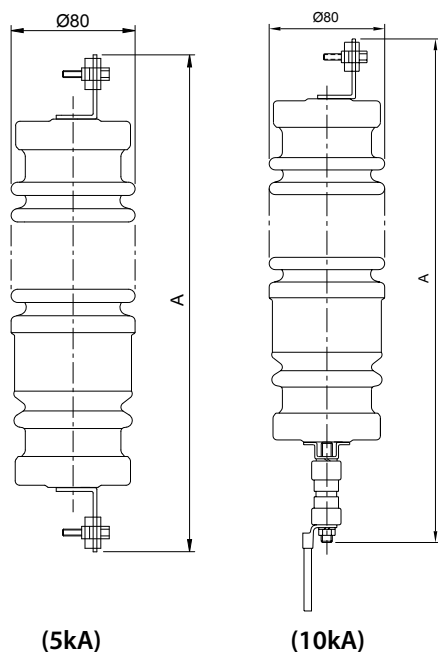
The design and functions of this invention meet the standards of IEEE Std C62.11

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

表二 (Table 2.) (10kA)

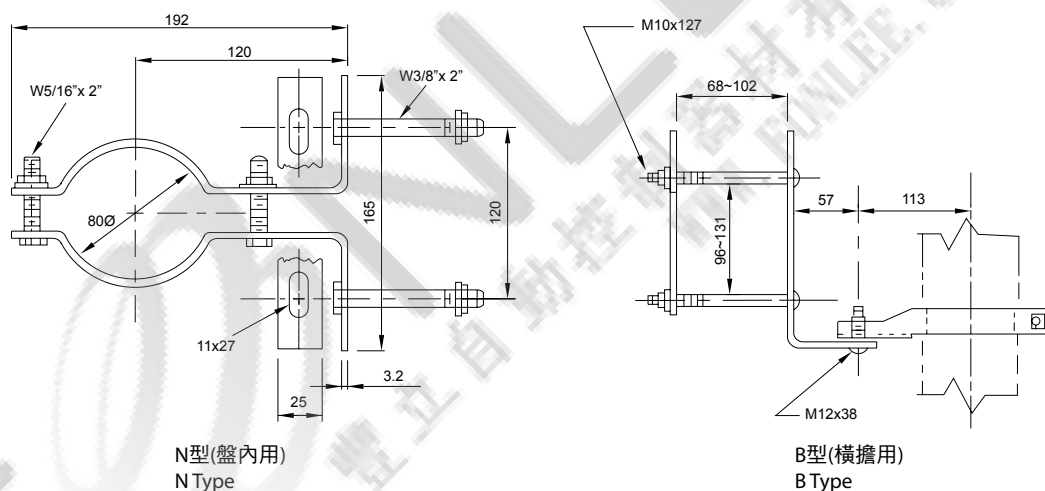
額定 電壓 Rated Voltage (kV) RMS	最大連續 運轉電壓 Maximum Continuous Operating Voltage(kV)	最大等效定峻度波 頭保護水準 Max Front of Wave Protective Level 0.5μs (kV Crest)	最大放電阻抗電壓(kV波峰值) 電流波形8x20 μs Max Discharge Voltage (kV Crest) Using an 8x20 μs Current Wave			放電電流耐量 Withstand Discharge Current 4~6x10~15 μs (kA 波峰值) (kA 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:

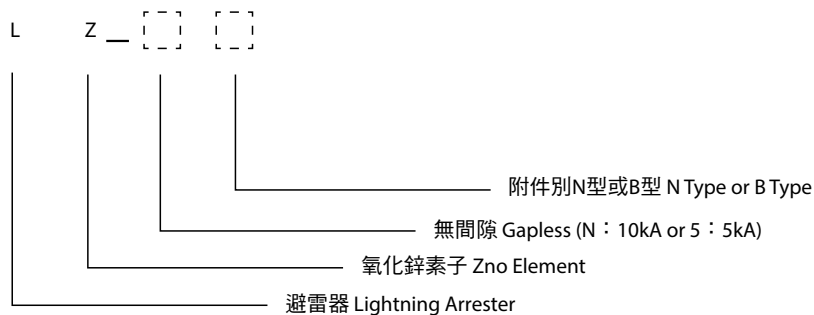
(2) 額定電壓選擇：

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.



三、熔絲鏈開關 Fuse Cutout

(1) 特性 Characteristics

1. 符合ANSI規格。
Consistent with ANSI specifications
2. 採用單純之肘節機構(toggle mechanism)，熔絲熔斷之後，熔絲鏈套管迅速確實地跳開。
Employing simplified toggle mechanism. After fuse burnt, the Fuse Holder rapidly and positively disengages.
3. 可動及固定導電部分均有鍍銀，保證長期使用之優良接觸與操作便利性，其餘鐵製部分亦電鍍熔鋅，耐鹽蝕能力高，在鹽分濕氣特多地方，亦能保證長期使用。
Movable and stationary contacts are coated with a thick layer of silver to ensure smooth operation for long years. Other iron parts are also coated with zinc to obtain high resistance to salt corrosion. Extensive service life is guaranteed even in salty and humid climate.
4. 熔絲筒之強度很高，在沒有保養之情況下，即使以額定啟斷電流啟斷五次，亦無異狀。
High strength of Fuse Holder which will not become defective even without maintenance and subjected to five switching interrupt operations of Rated Interrupting Current.
5. 附有ANSI規格之安裝器具可依照設計裝在橫木柱上。
With a Mounting Bracket of ANSI specifications that can be mounted on a crossarm according to design.

(2) 規格 Specification

表1. DXM型熔絲鏈開關種類及額定值
Table1. Type DXM cutout, Item and Rated

型別Type	DXM-5
連續額定電流Rated Continuous Current (A)	100
最大設計電壓Rated Maximum Voltage (V)	7800/15000
頻率Power Frequency (Hz)	50/60
額定啟斷電流Rated Interrupting Current (A) (Asym)	10000 (at7.8kV)

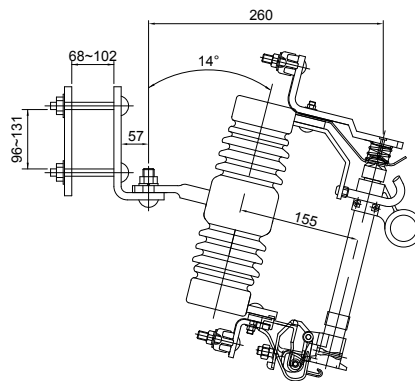
表2. DXM型熔絲鏈開關絕緣耐力表
Table2. Type DXM Cutout, Withstand Voltage

型別 Type	加壓端 Test Location	60Hz 商用電壓kV (r.m.s.) Power -Frequency Voltage (r.m.s.)		衝擊波電壓kV (crest) Impulse Voltage 1.2×50μs
		乾燥 (1分鐘) Dry (1min)	注水 (10秒) Wet (10sec)	
DXM-5	端子-端子 Terminal- Terminal	35	-	95
	端子-大地 Terminal- Ground	35	30	95

(3) 保養 Maintenance

DXM型熔絲鏈開關構造堅固，不必保養亦可長期使用，尤其是沒有保養下可以啟斷額定啟斷電流5次而不發生電氣上及機械上之障礙，但是啟斷故障多次之後，會消耗熔絲筒內部之消弧用纖維板，其內徑在下端口比原內徑大0.8~1.6mm時應更新熔絲筒。

Solid and sturdy construction of DXM CUTOUT with an extensive service life even without maintenance. It will not cause electrical or mechanical failure even without maintenance and subjected to five switching interrupt operations of Rated Interrupting current. But, after frequent interrupting failures, it will result in consumption of the Vulcanized Fibre Tube in the Fuse Holder. Replace with a new Fuse Holder in case the inner diameter at the lower end is 0.8-1.6mm larger than its original inner diameter.







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SK變壓器為一般變壓器的

3倍強度

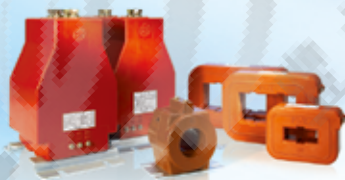
- 保證氫氣 < 400 ppm，部分放電 < 200 pC
- surge V / source V $\approx$ 3 p.u.(耐壓強度)
- 適用負載：變壓變頻(VVVF)，非線性負載及多相整流負載(例如：三相六脈波)
- 保固兩年



SK type 變壓器



高效率模鑄式變壓器
Cast Resin Transformer



比流器 / 比壓器
Current Transformer
Voltage Transformer



高低壓電容器/電抗器
HV/LV Capacitors / Reactor



配電盤
Switchgear & Controlgear



避雷器 / 分段開關
Lightning Arrester /
Disconnecting Switches



智慧型電表 / SCADA
Smart Meter / SCADA



智慧型電容器調諧組/盤
Smart Capacitors / Panel



主動式濾波器 / 自動虛功補償器
Active Power Filter /
Static Var Generator



高/低壓匯流排
HV/LV Busway

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INTEGRATION OF POWER SYSTEM

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