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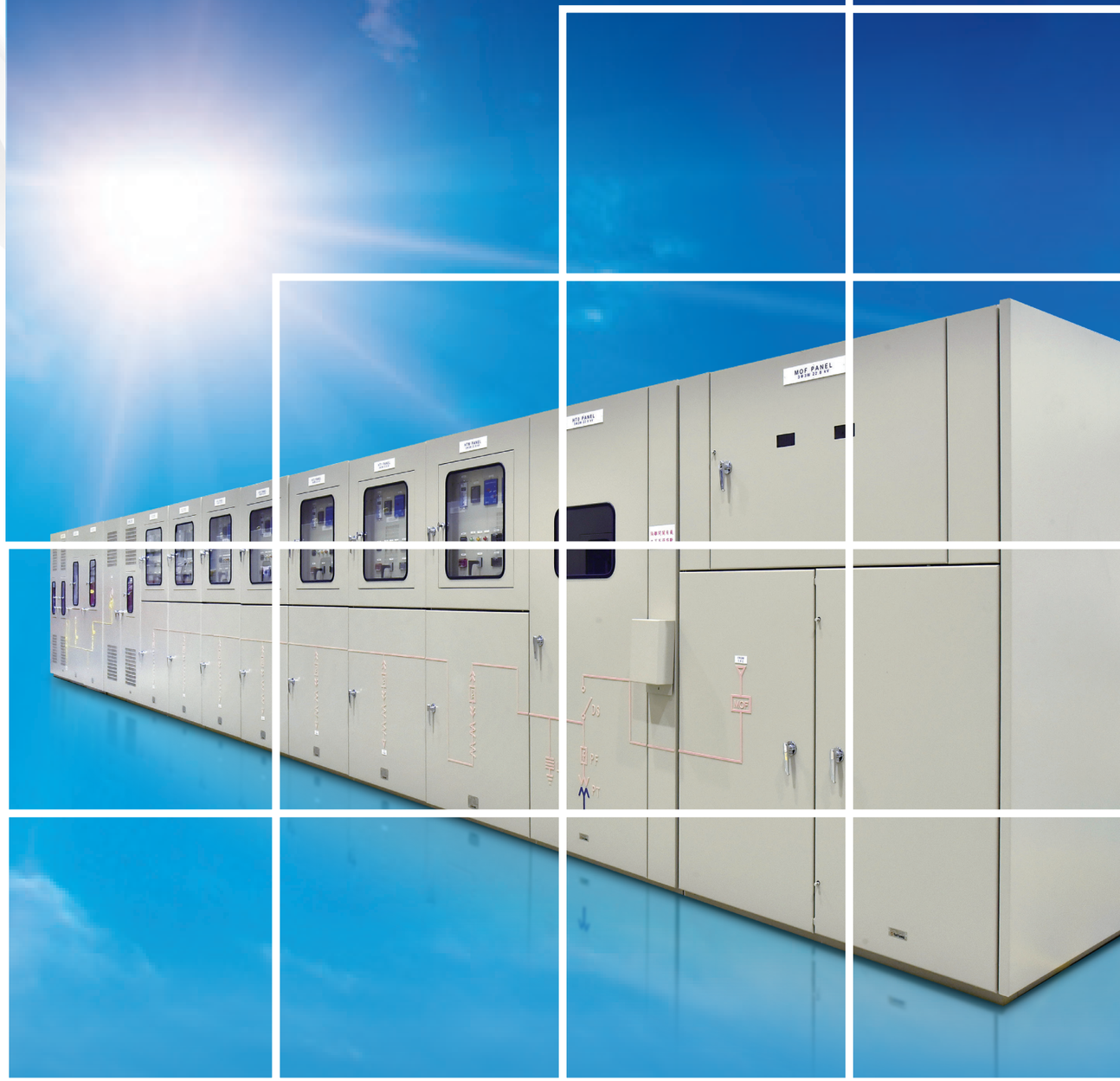
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Web Code

2024-01

TATUNG

電力事業群 ***Power Business Group***
重電事業部 ***Heavy Electrical Equipment***



配 電 盤

Switchgear & Controlgear



Professional Trustworthy Quality

MIRDC ISO 9001
MIRDC ISO 14001
MIRDC ISO 14064-1
MIRDC ISO 45001
SGS
TAF Testing Laboratory 2306

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發展沿革

Development and Innovation

1985
工業局評定為配電盤一級廠
The Industrial Bureau rated us as a first-class switch-gear factory

1986
- 完成15kV 600A 12kA真空斷路器、無間隙避雷器開發
  Successfully developed and completed 15kV 600A 12kA vacuum breaker and arrester without gaps
- 完成台電國產化13.8kV裝甲閉鎖型配電盤開發
  Successfully developed and completed TPC 13.8kV metal-clad switchgear

1987
完成25.8kV 600A 12kA真空斷路器開發
Successfully developed and completed 25.8kV 600A 12kA vacuum breaker

1988
完成14.4kV屋外裝甲閉鎖型配電盤、23kV裝甲閉鎖型配電盤開發
Successfully developed and completed 14.4kV outdoor metal-clad switchgear and 23kV metal-clad switchgear

1985 | 1988

1995
完成36kV裝甲閉鎖型配電盤開發
Successfully developed and completed 36kV metal-enclosed switchgear

1999
完成9kV配電級高分子避雷器開發定型通過
Successfully developed and passed 9kV poly merhoused surge arrester

2000
完成161kV 50kA SF_6氣體絕緣開關設備開發
Successfuly developed and completed 161kV 50kA SF_6 gas insulated switchgear

2001
完成7.8/15kV 熔絲鏈開關開發，通過台電型式認證
Successfully developed and completed 7.8/15kV fuse cutout switch, and awarded TPC certification

2003
完成移動式電力檢測裝置(台電移動式試驗車)開發
Successfully developed and completed mobile test substation (TPC Movable Voltage Regulate Trans-former)

1995 | 2003

2004
- 完成12kV 3150A 40kA鎧裝式金屬封閉開關設備開發(SIEMENS&ABB)
  Successfully developed and completed 12kV 3150A 40kA metal-enclosed switchgear (SIEMENS & ABB)
- 完成660V低壓抽出式開關櫃及低壓動力配電箱開發
  Successfully developed and completed 660V LV draw-out switchgear and LV switchgear

2006
完成7.2kV 3150A 40kA鎧裝式金屬封閉開關設備開發
Successfully developed and completed 7.2kV 3150A 40kA metal-enclosed switchgear

2008
完成中龍鋼鐵3.45kV & 480V配電盤開發
Successfully developed and completed DRAGON STEEL 3.45kV & 480V metal-enclosed switchgear

2004 | 2008

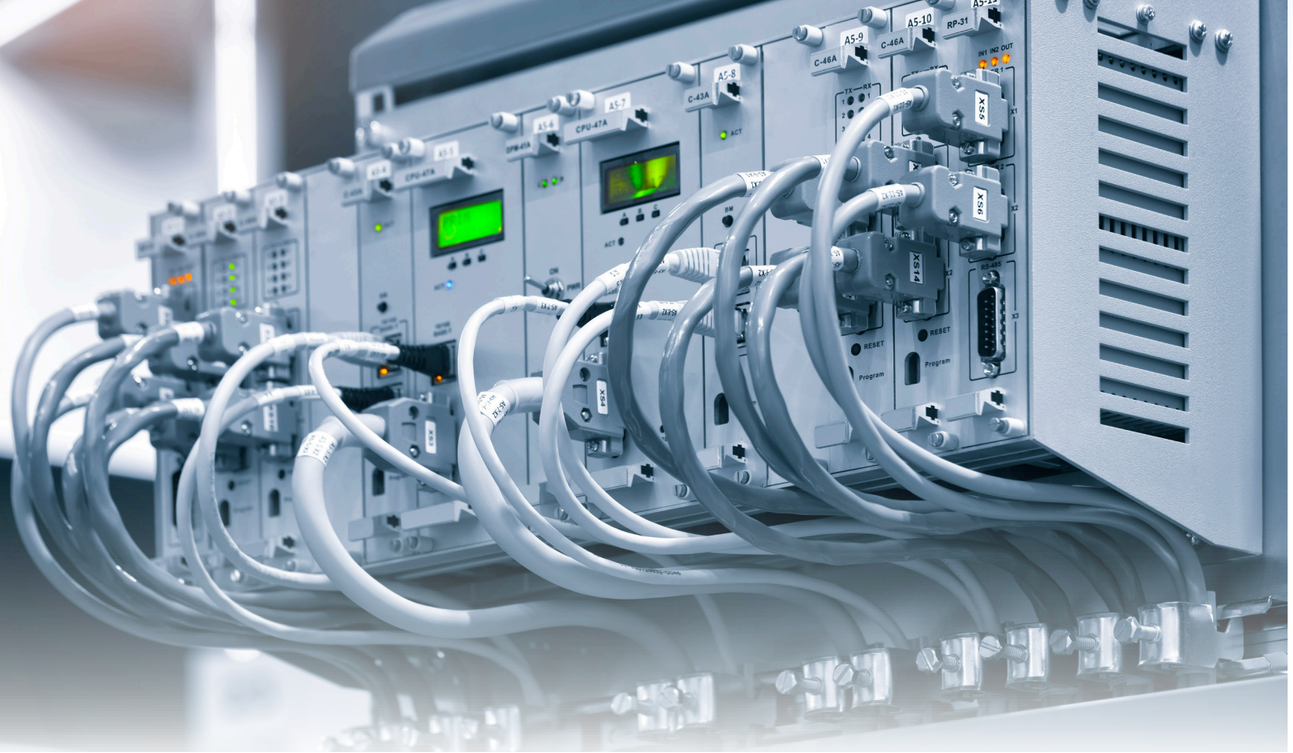
2011
通過全國認證基金會(TAF) ISO/IEC 17025實驗室管理系統評鑑合格
Awarded (TAF) ISO/ IEC 17025 certificate by BSMI

2012
通過經濟部能源局高壓用電設備原製造廠家認可
Awarded original manufacturer by Ministry of Economic Affairs

2018
完成CNS 15156-200 / IEC62271-200高壓配電盤開發
Successfully developed and completed CNS15156-200 / IEC62271-200 HV metal-enclosed switchgear

2023
完成全國認證基金會(TAF)認證之屋外高壓配電盤耐候防風雨試驗場
Completed the Taiwan Accreditation Foundation(TAF) certi-fication for outdoor high-voltage switchgear weatherproof test site.

2011 | 2023



前言 Preface

大同公司重電事業部為國內最大且歷史最悠久之重電電機事業體。擁有傑出的工程師群和技術人員投入產品的研發及製造，以提供客戶高品質，高效率的服務。本事業部除了生產變壓器，現為國內最高電壓最大容量345kV及728MVA，金屬閉鎖型配電盤和盤內器材之外，在電力系統的設計及施工上也具有豐富的經驗。將高級技術應用到高度開發且多變的工業社會中，結合並整合不同領域的工業技術將是必要的成長。我們累積了服務客戶數十年的技術和經驗，在國內外都獲得客戶一致的肯定，將持續發展，生產與服務，以提供客戶高品質的用電設備。

TATUNG Heavy Electrical Equipment BU, the largest among the industry with the longest history in the Republic of China, has a group of outstanding engineers and technicians dedicated to the development, design and manufacturing products of best quality and highest efficiency. TATUNG Heavy Electrical Equipment BU can not only produce transformer rating up to 345kV and 728MVA, metal-enclosed switchgear and switchgear components, but also has rich experience in power system engineering design and the construction of power substations. In applying advanced know-how to the need of highly developed and diversified industry society, there is a growing need to combine and integrate techniques developed in different fields. With over several decades years of accumulated know-how and experience in offering service, and has won a good reputation both at home and abroad. we will keep on developing, producing installing and serving high-quality electrical products for customers all over the world.

產品特色 Product Features ▶ ▶ ▶ ▶

電力是現代社會不可或缺的能源，配電盤在提供可控且穩定的電力中扮演重要的角色。大同配電盤部門擁有廣泛的生產線，現代化的設備從事各項產品的生產，使各產品具有彈性、可信賴性、安全性及維護性的特色。

Electric is an energy essential to support modern society. switchgear play an important role in supplying regulated and constant power. Tatung switchers have wide-ranging production lines and modern production facilities, characterized by many advantages such as flexibility, reliability, safety, and maintainability.

- **彈性**
  依照系統設計及分析的技術， 可選擇各種斷路器(VCB, GCB, ACB)裝在配電盤上。
- **FLEXIBILITY**
  Applying systemic design method and analysis techniques, various types of breakers (VCB, GCB,ACB) can be selected to install in the switchgear.

- **信賴性**
  各項產品都在廠內通過例行試驗及機能測試。
- **RELIABILITY**
  Each unit is subjected to a series of routine tests and functional tests at factory.

- **安全性**
  藉著互鎖系統及自動安全裝置，可避免操作人員在操作或維護時，碰觸帶電體。
- **SAFETY**
  A system of interlocks and automatic safety devices prevent contact with live parts under all operating and service conditions.

- **維護性**
  提供完整的圖面和說明書(接續圖，控制圖，操作及維護說明書等)，使用戶能順利的操作，方便的維護。
- **MAINTAINABILITY**
  Complete drawings and instructions (wiring drawings, schematic diagrams, operating and maintenance instructions) are provided for smooth operation and easy maintenance.

配電盤製造作業流程圖
The Flow Chart of the Switchgear Manufacturing



作業或加工 Operation or Manufacture

客戶中間檢查（檢驗限止點） Customer Inspection (Interim and Final)

品管檢驗 Q.C. Inspection

定型試驗合格產品 Type Test Certificates of Products

☑13.8kV裝甲閉鎖型配電盤通過台電國產化認證合格
13.8kV metal-clad switchgear by TPC

☑14.4kV屋外裝甲閉鎖型配電盤通過台電國產化認證合格
14.4kV outdoor metal-clad switchgear by TPC

☑23kV裝甲閉鎖型配電盤通過台電國產化認證合格
23kV metal-clad switchgear by TPC

☑480V馬達控制中心通過台電國產化認證合格
480V motor control center by TPC

☑火力級發電廠用480V配電中心通過台灣大電力特性試驗合格
480V switchgear center for thermal power plant by TERTEC

☑7.8/15kV 熔絲鏈通過台電型式認證合格
7.8/15kV fuse cutout switch by TPC

☑12kV 2000A 25kA鎧裝式金屬封閉開關設備通過台灣大電力/大陸西安高壓電氣研究所型式試驗合格
12kV 2000A 25kA metal-enclosed switchgear by TERTEC / XIHARI, China

☑12kV 3150A 40kA鎧裝式金屬封閉開關設備通過大陸西安高壓電氣研究所型式試驗合格
12kV 3150A 40kA metal-enclosed switchgear by XIHARI, China

☑660V低壓抽出式開關櫃及低壓動力配電箱通過大陸中國質量認證中心CCC認證
CCC certificate for 660V LV draw-out switchgear and low voltage switchgear by CQC, China

☑7.2kV 3150A 40kA鎧裝式金屬封閉開關設備通過大陸西安高壓電氣研究所型式試驗合格
7.2kV 3150A 40kA metal-enclosed switchgear by XIHARI, China

☑中龍鋼鐵480V 2500A 50kA與3.45kV 1250A 25kA通過台灣大電力特性試驗合格
Dragon Steel 480V 2500A 50kA and 3.45kV 1250A 25kA metal-enclosed switchgear by TERTEC

☑24kV 1250A 25kA高壓金屬閉鎖型配電盤通過台灣大電力型式試驗合格
24kV 1250A 25kA HV metal-enclosed switchgear by TERTEC

☑480V 6300A 85kA低壓金屬閉鎖型配電盤通過台灣大電力型式試驗合格
480V 6300A 85kA LV metal-enclosed switchgear by TERTEC

☑鹽水噴霧試驗RN10認証合格
Salt spray test RN10 certified

☑CNS低壓配電盤保護等級(IP45)驗證合格
CNS LV metal-enclosed switchgear (IP45)

☑CNS 15156-200 / IEC62271-200高壓配電盤開發大電力定型試驗合格
CNS 15156-200 / IEC62271-200 HV metal-enclosed switchgear by TERTEC

設計製造標準 Design & Manuf. Standard ▶ ▶ ▶ ▶

• 高壓金屬閉鎖型配電盤 HV Metal-enclosed Switchgear

一般規範 / General Specification

依據標準 / Standard		☐ CNS 3990 ☐ JEM 1425 ☐ ANSI C37.20.0 ☐ CNS 15156-200/IEC 62271-200
適用環境 / Service Condition	海拔高度 / Altitude	☐ 1000 公尺以下 below 1000m (above sea level)
	裝置場所 / Install Position	☐ 屋內Indoor ☐ 屋外Outdoor
	周圍溫度 / Ambient Temperature	最大Max 40℃ 最小Min -5℃ （屋內型） 平均Ave 35℃ Min -25℃（屋外型）
	相對濕度 / Relative Humidity	最大Max 85% 最小Min 45%
	地震係數 / Seismic Factor	標準Standard 0.15G 接合處Connection Position 0.2G
構造型式 / Construction		☐ 裝甲型Metal-clad ☐ CNS.....型TYPE ☐ 隔間型Compartmented ☐ JEM.....型TYPE ☐ 箱櫃型Cubicle ☐ IEC.....型TYPE

額定 / Ratings

額定電壓 / Rated Voltage (kV)		3.6 / 7.2	12	13.8	24	36
額定一般電流(主電路) / Rated Current (Main Circuits)		最大Max 4000A				
顯定短時耐電流 / Rated Short-time Withstand Current		最大Max 40 kA 1 Sec				
額定絕緣等級 / Rated Insulation Level	衝擊電壓 / Rated Lightning Impulse Withstand Voltage (Peak Value)	60	75	95	125	170
	商用頻率耐壓 / Rated 1 Min Power Frequency Withstand Voltage (R.M.S. Value)	22	28	36	50	70
控制電壓 / Control Voltage		☐ AC..... V ☐ DC..... V ☐ 電池Battery ☐ 控制用比壓器Control PT.				

箱體 / Enclosure

保護等級 / Degree of Protection	☐ CNS IP..... ☐ IEC IP..... ☐ NEMA.....
材質 / Material	☐ SPHC ☐ SUS 304

設計製造標準 Design & Manuf. Standard ▶ ▶ ▶ ▶

• 低壓金屬閉鎖型配電盤 LV Metal-enclosed Switchgear

一般規範 / General Specification

依據標準 / Standard		☐ CNS 13542 ☐ JEM 1265 ☐ ANSI C37.20.0 ☐ CNS 61439-2 / IEC 61439-2
適用環境 / Service Condition	海拔高度 / Altitude	☐ 1000 公尺以下 below 1000m (above sea level)
	裝置場所 / Install Position	☐ 屋內Indoor ☐ 屋外Outdoor
	周圍溫度 / Ambient Temperature	最大Max 40℃ 最小Min -5℃ （屋內型） 平均Ave 35℃ Min -20℃（屋外型）
	相對濕度 / Relative Humidity	最大Max 85% 最小Min 45%
	地震係數 / Seismic Factor	標準Standard 0.15G 接合處Connection Position 0.2G
構造型式 / Construction		☐ CNS (JEM)..... 型TYPE ☐ IEC..... 型TYPE

額定 / Ratings

額定電壓 / Rated Voltage (V)	600 V / 1000V
額定一般電流(主電路) / Rated Current (Main Circuits)	最大Max 6000A
顯定短時耐電流 / Rated Short-time Withstand Current	最大Max 100 kA 1 Sec at 480V
額定耐電壓 / Rated Withstand Voltage	主電路Main Circuit : 2200V 1 Minute 控制電路Control Circuit : 1500V 1 Minute
控制電壓 / Control Voltage	☐ AC..... V ☐ DC..... V ☐ 電池Battery ☐ 控制用變壓器Control TR.

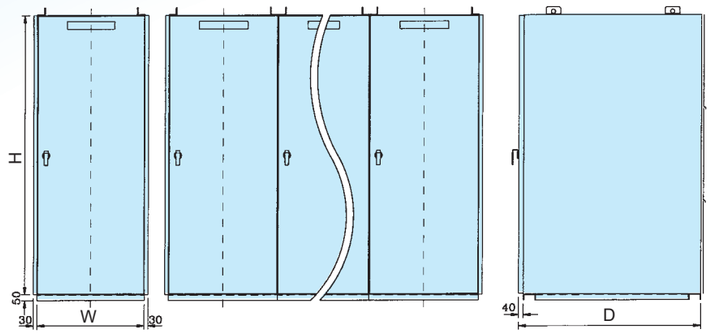
箱體 / Enclosure

保護等級 / Degree of Protection	☐ CNS ..... ☐ IEC IP..... ☐ NEMA Type.....
材質 / Material	☐ SPHC ☐ SUS 304

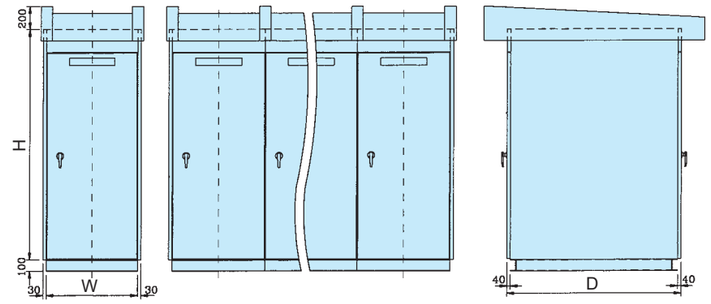
外形尺寸圖 Outline Drawings & Dimensions ▶ ▶ ▶ ▶

• 金屬閉鎖型配電盤 Metal-enclosed Switchgear

屋內型 / INDOOR TYPE PANEL



屋外型／ OUTDOOR TYPE PANEL



CNS 15156-200 / IEC62271-200 參考尺寸

盤型別 / Type of Panel	電壓(kV) / Voltage	尺寸 / DIMENSIONS (mm)		
		寬(W)	深(D)	高(H)
屋內型 / INDOOR	3.6/7.2	650	1500	2480
	12	650 / 800	1800	2480
	24	800 / 1000	2000	2480

CNS3990 參考尺寸

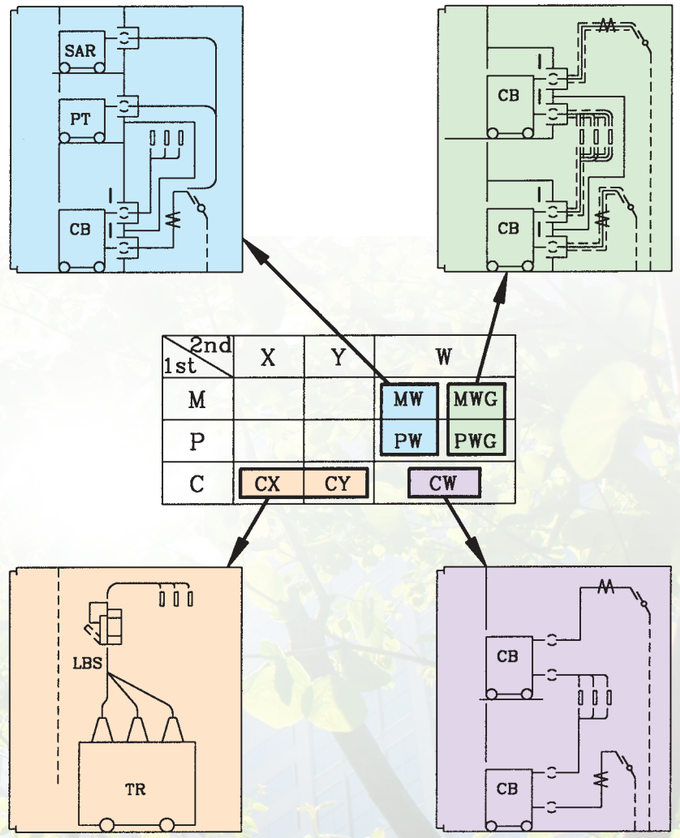
盤型別 / Type of Panel	電壓(kV) / Voltage	尺寸 / DIMENSIONS (mm)		
		寬(W)	深(D)	高(H)
屋內型 / INDOOR	3.6/7.2	800	1500	2350
	12	900	1800	2350
	24	1200	2000	2350
	36	1500	3200	2800
屋外型 / OUTDOOR	3.6/7.2	800	1500	2550
	12	900	1800	2550
	24	1200	2000	2550
	36	1500	3200	3000

型式分類 Type & Classification ▶ ▶ ▶ ▶

• 高壓金屬閉鎖型配電盤 HV Metal-enclosed Switchgear

CNS 3990 / JEM 1425

記號 Symbol		記號說明 Description
第一記號 1st	M	裝甲型配電盤及控制盤Metal-clad Switchgear & Controlgear
	P	隔間型配電盤及控制盤Compartmented Switchgear & Controlgear
	C	箱櫃型配電盤及控制盤Cubicle Switchgear & Controlgear
第二記號 2nd	X	固定型構件Fixed Part
	Y	搬出型構件Removable Part
	W	引出型構件Withdrawable Part
第三記號 3rd	G	於主回路之匯流排，接續導體及接續部施有絕緣被覆者 Wrapping Insulation Material Around Main Bus, Connecting Parts & Connecting Insulation



構造概念圖 / Conception of Construction

型式分類 Type & Classification ▶ ▶ ▶ ▶

•高壓金屬閉鎖型配電盤 HV Metal-enclosed Switchgear

CNS15156-200/IEC62271-200

當內部電弧發生時，有關人員安全上之分類 Classification related to personnel safety in case of internal arc

可接近性之分隔室型式 Types of compartments with regard to accessibility		特徵 Features
操作者可接近式 分隔室 Operator-accessible compartment	互鎖基礎型之可接近式分隔室 供正常操作及維護時開啟 Interlocked-based accessible compartment Intended to be opened for normal operation and maintenance	不用工具即可開啟-互鎖作用僅容許於高電壓零件不帶電且接地時始可接近 No tools are required - Interlocking allowing access only when HV parts are dead and earthed
	程序基礎型之可接近式分隔室 供正常操作及維護時開啟 Procedure-based accessible compartment Intended to be opened for normal operation and maintenance	不用工具即可開啟-在操作者之作業程序中結合鎖定工作，以容許僅於高電壓零件不帶電且接地時始可接近 No tools are required - Provision for locking to be combined with operator procedures, to allow access only when Hv parts are dead and earthed
特殊可接近式分隔室 Special accessible compartment	工具基礎型之分隔室，使用者可以開啟，但非為正常操作及維護 Tool-based accessible compartment possible for user to open, but not intended to be for normal operation and maintenance.	開啟時須使用工具，對於接近程序無特殊規定。 維持工作可能需要特殊程序 Tools necessary for opening. No specific provision to address access procedure. Special procedures may be required to maintain performances
不可接近式分隔室 Non-accessible compartment	使用者不可能開啟(非供開啟用) Not possible for user to open (not intended to be opened)	開啟會使分隔室損壞或使用者無法獲得清楚之指示，與可接近性無關 Opening destroys compartment or clear indication to the user. Accessibility not relevant

當可接近式分隔室開啟時，有關運轉持續性喪失之開關裝置屬性 Switchgear categories with regard to the loss of service continuity when opening accessible compartments.		特徵 Features
LSC1		其他功能性單元或其一部分應予切離 Other functional units or some of them shall be disconnected
LSC2	LSC2A	其他功能性單元可通電 Other functional units can be energized
	LSC2B	其他功能性單元及所有電纜分隔室均可通電 Other functional units and all cable compartments can be energized

與帶電零件與開啟之可接近式分隔室之間，與障壁特性有關之開關裝置的分類 Switchgear classification with regard to the nature of the barrier between live parts and opened accessible compartment	特徵 Features
PM	帶電零件與開啟之分隔室之間的金屬擋門及隔板-(金屬閉鎖狀態繼態保持) Metallic shutters and partition between live parts and open compartment - (metal- enclosed condition maintained)
PI	帶電零件與開啟之分隔室之間的金屬隔板/擋門出現非連續之絕緣被覆 Insulation-covered discontinuity in the metallic partitions/ shutters between live parts and open compartment

型式分類 Type & Classification ▶ ▶ ▶ ▶

• 低壓金屬閉鎖型配電盤 LV Metal-enclosed Switchgear

依CNS13542 低壓金屬閉鎖型配電盤分為A-G 等型，如下表所示，各型皆具備2 種型式
According to CNS13542 the form of metal-enclosed switchgear shall be classified into A form to G, Form as given in following table

低壓金屬閉鎖型配電盤型式 / Form of metal-enclosed switchgear								條件記號 / Designation	具備條件 / Requirements to be provided
A	B	C	D	E	F	G			
○	○						隔離板及絕緣程度 / Degree of partition and insulation	1	所有器具均安裝於接地之金屬箱內。 The apparatus shall be arranged in the earthed metal-enclosure
		○	○	○				2	除具備1 . 之條件外，打開監視控制盤時，須具有不誤觸及主電路帶電部之危險，且能夠安全檢查監視控制盤裡面及端子台等之必要的維修。 Further, live parts of the primary circuit shall be arranged so as to prevent accidental contact, when a control board is opened. And in addition , the back face of the control board, terminal boards, etc. which would be approached for the normal purpose of maintenance, can be insepcted safely
					○			3	除具備1.2 . 之條外，斷路器室相互間及斷路器室和其他各室之間，將以接地金屬隔離板或絕緣板隔離之。 Further, each circuit breaker shall be segregated by earthed metallic partitions or insulating partitions
						○		4	除具備1.2.3. 之條件外; 主電路匯流排、連接導體及連接處(1) 皆須加以絕緣。 Further, buses, connecting conductors and connecting parts (1) of the primary circuit shall be covered with insulating material
○		○					斷路器之裝置方式 / Construction of circuit breaker	X	固定安裝式之構造。 Fixed type
	○		○					Y	可搬動方式之構造。 Removable type
				○	○	○		Z	主電路為自動連接式斷路部，而控制電路為手動連接式斷路部(2) 之抽出型方式。 Withdrawable type arranged with a self coupling primary circuit disconnecting device and a manual coupling control circuit disconnecting device (2)

註：(1) 於連接部作絕緣被覆，考慮到低電壓金屬閉鎖型配電箱之特殊性，即匯流排、連接導體、機器之端子等之形狀，將依照使用者和製造業者間之協議可以省略。
(2) 設計自動連接式斷路器以取代手動連接式斷路器也可以。

NOTE: (1) Taking account of the complexity of busbars, connecting conductors and terminal of apparatus, insulating covering of connecting parts may be omitted, when agreed between user and manufacturer.
(2) Self coupling control circuit disconnecting device may be used instead of manual coupling type.

主要產品 Main Products ▶ ▶ ▶ ▶

1. 整套配電設備之設計、製造、安裝

   The Design, Manufacture & Installation of The Whole Electric Power System of Plant

2. 配電盤／ Switchgear：

   裝甲型配電盤（至36kV）／Metal-Clad Switchgear (Up to 36kV)

   電力中心型配電盤（單元變電站）／Power Center (Unit Substation)

   高壓馬達啟動盤／ HV Motor Starters

   低壓馬達控制中心／LV Motor Control Center (M.C.C.)

   發電機控制盤／ Generator Control Panel

   燈用照明分電盤／ Panel board for Light

   監視控制盤／Graphic Control & Supervising Panel

   儀表及電驛表／ Meter & Relay Panel

   工業電子控制盤／Industrial Electronic Control Panel



代表實績 Achievement ▶ ▶ ▶ ▶



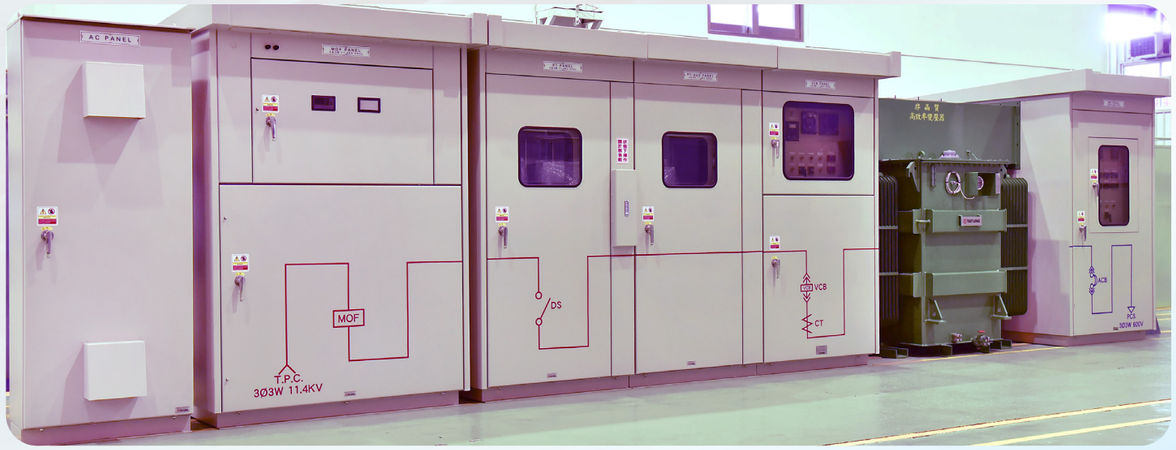
22.8kV 高壓配電盤 22.8 kV High-vlotage Switchgear



22.8kV 高壓配電盤(通過CNS 15156試驗)
22.8 kV High-voltage Switchgear(pass CNS15156)



480V 負載中心 480V Load Center



電力中心盤 (HV+TR+LV) Power Center Switchgear

代表實績 Achievement ▶ ▶ ▶ ▶



36kV 金屬閉鎖型配電盤 36kV Metal-enclosed Switchgear



屋外裝甲閉鎖型配電盤 Metal-clad Switchgear



雙層式閉鎖型配電盤 2 Tiers type Metal-enclosed Switchgear



保護電驛盤 (RCP) Relay Control Panel



馬達控制中心 Motor Control Center