

保存年限	
檔 號	

## 財團法人全國認證基金會 書函

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受文者：中興電工機械股份有限公司

速別：普通件

密等及解密條件：普

發文日期：2023年07月13日

發文字號：TAF-L240223003

附件：如文

主旨：中興電工機械股份有限公司重電事業處供電產品測試實驗室(認證編號:2402)之實驗室  
\_測試領域實驗室延展認證申請案，業經評鑑認可，請查照。

- 說明：
- 一、復 貴公司 2022 年 12 月 2 日實驗室延展認證申請書。
  - 二、本案經認證決定審查通過，檢附本會 L2402-230707 號中、英文認證證書各一份。
  - 三、貴公司重電事業處供電產品測試實驗室(認證編號:2402)的認可後監督評鑑訂於 2024 年 8 月辦理，查核重點包括但不限於：
    1. 查核人員工作資格評定表。
    2. 查證追溯性認證儀校報告，溫濕度計校正範圍 5-35 度。
    3. 查證報告內標示商頻耐電壓試驗頻率。
    4. 查證溫度計校正計畫，校正範圍，需符合 ISO/IEC 17025 第 6.4.7。
    5. 查證測試紀錄表單已加入溫溼度。
    6. 查證委託單比流器已加入負擔之規格。
    7. 查證無線電波干擾試驗表單已加入 RIV 量測值。
  - 四、提醒實驗室應依「使用認證標誌與宣稱認可要求(TAF-CNLA-R03)」，正確使用認證標誌與宣稱認可身份，如欲使用「獲認證實驗室 ILAC MRA 組合標記」(Accredited Lab Combined ILAC MRA Mark)於發出報告或相關廣宣品展示(包含陶板)時，除應熟讀相關規定，並應與本會完成簽署本會 2015 年 12 月底公告之「ILAC-MRA 組合標記使用合約書(TAF-CNLA-B03)」第三版後，方可使用。
  - 五、請於兩週內上網填寫「實驗室滿意度問卷調查表」。

正本：中興電工機械股份有限公司

副本：經濟部能源局電力組

## 財團法人全國認證基金會



財團法人全國認證基金會  
Taiwan Accreditation Foundation

# 認 證 證 書

(證書編號：L2402-230707)

茲證明

中興電工機械股份有限公司

中興電工機械股份有限公司重電事業處供電產  
品測試實驗室

桃園市龜山區文德路 25 號

為本會認證之實驗室

認 證 依 據：ISO/IEC 17025：2017；CNS 17025：2018  
認 證 編 號：2402  
初 次 認 證 日 期：一百年八月十五日  
認 證 有 效 期 間：一百一十二年八月十五日至一百一十五年八月十四  
日 止  
認 證 範 圍：測試領域，如續頁

董事長

連錦漳



掃描確認真偽

中華民國一一二年七月七日

認證編號：2402  
實驗室主管：戴元中

■ 31.01 電力設備

避雷器 (LA)

E006

- 1.商頻洩漏電流試驗
  - 2.部分放電試驗
  - 3.無線電波干擾試驗
- 1.IEC 60099-4 (2014)
  - 2.IEEE Std C62.11 (2012)
- 144 kV Max., 10 kA Max.

報告簽署人: 陳宗耀; 黃榕堃; 戴元中

■ 31.03 電力設備

比壓器 (PT)

E006

- 1.構造檢查
  - 2.感應過電壓試驗 (匝間過電壓試驗)
  - 3.商頻耐電壓試驗 (試驗電壓 10 kV Max.)
  - 4.極性試驗
  - 5.誤差試驗
  - 6.部分放電試驗
  - 7.無線電波干擾試驗
- 1.CNS 11437 (90 年)
  - 2.IEEE Std C57.13 (2016)
  - 3.IEC 61869-1 (2007)
  - 4.IEC 61869-3 (2011)
  - 5.勞動部壓力容器安全檢查構造標準
  - 6.ASME BPVC VIII division1 UG-99 (2015)
- 一次標稱電壓  $161/\sqrt{3}$  kV Max.  
二次標稱電壓 115 V Max.  
準確度等級  $\geq 0.2\%$   
頻率 60 Hz  
負擔 400 VA Max.

報告簽署人: 陳宗耀; 黃榕堃; 戴元中

E006 外殼抗壓力試驗 (第二種壓力容器水壓檢查)

- 1.勞動部壓力容器安全檢查構造標準



2.ASME BPVC VIII division1 UG-99 (2015)

3.IEC 61869-1 (2007)

1  $\phi$ /3  $\phi$ , 一次側電壓 161 kV/ $\sqrt{3}$  Max., 二次側電壓 115 V Max., 400 VA Max.,  
準確等級 $\geq 0.2\%$ , 60Hz.

報告簽署人: 陳宗耀; 戴元中

■ 31.04 電力設備

比流器 (CT)

E006

1.構造檢查

2.感應過電壓試驗(匝間過電壓試驗)

3.商頻耐電壓試驗

4.極性試驗

5.誤差試驗

6.部分放電試驗

7.激磁曲線特性試驗

8.溫升試驗

9.二次繞組開路試驗

1.CNS 11437 (90 年)

2.IEEE Std C57.13 (2016)

3.IEC 61869-1 (2007)

4.IEC 61869-2 (2012)

一次額定電流 6000 A Max.

二次額定電流 1 A, 5 A

準確度等級 $\geq 0.2\%$

頻率 60 Hz

負擔 200 VA Max.

報告簽署人: 林瑞賢; 陳宗耀; 黃榕堃; 戴元中

E006 短時間電流試驗

1.IEEE Std C57.13 (2016)

2.IEC 61869-1 (2007)

3.IEC 61869-2 (2012)

4.CNS 11437 (90 年)

對稱電流: 12000 A rms/3 s Max., 60Hz.

報告簽署人: 黃榕堃; 戴元中

■ 31.06 電力設備

氣體絕緣開關設備 (GIS)

E006



- 1.HVD 試驗
- 2.VD 試驗
- 3.介質電力因數試驗
- 4.衝擊電壓試驗
- 5.溫升試驗 ( 6000 A Max.)
- 6.壓力開關動作試驗
- 7.SF<sub>6</sub>含水量試驗
- 8.SF<sub>6</sub>純度試驗
- 9.無線電波干擾試驗
- 1.345 kV 氣體絕緣開關設備技術規範 GIS-1
- 2.161 kV 氣體絕緣開關設備技術規範 GIS-2
- 3.69 kV 氣體絕緣開關設備技術規範 GIS-3
- 4.23 kV 氣體絕緣開關設備技術規範 GIS-4
- 5.IEC 62271-201 (2014)
- 6.IEC 62271-203 (2011)
- 7.IEC 62271-1 (2017)
- 8.IEC 60060-1 (2010)
- 9.IEEE Std C37.122 (2010)
- 10.IEC 60480 (2019)
- 11.IEC 60376 (2018)
- 12.IEC 62271-206 (2011)
- 13.IEEE Std 4 (2013)
- 14.IEC 62271-200 (2003, ed1.0)
- 15.IEC 62271-203 (2011, ed2.0)
- 16.IEC 62271-200 (2011, ed2.0)
- 17.IEC 62271-1 (2007)
- 345 kV Max., 63 kA Max., 8000 A Max., 60 Hz

報告簽署人：林瑞賢；康聖龍；陳宗耀；黃榕堉；戴元中

#### E006 保護等級驗證

- 1.IEC 60529 (2013)
  - 2.IEEE Std C37.100.1 (2007)
  - 3.IEC 62271-1 (2007, ed1.0)
  - 4.IEC 62271-200 (2003, ed1.0)
  - 5.IEC 62271-1 (2017)
  - 6.IEC 62271-200 (2011, ed2.0)
- IP4X/IP3X

報告簽署人：陳秉正；戴元中

#### E006

外殼抗壓力試驗 (第二種壓力容器水壓檢查)

- 1.IEEE Std C37.09 (2018)
- 2.IEEE Std C37.122 (2010)
- 3.IEC 62271-201 (2014)



4. IEC 62271-203 (2003, ed1.0)
  5. 勞動部壓力容器安全檢查構造標準
  6. ASME BPVC VIII division1 UG-99 (2015)
  7. IEC 62271-1 (2007, ed1.0)
  8. IEC 62271-200 (2003, ed1.0)
  9. IEC 62271-203 (2011, ed2.0)
  10. IEC 62271-1 (2017)
  11. IEC 62271-200 (2011, ed2.0)
- 345 kV Max.  
63 kA Max.  
8000 A Max.

報告簽署人：康聖龍；陳宗耀；戴元中

#### E006

1. 構造檢查
  2. 主回路商頻耐電壓試驗
  3. 輔助和控制回路的絕緣試驗
  4. 部分放電測量
  5. 機械操作試驗  
(斷路器、隔離開關、接地開關)
  6. 動作特性試驗
  7. 主回路電阻測量
  8. 接線正確性的驗證
  9. 絕緣電阻試驗
  10. 氣體密封性試驗
1. 勞動部壓力容器安全檢查構造標準
  2. ASME BPVC VIII division1 UG-99 (2015)
  3. 345 kV 氣體絕緣開關設備技術規範 GIS-1
  4. 161 kV 氣體絕緣開關設備技術規範 GIS-2
  5. 69 kV 氣體絕緣開關設備技術規範 GIS-3
  6. 23 kV 氣體絕緣開關設備技術規範 GIS-4
  7. IEEE Std C37.09 (2018)
  8. IEEE Std C37.122 (2010)
  9. IEC 62271-201 (2014)
  10. IEC 62271-203 (2003, ed1.0)
  11. IEC 60060-1 (2010)
  12. IEC 62271-1 (2017)
  13. IEC 62271-200 (2003, ed1.0)
  14. IEC 62271-200 (2011, ed2.0)
  15. IEC 62271-203 (2011, ed2.0)
- 345 kV Max.  
8000 A Max.  
63 kA Max.  
60 Hz

報告簽署人：林瑞賢；康聖龍；陳宗耀；黃榕岑；戴元中





31.06 電力設備

氣體絕緣複合式開關設備 (GCS)

E006

- 1.介質電力因數試驗
- 2.衝擊電壓試驗
- 3.溫升試驗 (6000A Max.)
- 4.壓力開關動作試驗
- 5.SF<sub>6</sub>含水量試驗
- 6.SF<sub>6</sub>純度試驗
- 7.無線電波干擾試驗

- 1.台電技術規範 GIS-2
  - 2.台電技術規範 GCS-1
  - 3.IEC 62271-203 (2003, ed1.0)
  - 4.IEC 62271-1 (2007, ed1.0)
  - 5.IEC 60060-1 (2010)
  - 6.IEEE Std C37.122 (2010)
  - 7.IEC 60480 (2019)
  - 8.IEC 60376 (2018)
  - 9.IEEE Std 4 (2013)
  - 10.IEC 62271-203 (2011, ed2.0)
  - 11.IEC 62271-1 (2017)
- 345 kV Max.  
63 kA Max.  
6000 A Max.  
60 Hz

報告簽署人: 康聖龍; 陳宗耀; 黃榕堃; 戴元中

E006

- 1.構造檢查
  - 2.主回路商頻耐電壓試驗
  - 3.輔助和控制回路的絕緣試驗
  - 4.部分放電測量
  - 5.機械操作試驗  
(斷路器、隔離開關、接地開關)
  - 6.動作特性試驗
  - 7.主回路電阻測量
  - 8.接線正確性的驗證
  - 9.絕緣電阻試驗
  - 10.氣體密封性試驗
- 1.勞動部壓力容器安全檢查構造標準
  - 2.ASME BPVC VIII division1 UG-99 (2015)
  - 3.345 kV 氣體絕緣複合式開關設備技術規範 GCS-1
  - 4.161 kV 氣體絕緣開關設備技術規範 GIS-2
  - 5.IEEE Std C37.09 (2018)
  - 6.IEEE Std C37.122 (2010)





7.IEC 62271-203 (2003, ed1.0)  
8.IEC 60060-1 (2010)  
9.IEC 62271-1 (2007, ed1.0)  
10.IEC 62271-203 (2011, ed2.0)  
11.IEC 62271-1 (2017)  
345 kV Max.  
6000 A Max.  
63 kA Max.  
60 Hz

報告簽署人：林瑞賢；康聖龍；陳宗耀；黃榕堦；戴元中

■ 31.06 電力設備

氣體絕緣複合式開關設備 (GCS)

E006 外殼抗壓力試驗 (第二種壓力容器水壓檢查)

1.IEEE Std C37.09 (2018)  
2.IEEE Std C37.122 (2010)  
3.IEC 62271-203 (2003, ed1.0)  
4.勞動部壓力容器安全檢查構造標準  
5.ASME BPVC VIII division I UG-99 (2015)  
6.IEC 62271-1 (2007, ed1.0)  
7.IEC 62271-203 (2011, ed2.0)  
8.IEC 62271-1 (2017)  
345 kV Max.  
63 kA Max.  
6000 A Max.

報告簽署人：康聖龍；陳宗耀；戴元中

■ 31.07 電力設備

氣體斷路器 (GCB)

E006 部分放電測量

1.IEC 62271-100 (2003, ed1.1)  
2.IEC 62271-1 (2007, ed1.0)  
3.IEC 60060-1 (2010)  
4.IEC 62271-100 (2017)  
5.IEC 62271-1 (2017)  
345 kV Max.  
63 kA Max.  
6000 A Max.  
60 Hz

報告簽署人：康聖龍；陳宗耀；戴元中

E006



- 1.介質電力因數試驗
  - 2.衝擊電壓試驗
  - 3.溫升試驗 (6000 A Max.)
  - 4.壓力開關動作試驗
  - 5.SF<sub>6</sub>含水量試驗
  - 6.SF<sub>6</sub>純度試驗
  - 7.無線電波干擾試驗
  - 1.台電 161 kV 電力斷路器技術規範 BK02
  - 2.台電 69 kV 電力斷路器技術規範 BK03
  - 3.台電 345 kV 氣體斷路器設備規範 EHV-GIS-1
  - 4.IEC 62271-1 (2007, ed1.0)
  - 5.IEC 62271-100 (2003, ed1.1)
  - 6.IEC 60060-1 (2010)
  - 7.IEEE Std C37.09 (2018)
  - 8.IEC 60480 (2019)
  - 9.IEC 60376 (2018)
  - 10.IEEE Std 4 (2013)
  - 11.IEC 62271-1 (2017)
  - 12.IEC 62271-100 (2017)
- 345 kV Max., 63 kA Max., 6000 A Max., 60 Hz

報告簽署人: 林瑞賢; 康聖龍; 陳宗耀; 戴元中

E006

- 1.構造檢查
  - 2.主回路商頻耐電壓
  - 3.輔助和控制回路的絕緣試驗
  - 4.機械開閉及特性試驗
  - 5.主回路電阻測量
  - 6.接線正確性的驗證
  - 7.絕緣電阻試驗
  - 8.氣體密封性試驗
  - 1.勞動部壓力容器安全檢查構造標準
  - 2.ASME BPVC VIII division1 UG-99 (2015)
  - 3.台電 69 kV 電力斷路器技術規範 BK03
  - 4.台電 161 kV 電力斷路器技術規範 BK02
  - 5.台電 345 kV 氣體斷路器設備規範 EHV-GIS-1
  - 6.IEEE Std C37.09 (2018)
  - 7.IEC 62271-100 (2003, ed1.1)
  - 8.IEC 60060-1 (2010)
  - 9.IEC 62271-1 (2007, ed1.0)
  - 10.IEC 62271-1 (2017)
  - 11.IEC 62271-100 (2017)
- 345 kV Max.  
6000 A Max.  
63 kA Max.



60 Hz

報告簽署人：康聖龍；陳宗耀；戴元中

■ 31.07 電力設備

氣體斷路器 (GCB)

E006 外殼抗壓力試驗 (第二種壓力容器水壓檢查)

1. IEEE Std C37.09 (2018)
  2. IEC 62271-100 (2003, ed1.1)
  3. 勞動部壓力容器安全檢查構造標準
  4. ASME BPVC VIII division1 UG-99 (2015)
  5. IEC 62271-1 (2007, ed1.0)
  6. IEC 62271-100 (2017)
  7. IEC 62271-1 (2017)
- 345 kV Max.  
63 kA Max.  
6000 A Max.

報告簽署人：康聖龍；陳宗耀；戴元中

■ 31.99 電力設備

架空線路開關

E007 短時間電流試驗

台灣電力公司材料標準 Y210

對稱電流：12000 A rms/1 s Max.

報告簽署人：黃榕堃；戴元中

■ 31.99 電力設備

電力設備用容器或箱體

E007 保護等級驗證

1. IEC 60529 (2013)
  2. IEEE Std C37.100.1 (2007)
  3. IEC 61869-1 (2007)
  4. IEC 62271-1 (2007, ed1.0)
  5. IEC 62271-200 (2003, ed1.0)
  6. IEC 62271-1 (2011)
  7. IEC 62271-200 (2011, ed2.0)
- IP4X/IP3X/IPX5

報告簽署人：陳秉正；戴元中

E007 外殼抗壓力試驗 (第二種壓力容器水壓檢查)

1. IEEE Std C37.09 (2018)



- 2.IEEE Std C37.122 (2010)
  - 3.IEC 62271-203 (2003, ed1.0)
  - 4.IEC 62271-201 (2014)
  - 5.IEC 62271-100 (2003, ed1.1)
  - 6.IEC 62271-1 (2007, ed1.0)
  - 7.IEC 60529 (2013)
  - 8.IEC 61869-1 (2007)
  - 9.勞動部壓力容器安全檢查構造標準
  - 10.ASME BPVC VIII division1 UG-99 (2015)
  - 11.IEC 62271-200 (2003, ed1.0)
  - 12.IEC 62271-203 (2011, ed2.0)
  - 13.IEC 62271-100 (2017)
  - 14.IEC 62271-1 (2017)
  - 15.IEC 62271-200 (2011, ed2.0)
- Min.: 0.5 kgf/cm<sup>2</sup>·G (0.05 MPa)  
Max.: 50 kgf/cm<sup>2</sup>·G (5.0 MPa)

報告簽署人: 康聖龍; 陳宗耀; 戴元中

(以下空白)





財團法人全國認證基金會  
Taiwan Accreditation Foundation

## Certificate of Accreditation

(Certificate No : L2402-230707)

This is to certify that

**Chung-Hsin Electric & Machinery Mfg. Corp.**  
**Chung-Hsin Electric & Machinery Mfg. Corp. Power Equipment Products**  
**Division High Voltage Circuit Breakers and Switchgear Equipment Testing**  
**Laboratory**

NO.25, Wende Rd., Guishan Dist., Taoyuan City 333, Taiwan, R.O.C

**is accredited in respect of laboratory**

**Accreditation Criteria** : ISO/IEC 17025:2017 ; CNS 17025:2018

**Accreditation Number** : 2402

**Originally Accredited** : August 15, 2011

**Effective Period** : August 15, 2023 to August 14, 2026

**Accredited Scope** : Testing Field, see described in the Appendix

*Ching-Chang Lien*



Scan to verify

Ching-Chang Lien  
President, Taiwan Accreditation Foundation  
July 07, 2023

Accreditation Number : 2402

Laboratory Head : TAI, Yuan-Chung

▀ 31. 01 Electrical power equipment

Lightning arrester

E006

- 1.Reference voltage measurement
  - 2.Partial discharge measurement
  - 3.Radio interference voltage (RIV) test
- 1.IEC 60099-4 (2014)
  - 2.IEEE Std C62.11 (2012)
- 144 kV Max., 10 kA Max.

Approval Signatory: CHEN, Chung-yao; HUANG, Yong-Cen; TAI, Yuan-Chung

▀ 31. 03 Electrical power equipment

Inductive voltage transformer (Potential transformer)

E006

- 1.Design and visual checks
  - 2.Induced voltage test (Inter-turn overvoltage test)
  - 3.Power-frequency withstand voltage test
  - 4.Polarity test
  - 5.Accuracy test
  - 6.Partial discharge measurement
  - 7.Radio interference voltage (RIV) test
- 1.CNS 11437 (2001)
  - 2.IEEE Std C57.13 (2016)
  - 3.IEC 61869-1 (2007)
  - 4.IEC 61869-3 (2011)
- 5.Pressure vessel safety inspection standards of construction of Ministry of Labor Affairs Executive Yuan.
- 6.ASME BPVC VIII division1 UG-99 (2015)
- Primary Voltage  $161\text{kV}/\sqrt{3}$  Max.  
Secondary Voltage 115 V Max.  
Accuracy Class  $\geq 0.2\%$   
60 Hz  
400 VA Max.

Approval Signatory: CHEN, Chung-yao; HUANG, Yong-Cen; TAI, Yuan-Chung

▀ 31. 03 Electrical power equipment

Inductive voltage transformers

(Potential transformer)

E006 Pressure tests of enclosures

P2, total 10 pages

The Appendix forms an integral part of this Certificate, which shall be invalid when use without the Appendix





(The second type of pressure vessel water pressure inspection)

1. Pressure vessel safety inspection standards of construction of Ministry of Labor Affairs Executive Yuan

2. ASME BPVC VIII division 1 UG-99 (2015)

3. IEC 61869-1 (2007)

1  $\phi$ /3  $\phi$ , Primary Voltage 161 kV/ $\sqrt{3}$  Max., Secondary Voltage 115 V Max., 400 VA Max., Accuracy Class  $\geq$  0.2%, 60 Hz.

Approval Signatory: CHEN, Chung-yao; TAI, Yuan-Chung

31.04 Electrical power equipment

Current transformers

E006

1. Design and visual checks

2. Induced voltage test (Inter-turn overvoltage test)

3. Power-frequency withstand voltage test

4. Polarity test

5. Accuracy test

6. Partial discharge measurement

7. Excitation curves test

8. Temperature-rise test

9. Operation with secondary circuit open test

1. CNS 11437 (2001)

2. IEEE Std C57.13 (2016)

3. IEC 61869-1 (2007)

4. IEC 61869-2 (2012)

Primary Current: 6000 A Max.

Second Current: 1 A, 5 A

Accuracy Class  $\geq$  0.2%

60 Hz

Burden: 200 VA Max.

Approval Signatory: LIN, Rui-Hsien; CHEN, Chung-yao; HUANG, Yong-Cen;  
TAI, Yuan-Chung

31.04 Electrical power equipment

Current transformers

E006 Short-time current tests

1. IEEE Std C57.13 (2016)

2. IEC 61869-1 (2007)

3. IEC 61869-2 (2012)

4. CNS 11437 (2001)

Symmetric

Value 12000 Arms/3 s Max, 60 Hz.

Approval Signatory: HUANG, Yong-Cen; TAI, Yuan-Chung





31. 06 Electrical power equipment

Gas Insulated Switchgear (GIS)

E006

- 1.HVD test
- 2.VD test
- 3.Power factor test
- 4.Impulse test
- 5.Temperature-rise test (6000 A Max.)
- 6.Low- and high-pressure interlocking and monitoring device test
- 7.Moisture in SF<sub>6</sub> test
- 8.SF<sub>6</sub> pure analysis test
- 9.Radio interference voltage (RIV) test

1.TECHNICAL SPECIFICATIONS FOR 345 kV GAS INSULATED SWITCHGEAR EQUIPMENT GIS-1

2.TECHNICAL SPECIFICATIONS FOR 161 kV GAS INSULATED SWITCHGEAR EQUIPMENT GIS-2

3.TECHNICAL SPECIFICATIONS FOR 69 kV GAS INSULATED SWITCHGEAR EQUIPMENT GIS-3

4.TECHNICAL SPECIFICATIONS FOR 23 kV GAS INSULATED SWITCHGEAR EQUIPMENT GIS-4

5.IEC 62271-201 (2014)

6.IEC 62271-203 (2011)

7.IEC 62271-1 (2017)

8.IEC 60060-1 (2010)

9.IEEE Std C37.122 (2010)

10.IEC 60480 (2019)

11.IEC 60376 (2018)

12.IEC 62271-206 (2011)

13.IEEE Std 4 (2013)

14.IEC 62271-200 (2003, ed1.0)

15.IEC 62271-203 (2011, ed2.0)

16.IEC 62271-200 (2011, ed2.0)

17.IEC 62271-1 (2007)

345 kV Max., 63 kA Max., 8000 A Max., 60Hz

Approval Signatory: LIN, Rui-Hsien; KANG, Sheng-Long; CHEN, Chung-yao;  
HUANG, Yong-Cen; TAI, Yuan-Chung

E006

- 1.Design and visual checks.
- 2.Power-frequency voltage tests on the main circuit
- 3.Tests on auxiliary and control circuits
- 4.Partial discharge measurement
- 5.Mechanical operation tests (Circuit breaker, disconnection switch, earthing switch)
- 6.Timing test
- 7.Measurement of resistance of the main circuit
- 8.Tests on auxiliary circuits, equipment and interlocks in the control mechanism
- 9.Insulation resistance test
- 10.Gas tightness tests

P4, total 10 pages

The Appendix forms an integral part of this Certificate, which shall be invalid when use without the Appendix



1. Pressure vessel safety inspection standards of construction of Ministry of Labor Affairs Executive Yuan.
  2. ASME BPVC VIII division 1 UG-99 (2015)
  3. TECHNICAL SPECIFICATIONS FOR 345 kV GAS INSULATED SWITCHGEAR EQUIPMENT GIS-1
  4. TECHNICAL SPECIFICATIONS FOR 161 kV GAS INSULATED SWITCHGEAR EQUIPMENT GIS-2
  5. TECHNICAL SPECIFICATIONS FOR 69 kV GAS INSULATED SWITCHGEAR EQUIPMENT GIS-3
  6. TECHNICAL SPECIFICATIONS FOR 23 kV GAS INSULATED SWITCHGEAR EQUIPMENT GIS-4
  7. IEEE Std C37.09 (2018)
  8. IEEE Std C37.122 (2010)
  9. IEC 62271-201 (2014)
  10. IEC 62271-203 (2003, ed1.0)
  11. IEC 60060-1 (2010)
  12. IEC 62271-1 (2007)
  13. IEC 62271-200 (2003, ed1.0)
  14. IEC 62271-200 (2011, ed2.0)
  15. IEC 62271-203 (2011, ed2.0)
- 345 kV Max.  
8000 A Max.  
63 kA Max.  
60 Hz

Approval Signatory: LIN, Rui-Hsien; KANG, Sheng-Long; CHEN, Chung-yao;  
HUANG, Yong-Cen; TAI, Yuan-Chung

▀ 31. 06 Electrical power equipment

Gas Insulated Switchgear

E006 Degrees of protection provided by enclosures

1. IEC 60529 (2013)
  2. IEEE Std C37.100.1 (2007)
  3. IEC 62271-1 (2007, ed1.0)
  4. IEC 62271-200 (2003, ed1.0)
  5. IEC 62271-1 (2017)
  6. IEC 62271-200 (2011, ed2.0)
- IP4X/IP3X

Approval Signatory: CHEN, Bin-jeng; TAI, Yuan-Chung

▀ 31. 06 Electrical power equipment

Gas Insulated Switchgear

E006

Pressure tests of enclosures (The second type of pressure vessel water pressure inspection)

1. IEEE Std C37.09 (2018)
2. IEEE Std C37.122 (2010)
3. IEC 62271-201 (2014)

P5, total 10 pages



- 4.IEC 62271-203 (2003, ed1.0)
  - 5.Pressure vessel safety inspection standards of construction of Ministry of Labor Affairs Executive Yuan
  - 6.ASME BPVC VIII division1 UG-99 (2015)
  - 7.IEC 62271-1 (2007, ed1.0)
  - 8.IEC 62271-200 (2003, ed1.0)
  - 9.IEC 62271-203 (2011, ed2.0)
  - 10.IEC 62271-1 (2017)
  - 11.IEC 62271-200 (2011, ed2.0)
- 345 kV Max.  
63 kA Max.  
8000 A Max.

Approval Signatory: KANG, Sheng-Long; CHEN, Chung-yao; TAI, Yuan-Chung

31. 06 Electrical power equipment

Gas Insulated Combined Switchgear

E006

- 1 .Power factor test
2. Impulse test
3. Temperature-rise test (6000A Max.)
4. Low- and high-pressure interlocking and monitoring device test
5. Moisture in SF<sub>6</sub> test
6. SF<sub>6</sub> pure analysis test
7. Radio interference voltage (RIV) test

1.TECHNICAL SPECIFICATIONS FOR 161kV GAS INSULATED SWITCHGEAR EQUIPMENT GIS-2

2.TECHNICAL SPECIFICATIONS FOR 345 kV GAS INSULATED COMBINED SWITCHGEAR GCS-1

- 3.IEC 62271-203 (2003, ed1.0)
- 4.IEC 62271-1 (2007, ed1.0)
- 5.IEC 60060-1 (2010)
- 6.IEEE Std C37.122 (2010)
- 7.IEC 60480 (2019)
- 8.IEC 60376 (2018)
- 9.IEEE Std 4 (2013)
- 10.IEC 62271-203 (2011, ed2.0)
- 11.IEC 62271-1 (2017)

345 kV Max.

63 kA Max.

6000 A Max.

60Hz

Approval Signatory: KANG, Sheng-Long; CHEN, Chung-yao; HUANG, Yong-Cen;  
TAI, Yuan-Chung

31. 06 Electrical power equipment

Gas Insulated Combined Switchgear (GCS)

P6, total 10 pages

The Appendix forms an integral part of this Certificate, which shall be invalid when use without the Appendix



E006

- 1.Design and visual checks
  - 2.Power-frequency voltage tests on the main circuit
  - 3.Tests on auxiliary and control circuits
  - 4.Partial discharge measurement
  - 5.Mechanical operation tests (Circuit breaker, disconnection switch, earthing switch )
  - 6.Timing test
  - 7.Measurement of resistance of the main circuit
  - 8.Tests on auxiliary circuits, equipment and interlocks in the control mechanism
  - 9.Insulation resistance test
  - 10.Gas tightness tests
- 1.Pressure vessel safety inspection standards of construction of Ministry of Labor Affairs Executive Yuan
  - 2.ASME BPVC VIII division1 UG-99 (2015)
  - 3.TECHNICAL SPECIFICATIONS FOR 345 kV GAS INSULATED COMBINED SWITCHGER GCS-1
  - 4.TECHNICAL SPECIFICATIONS FOR 161 kV GAS INSULATED SWITCHGEAR EQUIPMENT GIS-2
  - 5.IEEE Std C37.09 (2018)
  - 6.IEEE Std C37.122 (2010)
  - 7.IEC 62271-203 (2003, ed1.0)
  - 8.IEC 60060-1 (2010)
  - 9.IEC 62271-1 (2007, ed1.0)
  - 10.IEC 62271-203 (2011, ed2.0)
  - 11.IEC 62271-1 (2017)
- 345 kV Max.  
6000 A Max.  
63 kA Max.  
60 Hz

Approval Signatory: LIN, Rui-Hsien; KANG, Sheng-Long; CHEN, Chung-yao;  
HUANG, Yong-Cen; TAI, Yuan-Chung

31.06 Electrical power equipment

Gas Insulated Combined Switchgear

E006 Pressure tests of enclosures

(The second type of pressure vessel water pressure inspection)

- 1.IEEE Std C37.09 (2018)
  - 2.IEEE Std C37.122 (2010)
  - 3.IEC 62271-203 (2003, ed1.0)
  - 4.Pressure vessel safety inspection standards of construction of Ministry of Labor Affairs Executive Yuan
  - 5.ASME BPVC VIII division1 UG-99 (2015)
  - 6.IEC 62271-1 (2007, ed1.0)
  - 7.IEC 62271-203 (2011, ed2.0)
  - 8.IEC 62271-1 (2017)
- 345 kV Max.  
63k A Max.  
6000 A Max.

P7, total 10 pages

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Approval Signatory: KANG, Sheng-Long; CHEN, Chung-yao; TAI, Yuan-Chung

■ 31. 07 Electrical power equipment

Gas Circuit Breaker

E006 Partial discharge measurement

1.IEC 62271-100 (2003, ed1.1)

2.IEC 62271-1 (2007, ed1.0)

3.IEC 60060-1 (2010)

4.IEC 62271-100 (2017)

5.IEC 62271-1 (2017)

345 kV Max.

63 kA Max.

6000 A Max.

60 Hz

Approval Signatory: KANG, Sheng-Long; CHEN, Chung-yao; TAI, Yuan-Chung

E006

1.Power factor test

2.Impulse test

3.Temperature-rise test (6000 A Max.)

4.Low- and high-pressure interlocking and monitoring device test

5.Moisture in SF<sub>6</sub> test

6.SF<sub>6</sub> pure analysis test

7.Radio interference voltage (RIV) test

1.TECHNICAL SPECIFICATIONS FOR 161kV POWER CIRCUIT BREAKERS

NO.BK02

2.TECHNICAL SPECIFICATIONS FOR 69kV POWER CIRCUIT BREAKERS

NO.BK03

3.SPECIFICATIONS FOR 345 kV GAS CIRCUIT BREAKERS EQUIPMENTS

NO.EHV-GIS-1

4.IEC 62271-1 (2007, ed1.0)

5.IEC 62271-100 (2003, ed1.1)

6.IEC 60060-1 (2010)

7.IEEE Std C37.09 (2018)

8.IEC 60480 (2019)

9.IEC 60376 (2018)

10.IEEE Std 4 (2013)

11.IEC 62271-1 (2017)

12.IEC 62271-100 (2017)

345 kV Max., 63 kA Max., 6000 A Max., 60 Hz

Approval Signatory: LIN, Rui-Hsien; KANG, Sheng-Long; CHEN, Chung-yao;  
TAI, Yuan-Chung

E006

P8, total 10 pages

The Appendix forms an integral part of this Certificate, which shall be invalid when use without the Appendix





- 1.Design and visual checks
  - 2.Power-frequency voltage tests on the main circuit
  - 3.Tests on auxiliary and control circuits
  - 4.Mechanical operation tests
  - 5.Measurement of resistance of the main circuit
  - 6.Tests on auxiliary circuits, equipment and interlocks in the control mechanism
  - 7.Insulation resistance test
  - 8.Gas tightness tests
  - 1.Pressure vessel safety inspection standards of construction of Council of Labor Affairs Executive Yuan.
  - 2.ASME BPVC VIII division1 UG-99 (2015)
  - 3.TECHNICAL SPECIFICATIONS FOR 69 kV POWER CIRCUIT BREAKERS NO.BK03
  - 4.TECHNICAL SPECIFICATIONS FOR 161 kV POWER CIRCUIT BREAKERS NO.BK02
  - 5.SPECIFICATIONS FOR 345 kV GAS CIRCUIT BREAKERS EQUIPMENTS NO.EHV-GIS-1
  - 6.IEEE Std C37.09 (2018)
  - 7.IEC 62271-100 (2003, ed1.1)
  - 8.IEC 60060-1 (2010)
  - 9.IEC 62271-1 (2007, ed1.0)
  - 10.IEC 62271-1 (2017)
  - 11.IEC 62271-100 (2017)
- 345 kV Max.  
6000 A Max.  
63 kA Max.  
60 Hz

Approval Signatory: KANG, Sheng-Long; CHEN, Chung-yao; TAI, Yuan-Chung

**E006 Pressure tests of enclosures**

(The second type of pressure vessel water pressure inspection)

- 1.IEEE Std C37.09 (2018)
  - 2.IEC 62271-100 (2003, ed1.1)
  - 3.Pressure vessel safety inspection standards of construction of Ministry of Labor Affairs Executive Yuan
  - 4.ASME BPVC VIII division1 UG-99 (2015)
  - 5.IEC 62271-1 (2007, ed1.0)
  - 6.IEC 62271-100 (2017)
  - 7.IEC 62271-1 (2017)
- 345 kV Max.  
63 kA Max.  
6000 A Max.

Approval Signatory: KANG, Sheng-Long; CHEN, Chung-yao; TAI, Yuan-Chung

▀ 31. 99 Electrical power equipment

Load Break Switch

P9, total 10 pages

The Appendix forms an integral part of this Certificate, which shall be invalid when use without the Appendix



E007 Short-time current tests  
Taiwan Power Company Material standards Y210  
Symmetric Value 12000 Arms/1 s Max.

Approval Signatory: HUANG, Yong-Cen; TAI, Yuan-Chung

■ 31. 99 Electrical power equipment

Electrical equipment with enclosures or box

E007 Degrees of  
protection provided by enclosures

- 1.IEC 60529 (2013)
  - 2.IEEE Std C37.100.1 (2007)
  - 3.IEC 61869-1 (2007)
  - 4.IEC 62271-1 (2007, ed1.0)
  - 5.IEC 62271-200 (2003, ed1.0)
  - 6.IEC 62271-1 (2011)
  - 7.IEC 62271-200 (2011, ed2.0)
- IP4X / IP3X / IPX5

Approval Signatory: CHEN, Bin-jeng; TAI, Yuan-Chung

E007 Pressure tests of enclosures  
(The second type of pressure vessel water pressure inspection)

- 1.IEEE Std C37.09 (2018)
  - 2.IEEE Std C37.122 (2010)
  - 3.IEC 62271-203 (2003, ed1.0)
  - 4.IEC 62271-201 (2014)
  - 5.IEC 62271-100 (2003, ed1.1)
  - 6.IEC 62271-1 (2007, ed1.0)
  - 7.IEC 60529 (2013)
  - 8.IEC 61869-1 (2007)
  - 9.Pressure vessel safety inspection standards of construction of Ministry of Labor Affairs  
Executive Yuan
  - 10.ASME BPVC VIII division1 UG-99 (2015)
  - 11.IEC 62271-200 (2003, ed1.0)
  - 12.IEC 62271-203 (2011, ed2.0)
  - 13.IEC 62271-100 (2017)
  - 14.IEC 62271-1 (2017)
  - 15.IEC 62271-200 (2011, ed2.0)
- Min.: 0.5 kgf/cm<sup>2</sup>-G (0.05 MPa)  
Max.: 50 kgf/cm<sup>2</sup>-G (5.0 MPa)

Approval Signatory: KANG, Sheng-Long; CHEN, Chung-yao; TAI, Yuan-Chung

(Null below)

P10, total 10 pages

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