

LS環路開關

LS Ring Main Units

Type : Tri-Mec RMU Series

操作手冊

INSTRUCTION MANUAL



下列系列均通用本手冊
Types covered in this manual

RPS
RPL
RPF

注意事項：在使用本產品前，請仔細研讀本手冊並確保所有使用本產品之人員均已研讀過本手冊。

IMPORTANT NOTE : Before using this Tri-MEC RMU, please read these instructions carefully, and make sure that all actual users also read them.

 **LS產電**
LS Industrial Systems co., Ltd.
<http://www.lsis.biz>



危險 DANGER

- 請勿超過設備額定值，否則可能因為介電性被破壞而導致接地故障、斷路電流故障。
Do not over rate this device. Otherwise Ground fault, Short circuit fault may occur due to dielectric breakdown. Or explosion may occur due to a short circuit protection failure.
- 請勿觸碰任何端子，否則會有觸電的風險。
Do not touch the terminals. There is a risk of electric shock.



注意 CAUTION

- 本設備請由具專業認證的電工技師進行安裝。
This equipment should be installed by a qualified electrician.
- 本設備的檢查與保養工作需由專業認證的電工技師來完成，且作業前需確認電源已經關閉且沒有電壓存在。否則可能會導致觸電的危險。
Inspection and maintenance should be performed by a qualified electrician and only after shutting off the electric power and verifying that there is no voltage present. Failure to do so may result in an electric shock.
- 請使用手冊中的扭力規範來進行端子座上螺絲的轉緊動作。
Be sure to tighten the terminal screws to the torque specified in the instruction manual.
- 請勿安裝本設備在高溫、高濕度、粉塵、腐蝕氣體、具震動和擺動的地區。擺放在這些環境下可能會導致設備故障或失火。
Do not install in areas subject to high temperature, high humidity, dust, corrosive gas, vibrations, shocks. To do so may result in malfunction or fire.
- 為了確保RMU可以自動跳脫，請先將造成故障的原因排除後再投入RMU。否則可能會導致失火。
Should the RMU trip automatically, always clear the source of the malfunction before closing the RMU. Failure to do so may result in fire.
- 端子台上的螺絲請定期的再次鎖緊，否則有造成失火的危險。
Terminal screws should be tightened periodically. Failure to do so may result in fire.
- 請使用本RMU於50/60Hz系統中，否則可能會造成設備故障或失火。
Use the RMU in 50/60Hz. Failure to do so may result in malfunction or fire.

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一般外觀 General outline

1. 概述 Conception

RMU(Ring Main Unit)乃適用於控制 22.9/24kV 地下電纜線分配用。使用 Power Fuse來進行負載測的保護，共分爲不可擴充的 RMU(RPS)型式和可以擴充的 RMU (RPL/RPF)型式。

RMU is used for controlling of 22.9/24kV undergrounded distribution lines. It involves Power fuse to protect Load sides and separated into extensible type RMU and Non extensible type RMU.

2. 類別 Categories

2.1 RPS(RMU Puffer type Standard)

不可擴充的RMU，包含兩組LBS和一組Fused LBS。

Non extensible RMU that consists of 2way LBS and 1way Fused LBS

2.2 RPL(RMU Puffer type LBS)

可擴充的RMU，僅包含一組LBS(具擴充能力)

Extensible RMU that consists of 1way LBS only (capable of extending)

2.3 RPF(RMU Puffer type with Fuse)

可擴充的RMU，僅包含一組Fused LBS(具擴充能力)

Extensible RMU that consists of 1way Fused LBS only (capable of extending)

3. 特色 Characteristics

3.1 使用單一-SF6氣體主體槽，可在三個位置間動作。(閉路↔開路↔接地)

但是直接從閉路↔接地的動作是不可能的。

One body tank using SF6 gas can be operated three -position

(Close ↔ Open ↔ Earth)

But Close ↔ Earth operation is impossible.

3.2 操作型式：手動/自動操作

Operating type:Manual/Automatic operation

3.3 當負載端增加時，可以外加與擴充RMU(RPL/RPF)

Additional extension will be available when load sides are in increasing.

(RPL/RPF)

3.4 可以利用當地的控制器來自動操作RMU閉路和開路。

Automatic Close/Open operation is possible by using Controller in the local area.

3.5 當意外發生時，可利用Power fuse來保護變壓器。(機械結構具自動跳脫功能)。

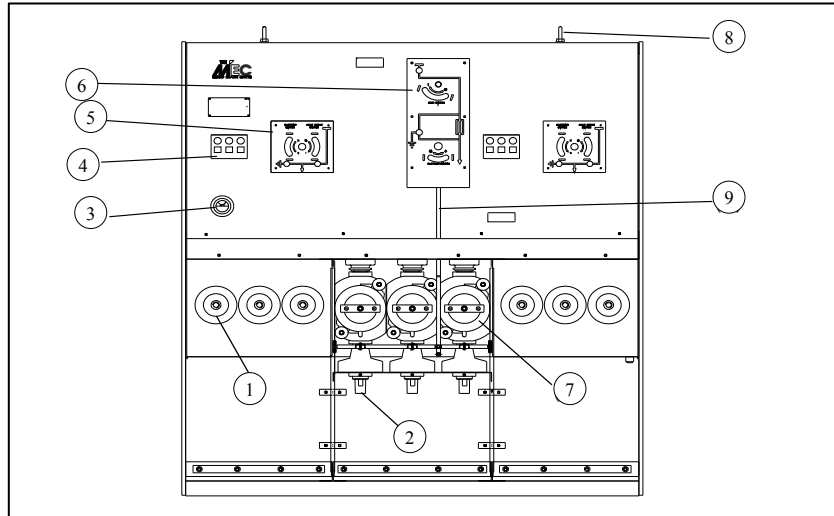
Protect Transformer by Power fuse when accident happened.

(Automatic trip function of Mechanism.)

額定規格 Ratings

項目 Item	可擴充 Extensible			不可擴充 Non-extensible	
	RPL		RPF	RPS	
	LGS-R-M-24 -6-12-1L-D	LGS-R-B-24 -6-12-1L-D	LGS-R-B-24 -2-12-1T-M	LGS-R-M-24 -6-12-21-M	LGS-R-B-24 -6-12-21-M
迴路數 Number of way	2迴路-1開關 2way-1switch			3迴路-3開關 3way-3switch	
額定電壓(kV) Rated voltage	12~25.8(24)				
額定電流(A) Rated current	600(630)		200	600(630)	
額定頻率(Hz) Rated frequency	60(50)				
額定短路電流(kA) Rated short-time current	16				
額定啓斷電流(kA) Rated making current	40				
功率頻率耐受電壓(kV/1分) Power frequency withstand voltage	50				
DC 耐受電壓(kV/15分) DC withstand voltage	78				
衝擊耐受電壓(kV(BIL)) Impulse withstand voltage	125				
標準工作壓力(psi.G(20°C)) Standard operating pressure	3				
最小工作壓力(psi.G(20°C)) Minimum operating pressure	1.3				
工作方式 Operating method	自動 Automatic	手動 Manual	手動 Manual	自動 Automatic	手動 Manual
絕緣介質 Insulating medium	SF ₆ Gas				
總重量(kg) Total weight	210/200		250	370/350	
安裝型式 Installation type	室內 Indoor				
氣體重量(kg) Gas weight	1		1	3	
控制電壓 Operating voltage at controller	AC 220V 5A	-	-	AC 220V 5A	-
標準 Standard	IEC 265 / 298 / 694				

內部架構(RPS) internal construction



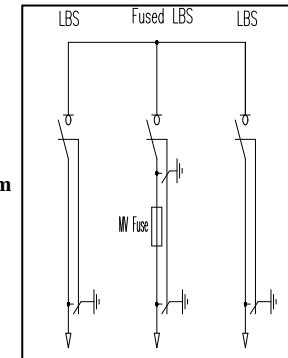
- ① 600A 絕緣套管：電力輸入/輸出端子
600A bushing: Power input/output terminal
- ② 200A 絕緣套管：負載側電力輸出端子
200A bushing: Power output terminal at load side
- ③ 壓力錶：SF6 氣體壓力指示
Pressure gauge: Indicates the SF6 gas pressure value
- ④ LBS 控制器：LBS 操作控制器
LBS controller: LBS operating controller
- ⑤ LBS 機構：LBS 主電路的 閉合↔開路↔接地
LBS mechanism: Close ↔ Open ↔ Earth at LBS main circuit
- ⑥ 熔絲LBS機構：熔絲 LBS 主電路的 閉合↔開路↔接地
Fused LBS mechanism: Close ↔ Open ↔ Earth at Fused LBS main circuit
- ⑦ 熔絲固定器：包含Power Fuse
Fuse Holder: Involves Power Fuse
- ⑧ 抬升柄：RPS 抬升用
Lifting lug: Equipment for lifting RPS
- ⑨ 熔絲跳脫機構：當熔絲熔斷時設備跳脫機構
Fuse Strike Link: Equipment to trip the Fused LBS mechanism when Fuse cut

外觀(RPS) External view

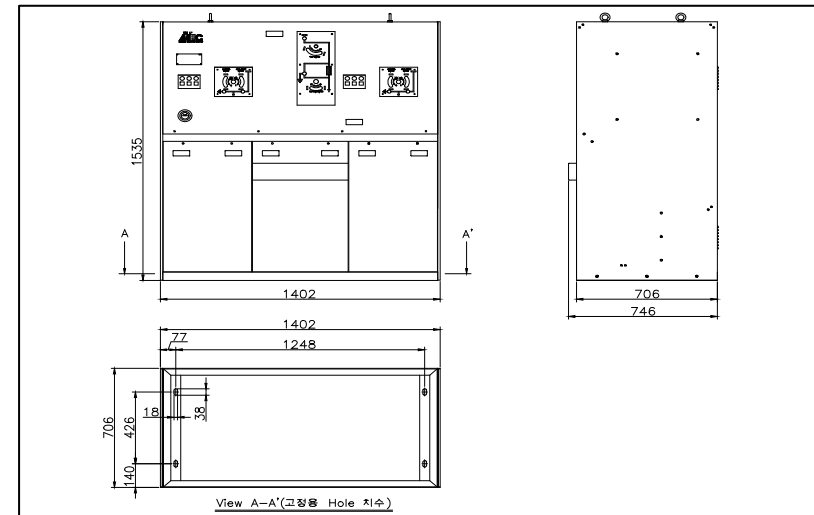
RPS type



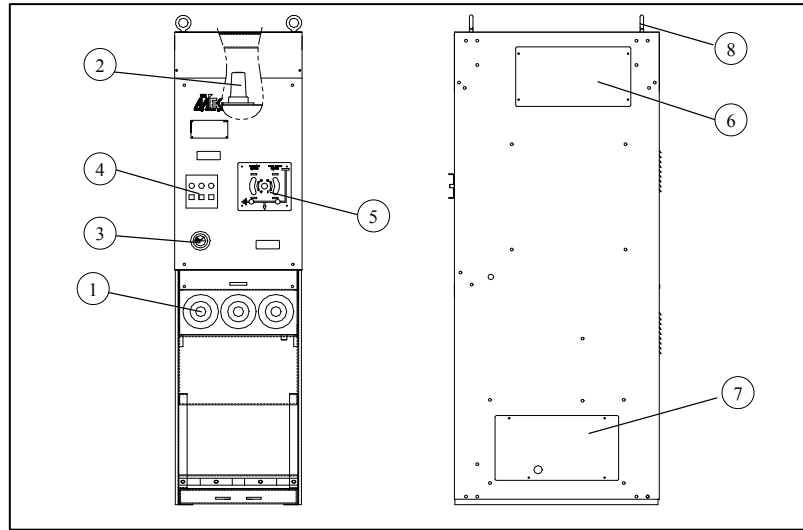
電路圖 Circuit diagram



外觀尺寸 Outline



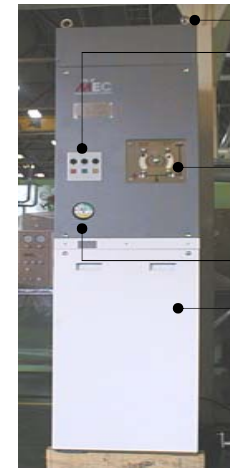
內部結構(RPL) internal construction



- ① 600A絕緣套管：電力輸入/輸出端子
600A bushing: Power input/output terminal
- ② 600A絕緣套管：擴張用電力輸出端子
600A bushing: Power output terminal to extend
- ③ 壓力錶：SF6 氣體壓力指示器
Pressure gauge: Indicates the SF6 gas pressure value
- ④ LBS 控制器：LBS 操作控制器
LBS controller: LBS operating controller
- ⑤ LBS 機構：LBS主電路的 閉合↔開路↔接地
LBS mechanism: Close ↔ Open ↔ Earth at LBS main circuit
- ⑥ 上蓋版：當RPL擴充時，特殊轉接器的連接路線
Upper side plate: Connecting way for the special adapter when panels are extended.
- ⑦ 下蓋版：當使用CB 盤和 RPL時的電纜線通路。
Lower side plate: Cable way when using circuit breaker panel and RPL only
- ⑧ 抬升柄：RPL 設備抬升用
Lifting lug: Equipment for lifting RPL

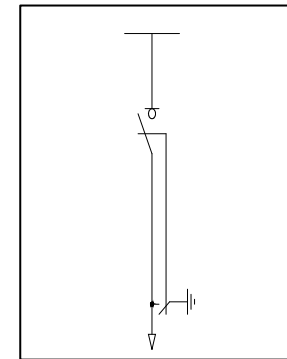
外觀(RPL) External view

RPL type

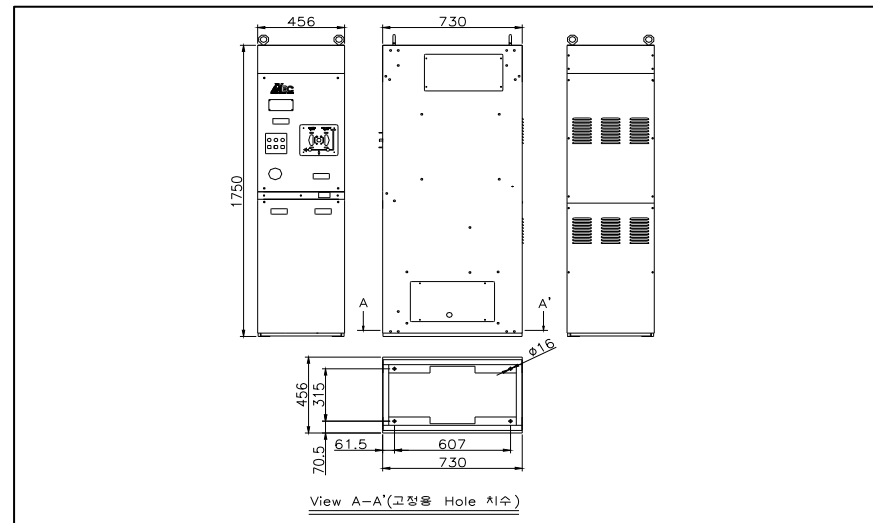


- 抬升柄 Lifting lug
- 控制器
Controller
- LBS 機構
LBS mechanism
- 壓力錶
Pressure gauge
- LBS 門
LBS door

電路圖
Circuit diagram



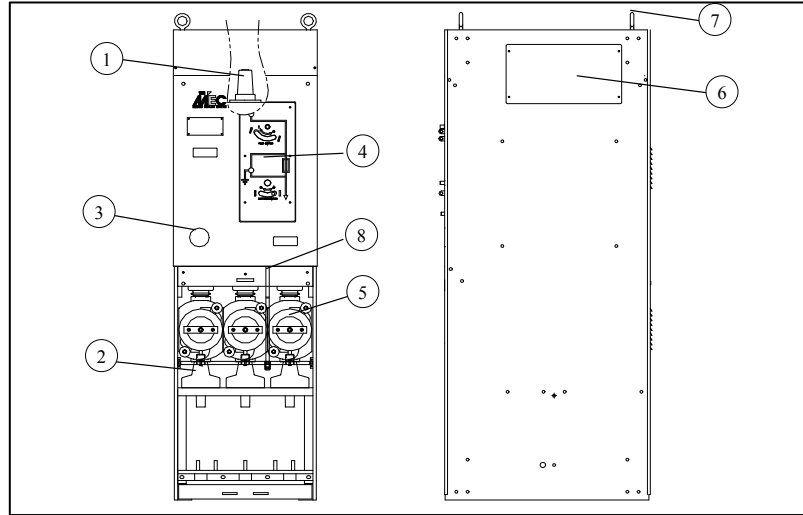
外觀尺寸 Outline



Tri-MEC RMU

Tri-MEC RMU

內部結構(RPF) internal construction



- ① 600A 絕緣套管：電力輸入/輸出端子
600A bushing: Power input/output terminal
- ② 600A 絕緣套管：負載側電力輸出端子
600A bushing: Power output terminal at load side
- ③ 壓力錶：SF6 氣體壓力指示
Pressure gauge: Indicates the SF6 gas pressure value
- ④ 熔絲LBS機構：熔絲 LBS 主電路的 閉合↔開路↔接地
Fused LBS mechanism: Close ↔ Open ↔ Earth at Fused LBS main circuit
- ⑤ 上蓋版：RPF擴充時，特別轉接器的連接路線
Upper side plate: Special adapter connecting way when extending panels
- ⑥ Fuse Holder：包含Power Fuse
Fuse Holder: Involves Power Fuse
- ⑦ 抬升柄：RPF 設備抬升用
Lifting lug: Equipment for lifting RPF
- ⑧ Fuse Strike Link：當熔絲熔斷時設備跳脫機構
Fuse Strike Link: Equipment to trip the Fused LBS mechanism when Fuse cut

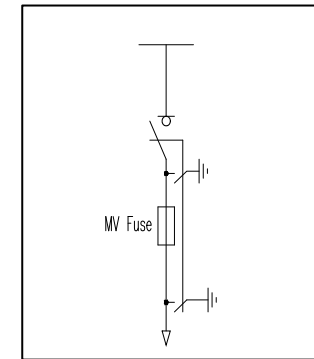
外觀(RPF) External view

RPF type

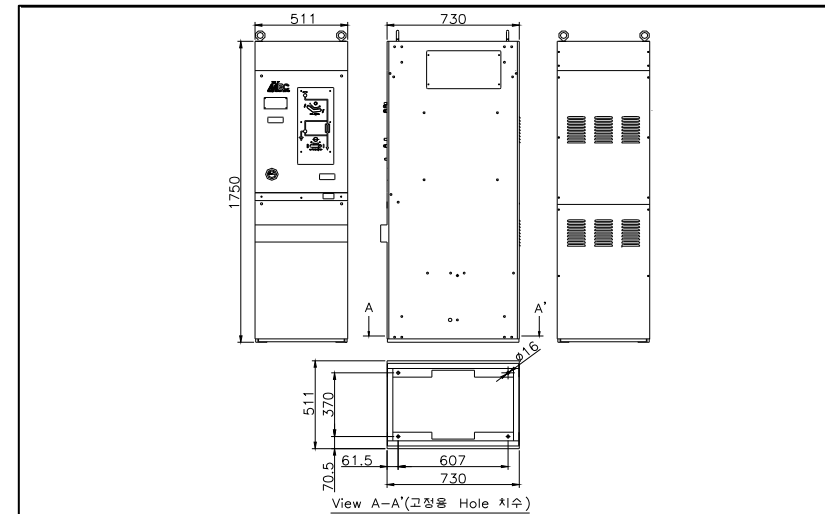


- 抬升柄
Lifting lug
- Fused LBS 機構
Fused LBS mechanism
- 壓力錶 Pressure gauge
- Fused LBS 門
Fused LBS door

電路圖 Circuit diagram



外觀尺寸 Outline



開箱 Unpacking

開箱

1. 在將RMU開箱前，請確認所有箱體和包裝處於完整的狀態。
2. 開箱時，請確認RMU本身的完整性。
3. 開箱後，請確認本體名牌上的相關規格資訊，確認其與所定的規格是否相符合。

Unpacking

1. Before unpacking the RMU, check that all boxes and packing are in sound condition.
2. While unpacking, check the RMU is in sound condition.
3. Check that the information given on the main rating nameplates and on the purchase order agree.



RPS



RPL



RPF

正常操作的標準環境

1. 大氣溫度：最高 +50°C，最低 -25 °C。
24小時的平均溫度不超過 +35 °C
2. 海拔不超過 1000m
3. 環境：空氣必須是乾淨的空氣，且溫度在 +50 °C時
相對濕度不超過 85%。溫度在 +20 °C 時不超過 90%
4. 假如環境狀況不同於上述的正常標準狀態，必須請原廠特別去設計。

Standard conditions for operation in service

Standard service conditions

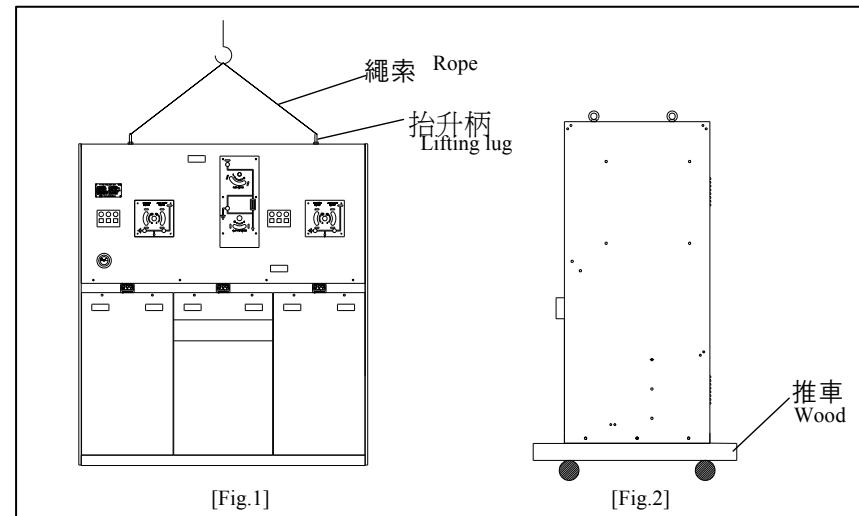
RMU shall be capable of operating under the following standard conditions.

1. Ambient air temperature
The ambient air temperature does not exceed +50 °C and its average over a period of 24hours does not exceed +35 °C
The lower limit of the ambient air temperature is -25 °C
2. Altitude
The altitude of the site of installation does not exceed 1000m.
3. Environmental conditions
The air must be clean, and the relative humidity 85% or less at a max. of +50 °C. 90% or less is acceptable at +20 °C.
4. When the special conditions different to the normal service conditions given in the items, it should be decided especially.

處理 Handling



- 需要抬升RMU時，請使用RMU本體上方的掛勾，並使用繩索或類似的東西來抬升。
[見圖1]
To lift the RMU, use the crane on the top of the RMU, and lift with ropes or something similar. [Fig.1]
- 請將RMU移動擺放在平坦的地面上。 [如圖2]
Move the RMU on the flat place. [Fig.2]
- 當在將RMU放置到地面上時，注意輕放，請勿直接將設備丟下或造成衝擊。
When placing the RMU on the ground, be careful not to drop or to impact the RMU.
- 當在移動中請勿使RMU滑下。
Never slide the RMU when handling.



安裝 Installation

1. Fuse 安裝/更換
Fuse installation/replacement

■ Fused的LBS會在Fuse燒斷時自動開路，在打開LBS門板之前，請先針對LBS的電路做接地的動作。
[參考右圖]
Fused LBS switch is opened automatically when fuse cut. Before opening the Fused LBS door, Earth the Fused LBS circuit. [Refer to Figure]

警告 WARNIG

■ 更換Fuse前，請先針對Fused LBS進行接地的動作。否則可能會造成觸電，且造成人員和財產受損。

Before replacing Fuse, earth the Fused LBS circuit. Unless electric shock will be happened and cause damage to human and real property.



2. Fuse選擇表 Fuse choosing table

■ 根據Table1的變壓器容量來選擇Fuse，我們建議直接使用由LS公司所生產的Fuse。
Choose the Fuse according to Transformer capacity by Table 1. Fuse choice is performed by LG industrial company fuses.

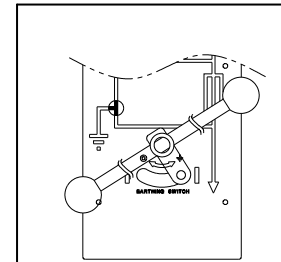
Table 1

Fuse rating(A) 額定		變壓器容量(kVA) Transformer capacity		備註 Remark
12kV	24kV	12kV	24kV	
5	5	18 ~ 37	36 ~ 75	製造商：LS產電 Manufacturer：LS industrial company
10	10	37 ~ 78	75 ~ 157	
20	20	70 ~ 179	172 ~ 358	
30	30	129 ~ 269	258 ~ 538	
40	40	232 ~ 482	464 ~ 965	
50	50	299 ~ 623	598 ~ 1246	
63	63	372 ~ 772	745 ~ 1554	

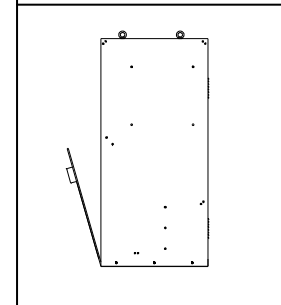
手動操作 Manual operation

3. Power Fuse更換方法 Power fuse replacing method

RMU在Fuse燒斷時會藉由機械連鎖自動開路。假如Fuse已經燒斷，請依照下列方式進行更換的動作。
RMU is opened automatically by mechanical link when fuse cut. If fuse cut, replace the fuse as follows.

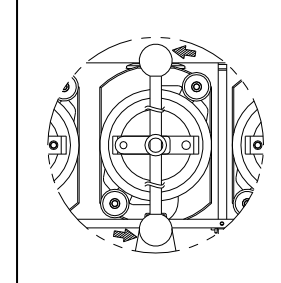


■ 請使用操作桿先將熔絲的開關接地。
Please earth the fused switch by using operating handle..



■ 請將兩組固定螺絲鬆開，便可以打開熔絲開關的門板。
Please loosen the two fixed bolts and open the fused switch door.

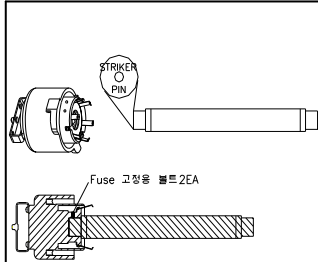
■ 打開門板時注意要撐著它，以免它直接掉落到地上。
Please open the door as support the door because of falling it down.



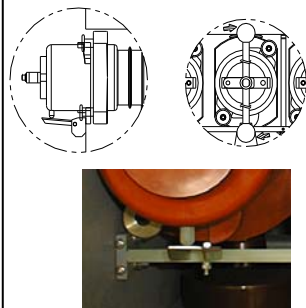
■ 請使用操作桿來將熔絲保護帽打開。
Please separate the fuse cap by using the operating handle (Rotate to C.C.W)



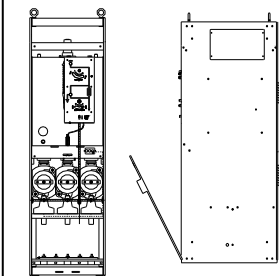
安裝 Installation



- 請轉動兩個固定的螺絲後分離熔絲，之後根據指示的方向放入新的熔絲。
Please rotate the fixed two bolts and separate the fuse. And replace the fuse as following direction.
- 更換熔絲後，再將兩個螺絲鎖緊即可。
After replacing fuse, tighten two bolts to fix the fuse.



- 請如置中插入熔絲，並將熔絲保護帽壓到接觸位置。
Please insert fuse cap as centering fuse holder. And push the fuse cap to contact position.
- 請使用操作把手轉動保護帽到中心的位置。
Please rotate the fuse cap by using operating handle to come center position.



- 請關上fused LBS的門板並用螺絲固定。
Please close the fused LBS door and fix with bolts.
- 請將接地位置操作到開路位置，之後再由開路位置切換到閉合位置。之後便會開始提供電源了。
Please operate earth → open position and then open → close position. So the current is applied.

安裝 Installation

4. RPL,RPF 安裝 RPL,RPF installation

4.1 當要在可擴充的RMU旁擴充新的單元時，請安裝在平坦的地面上。
Install on the flat place when extending extensible RMU.

4.2 安裝 Installation

4.2.1 零件列表 Parts list

零件 part	名稱 name	零件 part	名稱 name
	連接Boss (Connect boss)		接地銅排1 (Earth busbar 1)
			接地銅排2 (Earth busbar 2)

4.2.2 打開門板 Door open

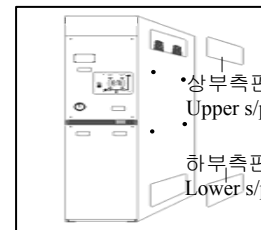
當要擴充盤時，必須先分離前面與背面的門板。
Separate front and rear door when extending panels.

4.2.3 連續擴充 Continuous extension

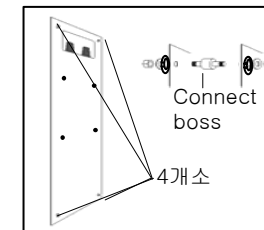
- 1) 安裝1st盤。 Install 1st panel.
- 2) 移除上方與下方的面版[Fig.3]。
Remove the upper,lower side plate. [Fig.3]
- 3) 安裝於1st盤隔壁的2nd盤。
Install 2nd panel next to the 1st panel.
- 4) 使用connect boss、螺帽和墊片組裝四個零件。 [Fig.4]
Assemble 4 parts by using connect boss,nut,washer as [Fig.4]

4.2.4 盤體固定 Panel fix

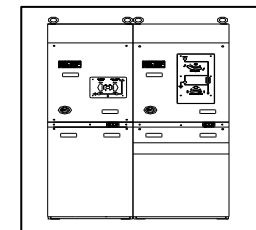
使用四顆M12螺絲，將其鎖緊到嵌入孔內。
Tighten four M12 bolts on the RMU mounting hole.



[Fig.3]



[Fig.4]


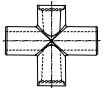
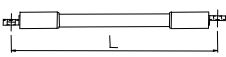



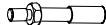



[Fig.5]

安裝 Installation

5. 特殊轉接器連接 Special adapter connection

5.1 零件清單 Parts list

零件 Part	名稱 Name	備註 Remark
	終端連接器 End connector	■ 當在擴充盤時，使用在絕緣套管的尾端。 Use on the end bushing when expending panels.
	十字連接器 Cross connector	■ 除了絕緣套管的終端外，使用在絕緣套管上。 Use on the bushings except end bushings.
	膜鑄電纜 Mold cable	■ 連接電纜(3種) Connecting cable (3 kinds)
	塞子 Plug	■ 安裝連接器後，固定與絕緣保護帽。 After installing connector, fixing and insulating cap.
	區隔器(F) Spacer(F)	■ 根據兩面的凹槽，使用在連接連接器的終端與電纜線上。 Use when connecting end connector and mold cable according to its concavo-concave.
	區隔器(M) Spacer(M)	■ 根據兩面的凹槽，使用在連接連接器的終端與電纜線上。 Use when connecting end connector and mold cable according to its concavo-concave.
	夾式螺栓 Clamping bolt	■ 連接電纜線與絕緣套管。 Connect mold cable and bushing
	彈簧墊片(M16) Spring washer	

[Mold cone Table]

類別	RPL和 RPL	RPL和 RPF	RPF和 RPF
L	459	487	514






安裝 Installation



5.2 在安裝特殊轉接器的時候請特別注意，因為這些都是高壓絕緣的零件。
Be careful when connecting special adapter because these are high voltage insulating parts.



- 請用清潔用棉紙清除接點上的所有外來的物質。之後在接點上塗上矽膏。
Remove foreign substances on all contact points with cleaning tissue. And then spread silicone compound on contacting points.
- 請勿殘留外來物質。在組裝電纜與區隔器時，請確認溝槽。接點如下所示 [Table 2]。
Be careful not to stick foreign substances. In case of assembling moldcables and Spacers each other, conform the concavo-concave. Contacting points are as follows. [Table .2]

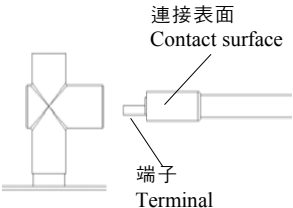
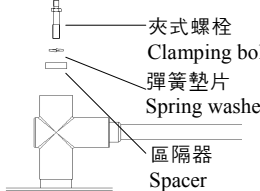
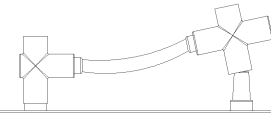
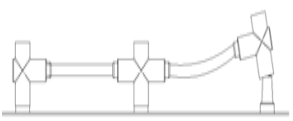
[Table 2]

絕緣套 Bushing	終點連接器 End connector	十字連接器 Cross connector	塞子 Plug	膜鑄電纜 Mold cable
				

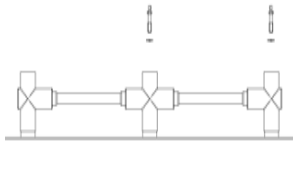
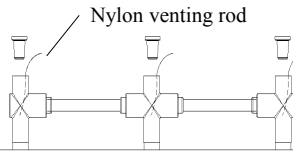





■ 使用清潔棉布清潔終點連接器與絕緣套的接觸表面。在表面塗布矽膏後再插入到絕緣套管內。
Clean the contact surface of bushing and End connector with cleaning tissue. And after greasing the silicone compound on the surface, inset to the bushing.

安裝 Installation

 <p>連接表面 Contact surface</p> <p>端子 Terminal</p>	<ul style="list-style-type: none"> ■ 在使用清潔棉布清潔電纜接觸表面後，塗布上矽膏。 After cleaning the contact surface of mold cable with cleaning tissue, grease the silicone compound. ■ 確認電纜現端子的溝槽，插入到終點連接器。且安插到絕緣保護帽和電纜現端子的中心。 Conform the concavo-concave of cable terminal, insert to the end connector. And insert to the centers of bushing tap and cable terminal.
 <p>夾式螺栓 Clamping bolt</p> <p>彈簧墊片 Spring washer</p> <p>區隔器 Spacer</p>	<ul style="list-style-type: none"> ■ 單安裝入區隔器與彈簧墊片到終點連接器後，用夾式螺栓予以鎖緊。 After inserting spacer and spring washer to the end connector, tighten with clamping bolt. ■ 在安裝組合區隔器與電纜現端子時，請注意其溝槽。 Conform the concavo-concave when inserting the spacer to combine with spacer and cable terminal.
	<ul style="list-style-type: none"> ■ 在塗上矽膏前，先清潔電纜線反面的矽膏。 Clean the silicone on the adverse surface of the mold cable prior to grease the silicone. ■ 插入十字轉接器後連接到隔壁盤的絕緣套管。 Insert to the cross connector and then insert to the next panel bushing.
	<ul style="list-style-type: none"> ■ 如上圖所示，插入另一組電纜線到連接器，之後再插到隔壁的絕緣套中。 Like the upper figure, insert another mold cable to the connector, and then insert to next bushing. And conform the concavo-concave. ■ 如上一頁圖所示，組裝十字與終點連接器。 Like the front page figure, assemble the cross and end connector,

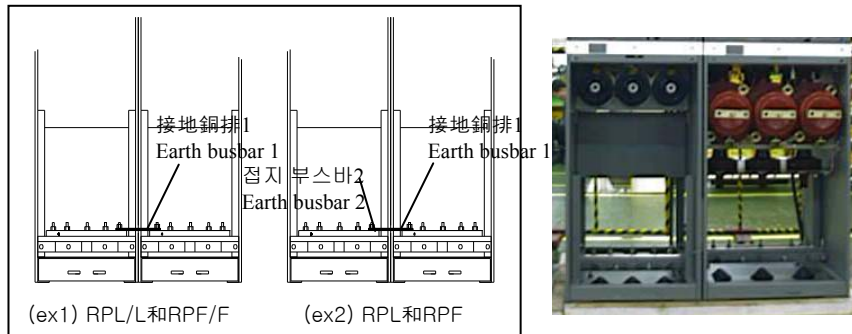
安裝 Installation

	<ul style="list-style-type: none"> ■ 使用正確的扭力來鎖緊夾式螺栓。(450~500Kgf.cm) Tighten the clamping bolt with proper torque. (450~500Kgf.cm) ■ 請勿使已經塗布矽膏的零件上碰到髒污、灰塵。 Be careful not to contact the dirt of dust on the silicone greasing parts.
 <p>Nylon venting rod</p>	<ul style="list-style-type: none"> ■ 在清潔與塗布矽膏到塞子的接觸表面後，使用適當的扭力將其鎖緊。(200~250Kgf.cm) After cleaning and greasing the contact surface of Plug, tighten with proper torque. ■ 在完全鎖緊塞子前，將尼龍出口棒抽出。 Before tightening the plug securely, unthread the Nylon venting rod. (to remove surface bubble)
 <p>(example 1) 1L1T (RPL/F)</p>  <p>(example 2) 3L1T (3RPL/1RPF)</p>	

安裝 Installation

5.3 接地電纜連接 Earth cable connection

如下圖所示安裝接地電纜。(可擴充型RMU)
Install the earth cable as following figures. (Extensible type RMU type)



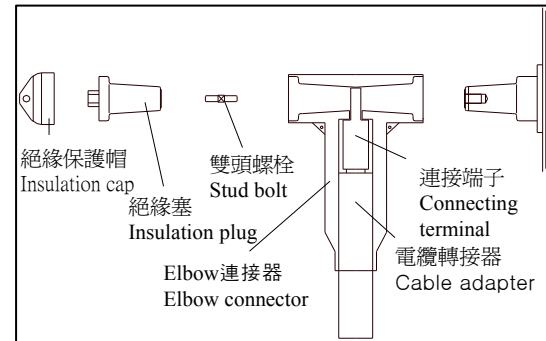
5.4 安裝所需零件列表 Requiring parts list when installing
[Table 3]

No.	品名	2L	3L	4L	5L	6L	1L-1T	2L-1T	2L-2T	3L-1T
1	十字連接器 Cross connector	-	3	6	9	12	-	3	6	6
2	終點連接器 End connector	6	6	6	6	6	6	6	6	6
3	塞子 Plug	6	9	12	15	18	6	9	12	12
4	區隔器(F) Spacer(F)	3	3	3	3	3	3	3	3	3
5	區隔器(M) Spacer(M)	3	3	3	3	3	3	3	3	3
6	클램핑 볼트 Clamping bolt	6	9	12	15	18	6	9	12	12
7	Mold cable(RPL-RPL)	3	6	9	12	15		3	3	6
8	Mold cable(RPL-RPF)						3	3	6	6
9	Mold cable(RPF-RPF)							3	3	
10	Spring washer M16	6	9	12	15	18	6	9	12	12
11	連接boss Connect boss	4	8	12	16	20	4	8	12	12
12	Plain washer M10	8	16	24	32	40	8	16	24	24
13	Spring washer M10	8	16	24	32	40	8	16	24	24
14	Hex.nut M10	8	16	24	32	40	8	16	24	24

安裝 Installation

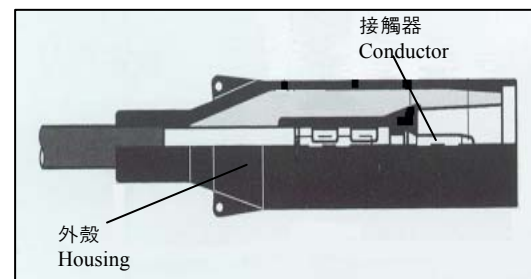
5.5 連接器選擇方法 Connector choosing method
請參考連接器製造商或供應商的手冊。
Please refer to manual of connector producer or supplier.

- 600A 連接器 (600A connector Dead Type)
600A 連接器組成如下圖[Fig.6]
600A connector is composed as follows.[Fig.6]



[Fig. 6]

- 200A 連接器 (200A connector Plug-in Type)
200A 連接器組成如下圖[Fig.7]
200A connector is composed as follows.[Fig.7]



[Fig. 7]

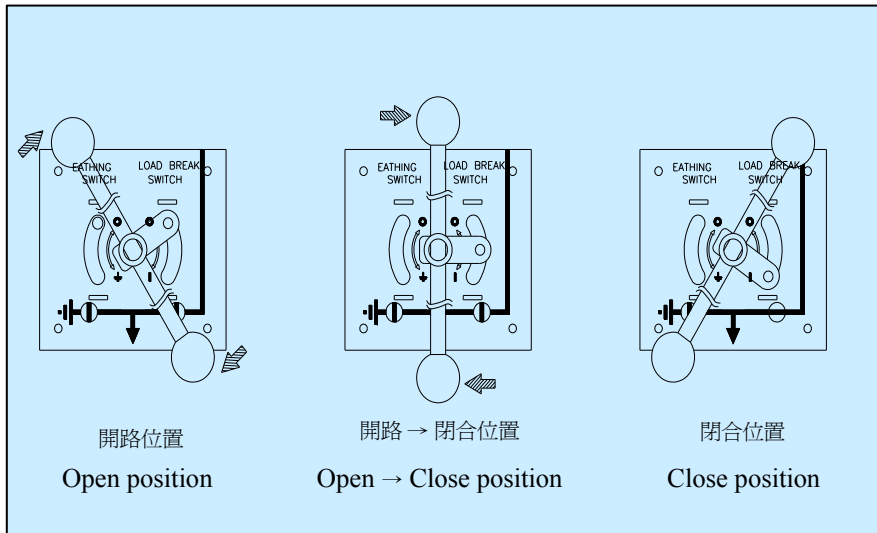


操作 Operation

1. LBS 操作方法(手動操作)

LBS operating method (manual operation)

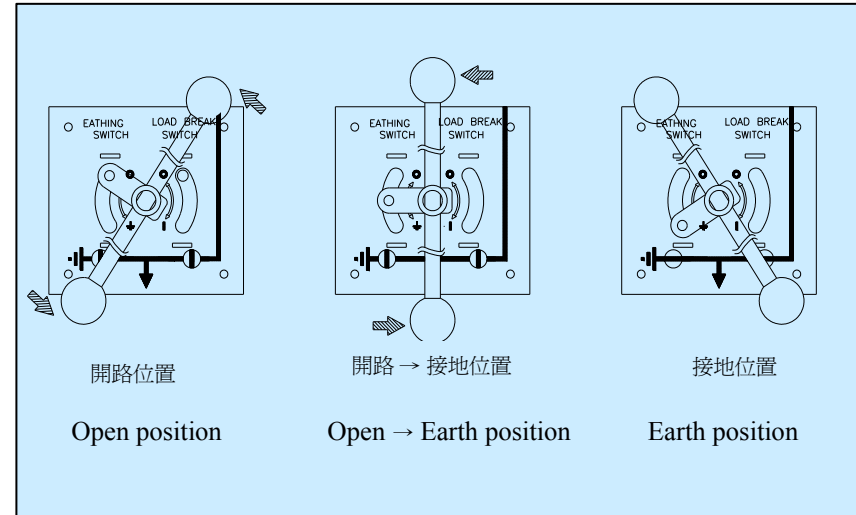
1.1 開路 → 閉合 Open → Close



- 開路(O) → 閉合(I) 的操作乃是藉由操作把手到箭頭所指的方向來完成。
Open(O) → Close(I) operation is performed by moving operation handle to arrow direction
- 閉合(I) → 開路(O) 的操作乃是藉由操作把手到箭頭所指的方向來完成。
Close(I) → Open(O) operation is performed by moving operation handle to arrow direction

操作 Operation

1.2 開路 → 接地 Open → Earth



- 開路(O) → 接地(\perp) 的操作乃是藉由操作把手到箭頭所指的方向來完成。
Open(O) → Earth(\perp) operation is performed by moving operation handle to arrow direction
- 接地(\perp) → 開路(O) 的操作乃是藉由操作把手到箭頭所指的方向來完成。
Earth(\perp) → Open(O) operation is performed by moving operation handle to arrow direction
- 接地的動作必須、也僅能由手動模式來完成。
Earth operation is performed by manual method irrespective of operating method

操作 Operation

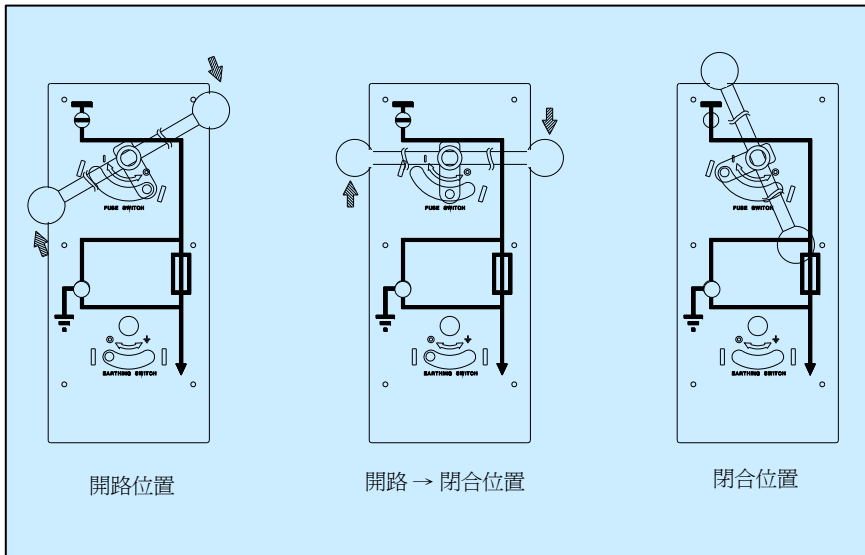
2. Fused LBS 操作方法

Fused LBS operating method

Fused LBS 僅能用手動操作。

Fused LBS always operated by manual method.

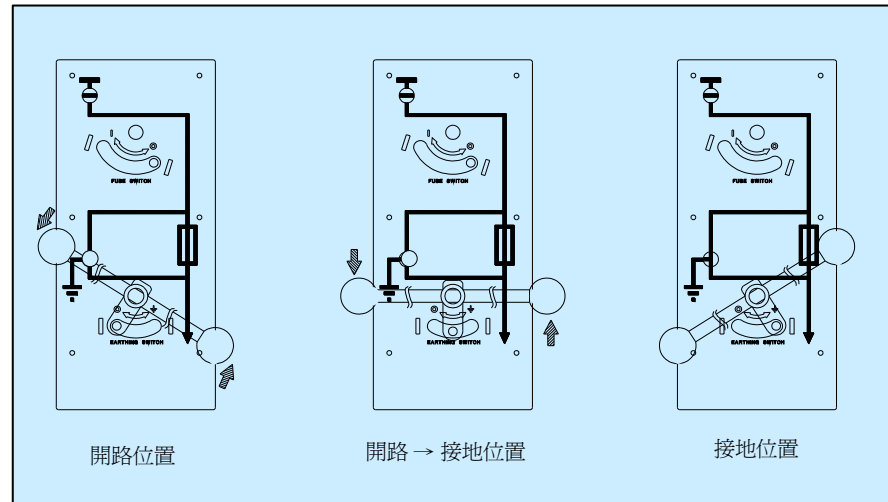
2.1 開路 → 閉合 Open → Close



- 開路(O) → 閉合(I) 的操作乃是藉由操作把手到箭頭所指的方向來完成。
Open (O) → Close (I) operation is performed by moving operation handle to arrow direction
- 閉合(I) → 開路(O) 的操作乃是藉由操作把手到箭頭所指的方向來完成。
Close (I) → Open (O) operation is performed by moving operation handle to arrow direction

操作 Operation

2.2 開路 → 接地 Open → Earth



- 開路(O) → 接地(⏏) 的操作乃是藉由操作把手到箭頭所指的方向來完成。
Open(O) → Earth(⏏) operation is performed by moving operation handle to arrow direction
- 接地(⏏) → 開路(O) 的操作乃是藉由操作把手到箭頭所指的方向來完成。
Earth(⏏) → Open(O) operation is performed by moving operation handle to arrow direction

操作 Operation

控制器構成 Controller composition

- 可以藉由本地或是遙控的方式來自動的操作LBS開關。LBS的控制器需要的工作電源為 AC 220V, 60Hz。
- We can operate LBS switch automatically in local or remote area.
- The LBS controller requires AC 220V,60Hz.



操作 Operation

■ 控制器功能 Controller function


控制器狀態指示 Controller state indication

電源開關 Power switch	→ 控制器的電源開關控制 Controller power on/off switch → 當電源開關是打開的時候，燈號是紅色的 LED is red if Power s/w is on.
鎖定/解鎖觸發開關 Lock/Unlock toggle s/w	→ Lock 狀態時，LED燈顯示紅色 LED is red if the state is lock.
本地/遙控觸發開關 Remote/Local toggle s/w	→ 當在遙控狀態下，LED顯示為紅色 LED is red if the stae is remote.
閉合開關 Closing s/w	→ RMU為閉合時，LED顯示為紅色 LED is red if RMU is closed.
開路開關 Opening s/w	→ RMU為開路狀態時，LED顯示為綠色 LED is green if RMU is opened.
接地狀態指示燈 Earth state indication lamp	→ RMU為接地狀態時，LED顯示黃燈 LED is yellow if RMU is earthed.

■ 控制器操作方法 Controller operating method


電源開關 Power switch	→ 控制器的電源開關 Controller power on/off switch
閉鎖/解鎖觸發開關 Lock/Unlock toggle s/w	→ RMU閉合與開路操作開關 Close/Open operating switch of RMU → Unlock當此開關為解鎖狀態時，可以進行自動操作，手動操作僅有在閉鎖狀態下才能夠執行 Automatic operation is possible when the switch is unlock state. Manual operation is possible only in lock state.
遙控/本地觸發開關 Remote/Local toggle s/w	→ 遙控/本地選擇開關 Remote/Local choosing switch → 僅有在解鎖狀態下，可以進行本地控制的開路與閉合操作 Close/Open operation is possible in local area if only the state is unlock,local. → 在遙控模式下，本地無法進行開路與閉合的動作 Close/Open operation is impossible in local area if the state is remote.
閉合開關 Closing s/w	→ 按鈕狀態為解鎖、本地控制且為開路狀態時可以操作閉合 The button state is unlock,local position and open state we can operate closing.
開路開關 Opening s/w	→ 按鈕狀態為解鎖、本地控制且為閉合狀態時可以操作開路 The button state is unlock,local position and close state we can operate opening.

謹慎使用 Precaution when using

 警告 WANING

- 在確認輸入電纜頭後，LBS輸入端要接地。(則接地故障意外事件可能會發生)
After checking the dead incoming line, earth the incoming LBS.
(Unless the earth fault accident will be happened)
- 在維修熔絲之前，先對LBS熔絲做接地動作。(否則可能因為電纜帶電導致觸電和人員與財物的損失。)
Earth the Fused LBS prior to replace fuse.
(Unless Electric shock will be happened by cable charging current and cause damage to human and real property.)
- 當SF6氣體壓力低於 1.3psi.G (表頭的紅色區塊)時，請勿操作本機台，並聯繫本廠迅速支援。
Don't operate when gas pressure falls below 1.3Psi.G.
(Red parts of pressure gauge). And contact the A/S immediately.

標準品清單 Standard parts list

零件 Parts	數量 Quantity	備註 Remark
操作把手 Operating handle 	1EA	
特殊轉接零件清單 Special adapter parts list		參考P.20 表 3 Refer to P.20 Table3

保養與檢測 Maintenance and inspection

檢測細項 Inspection Details

初始檢測 Initial Inspection

■ 在供電前檢測 Inspection Prior to Applying Current

RMU安裝完畢後，在供電前，完成下列檢測項目
Perform the following inspections after installing the RMU and before applying the current

檢測項目 Inspection item	標準 Criteria
1. 連接到主端子的接線和銅排是否完全的拴緊？ Are the electrical wires and bus bars fastened securely to the external line connection main terminal?	請使用建議的扭力來鎖緊螺絲 (M12 screw: 400~500kgf.cm) Must be tightened at the designated tightening torque (M12 screw: 400~500kgf.cm)
2. 是否有任何外來導體，如螺絲、螺帽、盤內的處理夾和耐受電壓測試用連接導線等遺留在端子附近？ Are any conductive foreign objects, such as screws, nails, processing chips from the panel and also connecting lead wires for the withstand voltage tests, left around the terminals	必須完全清除 Must be removed completely.
3. 前面板、底做使否有破裂或受損？ Is the front cover, base, etc cracked or damaged?	必須不能有任何損傷 There must be no cracks or damage.
4. RMU是否有受潮或有露水凝結？ Has the RMU been flooded or is there condensation of dew?	必須不能受潮與有露水凝結 There must be no flooding or dew condensation.

保養與檢測 Maintenance and inspection

週期性檢測 Periodic Inspection

爲了長時穩定的使用RMU，建議每個月必須根據檢測指示完成一次檢測動作。
It is recommended that periodic inspections are performed once about one month commencing use and thereafter according to the guidelines for inspection and renewal to ensure a stable, long-term use of the RMU.

■ RMU 外觀 External Appearance of the RMU

檢測項目 Inspection Item	檢測方法 Inspection Method	標準 Criteria	處理方式 Treatment Method
灰塵與泥土 Dust and soiling	目視檢查 Visual inspection	不能有灰塵和泥土 There must be no detrimental deposits of dust and dirt.	使用空氣槍來吹乾淨或使用乾淨的布來擦拭 Blow with air upon each periodic inspection or clean and remove the dust with a dry cloth
主電路端子松脫 Loosening of the main circuit terminals	使用扭力尺檢測 Tighten with a torque wrench.	建議扭力 Tightening torque M12 screw: 400~500 kgf.cm	必要時重新鎖緊 Retighten if necessary
有水流入或浸入 Flooding, immersion in water	目視檢查 Visual inspection	不可有 There must be no flooding or immersion	必須更換本產品 Replace the product if flooding or immersion has occurred.
控制端子鬆脫 Loosening of the control terminals	目視檢查 Visual inspection	必須完全鎖緊 Must be tightened securely.	必要時重新鎖緊 Retighten if necessary
前面板、底座、控制電路端子座破裂、損壞或變形。 Cracks, brakage or deformation of the front cover, base, control circuit terminal black	目視檢查 Visual inspection	不可有 There must be no cracks, breakage or deformation.	更換受損的零件 Replace the parts if there are any abnormalities on the front cover or the control circuit terminal block.

保養與檢測 Maintenance and inspection

■ 主電路導通部分 Conductive Part of the Main Circuit

檢測項目 Inspection Item	檢測方法 Inspection Method	標準 Criteria	處理方式 Treatment Method
移動或固定導體變色 Discoloration of the moving and fixed conductors	目視檢測 Visual inspection	不可有 There must be no detrimental discoloration.	請更換RMU Replace the RMU if there is any detrimental discoloration.
主電路導體有泥土 Soiling of the main circuit conductors	目視檢測 Visual inspection	不可有 There must be no detrimental deposits of dust or soot.	在布上使用酒精、丙醇等擦拭 Put methyl alcohol on a cloth, etc and wipe.
主電路接點變色或變形 Discoloration and deformation of the main circuit junction	目視檢測 Visual inspection	不可有 There must be no discoloration of the junction or deformation of the flat spring.	如果有任何不正常時，更換RMU Replace the RMU if there are any abnormalities.

■ 開關機構部分 Switching Mechanism Part

檢測項目 Inspection Item	檢測方法 Inspection Method	標準 Criteria	處理方式 Treatment Method
投入彈簧手動儲能操作 Manual charge operation of closing spring	手動操作 Manual operation	必須可以平順的完成儲能動作 Must be able to perform the charge operation smoothly	假如出現不正常時，維修或更換RMU Repair or replace the RMU if there are any abnormalities



전국서비스망

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