

天铂致力于在最关键的时刻提供绝对可靠、有效、安全的电力产品。天铂专家拥有顶级的跨行业电力管理知识，能够提供定制化的整合解决方案，以解决客户面临的最重大挑战。

我们立足于根据具体应用提供相应的解决方案。但决策者们要求的不仅仅是创新型的产品，他们需要天铂提供稳固的贴心支持承诺，以“客户成功”为第一要务。更多内容，请访问网站www.tbdlc.com。

Temper is committed to providing absolutely reliable, effective and safe electric energy at the most crucial moment. With top-class cross-industry electric management knowledge, Temper experts can provide customized integrated solutions to resolve the greatest challenges faced by customers.

We provide appropriate solution based on specific application. However, decision makers not only require innovative products, but also need Temper to provide secure and considerate support commitments and to regard "Customer Success" as top priority. Please visit our website www.tbdlc.com for more information.

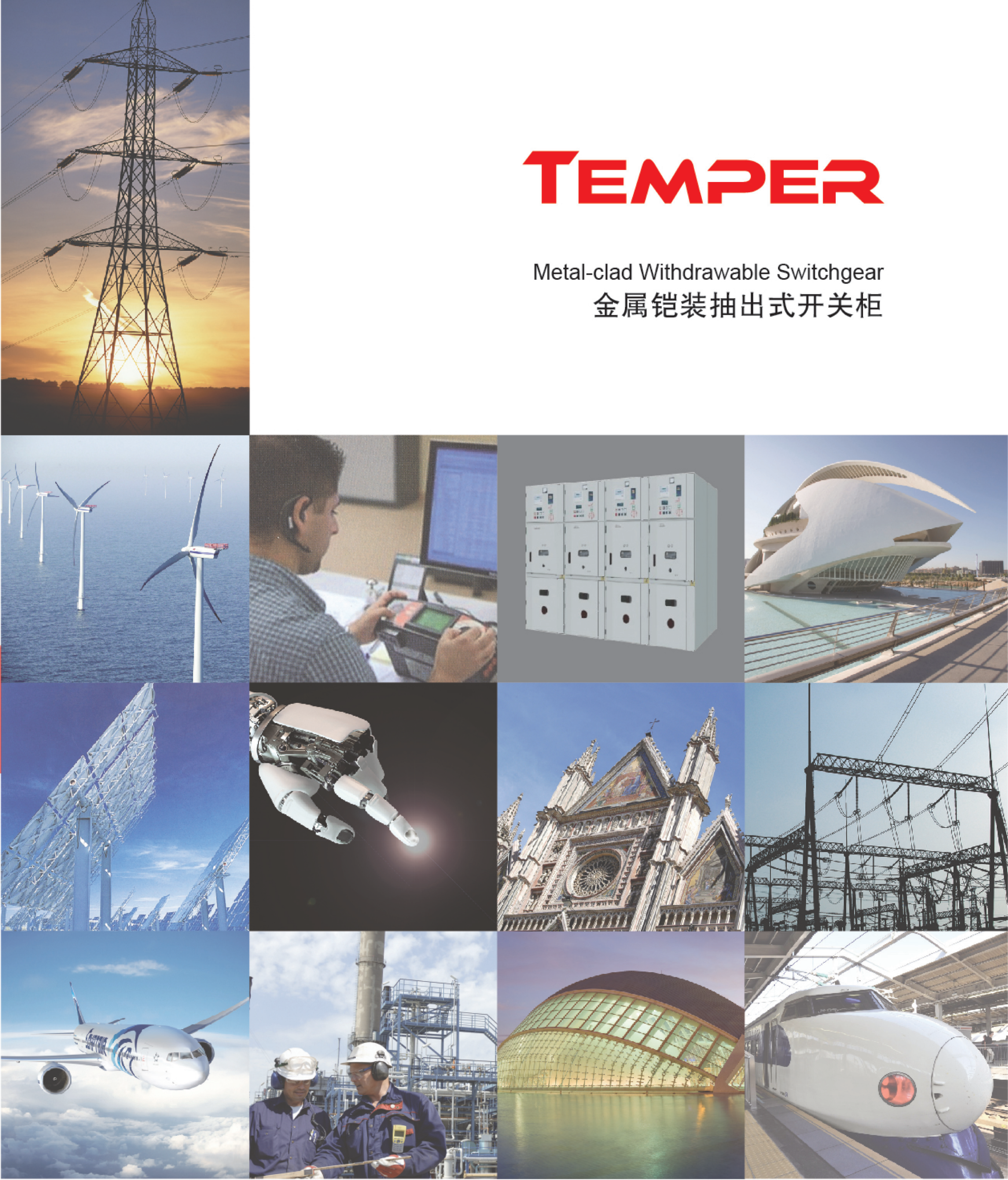
TEMPER

天铂电力（常州）有限公司
地址：江苏省常州市武进高新区凤栖路24号(天铂工厂)
Temper Power (changzhou) Co.,Ltd.
No. 24 Fengqi Road, Wujin High-tech District, Changzhou City,
Jiangsu Province
Phone: +86-519-89620090/0092/0093
Fax: +86-519-81161300/1301
<http://www.tbdlc.com>
E-mail: sales@tbdlc.com



TEMPER

Metal-clad Withdrawable Switchgear
金属铠装抽出式开关柜



T-MIC



Contents 目录

	Page 页 码
Company Profile 公司简介	03 – 04
General 概 述	05
Technical Parameters 技术参数	06
Characteristics 特 点	07
Installation Foundation Drawing 安装地基图	09
Overall Dimension 外形尺寸	10
Safety and Maintenance 安全与维护	11
General Requirements of Switchgear Installation 开关柜安装的一般要求	13
Typical Primary Schematic Diagram 典型的一次方案图	14
Memo 备忘录	16

关于我们

我们自己的研发、生产及销售团队，为客户提供电气设备和电气材料方面的分析、测量、保护、控制解决方案。

我们的服务是专一、一对一的服务

我们是从事电气设备生产与销售厂家。在这个领域里，我们已经有了30多年的历史，我们的产品也已经销售到国际市场中。我们企业的理念是：充满自信、优质服务、创新进取、灵活开发。

我们致力于提供与能源、工业、基础设施相关的产品。

我们的市场运作是国际化的，因为我们的灵活与高效，所以我们可以根据客户个性化的要求，提供给他们一个具体的解决方案。

企业发展方向

我们灵活多变的能力使得我们可以发现当前以及将来市场的需求，给我们的客户一个最佳的解决方案。

天铂公司认为最重要的是明确企业发展方向，而不是确定企业的发展目标。

因为明确了企业发展方向可以使得我们能不断地持续改进，使得我们能着眼于未来，不断进步。

企业理念

我们有5个基本理念

充满自信 每个人必须要有足够多的自信心

完成目标 以事情的结果为导向

优质服务 向客户提供优质的服务

创新进取 我们要有不断进取的精神

灵活开放 我们一直以灵活、开放的心态接受变化

质量要求

我们的第一质量标准是争取的客户最大的满意。

我们的产品必须要符合所有的标准、法律、技术要求，我们的质量控制系统包括了从设计、生产以及到销售的所有环节的控制。

Introduction

We have our own R&D, production, and sales teams to provide out customers with solutions in the analysis, measurement, protection, and control of electrical components.

We are engaged in the production and sales of electrical components. We have more than 30 years of history in this area. Our products have been sold to the international market. Our business philosophy: Confidence, Quality, Innovation, and Flexibility.

Products to improve energy efficiency, and

Products related to energy, industry and infrastructure

Our market is international. We are flexible and efficient. That's why we can provided our customers with specific solutions according to their customized demands.

The development of our company

Because of our flexibility, we can sense the current and future demands of the market and offer the best solutions to our customers.

Temper considers the direction, rather than the goals, of development the most important for a company. As we are clear about it's direction, we can focus on the future and improve continuously.

Corporate philosophy

We have five basic concepts.

Confidence. We must be confident enough.

Achievement. We are result-oriented.

Quality. We offer quality service to our customers.

Improvement. We have the spirit of continuous improvement.

Flexibility. We are flexible, and open to changes.

Our requirements on product quality

Our most important quality rule is to satisfy our customers mostly.

Our products must comply with all legal, standard, and technical requirements. Each link in the supply chain from design to production to sales must be involved in the quality control system.

Our Team 我们的团队

We have a professional, dedicated, motivated team, which allows us to innovate all the time, to provide customers with quality service, and to fulfill the corporate philosophy.

我们有一个专业、敬业、上进的团队，这使得我们可以不断创新、为客户提供优质的服务、实现我们公司的理念。

We give our team members advanced training to help them work positively. In this way, we can face the changing market with the peace of mind and provide first-class service to our customers.

我们团队的人员工作积极，接受过高级培训，这样，我们可以从容地面对不断变化的市场，向客户提供高水平的服务。

Please come to us and visit our team. We adjust our direction for you.

请来我们公司，视察我们的团队，我们因您的需求不断地调整我们的工作方向。



Temper in China 我们在中国

We came to China in 2006, and set up the headquarter in Pudong, Shanghai and the manufacturing site in Changzhou, Jiangsu.

We introduced to the market a full set of intelligent vacuum circuit breakers, environmentally friendly network cabinets and other low-voltage products. All products have passed China's test and certification. We have sales offices in Shanghai, Beijing, Tianjin, Chongqing, Hangzhou, Hefei and Nanchang, and have offices in Hong Kong and Singapore to take care of the sales and customer service in the local markets.

2006年我们来到中国，在上海浦东成立亚太区总部，在江苏常州建有大型生产基地；

全套引进 智能型真空断路器和环保型环网柜方案和其他低压产品。产品全部通过中国的试验和认证。

我们在上海、北京、天津、重庆、杭州、合肥和南昌设有销售办事机构，同时在香港和新加坡设有办事机构，负责当地市场销售和客户服务。

T-MIC-12 Metal-clad Withdrawable Switchgear T-MIC-12 金属铠装抽出式开关柜



The following features make the equipment need no maintenance or minimal maintenance:

- The arc-extinguishing chamber with ceramic enclosure has a vacuum degree of not more than 10^{-6} Pa and a guaranteed working life of 25 years.
- The spring operation mechanism only needs low maintenance.
- Cable terminal boxes and current transformers can be fitted up after opening the back door of the switchgear.
- The switchgear employs standard components and parts, which are kept in stock to meet users' demand.

如下特征使用户对设备免维护或极少维护：

- 灭弧室为陶瓷外壳，真空度 $\leq 10^{-6}$ Pa，工作寿命保证25年。
- 弹簧操作机构仅需少量维护。
- 开关柜后门打开后，即可装修电缆终端盒和电流互感器。
- 采用标准元器件，而且备有现货，满足用户需要。

General 概述

The removable switchgear (hereinafter called the "switchgear"), which is the latest generation product of Temper Power(Changzhou) Co., Ltd. – an indoor complete power distribution equipment of intelligent three-phase AC 50Hz, 3.6~12kV single-bus sectionalized systems, mainly serves power plants, transformer stations, industrial and mining enterprises and high-rise buildings to receive and distribute electric energy, and possesses functions such as control, protection and detection of circuits.

The switchgear has built-in T-CAB (i) maintenance-free vacuum circuit breaker or other similar product of Temper Electric (Changzhou) Co., Ltd. The switchgear is of modular design, having two parts that can be separately assembled - front cabinet comprising low voltage chamber, circuit breaker chamber and maintenance chamber, and rear cabinet comprising bus chamber and cable chamber. This makes it easy to carry out mass production and maintenance. The complete equipment can meet the requirements of China's power grid for medium-voltage switchgears and is applicable to the "Five Preventions", while its door-closing feature can realize special performance requirements of safe operation, full sealing, complete isolation, full insulation and all operating conditions.

移开式开关设备(以下简称开关柜)是天铂电力(常州)有限公司生产的最新一代的智能型三相交流50Hz, 3.6~12kV单母线分段系统的户内成套配电设备, 主要使用于电厂、变电站、工矿企业及高层建筑中, 作为接受和分配电能之用, 并具有对电路进行控制、保护和检测等功能。

开关柜内配置天铂电气(常州)有限公司生产的T-CAB(i)型免维护型真空断路器或其他类似产品。开关柜采用模块化设计, 整体柜型由低压室、断路器室、检修室组成前柜, 由母线室、电缆室组成后柜, 可以分开拼装。便于批量生产和检修。成套设备可满足中国电网对中压开关柜之要求, 并适合“五防”及可关门实现安全操作、全密封、全隔离、全绝缘、全工况的特殊性能要求。



T-MIC-12 Metal-clad Withdrawable Switchgear T-MIC-12 金属铠装抽出式开关柜



Safe, Reliable and Practical Intelligent Switchgear 安全可靠实用性强的智能开关柜

- Fully metal-clad and totally enclosed, the switchgear can prevent dirt and small animals from entering. The level of protection is IP4X.
- Chambers in the switchgear are individually separated. They can have their door closed. The door panel of the circuit breaker chamber is equipped with an emergency opening device for circuit breaker in closed-door state.
- The quick closing earth switch is used for earthing and artificial short circuit, and can be operated electrically or manually.
- The reliable five-prevention interlocking function can effectively prevent misoperation and mistaken entry into the live chambers. Through the observation window in the front door, it is easy to look over the position where the circuit breaker is and its opening/closing state and energy storage state.
- The enlarged voltage relief passage in the circuit breaker chamber better the heat dissipation and improves the safety.
- The ample cable chamber facilitates cable connection.
- Pursuant to the standard IEC60298 and Chinese standards GB3906 and DL404, the switchgear has passed various type tests by the National Quality Supervision and Inspection Center of High-Voltage Electrical Apparatus.
- With large creep distance and compound insulation, the switchgear has high technical performance and multiple combinations of cabling mode.

- 完全金属铠装及全封闭, 防止污物及小动物进入, 防护等级IP4X。
- 开关柜内的各小室均隔开为各自独立的小室, 可关门操作, 断路器室门板带有关门状态下的断路器紧急分闸装置。
- 快速合闸接地开关用于接地和人工短路, 且可采用电动或手动操作方式。
- 可靠的五防联锁能有效的防止误操作及误入带电隔室。
- 透过前门观察窗, 可方便察看断路器所处位置及其分合、储能状态。
- 加大的断路器室泄压通道, 改善了散热效果, 提高了安全性。
- 宽裕的电缆隔室方便电缆连接。
- 按照国际电工委员会标准IEC60298和中国标准GB3906、DL404, 通过国家高压电器质量监督检验中心各项型式试验。
- 采用大爬距与复合绝缘的措施, 具有较高的技术性能及多种进出线方式组合性。

Main Reference Standards 参照采用的主要标准

- IEC62271-200
- IEC62271-100
- GB3906
- GB/T11022
- DL402
- DL404
- DL593

T-MIC-12 Metal-clad Withdrawable Switchgear
T-MIC-12 金属铠装抽出式开关柜

T-MIC-12 Metal-clad Withdrawable Switchgear
T-MIC-12 金属铠装抽出式开关柜

Technical Parameters of Switchgear 开关柜的技术参数

■ Technical Parameters of Switchgear (Table 1)
开关柜技术参数 (表1)

Rated voltage 额定电压	kV	12
Rated 1min power frequency withstand voltage 额定1min工频耐受电压	kV	42
Rated lightning impulse withstand voltage 额定雷电冲击电压	kV	75
Rated frequency 额定频率	Hz	50
4s thermal stability current (effective value) 4s热稳定电流 (有效值)	kA	20 , 25 , 31.5 , 40 , 50
Rated dynamic stability current (peak value) 额定动稳定电流 (峰值)	kA	50 , 63 , 80 , 100 , 125
Rated current of main bus 主母线额定电流	A	4000
Rated current of branch bus 分支母线额定电流	A	630 , 1250 , 1600 , 2000 , 2500 , 3150 , 4000*
Cabinet width (W) 柜宽 (W)	mm	800 , 1000
Cabinet depth (D) 柜深 (D)	mm	1500 (1650)
Cabinet Height (H) 柜高 (H)	mm	2200
Level of protection 防护等级		外壳IP4X (断路器室门打开为IP2X)
Weight 重量	kg	700 ~ 1000 (包括手车在内)
Ambient temperature 环境温度	℃	-15 ~ 4 0
Altitude 海拔高度	米	≤2000
Relative humidity 相对湿度	%	日平均≤95% 月平均≤90%

*Forced air cooling is necessary 开关柜需采用强制风冷

■ Main Technical Parameters of Vacuum Circuit Breaker (Table 2)
真空断路器主要技术参数 (表2)

Rated voltage 额定电压	kV	12		
Rated 1min power frequency withstand voltage 额定1min工频耐受电压	kV	42		
Rated lightning impulse withstand voltage 额定雷电冲击电压	kV	75		
Rated frequency 额定频率	Hz	50		
Rated current 额定电流	A	630 , 1250 , 1600 , 2000 , 2500 , 3150 , 4000*		
Rated short circuit breaking current (effective value) 额定短路开断电流 (有效值)	kA	25 , 31.5 , 40 , 50	25 , 31.5 , 40 , 50	25 , 31.5 , 40 , 50
Rated short-circuit making current (peak value) 额定短路关合电流 (峰值)	kA	63 , 80 , 100 , 125	63 , 80 , 100 , 125	63 , 80 , 100 , 125
4s thermal stability current (effective value) 4s热稳定电流 (有效值)	kA	25 , 31.5 , 40 , 50	25 , 31.5 , 40 , 50	25 , 31.5 , 40 , 50
Maximum arcing time 最大燃弧时间	ms	< 15		
Mechanical life 机械寿命	次	30000	20000	20000
Auto reclosing sequence 自动重合闸操作顺序		O-0.3s-CO-180s-CO , O-180sCO-180s-CO		O-180sCO-180s-CO
Energy storage motor power 储能电机功率	W	75(50kA为100W)		65W/80W
Energy storage motor voltage (DC/AC) 储能电机电压 (DC/AC)	V	110/220		
Energy storage time of motor 电动机储能时间	S	≤15		
Voltage of opening and closing coil (DC/AC) 分合闸线圈电压 (DC/AC)	V	110/220		

*Forced air cooling is necessary 需采用强制风冷

Characteristics of Circuit Breaker 断路器特点

- It meets such standards as IEC, GB and DL.
- It employs the latest generation arc-extinguishing chamber of Temper, so that the chopping current is less than 3A.
- Adopting the latest generation spring operation mechanism imported from Europe, it is compact in structure.
- It can realize desired making and breaking of resistance, inductive and capacitive loads.
- It can electrically manipulate AC/DC, and can be equipped with electrical and manual chassis.
- The quincunx moving contact is silvered. With band spring, the moving and fixed contacts stay in good contact, have little defensive resistance and low temperature rise, and remain free of maintenance.
- 符合IEC, GB, DL等标准
- 使用天铂公司最新一代的真空灭弧室, 截流值小于3A
- 最新一代的欧洲进口弹簧操动机构, 结构紧凑
- 可理想的切合电阻、感性和容性负荷
- 电动操作交流 / 直流两用, 可配置电动、手动型底盘车
- 梅花型的动触头表面镀银, 采用箍簧式使动静触头接触良好、回防电阻小、温升低、免维护

Structural Features 结构特点

The door and terminal panel are coated with epoxy powder. The body of the switchgear is made of 2.0mm zinc-aluminum-magnesium steel plate or aluminum-zinc-coated steel plate. With double bending technology, the switchgear enclosure has high strength and strong resistance to corrosion and oxidation.

Designed as standard internal arc cabinet, with lifting lock and electrical operation, it can provide the safest personal protection and prevent mistaken interlocking.

门和终端封板采用环氧树脂粉末喷涂, 开关柜柜体采用2.0mm锌铝镁钢板或敷铝锌钢板, 经双重折弯工艺使开关柜外壳具备很高的强度及极强的防腐抗氧化能力。

标准内燃弧柜型设计, 提升门锁, 电动操作, 提供最安全的人身防护及防误连锁功能。

Frame 框架

- The low voltage chamber, handcart chamber, bus chamber and cable chamber are enclosed and isolated by metal plate, and equipped with pressure relief passage except the low voltage chamber.
- The frame is free of welded points. During assembly, it adopts special clamps to ensure high assembly accuracy.
- The handcart chamber is equipped with an opening-closing-controllable metal or SMC valve with lock, which can meet the requirement of simultaneous automatic isolation between handcart circuit breaker and bus side.
- The handcart chamber is equipped with specific guide rails for easy pushing or pulling of handcart.
- All functional units have a door, where lock and hinge are fitted. The distance between the hinges is not more than 330mm.
- The frame, after worked and assembled, is neat, firm and beautiful.
- The switchgear enclosure after closed can achieve a protection level of IP4X.
- 低压室、手车室、母线室以及电缆室全部用金属板封闭隔离, 除低压室外均设有独立的压力释放通道。
- 框架无任何焊接点。组装时采用特殊的夹具, 保证很高的装配精度。
- 手车室内设计有带加锁可控制开启或关闭金属或SMC活门, 满足手车断路器与母线侧之间同时自动隔离的要求。
- 手 车室内安装了特定的导轨, 供手车可以轻巧的推进或拉出。
- 各 功能单元均装有门, 门上装有锁和铰链, 铰链之间距离≤330mm。
- 加 工和装配后的框架整齐、牢固、美观。
- 开关柜外壳封闭后可达到防护等级IP4X。

T-MIC-12 Metal-clad Withdrawable Switchgear T-MIC-12 金属铠装抽出式开关柜



Figure 1
见图1

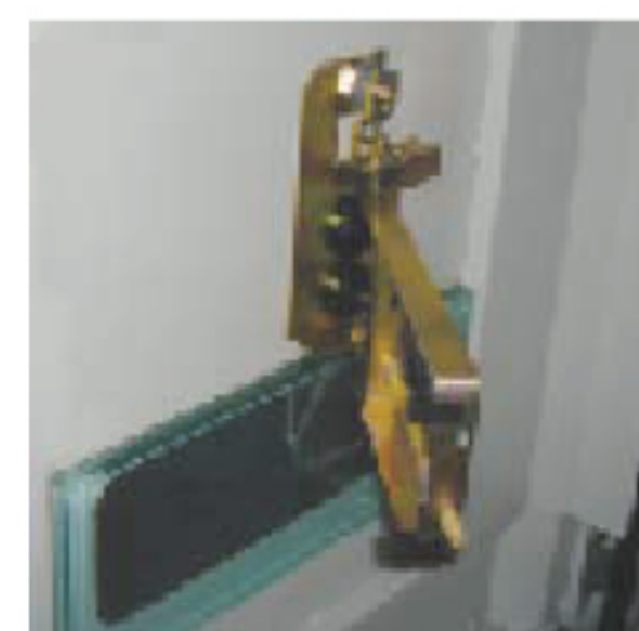


Figure 2
见图2



Figure 3
见图3

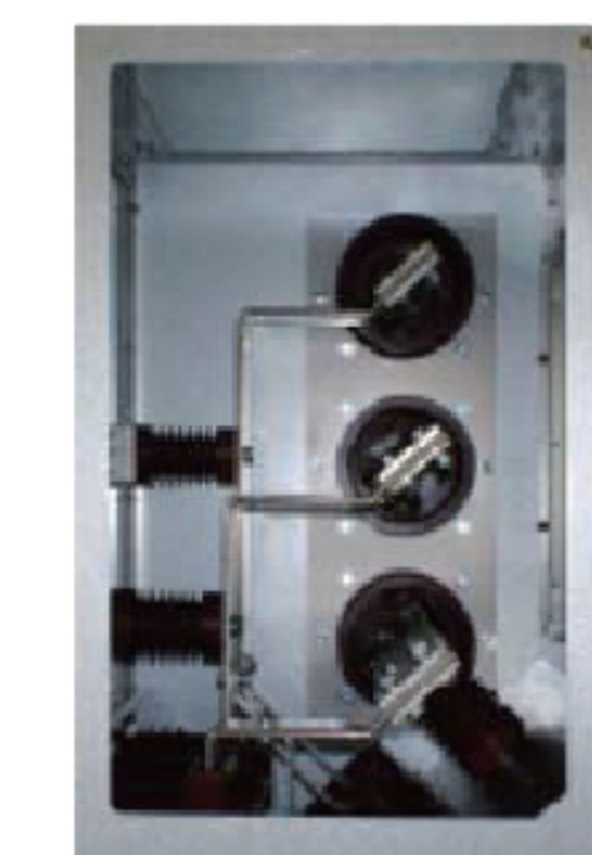


Figure 4
见图4

Circuit Breaker Chamber 断路器室

The circuit breaker chamber is equipped with specific guide rails for the circuit breaker handcart to slide and work in it. The handcart has "operating" and "testing" position in the chamber. When the handcart moves from the "testing" position to the "operating" position, the valve will open automatically; while the handcart moves reversely, the valve will close automatically to fully isolate the primary contacts. (See Figure 1)

在断路器隔室内安装了特定的导轨，供断路器手车在内滑行与工作。手车在小室内有“工作”、“试验”位置。手车从试验位置移至“工作”位置时，活门自动打开；手车反方向运动时，则活门自动关闭，将一次触头完全隔离。（见图1）

The door of handcart chamber has a mechanical emergency opening button. In case of emergency, it is possible to achieve manual opening without opening the door of handcart chamber, so as to ensure operator's safety. (See Figure 2)

手车室门上设有机械紧急分闸按钮，当遇到紧急情况时，可以不需要打开手车室门，即可进行手动分闸，确保了操作人员的安全。（见图2）

Cable Chamber 电缆室

The cable chamber can be equipped with various standard current transformers, earth switches and arresters to provide cabinet-back installation and maintenance methods for users. The cable chamber and the switchgear are designed to meet various cabling modes, for example, bottom-in bottom-out or top-in top-out. The cable bonding conductor can connect three 400mm² three-core cables in parallel at the same time, making connection easy. (See Figure 3) The installation height of cable is not less than 750mm.

电缆室内可安装各型标准电流互感器、接地开关及避雷器，为用户提供柜后安装维护方式。电缆室与开关柜的设计可满足电缆的各种进出方式，例如：下进下出或上进上出方式。电缆连接导体可同时并接3根400mm²三芯电缆，连接方便。（见图3）电缆安装高度≥750mm。

Bus Chamber 母线室

As required by Chinese users, metal partition and sleeve are used between adjacent bus chambers for isolation to avoid failure propagation. Larger bus chambers are equipped with busbar installation and maintenance window. The window circumference is folded to eliminate cutting edge so as to reduce injury to assembly personnel. The busbar is supported by epoxy resin insulator with large creep distance (≥240mm). As for the busbar in the cabinet, when the phase-to-phase and phase-to-earth distances are more than 125mm, air insulation is adopted generally, or compound insulation is adopted and all the buses are covered with heat shrinkable sleeve. The bus lap-joints are protected by insulating cover. (See Figure 4)

可按照中国用户的要求，相邻母线室之间采用金属隔板和套管隔离、以防止事故蔓延；较大的母线室母排安装、维护窗口；窗口周边均采用折边工艺无刃口，减少对装配人员的伤害；母排支撑采用环氧树脂绝缘子，支撑绝缘子采用大爬距(≥240mm)。柜内母排当相间和对地距离大于125mm时，一般采用空气绝缘方式，否则采取复合绝缘，则全部母线用热缩绝缘套管覆盖。母线搭接处加绝缘罩保护。（见图4）

T-MIC-12 Metal-clad Withdrawable Switchgear T-MIC-12 金属铠装抽出式开关柜

Low-voltage Instrument Chamber 低压仪表室

The low voltage chamber and its panel can be equipped with relay protecting components, instruments, air switches, live displays, mimic buses and various secondary components.

The modular matrix plate used to install secondary equipment in the chamber can be flexibly arranged with various secondary components and can facilitate secondary connection.

Equipped with Temper's advanced T-P100 microcomputer-based protection unit and additional communication interface, it can realize power-station integrated automation.

In addition to protection function, the microcomputer-based relay provides functions of displaying, recording and warning all main information of the transformer station. Furnished with standard RS232 or RS485 serial interface, it can connect with transformer station's monitoring systems.

低压室的面板与室内可装继电保护元件、仪表、空气开关、带电显示器、模拟母线以及各种二次元件。

室内用于安装二次设备的模数化的网格板，可以灵活的布置各种二次元件，并方便二次接线。

配置天铂公司先进的T-P100微机型保护装置，附加通讯接口，可实现电站综合自动化。

微机型继电器除提供保护功能外，还具有变电所主要信息的显示、记录和报警功能。并配置有标准的RS232或RS485串行接口，可与变电所监控系统连接。

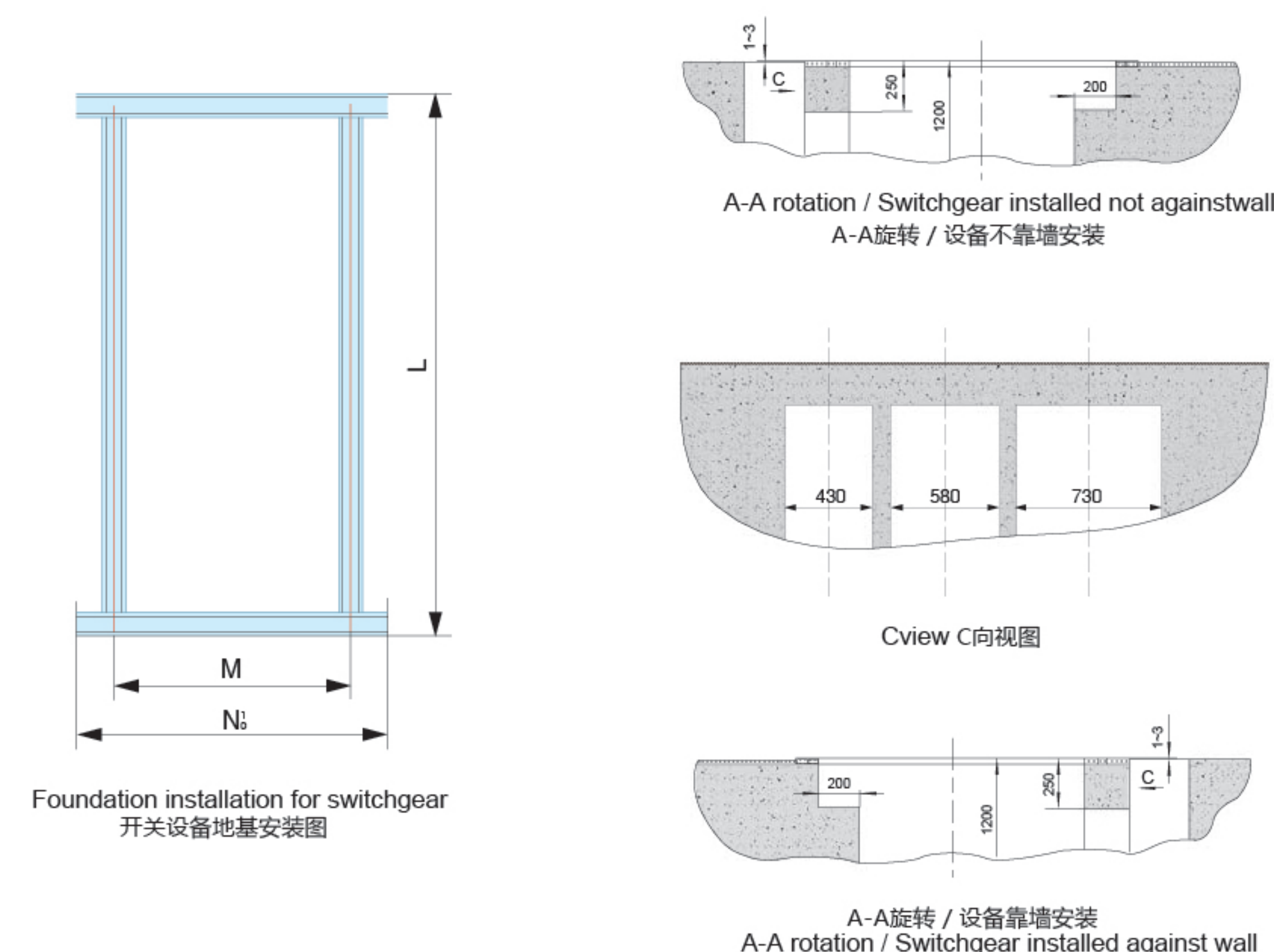
The panel of low voltage chamber is furnished with the following display and control devices:

- Local/remote selection switch
- Signal indicator: indicating opening/closing state, circuit breaker handcart's operating/testing position and earth switch's closing position
- High-voltage live display (connected with capacitor voltage divider in the cable chamber)

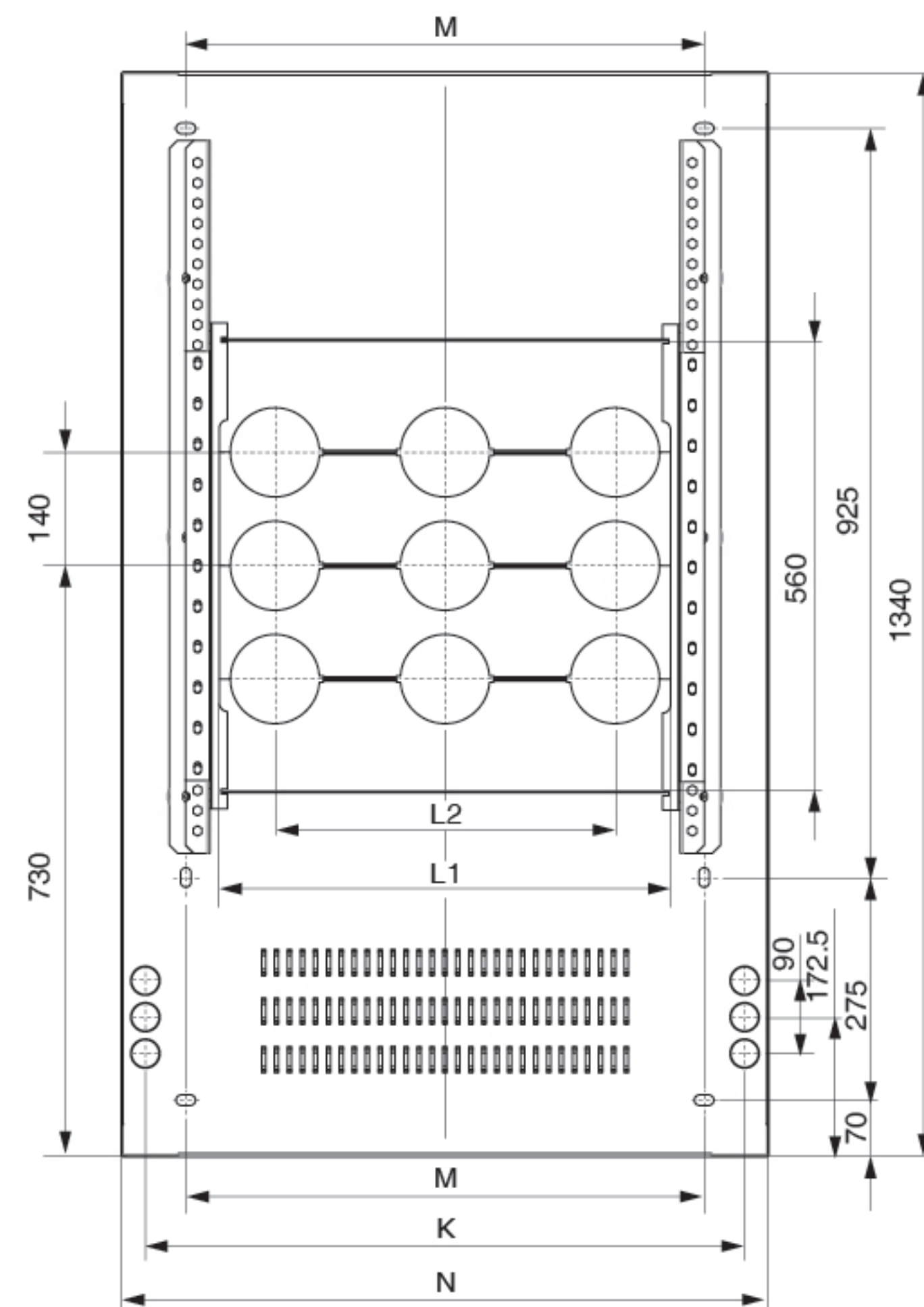
低压室面板上设下列控制和显示装置：

- 就地 / 遥控选择开关
- 信号指示：分合闸状态以及反映断路器手车工作、试验位置以及接地开关闭合位置
- 高压带电显示器（与电缆室的电容器分压器相连接）

Installation Foundation Drawing 安装地基图



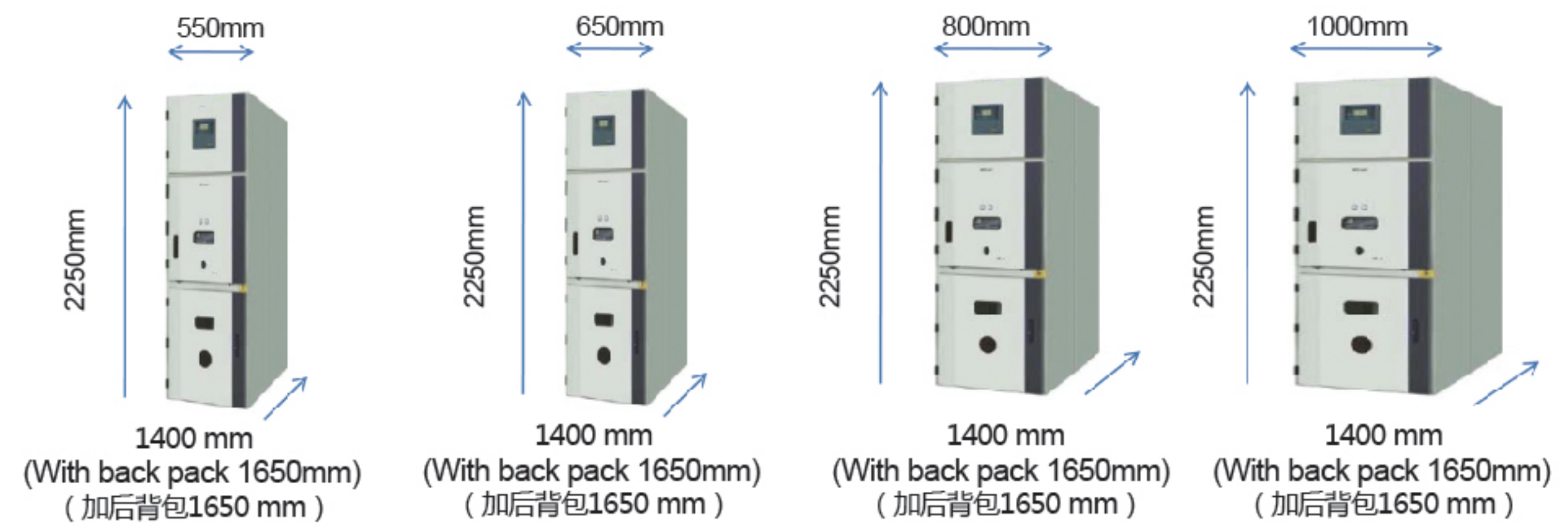
T-MIC-12 Metal-clad Withdrawable Switchgear
T-MIC-12 金属铠装抽出式开关柜



Installation dimensions for Switchgear
开关设备安装基础示意图

Width 柜宽A	Depth 柜深B	M	N	K	L	L1	L2
550	1400 电缆 Cable	390	550	490	1200	310	300
	1650 架空 Overhead				1450		
650	1400 电缆 Cable	490	650	590	1200	410	300
	1650 架空 Overhead				1450		
800	1400 电缆 Cable	640	800	740	1200	530	420
	1650 架空 Overhead				1450		
1000	1400 电缆 Cable	840	1000	940	1200	680	550
	1650 架空 Overhead				1450		

Overall Dimension 外形尺寸



T-MIC-12 Metal-clad Withdrawable Switchgear
T-MIC-12 金属铠装抽出式开关柜

Safety and Maintenance安全与维护

The switchgear is designed to guarantee safety of operators and the equipment itself and make maintenance easy for Chinese users.

开关柜在设计中，保证运行人员和设备自身的安全，并使中国用户维护方便。

Safe Operation 安全操作

To ensure the procedure of correct operation of the switchgear and handcarts, the switchgear is equipped with reliable mechanical or electrical interlocking mechanism (see Table 3 for main measures). The switchgear can also additionally fit electromagnet locking device on the earth switch operating mechanism to meet the electrical interlocking requirements between the earth switch and circuit breaker handcart. Electrical and mechanical interlock can be added between the feed-in switch and bus connection switch. In any case, no simultaneous closing of three switches is allowed.

为了保证开关柜和手车正确操作的程序性，开关柜设置有可靠的机械或电气联锁机构，主要措施见表3。

本开关柜还可以在接地开关操作机构上加装电磁铁锁定装置，以满足接地开关与断路器手车之间电气联锁要求。

可以在两路进线开关与母联开关之间加电气与机械联锁。任何情况下不允许出现三个开关同时合闸。

Five-prevention Requirements 五防要求	Specific Measures 具体措施
Prevention of mistaken opening/closing 防止误分、合断路器	If the circuit breaker is already in closing state and the interlocking rod moves backwards, the relief plate of closing spring cannot lift the lever to release the lock catch. 如果断路器已经处于合闸状态，连锁杆向后运动，此时合闸簧释放板的运动不能抬起杠杆释放锁扣。
Prevention of pulling/pushing handcart with load 防止带负荷推拉手车	The full door-closing operation greatly ensures the safety of operators. There is a mechanical interlock between the circuit breaker handcart and the switchgear. The circuit breaker can close only when the circuit breaker handcart is at the testing or operating position. When the circuit breaker is in closing state, the circuit breaker will automatically trip if the circuit breaker handcart is pulled mistakenly. 关门完全操作极大的保证了操作人员的安全。断路器手车与开关柜之间有机机械联锁。只有当断路器手车处于试验位置和运行位置时才能合闸。断路器处于合闸状态时，当误拉断路器手车就会自动跳开断路器。
Prevention of closing live earth switch 防止带电合接地开关	When the circuit breaker handcart is at the operating position and the cable chamber is live, the earth switch cannot be operated by mechanical interlock. 断路器手车处于工作位置，当电缆室带电时，通过机械联锁接地开关不能操作。
Prevention of earth switch from switching-on at earthing position 防止接地开关在接地位置送电	When the earth switch is closed, the advancing handle hole of the circuit breaker handcart cannot open by mechanical interlock, so that the handcart cannot advance to the operating position. As a result, the primary circuit cannot be switched on. Only when the earth switch is at the opening position, the handcart can be moved from the testing position to the operating position. 当接地开关已合上，则通过机械联锁，断路器手车的进车操作孔不能打开，手车不能进到工作位置。一次回路不能接通。只有接地开关在分闸位置时，手车才能从试验位置摇到运行位置。
Prevention of mistaken entry into live chamber 防止误入带电间隔	The bus chamber, handcart chamber and cable chamber are separated each other. When the handcart moves to or moves away from the testing position, the valve will close automatically to fully isolate the primary fixed contacts. The door of cable chamber has live indicators or mechanical interlock. The back door can be opened only when the earth switch closes. If the back door is not closed, the earth switch cannot be opened. 母线室、手车室、电缆室相互隔开，当手车移到试验位置或移出位置，活门自动关闭，一次静触头被完全隔离。电缆室门装带电指示器或机械联锁，接地开关合闸后，后门才能打开，后门不关闭，接地开关不能分闸。
Secondary plug 二次插头	When the handcart is at the middle or operating position, the secondary plug is locked and cannot be pulled out. 手车在中间位置、工作位置时，二次插头被锁定不能拔下。

T-MIC-12 Metal-clad Withdrawable Switchgear T-MIC-12 金属铠装抽出式开关柜

Safety of Operators 运行人员的安全

- The metal enclosure of the switchgear has passed examination of internal arc failure type test.
- The circuit breaker can be operated only when the cabinet door is closed or electrified bodies cannot be approached.
- When the cabinet door is closed, a test can be carried out to check whether the interior is live even without approaching electrified bodies.
- The body and all metal partitions of the switchgear are earthed. They have special earth terminals for connection so that the earthing continuity is good.
- 开关柜金属封闭已通过内部电弧故障型式试验的考核。
- 可在柜门关闭或无法接近带电体的情况下，才可操作断路器。
- 在柜门关闭时，不用接近带电体即可测试柜内是否有电。
- 开关柜柜体及所有金属隔板接地，并设有专用接地线端子供连接，接地连续性好。

Maintenance 维护

The following features make the equipment need no maintenance or minimal maintenance:

- The arc-extinguishing chamber with ceramic enclosure has a vacuum degree of not more than 10⁻⁶Pa and a guaranteed working life of 25 years.
- The spring operation mechanism only needs low maintenance.
- Cable terminal boxes and current transformers can be fitted up after opening the back door of the switchgear.
- The switchgear employs standard components and parts, which are kept in stock to meet users' demand.

如下特征使用户对设备免维护或极少维护：

- 灭弧室为陶瓷外壳，真空度 $\leq 10^{-6}$ Pa，工作寿命保证25年。
- 弹簧操作机构仅需少量维护。
- 开关柜后门打开后，即可装修电缆终端盒和电流互感器。
- 采用标准元器件，而且备有现货，满足用户需要。

Earthing Device of Switchgear 开关柜接地装置

- Connect all cabinets with connecting plates prepared in advance.
- Connect all leads to be earthed in the switchgear.
- Connect the foundation frame with the earth bar. If the number of cabinets in connection exceeds 10, there must be two earth bar joints.
- 用预先准备连接板将各柜连接在一起。
- 在开关柜内部联结所有需要接地的引线。
- 将基础框架与接地排相连，如果柜子排列超过10台，必须有两个接地排连接点。

T-MIC-12 Metal-clad Withdrawable Switchgear 典型的一次方案图

General Requirements of Switchgear Installation 开关柜安装的一般要求

The installation foundation of the switchgear shall comply with relevant regulations in the "Code of Erection and Acceptance of Electric Power Construction". The installation foundation is generally concreted in twice. The first time is to install embedded parts for the switchgear and lay down the foundation channel steel. The second time is to pour the supplementary layer of the ground, which is usually 60mm high. The concrete height shall be 3-6mm lower than the channel steel plane when pouring the concrete supplementary layer.

The form of the primary and secondary cable chute of the switchgear depends on its installation site and construction conditions.

For installation foundation flatness of the switchgear, the error per meter shall not be greater than 1mm, and the error in the whole length shall not be over 3mm.

The cabinets shall be transported to their specific site according to project requirements and drawing indication. If the line is longer (over 10 cabinets), it is recommended to assemble them from the middle.

Please use specific transportation facilities such as crane and fork truck. It is prohibited to use rollers and crowbars. The circuit breaker handcart drawn from the switchgear can be kept in other places.

During installation, the first cabinet or the first section shall be leveled to ensure the horizontal and vertical requirements. The installation roughness of the switchgear shall not be over 2mm.

After the first cabinet is leveled, other cabinets can be installed, while attention shall be paid to make sure the side opening align with the installed section.

开关柜的安装基础应符合“电力建设施工及验收技术规范”中的有关条款规定。开关柜的安装基础一般要分两次浇注混凝土。第一次为开关柜安装预埋件，并铺设基础槽钢。第二次浇灌混凝土是地面的补充层，一般高度为60mm，在浇筑混凝土补充层时混凝土高度应低于槽钢平面3-6mm。

开关柜一二次电缆沟的形式，视开关柜安装位置及建筑条件而定。

开关柜安装基础平面度每米误差不大于1mm。全长误差不超过3mm。

按工程需要与图纸标明，将开关柜运至它们特定的位置，如果一排较长的开关柜排列(10台以上)，建议拼柜从中间开始。

用特定的运输工具如吊车、叉车等，严禁使用滚筒与撬棍。从开关柜内抽出的断路器手车，可先放别处妥善保管。

安装时先校平第一台柜子或第一个截面保证水平和垂直两个方面的要求。开关柜安装不平度不得超过2mm。

校正好第一台柜子后，安装其他柜子，注意侧孔与已安装的截面对齐。

Bus Installation 母线的安装

Main buses shall be supported by insulator (creep distance ≥ 240 mm). Coupling is adopted between main buses as well as between main buses and branch buses (phase-to-phase and phase-to-earth distances ≥ 125 mm).

The buses shall be wiped with clean and dry soft cloth and checked for damage. Conductive paste or neutral Vaseline shall be applied to the joints.

After the buses are installed, fixing bolts shall be tightened with torque wrench.

The insulating cover shall be well covered over the joints.

主母线用绝缘子支撑（爬电距离 ≥ 240 mm），主母线之间以及与分支母线之间采用耦接形式。（相间、相地距离 ≥ 125 mm）

用清洁干燥的软布擦揩母线，检查母线是否损伤，在连接处涂上导电膏或中性凡士林。

母线安装好后用扭矩扳手拧紧固定螺栓。

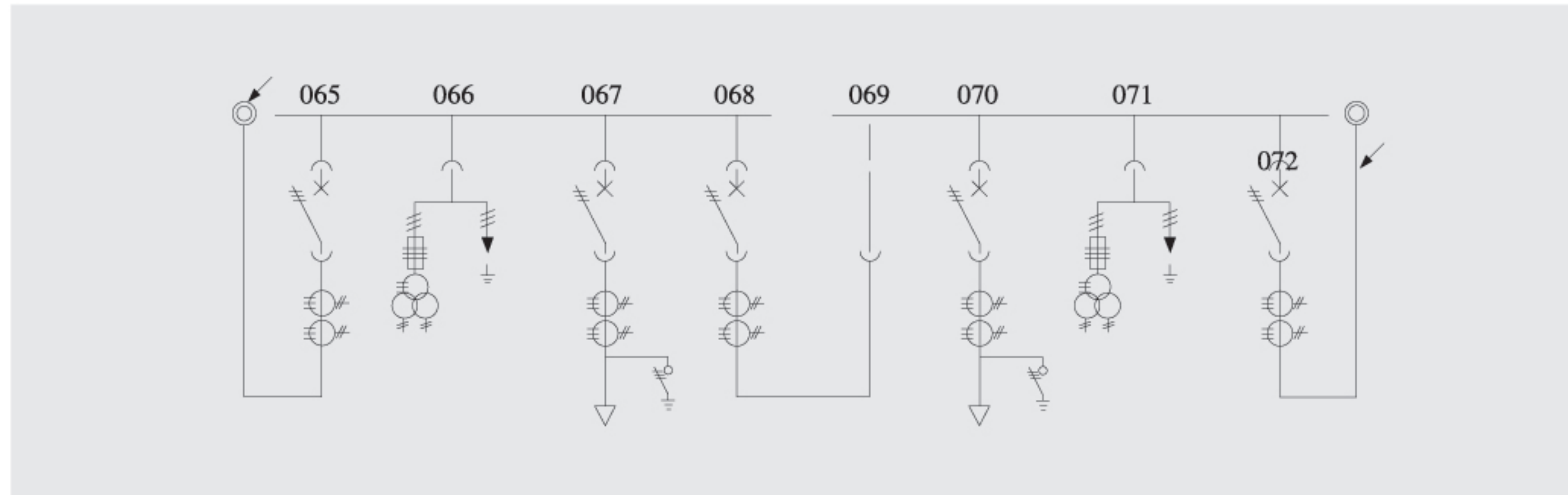
套好连接处的绝缘罩。

Ordering Note 订货须知

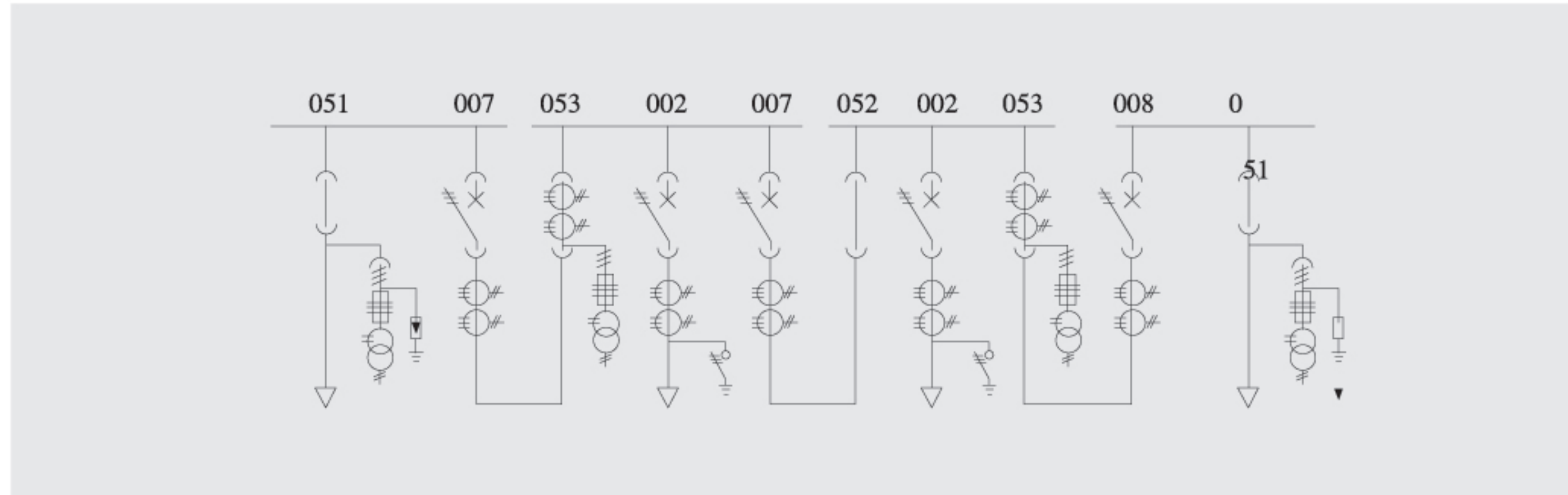
Please contact us when you place orders

订货时须与本公司联系

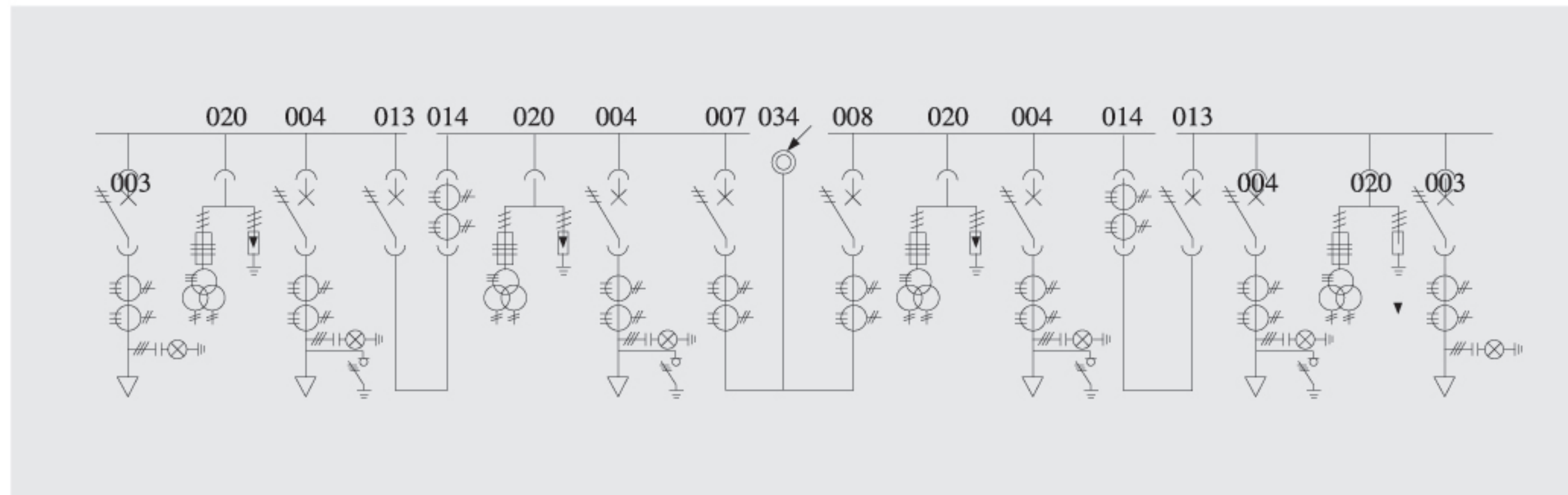
Typical Primary Schematic Drawing
典型的一次方案图



Schematic Drawing 1 方案图1



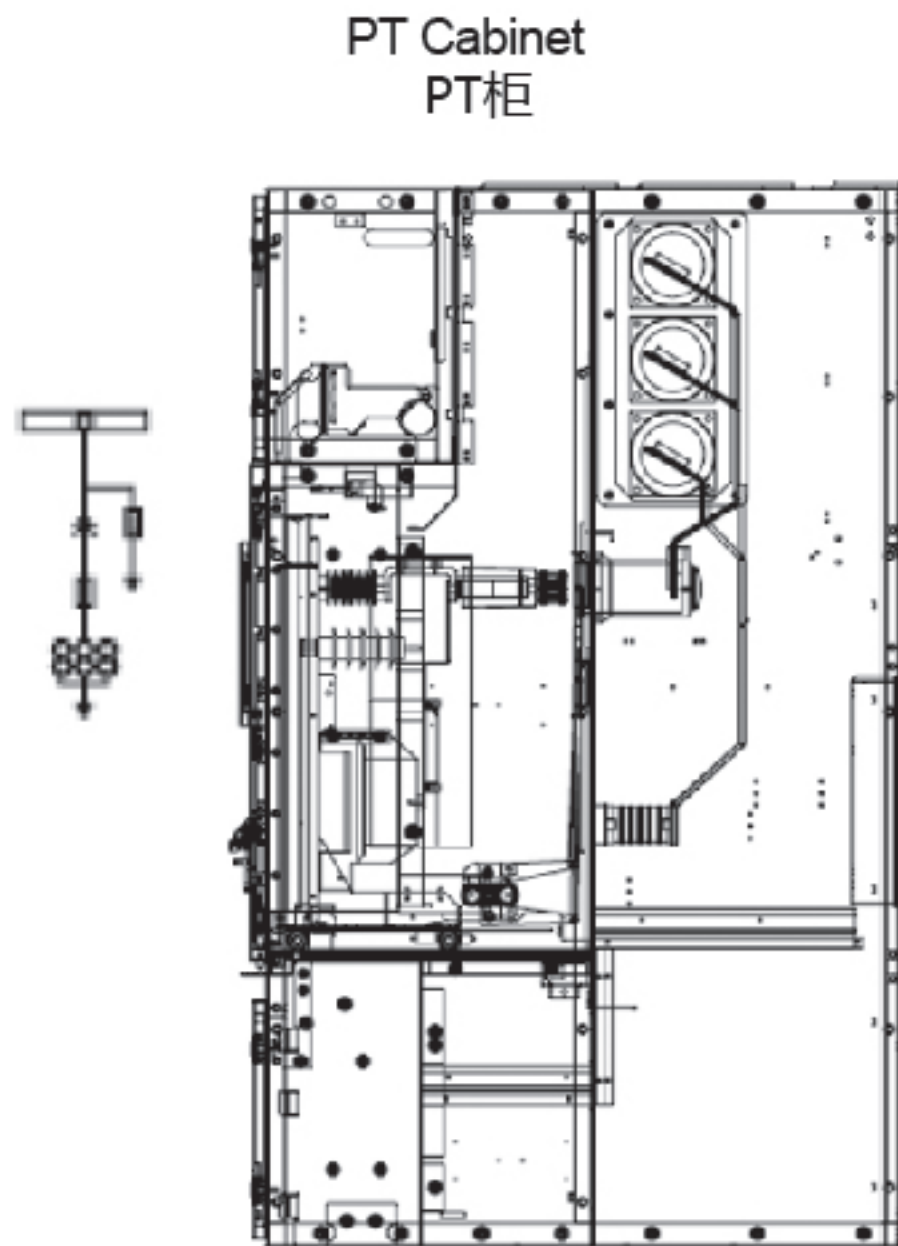
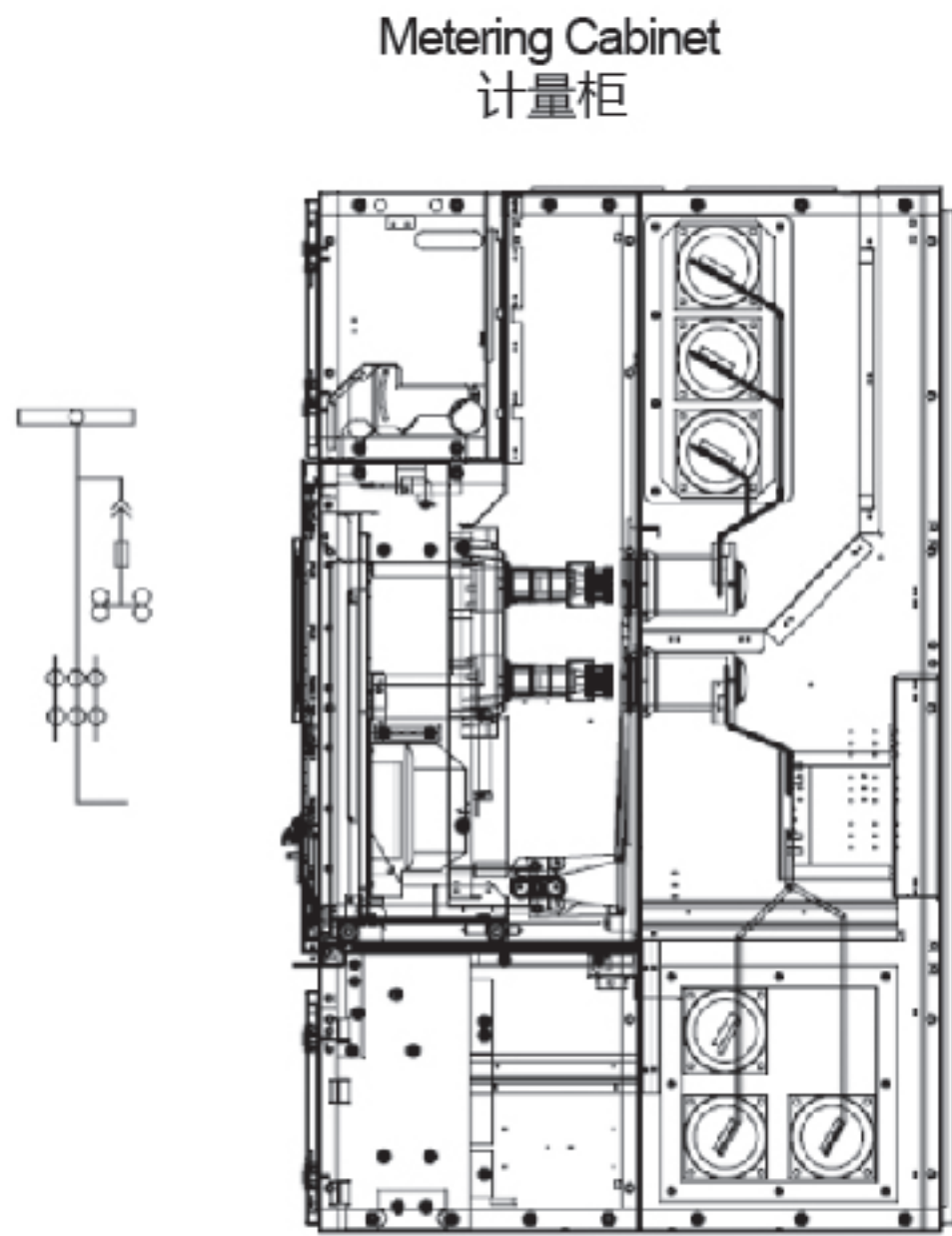
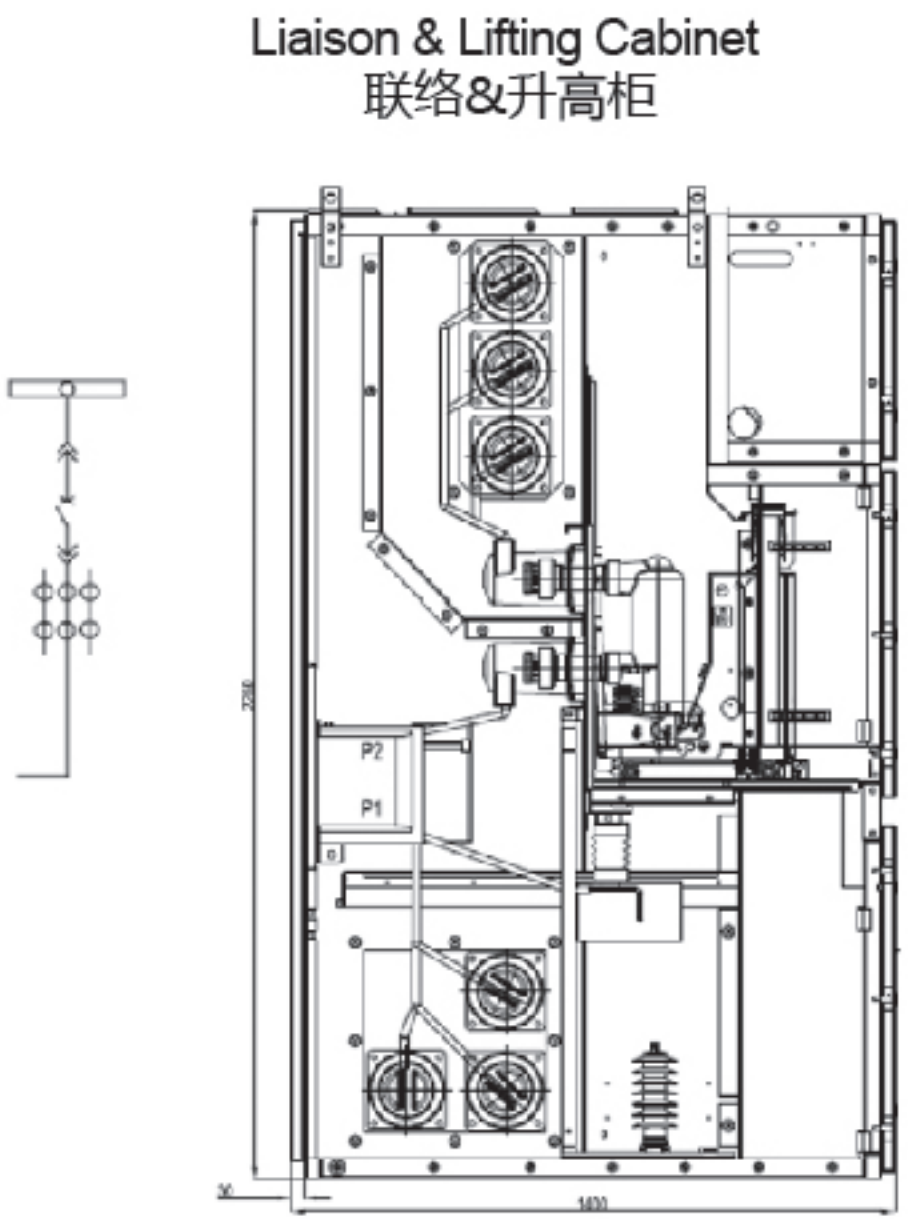
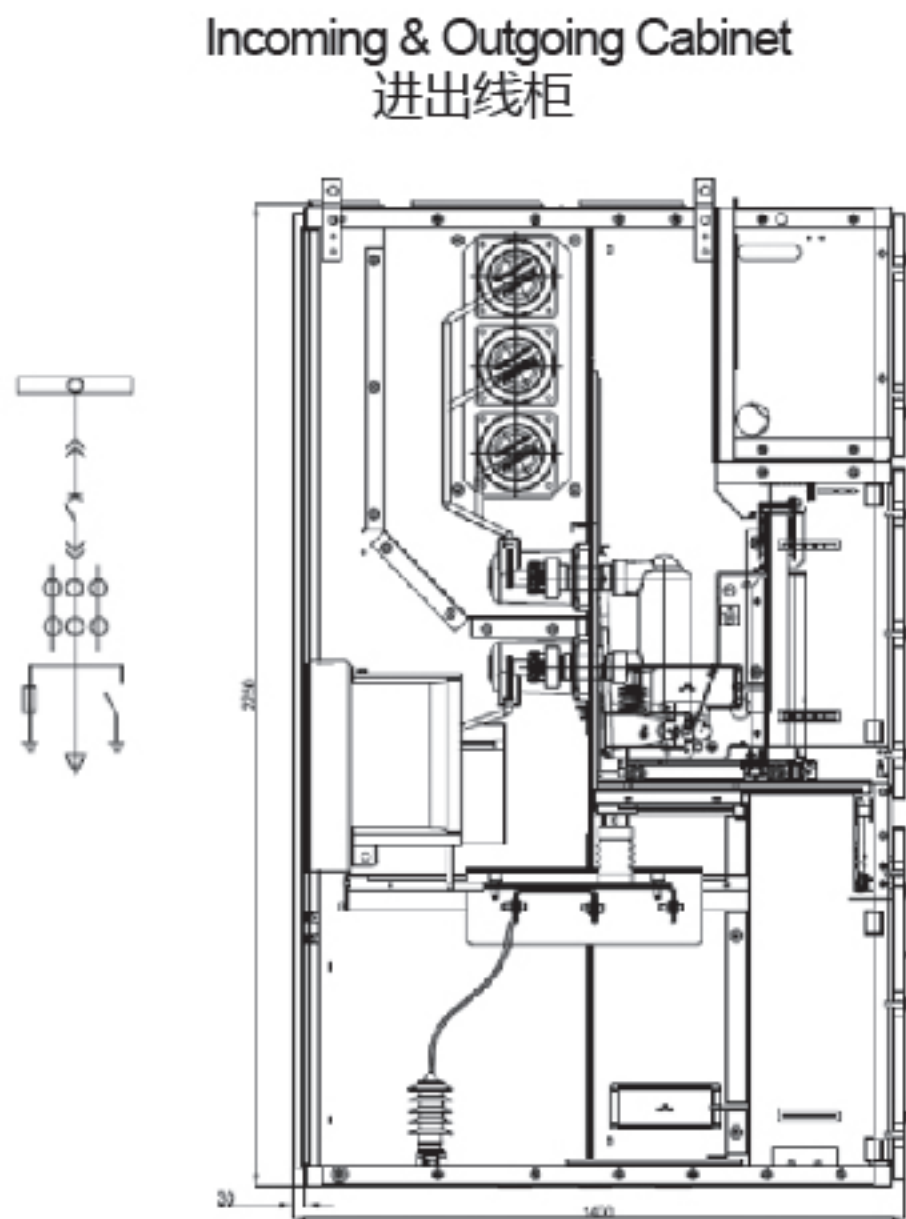
Schematic Drawing 2 方案图2



Schematic Drawing 3 方案图3

Typical Primary Schematic Drawing
典型的一次方案图

Typical Scheme 典型方案



A large grid of small squares, typically used for graphing or writing notes. The grid is composed of many small squares, providing a structured area for content.A large grid of small squares, typically used for graphing or writing notes. The grid is composed of many small squares, providing a structured area for content.