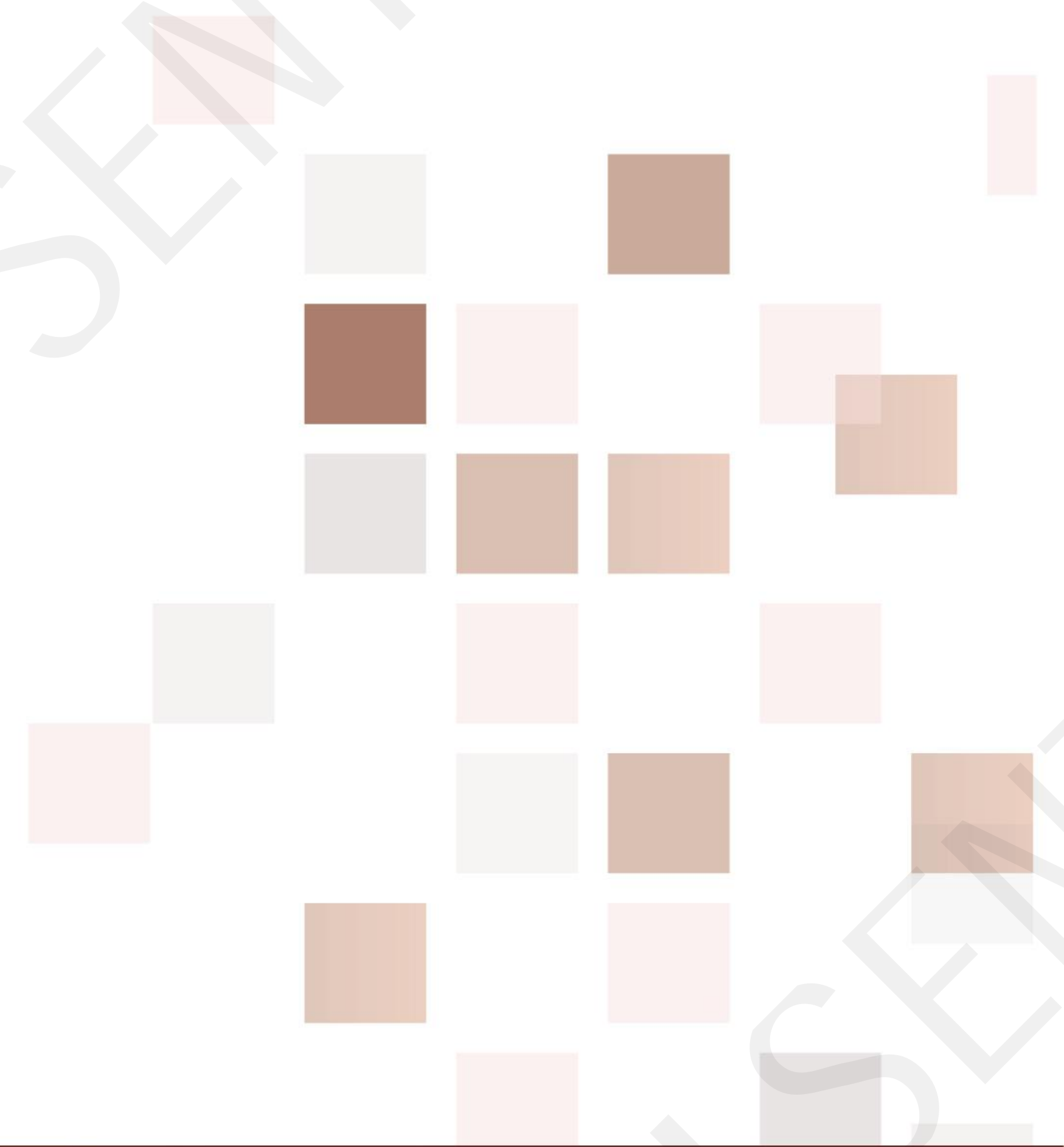


This manual is printed by Shanghai Risenric Electric Co., Ltd. and is intended only to describe part of the product information. The illustrations in this manual are for reference only; the actual product shall prevail. For ordering or confirmation of relevant information, please contact our company at any time.

(Version No.: MG2025112109280, 2025)


Risenric



SHANGHAI RISENTRIC ELECTRIC CO.,LTD


KYN28A-12 Armoured Withdrawable AC Metal-Enclosed Switchgear Manual

 Hotline | +86 173 0181 0387

 +86 173 0181 0387

 www.risenric.com

 info@risentric.com

 No. 900, Shantong Road, Jinshan District, Shanghai, China



■ CONTENTS

I /	01/02	Company Profile
	03/04	Customers Served
	05/06	Product Description、 Technical Specifications
	07/08	Structure and Components

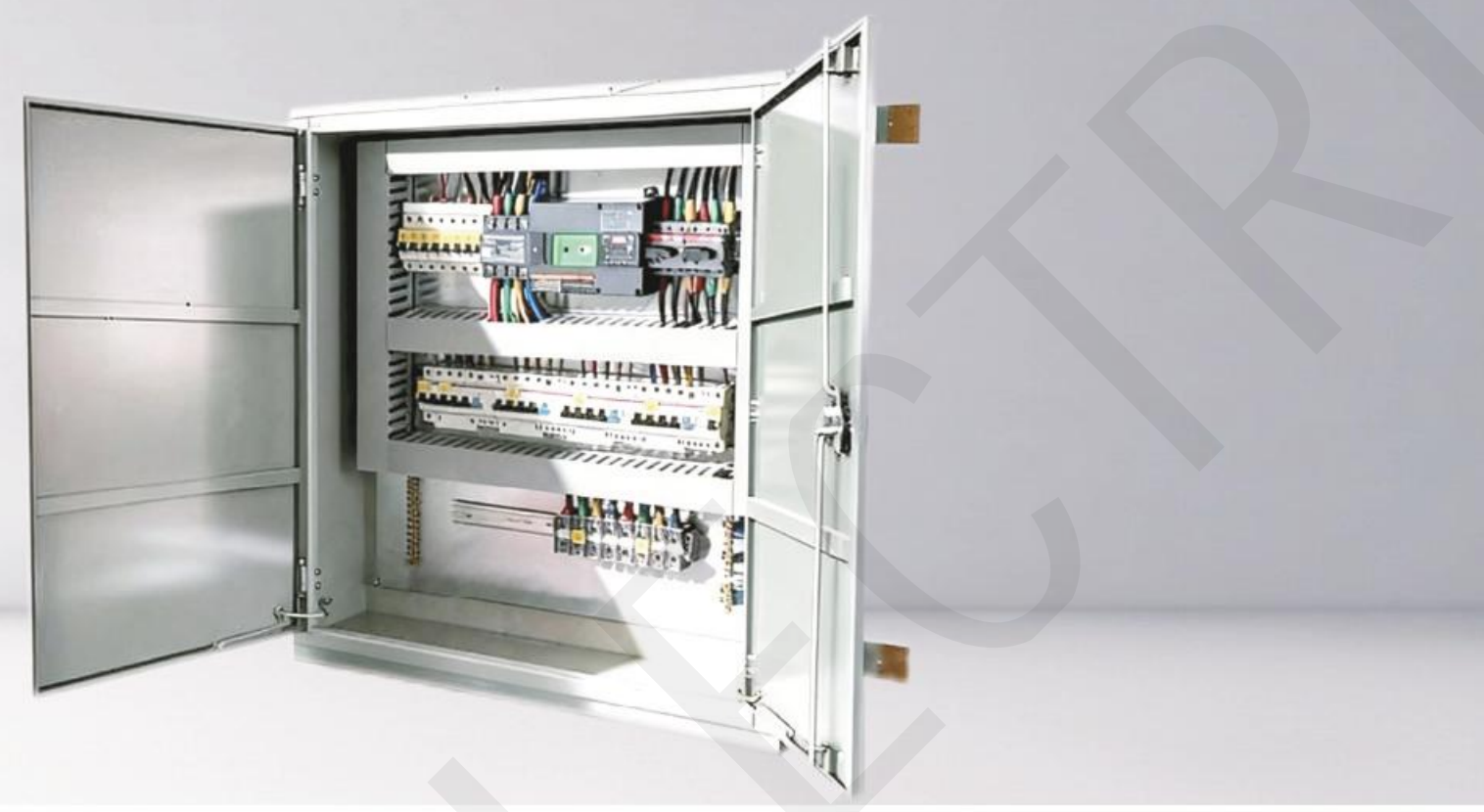
II /	09/12	Model Type
------	-------	------------

III /	13/14	Installation and Wiring
	13/14	Commissioning and Acceptance
	13/14	Operation
	13/14	Maintenance (Recommendations)
	15/16	Common Faults and Troubleshooting
	15/16	Packing and Accompanying Documents
	15/16	Ordering Information

ABOUT RISENTRIC

Shanghai Risentric Electric Co., Ltd. specializes in the research, development, and manufacture of high- and low-voltage complete switchgear, box-type substations, power transformers, and other power transmission and distribution equipment.

COMPANY PROFILE



Shanghai Risentric Electric Co., Ltd., established in 2005, is a national high-tech enterprise specializing in intelligent power transmission and distribution as well as industrial electrical control. The company has been certified to ISO 9001 Quality Management System, ISO 14001 Environmental Management System, and ISO 45001 Occupational Health and Safety Management System, and has been awarded multiple qualifications including “Specialized and Innovative Enterprise.”

All products are designed and manufactured in strict accordance with IEC standards and relevant national regulations. Many products have obtained mandatory certifications such as CCC and CQC, as well as CE certification, ensuring high levels of safety, reliability, and international applicability.

Risentric possesses comprehensive capabilities covering research and development, manufacturing, system integration, and engineering implementation. Its product portfolio includes high- and low-voltage complete switchgear, European- and American-style box-type substations, power transformers, industrial automation control systems, photovoltaic equipment, and related electrical components. These products are widely applied in industries such as power generation, metallurgy, chemical processing, petroleum, transportation, construction, and municipal engineering, continuously delivering stable and reliable products and professional services to customers.

To ensure product quality and manufacturing excellence, the company has introduced advanced flexible production lines from both domestic and international sources, equipped with CNC turret punching machines, CNC bending machines, CNC shearing machines, CNC laser cutting machines, and CNC busbar processing centers, enabling lean manufacturing and full-process quality control.

While continuously strengthening its presence in the domestic market, Risentric actively expands its international business and is committed to becoming a trusted global partner for power transmission, distribution, and industrial electrical solutions.

Technological innovation, quality first, integrity-based service, and win-win cooperation are the core business philosophies of Risentric. The company sincerely welcomes customers worldwide to cooperate and achieve shared success.



HONORS AND QUALIFICATIONS



OUR PARTNERS



Customer service



Technical Achievements

To Realize Automation World With High-advanced Technology



KYN28A-12 Armoured Withdrawable AC Metal-Enclosed Switchgear

PRODUCT INTRODUCTION

KYN28A-12 armoured withdrawable AC metal-enclosed switchgear is used for receiving and distributing electrical energy in 3 – 12 kV power systems and for controlling, protecting, and monitoring circuits. Various types of microprocessor-based integrated protection relays can be installed on the relay compartment panel of this product. It can realize intelligent system control with functions such as remote control, remote measurement, remote signaling, and remote regulation. Field network communication can be achieved through the CAN bus with a communication interface. The switchgear is equipped with the “five prevention” interlocking functions: preventing misoperation of the circuit breaker, preventing movement of the withdrawable truck under load, preventing closing of the earthing switch when the circuit is energized, preventing energizing when the earthing switch is in the grounding position, and preventing access to live compartments by mistake.

Environmental Conditions

- Ambient air temperature: upper limit +40° C, lower limit – 10° C in general areas.
 - Altitude: 1000 m.
 - Humidity: Relative humidity — daily average not exceeding 95%, monthly average not exceeding 90%.
Water vapor pressure — daily average not exceeding 2.2 kPa, monthly average not exceeding 1.8 kPa.
- When the temperature drops rapidly, condensation may occur, accompanied by pollution. This product is suitable for the following two environmental conditions more severe than normal conditions:
- a. Condensation occurs infrequently (monthly average not more than twice) with slight pollution.
 - b. Condensation generally does not occur (annual average not more than twice) with relatively heavy pollution.
- The installation site shall be free from fire and explosion hazards, and free from gases or severe pollution that could corrode metals or damage insulation.
 - The installation location shall be free from severe vibration or impact, and the vertical inclination shall not exceed 8° .
- Note: Storage and transportation are permitted at temperatures down to – 30° C.

Technical Specifications

Project	Unit	Data	
Rated voltage	kV	3,6,7,2,12	
Rated frequency	Hz	50	
Circuit breaker rated current	A	630,1250,1600,2000,2500,3150	
Switchgear rated current	A	630,1250,1600,2000,2500,3150	
Rated dynamic stability current (4s)	kA	16,20,25,31.5,40,50	
Rated stability current (peak)	kA	40,50,63,80,100,125	
Rated short-circuit breaking current	kA	16,20,25,31.5,40,50	
Rated short-circuit making current (peak value)	kA	40,50,63,80,100,125	
Rated insulation level	1-minute power frequency withstand voltage	kV	24,32,42
	Lightning impulse withstand voltage	kV	40,60,75
Protection level		The enclosure is IP4X, and the isolation compartment and circuit breaker compartment doors are IP2X when open.	



STRUCTURE AND COMPONENTS

PRODUCT STRUCTURE OVERVIEW



Busbar Compartment

The main busbars and insulation supports are installed here to connect different switchgear units and distribute electrical power. The busbars are fixed with insulating sleeves and support insulators, providing reliable insulation and high operational safety.



Withdrawable Circuit Breaker Compartment

This compartment is used for installing the withdrawable vacuum circuit breaker. The breaker can move between the service position, test position, and isolated position, allowing convenient operation, inspection, and maintenance.



Cable Compartment

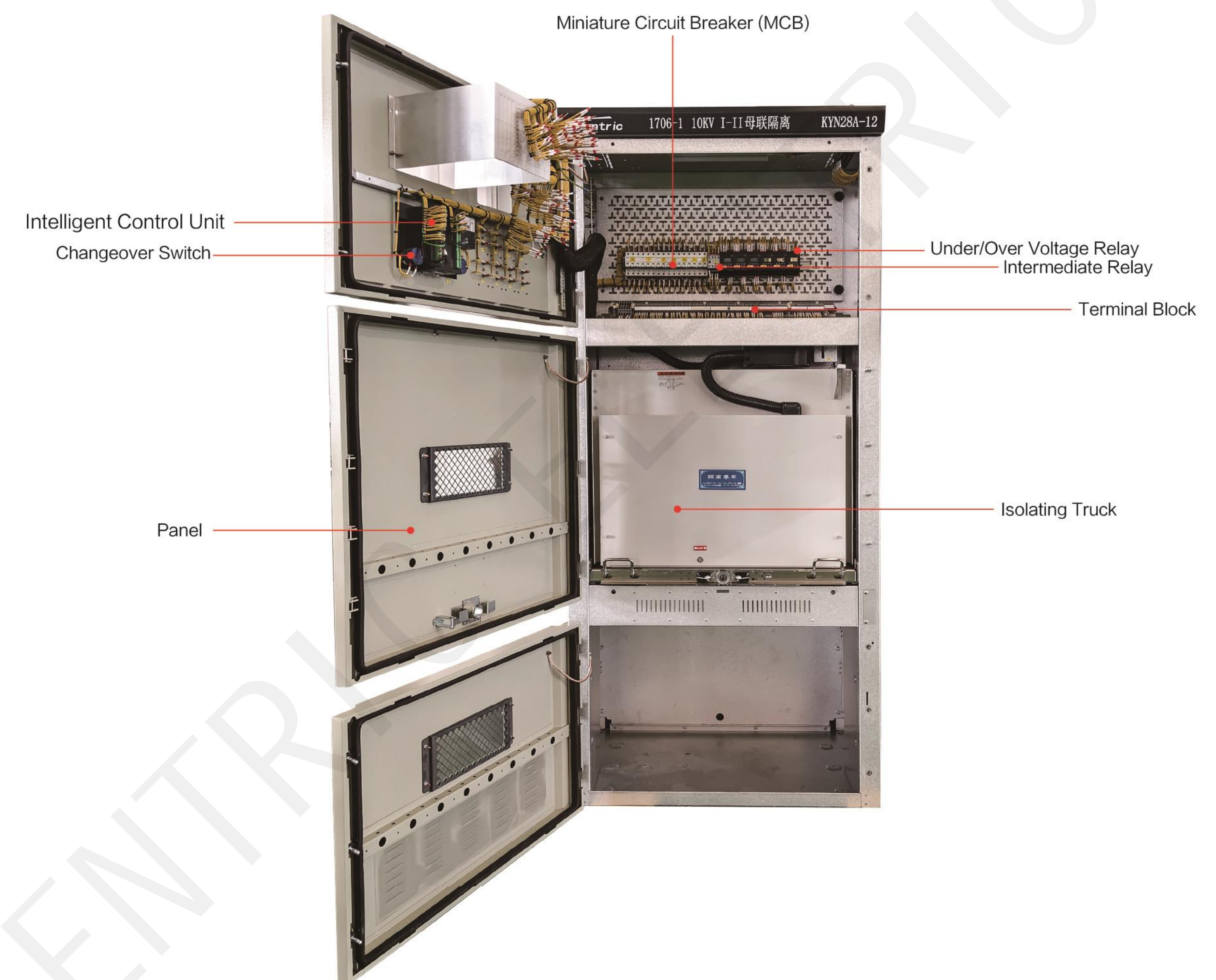
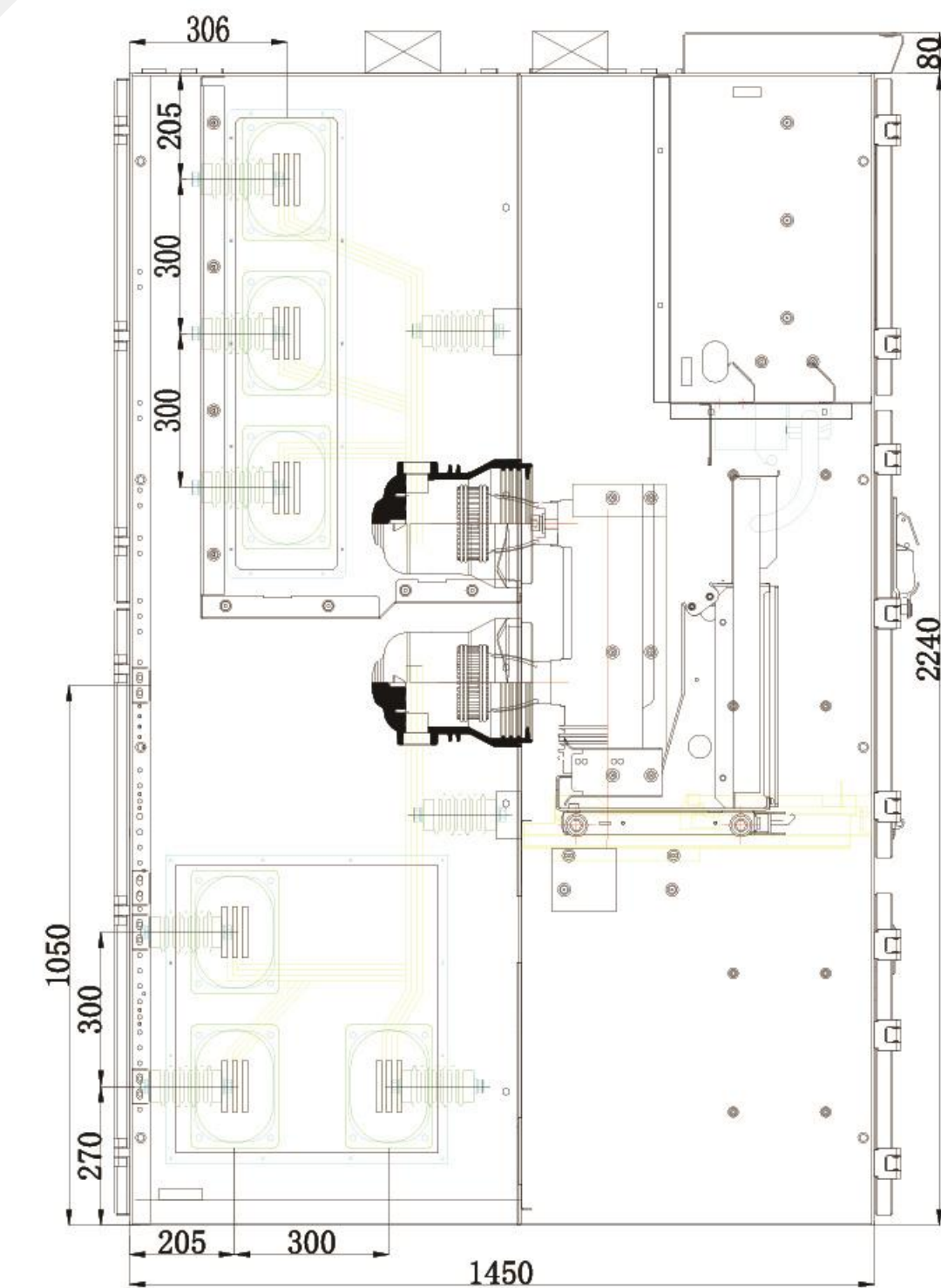
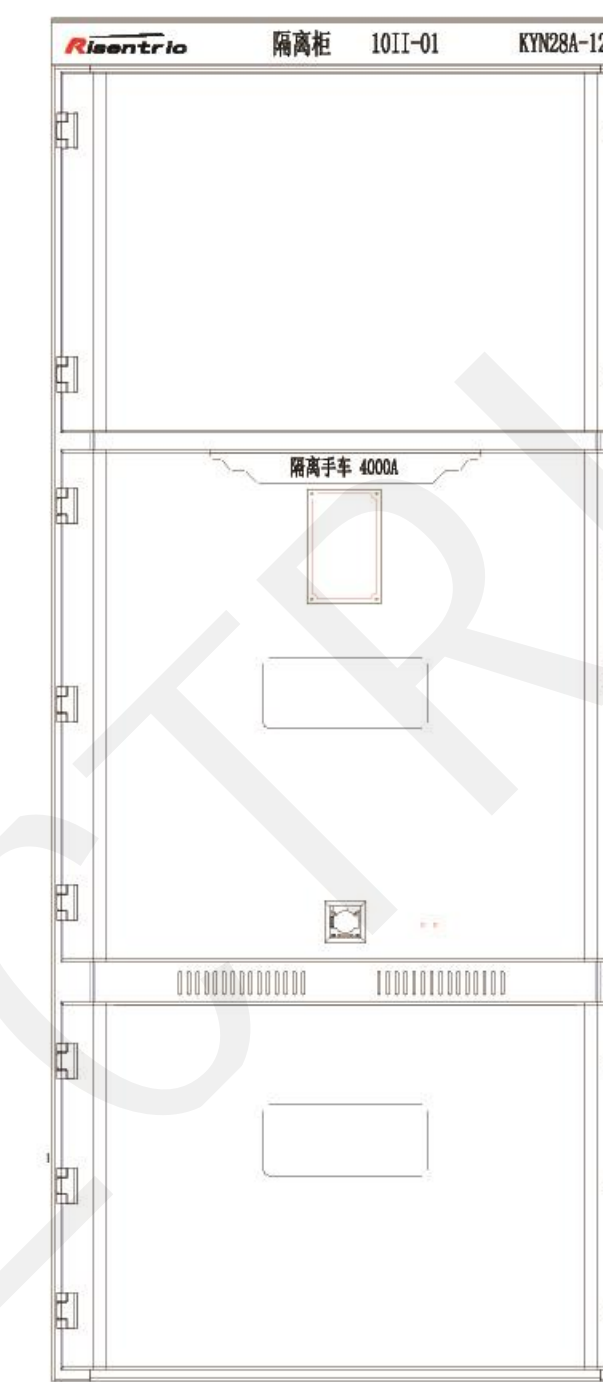
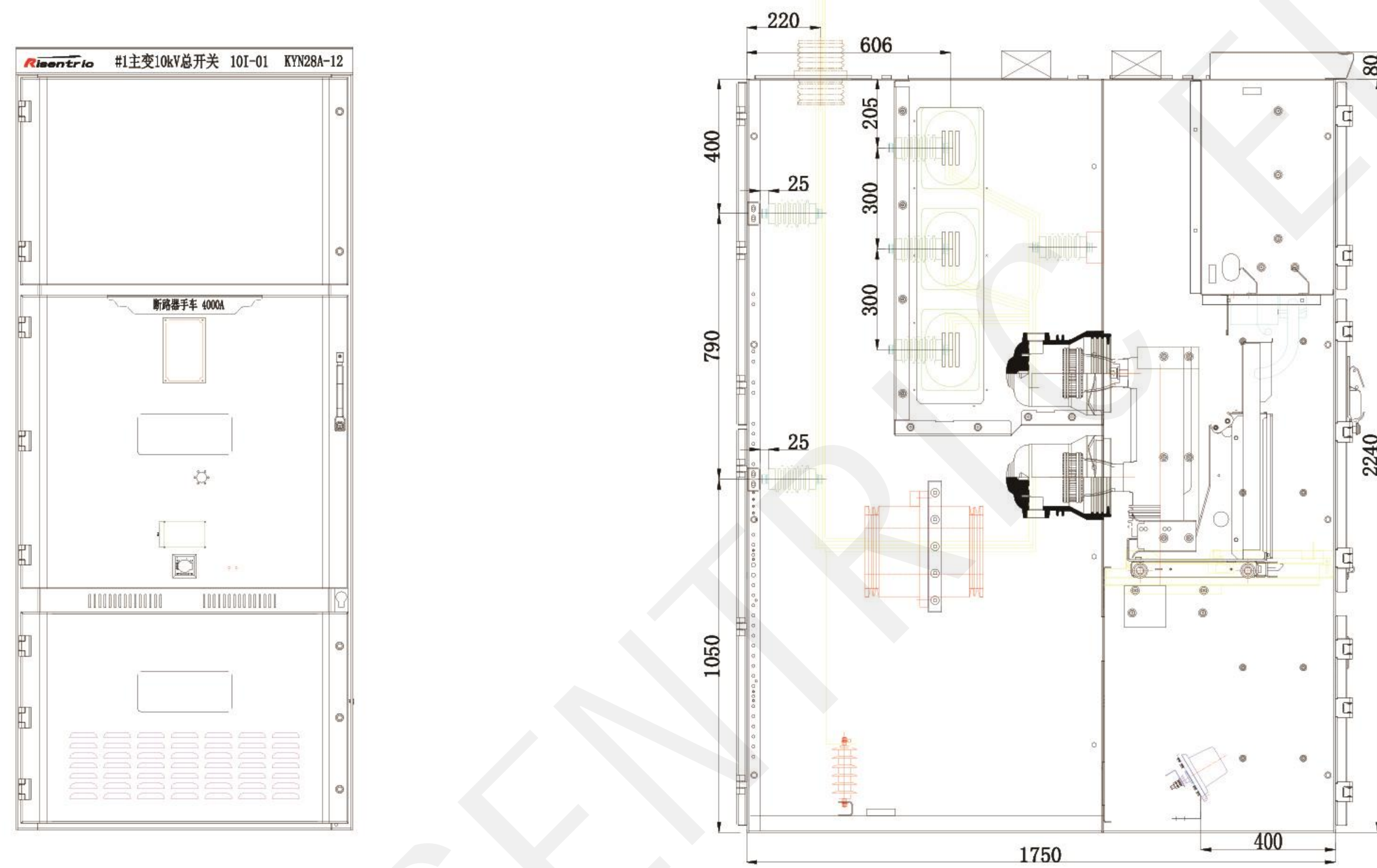
This compartment is mainly used for cable incoming and outgoing connections. It also accommodates components such as current transformers (CT), earthing switches, and surge arresters to provide measurement, protection, and grounding functions.

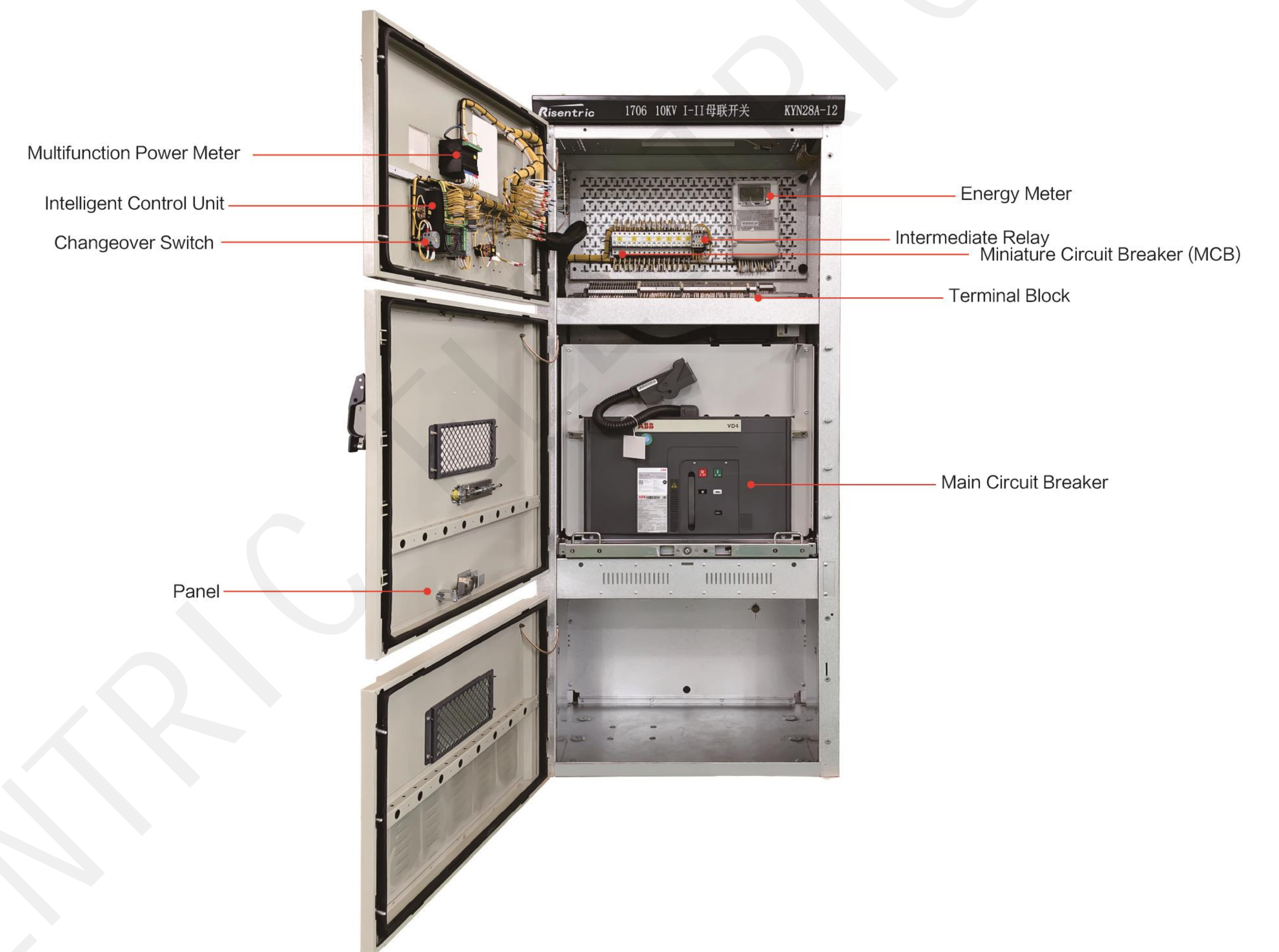
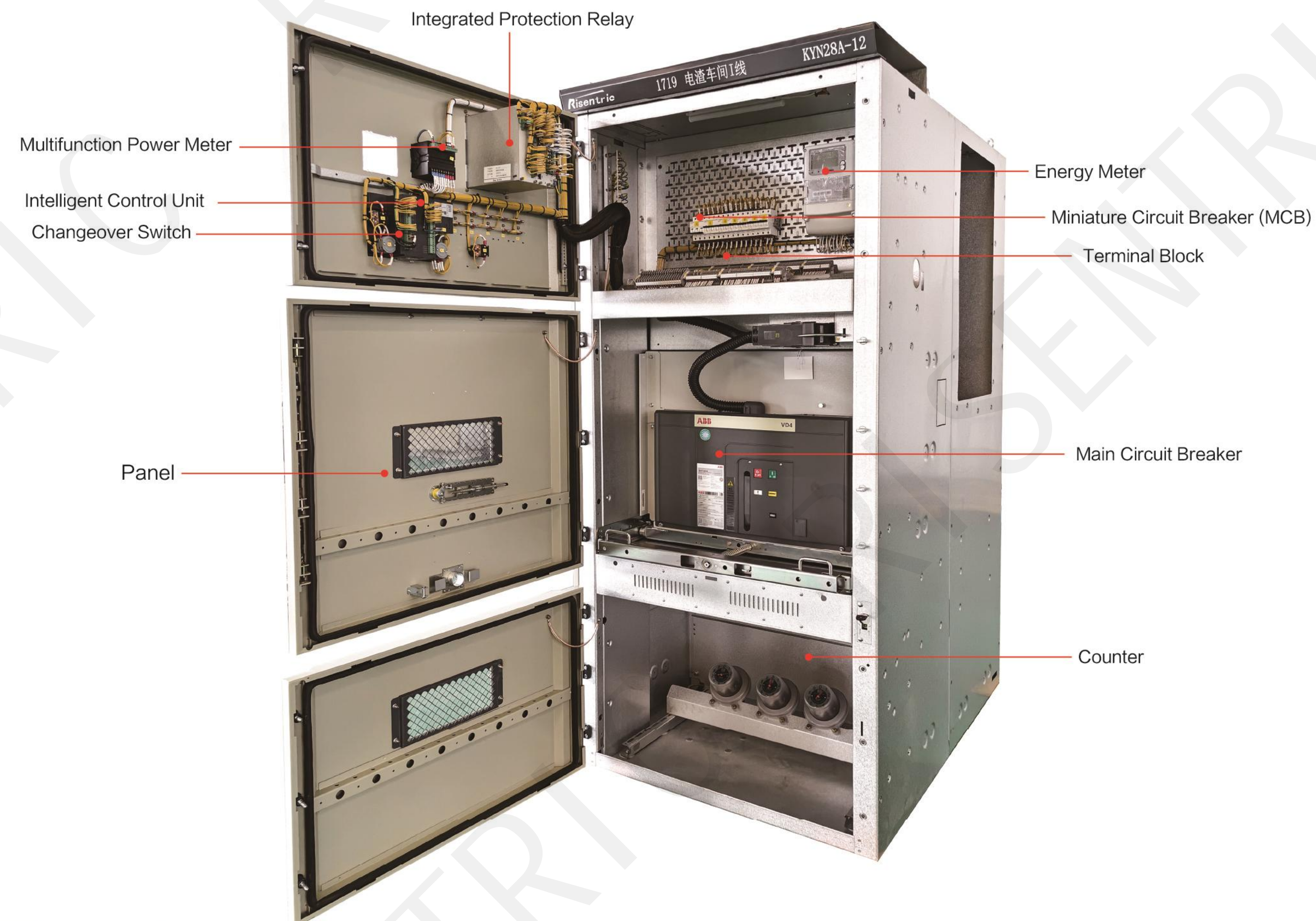
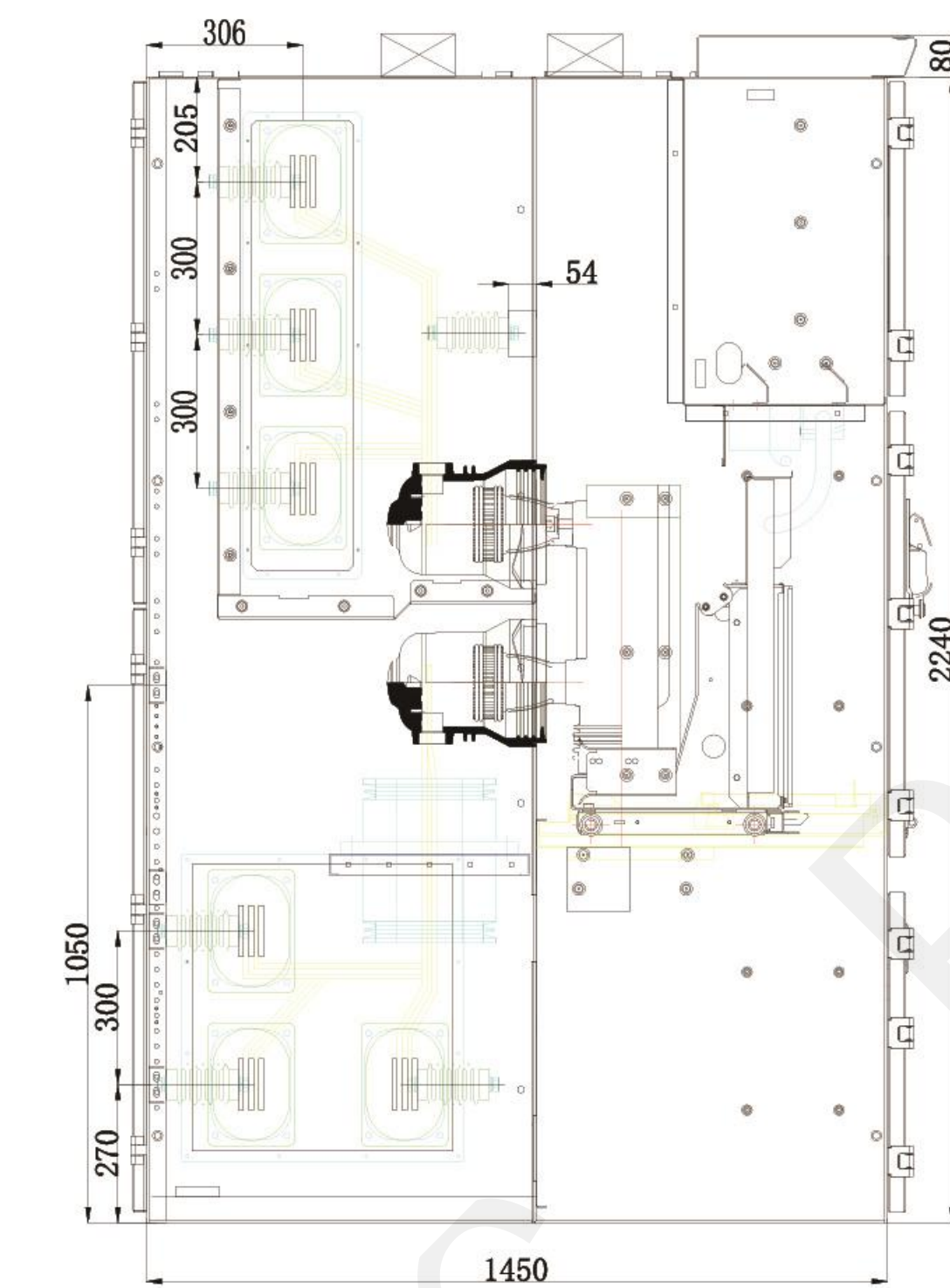
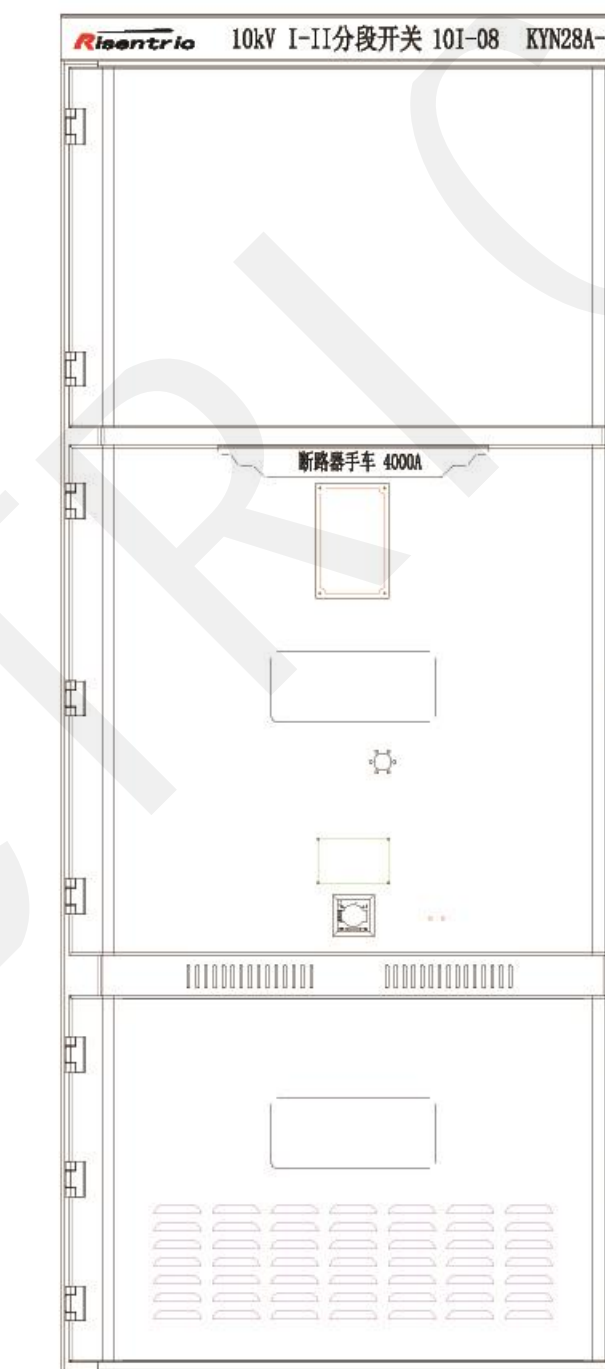
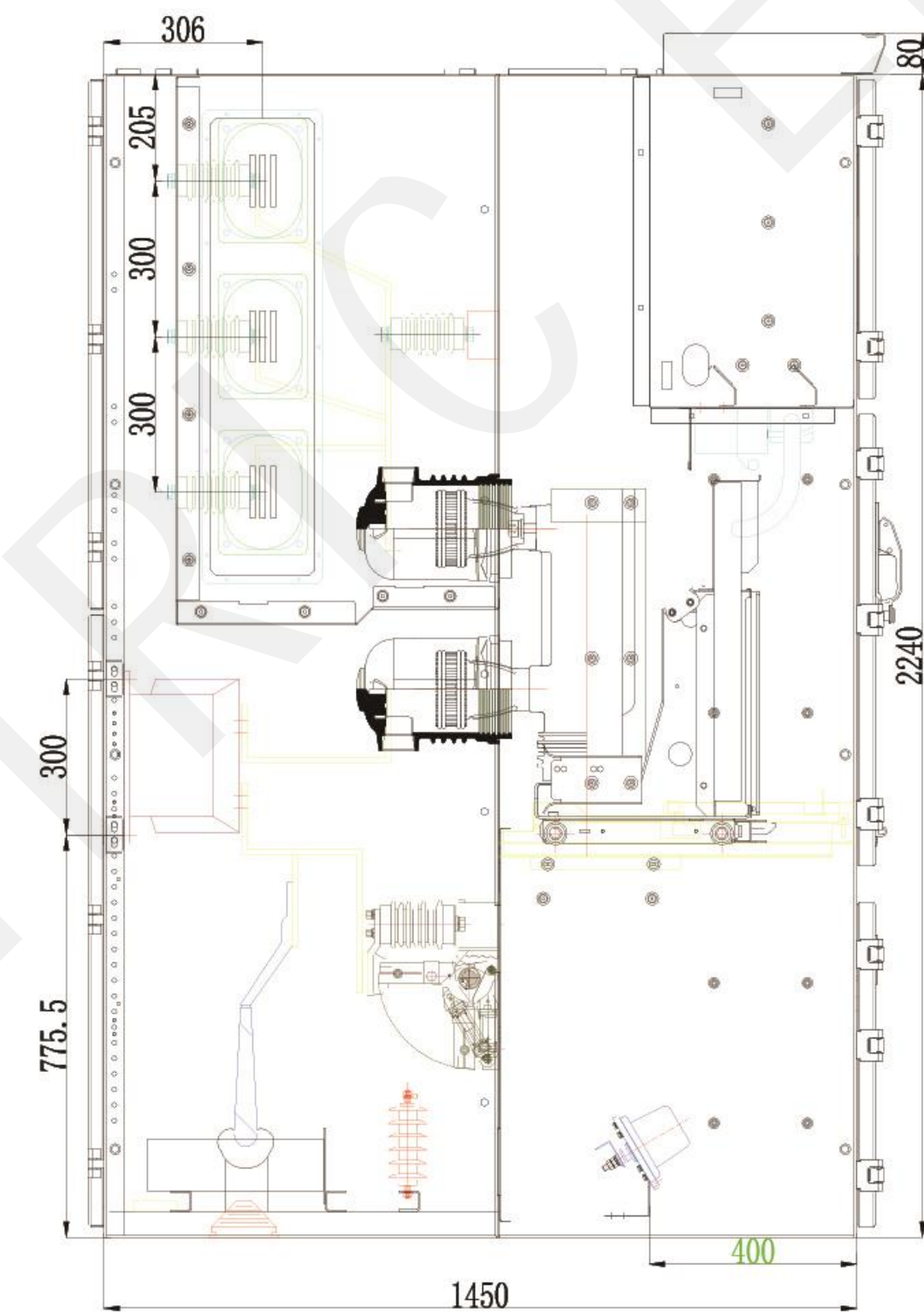
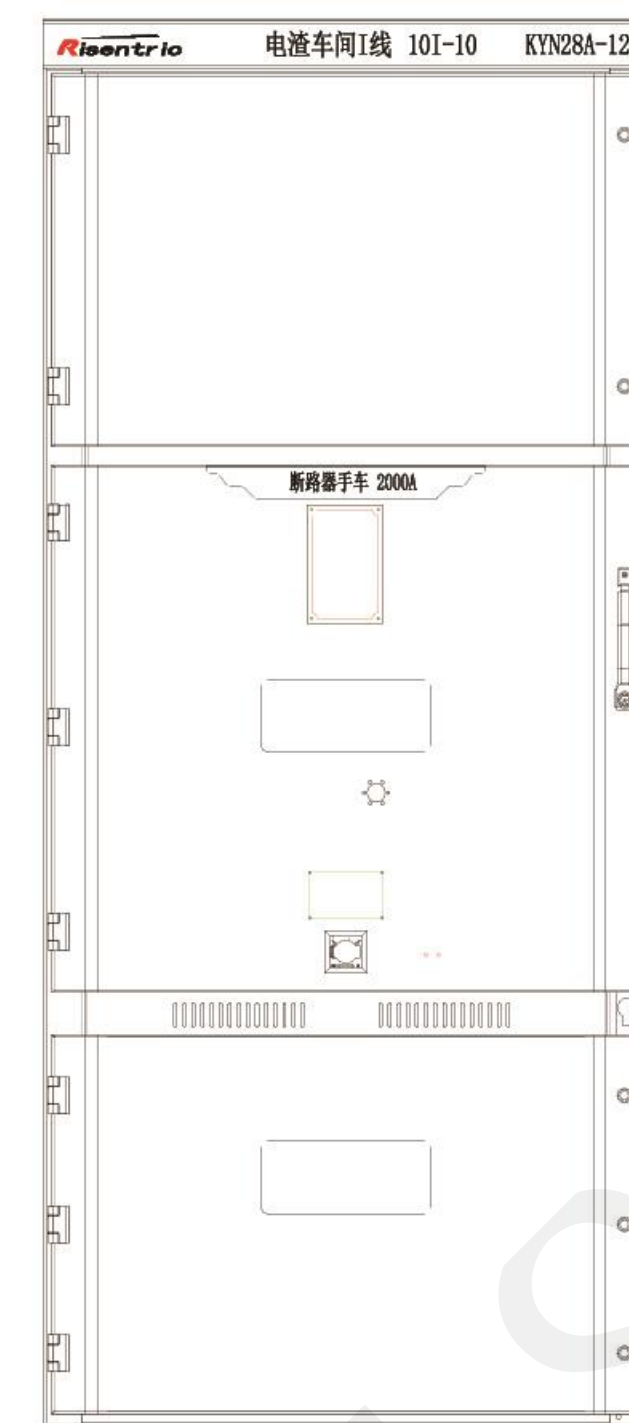


Secondary Instrument Compartment

This compartment is used for installing protection relays, measuring instruments, control switches, and terminal blocks to realize control, protection, signaling, and monitoring functions of the switchgear.

MODEL TYPE





INSTALLATION AND WIRING

● Foundation Installation

Before installation, check the levelness and strength of the foundation channel steel. The foundation level deviation shall be ≤ 2 mm/m. After the switchgear is placed in position in sequence, it shall be fixed securely. The cabinets should be firmly connected to ensure a neat and stable arrangement.

● Grounding Requirements

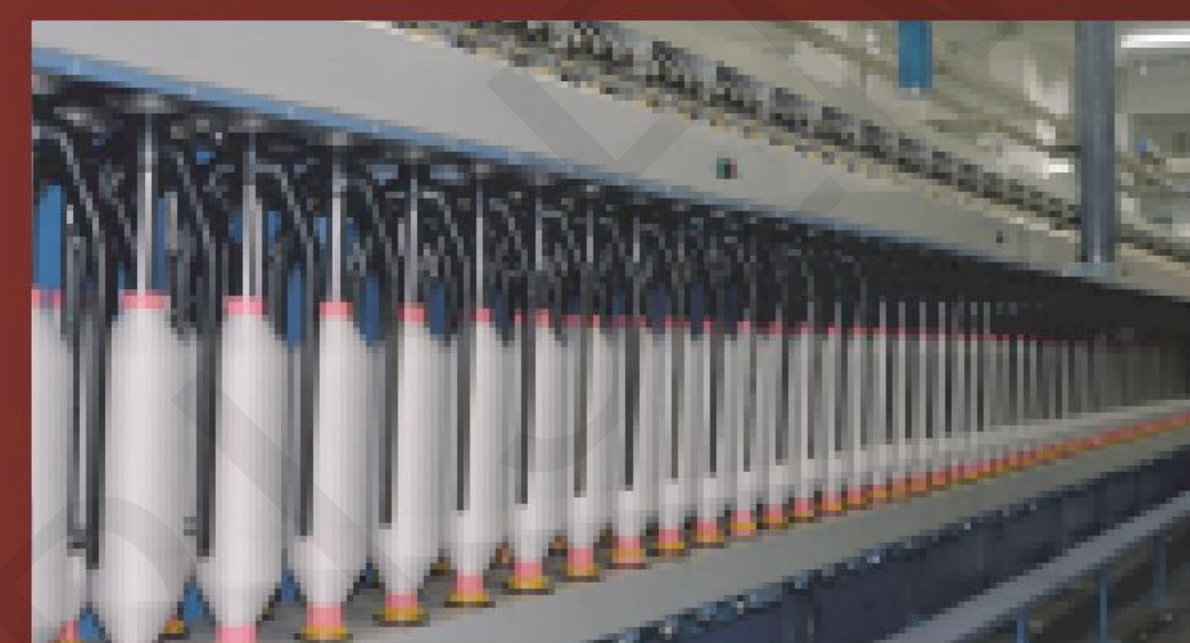
The switchgear must be reliably grounded. The grounding busbar of the cabinet shall be securely connected to the site grounding system, and the grounding resistance shall meet relevant standards to ensure safe operation of the equipment.

● Primary Circuit Wiring

Before connecting the main busbar and cables, the contact surfaces shall be cleaned to ensure good conductivity. Connection bolts shall be tightened according to the specified torque, and the cable bending radius shall comply with the relevant standards to ensure firm and reliable connections.

● Secondary Circuit Wiring

Control and protection circuits shall be wired according to the electrical schematic diagram, with terminal numbers clearly corresponding. After wiring is completed, inspection and testing shall be carried out to ensure the normal operation of control, protection, and signal circuits.



Commissioning and Acceptance

- Before energizing: Verify the switchgear model, drawings, and component nameplates. Check whether the primary busbar connections, cable wiring, and secondary circuits are correct, and confirm that the cabinet grounding is reliable.
- Parameter setting: Set the protection relay parameters according to system protection requirements, such as overcurrent, instantaneous trip, and protection operating time, and perform calibration.
- Opening and closing test: Operate the withdrawable circuit breaker manually or electrically to check whether the breaker can reliably move between the service, test, and isolated positions.
- Protection test: Carry out relay protection operation tests and interlocking tests to verify correct operation of the protection devices and ensure safe operation of the switchgear.

Operation

- Auto / Manual mode: During normal operation, the automatic protection mode is used. During maintenance or commissioning, it can be switched to manual operation mode.
- Operating procedure: When operating the withdrawable circuit breaker, follow the sequence of "open - move - close", ensuring the position indicator is correct.
- Shutdown operation: During maintenance outages, first open the circuit breaker, then disconnect the isolation circuit and apply grounding. Maintenance can only be performed after warning signs are placed.

Maintenance (Recommended)

- Quarterly inspection: Check the internal cleanliness of the cabinet, remove dust, and inspect indicator lights, position indicators, and operating mechanisms.
- Semi-annual inspection: Check busbar connection bolts, cable terminals, and grounding connections to ensure they are secure and reliable.
- Annual maintenance: Carry out a comprehensive functional inspection and insulation test, and check the operating condition of the circuit breaker mechanism and protection devices.



Risentric

The company is equipped with advanced flexible sheet metal processing production lines, busbar processing production lines, and state-of-the-art manufacturing and testing equipment. By adopting modern information technology, it has fully implemented the CIMS (Computer Integrated Manufacturing System) and PDM (Product Data Management) systems.

Common Faults and Troubleshooting

Fault Phenomenon	Possible Cause	Troubleshooting
Circuit breaker cannot be closed	Control power failure; incorrect secondary wiring; closing coil fault; interlock not released	Check control power supply and secondary wiring; inspect the closing coil and operating mechanism; confirm interlock status
Circuit breaker cannot be opened	Trip coil fault; control circuit failure; mechanical mechanism jammed	Check the trip coil and control circuit; inspect the operating mechanism and eliminate mechanical faults
Protection device alarm or malfunction	Incorrect protection parameter settings; CT wiring error; short circuit or grounding fault in the system	Verify protection parameters; check CT wiring and polarity; eliminate system faults
Abnormal temperature rise in cabinet	Loose busbar connections; poor cable terminal contact; poor ventilation inside the cabinet	Tighten busbars and terminals; check cable connections; improve cabinet ventilation conditions
Withdrawable truck cannot be inserted or withdrawn	Interlock not released; guide rail or mechanism jammed	Check the mechanical interlock device; clean guide rails and inspect the truck mechanism

“ **Science, truth-seeking, and continuous improvement** ”

Packing and Accompanying Documents

- Switchgear cabinet: 1 unit (configured according to the selected size and series)
- Supplied with the cabinet: Primary and secondary wiring diagrams, certificate of conformity, factory inspection report, terminal / circuit list, component manuals, and type test report
- Accessories: Installation fasteners, Special Operating Handle, and tool kit (configured as required)

Ordering Information

- Rated parameters: rated voltage, rated current, number of poles, short-time withstand current, degree of protection
- Cubicle configuration: series, cubicle dimensions, color, form of internal separation, type and quantity of functional units
- Component selection: models and ratings of circuit breakers, contactors, thermal overload relays, SPD, etc.
- Installation and wiring: incoming and outgoing directions, cable specifications, earthing requirements, configuration of anti-condensation devices
- Expansion requirements: arc flash detection system, intelligent power distribution management unit (PMU), communication functions, etc.
- Brand preference: specified component brands or standard configuration

100+

Over 100 professionals

20+

20 years of manufacturing experience

20000+

Factory footprint 20000 square meter

2000+

Number of satisfied customers 2000+