(Version No.: MG2025112109280, 2025)

Risentric

SHANGHAI RISENTRIC ELECTRIC CO .,LTD

KYN61-40.5 Indoor AC Metal-clad Withdrawable Switchgear Manual

Hotline | +86 173 0181 0387

+86 173 0181 0387

E-mail:info@risentric.com

www.risentric.com

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

Risentric

CONTENTS

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.

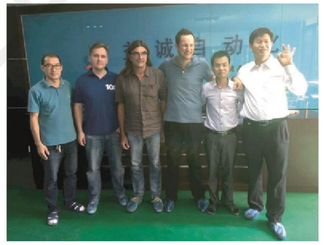
Technological innovation, quality first, integrity-based service, and win-win cooperation are the core business philosophies of Risentric. The company sincerely welcomes customers worldwide to cooperate and achieve shared success.

HONORS AND QUALIFICATIONS

OUR PARTNERS

ZF | Schneider Electric | Defond | ABB
MOATECH | BULL公牛 公牛安全插座 | SIEMENS | EUROtronic
SUNON 台湾建准集团 | OMRON 欧姆龙 | CHINT 正泰电器 | HAVELLS
TOSHIBA東芝 | Galanz 格兰仕 | TAILI泰力 | TCL
TONELUCK MICRO | BYD | JINLI | Otter
GLOBAL PMX | PHOENIX MECANO | DELTA | AVC
HAN'S LASER 大族激光 | 徐記 | vtech | Midea
BOLSTER SYSTEMS | LD | BERPU 贝普 | ZIPPY

Customer service



Technical Achievements

To Realize Automation World With High-advanced Technology

Risentric

KYN61–40.5 Indoor AC Metal–clad Withdrawable Switchgear

PRODUCT INTRODUCTION

KYN61-40.5 Indoor Armored Withdrawable AC Metal-Enclosed Switchgear (hereinafter referred to as the "switchgear")
It is suitable for three-phase AC 50 Hz power systems and is used in power plants, substations, and distribution rooms of industrial and mining enterprises for the reception and distribution of electric energy, as well as for the control, protection, and monitoring of power circuits.
This product complies with the following standards:
GB 3906-2006 - AC Metal-Enclosed Switchgear and Controlgear for Rated Voltages from 3.6 kV to 40.5 kV
GB/T 11022 - Common Specifications for High-Voltage Switchgear and Controlgear Standards
IEC 62271-200 - AC Metal-Enclosed Switchgear and Controlgear for Rated Voltages above 1 kV and up to and including 52 kV

Environmental Conditions

- Ambient air temperature:Maximum temperature: +40° C; Minimum temperature: −15° C
- Relative humidity:

Daily average relative humidity: ≤ 95%; Daily average vapor pressure: ≤ 2.2 kPa
Monthly average relative humidity: ≤ 90%; Monthly average vapor pressure: ≤ 1.8 kPa

- Altitude:Not exceeding 1000 m above sea level
- Seismic intensity:Not exceeding magnitude 8
- Environmental conditions:The surrounding air shall not be significantly polluted by corrosive or flammable gases, vapor, etc.
- Installation site:The equipment shall be installed in a place free from severe vibration.
- Special conditions:When the equipment is used under conditions exceeding those specified in GB 3906, the user and manufacturer shall negotiate separately.

Technical Specifications

Item			Unit	Data
Rated voltage			kV	40.5
Rated frequency			Hz	50
Circuit-breaker rated current			A	1250、1600、2000
Switchgear rated current			A	1250、1600、2000
Rated short-time withstand current (4 s)			kA	20、25、31.5
Rated peak withstand current (peak)			kA	50、63、80
Rated short-circuit breaking current			kA	20、25、31.5
Rated short-circuit making current (peak)			kA	50、63、80
Rated insulation level	1 min power-frequency withstand voltage	Between poles / pole to earth	kV	95
		Across open contacts	kV	110
Lightning impulse withstand voltage (peak)		Between poles / pole to earth	kV	185
		Across open contacts	kV	215
Degree of protection				Enclosure: IP3X Between compartments and with the circuit-breaker compartment door open: IP2X

Product Features

1 Metal–clad/ Fully Enclosed

The switchgear adopts a fully metal–enclosed structure, which effectively isolates live parts to prevent accidental external contact. It also minimizes the influence of environmental factors such as dust and moisture, thereby improving the reliability and service life of the equipment.

2 Flexibility

Key components such as the circuit breaker and metering unit adopt a withdrawable design, allowing them to be conveniently withdrawn from the cabinet for testing, maintenance, or replacement. This greatly reduces power outage time and improves operational efficiency.

3 Safety

The switchgear is equipped with a complete five–interlock mechanical system to prevent maloperation. It is also fitted with a voltage presence indicating system (VPIS) and an earthing switch, ensuring safe isolation under energized and earthed conditions and enabling interlocked operations.
The switchgear is suitable for distribution systems in various industrial and mining enterprises as well as substations.

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.

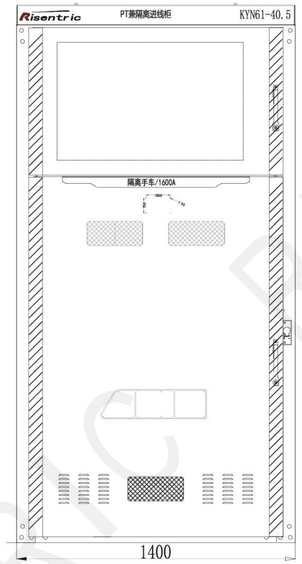
Cable Compartment

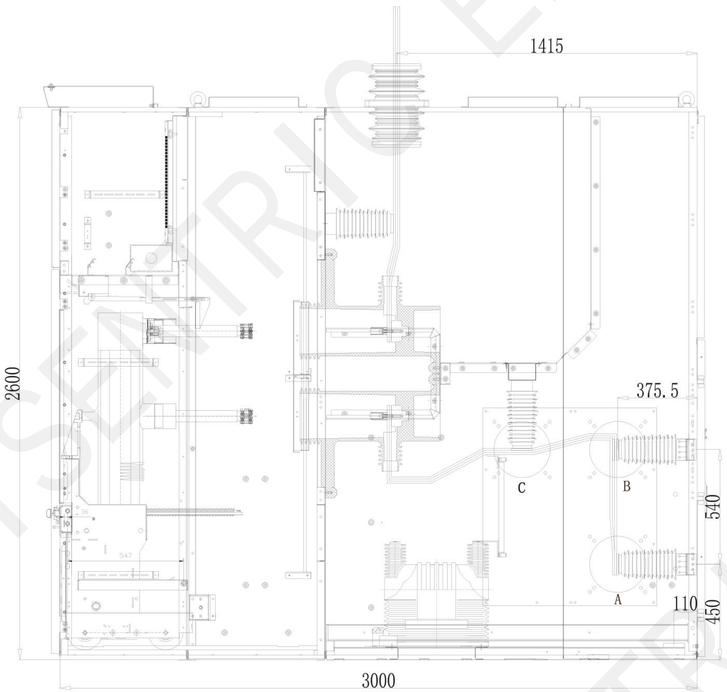
This compartment is mainly used for cable incoming and outgoing connections. It also accommodates components such as current transformers (CT), earthing switches, and surge arresters to provide measurement, protection, and grounding functions.

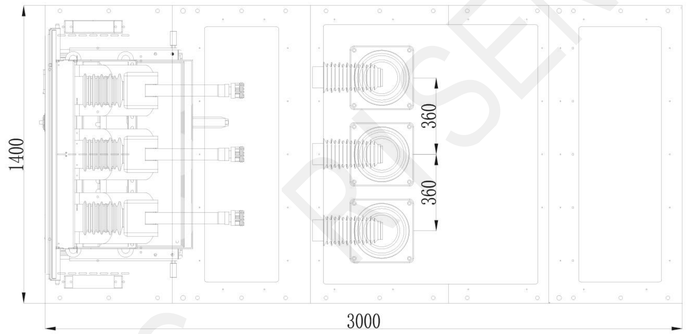
Secondary Instrument Compartment

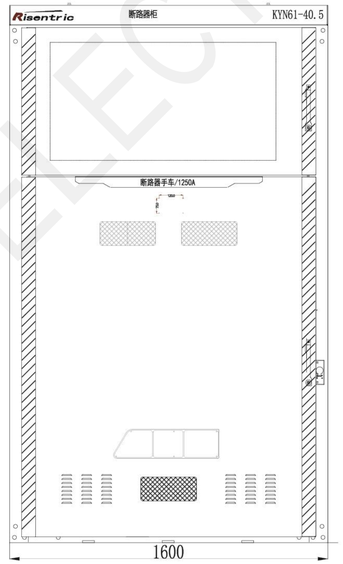
This compartment is used for installing protection relays, measuring instruments, control switches, and terminal blocks to realize control, protection, signaling, and monitoring functions of the switchgear.

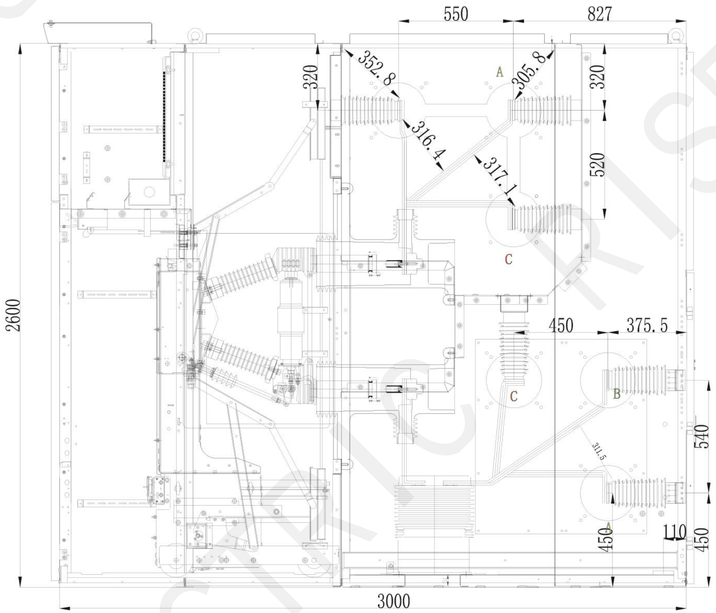
MODEL TYPE

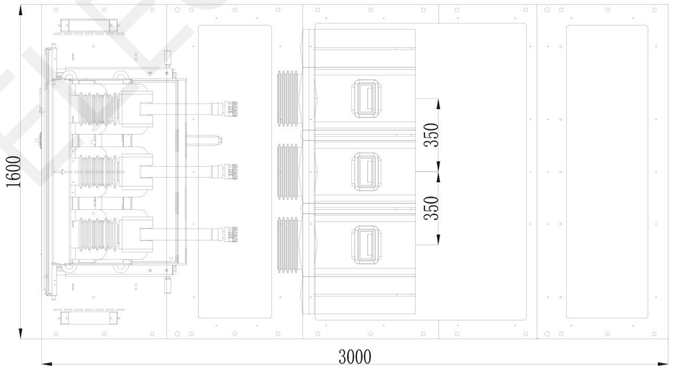

Risentric
PT兼隔离进线柜
KYN61-40.5
隔离手车/1600A
2600
1400


1415
375.5
C
B
A
540
110
450
3000


360
360
1400
3000


Risentric
断路器柜
KYN61-40.5
断路器手车/1250A
1600


550
827
320
352.8
305.8
320
316.4
317.1
520
A
C
450
375.5
C
B
540
450
110
450
2600
3000


350
350
1600
3000

INTERNAL STRUCTURE

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+