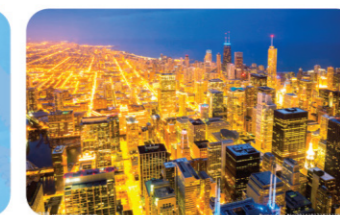




KYN61-40.5

AC Metal-clad Withdrawable Switchgear
Product Brochure



Shijiazhuang Kelin Electric Co., Ltd

Add: Nanjiangbi, Luquan District, Hongqi Street, Shijiazhuang City, Hebei Province, China

Tel: 0086-311-85231078, 85231088

Fax: 0086-311-85231087

Http://www.kechina.com

400-0311-128



Company Profile

Shijiazhuang Kelin Electric Co., Ltd. (Hereinafter referred to as KE Electric) is a public company (Shanghai Stock Exchange I.D: 603050) and one of the leading companies in the field of Power Distribution, Metering and Automation (Protection-Monitoring-Control). KE Electric is also active in the field of Distributed Generation and Clean Renewable Energies and offers solutions for Power Distribution Fault Management and Line Loss Mitigation. Besides, KE Electric has our own Engineering, Procurement and Construction (E.P.C.) subsidiary and executed lots of typical engineering projects.

KE Electric owns more than 3000 employees and 3 plants of 450000 m² in total. With the strong desire of pursuing perfect operation management, KE Electric has obtained ISO 9001,14001,45001 certificate.

KE Electric has its own Research and Development team comprising of more than 300 talented engineers from top technical universities across China and has been awarded several patents, qualification degrees and honors at both national and provincial level by related authorities.

As a leading electrical solution provider, KE Electric has successfully accomplished several projects with famous Enterprises like China Mobile, China Petroleum Group, China National Nuclear Cooperation, etc. and is constantly in pursuit of adapting to new technological innovations to win new markets at global level.

We are actively seeking business partners across the globe for cooperation in the fields related to Smart Grid Power Distribution, Advanced Metering Infrastructure (AMI), Automatic Meter Reading (AMR), Primary and Secondary Distribution Substations, Power Distribution Protection, Monitoring, Control, PV generation system and Electrical Vehicle Charging stations. We warmly welcome you to visit the headquarters of KE Electric in Shijiazhuang City, Hebei Province, China for further acquaintance regarding cooperation in the fields of mutual interests.



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General

KYN61-40.5 AC metal-clad withdrawable switchgear (hereinafter referred to as switchgear) is three-phase AC, 50Hz, rated voltage 40.5kV indoor power distribution device. It is used for power plants, substations and industrial and mining enterprises to receive and distribute electricity, it can control, protect and detect circuits, and can also be used in places with frequent operations.

Operation Environment

- ◆ Ambient temperature: The max. temperature is +40°C, and the average temperature measured within 24 hours should not exceed 35°C, and the min. temperature is -10°C.
- ◆ Altitude: The elevation should be no higher than 1000m.
- ◆ Relative humidity: The daily average humidity should not exceed 95%, and the monthly average humidity should not exceed 90%.
- ◆ Earthquake intensity: ≤ 8 degree.
- ◆ Water vapor pressure: The daily average pressure should not exceed 2.2kPa, and the monthly average pressure should not exceed 1.8kPa.
- ◆ Surrounding environment: Place without fire, explosion hazard, serious pollution, chemical corrosion and severe vibration.



Main Technical Parameters

◎Main technical parameters of switchgear

No.	Description	Unit	Value
1	Rated voltage	kV	40.5
2	Rated current	A	1250 1600 2000 2500
3	Rated power	Hz	50
4	Rated short-time withstand current	kA	20 25 31.5
5	Rated peak withstand current	kA	50 63 80
6	Rated power frequency withstand current	kV	95 / 1min
7	Rated lightning impulse withstand current	kV	185
8	Rated short-time short-circuit duration	s	4
9	Protection grade		IP4X / IP65

◎Main technical parameters of vacuum circuit breaker

No.	Description	Unit	Value
1	Rated voltage	kV	40.5
2	Rated frequency	Hz	50
3	Rated power frequency withstand voltage	kV	95 / 1min
4	Rated lightning impulse withstand voltage	kV	185
5	Rated current	A	1250 1600 2000
6	Rated short-time withstand current	kA	20 25 31.5
7	Rated short-circuit making current	kA	20 25 31.5
8	Rated peak withstand current	kA	50 63 80
9	Rated short circuit duration	ms	4
10	Opening time	ms	30≤t≤60
11	Closing time	s	50≤t≤100
12	Rated short-circuit current breaking	Times	30
13	Mechanical life	Times	10000



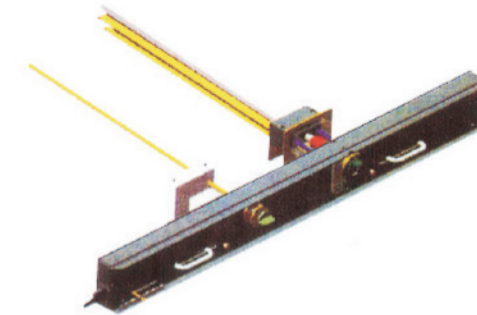
©Main technical parameters of spring operating mechanism

Description		Unit	Value
Rated operation voltage	Opening coil	V	DC220 / 110 AC220 / 110
	Closing coil		
Rated operation current	Opening coil	A	0.96(220V) 1.05(110V)
	Closing coil		
Storage motor power		W	230
Power storage motor rated voltage		V	DC220 / 110 AC220 / 110
Storage time		s	≤12



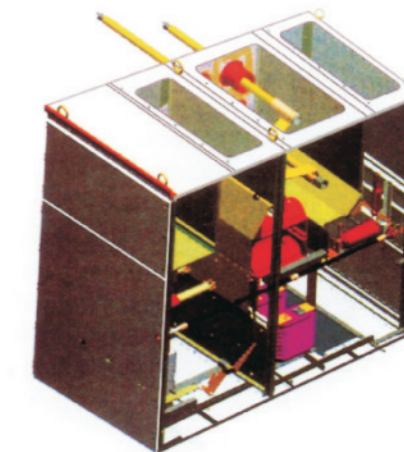
Structure Description of Switchgear

The switchgear is designed according to the standard of metal-clad withdrawable switchgear GB3906-2006 and IEC298. The whole is composed of two parts: the compartment and the handcart. The compartment is assembled and formed by bolting. And the metal barrier divides the switchgear into the circuit breaker compartment, the main busbar compartment, the cable compartment and the instrument meter compartment. All metal structures are reliably grounded, and each compartment of the main circuit system has an independent exhaust pressure release channel.



©Enclosure and Barrier

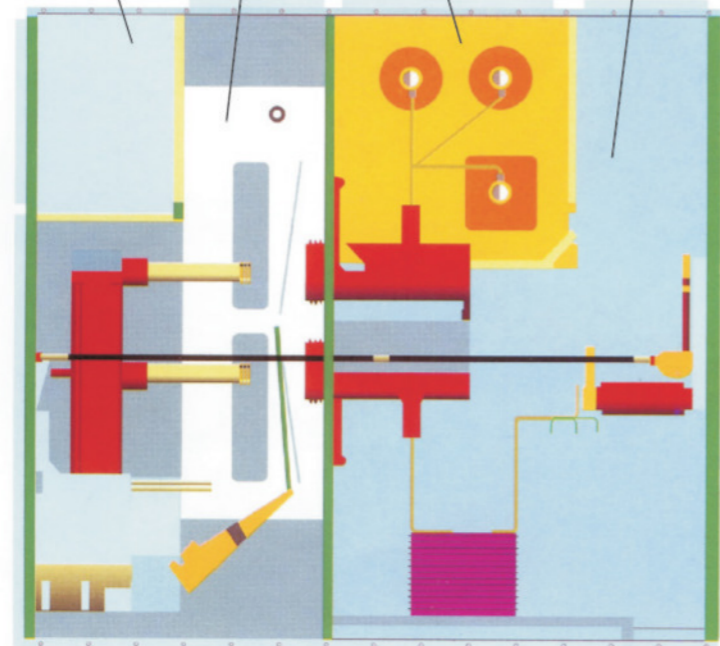
The enclosure and barriers of the switchgear are bolted from cold-rolled steel plate after CNC machining and bending. Therefore, the switchgear can ensure the uniformity of structure size. The switchgear is divided into circuit breaker compartment, main busbar compartment, cable compartment and instrument meter compartment, and each part is separated by grounded metal barrier.



©Handcarts

Handcarts can be used for circuit breakers, voltage transformers, instrument, isolation, etc. All kinds of handcarts have the same dimensions and are interchangeable. There are test / isolation position and a working position inside the switchgear for the handcart. Each position is equipped with an interlocking device to ensure that the handcart cannot move casually when it is in the test / isolation position and working position.

Metering compartment Handle compartment Busbar compartment Cable compartment



Structure



◎Circuit breaker compartment

It is installed special slide way in vacuum circuit breaker compartment for handcart moving. When the vacuum circuit breaker moves between in test position and work position, the isolated barrier automatic open or close, which ensures the operator keep out of live part. The handcart can be operated while the door closed, the handcart position and any function signals inside the enclosure can be seen through the observation window.

◎Busbar compartment

The main busbar is gone through from one switchgear to another, fixed by branch small busbar and fixed contact box. When it goes through the side of the next switchgear, it is fixed by heat-shrink busbar bushing. All busbars use composite insulation.

◎Cable Compartment

PT, grounding switch, arrester and multiple cables can be installed in the cable compartment.

◎Relay Compartment

The control and protection compartment, measurement, display instrument, voltage indicator such secondary components can be installed in the inside board and outside board of the relay compartment.

◎Interlocking Device

The switchgear has a reliable interlocking device to ensure the safety of operators and equipment:

The handcart only can be moved from the test / isolation position to the working position when the grounding switch is open, and the back door can not be opened, this logic prevent accidental entry.

When the handcart is completely out of the compartment or the handcart is in the test / isolation position in the compartment and the grounding switch interlock is unlocked, the grounding switch closing operation can be performed; when the handcart is in the working position, the grounding switch can not be closed. This logic prevents misoperation of the grounding switch under power, and prevents the handcart from being moved to the working position when the grounding switch is in the closed position.

The circuit breaker can only be operated when the circuit breaker handcart is in the test / isolation position or in the working position; and after the circuit breaker is closed, the handcart can not move. This logic prevents the circuit breaker from being pushed or pulled by mistake under power.

Electrical interlocks can be installed between the compartments.

◎Grounding Device

It is separately installed grounding busbar with the size of 10*40mm² in cable compartment, the busbar can be passed through all adjacent switchgears and keep suitable contact with enclosure.

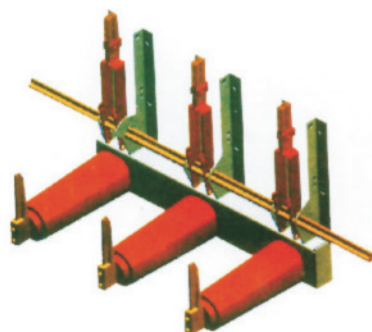
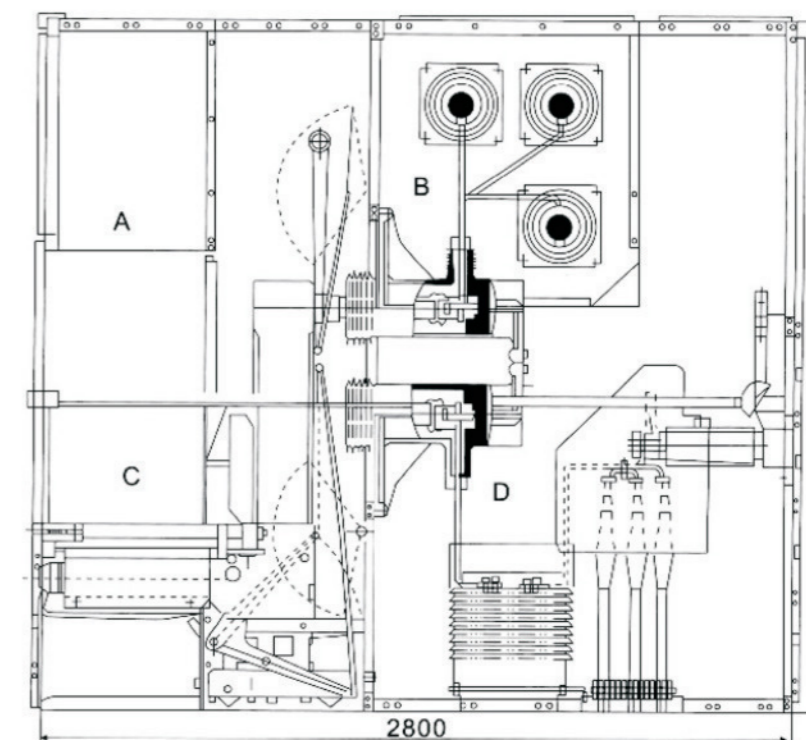


Structure Layout

Dimension: 1400 × 2800 × 2600 (Width × Depth × Height, unit: mm)

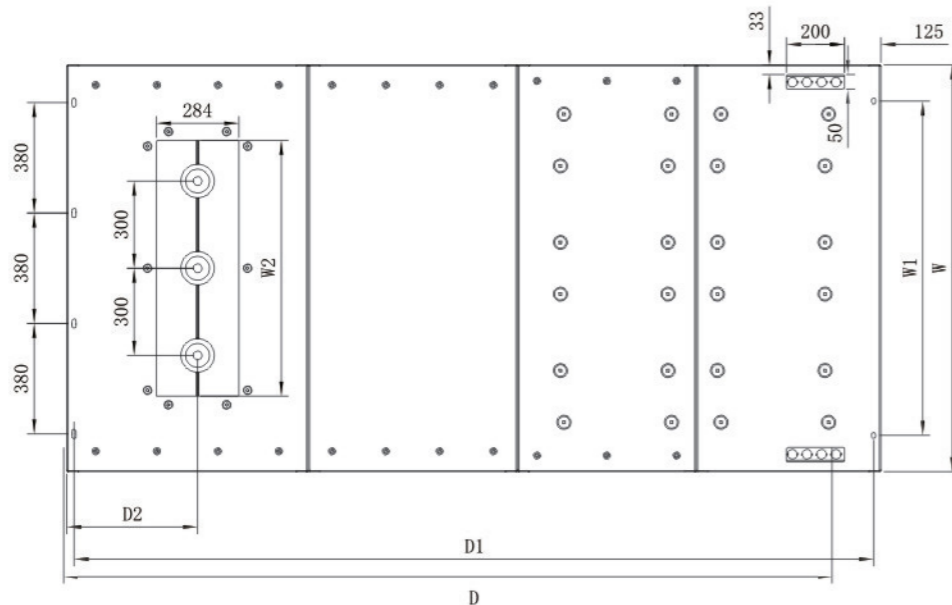
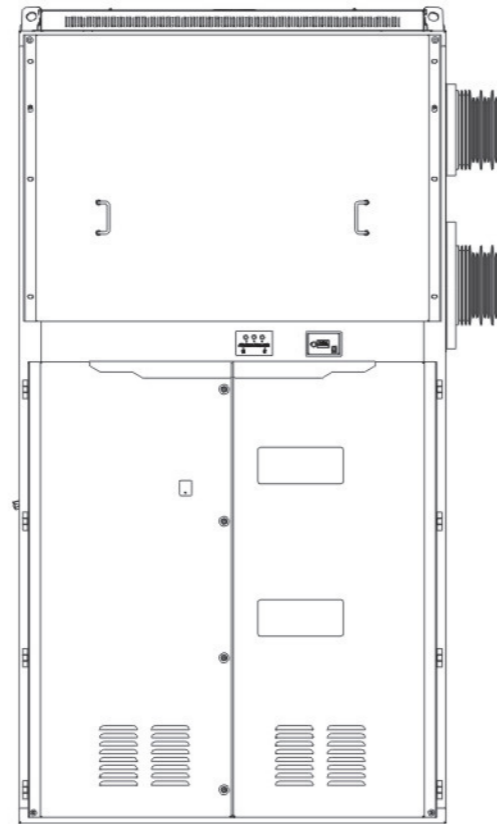


A – Instrument meter compartment B – Busbar compartment
C – Circuit breaker compartment D – Cable compartment



Installation Instruction

- ◆ Height of power distribution room: $\geq 4500\text{mm}$;
- ◆ Distance from the back of the switchgear to the wall: 1500mm ;
- ◆ The flatness of the foundation: $\leq 1\text{mm/m}^2$;
- ◆ The part of the embedded channel steel above the ground shall not exceed 3mm ;
- ◆ The fixing method can be bolted or welded;
- ◆ Weight of switchgear is about 1800kg ;
- ◆ Switchgear operation corridor width(Single row): $\geq 3000\text{mm}$, double row: $\geq 4000\text{mm}$.



Switchgear installation

Typical Scheme

Scheme Number	01	02	03	04
Primary Connection Scheme				
Rated Current(A)	1250, 2000			
Main components				
Circuit Breaker ZN85-40.5	1	1	1	1
CT LZBJ9-35		1	2	3
Grounding Switch JN22-40.5/31.5	1	1	1	1
Purpose	TOP Feeder	TOP Feeder	TOP Feeder	TOP Feeder

Scheme Number	05	06	07	08
Primary Connection Scheme				
Rated Current(A)	1250, 2000			
Main components				
Circuit Breaker ZN85-40.5	1	1	1	1
CT LZBJ9-35		1	2	3
Grounding Switch JN22-40.5/31.5	1	1	1	1
Purpose	Cable Feeder	Cable Feeder	Cable Feeder	Cable Feeder



Scheme Number		09	10	11	12
Primary Connection Scheme					
Rated Current(A)		1250, 2000			
Main components	Circuit Breaker ZN85-40.5	1	1	1	1
	CT LZBJ9-35		1	2	3
	Grounding Switch JN22-40.5/31.5			1	1
Purpose		Left(Right) Coupling	Left(Right) Coupling	Left(Right) Coupling	Left(Right) Coupling

Scheme Number		17	18	19	20
Primary Connection Scheme					
Rated Current(A)		1250, 2000			
Main components	Circuit Breaker ZN85-40.5	1	1	1	1
	CT LZBJ9-35		1	2	3
Purpose		Cable Feeder	Cable Feeder	Cable Feeder	Cable Feeder

Scheme Number		13	14	15	16
Primary Connection Scheme					
Rated Current(A)		1250, 2000			
Main components	Circuit Breaker ZN85-40.5				
	CT LZBJ9-35		1	2	3
	Grounding Switch JN22-40.5/31.5			1	1
Purpose		Isolation, Coupling	Isolation, Coupling	Isolation, Coupling	Isolation, Coupling

Scheme Number		21	22	23	24
Primary Connection Scheme					
Rated Current(A)		1250, 2000			
Main components	Circuit Breaker ZN85-40.5	1	1	1	1
	CT LZBJ9-35		1	2	3
Purpose		TOP Feeder	TOP Feeder	TOP Feeder	TOP Feeder



Instructions before Placing PO



To require quotation or before placing PO, the following technical documents should be provided by customer.

- ◆ Design No. for primary circuit, the single busbar diagram, arrangement design and layout.
- ◆ Secondary schematic, terminal layout (If no terminal layout, the product terminal design follow manufacturer design).
- ◆ Model and specification of electrical components inside switchgear.
- ◆ BOQ of electrical equipment.
- ◆ If busbar bridge is required, span distance and height dimension must be provided.
- ◆ Special operation environment must be noted.
- ◆ If accessories or spare parts are designated, specification and quantity must be noted.

Transportation and storage

- ◆ Severe vibration, tilt or upend placement is forbidden.
- ◆ Rainproof protection measures should be set to prevent product from damp.
- ◆ Electrical components should not be dismantled without qualified engineer permission.

Scheme Number	25	26	27	
Primary Connection Scheme				
Rated Current(A)	1250, 2000			
Main components	PT JDZX9-35	2	3	
	Fuse XRN XRNP-35	3	3	3
	Arrester YH5WZ-51/134	3	3	
	Transformer SC9			1
Purpose	PT Power Supply	PT Power Supply	Distribution Transformer	