CLH-12/24

Series Eco-Friendly Gas Insulated RMU

Overview

MGA series eco-friendly gas insulated AC metal-enclosed switchgear and control equipment (hereinafter referred to as MGA series switchgear)is an environmentfriendly gas-insulated medium-voltage switchgear developed independently by Chuanli. It features green and environmentally friendly, reliable performance, guaranteed safety, compact design, small footprint, maintenance-free operation, long lifespan, and strong adaptability to various environmental conditions.

The MGA series switchgear is a fully sealed system, with all primary components and switches enclosed within a stainless steel shell, which is not affected by the environment. The product adopts a modular design, allowing for flexible arrangement according to different design schemes, enabling combinations of compact and expandable units to meet the requirements of various secondary distribution substations for compact switchgear.

The MGA series switchgear has passed the type tests conducted by the nationallevel high-voltage electrical apparatus testing center, making it suitable for a wide range of applications, including small-scale secondary distribution substations, compact switch houses, industrial and mining enterprises, airports, railways, commercial areas, high-rise buildings, highways, subways, tunnels, and locations with harsh environmental conditions.

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Model meaning

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↓		↓	↓	↓	↓		↓
Rated short-timeWIthstand current (kA)		Rated current (A)	Switch module(C,V...)		Rated voltage(kV)		Enterprise type

Applicable Standards

IEC 62271-100 :2012 High-voltage switchgear and controlgear-Part 100: Alternating-current circuit-breakers

IEC 62271-105 High-voltage switchgear and controlgear-Part 105: Alternating current switch-fuse combinations

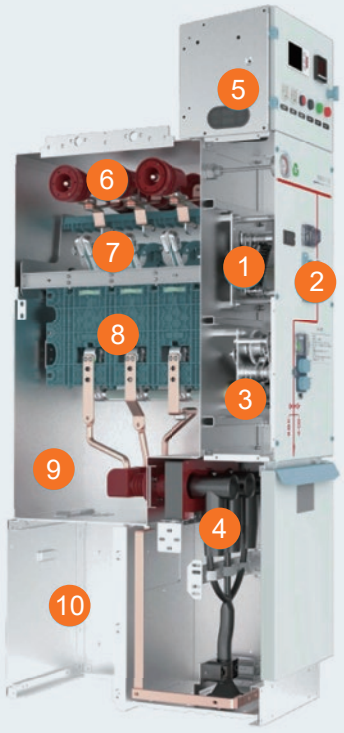
IEC 62271-102 High-voltage switchgear and controlgear-Part 102: Alternating current disconnectors and earthing switches

IEC 62271-103 High-voltage switchgear and controlgear-Part 103: Switches for rated voltages above 1 kV and up to and including 52 kV

IEC 62271-200 : 2011 High-voltage switchgear and controlgear-Part 200: AC metal-enclosed switchgear and controlgear for rated voltage above 1 kV and up to and including 52 kV

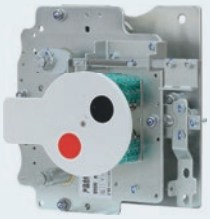
IEC 62271-1 : 2007 High-voltage switchgear and controlgear-Part 1: Common specifications

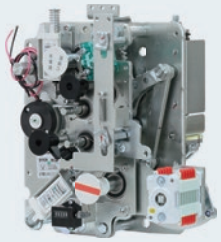
Main components of eco-friendly gas insulated ring main unit

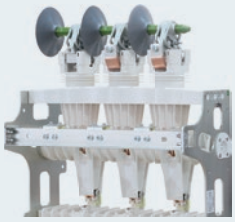


① Main components
② Operation panel
③ Main switch mechanism
④ Cable compartment
⑤ LV compartment
⑥ Bus connection bushing
⑦ Isolator
⑧ Arc extinguishing device
⑨ Gas tank
⑩ Pressure relief device

Diagram of the core components of the VCB unit (upper isolation switch)







① Isolation switch mechanism

The isolation switch mechanism is with single spring anddouble operation hole structure;On the basis of the load switch mechanism, an interlock module with the circuit breaker mechanism is added;

Rigid interlocking method is adopted, ensuring safety and reliability, and minimizing the risk of misoperation;

The operation control unit is integrated and modularized and placed in front for easy maintenance.

② Vacuum circuit breaker mechanism

The vacuum circuit breaker mechanism is with fastreclosing function;

With comprehensive interlocking device and rigid interlocking method, ensuring safety and reliability, and minimizing the risk of misoperation;

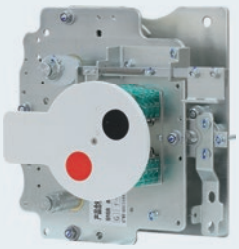
The operation control unit is integrated and modularized and placed in front for easy maintenance.

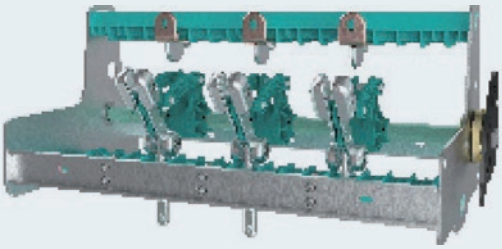
③ Vacuum circuit breaker components

The vacuum circuit breaker adopts a cam-driven transmission mode, and the arc extinguishing chamber is fixed using end-face connections, ensuring stable overtravel and contact gaps. It employs an upper isolation structure, meeting the requirements of standardized customization for power grids. High-quality insulation materials are used to ensure that the partial discharge quantity at 1.1 times the rated voltage is less than 20pC.

Voltage equalization measures are implemented to ensure electric field balance, no additional insulating partitions are required between phases.

Diagram of the core components of isolating switch





① Isolation switch operating mechanism

The CLH series isolating switch operating mechanism, designed specifically for MGA series switchgear, is available as a compatible accessory. This mechanism is mainly designed for the VMA series isolating switch, enabling the opening, closing, and grounding functions of the three-position isolating switch

② Isolation switch components

The isolating switch adopts a three-position design of closing, opening and grounding, which is stable in operation, safe and reliable;

The optimized design of the conductor contact surface of the isolating switch improves the conductivity and operational stability;

High-quality insulation materials are used to ensure that the partial discharge quantity at 1.1 times the rated voltage is less than 20pC.

Voltage equalization measures are implemented to ensure electric field balance, no additional insulating partitions are required between phases.

Technical Parameters

Sr.No.	Description			Unit	Load BreakeSwitch (C-module)	Switch- Fuse Combinations (F-module)	Vacuum Circuit Breaker(V/-module)
1	Rated voltage (Ur)			kV	12/24	12/24	12/24
2	Rated frequency(fr)			Hz	50	50	50
3	Rated current (Ir)			A	630	125 see(1)	630
4	Rated insulation level (Ud, Up,)	Power-frequency withstand voltage (Ud) (1 min)	Between phase and phase to earth	kV	42	42	42
			Across the isolating distance		48	48	48
			auxiliary and control circuits (Ua)		2	2	2
		Lightning impulse withstand voltage(Up)	Between phase and phase to earth		75	75	75
			Across the isolating distance		85	85	85
5	Rate s h ort-ti me withstand current			kA/s	20/4	--	20/4
6	Rated peak withstand current			kA	50	--	50
7	Rated s hort- circuit breaking current			kA	--	see(2)	20
8	Rated s hort- circuit making current			kA	50	see(2)	50
9	Rated on load breaking current			A	630	--	--
10	Rated c l osed circuit breaking current			A	630	--	--
11	Rated operatiing sequence			/	--	--	O-0.3s-C0-180s-CO
12	Mec hanica l endurance	LBS/circuit breaker		Ops	10000	10000	10000
		Isolating/earthing switch		Ops	3000	3000	3000
13	Circuit resistance			μQ	≤ 150	--	≤ 150
14	Rated pressure o f gas (relative pressure at 20℃)			M P a	0.02		
15	Annual leakage rate			Year	≤ 0.01%		
16	Insulating gas			/	N2		
17	Degree of protection	Compartment(IP code)		/	IP2XC		
		Gas tank(IP code)		/	IP67		
		Enclosure(IP code)		/	IP41		
		Enclosure(IK code)		/	Ik10		
18	IAC classification			/	A FLR 20 kA/1 s		

(1) Determined by the current rating of the fuse-link
(2) Limited by high voltage fuse-links

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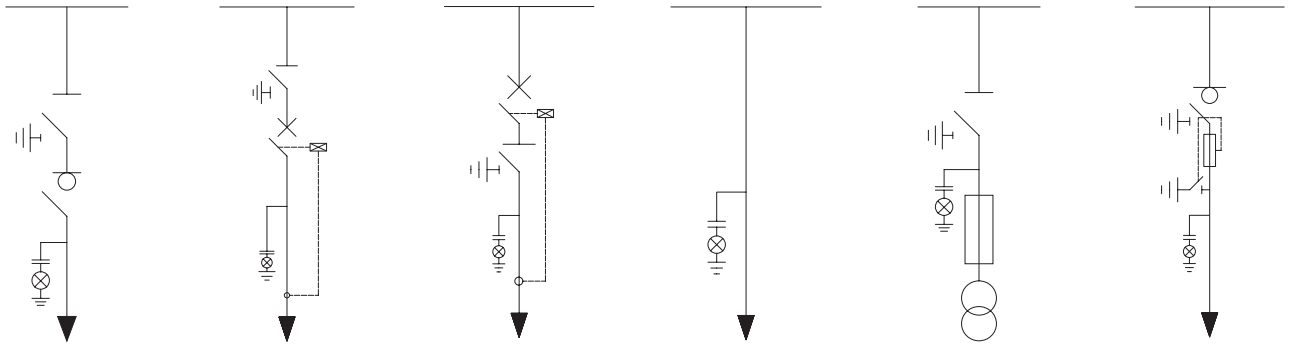
Typical primary scheme

C - LBS unit	V-VCB unit (lower disconnector)	V-VCB unit (lower disconnector)	D- bus connection unit	PT unit	F-LBS-fuse combinations



Note: The basic units can be combined to form a shared enclosure scheme, allowing for a maximum of 4 units in one enclosure, meeting customers'personalized customization needs. For more detailed solutions, please inquire with our company's technical support.

Outline Dimension

Type		Width (W)	Height (H)	Depth (D)
C	top extension	420mm	1950mm	850mm
	side extension	420mm	2000mm	850mm
V	top extension	420mm	1950mm	850mm
	side extension	420mm	2000mm	850mm
PT	top extension	600mm	1950mm	850mm
	side extension	600mm	2000mm	850mm
D	top extension	420mm	1950mm	850mm
	side extension	420mm	2000mm	850mm