

## Introduction

EVC9 Series AC High-Voltage Vacuum Contactor (hereinafter referred to as the "contactor") is suitable for power network systems with AC 50-60 Hz, a rated main circuit voltage of 40.5 kV, and rated currents ranging from 630A to 2000A. It is designed for remote switching, frequent starting, and control of AC motors, transformers, capacitor banks, and other applications.

## Operating Environmental Conditions

1. Ambient temperature:  $-25^{\circ}\text{C}$  to  $+40^{\circ}\text{C}$ .
2. Installation altitude: not exceeding 2000 m above sea level (custom high-altitude versions available for installations above 2000 m).
3. Relative humidity: the monthly average maximum relative humidity is 90% during the wettest month, with a corresponding monthly average minimum temperature of  $25^{\circ}\text{C}$ . Condensation on the product surface due to temperature variations must be taken into account.
4. Environment: free from water ingress, corrosive or flammable gases, and severe mechanical vibration.

## Operational Requirements

1. Select the technical parameters of the contactor correctly. Do not overload any components, including the auxiliary switch contacts. The contact rating is 5A.
2. Sufficient insulating clearance must be maintained around and above the contactor to ensure operational safety.
3. If there is no response upon energizing the control power supply, immediately cut off the control power and investigate the cause to avoid burning out the electromagnetic coil.
4. Strictly differentiate between AC and DC control circuits. The closing, opening, and common control terminals are all passive contacts, controlled by momentary pulse signals. Continuous power supply to the control circuit is prohibited, as it may cause damage.
5. During open/close testing operations, to ensure capacitor charging completion, the interval between consecutive close/open operations should be no less than 5 minutes.
6. The contactor is not suitable for series or parallel operation.
7. Main circuit connection principle: The upper end (fixed terminal) is the line side (input), and the lower end (moving terminal) is the load side (output).

## Product Specifications

The rated voltage is 40.5 kV, with available rated currents of 630 A, 800 A, 1250 A, 1600 A, and 2000 A.

## Product Structure and Working Principle

### 1. Structure:

This series of contactor consists of components such as an insulation cylinder, metal base, transmission system, permanent magnetic mechanism, auxiliary switch, and vacuum interrupter. It features a vertically segregated structure separating the high-voltage circuit and the low-voltage control section. This layout offers an aesthetic design, safety, reliability, and ease of installation and maintenance.

## 2. Working Principle:

The contactor performs closing and opening operations by controlling the drive of the permanent magnetic mechanism. After connecting the control power supply, the internal control system charges the closing/opening capacitors. To perform a closing operation, momentarily connect (short) the common and closing terminals with a pulse signal (passive shorting). The switch then achieves and maintains the closed state via the permanent magnetic mechanism. To perform an opening operation, momentarily connect (short) the common and opening terminals with a pulse signal (passive shorting). The switch then achieves and maintains the closed state via the permanent magnetic mechanism. To perform an opening operation, momentarily connect (short) the common and opening terminals with a pulse signal (passive shorting). The switch then achieves and maintains the open state via the permanent magnetic mechanism. This permanent magnetic mechanism offers advantages such as reliable operation and energy efficiency. Its control method is well-suited for electrical applications requiring long-term closure, making it particularly suitable for controlling electrical equipment like power supply transformers.

## Maintenance

1. It is recommended that users establish a regular maintenance schedule to ensure the contactor remains in good condition. Regularly clean the insulation cylinder and the circuit system to ensure proper working insulation and normal operation.
2. Check for loose fasteners and any abnormalities in the structural components.
3. Ensure the auxiliary switch operates normally and maintains good contact.
4. Check electrical connections for looseness and ensure they are securely fastened.

## Technical Parameters

1. Main Circuit Poles: 3 poles
2. Control Power Supply Voltage: AC or DC 220V, or customized as per user requirements.
3. Secondary Circuit Schematic: Permanent Magnet Type (Figure 2).
4. Conventional Thermal Current for Auxiliary Switch Contacts: 5A.
5. Rated Duty Cycle: Intermittent Long-Time Duty, Intermittent Periodic Duty (with a rated duty cycle of 40%).

## Dimension



**Table 1 Main Technical Characteristics of EVC9 Series Vacuum Contactor**

Technical Characteristics Parameter Name	Model	EVC9 630A	EVC9 800A	EVC9 1250A	EVC9 1600A	EVC9 2000A
	Rated Main Circuit Voltage (KV)		40.5	40.5	40.5	40.5
Rated Main Circuit Current (A)		630	800	1250	1600	2000
Main Circuit Making Capacity (A/100 operations)		6300	8000	10000	12800	16000
Main Circuit Breaking Capacity (A/25 operations)		5000	6000	7500	9600	12000
Ultimate Breaking Capacity (A/3 operations)		6300	8000	12500	16000	20000
Electrical Life (10,000 operations)		10	10	10	10	10
Mechanical Life (10,000 operations)		20	20	20	20	20
Main Circuit Power Frequency Withstand Voltage (break) (kV)		95	95	95	95	95
Phase to Phase, Phase to Ground Power Frequency Withstand Voltage (kV)		95	95	95	95	95
Lightning Impulse Withstand Voltage (kV)		185	185	185	185	185
Control Circuit Power Frequency Withstand Voltage (KV)		2	2	2	2	2
Rated Operating Frequency (operations/h)		50	50	50	50	50
Permanent Magnet Mechanism Operating Frequency (operations/h)		30	30	30	30	30
Terminal Pressure (N)		>800	>800	>800	>800	>800
Contact Gap (mm)		17±2	17±2	17±2	17±2	17±2
Overtravel (mm)		3±1	3±1	3±1	3±1	3±1
Main Circuit Contact Resistance (μΩ)		≤200	≤200	≤200	≤200	≤200
Secondary Control Voltage (V)	AC 220V or DC 220V or customized					

03

