VOZWEI

Application for

# Solar Energy
# Wind Power
# Telecommunication

## CIRCUIT BREAKER PRODUCT MANUAL

# VOZWEI

## Brief Introduction

VOZWEI is a dual drive company driven by technology and client's demand, focusing on people's electricity safety and striving to contribute to the development of green energy. We specialize in the research and development, production, sales, and service of terminal electrical apparatus, electrical distribution apparatus, and control electrical apparatus, such as miniature circuit breakers, molded case circuit breakers, Air circuit breakers, DC contactors, and other electrical products.

Since its establishment, VOZWEI has adhered to the core value of "achieving clients" and driven product research and development based on client's needs. We focus on telecommunication, solar energy, and wind power applications, etc. relying on the manufacturing advantages of China's industry and the excellent cost control and quality management advantages of our team to achieve cost control for clients, while ensuring the business philosophy of providing high-quality electrical products and solutions. At present, our products have involved in dozens of countries and regions such as Germany, France, Italy, Britain, Brazil, Argentina, Colombia, Canada, Israel, Thailand, Vietnam, South Korea, India, etc.

**Telecom**

**Solar Energy**

**Wind Power**

## Corporate Cultures

| | |
|---|---|
| **Our Vision** | Pursuing excellence, creating the electrical future of a safer, more reliable and smarter |
| **Our Mission** | Steady development, bring the electric products of premium quality at reasonable prices to world |
| **Core values** | Value, Reliability, Efficiency, Innovation, Low-carbon, Vitality |
| **Work Philosophy** | Relying on responsibility and diligence to aim at perfection, respect everyone, and happiness comes from striving |

# Contents



VOZMI

# VW3

Air Circuit Breaker

# Design Features



- Tailored for solar energy, wind power and energy storage systems
- High-voltage air circuit breaker, optional 800V AC, 1140V AC, 1250V AC, 1500V AC
- With ultra-high breaking capacity, max meet 85kA at 800V AC
- With excellent anti damp heat and dew solidification capabilities
- Strong ability to adapt to alternating changes in high and low temperatures
- Strong resistance to salt spray and humid environments
- High altitude adaptability, still safe working at an altitude of 5000 meters
- Can be used in complex mixed gas environments ($Cl_2$, $SO_2$, $NO_2$, $H_2S$)
- Low energy consumption and temperature rise of the product itself
- Integrated communication network, capable of remote control, telemetry, remote signaling, and remote adjustment

## Ambient conditions

### Operating ambient temperature/storage temperature

- Operating environment temperature:-40°C- +70°C

### Altitude conditions

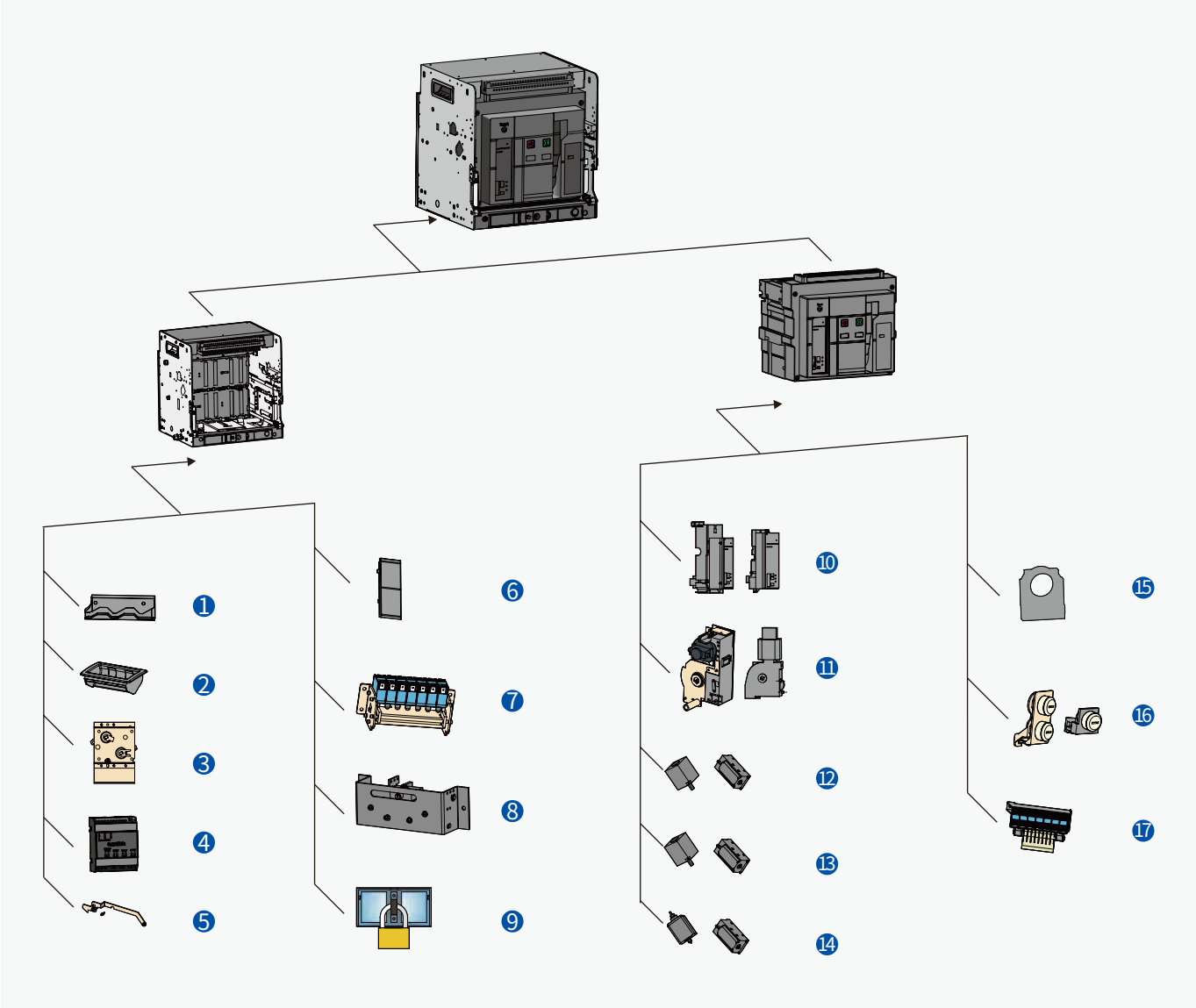
- Altitude of installation site ⩽ 5000m (Over 2000 meters need capacity reduction for using)

### Shockproof level

- Passed the impact test with a peak acceleration of 30g and three axes and six directions
- Passed the vibration test with an acceleration of 10g and a frequency of 10-200Hz
- Excessive vibration may cause component damage and affect the reliable operation of the circuit breaker

### Corrosion prevention

- Passed the C4-H level anti-corrosion test specified in ISO12944-6 and GB/T 30790.6-2014 standards




## **VW3** Accessories

1. Positioning component
2. Sheath
3. Mechanical interlocking
4. Power supply module
5. Door interlocking
6. Phase partition
7. External auxiliary contact
8. Position indication
9. Button lock
10. Controller
11. Motor operating mechanism
12. Shunt release
13. Undervoltage(loss of voltage) release
14. Closed electromagnet
15. External transformer
16. Prevent closinglock
17. Auxiliary contact

# Selection Guide

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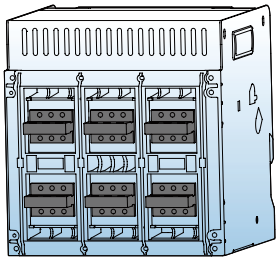
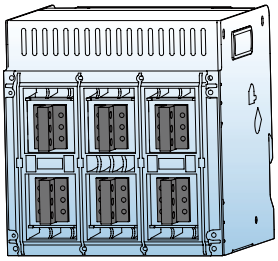
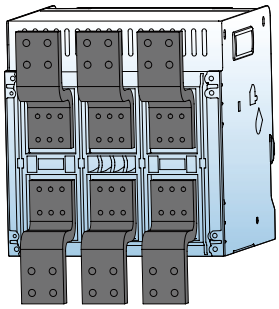


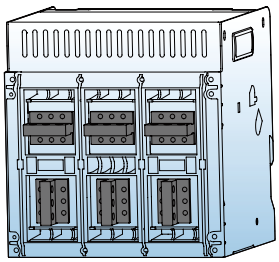
Horizontal Wiring C1



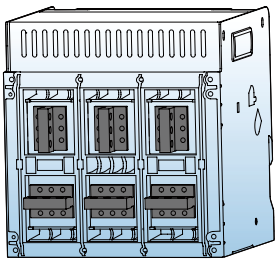
Vertical Wiring C2



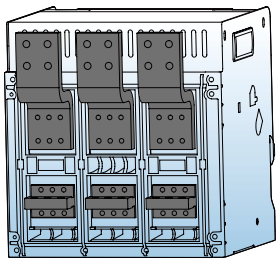
Forward Wiring C3



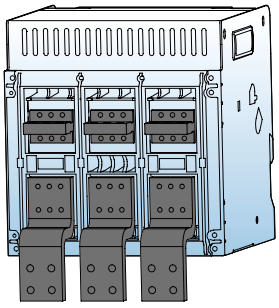
Mixed Wiring C4
(Upper Horizontal, Lower Vertical)



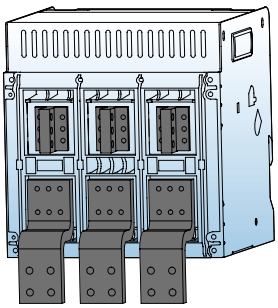
Mixed Wiring C5
(Upper Vertical, Lower Horizontal)



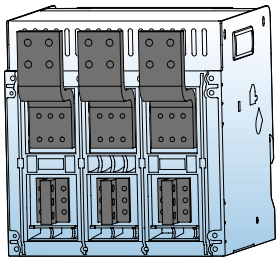
Mixed Wiring C6
(Upper Forward, Lower Horizontal)



Mixed Wiring C7
(Upper Horizontal, Lower Forward)



Mixed Wiring C8
(Upper Vertical, Lower Forward)



Mixed Wiring C9
(Upper Forward, Lower Vertical)

| Wiring mode | VW3-20 | VW3-25 | VW3-40 | | VW3-63 |
|---|---|---|---|---|---|
| | | | 1000~3200A | 3600~4000A | |
| Horizontal Wiring | ● | ● | ● | ● | ● |
| Vertical Wiring | ○ | — | ○ | ○ | — |
| Forward Wiring | — | — | ○ | — | — |
| Mixed Wiring (Upper Horizontal, Lower Vertical) | ○ | — | ○ | ○ | — |
| Mixed Wiring (Upper Vertical, Lower Horizontal) | ○ | — | ○ | ○ | — |
| Mixed Wiring (Upper Forward, Lower Horizontal) | — | — | ○ | — | — |
| Mixed Wiring (Upper Horizontal, Lower Forward) | — | — | ○ | — | — |
| Mixed Wiring (Upper Vertical, Lower Forward) | — | — | ○ | — | — |
| Mixed Wiring (Upper Forward, Lower Vertical) | — | — | ○ | — | — |

***Note:*** ●*standard wiring,* ○*optional wiring,* —*without wiring*

## Fixed type


## Drawout type


1 Secondary wiring chart

2 Controller

3 Nameplate

4 Fixed bracket

5 Grounding bolt

6 Secondary wiring terminal

7 Drawer seat

8 Reset button

9 Disconnection button

10 Closing button

11 Manual energy storage handle

12 Energy releasing and storing indication

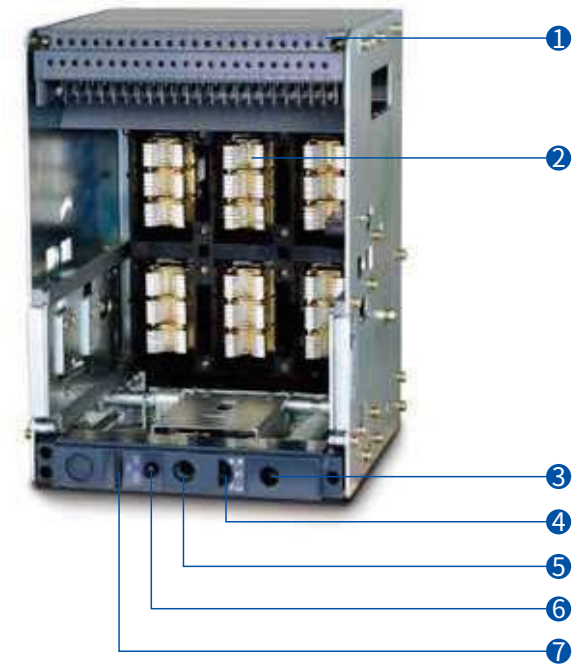
13 Disconnection and closing indication

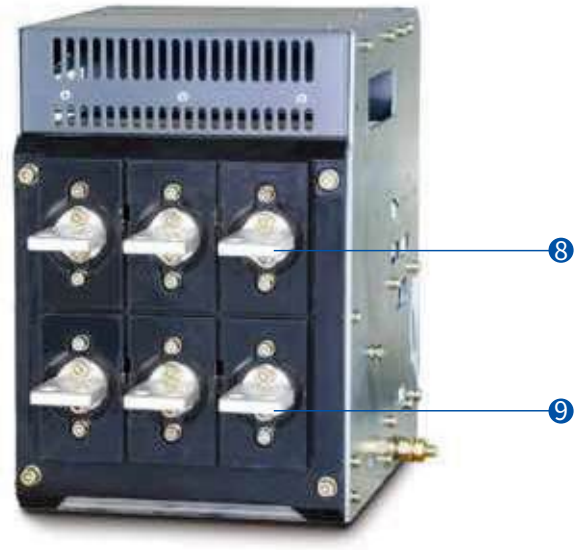
14 Three position indication

15 Unlocking button

16 Separation position locking device

## Drawer seat




1. Secondary wiring terminal
2. Bridge contact
3. Rocker and storage position
4. Three position indication
5. Rocker operating position
6. Unlocking button
7. Separation position locking device
8. Upper wiring terminal
9. Lower wiring terminal

## Model Explanation and Encoding Rules

| VW3 | – | □ | □ | / | □ | □ | / | □ | / | □ | □ | / | □ | □ | □ | □ | □ | □ | / | □ | / | □ | / | □ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 2 | 3 | | 4 | 5 | | 6 | | 7 | 8 | | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | | 17 | 18 | | 19 |

| SN | Name | Specification, type code | | Description |
|---|---|---|---|---|
| 1 | Design code | VW3: Design code | | / |
| 2 | Frame rating | 20: 2000A; 25:2500A; 40: 4000A; 63: 6300A | | / |
| 3 | Breaking type | S: Standard breaking level; H: High breaking level;<br>HU: High voltage level; HV: Ultra high voltage level | | S only for VW3-20 |
| 4 | Rated current | 02: 200A; 04: 400A; 06: 630A; 08: 800A; 10: 1000A; 12: 1250A;<br>16: 1600A; 20: 2000A; 25: 2500A; 29: 2900A; 32: 3200A; 36: 3600A;<br>40: 4000A; 50: 5000A; 63: 6300A | | / |
| 5 | Installation mode | F: Fixed type; D: Drawout type | | |
| 6 | Number of poles | 3: 3P; 4: 4P; 5: 3P+N | | 3P+N: 3P products are added with N-phase external transformers |
| 7 | Controller | VWC2(DIP switch); VWC4 (digital screen); VWC6 (LCD) | | VWC2 is only used for VW3-20; |
| 8 | Controller optional function | Protection type | Empty: Conventional type; V: Voltage measurement; P: Harmonic measurement and protection | 1.VWC4 controller only has S1-4DO;<br>2. Choose one from the communication functions of "H", "MP", "MD";<br>3. VWC2 does not have remote reset function;<br>4. Only VWC6 has communication function; |
| | | Communication function | H: Modbus protocol; MP: Profibus-DP protocol; MD: Devicenet protocol | |
| | | Signal unit | S1: 4DO; S2: 3DO+1DI; S3:2DO+2DI | |
| | | Remote reset function | Z2: AC230V | |
| | | Grounding mode | T: Differential type<br>W: Ground current type<br>Note: 3P+N needs to be added with an external transformer | |
| | | External N-phase transformer | N1; N2; N3; N4 | |
| | | Protection form of current leakage: E-type (including the external current leakage transformer) | | |
| | | Contact wear equivalent: J | | |
| 9 | Electric energy storage mechanism | D1: AC400V; D2: AC230V/DC220V; D4: AC/DC110V; D5: DC24V | | / |
| 10 | Shunt release | F1: AC400V; F2: AC230V/DC220V; F4: AC/DC110V; F5: DC24V | | / |
| 11 | Closed electromagnet | B1: AC400V; B2: AC230V/DC220V; B4: AC/DC110V; B5: DC24V | | / |
| 12 | Under-voltage release / Loss of voltage release / Voltage-check release | Under-voltage release | Q1: AC400V; Q2: AC230V; Q5: DC24V | 1. Choose one from the Under-voltage release, Loss of voltage release, Voltage-check release; |
| | | Loss of voltage release | S1: AC400V; S2: AC230V | |
| | | Voltage-check release | J1: AC400V; J2: AC230V | |
| 13 | Under-voltage release / loss of voltage release Delay time | 0: Instantaneous; 1: 1s delay; 3: 3s delay; 5: 5s delay | | / |
| 14 | Auxiliary contact | A33: 3NO3NC; A44: 4NO4NC; … ; A1414: 14NO14C | | |
| | | A3: Three-group switching; A4: Four-group switching; …; A14: Fourteen-group switching | | |

# Selection Guide

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## Model Explanation and Encoding Rules

| VW3 | – | □ | □ | / | □ | □ | / | □ | / | □ | / | □ | □ | / | □ | □ | □ | □ | □ | / | □ | / | □ | / | □ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 2 | 3 | | 4 | 5 | | 6 | | 7 | | 8 | 9 | | 10 | 11 | 12 | 13 | 14 | | 15 | | 16 | | 17 | | 18 | | 19 |

| SN | Name | Specification, type code | Description |
|---|---|---|---|
| 15 | Internal Accessories | BX: Closing ready signal output unit | / |
| | | JS: Counter functional unit | / |
| | | CM1: Drawout type (with the right side of the door interlock); | / |
| | | CX: Drawer seat three-position signal output | / |
| 16 | External accessories | M: Doorframe<br>Note: standard | / |
| | | R: Relay module | / |
| | | Power supply module AC65~500V, DC80~700V Note: standard | / |
| | | S: Button lock | / |
| | | P2: Voltage conversion module | / |
| 17 | Wiring mode | C1: Horizontal wiring, C2: Vertical wiring. C3: Forward wiring;<br>C4: Mixed wiring (upper horizontal, lower vertical);<br>C5: Mixed wiring (upper vertical, lower horizontal);<br>C6: Mixed wiring (upper forward, lower horizontal);<br>C7: Mixed wiring (upper horizontal, lower forward);<br>C8: Mixed wiring (upper vertical, lower forward);<br>C9: Mixed wiring (upper forward, lower vertical) | / |
| | | 1: Standard wiring, 2: Extended wiring | / |
| 18 | Rated working voltage | KV1: AC400/415V; KV2: AC500/550V; KV3: AC660/690V;<br>KV4: AC800V; KV6: AC1140V; KV7: AC1250V; KV8: AC1500V | / |
| 19 | Language type | Empty: Chinese; Y: English | / |

## Interlocking Piece Model Explanation and Encoding Rules

| | | |
|---|---|---|
| Key lock | SF11: Key lock device (one lock and one key);<br>SF21: Key lock device (two locks and one key);<br>SF31: Key lock device (three locks and one key);<br>SF32: Key lock device (three locks and two keys);<br>SF53: Key lock device (five locks and three keys) | 1. Select one from five key locks; |
| Mechanical interlocking | SR11: Mechanical interlocking device (two sets of steel cables, one for closing and one for opening);<br>SR12: Mechanical interlocking device (three sets of steel cables, one for closing and two for opening);<br>SR21: Mechanical interlocking device (three sets of steel cables, two for closing and one for opening);<br>SY11: Mechanical interlocking device (two sets of hard rods, one for closing and one for opening); | 1. Select one from five mechanical interlocks; |

# Selection Guide

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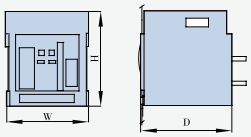
| Series | | | VW3-20 | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | |  | | | | | |
| Rated current In(A) | | | 200,400,630,800,1000,1250,1600,2000 | | | | | |
| Rated working voltage Ue(V) 50Hz/60Hz | | | AC400/AC415 | | AC500/AC550 | | AC660/AC690 | |
| Rated insulation voltage Ui(V) | | | 1150 | | | | | |
| Rated impulse withstand voltage Uimp(kV) | | | 12 | | | | | |
| Power frequency withstand voltage U(V) 1min | | | AC5000V 50Hz/60Hz | | | | | |
| Number of poles | | | 3P/4P | | | | | |
| N-pole rated current | | | 100%In | | | | | |
| Breaking capacity code | | | S | H | S | H | S | H |
| Rated limit short-circuit breaking capacity (effective value) Icu(kA) | | | 50 | 66 | 50 | 50 | 25 | 50 |
| Rated operating short-circuit breaking capacity (effective value) Ics(kA) | | | 50 | 66 | 50 | 50 | 25 | 50 |
| Rated short circuit making capacity (peak value) Icm(kA) | | | 105 | 145 | 105 | 105 | 52.5 | 105 |
| Rated short-time withstand current (effective value) Icw(kA) 1s | | | 42 | 55 | 42 | 50 | 25 | 50 |
| Rated conditional short-circuit current Icc(kA) | | | 42 | 55 | 42 | 50 | 25 | 50 |
| Full break time (no additional delay) (ms) | | | 12~18 | | | | | |
| Closing time (ms) | | | ≤60 | | | | | |
| Operating performance | Electrical life (times) | | 15000(200~630A)<br>10000(800~1250A)<br>10000(1600~2000A) | | | 15000(200~630A)<br>10000(800~1250A)<br>10000(1600~2000A) | | |
| | Mechanical life (times) | Without maintenance | 15000 | | | | | |
| | | Maintenance | 30000 | | | | | |
| Operational condition | Utilization category | | B | | | | | |
| | Pollution degree | | 3 | | | | | |
| | Protection grade | | IP40 | | | | | |
| | Ambient temperature | | ≥-40°C | | | | | |
| | Altitude | | ≤5000m | | | | | |
| Outline dimension (mm) (H × W × D) | | Drawout type 3P | 357×254×300 | | | | | |
|  | | Drawout type 4P | 357×324×300 | | | | | |
| | | Fixed type 3P | 335×266×199 | | | | | |
| | | Fixed type 4P | 335×336×199 | | | | | |

# Selection Guide

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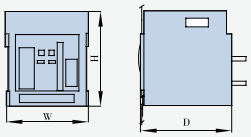
| Series | | | VW3-25 | | | | |
|---|---|---|---|---|---|---|---|
| | | |  | | | | |
| Rated current In(A) | | | 630, 800, 1000, 1250, 1600, 2000, 2500 | | | | |
| Rated working voltage Ue(V) 50Hz/60Hz | | | AC400 | AC500 | AC690 | AC800/AC1140 | AC1500 |
| Rated insulation voltage Ui(V) | | | 1800 | | | | |
| Rated impulse withstand voltage Uimp(kV) | | | 18 | | | | |
| Power frequency withstand voltage U(V) 1min | | | AC5000V 50Hz/60Hz | | | | |
| Number of poles | | | 3P/4P | | | 3P | 3P |
| N-pole rated current | | | 100%In | | | | |
| Breaking capacity code | | | H | | | HU | HV |
| Rated limit short-circuit breaking capacity (effective value) Icu(kA) | | | 85 | 75 | 65 | 75 | 50 |
| Rated operating short-circuit breaking capacity (effective value) Ics(kA) | | | 85 | 75 | 65 | 75 | 50 |
| Rated short circuit making capacity (peak value) Icm(kA) | | | 187 | 165 | 143 | 165 | 105 |
| Rated short-time withstand current (effective value) Icw(kA) 1s | | | 85 | 75 | 65 | 70 | 50 |
| Rated conditional short-circuit current Icc(kA) | | | 85 | 75 | 65 | 70 | 50 |
| Full break time (no additional delay) (ms) | | | 12~18 | | | | |
| Closing time (ms) | | | ≤60 | | | | |
| Operating performance | Electrical life (times) | | 15000 (630~1250A)<br>11500 (1600~2000A)<br>11000 (2500A) | 12500 (630~1250A)<br>10000 (1600~2000A)<br>8000 (2500A) | | 5000 (630~1250A)<br>5000 (1600~2000A)<br>5000 (2500A) | 500 (630~1250A)<br>500 (1600~2000A)<br>500 (2500A) |
| | Mechanical life (times) | Without maintenance | 15000 | | | | |
| | | Maintenance | 30000 | | | | |
| Operational condition | Utilization category | | B | | | | |
| | Pollution degree | | 3 | | | | |
| | Protection grade | | IP40 | | | | |
| | Ambient temperature | | ⩾-40°C | | | | |
| | Altitude | | ≤5000m | | | | |
| Outline dimension (mm) (H × W × D) | | Drawout type 3P | 430 × 407 × 395 | | | | |
|  | | Drawout type 4P | 430 × 522 × 395 | | | | |
| | | Fixed type 3P | 390 × 422 × 297.5 | | | | |
| | | Fixed type 4P | 390 × 537 × 297.5 | | | | |

# Selection Guide

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## VW3-40

| 1000, 1250, 1600, 2000, 2500, 2900, 3200, 3600, 4000 | | | | | |
|---|---|---|---|---|---|
| AC400 | AC690 | AC800 | AC1140 | AC1250 | AC1500 |
| 1800 | | | | | |
| 18 | | | | | |
| AC5000V 50Hz/60Hz | | | | | |
| 3P/4P | | 3P | | 3P | |
| 100%In | | | | | |
| H | | HU | | HV | |
| 100 | 85 | 80 | 75 | 66 | 50 |
| 100 | 85 | 80 | 75 | 66 | 50 |
| 220 | 187 | 176 | 165 | 145 | 105 |
| 100 | 85 | 80 | 75 | 66 | 50 |
| 100 | 85 | 80 | 75 | 66 | 50 |
| 12~18 | | | | | |
| ⩽60 | | | | | |
| 10000 (1000~2500A)<br>8000 (2900~3200A)<br>8000 (3600~4000A) | | 5000 (1000~2500A)<br>5000 (2900~3200A)<br>5000 (3600~4000A) | | 500 (1000~2500A)<br>500 (2900~3200A)<br>500 (3600~4000A) | |
| 10000 | | | | | |
| 20000 | | | | | |
| B | | | | | |
| 3 | | | | | |
| IP40 | | | | | |
| ⩾-40°C | | | | | |
| ⩽5000m | | | | | |
| 430 × 407 × 395 | | | | | |
| 430 × 522 × 395 | | | | | |
| 390 × 422 × 297.5 | | | | | |
| 390 × 537 × 297.5 | | | | | |

## VW3-63

| 4000, 5000, 6300 | | | |
|---|---|---|---|
| AC400 | AC690 | AC800/AC1140 | AC1500 |
| 1800 | | | |
| 18 | | | |
| AC5000V 50Hz/60Hz | | | |
| 3P/4P | | 3P | 3P |
| 50%In | | | |
| H | | HU | HV |
| 135 | 120 | 85 | 50 |
| 135 | 120 | 85 | 50 |
| 297 | 264 | 187 | 105 |
| 135 | 120 | 85 | 50 |
| 135 | 120 | 85 | 50 |
| 12~18 | | | |
| ⩽60 | | | |
| 6000 (4000A)<br>4000 (5000A)<br>2000 (6300A) | 3500 (4000A)<br>2500 (5000A)<br>1500 (6300A) | 2500 (4000A)<br>1500 (5000A)<br>1000 (6300A) | 500 (4000A)<br>400 (5000A)<br>500 (6300A) |
| 6500 | | | |
| 13000 | | | |
| B | | | |
| 3 | | | |
| IP40 | | | |
| ⩾-40°C | | | |
| ⩽5000m | | | |
| 480 × 853 × 395 | | | |
| 480 × 900 × 395 | | | |
| 390 × 800 × 297.5 | | | |
| 390 × 915 × 297.5 | | | |

# Controller

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| Model | VWC2 | VWC4 | VWC4(V) | VWC6 | VWC6(V) | VWC6(P) |
|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |
| Display interface | | | | | | |
| DIP switch | ✓ | — | — | — | — | — |
| Digital tube numbers and symbols display | — | ✓ | ✓ | — | — | — |
| LCD panel symbols and graphics display | — | — | — | ✓ | ✓ | ✓ |
| Protection function | | | | | | |
| Overload long-time delay protection | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Overload thermal memory | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Overload pre-alarm/alarm output | — | ✓ / ■ | ✓ / ■ | ✓ / ■ | ✓ / ■ | ✓ / ■ |
| Short circuit short-time delay protection | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Short-time delay thermal memory | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Short circuit instantaneous protection | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Ground protection (differential type/ W ground current type) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Grounding alarm/alarm output | — | ✓ / ■ | ✓ / ■ | ✓ / ■ | ✓ / ■ | ✓ / ■ |
| Current leakage protection/alarm/ alarm output | — | — | — | ■ / ■ / ■ | ■ / ■ / ■ | ■ / ■ / ■ |
| Neutral wire protection | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Current unbalance protection/alarm/ alarm output | — | ✓ / — / — | ✓ / — / — | ✓ /✓ / ■ | ✓ /✓ / ■ | ✓ /✓ / ■ |
| MCR&HSISC | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Load monitoring/alarm/alarm output | — | ■ / ■ / ■ | ■ / ■ / ■ | ■ / ■ / ■ | ■ / ■ / ■ | ■ / ■ / ■ |
| Undervoltage protection /alarm/alarm output | — | — | — | — | ✓ /✓ / ■ | ✓ /✓ / ■ |
| Overvoltage protection /alarm/ alarm output | — | — | — | — | ✓ /✓ / ■ | ✓ /✓ / ■ |
| Voltage unbalance protection/alarm/ alarm output | — | — | — | — | ✓ /✓ / ■ | ✓ /✓ / ■ |
| Phase sequence protection/alarm/ alarm output | — | — | — | — | ✓ /✓ / ■ | ✓ /✓ / ■ |
| Underfrequency protection/alarm/ alarm output | — | — | — | — | ✓ /✓ / ■ | ✓ /✓ / ■ |
| Overfrequency protection/alarm/ alarm output | — | — | — | — | ✓ /✓ / ■ | ✓ /✓ / ■ |
| Current required value protection/alarm/ alarm output | — | — | — | — | ✓ /✓ / ■ | ✓ /✓ / ■ |
| Reverse power protection/alarm/ alarm output | — | — | — | — | — | ✓ /✓ / ■ |

# Controller

VOZWEI

| Measuring function | | | | | | |
|---|---|---|---|---|---|---|
| Current measurement (phase pole, N-pole, grounding) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Voltage (phase voltage, circuit voltage, voltage unbalance rate) | — | — | ✓ | — | ✓ | ✓ |
| Phase sequence detection | — | — | — | — | ✓ | ✓ |
| Frequency measurement | — | — | ✓ | — | ✓ | ✓ |
| Required value measurement (current) | — | — | — | — | ✓ | ✓ |
| Required value measurement (power) | — | — | — | — | — | ✓ |
| Power measurement (active power, reactive power, apparent power) ① | — | — | ✓ | — | — | ✓ |
| Power factor measurement | — | — | ✓ | — | — | ✓ |
| Electric energy measurement (active electric energy, reactive electric energy, apparent electric energy) | — | — | — | — | — | ✓ |
| Harmonics measurement | — | — | — | — | — | ✓ |
| **Maintenance function** | | | | | | |
| LED fault status indication | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Fault record (8 times) and query ② | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Displacement record (8 times) ③ | — | — | — | ✓ | ✓ | ✓ |
| Alarm history query (8 times) ④ | — | — | — | ✓ | ✓ | ✓ |
| Fault tripping signal output ⑤ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Self-diagnostic function | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Simulating tripping test function | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Contact wear equivalent (alarm) query | — | ■ | ■ | ✓ | ✓ | ✓ |
| Query of number of operations | — | ✓ | ✓ | ✓ | ✓ | ✓ |
| Clock function | — | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Other** | | | | | | |
| Remote reset of controller | ■ | ■ | ■ | ■ | ■ | ■ |
| Signal unit | — | ■ | ■ | ■ | ■ | ■ |
| Selective area interlock | — | — | — | ■ | ■ | ■ |
| Communication | — | — | — | ■ | ■ | ■ |
| Protection curve | $I^2T$(Default), standard inverse time limit | $I^2T$ (Default), Standard inverse time limit, Fast inverse time limit, Express inverse time limit (G), Express inverse time limit(M), High-voltage fuse compatible | | | | |

***Note:*** *① VWC4 (V) power measurement only have active power;*
*② VMC2 only have fault type,VWC4/VWC4(V) only have the record of last one fault type and data value;*
*③ Record the displacement include: displacement type (closing, opening, or tripping), displacement reason (local/remote operation, fault/test tripping), displacement time (year, month, day, hour, minute, second);*
*④ Record the alarm history: Alarm type, alarm domain value, alarm time (year, month, day, hour, minute, second);*
*⑤ Trip parameters: trip type, trip domain value, delay time, current or voltage value, time (year, month, day, hour, minute, second), MCR trip, undervoltage trip, except for HSISC trip;*
*⑥ "√"represents with this function, "—"represents without this function，"■"represents optional function;*
*⑦ V and P function type are optional;*
*⑧ If selected the unit function, that will be achieved alarm and switch output functions or area selective interlocking functions.*

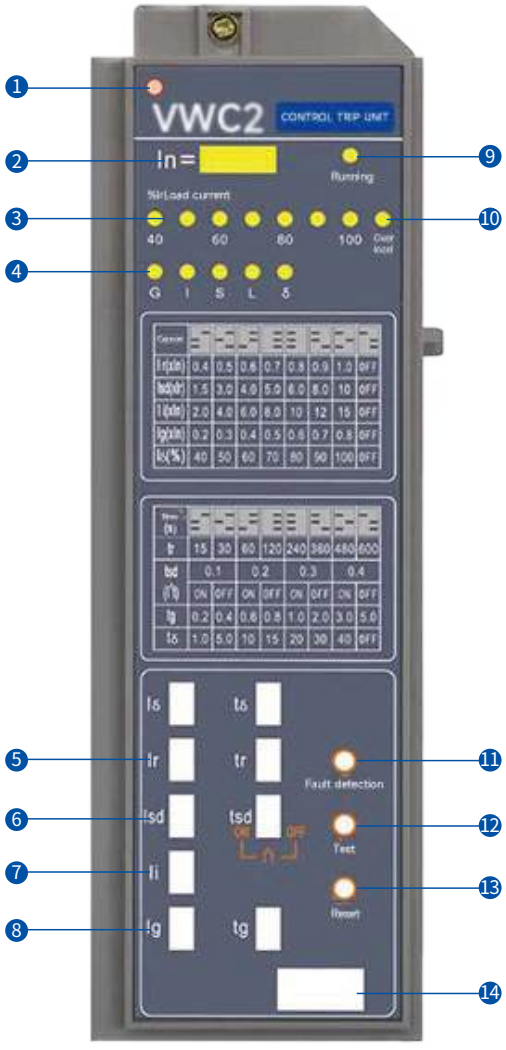
## VWC2 Controller

### Standard function

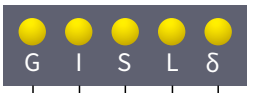
- Overload long-time delay protection,
  Short circuit short-time delay protection,
  Short circuit instantaneous protection
- Function test
- Fault record
- Overload thermal memory
- Self-diagnostic function
- Current bar display
- Fault status indication & Fault value indication

### Optional function

- Ground Fault Protection
- Current unbalance protection
- Signal unit
- MCR & HCISC




1. Reset button
2. Rated current
3. Current bar indicator light
4. Fault indicators




Current imbalance protection fault indicator
Overload long-time delay protection fault indicator
Short-circuit short-time delay protection fault indicator
Short-circuit instantaneous protection fault indicator
Ground fault protection indicator

5. Overload long-time delay protection setting DIP switch


Overload long-time delay protection time setting
Overload long-time delay protection current setting

6. Short-circuit short-time delay protection setting DIP switch


Short-circuit short-time delay protection time setting
Short-time delay short-circuit protection current setting

7. Short-circuit instantaneous protection current setting DIP switch
8. Ground fault protection setting DIP switch


Ground fault protection time setting
Ground fault protection current setting

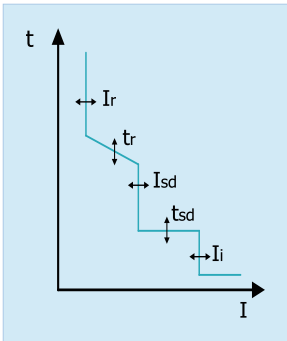
9. Operation indicator
10. Overload indicator
11. Fault check button
12. Test trip button
13. Clear indicator button
14. Test port

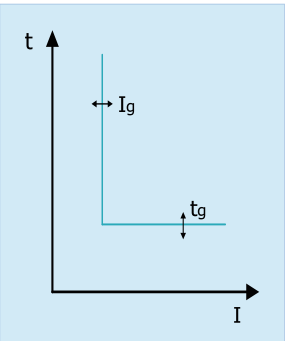
***Note:***

*1. Move the dial switch by using a special tool (screwdriver for small clocks and watches), so as to make it point to the scale value or position corresponding to protection parameter. When dialing, it should not point to the middle position between two scale values.*

*2. The protection parameters shall not be cross-set (with the requirement of Ir<Isd< Ii ).*

## VWC2 Controller protection characteristics




| Overload long-time delay | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Current setting value Ir, Current tolerance error ±10% | | (0.4 , 0.5 , 0.6 , 0.7 , 0.8 , 0.9 , 1.0)×In+OFF | | | | | | | | |
| Tripping time $t_r$ tolerance error±15% | Current | Tripping time | | | | | | | | |
| | ⩽1.05Ir | Inaction within 2h | | | | | | | | |
| | ＞1.20Ir | Action within 1h | | | | | | | | |
| | 1.5Ir | Setting time tr (s) | 15 | 30 | 60 | 120 | 240 | 360 | 480 | 600 |
| | 2.0Ir | Tripping time tr (s) | 8.4 | 16.9 | 33.8 | 67.5 | 135 | 202.5 | 270 | 337.5 |
| | 7.2Ir | Tripping time tr (s) | 0.65 | 1.3 | 2.6 | 5.2 | 10 | 15.6 | 20 | 26 |
| Thermal memory protection | | 30min+OFF(clear the thermal memory when the power off) | | | | | | | | |

| Short-circuit short time-delay | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Current setting value Isd,Current tolerance error ±10% | | (1.5 , 3 , 4 , 5 , 6 , 8 , 10)×Ir+OFF | | | | | | | | |
| Tripping time tsd tolerance error±15% | ON: The short-time delay inverse time limit is on | Isd | 0.1 | | 0.2 | | 0.3 | | 0.4 | |
| | OFF: The short-time delay inverse time limit is off | ($I^2t$) | ON | OFF | ON | OFF | ON | OFF | ON | OFF |
| Thermal memory protection | | 30min+OFF(clear the thermal memory when the power off) | | | | | | | | |

| Short-circuit instantaneous protection | |
|---|---|
| Current setting value Ii,Current tolerance error ±10% | (2 , 4 , 6 , 8 , 10 , 12 , 15)×In+OFF |
| Tipping time t3 | Within 30ms |

| Ground fault protection | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Current setting value Ig,Current tolerance error ±10% | | | (0.2 , 0.3 , 0.4 , 0.5 , 0.6 , 0.7 , 0.8)×In+OFF | | | | | | |
| Tripping time tg tolerance error±15% | Fixed time-limit | Setting time tg (s) | 0.2 | 0.4 | 0.6 | 0.8 | 1 | 2 | 3 | 5 |

## VWC2 Controller time setting value reference table

| DIP switch setting |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|
| tr | 15 | 30 | 60 | 120 | 240 | 360 | 480 | 600 |
| tsd | 0.1 | | 0.2 | | 0.3 | | 0.4 | |
| ($I^2t$) | ON | OFF | ON | OFF | ON | OFF | ON | OFF |
| tg | 0.2 | 0.4 | 0.6 | 0.8 | 1.0 | 2.0 | 3.0 | 5.0 |
| tδ | 0.1 | 5 | 10 | 15 | 20 | 30 | 40 | OFF |

## VWC2 Controller current setting value reference table

| DIP switch setting |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|
| Ir(xIn) | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | OFF |
| Isd(xIr) | 1.5 | 3 | 4 | 5 | 6 | 8 | 10 | OFF |
| Ii(xIn) | 2 | 4 | 6 | 8 | 10 | 12 | 15 | OFF |
| Ig(xIn) | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | OFF |
| Iδ(%) | 40 | 50 | 60 | 70 | 80 | 90 | 100 | OFF |

***Note:*** *OFF indicates protection function is deactivated.*

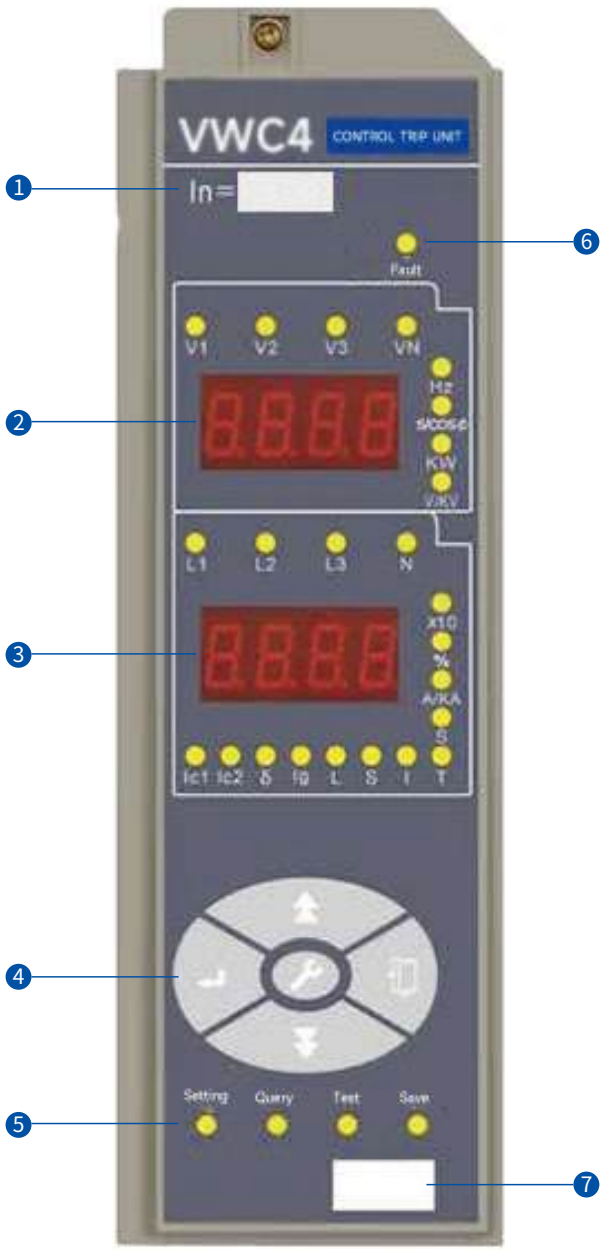
## VWC4 Controller

### Standard function

- Overload long-time delay protection,
  Short circuit short-time delay protection,
  Short circuit instantaneous protection
- Ground Fault Protection
- Function test
- Fault record
- Overload thermal memory
- Self-diagnostic function
- Current measurement
- Fault status indication & Fault value indication

### Optional function

- ☐ Current unbalance protection
- ☐ Signal unit
- ☐ MCR & HCISC
- ☐ Load monitoring
- ☐ Voltage measurement
- ☐ Contact wear equivalent indication
- ☐ Voltage protetion
- ☐ Current leakage protetion
- ☐ Power factor measurement
- ☐ frequency measurement
- ☐ Power measurement
- ☐ Electric energy measurement
- ☐ Voltage measurement




1. Rated current
2. Voltage and Power
3. Current
4. Setting button
5. Setup, query indicators
6. Fault and alarm indicators
7. Test port

***Note:*** *Protection parameters must not be cross set,* $I_r < I_{sd} < I_{io}$

## Panel Display Description

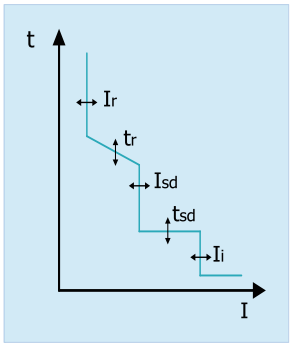
- “HZ” Lighting on,is frequency
- “S/COSΦ” Lighting on,is time;flashing is power factor
- “kW” Lighting on,is active power;flashing is active electric energy
- “%” Lighting on,is contact wear equivalent indication
- “×10” Lighting on,is number of opening and closing operations
- “δ” “%” and “L1/L2/L3” Lighting on,is the imbalance ratio
- “Ig” and “A/kA” Lighting on,is grounding current
- “L1/L2/L3” and “A/kA” Lighting on,is current
- “N” and “A/kA” Lighting on,is N-phase current
- “A/kA” Flashing is kA,lighting on is A
- One of “V1”, “V2”, “V3” and V lighting on,is three phase line voltage
- One of “V1”, “V2”, “V3” and “N” and “V” lighting on,is corresponding phase voltage
- When the “T” lighting on,have the self-diagnostic fault,press Enter show the fault code
- If the fault is resolved, press the return button to clear self-diagnostic fault, “T” no lighting
- If there are multiple diagnostic faults, press the ▲ and ▼ keys to view the fault codes
- Fault code:

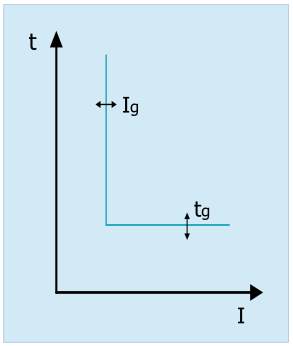
| ER01 | ER02 | ER03 | ER12 | ER13 |
|---|---|---|---|---|
| $E^2$PROM error | A/D error | overtemperature | Circuit breaker refused to operate | contact maintained indication |

## Controller running status:

① **Setting status:**Set lighting on,view or modify the protection setting value
② **Query status:**Query lighting on ,view the fault history
③ **Test status:**Test lighting on,can do the tripping test
④ **Fault status:**Fault lighting on,indication the fault type and cycle display of fault current and time
⑤ **Communication status:**Communication lighting on ,the controller is communicating
⑥ **Storage status:**Storage lighting on,change data once
⑦ **Self-diagnostic status:** “T” lighting on ,have the self-diagnostic fault

## VWC4 Controller protection characteristics




| Overload long-time delay protection | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Current setting value $I_r$,Current tolerance error ±10% | | (0.4～1.0)×$I_n$+OFF (step 1A) | | | | | | | |
| Tripping time $t_r$ tolerance error±15% | Current | Tripping time | | | | | | | |
| | ≤1.05$I_r$ | Inaction within 2h | | | | | | | |
| | >1.20$I_r$ | Action within 1h | | | | | | | |
| | Protection curve (default is $I^2T$) | Tripping time $t_r$ (factor K in bracket) | | | | | | | |
| | Standard inverse time limit $t=K/(N^{0.02}-1)$ | 0.61(0.005) | 0.98(1.0) | 1.47(0.012) | 2.46(0.02) | 3.68(0.03) | 4.91(0.04) | 6.14(0.05) | 8.29(0.075) |
| | | 11.1(0.09) | 17.2(0.14) | 24.6(0.2) | 36.8(0.3) | 49.1(0.4) | 61.4(0.5) | 73.7(0.6) | 86(0.6) |
| | Fast inverse time limit $t=K/(N-1)$ | 2(1) | 3.2(1.6) | 4.8(2.4) | 8(4) | 12(6) | 16(8) | 20(10) | 27(13.5) |
| | | 36(18) | 56(28) | 80(40) | 120(60) | 160(80) | 200(100) | 240(120) | 280(140) |
| | Express inverse time limit $t=K/(N^2-1)$ | 8(10) | 12.8(16) | 19.2(24) | 32(40) | 48(60) | 64(80) | 80(100) | 108(135) |
| | | 144(180) | 224(280) | 320(400) | 480(600) | 640(800) | 800(1000) | 960(1200) | 1120(1300) |
| | Express inverse time limit $t=(K/1.15)\times\log_e[N^2/(N^2-1.15)]$ | 6.22(10) | 9.96(16) | 14.9(24) | 24.9(40) | 37.3(60) | 49.8(80) | 62.2(100) | 84(135) |
| | | 112(180) | 174(280) | 249(400) | 373(600) | 498(800) | 622(1000) | 747(1200) | 871(1300) |
| | High-voltage fuse compatible $t=K/(N^4-1)$ | 2.46(10) | 3.94(16) | 5.9(24) | 9.85(40) | 14.8(60) | 19.7(80) | 24.6(100) | 33.2(135) |
| | | 44.3(180) | 68.9(280) | 98.5(400) | 147(600) | 197(800) | 246(1000) | 295(1200) | 344(1300) |
| | $I^2T$ Table $t=(1.5/N)^2\times K$ | 15(15) | 30(30) | 60(60) | 120(120) | 240(240) | 360(360) | 480(480) | 600(600) |
| | | 720(720) | 840(840) | 960(960) | | | | | |

***Note:*** *N=I/Ir (I is the actual fault current, Ir is the set value of overload current).*
*The above set time value is action delay time when I=1.5Ir, with the of current I increase,the delay time will be decreases which can be calculated according to the curve formula.*

| | |
|---|---|
| Thermal memory protection | 30min+OFF(clear the thermal memory when the power off) |

| Short-circuit short time-delay protection | | |
|---|---|---|
| Current setting value $I_{sd}$,Current tolerance error ±10% | | (1.5～15)×$I_r$+OFF (step1A) |
| Tripping time $t_{sd}$ tolerance error±15% | Fixed time-limit current setting value | 0.1～1s (step 0.1s) |
| | Inverse time-limit current setting value | The curve is the same as the overload long delay curve, and the curve speed is 10 times faster than the overload long delay (dividing the time calculated by the overload delay curve formula by 10 is the inverse delay time of the short delay) |
| Thermal memory protection | | 15min+OFF (clear the thermal memory when the power off) |

***Note:*** *When both the inverse time limit and fixed time limit protection are enabled, the inverse time limit current setting value must be less than the fixed time limit current setting value, otherwise the inverse time limit function will automatically fail. In addition, the actual delay time is not less than the set time of the fixed time limit*

| | | |
|---|---|---|
| **Short-circuit instantaneous protection** | | |
| Current setting value $I_i$,Current tolerance error ±10% | | (1~20)×$I_n$+OFF |
| Action features | | ≤0.85$I_i$ , inaction |
| | | >1.15 $I_i$ , action |
| **Ground protection** | | |
| Current setting value $I_r$,Current tolerance error ±10% | | (0.2~1.0)×$I_n$+OFF (min100A) |
| Action features | | ≤0.8$I_g$ , inaction |
| | | ≥1.0 $I_g$ , delay action |
| Tripping time $t_g$ tolerance error±10% | Fixed time-limit | 0.1～100s+OFF (0.1~1s , step0.1s , 1s~100s , step1s , OFF : alarm does not trip) |
| | Inverse time shear coefficient $C_r$ | 1.5～6+OFF (step 0.5， OFF : inverse time-limit OFF) |
| | Inverse time-limit formula | Formula $t=t_g \times C_r \times I_g/I$<br>t - Delay time; $T_g$ - Set delay time; $C_r$ - Shear coefficient; $I_g$ - Set actioncurrent;<br>I - Ground current; When the multiple of fault current ($I/I_g$) is less than $C_r$, the action characteristic is inverse time characteristic; When the fault current multiple is greater than or equal to $C_r$, the action characteristic is a fixed time limit |
| **Neutral line protection** | | |
| Current setting value $I_N$,Current tolerance error ±10% | | (0.5 , 1.0) × $I_n$+OFF |
| Action time | | same as long time-delay time |
| **Current unbalance protection** | | |
| Protection setting value | | 40%~100%+OFF |
| Action or alarm features | | ≤0.9δ , inaction |
| | | ＞1.1δ , action delay or alarm |
| Delay time (s) | | 0.1～100s+OFF（OFF：Alarm only, inaction,step0.1s） |
| **Load monitoring function** | | |
| Mode 1 | Current setting $I_{c1}$ , $I_{c2}$ Adjustment(A) | (0.2～1.0) ×$I_n$+OFF (min100A ) |
| | Inverse time-limit $t_{c1}$ , $t_{c2}$ (s) | Same overload long delay curve |
| Mode 2 | Current setting $I_{c1}$ , $I_{c2}$ Adjustment(A) | (0.2～1.0) ×$I_n$+OFF (min100A) |
| | Inverse time-limit $t_{c1}$ | Same overload long delay curve |
| | Fixed time-limit $t_{c2}$ | 60s |

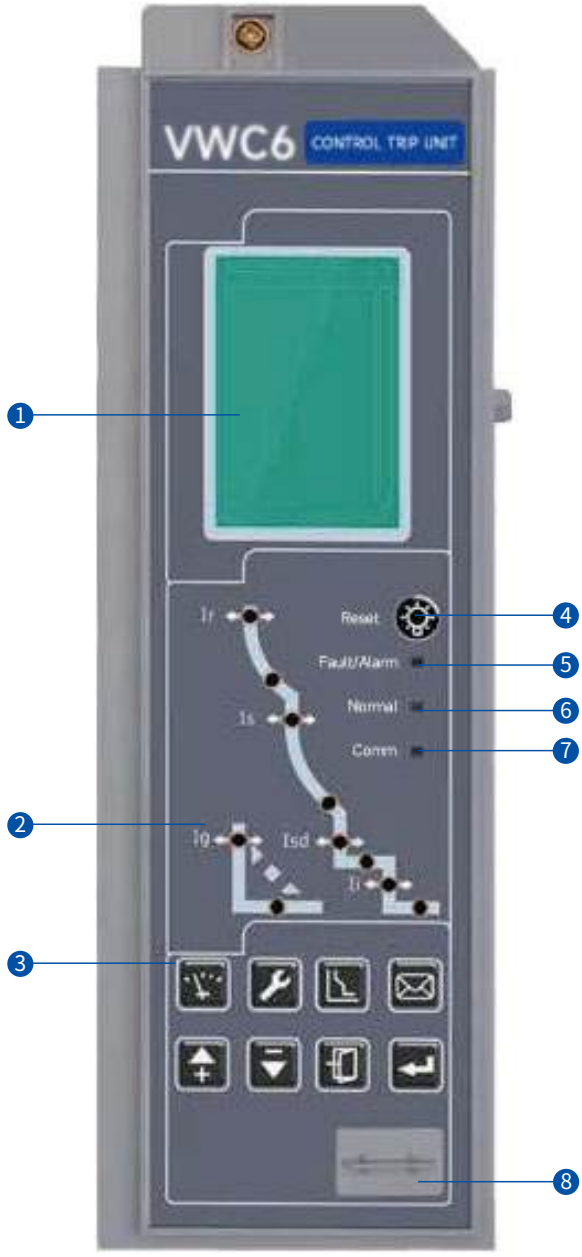
## VWC6 Controller

### Standard function

- Overload long-time delay protection,
  Short circuit short-time delay protection,
  Short circuit instantaneous protection
- Ground Fault Protection
- Function test
- Fault record
- Overload thermal memory
- Self-diagnostic function
- Current measurement
- Fault status indication & Fault value indication
- Contact wear equivalent indication
- Record of operations

### Optional function

- ☐ Current unbalance protection
- ☐ Signal input
- ☐ Signal unit
- ☐ MCR & HCISC
- ☐ Load monitoring
- ☐ Power measurement
- ☐ Voltage measurement
- ☐ Voltage protetion
- ☐ Current leakage protetion
- ☐ Required value protection
- ☐ Power factor measurement
- ☐ Electric energy measurement
- ☐ Selective area interlock
- ☐ Harmonics measurement
- ☐ Frequency measurement
- ☐ Reverse power measurement
- ☐ Electric energy measurement
- ☐ Communication

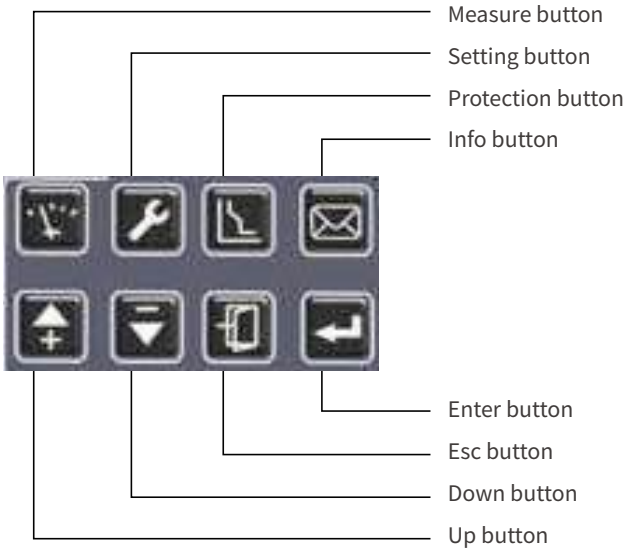



***Note:*** *Protection parameters must not be cross set,* $I_r < I_{sd} < I_{io}$

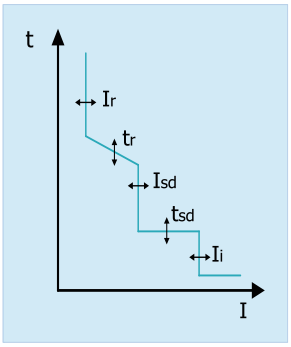
# Controller

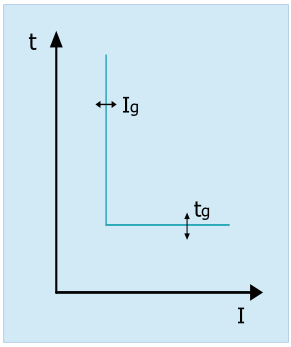


1. LCD interface display
2. Protection curve
3. Function buttons
4. Fault and alarm reset button
5. Fault alarm indicators
6. Normal indicators
7. Communication indicators
8. Test port



## VWC6 Controller protection characteristics




| Overload long-time delay protection | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Current setting value $I_r$,Current tolerance error ±10% | | (0.4～1.0)×$I_n$+OFF (step 1A) | | | | | | | |
| Tripping time $t_r$ tolerance error±15% | Current | Tripping time | | | | | | | |
| | ≤1.05$I_r$ | Inaction within 2h | | | | | | | |
| | >1.20$I_r$ | Action within 1h | | | | | | | |
| | Protection curve (default is $I^2T$) | Tripping time $t_r$ (factor K in bracket) | | | | | | | |
| | Standard inverse time limit $t=K/(N^{0.02}-1)$ | 0.61(0.005) | 0.98(1.0) | 1.47(0.012) | 2.46(0.02) | 3.68(0.03) | 4.91(0.04) | 6.14(0.05) | 8.29(0.075) |
| | | 11.1(0.09) | 17.2(0.14) | 24.6(0.2) | 36.8(0.3) | 49.1(0.4) | 61.4(0.5) | 73.7(0.6) | 86(0.6) |
| | Fast inverse time limit $t=K/(N-1)$ | 2(1) | 3.2(1.6) | 4.8(2.4) | 8(4) | 12(6) | 16(8) | 20(10) | 27(13.5) |
| | | 36(18) | 56(28) | 80(40) | 120(60) | 160(80) | 200(100) | 240(120) | 280(140) |
| | Express inverse time limit $t=K/(N^2-1)$ | 8(10) | 12.8(16) | 19.2(24) | 32(40) | 48(60) | 64(80) | 80(100) | 108(135) |
| | | 144(180) | 224(280) | 320(400) | 480(600) | 640(800) | 800(1000) | 960(1200) | 1120(1300) |
| | Express inverse time limit $t=(K/1.15)\times\log_e[N^2/(N^2-1.15)]$ | 6.22(10) | 9.96(16) | 14.9(24) | 24.9(40) | 37.3(60) | 49.8(80) | 62.2(100) | 84(135) |
| | | 112(180) | 174(280) | 249(400) | 373(600) | 498(800) | 622(1000) | 747(1200) | 871(1300) |
| | High-voltage fuse compatible $t=K/(N^4-1)$ | 2.46(10) | 3.94(16) | 5.9(24) | 9.85(40) | 14.8(60) | 19.7(80) | 24.6(100) | 33.2(135) |
| | | 44.3(180) | 68.9(280) | 98.5(400) | 147(600) | 197(800) | 246(1000) | 295(1200) | 344(1300) |
| | $I^2T$ Table $t=(1.5/N)^2\times K$ | 15(15) | 30(30) | 60(60) | 120(120) | 240(240) | 360(360) | 480(480) | 600(600) |
| | | 720(720) | 840(840) | 960(960) | / | / | / | / | / |

***Note:*** *N=I/Ir (I is the actual fault current, Ir is the set value of overload current).*
*The above set time value is action delay time when I=1.5Ir, with the of current I increase,the delay time will be decreases which can be calculated according to the curve formula.*

| | |
|---|---|
| Thermal memory protection | 30min+OFF(clear the thermal memory when the power off) |

| Short-circuit short time-delay protection | | |
|---|---|---|
| Current setting value $I_{sd}$,Current tolerance error ±10% | | (1.5～15)×$I_r$+OFF (step1A) |
| Tripping time $t_{sd}$ tolerance error±15% | Fixed time-limit current setting value | 0.1～0.4s (step 0.1s) |
| | Inverse time-limit current setting value | The curve is the same as the overload long delay curve, and the curve speed is 10 times faster than the overload long delay (dividing the time calculated by the overload delay curve formula by 10 is the inverse delay time of the short delay) |
| Thermal memory protection | | 15min+OFF (clear the thermal memory when the power off) |

***Note:*** *When both the inverse time limit and fixed time limit protection are enabled, the inverse time limit current setting value must be less than the fixed time limit current setting value, otherwise the inverse time limit function will automatically fail. In addition, the actual delay time is not less than the set time of the fixed time limit*

| | | |
|---|---|---|
| **Short-circuit instantaneous protection** | | |
| Current setting value $I_i$,Current tolerance error ±10% | | (1~20)×$I_n$+OFF (min100A) |
| Action features | | ≤0.85$I_i$ , inaction |
| | | >1.15 $I_i$ , action |
| **Ground protection** | | |
| Current setting value $I_r$,Current tolerance error ±10% | | (0.2~1.0)×$I_n$+OFF (min100A) |
| Action features | | ≤0.8$I_g$ , inaction |
| | | ≥1.0 $I_g$ , delay action |
| Tripping time $t_g$ tolerance error±10% | Fixed time-limit | 0.1～100s+OFF (0.1~1s , step0.1s , 1s~100s , step1s , OFF : alarm does not trip) |
| | Inverse time shear coefficient $C_r$ | 1.5～6+OFF (step 0.5 , OFF : inverse time-limit OFF) |
| | Inverse time-limit formula | Formula $t=t_g \times C_r \times I_g/I$<br>t - Delay time; $T_g$ - Set delay time; $C_r$ - Shear coefficient; $I_g$ - Set actioncurrent;<br>I - Ground current; When the multiple of fault current ($I/I_g$) is less than $C_r$, the action characteristic is inverse time characteristic; When the fault current multiple is greater than or equal to $C_r$, the action characteristic is a fixed time limit |
| Execution mode:tripping + close | | |
| Ground protection (The ground alarm and ground protection functions are independent of each other and have their own independent parameter settings, which can exist simultaneously | | |
| Alarm action setting value | current | (0.2～1.0) × $I_n$ (min100A) |
| | time | 0.1～100s+OFF |
| Alarm cleared setting | current | (0.2～1.0) × $I_n$ (min100A) |
| | time | 0.1～100s+OFF |
| **Neutral line protection** | | |
| Current setting value $I_N$,Current tolerance error ±10% | | (0.5 , 1.0 , 1.6 , 2.0) × $I_n$+OFF |
| Action time | | same as long time-delay time |
| **Current unbalance protection** | | |
| Protection setting value | | 5% ~ 60% (step1%) |
| Delay time | | 0.1 s ~ 40s (step 0.1s) |
| Protection return setting value | | 5% ~ start value (step 1%) |
| Delay time | | start value (step 1%) |
| Action or alarm features | | ≤0.9δ, inaction |
| | | ＞1.1δ, action delay or alarm |
| Execution mode :Tripping+alarm+close | | |

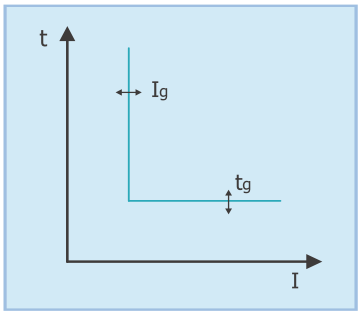
| | | | |
|---|---|---|---|
| **Load monitoring function** | | | |
| Mode 1 | | Current setting $I_{c1}$ , $I_{c2}$ | (0.2～1) ×$I_r$ (min100A , step1A) |
| | | Inverse time-limit $t_{c1}$ , $t_{c2}$ | (20%～80%) ×$t_r$ |
| Mode 2 | | Current setting $I_{c1}$ (unloading) | (0.2～1) ×$I_r$ (min100A) |
| | | Current setting $I_{c2}$ (return) | 0.2×$I_r$～ $I_{c1}$ |
| | | Inverse time-limit $t_{c1}$ | (20%～80%) ×$t_r$ |
| | | Fixed time-limit $t_{c2}$ | 10s～600s |

## VWC4 Controller

| | | | |
|---|---|---|---|
| **Voltage unbalance protection** | | | |
| Protection start setting value | 2%～30%（accuracy 1%） | | |
| Protection action delay time setting（s） | 0.2～60（accuracy 0.1） | | |
| Protection action return setting value | 2%～start value（accuracy 1%） | This set value only exists when the "alarm" execution method , and the return value must be less than or equal to the start value. | |
| Protection return delay time (s) | 0.2～60（accuracy 0.1） | | |
| Action features of voltage unbalance protection/alarm (Accuracy of ±10%) | Actual voltage unbalance rate/setting value ⩾1.1 | Action or alarm according to the set delay time | |
| | Actual voltage unbalance rate/setting value ＜0.9 | Inaction (no alarm) | |
| Voltage unbalance alarm return action features(Accuracy of ±10%) | Actual voltage unbalance rate/setting value ⩽0.9 | Returns according to the set delay time | |
| | Actual voltage unbalance rate/setting value ＞1.1 | Non-return | |
| Voltage unbalance protection alarm DO output | Added the "Voltage Unbalance Alarm" contact output when the alarm execution mode | | |
| **Undervoltage protection** | | | |
| Action setting value(V) | 100～return setting value(step 1) | | |
| Protection action delay time setting value(s) | 0.2～60(step 0.1) | | |
| Action return setting value (V) | action setting value～1200(step 1) | This set value only exists when the "alarm" execution method , and the return value must be less than or equal to the start value. | |
| Protection action delay time setting value(s) | 0.2～60(step 0.1) | | |
| Action features of voltage unbalance protection/alarm (Accuracy of ±10%) | Umax / action setting value＜0.9 | Action or alarm according to the set delay time | |
| | Umax / action setting value⩾1.1 | Inaction (no alarm) | |
| Undervoltage alarm return action features (Accuracy of ±10%) | Umin / action setting value＞1.1 | Returns according to the set delay time | |
| | Umax / action setting value⩽0.9 | Non-return | |
| Undervoltage protection alarm DO output | Added the "Undervoltage Alarm" contact output when the alarm execution mode | | |
| **Overvoltage protection** | | | |
| Action setting value(V) | return setting value～1200（step 1） | | |
| Protection action delay time setting value(s) | 0.2～60（step 0.1） | | |
| Action return setting value (V) | 100～action setting value（step 1） | This set value only exists when the "alarm" execution method , and the return value must be less than or equal to the start value. | |
| Return action delay time setting value(s) | 0.2～60（step 0.1） | | |
| Action features of overvoltage protection/alarm (Accuracy of ±10%) | Umin / action setting value⩾1.1 | Action or alarm according to the set delay time | |
| | Umin / action setting value＜0.9 | Inaction (no alarm) | |
| Overvoltage protection alarm return features（Accuracy of ±10%) | Umax / action setting value⩽0.9 | Returns according to the set delay time | |
| | Umax / action setting value＞1.1 | Non-return | |
| Overvoltage protection alarm DO output | Added the "Overvoltage Alarm" contact output when the alarm execution mode | | |
| **Required current value protection** | | | |
| Protection start setting value | (0.2～1.0)×In（step 2） | | |
| Protection action delay time setting value(s) | 15～1500（step 1） | | |
| action return setting value | 0.2In～start value（step 2） | This set value only exists when the "alarm" execution method , and the return value must be less than or equal to the start value. | |
| Return action delay time setting value(s) | 15～3000（step 1） | | |
| Action features of required current value protection protection/alarm (Accuracy of ±10%) | I /setting value⩾1.1 | Action or alarm according to the set delay time | |
| | I /setting value＜0.9 | Inaction (no alarm) | |
| Voltage unbalance alarm return action features(Accuracy of ±10%) | I /setting value⩽0.9 | Returns according to the set delay time | |
| | I /setting value＞1.1 | Non-return | |
| Required current value protection alarm DO output | Added the "Required current value protection" contact output when the alarm execution mode | | |
| **Phase sequence protection** | | | |
| Setting range of action phase sequence | △ϕ: A, B, C /△ϕ: A, C, B | | |
| Phase sequence protection alarm DO output | Added the "Phase sequence protection" contact output when the alarm execution mode | | |
| Execution mode | Alarm/tripping/close | | |
| **Underfrequency, overfrequency protection** | | | |
| Start setting value | Action start setting value | underfrequency | 45～return value（step 0.5Hz） |
| | | overfrequency | return value～65（step 0.5Hz） |
| | Action delay time setting value (s) | 0.1~5s+OFF（0.1~1s step 0.1，1~5s step 1s） | |
| | Alarm action return setting value (Hz) | underfrequency | start value～65Hz（step 0.5Hz） |
| | | overfrequency | 45Hz～Start value（step 0.5Hz） |
| | | This setting value only exists when the "alarm" execution mode | |
| | Alarm return delay time (s) | 0.2～36.0s（step 0.1s） | |
| Underfrequency, overfrequency protection alarm DO output | Added the "Underfrequency, overfrequency protection alarm" contact output when the alarm execution mode | | |
| Execution mode | Phase sequence protection alarm Alarm/tripping/closeDO output | | |

## Controller protection function description

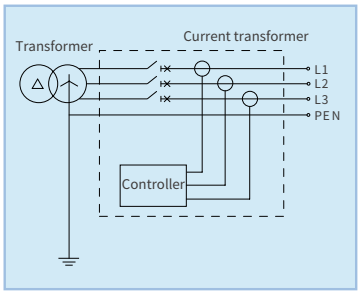
Ground fault protection features




### Ground fault protection

- ■ Current setting value Ig adjustable, when fixed or inverse time limit ground fault protection
- ■ Delay time tg adjustable
- ■ Turning off (OFF), only alarm, no tripping
- ■ Ground protection type
- ☐ Type 1
- ☐ Type 2
- ☐ Type 3
- ☐ Type 4

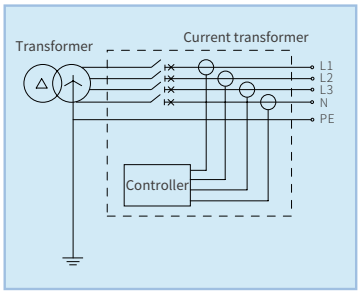
Type 1




### Type1：The TN-C and TN-C-S distribution systems use three-pole circuit breakers without neutral current transformers.

- ☐ The ground fault protection signal from the vector sum of the three-phase current.
- ☐ The protection feature is fixed limit time or inverse limit time protection
- ☐ Only applicable when the three-phase unbalanced current and harmonic current flowing through the PEN neutral protection line are very small

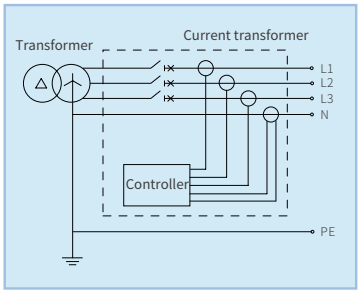
Type 2




### Type 2: The TN-S distribution system use four pole circuit breaker with internal neutral current transformer.

- ☐ The ground fault protection signal from the vectors sum of the three-phase current and N-phase current .
- ☐ The protection feature is fixed limit time or inverse limit time protection

Type 3

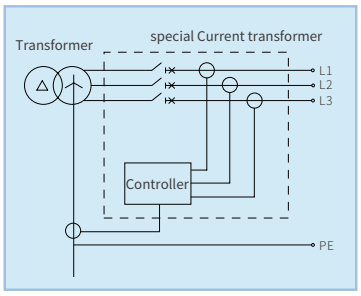



### Type 3: The TN-S distribution system use three-pole circuit breaker and external neutral current transformer.

- ☐ The ground fault protection signal from the vectors sum of the three-phase current and N-phase current .
- ☐ The protection feature is fixed limit time or inverse limit time protection

***Note:*** *The transformer wire length shall not exceed 2m*

Type 4




### Type 4: The T-T distribution system use three-pole circuit breaker and external ground current transformer.

- ☐ The ground fault protection signal from the current on the grounding wire at the center point of the low-voltage terminal of the transformer
- ☐ The protection feature is fixed limit time or inverse limit time protection

***Note:*** *The transformer wire length shall not exceed 2m*

## Signal unit

### DI：input

1-2 programmable optoelectronic coupling switch input (DI)

| | | |
|---|---|---|
| Function setting | General,alarm, tripping, regional interlocking, grounding interlocking, short circuit interlocking | |
| DI Input form | Normally open | Normally closed |

### DO：output

2-4 Switch Output (DO)

| | | | | |
|---|---|---|---|---|
| Function setting | See the table below, “Parameter Settings of Switch Output (DO)” | | | |
| Execution mode | Normally opened level | Normally closed level | Normally opened Impulse | Normally closed Impulse |
| Impulse time | N/A | | 1～360s（step 1s） | |

### Parameter Settings of Switch Output (DO)

| General | Alarm | Fault tripping | Self-diagnostic function alarm | Instantaneous fault |
|---|---|---|---|---|
| Grounding/current leakage fault | Overload pre-alarm | Overload fault | Short-time delay fault | Undervoltage fault |
| Overvoltage fault | Grounding/ leakaging alarm | Current unbalance fault | Neutral line fault | Required value fault |
| Reverse power fault | Voltage unbalance fault | Underfrequency fault | Overfrequency fault | Phase sequence fault |
| MCR/HSISC fault | Short circuit interlocking | Remote On | Remote Off | Required value out-of-limit |
| A-phase required value fault | B-phase required value fault | C-phase required value fault | N-phase required value fault | / |

***Note:*** *The general table function can be setting on the computer in the communication group,when the DI/DO not be setting in the controller*

## Communication

Communication type controller connects to the communication products ,achieve the remote communication, remote regulating, remote control and remote sensing functions,for monitor the circuit breaker working on time.As "Communication Networking Diagram" showing, achieved the local monitoring and ultra remote monitoring to monitor the operating status of circuit breakers and control them on time

# Controller

VOZWEI

The specific configuration and communication interface parameters as the below table show:

| | | |
|---|---|---|
| Applicable controller | | VWC4 , VWC6 (Communication) |
| Communication mode | | RS485(Photoelectric isolation) |
| Communication cable | | Shielded twisted pair cable |
| Communication distance | | 1200m (1) |
| Communication protocol | Standard | Modbus-RTU |
| | Optional | Profibus-DP or DeviceNet |
| | | Accessories required: Profibus-DP conversion module or DeviceNet conversion module |
| Communication instructions | | 《PTU series intelligent controller Modbus communication protocol V3.0》 |
| Transmission rate (bit/s) | | 9.6K , 19.2K , 38.4K（Settable） |
| Communication address | | 0～255（Settable） |
| The 'remote control' function requires additional accessories(2) | | 1）201 Relay moudle；2）power supply moudle |
| When connecting the monitoring system (RS232 interface) with the system, accessories (3) are required | | RS485/RS232 conversion module |
| When connecting the monitoring system (Ethernet interface) with the system, accessories are required | | (ModBUS / TCP / IP) Ethernet conversion module |

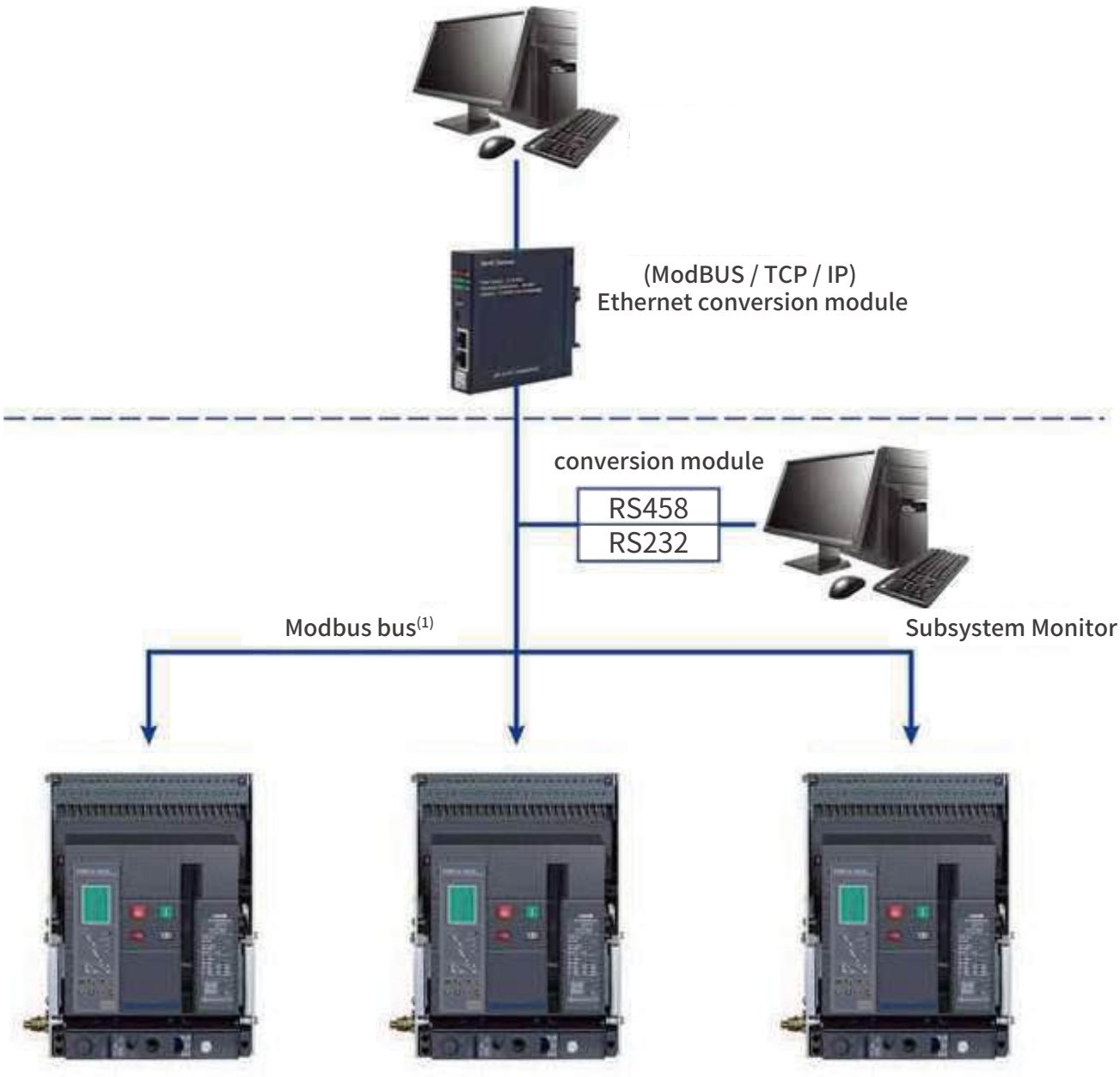
***Note:*** *(1).When the bus length exceeds 1200 meters, addational a "communication relay module";*
*(2).Achieve the remote communication, remote regulating, remote control and remote sensing functions without addational accessories*
*(3).When monitor system have the RS485 interface,no need "RS485/RS232 conversion module*

## Controller factory setting

| | | | |
|---|---|---|---|
| Overload long-time delay protection | | $I_r$ | $I_n$ |
| | | $t_r$ | 60s |
| Short circuit short-time delay protection | | $I_{sd}$ | $3I_r$ |
| | | $t_{sd}$ | 0.1s |
| Short circuit instantaneous protection | | $I_i$ | $6I_n$ |
| Ground Fault Protection | | $I_g$ | OFF |
| Current unbalance protection | | OFF | |
| Neutral line protection | | 100%$I_r$ | |
| Current unbalance protection | | OFF | |
| Undervoltage protection | | OFF | |
| Overvoltage protection | | OFF | |
| Required current value protection | | OFF | |
| Phase sequence protection | | OFF | |
| Underfrequency, overfrequency protection | | OFF | |
| MCR | VW3-20(S/H) | 20kA | |
| | VW3-25(H/HU/HV) | 30kA | |
| | VW3-40(H/HU/HV) | 45kA | |
| | VW3-63(H/HU/HV) | 75kA | |
| HSISC | VW3-20(S/H) | OFF | |
| | VW3-25(H/HU/HV) | OFF | |
| | VW3-40(H/HU/HV) | OFF | |
| | VW3-63(H/HU/HV) | OFF | |

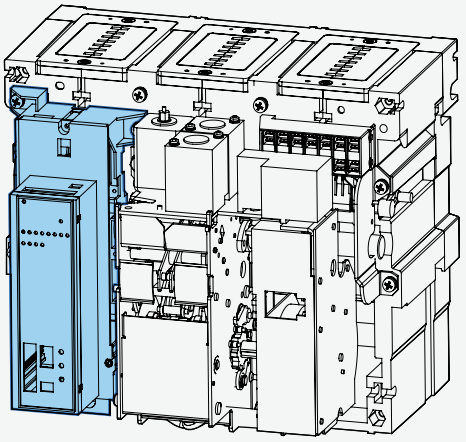
| Contact factory setting | | | | |
|---|---|---|---|---|
| | Contact 1 | Contact 2 | Contact 3 | Contact 4 |
| VWC2/VWC4/VWC6 | Overload fault output | Fault tripping output | Self-diagnostic function alarm | Fault tripping |
| VWC6 (Communication) | | | Remote Off | Remote On |

## Main network communication




***Note:*** *(1) When the bus with Profibus-DP or DeviceNet, need to be converted by Profibus-DP or DeviceNet conversion module*

## Controller

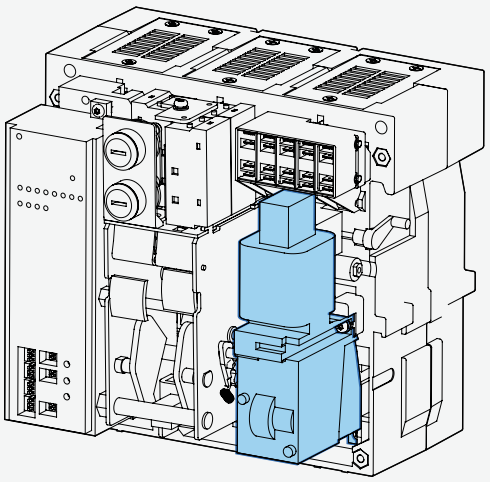



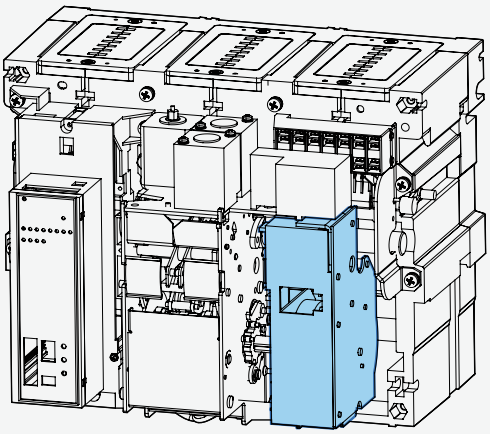
VW3-25 (H/HU/HV)
VW3-40 (H/HU/HV)

| | Controller mode | Supply voltage Ue (V) |
|---|---|---|
| Controller | VWC2 | AC65~500V, DC80~700V |
| | VWC4 | |
| | VWC6 | |
| | VWC6 (Communication) | |

## Motor operating mechanism (D)

The circuit breaker has motor energy storage and automatic energy re-storage function (also energy storage by manual)





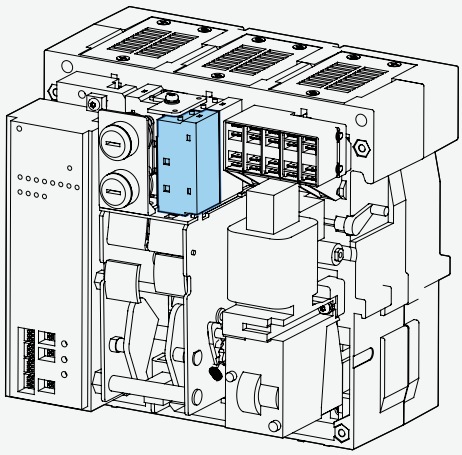
| Rated control supply voltage Us (V) | | AC230 | AC400 | DC110 | DC220 |
|---|---|---|---|---|---|
| Operation voltage | | (0.85～1.1) Us | | | |
| Power consumption | VW3-20 (S/H) | 100VA | | 100W | |
| | VW3-25 (H/HU/HV) | 150VA | | 150W | |
| | VW3-40 (H/HU/HV) | 150VA | | 150W | |
| | VW3-63 (H/HU/HV) | 190VA | | 190W | |
| Energy storage time(s) | | 5s | | | |

# Accessories



## Closed electromagnet (B)

After the energy storage is completed, closed electromagnet release the operating mechanism energy , make the circuit breaker quickly closed.

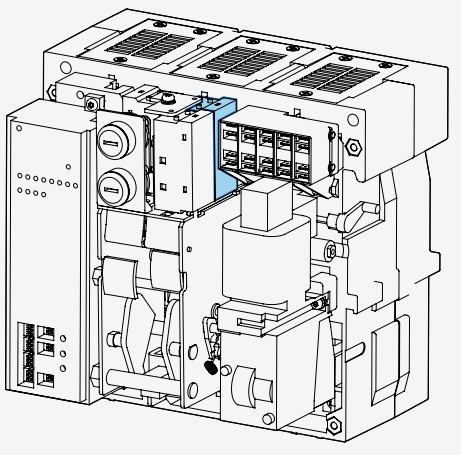


Power Consumption Table of Closed Electromagnet

| Rated insulation voltage(Ui) | Rated control supply voltage(Us) | Closed current | | Instantaneous power | |
|---|---|---|---|---|---|
| | | VW3-20 (S/H) | VW3-25 (H/HU/HV)<br>VW3-40 (H/HU/HV)<br>VW3-63 (H/HU/HV) | VW3-20 (S/H) | VW3-25 (H/HU/HV)<br>VW3-40 (H/HU/HV)<br>VW3-63 (H/HU/HV) |
| 400V | AC380V/AC400V | 1A | 2.1A | 360VA | 780VA |
| | AC220V/AC230V | 1.3A | 2.8A | 295VA | 575VA |
| | DC220V | 1.4A | 2.9A | 280W | 630W |
| | DC110V | 2.1A | 5.2A | 250W | 550W |

## Shunt release (F)

Can disconnect the circuit breaker by remote operation.

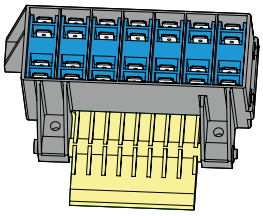


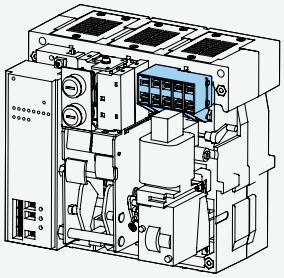
Power Consumption Table of Shunt Release

| Rated insulation voltage(Ui) | Rated control supply voltage(Us) | Closed current | | Instantaneous power | |
|---|---|---|---|---|---|
| | | VW3-20 (S/H) | VW3-25 (H/HU/HV)<br>VW3-40 (H/HU/HV)<br>VW3-63 (H/HU/HV) | VW3-20 (S/H) | VW3-25 (H/HU/HV)<br>VW3-40 (H/HU/HV)<br>VW3-63 (H/HU/HV) |
| 400V | AC380V/AC400V | 1A | 2.1A | 360VA | 780VA |
| | AC220V/AC230V | 1.3A | 2.8A | 295VA | 575VA |
| | DC220V | 1.4A | 2.9A | 280W | 630W |
| | DC110V | 2.1A | 5.2A | 250W | 550W |

## Auxiliary contact

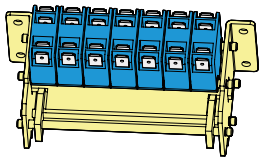
### Internal auxiliary contact

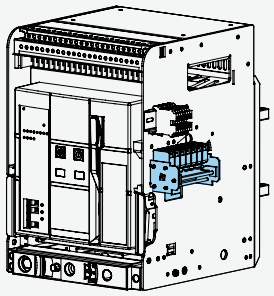




### External auxiliary contact

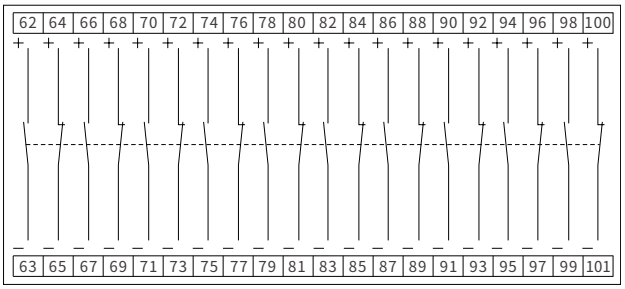
Min 60mm safety distance of circuit breaker after installation



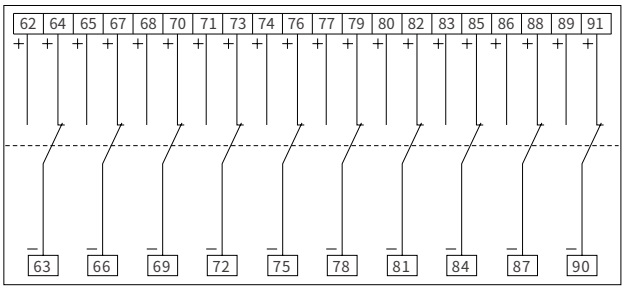


### External auxiliary contact terminal number

Without common point




With common point



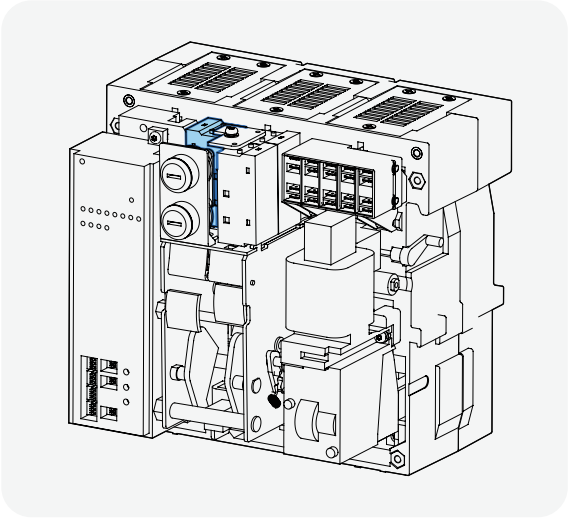

H/HU/HV/Standard have Max 4NO+4NC internal auxiliary contact,if more auxiliary contact ,need the external auxiliary contact

| Auxiliary contact | Rated operational voltage Ue(V) | Rated breaking capacity | Agreed thermal current $I_{th}$ (A) |
|---|---|---|---|
| | AC400 | 800VA | 16 |
| | AC230 | | |
| | DC220 | 300W | |
| | DC110 | | |

| Type | Code | Type | Code |
|---|---|---|---|
| 3NO3NC | A33 | 4NO4NC | A44 |
| 5NO5NC | A55 | 6NO6NC | A66 |
| 7NO7NC | A77 | 8NO8NC | A88 |
| 9NO9NC | A99 | 10NO10NC | A1010 |
| 11NO11NC | A1111 | 12NO12NC | A1212 |
| 13NO13NC | A1313 | 14NO14NC | A1414 |

***Note:*** *1.H/HU/HV series have 3NO 3NC~14NO 14NC*
*NO:normally open contact*
*NC:normally closed contact*

## Undervoltage (loss-of-voltage) release (Q)



| Rated operational voltage (V) | | Undervoltage release | | Loss-of-voltage release | |
|---|---|---|---|---|---|
| | | AC230 | AC400 | AC230 | AC400 |
| Action type | Type | Code | | | |
| | Instantaneous time | Q20 | Q10 | S20 | S10 |
| | Delay time 1s | Q21 | Q11 | S21 | S11 |
| | Delay time 3s | Q23 | Q13 | S23 | S13 |
| | Delay time 5s | Q25 | Q15 | S25 | S15 |
| Action voltage (V) | | (0.35-0.7) Ue | | (0.1-0.35) Ue | |
| Guarantee the reliable closing voltage (V) | | (0.85-1.1) Ue | | | |
| Not guarantee the reliable closing voltage | | ⩽ 0.35Ue | | | |
| Power consumption | | 15VA | | | |

***Note:*** *In thunderstorm prone areas or power grids with unstable power supply voltage, it is recommended to use undervoltage tripping with delay to prevent circuit breaker tripping due to short-time voltage drop. The delay time is generally 1S, 3S, 5S*

Undervoltage release

| Rated insulation voltage(Ui) | Rated control supply voltage(Us) | Instantaneous power | | Maintained power | |
|---|---|---|---|---|---|
| | | VW3-20 (S/H) | VW3-25 (H/HU/HV) VW3-40 (H/HU/HV) VW3-63 (H/HU/HV) | VW3-20 (S/H) | VW3-25 (H/HU/HV) VW3-40 (H/HU/HV) VW3-63 (H/HU/HV) |
| 400V | AC380V/AC400V | 180W | 115W | 3.8W | 3.6W |
| | AC220V/AC230V | 148W | 118W | 2.4W | 3.4W |

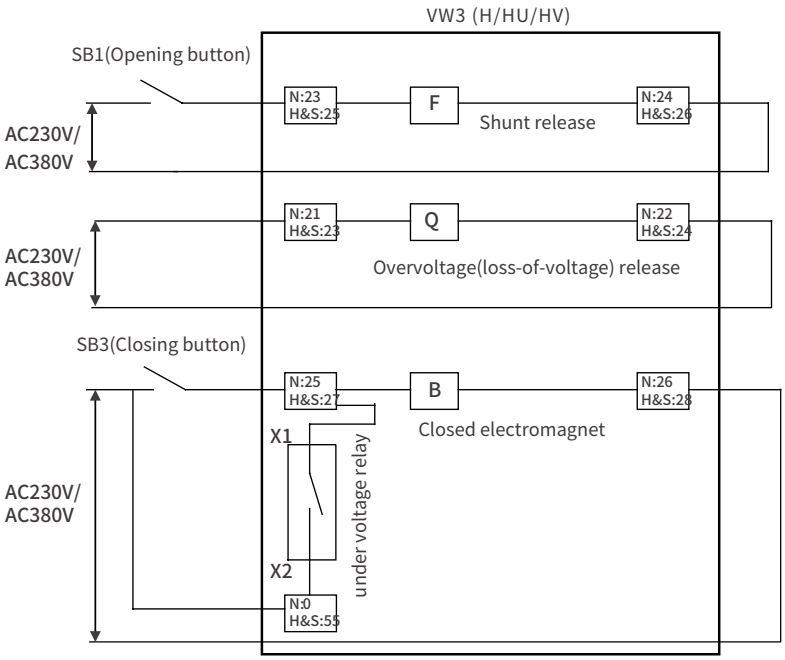
Loss-of-voltage release

| Rated insulation voltage(Ui) | Rated control supply voltage(Us) | Instantaneous power | | Maintained power | |
|---|---|---|---|---|---|
| | | VW3-20 (S/H) | VW3-25 (H/HU/HV) VW3-40 (H/HU/HV) VW3-63 (H/HU/HV) | VW3-20 (S/H) | VW3-25 (H/HU/HV) VW3-40 (H/HU/HV) VW3-63 (H/HU/HV) |
| 400V | AC380V/AC400V | 650W | 280W | 0.43W | 6.36W |
| | AC220V/AC230V | 440W | 105W | 0.36W | 3.24W |

## Grid Undervoltage (loss-of voltage) release

Suitable for distributed PV low-voltage grid connection, achieving voltage loss tripping, overvoltage tripping, and automatic closing upon voltage detection.

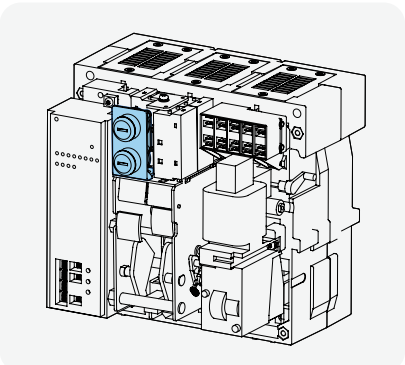
| | |
|---|---|
| Action value of loss-of voltag:⩽20%Ue | Action delay time of loss-of voltage:1-10s |
| Action value of overvoltage:⩾135%Un | Automatic closing voltage:(0.85-1.1)Ue |

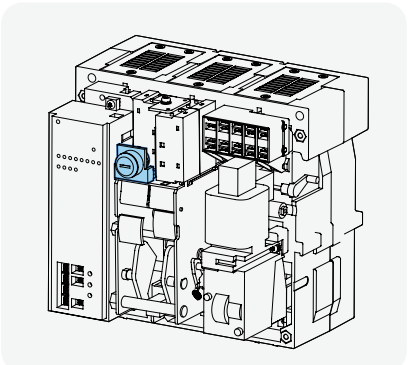



***Note:*** *1. X1 and X2 only send a short signal (200ms) after overvoltage(loss-of-voltage) release recover for 1 second, then the closed electromagnet act .*
*2.The number in the box represents the secondary wiring terminal number. N represents the terminal number of VW3-20 (S/H) circuit breaker, and H&S represents the terminal number of VW3-25 (H/HU/HV), VW3-40 (H/HU/HV), VW3-63 (H/HU/HV).*

## Lock

## Off-position key lock (SF11,SF21,SF31,SF32,SF53)





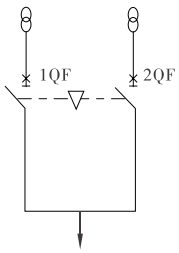
This key lock is locked on the manually disconnected position of the circuit breaker

**Key lock :**

One lock one key (SF11):One circuit breaker with one lock and one key, and not allowed to closed when locked
Two locks one key (SF21):Two circuit breakers with two same lock and one key, and only allowed one circuit breaker closed
Three locks one key (SF31):Three circuit breakers with three same lock and one key, and only allowed one circuit breaker closed
Three locks two keys (SF32):Three circuit breakers with three same lock and two keys, and only allowed two circuit breakers closed
Five locks three keys (SF53): Five circuit breakers with five same lock and three keys, and only allowed three circuit breakers closed

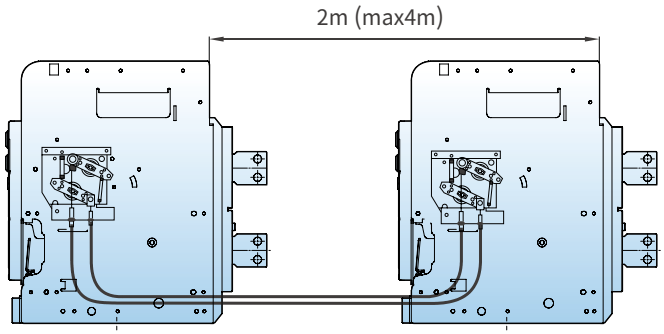
## Mechanical interlocking (SR11,SR12,SR21,SY11)

Circuit figure Possible operating modes



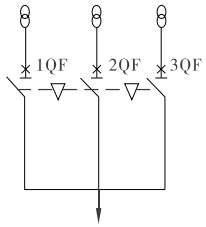

| 1QF | 2QF |
|---|---|
| 0 | 0 |
| 0 | 1 |
| 1 | 0 |

Two interlocking cables circuit breakers or two interlocking hard rods circuit breakers



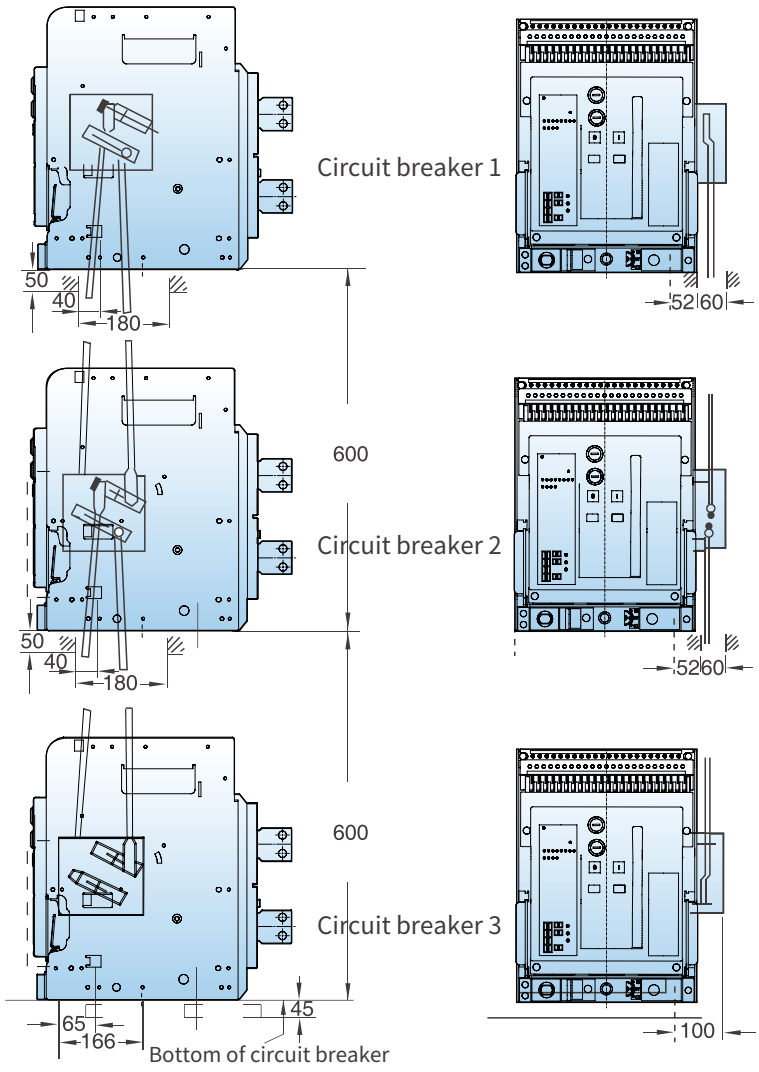

Circuit figure Possible operating modes

Mode 1: Three power supplies can only cloees one circuit breaker




| 1QF | 2QF | 3QF |
|---|---|---|
| 0 | 0 | 0 |
| 1 | 0 | 0 |
| 0 | 1 | 0 |
| 0 | 0 | 1 |

Three circuit breaker interlocking hard rods



# Accessories

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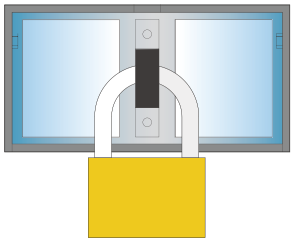
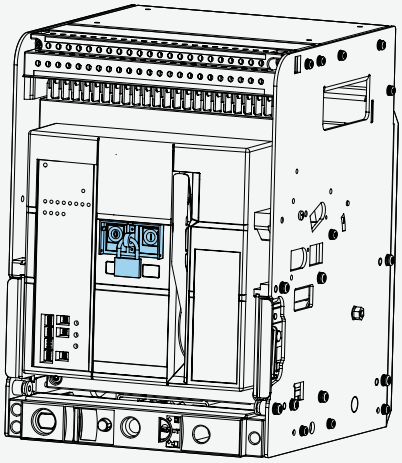
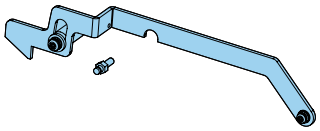
## Button lock (S) (The minimum safety distance 35mm between the cases)

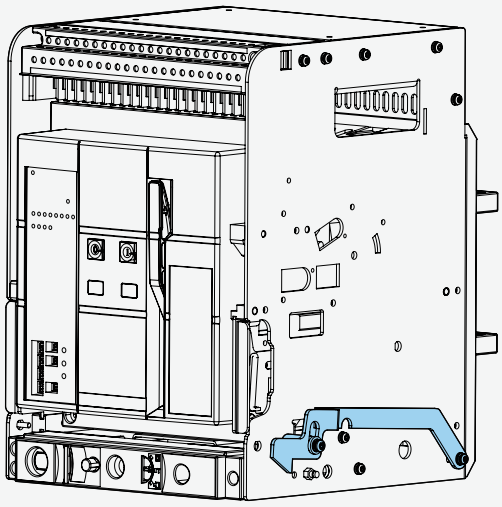




## Door interlock (The minimum safety distance 40mm between the circuit breaker)

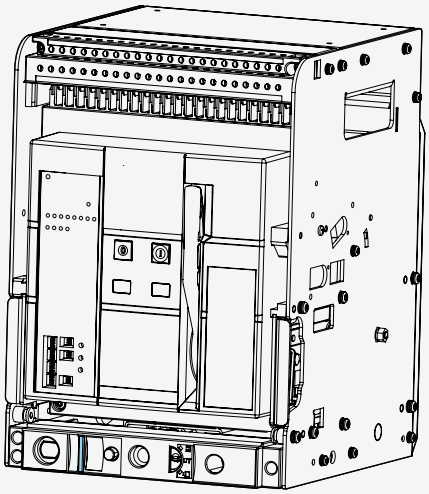
When the circuit breaker at the working or testing position, prohibited to open the cabinet door; The door is opened and the circuit breaker at the connected position, close the door without disconnecting the circuit breaker.





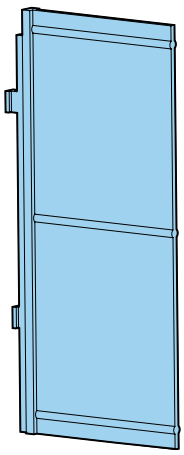
## Drawer type circuit breaker locking device at "separation" position

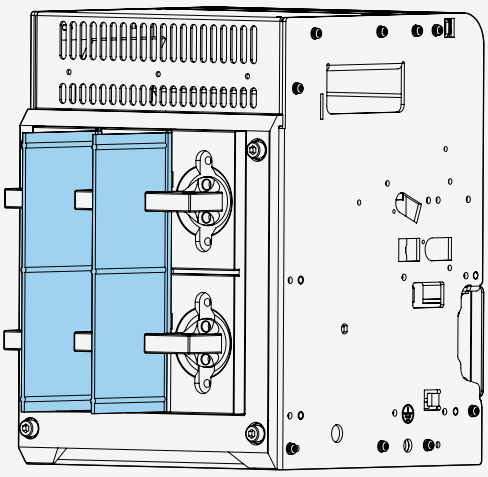
When the drawer type circuit breaker at the separated position, lock the circuit breaker by pull out the rod. After locking, the circuit breaker will not be able to "test" and "connection" positions.



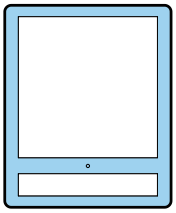
## Phase separator (The minimum safety distance 180mm between the circuit breakers)

The minimum safety distance 100mm between VW3-20 (S/H), and The minimum safety distance 180mm between VW3-25 (H/HU/HV), VW3-40 (H/HU/HV), VW3-63 (H/HU/HV).

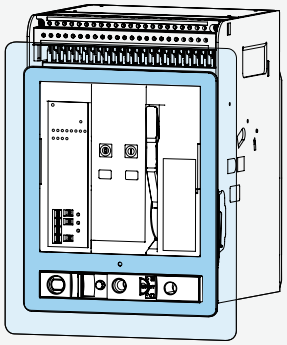




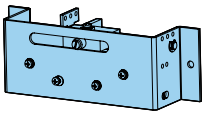
## Doorframe(M)



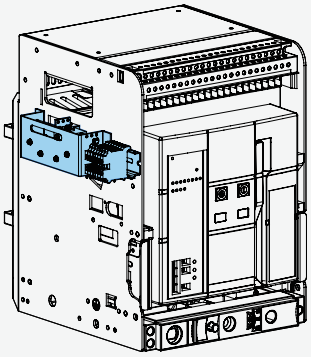
Have the  fixed type and drawout type, it is mainly placed on the door of the cubicle for sealing, and can make the protection level of the circuit breaker reaches IP40. It is beautiful and practical.



## Position indication(CX) (The minimum safety distance 50mm between the circuit breakers)

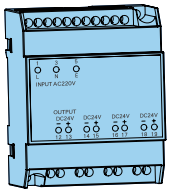


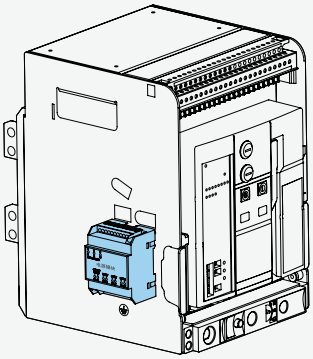
With three contacts to indicate the position status of the circuit breaker (connection, testing, separation). When the circuit breaker is in a certain position, the corresponding contact will be closed.



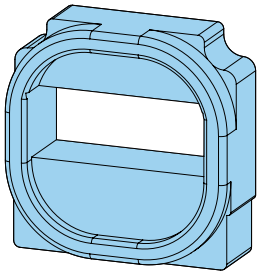
## Power supply module (The minimum safety distance 60mm between the circuit breakers)

AC65~500V, DC80~700V





## External neutral current transformer (N)



The TN-S distribution system use the three pole circuit breaker and requires an external neutral current transformer.
The earth current protection type distribution system use the three pole circuit breaker and requires an external neutral current transformer.
The installation cautions as follows:

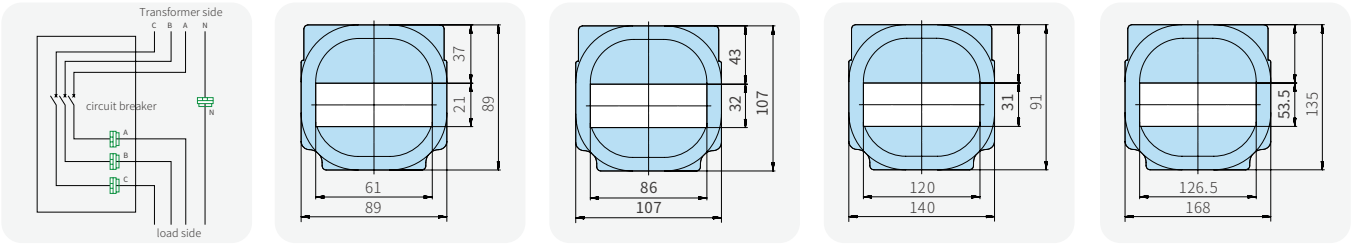
1. The external neutral current transformer has a twisted pair wire with codes 6 and 7 ,connect to same terminal code of the secondary terminal

2.The installation direction of the external neutral current transformer depends on the wiring method of the circuit breaker:

If the line of the circuit breaker upper , the convex surface of the external neutral current transformer should face the neutral grounding point side;

If the line of the circuit breaker down , the plane surface of the external neutral current transformer should face the neutral grounding point side;

3. Current transformer type based on the width of the N-phase busbar

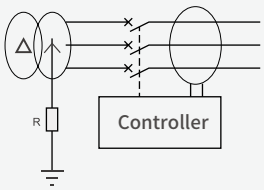



N1 N2 N3 N4

## External leakage current transformer

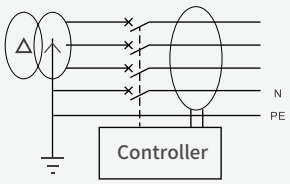
When the residual current protection function, required an external residual current transformer, and the controller does not have the ground protection function.
The external neutral current transformer has a twisted pair wire with codes 6 and 7 ,connect to same terminal code of the secondary terminal
The principle of residual current protection is shown in the following figure

External leakage current transformer



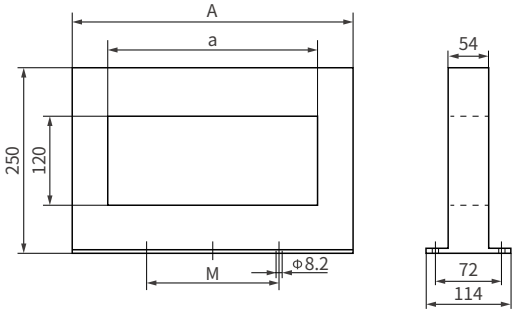

3P

External leakage current transformer




4P

Outline Dimension




| | A | M | a |
|---|---|---|---|
| Type I | 380 | 250 | 285 |
| Type II | 465 | 250 | 370 |
| Type III | 595 | 350 | 500 |

# Main Characteristic



## Power consumption (ambient air temperature +40°C)

Power consumption is the total Power consumption which measured at the circuit breaker frame rated current Inm

| Type | Power consumption (W) | |
|---|---|---|
| | Fixed type | Drawout type |
| VW3-20(S/H) | 123.5 | 331.5 |
| VW3-25(H/HU/HV) | 356.8 | 823.4 |
| VW3-40(H/HU/HV) | 486.7 | 856.8 |
| VW3-63(H/HU/HV) | 787 | 1145 |

### Temperature derated coefficient

If the ambient temperature is higher than +40°C,capacity can be corrected according to the following table

| Type | Rated current (A) | +40°C | +45°C | +50°C | +55°C | +60°C | +65°C | +70°C |
|---|---|---|---|---|---|---|---|---|
| VW3-20(S/H) | 200~1250 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | 1600~2000 | 1 | 1 | 1 | 1 | 0.98 | 0.93 | 0.87 |
| VW3-25(H/HU/HV) | 630~2000 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | 2500 | 1 | 1 | 1 | 1 | 0.99 | 0.94 | 0.88 |
| VW3-40(H/HU/HV) | 1000~2500 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | 2900 | 1 | 1 | 1 | 1 | 1 | 0.96 | 0.94 |
| | 3200 | 1 | 1 | 1 | 1 | 0.94 | 0.92 | 0.90 |
| | 3600 | 1 | 1 | 1 | 0.94 | 0.92 | 0.90 | 0.85 |
| | 4000 | 1 | 0.95 | 0.92 | 0.89 | 0.85 | 0.85 | 0.80 |
| VW3-63(H/HU/HV) | 4000~5000 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | 6300 | 1 | 1 | 0.98 | 0.93 | 0.89 | 0.85 | 0.82 |

If the altitude is higher than 2000m,capacity can be corrected according to the following table

| Altitude (m) | | 2000 | 3000 | 4000 | 4500 | 5000 |
|---|---|---|---|---|---|---|
| Power-frequency withstand voltage(V) | | 5000 | 4500 | 4000 | 3700 | 3500 |
| Rated impulse withstand voltage Uimp(kV) | | 18 | 15 | 15 | 12 | 12 |
| Correction coefficient for short-circuit breaking capacity | | 1 | 0.98 | 0.93 | 0.88 | 0.85 |
| Correction coefficient for working current | VW3-20(S/H) | 1 | 0.98 | 0.93 | 0.9 | 0.87 |
| | VW3-25(H/HU/HV) | 1 | 1 | 1 | 1 | 0.97 |
| | VW3-40(H/HU/HV) | 1 | 0.93 | 0.88 | 0.85 | 0.82 |
| | VW3-63(H/HU/HV) | 1 | 0.98 | 0.93 | 0.90 | 0.87 |

*The derating correction factor is only applicable to the maximum current of the shell frame*

# Size and Connection



## Copper busbar specification

| Frame size rated current Inm (A) | Rated current In (A) | Copper busbar specification | | |
|---|---|---|---|---|
| | | Number of busbar | | Dimension |
| | | Horizontal wiring | Vertical wiring | |
| VW3-20(S/H) | ⩽630 | 1 | | 50×5 |
| | 800 | 1 | | 50×10 |
| | 1000 | 1 | | 50×10 |
| | 1250 | 2 | | 50×10 |
| | 1600 | 2 | | 50×10 |
| | 2000 | 3 | | 60×10 |
| VW3-25(H/HU/HV) | 630 | 2 | / | 80×5 |
| | 800 | 2 | / | 80×5 |
| | 1000 | 2 | / | 80×5 |
| | 1250 | 3 | / | 80×5 |
| | 1600 | 2 | / | 80×10 |
| | 2000 | 3 | / | 80×10 |
| | 2500 | 3 | / | 80×10 |
| VW3-40(H/HU/HV) | 1000 | 2 | 1 | 80×5 |
| | 1250 | 3 | 2 | 80×5 |
| | 1600 | 2 | | 80×10 |
| | 2000 | 3 | 2 | 80×10 |
| | 2500 | 3 | | 80×10 |
| | 2900 | 3 | | 100×10 |
| | 3200 | 4 | | 100×10 |
| | 3600 | 5 | 4 | 100×10 |
| | 4000 | 5 | 4 | 100×10 |
| VW3-63(H/HU/HV) | 4000 | 5 | 4 | 100×10 |
| | 5000 | 7 | 5 | 100×10 |
| | 6300 | 10 | 8 | 100×10 |

*The table indicates the copper busbar specifications adopted when the circuit breaker is under the ambient temperature of 40°C and the open wide installation under the heating condition meets the stipulation in GB14048.2.*

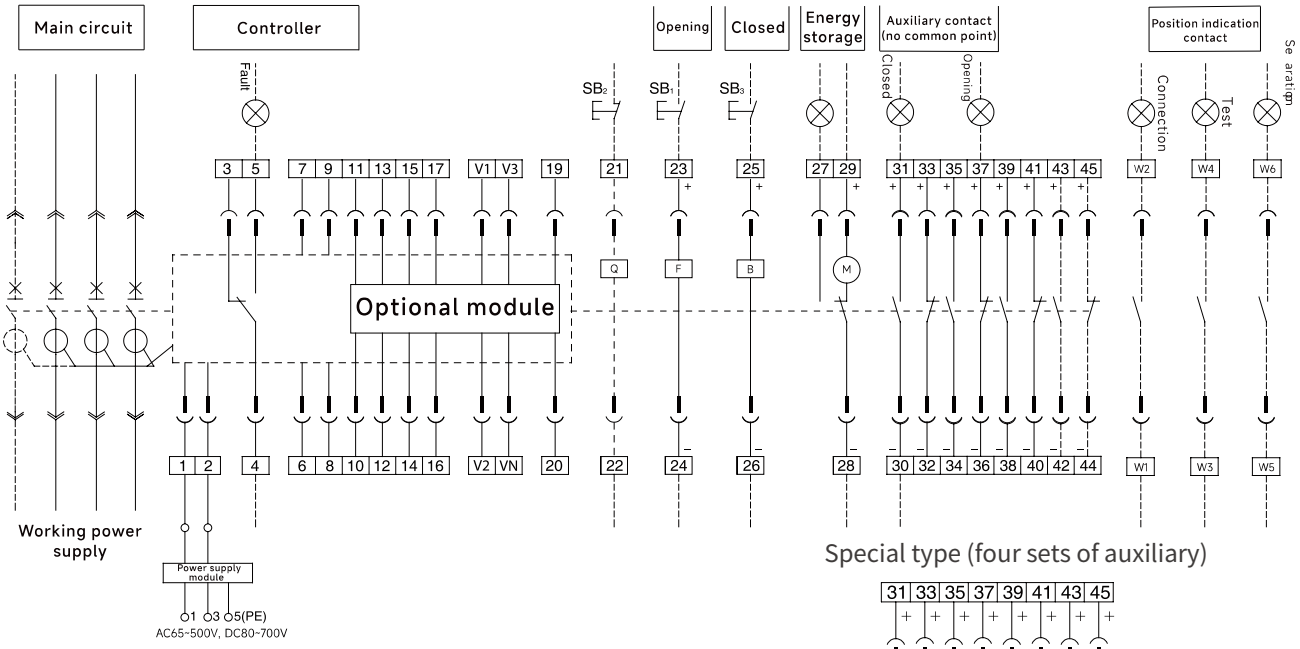
### Recommended screw used of outlet busbar diameter

| Circuit breaker type | Outlet busbar diameter | Screws grade 8.8 (with washer) | Tightening torque |
|---|---|---|---|
| VW3-20(S/H) | Φ11 | M10 | 50N.m |
| VW3-25 (H/HU/HV)<br>VW3-40(H/HU/HV)<br>VW3-63 (H/HU/HV) | ϕ13 | M12 | 70N.m |

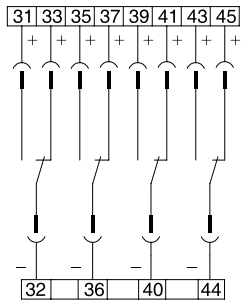
# Size and Connection

VOZWEI

## VW3-20(S/H) Electrical Wiring Diagram




Special type (four sets of auxiliary)




***Note:*** ***SB1*** *Shunt button* ***SB3*** *Close button*
***F*** *Shunt release* ***B*** *Closed electromagnet*
***M*** *Motor operating mechanism*

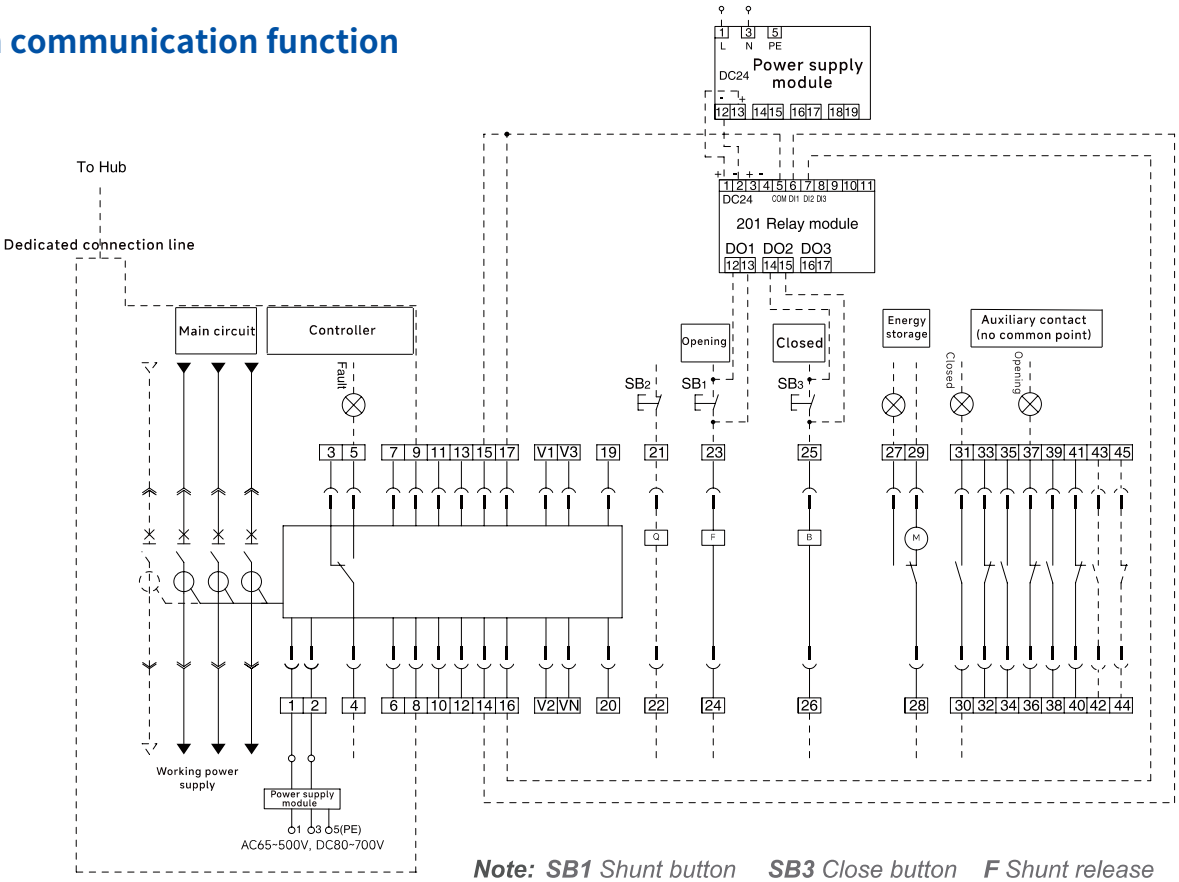
| Terminal Number | | | |
|---|---|---|---|
| 1#, 2# | Working power supply | 21#, 22# | Under-voltage release or loss of voltage release |
| 3#, 4#, 5# | Fault tripping contact output | 23#, 24# | Shunt release |
| 6#, 7# | External transformer or external leakage current transformer | 25#, 26# | Closed electromagnet |
| 8#, 9# | Communication | 27#, 28#, 29# | Motor operating mechanism |
| 10#, 11# | First contact output | 30#~45# | Auxiliary contact |
| 12#, 13# | Second contact output | V1 | A-phase wiring (input voltage ⩽ 230V) |
| 14#, 15# | Third contact output | V2 | B-phase wiring (input voltage ⩽ 230V) |
| 16#, 17# | Fourth contact output | V3 | C-phase wiring (input voltage ⩽ 230V) |
| 19# | Communication shielded grounding wire | VN | N-phase wiring |
| 20# | PE-phase wiring | / | / |

***Note:*** *(1) Position contact terminal numbers W1 # -W6 # do not connect the secondary terminal*
*(2)If the control power supply voltage of F, B and M is different, cconnect to different power sources separately*
*(3)Terminals 29 # (VW3-20S/VW3-20H) can be directly connect to the power supply (automatic pre energy storage), or can be connect to the power supply after the normally open button (manual pre energy storage)*
*(4)Indicator light, button switch are provided by user*
*(5)Select the contact output function according to the "DO Function Setting Table" on page 42*
*(6)The above circuit diagrams is the circuit breaker in the open position.*
*(7)The shunt release coil is of the long-term energized type and defaults to the pulse type. If choose to maintain type coil, please contact the manufacturer.*
*(8)When connecting the auxiliary contact to a load, please keep the load in the same position and direction as the auxiliary contact, otherwise it may cause the auxiliary contact to burn out Do not connect the normally closed contacts of this machine in series with the closed coil, otherwise it will cause anti bounce failure.*

# Size and Connection

VOZWEI

## With communication function




***Note:*** ***SB1*** *Shunt button* ***SB3*** *Close button* ***F*** *Shunt release*
***B*** *Closed electromagnet* ***M*** *Motor operating mechanism*

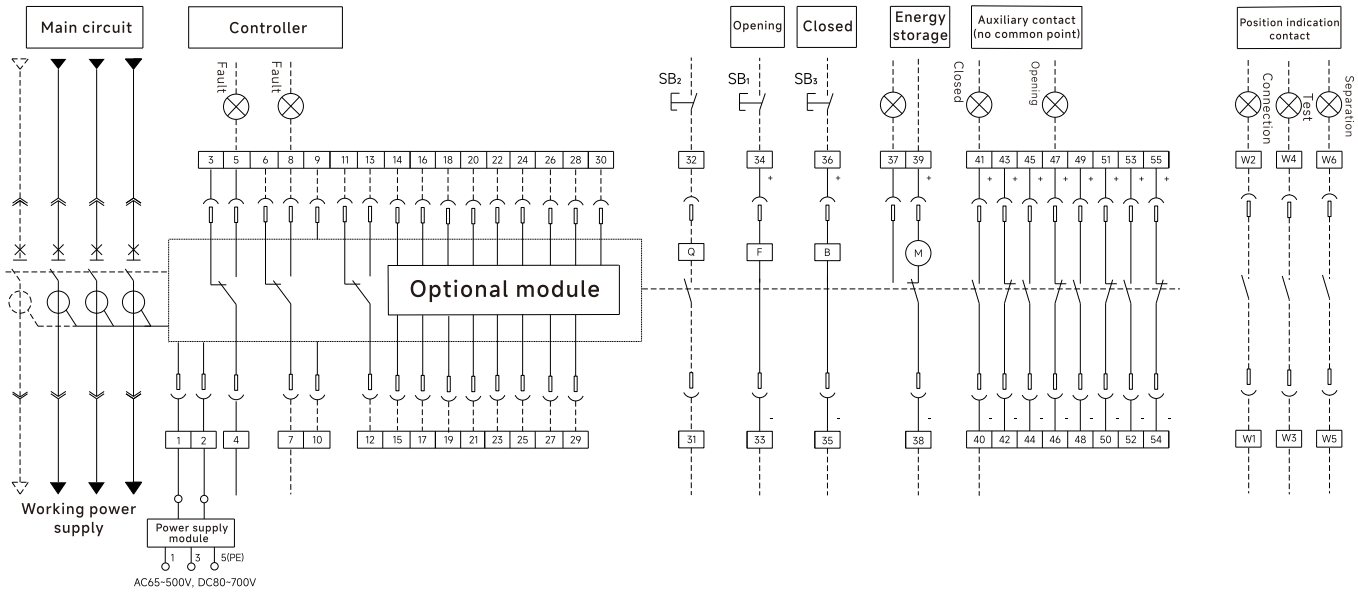
| Terminal Number | | | |
|---|---|---|---|
| 1#, 2# | Working power supply | 21#, 22# | Under-voltage release or loss of voltage release |
| 3#, 4#, 5# | Fault tripping contact output | 23#, 24# | Shunt release |
| 6#, 7# | External transformer or external leakage current transformer | 25#, 26# | Closed electromagnet |
| 8#, 9# | Communication | 27#, 28#, 29# | Motor operating mechanism |
| 10#, 11# | First contact output | 30#~45# | Auxiliary contact |
| 12#, 13# | Second contact output | V1 | A-phase wiring (input voltage ⩽ 230V) |
| 14#, 15# | Third contact output | V2 | B-phase wiring (input voltage ⩽ 230V) |
| 16#, 17# | Fourth contact output | V3 | C-phase wiring (input voltage ⩽ 230V) |
| 19# | Communication shielded grounding wire | VN | N-phase wiring |
| 20# | PE-phase wiring | / | / |

***Note:*** *(1) Position contact terminal numbers W1 # -W6 # do not connect the secondary terminal*
*(2)If the control power supply voltage of F, B and M is different, cconnect to different power sources separately*
*(3)Terminals 29 # (VW3-20S/VW3-20H) can be directly connect to the power supply (automatic pre energy storage), or can be connect to the power supply after the normally open button (manual pre energy storage)*
*(4)Indicator light, button switch are provided by user*
*(5)Select the contact output function according to the "DO Function Setting Table" on page 42*
*(6)The above circuit diagrams is the circuit breaker in the open position.*
*(7)The shunt release coil is of the long-term energized type and defaults to the pulse type. If choose to maintain type coil, please contact the manufacturer.*
*(8)When connecting the auxiliary contact to a load, please keep the load in the same position and direction as the auxiliary contact, otherwise it may cause the auxiliary contact to burn out Do not connect the normally closed contacts of this machine in series with the closed coil, otherwise it will cause anti bounce failure.*

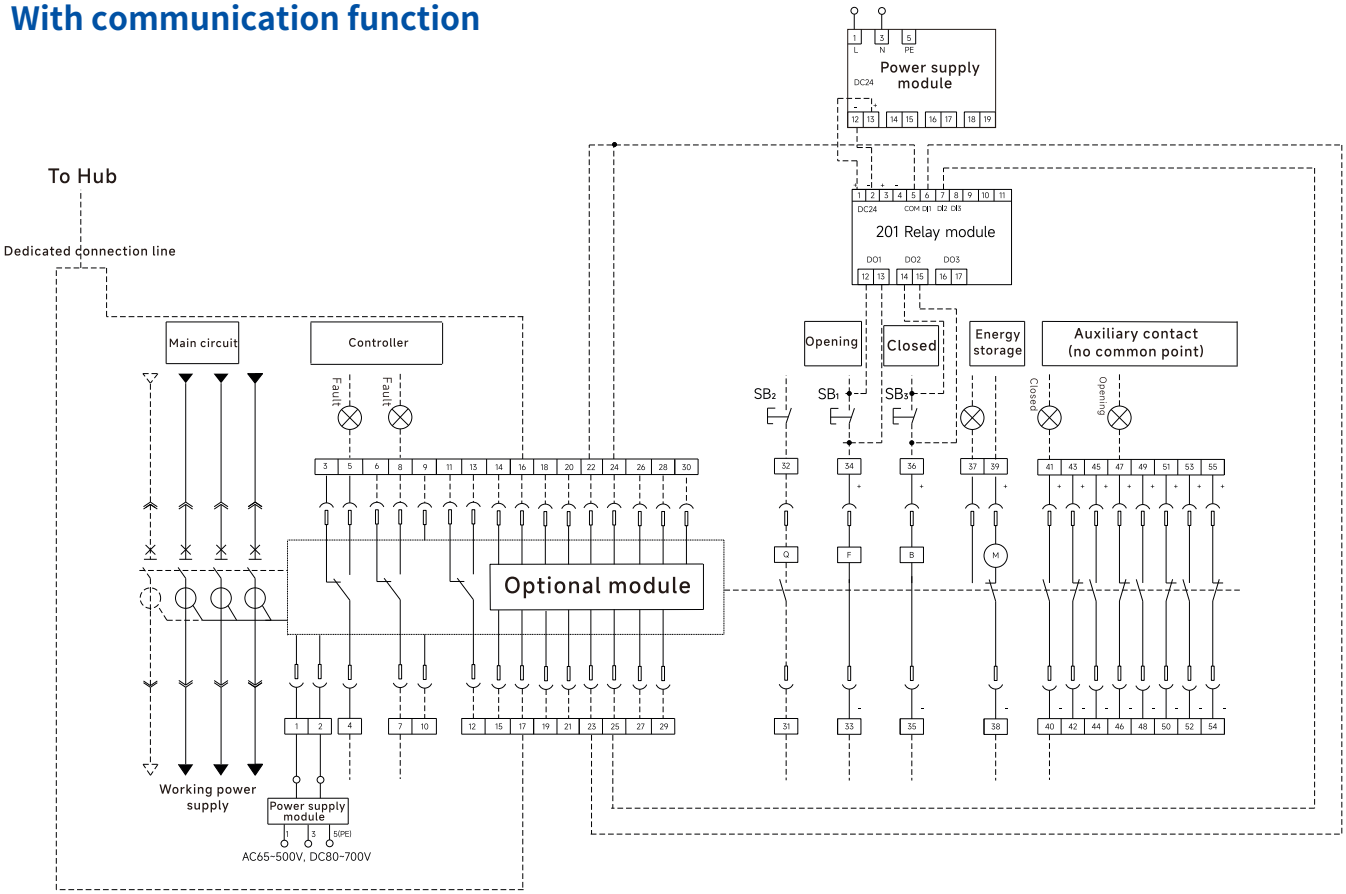
# Size and Connection

VOZWEI

## VW3-25(H/HU/HV), VW3-40(H/HU/HV), VW3-63(H/HU/HV) Electrical Wiring Diagram



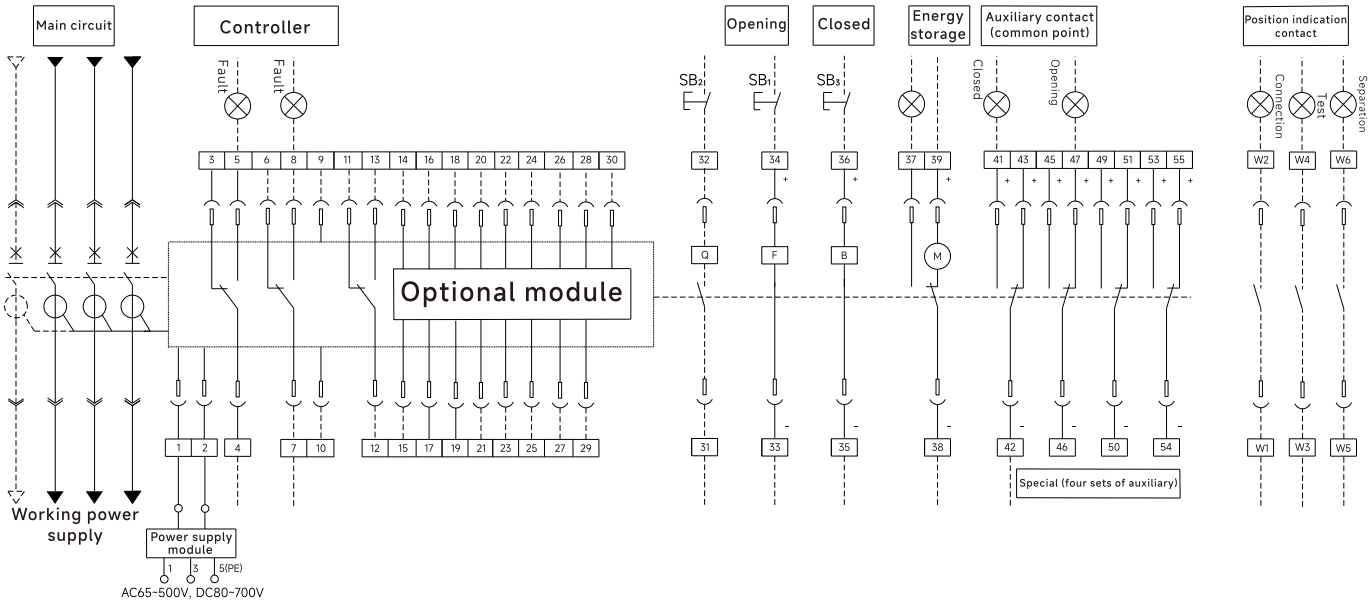

## With communication function



# Size and Connection

VOZWEI

## Special (four sets of auxiliary)




***Note:*** ***SB1*** *Shunt button* ***SB3*** *Close button* ***F*** *Shunt release* ***B*** *Closed electromagnet* ***M*** *Motor operating mechanism*

| Terminal Number | | | |
|---|---|---|---|
| 1#, 2# | Working power supply | 26# | A-phase wiring (input voltage ⩽ 230V) |
| 3#, 4#, 5# | Fault tripping contact output 1 | 27# | B-phase wiring (input voltage ⩽ 230V) |
| 6#, 7#, 8# | Fault tripping contact output 2 | 28# | C-phase wiring (input voltage ⩽ 230V) |
| 9#, 10# | Remote reset | 29# | N-phase wiring |
| 11#, 12#, 13# | Close ready signal output unit | 30# | PE-phase wiring |
| 14#, 15# | External transformer or external leakage current transformer | 31#, 32# | Under-voltage release or loss of voltage release |
| 16#, 17# | Communication | 33#, 34# | Shunt release |
| 18#, 19# | First contact output | 35#, 36# | Closed electromagnet |
| 20#, 21# | Second contact output | 37#, 38#, 39# | Motor operating mechanism |
| 22#, 23# | Third contact output | 40#~55# | Auxiliary contact |
| 24#, 25# | Fourth contact output | / | / |

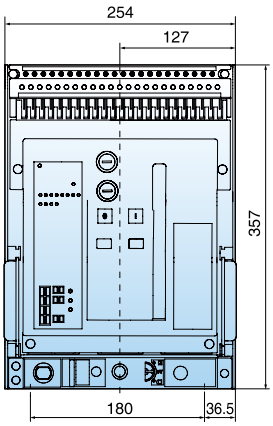
***Note:*** *(1) Position contact terminal numbers W1 # -W6 # do not connect the secondary terminal*
*(2)If the control power supply voltage of F, B and M is different, cconnect to different power sources separately*
*(3)Terminals 39 # (VW3-25H/VW3-40H/VW3-63H) can be directly connect to the power supply (automatic pre energy storage), or can be connect to the power supply after the normally open button (manual pre energy storage)*
*(4)Indicator light, button switch are provided by user*
*(5)Select the contact output function according to the "DO Function Setting Table" on page 1-23*
*(6)The above circuit diagrams is the circuit breaker in the open position.*
*(7)The shunt release coil is of the long-term energized type and defaults to the pulse type. If choose to maintain type coil, please contact the manufacturer.*

# Size and Connection

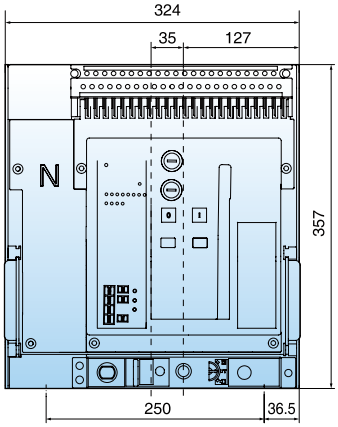
VOZWEI

## Drawout type (VW3-20S/VW3-20H)

### Front view

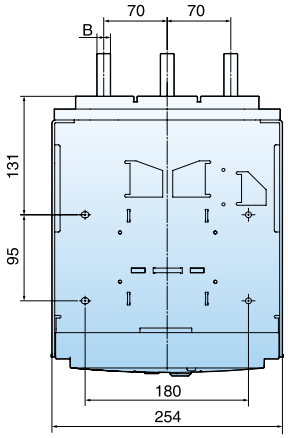


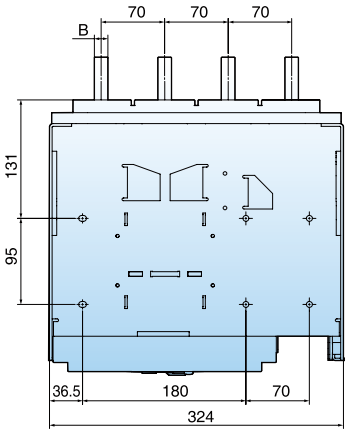

3 pole

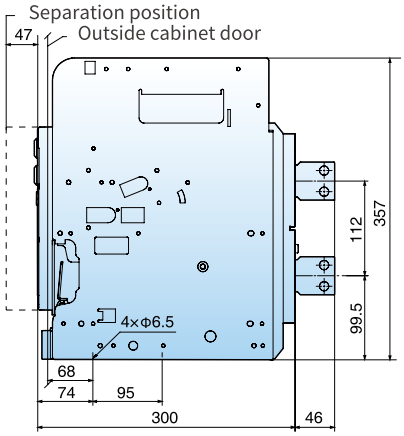


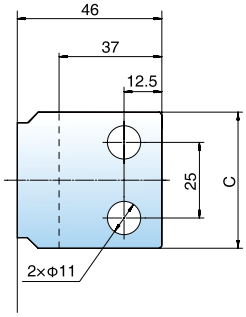

4 pole

### Vertical Wiring



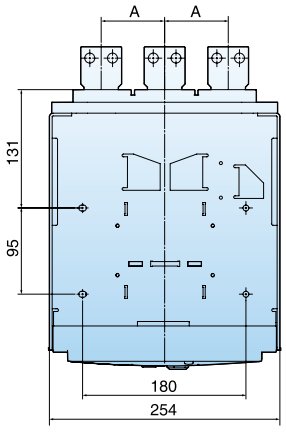



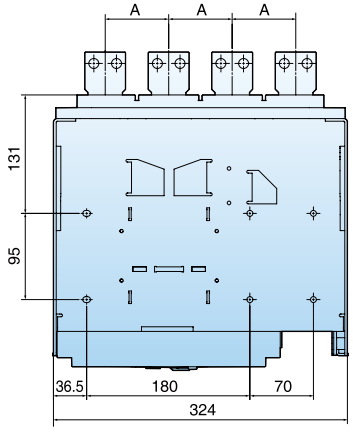
# Size and Connection

VOZWEI

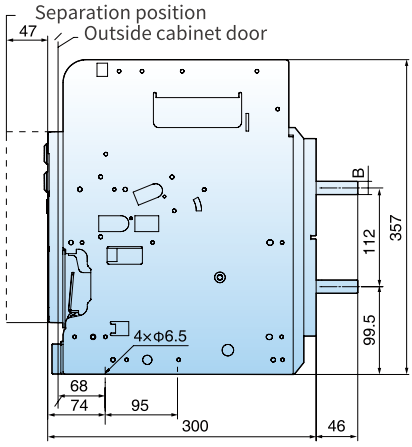
## Horizontal Wiring

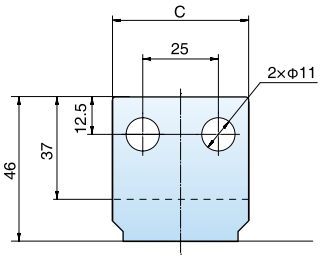



3 pole



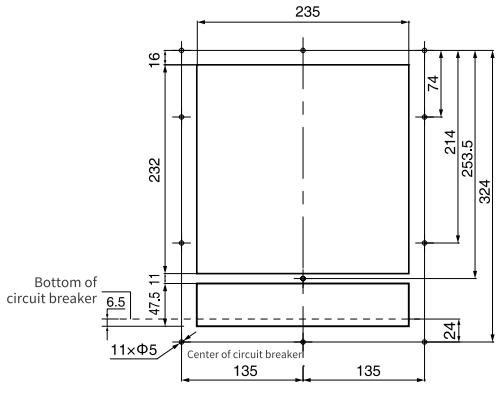

4 pole



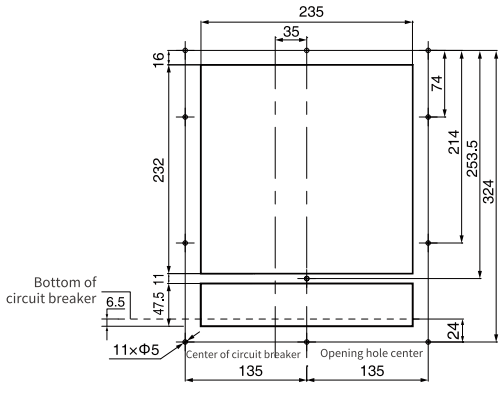




| Current | VW3-20 (200~630A) | VW3-20 (800~1250A) | VW3-20 (1600A) | VW3-20 (2000A) |
|---|---|---|---|---|
| Dimension A (mm) | 70 | 70 | 70 | 3P:85/4P:80 |
| Dimension B (mm) | 5 | 10 | 15 | 15 |
| Dimension C (mm) | 45 | 45 | 45 | 60 |

## Cabinet door open hole dimension




3P



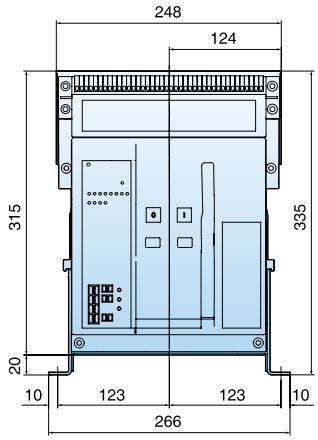

4P

# Size and Connection

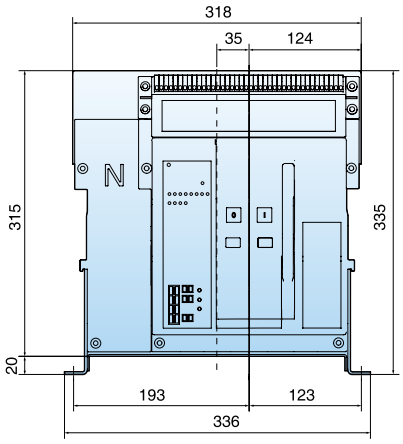
VOZWEI

## Fixed type (VW3-20S/VW3-20H)

### Front view

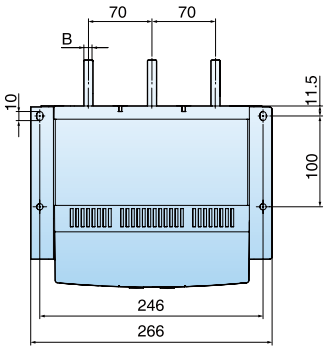


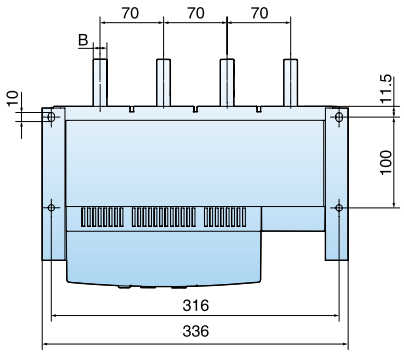

3 pole



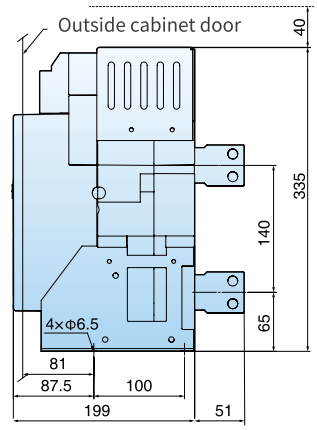

4 pole

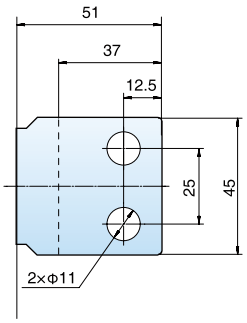
### Vertical Wiring




Distance for dismantling the arc extinguishing chamber

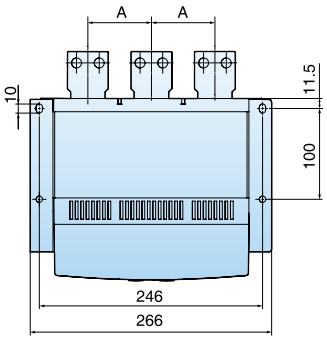


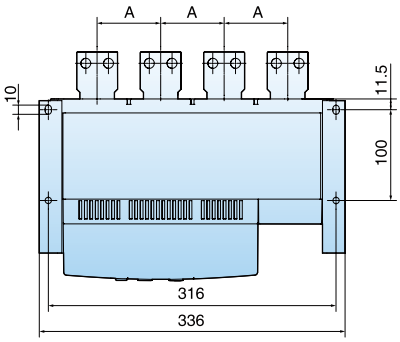



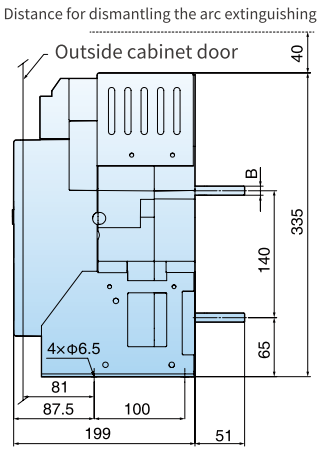
# Size and Connection

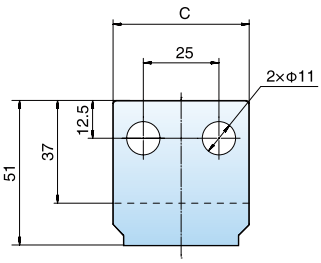
VOZWEI

## Vertical Wiring

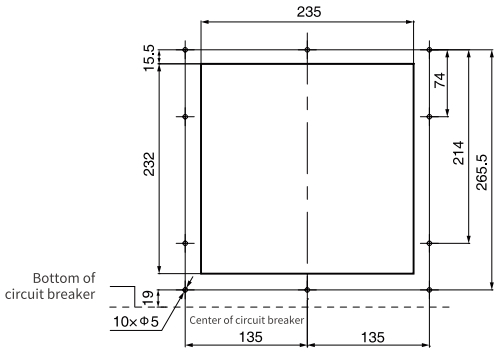


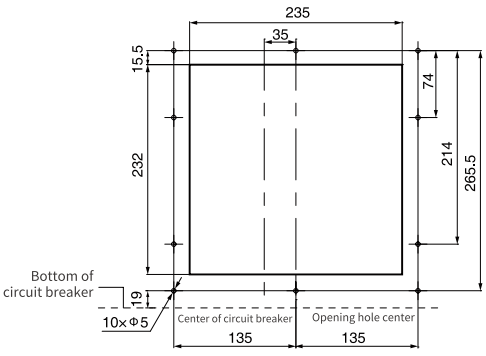




| Current | VW3-20 (200~630A) | VW3-20 (800~1250A) | VW3-20 (1600A) | VW3-20 (2000A) |
|---|---|---|---|---|
| Dimension A (mm) | 70 | 70 | 70 | 3P:85/4P:80 |
| Dimension B (mm) | 5 | 10 | 15 | 15 |
| Dimension C (mm) | 45 | 45 | 45 | 60 |




3P



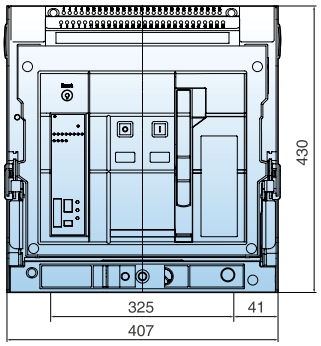

4P

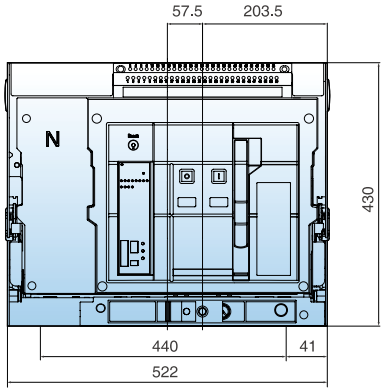
# Size and Connection

VOZWEI

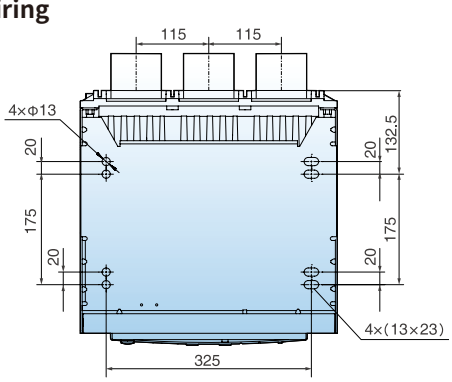
## Drawout type (VW3-25H/VW3-25HU/VW3-25HV)

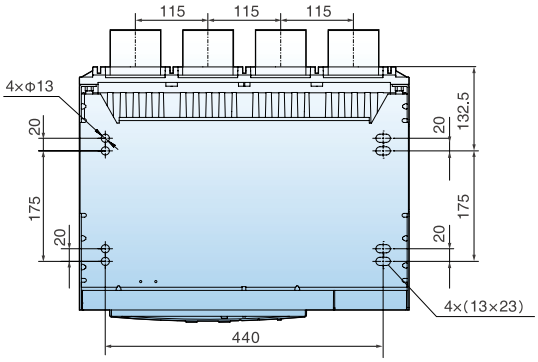
### Front view

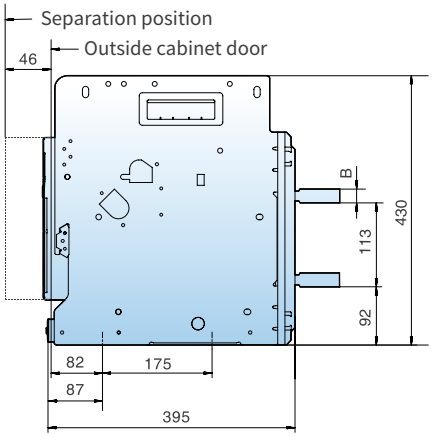


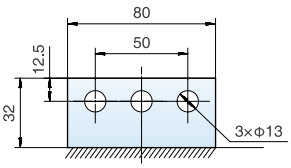




### Horizontal Wiring

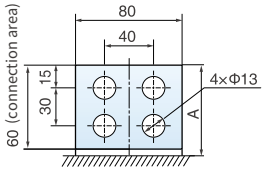


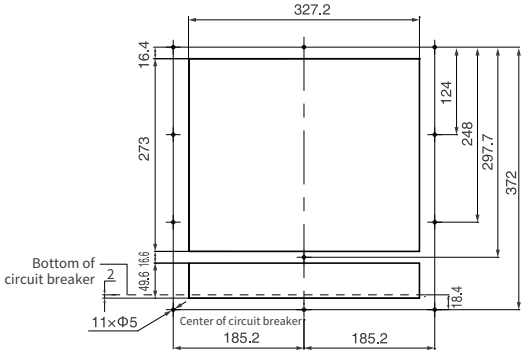

Standard



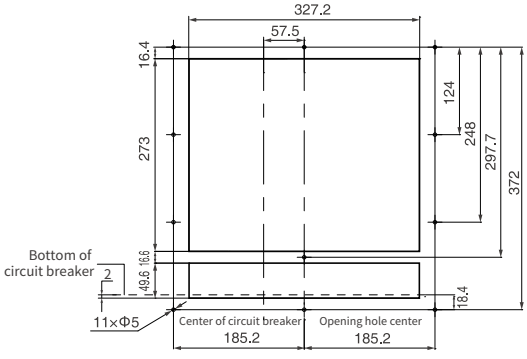

Extended

| Current | VW3-25H (630～1600A) | VW3-25H (2000～2500A) |
|---|---|---|
| Dimension A(mm) | 65 | 75 |
| Dimension B(mm) | 10 | 20 |

### Cabinet door open hole dimension




3P



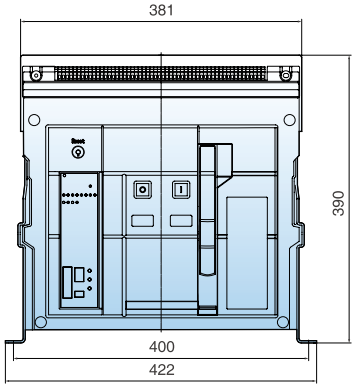

4P

# Size and Connection

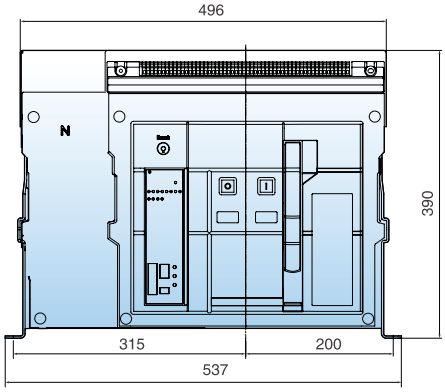
VOZWEI

## Fixed type (VW3-25H/VW3-25HU/VW3-25HV)

### Front view

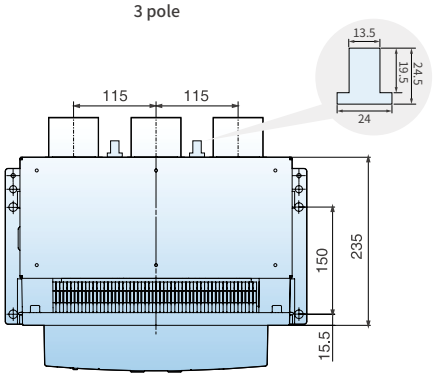


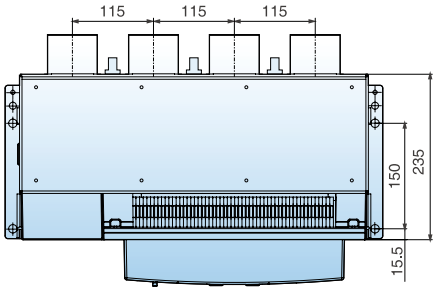

3 pole



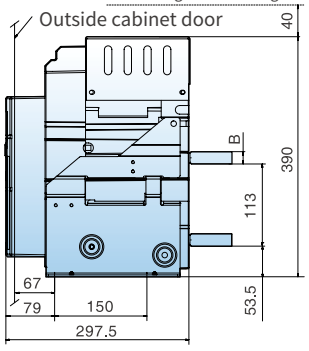

4 pole

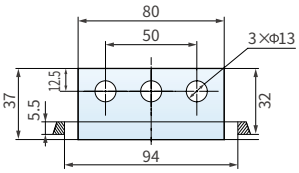
### Horizontal Wiring



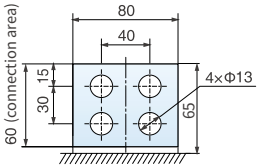




Distance for dismantling the arc extinguishing chamber



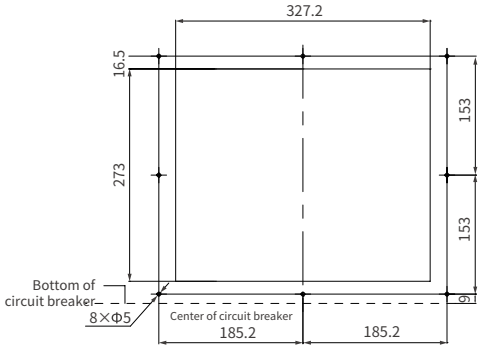

Standard



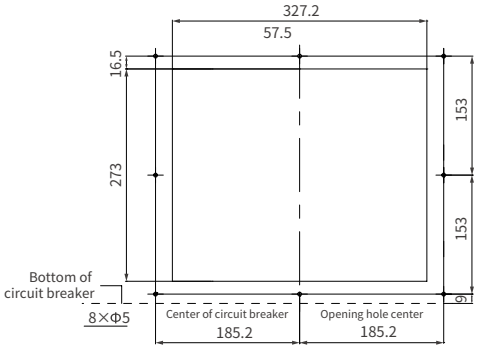

Extended

| Current | VW3-25H (630～1600A) | VW3-25H (2000～2500A) |
|---|---|---|
| Dimension B(mm) | 10 | 20 |

### Cabinet door open hole dimension



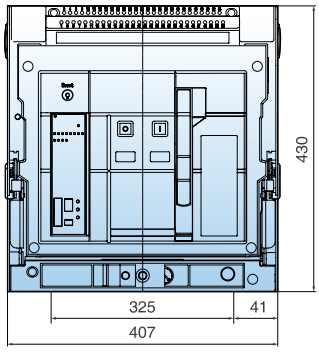

3P



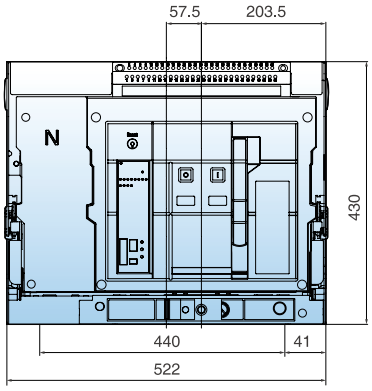

4P

## Drawout type (VW3-40H/VW3-40HU/VW3-40HV, 1000～3200A)

### Front view

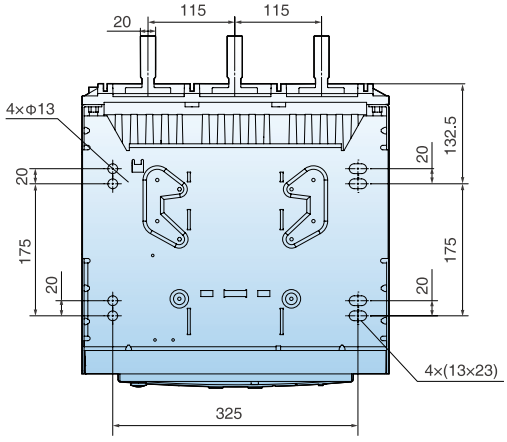


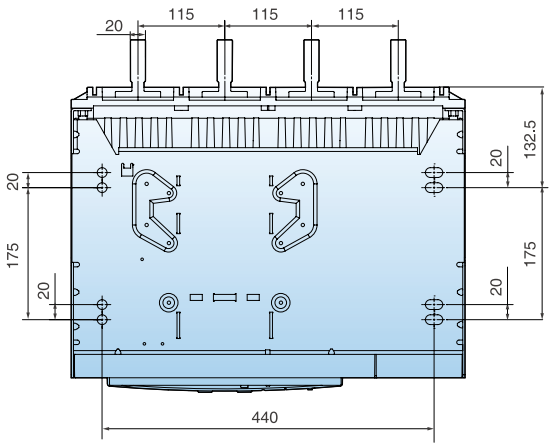

3 pole

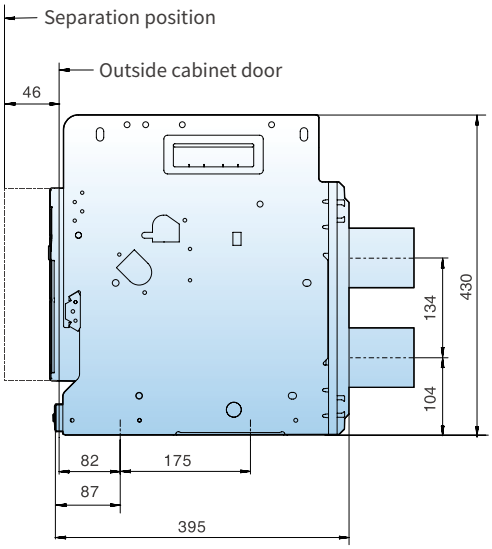


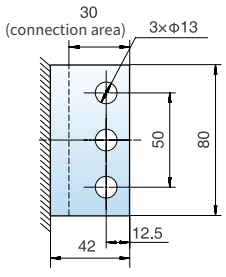

4 pole

### Vertical Wiring

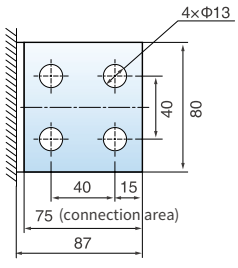



Standard

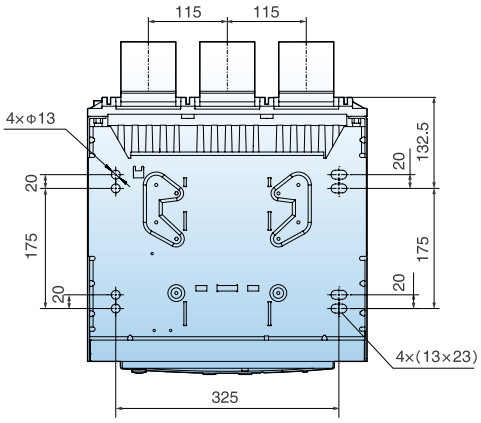


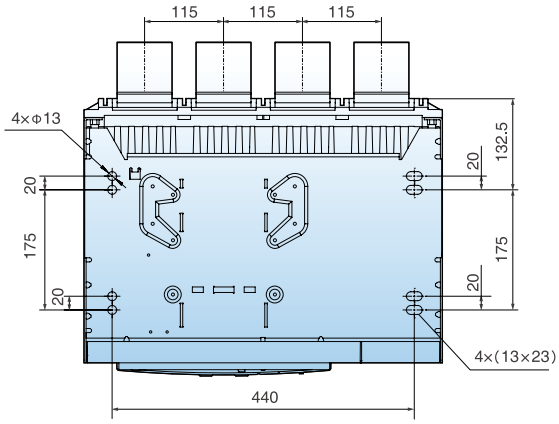

Extended

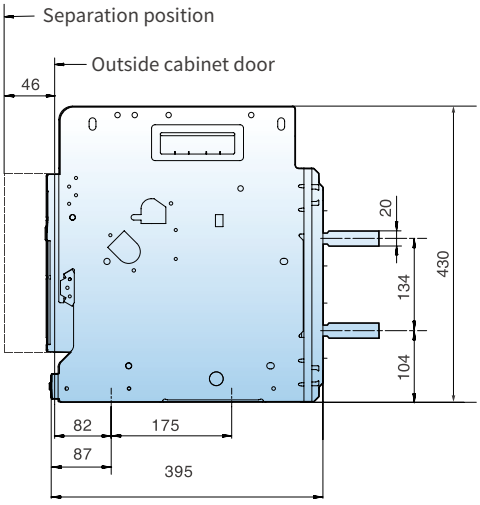
# Size and Connection

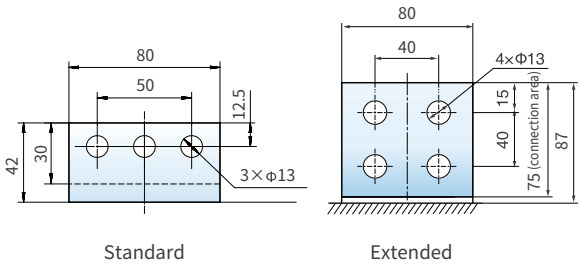
VOZWEI

## Horizontal Wiring

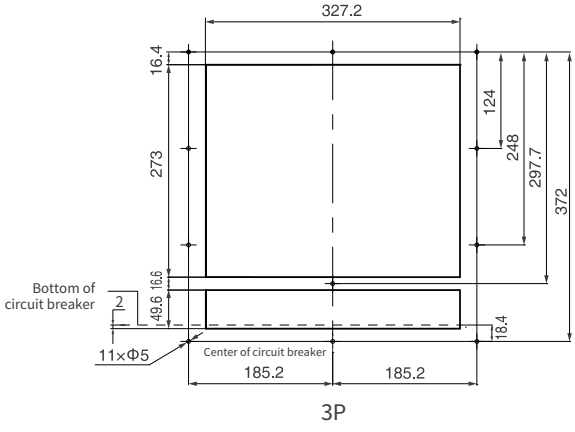


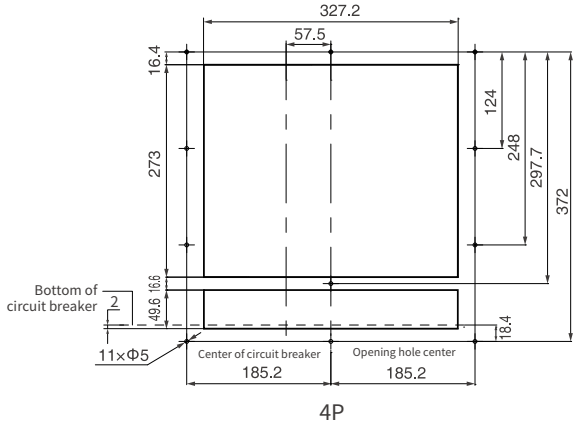




## Cabinet door open hole dimension



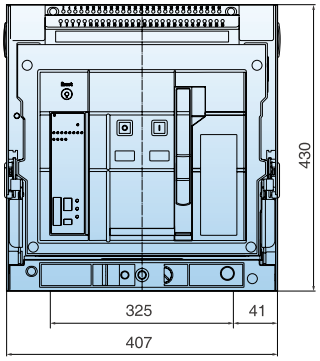



# Size and Connection

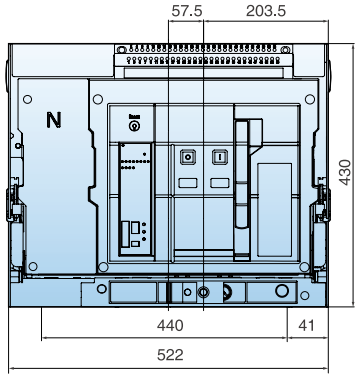
VOZWEI

## Drawout type (VW3-40H/VW3-40HU/VW3-40HV, 3600～4000A)

### Front view

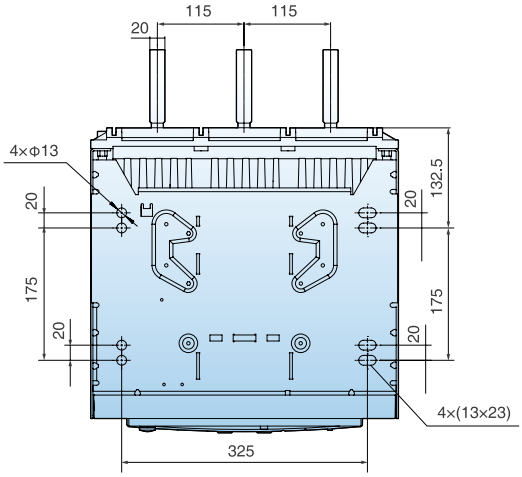


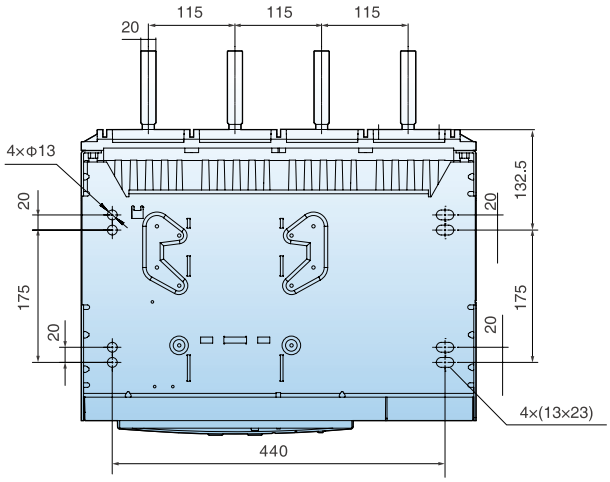

3pole

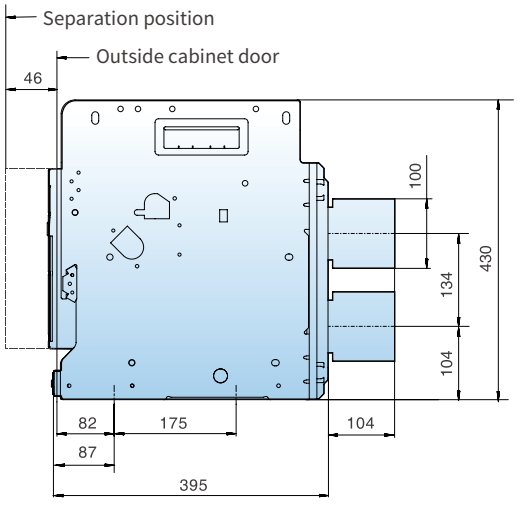


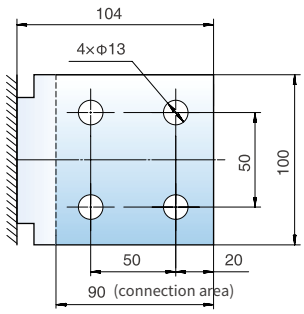

4pole

### Vertical Wiring



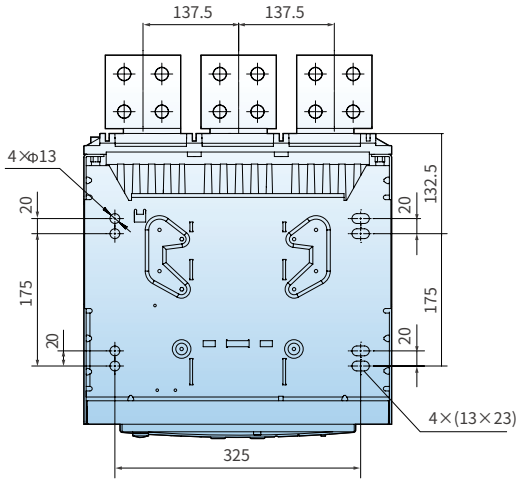



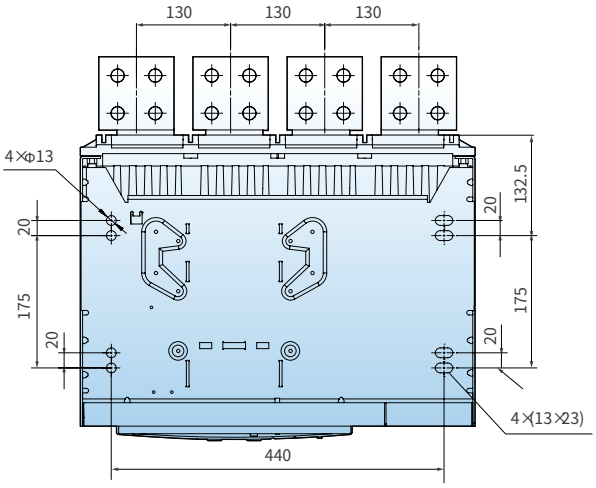



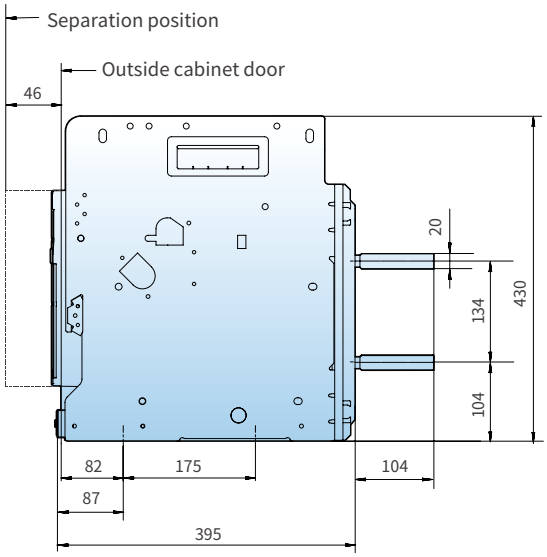
# Size and Connection

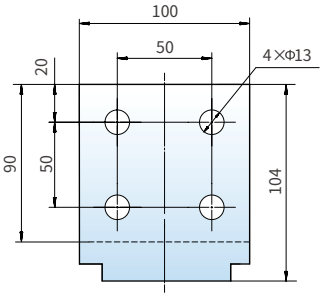
VOZWEI

## Horizontal Wiring

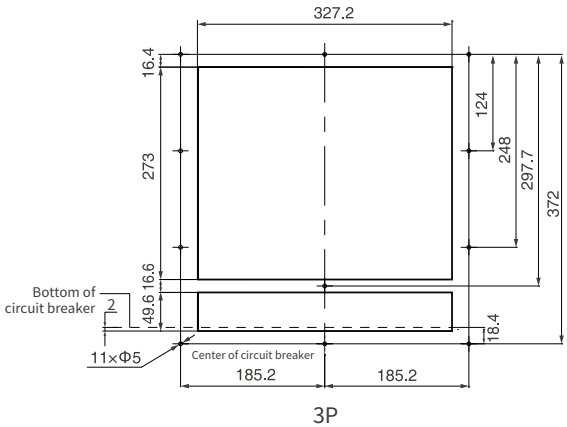


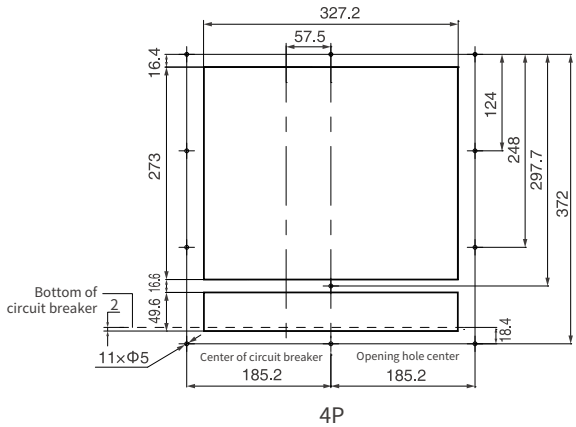




## Cabinet door open hole dimension




3P



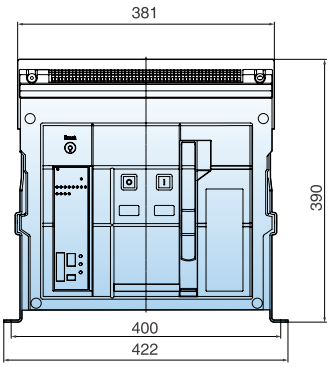

4P

# Size and Connection

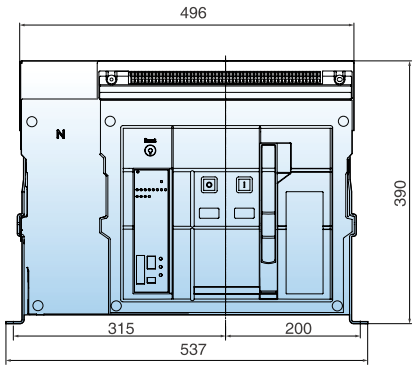
VOZWEI

## Fixed type (VW3-40H/VW3-40HU/VW3-40HV, 1000～3200A)

### Front view

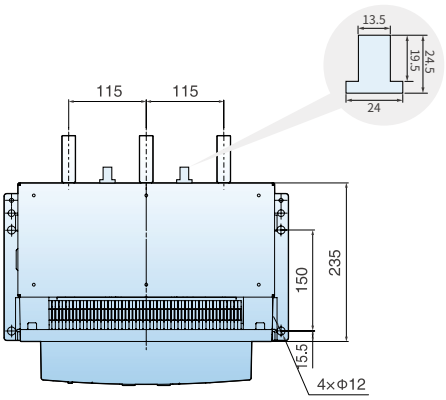


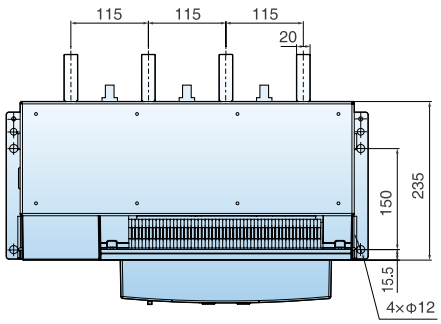

3pole



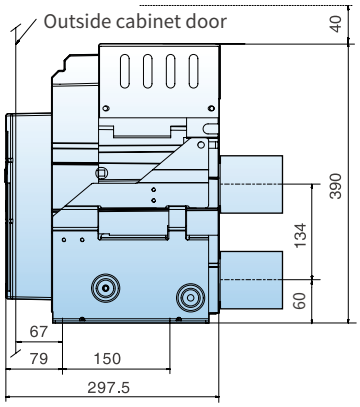

4pole

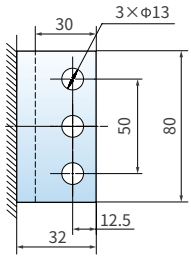
### Vertical Wiring



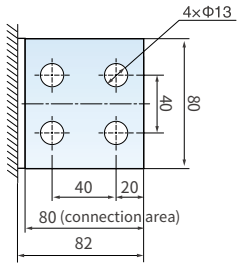




Distance for dismantling the arc extinguishing chamber




Standard

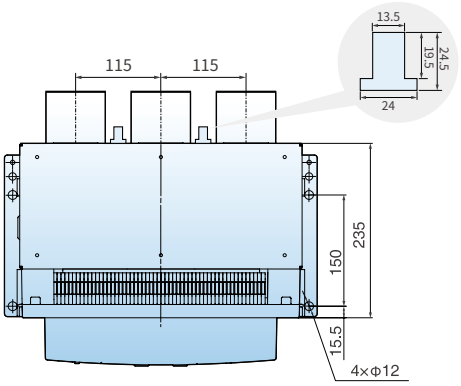



Extended

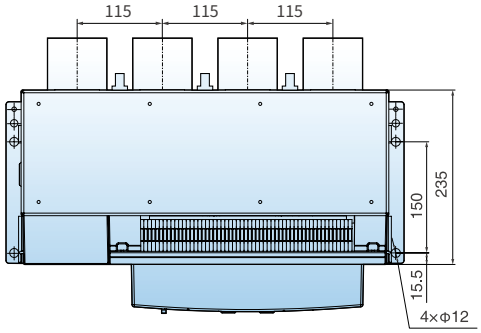
# Size and Connection

VOZWEI

## Horizontal Wiring

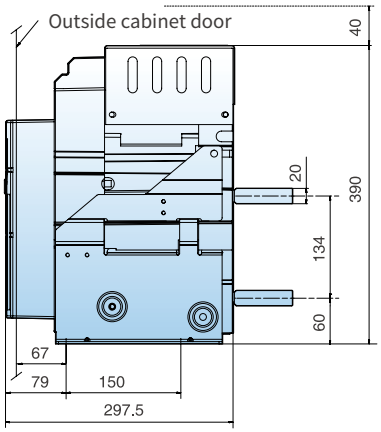


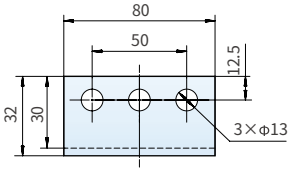

3pole



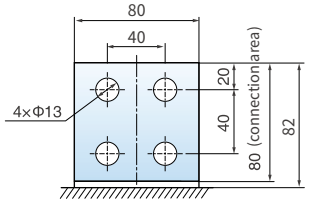

4pole

Distance for dismantling the arc extinguishing chamber



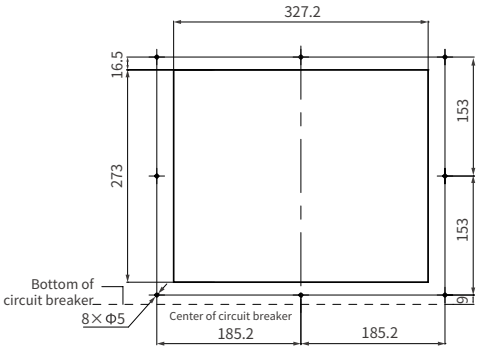




Standard

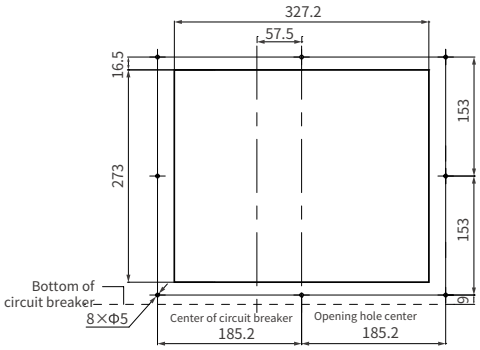



Extended

## Cabinet door open hole dimension




3P



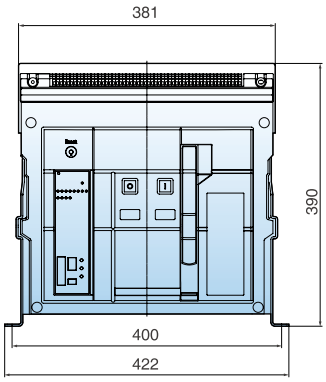

4P

# Size and Connection

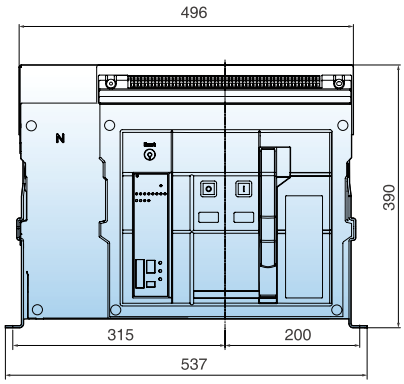
VOZWEI

## Fixed type (VW3-40H/VW3-40HU/VW3-40HV, 3600～4000A)

### Front view

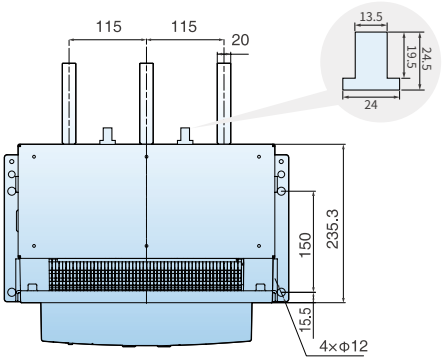


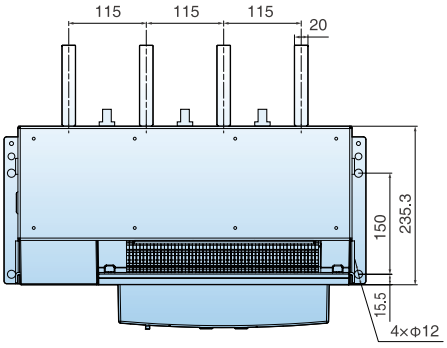

3pole



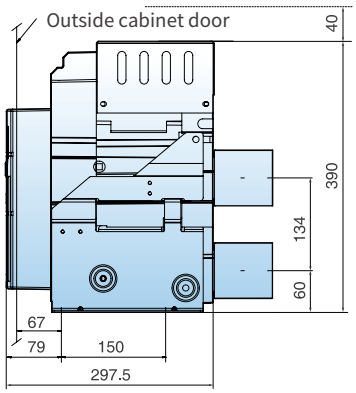

4pole

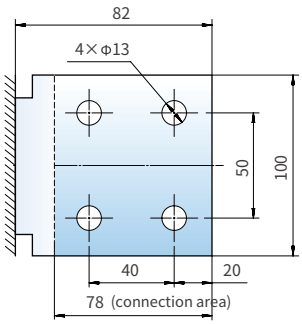
### Vertical Wiring




Distance for dismantling the arc extinguishing chamber

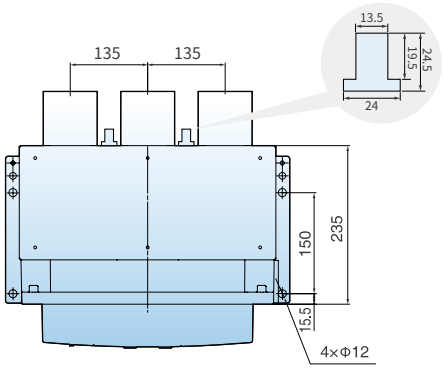


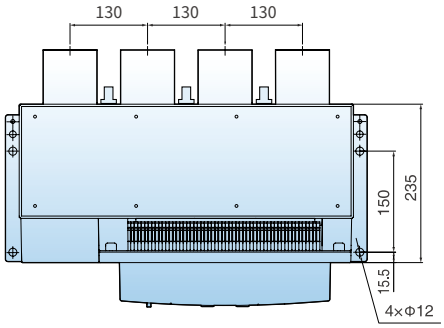



# Size and Connection

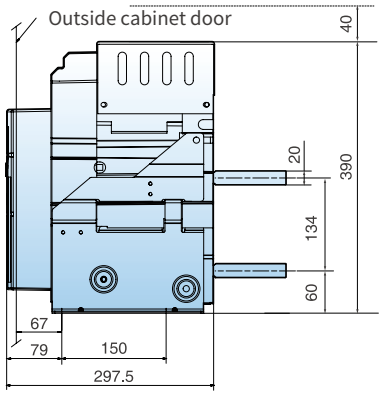
VOZWEI

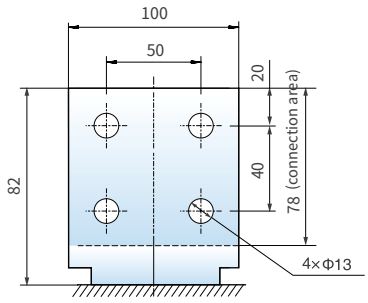
## Horizontal Wiring



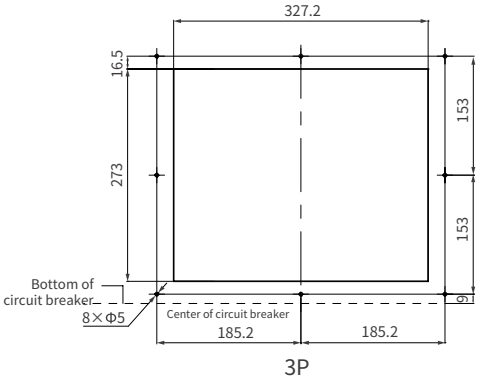




Distance for dismantling the arc extinguishing chamber

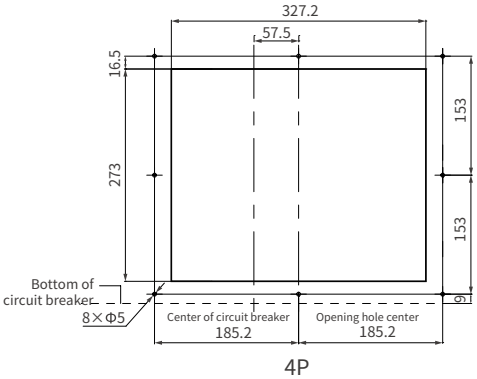



## Cabinet door open hole dimension




3P



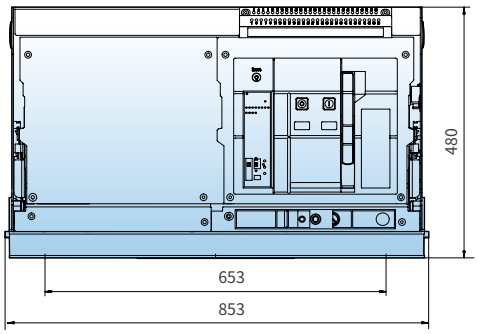

4P

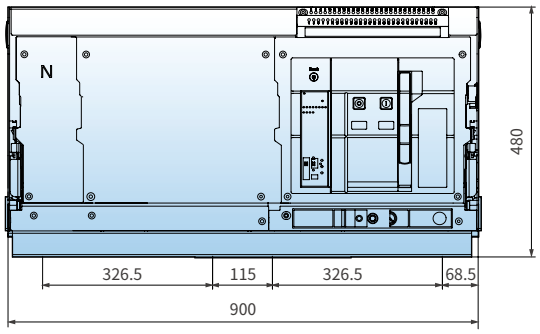
# Size and Connection

VOZWEI

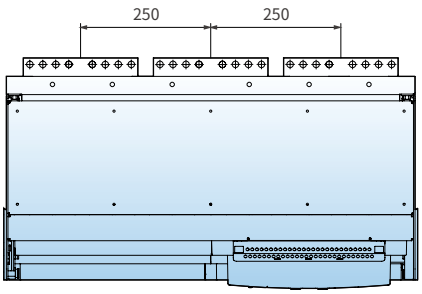
## Drawout type (VW3-63H/VW3-63HU/VW3-63HV, 4000～5000A)

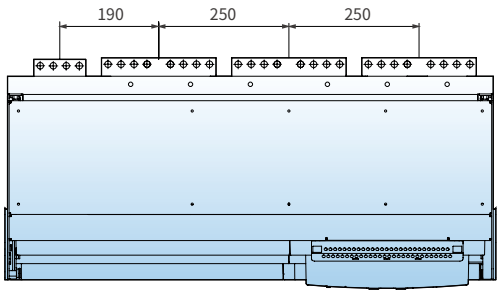
### Front view

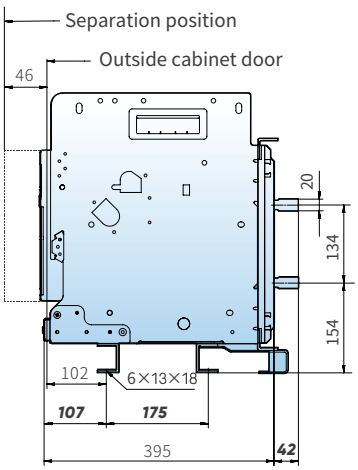


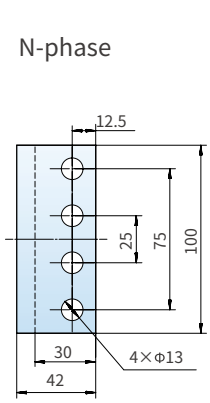



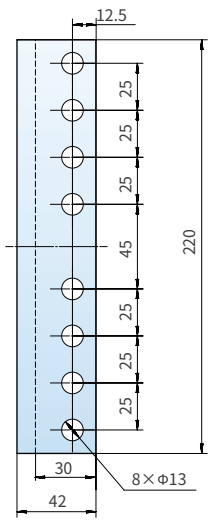

### Horizontal Wiring



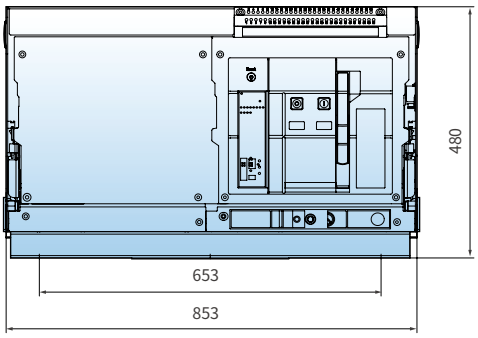



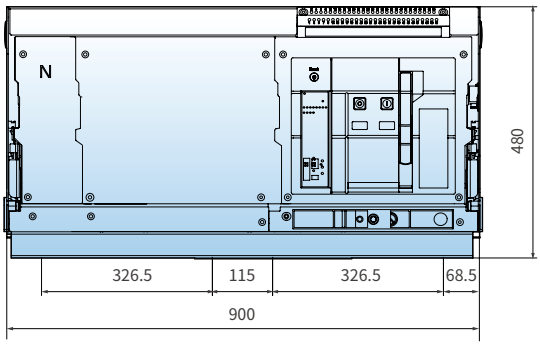



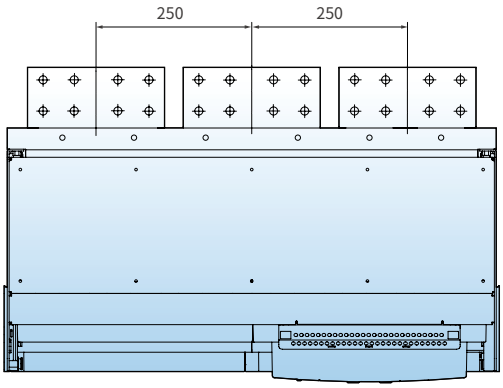
## Drawout type (VW3-63H/VW3-63HU/VW3-63HV, 6300A)

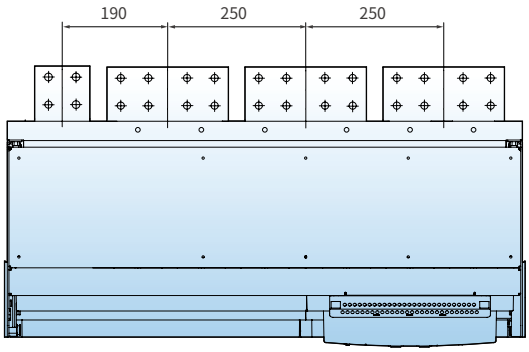
### Front view

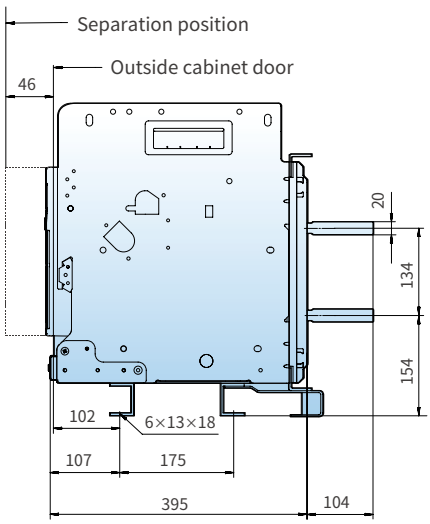


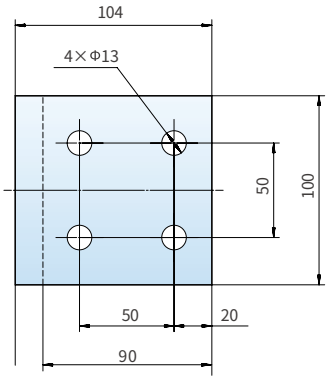

### Horizontal Wiring

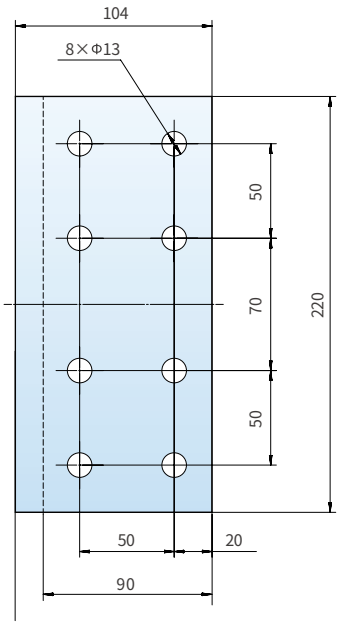



N-phase



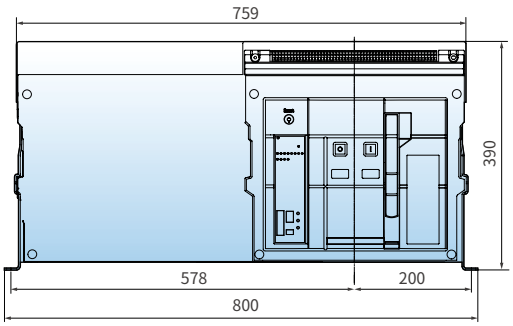



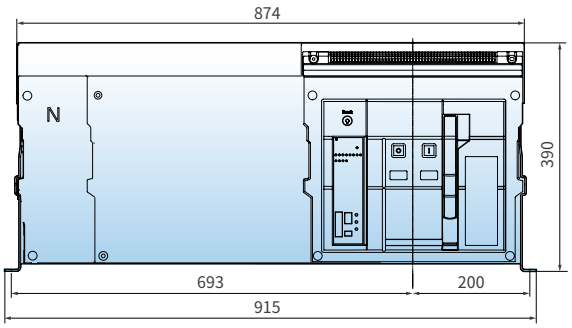
# Size and Connection

VOZWEI

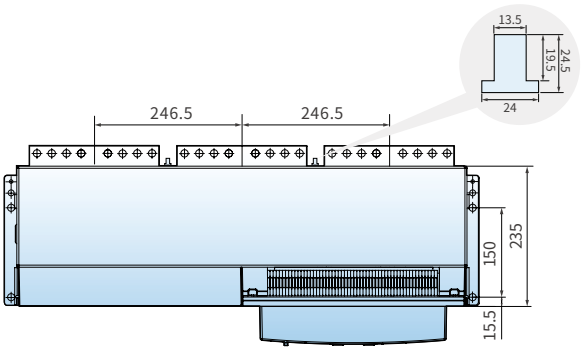
## Fixed type (VW3-63H/VW3-63HU/VW3-63HV, 4000~5000A)

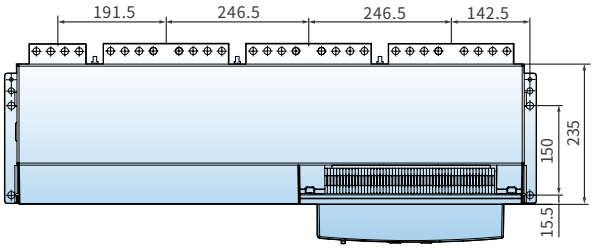
### Front view



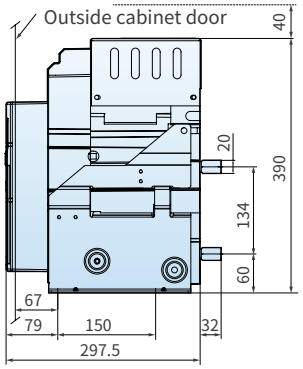




### Horizontal Wiring

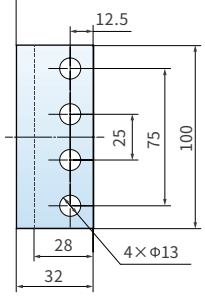


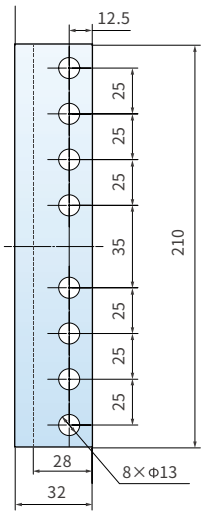




Distance for dismantling the arc extinguishing chamber



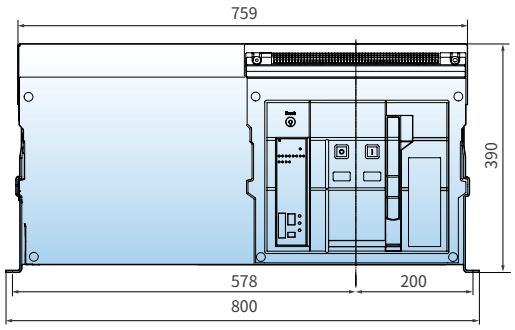

N-phase

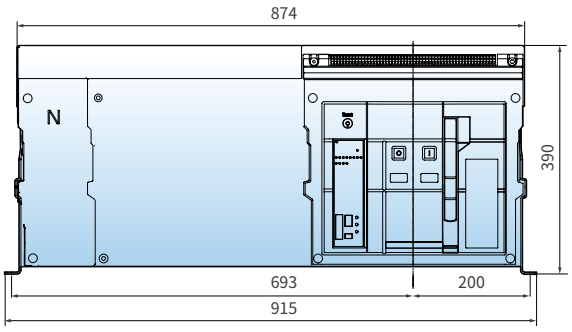


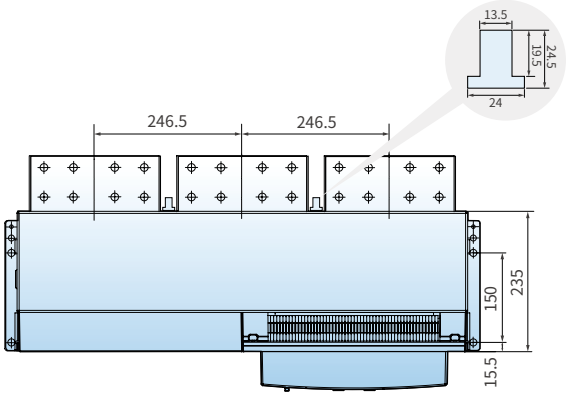



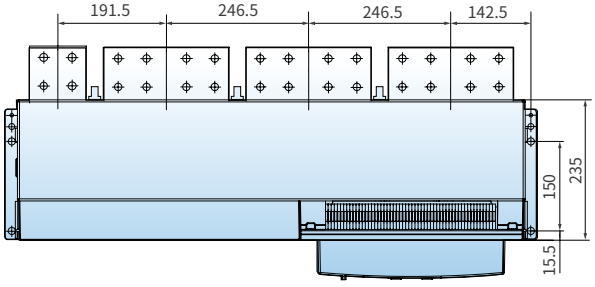
## Fixed type (VW3-63H/VW3-63HU/VW3-63HV, 6300A)

### Front view

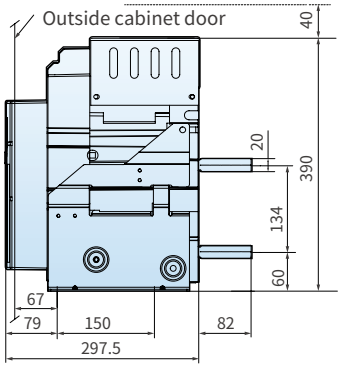


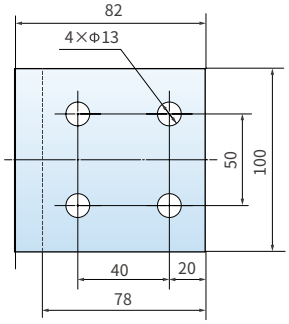



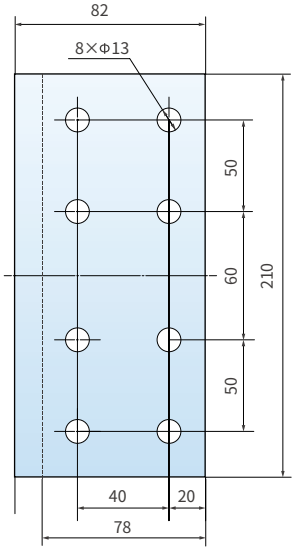




Distance for dismantling the arc extinguishing chamber



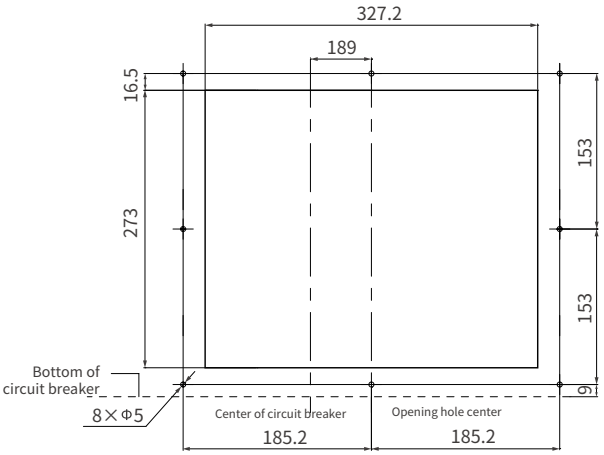



# Size and Connection

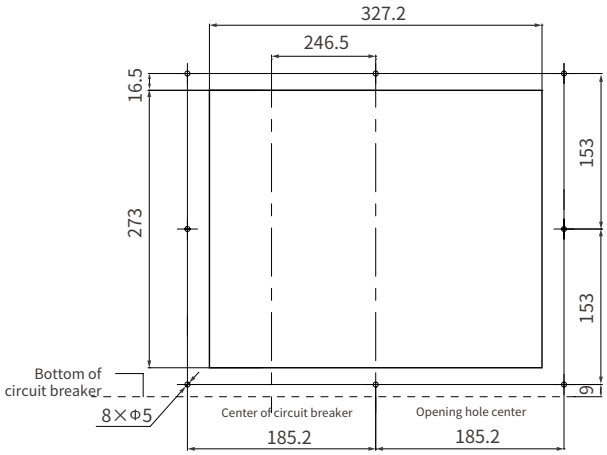
VOZWEI

## VW3-63H/VW3-63HU/VW3-63HV Cabinet door open hole dimension

### Cabinet door open hole dimension Fixed type

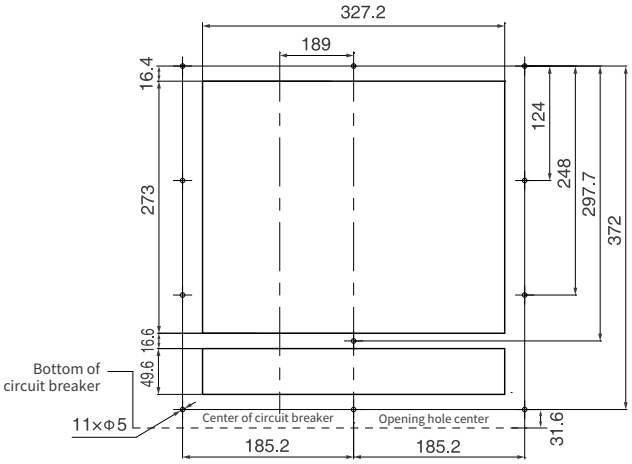



3P

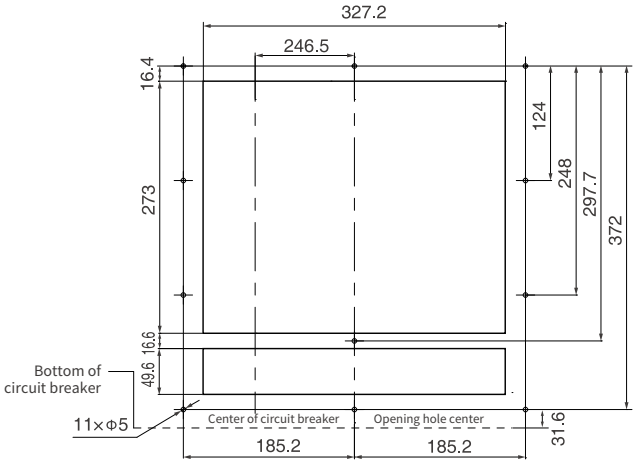



4P

### Cabinet door open hole dimension Drawout type




3P

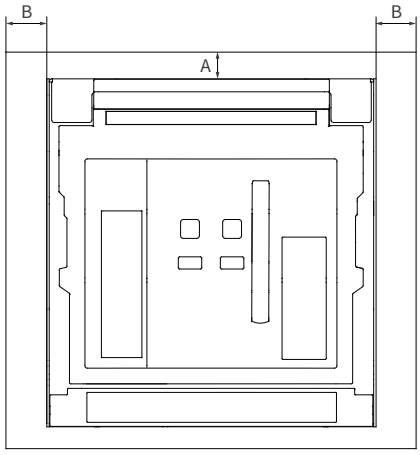



4P

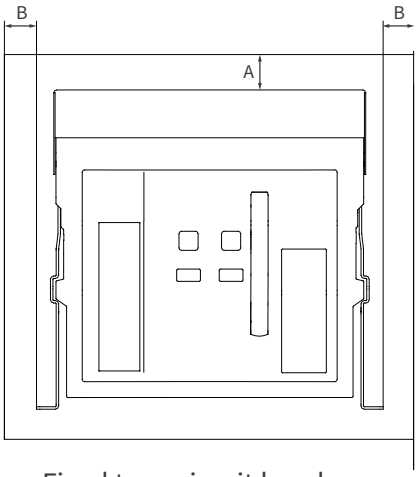
# Size and Connection



When users install the circuit breaker into the cabinet, the safe distance between the circuit breaker and the cabinet is shown in the figure below, and the installation dimensions are shown in the table below.




Drawout type circuit breaker




Fixed type circuit breaker

unit: mm

| Installation type of the circuit breaker | To the insulator | | To the metallic body grounded safely | | To the live part | |
|---|---|---|---|---|---|---|
| | A | B | A | B | A | B |
| Drawout type | 0 | 0 | 0 | 0 | 60 | 60 |
| Fixed type | 0 | 0 | 0 | 0 | 60 | 60 |

***Note:*** *1. The safety distance of the fixed circuit breaker should consider the space required to remove the arc extinguishing chamber of 150mm;*

# Order Notes

VOZWEI

Please fill in numbers in_____, and check ✓ in ☐

| | | |
|---|---|---|
| User:<br>Number of units ordered:<br>Date of ordering: | | |
| Basic parameters | Shell frame level | ☐ VW3-2000 ☐ VW3-2500 ☐ VW3-4000 ☐ VW3-6300 |
| | Installation mode | ☐ F-Fixed type ☐ D-Drawout type |
| | Rated current (A) | VW3-2000 ☐ 200 ☐ 400 ☐ 630 ☐ 800 ☐ 1000 ☐ 1250 ☐ 1600 ☐ 2000<br>VW3-2500 ☐ 630 ☐ 800 ☐ 1000 ☐ 1250 ☐ 1600 ☐ 2000 ☐ 2500<br>VW3-4000 ☐ 1000 ☐ 1250 ☐ 1600 ☐ 2000 ☐ 2500 ☐ 2900 ☐ 3200 ☐ 3600 ☐ 4000<br>VW3-6300 ☐ 4000 ☐ 5000 ☐ 6300 |
| | Breaking type | ☐ S-standard breaking (AC400/415V) ☐ S-standard breaking (AC500/550V)<br>☐ S-standard breaking (AC660/690V) ☐ H-high breaking (AC400/415V)<br>☐ H-high breaking (AC500/550V) ☐ H-high breaking (AC660/690V)<br>☐ HU-High voltage breaking(AC800V) ☐ HU-High voltage breaking(AC1140V)<br>☐ HV-Ultra high voltage breaking(AC1250V) ☐ HV-Ultra high voltage breaking(AC1500V)<br>Note: 1. HU-AC1250V only for VW3-4000; 2.S-only for VW3-20 |
| | Number of poles | ☐ 3-3P ☐ 4-4P ☐ 5-3P+N |
| | Wiring mode | **VW3-2000(S/H):** ☐ C11-Standard Horizontal Wiring ☐ C21-Standard Vertical Wiring<br>C41-Standard Mixed Wiring (Upper Horizontal, Lower Vertical)<br>C51-Standard Mixed Wiring (Upper Vertical, Lower Horizontal)<br>**VW3-2500(H/HU/HV):** ☐ C11-Standard Horizontal Wiring ☐ C12-Extended Horizontal Wiring<br>**VW3-4000(H, 1000-3200A):** ☐ C11-Standard Horizontal Wiring ☐ C12-Extended Horizontal Wiring<br>☐ C21-Standard Vertical Wiring ☐ C22-Extended Vertical Wiring ☐ C31-Standard Forward Wiring<br>☐ C41-Standard Mixed Wiring (Upper Horizontal, Lower Vertical)<br>☐ C42-Extended Mixed Wiring (Upper Horizontal, Lower Vertical)<br>☐ C51-Standard Mixed Wiring (Upper Vertical, Lower Horizontal)<br>☐ C52-Extended Mixed Wiring (Upper Vertical, Lower Horizontal)<br>☐ C61-Standard Mixed Wiring (Upper Forward, Lower Horizontal)<br>☐ C71-Standard Mixed Wiring (Upper Horizontal, Lower Forward)<br>☐ C81-Standard Mixed Wiring (Upper Vertical, Lower Forward)<br>☐ C91-Standard Mixed Wiring (Upper Forward, Lower Vertical)<br>**VW3-4000(HU/HV, 1000-3200A):** ☐ C11-Standard Horizontal Wiring<br>☐ C12-Extended Horizontal Wiring ☐ C21-Standard Vertical Wiring<br>**VW3-4000(H/HU/HV, 3600-4000A):** ☐ C12-Extended Horizontal Wiring ☐ C22-Extended Vertical Wiring<br>**VW3-6300(H/HU/HV, 4000-5000A):** ☐ C11-Standard Horizontal Wiring<br>**VW3-6300(H/HU/HV, 6300A):** ☐ C12-Extended Horizontal Wiring |
| Controller parameters | Controller model | ☐ VWC2 (DIP switch) ☐ VWC4 (digital screen) ☐ VWC6 (LCD)<br>Note: VWC2 is only used for VW3-20 |
| | Protection type | ☐ Conventional type (standard configuration) ☐ V-Voltage measurement and protection type<br>☐ P-Harmonic measurement and protection type |
| | Communication function | ☐ H-Modbus protocol ☐ MP-Profibus-DP protocol ☐ MD-Devicenet protocol<br>Note: Only VWC6 have communication function |
| | Signal unit | ☐ S1-4DO ☐ S2-3DO+1DI ☐ S3-2DO+2DI<br>Note: VWC4 only S1-4DO |
| | Remote reset | ☐ Z2-AC230V Note: VWC2 does not have remote reset function |
| | External transformer | 3P+N required: ☐ N1 ☐ N2 ☐ N3 ☐ N4 ☐ E |
| | Grounding mode | ☐ T(default) ☐ W ☐ E |
| | Contact wear equivalent | ☐ J |
| Required accessories | Electric operating mechanism | ☐ D1-AC400V ☐ D2-AC230V/DC220V ☐ D4-AC/DC110V ☐ D5-DC24V |

# Order Notes

VOZWEI

| | | | |
|---|---|---|---|
| Required accessories | Shunt release | ☐ F1-AC400V ☐ F2-AC230V/DC220V ☐ F4-AC/DC110V ☐ F5-DC24V | |
| | Closed electromagnet | ☐ B1-AC400V ☐ B2-AC230V/DC220V ☐ B4-AC/DC110V ☐ B5-DC24V | |
| Optional accessories | Under-voltage release | Voltage specifications | ☐ Q1-AC400V ☐ Q2-AC230V ☐ Q5-DC24V |
| | | Delay time | ☐ 0-Instantaneous ☐ 1-1s delay ☐ 3-3s delay ☐ 5-5s delay |
| | Loss of voltage release | Voltage specifications | ☐ S1-AC400V ☐ S2-AC230V |
| | | Delay time | ☐ 0-Instantaneous ☐ 1-1s delay ☐ 3-3s delay ☐ 5-5s delay |
| | Voltage-check closing device | ☐ J1-AC400V ☐ J2-AC230V | |
| | Auxiliary contact | ☐ A33-3NO3NC ☐ A44-4NO4NC ☐ A55-5NO5NC ☐ A66-6NO6NC<br>☐ ____NO____NC (Max. 14) | |
| | | ☐ A3-Three-group switching ☐ A4-Four-group switching ☐ A5-Five-group switching<br>☐ A6-Six-group switching ☐ ____-group switching (Max. 14) | |
| | Closing ready | ☐ BX-Closing ready signal output unit | |
| | Counter | ☐ JS-Counter | |
| | Drawer seat door interlock | ☐ CM1-Drawout type (with the right side of the door interlock) | |
| | Door frame | ☐ M-Door frame<br>Note: standard | |
| | Position indicator | ☐ CX-Drawer seat three-position signal output | |
| | Relay module | ☐ R-Relay module | |
| | Power supply | ☐ AC65~500V, DC80~700V Note: standard | |
| | Button lock | ☐ S-Button lock | |
| | Voltage conversion module | ☐ P2-Voltage conversion module | |
| Language type | | ☐ Chinese ☐ Y-English | |
| Interlocking accessories | Off-position lock | ☐ SF11-Key lock device (one lock and one key) ☐ SF21-Key lock device (two locks and one key)<br>☐ SF31-Key lock device (three locks and one key) ☐ SF32-Key lock device (three locks and two keys)<br>☐ SF53-Key lock device (five locks and three keys) | |
| | Mechanical interlocking | Cable type | ☐ SR11-Mechanical interlocking device (two sets of steel cables, one for closing and one for opening)<br>☐ SR12-Mechanical interlocking device (three sets of steel cables, one for closing and two for opening)<br>☐ SR21-Mechanical interlocking device (three sets of steel cables, two for closing and one for opening) |
| | | Hard rod type | ☐ SY11-Mechanical interlocking device (two sets of hard rods, one for closing and one for opening) |
| Special requirements | | Overload and long-time delay current $I_r$=____A | Overload and long-time delay time $t_r$=____s |
| | | Short-circuit short-time delay current $I_{sd}$=____A | Short-circuit short-time delay time $t_{sd}$=____s |
| | | Short circuit instantaneous current $I_i$=____A | |
| | | Grounding fault current $I_g$=____A | Grounding fault time $t_g$=____s |
| | | Current imbalance percentage δ=____% | Current imbalance action time δ=____s |
| | | Current leakage setting value $I_{\triangle n}$____A | Current leakage action time $t_{\triangle n}$____s |
| | | Load monitoring1 current setting value $I_{c1}$____A | Inverse time-limit time $t_{c1}$____s |
| | | Load monitoring2 currentI setting value $I_{c2}$____A | Fixed time-limit $t_{c2}$____s |
| Other requirements | | | |

# VW3GZ

**DC Disconnector**

# Design Features

VOZWEI

- Tailored for solar energy and energy storage systems
- Rated working voltage DC500~1500V
- With high breaking capacity up to 100kA
- Multiple patented arc-extinguishing designs ensure
- lower temperature rise

## Ambient conditions

### Operating ambient temperature/storage temperature

- Recommended ambient air temperature limit is-40°C~+70°C, it can reach to +70°C in a short time(within 24h), derating is required above 40°C

### Altitude conditions

- The altitude of the installation location is less than 5000m.
- Relative humidity:not exceed 50% at the maximum ambient temperature of +40°C,but higher relative humidity at the lower temperature,for example,90% at 20°C.Special measures should be taken considering the dews on product surface due to temperature change.

### Pollution grade

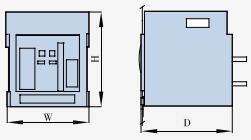
- Level 3

### Salt spray grade

- GB2423.18 - Extreme Grade 2

# Selection Guide

VOZWEI

| Series | | | VW3GZ-16 | | VW3GZ-40 |
|---|---|---|---|---|---|
| | | |  | |  |
| Rated current In(A) | | | 200, 400, 630, 800, 1000, 1250, 1600 | | 630, 800, 1000, 1250, 1600, 2000, 2500, 2900, 3200, 3600, 4000 |
| Rated working voltage Ue(V)50Hz/60Hz | | | DC1000 | DC1500 | DC500/750/1000/1200/1500 |
| Rated insulation voltage Ui(V) | | | 1600 | | 1600 |
| Rated impulse withstand voltage Uimp(kV) | | | 12 | | 15 |
| Number of poles | | | 3P | 4P | 2P |
| Rated short circuit making capacity (peak value)Icm(kA) | | | 55 | | 100 |
| Rated short-time withstand current (effective value) Icw(kA) 1s | | | 55 | | 100kA 1s 150kA 0.2s |
| Electrical life (times) | | | 500 | 500 | 1000 |
| Operating performance | Mechanical life (times) | Without maintenance | 10000 | | 12500 |
| | | Maintenance | 10000 | | 30000 |
| Operational condition | Utilization category | | DC22/23A | | DC-PV2 |
| | Pollution degree | | 3 | | 3 |
| | Protection grade | | IP30 | | IP40 |
| | Ambient temperature | | -40~75°C | | ⩾-40°C |
| | Altitude | | ⩽5000m | | ⩽5000m |
| Outline dimension(mm) | | Fixed type 2p | | | 395 x 318.5 x 321 |
| (H x W x D)  | | Fixed type 3p | 335×266×250 | | / |
| | | Fixed type 4p | 335×336×250 | | / |

***Note:*** *Derating is required when the temperature of VW3Z-40 exceeds 40°C. Refer to the temperature derating table for specific requirements."*

## Model Explanation and Encoding Rules

| VW3GZ | – | □ | □ | / | □ | □ | / | □ | / | □ | □ | / | □ | □ | □ | □ | □ | □ | / | □ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 2 | 3 | | 4 | 5 | | 6 | | 7 | 8 | | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |

| SN | Name | Specification, type code | | Description |
|---|---|---|---|---|
| 1 | Design code | VW3GZ:Design code | | / |
| 2 | Frame rating | 16: 1600A; 40: 4000A | | / |
| 3 | Breaking type | Empty:Standard breaking level | | / |
| 4 | Rated current | VW3GZ-16: 02: 200A; 04: 400A; 06: 630A; 08: 800A; 10: 1000A;<br>12: 1250A; 16: 1600A<br>VW3GZ-40: 06: 630A; 08: 800A; 10: 1000A; 12: 1250A; 16: 1600A; 20: 2000A<br>25: 2500A; 29: 2900A; 32: 3200A; 36: 3600A; 40: 4000A | | / |
| 5 | Installation mode | F: Fixed type | | / |
| 6 | Number of poles | 2: 2P; 3: 3P; 4: 4P<br>Note: (2P only for VW3GZ-40) | | / |
| 7 | Electric energy storage mechanism | D1: AC400V; D2: AC230V/DC220V; D4: AC/DC110V; D5: DC24V | | / |
| 8 | Shunt release | F1: AC400V; F2: AC230V/DC220V; F4: AC/DC110V; F5: DC24V | | / |
| 9 | Closed electromagnet | B1: AC400V; B2: AC230V/DC220V; B4: AC/DC110V; B5: DC24V | | / |
| 10 | Under-voltage release / Loss of voltage release | Under-voltage release | Q1: AC400V; Q2: AC230V; Q5: DC24V | 1.Choose one from the Under-voltage release, Loss of voltage release; |
| | | Loss of voltage release | S1: AC400V; S2: AC230V | |
| 11 | Under-voltage release / loss of voltage release Delay time | 0: Instantaneous; 1: 1s delay; 3: 3s delay; 5: 5s delay | | / |
| 12 | Auxiliary contact | A33: 3NO3NC; A44: 4NO4NC; … ; A1414: 14NO14C | | / |
| | | A3: Three-group switching; A4: Four-group switching; …;<br>A14: Fourteen-group switching | | / |
| 13 | Internal Accessories | BX: Closing ready signal output unit<br>JS: Counter functional unit<br>Note: JS only for VW3GZ-40 | | / |
| 14 | External accessories | M: Doorframe<br>Note: M only for VW3GZ-16, standard<br>S: Button lock | | / |
| 15 | Wiring mode | C1: Horizontal wiring;<br>C2: Vertical wiring;<br>C4: Mixed wiring(upper horizontal,lower vertical);<br>C5: Mixed wiring(upper vertical,lower horizontal);<br>Note: C4, C5 only for VW3GZ-40 | | / |
| | | 1: Standard wiring | | / |
| 16 | Language type | Empty: Chinese; Y: English | | / |

## Interlocking Piece Model Explanation and Encoding Rules

| | | |
|---|---|---|
| Key lock (16, 40) | SF11: Key lock device (one lock and one key)<br>SF21: Key lock device(two locks and one key)<br>SF22: Key lock device(two locks and two keys)<br>SF31: Key lock device(three locks and one key)<br>SF32: Key lock device (three locks and two keys)<br>SF53: Key lock device(five locks and three keys) | Select one from six locks; |
| Mechanical interlocking | SR11: Mechanical interlocking device (two sets of steel cables,one for closing and one for opening) | 1.Select one from five mechanical interlocks |
| | SR12: Mechanical interlocking device (three sets of steel cables,one for closing and two for opening) | |
| | SR21: Mechanical interlocking device (three sets of steel cables,two for closing and one for opening) | |
| | SY11: Mechanical interlocking device (two sets of hard rods,one for closing and one for opening) | |

## Shunt Release(F)

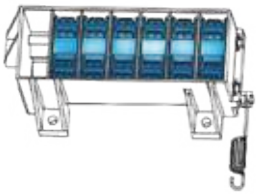
**To break the DC disconnector by remote control**

| project | VW3GZ-16 | | | VW3GZ-40 | | |
|---|---|---|---|---|---|---|
| |  | | |  | | |
| Rated insulation voltage(Ui) | Rated control supply voltage(Us) | Closed current VW3GZ-16 | Instantaneous power VW3GZ-16 | Rated control supply voltage(Us) | Closed current VW3GZ-40 | Instantaneous power VW3GZ-40 |
| 400V | AC380V/AC400V | 1.5A | 600W | AC230V | 2.9A | 575VA |
| | AC220V/AC230V | 2.2A | 500W | AC400V | 2.1A | 780VA |
| | DC220V | 2.2A | 500W | DC110V | 5.2A | 550W |
| | DC110V | 2.5A | 270W | DC220V | 2.9A | 630W |
| | DC24V | 2.5A | 60W | DC24V | 11A | 264W |
| | | / | | AC110V | 5.2A | 550VA |
| Operating voltage | (70%-10%)Us | | | | | |
| Action time(ms) Switching responsetime in Us | <50ms | | | | | |

# Accessories

VOZWEI

## Auxiliary contact

| project | VW3GZ-16 | VW3GZ-40 |
|---|---|---|
| |  |  |
| Rated insulation voltage(U) | 400V | |
| Corventional Themal Current (Ith) | 16A | |
| Utilization Category | AC-12 AC-15 DC-12 DC-13 | AC-12 AC-15 DC-12 |
| Rated working voltage(Ue) | AC380 AC400 DC250 DC220 DC48 | AC380 AC400 DC250 |
| Rated Operating Curent(Ie) | 16A 3A 5A 1.2A 6A | 16A 3A 5A |

| Type | Code | Type | Code |
|---|---|---|---|
| 3NO3NC | A33 | 4NO4NC | A44 |
| 5NO5NC | A55 | 6NO6NC | A66 |
| 7NO7NC | A77 | 8NO8NC | A88 |
| 9NO9NC | A99 | 10NO10NC | A1010 |
| 11NO11NC | A1111 | 12NO12NC | A1212 |
| 13NO13NC | A1313 | 14NO14NC | A1414 |

***Note:***

*1.VW3GZ-16 series have 3NO 3NC~14NO 14NCNO:normally open contactNC:normally closed contact*
*2.VW3GZ-40 series only have 3NO 3NC~6NO 6NCNO,"N66"indicates contacts with no common point,while "N6"denotes contacts with a common point The same logic applies to other codes*
*3.Standard configuration includes N3/N33 contact arangements*
*4.The auxilary contacs support a minimum load of DC24V 10mA*

## Undervoltage (loss-of-voltage) release (Q)

| | | VW3GZ-16 | | | | VW3GZ-40 | | | |
|---|---|---|---|---|---|---|---|---|---|
| Rated operational voltage(V) | | Undervoltage release | | Loss-of-voltage release | | Undervoltage release | | Loss-of-voltage release | |
| | | AC230 | AC400 | AC230 | AC400 | AC230 | AC230 | AC230 | AC400 |
| Action type | Type | Code | | | | | | | |
| | Instantaneous time | Q20 | Q10 | S20 | S10 | Q20 | Q10 | S20 | S10 |
| | Delay time 1s | Q21 | Q11 | S21 | S11 | Q21 | Q11 | S21 | S11 |
| | Delay time 3s | Q23 | Q13 | S23 | S13 | Q23 | Q13 | S23 | S13 |
| | Delay time 5s | Q25 | Q15 | S25 | S15 | Q25 | Q15 | S25 | S15 |
| Operation voltage(V) | | (0.35-0.7)Ue | | <0.35Ue | | (0.35-0.7Ue | | (0.1-0.35)Ue | |
| Guarantee the reliable closing | | (0.85-1.1)Ue | | | | | | | |
| Not guarantee the reliable | | ⩽0.35Ue | | | | | | | |
| Maintain power consumption(W) | | 4 | 3.27 | 3.5 | 3.3 | 3.4 | 3.6 | 3.24 | 6.36 |

## Accessories for VW3GZ-16:
## Motor operating mechanism (D)

The DC disconnector has the function of motor driven energy storage and automatic energy restoring.
(Manual energy storage can also be done)

| Rated control supply voltage Us (V) | AC230 | AC400 | DC110 | DC220 | DC24 |
|---|---|---|---|---|---|
| Operation voltage | (85%-110%) Us | | | | |
| Operating power | 80VA | | 80W | | |
| Starting power | 400VA | | 400W | | |
| Energy storage time(s) | ⩽5 | | | | |
| Motor type | Brush motor | | | | |

## Closed Electromagnet (B)

After storing energy, closed electromagnet may make the energy release instantly so that the DC disconnector is closed quickly.

Power Consumption Table of Closed Electromagnet

| Rated insulation voltage(Ui) | Rated control supply voltage(Us) | Closed current | Instantaneous power |
|---|---|---|---|
| | | VW3GZ-16 | VW3GZ-16 |
| 400V | AC380V/AC400V | 1.5A | 600W |
| | AC220V/AC230V | 2.2A | 500W |
| | DC220V | 2.2A | 500W |
| | DC110V | 2.5A | 270W |
| | DC24V | 2.5A | 60W |
| Operating voltage | (85%-110%)Us | | |
| Minimum time of power on | 100ms±10ms | | |
| Action time (ms) Switching response time in Us | ＜50ms | | |

# Accessories

VOZWEI

## Lock

## Off-position key lock (SF11, SF21, SF31, SF32, SF53, SF22)

Opening position lock can lock the OFF button of the switch disconnector on the pressed position. After the opening position lock is chosen by the users, we would install and configurate.

Application method:

One lock one key (SF11): One DC disconnector with one same lock and one key, and only allowed to closed when locked.

Two locks one key (SF21): Two DC disconnectors with two same locks and one key, and only allowed one DC disconnector closed.

Three locks one key (SF31): Three DC disconnectors with three same locks and one key, and only allowed one DC disconnector closed.

Three locks two keys (SF32): Three DC disconnectors with three same locks and two keys, and only allowed two DC disconnectors closed.

Five locks three keys (SF53): Five DC disconnectors with five same locks and three keys, and only allowed three DC disconnectors closed.

Double interlock (SF22): With two different sets of keys and locks.

## Phase separator

Phase separators are vertically installed between wiring boards of DC disconnector which strengthen insulation.

## Accessories for VW3GZ-40:

## Motor operating mechanism (D)

The circuit breaker's spring charging is accomplished by a motor-operated mechanism, featuring both motor-powered energy storage and automatic recharging functions (manual charging is also available). It has no overvoltage protection capability. The device can withstand 1.4Us for 1 second, but prolonged energization may cause burnout. The mechanism can operate 100 cycles at 1.4Us with a maximum frequency of once every 3 minutes.

| project | Parameters | | | | | |
|---|---|---|---|---|---|---|
| Rated control voltageUs | AC230 | AC400 | DC110 | DC220 | DC24 | AC110 |
| Operational voltage | (0.85-1.1) Us | | | | | |
| Operating power | 150W | | | | | |
| Starting power | 500-600W | | | | | |
| Energy storage time (s) | ≤5s | | | | | |
| Type | Brushed Motor | | | | | |

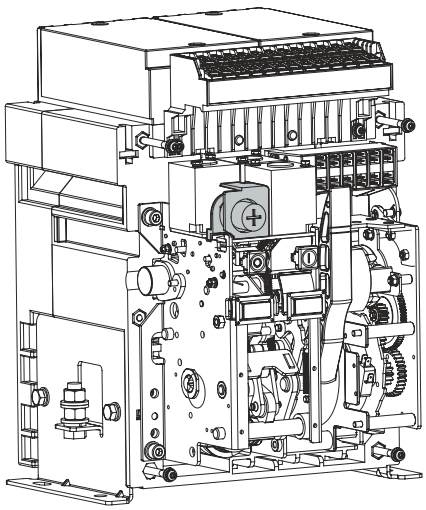
## Closed electromagnet (B)

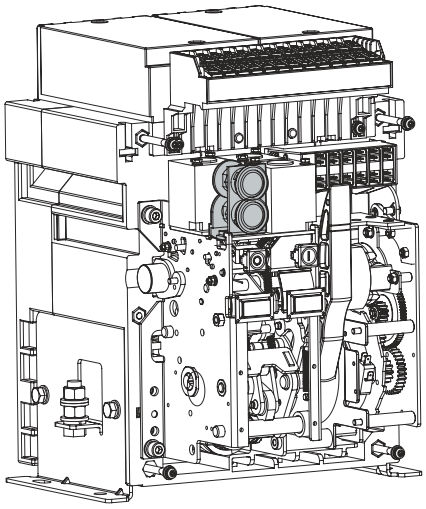

The closing solenoid is primarily composed of a coil, iron core assembly, and electronic components. When energy storage is completed and the closing operation is ready, energizing the closing solenoid enables instantaneous release of the stored energy in the operating mechanism, causing rapid closure of the circuit breaker.The shunt trip device has no overvoltage protection function. It can withstand 1.4 times the rated control supply voltage (1.4Us) for 1 second. Prolonged energization may cause burnout. The device is capable of 100 operations at 1.4Us with a maximum operating frequency of one operation per 3 minutes.

| Rated Insulation Voltage (Ui) | VW3GZ-40 | | |
|---|---|---|---|
| | (Us) | Pickup Inrush Current | Pickup Inrush Power |
| 400V | AC230V | 2.9A | 575VA |
| | AC400V | 2.1A | 780VA |
| | DC110V | 5.2A | 550W |
| | DC220V | 2.9A | 630W |
| | DC24V | 11A | 264W |
| | AC110V | 5.2A | 550VA |
| Operating Voltage | (0.85-1.1)Un | | |
| Movement time (ms) | <50ms | | |

## Lock

## Off-position key lock (SF11, SF21, SF31, SF32, SF53, SF22)





The open-position lock secures the trip button in the depressed position. When selected by the customer, we will install and configure it. Usage method:

(1) key lock:

One lock one key (SF11): One DC disconnector with one same lock and one key, and only allowed to closed when locked.

Two locks one key (SF21): Two DC disconnectors with two same locks and one key, and only allowed one DC disconnector closed.

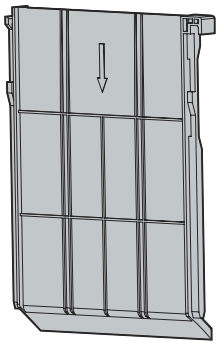
Three locks one key (SF31): Three DC disconnectors with three same locks and one key, and only allowed one DC disconnector closed.

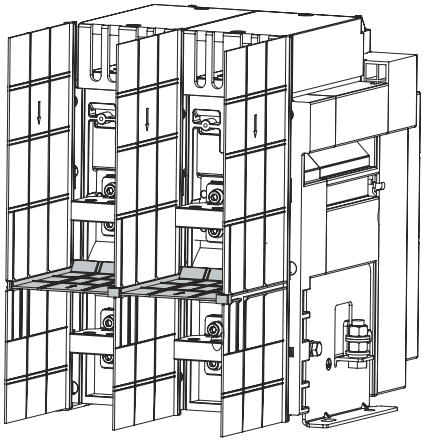
Three locks two keys (SF32): Three DC disconnectors with three same locks and two keys, and only allowed two DC disconnectors closed.

Five locks three keys (SF53): Five DC disconnectors with five same locks and three keys, and only allowed three DC disconnector closed.

(2) Double interlock (SF22): With two different sets of keys and locks.

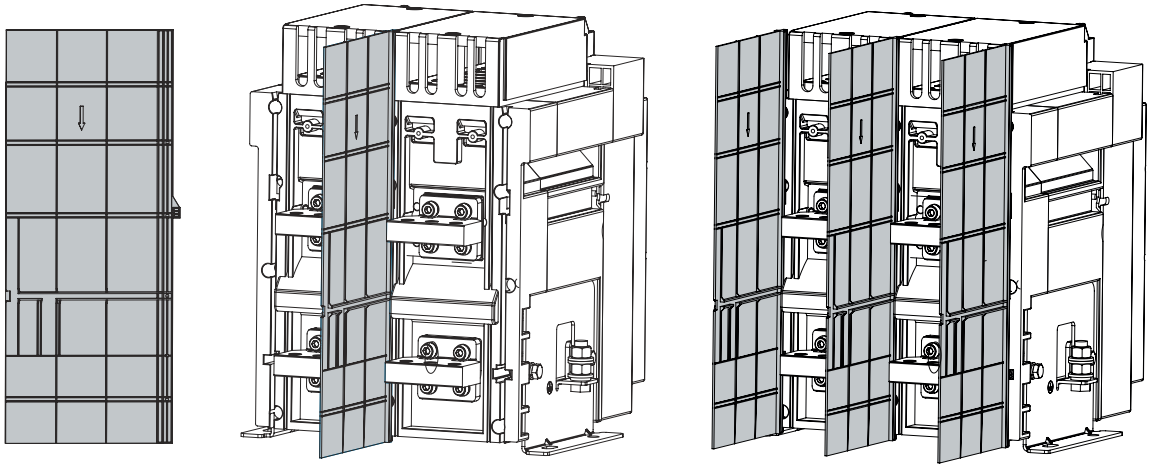
## Phase separator





## Phase separator

Installed vertically between the terminal blocks of the fixed part of a fixed-mounted DC disconnector , it enhances the insulation strength at the busbar connection points and prevents arc propagation into the breaker's interior.



# Main Characteristic

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## Model Explanation and Encoding Rules

### Connection of Ground Terminal

It should be cleaned before grounding of the fixed type DC disconnector. And connect the PE wire to grounding bar of the switchgear by M12. The area of wire refers to the follwing table.

| Cross-sectional area of phase wire（ $mm^2$） | Corresponding protective conductor （ minimum cross-sectional area of PE（ $mm^2$）） |
|---|---|
| 35 ＜ S≤400 | S/2 |
| 400 ＜ S≤800 | 200 |
| S＞ 800 | S/4 |

## Temperature derated coefficient

**The temperature and altitude correction factors for VW3GZ-16 and VW3GZ-40 can be referenced according to the following table:**

If the ambient temperature is higher than +40°C,capacity can be corrected according to the following table.

| Type | Rated current(A)In | +40°C | +45°C | +50°C | +55°C | +60°C | +65°C | +70°C |
|---|---|---|---|---|---|---|---|---|
| VW3GZ-16 | 200-1250 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| | 1600 | 1.0 | 1.0 | 1.0 | 1.0 | 0.98 | 0.93 | 0.87 |
| VW3GZ-40 | 6300-2500 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | / | 1.0 |
| | 2900 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | / | 0.96 |
| | 3200 | 1.0 | 1.0 | 1.0 | 1.0 | 0.94 | / | 0.92 |
| | 3600 | 1.0 | 1.0 | 1.0 | 0.94 | 0.92 | / | 0.9 |
| | 4000 | 1.0 | 0.95 | 0.92 | 0.89 | 0.95 | / | 0.85 |

Altitude correction coefficient

| Type | Project | Parameters | | | | |
|---|---|---|---|---|---|---|
| | Altitude | 2000 | 3000 | 4000 | 4500 | 5000 |
| VW3GZ-16 | Power frequency withstand voltage(V) | 5000 | 4500 | 3500 | / | 2200 |
| | Rated current(A) | 1.0In | 0.9In | 0.8In | / | 0.6In |
| | Rated working voltage(V) | DC1000 DC1500 | DC1000 DC1500 | DC1000 DC1500 | / | DC1000 DC1500 |
| | Rated Insulation voltage(V) | 1600V | 1600V | 1600V | / | 1600V |
| VW3GZ-40 | Working current(A) | 1.0In | 0.9In | 0.88In | 0.85In | 0.82In |
| | Breaking capacity | 1.0 | 0.98 | 0.93 | 0.88 | 0.85 |

# Size and Connection

VOZWEI

## Copper busber specification

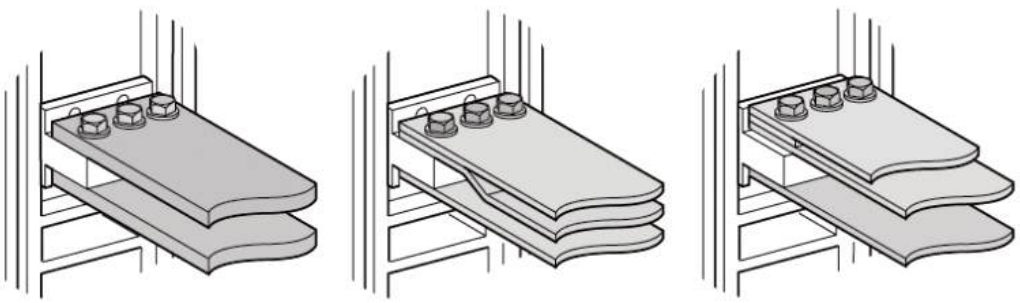
| Frame size rated current Inm (A) | Rated current In (A) | Copper busbar specification | | |
|---|---|---|---|---|
| | | Number of busbar | | Dimension |
| | | Horizontal wiring | Vertical wiring | |
| VW3GZ-16 | ⩽630 | 1 | | 50×5 |
| | 800 | 1 | | 50×10 |
| | 1000 | 1 | | 50×10 |
| | 1250 | 2 | | 50×10 |
| | 1600 | 2 | | 50×10 |
| VW3GZ-40 | 630 | 2 | 1 | 80×5 |
| | 800 | 2 | 1 | 80×5 |
| | 1000 | 2 | 1 | 80×5 |
| | 1250 | 2 | 1 | 100×5 |
| | 1600 | 2 | 1 | 100×5 |
| | 2000 | 3 | 2 | 100×5 |
| | 2500 | 4 | 3 | 100×5 |
| | 2900 | 3 | 2 | 100×10 |
| | 3200 | 4 | 3 | 100×10 |
| | 3600 | 5 | 4 | 100×10 |
| | 4000 | 5 | 4 | 100×10 |

***Note 1:*** *The table shows that the DC disconnector is installed in an open environment with a maximum ambient temperature of 40 °C and meets the copper bar specifications specified in GB/T 14048.3 for heating conditions. If the temperature exceeds 40 °C, the breaking capacity should be reduced or the number of copper bars should be increased.*
***Note 2:*** *The maximum allowable temperature for copper bars should not exceed 110 °C.*

Recommended screw used of outlet busbar diameter

| Switch Disconnector type | Outlet busbar diameter | Screws grade 8.8 (with washer) | Tightening torque |
|---|---|---|---|
| VW3GZ-16 | Φ11 | M10 | 50N.m |
| VW3GZ-40 | Φ13 | M12 | 70N.m |

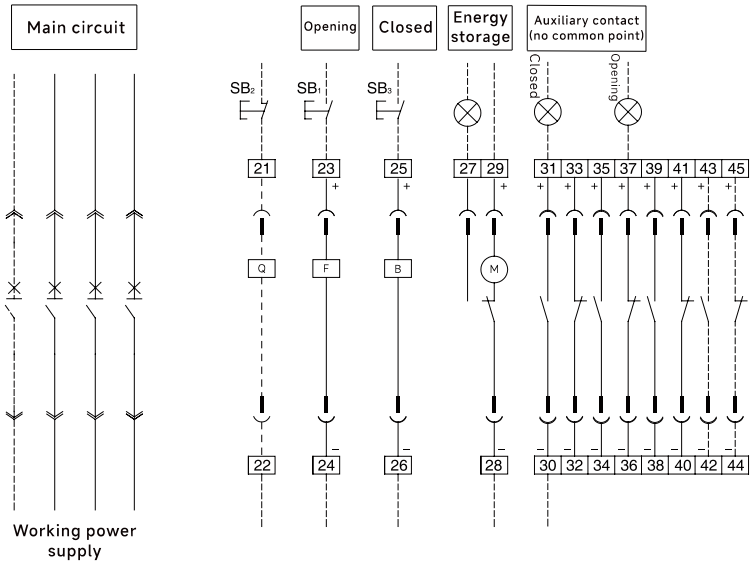
Wiring method for copper bars



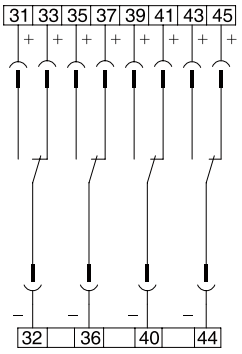
# Size and Connection

VOZWEI

## VW3GZ-16 Electrical wiring Diagram




Special type (four sets of auxiliary)




***Note:*** ***SB1*** *Shunt button* ***SB3*** *Close button* ***F*** *Shunt release*
***B*** *Closed electromagnet* ***M*** *Motor operating mechanism*

| Terminal Number | |
|---|---|
| 21#, 22# | Under-voltage release or loss of voltage release |
| 23#, 24# | Shunt release |
| 25#, 26# | Closed electromagnet |
| 27#, 28#, 29# | Motor operating mechanism |
| 30#~45# | Auxiliary contact |

***Note:***

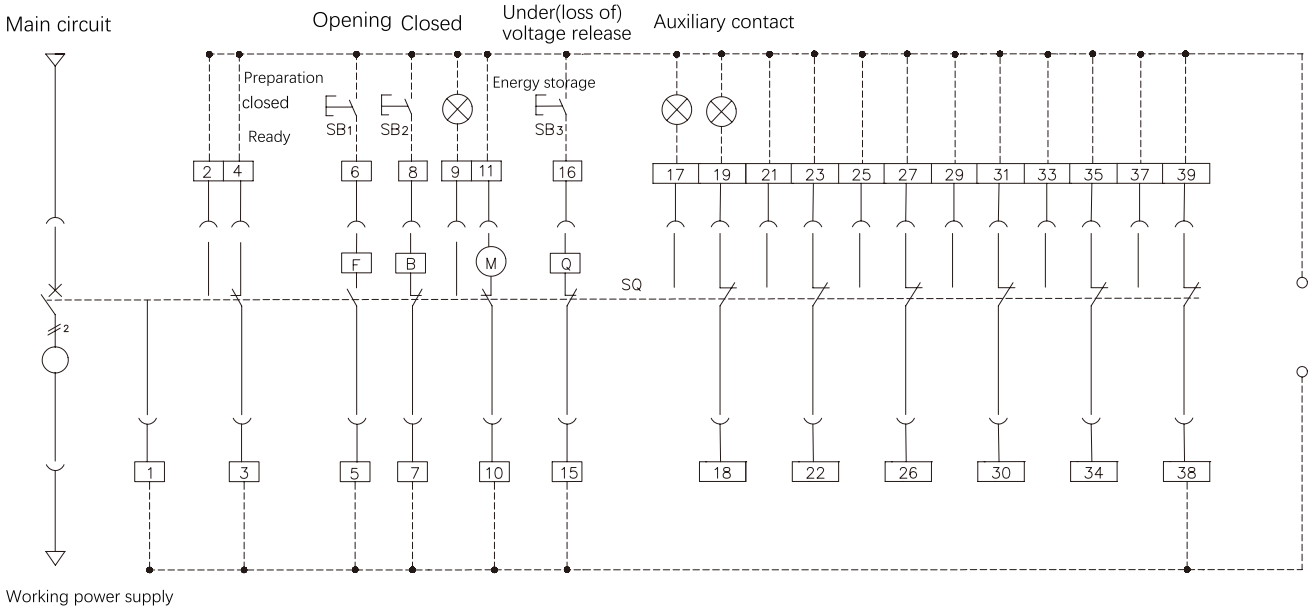
*1) the Q, F, B, M can be with different power supply voltage;*

*2) Terminal 29# can be directly connected to the power supply (automatic pre energy storage),It can also be connected to the normally open button and then to the power supply (manually controlled pre energy storage);*

*3) The buttons and indicator should be provided by the user;*

*4) If the control power supply is DC, please connect the positive and negative wire*

## VW3GZ-40 Electrical wiring Diagram




***Note:***

***SB1*** *Open button*

***SB2*** *Close button*

***SB3*** *Undervoltage release button*

***F*** *Shunt release*

***B*** *Closed electromagnet*

***M*** *Motor operating mechanism*

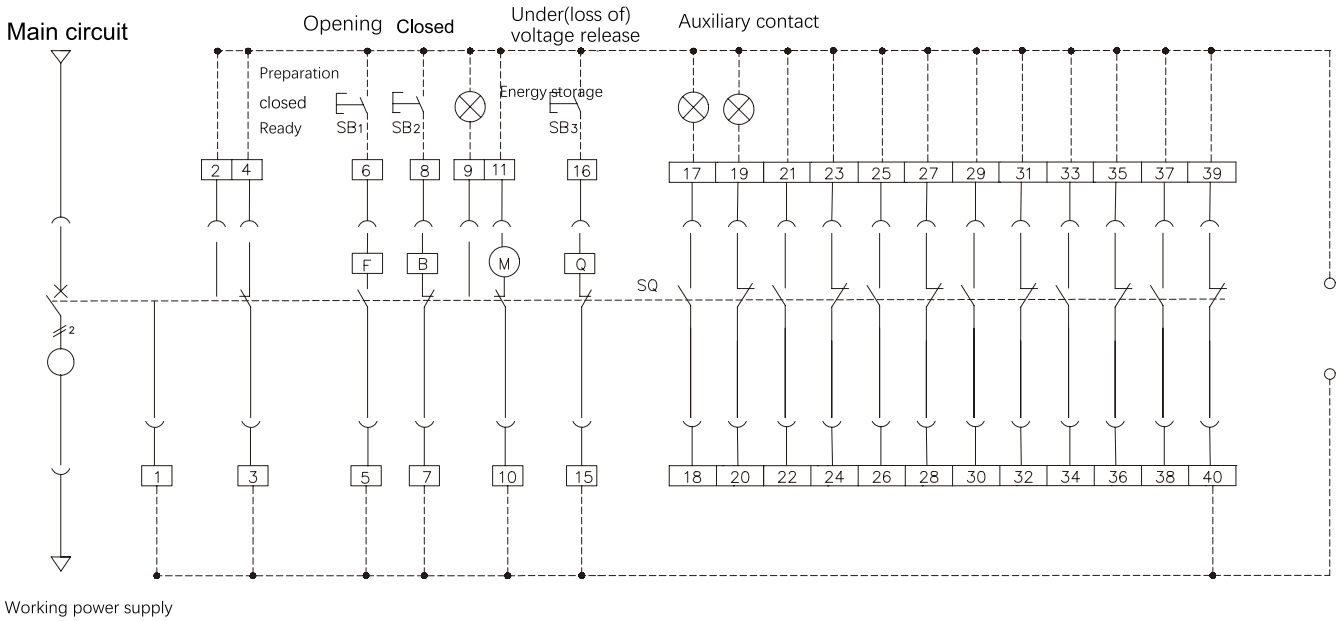
***SQ*** *Auxiliary contact*

| Terminal Number | Description |
|---|---|
| 1# | Grounding terminal |
| 2#、3#、4#（Optional） | Closing ready terminal |
| 5#、6# | Shunt release terminal |
| 7#、8# | Closing release terminal |
| 9#、10#、11# | Motor operator terminal |
| 15#、16#（Optional） | Undervoltage release terminal |
| 17#-28# | Auxiliary contact terminal 3no3nc |
| 29#-40#（Optional） | Auxiliary contact terminals |

***Note:***

*External wiring diagram shows buttons and indicators to be provided by the user*

## VW3GZ-40 Electrical Wiring Diagram (No common point)




***Note:***

***SB1*** *Open button*

***SB2*** *Close button*

***SB3*** *Undervoltage release button*

***F*** *Shunt release*

***B*** *Closed electromagnet*

***M*** *Motor operating mechanism*

***SQ*** *Auxiliary contact*

| Terminal Number | Description |
|---|---|
| 1# | Grounding terminal |
| 2#、3#、4#（Optional） | Closing ready terminal |
| 5#、6# | Shunt release terminal |
| 7#、8# | Closing release terminal |
| 9#、10#、11# | Motor operator terminal |
| 15#、16#（Optional） | Undervoltage release terminal |
| 17#-28# | Auxiliary contact terminal 3no3nc |
| 29#-40#（Optional） | Auxiliary contact terminals |

***Note:***

*External wiring diagram shows buttons and indicators to be provided by the user*

# Size and Connection

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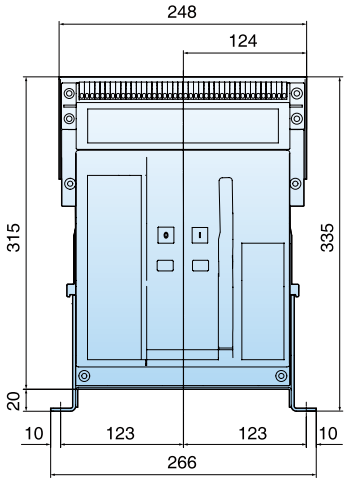
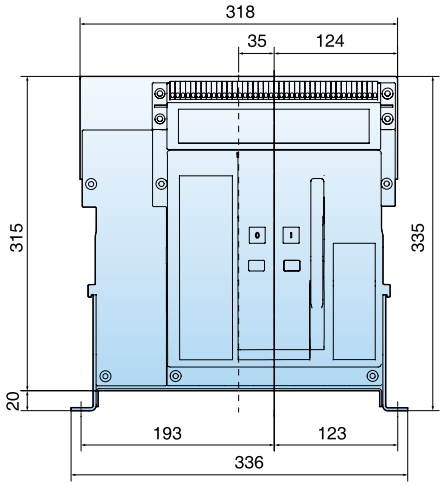
## Fixed type (VW3GZ-16, 200-1600A)

### Front view

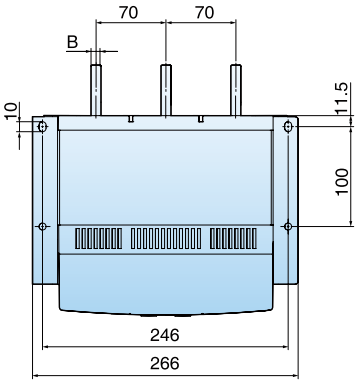


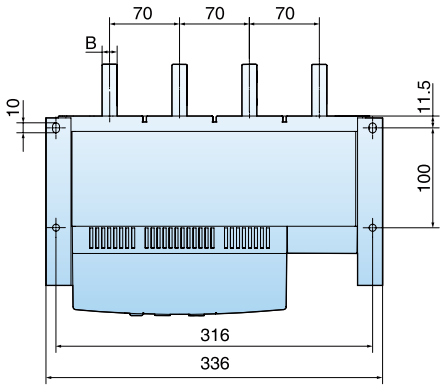

3 pole



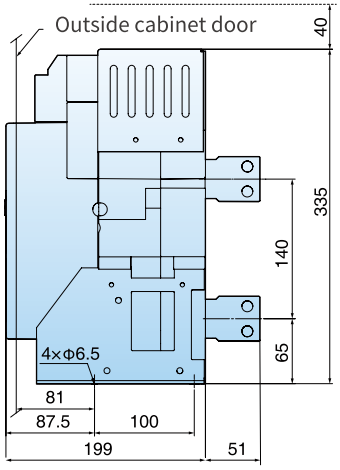

4 pole

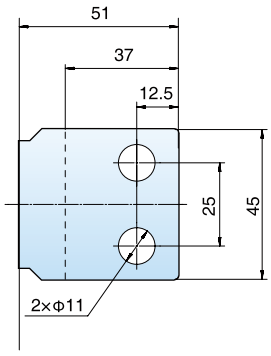
### Vertical Wiring




Distance for dismantling the arc extinguishing chamber



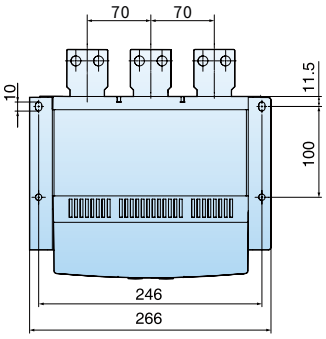



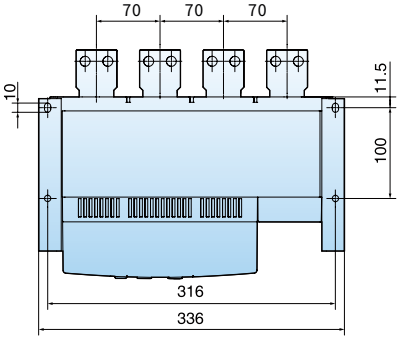

| Current | VW3GZ-16 (200~1250A) | VW3GZ-16 (1600A) |
|---|---|---|
| Dimension B (mm) | 10 | 15 |

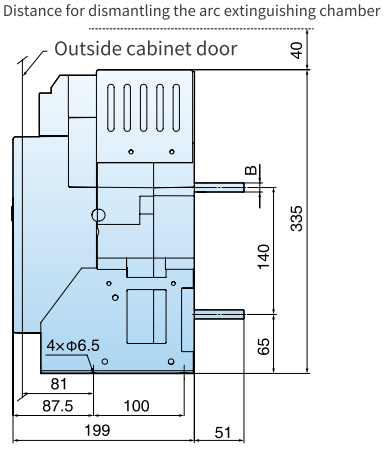
# Size and Connection

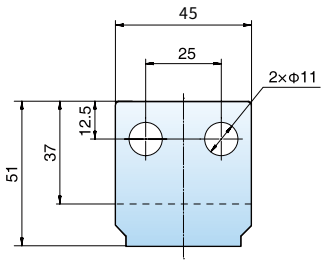
VOZWEI

## Horizontal Wiring

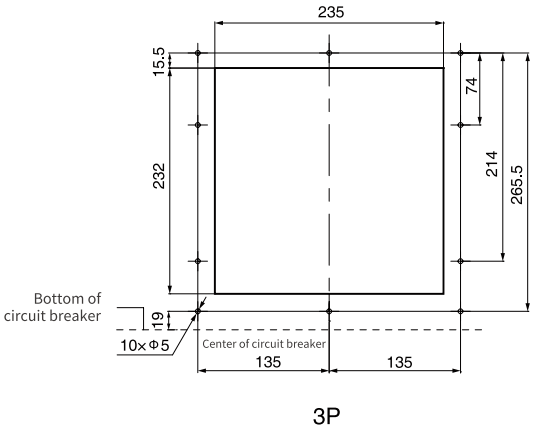


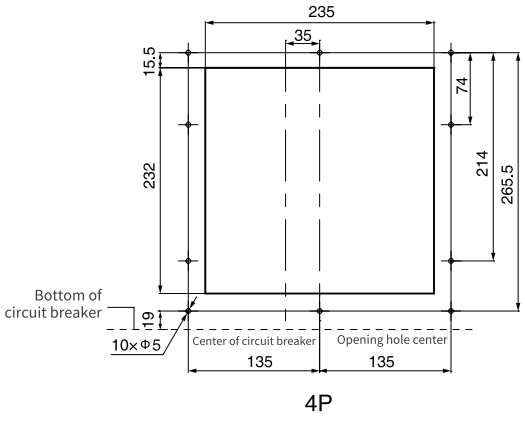




## Cabinet door open hole dimension



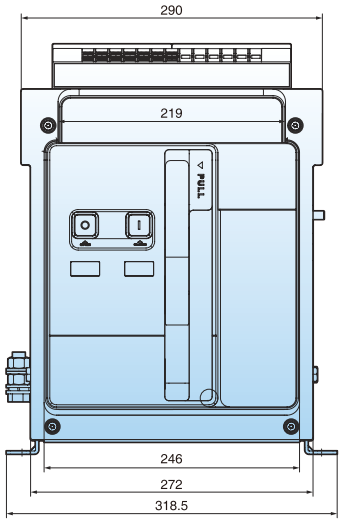

3P



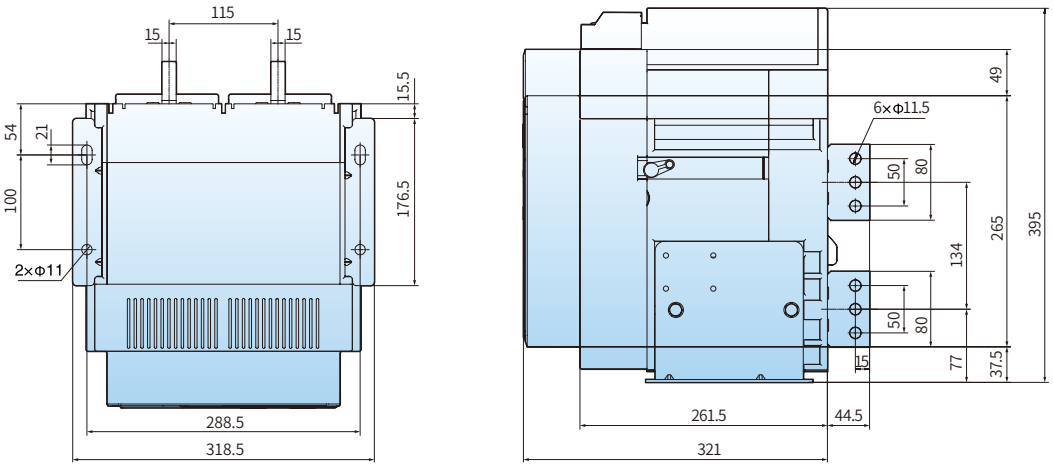

4P

## Fixed type (VW3GZ-40, 630~2500A)

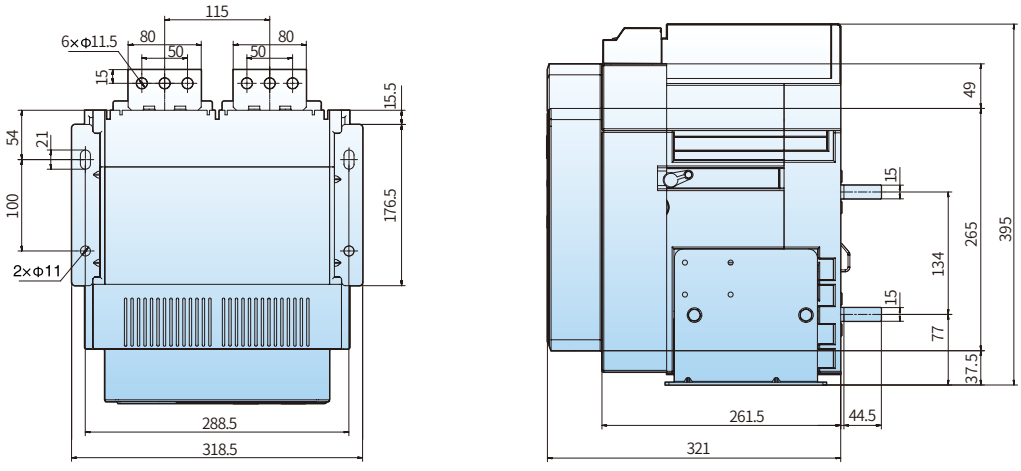
### Front view




### Vertical Wiring

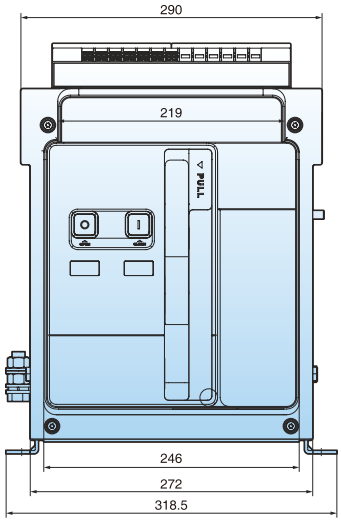



### Horizontal Wiring

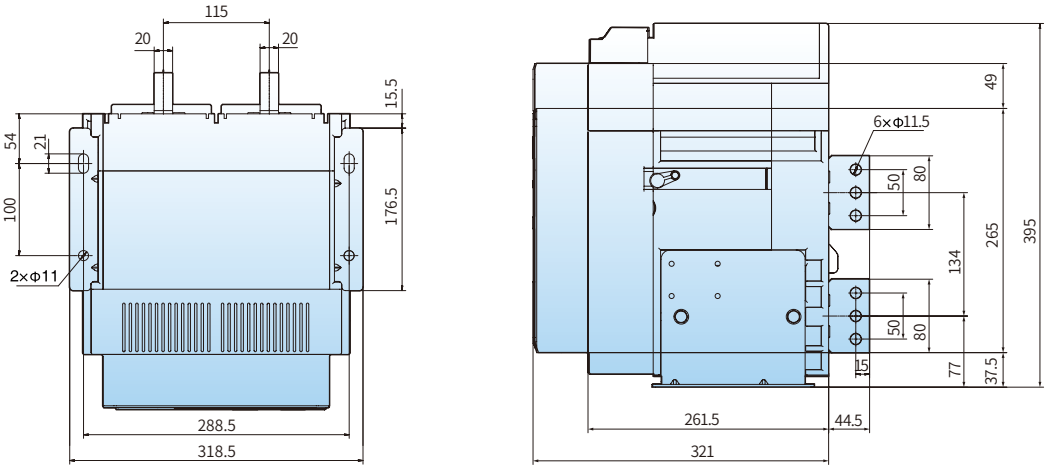


## Fixed type (VW3GZ-40, 2900-3200A)

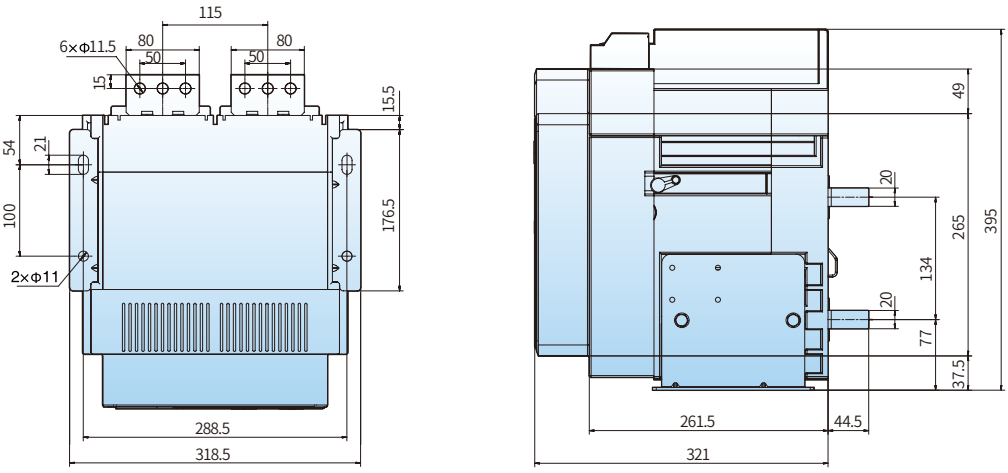
### Front view




### Vertical Wiring

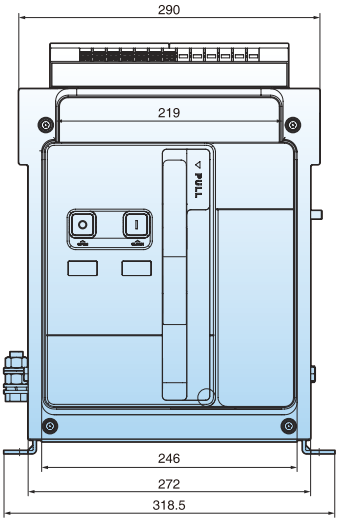



### Horizontal Wiring

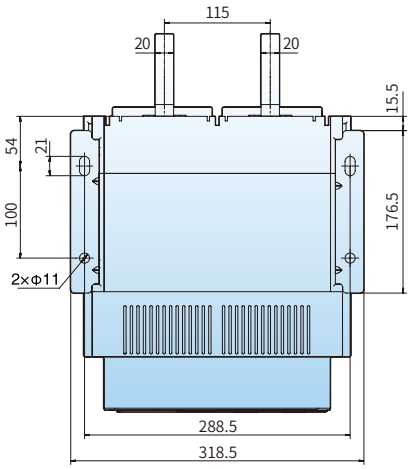


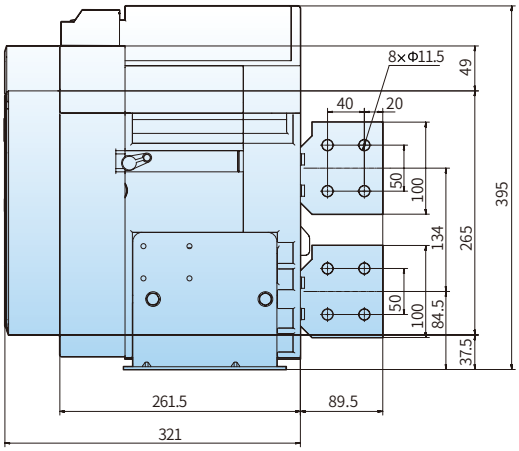
## Fixed type (VW3GZ-40, 3600-4000A)

### Front view

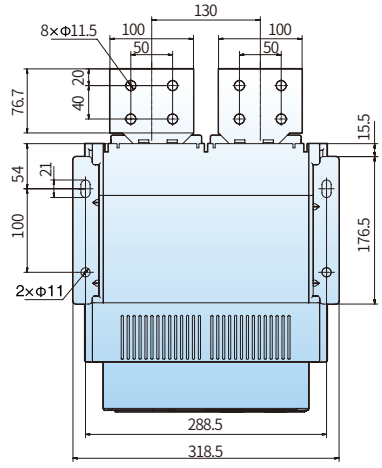


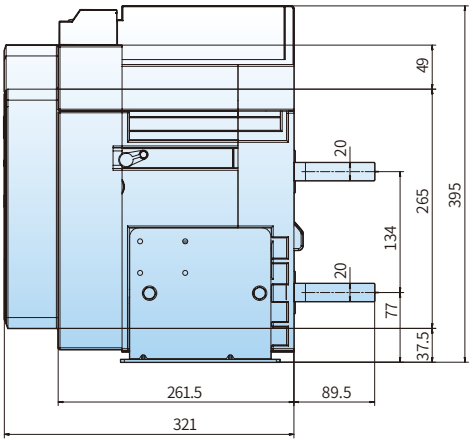

### Vertical Wiring




### Horizontal Wiring



# Size and Connection

VOZWEI

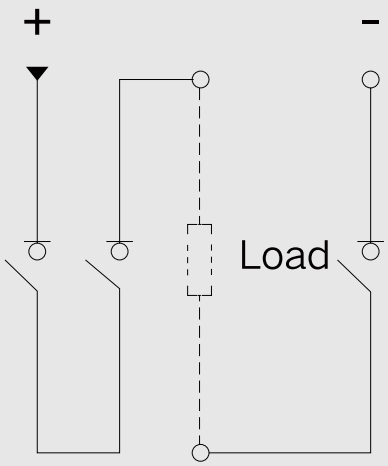
The selection of switchgear in DC systems mainly considers the following aspects:

- Rated working voltage, considering the number of series connected poles for disconnection
- Rated current, considering load power
- Grounding system method

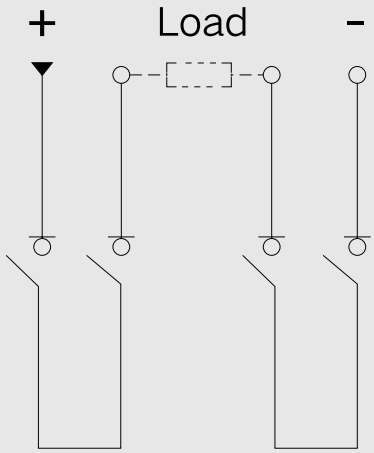
a. Three pole series isolation switch - B-type wiring method

b. Four pole series isolation switch - C-type wiring method

## Recommended wiring method for VW3GZ-16 DC disconnector



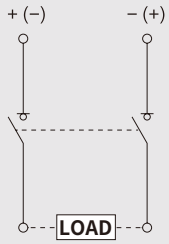

B-type wiring method



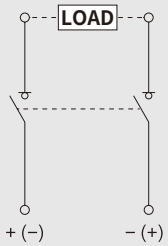

C-type wiring method

***Note:*** *If directly connected in parallel or series with the busbar, the continuous load of the isolating switch can only be 80% of the maximum operating current due to heating reasons.If parallel or series connections are made at a distance of 1 meter from the busbar, the switch disconnector can operate at full load.*

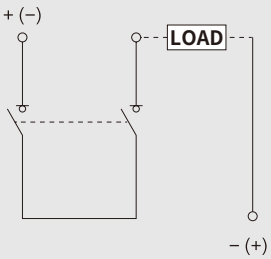
## Recommended wiring method for VW3GZ-40 DC disconnector



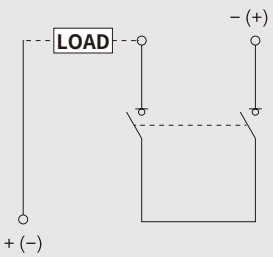

Wiring method 1




Wiring method 2




Wiring method 3

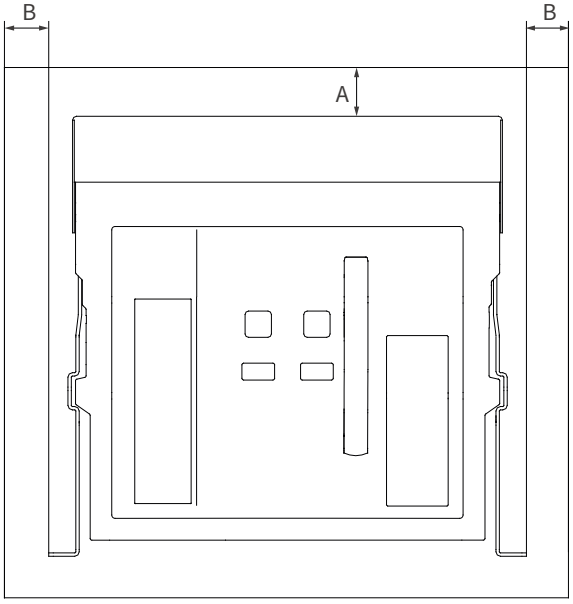



Wiring method 4

# Size and Connection

VOZWEI

When users install the DC disconnector into the cabinet, the safe distance between the DC disconnector and the cabinet is shown in the figure below, and the installation dimensions are shown in the table below.




**Fixed type DC disconnector**

unit: mm

| Fixed type | To the insulator | | To the metallic body grounded safely | | To the live part | |
|---|---|---|---|---|---|---|
| | A | B | A | B | A | B |
| VW3GZ-16 | 0 | 0 | 0 | 0 | 60 | 60 |
| VW3GZ-40 | 0 | 0 | 0 | 0 | 80 | 80 |

***Note:*** *The safety distance for fixed switches should consider a space of 40mm required to remove the arc extinguishing chamber;*

# Order Notes

VOZWEI

| Please fill in numbers in,and check √ in☐ | | |
|---|---|---|
| User:<br>Number of units ordered:<br>Date of ordering: | | |
| Basic parameters | Shell frame level | ☐ VW3GZ-1600 ☐ VW3GZ-4000 |
| | Installation mode | F-Fixed type |
| | Rated current(A) | VW3GZ-1600 ☐ 200 ☐ 400 ☐ 630 ☐ 800 ☐ 1000 ☐ 1250 ☐ 1600<br>VW3GZ-4000 ☐ 630 ☐ 800 ☐ 1000 ☐ 1250 ☐1600 ☐ 2000 ☐ 2500 ☐ 2900 ☐ 3200 ☐ 3600 ☐ 4000 |
| | Breaking type | ☐ Empty: Standard breaking level |
| | Number of poles | ☐ 2-2P ☐ 3-3P ☐ 4-4P Note:(2P only for VW3GZ-4000) |
| | Wiring mode | VW3GZ-1600: ☐ C1-Standard Horizontal Wiring ☐ C2-Standard Vertical Wiring<br>VW3GZ-4000: ☐ C1-Horizontal wiring ☐ C2-Vertical wiring ☐ C4-Mixed wiring(upper horizontal,lower vertical)<br>☐ C5-Mixed wiring(upper vertical,lower horizontal) ☐ 1-Standard wiring |
| Required accessories | Electric operating mechanism | ☐ D1-AC400V ☐ D2-AC230V/DC220V ☐ D4-AC/DC110V ☐ D5-DC24V |
| | Shunt release | ☐ F1-AC400V ☐ F2-AC230V/DC220V ☐ F4-AC/DC110V ☐ F5-DC24V |
| | Closed electromagnet | ☐ B1-AC400V ☐ B2-AC230V/DC220V ☐ B4-AC/DC110V ☐ B5-DC24V |
| Optional accessories | Under-voltage release | Voltage specifications ☐ Q1-AC400V ☐ Q2-AC230V ☐ Q5-DC24V |
| | | Delay time ☐ 0-Instantaneous ☐ 1-1s delay ☐3-3s delay ☐ 5-5s delay |
| | Loss of voltage release | Voltage specifications ☐ S1-AC400V ☐ S2-AC230V |
| | | Delay time ☐ 0-Instantaneous ☐ 1-1s delay ☐ 3-3s delay ☐ 5-5s delay |
| | Auxiliary contact | ☐ A33-3NO3NC ☐ A44-4NO4NC ☐ A55-5NO5NC ☐ A66-6NO6NC<br>☐ ____NO____NC(Max.14) |
| | | ☐ A3-Three-group switching ☐ A4-Four-group switching ☐ BX-Closing ready signal output unit<br>☐ A6-Six-group switching ☐ _____-group switching(Max.14) |
| | Closing ready | ☐ BX-Closing ready signal output unit |
| | Counter | ☐ JS-Counter Note: (JS only for VW3GZ-40) |
| | Door frame | ☐ M-Door frame Note: (M only for VW3GZ-16) |
| | Button lock | ☐ S-Button lock |
| Language type | | ☐ Chinese ☐ Y-English |
| Interlocking Off-position lock accessories | | ☐ SF11-Key lock device(one lock and one key) ☐ SF21-Key lock device(two locks and one key)<br>☐ SF31-Key lock device (three locks and one key) ☐ SF22-Key lock device(two locks and two keys)<br>☐ SF32: Key lock device(three locks and two keys) ☐ SF53: Key lock device (five locks and three keys) |
| Mechanical interlocking | | ☐ SR11-two sets of steel cables, one for closing and one for opening<br>☐ SR12-three sets of steel cables, one for closing and two for opening<br>☐ SR21-three sets of steel cables, two for closing and one for opening<br>☐ SY11-two sets of hard rods, one for closing and one for opening |
| Other requirements | | |

# VM3

Molded Case Circuit Breaker

# Design Features

VOZWEI


- Tailored for solar energy and wind power
- With higher breaking capacity
- With excellent anti damp heat and dew solidification capabilities
- Working voltage up to 1000V
- Strong ability to adapt to alternating changes in high and low temperatures
- High altitude adaptability

## Ambient conditions

### Operating ambient temperature/storage temperature

- Operating environment temperature: -40 °C~+70 °C, with an average value of no more than +35 °C within 24 hours
- Storage temperature: -40 °C~+75 °C

### Altitude conditions

- Altitude of installation site ⩽ 2000m (Over 2000 meters need capacity reduction for using)

### Pollution level

- Level 3

### Protection level

- Product protection level: IP20

### Installation Category

- Class II (load) and Class III (distribution and control)

### Installation Environment

- The product is installed in a medium without explosion risk, and the medium is not sufficient to corrode metal, there is no gas that damages the insulation layer of the product, there is no conductive dust, and it should be avoided from being used in places invaded by rain and snow

### Environmental requirements

- The product meets RoHS standards

# Selection Guide

VOZWEI

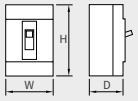
| VM3 Series Molded Case Circuit Breaker (TMF) | | | | VM3-250HUL | VM3-250HUM |
|---|---|---|---|---|---|
| | | | |  |  |
| Poles | | | | 3P | 3P |
| Control | Rotary handle operator | | | ■ | ■ |
| | Motor-operated mechanism | | | ■ | ■ |
| Connection | Wiring in front of the board | | | ■ | ■ |
| | Wiring on back of the board | | | — | — |
| | Plug-in | | | — | — |
| | Draw-out | | | — | — |
| IEC 60947-2 | | | | | |
| Release rated current $I_n$ (A) | | | | 63, 80, 100, 125, 140, 160, 180, 200, 225, 250 | 63, 80, 100, 125, 140, 160, 180, 200, 225, 250 |
| Rated insulation voltage(V) | | | Ui | AC1150 | AC1150 |
| Rated impulse withstand voltage(kV) | | | Uimp | 8 | 8 |
| Rated operating voltage(V) | | | Ue | AC800 | AC800/AC1000 |
| Breaker Type | | | | L | M |
| Rated ultimate short circuit breaking capacity(kA) | Icu | AC 50/60 Hz | 400V | / | / |
| | | | 500V | / | / |
| | | | 690V | / | / |
| | | | 800V | 30 | 40 |
| | | | 1000V | / | 15 |
| Rated service short circuit breaking capacity(kA) | Ics | AC 50/60 Hz | 400V | / | / |
| | | | 500V | / | / |
| | | | 690V | / | / |
| | | | 800V | 23 | 36.5 |
| | | | 1000V | / | 15 |
| Utilization category | | | | A | A |
| Number of operation cycles | | Machinery | | 10000 | 10000 |
| | | Electrical | AC400V | / | / |
| | | | AC500V | / | / |
| | | | AC690V | / | / |
| | | | AC800V | 1500 | 1500 |
| | | | AC1000V | | 1000 |
| Protection unit | | | | | |
| Protection unit | | | | Thermal-Magnetic | Thermal-Magnetic |
| Overload protection | | Long time delay | $I_r$ ($I_n$×...) | ■ | ■ |
| Short-circuit protection | | Instantaneous | $I_i$ ($I_n$×...) | ■ | ■ |
| Indication and control accessories | | | | | |
| Alarm switch(AL) | | | | ■ | ■ |
| Auxiliary switch(AX) | | | | ■ | ■ |
| Shunt release(SHT) | | | | ■ | ■ |
| Under-voltage release(UVT) | | | | ■ | ■ |
| Installation | | | | | |
| Accessories | | Terminal | | ■ | ■ |
| | | Phase separator | | ■ | ■ |
| Outline dimension (mm) (H × W × D) | | | | 200 × 116 × 107 | 200 × 116 × 107 |

***Note :*** *1.HUL,HUM,HUH type only provides front wiring of 3P;*

*2.The symbol "–" indicates that this option is not available; The symbol "■" indicates that this option is optional.*

# Selection Guide

VOZWEI

| VM3 Series Molded Case Circuit Breaker (TMF) | | | | VM3-250HUH | VM3-630HUL |
|---|---|---|---|---|---|
| | | | |  |  |
| Poles | | | | 3P | 3P |
| Control | Rotary handle operator | | | ■ | ■ |
| | Motor-operated mechanism | | | ■ | ■ |
| Connection | Wiring in front of the board | | | ■ | ■ |
| | Wiring on back of the board | | | — | — |
| | Plug-in | | | — | — |
| | Draw-out | | | — | — |
| IEC 60947-2 | | | | | |
| Release rated current $I_n$ (A) | | | | 63,80,100,125,140,160, 180,200,225,250 | 200,250,315,350,400 |
| Rated insulation voltage(V) | | | Ui | AC1150 | AC1150 |
| Rated impulse withstand voltage(kV) | | | Uimp | 8 | 8 |
| Rated operating voltage(V) | | | Ue | AC800 | AC800/AC1000 |
| Breaker Type | | | | H | L |
| Rated ultimate short circuit breaking capacity(kA) | Icu | AC 50/60 Hz | 400V | / | / |
| | | | 500V | / | / |
| | | | 690V | / | / |
| | | | 800V | 50 | 36.5 |
| | | | 1000V | / | 15 |
| Rated service short circuit breaking capacity(kA) | Ics | AC 50/60 Hz | 400V | / | / |
| | | | 500V | / | / |
| | | | 690V | / | / |
| | | | 800V | 36.5 | 36.5 |
| | | | 1000V | / | 15 |
| Utilization category | | | | A | A |
| Number of operation cycles | Machinery | | | 10000 | 10000 |
| | Electrical | | AC400V | / | / |
| | | | AC500V | / | / |
| | | | AC690V | / | / |
| | | | AC800V | 1500 | 1500 |
| | | | AC1000V | | 1000 |
| Protection unit | | | | | |
| Protection unit | | | | Thermal-Magnetic | Thermal-Magnetic |
| Overload protection | Long time delay | | $I_r$ ($I_n$×... ) | ■ | ■ |
| Short-circuit protection | Instantaneous | | $I_i$ ($I_n$×... ) | ■ | ■ |
| Indication and control accessories | | | | | |
| Alarm switch(AL) | | | | ■ | ■ |
| Auxiliary switch(AX) | | | | ■ | ■ |
| Shunt release(SHT) | | | | ■ | ■ |
| Under-voltage release(UVT) | | | | ■ | ■ |
| Installation | | | | | |
| Accessories | Terminal | | | ■ | ■ |
| | Phase separator | | | ■ | ■ |
| Outline dimension (mm) (H × W × D) |  | | | 200 × 116 × 107 | 257 × 150 × 103 |



***Note :*** *1.HUL,HUM,HUH type only provides front wiring of 3P;*

*2.The symbol "–" indicates that this option is not available; The symbol "■" indicates that this option is optional.*

# Selection Guide

VOZWEI

| VM3 | – | 250 | HU | M | 250 | / | TMF | / | 3 | / | AX/SHT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 2 | 3 | 4 | 5 | | 6 | | 7 | | 8 |

| SN | Name | Specification, type code | |
|---|---|---|---|
| 1 | Design code | VM3: Design code | |
| 2 | Frame rating | 250: 250A<br>630: 630A | |
| 3 | High voltage type | HU: High voltage | |
| 4 | Breaking capacity | L, M, H | |
| 5 | Rated current | 63~400A | |
| 6 | Protection unit type | TMF: Thermal magnetic protection unit (For power distribution protection) | |
| 7 | Number of poles | 3P | |
| 8 | Accessories (separated with''/'' between different accessories) | Connection accessories | Empty: Fixed type wiring in front of the board |
| | | Electrical accessories | AL: Alarm contact<br>AX: Auxiliary contact<br>SHT: Shunt release<br>UVT: Under-voltage release |
| | | Control Accessories<br>Note: VM3-630HU optional | CD2: Motor operator<br>CS1: Manual operator<br>CS2: Manual operator-eccentric<br>CS3: Box-type manual operator eccentric<br>SF: Rotary handle F type<br>SR: Rotary handle R type |

## * Electrical accessories

| Accessories | Voltage | | | | |
|---|---|---|---|---|---|
| SHT Shunt release | AC230V | AC400V | DC220V | AC/DC110V | DC24V |
| UVT Under-voltage release | AC230V | AC400V | | | |
| Motor operator | AC110V | AC230V | DC110V | AC/DC220V | DC24V |

*If the accessory voltage and voltage control loop is inconsistent,please use indicate the accessory voltage after accessory.*

*Example*

***VM3-250HUL250/TMF/3/AX/SHT (AC230)***

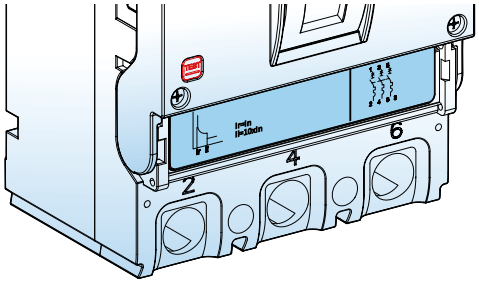
*Meaning: VM3 series circuit breaker; the frame level is 250A; breaking capacity is 30kA, 3 poles; rated current is 250A; fixed type wiring on front of the board; accessory contains auxiliary contact and shunt release with voltage (AC230V).*

***Notice:*** *1. HU type only provides front wiring of 3P.*

# Main Characteristic



## TMF Protection unit



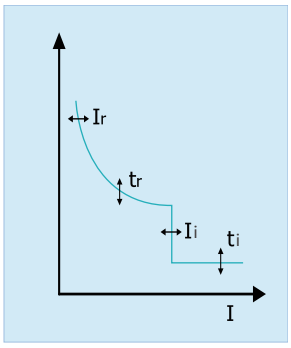

**TMF:** Thermal magnetic protection unit (For power distribution protection)

### TMF Sign interpretation


Protection curve

Protection unit type

### TMF Protection characteristics




TMF: Data sheet of protection characteristics

| Rated current(A) | Inverse time acting characteristic (Ambient air temperature +40°C) | | Instantaneous acting current(A) |
|---|---|---|---|
| | 1.05$I_n$(Cold state) Not acting time | 1.3$I_n$(Hot state) Acting time | |
| $I_n \leqslant 63$ | $\geqslant$1h | <1h | $10I_n \pm 20\%$ |
| $63 < I_n \leqslant 800$ | $\geqslant$2h | <2h | |

## TMF Protection unit power loss

Power loss

| Circuit Breaker Model | Rated current(A) | Total power loss of three-phase(W) | |
|---|---|---|---|
| | | Wiring in front of the board, Wiring on back of the board | Plug-in / Wiring on back of the board |
| VM3-250 | 250 | 35 | 40 |
| VM3-630 | 630 | 43 | 51 |

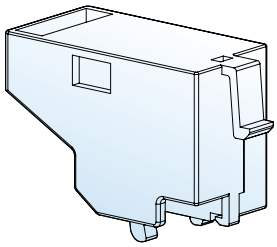
Derated coefficient of rated current

| Circuit Breaker Model | +40°C | +45°C | +50°C | +55°C | +60°C | +65°C | +70°C |
|---|---|---|---|---|---|---|---|
| VM3-250 | 1.0 In | 1.0 In | 1.0 In | 1.0 In | 0.98 In | 0.95 In | 0.92 In |
| VM3-630 | 1.0 In | 1.0 In | 1.0 In | 1.0 In | 0.97 In | 0.94 In | 0.91 In |

Derated coefficient of high altitude of VM3 series MCCB

| Item | Parameter | | | | | | |
|---|---|---|---|---|---|---|---|
| Elevation | 2000 | 2500 | 3000 | 3500 | 4000 | 4500 | 5000 |
| Power frequency withstand voltage(V) | 3000 | 3000 | 2500 | 2400 | 2200 | 2200 | 2200 |
| Isolation voltage | 1 | 1 | 0.95 | 0.91 | 0.87 | 0.87 | 0.87 |
| Breaking capacity correction factor | 1 | 1 | 0.95 | 0.91 | 0.87 | 0.80 | 0.74 |
| Working current correction factor | 1 | 1 | 0.98 | 0.97 | 0.96 | 0.95 | 0.94 |

## Electrical accessories



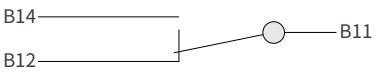
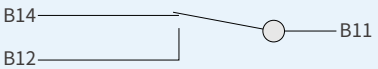
Alarm contact (AL)

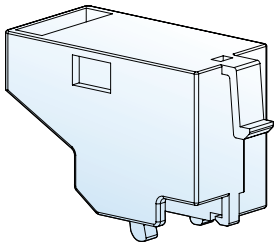
### Alarm contact (AL)

#### Function

The product outputs alarm signal when it is tripped by outer excitation signal due to overload, short circuit, undervoltage, or when the release button is pressed. This function is particularly useful in an automatic system, since that a fault signal can be sent to the designated place. And the fault signal will turn on due to an internal microswitch, when circuit breaker releases. But for normal opening or closing operations, it does not have any action.

#### Alarm contact operating characteristics

| Circuit breaker status | Alarm contact status |
|---|---|
| The statuses of open and close |  |
| The statuses of tripping |  |



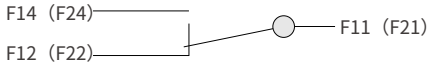
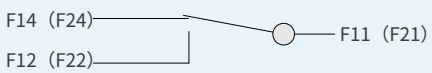
Auxiliary contact (AX)

### Auxiliary contact (AX)

#### Function

Auxiliary switch is used for indication of remote "ON" and "OFF". Each switch contains two contacts, which share a common end of connection. The ON/OFF position depends on the state of main contact. When the circuit breaker is open, one of them is normally open, and the other is closed, or vice versa.

#### Auxiliary contact operating characteristics

| Circuit breaker status | Auxiliary contact status |
|---|---|
| The statuses of open |  |
| The statuses of close |  |

# Accessories



### Alarm contact,Auxiliary contact rated operational current

| Classification | Rated current Inm | Conventional thermal current Ith(A) | Rated working current Ie(A) | |
|---|---|---|---|---|
| | | | AC400V | DC220V |
| Auxiliary contact | ⩽250 | 3 | 0.3 | 0.15 |
| | 400⩽Inm⩽1000 | 3 | 0.4 | 0.2 |
| Alarm contact | 10⩽Inm⩽1000 | - | AC220V/1.0A | 0.15 |

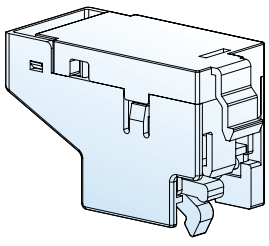
### ON-OFF capacity of Alarm contact and Auxiliary contact under normal conditions

| Utilization category | ON | | | | OFF | | | | Number of operation cycles | Number of operation cycles per minute | Power time |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | I/Ie | U/Ue | cosϕ | T0.95 | I/Ie | U/Ue | cosϕ | T0.95 | | | |
| AC-15 | 10 | 1 | 0.7 | - | 1 | 1 | 0.7 | - | 6050 | 6 | ⩾ 0.05s |
| DC-13 | 1 | 1 | - | 6 × Pe | 1 | 1 | - | 6 × Pe | | | ⩾ 0.05s |

### ON-OFF capacity of Alarm contact and Auxiliary contact under abnormal conditions

| Utilization category | ON | | | | OFF | | | | Number of operation cycles | Number of operation cycles per minute | Power time |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | I/Ie | U/Ue | cosϕ | T0.95 | I/Ie | U/Ue | cosϕ | T0.95 | | | |
| AC-15 | 6 | 1 | 0.7 | - | 1 | 1 | 0.7 | - | - | - | ⩾ 0.05s |
| DC-13 | 1.1 | 1.1 | - | 6 × Pe | 1.1 | 1.1 | - | 6 × Pe | 10 | 6 | ⩾ 0.05s |

***Note:*** *1. $T_{0.95}$=6Pe is an empirical formula in which the unit of "Pe" is watt and the unit of $T_{0.95}$ is millisecond.*
*2. The number of operation of Auxiliary contact can equal to that of the circuit breaker, if the number of operation of circuit breaker is less than 6050.*
*3. The operation frequency and power-on time of an auxiliary contact are allowed to be the same as those of the main circuit.*
*4. If $T_{0.95}$ is more than 0.05s, the power-on time is at least $T_{0.95}$.*



Shunt release (SHT)

## Shunt release (SHT)

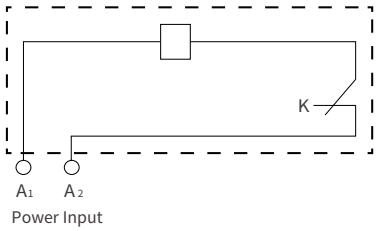
### Function

Shunt release refers to the device which disconnect circuit breaker with current from a distance. A shun release can cut off the signal circuit automatically after tripping.

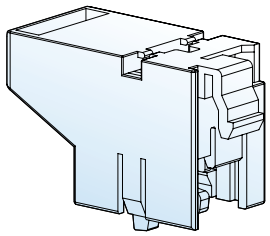
### Operating Characteristics

| | |
|---|---|
| Voltage specification | AC50Hz：110V 230V 400V<br>DC：24V 110V 220V |
| Operating characteristics | When the operation voltage is 70%~110% of the rated control voltage, the shunt release should trip the circuit breaker reliably. |

### Connection diagram (internal accessories of a circuit breaker)




K is a microswitch closed contact of micro switch installed in series with the coil in shunt tripper, when the breaker is tripping,the switch is off by itself, when the breaker is closing, and then the switch is on.



Under-voltage release (UVT)

## Under-voltage release (UVT)

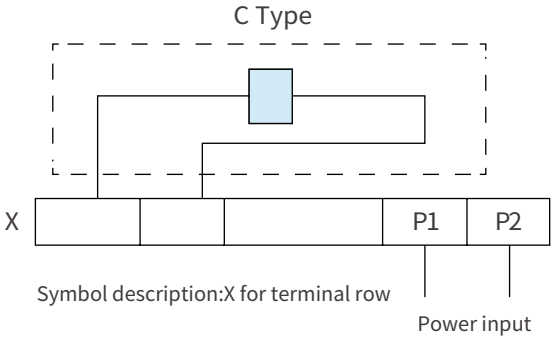
### Function

Under-voltage release is a device which can automatically disconnect the circuit breaker when voltage is reduced.

### Operating characteristics of the under-voltage release

| | |
|---|---|
| Rated operational voltage | AC400V AC230V |
| Operating Characteristics | When the operation voltage is 70%~110% of the rated control voltage,the under-voltage should trip the circuit breaker reliably.<br>When the working voltage is 85%~110% of the rated voltage, the under-voltage release should make the circuit breaker switch on.<br>When the working voltage is less than 35% of the rated voltage, the under-voltage release should prevent the circuit breaker from being switched on. |

### Wiring digram of under-voltage release module (the internal accessories of circuit breaker are depicted in the dotted area)




### Under-voltage release power meter

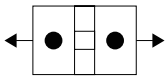
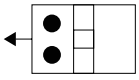
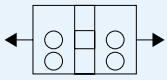
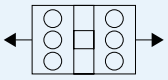
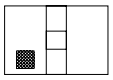
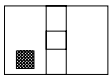
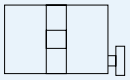
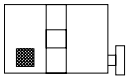
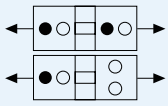
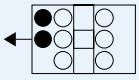
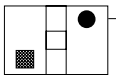
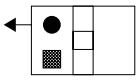
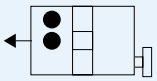
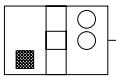
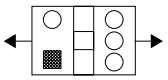
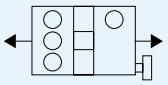
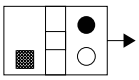
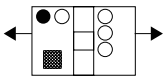
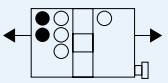
| Equipped with circuit breaker type | Under-voltage release power | |
|---|---|---|
| | AC230V | AC400V |
| VM3-630 (Thermal-magnetic) | 0.75 | 0.75 |

Warning

*Before switch on a circuit breaker, the undervoltage release must be electrified otherwise the circuit breaker may be damaged.*

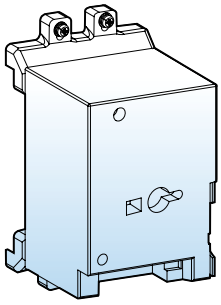
## Electrical accessories (TMF)

### Combined mode of electrical accessories


| Accessory code | Accessory name | Model / Poles | VM3-250 | VM3-630 |
|---|---|---|---|---|
| | | | 3 | 3、4 ① |
| AL | Alarm contact | |  |  |
| AX | Auxiliary contact | |  |  |
| SHT | Shunt release | |  ②③ |  ②③ |
| UVT | Under-voltage release | | / |  ②③ |
| SHT + UVT | Shunt release and under-voltage release | | / |  |
| AL+AX | Alarm contact and auxiliary contact | |  |  |
| AL+SHT | Alarm contact and shunt release | |  ②③ |  ②③ |
| AL+UVT | Alarm contact and under-voltage release | | / |  ②③ |
| AX+SHT | Auxiliary contact and shunt release | |  ②③ |  ②③ |
| AX+UVT | Auxiliary contact and under-voltage release | | / |  ②③ |
| AX+AL+ SHT | Auxiliary contact, alarm contact and shunt release | |  ②③ |  ②③ |
| AX+AL+ UVT | Auxiliary contact, alarm contact and under-voltage release | | / |  ②③ |

***Note:*** *1.If there is need to learn about the instructions of installation of accessories of a 4 poles circuit breaker, please contact with the manufacturer;*
*2.If there is need for a UVT, a voltage module for the UVT is needed firstly(no voltage module is needed for a SHT).*
*3.The standard installation of a SHT is the left pole installation, UVT is the right pole installation, please note if there is any special request.*
*4.AL module of a VM3-630 product is special supply for the right pole installation, please contact with the manufacturer*

## Control accessories



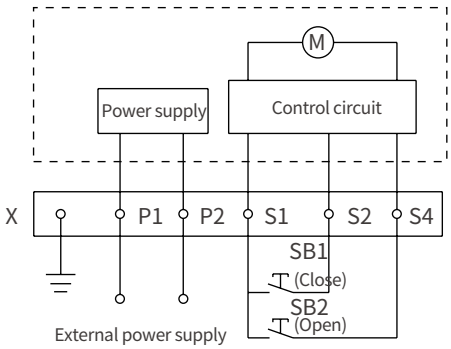
Motor-operated mechanism (CD2)

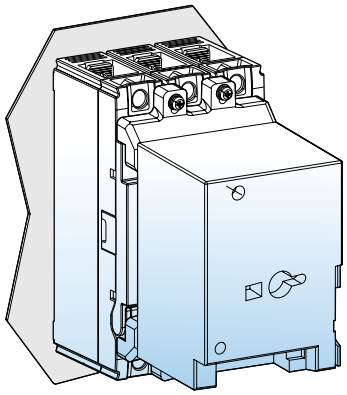
### Motor-operated mechanism (CD2)

Motor-operated mechanism which consists of an energy storage spring, an opening coil and a closing coil is used to control a circuit breaker from a distance. And a CD2 Motor-operated mechanism has the following features: CD2 type electric operating mechanism has

- The operation mode, manual or automatic mode, can be chosen.
- Hand drive handle is in front of a face cover.

The wiring diagram of a CD2 motor-operated mechanism is shown as following (internal accessories are indicated in thedotted square)



### Manual operation

- The internal power supply is automatically closed, if the switch is operated to "manual" position.
- Put the handle into the slot in the front of an electric operating mechanism and then turn in a clockwise direction.
- Do not turn it in a counterclockwise direction.

### Electric operation

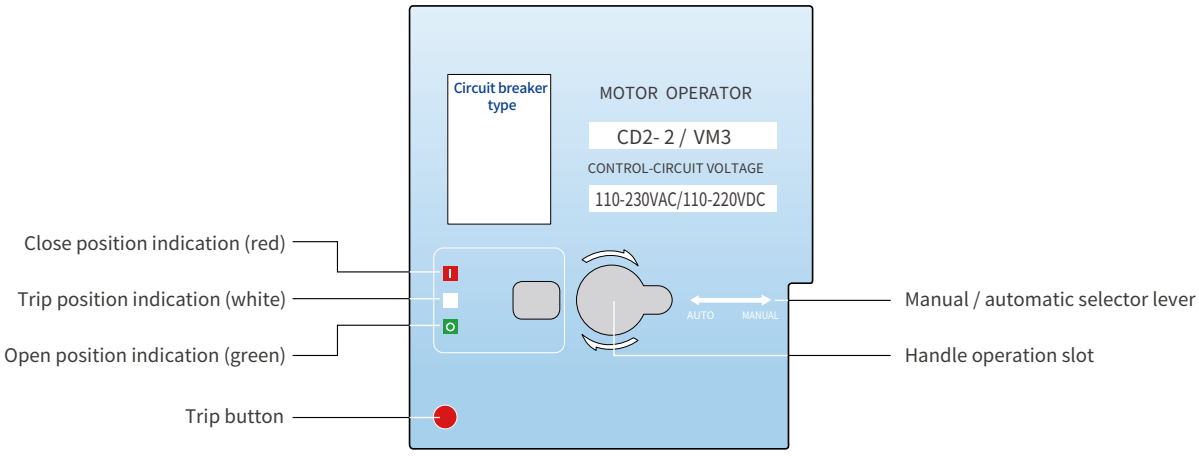
- Auto connection
- Operating frequency should be no more than 3 times per minute.
- Using ON/OFF switches in the frequency range.
- Please do not input ON/OFF signal during automatic operation.
- Under-voltage release accessory(UVT) need to be applied a rated voltage before electric operation, if a Under-voltage release accessory(UVT) is mounted in a circuit breaker.

# Accessories

VOZWEI

## Motor-operated mechanism appearance

Example: CD2-2/VM3



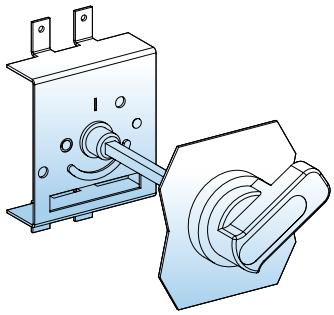

## Acting Current, Motor Power and Longevity of CD2 type Power-driven Operating Mechanism

| Equipped with circuit breaker type | Electric operating mechanism type | Control voltage | Starting current(A) | Response time(ms) | | Power consumption | Durability |
|---|---|---|---|---|---|---|---|
| | | | | Closed | Disconnect | | |
| VM3-630 (Thermal-magnetic) | CD2-3 | AC 110V/230V/400V<br>DC 110V/220V/24V | ⩽ 0.5 | 500 | 350 | 14 | 10000 |

***Note:*** *After the circuit breaker trips,power-driven operating mechanism has to make the circuit reaker recramped,then it can be turned on.*

# Accessories

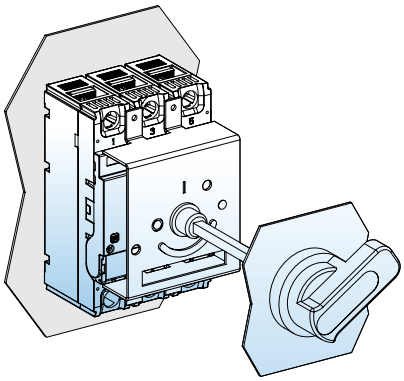




### Rotary handle operator（CS1、CS2、CS3）*

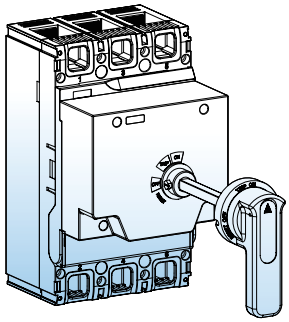
With the unique design and transmission mechanism, the rotary handle operator can make the circuit breaker open, close and lock the tripping part by turning the handle.

***Note:*** *Rotary handle operator CS1、CS2、CS3 types details as P2-21 show*



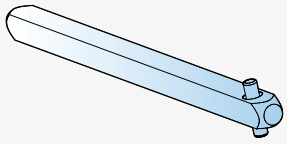
### CS series rotary handle operator has the following features:

- Equipped with circular and square rotary operating handles.
- The panel sheet of the cabinet cannot be opened when the circuit breaker is on (i.e interlock with the door).
- The handle can related supporting drawers, and interlock with the drawer unit.
- If fault of the operation handle occurs during its closing state, the panel sheet can be opened by operating the emergency reliever.
- Extended rotary handle can be used and the length of the extension handle is determined according to the distance between the rotary handle and the door. The shortest and the longest are 150mm and 500mm

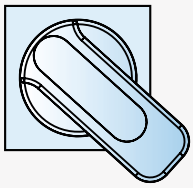


### Classification

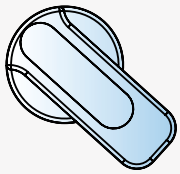
The rotary handle mechnism contains central type and eccentric type.
The rotary handle contains R type(circular) and F type(square).



Connecting rod

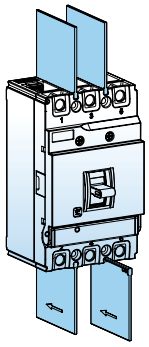


F-type square handle



R-type round handle

## Insulation accessories



### Phase separator

- The insulation strength can be enhanced by phase separators.
- It can be installed from a slot of a switch after the switch is mounted.
- It can be used with all the other accessories except long and short covers.

# Characteristic Curve

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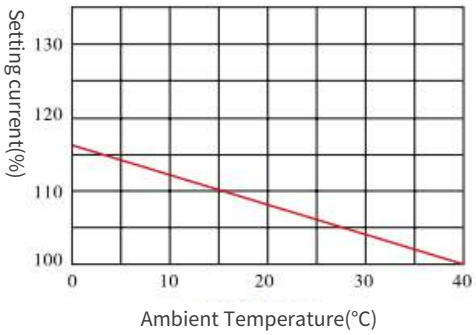
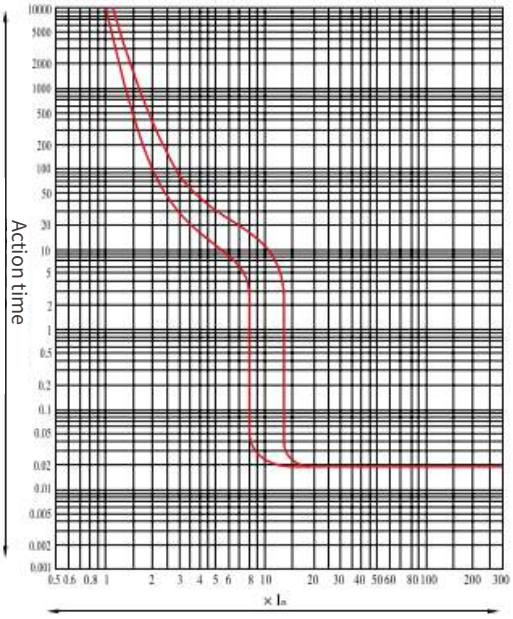
## Thermal magnetic protection operating characteristic curve

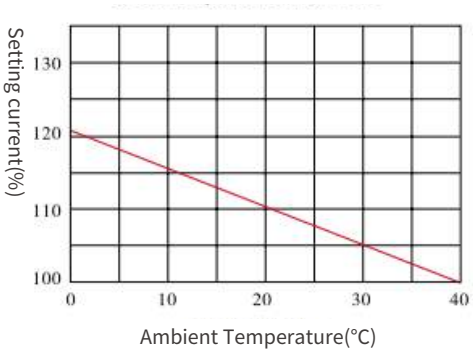
Current-Temperature Characteristics



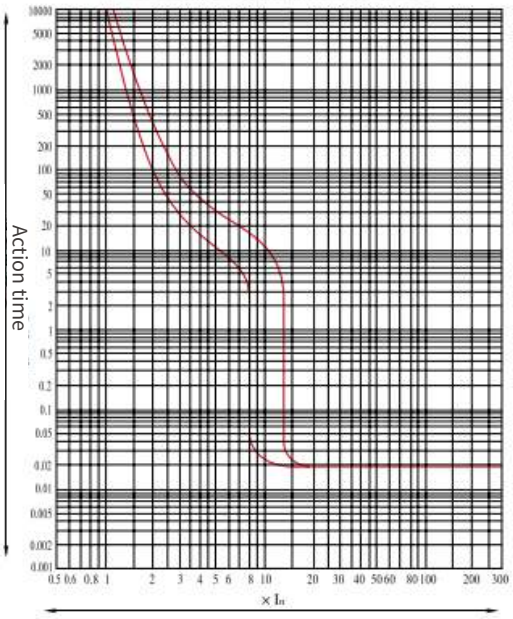

VM3-250 Time/Current Characteristic curve



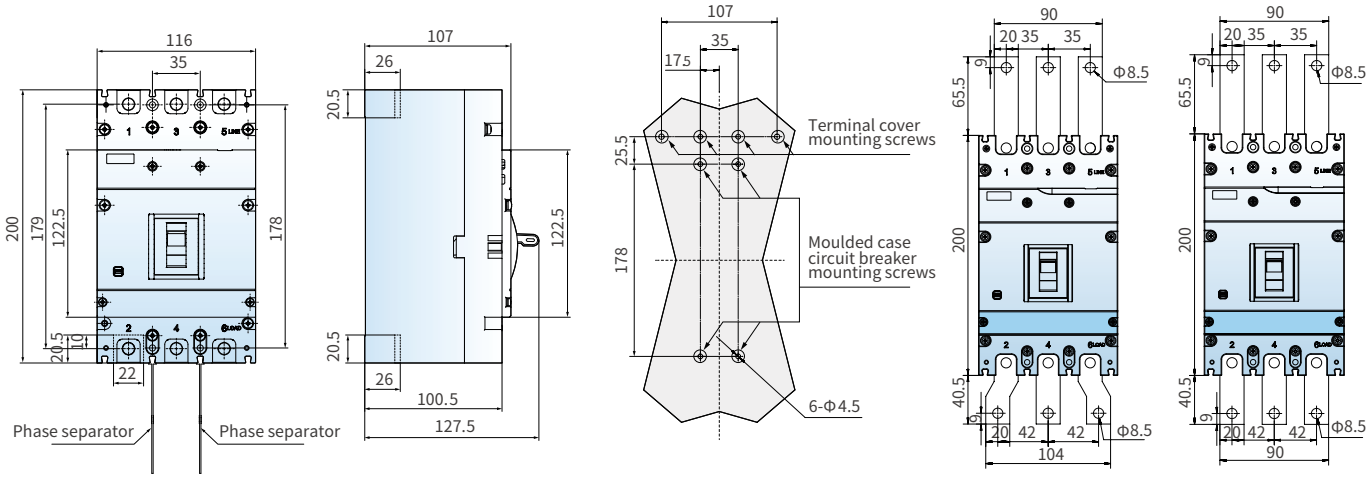

Current-Temperature Characteristics




VM3-630 Time/Current Characteristic curve

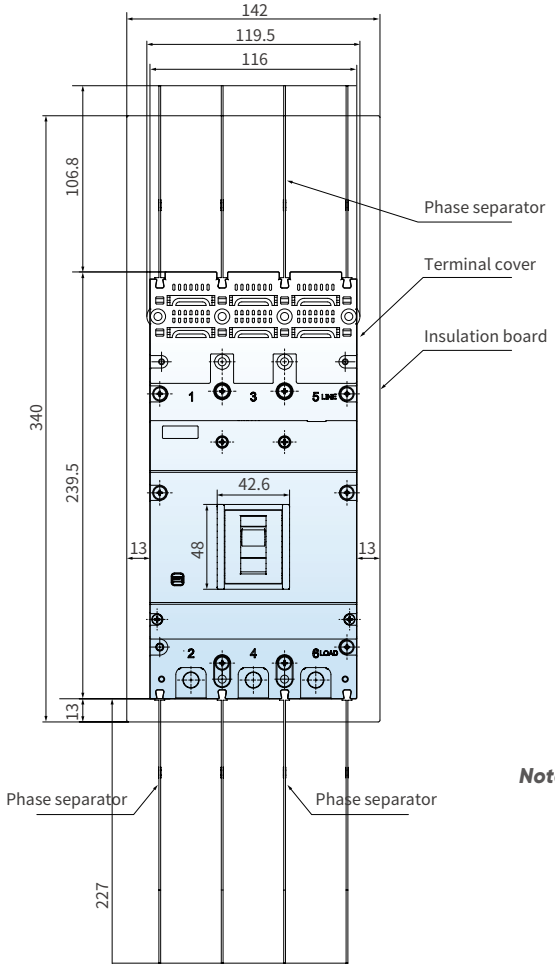


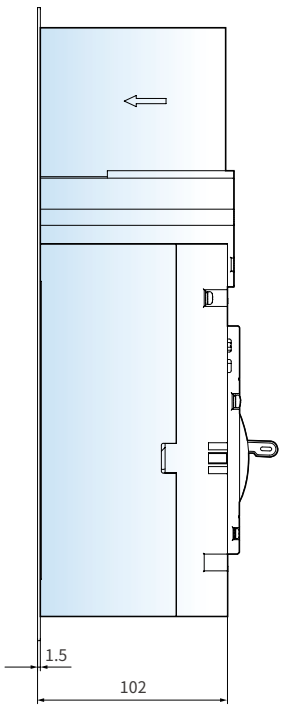
## VM3-250HU series dimensions and installation




***Note:*** *Ensure the circuit breaker is fixed to the plate or the beam of the cabinet*

## VM3-250HU series dimensions with terminal cover



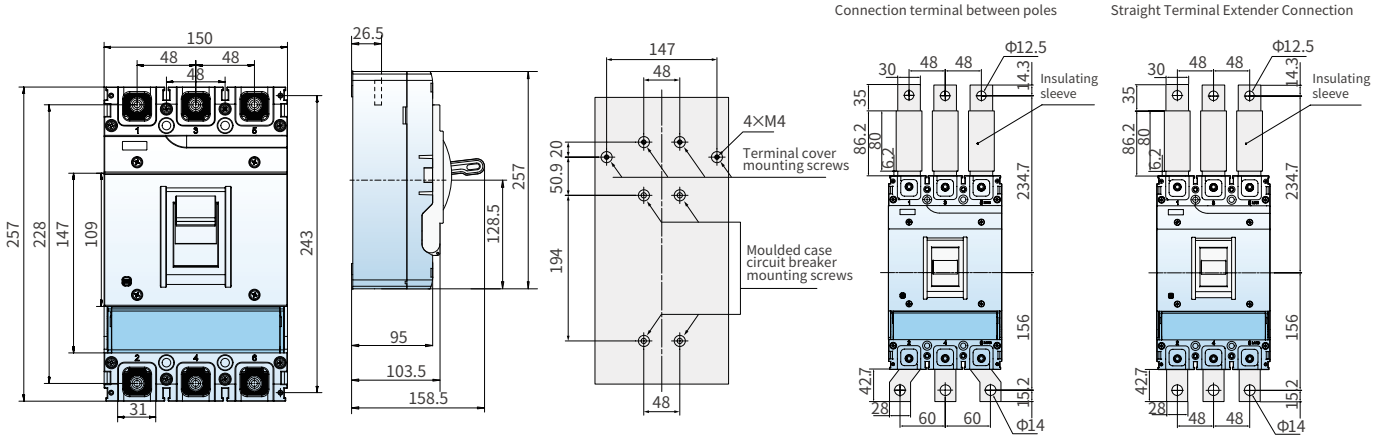




***Note:*** *The standard configuration of phase separators is 8, and 4 short and 4 long, When the number of circuit breakers installed side by side is≥ 2, please keep the installation position of the interphase clapboard of the side phase consistent (all installed on phase A side or phase C side), 1 long and 1 short (phase separator) should be added for the side phase of the circuit breaker close to the metal cabinet.*

# Size and Connection

VOZWEI

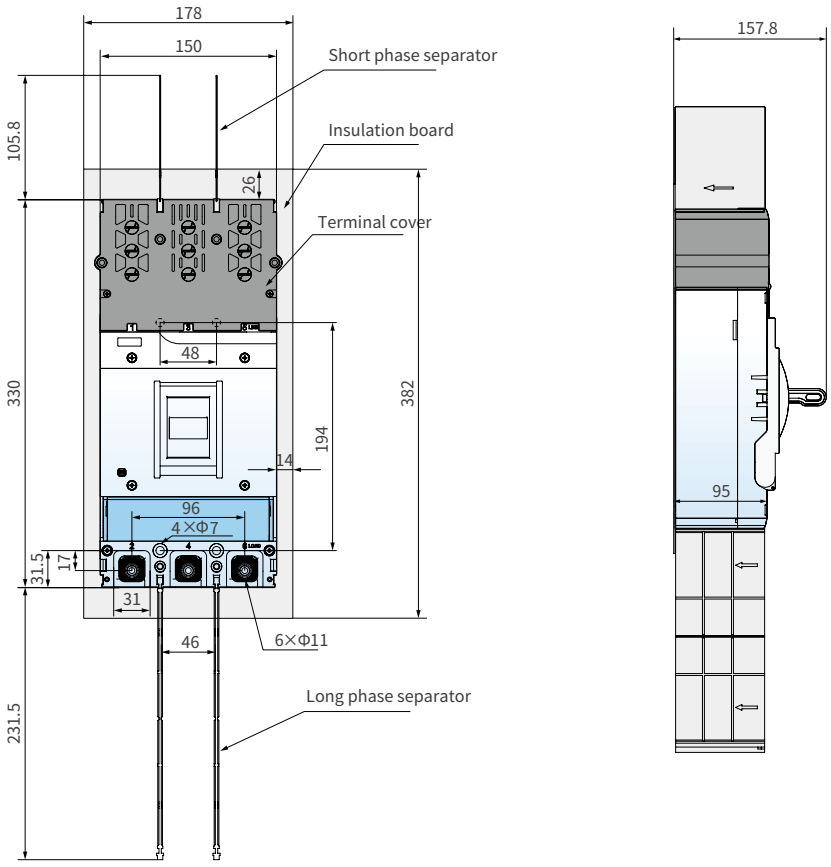
## VM3-630HU series dimensions and installation




***Note:*** *Ensure the circuit breaker is fixed to the plate or the beam of the cabinet*

***Note:*** *1. This diagram removes the terminal cover, phase separator and insulation board.*
*2. This terminal expander is not standard matching and needs to be matched.*
*3. Sides 1,3,5 terminal expander can only be matched with straight bar; 2,4,6 terminal expander can choose both straight bar or extend bent bar.*

## VM3-630HU series dimensions with terminalcover

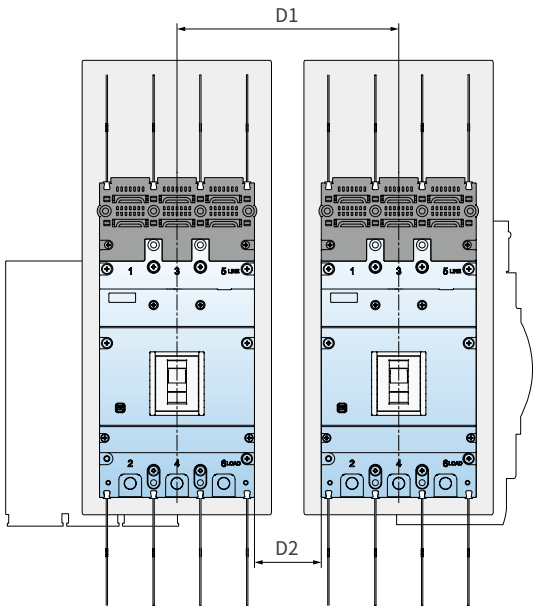


# Size and Connection

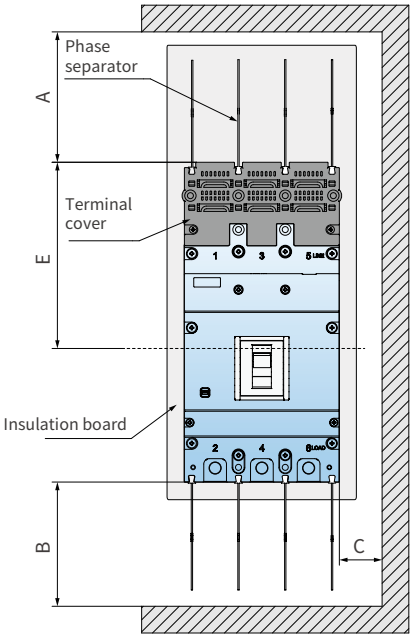
VOZWEI

## Safety distance and installation diagram for VM3-250HU

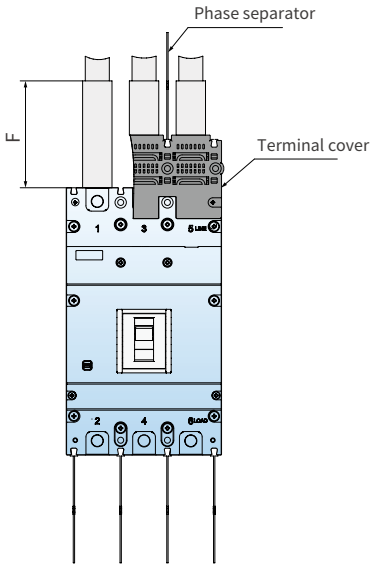
The minimum spacing between adjacent circuit breakers



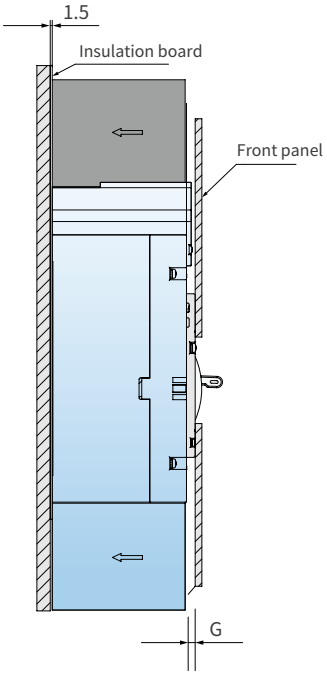

The minimum spacing of the top, baseplate and side plate of the circuit breaker




The minimum insulation length of wiring bar when it is front panel connection




The minimum spacing between the circuit breaker and front panel



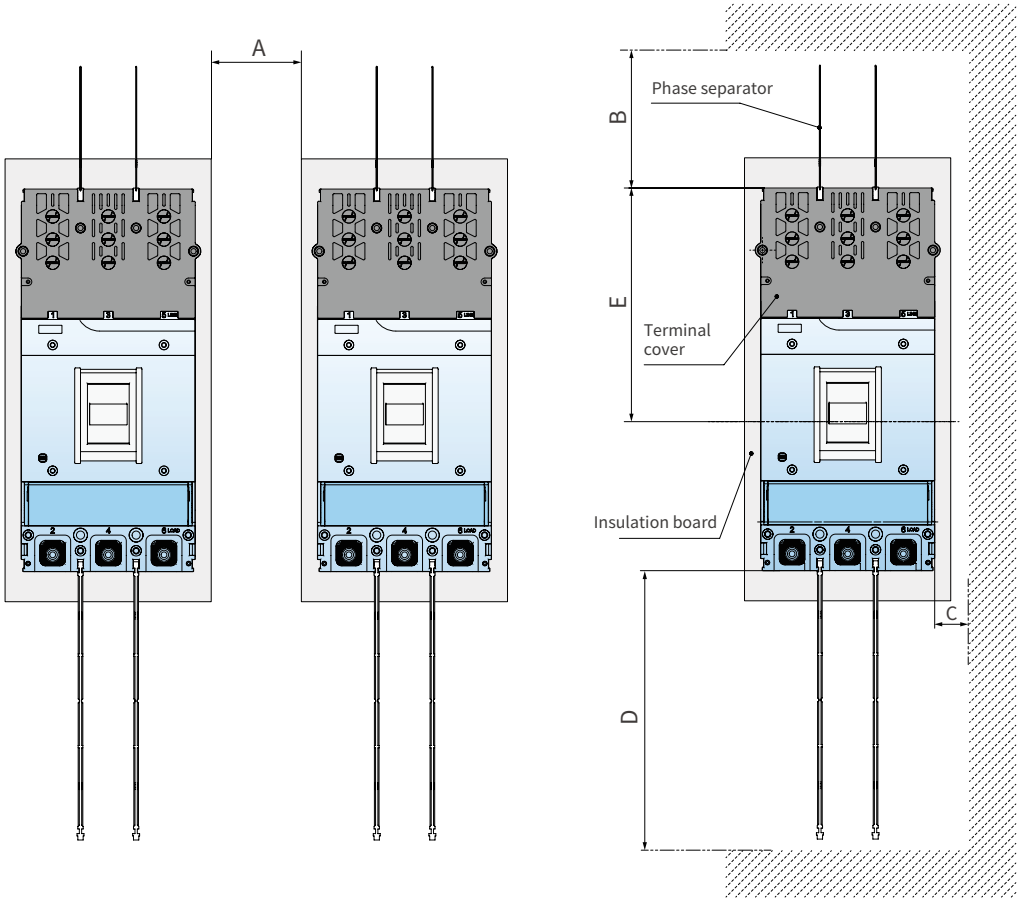

| Model | Distance (mm) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D1 | D2 | E | F | G | |
| | | | | | | | | Insulation board | Metal board |
| VM3-250HU | 150 | 228 | 30 | 146 | 30 | 139.5 | 350 | 0 | 30 |

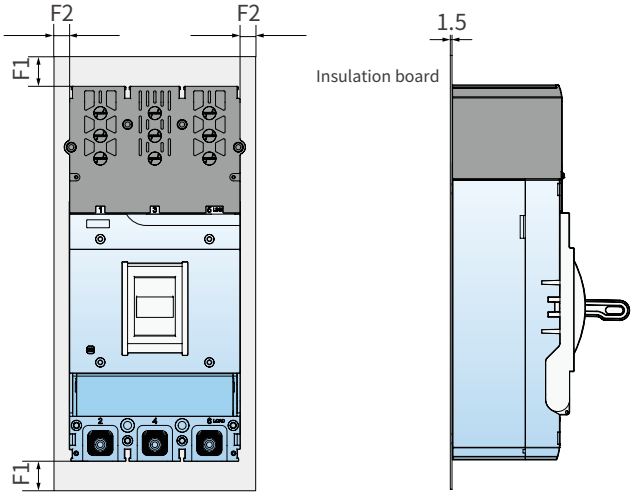
***Note:*** *When users use, terminal cover and phase separator should be assembled on terminals 1,3 and 5 of circuit breaker according to graphics. Phase separator should be assembled on terminals 2,4 and 6 of circuit breaker according to graphics. Insulation board is installed between circuit breaker and metal installation board.*

# Size and Connection

VOZWEI

## Safety distance and installation diagram for VM3-630HU

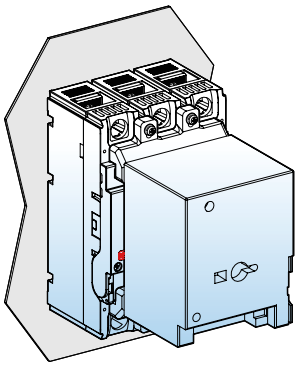


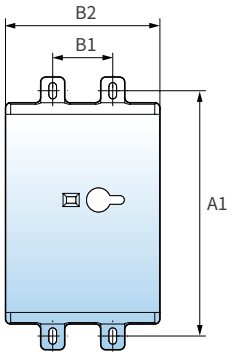



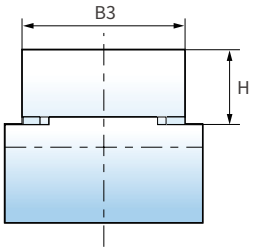

| Model | A | B | C | D | E | F1 | F2 |
|---|---|---|---|---|---|---|---|
| VM3-630HU | 30 | 150 | 30 | 180 | 201.5 | 26 | 14 |

***Note:*** *When users use, terminals 1,3 and 5 of the circuit breaker connect to transformer side and install terminal cover and phase separator according to graphics. Terminals 2,4 and 6 connect to inverter side and install phase separator acording to graphics. Insulation board is installed between circuit breaker and metal installation board.*

## Motor-operated mechanism

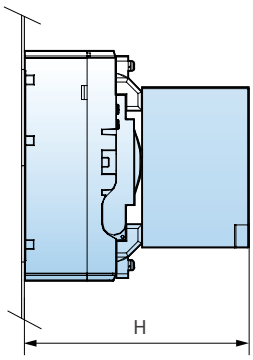


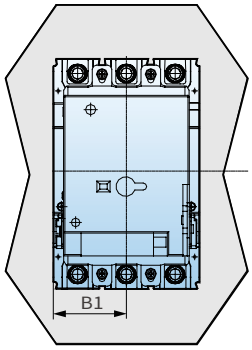


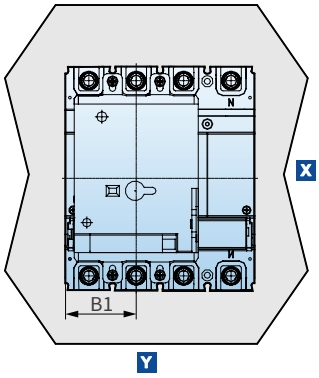




### Motor-operated mechanism dimension table

| Circuit breaker type | Motor operator model | A1 | B1 | B2 | B3 | H |
|---|---|---|---|---|---|---|
| VM3-630 (Thermal-magnetic) | CD2-3 | 194 | 48 | 129 | 175 | 156 |



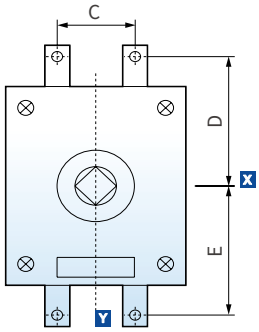

| Model | B1 | H | |
|---|---|---|---|
| VM3-630 (Thermal-magnetic) | 75 | 250.5 | |

# Size and Connection

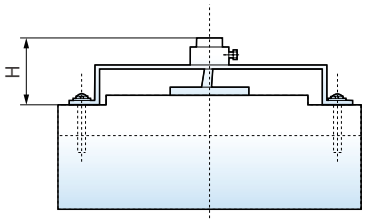


## Extended rotary handle dimension

### ■ Centric




CS1

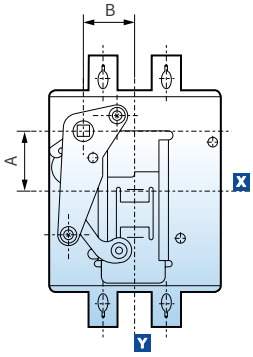



Horizontal and vertical mounting of circuit breaker

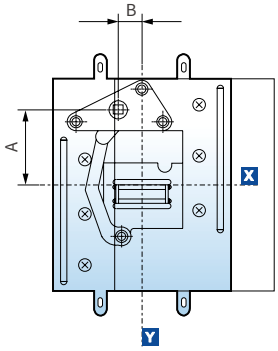
Centric size table

| Model | Circuit breaker type | C | D | E | H | Remark |
|---|---|---|---|---|---|---|
| CS1-3 | VM3-630 (Thermal-magnetic) | 48 | 97 | 97 | 87 | Used for vertical or horizontal installation ofcircuit breakers (centric trepanning) |

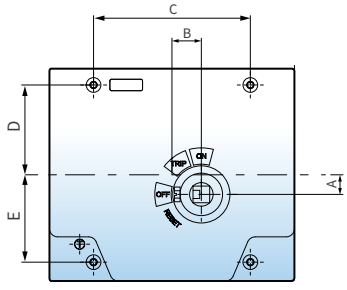
### ■ Eccentric type



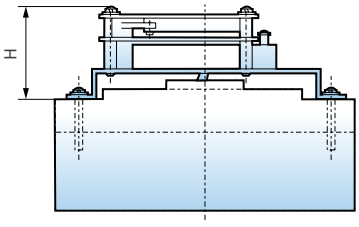

CS2-2



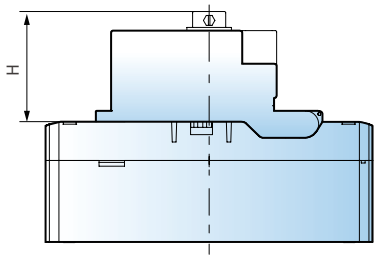

CS2-3




CS3-3




CS2




CS3

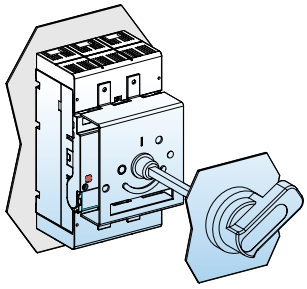
Eccentric size table

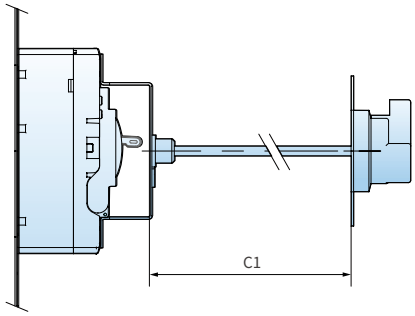
| Model | Circuit breaker type | A | B | H | D | E | Remark |
|---|---|---|---|---|---|---|---|
| CS2-3 | VM3-630 (Thermal-magnetic) | 68 | 15 | 59 | / | / | Used for vertical or horizontal installation of circuit breakers (eccentric trepanning) |
| CS3-3 | VM3-630 (Thermal-magnetic) | 12 | 18 | 86.5 | 55 | 53.5 | |

# Size and Connection

VOZWEI

## Extended rotary handle installation



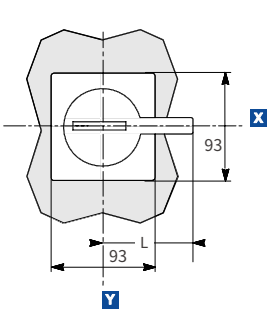


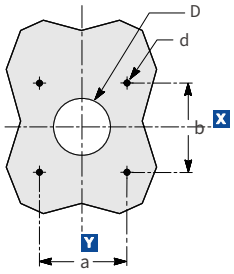

| Circuit breaker model | C1 | |
|---|---|---|
| | min | max |
| VM3-630 | 150 | 300 |

## Extended rotary handle installation

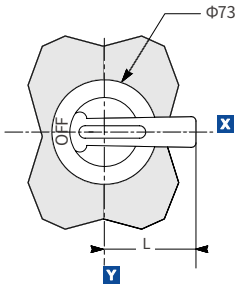
### Size and door sheet trepanning

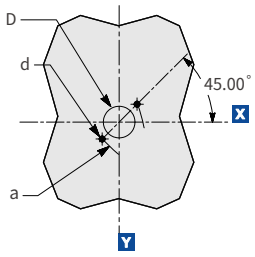
F-type (F1 type used for VM3-250, F2 type used for VM3-630)




R-type (R1 type used for VM3-250, R2 type used for VM3-630)




#### F-type

F type handle mounting dimensions

| Handle specifications | F1 | F2 |
|---|---|---|
| D | ϕ 42 | ϕ 42 |
| d | ϕ 4.5 | ϕ 4.5 |
| a | 65 | 65 |
| b | 65 | 65 |
| L | 65 | 95 |

#### R-type

R type handle mounting dimensions

| Handle specifications | R1 | R2 |
|---|---|---|
| D | ϕ 34 | ϕ 34 |
| d | ϕ 5.5 | ϕ 5.5 |
| a | ϕ 53 | ϕ 53 |
| L | 65 | 95 |

***Note:*** *1. The standard configuration of CS1 and CS2 type rotating handle is R type and the length of square shaft is 200mm which connects rotary handle and the operating mechanism. Please specify if you have special requirement.*
*2. For three pole and four pole circuit breakers, rotating handles have the same parameters.*
*3. VM3-250 hand aperture dimensions refers to F1, R1 and VM3-630 aperture dimensions refers to F2, R2.*

# VM5

Molded Case Circuit Breaker

# Design Features

VOZWEI

- Tailored for solar energy and wind power
- Working voltage up to 1000V
- With ultra-high breaking capacity
- With excellent anti damp heat and dew solidification capabilities
- Strong ability to adapt to alternating changes in high and low temperatures
- With thermal and magnetic adjustability

## Ambient conditions

### Operating ambient temperature/storage temperature

- Operating environment temperature: -40 °C~+70 °C, with an average value of no more than +35 °C within 24 hours
- Storage temperature: -40 °C~+75 °C

### Altitude conditions

- Altitude of installation site ⩽ 2000m (Over 2000 meters need capacity reduction for using)

### Pollution level

- Level 3

### Protection level

- Product protection level: IP20

### Installation Category

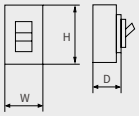
- Class II (load) and Class III (distribution and control)

### Installation Environment

- The product is installed in a medium without explosion risk, and the medium is not sufficient to corrode metal, there is no gas that damages the insulation layer of the product, there is no conductive dust, and it should be avoided from being used in places invaded by rain and snow

# Selection Guide

VOZWEI

| Type | | | VM5-320HU | | VM5-630HU | |
|---|---|---|---|---|---|---|
| | | |  | |  | |
| Rated current | | A | 63, 80, 100, 125, 140, 160, 180, 200, 225, 250, 320 | | 315, 350, 400, 500, 630 | |
| Pole number | | | 3 | | | |
| Rated operating voltage | | AC50～60Hz (V) | 800, 1000 | | | |
| Rated insulation voltage | | V | 1000 | | | |
| Rated impulse withstand voltage Uimp | | kV | 8 | | | |
| Breaking capacity | | | L | M | L | M |
| Ultimate short-circuit breaking(Icu) | | AC800V | 30 | 50 | 50 | 50 |
| | | AC1000V | 15 | 30 | 15 | 18 |
| Service short-circuit breaking(Ics) | | AC800V | 30 | 50 | 36.5 | 50 |
| | | AC1000V | 12 | 18 | 15 | 18 |
| Mechanical durabillity | | Times | 12000 | | 8000 | |
| Electrical durabillity | AC800V | Times | 1000 | | | |
| | AC1000V | Times | 1000 | | | |
| Outline dimension (mm) (H × W × D) |   | | 185 × 112.5 × 114.5 | | 255 × 140 × 122.5 | |
| Isolatiion function | | | Have isolation function | | | |
| Optional trip unit | | TMD | Thermally adjustable（0.7～1.0）<br>Magnetic adjustable（5～10） | | | |
| | | TAL | Thermally adjustable（0.7～1.0）<br>Magnetic fixation（10In） | | | |

***Note:***

*VM5-320: 63A is thermally adjustable magnetic fixation, 80~320A is thermo-magnetic adjustable;*
*VM5-630: Only thermo-magnetic adjustable;*

# Selection Guide

VOZWEI

| VM5 | – | 320 | HU | M | 320 | / | TMD | / | 3 | / | AX/SHT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 2 | 3 | 4 | 5 | | 6 | | 7 | | 8 |

| SN | Name | Specification, type code | |
|---|---|---|---|
| 1 | Design code | VM5: Design code | |
| 2 | Frame rating | 320: 320A<br>630: 630A | |
| 3 | High voltage | HU: High voltage | |
| 4 | Breaking capacity | L, M | |
| 5 | Rated current | 63A~630A | |
| 6 | Protection unit type | TAL: Thermal protection unit (power distribution protection, 63A)<br>TMD: Thermal magnetic adjustable unit (For power distribution protection, 80~630A) | |
| 7 | Number of poles | 3P | |
| 8 | Accessories (separated with''/'' between different accessories) | Connection accessories | Empty: Fixed type wiring in front of the board |
| | | Electrical accessories | AL: Alarm contact<br>AX: Auxiliary contact<br>SHT: Shunt release |
| | | Expansion accessories | K6: Phase separator<br>K11: Insulating mounting plate<br>CD3: Motor operator<br>CS1: Rotary handle operator |

## * Electrical accessories

| Accessories | Voltage |
|---|---|
| SHT Shunt release | AC230V AC400V DC220V AC/DC110V DC24V |

*If the accessory voltage and voltage control loop is inconsistent,please use indicate the accessory voltage after accessory.*

***Example***

***VM5-630HUM630/TMD/3/AX/SHT(AC230V)***

*Meaning: VM5 series circuit breaker; the frame level is 630; 3 poles; rated current is 630A; fixed rear connection; accessory contains auxiliary contact and shunt release with voltage (AC230V).*

# Main Characteristic

VOZWEI

## TMD/TAL: Data sheet of protection characteristics

| Rated current | Inverse time acting characteristic (Ambient air temperature +40°C) | | Instantaneous acting current |
|---|---|---|---|
| | 1.05$I_n$(Cold state) Not acting time | 1.3$I_n$(Cold state) Not acting time | |
| $I_n \leqslant 63$ | ⩾1h | <1h | TMD: 5~10±20%<br>TAL: 10$I_n$±20% |
| $63 < I_n \leqslant 800$ | ⩾2h | <2h | |

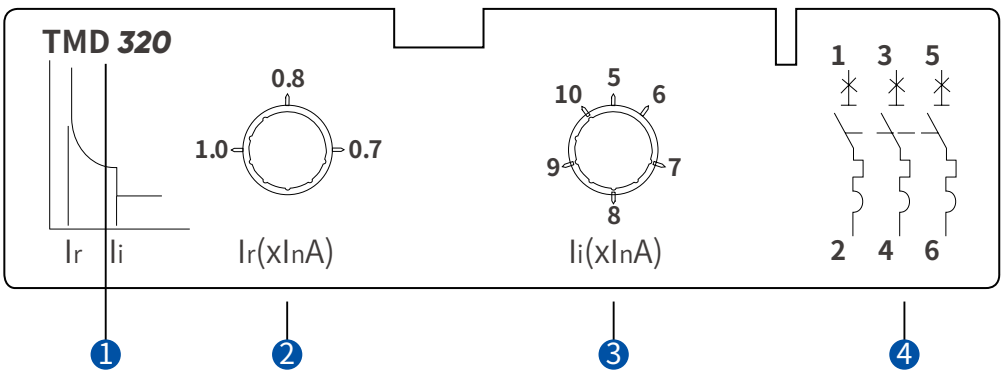
## Derated coeffcient of rated current

| Circuit Breaker Model | +40°C | +45°C | +50°C | +55°C | +60°C | +65°C | +70°C |
|---|---|---|---|---|---|---|---|
| VM5-320HU | 1.0 $I_r$ | 0.98 $I_r$ | 0.96 $I_r$ | 0.94 $I_r$ | 0.92 $I_r$ | 0.91 $I_r$ | 0.88 $I_r$ |
| VM5-630HU | 1.0 $I_r$ | 0.97 $I_r$ | 0.95 $I_r$ | 0.93 $I_r$ | 0.91 $I_r$ | 0.89 $I_r$ | 0.87 $I_r$ |

## Derated coefficient of high altitude of VM5 series MCCB

| Item | Parameter | | | | | | |
|---|---|---|---|---|---|---|---|
| Elevation | 2000 | 2500 | 3000 | 3500 | 4000 | 4500 | 5000 |
| Power frequency withstand voltage | 3500 | 3500 | 3200 | 3000 | 2800 | 2750 | 2500 |
| Isolation voltage | 1250 | 1250 | 1250 | 1140 | 1140 | 1140 | 1140 |
| Breaking capacity correction factor | 1 | 1 | 0.9 | 0.85 | 0.8 | 0.75 | 0.7 |
| Working current correction factor | 1 | 1 | 0.98 | 0.97 | 0.96 | 0.95 | 0.94 |

## Sign interpretation



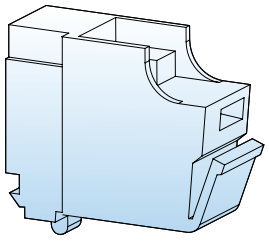

❶ Thermal magnetic adjustable unit
Rated current is 320A

❷ Thermally adjustable

❸ Magnetic adjustable

❹ Wiring diagram

## Electrical accessories



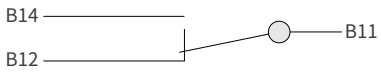
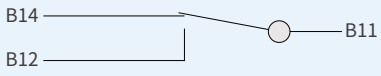
Alarm contact (AL)

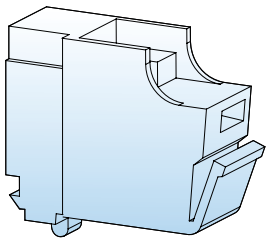
### Alarm contact (AL)

#### Function

The product outputs alarm signal when it is tripped by outer excitation signal due to overload, short circuit, undervoltage, or when the release button is pressed. This function is particularly useful in an automatic system, since that a fault signal can be sent to the designated place. And the fault signal will turn on due to an internal microswitch, when circuit breaker releases. But for normal opening or closing operations, it does not have any action.

#### Alarm contact operating characteristics

| Circuit breaker status | Alarm contact status |
|---|---|
| The statuses of open and close |   |
| The statuses of tripping |   |



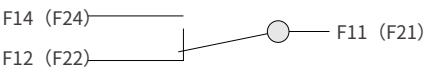
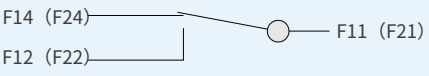
Auxiliary contact (AX)

### Auxiliary contact (AX)

#### Function

Auxiliary switch is used for indication of remote "ON" and "OFF". Each switch contains two contacts, which share a common end of connection. The ON/OFF position depends on the state of main contact. When the circuit breaker is open, one of them is normally open, and the other is closed, or vice versa.

#### Auxiliary contact operating characteristics

| Circuit breaker status | Auxiliary contact status |
|---|---|
| The statuses of open |   |
| The statuses of close |   |

# Accessories



### Alarm contact, Auxiliary contact rated operational current

| Classification | Rated current $I_{nm}$ | Conventional thermal current $I_{th}$(A) | Rated working current $I_e$(A) | |
|---|---|---|---|---|
| | | | AC400V | DC220V |
| Auxiliary contact | ⩽250 | 3 | 0.3 | 0.15 |
| | 400⩽$I_{nm}$⩽1000 | 3 | 0.4 | 0.2 |
| Alarm contact | 10⩽$I_{nm}$⩽1000 | - | AC220V/1.0A | 0.15 |

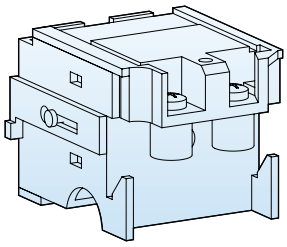
### ON-OFF capacity of Alarm contact and Auxiliary contact under normal conditions

| Utilization category | ON | | | | OFF | | | | Number of operation cycles | Number of operation cycles per minute | Power time |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $I/I_e$ | $U/U_e$ | cosϕ | $T_{0.95}$ | $I/I_e$ | $U/U_e$ | cosϕ | $T_{0.95}$ | | | |
| AC-14 | 10 | 1 | 0.7 | - | 1 | 1 | 0.7 | - | 6050 | 6 | ⩾ 0.05s |
| DC-13 | 1 | 1 | - | 6 × Pe | 1 | 1 | - | 6 × Pe | | | ⩾ 0.05s |

### ON-OFF capacity of alarm contact and auxiliary contact under abnormal conditions

| Utilization category | ON | | | | OFF | | | | Number of operation cycles | Number of operation cycles per minute | Power time |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $I/I_e$ | $U/U_e$ | cosϕ | $T_{0.95}$ | $I/I_e$ | $U/U_e$ | cosϕ | $T_{0.95}$ | | | |
| AC-14 | 6 | 1 | 0.7 | - | 1 | 1 | 0.7 | - | - | - | ⩾ 0.05s |
| DC-13 | 1.1 | 1.1 | - | 6 × Pe | 1.1 | 1.1 | - | 6 × Pe | 10 | 6 | ⩾ 0.05s |

***Note:*** *1. $T_{0.95}$=6Pe is an empirical formula in which the unit of "Pe" is watt and the unit of $T_{0.95}$ is millisecond.*
*2. The number of operation of Auxiliary contact can equal to that of the circuit breaker, if the number of operation of circuit breaker is less than 6050.*
*3. The operation frequency and power-on time of an auxiliary contact are allowed to be the same as those of the main circuit.*
*4. If $T_{0.95}$ is more than 0.05s, the power-on time is at least $T_{0.95}$.*



Shunt release (SHT)

## Shunt release (SHT)

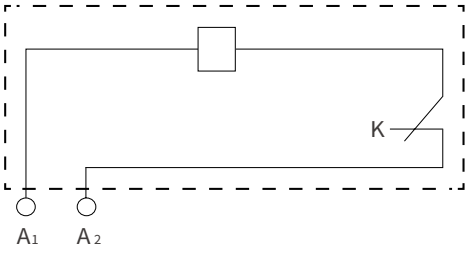
### Function

Shunt release refers to the device which disconnect circuit breaker with current from a distance.
A shunt release can cut off the signal circuit automatically after tripping.

### Operating Characteristics

| | |
|---|---|
| Voltage specification | AC50Hz：110V 230V 400V<br>DC：24V 110V 220V |
| Operating characteristics | When the operation voltage is 70%~110% of the rated control voltage,the shunt release should trip the circuit breaker reliably. |

### Connection diagram (internal accessories of a circuit breaker)

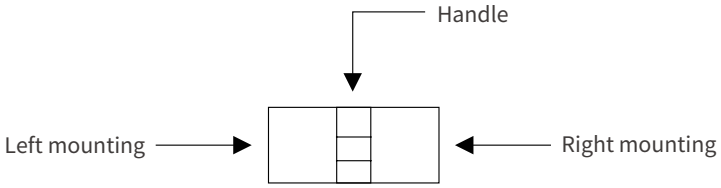



K is a microswitch closed contact of micro switch installed in series with the coil in shunt tripper, when the breaker is tripping,the switch is off by itself, when the breaker is closing, and then the switch is on.

# Accessories

VOZWEI

## Combined mode of electrical accessories



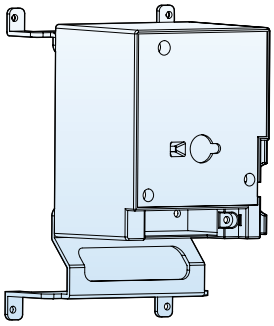

● Alarm contact

○ Auxiliary contact

■ Shunt release

| Accessory code | Accessory name | Model / Poles | VM5-320HU | VM5-630HU |
|---|---|---|---|---|
| | | | 3 | 3 |
| AL | Alarm contact | | ● | ● |
| SHT | Shunt release | | ■ | ■ |
| AX | Auxiliary contact | | ○○ | ○○○ |
| AX+SHT | Shunt release and alarm contact | | ■ ○○ | ■ ○○○ |
| AL+SHT | Shunt release and alarm contact | | ● ■ | ● ■ |
| AL+AX | Auxiliary contact and alarm contact | | ● ○○ | ● ○○○ |
| AX+AL+SHT | Shunt release, auxiliary contact and alarm contact | | ● ■ ○○ | ● ■ ○○○ |
| | Without accessory | | | |

## Control accessories



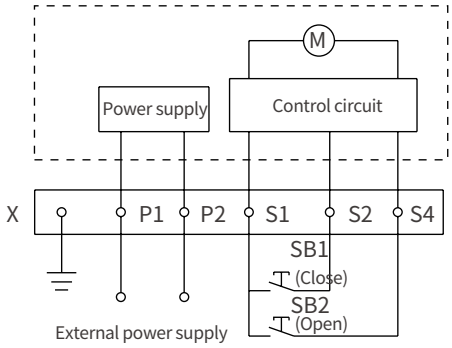
Motor operator mechanism (CD3)

### Motor operator mechanism (CD3)

Motor-operated mechanism which consists of an energy storage spring, an opening coil and a closing coil is used to control a circuit breaker from a distance. And a CD3 Motor-operated mechanism has the following features: CD3 type electric operating mechanism has

- The operation mode, manual or automatic mode, can be chosen.
- Hand drive handle is in front of a face cover.

The wiring diagram of a CD3 motor-operated mechanism is shown as following (internal accessories are indicated in the dotted square)




### Please pay attention to the following two points when wiring:

1. When the lead out distance of the electric control line is ⩽ 5m, a regular electronic line can be used as the controller, but it needs to be routed separately from the power line;
2. When the lead out distance of the electrical control line is ⩾ 5m or there is a possibility of strong electromagnetic interference in the surrounding environment, the control line should be shielded or connected to the control end (S1, S2, S4) of the electrical control through an intermediate relay installed near the electrical control, and the distance between the relay and the electrical control should not exceed 5m;

### Manual operation

- The internal power supply is automatically closed, if the switch is operated to "manual" position.
- Put the handle into the slot in the front of an electric operating mechanism and then turn in a clockwise direction.
- Do not turn it in a counterclockwise direction.

### Electric operation

- Auto connection
- Operating frequency should be no more than 3 times per minute.
- Using ON/OFF switches in the frequency range.
- Please do not input ON/OFF signal during automatic operation.
- UVT need to be applied a rated voltage before electric operation, if a UVT is mounted in a circuit breaker.

# Accessories

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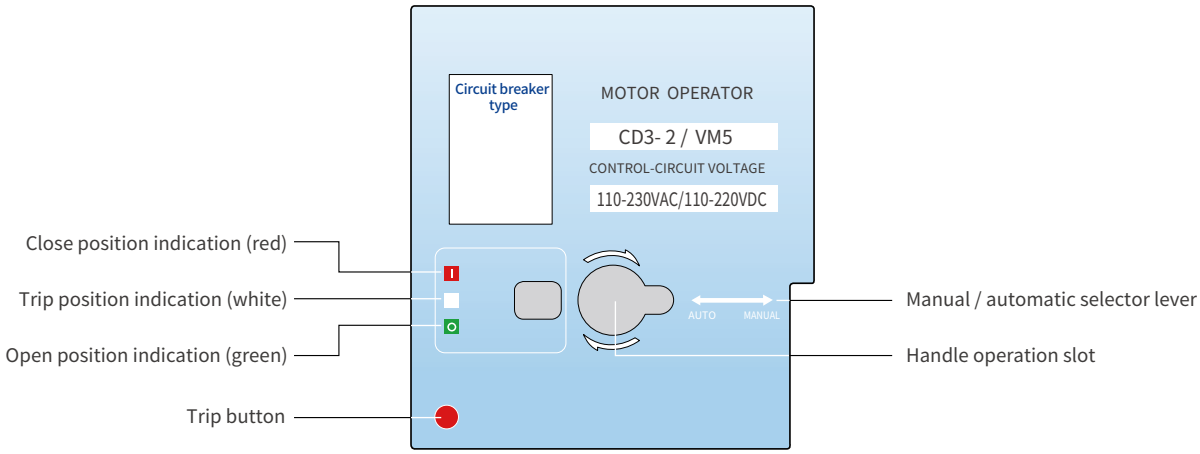
## Motor-operator mechanism appearance

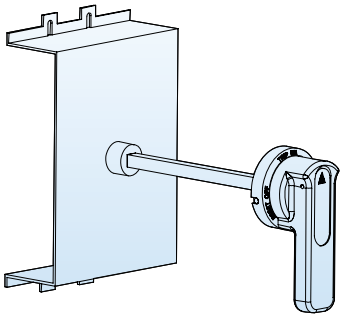
Example: CD3-2/VM5




## Acting Current, Motor Power and Longevity of CD3 type Power-driven Operating Mechanism

| Equipped with circuit breaker type | Electric operating mechanism type | Control voltage | Starting current(A) | Response time(ms) | | Power consumption | Durability |
|---|---|---|---|---|---|---|---|
| | | | | Closed | Disconnect | | |
| VM5-320HU | CD3-2 | AC 110V/230V/400V<br>DC 110V/220V/24V | ⩽0.5<br>24VDC⩽2 | ⩽700 | ⩽700 | 14 | 10000 |
| VM5-630HU | CD3-3 | AC 110V/230V/400V<br>DC 110V/220V/24V | ⩽2<br>24VDC⩽5 | ⩽1000 | ⩽1000 | 35 | 5000 |

***Note:*** *After the circuit breaker trips,power-driven operating mechanism has to make the circuit reaker recramped,then it can be turned on.*

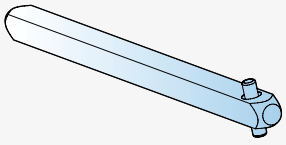


### Rotary handle operator (CS1)

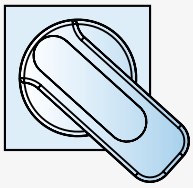
With the unique design and transmission mechanism, the rotary handle operator can make the circuit breaker open, close and lock the tripping part by turning the handle.

### CS series rotary handle operator has the following features:

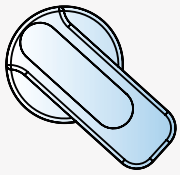
- Equipped with circular and square rotary operating handles.
- The panel sheet of the cabinet cannot be opened when the circuit breaker is on (i.e interlock with the door).
- The handle can related supporting drawers, and interlock with the drawer unit.
- If fault of the operation handle occurs during its closing state, the panel sheet can be opened by operating the emergency reliever.
- Extended rotary handle can be used and the length of the extension handle is determined according to the distance between the rotary handle and the door. The shortest and the longest are 150mm and 500mm



Connecting rod



F-type square handle

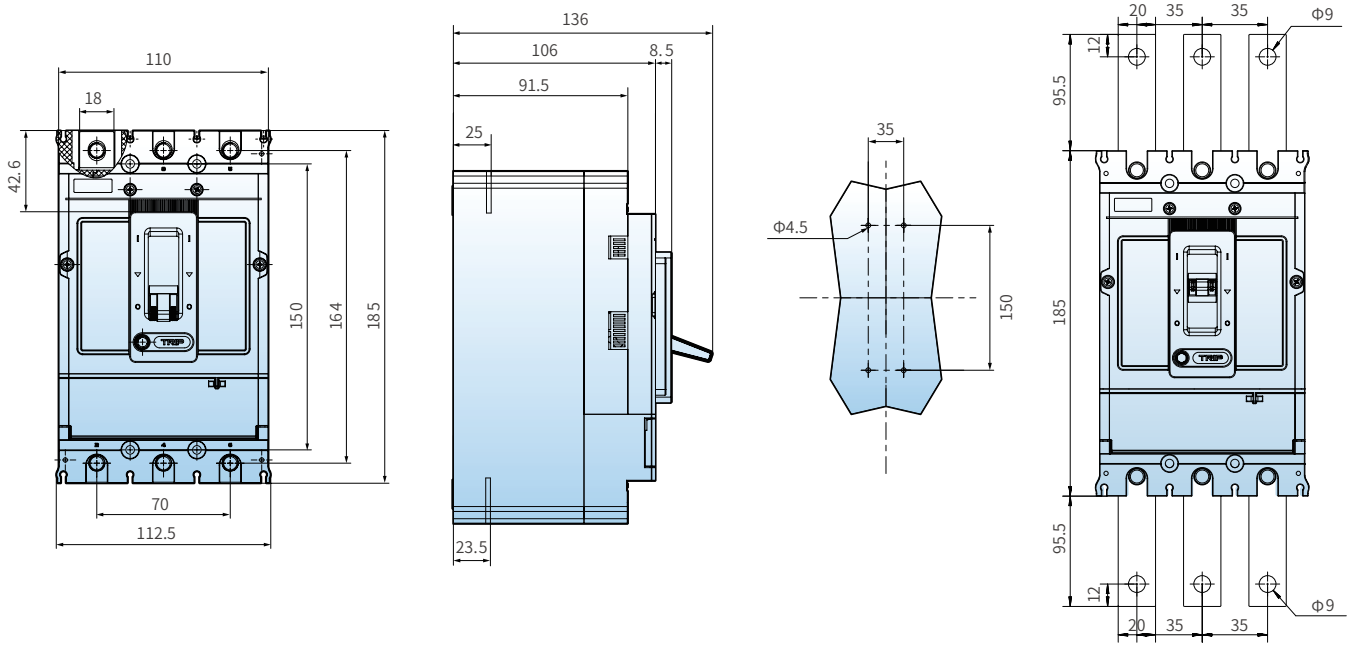


R-type round handle

# Size and Connection

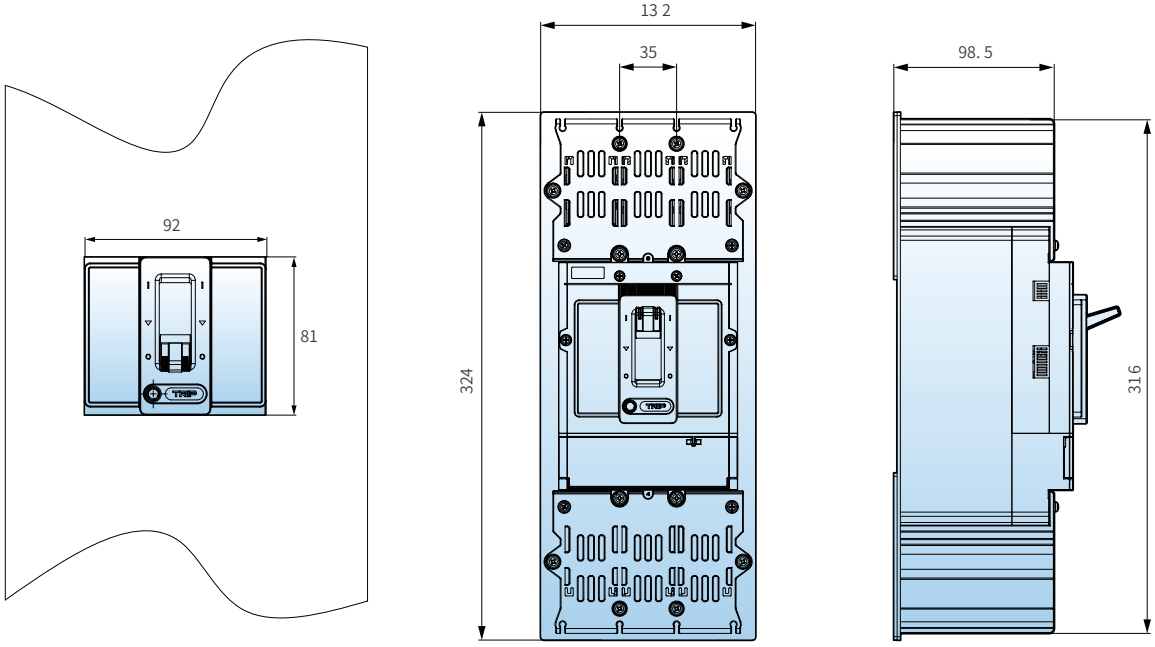
VOZWEI

## VM5-320HU series dimensions and installation




For toggling handle

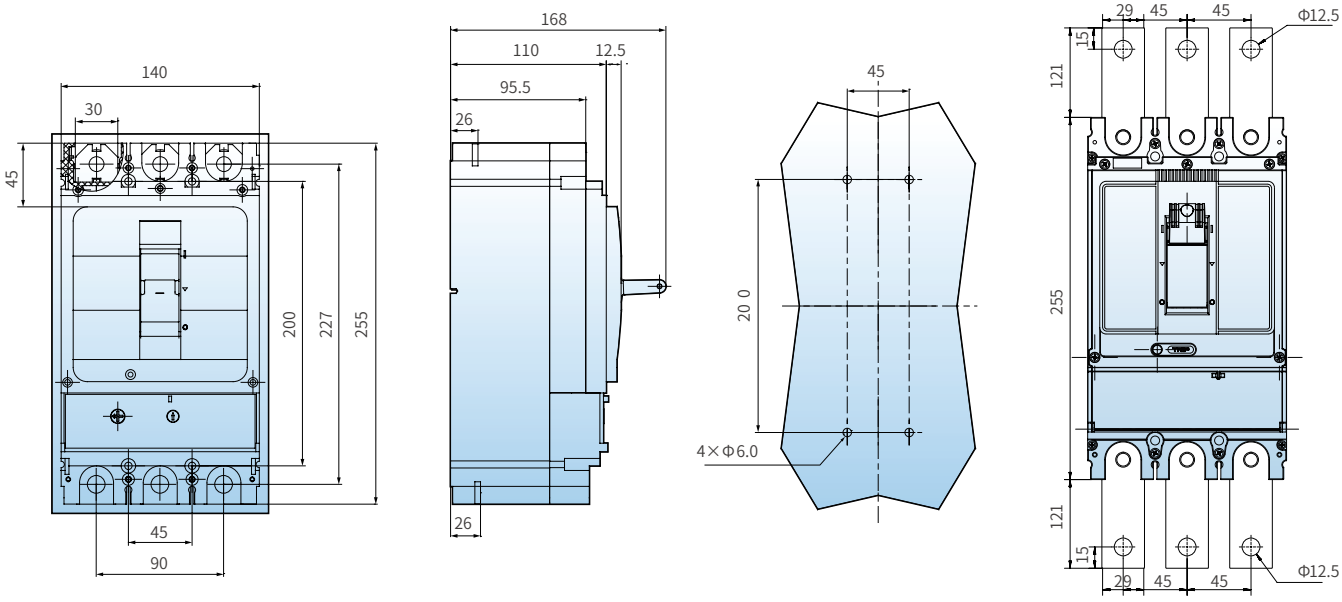
## VM5-320HU series dimensions with terminal cover



# Size and Connection

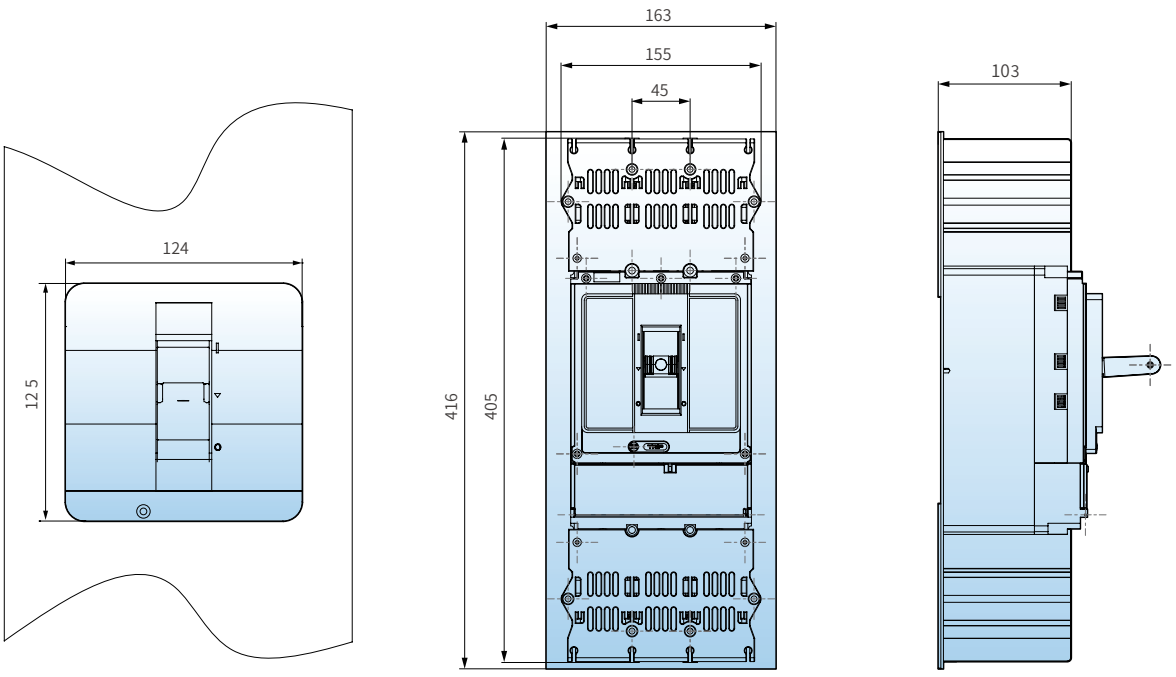
VOZWEI

## VM5-630HU series dimensions and installation



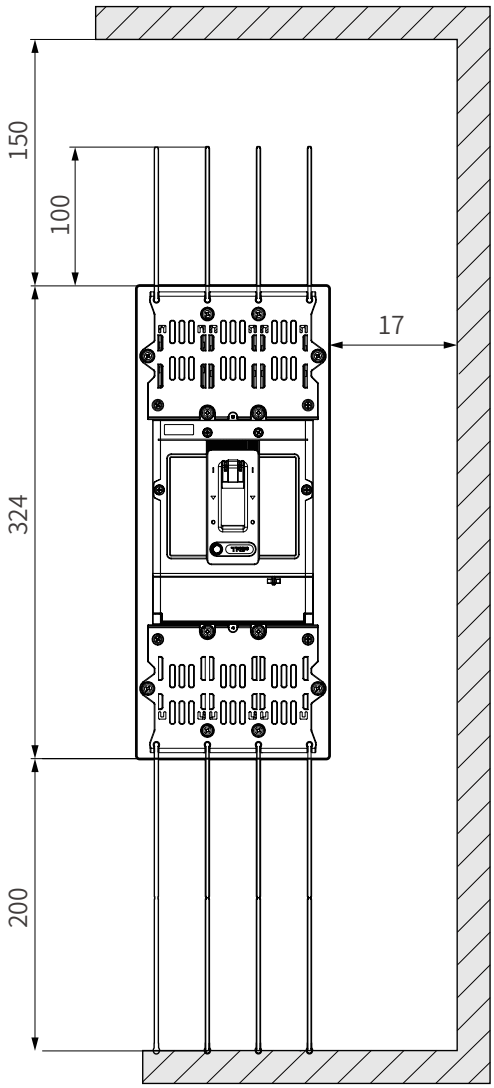

For toggling handle

## VM5-630HU series dimensions with terminal cover

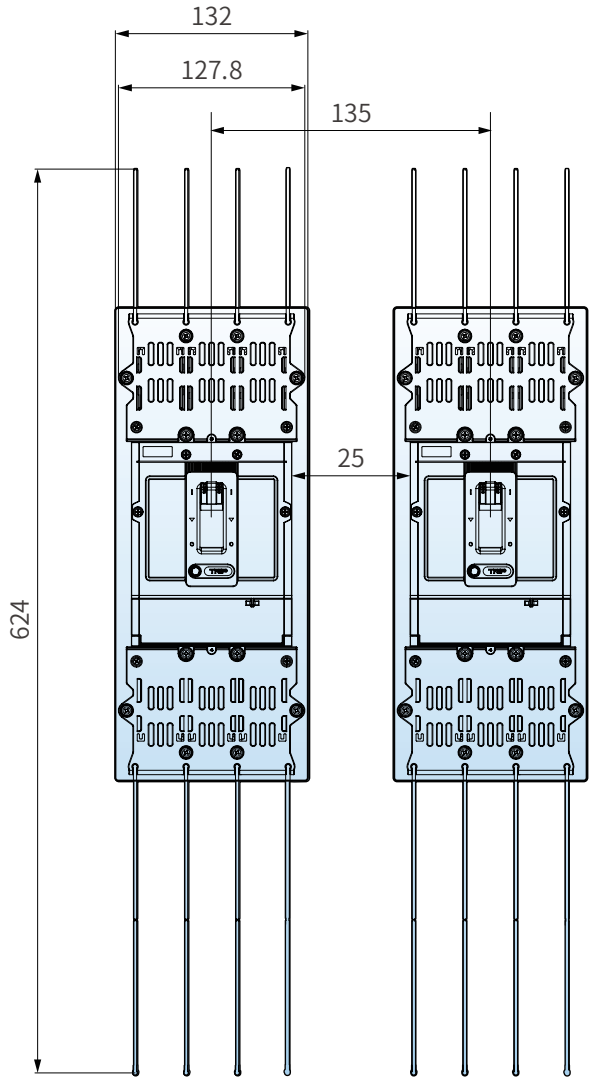


## Safety distance and installation diagram for VM5-320HU

Safty distance




Minimum distance between two adjacent circuit breakers

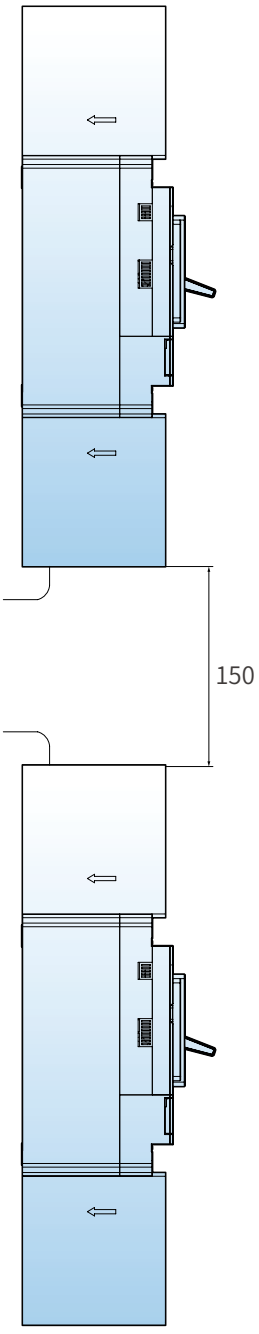



***Note:*** *There are 8 phase separators as standard, the top is short and the bottom is long, When the number of circuit breakers installed side by side is≥ 2, please keep the installation position of the interphase clapboard of the side phase consistent (all installed on phase A side or phase C side), 1 long and 1 short (phase separator) should be added for the side phase of the circuit breaker close to the metal cabinet.*

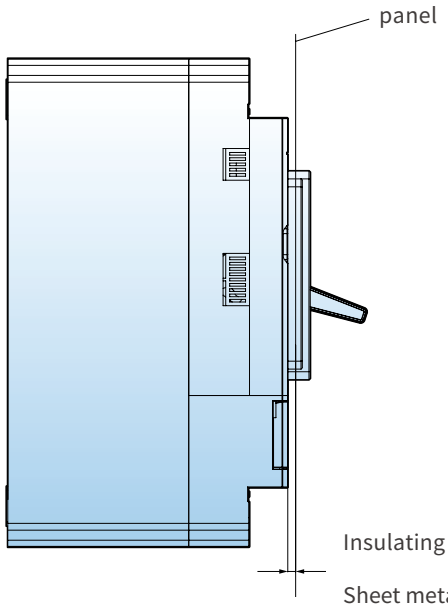
# Size and Connection



Short terminal shield rear connected




Minimum distance between circuit breaker and front panels

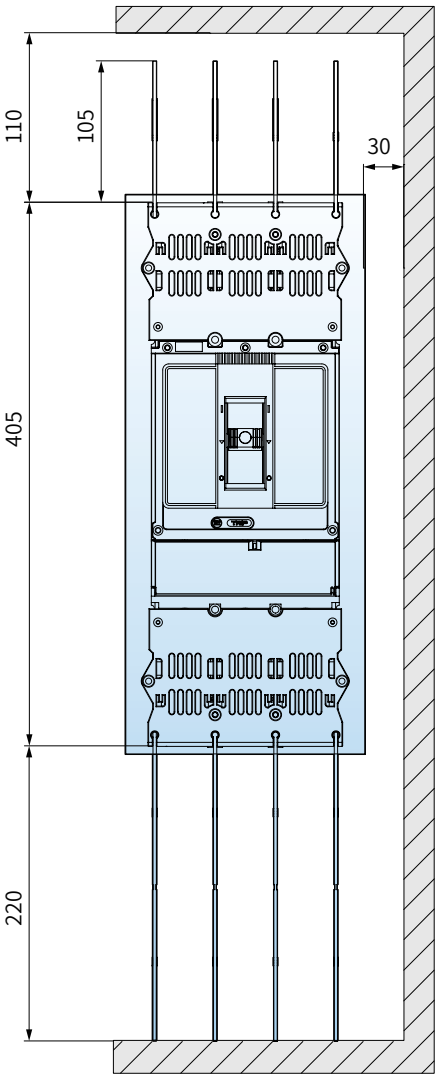


# Size and Connection

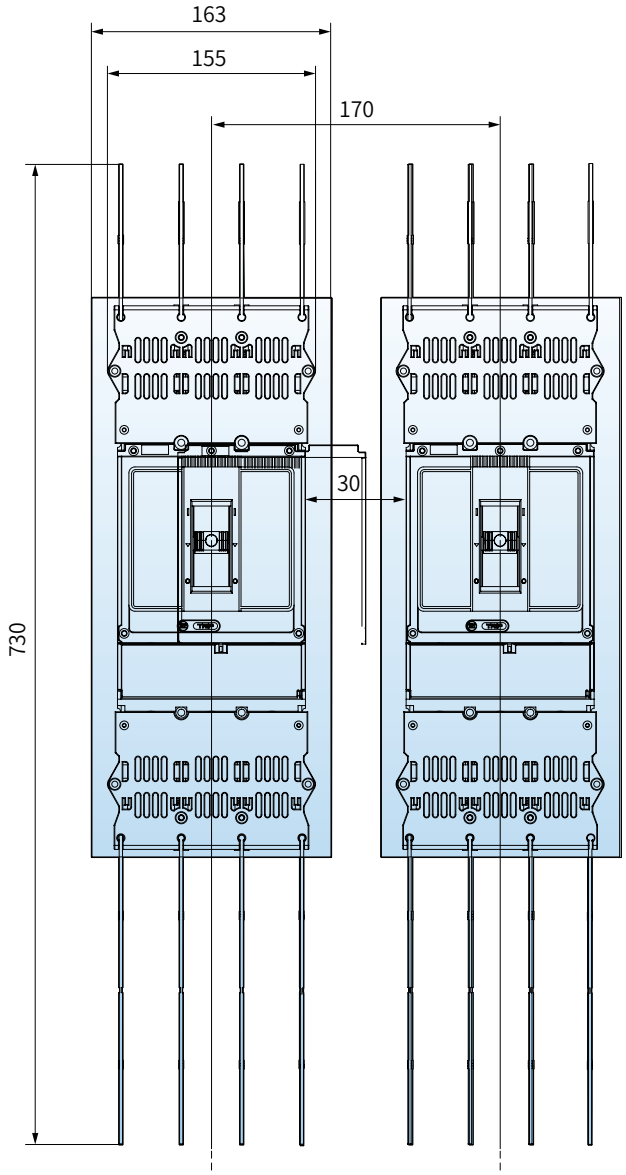
VOZWEI

## Safety distance and installation diagram for VM5-630HU

Safty distance




Minimum distance between two adjacent circuit breakers

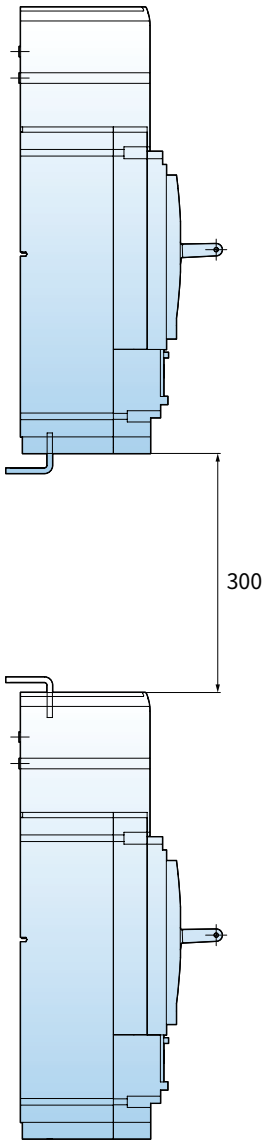



***Note:*** *There are 8 phase separators as standard, the top is short and the bottom is long, When the number of circuit breakers installed side by side is≥ 2, please keep the installation position of the interphase clapboard of the side phase consistent (all installed on phase A side or phase C side), 1 long and 1 short (phase separator) should be added for the side phase of the circuit breaker close to the metal cabinet.*

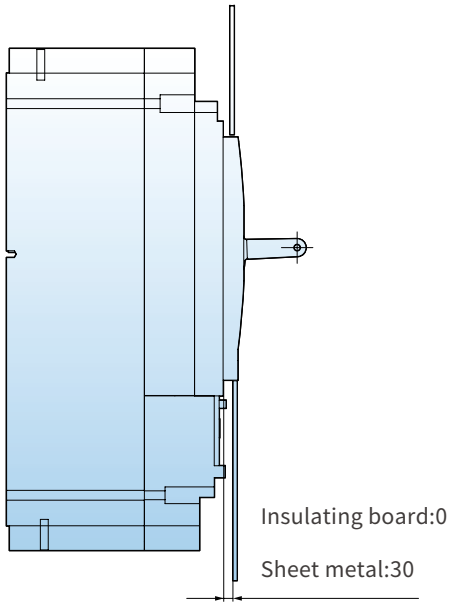
# Size and Connection



Short terminal shield rear connected




Minimum distance between circuit breaker and front panels

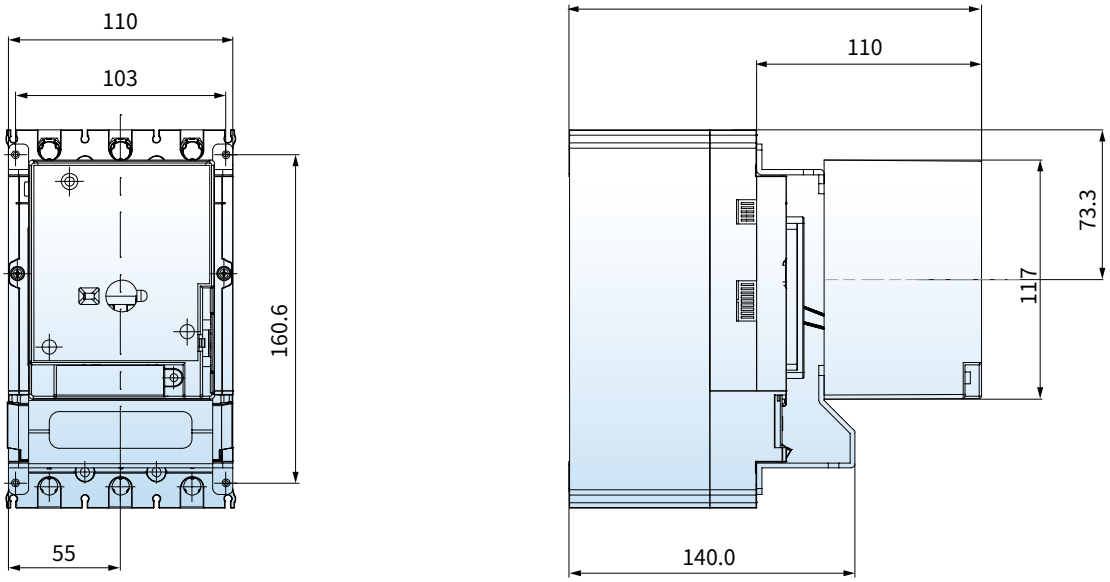


# Size and Connection

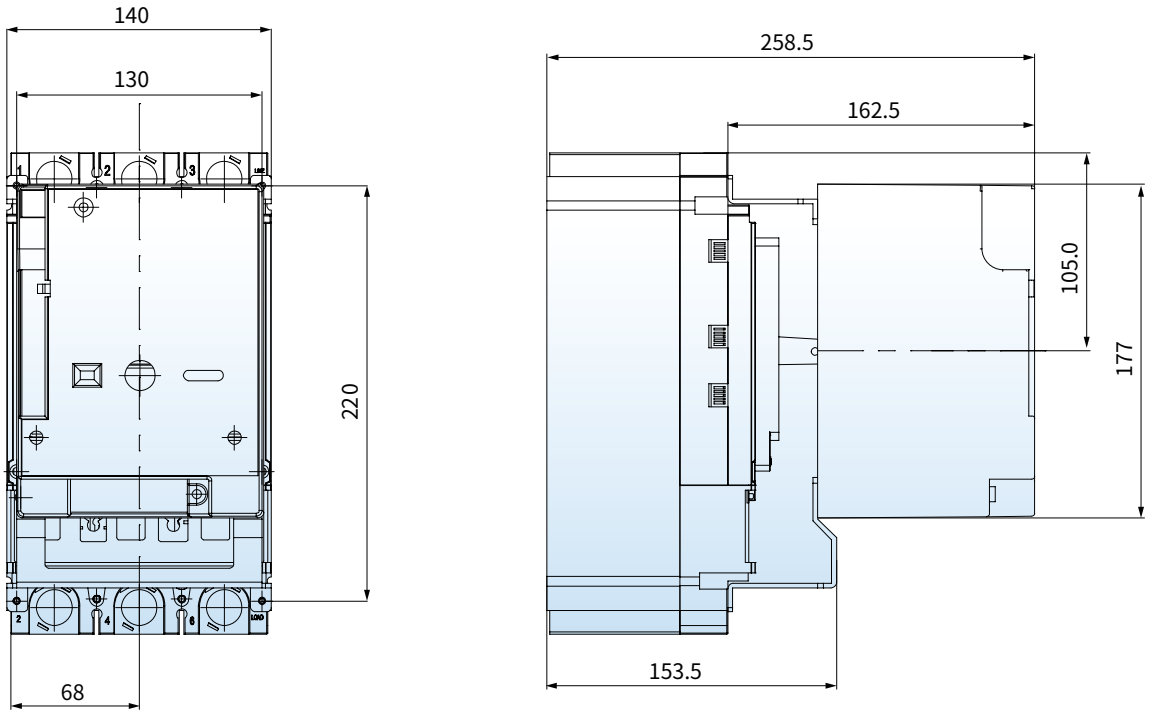
VOZWEI

## Motor-operated mechanism

### VM5-320HU

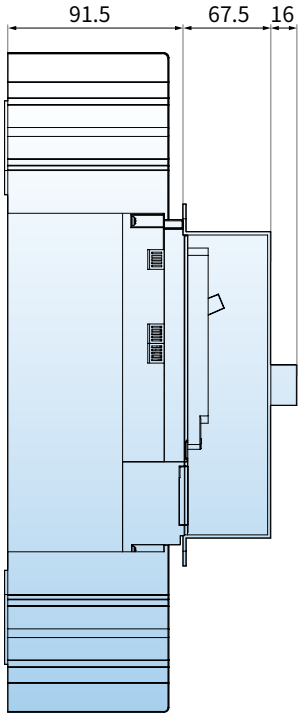


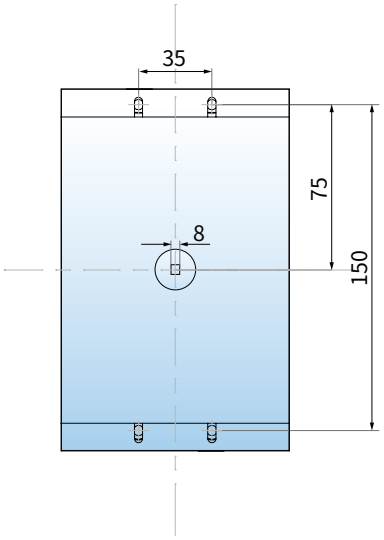

### VM5-630HU



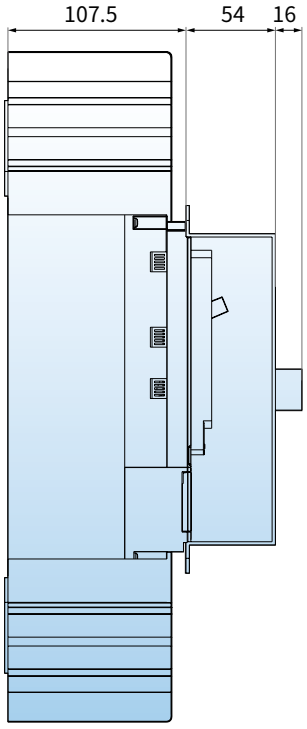
## Manual operator size

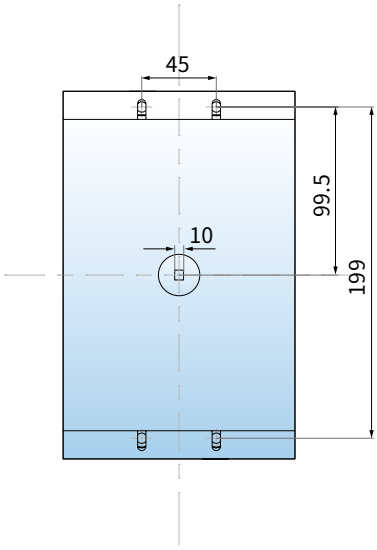
### VM5-320HU




### VM5-630HU



# Size and Connection

VOZWEI

## Cross-sectional area of wire

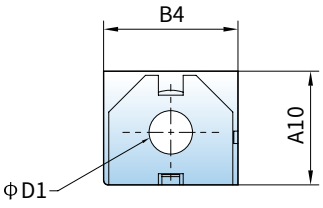
Cross-sectional areas of connection wiring with different rated currents

| Rated current (A) | 10 | 16<br>20 | 25 | 32 | 40<br>50 | 63 | 80 | 100 | 125<br>140 | 160 | 180<br>200<br>225 | 250 | 315<br>350 | 400 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rated current ($mm^2$) | 1.5 | 2.5 | 4 | 6 | 10 | 16 | 25 | 35 | 50 | 70 | 95 | 120 | 185 | 240 |

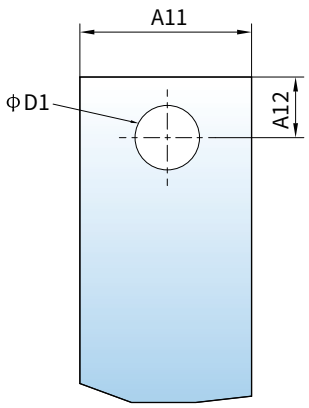
| Rated current (A) | Cable | | Copper bar | |
|---|---|---|---|---|
| | Sectional area ($mm^2$) | Quantity | Size | Quantity |
| 500 | 150 | 2 | 30×5 | 2 |
| 630 | 185 | 2 | 40×5 | 2 |

## Fixed connection

Terminal part




Conductor section




| Model | B4 | A10 | A11 | A12 | ΦD1 |
|---|---|---|---|---|---|
| VM5-320 | 24 | 20.5 | 20 | 9.5 | 9 |
| VM5-630 | 32 | 30 | 30 | 15 | 12.5 |

# VB2

Miniature Circuit Breaker

# Design Features

VOZWEI


- Quick closing ensures reliable operation and extends the lifetime of circuit breakers
- The temperature-rise of the product itself is lower
- Rated impulse withstand voltage up to 6.0kV
- Tunnel type wiring structure and busbar type wiring structure, reliable and fast wiring
- Modular and modular structure, can be combined arbitrarily

## Ambient conditions

### Operating ambient temperature/storage temperature

- Operating environment temperature: -40 °C~+70 °C, with an average value of no more than+35 °C within 24 hours
- Storage temperature: -40 °C~+80 °C

### Altitude conditions

- Altitude of installation site ⩽ 2000m (Over 2000 meters need capacity reduction for using)

### Damp heat resistance

- Category 2 (at a temperature of 55 °C and a relative humidity of 95%)

### Pollution level

- Level 2

### Protection level

- Product protection level: IP20

### Installation Category

- Class II (load) and Class III (distribution and control)

### Installation method

- Installed on TH35mm × 7.5 (EN50022) Standard Guide

### Installation Direction

- Vertical installation of the product, with an inclination of ⩽ ± 5 ° between the installation surface and the vertical surface
- Horizontal installation

### Environmental requirements

- The product meets RoHS standards

# VB2-63 Main Characteristics

VOZWEI

## Technical parameters

| Series | | VB2-63 |
|---|---|---|
| | |  |
| Rated Operational Voltage ($U_e$) | | AC 230/400V, DC 48/60V (1P/2P) |
| Rated Current | | 1A, 2A, 3A, 4A, 6A, 8A, 10A, 13A, 16A, 20A, 25A, 32A, 35A, 40A, 50A, 63A |
| Tripping Characteristic | | B Curve $3I_n$~$5I_n$, C Curve $5I_n$~$10I_n$, D Curve $10I_n$~$14I_n$ |
| Number of Poles | | 1P, 2P, 3P, 4P |
| Rated Insulation Voltage ($U_i$) | | 690 V |
| Rated Impulse Withstand Voltage ($U_{imp}$) | | 6.0 kV |
| Rated Short-Circuit Capacity ($I_{cn}$) | | 10.0kA (Type B/C, $I_n$=1-63A), 6.0KA (Type D, $I_n$=1-63A) |
| Running Short-Circuit Capacity ($I_{cs}$) | | 10.0kA (Type B/C, $I_n$=1-40A), 7.5kA (Type B/C, $I_n$=50A,63A), 6.0kA (Type D, $I_n$=1-63A) |
| Rated Frequency | | 50/60 Hz |
| Operating performance | Mechanical Endurance | 15000 Cycle |
| | Electrical Endurance | 10000 Cycle |
| Standard | | IEC 60898-1 |
| Connection | | Tunnel type, Bus-bar |
| Connecting Capacity | | 1.0 $mm^2$…25 $mm^2$ |
| Tightening Torque | | 2.5 N·m |

# VB2-63 Main Characteristics

VOZWEI

| VB2 | – | 63 | C | 63 | / | 1 |
|---|---|---|---|---|---|---|
| 1 | | 2 | 3 | 4 | | 5 |

| SN | Name | Specification, type code |
|---|---|---|
| 1 | Design code | VB2: Design code |
| 2 | Frame rating | 63: 63A |
| 3 | Tripping characteristic | B: $3I_n$～$5I_n$<br>C: $5I_n$～$10I_n$<br>D: $10I_n$～$14I_n$ |
| 4 | Rated current | 1A, 2A, 3A, 4A, 6A, 8A, 10A, 13A, 16A, 20A, 25A, 32A, 35A, 40A, 50A, 63A |
| 5 | Number of poles | 1P, 2P, 3P, 4P |

## Temperature and Breaking Capacity Coefficient

| Ambient °C | -40 °C | -30 °C | -20 °C | -10 °C | 0 °C | 10 °C | 20 °C | 30 °C | 40 °C | 50 °C | 60 °C | 70 °C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Coefficient | 133.97% | 125.18% | 119.90% | 116.95% | 113.05% | 109.52% | 105.62% | 100% | 95.24% | 91.33% | 88.38% | 83.62% |

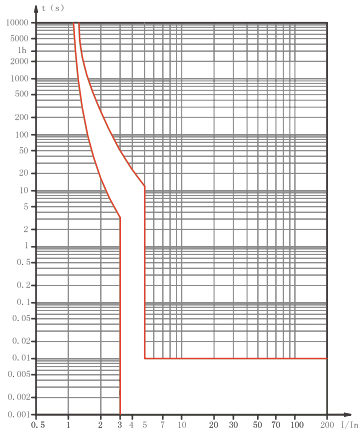
## Breaking Capacity Coefficient and High Altitude Derating Tables

| Altitude | Rated current | Rated voltage | Rated frequency voltage tolerance | Breaking Capacity | Breaking Capacity and Electrical life |
|---|---|---|---|---|---|
| 2 km | $1.00I_n$ | $U_e$ | 1.00 | 1.00 | 1.00 |
| 3 km | $0.96I_n$ | $U_e$ | 0.92 | 0.88 | 0.88 |
| 4 km | $0.92I_n$ | $U_e$ | 0.83 | 0.82 | 0.82 |
| 5 km | $0.87I_n$ | $U_e$ | 0.77 | 0.70 | 0.70 |

# VB2-63 Characteristic Curve

VOZWEI

## B curve




Protection against loads with small short circuit currents (e.g., non-inductive or micro-inductive circuits)

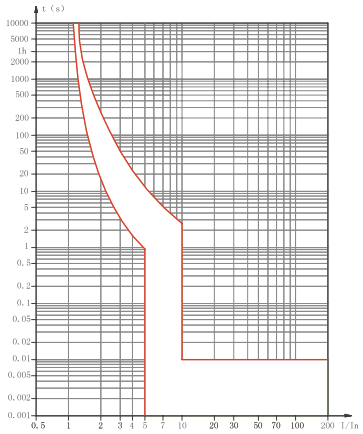
**Trip characteristics:**

The instantaneous trip range is $3I_n$ ~$5I_n$

**Base temperature:**

+30°C

## C curve




Protection of conventional loads and distribution circuits

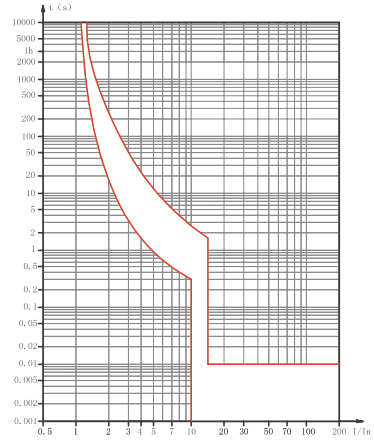
**Trip characteristics:**

The instantaneous trip range is $5I_n$ ~$10I_n$

**Base temperature:**

+30°C

## D curve




Protection of impulse loads with large starting current (e.g., motors, transformers, etc.)

**Trip characteristics:**

The instantaneous trip range is 10In~14In

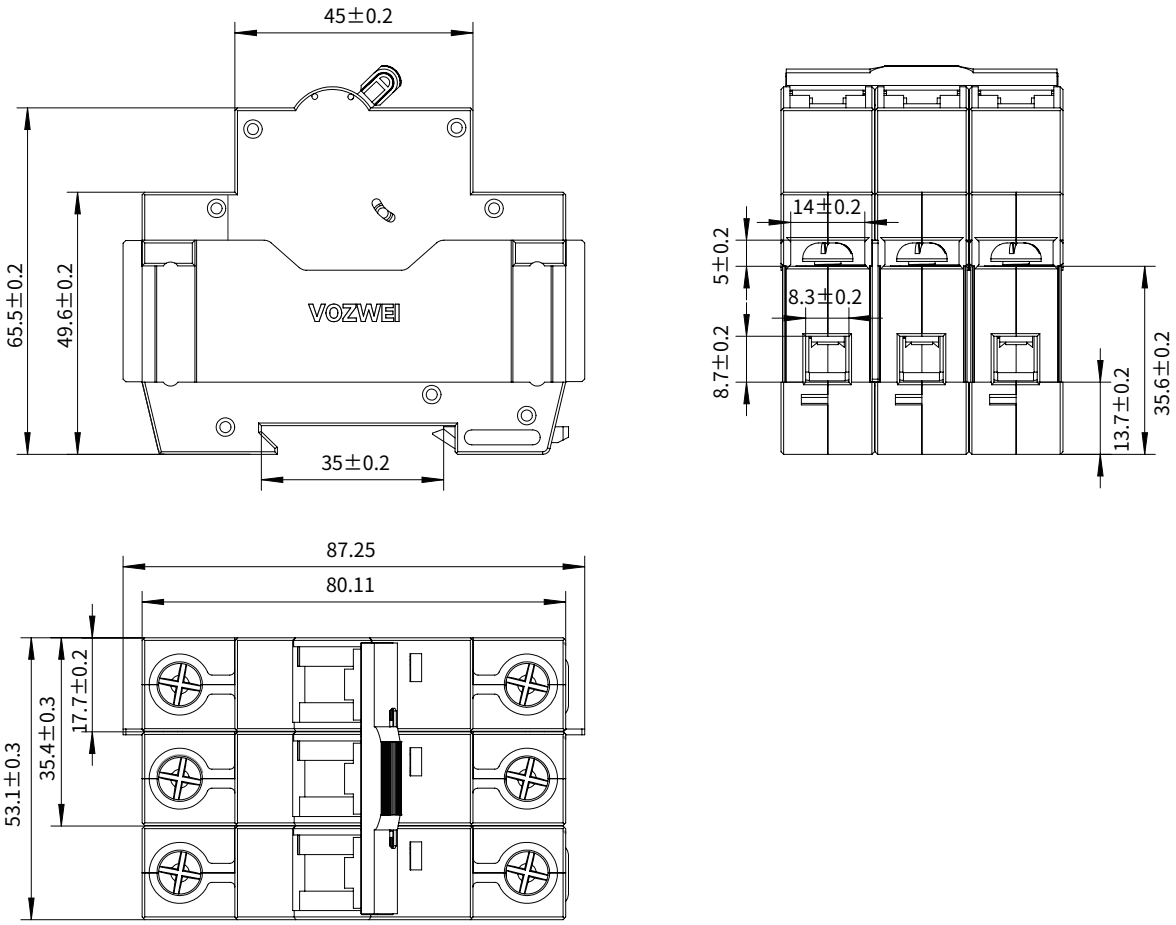
**Base temperature:**

+30°C

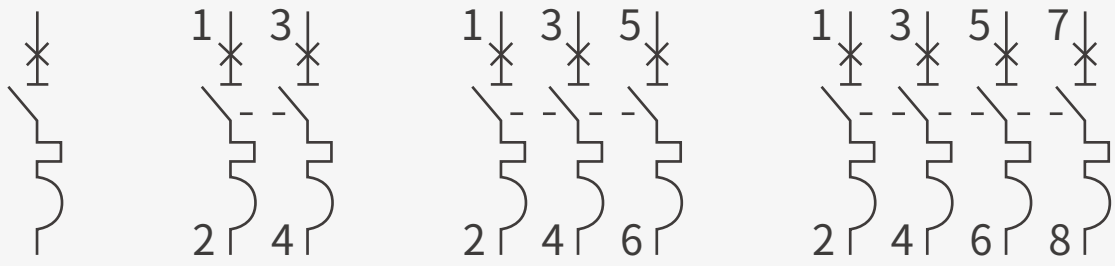
# VB2-63 Size and Connection

VOZWEI

## Overall and Mounting Dimensioned




## Wiring Diagram



# VB2T-63 Main Characteristics

VOZWEI

## Technical parameters

| Series | | VB2T-63 |
|---|---|---|
| | |  |
| Rated Operational Voltage ($U_e$) | | AC 230/400V (1P), AC 400/415V (2P, 3P, 4P),<br>DC 60/80V (1P), DC 80/125V (2P) |
| Rated Current | | 1A, 2A, 3A, 4A, 6A, 8A, 10A, 13A, 16A, 20A,<br>25A, 32A, 35A, 40A, 50A, 63A |
| Tripping Characteristic | | B Curve 4$I_n$±20%, C Curve 8$I_n$±20%,<br>D Curve 12$I_n$±20%, K Curve 10$I_n$±20%, Z Curve 2.5$I_n$±20% |
| Number of Poles | | 1P, 2P, 3P, 4P |
| Rated Insulation Voltage ($U_i$) | | 690 V |
| Rated Impulse Withstand Voltage ($U_{imp}$) | | 6.0 kV |
| Rated Short-Circuit Capacity ($I_{cu}$) | | 10.0kA |
| Running Short-Circuit Capacity ($I_{cs}$) | | 10.0kA |
| Rated Frequency | | 50/60 Hz |
| Operating performance | Mechanical Endurance | 15000 Cycle |
| | Electrical Endurance | 10000 Cycle |
| Standard | | IEC 60947-2 |
| Connection | | Tunnel type, Bus-bar |
| Connecting Capacity | | 1.0 $mm^2$…25 $mm^2$ |
| Tightening Torque | | 2.5 N·m |

# VB2T-63 Main Characteristics



| VB2T | – | 63 | C | 63 | / | 1 |
|---|---|---|---|---|---|---|
| 1 | | 2 | 3 | 4 | | 5 |

| SN | Name | Specification, type code |
|---|---|---|
| 1 | Design code | VB2T: Design code |
| 2 | Frame rating | 63: 63A |
| 3 | Tripping characteristic | B, C, D, K, Z |
| 4 | Rated current | 1A, 2A, 3A, 4A, 6A, 8A, 10A, 13A, 16A, 20A, 25A, 32A, 35A, 40A, 50A, 63A |
| 5 | Number of poles | 1P, 2P, 3P, 4P |

## Temperature and Breaking Capacity Coefficient

| Ambient °C | -40 °C | -30 °C | -20 °C | -10 °C | 0 °C | 10 °C | 20 °C | 30 °C | 40 °C | 50 °C | 60 °C | 70 °C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Coefficient | 133.97% | 125.18% | 119.90% | 116.95% | 113.05% | 109.52% | 105.62% | 100% | 95.24% | 91.33% | 88.38% | 83.62% |

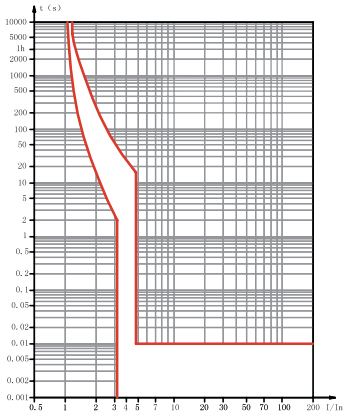
## Breaking Capacity Coefficient and High Altitude Derating Tables

| Altitude | Rated current | Rated voltage | Rated frequency voltage tolerance | Breaking Capacity | Breaking Capacity and Electrical life |
|---|---|---|---|---|---|
| 2 km | 1.00$I_n$ | $U_e$ | 1.00 | 1.00 | 1.00 |
| 3 km | 0.96$I_n$ | $U_e$ | 0.92 | 0.88 | 0.88 |
| 4 km | 0.92$I_n$ | $U_e$ | 0.83 | 0.82 | 0.82 |
| 5 km | 0.87$I_n$ | $U_e$ | 0.77 | 0.70 | 0.70 |

# VB2T-63 Characteristics Curve

VOZWEI

## B curve




Protection against loads with small short circuit currents (e.g., non-inductive or micro-inductive circuits)

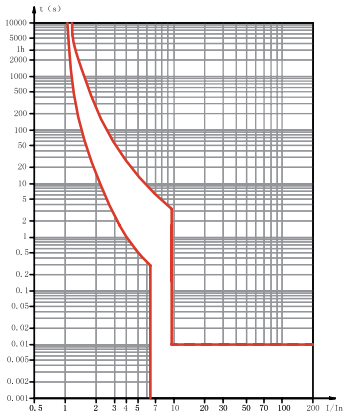
**Trip characteristics:**

The instantaneous trip range is $4I_n \pm 20\%$

**Base temperature:**

+30°C

## C curve




Protection of conventional loads and distribution circuits

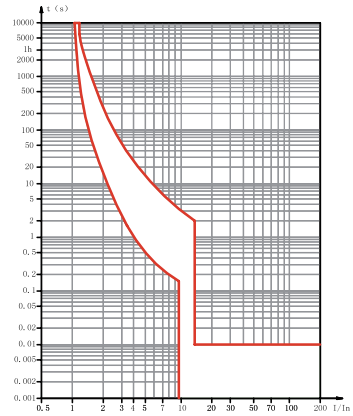
**Trip characteristics:**

The instantaneous trip range is $8I_n \pm 20\%$

**Base temperature:**

+30°C

## D curve




Protection of impulse loads with large starting current (e.g., motors, transformers, etc.)

**Trip characteristics:**

The instantaneous trip range is 12In±20%

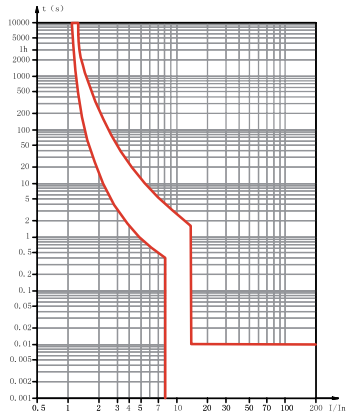
**Base temperature:**

+30°C

# VB2T-63 Characteristics Curve

VOZWEI

## K curve




Protection of impulse loads with large starting current

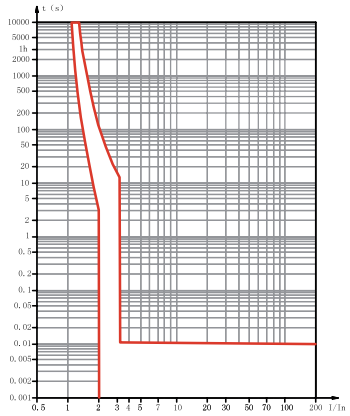
**Trip characteristics:**

The instantaneous trip range is 10$I_n$ ±20%

**Base temperature:**

+30°C

## Z curve




Protecting loads or distribution circuits that require more sensitive action

**Trip characteristics:**

The instantaneous trip range is 2.5$I_n$ ±20%

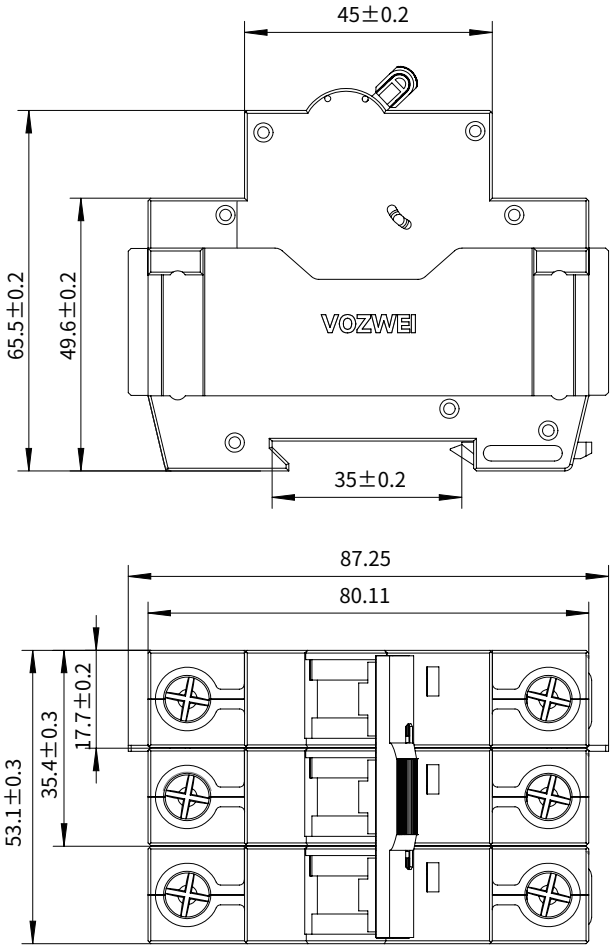
**Base temperature:**

+30°C

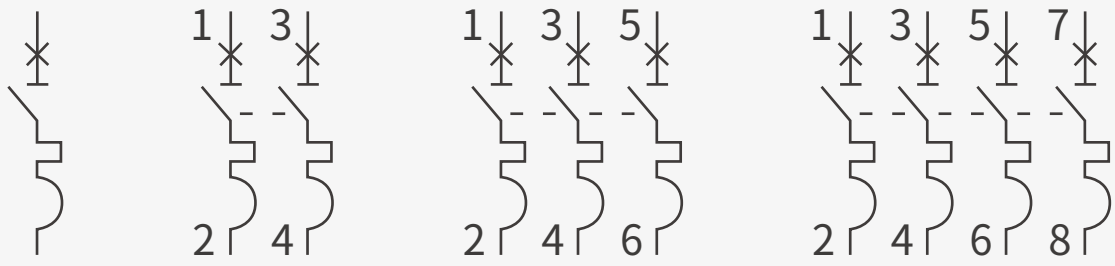
# VB2T-63 Size and Connection

VOZWEI

## Overall and Mounting Dimensioned




## Wiring Diagram



# VB2TS-63 Main Characteristics

VOZWEI

## Technical parameters

| Series | | VB2TS-63 (Magnetic protection only) |
|---|---|---|
| | |  |
| Rated Operational Voltage ($U_e$) | | AC 230/400V (1P), AC 400/415V (2P, 3P, 4P),<br>DC 60/80V (1P), DC 80/125V (2P) |
| Rated Current | | 1A, 2A, 3A, 4A, 6A, 8A, 10A, 13A, 16A, 20A,<br>25A, 32A, 35A, 40A, 50A, 63A |
| Tripping Characteristic | | B Curve 4$I_n$±20%, C Curve 8$I_n$±20%, D Curve 12$I_n$±20% |
| Number of Poles | | 1P, 2P, 3P, 4P |
| Rated Insulation Voltage ($U_i$) | | 690 V |
| Rated Impulse Withstand Voltage ($U_{imp}$) | | 6.0 kV |
| Rated Short-Circuit Capacity ($I_{cu}$) | | 10.0kA |
| Running Short-Circuit Capacity ($I_{cs}$) | | 10.0kA |
| Rated Frequency | | 50/60 Hz |
| Operating performance | Mechanical Endurance | 15000 Cycle |
| | Electrical Endurance | 10000 Cycle |
| Standard | | IEC 60947-2 |
| Connection | | Tunnel type, Bus-bar |
| Connecting Capacity | | 1.0 $mm^2$…25 $mm^2$ |
| Tightening Torque | | 2.5 N·m |

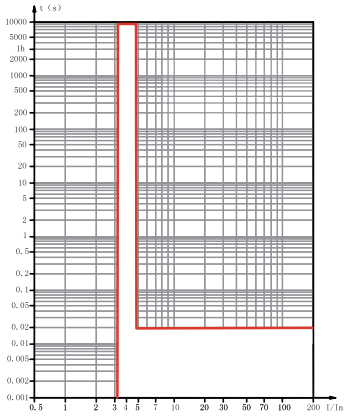
| VB2T | S | – | 63 | C | 63 | / | 1 |
|---|---|---|---|---|---|---|---|
| 1 | 2 | | 3 | 4 | 5 | | 6 |

| SN | Name | Specification, type code |
|---|---|---|
| 1 | Design code | VB2T: Design code |
| 2 | Function code | S: Magnetic protection only |
| 3 | Frame rating | 63: 63A |
| 4 | Tripping characteristic | B, C, D |
| 5 | Rated current | 1A, 2A, 3A, 4A, 6A, 8A, 10A, 13A, 16A, 20A, 25A, 32A, 35A, 40A, 50A, 63A |
| 6 | Number of poles | 1P, 2P, 3P, 4P |

# VB2TS-63 Characteristics Curve

VOZWEI

## B curve



Protection against loads with small short circuit currents (e.g., non-inductive or micro-inductive circuits)

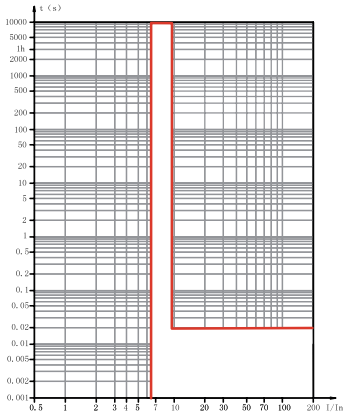
**Trip characteristics:**

The instantaneous trip range is 4$I_n$ ±20%

**Base temperature:**

+30°C

## C curve



Protection of conventional loads and distribution circuits

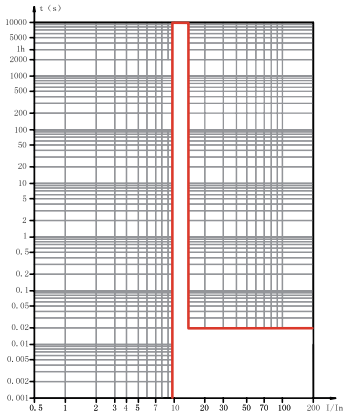
**Trip characteristics:**

The instantaneous trip range is 8$I_n$ ±20%

**Base temperature:**

+30°C

## D curve



Protection of impulse loads with large starting current (e.g., motors, transformers, etc.)

**Trip characteristics:**

The instantaneous trip range is 12In±20%

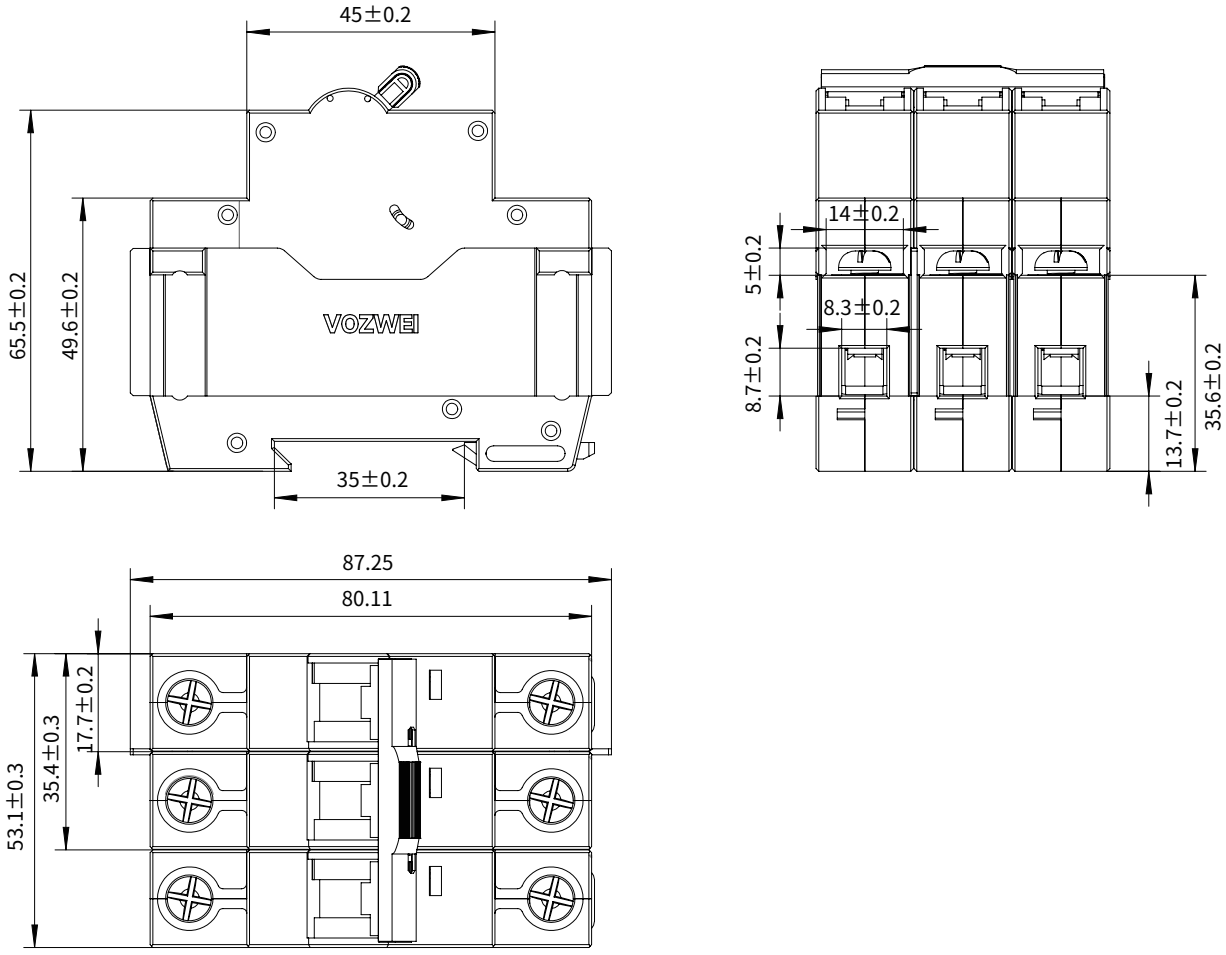
**Base temperature:**

+30°C

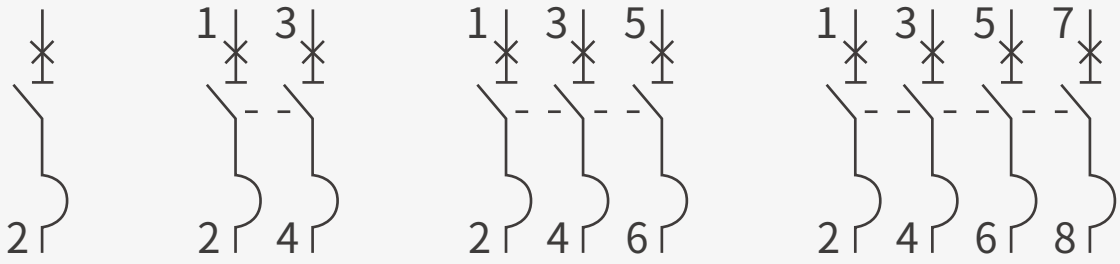
# VB2TS-63 Size and Connection

VOZWEI

## Overall and Mounting Dimensioned




## Wiring Diagram



# VB2Z-63 Main Characteristics

VOZWEI

## Technical parameters

| Series | | VB2Z-63 |
|---|---|---|
| | |  |
| Rated Operational Voltage ($U_e$) | | DC 125/220/250V (1P), DC 250/440/500/690/800V (2P),<br>DC 750/800V (3P), DC 800/1000V (4P) |
| Rated Current | | 1A, 2A, 3A, 4A, 6A, 8A, 10A, 13A, 16A, 20A,<br>25A, 32A, 35A, 40A, 50A, 63A |
| Tripping Characteristic | | B Curve 6In±20%, C Curve 12In±20% |
| Number of Poles | | 1P, 2P, 3P, 4P |
| Rated Insulation Voltage ($U_i$) | | 1000 V |
| Rated Impulse Withstand Voltage ($U_{imp}$) | | 6.0 kV |
| Rated Short-Circuit Capacity ($I_{cu}$) | | DC 125/220/250V (1P), DC 250/440/500V (2P):10kA<br>DC 690/800V (2P):6kA<br>DC 750/800V (3P), DC 800/1000V (4P):5kA |
| Running Short-Circuit Capacity ($I_{cs}$) | | DC 125/220/250V (1P):7.5kA<br>DC 250/440/500V (2P):6kA<br>DC 690V (2P):4.5kA<br>DC 800V (2P):3kA<br>DC 750/800V (3P):5kA<br>DC 800/1000V (4P):5kA |
| Operating performance | Mechanical Endurance | 15000 Cycle |
| | Electrical Endurance | 10000 Cycle |
| Standard | | IEC 60947-2 |
| Connection | | Tunnel type, Bus-bar |
| Connecting Capacity | | 1.0 $mm^2$…25 $mm^2$ |
| Tightening Torque | | 2.5 N·m |

# VB2Z-63 Main Characteristics



| VB2 | Z | – | 63 | C | 63 | / | 1 |
|---|---|---|---|---|---|---|---|
| 1 | 2 | | 3 | 4 | 5 | | 6 |

| SN | Name | Specification, type code |
|---|---|---|
| 1 | Design code | VB2: Design code |
| 2 | Function code | Z: DC type |
| 3 | Frame rating | 63: 63A |
| 4 | Tripping characteristic | B, C |
| 5 | Rated current | 1A, 2A, 3A, 4A, 6A, 8A, 10A, 13A, 16A, 20A, 25A, 32A, 35A, 40A, 50A, 63A |
| 6 | Number of poles | 1P, 2P, 3P, 4P |

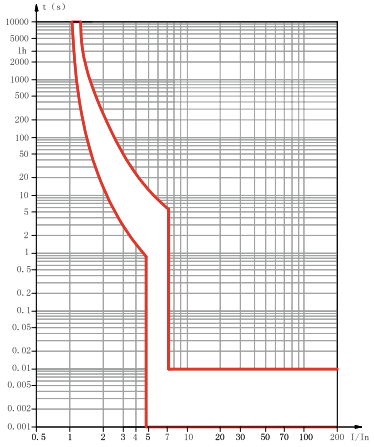
### Temperature and Breaking Capacity Coefficient

| Ambient °C | -40 °C | -30 °C | -20 °C | -10 °C | 0 °C | 10 °C | 20 °C | 30 °C | 40 °C | 50 °C | 60 °C | 70 °C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Coefficient | 131.59% | 127.14% | 123.10% | 118.81% | 114.40% | 109.76% | 105.07% | 100% | 94.44% | 88.77% | 82.63% | 76.20% |

# VB2Z-63 Characteristics Curve

VOZWEI

## B curve




Protection against loads with small short circuit currents (e.g., non-inductive or micro-inductive circuits)

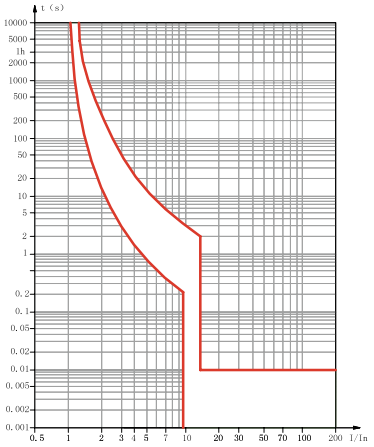
**Trip characteristics:**

The instantaneous trip range is 6(1±20%) $I_n$

**Base temperature:**

+30°C

## C curve




Protection of conventional loads and distribution circuits

**Trip characteristics:**

The instantaneous trip range is 12(1±20%) $I_n$

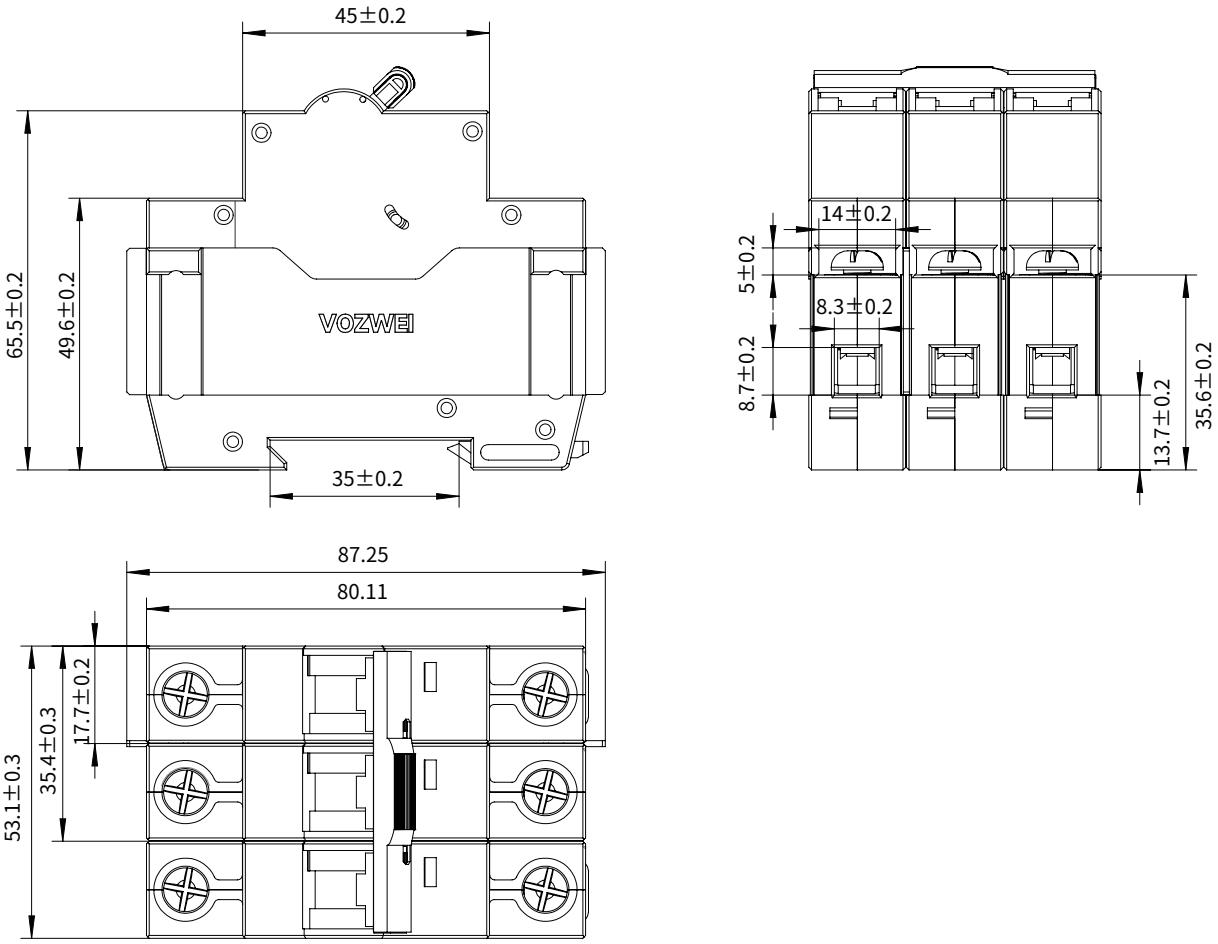
**Base temperature:**

+30°C

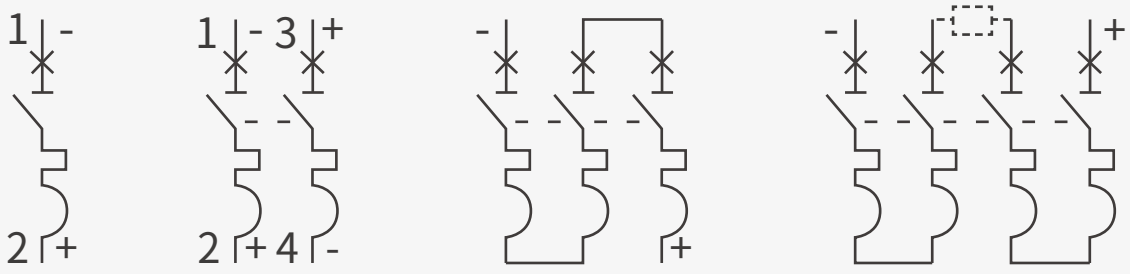
# VB2Z-63 Size and Connection

VOZWEI

## Overall and Mounting Dimensioned




## Wiring Diagram



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support@vozwei.com (Get technical support)
info@vozwei.com (Others information)

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