

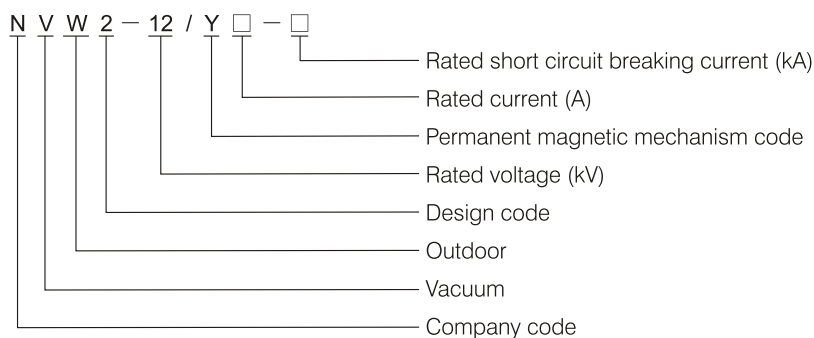


## NVW2-12 Series Outdoor AC Vacuum Circuit Breaker

### 1. General

- 1.1 Ratings: voltage 12kV, current up to 1250A, AC50HZ
- 1.2 Application: for the control and protection of substation and equipments. Making and breaking load current, overload current and short-circuit current under various operating status of electric network.
- 1.3 Standard: IEC62271-100

### 2. Type and Interpretation



### 3. Working Condition

- 3.1 Ambient air temperature: -40~+40°C
- 3.2 Altitude: ≤2000m
- 3.3 No operating in such places as subject to dust, dirt, smog, corrosive/flammable gas, vapor and salt pollution.
- 3.4 Wind speed: ≤34m/s (Equal to 700Pa over cylindrical surface)
- 3.5 The external shocking and earthquake could be neglected.
- 3.6 The amplitude of electromagnetic interference in the secondary system ≤1.6kV.
- ※ Note: Customized products for other special working conditions are available on your requirements.

### 4. Main Technical Parameter

4.1 Main technical parameter of circuit breaker

Table 1

Item	Unit	Parameter		
Raged voltage	kV	12		
Rated current	A	630	1250	
Rated Short-circuit breaking current	kA	20	25	
Rated Short-circuit making current (peak)	kA	50	63	
Rated withstand current (peak)	kA	50	63	
Rated short-time withstand current	kA	20	25	
Rated frequency	Hz	50		
Rated duration of short-circuit	s	4		
DC component of rated short-circuit breaking current		51%		
Rated operating sequence		O-0.3s-CO-180s-CO		
Out-phase earthing fault breaking current	kA	20.6		
Mechanical life		M2		
Electrical life		E2		
Rated insulation level	1min pf withstand	Dry	kV	42
		Wet		34
	Lightning impulse withstand		kV	75
Rated cable charging breaking current		A	25	
Rated voltage of auxiliary loop		V	DC220	
1min pf withstand of secondary loop		kV	2	

## 4.2 Functions and technical parameters of intelligent terminal controller

### 4.2.1 General introduction

- 1) Circuit breaker adopts MGK magnetic controller. It's convenient to realize opening and closing of pole magnetic switch, protect lines and devoid over current during closing.
- 2) Closing and opening operation of magnetic mechanism
- 3) Protection function of lines
- 4) Function of anti rush current
- 5) Function of communicating with control center
- 6) Continuous power supply of all parts
- 7) Signal supervision
- 8) System electricity measuring
- 9) Remote control
- 10) Wireless data transmission (optional)
- 11) History operation memory

### 4.2.2 Closing and opening management of magnetic mechanism

- 1) Manual operation
- 2) Controller(within 30m)
- 3) Remote communication operation
- 4) Wireless data communication operation (within 200m)

### 4.2.3 Function of line protection

- 1) Instant breaking protection
- 2) Timing over-current limitation protection
- 3) Closing rush current protection
- 4) Switch signal collection and special non-electricity protection
- 5) All sections of protection value can be adjusted on panel digital tube

### 4.2.4 Signal supervision

- 1) Supervise operating condition of circuit breaker
- 2) Supervise voltage of control loop, alarm and lock closing and opening operation under LV
- 3) Optical isolation, anti-interference ability
- 4) 6 lines of switching signal input

### 4.2.5 Measuring function

- 1) Statistics of switch operation
- 2) Measured value will show on panel digital tube.

Item	Rating(secondary input value)	Accuracy	Max. over-load times
PT voltage	220V	0.5	1.5
Three phase protection current Ia, Ib, Ic	5A	1.0	20
Control loop voltage	DC220V	0.5	1.5
System frequency	50Hz	$\pm 0.02\text{Hz}$	

## 4.3.6 Memory of history operation

- 1) SOE record: record operation information, with time scale, 2ms minimum resolution; circularly memorize 32 groups of SOE event.
- 2) Record the current value of the line protection, with a time scale
- 3) SOE records call via PC RS232 port; also available through wireless data transmission call.

## 4.3.7 Man-machine interface function

Wireless data transmission (optional): using wireless network card of the machine parts within 200 meters, the computer can easily query and set data as well as query all information of device without operation.

## 4.3.8 Self-diagnostic protection

- 1) Device self-test: periodic self-test such as RAM, FLASH, UART, A/D, such as voltage control loop. Any failure is shown through the alarm panel and lock the corresponding operation.
- 2) Receiving the time correcting request from master or sub-station to keep pace with the system clock and enhance the comparability of time records.

## 4.3.9 High reliability

All EMC targets can comply with the fourth class criteria of DL/T721-2000, the failure rate is low.

## 4.3.10 High degree of protection

The controller box is made of high quality stainless steel, surface brushed, nice shape. To prevent corrosion, accidental damage, UV damage and high-frequency attenuation. Outdoor wall mounted with good protection. Protection is not less than IP54.

## Main technical parameters of controller

Electromagnetism compatibility	Insulation resistance	$\geq 10M\Omega$	
	Insulation level	2.5kV	
	Voltage dips and interruptions	100%、0.5s	IEC 1000-4-1
	High frequency	Series mode	1.5kVP IEC 60870-2-2: 1996
	Interference	Common mode	2.5kVP IEC 60870-2-2: 1996
	Transient pulse train	4.0kVP, 1min	IEC 60870-2-2: 1996
	Surge Interference	4.0kVP, 1min	IEC 60870-2-2: 1996
	Electrostatic discharge (ESD)	8kV	IEC 60870-2-2: 1996
	Power Frequency Magnetic Field	100A/m	IEC 1000-4-8
	Damped vibration	100A/m	IEC 1000-4-8
	Impulse voltage	5kV, 1.2/50 $\mu$ s	IEC 60870-2-2: 1996
Power supply	Operating power	AC220V	
	Losses	$\leq 10W$	
	Frequency	50Hz	
Ratings	CT	5A, losses < 1.0VA/phase	
	PT	220V, losses < 0.5VA/phase	
	Frequency	50Hz/60Hz	
Protection parameters	Fast tripping protection scope	$(20\% \sim 2000\%) \times I_n$	Continuously adjustable, resolution 0.01A
	Over current protection scope	$(20\% \sim 2000\%) \times I_n$	Continuously adjustable, resolution 0.01A
	Over current protection delay	0s~99.99s	Continuously adjustable, resolution 0.01s
	Reclosing frequency	0~3 times	Free to set the number of reclosing
	Reclosing interval	0s~999.9s	Continuously adjustable, resolution 0.1s
Reclosing interval	Protection level	Not less than IP55	
Mean Time Between Failure	MTBF	Not less than 80,000h	

#### 4.4 The configuration of current transformer

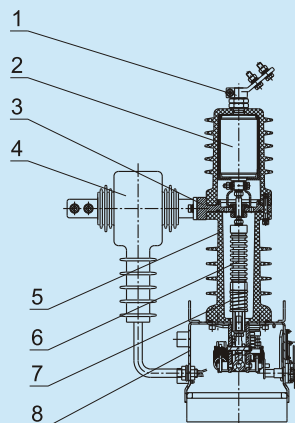
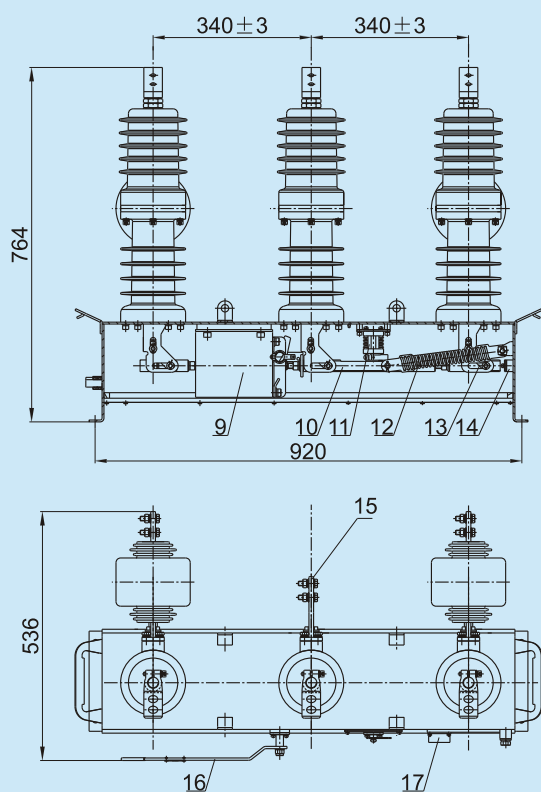
Two standard current transformers with circuit breaker body, current transformer ratio is selected as 50 / 5 ~ 1250 / 5 (circuit breaker rated at 630A, the current transformer ratio selection up to 630 / 5). To improve the mechanical strength, epoxy cast transformer body is whole and adopts solid silicon rubber insulation.

#### 4.5 Voltage transformer configuration

Circuit breaker can be equipped with two external voltage transformer, variable ratio 10000/100/220V, capacity of 500VA, partial discharge is less than 20pC. Permanent magnetic actuator and control device operating power and low voltage component power supply components are provided by the secondary voltage transformer.

### 5. Overall and Installation Dimension

Fig1. Circuit breaker structure



- |   |                              |
|---|------------------------------|
| 1. Top outgoing terminal                | 9. Magnetic mechanism        |
| 2. Vacuum arc-extinguish chamber device | 10. Driving tension pole     |
| 3. Flange                               | 11. Auxiliary switch         |
| 4. CT                                   | 12. Opening spring           |
| 5. Bottom post insulating cylinder      | 13. Connecting plate         |
| 6. Insulating tension pole              | 14. Cushion                  |
| 7. Pressure spring                      | 15. Bottom outgoing terminal |
| 8. Box                                  | 16. Opening handle           |
|   | 17. Aviation socket          |

## 5.2 Overall Dimension of circuit breaker

Fig.2 Overall Dimension (without CT)

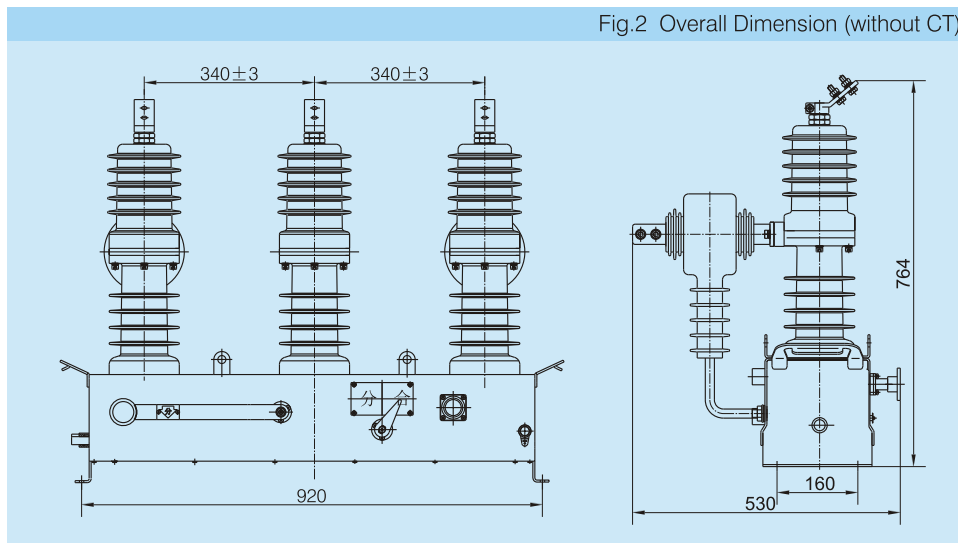


Fig.3 Overall Dimension (with CT)

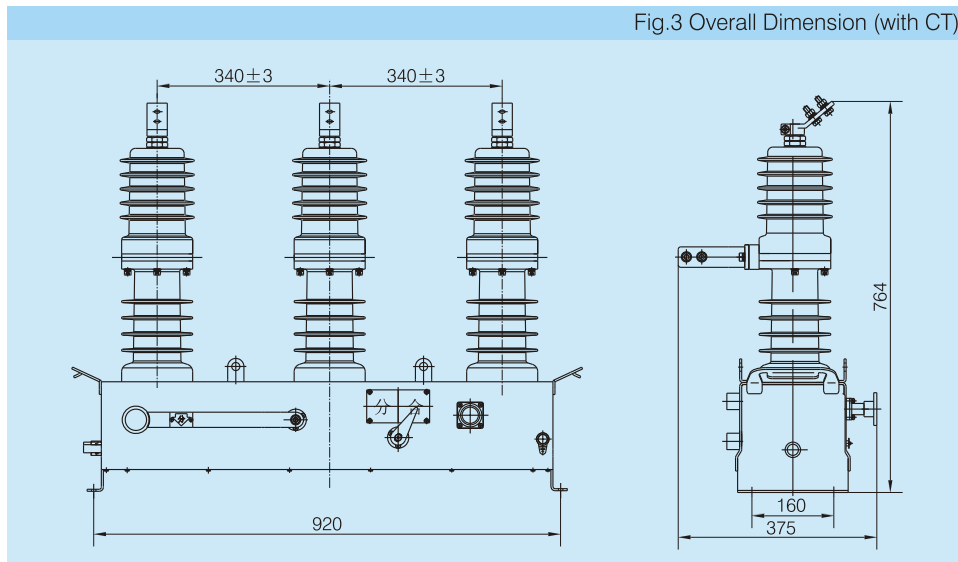


Fig.4 Overall dimension (with disconnector, with CT)

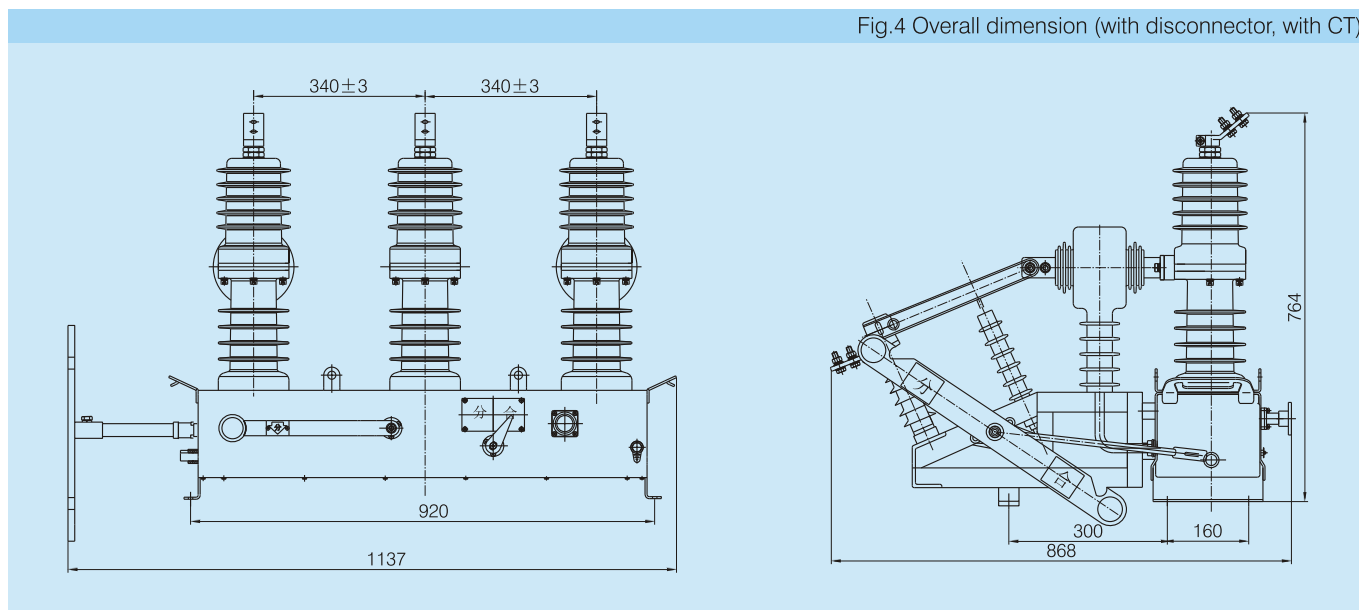
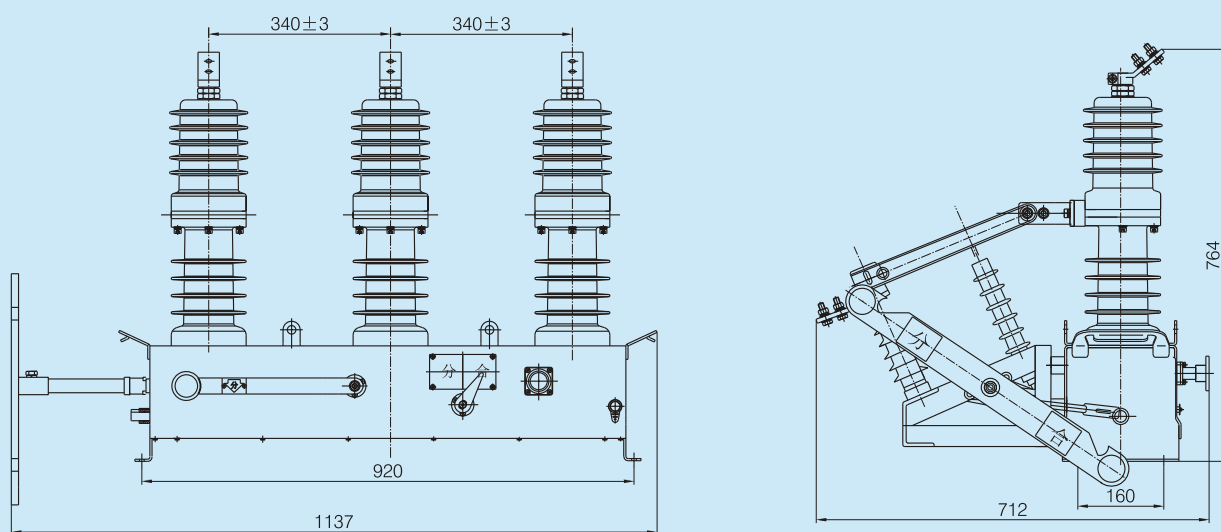


Fig.5 Overall dimension (with disconnecter, without CT)



## 5.3 Installation dimension of circuit breaker

Fig.6 Installation dimension of circuit breaker

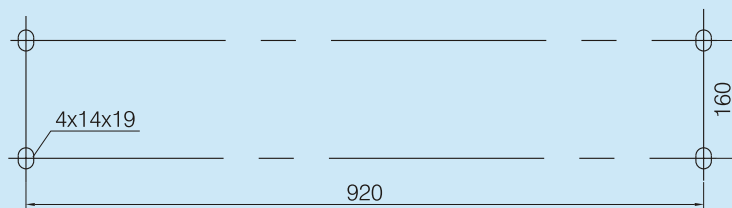
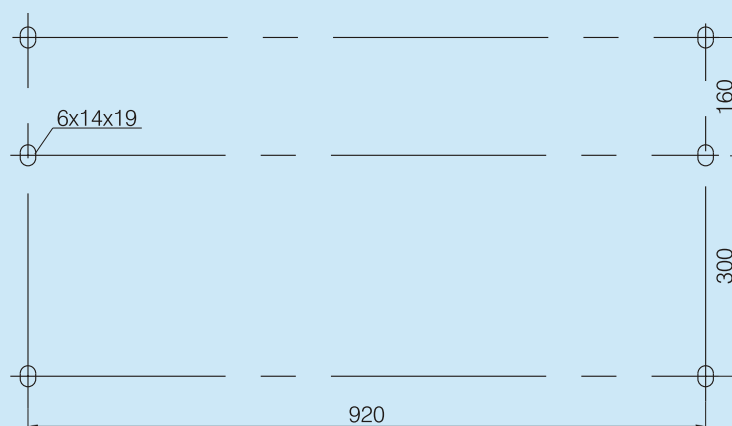
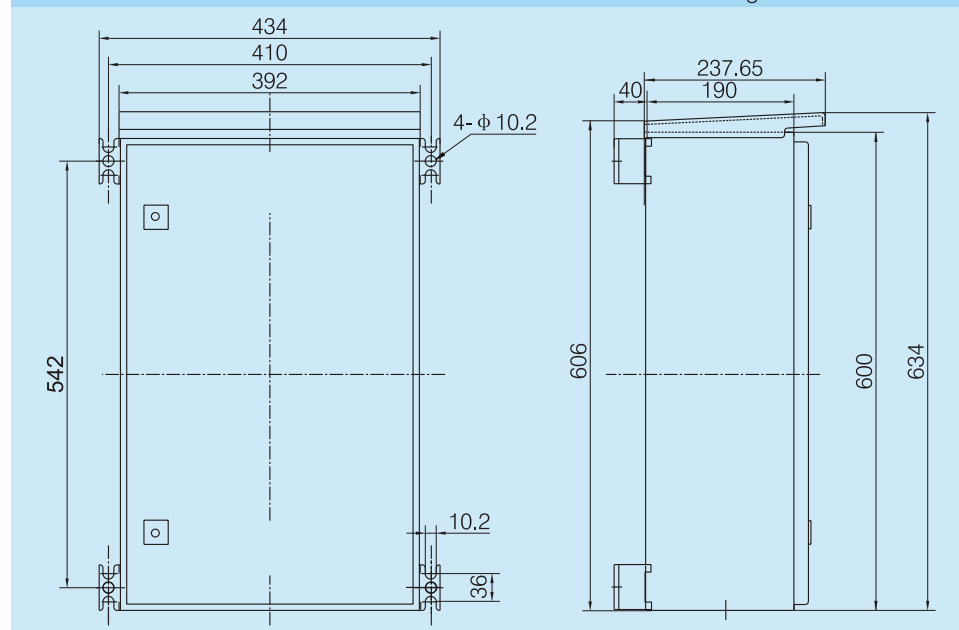


Fig.7 Installation dimension of circuit breaker with disconnecter



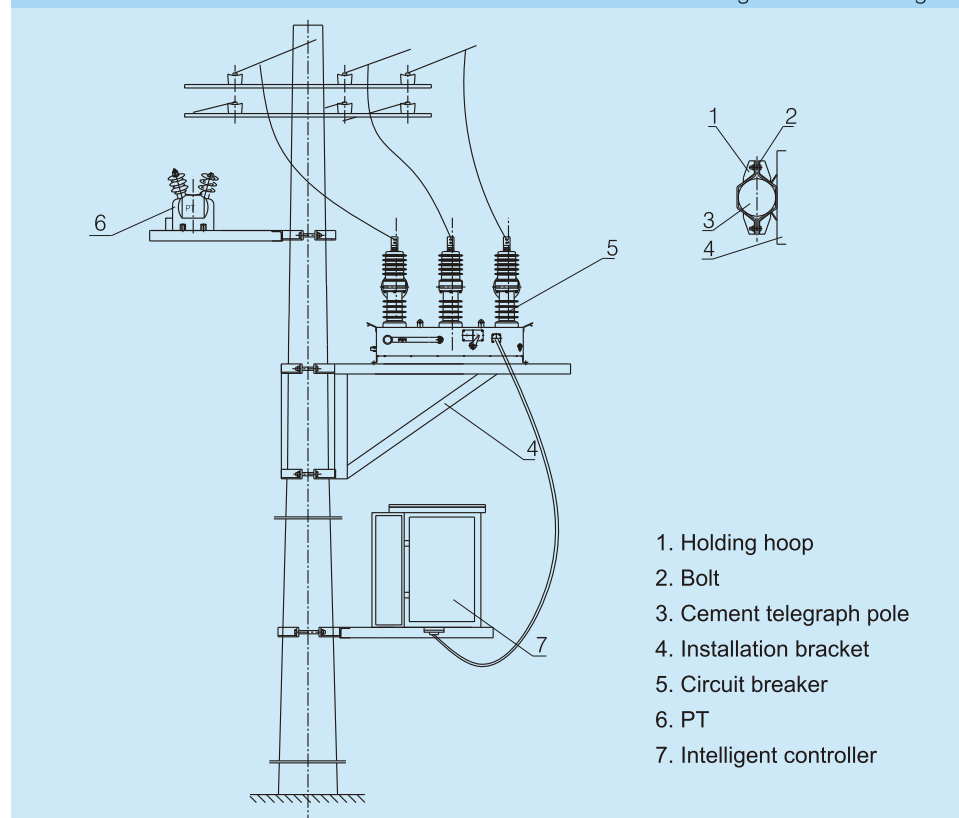
## 7.4 Outline dimension of intelligent terminal controller

Fig.8 Overall dimension



## 5.5 Installation diagram of circuit breaker and controller

Fig.9 Installation diagram



## 6. Ordering Information

Please indicate the following items when order:

- 6.1 Type, name and quantity.
- 6.2 Rated operating voltage of the operating mechanism.
- 6.3 Variable ratio, accuracy and quantity of the external current transformer.
- 6.4 Variable ratio and quantity of the external voltage transformer.