

ZW7-40.5 Outdoor Medium-voltage AC Vacuum Circuit Breaker



1 Overview

1.1 The three-phase AC 50Hz outdoor switchgear is suitable for 35kV power system used in urban network and rural network for making and breaking load current, overcurrent and short-circuit current, and for other similar applications.

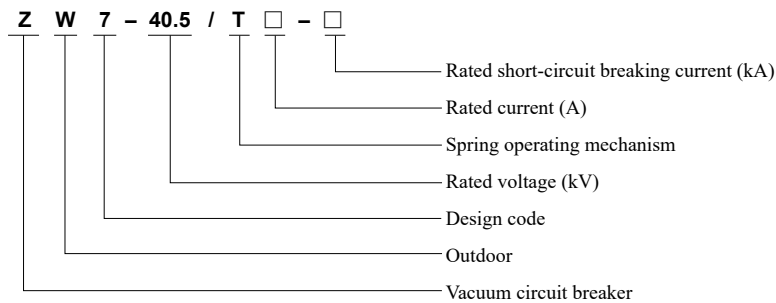
1.2 Standard

GB1984 "High-voltage alternating-current circuit-breakers"

GB/T 11022 "Common specifications for high-voltage switchgear and controlgear standard"

DL/T402 "Technical conditions for ordering the high-voltage AC circuit breaker"

2 Type Designation



3 Technical Parameters

No.	Name		Unit	Value		
1	Rated voltage		kV	40.5		
2	Rated current		A	1250, 1600, 2000		
3	Rated frequency		Hz	50		
4	Rated insulation level	1 minute power frequency withstand voltage	kV	Phase to phase, phase to earth 95 / 185 open contacts 118		
		Lighting impulse withstand voltage (peak)		80		
					Phase to phase, phase to earth / open contacts 215	
5	Rated short-circuit breaking current		kA	20	25	31.5
6	Rated short-circuit making current (peak)		kA	50	63	80
7	Rated peak withstand current		kA	50	63	80
8	4s thermal stability current		kA	20	25	31.5
9	Rated operation sequence			O-0.3s-CO-180s-CO		
10	Closing time		ms	40~100		
11	Opening time			25~60		
12	Rated short circuit breaking current breaking times		Times	30		
13	Mechanical life			10000		
14	1 min power frequency withstand voltage of control circuit and auxiliary circuit		V	2000		
15	Rated operating voltage and auxiliary voltage			AC/DC220, DC110		

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No.	Name	Unit	Value
16	Rated current of the overcurrent trip coil	A	5
17	Allowable wear thickness of the moving and stationary contacts of arc extinguishing chamber	mm	3

4 Operating Conditions

- 4.1 Ambient air temperature: The maximum temperature is +55°C, the minimum temperature is -40°C, and the maximum daily temperature difference is 25K;
- 4.2 Relative humidity: The daily mean is not greater than 95%, and the monthly mean is not greater than 90%;
- 4.3 Altitude: ≤2,000 meters;
- 4.4 Wind speed: Not exceed 35m/s (equivalent to wind pressure 700 Pa);
- 4.5 Pollution degree: 3, 4;
- 4.6 Icing thickness: 10mm;
- 4.7 Seismic capacity: Horizontal acceleration: 0.3 g m/s²; vertical acceleration: 0.2 g m/s²;
- 4.8 Installed in places where there are no fire, explosion, chemical corrosion, and frequent severe vibration.
- For any requirements out of the normal working conditions, please contact the manufacturer.

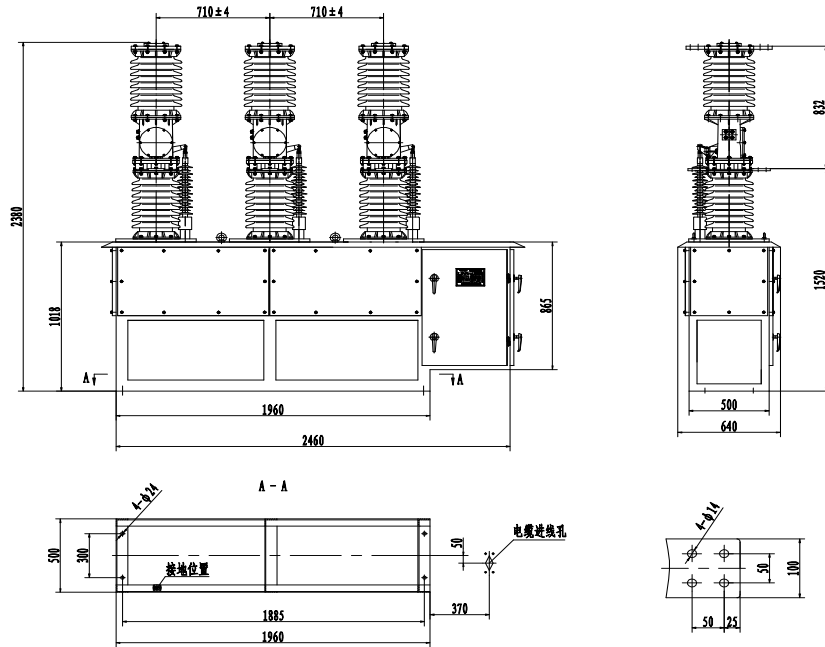
5 Structure And Working Principle

- 5.1 The overall structure is of the three-phase porcelain pillar type, and the product is primarily composed of a three-phase porcelain pillar, a spring operating mechanism and drive system, conductive circuit, control unit, and shell (common carton steel plastic-sprayed or stainless steel);
- 5.2 The vacuum interrupter is installed in a high-strength porcelain pillar, and high-strength insulation silicone is filled between the interrupter and the porcelain pillar, providing high-voltage resistance, aging resistance, and excellent sealing capacity;
- 5.2 The reliable spring operating mechanism (manual or electric; with manual function available for electric mode) is used, the energy-storing motor has small power with low opening and closing energy consumption, and the operating mechanism is sealed in a box; there are temperature and humidity controllers and a heater with automatic switching function in the box to effectively prevent rust to the parts due to condensation, thus guaranteeing the reliability of the operations under the low temperature and at high-altitude areas;
- 5.3 The porcelain pillar is made of high-strength porcelain (epoxy glass tube coated with silicone rubber), featuring with high and low temperature resistance, resistance to ultraviolet, and aging resistance;
- 5.4 The internal (external) two-phase or three-phase current transformer (metering, measurement, and protection) works with the surge controller to realize overcurrent protection and fault current quick-off protection. The intelligent controller can be provided as required by user to realize the automatic control function.
- 5.6 There are side-mounted, central, CT internal or external modes according to the layout of operating mechanism for selection by user.

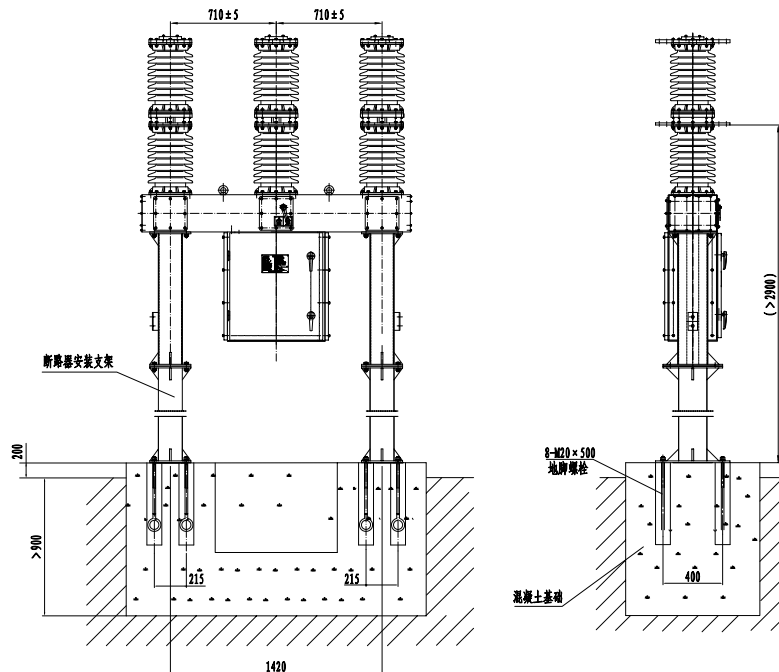
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6 Outline and Installation Dimensions

6.1 Circuit breaker outline and installation dimensions (miniature central type without CT)

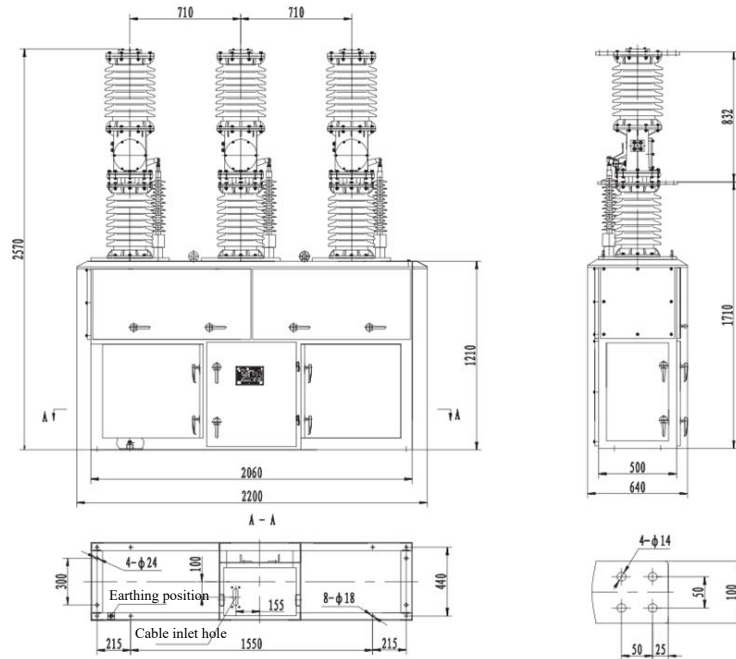


6.2 Circuit breaker outline and installation dimensions (miniature central type with CT)



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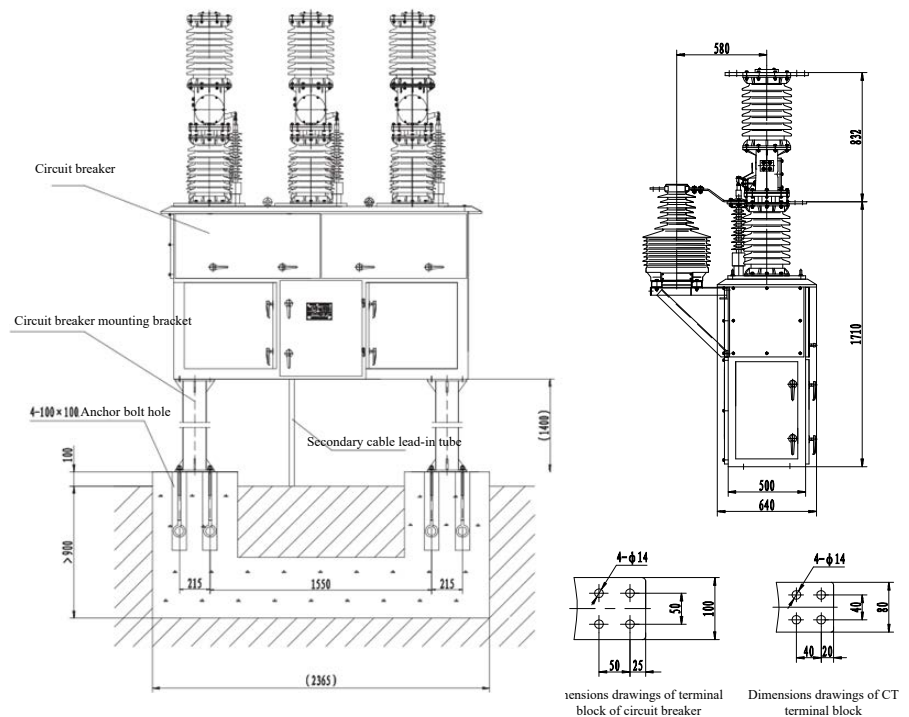
6.3 Outline dimensions of ZW7-40.5 circuit breaker (central, and embedded CT)



Drawing of circuit breaker base

Drawing of wiring terminal

6.4 Outline dimensions of ZW7-40.5 circuit breaker (central, and embedded CT)

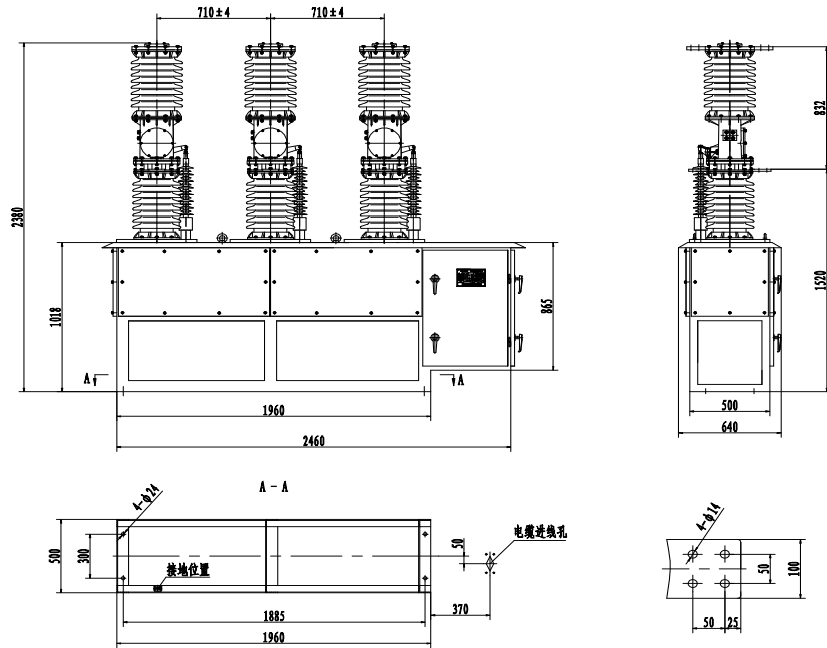


tensions drawings of terminal block of circuit breaker

Dimensions drawings of CT terminal block

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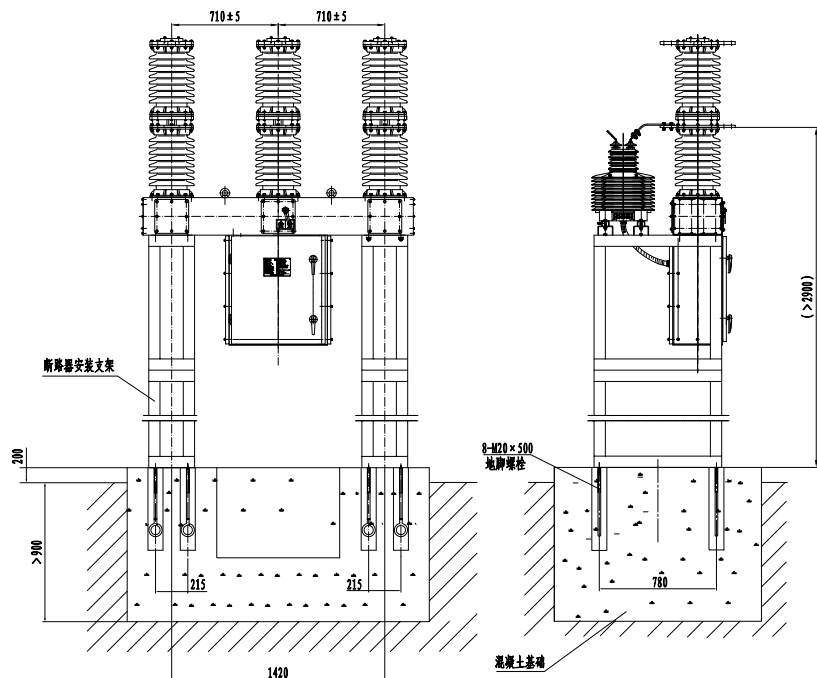
6.5 Dimensions drawings of circuit breaker (side-mounted, built-in CT)



Circuit breaker base dimensions drawing

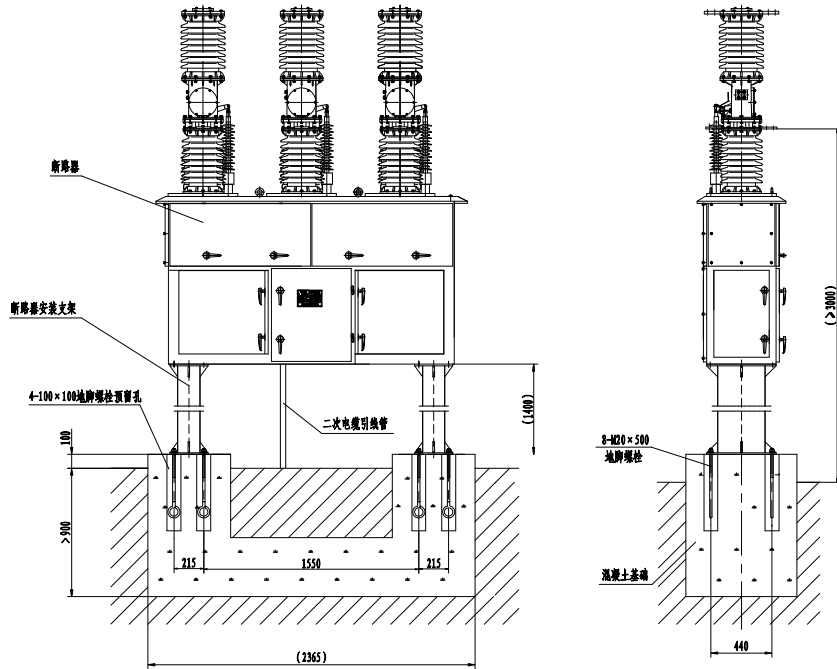
Dimensions drawings of terminal block of circuit breaker

6.6 Circuit breaker installation diagram (miniature central type with CT)

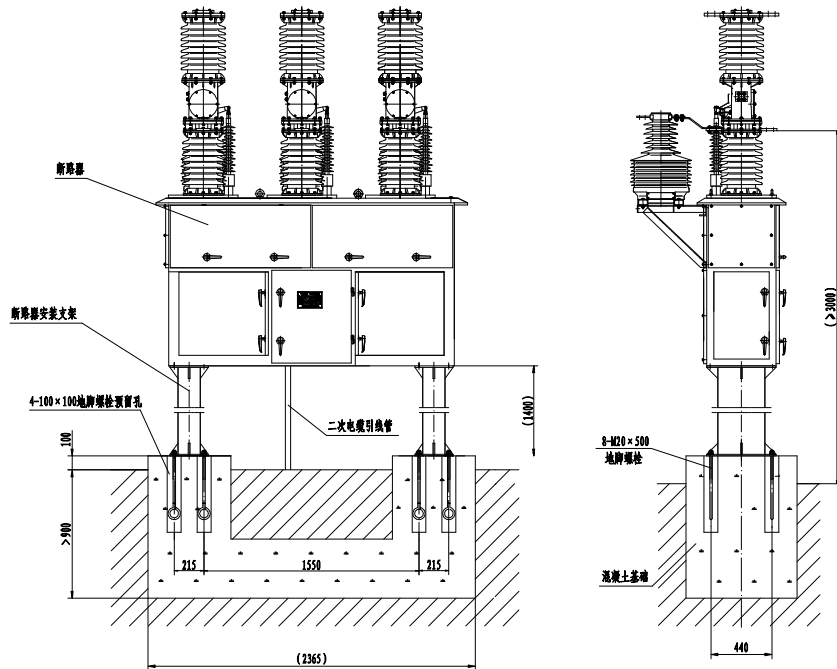


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6.8 Circuit breaker installation diagram (conventional central type, built-in CT)

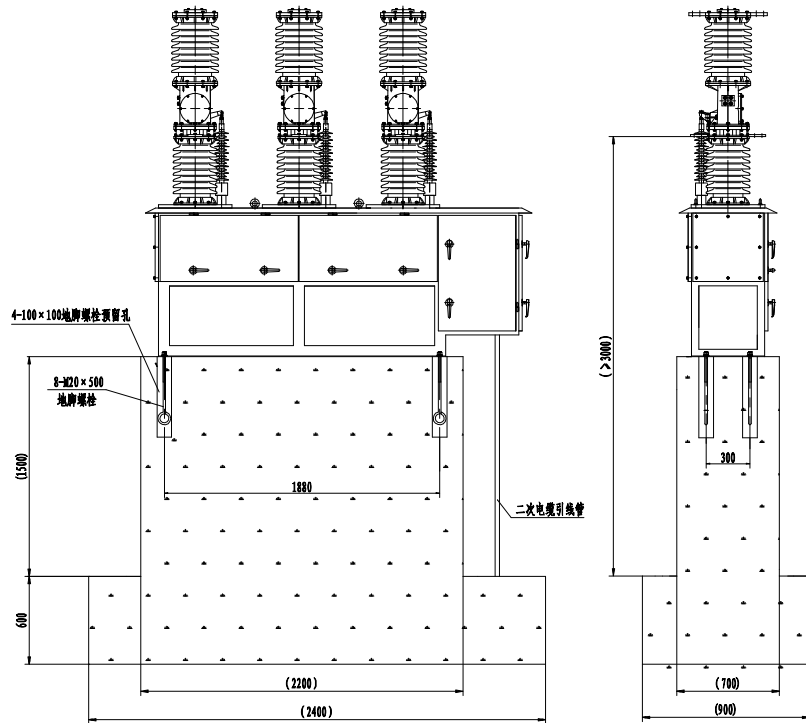


6.9 ZW7-40.5 Circuit breaker installation diagram (conventional central type, external CT)



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6.10 Circuit breaker installation diagram (side-mounted type, built-in CT)



7 Ordering Notice

- 7.1 Product model, name, spec. and qty.
- 7.2 Structure type (side-mount type or central type);
- 7.3 Rated current, rated short circuit breaking current;
- 7.4 Three-phase or two-phase current transformer and transformation ratio and accuracy;
- 7.5 Current transformer configuration mode (built-in or external)
- 7.6 Operating mechanism operating voltage;
- 7.6 Names and quantity of accessories or spare parts
- 7.7 For special requirements, please contact our company, and sign a technical agreement.

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8 Ordering Technical Confirmation Form

Technical Confirmation Form for Ordering ZW7-40.5 Outdoor Medium-voltage AC Vacuum Circuit Breaker

Please determine your requirements according to the items listed in table below:

Current	Rated current (A): <input type="checkbox"/> 1250 <input type="checkbox"/> 1600 <input type="checkbox"/> 2000 Others: _____	
	Rated short-circuit breaking current (kA): <input type="checkbox"/> 20 <input type="checkbox"/> 25 <input type="checkbox"/> 31.5	
Qty. (unit)		
Shell	<input type="checkbox"/> Stainless steel polishing (standard) <input type="checkbox"/> Carton steel plastic sprayed <input type="checkbox"/> Others: _____	
Outline structure	<input type="checkbox"/> Miniature central type <input type="checkbox"/> Conventional central type <input type="checkbox"/> Side-mounted type	
Operating mechanism position and operating voltage	OFF, ON: <input type="checkbox"/> AC/DC220 (standard) <input type="checkbox"/> Others _____	
	Stored energy: <input type="checkbox"/> AC/DC220 (standard) <input type="checkbox"/> Others _____	
Configuration requirements for current transformer	<input type="checkbox"/> No <input type="checkbox"/> Two-phase (embedded External) Note: Two-phase embedded type is available as standard mode <input type="checkbox"/> Three-phase (embedded External)	
	<input type="checkbox"/> Standard: Ratio 200-400-600/5, Accuracy 0.2s/0.5/10P10/10P10 <input type="checkbox"/> Others: _____	
Altitude	<input type="checkbox"/> ≤1500m (Standard) <input type="checkbox"/> Others: _____	
Pollution degree	<input type="checkbox"/> 3 (standard) <input type="checkbox"/> 4	
Controller requirements (No controller for standard configuraiton)	Shield-type: <input type="checkbox"/> Common type <input type="checkbox"/> Intelligent type (with GPRS) Box-type: <input type="checkbox"/> Common type <input type="checkbox"/> Intelligent type (with GPRS) Others: _____	
Mounting bracket	<input type="checkbox"/> No (standard configuration) <input type="checkbox"/> With bracket (including anchor bolts) Bracket height: Note: The surface of bracket is hot-galvanized, with standard height 1400mm.	
Other special requirements		Ordering unit (seal) Signature: _____ Confirmation date: _____ Tel: _____

Note: If not ticked, all options shall be manufactured according to TENGEN's standard configurations.