



**Porcelain-housed Metal-oxide Surge
Arresters without Gaps
For A.C. Systems**

Installation and Operation Instruction

Shandong Taikai Instrument Transformer Co., Ltd.

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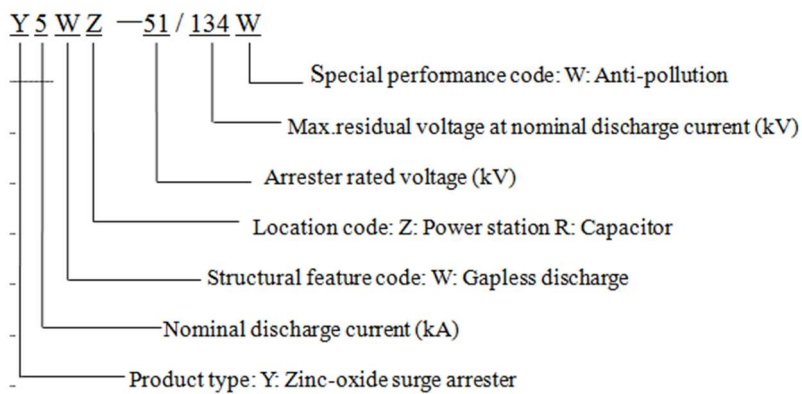
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1 Product description

1.1 Product application

The gapless porcelain-housed metal oxide arrester (hereinafter referred to as the arrester) for the AC power system is a protective appliance used to protect the AC electrical equipment of the corresponding voltage class from lightning overvoltage and operating overvoltage damage.

1.2 Model designation



Type code

YH - Porcelain-housed Metal-oxide Surge Arrester

Use site code

S - For distribution

Z -For power station

X - For protecting the line side of substations

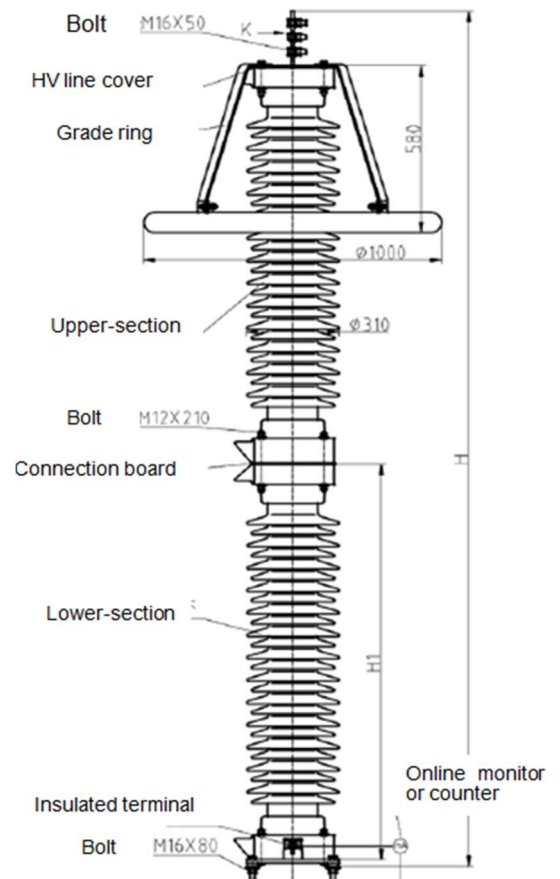
Additional feature code

W - Heavy polluted area

G - High altitude area

1.3 Product construction

This type of arrester is assembled by stacking non-linear zinc oxide resistor blocks, sealed in a HV insulating porcelain bushing, without any discharge gap. Under normal voltage, the arrester is in a high-resistance insulating state; when subjected to an overvoltage impulse, the arrester is in a low-resistance state, and quickly discharges the impulse current into the ground, so that the voltage on the electrical equipment connected in parallel is limited within the



specified value to ensure the safe operation of equipment.

The arrester is equipped with a pressure release device. When it is overloaded or accidentally damaged, the internal pressure increases sharply, causing the pressure release device to act to discharge gas. 220kV arrester consists of 2 elements, 1 grade ring, 1 base or insulating terminal. 110kV and below arrester consists of 1 element, 1 base or insulating mat. The arrester has the characteristics of good steep wave response, large impulse current tolerance, and low residual voltage, reliable operation, without continued flow, good explosion-proof, and easy maintenance.

2 Normal service conditions

Maximum temperature: +40°C

Daily average temperature does not exceed: +35°C

Minimum temperature: -40°C

Monthly mean maximum relative humidity: 95% (At 25°C)

Maximum wind speed: 34 m/s

Power frequency: (48~62) Hz

There is no contamination and corrosive and explosive media in the atmosphere that seriously affect the insulation of the transformer

For areas with seismic intensity not greater than 8 degrees

Ice thickness not more than 20mm

There should be no heat source near the arrester

The power frequency voltage applied between the arrester terminals for a long time should not exceed the continuous operating voltage of the arrester.

3 Storage and Transportation

The product should be stored in an environment free of flammable, explosive and corrosive gases and well ventilated. During long-term storage and transportation, the product should be packaged to avoid damage to the product. During transportation and storage, the arrester should be kept in a vertical direction, and strong vibration and collision are strictly prohibited.

4 Acceptance and installation

4.1 Product acceptance

1) First check whether the product model and quantity on the packaging box are correct after the product was delivered to the user's site or warehouse; before installing, open the packaging box and accessories box, and check whether the random documents (instruction manual, certificate of conformity) are complete and correct.

2) Check whether the accessories are complete according to the packing list item by item. And check whether there are bumps on the surface of the product, and whether the porcelain bushing has cracks and blocks. If any questions, please contact the manufacturer's service department in time.

4.2 Product Installation

1) The arrester is usually fixed on the arrester base. The recommended base height of 220kV series arrester is more than 2.5m.

2) Arrester composed of single components: During installation, the base (products with a separate base), connecting plate, and arrester components can be placed in sequence according to the outline drawing, and then fastened with bolts.

220kV series arresters are composed of multiple elements connected in series. During installation, fasten the base (products with a separate base), connecting plate, lower section, connecting plate, and upper section with bolts (double-ended studs), and then fasten the high-voltage wiring board, the grade ring (product with grade ring) is fastened to the upper flange of the upper section. Note that the upper and lower numbers on the sections are the same, and they should be installed together. They cannot be reversely connected or installed. It is not allowed to hoist after connecting two sections.

3) Line connection: Connect the high-voltage wire to the high-voltage wiring board on the top of the arrester. If there is a separate base, it can be directly grounded through the upper bolt of the base, or can be grounded through a monitor or discharge counter. If there is no separate base, it can be grounded directly through

the bolt on the insulated terminal, or through the monitor or discharge counter.

4.3 High Voltage Terminal Connection

Before connecting to the high-voltage terminal, remove the dirt and oxide layer on each contact surface to ensure good electrical contact performance. See Table 1 for recommended tightening torques.

Table 1 Torque recommendation

bolt specification, mm	Torque recommendation	
	N·m	kgf·m
M12	48±5	4.8±0.5
M16	120±10	12±1

Note: The tensile force of the high-voltage terminal should be within the static load range which it can bear.

4.4 Low-voltage terminal Connection

1) If an on-line monitor or discharge counter is used, the low-voltage terminal of the arrester is connected to the high-voltage end of the on-line monitor or discharge counter, and the low-voltage end (housing) of the on-line monitor or discharge counter should be grounded reliably.

2) If the online monitor or discharge counter is not used, the low voltage terminal of the arrester should be grounded reliably.

3) It is strictly forbidden to suspend the low voltage terminal of the arrester.

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