

INTELLIGENT POWER SUPPLY AND DISTRIBUTION SYSTEM ➡

Dry-type Power Transformer

Product Description

The SG12 series dry-type transformer refers to transformers whose core and windings are not immersed in insulating oil. The SG12 dry-type power transformer is a three-phase, non-encapsulated (open type), vacuum impregnated dry-type power transformer. Both the high and low voltage windings use NOMEX(R) paper insulation recognized by UL in the USA. They are vacuum pressure impregnated with H-class solvent-free insulating varnish and cured at high temperatures. Produced using advanced VPI (Vacuum Pressure Impregnation) technology, it differs significantly from traditional F-class epoxy resin cast dry-type power transformers not only in the insulating materials used but also in electromagnetic, mechanical, and temperature rise calculations, structural layout, and manufacturing processes. Its insulation heat resistance rating, partial discharge measurement, load overload capacity, and adaptability to external environments have all been significantly improved and enhanced.



Product Features

a. Green and Environmentally Friendly: The high/low voltage windings use NOMEX paper as the main insulating material, maintaining excellent electrical performance and mechanical strength. The selected insulation grade is H-R (heat resistance temperature 180°C-220°C), with high insulation heat resistance, and features such as self-extinguishing, flame retardant, and resistant to burning. It can operate safely in harsh environments like humidity and salt fog. During decomposition above 750°C, it does not emit toxic gases. The high voltage coil uses a continuous structure, while the low voltage coil uses a foil winding structure. The insulating varnish layer is thin, and after the product's lifespan, the main materials such as copper can be easily recycled, avoiding environmental pollution and resource waste. To reduce operational noise, elastic silicone rubber components are placed between the core and coils, and between the core and clamps and support parts.

b. Advanced Technology: The high and low voltage coils undergo multiple processes of vacuum pressure impregnation, baking, and curing. The varnish layer penetrates thoroughly, is uniform, and has strong adhesion. After forming, the surface is bright and crack-free, and the coils have high mechanical strength and strong impact resistance. Additionally, the high voltage coils use a continuous structure, and the low voltage coils use a foil winding structure with high-strength ceramic supports, greatly enhancing the product's short-circuit withstand capability and operational reliability.

c. Enhanced Overload Capacity: Due to the relatively thin insulation layer of the high/low voltage coils, and the adoption of a multi-duct structure/radial and honeycomb structure for ventilation and heat dissipation, the transformer has a significantly lower operating temperature rise and strong overload capacity. It can safely operate at 120% of the rated capacity during peak electricity demand periods.

d. Reduced Manufacturing Costs: The product's structure differs from that of epoxy resin cast transformers, allowing for flexible design without the need to consider the impact of outsourced mold processing. This flexibility shortens the production cycle of non-standard products by more than a week, ensuring timely delivery and meeting customer requirements.

e. Comprehensive Product Protection: Protective enclosures and temperature control devices can be provided as needed. The transformer can also be equipped with air cooling, thermal protection intelligent control, and real-time monitoring. It uses a three-phase automatic temperature control system that allows for remote monitoring via a network.

f. Easy Installation: The transformer requires no debugging and almost no maintenance. There is no need to replace or inspect oil, resulting in low operational and maintenance costs.

g. Diverse Product Configurations: Depending on the protection level, the transformer enclosure is made of high-quality steel plates. The structure is designed to ensure adequate airflow while providing effective protection. The transformer connection cables are easy to connect. Additionally, voltage and current meters, power indicator lights, and molded case circuit breakers can be installed according to user requirements.

Technical Parameters

- a. Rated Capacity:** 100-2500kVA;
- b. Rated Voltage:** Primary voltage 10kV / 6kV; Secondary voltage 0.4 kV and others;
- c. Rated Frequency:** 50Hz;
- d. Number of Phases:** 3;
- e. Cooling Method:** AN/AF;
- f. Insulation Material Temperature Class:** H, N, R;
- g. Technical Performance Data and Insulation Levels:** See Tables 1 and 2.

Table 1 Performance Parameters for Dry-type Transformers with Primary Rated Voltage of 6 kV and 10 kV

Rated Capacity (kVA)	Voltage Combination			Vector Group Symbol	Losses		Short Circuit Impedance (%)	No-load Current (%)
	Primary Voltage (kV)	Primary Voltage Tapping Range (%)	Secondary Voltage (kV)		No-load (W)	Load (W)		
100	6 10	±5 ±2×2.5	0.4	Dyn11 Yyn0	320	1570	4	1.8
125					375	1850		1.6
160					430	2130		1.6
200					495	2530		1.4
250					575	2760		1.4
315					705	3470		1.2
400					785	3990		1.2
500					930	4880		1.2
630					1040	5960		1.2
800					1215	6960	6	1
1000					1415	8130		1
1250					1670	9690		1
1600					1960	11730		1
2000					2440	14450		0.8
2500					2880	17170		0.8

Table 2 Insulation Levels

Rated Voltage	Rated Short-time Power Frequency Withstand Voltage (kV)
≤1	3
3	10
6	20
10	35
15	38
20	50
35	70

Product Dimensions

Capacity	L×W×H(mm)	Total Weight (kg)
100	1000×620×1080	520
200	1150×620×1145	890
315	1220×620×1280	1290
400	1260×620×1365	1490
500	1280×620×1435	1810
630	1360×700×1540	2240
800	1490×700×1390	2735
1000	1580×720×1480	3280
1250	1670×760×1555	3820
1600	1700×760×1690	4650
2000	1815×890×1690	5760
2500	1815×920×1820	6905

Application Areas

This series of products has strong heat dissipation capabilities and can operate continuously at 120% of the rated load under forced air cooling conditions. They are equipped with an intelligent temperature controller that provides fault alarms, over-temperature alarms, over-temperature tripping, and blackout functions. Additionally, these transformers can be networked with a computer via an RS485 interface for centralized monitoring and control. They can be widely used in load centers with high requirements for fire safety and environmental protection (dustproof, moisture-proof, and pollution-proof), such as high-rise buildings, commercial centers, hotels, residential communities, tourist attractions, ports, airports, subways, and prefabricated substations and other power distribution systems.

Mine Explosion-proof Mobile Substation

Product Description

The flameproof mobile substation for mining is a portable, integrated device consisting of components such as a high-voltage permanent magnet vacuum switch, a dry-type transformer, cable connectors, and low-voltage feeder switches or low-voltage protection boxes. It is



It is suitable for use in mines with explosion hazards, providing power for intelligent mining, excavation, and transportation equipment, as well as for handheld electric drills, lighting, and other devices. This series of products features an intelligent integrated protection system, enabling interconnection, intelligent monitoring, and control of mining equipment, thereby meeting the requirements of intelligent mines.

Product Features

a. Remarkable Energy-saving Effect: By using thin cold-rolled silicon steel sheets, which exhibit excellent electro-magnetic properties, and eliminating air gaps in the magnetic circuit, the magnetic resistance of the magnetic circuit is reduced, and the magnetic permeability is improved. Under the same capacity conditions, it can reduce the no-load loss by 20% to 30% compared to traditional transformers, and the no-load current can be reduced by 60% to 70%.

b. Light Weight and Small Volume: The transformer with a wound core has four fewer sharp corners compared to a laminated core, resulting in a compact structure that saves 10% to 12% of the total core material. Therefore, its volume is smaller than conventional transformers. The wound transformer boasts a high space utilization coefficient, reducing the length of coil wires and conserving copper material, which also helps lower load losses. By conserving raw materials, the weight of the transformer is reduced.

c. Low Noise: Since the wound core is formed by sequentially winding several trapezoidal steel strips, the winding between the silicon steel strips is tight, and the magnetic conduction direction of the silicon steel strips is completely consistent with the magnetic circuit direction of the core. This results in minimal vibration during operation, which can address the noise emitted by laminated cores due to discontinuous magnetic circuits, thereby minimizing noise to the lowest possible level.

d. Strong Short-Circuit Resistance: The high and low-voltage coil wires are crafted from high-quality oxygen-free copper rods and undergo VPI (Vacuum Pressure Impregnation) with Class C solvent-free varnish followed by high-temperature curing. This results in excellent strength, heat resistance, moisture resistance, overload capacity, and short-circuit resistance. High Temperature Resistance □ It employs Class C insulating material NOMEX paper-covered wire imported from DuPont USA, which is environmentally friendly, boasts a long service life, and can be decomposed and recycled.

e. Strong Anti-Interference Capability: The protection unit utilizes a high-performance PLC as its core data acquisition and processing module, featuring precise control, rapid response, strong anti-interference capability, and stability.

f. Intelligence: It integrates into intelligent mining systems through multiple methods, enabling interconnection among mining equipment, and provides multiple communication methods including CAN, RS485, RJ45, WIFI, and 5G, thus meeting the requirements of intelligent mines.

g. Comprehensive Protection Functions: The mobile substation is equipped with comprehensive protection against overload, short circuit, and leakage. There are electrical or mechanical interlocking devices between the high and low-voltage switches, as well as between the high-voltage switch and the upstream circuit breaker.