CNHK®

HUANGHUA GROUP CO.,LTD.

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CNHK

沈特变 SHSTB CBC

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Distribution Transformers & Substations



About CNHK

China Huanghua Group Co.,Ltd (CNHK) was founded in 1980, former is Huanghua Electrical Co.,Ltd.



We are an integrated model enterprise group with researching and developing, professional large-scale manufacturing and marketing in power industry,

Main products cover high and low voltage equipment, such as transformers, switchgear and compact distribution substation.

We are an ISO 9001:2015 certified company with over 40 years' experience in the transformer industry and We are manufacturing transformers ranging from 5 KVA to 31.5MVA up to 40.5kV class.

Our technology with our expertise in transformers has resulted in a large range of very compact and cost efficient transformer. Transformers are available with off-circuit tap changer and / or On-load tap changes for voltage regulation.







Standard Features

- Better shield circuit strength
- Compact design
- Durable
- Optimum losses, provide lower losses solution for choose
- Use of magnetic shields to control strong flux
- Low flux density to withstand severe over excitation
- Thermally upgraded paper to improve transformer life time
- Optionally but On load tap changes (OLTC) are also available
- Transforming medium voltage into high voltage levels
- Meeting the latest I.E.C. technical specification
- Large overload capability depending on the ambient temperature
- Large overvoltage capability to withstand the overvoltage coming for load rejection
- Customized solution
- Satisfying specific customer requests
- Equipment for indoor and outdoor usage

Our Partners and Co-operated Projects



Wenzhou Airport Project



Three Gorges Hydroelectric Power Station Project



Qinghai-Tibet Railway Project



China Resources Power Yiliang ZhangGuanying 40MW Composite Photovoltaic Project



Shandong China Coal Industry Mining Factory Project



Bangladesh Boduakali 1320MW Coal-Fired Power Plant Project

Enterprise Qualification



High tech enterprise certificate



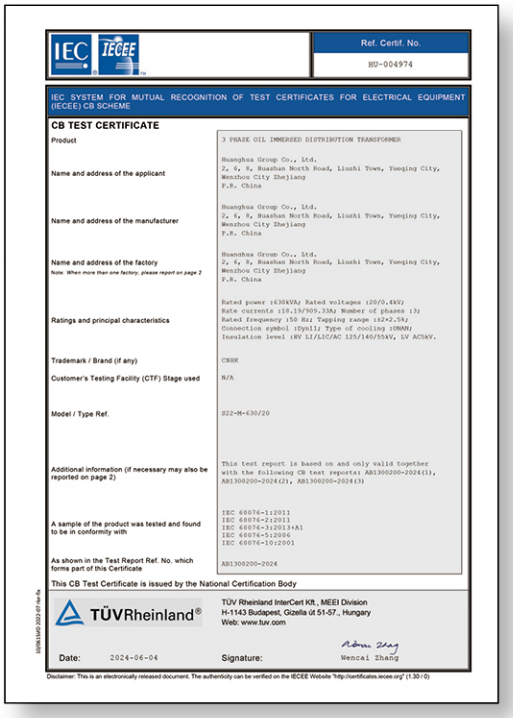
A+Institution Credit Code Certificate







Product Certificate



IEC IECEE

Ref. Certif. No.
HU-004974

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

CB TEST CERTIFICATE

Product	3 PHASE OIL IMMERSED DISTRIBUTION TRANSFORMER
Name and address of the applicant	Huanghua Group Co., Ltd. 2, 6, 8, Huashan North Road, Liushi Town, Yueqing City, Wenzhou City Zhejiang P.R. China
Name and address of the manufacturer	Huanghua Group Co., Ltd. 2, 6, 8, Huashan North Road, Liushi Town, Yueqing City, Wenzhou City Zhejiang P.R. China
Name and address of the factory Note: When more than one factory, please report on page 2	Huanghua Group Co., Ltd. 2, 6, 8, Huashan North Road, Liushi Town, Yueqing City, Wenzhou City Zhejiang P.R. China
Ratings and principal characteristics	Rated power :630kVA; Rated voltages :20/0.4kV; Rate currents :18.19/909.33A; Number of phases :3; Rated frequency :50 Hz; Tapping range :±2×2.5%; Connection symbol :Dyn11; Type of cooling :ONAN; Insulation level :HV LI/LIC/AC 125/140/55kV, LV AC5kV.
Trademark / Brand (if any)	CNHK
Customer's Testing Facility (CTF) Stage used	N/A
Model / Type Ref.	S22-M-630/20
Additional information (if necessary may also be reported on page 2)	This test report is based on and only valid together with the following CB test reports: AB1300200-2024(1), AB1300200-2024(2), AB1300200-2024(3)
A sample of the product was tested and found to be in conformity with	IEC 60076-1:2011 IEC 60076-2:2011 IEC 60076-3:2013+A1 IEC 60076-5:2006 IEC 60076-16:2001
As shown in the Test Report Ref. No. which forms part of this Certificate	AB1300200-2024

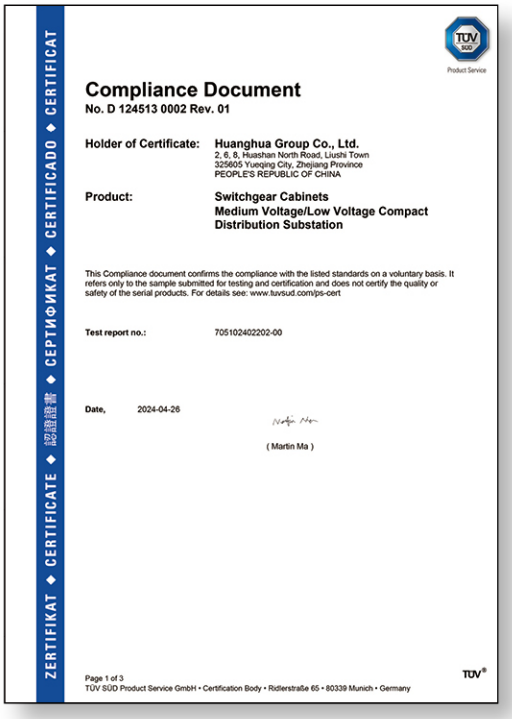
This CB Test Certificate is issued by the National Certification Body

TÜVRheinland®

TÜV Rheinland InterCert Kft., MEEI Division
H-1143 Budapest, Gizella út 51-57., Hungary
Web: www.tuv.com

Date: 2024-06-04 Signature: Wencai Zhang

Disclaimer: This is an electronically released document. The authenticity can be verified on the IECEE Website "http://certificates.iecee.org" (1.30 / 0)



ZERTIFIKAT ◆ CERTIFICATE ◆ 認證證書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

TÜV SÜD Product Service

Compliance Document
No. D 124513 0002 Rev. 01

Holder of Certificate: **Huanghua Group Co., Ltd.**
2, 6, 8, Huashan North Road, Liushi Town
325605 Yueqing City, Zhejiang Province
PEOPLE'S REPUBLIC OF CHINA

Product: **Switchgear Cabinets**
Medium Voltage/Low Voltage Compact Distribution Substation

This Compliance document confirms the compliance with the listed standards on a voluntary basis. It refers only to the sample submitted for testing and certification and does not certify the quality or safety of the serial products. For details see: www.tuvsud.com/ps-cert

Test report no.: 705102402202-00

Date, 2024-04-26

(Martin Ma)

Page 1 of 3
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ZERTIFIKAT ◆ CERTIFICATE ◆ 認證證書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

TÜV SÜD Product Service

Compliance Document
No. D 124513 0001 Rev. 00

Holder of Certificate: **Huanghua Group Co., Ltd.**
2, 6, 8, Huashan North Road, Liushi Town
325605 Yueqing City, Zhejiang Province
PEOPLE'S REPUBLIC OF CHINA

Product: **Switchgear Cabinets**
AC Metal SF6 Air-insulated Ring Main Unit (RMU)

This Compliance document confirms the compliance with the listed standards on a voluntary basis. It refers only to the sample submitted for testing and certification and does not certify the quality or safety of the serial products. For details see: www.tuvsud.com/ps-cert

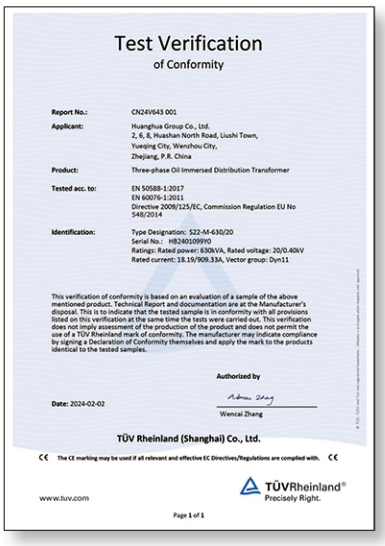
Test report no.: 705102402201-00

Date, 2024-02-05

(Martin Ma)

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Test Verification
of Conformity

Report No.:	CN24V643 001
Applicant:	Huanghua Group Co., Ltd. 2, 6, 8, Huashan North Road, Liushi Town, Yueqing City, Wenzhou City, Zhejiang, P.R. China
Product:	Three-phase Oil Immersed Distribution Transformer
Tested acc. to:	EN 50588-1:2017 EN 60076-1:2011 Directive 2009/125/EC, Commission Regulation EU No 548/2014
Identification:	Type Designation: S22-M-630/20 Serial No.: HB240109990 Ratings: Rated power: 630kVA, Rated voltage: 20/0.4kV Rated current: 18.19/909.33A, Vector group: Dyn11

This verification of conformity is based on an evaluation of a sample of the above mentioned product. Technical Report and documentation are at the Manufacturer's disposal. This is to indicate that the tested sample is in conformity with all provisions listed on this verification at the same time the tests were carried out. This verification does not imply assessment of the production of the product and does not permit the use of a TÜV Rheinland mark of conformity. The manufacturer may indicate compliance by signing a Declaration of Conformity themselves and apply the mark to the products identical to the tested samples.

Authorized by

Date: 2024-02-02 Wencai Zhang

TÜV Rheinland (Shanghai) Co., Ltd.

CE The CE marking may be used if all relevant and effective EC Directives/Regulations are complied with. CE

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Page 1 of 1



CERTIFICATE
of Conformity
Low Voltage Directive (EU) 2014/35

Registration No.:	AN 50617316 0001
Report No.:	CN2434AY 001
Holder:	Huanghua Group Co., Ltd. 2, 6, 8, Huashan North Road, Liushi Town, Yueqing City, Wenzhou City, Zhejiang P.R. China
Product:	Low-voltage switchgear and controlgear assembly *Low-voltage Switchgear Assemblies*

Type designation listed on the next page

This certificate of conformity is based on an evaluation of a sample of the above-mentioned product. Technical Report and documentation are at the License Holder's disposal. This is to certify that the tested sample is in conformity with Annex I of Council Directive (EU) 2014/35, referred to as the Low Voltage Directive. This certificate does not imply assessment of the series-production of the product and does not permit the use of a TÜV Rheinland mark of conformity. The holder of the certificate is authorized to use this certificate in connection with the EC declaration of conformity according to Annex IV of the Directive.

Certification Body

Date: 2024-01-24 Wencai Zhang

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg

CE The CE marking may be used if all relevant and effective EC Directives/Regulations are complied with. CE

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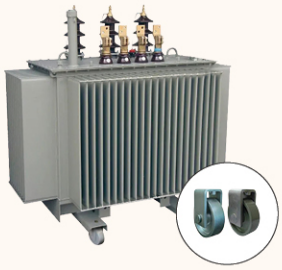
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Product Selection Guide



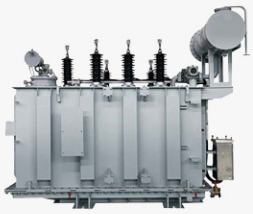
Small Three Phase Oil Immersed Distribution Transformer

Rated Power (kVA): ≥10kVA , ≤250kVA
Rated Voltage: Up to 38.5kV
Features: Used for indoor or outdoor applications, can be provided with off-load tap changers.



Medium Three Phase Oil Immersed Distribution Transformer

Rated Power (kVA): ≥315kVA, ≤2500kVA
Rated Voltage: Up to 38.5kV
Features: Used for indoor or outdoor applications, can be provided with off-load tap changers.



Large Three Phase Oil Immersed Power Transformer

Rated Power (kVA): ≥2000kVA, ≤31500kVA
Rated Voltage: Up to 38.5kV
Features: Used for indoor or outdoor applications, can be provided with on-load tap changers or off-load tap changers.



Small Single Phase Oil Immersed Distribution Transformer

Rated Power (kVA): ≤333kVA
Rated Voltage: Up to 33kV
Features: Small distribution transformers for pole mounting



Epoxy Resin Cast Dry Type transformer

Rated Power (kVA): ≥ 10kVA, ≤ 4000kVA

Rated Voltage: Up to 38.5kV

Features: F insulation Class, Provides the ultimate resistance to mechanical stress associated with heat and short circuit conditions in the most demanding applications.



NOMEX Insulated Dipping Varnish Dry Type Transformer

Rated Power (kVA): ≥ 80kVA, ≤ 2500kVA

Rated Voltage: Up to 38.5kV

Features: H insulation Class,Provides Environment friendly type, the ultimate resistance to mechanical stress associated with heat and short circuit conditions in the most demanding applications.



Pad Mounted Transformer

Rated Power (kVA): ≤ 1600kVA

Rated Voltage: Up to 40.5kV

Features: An oil immersed transformer equipped with fuse and switching equipment(Fuse for MV while ACB and MCCB for LV), Lower cost. Smaller volume,Lighter weight



Compact Substation

Rated Power (kVA): ≤ 2500kVA

Rated Voltage: Up to 40.5 kV

Features: Prefabricated substation contains MV switchgear, Power distribution transformer and LV switchgear inside as an integrated unit.



The Integrated Step-up Transformer with Wind Solar Energy Storage System

Rated Power (kVA): Rated Power: ≤4000kVA

Rated Voltage: Up to 40.5 kV

Features: It can achieve efficient energy management and optimized configuration through an intelligent control system.

Product Index

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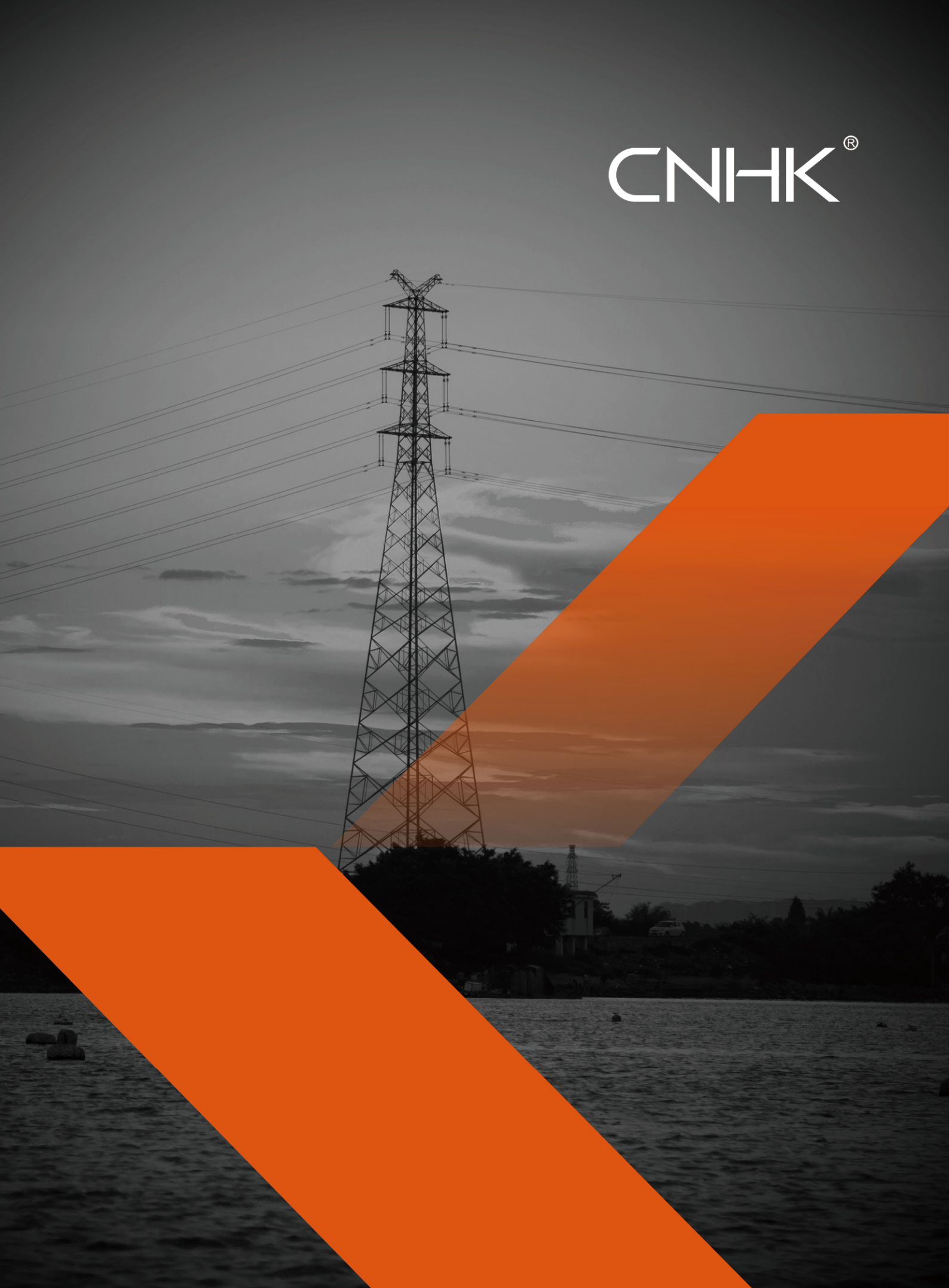
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OIL IMMERSED TRANSFORMER



Oil Immersed Transformer

CNHK 's liquid filled Power and Distribution Transformers range from 10 kVA to 31.5MVA, with primary voltages up to 38.5 kV.

CNHK supplies the wide range of power distribution transformers, including specific designs for power centers, substations and networks.

Transformers are an important part of power systems with applications in industrial facilities, commercial buildings and utility transmission and distribution networks.

CNHK Oil Immersed Transformers are manufactured in accordance with the international quality standards ISO 9001 and ISO14001.



Reliable Structure

Core

The core is a series of lamination made from high-quality, grain-oriented silicon steel. The stacked core provides a superior flux path by utilizing a step-lap that joins the core to the top and bottom yokes. The effective support for the core together with a step-lap joint have reduced existing currents by up to 30%, sound levels by up to 2-3 dB and iron losses by up to 15-20%. The core efficiently fills the opening in the coil, leaving a minimum of unused space. The short yoke between the legs of the core reduces the external flow between the active core material, resulting in an increase in efficiency. The rectangular shape of the core can be more uniformly and firmly supported to prevent movement of the laminations so as to improve sound level characteristics.

Coil

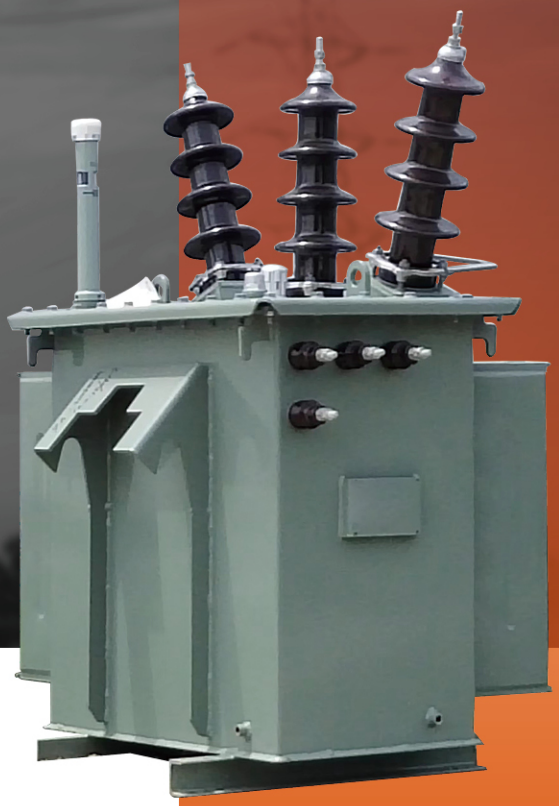
The coil which is a low voltage rectangular wire or sheet conductor extending along the full height of the coil. The layer to layer insulation, is a thermally upgraded Insulating paper. The layer insulation , which cures during processing to form a high strength bond. This bond keeps the windings from moving during operation or under short circuit stresses. The high to low insulation is fitted over the low voltage winding and the wire of the strap wound high voltage is wound directly over the low voltage to form a high strength coil assembly. Generous oil ducts extend along the height of the coil to provide cooling in the winding. The staggered bonds help assure free oil flow through the winding.

Accurately located taps and a large winding cross section keep unbalanced ampere-turns to a minimum. Unbalanced ampere-turns create forces during short circuits that push the high voltage and low voltage coils apart vertically. By minimizing his imbalance vertical forces are correspondingly reduced, in this way making the design stronger under short circuit stresses. The large areas presented by the layer-type winding result in a low ground capacity, which gives a nearly straight line surge distribution throughout the winding. A compact, high-impulse strength coil is the result.

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Small Three Phase Oil Immersed Distribution Transformer

(≥10KVA, ≤250kVA)



General

CNHK's Pole mounted small Transformers HKS11 (≥10KVA, ≤250kVA) are suitable for air distribution networks in rural and surrounding areas of cities.

The CNHK high pole series is characterized by strong resistance to atmospheric erosion and environmental constraints (high humidity and salt spray) due to a thoroughly modified surface treatment and painting process

Type Designation



Constitution

Core

The magnetic circuit is of the three column type with mired joints. It is manufactured with first-rate, grain oriented silicon iron sheets insulated with calcite. The mounted core is clamped down in order to reduce vibrations and minimize noise levels.

Windings

The windings are made of either copper or aluminium; they are insulated with either pure cellulose or double enamel. Furthermore, the complete columns are manufactured to withstand short circuit stresses.

Off-circuit tap changer

The tappings (±2 x 2.5%) of the MV winding, are connected to the off-circuit tap changer located horizontally between the yoke and the tank cover. The handle is located on the cover and should be operated when the transformer is deactivated. The design prevents setting the off-circuit tap changer to intermediate positions.

Insulating oil

The mineral oil with its electrical and chemical characteristics is in compliance with the IEC Standards and is P.C.B. free.

Tank and cover

The sides of the tank are made of corrugated cooling surfaces. The bottom plate, side and frames are of a welded construction. The welds are tested for oil tightness. The thermometer pockets, bushings, tap switch drive and lifting lugs are fitted on the tank cover. The cover is bolted to the tank frame. The undercarriage is welded to the bottom plate and the rollers are suitable for either longitudinal or transverse movements.

Painting and surface treatment

Transformers tank is taken with anti-corrosion treatment or painted. The metal parts are carefully sandblasted. The painting system is a spray coat with thickness of 130μm. The top coat is RAL 7033 or customized.

Basic structure:

3 HV porcelain sleeves

4 LV porcelain sleeves

Exhaust valve (optional)

Filling port

Standard hook on the back

Lifting ring

Welded square bracket at tank bottom

2 grounded sockets

Nameplate, warranty lead.

Container color: RAL 7033.or customized

General characteristics:

Standards and specifications: IEC 60076

Power range: 10-20-30-50-100-160-200-250KVA.

Description:

Oil-immersed sealed transformer

Completely filled

Cooling type: ONAN

Outdoor high pole installation.

Rated voltage:

HV side: 11000, 22000, 33000V and etc.

LV side: 400-410-415-420V

Off load tap:

3 taps or 5 taps on HV winding:±5%， ±2.5%

Vector Group:Yy, Yz, Dy

Structural characteristics

- Corrugating tank
- Medium and low voltage bushings accordance with DIN 42531 and DIN 42530
- Off-circuit tap changer in 3 or 5 positions
- Lifting lugs
- Earthing terminals
- Oil level indicator for hermetically sealed transformers
- Filling plug
- Exhaust valve (optional)
- Rating plate
- Inhibited oil

Transformers can also be manufactured with conservators. (optional)

Other product types with different dimensions and technical specifications can be designed and manufactured on request.

Options and accessories

- Plug-in bushings on MV
- Standard hook on the back for pole mounting
- Cable boxes
- Integrated pole brackets on tank
- Skid base
- Bi-directional rollers
- Total enclosure on cover over HV and LV bushing

Testing

The transformers are manufactured in accordance with ISO 9001 and ISO 14001. At the end of the manufacturing process the transformers are individually tested in accordance with the IEC Standards.

The routine tests are:

- Measurement of the winding resistance
- Measurement of the voltage ratio and check of the vector group
- Measurement of the impedance voltage and measurement of load losses
- Measurement of no load losses and no load current
- Dielectric tests
- Measurement of on load losses

Typical Data for Small Oil immersed Distribution Transformer HKS11-10kVA to 250kVA, Up to 38.5kV, NLTC

Rated Power (kV.A)	H. V (V)	H.V Taps	L.V (V)	Vector Group	Losses(W)		Io (%)	Uk(%)	Weight(Kg)			Dimension(mm) L×W×H	Gauge (vertical/ horizontal)	Tank Type
					Po(W)	Pc(W) 75°C			Active Body	Oil	Total			
10	11000 10500 10000 6300 6000	±2×2.5%	400 410 415 420	Dyn11 Dyn5 Yzn11 Yzn5	65	400	3.5	4	90	55	220	650×450×880	400/350	H
20					80	520	3.0.		140	60	270	720x490x950	400/350	H
30					100	630	2.3		185	70	330	750×490×970	450/340	H
50					130	910	2.0.		260	80	430	770x550x1030	400/380	H
63					150	1090	1.9		260	85	440	800x600x1040	400/380	H
80					180	1310	1.9		320	95	520	810x680x1060	450/430	H
100					200	1580	1.8		355	100	570	820x680x1100	550/450	H
125					240	1890	1.7		425	115	675	1070x700x1150	550/470	H
160					280	2310	1.6		510	130	790	1120x700x1220	550/520	H
200					340	2730	1.5		550	145	850	1160x720x1255	550/520	H
250					400	3200	1.4		630	165	985	1230x800x1210	650/550	H
50	16800 15750 15000		400 410 415 420	Dyn11 Dyn5 Yzn11 Yzn5	130	950	2.0.	4.5	200	145	465	920x610x1000	450/380	H
100					200	1700	1.6		330	165	635	920x680x1100	550/450	H
125					240	2080	1.5		395	185	745	960x780x1120	550/470	H
160					280	2200	1.4		505	205	885	1160x710x1180	550/520	H
200					340	3000	1.3		580	225	995	1190x730x1190	550/520	H
250					400	3520	1.2		695	245	1130	1280x820x1210	650/550	H
50	23000 22000 20000		400 410 415 420	Dyn11 Dyn5 Yzn11 Yzn5	130	1010	2.0.	5.5	200	145	465	920x610x1000	450/380	H
100					200	1730	1.6		330	165	635	920x680x1100	550/450	H
125					240	2080	1.5		395	185	745	960x780x1120	550/470	H
160					290	2540	1.4		505	205	885	1160x710x1180	550/520	H
200					340	3000	1.3		580	225	995	1190x730x1190	550/520	H
250					400	3520	1.2		695	245	1130	1280x820x1210	650/550	H
50	38500 35000 33000		400 410 415 420	Dyn11 Dyn5 Yzn11 Yzn5	160	1200	1.3	6.5	195	205	590	1000x950x1430	550/550	H
100					230	2010	1.1		320	240	790	1080x1000x1600	550/500	H
125					270	2370	1.1		395	270	950	1100x1030x1630	660/660	H
160					280	2820	1.0		460	285	1020	1130x1060x1630	660/660	H
200					340	3320	1.0.		555	325	1170	1190x1160x1670	660/660	H
250					400	3950	0.95		630	340	1340	1260x1160x1700	660/660	H

* Provide ±5% or ±2×2.5% tap changer

* Tank Type: H: Hermetically sealed with corrugated tank

* NLTC: No-load Tap Changer

Typical Data for Higher Effiency Small Oil Immersed Transformer HKS18, HKS20, HKS22, Up to 38.5kV, NLTC

Rated Power kVA	HV (V)	HV Taps	LV (V)	Uk (%)	HKS11 Series			HKS18 Series			HKS20 Series			HKS22 Series		
					Po (W)	Pc (W)75°C		Po (W)	Pc (W)75°C		Po (W)	Pc (W)75°C		Po (W)	Pc (W)75°C	
						Dyn11/ Yzn11	Yyn0		Dyn11/ Yzn11	Yyn0		Dyn11/ Yzn11	Yyn0		Dyn11/ Yzn11	Yyn0
30	11000 10500 10000 6300 6000	±2 ×2.5%	400 410 415 420	4.0	100	630	600	80	630	600	70	505	480	65	455	430
50					130	910	870	100	910	870	90	730	695	80	655	625
63					150	1090	1040	110	1090	1040	100	870	830	90	785	745
80					180	1310	1250	130	1310	1250	115	1050	1000	105	945	900
100					200	1580	1500	150	1580	1500	135	1265	1200	120	1140	1080
125					240	1890	1800	170	1890	1800	150	1510	1440	135	1360	1295
160					280	2310	2200	200	2310	2200	180	1850	1760	160	1665	1585
200					340	2730	2600	240	2730	2600	215	2185	2080	190	1970	1870
250					400	3200	3050	290	3200	3050	260	2560	2440	230	2300	2195
30	22000 21000 20000			5.5	100	690	660	80	656	627	65	621	594	55	621	594
50					130	1010	960	104	960	912	85	909	864	72	909	864
63					150	1200	1150	120	1140	1093	98	1080	1035	83	1080	1035
80					180	1440	1370	144	1368	1302	117	1296	1233	99	1296	1233
100					200	1730	1650	160	1644	1568	130	1557	1485	111	1557	1485
125					240	2080	1980	192	1976	1881	156	1872	1782	133	1872	1782
160					290	2540	2420	232	2413	2299	189	2286	2178	160	2286	2178
200					340	3000	2860	272	2850	2717	221	2700	2574	188	2700	2574
250					400	3525	3350	320	3349	3183	260	3173	3015	221	3173	3015
50	33000 35000 36000 38500			6.5	160	1200	1140	128	1140	1083	104	1080	1026	88	1080	1026
100					230	2040	1910	184	1938	1815	150	1836	1719	127	1836	1719
125					270	2370	2260	216	2252	2147	176	2133	2034	149	2133	2034
160					280	2820	2260	224	2679	2147	182	2538	2034	155	2538	2034
200					340	3320	3160	272	3154	3002	221	2988	2844	188	2988	2844
250					400	3950	3760	320	3753	3572	260	3555	3384	221	3555	3384

* Provide ±5% or ±2×2.5% off-load tap changer

* NLTC: No-load Tap Changer

CNHK®

Medium Three Phase Oil Immersed Distribution Transformer

HKS11-315kVA to 2500kVA (up to 38.5kV)



General

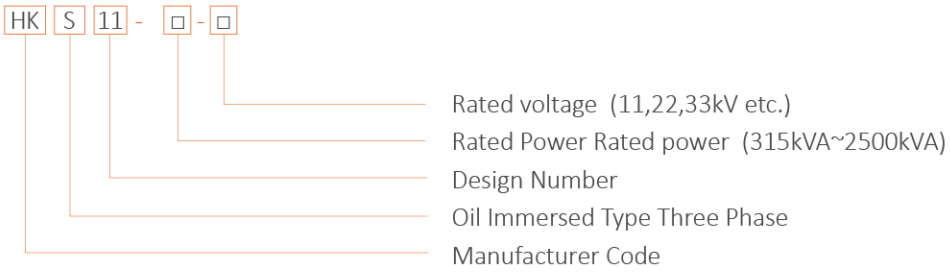
CNHK Medium Oil Immersed Transformers are used to step down three phase high voltage to low voltage for power

distribution, mainly in metropolitan areas and for industrial applications. The transformers in standard versions are designed for use in moderate climates and can be installed both outdoors and indoors.

Medium transformers are hermetically sealed (the tank is completely filled with oil) or equipped with oil conservator. Both types are equipped with flexible corrugated tank walls enabling sufficient cooling of the transformer.

They also compensate for the changes in the oil volume during operation. An advantage of the hermetically sealed transformers is that the oil is never in contact with the atmosphere thus avoiding periodic oil analysis.

Type Designation



Constitution

Core

The cores of the transformers are made of grain-oriented magnetic, cold-rolled silicon steel laminations with low losses.

Windings

The windings of the transformers are made of high grade electrolytic copper or aluminium. The High Voltage windings are wound either with round, enamel insulated, or shaped, paper insulated wire. The Low Voltage windings are wound with shaped, paper insulated wire or foil. The winding construction is characterised by high dielectric strength with high resistance,

To atmospheric surges and to the effects of short-circuits. Neutral points of the Low Voltage windings are brought to the tank cover.

Basic structure:

-3 HV porcelain sleeves

-4 LV porcelain sleeves

-Exhaust valve (optional)

-Filling port

-Lifting ring

-Welded square bracket at tank bottom

-2 grounded sockets

-Nameplate

Additionally, for transformers with conservator(Optional) (Rated power ≥1000 kVA):

- Max thermometer
- Magnetic oil-level indicator
- Oil filling port on the conservator
- Buchholz relay
- Dehydrating breather
- Conservator

Container color:

RAL 7033.or customized

Standards and specifications:

IEC 60076

Power range:

315-400-500-630-800-1000-1250-1600-2000-2500KVA.

Description:

Oil-immersed sealed transformer or with conservator

Cooling type: ONAN

Outdoor high pole installation.

Rated Frequency:

50 Hz (standard)/60 Hz(optional)

Rated voltage:

HV side: 11000, 22000, 33000V and etc.

LV side: 400-410-415-420V

Off-load Tap Changer (NLTC):

3 taps or 5 taps on HV winding:±5%， ±2.5% when Transformer is deactivated

On-load Tap Changer(OLTC):

7 taps or 9 taps on HV winding : ±3*2.5%， ±4*2.5% (optional)

Vector Group:Yy, Yz, Dy, Dd, Yd

Options And Accessories

- Plug-in bushings
- Dial type thermometer with two contacts
- DGPT2 control device
- Pressure relief valve with or without contacts
- Tap changer with more than five positions
- Cable boxes
- Spark gap meter
- Air insulated housings
- Galvanized tank
- Additional thermometer pocket
- Dual voltage transformer

Typical Data for Medium Three phase Oil Immersed Distribution Transformer HKS11-315kVA to 2500kVA, Up to 38.5kV, NLTC

Rated Power (kV.A)	H. V (V)	Tap changer	L.V (V)	Vector Group	Losses(W)		Io (%)	Uk(%)	Weight(Kg)			Dimension(mm) L×W×H	Gauge (vertical/ horizontal)	Wheel base	Tank Type
					Po(W)	Pc(W) 75°C			Active Body	Oil	Total				
315	11000 10500 10000 6300 6000	±2×2.5%	400 410 415 420	Dyn11 Dyn5 Yzn11 Yzn5	480	3830	0.9	4	755	190	1155	1210x780x1320	660/660	660	H
400					570	4520	0.8		910	225	1450	1340x880x1360	660/660	660	H
500					680	5410	0.8		1050	240	1600	1360x890x1410	660/660	660	H
630					810	6200	0.6	4.5	1250	310	1945	1560x1020x1430	660/660	660	H
800					980	7500	0.6		1540	365	2350	1640x1060x1500	820/820	820	H
1000					1150	10300	0.6		1690	405	2645	1720x1160x1540	820/820	820	H
1250					1360	12000	0.5		1965	560	3230	1790x1190x1740	820/820	820	H
1600					1640	14500	0.5		2355	650	3805	1830x1210x1850	820/820	820	H
2000					1940	18300	0.4		2570	695	4245	2190x1900x1950	820/820	820	H
2500					2290	21200	0.4		3130	800	5260	2240x1940x1980	1070/1070	1070	H
315	16800 15750 15000	±2×2.5%	400 410 415 420	Dyn11 Dyn5 Yzn11 Yzn5	480	4210	1.1	4.5	745	260	1285	1380x910x1240	660/660	660	H
400					570	4970	1.0		865	305	1500	1430x950x1320	660/660	660	H
500					680	5940	1.0		980	335	1710	1520x1020x1360	660/660	660	H
630					810	6820	0.9	5	1165	385	2010	1680x1150x1380	660/660	660	H
800					980	8250	0.8		1335	415	2315	1810x1280x1430	820/820	820	H
1000					1150	11330	0.7		1655	515	2985	1840x1290x1540	820/820	820	H/C
1250					1380	13200	0.7		1890	630	3460	1850x1300x1730	820/820	820	H/C
1600					1660	15950	0.6		2220	710	4015	1920x1350x1790	820/820	820	H/C
2000					1950	19140	0.6		2530	730	4425	2020x1770x2040	820/820	820	H/C
2500					2340	22220	0.6		3165	795	5260	2080x1800x2130	1070/1070	1070	H/C
315	23000 22000 20000	±2×2.5%	400 410 415 420	Dyn11 Dyn5 Yzn11 Yzn5	480	4210	1.1	5.5	745	260	1285	1380x910x1240	660/660	660	H
400					570	4970	1.0		865	305	1500	1430x950x1320	660/660	660	H
500					680	5940	1.0		980	335	1710	1520x1020x1360	660/660	660	H
630					810	6820	0.9	6	1165	385	2010	1680x1150x1380	660/660	660	H
800					980	8250	0.8		1335	415	2315	1810x1280x1430	820/820	820	H
1000					1150	11330	0.7		1655	515	2985	1840x1290x1540	820/820	820	H/C
1250					1380	13200	0.7		1890	630	3460	1850x1300x1730	820/820	820	H/C
1600					1660	15950	0.6		2220	710	4015	1920x1350x1790	820/820	820	H/C
2000					1950	19140	0.6		2530	730	4425	2020x1770x2040	820/820	820	H/C
2500					2340	22220	0.6		3165	795	5260	2080x1800x2130	1070/1070	1070	H/C
315	38500 35000 33000	±2×2.5%	400 410 415 420	Dyn11 Dyn5 Yzn11 Yzn5	480	4750	0.95	6.5	720	400	1530	1280x1240x1790	660/660	660	H
400					580	5740	0.85		830	490	1780	1960x880x1900	820/820	820	H
500					680	6910	0.85		930	510	1960	2020x940x1920	820/820	820	H
630					830	7860	0.65		1085	600	2290	2070x1010x2010	820/820	820	H
800					980	9400	0.65.		1270	660	2640	2240x1040x2150	820/820	820	H
1000					1150	11500	0.65.		1495	735	3100	2300x1200x2150	820/820	820	H/C
1250					1400	13900	0.60.		1775	830	3630	2450x1280x2250	1070/1070	1070	H/C
1600					1690	16600	0.60.		2140	935	4235	2220x1510x2350	1070/1070	1070	H/C
2000					1990	19700	0.55		2535	1035	4910	2310x1740x2440	1070/1070	1070	H/C
2500					2360	23200	0.55		3140	1190	5840	2370x1840x2490	1070/1070	1070	H/C

* NLTC: No-load Tap Changer

* Provide ±5% or ±2×2.5% off-load tap changer

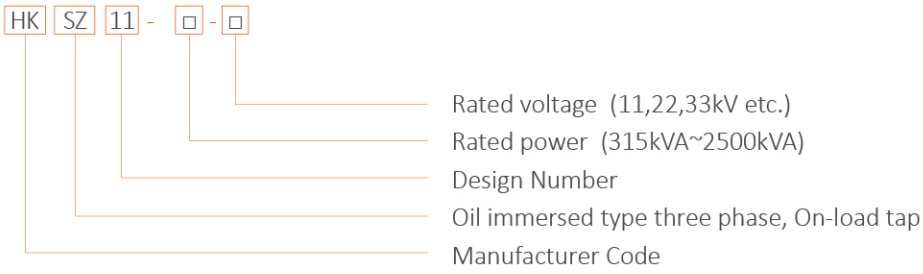
* Tank Type: H: Hermetically sealed with corrugated tank C: Corrugated tank with conservator

Typical Data for Higher Effiency Medium Oil Immersed Transformer HKS18, HKS20, HKS22 Series for Optional, Up to 38.5kV, NLTC

Rated Power kVA	HV (V)	HV Taps	LV (V)	Uk (%)	HKS11 Series			HKS18 Series			HKS20 Series			HKS22 Series		
					Po (W)	Pc (W)75°C		Po (W)	Pc (W)75°C		Po (W)	Pc (W)75°C		Po (W)	Pc (W)75°C	
						Dyn11/ Yzn11	Yyn0		Dyn11/ Yzn11	Yyn0		Dyn11/ Yzn11	Yyn0		Dyn11/ Yzn11	Yyn0
315	11000 10500 10000 6300 6000	±2 ×2.5%	400 410 415 420	4.0	480	3830	3650	340	3830	3650	305	3065	2920	270	2760	2630
400					570	4520	4300	410	4520	4300	370	3615	3440	330	3250	3095
500					680	5410	5100	480	5410	5150	430	4330	4120	385	3900	3710
630					810	6200		570	6200		510	4960		460	4460	
800					980	7500		700	7500		630	6000		560	5400	
1000					1150	10300		830	10300		745	8240		665	7415	
1250					1360	12000		970	12000		870	9600		780	8640	
1600					1640	14500		1170	14500		1050	11600		940	10440	
2000					1950	19800		1360	18300		1225	14640		1085	13180	
2500					2310	23000		1600	21200		1440	14840		1280	13360	
315	22000 21000 20000			5.5	480	4210	4010	384	4000	3810	312	3789	3609	265	3789	3609
400					570	4970	4730	456	4722	4494	371	4473	4257	315	4473	4257
500					680	5940	5660	544	5643	5377	442	5346	5094	376	5346	5094
630				6.0	810	6820		648	6479		527	6138		448	6138	
800					980	8250		784	7838		637	7425		541	7425	
1000					1150	11330		920	10764		748	10197		635	10197	
1250					1380	13200		1104	12540		897	11880		762	11880	
1600					1660	15950		1328	15153		1079	14355		917	14355	
2000					1950	19140		1560	18183		1268	17226		1077	17226	
2500					2340	22220		1872	21109		1521	19998		1293	19998	
315	38500 35000 33000			6.0	480	4750	4530	408	4513	4304	312	4275	4077	265	4275	4077
400					580	5740	5470	493	5453	5197	377	5166	4923	320	5166	4923
500					680	6910	6580	578	6565	6251	442	6219	5922	376	6219	5922
630					830	7860		706	7467		540	7074		459	7074	
800					980	9400		833	8930		637	8460		541	8460	
1000					1150	11500		978	10925		748	10350		635	10350	
1250					1400	13900		1190	13205		910	12510		774	12510	
1600					1690	16600		1437	15770		1099	14940		934	14940	
2000					1990	19700		1692	18715		1294	17730		1099	17730	
2500					2360	23200		2006	22040		1534	20880		1304	20880	

* NLTC: No-load Tap Changer

Type Designation



On-load tap changer

The on-load tap-changer is mounted on the cover of the main transformer tank. The tap changer works as a selector switch combining the features of a diverter switch and a tap selector. The selector switch is located in a separate oil compartment which is connected to its own conservator. The selector switch is of the high-speed spring operated type with resistive transition impedances. The tap-changer is equipped with a protective relay. The selector switch can be lifted for inspection and the oil in the compartment can be changed separately

Typical Data for Medium Oil immersed Distribution Transformer HKSZ11-315kVA to 2500kVA, Up to 12kV, OLTC

Rated Power (kV.A)	H. V (V)	Tap changer	L.V (V)	Vector Group	Losses(W)		Io (%)	Uk(%)	Weight(Kg)			Dimension(mm) L×W×H	Gauge (vertical/ horizontal)	Wheel base	Tank Type
					Po(W)	Pc(W) 75°C			Active Body	Oil	Total				
315	11000 10500 10000 6300 6000	±3/ 4×2.5%	400 410 415 420	Dyn11 Dyn5 Yzn11 Yzn5	530	4100	0.9	4	835	320	1500	1590x940x1250	660/660	660	H
400					640	4950	0.8		1010	370	1780	1650x1000x1350	660/660	660	H
500					760	5890	0.8		1170	370	1920	1810x1200x1310	660/660	660	H
630					960	7260	0.6	4.5	1220	460	2280	1860x1090x1500	660/660	660	H
800					1120	8890	0.6		1500	500	2740	1910x1260x1570	820/820	820	H
1000					1360	10400	0.6		1780	520	3060	1960x1280x1740	820/820	820	H/C
1250					1560	12300	0.5		2065	700	3710	2330x1800x1910	820/820	820	H/C
1600					1920	14700	0.5		2470	780	4350	2580x1910x1950	820/820	820	H/C
2000					2270	18600	0.4	5.0.	2700	900	4950	2580x1900x1950	820/820	820	H/C
2500					2680	21600	0.4		3230	1010	6020	2580x1940x2250	1070/1070	1070	H/C

* OLTC:On-load tap changer

* Provide ±3×2.5% or ±4×2.5% on load tap changer

* Tank Type: H: Hermetically sealed with corrugated tank R: Radiator tank with conservator

Dual voltage conversion three phase distribution Transformer

Transformers having dual primary (or secondary) voltages equipped with a selector switch with the handle on the cover.

Typical Data for Medium Oil immersed Distribution Dual Voltage Transformer HKS11-50kVA to 2500kVA, 20/10kV, NLTC

Rated Power (kV.A)	H. V 1 (V)	H. V 2 (V)	L.V (V)	Vector Group	Losses(W)		Io (%)	Uk(%)	Weight(Kg)			Dimension(mm) L×W×H	Gauge (vertical/ horizontal)	Wheel base	Tank Type
					Po(W)	Pc(W) 75°C			Active Body	Oil	Total				
50	20000	10000	400 410 415 420	Dyn11 Dyn5 Yzn11 Yzn5	130	1010	2.0.	5.5	200	185	515	920x6100x1150	450/380	/	H
100					200	1730	1.6		330	210	695	920x680x1250	550/450	/	H
125					240	2080	1.5		395	235	810	960x780x1270	550/470	/	H
160					290	2540	1.4		505	255	950	1160x710x1330	550/520	/	H
200					340	3000	1.3		580	225	1065	1190x730x1340	550/520	/	H
250					400	3520	1.2		695	300	1200	1280x820x1360	650/550	650	H
315					480	4210	1.1		745	320	1360	1380x910x1390	650/550	650	H
400					570	4970	1.0		865	370	1580	1430x950x1470	650/550	650	H
500					680	5940	1.0		985	400	1790	1520x1020x1510	650/550	660	H
630					810	6820	0.9		1165	460	2100	1680x1150x1530	750/600	750	H
800					980	8250	0.8		1335	495	2420	1810x1280x1580	850/660	850	H
1000					1150	11330	0.7		1655	590	3080	1840x1290x1690	850/660	850	H/C
1250					1380	13200	0.7		1890	630	3460	1850x1300x1730	850/660	850	H/C
1600					1660	15950	0.6		2220	710	4015	1920x1350x1790	850/700	850	H/C
2000					1950	19140	0.6		2530	830	4555	2020x1770x2290	820/820	820	H/C
2500					2340	22220	0.6		3165	905	5400	2080x1800x2280	1070/1070	1070	H/C

* NLTC: No-load Tap Changer

* Provide ±5% or ±2×2.5% tap changer

* Tank Type: H: Hermetically sealed with corrugated tank C: Corrugated tank with conservator

CNHK®

Large Three Phase Oil immersed Distribution Transformer

HKS11-2000kVA to 31500kVA (≥2000kVA,≤31500kVA)

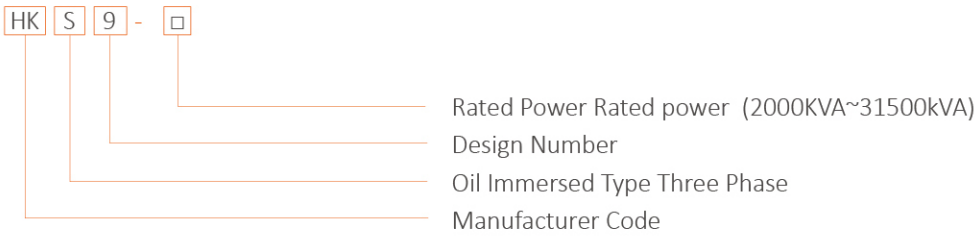


Description

Large Three Phase Oil immersed power transformers are custom-built pieces of equipment that are crucial links to the bulk transmission grid. Usually, they link a generator-transmission line and/or linking lines of different voltages.

CNHK's Large Three Phase Oil immersed power transformer are manufactured and tested in accordance the IEC60076

Type Designation



Construction features

The transformers are of the breathing, conventional type provided with an oil conservator.

Two types of transformers are manufactured:

- Transformers with off-load tap changer
- Transformers with on-load tap changer

Core

The three legged bolt-less core is constructed of grain oriented steel laminations. The joints between the leg and yoke are mitred at 45° and interleaved. The cross section of the leg is circular.

Windings

The material of the windings is either copper or aluminum. The windings are made of paper insulated rectangular wire in the form of multilayer, disc or helical windings. Transformers provided with on-load tap-changer usually have a separate tap winding.

Off-load tap-changer

The transformers are normally equipped with a 5-position off-load tap-changer on the High Voltage side, with its handle located on the cover. When changing the tap position the transformer has to be un-energized. Position 1 of the tap-changer (+ position) corresponds with the highest ratio, which gives the lowest voltage on the Low Voltage side. Position 5 of the tap-changer (- position) corresponds with the lowest ratio which consequently gives the highest voltage on the Low Voltage side.

On-load tap-changer

The on-load tap-changer is mounted on the cover of the main transformer tank. The tap changer works as a selector switch combining the features of a diverter switch and a tap selector. The selector switch is located in a separate oil compartment which is connected to its own conservator. The selector switch is of the high-speed spring operated type with resistive transition impedances. The tap-changer is equipped with a protective relay. The selector switch can be lifted for inspection and the oil in the compartment can be changed separately. The on-load tap-changer is provided with a motor drive mechanism for remote and local control. Normally the motor drive is three-phase and the control and the heating circuits are for single phase AC supply. When re-quested, DC circuits can be supplied.

Insulating oil

The mineral oil used in the transformers complies with IEC 296 and several national standards. The oil slows down the ageing process.

Tank

The transformer tank is usually of the rigid type provided with removable radiators connected to the tank by means of a shut-off valve. On request, the tank can be made vacuum proof.

Transformers up to 5 MVA can be supplied with a compact tank with corrugated cooling fins.

Painting and surface treatment Prior to the painting of the tank, the cover and oil conservator are sandblasted. External surfaces are painted immediately after pre-treatment with a two-pack epoxy primer coat.

Corrugated tanks are flow painted with alkyd primer and acrylic finish to a total thickness of 80 µm. The conservator and the bottom part of the tank are painted internally.

Options and accessories

The transformers are fitted with the following

standard accessories:

- Bushings
- Oil conservator with oil level indicator
- Filling and drain valves
- Oil sampling device
- Earthing terminals
- Lifting lugs
- Jacking pads (radiator tanks)
- Rating plate
- Silica-gel breather
- Buchholz relay
- Top oil thermometer

Additional accessories can be fitted in accordance with the customer’s specifications.

Vacuum treatment

Drying and vacuum treatment takes place in a special oven, where the windings are heated

electrically while simultaneously the air is evacuated from the oven, reaching an absolute

pressure of 1 mbar. The transformer is filled

with oil while it is still under vacuum. In this

way moisture and gases are effectively remo

ved from the windings and oil.

Bushings

The bushings are of a solid porcelain type and located on the cover. Bushing insulators can

be changed without opening the transformer. The bushings comply with IEC 137.

The terminals can be provided with an air insulated enclosure. The enclosure can be on the primary and/or on the secondary side and may be constructed for cable or bus duct connection. Alternatively the transformers can

be provided with plug-in bushings.

Testing

All transformers are manufactured according to the ISO 9001 Quality System. The transformers are individually tested according to IEC standards.

1. Routine tests

1.1 Measurement of winding resistance

1.2 Measurement of voltage ratio and testing of voltage vector relationship

1.3 Measurement of impedance voltage, short-circuit impedance and load loss

1.4 Measurement of no-load loss and current

1.5 Dielectric tests:

1.5.1 Separate source voltage withstand test

1.5.2 Induced overvoltage withstand test Witness type/special tests can be carried out on request.

2. Type tests

2.1 Temperature rise test

2.2 Dielectric tests:

2.2.1 Lightning impulse test

3. Special tests

3.1 Dielectric tests:

3.1.1 PD-test

3.1.2 Chopped wave test

3.2 Measurement of zero-sequence impedance on three phase transformers

3.3 Short circuit test

3.4 Measurement of sound level

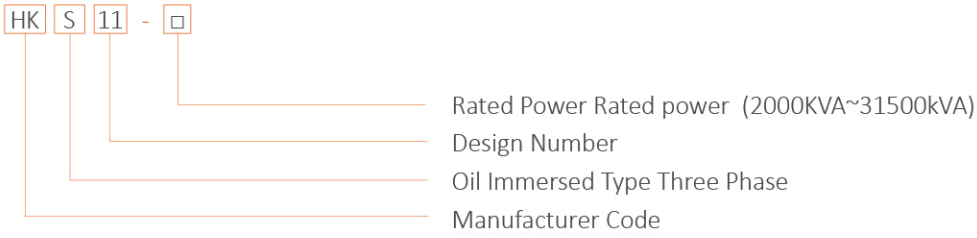
3.5 Measurement of harmonics in the noload current

3.6 Tests of auxilary equipment and wiring

3.7 Tests onload tap-changer

3.8 Leakage test for transformer tank

Type Designation



Typical Data for Large Oil immersed Power Transformer HKS11-2000kVA to 31500kVA, Up to 38.5kV, NLTC

Rated Power (kV.A)	H. V (V)	Tap changer	L.V (V)	Vector Group	Losses(W)		Io (%)	Uk(%)	Weight(Kg)			Dimension(mm) L×W×H	Gauge (vertical/ horizontal)	Tank type
					Po(W)	Pc(W) 75°C			Active Body	Oil	Total			
2000	38500 35000 33000	±2×2.5%	11000 10500 10000 6300	Yd11	2170	18300	0.45	6.5	2460	1090	4890	2320x1750x2450	1070/1070	H/R
2500					2560	19600	0.45		3010	1205	5660	2380x1840x2530		H/R
3150					3040	23000	0.45	7	3785	1500	7600	2550x2200x2620		R
4000					3610	27300	0.45		4690	1790	8500	2670x2390x2670		R
5000					4320	31300	0.45		5570	2015	9790	2870x2450x2750		R
6300					5210	35000	0.45	8	7380	2460	12620	3100x2580x2950	1475/1475	R
8000				YNd11	7200	38400	0.35		8870	2650	14100	3250x2680x3150		R
10000					8700	45300	0.35		10020	2930	16500	3320x2720x3230		R
12500					10000	53800	0.30.		12880	3710	19780	3410x2950x3410		R
16000					12100	65800	0.30.		16120	4280	23950	3520x3180x3570		R
20000					14100	79500	0.30.		18580	5230	29600	3730x3560x3990		R
25000					17000	94000	0.25	10	22970	6370	35350	4110x4120x4220	2040/2040	R
31500					20200	112000	0.25		27600	7740	41900	4760x4570x4390		R

* NLTC: No-load Tap Changer

* Provide ±5% or ±2×2.5% off-load tap changer

* Tank Type: H: Hermetically sealed with corrugated tank R: Radiator tank with conservator

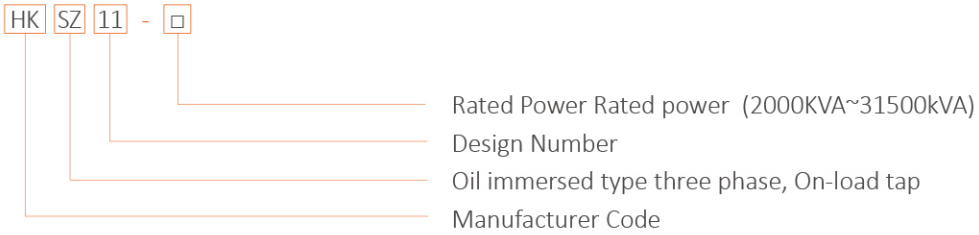
Typical Data for Higher Effiency Large Oil Immersed Transformer HKS18, HKS20, HKS22 Series for Optional, Up to 38.5kV, NLTC

Rated Power (kVA)	HV (V)	HV Taps	LV (V)	Uk(%)	HK S11 Series		HK S18 Series		HK S20 Series		HK S22 Series	
					Po (W)	Pc(W) 75°C	Po (W)	Pc(W) 75°C	Po (W)	Pc(W) 75°C	Po (W)	Pc(W) 75°C
3150	38500 35000 33000	±2 ×2.5%	11000 10500 10000 6300 6000	7	2670	24300	2400	21900	2000	20700	1700	20700
4000					3250	28800	2900	25900	2300	24600	2000	24600
5000					3890	33030	3500	29700	2800	28200	2400	28200
6300				8	4670	36900	4200	33300	3400	31500	2900	31500
8000					6450	40500	5800	36500	4700	34600	4000	34600
10000					7780	47700	7000	43000	5700	40800	4800	40800
12500					8890	56700	8000	51100	6500	48400	5500	48400
16000					10780	69300	9700	62500	7900	59200	6700	59200
20000					12780	83700	11500	75500	9400	71600	7900	71600
25000				10	15120	99000	13600	89300	11100	84600	9400	84600
31500					18000	118800	16200	106400	13100	100800	11100	100800

* NLTC: No-load Tap Changer

* Provide ±5% or ±2×2.5% off-load tap changer

Type Designation



Typical Data for Large Oil immersed Power Transformer HKSZ11-2000kVA to 31500kVA Transformer , Up to 38.5kV, OLTC

Rated Power (kV.A)	H. V (V)	Tap changer	L.V (V)	Vector Group	Losses(W)		Io (%)	Uk(%)	Weight(Kg)			Dimension(mm) L×W×H	Gauge (vertical/ horizontal)	Tank type
					Po(W)	Pc(W) 75°C			Active Body	Oil	Total			
2000	38500 35000 33000	±3×2.5% or ±4×2.5%	11000 10500 10000 6300	Yd11	2300	19200	0.50.	6.5	2720	1280	5460	2980x2080x2320	1070/1070	H/R
2500					2720	20600	0.50.		3630	1500	6420	3060x2190x2430		H/R
3150					3230	24700	0.50.	7	4030	1770	8360	3080x2240x2450		R
4000					3870	29100	0.50.		4980	2150	9350	3270x2410x2540		R
5000					4640	34200	0.50.	8	5900	2420	10960	3490x2480x2780		R
6300					5630	36700	0.50.		7920	2950	14100	3710x2600x2950	1475/1475	R
8000				YNd11	7870	40600	0.40.		9400	3310	15800	3850x2600x2950		R
10000					9280	48000	0.40.		10500	3960	18980	3920x2750x3230		R
12500					10900	56800	0.35		13590	5010	23140	4035x2980x3470		R
16000					13100	70300	0.35		16930	5980	27350	4140x3200x3600		R
20000					15500	82700	0.30.		19240	7060	3560	4370x3580x4110		R
25000					18300	97800	0.30.	10	23760	8600	41360	4710x4120x4250	2040/2040	R
31500					21800	116000	0.30.		28400	10500	49100	5360x4570x4390		R

* OLTC:On-load tap changer

* Provide ±3×2.5% or ±4×2.5% on load tap changer

* Tank Type: H: Hermetically sealed with corrugated tank R: Radiator tank with conservator

Typical Data for Higher Effiency Large Oil Immersed Transformer HKS18, HKS20, HKS22 Series for Optional , Up to 38.5kV, OLTC

Rated Power (kVA)	HV (V)	HV Taps	LV (V)	Uk(%)	HK S11 Series		HK S18 Series		HK S20 Series		HK S22 Series	
					Po (W)	Pc(W) 75°C	Po (W)	Pc(W) 75°C	Po (W)	Pc(W) 75°C	Po (W)	Pc(W) 75°C
3150	38500 35000 33000	±3×2.5% ±4×2.5%	11000 10500 10000 6300 6000	7	3230	24700	2600	23500	2100	22200	1800	22200
4000					3870	29100	3100	27600	2500	26200	2100	26200
5000					4640	34200	3700	32500	3000	30800	2600	30800
6300				8	5630	36700	4500	34900	3700	33000	3100	33000
8000					7870	40600	6300	38600	5100	36500	4300	36500
10000					9280	48000	7400	45600	6000	43200	5100	43200
12500					10900	56800	8700	54000	7100	51100	6000	51100
16000					13100	70300	10500	66800	8500	63300	7200	63300
20000					15500	82700	12400	78600	10100	74400	8500	74400
25000				10	18300	97800	14600	92900	11900	88000	10100	88000
31500					21800	116000	17400	110200	14200	104400	12000	104400

* OLTC:On-load tap changer

* Provide ±3×2.5% or ±4×2.5% on load tap changer

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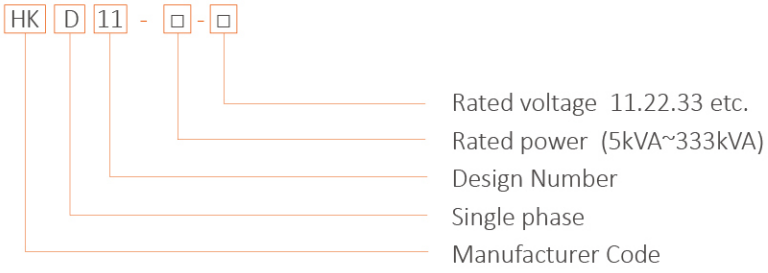
Single Phase Oil Immersed Distribution Transformer



General

CNHK produces the Single Phase , oil immersed Small distribution transformers which are pole mounting. They are suitable for serving residential overhead distribution type load, as well as for commercial , Industrial, lighting system and diversified power applications. These transformers are designed for the duties normally encountered on electric utility power distribution systems.

Type Designation



Standard Features

All units are built in accordance with both ANS/ C5712.00 and ANS/ C5712.20,except as modified to comply with customer specifications.

Mild steel tank with welded lifting lugs and hanger brackets for direct to pole mounting.

Single piece clamped cover band meets cover retention requirements of ANSI standards. Electrostatic-ally applied polyester powder paint system for superior corrosion protection.

Drain and sampling valveConnections for groundings.

HV porcelain cover mounted bushings Tank wall mounted porcelain or polymer low voltage bushings.

Tin-plated bronze terminals for connection to copper or aluminum.

Insulated cover for wildlife protection.

Stainless steel nameplate.

Non-PCB insulating oil.

KVA rating on tank wall.

Low voltage ground provisions.

Tank ground provisions Arrester mounting nuts welded to tank One HV bushings with tank ground strap for grounded wye applications or two HV bushings for wye application Recessed tank bottom

Optional Features

Dual High voltage ratings External tank mounted high voltage lighting arrester.

Stainless steel tank,cover,clamping band.

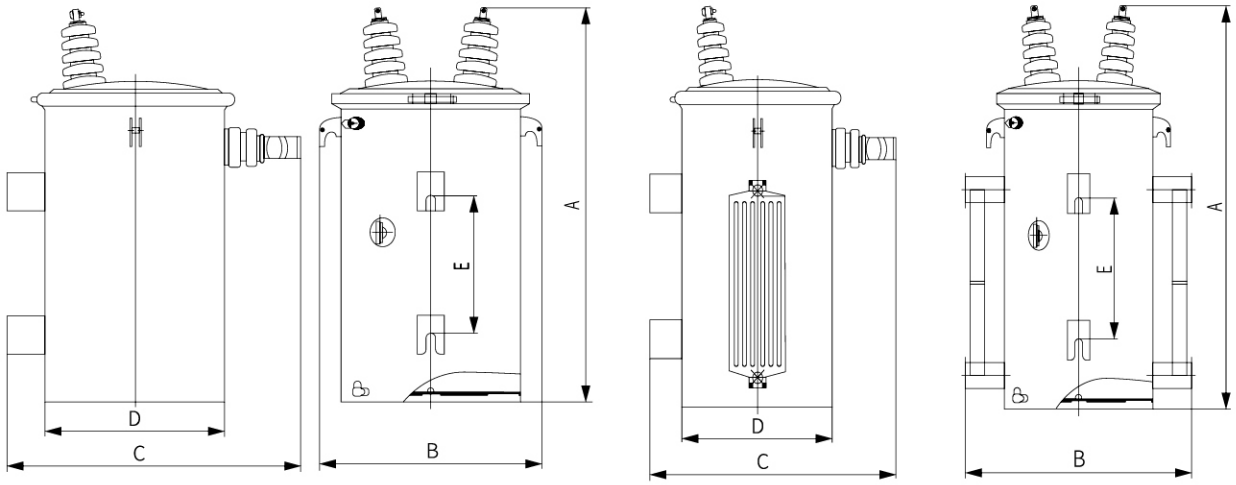
Variety of features available for wildlife protections.

About D11 Series Technical Parameters

Rated Power (kV.A)	H. V (V)	Tap changer	L.V (V)	Vector Group	Losses(W)		Impendance voltage(%)
					No-load loss	load loss (75°C)	
3	34500 19920 13800 13200 7600 12470 7200 or others	±2×2.5% or ±5%	110/220 120/240 240/480 250/500 or others	li0	12	45	3.5
5					25	75	
10					50	120	
15					65	195	
25					105	290	
37.5					140	360	
50					180	500	
75					250	650	
100					275	850	
167					455	1410	
250					650	2000	
333					845	2500	

* Provide ±5% or ±2×2.5% tap changer

Outline Dimensional Drawing



About D11 Series Dimensions(Primary voltage:13.2KV)

Model	Rated	Weight		Dimension(mm)					Tank Type
	(kVA)	Oil	Total	A	B	C	D	E	
D11-3	3	20	105	760	430	530	330	286	H
D11-5	5	30	110	780	430	530	330		H
D11-10	10	35	130	830	430	530	330		H
D11-15	15	40	185	850	480	580	380		H
D11-25	25	45	210	880	500	580	410		H
D11-37.5	37.5	60	300	930	560	640	460		H
D11-50	50	70	335	980	560	640	460		H
D11-75	75	105	460	980	680	720	554		H
D11-100	100	125	530	1020	780	800	610	591	H
D11-167	167	155	670	1050	830	890	660		H
D11-250	250	240	950	1100	960	950	660		H/R
D11-333	333	250	1000	1150	960	960	660		H/R

* Tank Type: H: Hermetically sealed tank R: Hermetically sealed tank with Raditor



CNHK®

DRY TYPE TRANSFORMER

Dry type transformer

With the aim of minimizing environmental contamination and fire hazards, customers are increasingly requesting dry type transformers. These transformers meet strict parameters with respect to electrical system demands and functioning in areas with extreme climatic conditions. Applications include high-density office buildings, nuclear power plants, offshore drilling platforms, nuclear-powered navy vessels and high-volume industrial process plants.

CNHK dry type transformers fulfil the requirements of international standards IEC 60726, and are virtually maintenance free and are manufactured in accordance with the international quality standards ISO 9001 and ISO 14001.

Application

CNHK dry type transformers are most suitable for installations that require a high degree of safety, such as: hotels, restaurants, hospitals, skyscraper, shopping centre, multipurpose cultural centre, car factories, residential areas and other severe condition present in: Subway, Chemical processing, offshore platforms for oil wells, offshore drilling platforms, marine applications, container cranes at seaports etc.

CNHK®

Epoxy Resin Cast Dry Type Transformer



General

CNHK's HK SCB series is a dry-type Epoxy Resin Cast dry type transformer. Due to the coil being encapsulated with epoxy resin, it is anti-ignite, fireproof, explosion-proof, maintenance free, pollution-free, small in size, and can be directly installed in the load center. At the same time, scientific and reasonable design and pouring process make the product have less partial discharge, low noise, and strong heat dissipation ability, Under forced air cooling conditions, it can operate for a long time at 140% of the rated load and is equipped with an intelligent temperature controller. It has functions such as fault alarm, over temperature alarm, over temperature trip, and black box. It is connected to a computer through an RS485 serial interface and can be centrally monitored and controlled.

Core

CNHK dry type transformers use step-lap mitred core construction to ensure good performance and minimum sound levels. The mitred core joint allows efficient flux transfer along natural grain lines between the core and yoke. The step-lap construction further enhances the efficiency of the joint by reducing joint fringing which reduces core losses and existing currents.

The core is designed and built to provide the low possible losses from the effects of magnetic hysteresis and eddy currents. All possible steps are taken to prevent local circulating currents and to avoid built-in bending stresses.

CNHK starts with cold-rolled, grain-oriented silicon steel, and constructs the core with step-lap mitred joints. Magnetic flux densities are kept well below the saturation point. The steel is precision cut to assure that it will be smooth and burr-free. For rigidity and support, the upper and lower yokes are solidly clamped to a sturdy metal frame. The finished core is coated with a corrosion resistant sealant which provides lamination cohesion and environmental protection.

Winding

CNHK's windings construction depends on operating voltage, basic impulse level and current capacity of the individual winding. CNHK's High Voltage winding is filled with epoxy resin vacuum casting, greatly reducing local discharge and improving the electrical strength of the coil. The inner and outer walls of the winding are filled with glass fiber mesh plates, enhancing the mechanical strength of the coil and improving the product's ability to withstand sudden short circuits.

Typically, CNHK's Low Voltage windings, insulation class 1.1 kV, are wound using sheet conductors. This construction allows free current distribution within the axial width of the coil which eliminates the axial forces developed in other types of windings under short circuit conditions. During the assembly process each Low Voltage winding is blocked radially and axially against the core using a combination of solid and resilient mounts for sound suppression and thermal expansion compensation.

CNHK's winding construction are oval up to 4000 kVA.

Temperature control system

Adopting a cross flow top blowing cooling fan, this fan has the characteristics of low noise, high air pressure, and beautiful appearance, enhancing the overload capacity of the transformer. The temperature control adopts an intelligent temperature controller, which improves the safety and reliability of the transformer operation.

Enclosure

The Enclosure provides further safety protection for the transformer, with protection levels of IP20 to IP54 according to customer requirements. The shell material is made of cold-rolled steel plate or stainless steel for users to choose from

Standard features

- HV coils vacuum cast in epoxy resin. LV windings pre-impregnated
- Casting process utilises high performance filled epoxy
- Aluminum windings
- Step-lap mitered core
- 155°C insulation system and 100°C average temperature rise
- Four full capacity taps on HV winding rated ± 2 x 2.5%
- Provisions for lifting core and coil assembly
- Rating plate
- Temperature control device
- Earthing terminals
- Base equipped with Forklift channel

Optional Feature:

- Copper windings for optional
- Cast coil LV windings
- Increased basic impulse levels
- Dual primary-secondary voltage
- Loss optimised designs
- Base equipped with bi-directional rollers
- Other designs available on request

Accessories

- Three-phase electronic temperature monitor
- Anti vibration pads
- Optional ventilated enclosure with removable front and rear panels (IP20 to IP54)
- Electrostatic screen
- Forced cooling package with three-phase electronic temperature monitor

Factory Routine Test

-Transformation ratio at all taps and polarity
- Applied voltage
- Induced voltage
- Partial discharge test
- Resistance of all windings
- Vector group
- No-load loss and no-load current
- Load losses and impedance voltage test

Type test for optional

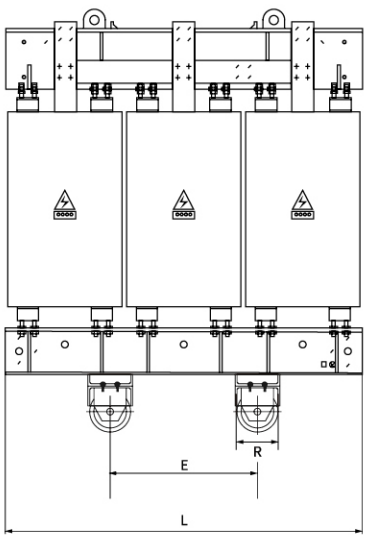
Temperature rise test

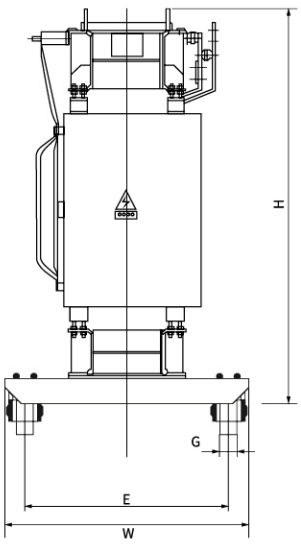
- Lightning impulse test
- Measurement of noise level
- Insulation resistance

Type Designation

HK S C (B) 10 - □ - □

- Rated voltage (11)
- Rated power (10kVA~4000kVA)
- Design Number
- Low Voltage Foil Coil
- Dry Type
- Three Phase
- Manufacturer Code





Typical Datas for Dry type transformer HKSCB10, Up to 12kV, NLTC

Rated Power (kV.A)	H. V (V)	H.V Taps	L.V (V)	Vector Group	Po (W)	Pc (W) 120°C	Io (%)	Uk (%)	Insulating Level	Weight (Kg)	L (mm)	W (mm)	H (mm)	E (mm)	R (mm)	G (mm)	Enclosure Model
10	11000 10500 10000 6300 6000	±2 ×2.5%	400 410 415 420	Dyn11 Dyn5 Yyn0	135	305	4	4	F/F	130	600	450	620	400	125	40	Enclosure 1#
20					170	595	3.5			170	620	450	780	400	125	40	
30					190	710	2.0.			330	620	450	880	400	125	40	
50					270	1000	2.0.			380	750	500	890	400	125	40	
63					330	1210	2.0.			440	750	500	1020	400	125	40	Enclosure 2#
80					370	1380	1.5			510	1060	600	1150	400	125	40	
100					400	1570	1.5			590	1060	600	1190	400	125	40	
125					470	1850	1.3			650	1060	600	1150	550	125	40	Enclosure 3 #
160					540	2130	1.3			780	1060	600	1190	550	125	40	
200					620	2530	1.1			930	1110	710	1250	660	125	40	
250					720	2760	1.1			1040	1150	710	1270	660	125	40	Enclosure 4 #
315					880	3470	1.0.			1180	1150	710	1325	660	125	40	
400					980	3990	1.0.			1450	1260	870	1415	660	125	40	
500					1160	4880	1.0.			1630	1290	870	1485	820	125	40	
630					1340	5880	0.85			1900	1450	870	1550	820	125	40	Enclosure 5#
630					1300	5960	0.85	6		1900	1550	870	1500	820	125	40	
800					1520	6960	0.85			2290	1550	870	1700	820	125	40	
1000					1770	8130	0.85			2700	1600	1120	1795	820	125	40	Enclosure 6#
1250					2090	9690	0.85			3130	1680	1120	1895	1070	125	40	
1600					2450	11700	0.85			3740	1750	1120	2070	1070	200	70	
2000					3050	14400	0.7			4150	1770	1120	2075	1070	200	70	Enclosure 7#
2500					3600	17100	0.7			4810	1870	1120	2160	1070	200	70	
3150					5140	22500	0.7	8		5800	1950	1120	2160	1070	200	70	Enclosure 8 #
4000					5960	27400	0.7			7100	2100	1120	2260	1070	200	70	

* NLTC: No-load Tap Changer * Provide ±5% or ±2×2.5% off-load tap changer

Typical Datas for Higher Effiency Dry type distribution transformer, Up to 12kV, NLTC

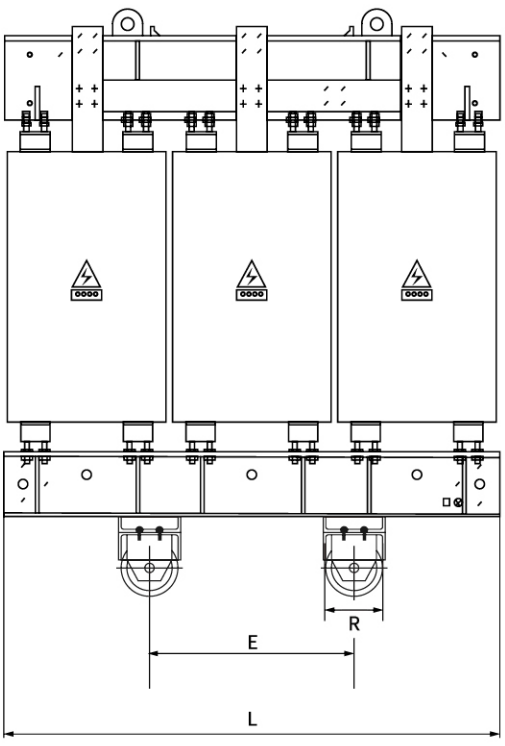
Rated Power (kVA)	H.V (V)	H.V Taps	L.V (V)	Uk (%)	HKSCB10 Series		HKSCB12 Series		HKSCB14 Series		HKSCB18 Series	
					Po (W)	Pc (W)120°C	Po (W)	Pc (W)120°C	Po (W)	Pc (W)120°C	Po (W)	Pc (W)120°C
30	11000 10500 10000 6300 6000	±2 ×2.5%	400 410 415 420	4	190	710	150	710	130	640	105	640
50					270	1000	215	1000	185	900	155	900
80					370	1380	295	1380	250	1240	210	1240
I00					400	1570	320	1570	270	1415	230	1415
125					470	1850	375	1850	320	1665	270	1665
160					540	2130	430	2130	365	1915	310	1915
200					620	2530	495	2530	420	2275	360	2275
250					720	2760	575	2760	490	2485	415	2485
315					880	3470	705	3470	600	3125	510	3125
400					980	3990	785	3990	665	3590	570	3590
500					1160	4880	930	4880	790	4390	670	4390
630					1340	5880	1070	5960	910	5290	775	5290
630				6	1300	5960	1040	5960	885	5365	750	5365
800					1520	6960	1215	6960	1035	6265	875	6265
1000					1770	8130	1415	8130	1205	7315	1020	7315
1250					2090	9690	1670	9690	1420	8720	1205	8720
1600					2450	11700	1960	11730	1665	10555	1415	10555
2000					3050	14400	2440	14450	2075	13005	1760	13005
2500					3600	17100	2880	17170	2450	15445	2080	15445

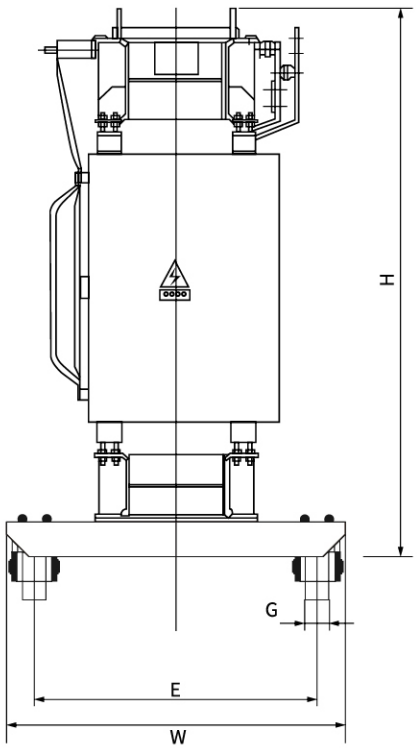
* NLTC: No-load Tap Changer * Provide ±5% or ±2×2.5% off-load tap changer

Type Designation

HK S C (B) 10 - □ - □

- Rated voltage (20)
- Rated power (50kVA~2500kVA)
- Design Number
- Low Voltage Foil Coil
- Dry Type
- Three Phase
- Manufacturer Code





Typical Datas for Dry type transformer HKSCB 10, Up to 24kV, NLTC

Rated Power (kV.A)	H. V (V)	H.V Taps	L.V (V)	Vector Group	Po (W)	Pc (W) 120°C	Io (%)	Uk (%)	Insulating Level	Weight (Kg)	L (mm)	W (mm)	H (mm)	E (mm)	R (mm)	G (mm)	Dimension(mm) of Transformer L×W×H
50	24000 22000 20000	±2 ×2.5%	400 410 415 420	Dyn11 Dyn5 Yyn0	340	1230	2.0.	6	F/F	488	800	670	1090	550	125	40	Enclosure 3 #
100					540	1990	1.8			732	900	760	1280	550	125	40	
160					670	2470	1.5			960	1300	780	1350	550	125	40	Enclosure 6 #
200					730	2940	1.5			1120	1330	780	1350	550	125	40	
250					840	3420	1.3			1280	1380	820	1480	550	125	40	
315					970	4080	1.3			1440	1380	850	1480	660	125	40	
400					1150	4840	1.1			1760	1540	850	1640	660	125	40	Enclosure 7#
500					1350	5790	1.1			2000	1540	870	1830	820	125	40	
630					1530	6840	1.0.			2320	1660	870	1910	820	125	40	
800					1750	8260	1.0.			2800	1660	870	2110	820	125	40	Enclosure 8 #
1000					2070	9780	0.85			3360	1700	870	2195	820	125	40	
1250					2380	11500	0.85			3920	1750	1120	2355	1070	200	40	
1600					2790	13800	0.85			4640	1800	1120	2385	1070	200	70	
2000					3240	16300	0.70			5280	1900	1120	2485	1070	200	70	Enclosure 9 #
2500					3870	19300	0.70			6000	2000	1120	2555	1070	200	70	
2000					3240	17800	0.70	8		5280	2160	1200	2485	1070	200	70	
2500					3870	21200	0.70			6000	2270	1200	2555	1070	200	70	

* NLTC: No-load Tap Changer * Provide ±5% or ±2×2.5% off-load tap changer

Typical Datas for Higher Effiency Dry type distribution transformer, Up to 24kV, NLTC

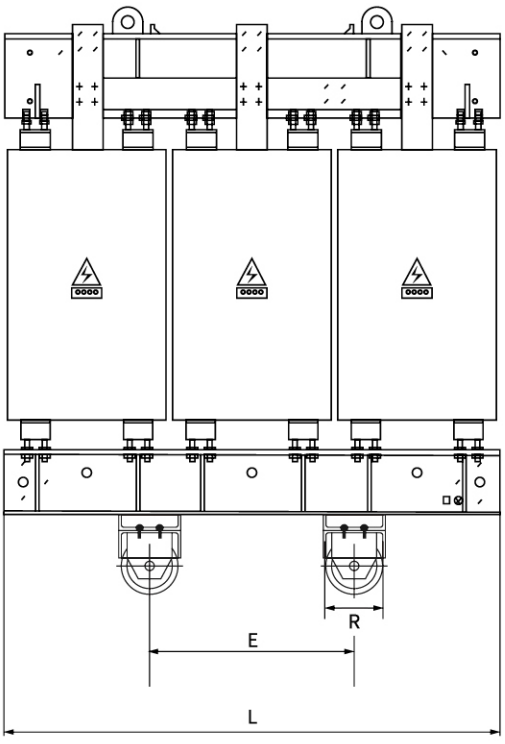
Rated Power (kVA)	H.V (V)	H.V Taps	L.V (V)	Uk (%)	HKSCB10 Series		HKSCB12 Series		HKSCB14 Series		HKSCB18 Series	
					Po (W)	Pc (W)120°C	Po (W)	Pc (W)120°C	Po (W)	Pc (W)120°C	Po (W)	Pc (W)120°C
50	24000 22000 20000	±2 ×2.5%	400 410 415 420	6	340	1230	272	1230	255	1107	221	1107
100					540	1990	432	1990	405	1791	351	1791
160					670	2470	536	2470	503	2223	436	2223
200					730	2940	584	2940	548	2646	475	2646
250					840	3420	672	3420	630	3078	546	3078
315					970	4080	776	4080	728	3672	631	3672
400					1150	4840	920	4840	863	4356	748	4356
500					1350	5790	1080	5790	1013	5211	878	5211
630					1530	6840	1224	6840	1148	6156	995	6156
800					1750	8260	1400	8260	1313	7434	1138	7434
1000					2070	9780	1656	9780	1553	8802	1346	8802
1250					2380	11500	1904	11500	1785	10350	1547	10350
1600					2790	13800	2232	13800	2093	12420	1814	12420
2000					3240	16300	2592	16300	2430	14670	2106	14670
2500					3870	19300	3096	19300	2903	17370	2516	17370
2000				8	3240	17800	2592	17800	2430	16020	2106	16020
2500					3870	21200	3096	21200	2903	19080	2516	19080

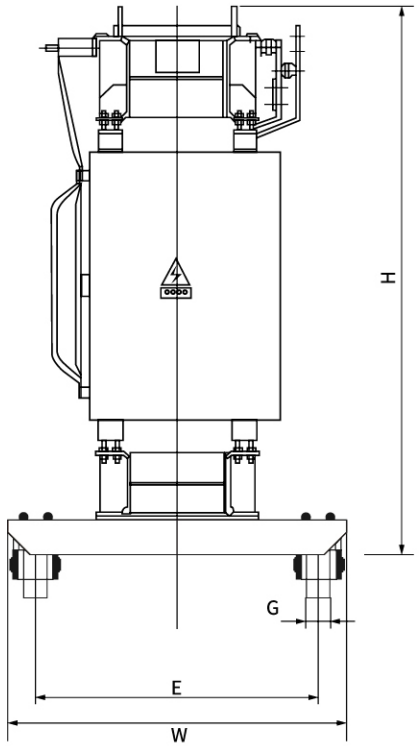
* NLTC: No-load Tap Changer * Provide ±5% or ±2×2.5% off-load tap changer

Type Designation

HK S C (B) 10 - □ - □

- Rated voltage (33)
- Rated power (50kVA~2500kVA)
- Design Number
- Low Voltage Foil Coil
- Dry Type
- Three Phase
- Manufacturer Code





Typical Datas for Dry type transformer HKSCB10, Up to 38.5kV, NLTC

Rated Power (kV.A)	H. V (V)	H.V Taps	L.V (V)	Vector Group	Po (W)	Pc (W) 120°C	Io (%)	Uk (%)	Insulating Level	Weight (Kg)	L (mm)	W (mm)	H (mm)	E (mm)	R (mm)	G (mm)	Dimension(mm) of Transformer L×W×H
50	38500 35000 33000	±2 ×2.5%	400 410 415 420	Dyn11 Dyn5 Yyn0	500	1500	2.8	6	F/F	610	1000	870	1285	550	125	40	Enclosure 6 #
100					700	2200	2.4			915	1100	870	1475	550	125	40	
160					880	2960	1.8			1200	1500	870	1545	550	125	40	Enclosure 7 #
200					980	3500	1.8			1400	1530	870	1545	550	125	40	
250					1100	4000	1.6			1600	1580	870	1675	550	125	40	
315					1310	4750	1.6			1800	1580	870	1675	660	125	40	
400					1530	5700	1.4			2200	1740	870	1835	660	125	40	Enclosure 8 #
500					1800	7000	1.4			2500	1740	870	2025	820	125	40	
630					2070	8100	1.2			2900	1860	870	2105	820	125	40	
800					2400	9600	1.2			3500	1860	870	2305	820	125	40	
1000					2700	11000	1.0			4200	1900	1120	2390	820	125	40	Enclosure 9 #
1250					3150	13400	0.9			4900	1950	1120	2550	1070	200	40	
1600					3600	16300	0.9			5800	2000	1120	2580	1070	200	70	
2000					4250	19200	0.9			6600	2100	1200	2680	1070	200	70	Enclosure 10 #
2500					4950	23000	0.9			7500	2200	1200	2750	1070	200	70	

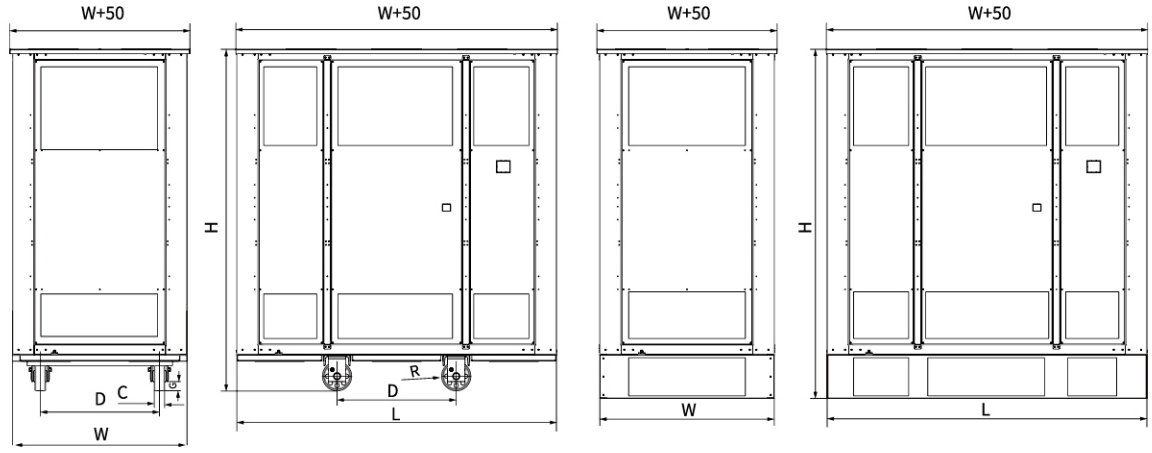
* NLTC: No-load Tap Changer * Provide ±5% or ±2×2.5% off-load tap changer

Typical Datas for Higher Effiency Dry type distribution transformer, Up to 38.5kV, NLTC

Rated Power (kVA)	H.V (V)	H.V Taps	L.V (V)	Uk (%)	HKSCB10 Series		HKSCB12 Series		HKSCB14 Series		HKSCB18 Series	
					Po (W)	Pc (W)120°C	Po (W)	Pc (W)120°C	Po (W)	Pc (W)120°C	Po (W)	Pc (W)120°C
50	38500 35000 33000	±2 ×2.5%	400 410 415 420	6	500	1500	400	1500	375	1350	325	1350
100					700	2200	560	2200	525	1980	455	1980
160					880	2960	704	2960	660	2664	572	2664
200					980	3500	784	3500	735	3150	637	3150
250					1100	4000	880	4000	825	3600	715	3600
315					1310	4750	1048	4750	983	4275	852	4275
400					1530	5700	1224	5700	1148	5130	995	5130
500					1800	7000	1440	7000	1350	6300	1170	6300
630					2070	8100	1656	8100	1553	7290	1346	7290
800					2400	9600	1920	9600	1800	8640	1560	8640
1000					2700	11000	2160	11000	2025	9900	1755	9900
1250					3150	13400	2520	13400	2363	12060	2048	12060
1600					3600	16300	2880	16300	2700	14670	2340	14670
2000					4250	19200	3400	19200	3188	17280	2763	17280
2500					4950	23000	3960	23000	3713	20700	3218	20700

* NLTC: No-load Tap Changer * Provide ±5% or ±2×2.5% off-load tap changer

Dimension Data



Enclosure with Rolls

Unit: mm

Enclosure Model	L	W	H	D	R	C
Enclosure 1#a	1050	900	1250	1180	125	45
Enclosure 2#a	1150	1100	1450	1230	125	45
Enclosure 3 #a	1400	1050	1450	1180	125	45
Enclosure 4 #a	1600	1300	1850	1430	125	45
Enclosure 5#a	1900	1300	2000	1430	125	45
Enclosure 6#a	2100	1400	1719	1530	125	45
Enclosure 7#a	2200	1500	2400	1630	200	70
Enclosure 8 #a	2400	1600	2400	1730	200	70
Enclosure 9 #a	2700	1800	2850	1930	200	70
Enclosure 10 #a	2900	1800	2850	2850	200	70

Enclosure without Rolls

Unit: mm

Enclosure Model	L	W	H
Enclosure 1#b	1050	900	1050
Enclosure 2#b	1150	1100	1250
Enclosure 3 #b	1400	1050	1250
Enclosure 4 #b	1600	1300	1650
Enclosure 5#b	1900	1300	1800
Enclosure 6#b	2100	1400	1519
Enclosure 7#b	2200	1500	2200
Enclosure 8 #b	2400	1600	2200
Enclosure 9 #b	2700	1800	2650
Enclosure 10 #b	2900	1800	2800

*CNHK reserves the right to modify technical details without prior notice

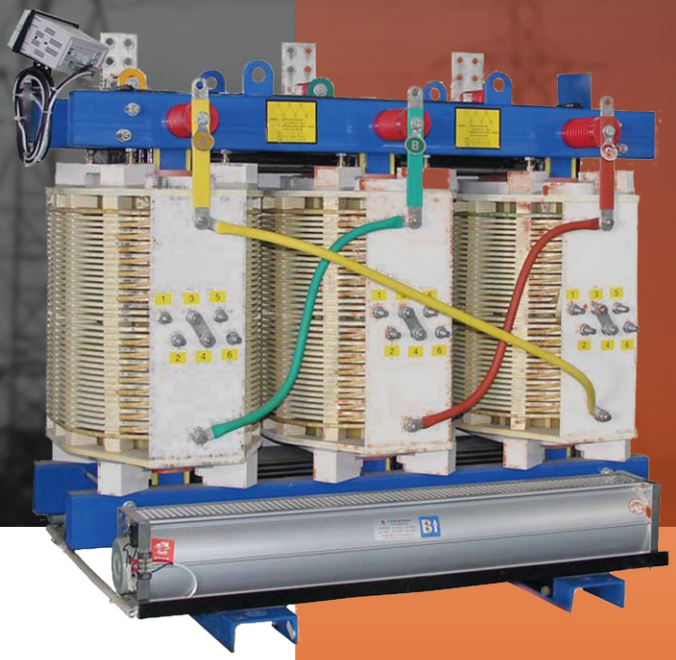
Dry type transformer shell parameters

Degree of Protection	Solid Items	Liquids	Installation
IP20	Protection against solid Items ≤12mm	None Protection against water	Indoor
IP21	Protection against solid Items ≤12mm	Protection against vertically falling water drops	Indoor
IP23	Protection against solid Items ≤12mm	Protection against direct water splashes up to 60° from the vertical	Indoor
IP31	Protection against solid Items ≤2.5mm	Protection against vertically falling water drops	Indoor
IP33	Protection against solid Items ≤2.5mm	Protection against direct water splashes up to 60° from the vertical	Indoor/ Outdoor
IP43	Protection against solid Items ≤1.0mm	Protection against direct water splashes up to 60° from the vertical	Outdoor
IP54	Protection against the dust incompletely, but the dust does not affect the operation of equipment.	Protection against water splashes in all directions.	Outdoor

CNHK can produce enclosures up to IP54 degree of protection

CNHK®

NOMEX Insulated Dipping Varnish Dry Type Transformer



General

CNHK 'S HKSGB series is a NOMEX insulated Dipping varnish dry type transformer. Its high and low voltage winding coils are made of NOMEX insulation material, and have been repeatedly impregnated with solvent-free Dipping paint through VPI vacuum equipment, followed by multiple high-temperature baking and curing. The high-voltage coil adopts a continuous structure with high mechanical strength and good heat dissipation conditions, avoiding the disadvantages of high interlayer voltage, poor heat dissipation ability, easy thermal breakdown, and low mechanical strength of multi-layer cylindrical coils. Thus improving the reliability of the product after operation. The low-voltage coil adopts a foil type or longitudinal air duct high current spiral structure. The soaked coil has excellent moisture-proof performance, better resistance to impact, no cracking, no partial discharge, and is easy to decompose and recycle after its lifespan, protecting the environment.

Winding

The HKSGB series is a fireproof, self extinguishing, and non-toxic product. All insulation materials do not support combustion and can burn for a long time at a high temperature of 800°C without toxic smoke generation. The HKSGB series is more advantageous in situations with high safety requirements, humid heat, and poor ventilation in power, subway, shipbuilding, chemical, metallurgical, and other fields.

The coil design, process and materials of HKSGB series NOMEX insulation impregnating varnish dry-type transformer make the product have excellent three proofing performance (moisture resistance, mold resistance, salt spray resistance), and can withstand Thermal shock. The NOMEX based insulation system maintains excellent performance, electrical energy and mechanical performance throughout the service life of the transformer. NOMEX is not prone to aging, is resistant to shrinkage and compression, and has strong elasticity. Therefore, it can ensure that the coil of the transformer remains tightly structured and withstand the pressure of short circuits even after several years of use. Adopting VPI equipment, vacuum Dipping technology, and UL approved high-quality Dipping paint, it can operate for a long time at temperatures of 180°C and above. Compared to capacity and epoxy resin poured products, the size and weight are smaller.

Standard features

- Both of HV and LV windings with NOMEX insulated Dipping varnish treatment
- Copper windings, Aluminium optional
- H class 180°C insulation system and 100°C average temperature rise
- Four full capacity taps on HV winding rated ± 2 x 2.5%
- Provisions for lifting core and coil assembly
- Rating plate
- Temperature control device
- Earthing terminals
- Base equipped with bidirectional rollers or designed for skidding

Options and accessories

Accessories

- Three-phase electronic temperature monitor
- Anti vibration pads
- Optional ventilated enclosure with removable front and rear panels (IP20 to IP54)
- Electrostatic screen
- Forced cooling package with three-phase electronic temperature monitor

Factory Routine Test

-Transformation ratio at all taps and polarity

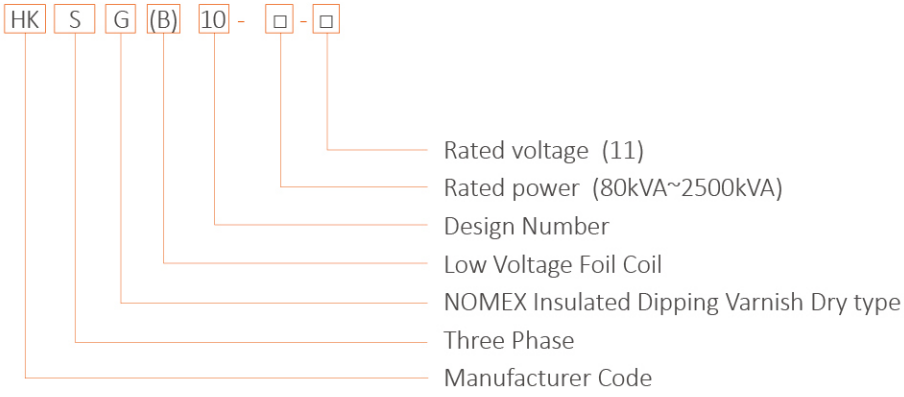
- Applied voltage
- Induced voltage
- Partial discharge test
- Resistance of all windings
- Vector group
- No-load loss and no-load current
- Load losses and impedance voltage test

Type test for optional

Temperature rise test

- Lightning impulse test
- Measurement of noise level
- Insulation resistance

Type Designation



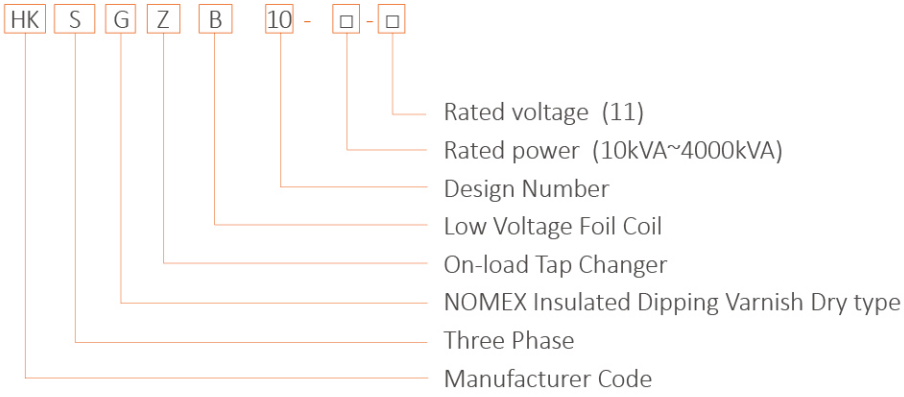
Typical Datas for NOMEX Insulate Dipping Varnish Dry type three phase transformer HKSGB10,up to 11kV, NLTC

Rated Power (kV.A)	H. V (V)	Tap changer	L.V (V)	Vector Group	Losses(W)		Io (%)	Uk(%)	Insu-lating Level	Weight (Kg)	Dimension(mm) of Transformer L×W×H	Dimension(mm) of Enclosure L×W×H
					Po(W)	Pc(W) 75°C						
80	11000 10000 6300 6000	±2×2.5%	400 410 415 420	Dyn11 Yyn0	370	1750	2.2	4	H/H	490	950x500x910	1250x1000x1330
100					400	2170	2.0.			520	950x600x910	1280x1100x1330
125					470	1850	1.3			650	970x600x920	1300x1050x1350
160					540	2130	1.3			740	1000x710x965	1300x1050x1350
200					620	2530	1.1			850	1060x710x1120	1450x1100x1350
250					720	2760	1.1			1005	1110x710x1140	1500x1150x1400
315					880	3470	1.0.			1270	1150x710x1195	1500x1200x1450
400					980	3990	1.0.			1470	1260x870x1285	1600x1250x1600
500					1160	4880	1.0.			1750	1290x870x1355	1600x1300x1650
630					1340	5880	0.85	6		1900	1450x870x1420	1800x1300x1700
800					1520	6960	0.85			2290	1550x870x1570	1900x1300x1800
1000					1770	8130	0.85			2700	1600x1120x1665	2050x1350x1950
1250					2090	9690	0.85			3130	1680x1120x1765	2050x1350x2000
1600					2450	11700	0.85			3740	1750x1120x1860	2100x1400x1519
2000					3050	14400	0.7			4150	1770x1120x1865	2150x1500x2100
2500					3600	17100	0.7			4810	1870x1120x1950	2200x1500x2200

* NLTC: No-load Tap Changer

* Provide ±5% or ±2×2.5% off-load tap changer

Type Designation

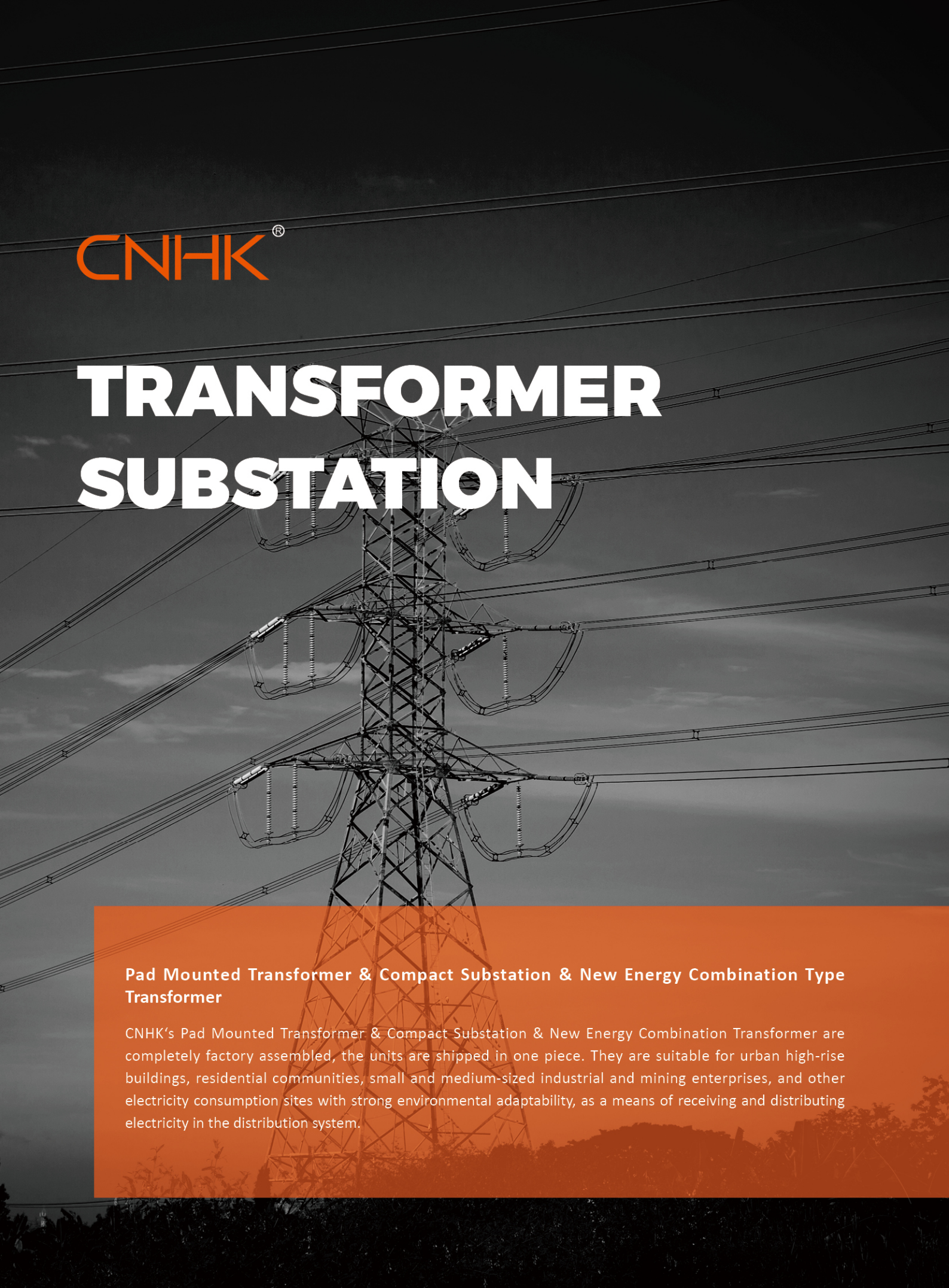


Typical Datas for HKSGZ(B) 6-11KV NOMEX Insulate Dipping Varnish Dry type three phase transformer, up to 11kV, OLTC

Rated Power (kV.A)	H. V (V)	Tap changer	L.V (V)	Vector Group	Losses(W)		Io (%)	Uk(%)	Insulating Level	Weight (Kg)	Dimension(mm) of Enclosure L×W×H
					Po(W)	Pc(W) 75°C					
200	11000 10500 10000 6300 6000	±3×2.5%/ ±4×2.5%	400 410 415 420	Dyn11 Yyn0	690	4270	1.6	4	H/H	1370	1360x1600x2100
250					790	5110	1.6			1520	1400x1600x2100
315					970	6170	1.4			1790	1500x1600x2100
400					1080	7290	1.4			2000	1600x1600x2100
500					1280	8750	1.4			2270	1650x1700x2100
630					1475	10670	1.2	6		2530	1850x1700x2100
800					1670	12610	1.2			2930	1900x1700x2100
1000					1950	14490	1.1			3200	1950x1700x2300
1250					2300	17110	1.1			3770	2050x1800x2300
1600					2700	19920	1.1			4120	2100x1800x2300
2000					3680	23370	1.0			5170	2150x1800x2300
2500					4400	27180	1.0			5860	2400x1800x2300

* OLTC:On-load tap changer

* Provide ±3×2.5%/±4×2.5% on-load tap changer



CNHK®

TRANSFORMER SUBSTATION

Pad Mounted Transformer & Compact Substation & New Energy Combination Type Transformer

CNHK's Pad Mounted Transformer & Compact Substation & New Energy Combination Transformer are completely factory assembled, the units are shipped in one piece. They are suitable for urban high-rise buildings, residential communities, small and medium-sized industrial and mining enterprises, and other electricity consumption sites with strong environmental adaptability, as a means of receiving and distributing electricity in the distribution system.

CNHK®

YB27-40.5/YB27-12 Series Pad Mounted Transformer



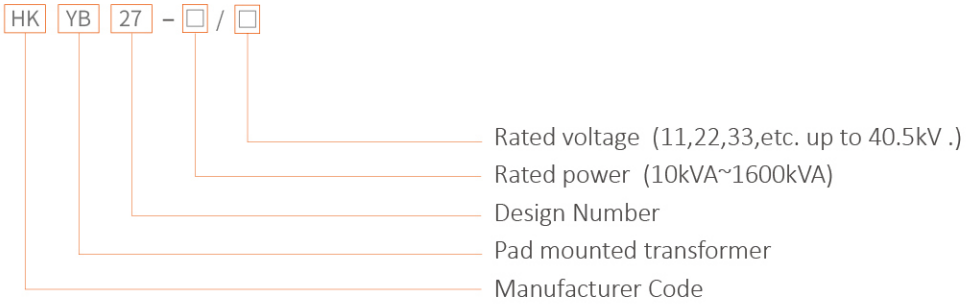
General

CNHK pad mounted transformer is a transformer equipped with fuse and switching equipment(LBS for MV while ACB and MCCB for LV panel), It features a Low cost and free Maintenance construction with no externally accessible bolts, hinges, screws or fasteners, thus providing a safe, self-contained unit which cannot be accessed by unauthorized personnel. Unsightly fences or other forms of protective devices are not necessary.

CNHK's pad mounted transformer have been proven design offers reliability, durability and reduced dimensions.

Available for up to 40.5kV,1600kVA.

Type Designation



Standard features

1. Low cost and free Maintenance
2. Copper winding, Aluminum winding for optional
3. 65°C average temperature rise
4. Liquid preservation system with sealed tank
5. Lifting lugs for moving integrate units
6. Weather-resistant cabinet bolted to the front of the transformer .
7. Independent HV/LV compartment
8. Three-point terminal compartment latching
9. HV compartment located on left side of unit:
   a) Live front-cast resin bushings, or dead front
   b) Tap changer for adjust HV voltage
   c) Fuse protection
   d) Pressure relief valve
   e) Insulation Oil level gauge
   f) Insulation Oil thermometer
   g) Load switch
   h) Grounding point
   i) Oil drain valve
10. LV compartment located on right side of unit
    a) Low voltage switchgear
    b) Support power compensation
11. Different paint finishes available
12. Base designed for rolling the unit in accordance with ANSI-IEC-DIN segment centre lines

Options and accessories

- 60°C or 55°C average winding temperature rise
- Dead front primary entrance
- Basic impulse level adjustable on request
- Dial-type thermometer
- Liquid level valve
- Pressure vacuum gauge
- Radiator valves
- Sudden Pressure surge relay
- CTs and PTs
- Special ambient conditions
- Special altitudes
- Non-standard HV taps
- Special impedance
- Special noise levels
- Electrostatic shields
- Special paint finishes

Typical Datas for Pad Mounted Trans former HKYB27- 12

Rated Power (kV. A)	H. V (V)	Tap changer	L.V (V)	Vector Group	No-load current (%)	Losses(W)		Impendance voltage(%)	Temperature Rise
					HKS11	No-load loss	load loss (120°C)		
					HKS11	HKS11	HKS11 (Dyn11)		
30	11000 10000 6300 6000	±2×2.5%	400 690	Dyn11 Yyn0	2.0.	100	630	4	Top Oil:60k, Winding Oil:65k
50					1.8	130	910		
63					1.5	150	1090		
80					1.2	180	1310		
100					1.1	200	1580		
125					1.0.	240	1890		
160					0.8	280	2310		
200					0.7	340	2730		
250					0.7	400	3200		
315					0.6	480	3830		
400					0.6	570	4520		
500					0.6	680	5410		
630					0.5	810	6200	4.5	
800					0.5	980	7500		
1000					0.5	1150	10300		
1250					0.85	1360	12000		
1600					0.85	1640	14500		

*Provide +5% or +2x2.5% off-load tap changer

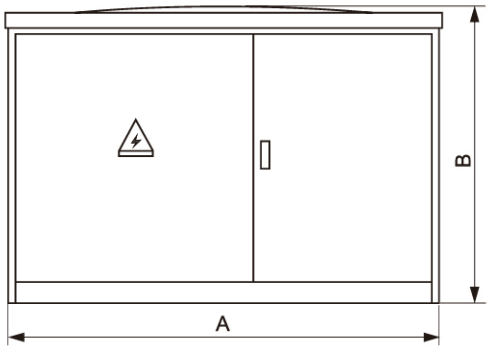
*The low voltage of the trans former can be designed to be 690V according to customer requirements

Typical Datas for Pad Mounted Transformer HKYB27- 40.5

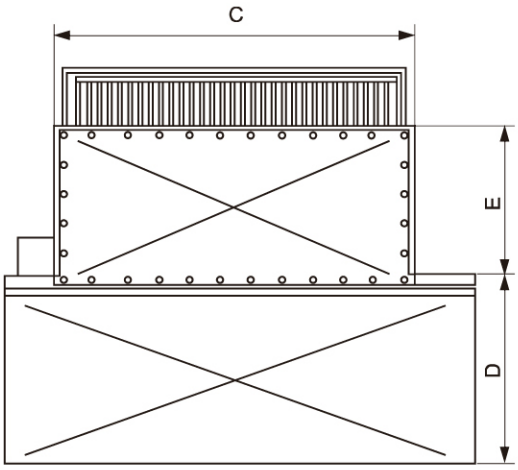
Rated Power (kV. A)	H. V (V)	Tap changer	L.V (V)	Vector Group	No-load current (%)	Losses(W)		Impendance voltage(%)	Temperature Rise
					HKS11	No-load loss	load loss (75°C)		
					HKS11	HKS11	HKS11 (Dyn11)		
50	38500 35000 34500 33000	±2×2.5%	400 690	Dyn11 Yyn0	1.3	160	1200	6.5	Top Oil:60k, Winding Oil:65k
100					1.1	230	2010		
125					1.1	270	2370		
160					1	280	2820		
200					1.0.	340	3320		
250					0.95	400	3950		
315					0.95	480	4750		
400					0.85	580	5740		
500					0.65	680	6910		
630					0.65.	830	7860		
800					0.65.	980	9400		
1000					0.60.	1150	11500		
1250					0.60.	1400	13900		
1600					0.55	1690	16600		
2000					0.85	1990	19700		

*Provide ±5% or ±2×2.5% off-load tap changer

*The low voltage of the transformer can be designed to be 690V according to customer requirements

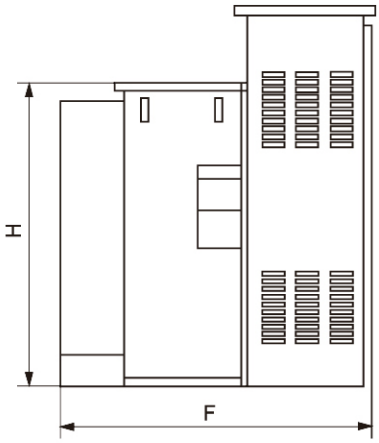


Front View



Vertical View





Side View

Outline Dimension (Unit:mm)

	Rated Power kVA	A	B	C	D	E	F	H
HKYB27-12	315	2400	1650	1250	800	600	1560	1450
	100-250	2400	1650	1350	800	650	1610	1450
	400-500	2400	1750	1450	800	650	1640	1550
	630	2400	1750	1550	800	700	1730	1550
	800	2400	1850	1550	800	700	1790	1650
	1000	2400	1850	1650	800	700	1790	1650

CNHK®

HKYBW-40.5 Series/ HKYBW-12/24 Series Compact Substation



Description

CNHK's compact substation HKYBW-40.5 Series/ HKYBW-12 Series is a prefabricated substation contains MV switchgear, Power distribution transformer and LV power distribution panel inside as an integrated unit.

It has the characteristics of diverse external decoration, high compatibility with the surrounding environment, strong completeness, small size, compact structure, safe and reliable operation, convenient maintenance, and mobility. Compared with conventional civil engineering substations, compact substations with the same capacity usually only occupy 1/10-1/5 of the area of conventional substations, greatly reducing design workload and construction volume, and reducing construction costs. In the distribution system, it can be used for ring network distribution systems, as well as dual power or radial end distribution systems. It is a new complete set of equipment currently used for the construction and selection of urban and rural substations

Available for up to 40.5kV, 2500kVA.

Type Designation

HK YBW – □ / □

- Rated voltage (11,22,33,etc. up to 40.5kV .)
- Rated power (100kVA-2500kVA)
- Outdoor Compact Substation
- Manufacturer Code









Standard features

1.Three independent compartments, MV&LV switchgear compartments,transformer compartment

2. Anti-misoperation interlocking function

3.Lifting lugs for moving integrate units

4. Weather-resistant out-housing.

5. Reduced dimensions

6. Natural ventilation and forced ventilation for optional
7. Temperature control device inside can automatically turn on and off according to the set temperature
8. Anti-corrosion treatment
9. MV compartment :
   a) MV switchgear inside
   b) Vacuum circuit breaker
   c) Relay to protect the system from transformer faults, transformer through faults and transformer overload
   d) Current Transformer
10. Transformer compartment
   a)Copper winding, Aluminum winding for optional
   b)Various losses of core and coil solutions for optional
   c)withstanding external short circuits for at least 0.5 seconds
   d)Minimize the risk of accidental short circuit caused by animals, birds or vermin
11. LV compartment :
   a)Provision for low voltage panel
   b) Provision for ACB and MCCB
   c) Current transformers for operation of instruments.
   d) Provision for function of power distribution,

Options and accessories

- Special ambient conditions
- Lower average winding temperature rise
- Lower losses of core and coil
- Either Oil Immersed Transformer or dry type transformer for optional
- Basic impulse level adjustable on request
- MV compartment: Ring main unit(RMU)for optional
- MV compartment: LBS protection for optional
- MV compartment :CTs and PTs
- Transformer compartment: Non-standard HV taps
- Transformer compartment:Special impedance
- Transformer compartment: Special noise levels
- LV compartment: reactive power compensation, energy metering, and energy measurement for optional
- LV compartment: various types of LV panel for optional
- Electrostatic shields
- Special paint finishes

Technical Data

Typical Data for Compact Substation YBW-100kVA to 2500kVA, Up to 12kV

Description	Unit	HV	Transformer	LV
Manufacture and Test Standard		IEC 62271-1/ IEC62271-200/ IEC62271202/ IEC60076/ IEC61439/IEC/TR62271-208/IEC60529/IEC62262/IEC60721		
Max. Rated Voltage	kV	12	12/0.4	0.4.
Max. Rated Current	A	630		100 to 3150
Rated Frequency	Hz	50 /60(optional)		
Rated Power	kVA	100 to 2500		
Power Frequency withstand voltage (1 min)	kV	42	42	3
Lighling Impulse Withstand Voltage	kV	95	95	/
Short-time withstand current	kA	25		30-80
Peak withstand current	kA	62.5		63-176
Rated Breaking Loading Current	A	630		
Protection Degree		IP65	IP54	IP23
Noise Level	dB		Oil type≤55,Dry type≤65	
Number of Circuits		1 to 6	/	4 to 30
Max. Reactive Power Compensation(LV side)	kVAR	/	/	30% of Rated power

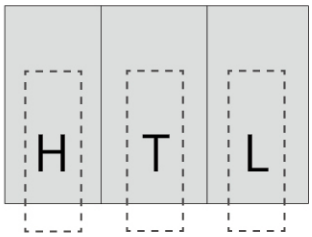
Typical Data for Compact Substation YBW-100kVA to 2500kVA, Up to 24kV

Description	Unit	HV	Transformer	LV
Max. Rated Voltage	kV	24	24/0.4	0.4.
Max. Rated Current	A	630		100 to 3150
Rated Frequency	Hz	50 /60(optional)		
Rated Power	kVA	100 to 2500		
Power Frequency withstand voltage (1 min)	kV	50	50	3
Lighling Impulse Withstand Voltage	kV	125	125	/
short-time withstand current	kA	25		30-80
Peak withstand current	kA	62.5		63-176
Rated Breaking Loading Current	A	630		
Protection Degree		IP65	IP54	IP23
Noise Level	dB		Oil type≤55,Dry type≤65	
Number of Circuits		1 to 6	/	4 to 30
Max. Reactive Power Compensation(LV side)	kVAR	/	/	30% of Rated power

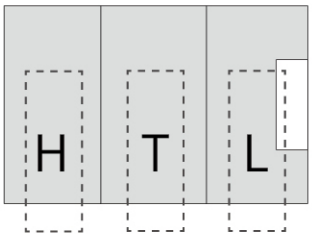
Typical Data for Compact Substation YBW-100kVA to 2500kVA, Up to 40.5V

Description	Unit	HV	Transformer	LV
Max. Rated Voltage	kV	40.5.	40.5/0.4	0.4.
Max. Rated Current	A	630		Up to 3150
Rated Frequency	Hz	50 /60(optional)		
Rated Power	kVA	100 to 2500		
Power Frequency withstand voltage (1 min)	kV	95	95	3/2.5
Lighling Impulse Withstand Voltage	kV	250	250	/
short-time withstand current	kA	25		30-80
Peak withstand current	kA	62.5		63-176
Rated Breaking Loading Current	A	630		
Protection Degree		IP65	IP54	IP23
Noise Level	dB		Oil type≤55,Dry type≤65	
Number of Circuits		1 to 6	/	4 to 30
Max. Reactive Power Compensation(LV side)	kVAR	/	/	30% of Rated power

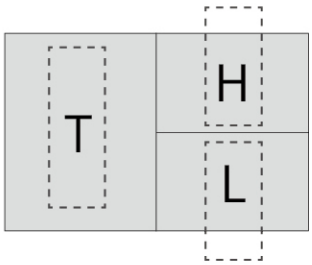
Layout Form And Overall Dimensions



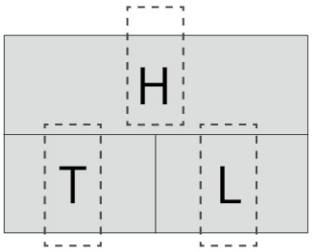
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1-2



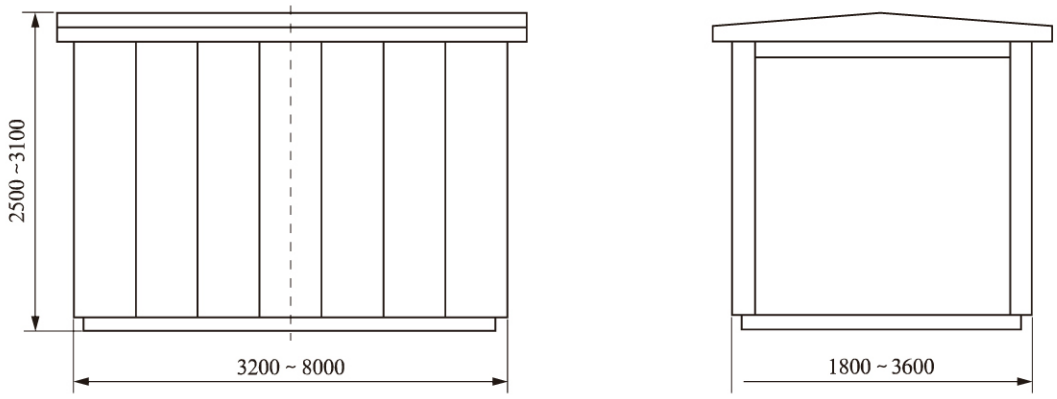
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1-4

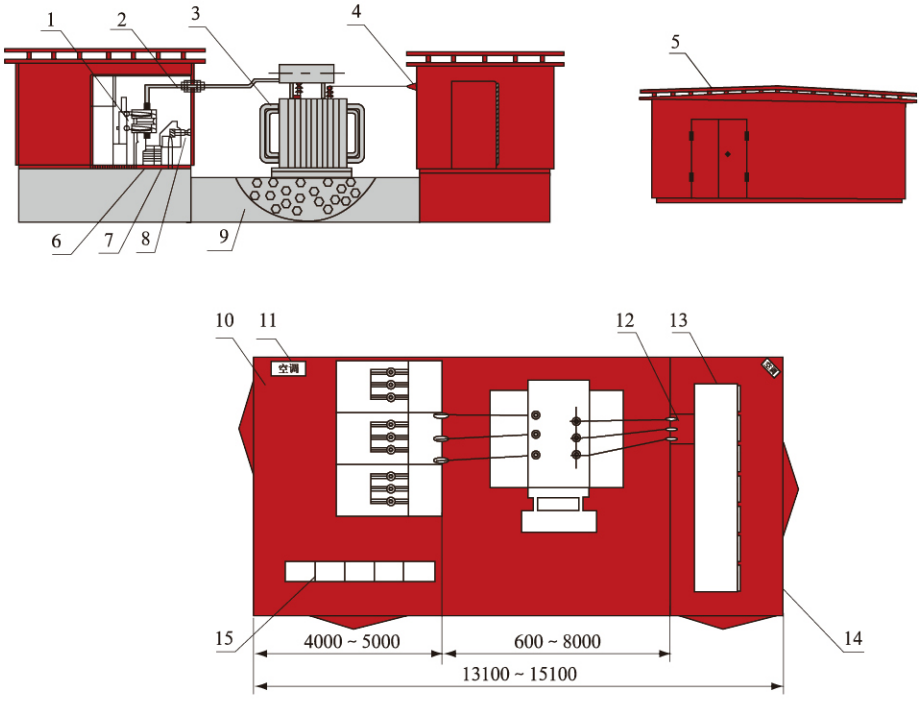
Layout Form

Layout Form



Overall Dimensions

Overall Dimensions



Construction :

1. Circuit breaker
2. 40.5kV wall bushing
3. Transformer
4. 1KV wall bushing
5. Sunshade
6. 40.5kV current transformer
7. 40.5kV cable head
8. 40.5kV support insulator
9. Compact substation foundation
10. 40.5kV MV compartment
11. Air conditioning
12. 13. LV switchgear
14. 1 kV LV Compartment
15. Relay protection screen

CNHK®

The Integrated Step-up Transformer with Wind Solar Energy Storage System



Description

Huanghua Group's integrated step-up transformer with wind solar energy storage system has deeply integrated and redesigned traditional energy storage converters (PCS) with step-up transformers, making it an advanced comprehensive set of equipment in the field of energy storage. Support customization of different specifications to achieve stable conversion and boosting of electrical energy, with frequency regulation and fast scheduling functions, playing a key role in power systems and new energy projects,

Through an intelligent control system, the integrated step-up transformer with wind solar energy storage system can achieve efficient energy management and optimized configuration.

Standard features

The energy storage system BESS designed by this project adopts a lithium iron energy battery, the battery is an energy storage element of the energy storage system, and its performance directly affects the stability of the system.The lithium iron phosphate battery (LFP) used in this energy storage system has the characteristics of high specific energy, longer cycle life, larger charge and discharge magnification, safety and pollution-free and others, It has been widely used in wind power generation, photovoltaic power field, peak cut, frequency modulation, peak modulation, emergency backup power supply and other applications.

The Main Technical Parameter of Step-up Transformer

Nr.	Item	Unit	Parameter		
1	Rated Power of Transformer	kVA	100-4000		
2	Rated Frequency	Hz	50		
3	System Voltage	kV	11	20	33
4	Highest working Voltage	kV	12	24	40.5
5	Switch Rated Current	A	400 630 1250		
6	Switch transfer current	A	1000-3150		
7	Rated Short time Withstand Current	kA	12.5, 16, 20 (2S or 4S)		
8	Rated Withstand Current(Peak)	kA	31.5, 40, 50		
9	Power Frequency Withstand Voltage	kV	42	50	95
10	Lighting Impulse Withstand Voltage	kV	95	125	185
11	Rated Short Circuit Breaking Current(limit-current fuse)	kA	31.5		

Features of BESS

1. Wide direct current voltage range, suitable for a variety of battery types
2. Touch screen operation, user-friendly design
3. Support and off-grid without seam cutting function, active and non-functional adjustment function
4. Support multi-machine parallel connection and good scalability
5. Smart cooling, ambient temperature 5 0 °C without derating
6. The fast power response (<3 0 m s) is connected to the grid adjustment
7. It has the functions of V F, P Q, V S G, black start, etc
8. Charge-discharge switching time< 2 0 ms
9. Complete converter and battery protection
10. Supports RS 485 / Ethernet / CAN

Protection Parameter of PCS

No.	Item	Parameter
1	Low voltage ride through	Yes
2	High voltage ride through	Yes
3	Anti-island protection	Yes
4	AC over-current/short-circuit protection	Yes
5	AC over-voltage/under-voltage protection	Yes
6	AC over/under-frequency	Yes
7	AC incoming phase sequence error protection	Yes
8	Grid voltage imbalance protection	Yes
9	DC over-current/short-circuit protection	Yes
10	DC over-voltage/under-voltage protection	Yes
11	DC reverse polarity protection	Yes
12	Over-temperature protection	Yes
13	Power module (IGBT) protection	Yes
14	Cooling system fail-safe	Yes
15	Protection against excessive DC component of current	Yes
16	Fault recording	Not less than 5 weekly waves, 128 points per week