KKM POWER d.o.o.

INSTRUCTIONS FOR INSTALLATION AND MAINTENANCE

DISTRIBUTION TRANSFORMER WITH PETERSEN COIL: CNT 50-10,5-50

50kVA, 10.5±2.5%/0.41kV/kV, Znyn11, 50Hz, 50A, 42.5A, 35A, 27.5A, 20A, >24h

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1. CNT 50-10,5-50 overview

CNT 50-10,5-50 (later Product) is a three-phase hermetically sealed oil-immersed distribution transformer with Petersen's coil within the same tank. Product is designed and produced according to IEC 60076-6 (Clauses 10 and 11) and fulfills standards and directives in table 1. Product with its accessories and components is shown on drawing. Technical data of product are given in the test report which is delivered with each Product unit. Electric diagram of product is given in Diagram Plate drawing.

Standards and directives	**Name**
EN 50708	Power transformers. Additional European requirements
IEC 60076	Power transformers
EN 50216, All parts	Power transformer and reactor fittings
IEC/TR 60616	Terminal and tapping markings for power transformers
EN 60296	Fluids for electro technical applications

Table 1.

2. Terminals and accessories

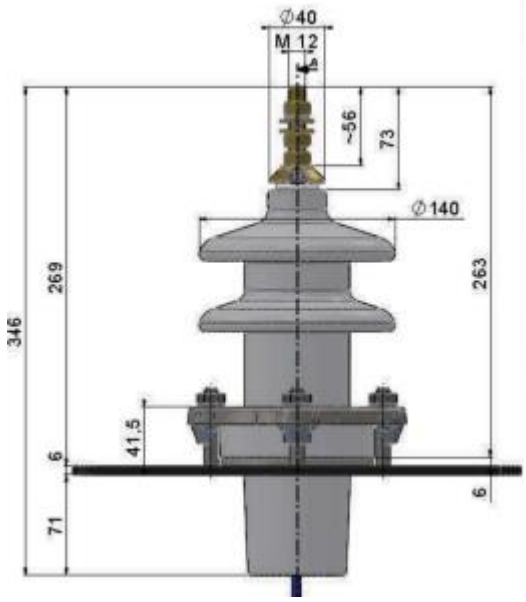
a. HV phase and neutral terminals (1U, 1V, 1W and 1N)

Porcelain bushings: EN 50180 12kV, 250A. Bolt M12, tightening torque for terminal [Nm]: 20

b. HV Petersen coil terminals (D1 and D2)

Porcelain bushing: EN 50180 12kV, 250A. D1 terminal is directly connected to HV neutral terminal 1N.

IMPORTANT: D2 terminal must be grounded properly prior to switching on the product.



c. LV phase and neutral connections

Porcelain Bushing: EN 50386 1kV, 250A. Bolt M12, tightening torque for terminal [Nm]: 20



d. Tap changer handle on reactor side

Five positions for five taps, each position for different earth-fault current accordingto rated plate and diagram plate.

Important: Adjustments to tapping point must be undertaken with the transformer off-load and de-energized. Ensure that tap changer setting is carried out properly.



e. Transformer's tap changer handle

Five positions for five taps, each position for different earth-fault current accordingto rated plate and diagram plate.

Important: Adjustments to tapping point must be undertaken with the transformer off-load and de-energized. Ensure that tap changer setting is carried out properly.



f. Filling tube with cap and gasket

Filling tube is sealed to avoid unauthorized pouring in of oil. Tightening torque for cap [Nm]: 35



g. Oil drain valve

Oil drain valve is sealed to avoid unauthorized pouring out of oil.



h. Oil level indicator

Red indicator shows level of oil in filling tube.
Important: Caution if oil level is below minimum, and product is on-load.



i. Earthing on tank



j. Pressure relief device with contact for switching-off
Switching off at: 0.4bar(40kPa)



3. Installation conditions

Product is designed for indoor and outdoor operation. Maximum height of installation must not exceed 1000m. Ambient temperature profile in place of transformer service is: Yearly average temperature 20°C, Monthly average temperature 30°C, maximum temperature 40°C, minimum “cold start” temperature -30°C, and minimum operating temperature -40°C. Product must be installed keeping insulation distances according to applicable standards. Terminals with porcelain must be protected against direct contact.

4. Delivery

Product is delivered entirely finished, ready to be connected to the medium voltage. Product is filled with oil and tested in accordance with standard IEC 60076-6 (Clause 10 and 11). Product have been packed on euro pallets and transported by truck. Total mass of Product for transport is 2000 kg.

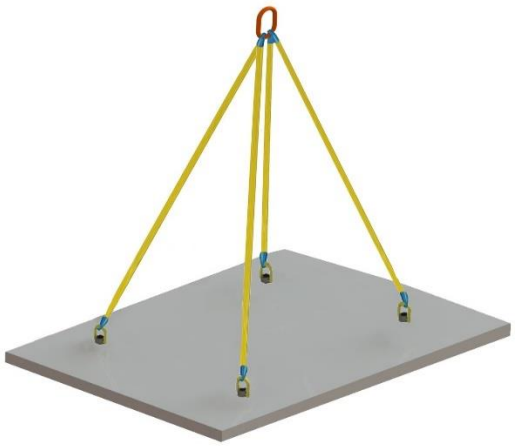
5. Reception

- Check whether the data on the rating plate comply with the transport data and with test report data, which is attached on Product.
- Visual examine the Product. If it is damaged in transport (broken insulators, damaged tank, etc.), inform the carrier about it. Check that all accessories ordered have been delivered.

IMPORTANT: In case any anomalies are found, contact your supplier.

6. Lifting by means of slings or a lifting beams

Lifting lugs on Product's top cover are clearly visible.



Ropes and lifting lugs on the cover

Angle between slings should be less or equal to 60°.

IMPORTANT: If there is a need to move transformer, do not push it by corrugated panels, by the insulators or other accessories. Use all 4 lugs for lifting with two ropes. Minimal length of the ropes is 2,5 m.

7. Instructions for storage at site

After had been delivered at site, in case that Product will not be put on the place of installation, it might be stored within the closed room. Product corrosive protection is such that product might be stored outdoor, as well.

8. Preparation and putting into operation

- Ensure correct ventilation.
- Check general condition and cleanliness of transformer. If Product is stored for a long time, clean bushings from eventual dust by means of dry compressed air jets and dry cloth.
- If there is oil leaking through the gaskets, contact supplier for procedure explanation before any action.
- Test insulation resistance and oil quality if the Product was stored for a long time. For a new Product insulation resistance is regularly higher than 2000 MΩ measured by megaohmmeter. Minimum measured values with 5000V tester are given in table:

Measuring Points	Unit	Minimum values for mineral oil
HV-earth	MΩ	250
LV-earth	MΩ	50
HV-LV	MΩ	250

- If the measured values are significantly less than the usual values, please call your Contractor.
- Verify that the position on the both tap changers are inserted correctly.
- Check of the insulating distance of the parts under voltage towards ground.
- Check the earthing continuity. Product earthing system must be grounded.
- Ensure there is no foreign body on the unit (metal filings, nuts and bolts, etc.).
- Ensure that HV neutral terminal 1N and Petersen coil terminal D1 must be connected to each other.
- Ensure that Petersen coil terminal D2 is grounded properly.
- Manufacturer is not responsible for the Product installment.

IMPORTANT: Product must be installed and switched on network only by qualified and authorized technicians. Otherwise, guarantee is not valid.

9. Supervision and maintenance

- Periodical (1 year) checking of oil level. As long as the dielectric fluid has not been exposed to the air for a particular reason (tank opening, repairs, fitting of accessories, topping up of oil, etc.), one dielectric withstand test, on a sample taken from the bottom of the tank (minimum breakdown voltage 30 kV), every 10 years is sufficient.

- Under conditions of extreme pollution (depositing of dust, salt, chemicals, etc.), cleaning of porcelain bushings is required.
- The overhaul is performed in specialized workshops, by drying insulation, replacing oil and tightening of windings.

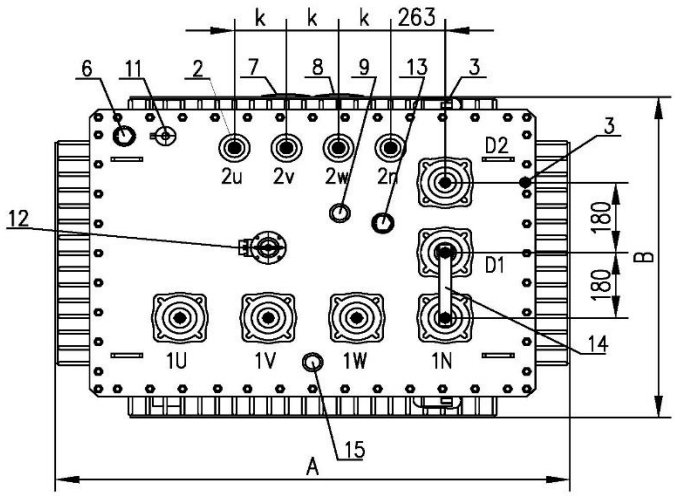
10. Guarantee period

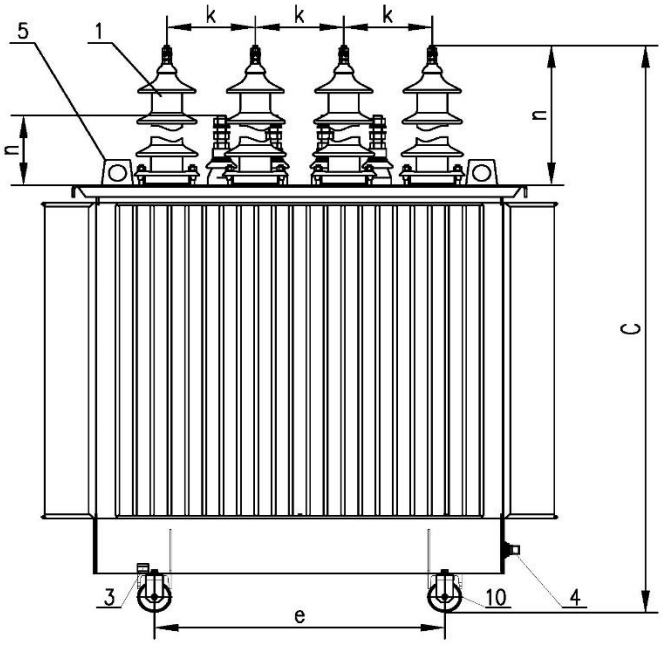
Guarantee period is 2 years after commissioning but limited to 3 years from delivery.

11. Layout drawing

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Three–phase oil–immersed hermetically sealed
earthing transformer with auxiliary winding
50kVA, 10,5±2x2.5%/0.41kV, ZNyn11+I, 50A

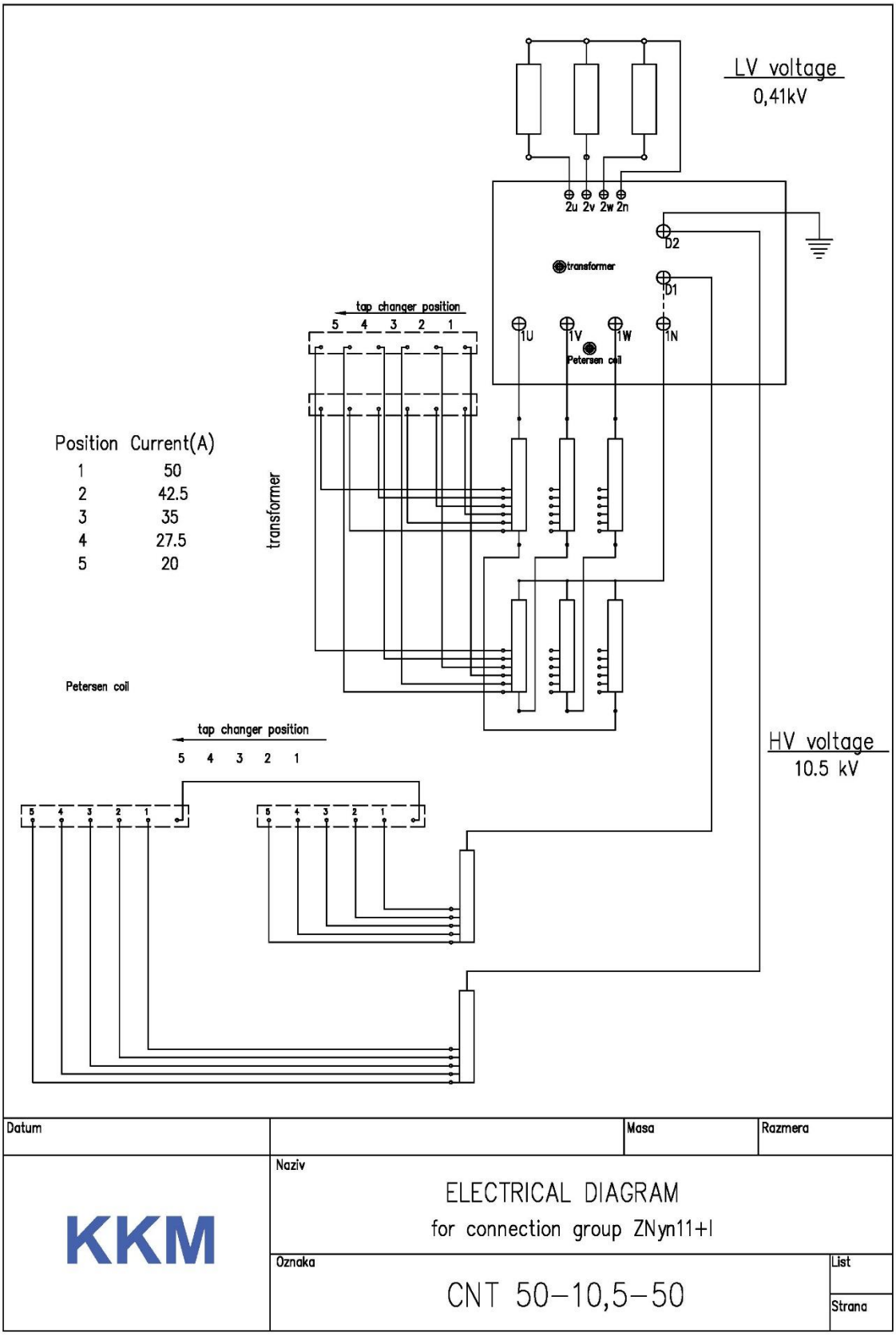




1. H.V. Bushings EN 50180 12kV, 250A
2. L.V. Bushings EN 50386 1kV, 250A
3. Earthing terminal
4. Oil drain valve
5. Lifting lugs
6. Filling hole
7. Diagram plate
8. Rated plate
9. Transformer tap changer
10. Bi–directional wheels
11. Contact thermometer
12. Pressure relief device with changeover contacts
13. Oil level inicator
14. Removable bushbar
15. Reactor tap changer

kVA	A	B	C	e	k		n		Mass(kg)		CNT 50–10,5–50
					H.V.	L.V.	H.V.	L.V.	Oil	Total	
50	1250	1170	1460	520	275	100	275	136	600	1980	

12. Electric diagram



13. Rated plate

