

SEPARATELY MOUNTED GAS-FILLED VOLTAGE TRANSFORMERS

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Series ZNOG voltage transformers (grounded, single-phase, gas-insulated) and type ZNTG-110 voltage transformer in common casing (grounded, three-phase group, gas-insulated) are designed for application in SF6 insulated switchgears (GIS) of voltage classes 110, 220, 330 and 500 kV for power supply of electrical measuring devices, circuits of protection and alarm and also for use as test transformers with power supply from secondary windings side, for carrying out the tests of GIS and its components on mounting site.

Distinctive features of the transformers are their fire and explosion safety. They almost do not have negative influence on the environment and are steady to multiple effects of the mechanic and climatic factors during transportation.

OPERATING CONDITIONS:

Operational values of ambient temperature for transformers of climatic design: YXJI4 - upper plus 35°C, lower - minus 25°C; O4 - upper plus 45°C, lower - minus 1°C.

DESIGN

Voltage transformers consist of active parts, enclosed in tight casings, high-voltage and low-voltage terminals. Type ZNTG-110 voltage transformer is made of three active parts, not electrically coupled, placed in a common casing.

Each active part consists of windings (main and auxiliary), magnetic core and a number of shields.

Primary windings are multilayer cylindrical, made of thin round conductor, interlayer insulation of windings is made of film. By means of special screens and corresponding location of winding turns by layers along the winding sufficient uniformity of lightning impulse voltages distribution is achieved, and also low non-homogeneous field outside the winding is created.

Transformer magnetic cores are of a shell-core type, assembled from separate laminations of electrical steel. Transformer casings - are steel, cylindrical, having elliptical bottoms with welded jointing of parts.

High voltage is supplied via "SF6-SF6" bushing, to which a primary winding is connected.

Low voltage is tapped off from the terminals, to which secondary windings are connected.

Filling of the transformers with SF6 is carried out via bellows valve.

Voltage transformers are gas-tight in service, and connected to gas-insulated switchgear by means of flanges.

Main parameters and characteristics of the transformers are given in Table.



UKRAINIAN TRANSFORMER INSTITUTE

11, Dniprovske shose, Zaporizhzhya, Ukraine

Phone: 38/061/284-52-01, 284-52-51

Fax: 38/061/284-54-55, 284-54-00

E-mail: postmaster@vit.zp.ua, ogki@vit.zp.ua <http://www.vit.zp.ua>

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TECHNICAL CHARACTERISTICS

Name of parameter, characteristic	The value of parameter, characteristic				
	ZNOG-110	ZNOG -220	ZNOG -330	ZNOG -500	ZNTG-110
Primary rated voltage, V	110/ $\sqrt{3}$	220/ $\sqrt{3}$	330/ $\sqrt{3}$	500/ $\sqrt{3}$	110/ $\sqrt{3}$
Secondary rated voltage, V, of main winding auxiliary winding	100/ $\sqrt{3}$ 100	100/ $\sqrt{3}$ 100	100/ $\sqrt{3}$ 100	100/ $\sqrt{3}$ 100	100/ $\sqrt{3}$ 100
Rated frequency, Hz	50 (60)	50 (60)	50 (60)	50 (60)	50 (60)
Number of phases	1	1	1	1	3
Rated power (at $\cos \varphi=0.8$, inductive), V·A in accuracy class					
0.2	150	150	150	150	150*
0.5	400	400	400	400	300*
1.0	600	600	600	600	600*
Transformer limiting power, V·A	3200	3200	3200	3200	2500×3
Output voltage in test mode at $f = 50$ Hz during 1 min, rms value, kV	100	200	370	600	140
Maximum power in test mode during 1 min, rms value, kVA	15,5	14	38	55	30×3
Capacitance value in test mode, pF	4900	1100	900	500	4900×3
SF ₆ operating pressure at temperature of plus 20°C(excessive), min/max, MPa	0,4/0,45	0,4/0,45	0,4/0,45	0,4/0,45	0,4/0,45
Overall dimensions, mm (D×H)	Ø580×910	Ø730×1155	Ø830×1275	Ø930×1485	Ø980×990
Mass, kg	250	390	550	750	780

* for each phase of transformer

Parameters and characteristics indicated in the Table can be altered by agreement between the Manufacturer and the Customer.



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