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检测
TESTING
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实验室名称: 苏州电器科学研究院股份有限公司
国家电器产品质量检验检测中心

Lab Name: Suzhou Electrical Apparatus Science Research Institute Co., Ltd.
China National Center for Quality Inspection and Test of Electrical
Apparatus Products

No 22N0593-S

检验（试验）报告 Test Report

委托单位: JIANGSU XIN TEBIAN S&T CO., LTD.

Client:

产品名称: Dry-type transformer

Name of Product:

产品型号: SG18-250/0.5

Product Type:

检验类别: Commission test

Test Category:

本实验室对出具的检验（试验）结果负责，未经实验室书面同意，
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Suzhou Electrical Apparatus Science Research Institute Co., Ltd.

Test Report

№: 22N0593-S

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Client	JIANGSU XIN TEBIAN S&T CO., LTD.	Test category	Commission test
Manufacturer	JIANGSU XIN TEBIAN S&T CO., LTD.	Date of sample receiving	May 09, 2022
Name of sample	Dry-type transformer	Type of sample	SG18-250/0.5
Address of manufacturer	No. 833. Tangshi West Street, Yangshe Town, Zhangjiagang City. Jiangsu. PRC	Original number or date of production	2201016.1-1
Date of test	From May 28, 2022 to May 28, 2022	Number of sample	1 set
Test item	Routine test	Test standards	GB/T 1094.1—2013 GB/T 1094.11—2007 GB/T 10228—2015 IEC 60076-1: 2013 IEC 60076-11: 2018 Commission requirements
Test conclusion	The test results of routine test of dry-type transformer (type: SG18-250/0.5) are in accordance with test standards and commission requirements. The sample has passed the above tests. Signing and issuing date: 2022.06.07 Period of validity: 5 years Note: the conclusion is valid only for the inspected and tested sample.		
Remarks	/		

Compiled by:

陈卫平

Proofread by:

王占东

Checked by:

陈卫平

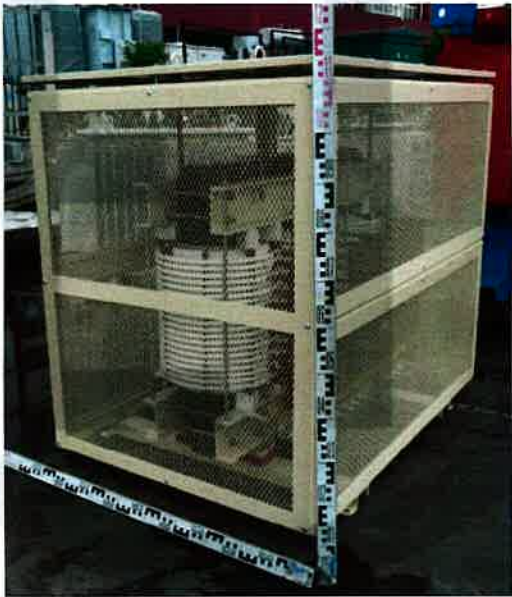
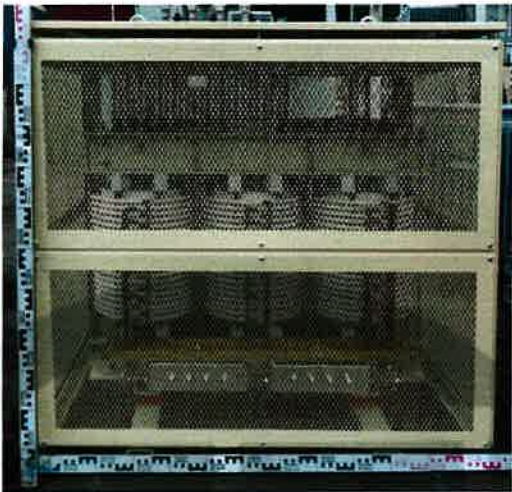
Approved by:

陈卫平

Test Report	Suzhou Electrical Apparatus Science Research Institute Co., Ltd.	№: 22N0593-S Total 11 Page 02						
1. Sample parameters Rated power: 250kVA Rated voltage: 0.4/0.052/0.060/0.075/0.090kV Rated current: 325/2498/2165/1732/1443A Rated frequency: 60Hz Number of phases: three-phase Tapping ranges: / Connection symbol: D-d/y Cooling method: AN Thermal class of insulation: H <table border="0"><tr><td>Insulation level: HV</td><td>U_m/AC</td><td>$\leq 1.1/3kV$</td></tr><tr><td>LV</td><td>U_m/AC</td><td>$\leq 1.1/3kV$</td></tr></table> 2. Test standards GB/T 1094.1—2013 <i>Power transformers—Part 1: General</i> GB/T 1094.11—2007 <i>Power transformers—Part 11: Dry-type transformers</i> IEC 60076-1: 2011 <i>Power transformers—Part 1: General</i> IEC 60076-11: 2018 <i>Power transformers—Part 11: Dry-type transformers</i> Commission requirements 3. Sample description The dry-type transformer meets the requirements of GB/T 1094.11—2007 and it is for indoor use, external photos of the sample have been attached.			Insulation level: HV	U_m/AC	$\leq 1.1/3kV$	LV	U_m/AC	$\leq 1.1/3kV$
Insulation level: HV	U_m/AC	$\leq 1.1/3kV$						
LV	U_m/AC	$\leq 1.1/3kV$						

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Photos of the sample

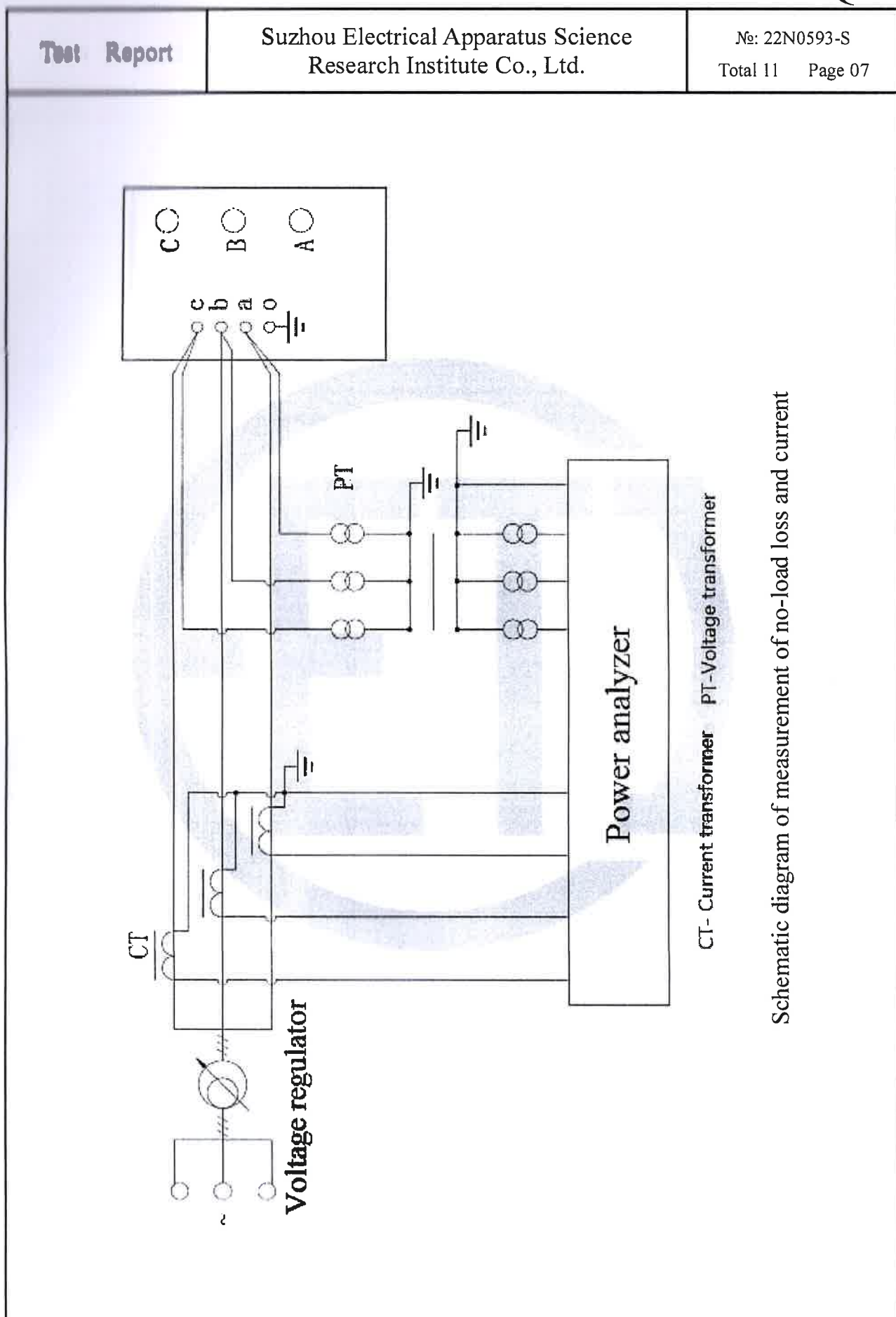


 特变科技 TEBIAN SAT		干式变压器 DRY-TYPE TRANSFORMER				
型 号 MODEL: SG10-250/0.5		负载功率 LOAD POWER: 187.5 kW				
额定容量 TYPE CAPACITY: 250 kVA		联结组别 CONNEX.SYMBOL: D-d/y				
额 率 FREQUENCY: 60 Hz		级 数 PHASE: 3				
耐热等级 TEMP. CLASS: H		冷却方式 COOLING TYPE: AN				
线 位 TAP	初级联结 HV CONNEX	初级电压 HV(V)	初级电流 HV(A)	次级联结 LV CONNEX	次级电压 LV(V)	次级电流 LV(A)
1	D	400	325	d	52	2498
2				d	60	2155
3				d	75	1732
4				y	90	1443
标准代号 STANDARD CODE: IEC 60076/EN 60075, IEC 726, IEC 905						
出厂编号 MANUFACTURE NO: 22011515			防护等级 PROTECTIVE CLASS: IP20			
出厂日期 MANUFACTURE DATE: 2022.05			重 量 WEIGHT: 1150 kg			
中华人民共和国·江苏新特变科技股份有限公司 P.R.OF CHINA·JIANG SU XIN TEBIAN SAT CO., LTD.						

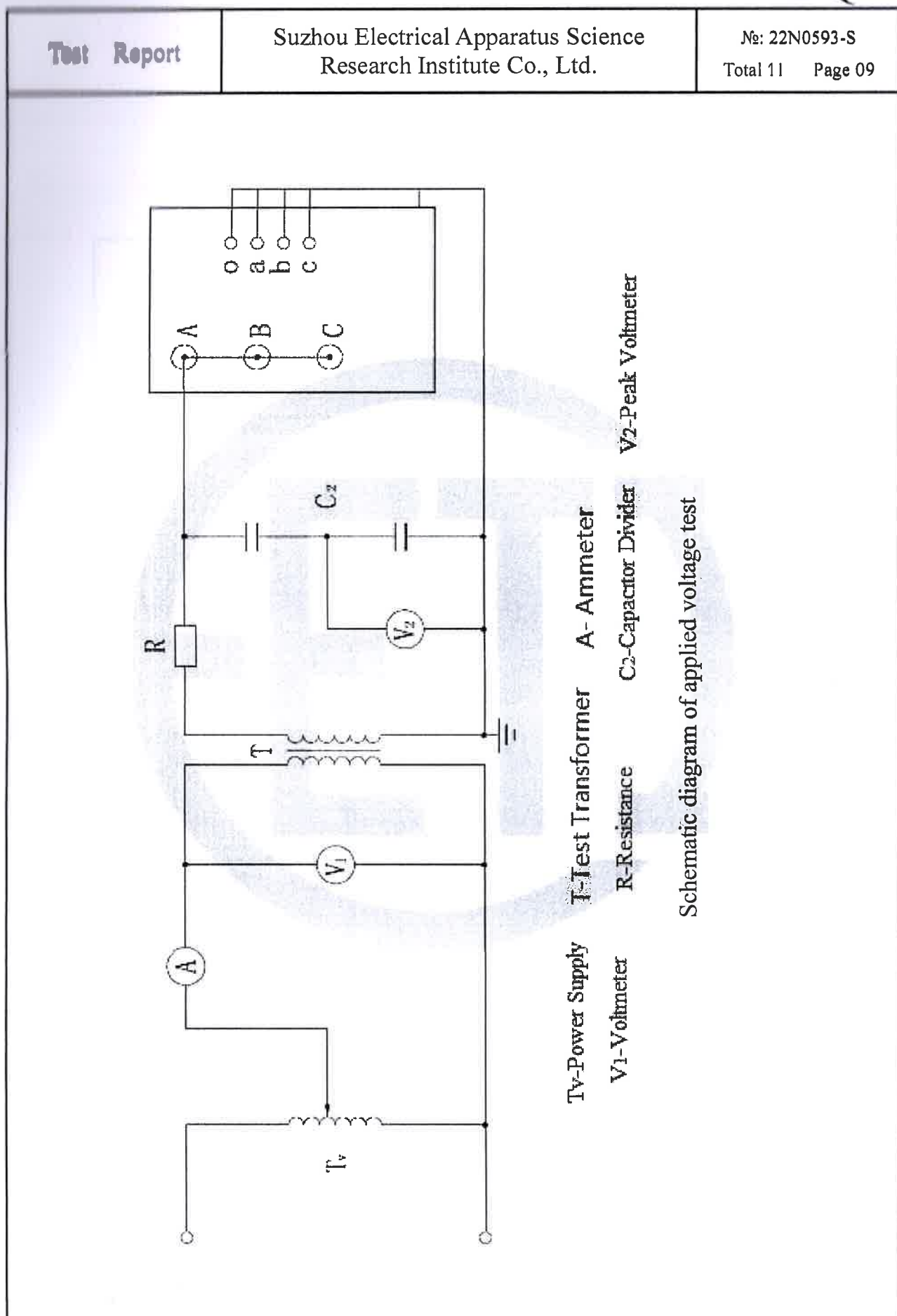
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Summary of test results					
No	Test Items	Specified value	Measured value	Results	
		Standards (commission requirements)			
1	Measurement of d.c. insulation resistance between each winding to earth and between windings (routine test)	Providing insulation resistance value (GΩ)	See 4.1	/	
2	Measurement of voltage ratio and check of phase displacement (routine test)	Providing the measured value	See 4.2	/	
3	Measurement of winding resistance (routine test)	Providing the measured value	See 4.3	/	
4	Applied voltage test (routine test)	HV: 3kV 60s LV: 3kV 60s	3kV 60s 3kV 60s	PASS	
5	Induced voltage withstand test (routine test)	Applied voltage(kV): 2Ur Induced voltage (kV): 0.8 Duration (s): 120(f _n /f) Frequency (Hz): >50	0.12 0.8 30 200	PASS	
6	Measurement of no-load loss and current (routine test)	I ₀ (%): measured P ₀ (kW): measured	0.26 0.4810	PASS	
7	Measurement of short-circuit impedance and load loss (routine test)	t: 145°C Z(%): measured P _k (kW): measured P _{total} (kW): measured	3.26 7.8145 8.2955	PASS	
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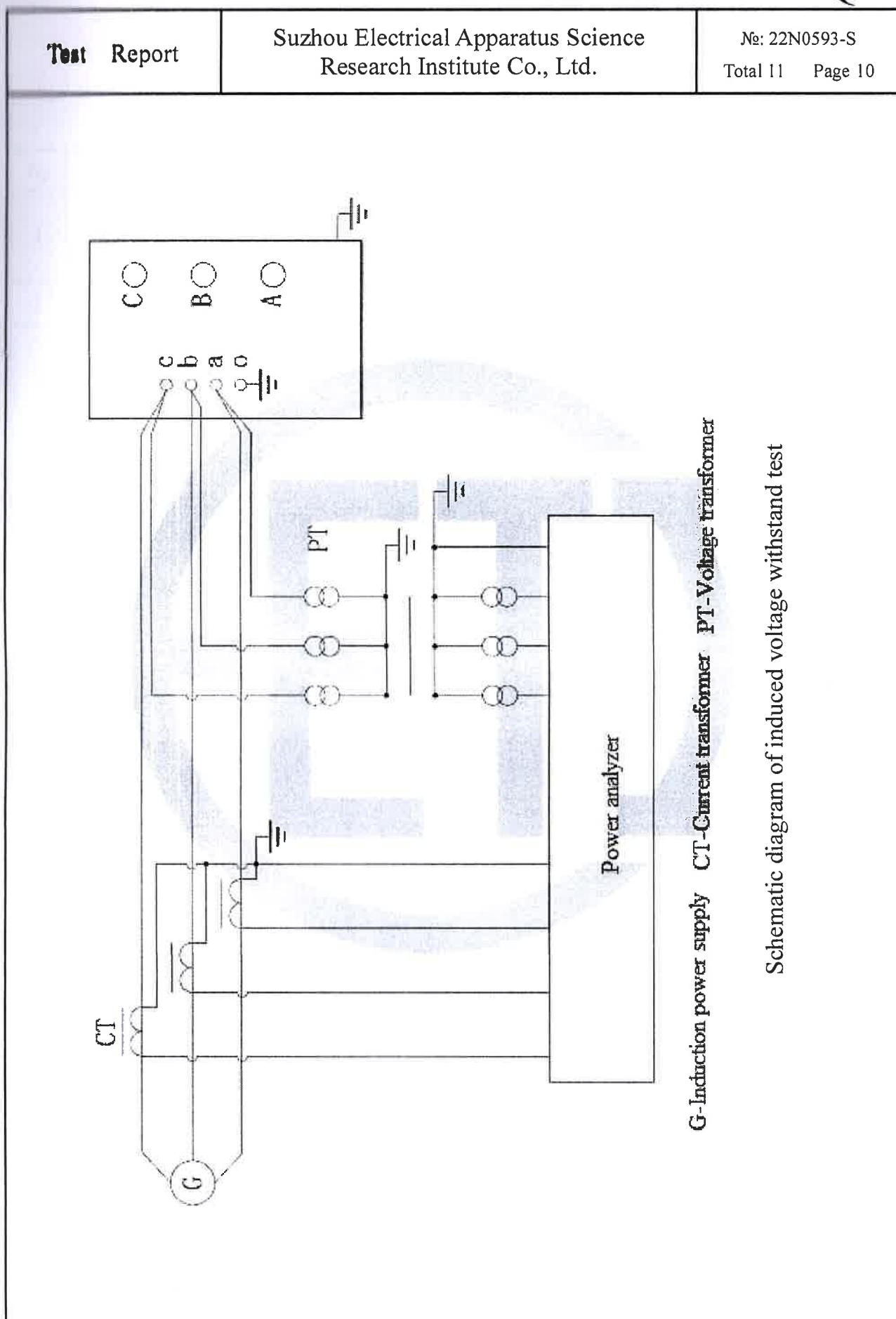
Test Report		Suzhou Electrical Apparatus Science Research Institute Co., Ltd.			№: 22N0593-S Total 11 Page 05			
4. Tests items and results								
4.1 Measurement of d.c. insulation resistance between each winding to earth and between windings (routine test)								
Test date: May 28, 2022 Relative humidity: 53%; Ambient temperature: 23.2°C								
Measured parts		Measured voltage (kV)		Measured insulation resistance (GΩ)				
HV—LV and earth		2.5		0.729				
LV—HV and earth		2.5		14.6				
HV and LV—earth		2.5		0.366				
Core—earth		1.0		6.57				
4.2 Measurement of voltage ratio and check of phase displacement (routine test)								
Test date: May 28, 2022								
HV winding		LV winding		Transformer ratio by calculation	Measured voltage ratio tolerance (%)			Connection symbol
Tapping position	Voltage (kV)	Tapping position	Voltage (kV)		AB/ab	BC/bc	CA/ca	
1	0.4	/	0.052	7.692	-0.32	-0.74	0.43	Dd
2			0.060	6.667	-0.03	-0.33	0.85	
3			0.075	5.333	0.03	-0.17	0.88	
1			0.090	4.444	-0.77	-0.31	0.41	Dy
4.3 Measurement of winding resistance (routine test)								
Test date: May 28, 2022 Ambient temperature: 26.4°C								
Winding	Tapping position	Measured resistance values (Ω)			Resistance unbalance rate (%)			
		A~B a~o	B~C b~o	C~A c~o				
HV	1	4.783×10^{-3}	4.875×10^{-3}	4.843×10^{-3}	1.90			
	2	4.021×10^{-3}	4.038×10^{-3}	4.043×10^{-3}	0.55			
	3	2.841×10^{-3}	2.851×10^{-3}	2.840×10^{-3}	0.39			
LV	/	0.215×10^{-3}	0.219×10^{-3}	0.228×10^{-3}	5.89			

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4.4 Applied voltage test (routine test)									
Test date: May 28, 2022 Relative humidity: 53%; Ambient temperature: 23.2°C; Air pressure: 100.5kPa									
Applied voltage parts		Test voltage (kV)		Test duration (s)		Result			
HV—LV and earth		3		60		PASS			
LV—HV and earth		3		60					
4.5 Induced voltage withstand test (routine test)									
Test date: May 28, 2022 Relative humidity: 53%; Ambient temperature: 23.2°C; Air pressure: 100.5kPa									
Tapping position	Applied voltage (kV)		Induced voltage (kV)		Induced multiple	Frequency (Hz)	Test duration (s)	Result	
	LV		HV						
2	0.12		0.8		2	200	30	PASS	
4.6 Measurement of no-load loss and current (routine test)									
Test date: May 28, 2022									
Voltage Multiple	Applied voltage(kV)		No-load current		No-load loss (kW)				
	Average value	r.m.s. value	(A)	(%)	Measured value	Corrected value			
100%Ur	0.4005	0.4007	0.93	0.26	0.4812	0.4810			
Remarks: at 100%Ur, the difference between r.m.s voltage and average voltage is within 3%.									
4.7 Measurement of short-circuit impedance and load loss (routine test)									
Test date: May 28, 2022 Winding temperature: 25.5°C									
Winding	Tapping position	Applied current I		Measured voltage (kV)	Measured load loss (kW)	Short-circuit impedance (for each phase)		Load loss (kW)	Total loss (kW)
		(A)	I/Ir (%)			HV impedance (Ω)	(%)	Corrected value	Corrected value
HV-LV	1	292.13	101.19	0.0152	7.2000	0.03	4.32	10.2238	10.7048
	2	244.44	84.67	0.0099	4.2600	0.02	3.26	7.8145	8.2955
	3	324.21	112.31	0.0076	4.4200	0.01	1.97	5.1263	5.6073



Schematic diagram of measurement of no-load loss and current





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Instruments used in the tests					
No	Test items	Name & type of instrument	Number & validity		Accuracy class
1	Measurement of d.c. insulation resistance between each winding to earth and between windings	Digital mega-ohm meter F1550C	ER17-013	2023-03-25	200k-5/10/20/50/100GΩ class 5, others class 20
2	Measurement of winding resistance	DC resistance tester JYR(50C)	ER16-032	2022-08-04	0.2%±0.2μΩ
3	Measurement of voltage ratio and check of phase displacement	Transformer ratio tester BC6638	RI15-032	2023-03-14	AC10V: ±0.3%; AC160V: <500±0.1%; 500~2000±0.2%; >2000±0.3%
4	Measurement of short-circuit impedance and load loss	Transformer loss test system TMS580-200-4000	749-1573	2023-01-21	Class 0.1
5	Measurement of no-load loss and current				
6	Applied voltage test	Power-frequency voltage test equipment PFT-5C	745-102	2022-10-12	/
7	Induced voltage withstand test	Transformer loss test system TMS580-200-4000	749-1573	2023-01-21	Class 0.1
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DECLARATION

- 1. The report is invalid** without special seal for testing and page combining seal on the report;
- 2. The report is invalid** if altered;
- 3. The report is invalid** without signatures of persons for drawing up, proof-reading, reviewing and approval;
- 4. The report is valid** only for the inspected and tested samples.
- 5. The client shall be responsible** for the information provided by the client and the authenticity of which cannot be verified by our laboratory.

NOTICE

- 1. In case there is any objection** to this report, please raise it to the laboratory within fifteen days starting from the date of receiving the report. Thank you for your cooperation.
- 2. In case there is no objection**, please take back the samples within one month starting from the date of receiving the report, when the manufacturer is going to take back the samples, certificate for sample taking should be brought in presence, only then the samples could be taken back. On time due, the samples will be in the laboratory's own disposal.

The test report is in total 11 pages including 4 figures and 1 photo

Typist Chen Weiping

Proofreader Wang Zhanbin

Binder Chen Weiping

Address: No.5 Qianzhu Rd., Yuexi, Wuzhong District, Suzhou

Tel: (0512)66556600(switchboards) 68252753 68081201

Fax: (0512)68081686

Post code: 215104

<http://www.eeti.cn>

E-mail: [eservice @eeti.cn](mailto:eservice@eeti.cn)

