

Name: Xi'an High Voltage Apparatus Research Institute Co., Ltd.

Address: No.18, North Section of Xi'erhuan, Xi'an, Shaanxi, China

Registration No. CNAS L0223

Accreditation Criteria: ISO/IEC 17025:2017 and relevant requirements of CNAS

Effective Date: 2022-02-21 Expiry Date: 2024-07-26

SCHEDULE 5 ACCREDITED CALIBRATION AND MEASUREMENT CAPABILITY SCOPE

Note: The instruments with * represents onsite calibration can be performed.

No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
1	High Voltage Electrostatic Voltmeters	AC Voltage	V.R. of High Voltage Electrostatic Voltmeters JJG494	(0.1~1)kV	$U_{rel}=1.0 \times 10^{-3}$		
				(1~100)kV	$U_{rel}=1.1 \times 10^{-3}$		
		DC Voltage		(0.1~100)kV	$U_{rel}=1 \times 10^{-3}$		
2	*DC High Voltage Dividers	Ratio	V.R. of DC High Voltage Dividers. JJG1007	(1~150)kV/(1~100)V	$U_{rel}=5.1 \times 10^{-4}$		
				(150~600)kV/(1~100)V	$U_{rel}=2.5 \times 10^{-3}$		
				(600~1200)kV/(1~100)V	$U_{rel}=1.0 \times 10^{-2}$		
3	*Digital High Voltmeters	AC Voltage	V.R. of Digital High Voltmeter DL/T 973	(1~150)kV	$U_{rel}=5.5 \times 10^{-4}$		
				(150~600)kV	$U_{rel}=8 \times 10^{-4}$		
		DC Voltage		(1~150)kV	$U_{rel}=5 \times 10^{-4}$		
				(150~600)kV	$U_{rel}=2.5 \times 10^{-3}$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
4	Withstanding Voltage Testers	DC Voltage	V.R. of Withstanding Voltage Testers JJG 795	(1~15)kV	$U_{rel}=5.0\times 10^{-4}$		
		AC Voltage		(1~15)kV	$U_{rel}=6.0\times 10^{-4}$		
		AC Current		(1~200)mA	$U_{rel}=2.8\times 10^{-3}$		
		DC Current		(1~200)mA	$U_{rel}=2.8\times 10^{-3}$		
5	*Impulse Voltage Measurement System	Impulse Voltage	C.S. for Calibration Specification of Impulse Measurement System JJF1029	(1~800)kV	$U_{rel}=6\times 10^{-3}$		
		Response Time		(800~4000)kV	$U_{rel}=1.0\times 10^{-2}$		
				0.1 μs~2.5ms	$U_{rel}=7\times 10^{-3}$		
6	*High Voltage Dividers at Power Frequency	Ratio	V.R. of High- Voltage Divider at Power Frequency JJG 496	(1~150) kV/ (1~100)V	$U_{rel}=5.5\times 10^{-4}$		
				(150~600) kV/ (1~100)V	$U_{rel}=8\times 10^{-4}$		
7	*Voltage Transformer	Ratio difference	V.R. of voltage transformer of Measuring Service JJG314	(100V~600V)/ (100V, 100/√3V,100/3V)	$U=1.8\times 10^{-6}$		
				1000V/ (100V, 100/√3V,100/3V)	$U=1.0\times 10^{-6}$		
				(10~35) kV/ (100V, 100/√3V,100/3V)	$U=1.2\times 10^{-4}$		
				(110/√3~220/√3) kV/ (100V, 100/√3V,100/3V)	$U=7\times 10^{-5}$		
				(500/√3~1000/√3)kV/(100V, 100/√3V,100/3V)	$U=3.1\times 10^{-4}$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
		Rate		$\pm 99.9'$, (100V~600V)/ (100V, 100/ $\sqrt{3}$ V, 3V,100/3V)	$U=1.0 \times 10^{-5}$ rad		
				$\pm 99.9'$, 1000V/ (100V, 100/ $\sqrt{3}$ V, 3V,100/3V)	$U=1.0 \times 10^{-6}$ rad		
				$\pm 99.9'$, (10~35)kV/(100V, 100/ $\sqrt{3}$ V,100/3V)	$U=0.4'$		
				$\pm 99.9'$, (110/ $\sqrt{3}$ ~220/ $\sqrt{3}$) kV/ (100V, 100/ $\sqrt{3}$ V,100/3V)	$U=0.2'$		
				$\pm 99.9'$, (500/ $\sqrt{3}$ ~1000/ $\sqrt{3}$)kV/(100V, 100/ $\sqrt{3}$ 3V,100/3V)	$U=0.8'$		
8	*Instrument Current transformers	Ratio difference	V.R.of Instrument Current transformers JJG 313	(5A~10kA) / (1, 5) A	$U=1.2 \times 10^{-5}$		
		Phase		$-99.9' \sim +99.9'$ ((5A~10kA) A/ (1, 5) A)	$U=1.2 \times 10^{-5}$ rad		
9	Instrument Transformer Test Set	Ratio difference	V.R.of Instrument Transformer Test Set JJG169	-10%~10%	$U_{rel}=3.3 \times 10^{-3}$		
		Phase difference		-50~50'	$U_{rel}=3.3 \times 10^{-3}$		
10	*High Voltage Capacitance Bridges	Capacitance Rate	V.R. of High Voltage Capacitance Bridges JJG563	0.1~1000	$U_{rel}=1.2 \times 10^{-4}$		
		Tan δ		$\pm (0.0001 \sim 0.1)$	$U=1.2 \times 10^{-3}D+1.4 \times 10^{-5}$		
11	*High Voltage standard capacitors	Capacitance Rate	V.R. of High Voltage standard capacitors JJG1075	(10~10000) pF	$U_{rel}=2.2 \times 10^{-4}$		



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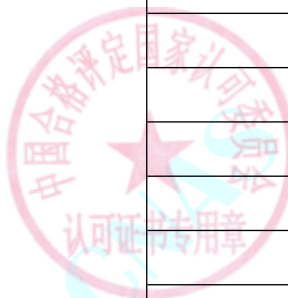
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		Medium Loss		$1 \times 10^{-5} \sim 1 \times 10^{-2}$	$U=1.2 \times 10^{-5}$		
12	Current Shunt at Power Frequency	Resistance	Verification Regulation of DC Shunts JJG	$1.0 \mu \Omega \sim 100 \Omega$	$U_{\text{rel}}=2.0 \times 10^{-4}$		
		AC Resistance	1069, Verification Regulation of AC Shunts JJF 0020	$10 \mu \Omega \sim 10 \Omega$ (10Hz~1kHz)	$U_{\text{rel}}=6.6 \times 10^{-4}$		
13	*Arrester Parameter Testers	DC voltage	C.S. for Zinc Oxide Arrester leakage current tester JJF	(0.1~100)kV	$U_{\text{rel}}=6 \times 10^{-4}$		
		DC Current	1012-2018	(0.1~1)mA	$U_{\text{rel}}=2.2 \times 10^{-3}$		
14	*Impulse Current measuring System	Impulse Current	C.S. for Calibration Specification for Impulse Current JJF (机械)109	(0.05~500)kA	$U_{\text{rel}}=1.6 \times 10^{-2}$		
		Response Time		0.1 μ s~2ms	$U_{\text{rel}}=2.3 \times 10^{-2}$		
15	*Turning Ratio Testers	Turning Ratio	V.R. of transformers Turn Ratio Test Sets JJG970	(1~10000)/1	$U_{\text{rel}}=6.8 \times 10^{-4}$		
16	*DC Current measuring Devices	DC Current	V.R. of DC Shunts JJG 1069, C.S. for Calibration Specificati for DC Standard Current Supply JJF (机械) 002	(0.1~10)kA	$U_{\text{rel}}=3 \times 10^{-4}$		
17	*Test System of Current	Current at Power Frequency	C.S for High Current Generator JJF1037-2019, C.S. for external Current Shunt JJF (机械) 001, C.S for Power Frequency Transient Current Measurement System JJ1028-2019	5A~10kA	$U_{\text{rel}}=2.4 \times 10^{-4}$		
				(10~150) kA	$U_{\text{rel}}=2.4 \times 10^{-3}$		
				(150~400) kA	$U_{\text{rel}}=4 \times 10^{-3}$		
18	Digital Multi-meters	DC Voltage	C.S. for Calibration Specification for multimeters JJF1587	(10~200) mV	$U=1.2 \times 10^{-5} V_x + 0.1 \mu$ V		
				(0.2~2)V	$U=5.7 \times 10^{-6} V_x + 0.4 \mu$ V		
				(2~20) V	$U=5.7 \times 10^{-6} V_x + 4 \mu$ V		

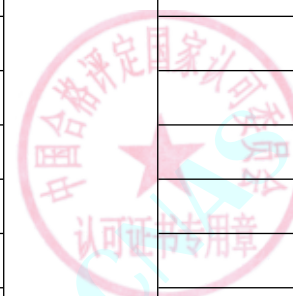


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		DC Current	ilac-MRA CHINA NATIONAL ACCREDITATION SERVICE FOR CONFORMITY ASSESSMENT SCHEDULE OF ACCREDITATION CERTIFICATE	(20~200)V	$U=7.5 \times 10^{-6} V_x+40 \mu V$		
				(200~1000)V	$U=6.7 \times 10^{-6} V_x+0.5mV$		
				(10~200) μ A	$U=1.5 \times 10^{-5} I_x+0.4nA$		
				200 μ A~2mA	$U=1.5 \times 10^{-5} I_x+4nA$		
				(2~20)mA	$U=1.7 \times 10^{-5} I_x+40nA$		
				(20~200)mA	$U=4.3 \times 10^{-5} I_x+0.8 \mu A$		
				200mA~2A	$U=2.0 \times 10^{-4} I_x+16 \mu A$		
				(2~20)A	$U=4.5 \times 10^{-4} I_x+0.4mA$		
		Resistance		(0.1~2) Ω	$U=1.9 \times 10^{-5} R_x+4 \mu \Omega$		
				(2~20) Ω	$U=1.2 \times 10^{-5} R_x+14 \mu \Omega$		
				(20~200) Ω	$U=9.4 \times 10^{-6} R_x+50 \mu \Omega$		
				200 Ω ~2k Ω	$U=9.4 \times 10^{-6} R_x+0.5m \Omega$		
				(10~100)k Ω	$U=9.4 \times 10^{-6} R_x+5m \Omega$		
				(20~200)k Ω	$U=9.4 \times 10^{-6} R_x+50m \Omega$		
				200k Ω ~2M Ω	$U=1.1 \times 10^{-5} R_x+1 \Omega$		
				(2~20) M Ω	$U=2.1 \times 10^{-5} R_x+100 \Omega$		
		(20~200) M Ω		$U=6.1 \times 10^{-4} R_x+10k \Omega$			
		200M Ω ~1G Ω		$U=6.1 \times 10^{-4} R_x+1M \Omega$			
		AC Voltage		(10~200)mV (10Hz~40Hz)	$U=2.2 \times 10^{-4} V_x+4 \mu V$		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
				(10~200)mV (40Hz~100Hz)	$U=1.4 \times 10^{-4} V_x + 4 \mu V$		
				(10~200)mV (100Hz~2kHz)	$U=1.3 \times 10^{-4} V_x + 2 \mu V$		
				(10~200)mV (2kHz~10kHz)	$U=1.4 \times 10^{-4} V_x + 4 \mu V$		
				(10~200)mV (10kHz~30kHz)	$U=3.6 \times 10^{-4} V_x + 8 \mu V$		
				(10~200)mV (30kHz~100kHz)	$U=8.3 \times 10^{-4} V_x + 20 \mu V$		
				200mV~2V (10~40)Hz	$U=1.3 \times 10^{-4} V_x + 20 \mu V$		
				200mV~2V (40Hz~100Hz)	$U=1.1 \times 10^{-4} V_x + 20 \mu V$		
				200mV~2V (100Hz~2kHz)	$U=8.1 \times 10^{-5} V_x + 20 \mu V$		
				200mV~2V (2kHz~10kHz)	$U=1.1 \times 10^{-4} V_x + 20 \mu V$		
				200mV~2V (10kHz~30kHz)	$U=2.5 \times 10^{-4} V_x + 40 \mu V$		
				200mV~2V (30kHz~100kHz)	$U=6.1 \times 10^{-4} V_x + 200 \mu V$		
				200mV~2V (30kHz~100kHz) 200mV~2V (100kHz~300kHz)	$U=3.5 \times 10^{-3} V_x + 2mV$		
				200mV~2V (300kHz~500kHz)	$U=1.2 \times 10^{-2} V_x + 20mV$		
				(2~20)V (10~40)Hz	$U=1.6 \times 10^{-4} V_x + 0.2mV$		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				(2~20)V (40Hz~100Hz)	$U=1.1 \times 10^{-4} V_x + 0.2\text{mV}$		
				(2~20)V (100Hz~2kHz)	$U=8.1 \times 10^{-5} V_x + 0.2\text{mV}$		
				(2~20)V (2kHz~10kHz)	$U=1.1 \times 10^{-4} V_x + 0.2\text{mV}$		
				(2~20)V (10kHz~30kHz)	$U=2.5 \times 10^{-4} V_x + 0.4\text{mV}$		
				(2~20)V (30kHz~100kHz)	$U=6.0 \times 10^{-4} V_x + 2\text{mV}$		
				(2~20)V (100kHz~300kHz)	$U=3.5 \times 10^{-3} V_x + 20\text{mV}$		
				(2~20)V (300kHz~500kHz)	$U=1.2 \times 10^{-2} V_x + 200\text{mV}$		
				(20~200)V (10~40)Hz	$U=1.6 \times 10^{-4} V_x + 2\text{mV}$		
				(20~200)V (40Hz~100Hz)	$U=1.1 \times 10^{-4} V_x + 2\text{mV}$		
				(20~200)V (100Hz~2kHz)	$U=8.1 \times 10^{-5} V_x + 2\text{mV}$		
				(20~200)V (2kHz~10kHz)	$U=1.1 \times 10^{-4} V_x + 2\text{mV}$		
				(20~200)V (10kHz~30kHz)	$U=2.5 \times 10^{-4} V_x + 4\text{mV}$		
				(20~200)V (30kHz~100kHz)	$U=6.0 \times 10^{-4} V_x + 20\text{mV}$		
				(200~1000)V (10Hz~40Hz)	$U=1.4 \times 10^{-4} V_x + 20\text{mV}$		
				(200~1000)V (40Hz~10kHz)	$U=1.0 \times 10^{-4} V_x + 20\text{mV}$		



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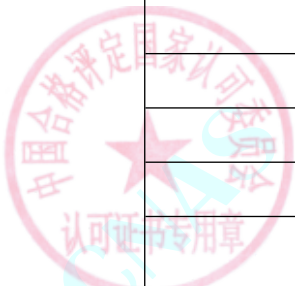
No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		AC Current		29 μ A \sim 200 μ A (10Hz \sim 10kHz)	$U=3.9 \times 10^{-4} I_x + 0.02 \mu$ A		
				29 μ A \sim 200 μ A (10kHz \sim 30kHz)	$U=7.8 \times 10^{-4} I_x + 0.02 \mu$ A		
				200 μ A \sim 2mA (10Hz \sim 10kHz)	$U=3.9 \times 10^{-4} I_x + 0.2 \mu$ A		
				200 μ A \sim 2mA (10kHz \sim 30kHz)	$U=7.8 \times 10^{-4} I_x + 0.2 \mu$ A		
				(2 \sim 20) mA (10Hz \sim 10kHz)	$U=3.9 \times 10^{-4} I_x + 2 \mu$ A		
				(2 \sim 20) mA (10kHz \sim 30kHz)	$U=7.8 \times 10^{-4} I_x + 2 \mu$ A		
				(20 \sim 200) mA (10Hz \sim 10kHz)	$U=3.6 \times 10^{-4} I_x + 20 \mu$ A		
				(20 \sim 200) mA (10kHz \sim 30kHz)	$U=7.3 \times 10^{-4} I_x + 20 \mu$ A		
				200mA \sim 2A (10Hz \sim 2kHz)	$U=7.3 \times 10^{-4} I_x + 200 \mu$ A		
				200mA \sim 2A (2kHz \sim 10kHz)	$U=8.4 \times 10^{-4} I_x + 200 \mu$ A		
				200mA \sim 2A (10kHz \sim 30kHz)	$U=3.5 \times 10^{-3} I_x + 200 \mu$ A		
				(2 \sim 20) A (10Hz \sim 2kHz)	$U=1.1 \times 10^{-3} I_x + 2$ mA		
				(2 \sim 20) A (2kHz \sim 10kHz)	$U=3.0 \times 10^{-3} I_x + 2$ mA		
19	Voltmeter Ampermeters Wattmeters	DC Voltage	V.R.of Amperemeters, Voltmeters, Wattmeters and Ohmmeters	20mV \sim 1000V	$U_{rel}=6.9 \times 10^{-4}$		
		DC Current		10 μ A \sim 20A	$U_{rel}=8.2 \times 10^{-4}$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
		AC Voltage	JJG 124	(20mV~1000V)(50Hz)	<i>U</i> _{rel} =6.9×10 ⁻⁴		
		AC Current		(1~100)mA(50Hz)	<i>U</i> _{rel} =1.5×10 ⁻³		
				(0.1~20)A(50Hz)	<i>U</i> _{rel} =1.1×10 ⁻³		
		DC Power		0.01W~5kW	<i>U</i> _{rel} =1.3×10 ⁻³		
		AC Power		0.01W~5kW(50Hz)	<i>U</i> _{rel} =1.5×10 ⁻³		
20	Insulation Resistance Testers	Insulation Resistance	V.R. of Megohm Meter JJG622,V.R. of Electronic Insulating Resistance Meters JJG1005,High Insulation Resistance Meters JJG690	(0.001~100)MΩ	<i>U</i> _{rel} =6.0×10 ⁻³		
				100MΩ~1GΩ	<i>U</i> _{rel} =1.3×10 ⁻²		
				1GΩ~10GΩ	<i>U</i> _{rel} =2.4×10 ⁻²		
				10GΩ~140GΩ	<i>U</i> _{rel} =5.8×10 ⁻²		
		Voltage		10V~5.5kV	<i>U</i> _{rel} =1.0×10 ⁻³		
21	Digital Single-phase and Three-phase AC Watt-meter	Power	V.R. of AC Digital Powermeter JJG780	0.01W~5kW	<i>U</i> _{rel} =1.8×10 ⁻³		
22	DC Bridge	Resistance	V.R. of DC Bridges JJG125	Single bridge(0.01~0.1)Ω	<i>U</i> _{rel} =8.0×10 ⁻³		
				Single bridge(0.1~1)Ω	<i>U</i> _{rel} =3.2×10 ⁻³		
				Single bridge(1~10)Ω	<i>U</i> _{rel} =8.0×10 ⁻⁴		
				Single bridge(10~10 ⁵)Ω	<i>U</i> _{rel} =3.2×10 ⁻⁴		
				Double bridge(10 ³ ~10 ⁻¹)Ω	<i>U</i> _{rel} =2.1×10 ⁻⁴		



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				Double bridge $10^{-2} \Omega \sim 10^{-3} \Omega$	$U_{\text{rel}}=2.9 \times 10^{-4}$		
				Double bridge $10^{-3} \Omega \sim 10^{-4} \Omega$	$U_{\text{rel}}=1.2 \times 10^{-3}$		
23	Earth Resistance Tester	Resistance	V.R. of Earth Resistance Meters JJG 366	$1 \text{ m} \Omega \sim 100 \text{ k} \Omega$	$U_{\text{rel}}=1.4 \times 10^{-3}$		
24	D.C. Resistors	Resistance	V.R. of D.C. Resistors JJG 166	$(10^{-6} \sim 1) \Omega$	$U_{\text{rel}}=3.0 \times 10^{-4}$		
				$(1 \sim 10) \Omega$	$U_{\text{rel}}=3.0 \times 10^{-5}$		
				$(10 \sim 10^6) \Omega$	$U_{\text{rel}}=1.5 \times 10^{-5}$		
				$(10^6 \sim 10^7) \Omega$	$U_{\text{rel}}=1.5 \times 10^{-4}$		
				$(10^7 \sim 10^8) \Omega$	$U_{\text{rel}}=1.5 \times 10^{-3}$		
				$(10^8 \sim 10^9) \Omega$	$U_{\text{rel}}=1.5 \times 10^{-2}$		
25	Single-phase Phase-meter at Power Frequency	Phase	V.R. of Industry Frequency Single-phase Phase meter JJG 440	$(0.01 \sim 360)^\circ$	$U=0.12^\circ$		
26	DC Resistance Box	Resistance	V.R. of D.C. Resistance Box JJG 982	$(10^{-3} \sim 1) \Omega$	$U_{\text{rel}}=3.0 \times 10^{-4}$		
				$(1 \sim 10) \Omega$	$U_{\text{rel}}=3.0 \times 10^{-5}$		
				$(10 \sim 10^6) \Omega$	$U_{\text{rel}}=1.5 \times 10^{-5}$		
				$(10^6 \sim 10^7) \Omega$	$U_{\text{rel}}=1.5 \times 10^{-4}$		
27	Digital Phase-meters	Phase	Calibration Specification for Low Frequency Phasometer JJF 1756	$(0.01 \sim 360)^\circ$	$U=0.12^\circ$		
28	Powerfactor Meters	Power factor	V.R. of Industry Frequency Single-phase Phase meter JJG 440	$0.01 \sim 1$	$U=0.12$		



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29	Frequency Meters	Frequency	V.R. of Frequency Meter used Indicator JJG603	(0.01~119.99)Hz	$U_{rel}=8.4 \times 10^{-4}$		
30	*Loop Resistance Tester and DC Resistance Meters	Resistance	C.S. for Regulation of Loop Resistance Tester JJF(Machinery) 073, V.R. of Loop Resistance Tester and DC Resistance Meters JJG 1052	(1~10) $\mu\Omega$	$U=6.0 \times 10^{-4} R_x + 0.012 \mu\Omega$		
				(10~100) $\mu\Omega$	$U=6.0 \times 10^{-4} R_x + 0.006 \mu\Omega$		
				100 $\mu\Omega \sim 100\Omega$	$U_{rel}=6.0 \times 10^{-4}$		
				100 $\Omega \sim 100k\Omega$	$U_{rel}=2.0 \times 10^{-4}$		
		Current		1mA~600A	$U_{rel}=1.2 \times 10^{-3}$		
31	电阻	Resistance	V.R. of DC Low Resistance Meter JJG837	1m $\Omega \sim 100k\Omega$	$U_{rel}=6.5 \times 10^{-4}$		
				10 $\mu\Omega \sim 1m\Omega$	$U_{rel}=9.0 \times 10^{-4}$		
				1 $\mu\Omega \sim 10\mu\Omega$	$U_{rel}=6.6 \times 10^{-3}$		
32	*High-voltage switching Mechanical characteristic Testers	Time	V.R. of High-Voltage Switch Operation Characteristic Testers JJG 1120, High - voltage switching characteristics Tester JJF (机械) 074	10 $\mu s \sim 999ms$	$U_{rel}=1.9 \times 10^{-3}$		
33	A.C peak voltage meter	Voltage	Verification Regulation of A.C peak voltage meter JJG1168	100mV~1000V (10Hz~500Hz)	$U_{rel}=6.0 \times 10^{-4}$		
34	*Temperature-rising Testing Devices	Voltage	V.R. of Recorders for Industrial - Process Measurement JJG 74	(0.1~1)mV	$U_{rel}=1.4 \times 10^{-2}$	Accredited only for Temperature-	
				(1~10)mV	$U_{rel}=1.4 \times 10^{-3}$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				(10~100)mV	$U_{rel}=1.4 \times 10^{-4}$	rising Testing Devices with thermocouple	
35	Transformer Loading Box	Impedance	C.S. for Calibration Specification for Burden Box of Instrument Transformers JJF 1264	(0.01~50) Ω	$U_{rel}=1.2 \times 10^{-2}$		
		admittance		(0.01~50)mS	$U_{rel}=1.2 \times 10^{-2}$		
36	Digital Oscilloscopes	Voltage	C.S. for Digital Storage oscilloscope JJF1057, Verification regulation for digital oscilloscope GJB7691	$\pm(1\text{mV}\sim 130\text{V})(1\text{M}\Omega)$ $\pm(1\text{mV}\sim 6.5\text{V})(50\Omega)$	$U_{rel}=0.32\%$		
		Time Base		2ns~5s	$U_{rel}=0.074\%$		
		bandwidth		50kHz~1GHz	$U_{rel}=5.8\%$		
		Time		300ps~350ns	$U_{rel}=6.3\%$		
37	*Partial Discharge Measuring System	Frequency	Calibration Specification for Partial Discharge Testers Based Pulse Current Method JJF 1616	25Hz~1MHz	$U_{rel}=7.2 \times 10^{-3}$		
		Apparent charge		(0.1~10000)pC	$U_{rel}=1.8 \times 10^{-2}$		
		Voltage		0.1~80)V	$U_{rel}=2.4 \times 10^{-2}$		
		Capacitance		10pF~100nF	$U_{rel}=5.9 \times 10^{-4}$		
		Time		5ns~5ms	$U_{rel}=5.4 \times 10^{-2}$		
38	Impulse Peak Voltmeters	Impulse Peak Voltmeters	Verification Regulation of Impulse Peak Voltmeters JJG588	$\pm(100\sim 1000)\text{V}$	$U_{rel}=7.0 \times 10^{-3}$		
39	Electrostatic Discharge Generator	Charging Voltage	C.S. for Calibration Specification for Electrostatic Discharge Generator JJF(电 子)30801	(1~30)kV	$U_{rel}=5.3 \times 10^{-3}$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		Peak Discharge Current		(1~30)A	$U_{rel}=2.4 \times 10^{-3}$		
		Rise time		(0.5~2)ns	$U_{rel}=2.0 \times 10^{-3}$		
40	Electrical Fast Transient Generator	Impulse peak voltage	Calibration Specification for Electrical Fast Transient/Burst Simulators JJF1672	(1~10)kV	$U_{rel}=1.2 \times 10^{-2}$		
		Impulse rise time		(3~7)ns	$U_{rel}=1.2 \times 10^{-2}$		
		Impulse Width		(2~200)ns	$U_{rel}=1.2 \times 10^{-2}$		
		Impulse repeating frequency		(1~200)kHz	$U_{rel}=1.2 \times 10^{-2}$		
		Burst duration		(0.1~30)ms	$U_{rel}=1.2 \times 10^{-2}$		
		Burst period		(100~500)ms	$U_{rel}=1.2 \times 10^{-2}$		
41	Electronic Surge Generator	Open-Circuit Voltage	C.S.of Electrical Surge Generator JJF(Electron) 30803,C.S.of Surge Simulators JJF 1741	(0.1~10)kV	$U_{rel}=1.6\%$		
		short circuit current		(0.1~5)kA	$U_{rel}=1.6\%$		
		front time for open-circuit voltage		(0.5~2) μ s	$U_{rel}=1.5\%$		
		time to half crest for open-circuit voltage		(20~800) μ s	$U_{rel}=1.5\%$		
		front time for short circuit current		(3~15) μ s	$U_{rel}=2.5\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		time to half crest for short circuit current		(10~400) μ s	$U_{rel}=2.5\%$		
42	Voltage Dips, Short Interruptions and Voltage Variations Generator	Voltage	C.S. for Voltage Dips, Short Interruptions and Voltage Variations Generator JJF(Electron) 30802, C.S for Voltage Dips, Short Interruptions and Voltage Variations Test Generators JJF 1673	(10~750)V	$U_{rel}=0.2\%$		
		rise time and fall time		(0.1~100) μ s	$U_{rel}=1.5\%$		
		Voltage overshoot and undershoot		(0.1~20)%	$U_{rel}=5.0\%$		
		Duration time		1ms~60s	$U_{rel}=1.5\%$		
		Interval time		1ms~60s	$U_{rel}=1.5\%$		
		Peak of Impulse current		(0.1~2)kA	$U_{rel}=1.6\%$		
		Phase		(0.18~360) $^{\circ}$	$U_{rel}=1.5\%$		
43	Oscillatory Wave Generator	Impulse Output Voltage	C.S. for Oscillatory Wave Generator JJF(ZHE)1059	(0.1~2.5)kV	$U_{rel}=1.6\%$		
		Rise time of the first peak Voltage		(50~500)ns	$U_{rel}=1.5\%$		
		Oscillation Frequency		10kHz~2MHz	$U_{rel}=1.5\%$		
		Repetition Rate		(40~400) /s	$U_{rel}=1.5\%$		
		Pulse Duration		2ns~60s	$U_{rel}=1.5\%$		
			C.S. for DC High Voltage Test system JJF	(1~150) kV(50Hz)	$U_{rel}=5.5 \times 10^{-4}$		

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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
	system	voltage	(Machinery) 1040, C.S. for AC High Voltage Test system JJF (Machinery) 1044	(150~600) kV(50Hz)	$U_{\text{rel}}=8.0 \times 10^{-4}$		
				(600~2000) kV(50Hz)	$U_{\text{rel}}=1.0 \times 10^{-2}$		
		DC Voltage		(1~150) kV	$U_{\text{rel}}=5.1 \times 10^{-4}$		
				(150~600) kV	$U_{\text{rel}}=2.5 \times 10^{-3}$		
				(600~2500) kV	$U_{\text{rel}}=1.0 \times 10^{-2}$		
45	Mechanical Thermo-hygrometers	Temperature	Mechanical Thermo-hygrometers JJG205	5°C~50°C	$U=0.6^\circ\text{C}$		
		Humidity		30%RH~95%RH	$U=1.8\%\text{RH}$		
46	*Environmental Testing Equipment	Temperature	C.S. for the Equipment Testing Equipment for Temperature and Humidity Parameters JJF 1101	-60°C~300°C	$U=0.4^\circ\text{C}$		
		Humidity		10%RH~90%RH	$U=1.8\%\text{RH}$		
47	Digital Thermo-hygrometers	Temperature	Calibration Specification of Humidity Sensors JJF1076	5°C~50°C	$U=0.5^\circ\text{C}$		
		Humidity		20%RH~95%RH	$U=1.8\%\text{RH}$		
48	A.C. Resistance Boxes	AC Resistance	C.S. for A.C. Resistance Boxes JJF 1636	(1 Ω ~ 10k Ω)(60Hz~10kHz)	$U_{\text{rel}}=6.0 \times 10^{-4}$		
				(>10k Ω ~ 100k Ω)(1kHz)	$U_{\text{rel}}=6.0 \times 10^{-4}$		
				(>100k Ω ~ 1M Ω)(1kHz)	$U_{\text{rel}}=5.0 \times 10^{-3}$		
49	Standard Capacitors	Capacitors	V.R of Standard Capacitors JJG 183	(1~10)pF(120Hz~1MHz)	$U_{\text{rel}}=1.5 \times 10^{-2} \sim 1.5 \times 10^{-3}$		
				(>10pF~1 μ F)(120Hz~1MHz)	$U_{\text{rel}}=6.0 \times 10^{-4}$		
				(>1 μ F~100 μ F)(100Hz~1kHz)	$U_{\text{rel}}=8.0 \times 10^{-4} \sim 5.0 \times 10^{-3}$		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				$(>100 \mu F \sim 1mF)(100Hz \sim 120Hz)$	$U_{rel}=1.2 \times 10^{-2}$		
50	Standard Inductors	Inductors	V.R. of Standard Inductors JJG 726	$(10 \mu H \sim 1H) (1kHz)$	$U_{rel}=1.5 \times 10^{-3} \sim 6.0 \times 10^{-4}$		

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