

Name: Hebei Institute of Metrology

Address: Zhijian Testing Center, Shangzhuang Street, Luquan District, Shijiazhuang, Hebei, China

Registration No. CNAS L1075

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

Effective Date: 2024-07-16 Expiry Date: 2028-08-08

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
I Geometry Measuring Instruments							
1	Internal Micrometers	Length	V. R. of Internal Micrometers JJG22	(50~1000)mm	$U=0.6\text{ }\mu\text{m}+4.0\times 10^{-6}L$		
				(1000~3000)mm	$U=0.1\text{ }\mu\text{m}+4.5\times 10^{-6}L$		
2	Calibrator of Extensometers	Length	C. S. for Calibrator of Extensometers JJF1096	(0~1/3)mm	$U=0.14\text{ }\mu\text{m}$		
				(1/3~1)mm	$U_{\text{rel}}=0.05\%$		
				(1~25)mm	$U_{\text{rel}}=0.01\%$		
3	*Extensometer	Length	V. R. of Extensometer JJG762	(0~0.3)mm	$U=0.5\text{ }\mu\text{m}$		
				(0.3~25)mm	$U_{\text{rel}}=0.14\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
4	Electromagnetic Layered Settlement Gauge,Steel Ruler Water Level Gauge	Length	V. R. of Electromagnetic Layered Settlement Gauge JJG(Traffic)149	(0~300)m	$U=0.2\text{mm}+5.1\times 10^{-6}L$		
5	Standard Parts of Ultrasonic Thickness Instruments	Length	C. S. for Standard Parts of Ultrasonic Thickness Instruments JJF(Jin) 77	standard thickness block:(0.5~200)mm	$U=4\text{ }\mu\text{ m}$		
				standard pipe:(2~3)mm	$U=5\text{ }\mu\text{ m}$		
6	Optical Flat	Flatness	V. R. of Optical Flats JJG28	$\phi\left(0\sim 100\right)\text{mm}$	$U=0.01\text{ }\mu\text{ m}$		
		Depth of parallelism		$\phi 150\text{mm}$	$U=0.012\text{ }\mu\text{ m}$		
				$\left(15\sim 91\right)\text{mm}$	$U=0.2\text{ }\mu\text{ m}$		
7	Gauge Blocks	Length	V. R. of Gauge Blocks JJG146	$\left(0.5\sim 1000\right)\text{mm}$	$U=0.05\text{ }\mu\text{ m}+0.8\times 10^{-6}l_n$		
8	Frame Levels and Shaft Levels	Angle	C.S. for Frame Levels and Shaft Levels JJF1084	Division Value: $\left(0.02\sim 0.10\right)\text{mm/m}$	$U_{\text{rel}}=5\%$		
9	Level Rules	Angle	C. S. for Level Rules JJF1085	Division Value: $\left(0.5\sim 10\right)\text{mm/m}$	$U=0.02\text{mm/m}+7.9\times 10^{-2}\tau$ (τ : Division Value)		
		Length		$\left(0\sim 2000\right)\text{mm}$	$U=0.6\text{mm}$		
10	Multifunction Slope Scale	Angles	C. S. for Multifunction Slope Scale JJF (Ji) 140	$\left(-90\sim +90\right)^{\circ}$	$U=0.3^{\circ}$		
11	Paint Film Scriber	Length	C. S. for Paint Film Scriber JJF (Ji) 137	$\left(0\sim 3\right)\text{mm}$	$U=3\text{ }\mu\text{ m}$		
		Angle		$\left(0\sim 90\right)^{\circ}$	$U=0.2^{\circ}$		
		Straightness		$\left(0\sim 0.2\right)\text{mm}$	$U=1.2\text{ }\mu\text{ m}$		



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12	Wet Film Thickness Gauges	length	C. S. for Wet Film Thickness Gauges JJF1484	wheel gauge: (0~125) μm	$U=1.0\text{ }\mu\text{m}$		
				comb gauge: (0~100) μm	$U=1.0\text{ }\mu\text{m}$		
				comb gauge: (100~3000) μm	$U=2.4\text{ }\mu\text{m}$		
13	Tester for Determining Expansion of Le Chatelier Needles	length	C. S. for Tester for Determining Expansion of Le Chatelier Needles JJF (Ji) 132	(-25~+25)mm	$U=(0.006\sim0.15)\text{mm}$		
14	Digital clinometer	angle	C. S. for Clinometers JJF1915	(0~360)°	$U=0.006^\circ$		
15	Coincidence Levels	angle	V. R. of Electronic Levels and Coincidence Levels JJG103	(0~40)'	$U=0.002\text{mm/m}$		
16	Microcator	Length	V. R. of Microcator JJG118	Division Value 0.1 μm , (-10~+10) μm	$U=0.06\text{ }\mu\text{m}$		
				Division Value 0.2 μm , (-10~+10) μm	$U=0.08\text{ }\mu\text{m}$		
				Division Value 0.5 μm , (-30~+30) μm	$U=0.1\text{ }\mu\text{m}$		
				Division Value 1 μm , (-100~+100) μm	$U=0.2\text{ }\mu\text{m}$		
17	Comparators of Machine Type	Length	V. R. of Comparator of Machine Type JJG39	Division Value 0.5 μm , (-30~+30) μm	$U=0.08\text{ }\mu\text{m}$		
				Division Value 1 μm , (-100~+100) μm	$U=0.17\text{ }\mu\text{m}$		
				Division Value 10 μm , (-1~+1)mm	$U=2\text{ }\mu\text{m}$		
18	Test Sieves	Length	C. S. for Test Sieves JJF1175	(0.04~4)mm	$U=2\text{ }\mu\text{m}$		

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				(4~125)mm	$U=0.03\text{mm}$		
19	Construction Quality Tester Sets	Angle	C. S. for Construction Quality Tester Sets JJF1110	Verticality Tester, Right Angle Tester, Slope Scale, (- 5~+5)mm/m	$U=0.12\text{mm/m}$		
		Length		Diagonal Tester, Hundred Grid, (115~240)mm	$U_{\text{rel}}=0.11\%$		
20	*Calibration Devices of Verticality Measuring Testers	Length	C. S. for Calibration Devices of Verticality Measuring Testers JJF(Yu)184	1000 mm	$U=0.09\text{ mm}$		
				micrometer head (0~ 50) mm	$U=1.6\text{ }\mu\text{m}$		
21	*Calibration Devices of Internal and External Angle Testers, Wedge Feelers	Length	C. S. for Calibration Devices of Internal and External Angle Testers, Wedge Feelers JJF (Yu) 186	135.5 mm	$U=0.011\text{ mm}$		
				155.5 mm	$U=0.011\text{ mm}$		
				micrometer head(0~50) mm	$U=1.6\text{ }\mu\text{m}$		
22	Tire Tread Depth Gauges	Length	C. S. for Tire Tread Depth Gauges JJF1477	(0~30)mm	$U=0.02\text{mm}$		
23	Level Rod	Length	Level Rod JJG8	(0~5)m	$U=0.3\text{mm}$		
24	Oil Special T- squares	Length	C. S. for Oil Special T- squares JJG(Ji)151	(0~2)m	$U=0.2\text{mm}$		
		Angle		(90±1)°	$U=3'$		
25	Cylindrical Measuring Pin	Length	C. S. for Cylindrical Measuring Pin JJF1207	(0.1~25)mm	$U=0.23\text{ }\mu\text{m}$		
26	Moulds	Length	C.S. for Moulds JJF1307	(90~610)mm	$U_{\text{rel}}=0.05\%$		
27	Cylindrical Thread Gauges	pitch diameter	C.S. for Cylindrical Thread Gauges JJF1345	(M1~M200)mm	$U=3.3\text{ }\mu\text{m}$		
		pitch		Plug gauge, (0.2~8.0)mm	$U=1.2\text{ }\mu\text{m}$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				Ring Gauge,(0.2~8.0)mm: 2.5mm≤L≤200mm"	$U=1.2\text{ }\mu\text{m}+1.9\times 10^{-6}L$		
28	Plain Limit Gauges	Length	Plain Limit Gauges JJG343	Ring Gauge: Φ (5~260)mm Plug Gauge: Φ (0~500)mm	$U=0.7\text{ }\mu\text{m}+4.0\times 10^{-6}L$ $U=0.30\text{ }\mu\text{m}$		
29	Borehole Clinometers	Angle	C. S. for Borehole Clinometers JJF1550	(-30° ~30°)	$U=0.008\%\text{FS}$		
30	Wedge-Shape Filler Gauges	Length	Calibration Specification for Wedge-Shape Filler Gauges JJF1548	(0~60)mm	$U=0.010\text{mm}$		
31	Blocks used in Ultrasonic Testing	Length	C. S. for Blocks used in Ultrasonic Testing JJF1487	(0~500)mm	$U=0.014\text{mm}$		
32	Micrometer	Length	V. R. of Micrometer JJG21	(0~500)mm Calibration Stick,(25~500)mm	$U=1.0\text{ }\mu\text{m}+3.5\times 10^{-6}L$ $U=0.3\text{ }\mu\text{m}+2.5\times 10^{-6}L$		
33	Large Dimension Outside Micrometers	Length	C. S. for Large Dimension Outside Micrometers JJF1088	Micrometer Head,(0~50)mm Calibration Stick,(500~1000)mm Calibration Stick,(1000~3000)mm	$U=1.2\text{ }\mu\text{m}$ $U=0.3\text{ }\mu\text{m}+2.5\times 10^{-6}L$ $U=0.4\text{ }\mu\text{m}+3.4\times 10^{-6}L$		
34	Micrometers of Measuring Inside Dimension	Length	C. S. for Micrometers of Measuring Inside Dimension JJF1411	(5~50)mm (50~100)mm (100~150)mm	$U=1.5\text{ }\mu\text{m}$ $U=1.9\text{ }\mu\text{m}$ $U=2.4\text{ }\mu\text{m}$		
	Micrometers with Dial	Length	V. R. of Micrometers with Dial Comparator and	Micrometers with Dial Comparator,(0~200)mm	$U=0.6\text{ }\mu\text{m}+2.6\times 10^{-6}L$		



№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
	Comparator and Indication Snap Gauge		Indication Snap Gauge JJG26	Calibration Stick, (25~200)mm	$U=0.3 \mu\text{m} + 2.5 \times 10^{-6}L$		
36	Common Normal Micrometer	Length	V. R. of Common Normal Micrometer JJG82	(0~200)mm	$U=0.8 \mu\text{m} + 6.8 \times 10^{-6}L$		
				Calibration Stick, (25~200)mm	$U=0.3 \mu\text{m} + 2.5 \times 10^{-6}L$		
37	Current Calipers	Length	V. R. of Current Calipers JJG30	(0~500)mm	$U=0.01\text{mm}$		
				(500~1000)mm	$U=0.02\text{mm}$		
				(1000~2000)mm	$U=0.03\text{mm}$		
38	Gear Tooth Calipers	Length	C. S. for Gear Tooth Calipers JJF1072	Modulus: (1~26)mm	$U=0.014\text{mm}$		
39	Height Caliper	Length	V. R. of Height Caliper JJG31	(0~500)mm	$U=0.01\text{mm}$		
				(500~1000)mm	$U=0.02\text{mm}$		
40	Bore Dial Indicators	Length	C. S. for Bore Dial Indicators JJF1102	Division Value 0.01mm, (2~200)mm	$U=2 \mu\text{m}$		
				Division Value 0.001mm, (2~200)mm	$U=1.2 \mu\text{m}$		
41	Dial Test Indicator	Length	V. R. of Dial Test Indicator JJG35	(0~0.4)mm	$U=1.2 \mu\text{m}$		
				(0.4~1.0)mm	$U=2.0 \mu\text{m}$		
42	General Bevel Protractors	Angle	C. S. for General Bevel Protractors JJF1591	(0~360)°	$U=1.2'$		
43	Feeler Gauges	Length	V. R. of Feeler Gauges JJG62	(0.02~3)mm	$U=1.4 \mu\text{m}$		
44	Straight Edge	straightness	V. R. of Straight Edge JJG63	(0~175)mm	$U=0.33 \mu\text{m}$		



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				(175~300) mm	$U=0.50 \mu m$		
45	Steel Rule	Length	V, R, of Steel Rule JJG1	(0~1000)mm	$U=0.05mm$		
				(1000~2000)mm	$U=0.09mm$		
46	Squares	Perpendicularity	V. R. of Squares JJG7	Wide Base Squares(50~500)mm	$U=1.3 \mu m$		
				Column Squares,(50~500)mm	$U=1.0 \mu m$		
				Straight Edge Squares,(50~400)mm	$U=0.7 \mu m$		
				Steel Squares with Linear Scale,(150~500)mm	$U=0.04mm$		
47	Depth Dial Gauge	Length	V. R. of Depth Dial Gauge JJG830	Resolution/Division Value:0.001mm, (0~50) mm	$U=1.3 \mu m$		
				Resolution/Division Value:0.01mm, (0~100) mm	$U=3 \mu m$		
48	Thickness Gauges	Length	C. S. for Thickness Gauges JJF1255	(0~1)mm	$U=1.9 \mu m$		
				(1~10)mm	$U=2.6 \mu m$		
				(10~30)mm	$U=5.1 \mu m$		
49	Dial Snap Gauges	Length	C. S. for Dial Snap Gauges JJF1253	(5~100)mm	$U=0.003mm$		
50	Rubber and Plastic Film Gage	Length	C. S. for Rubber and Plastic Film Gage JJF1488	Division Value:0.001mm,(0~30)mm	$U=2.5 \mu m$		
				Division Value:0.01mm,(0~30)mm	$U=4.9 \mu m$		
51	Steel Measuring Tapes	Length	V. R. of Steel Measuring Tapes JJG4	(0~200)m	$U=0.08mm+2.0 \times 10^{-6}L$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				Depth Steel Tape,(0~50)m	$U=0.11\text{mm}+3.0\times 10^{-6}L$		
52	Standard Steel Tapes	Lenth	V. R.of Standard Steel Tapes JJG 741	(0~50)m	$U=5\text{ }\mu\text{m}+4\times 10^{-6}L$		
53	Fiber Tapes	Length	V. R. of Fiber Tapes and Measuring Ropes JJG5	(0~200)m	$U=0.4\text{mm}+4.0\times 10^{-5}L$		
54	Brick Calipers	Length	V. R. of Brick Calipers JJG (Ji) 121	vice ruler:(-10~+30)mm	$U=0.06\text{mm}$		
				main ruler:(0~250)mm	$U=0.2\text{mm}$		
55	Standard Metallic Scale (Grade III)	Length	V. R. of Standard Metallic Scale (Grade III) JJG 71	(0~1000)mm	$U=4.8\text{ }\mu\text{m}+6.5\times 10^{-7}L$		
56	*Toolmaker's Microscope	Length	V. R. of Toolmaker's Microscope JJG 56	(0~200)mm	$U=0.3\text{ }\mu\text{m}+3\times 10^{-6}L$		
		Angles		(0~360)°	$U=4''$		
57	*Projectors	Length	C. S. for Projectors JJF 1093	(0~200)mm	$U=1.0\text{ }\mu\text{m}+6.0\times 10^{-6}L$		
				$10\times\sim 100\times$	$U_{\text{rel}}=0.01\%$		
58	*Contact (Stylus) Instruments of Surface Roughness Measurement by Profile Method	Roughness	C. S. for Contact (Stylus) Instruments of Surface Roughness Measurement by Profile Method JJF 1105	$R_a: (0.02\sim 0.1)\text{ }\mu\text{m}$	$U_{\text{rel}}=5.4\%$		
				$R_a: (0.1\sim 12.5)\text{ }\mu\text{m}$	$U_{\text{rel}}=2.1\%$		
59	*Inductive Micrometers	Length	C. S. for Inductive Micrometers JJF 1331	Resolution $0.01\text{ }\mu\text{m}, (-10\sim +10)\text{ }\mu\text{m}$	$U=0.02\text{ }\mu\text{m}$		
				Resolution $0.1\text{ }\mu\text{m} (-100\sim +100)\text{ }\mu\text{m}$	$U=0.2\text{ }\mu\text{m}$		
				Resolution $1\text{ }\mu\text{m} (-1000\sim +1000)\text{ }\mu\text{m},$	$U=1.3\text{ }\mu\text{m}$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
60	*Contact-type Interferometers	Length	V. R. of Contact-type Interferometers JJG101	$(-10 \sim +10) \mu\text{m}$	$U=0.007 \mu\text{m}$		
61	*Length Measuring Machine	Length	C. S. for Length Measuring Machine JJF 1066	decimetrescale (100~1000)mm	$U=0.2 \mu\text{m}+3.4 \times 10^{-6}L$		
				decimetrescale (1000~3000)mm	$U=0.3 \mu\text{m}+0.8 \times 10^{-6}L$		
				Millimeterscale (0~100)mm	$U=0.3 \mu\text{m}$		
				Micronscales (-100~+100) μm	$U=0.05 \mu\text{m}$		
62	*Optimeter	Length	V. R. of Optimeter JJG 45	$(-100 \sim +100) \mu\text{m}$	$U=0.06 \mu\text{m}$		
63	*Optical Digital Dividing Head	Angles	V. R. of Optical Digital Dividing Head JJG 57	$(0 \sim 360)^\circ$	$U=1''$		
64	*Gear Involute Measuring Instrument	Length	C. S. for Gear Involute Measuring Instrument JJF 1124	$r_b, 60\text{mm}$	$U=1.1 \mu\text{m}$		
				$r_b, 150\text{mm}$	$U=1.6 \mu\text{m}$		
65	Optical Theodolites	Angles	V. R. of Optical Theodolites JJG 414	Horizontal direction: $(0 \sim 360)^\circ$	$U=0.2''$		
				vertical direction: $(-30 \sim +30)^\circ$	$U=0.7''$		
66	Levels	Angles	V.R. of Levels JJG 425	i angle $(-25 \sim +25)''$	$U=1.4''$		
67	Autocollimators	Angles	V.R. of Autocollimators JJG 202	$(0 \sim 10)'$	$U=0.2''$		
68	Roughness Comparison Specimens	Roughness	C.S. for Roughness Comparison Specimens JJF 1099	$R_a: (0.012 \sim 0.4) \mu\text{m}$	$U_{\text{rel}}=7.6\%$		
				$R_a: (0.4 \sim 25) \mu\text{m}$	$U_{\text{rel}}=5.8\%$		
				$R_a: (25 \sim 100) \mu\text{m}$	$U_{\text{rel}}=9.2\%$		



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69	*Coordinate Measuring Machine	Length	C.S. for Coordinate Measuring Machine JJF 1064	(30~1000)mm	$U=0.2 \mu\text{m}+1.8 \times 10^{-6}L$		
				(1~10)m	$U=0.5 \mu\text{m}+1.7 \times 10^{-6}L$		
70	Ultrasonic Thickness Instruments	Length	C.S. for Ultrasonic Thickness Instruments JJF 1126	(0.5~75)mm	$U=0.02 \text{ mm}$		
				(75~200)mm	$U=0.04 \text{ mm}$		
71	*Surface Plates	Flatness	V.R. of Surface Plates JJG 117	(160×100~12000×5000)mm	$U=2.0 \times 10^{-3} \times n^{1/2} \times L$ (n, Number of segments)		
72	*Straight Edges	Straightness	C.S. for Straight Edges JJF 1097	(300~5000)mm	$U=1.3 \times 10^{-3} \times n^{1/2} \times L$ (n, Number of segments)		
73	Plumb Instruments	Angles	C.S. for Plumb Instruments JJF 1081	outside(0~50)°	$U=0.7''$		
74	*Square Testers	Perpendicularity	C.S. for Square Testers JJF 1140	H(0~500)mm	$U=0.7 \mu\text{m}$		
75	*Height Measuring Instrument with Digital Display	Length	C.S. for Height Measuring Instrument with Digital Display JJF 1254	(0~1000) mm	$U=0.1 \mu\text{m}+1.7 \times 10^{-6}L$		
76	*Testers for Dial Gauges	Length	V.R. of Testers for Dial Gauges JJG 201	(0~100)mm	$U=0.33 \mu\text{m}$		
77	*Gauge Block Comparators	Length	C.S. for Gauge Block Comparators JJF 1304	(0~300) μm	$U=15 \text{ nm}$		
78	*Gear Helix Measuring Instruments	Length	C.S. for Gear Helix Measuring Instruments JJF 1122	$r_b(40 \sim 47)\text{mm}, \beta(0 \sim 45)^\circ$	$U=1.7 \mu\text{m}$		
79	*Imaging Probe Measuring machines	Length	C.S. for Imaging Probe Measuring machines JJF 1318	x,yAxles(0~500)mm	$U=0.7 \mu\text{m}+2 \times 10^{-6}L$		
80	*Biological Microscopes	Lenth	C.S. for Biological Microscopes JJF 1402	Objective Lens(4×~100×)	$U_{\text{rel}}=1.2\%$		
				(0~16)mm	$U=4 \mu\text{m}$		



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81	Surface Profile Gauges	Length	C.S. for Surface Profile Gauges JJF 1476	(0~6.5)mm	$U=2\text{ }\mu\text{m}$		
82	*Laser Diameter Measuring Gauges	Length	C.S. for Laser Diameter Measuring Gauges JJF 1250	(1~20)mm	$U=0.6\text{ }\mu\text{m}$		
				(20~30)mm	$U=0.7\text{ }\mu\text{m}$		
83	*Linear Displacement Sensors	Length	C.S. for Linear Displacement Sensors JJF 1305	(0.1~50000)mm	$U_{\text{rel}}=0.02\%$		
84	Reinforced Concrete Covermeter and Floorslab Thickness Tester	Length	C.S. for Reinforced Concrete Covermeter and Floorslab Thickness Tester JJF1224	Reinforced protective layer thickness(12~88)mm	$U=1\text{ mm}$		
				Thickness of the floor(50~300)mm	$U=1\text{ mm}$		
85	Concrete Crack Width and Depth Measuring Instrument	Length	C.S. for Concrete Crack Width and Depth Measuring Instrument JJF 1334	Surface width(0.01~10)mm	$U=7\text{ }\mu\text{m}$		
				Depth(20~100)mm	$U=1.6\text{ mm}$		
86	*Metallurgical Microscope	Length	Calibration Specification for Metallurgical Microscopes JJF 1914	Objective Lens($4\times\sim 100\times$)	$U_{\text{rel}}=0.8\%$		
				(0~16)mm	$U=2\text{ }\mu\text{m}$		
87	*Measurement Standard Instrument of Roundness and Cylindricity	Roundness	V.R. of Measurement Standard Instrument of Roundness and Cylindricity JJG 429	(0.01~50) μm	$U_{\text{rel}}=3.8\%$		
		Cylindricity		(0.01~6) μm	$U=0.66\text{ }\mu\text{m}$		
88	*Gear Measuring Centers	Length	C.S. for Gear Measuring Centers JJF 1561	$r_b(40\sim 150)\text{mm}$, $\beta(0\sim 45)^\circ$, $m(1\sim 10)$	$U=1.7\text{ }\mu\text{m}$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
89	*Articulated Arm Coordinat Measuring Machines	Length	C.S.for Articulated Arm Coordinat Measuring Machines JJF 1408	$D(30\sim 3000)\text{mm}$	$U=11\ \mu\text{m}$		
90	*Calibration Devices of Four- wheel Aligner	Angle	C.S. for Calibration Devices of Four-wheel Aligner JJF 1489	$(-15\sim +15)^\circ$	$U=16''$		
91	Photoelectric Shaft Encoders	Angle	C.S. for Photoelectric Shaft Encoders JJF 1115	$(0\sim 360)^\circ$	$U=3.6''$		
92	Electronic Theodolites	Angle	V.R. of Electronic Tachometer Total Meter JJG100	Horizontal direction($0\sim 360$) $^\circ$	$U=0.2''$		
				vertical direction:($-30\sim +30$) $^\circ$	$U=0.7''$		
93	Magnetic and Eddy Current Measuring Instrument for Coating Thickness	Length	V.R. of Magnetic and Eddy Current Measuring Instrument for Coating Thickness JJG 818	Measuring Instrument for Coating Thickness $H(0\sim 50)\ \mu\text{m}$	$U=0.4\ \mu\text{m}$		
				Measuring Instrument for Coating Thickness $H(50\sim 10000)\ \mu\text{m}$	$U_{\text{rel}}=0.5\%H$		
				Thickness Plate($10\sim 50$) μm	$U=0.3\ \mu\text{m}$		
				Thickness Plate ($50\sim 10000$) μm	$U_{\text{rel}}=0.4\%H$		
94	Hand-held Laser Distance Meters	Length	V.R. of Hand-held Laser Distance Meters JJG 966	$(0\sim 200)\text{m}$	$U=0.5\ \text{mm}$		
95	Wedge Cut Method Film Thickness Instruments	Length	Calibration Specification for Wedge Cut Method Film Thickness Instruments JJF(Ji)150	$(0\sim 50)\text{mm}$	$U=0.005\ \text{mm}$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
96	*Standards For Level Rules	Flatness	Calibration method for Level Rules Standard Sets Z/JF-JHL-001	(0~2000)mm	$U=1.5 \times 10^{-2} \times n^{1/2} \times L$ (n, Number of segments)		
		Angle		45°	$U=40''$		
97	*Standards For Levels' Zero	Perpendicularity	C.S. for Frame Levels and Shaft Levels JJF 1084	90°	$U=0.7''$		
98	Micropattern Standards	Length	Calibration Specification for Micropattern Standards JJF 1917	(0~20) mm	$U=0.5 \mu m$		
99	*Slit lamp Microscopes	Length	Calibration Specification for Slit lamp Microscopes JJF(Zhe) 1169	$4 \times \sim 160 \times$	$U_{rel}=1.2\%$		
100	*Vertical Axis Deviation Measuring Instrument	Length	C.S for Vertical Axis Deviation Measuring Instrument JJF(Ji)153	$H(0 \sim 250)mm$	$U=0.008 mm$		
101	*Contact(Stylus) Electric Contour Measuring Instrument	Length	C.S for Contact(Stylus) Electric Contour Measuring Instrument JJF(Ji)3012	(0~100) mm	$U=4.4 \mu m$		
102	*Grating Micrometers	Length	C.S for Grating Micrometers JJF1682	(0~100) mm	$U=0.06 \mu m$		
103	*Optical Shaft Measuring Instrument	Length	C.S for Optical Shaft Measuring Instrument JJF 1933	$L(30 \sim 1000) mm$	$U=0.6 \mu m + 1.8 \times 10^{-6} L$		
				$D(3.5 \sim 100) mm$	$U=0.8 \mu m$		
104	*Stereomicroscope	Length	C.S. for Stereomicroscope JJF (Ji) 211	(0.5×~5×)	$U_{rel}=1.2\%$	合格评定国家认可委员会 认可证书专用章	
105	Optical Clinometers	Angles	Calibration Specification for Clinometers JJF 1915	(-120~+120)°	$U=10''$		



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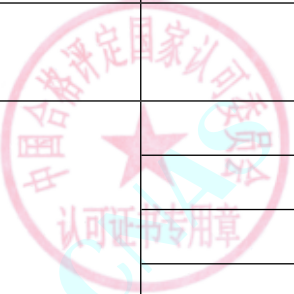
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
106	Telescope Rangefinders	Length	Calibration Specification for Telescope Rangefinders JJF 1704	(0~1000)m	$U=0.1\text{ m}$		
107	*Bottom Wall Thickness Measuring Instrument	Length	Calibration Specification for Bottom Wall Thickness Measuring Instrument JJF (Ji) 152	(0~50)mm	$U=0.004\text{ mm}$		
108	*Flat Equal Thickness Interferometers	Flatness	Calibration Specification for Flat Equal Thickness Interferometers JJF1100	$\phi\ (30\sim150)\text{ mm}$	$U=0.009\ \mu\text{ m}$		
109	Dial Gauges	Length	Dial Gauges JJG34	dial indicator, (0~30) mm	$U=3\ \mu\text{ m}$		
				dial indicator, (30~100) mm	$U=8\ \mu\text{ m}$		
				micrometer gauge, (0~1)mm	$U=1.0\ \mu\text{ m}$		
				micrometer gauge, (1~30)mm	$U=1.7\ \mu\text{ m}$		
				micrometer gauge, (30~50)mm	$U=7.0\ \mu\text{ m}$		
110	PiTapes	Length	C.S. for Pi Tapes JJF1423	(9~1100)mm	$U=0.02\text{mm}$		
				(1100~2100)mm	$U=0.03\text{mm}$		
				(2100~3750)mm	$U=0.04\text{mm}$		
				(3750~5000)mm	$U=0.05\text{mm}$		
				(5000~16000)mm	$U_{\text{rel}}=0.002\%$		
111	*Length Measuring Instrument	Length	C.S. for Length Measuring Instrument JJF 1189	(0~60)mm	$U=0.08\ \mu\text{ m}$		
				(60~100)mm	$U=0.10\ \mu\text{ m}$		



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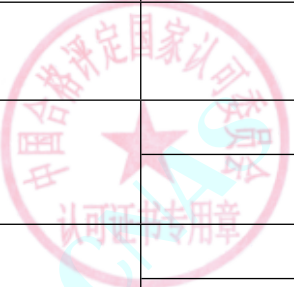
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				(100~1000)mm	$U=0.3\text{ }\mu\text{m}+0.8\times 10^{-6}L$		
112	Standard Ring Gauge	Length	V.R. of Standard Ring Gauge JJG894	(5~200)mm	$U=0.7\text{ }\mu\text{m}+4.0\times 10^{-6}L$		
		Roundness		(5~200)mm	$U=0.10\text{ }\mu\text{m}$		
113	Special Plate of Callipers for Welding Inspection	Length	C.S. for Special Plate of Callipers for Welding Inspection JJF(Jin) 88	(6~50)mm	$U=0.01\text{mm}$		
114	Sine Bars	Angle	V.R. of Sine Bars JJG 37	30°	$U=1.9''$		
115	Mechanical parts	Length	C.S. for Spatial Geometric Size Measurement JJF (Yu) 021	Three-dimensional geometric parameters 1000mm×1200mm×700mm	$U=3.0\text{ }\mu\text{m}$		
		Angle		(0~360)°	$U=15''$		
116	Plugs And Socket-outlets Gauges for Household and Similar Purposes	Length	C.S. for Plugs And Socket-outlets Gauges for Household and Similar Purposes JJF (Zhe) 1119	(0~500)mm	$U=0.003\text{mm}$		
		Angles		(0~120)°	$U=6'$		
117	*Rebar Gauge Punching Machine	Length	V.R. of Rebar Gauge Punching Machine JJG(Jiaotong)158	(0~300)mm	$U=0.05\text{mm}$		
118	Taper Thread Gauges	Pitch diameter	Calibration Method for Taper Thread Gauges Z/JB-JHJ-006	(3~200)mm	$U=0.004\text{mm}$		
		Pitch		(0.2~8.0)mm	$U=0.002\text{mm}$		
		Flank angle		(27~30)°	$U=5'$		
		Taper		(0.0625~0.25)mm/mm	$U=0.003\text{mm/mm}$		



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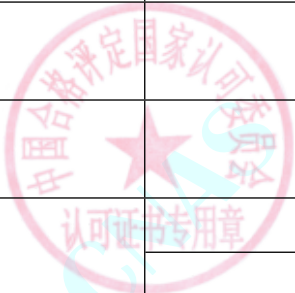
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
119	Denture snap gauge	Length	Calibration method of Denture snap gauge Z/JF-JHJ-001	(0~10)mm	$U=0.03\text{mm}$		
120	Bore gauge	Length	Calibration method of Bore gauge Z/JF-JHJ-002	(0~60)mm	$U=0.02\text{mm}$		
121	Depth Standard Block	Length	Depth Standard Block Z/JF-JHJ-003	(0~500)mm	$U=0.8\text{mm}$		
		Angles		(0~360)°	$U=0.5^\circ$		
122	Coordinate Type, Grid Type Rulers	Length	Calibration method of Coordinate Type, Grid Type Rulers Z/JF-JHJ-004	(0~1000)mm	$U=0.7\text{ }\mu\text{m}$		
123	*Height Measurement	Length	C.S. for Height Measurement JJF (Jing) 81	(0~2200)mm	$U=2\text{mm}$		
124	Standard Block of Reinforced Covermeter and Floorslab Thickness Tester	Length	C.S. for Standard Block of Reinforced Covermeter and Floorslab Thickness Tester JJF(Jin) 76	(0~600)mm	$U=0.09\text{mm}$		
125	Zero error calibrator for sounding steel tape	Length	Calibration method Zero error calibrator for sounding steel tape Z/JF-JHJ-005	(0~500)mm	$U=0.02\text{mm}$		
126	Inner Groove Calipers	Length	C. S. for Inner Groove Calipers JJF(Gui)124	(0~500)mm	$U=0.01\text{mm}$		
127	Point Micrometers	Length	C. S. for Point Micrometers JJF(Zhe)1045	(0~200)mm	$U=1.0\text{ }\mu\text{m}+6\times 10^{-6}L$		
				Calibration Stick, (25~200)mm	$U=0.3\text{ }\mu\text{m}+2.5\times 10^{-6}L$		
128	Micromete With μm Reading	Length	Micromete With μm Reading Z/JF-JHW-001	(0~50)mm	$U=0.82\text{ }\mu\text{m}$		
				(50~100)mm	$U=1.34\text{ }\mu\text{m}$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
				CalibrationStick,(25~100)mm	$U=0.3\text{ }\mu\text{ m}+2.5\times10^{-6}L$		
129	*Projectors for Detecting the Notch of Test Sample	Length	C.S. for Projectors for Detecting the Notch of Test Sample JJF(Ji)194	50×	$U_{\text{rel}}=0.2\%$		
		(0~300) mm		$U=0.02\text{ mm}$			
		Angles		(40~50) °	$U=2'$		
II Thermology Measuring Instruments							
1	Industry Platinum and Copper ResistanceThermo meter	Resistance	V.R. of Industry Platinum and Copper Resistance Thermometer JJG229	(-60~0) °C	$U=(0.028\sim0.020)^{\circ}\text{C}$		
				(0~300) °C	$U=(0.020\sim0.029)^{\circ}\text{C}$		
2	*Thermostatic Baths for Temperature Calibration	Temperature	Measurement and Test Norm of Metrological Characteristics of Thermostatic Baths for Temperature Calibration JJF1030	Uniformity: (-80~300) °C	$U=0.003^{\circ}\text{C}$		
				volatility: (-80~300) °C	$U=0.006^{\circ}\text{C}$		
				Rise and fall rate deviation: (0~5) °C /min	$U=0.03^{\circ}\text{C}/\text{min}$		
3	ThermistorThermo meters	Temperature	C.S. for Thermistor Thermometers JJF1379	(-50~200) °C	$U=0.015^{\circ}\text{C}$		
4	Temperature Data Acquisition Instruments	Temperature	C.S. for Temperature Data Acquisition Instruments JJF1366	(-80~300) °C	$U=(0.011\sim0.017)^{\circ}\text{C}$		
5	Standard Platinum-10% Rhodium	Temperature	V.R. of Standard Platinum-10% Rhodium Plantinum Thermocouples JJG75	419.527°C	$U=0.38^{\circ}\text{C}$		
				660.323°C	$U=0.38^{\circ}\text{C}$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
	Platinum Thermocouples			1084.62℃	U=0.45℃		
6	Working Noble Metal Thermocouples	Temperature	V.R. of Working Noble Metal Thermocouples JJG141	419.527℃	U=0.6℃		
				660.323℃	U=0.6℃		
				1084.62℃	U=0.7℃		
				(1100~1500)℃	U=3.1℃		
7	*Radiation Thermometers	Temperature	V.R. of Radiation Thermometers JJG856	(-10~500)℃	U= (0.6~1.3)℃		
				(500~1400)℃	U= (1.3~3.4)℃		
8	*ThermalImagers	temperature	C.S. for ThermalImagers JJF1187	(-10~50)℃	U= (0.6~0.4)℃		
				(50~500)℃	U= (0.4~0.6)℃		
9	*BimetallicThermometer	temperature	C.S. for Bimetallic Thermometers JJF1908	(-60~100)℃	U=0.3℃		
				(100~300)℃	U= (0.3~0.7)℃		
10	*PressureTypeThermometers	temperature	C.S. for Filled System Thermometers JJF1909	(-60~0)℃	U= (0.3~0.2)℃		
				(0~300)℃	U= (0.2~0.9)℃		
11	Temperature Itinerant Detecting Instrument	temperature	C.S for Temperature Itinerant Detecting Instrument JJF1171	PRT: (-60~0)℃	U= (0.09~0.07)℃		
				PRT: (0~300)℃	U= (0.07~0.09)℃		
				Tc: (300~1100)℃	U=0.6℃		
				Tc: (1100~1500)℃	U=2.0℃		
12	Clinical Electronic Thermometer	temperature	V.R. of the Clinical Electronic Thermometer JJG1162	(35~44)℃	U=0.07℃		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
13	Mechanical Thermo hygrometers	temperature	V.R. of Mechanical Thermo-hygrometers JJG205	(5~50) °C	U= (0.5~0.6) °C		
		humidity		30%RH~95%RH	U=1.5%RH~2.0%RH		
14	Working Disappearing-Filament of Optical Pyrometer	temperature	V.R. of Disappearance Filament of Photo-Pyrometer for Working JJG68	(900~1400) °C	U=9°C		
				(1400~2000) °C	U=10°C		
15	Base Metal Thermocouples	Temperature	C.S. for Base Metal Thermocouples JJF1637	(-60~300)°C	U=0.1°C		
				(300~1300) °C	U=0.6°C~1.0°C		
16	*Box-type Resistance Furnace	Temperature	C.S. For Box-type Resistance Furnace JJF1376	(200~1300) °C	U= (1.2~1.5) °C		
17	*Auto-measuring System of Thermocouples and Resistance Thermometers	Temperature	C.S. for Auto-measuring System of Thermocouples and Resistance Thermometers JJF1098	(300~1300) °C	U=0.6°C		
18	*Temperature Uniformity in Thermocouple Calibration Furnaces	Temperature	Testing specification for Temperature Uniformity in Thermocouple Calibration Furnaces JJF1184	(300~1300) °C	U=0.2°C		
19	sheathed Thermocouples	Temperature	C.S. for sheathed Thermocouples JJF1262	(-40~300) °C	U=0.2°C		
				(300~1100)°C	U=1.0°C		
20	*Temperature Indicators and Simulators	Temperature	C.S. of Temperature Indicators and Simulators by Electrical Simulation and	RTC: (-200~600) °C	U=0.1°C		
				Base Metal Thermoc: (0~1100) °C	U=0.2°C		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
	Electrical Simulation and Measurement		Measurement JJF1309	noble metal thermocouples: (0~1600) °C	$U=0.3^{\circ}\text{C}$		
21	*Recorders for Industrial-Process measurement	Temperature	V.R. of the Recorders for Industrial-Process measurement JJG74	(-60~200) °C (0~1600) °C	$U=0.08^{\circ}\text{C}$ $U=(0.2\sim0.8)^{\circ}\text{C}$		
22	*Clinic autoclave	Temperature	C.S. for Thermometers of Clinic Autoclave JJF1308, Calibration Specification for Temperature and Pressure Parameters of Small Stream Sterilizer JJF(冀)195	(0~150) °C	$U=0.4^{\circ}\text{C}$		
		Pressure		(0~400) kPa	$U=0.3\text{kPa}$		
23	*Analogue Temperature Indicators and Controllers	Temperature	V.R. of Analogue Temperature Indicators and Controllers JJG951	(-60~200) °C (0~1600) °C	$U=0.08^{\circ}\text{C}$ $U=(0.2\sim0.8)^{\circ}\text{C}$		
24	*Digital Temperature Indicators and Controllers	Temperature	V.R. of Digital Temperature Indicators and Controllers JJG617	PRT: (-60~200) °C Tc: (0~1600) °C	$U=0.08^{\circ}\text{C}$ $U=(0.2\sim0.8)^{\circ}\text{C}$		
25	*Temperature Transmitter	Temperature	C.S. for the Temperature Transmitter JJF1183	without PRT: (-80~500) °C without Tc: (500~1100) °C PRT: (-80~500) °C Tc: (500~1100) °C	$U=0.05\%\text{FS}$ $U=0.09\%\text{FS}$ $U=0.05\%\text{FS}$ $U=0.1\%\text{FS}$		
26	Precision Dew-point Hygrometers	Dewpoint	V.R. of Precision Dew-point Hygrometers JJG499	dewpoint: (-70~20) °C	$U=(0.40\sim0.30)^{\circ}\text{C}$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
27	Resistanceand Capacitance DewPoint Hygrometer	Dewpoint	C.S. for Resistanceand Capacitance DewPoint Hygrometer JJF1272	dewpoint: (-70~20)℃	U=0.4℃~0.3℃		
28	*Humidity Generator	Humidity	V.R. of Secondary Standard Divided Flow Humidity Generator JJG826	5%RH~95%RH	U=1.2%RH		
29	*Blackbody Radiation Sources of Radiation Thermometry	Temperature	Calibration Method for Blackbody Radiation Sources of Radiation Thermomer Z/JF-RGF-001,C.S. for Blackbody Radiation Sourcesof Radiation Thermometryfrom-10℃ to 200℃ JJF1552	(-50~-10)℃	U= (0.8~0.6)℃		
				(-10~200)℃	U= (0.6~1.0)℃		
				(200~2000)℃	U= (0.6~5.6)℃		
30	*Temperature and Humidity Standard Chambers	temperature	C.S. for Temperature and Humidity Standard Chambers JJF1564	(-60~50)℃	U=0.1℃		
		humidity		5%RH~95%RH	U=0.5%RH		
31	*Environmental Testing Equipment	Temperature	Calibration Specification for Environmental Testing Equipment for Temperature and Humidity Parameters JJF1101	(-80~100)℃	U= (0.12~0.4)℃		
				(100~300)℃	U= (0.2~0.4)℃		
		humidity		5%RH~60%RH	U=2.0%RH~1.6%RH		
				60%RH~95%RH	U=1.6%RH~2.2%RH		
32	*Temperature Block Calibrators	Temperature	Calibration Guideline of the Temperature Block Calibrators JJF1257	0℃	U=0.03℃		
				(-80~600)℃	U= (0.06~0.27)℃		
				(600~1100)℃	U=0.6℃		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
33	Passive Medical Cold Boxes	Temperature	Calibration Specification for Temperature Parameter of Passive Medical Cold Boxes JJF1676	$(-20 \sim 20) ^\circ\text{C}$	$U=0.13^\circ\text{C}$		
34	*Device for Thermal Conductivity Measurement	Thermal conductivity	C.S. of steady state Device for Thermal Conductivity Measurement JJF (Ji) 108	$(0.01 \sim 1) \text{ W/(m} \cdot \text{K)}$	$U_{\text{rel}}=4\%$		
		Temperature		$(-30 \sim 100) ^\circ\text{C}$	$U=0.1^\circ\text{C}$		
35	*Surface temperature control equipment	Temperature	Calibration method for Surface temperature control equipment Z/JF-RGG-001	$(-50 \sim 600) ^\circ\text{C}$	$U=2.0^\circ\text{C}$		
36	*Microwave Digestion Instrument	Temperature	C.S. for Temperature Parameters of Microwave Digestion Instrument JJF(Ji)203	$(0 \sim 200) ^\circ\text{C}$	$U=0.4^\circ\text{C}$		
37	*Illumination Test Chambers	Temperature	Calibration Method for Illumination Test Chambers Z/JF-RGG-005	$(0 \sim 100) ^\circ\text{C}$	$U=0.2^\circ\text{C}$		
		humidity		10%RH~90%RH	$U=2.0\%\text{RH}$		
		illumination		$(10 \sim 10000) \text{ lx}$	$U=66 \text{ lx}$		
		radiation quantity		$(50 \sim 100) \mu\text{W/cm}^2$	$U=12 \mu\text{W/cm}^2$		
38	*Temperature Indicators	Temperature	Calibration Specification for Temperature Indicators JJF1664	PRT: $(-200 \sim 600) ^\circ\text{C}$	$U=0.08^\circ\text{C}$		
				Tc: $(0 \sim 1600) ^\circ\text{C}$	$U= (0.2 \sim 0.8) ^\circ\text{C}$		
39	*Vacuum Ovens	Temperature	Calibration method for Vacuum Ovens JJF(Jin)01	$(0 \sim 150) ^\circ\text{C}$	$U=0.2^\circ\text{C}$		
		pressure		$(10 \sim 500) \text{ kPa}$ (Absolute pressure)	$U=0.6 \text{ kPa}$		
40	*Coal Ash Fusibility Tester	Temperature	C. S for Determinator of coal Ash Fusibility JJF(新)05	$(900 \sim 150) ^\circ\text{C}$	$U= (2.0 \sim 3.0) ^\circ\text{C}$ (Error Of Temperature Control)		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
				(900~1500) °C	U=(9.0~26) °C (Error Of Measuring Instrument)		
41	Standard Mercury-in-Glass Thermometer	Temperature	V.R. of Standard Mercury-in-Glass Thermometer JJG161	(-60~0) °C	U=(0.05~0.04) °C		
				(0~300) °C	U=(0.04~0.05) °C		
42	Standard Platinum Resistance Thermometer	Temperature	V.R. of Standard Platinum Resistance Thermometer JJG160	-189.3442 °C	U=8.0mK		
				-38.8344 °C	U=2.0mK		
				0.01 °C	U=1.8mK		
				231.928 °C	U=5.3mK		
				419.527 °C	U=8.4mK		
43	Standard Clinical Thermometer	Temperature	V.R. of Standard Clinical Thermometer JJG881	(35~44) °C	U=0.017 °C		
44	*Infrared Thermometers for Measurement of Human Temperature	Temperature	C.S. for Infrared Thermometers for Measurement of Human Temperature JJF1107	(30~42) °C	U=0.2 °C		
45	Liquid-in-Glass Thermometers	temperature	V.R. of Liquid-in-Glass Thermometers for Working JJG130	(-60~0) °C	U=(0.07~0.01) °C		
				(0~150) °C	U=(0.010~0.022) °C		
				(150~300) °C	U=(0.022~0.10) °C		
46	Electric Contact Mercury-in-Glass Thermometer	temperature	V.R. of Electric Contact Mercury-in-Glass Thermometer JJG131	(-30~100) °C	U=(0.06~0.10) °C		
				(100~200) °C	U=(0.10~0.22) °C		
				(200~300) °C	U=(0.22~0.6) °C		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
47	Clinical Thermometers	temperature	V.R. of Clinical Thermometers JJG111	(35~44) °C	U=0.05°C		
48	Electric Ventilation Psychrometer	Temperature	V.R. of Electric Ventilation Psychrometer JJG993	(5~50) °C	U=0.03°C		
		Humidity		30%RH~95%RH	U=1.3%RH		
49	*Digital Temperature-hygrometers	Temperature	Calibration Specification for Digital Temperature-hygrometers JJF 1076	(-40~100)°C	U= (0.2~0.4) °C		
		Humidity		5%RH~95%RH	U=0.5%RH~1.2%RH		
50	Thermometer of WBGT-index Meters	Temperature	C.S. for Thermometers of WBGT-index Meters JJF1407	(5~120) °C	U=0.3°C		
51	Water Triple point	Temperature	Calibration Specification of Fixed-Point Devices for Standard Platinum Resistance Thermometer JJF1178	0.01°C	U=0.7mk		
52	Thermometers for Transformer Windings	Temperature	Calibration Specification of Thermometers for Transformer Windings JJF(Ji)148	(0~150) °C	U=0.3°C		
53	Surface Thermometers	Temperature	Calibration Specification for the Surface Thermometers JJF1409	(50~400) °C	U= (0.7~2.4) °C		
54	*Short Base Metal Thermocouples	Temperature	C.S. for Short Base Metal Thermocouples JJF 1991	(-40~300) °C	U=0.32°C		
		Temperature		(300~1000) °C	U= (0.8~1.0) °C		
55	*Liquid Constant Temperature Testing Equipment	Temperature	C.S. for Temperature Performance of Liquid Constant Temperature Testing Equipment JJF 2019	(-80~5) °C	U= (0.10~0.12) °C		
				(5~95) °C	U= (0.10~0.16) °C		
				(95~300) °C	U= (0.27~0.33) °C		
56	*salt mist testing chambers	Temperature	C.S. for salt mist testing chambers JJF(Zhe) 1125-	(20~80) °C	U=0.2°C		



№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
		rate of salt spray precipitation	2016	(0.0~50.0) mL/ (80cm ³ ·h)	U=0.2mL/ (80cm ² ·h)		
57	*Large caliber liquid nitrogen container temperature measurement device	Temperature	Calibration method of Large caliber liquid nitrogen container temperature measurement device Z/JF-RGG-007	(-196~0) °C	U=0.84°C		
58	*Heat Distortion and Vicat Softening Temperature Meter	Temperature	Calibration Method of Heat Distortion and Vicat Softening Temperature Meter Z/JF-RGG-006	(25.0~300.0) °C	U=0.10°C		
		Rate of warming		(50~120) °C/h	U=0.16 °C/h		
59	*Constant Temperature and Humidity Laboratories	Temperature	C.S. for Environment Parameters of Constant Temperature and Humidity Laboratories JJF 2058	(15~30) °C	U=0.16°C	only test the concentration of particles in air with a particle size of >0.3 μm	
		Humidity		30%RH~80%RH	U=1.3%RH		
		Illuminance		(30~3000) lx	U=79lx		
		Velocity		(0.0~20.0) m/s	U=0.42m/s		
		Noise		(40~120) dB	U=1.5 dB		
		Differential static pressure		(-40~40) Pa	U=4Pa		
		classification of air cleanliness		(0.3~10) μm	U=44.0%FS		
60	D.C. Bridges for Measuring Temperature	Resistance	V.R. of D.C. Bridges for Measuring Temperature JJG484	1m Ω ~ 100m Ω	U _{rel} =1%		
				100m Ω ~ 1 Ω	U _{rel} =0.1%		
				1 Ω ~ 10 Ω	U _{rel} =0.01%		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
				10 Ω ~ 100 Ω	$U_{rel}=0.005\%$		
				100 Ω ~ 100k Ω	$U_{rel}=0.001\%$		
61	*Temperature, Pressure and Time Parameters of Large Steam Sterilizers	Temperature	C.S. for	(0~150) $^{\circ}\text{C}$	$U=0.20^{\circ}\text{C}$		
		Pressure	Temperature, Pressure and Time Parameters of Large Steam Sterilizers JJF 2088	(0~400)kPa	$U=0.50\text{kPa}$		
		Time		(0~3600)s	$U=1\text{s}$		
III Mechanics Measuring Instruments							
1	*Weights	Mass	V.R. of Weights JJG99	(1~500)mg	$U=(0.001\sim0.006)\text{mg}$		
				(1~500)g	$U=(0.006\sim0.09)\text{mg}$		
				500g~20kg	$U=(0.09\sim5)\text{mg}$		
				(20~500)kg	$U=(0.005\sim1.0)\text{g}$		
				(500~2000)kg	$U=(1.0\sim20)\text{g}$		
2	*Mechanical Balance	Mass	V.R. of Mechanical Balance JJG98	1mg~20g	$U=0.02\text{mg}$		
				(20~200)g	$U=0.2\text{mg}$		
				200g~1kg	$U=1.2\text{mg}$		
				(1~5)kg	$U=6\text{mg}$		
				(5~20)kg	$U=20\text{mg}$		
3	*Electronic Balance	Mass	V.R. of Electronic Balance JJG1036, C.S. for Electronic Balances JJF1847	(1~100)mg	$U=(0.003\sim0.006)\text{mg}$		
				100mg~6g	$U=(0.006\sim0.02)\text{mg}$		
				(6~50)g	$U=(0.02\sim0.04)\text{mg}$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				(50~500)g	$U=(0.04\sim0.09)\text{mg}$		
				500g~5kg	$U=(0.09\sim3.0)\text{mg}$		
				(5~100)kg	$U=(3.0\sim41)\text{mg}$		
				(100~2000)kg	$U=(0.041\sim12)\text{g}$		
				(2000~5000)kg	$U=(12\sim28)\text{g}$		
4	*Pressure Regulators with Bourdon Tube Pressure Gauge	Pressure	C.S. for Pressure Regulators with Bourdon Tube Pressure Gauge JJF1328	(0~60)MPa	$U=1.4\%\text{FS}$		
5	*Digital Pressure Gauge	Pressure	Verification Regulation of Digital Pressure Gauges JJG875	(-0.1~250)MPa	$U=0.006\%\text{FS}$		
6	*Pressure Transmitter	Pressure	V.R. of Pressure Transmitters JJG882	(-0.1~250)MPa	$U=0.03\%\text{FS}$		
7	*Metallic Brinell Hardness Testers	Hardness	V.R. of Metallic Brinell Hardness Testers JJG150	(8~650)HBW	$U_{\text{rel}}=1.6\%$		
8	*Metal Rockwell Hardness Testing Machines	Hardness	V.R. of Metallic Rockwell Hardness Testing Machines (Scales A, B, C, D, E, F, G, H, K, N, T) JJG112	(80~88)HRA	$U=0.5\text{HRA}$		
				(85~100)HRBW	$U=0.6\text{HRBW}$		
				(20~70)HRC	$U=0.8\text{HRC}$		
				(20~94)HRN	$U=0.8\text{HRN}$		
				(10~93)HRTW	$U=0.8\text{HRTW}$		
9	Tachometers	Rotate Speed	V.R. of Tachometers JJG105	(30~30000)r/min	$U_{\text{rel}}=0.1\%$		
10	*Metallic Vickers Hardness Testers	Hardness	V.R. of Metallic Vickers Hardness Testers JJG151	(50~1000)HV	$U_{\text{rel}}=3.5\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
11	*Equotip Hardness Tester	Hardness	V.R. of Equotip Hardness tester JJG747	(490~830)HLD	$U=5\text{HLD}$		
				(460~630)HLG	$U=5\text{HLG}$		
12	*Working Dynamometers	Force value	V.R. of Working Dynamometers JJG455	1cN~10MN	$U_{\text{rel}}=0.5\%$		
13	Torque Wrenches	Torque	V.R. of Torque Wrenches JJG707	(1~3000)Nm	$U_{\text{rel}}=0.3\%$		
14	Hydraulic Jacks	Force value	V.R. of Hydraulic Jacks JJG621	1kN~10MN	$U_{\text{rel}}=0.5\%$		
15	Relative Density Balance for Liquid	Density	V.R. of Relative Density Balance for Liquid JJG171	0.0010~2.0000	$U=0.0003$		
16	Torsion Balance	Mass	V.R. of Torsion Balance JJG46	(0.1~10)mg	$U=(0.003\sim0.03)\text{mg}$		
				(10~100)mg	$U=(0.03\sim0.1)\text{mg}$		
				(100~2500)mg	$U=(0.1\sim0.3)\text{mg}$		
17	Table Balances	Mass	V.R. for Table Balances JJG156	(0.1~10)g	$U=(0.03\sim0.1)\text{g}$		
				(10~1000)g	$U=(0.1\sim0.3)\text{g}$		
				(1~20)kg	$U=(0.3\sim1.5)\text{g}$		
18	Standard Metal Tank	Capacity	V.R. of Standard Metal Tank JJG259	second level, (1~2000)L	$U_{\text{rel}}=0.02\%$		
				third level, (1~5000)L	$U_{\text{rel}}=0.04\%$		
19	Vertical Metal Tank	Capacity	V.R. of Vertical Metal Tank Volume JJG168	(20~300000) m ³	$U_{\text{rel}}=0.3\%$		
				(>700~3000) m ³	$U_{\text{rel}}=0.2\%$		
				(>3000~300000) m ³	$U_{\text{rel}}=0.1\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
20	Metallic Horizontal Tank	Capacity	V.R. of Metallic Horizontal Tank JJG266	(20~100) m ³	$U_{rel}=0.4\%$		
21	Spherical Metal Tank	Capacity	V.R. of Spherical Metal Tank Capacity JJG642	(50~10000) m ³	$U_{rel}=0.3\%$		
22	Volume Pipe	Flow	V.R. of Volume Pipe JJG209	(100~5000)L	$U_{rel}=0.04\%$		
23	Bell Type Standard Device for Gas Flow	Flow	V.R. of Bell Type Standard Device for Gas Flow JJG165	(10~3000)L	$U_{rel}=0.08\%$		
24	Standard Facilities for Water Flowrate	Flow	V.R. of Standard Facilities for Liquid Flowrate JJG164	(0.01~6000) m ³ /h	$U_{rel}=0.04\%$		
25	Verification Facility for Water Meters	Flow	V.R. of Verification Facility for Water Meters JJG1113	(0.01~2500) m ³ /h	$U_{rel}=0.16\%$		
26	Heat Meters Calibration Facility	Flow	V.R. of Heat Meters Calibration Facility JJG (Ji) 122	(0.01~10000) m ³ /h	$U_{rel}=0.38\%$		
27	Flow Standard Facilities Master Meter Method	Flow	V.R. of Flow Standard Facilities Master Meter Method JJG643	liquid: (0.01~10000) m ³ /h	$U_{rel}=0.38\%$		
				air: (0.01~10000) m ³ /h	$U_{rel}=0.30\%$		
28	Gas Flow Calibration Facility by Means of Critical Flow Venturi Nozzles	Flow	Calibration Specification for Gas Flow Calibration Facility by Means of Critical Flow Venturi Nozzles JJF1240	(0.01~2000) m ³ /h	$U_{rel}=0.26\%$		
29	Gas Displacement Meters	Flow	V.R. of Gas Displacement Meters JJG633	(1~650) m ³ /h; DN25~DN100	$U_{rel}=0.54\%$ (mobile device)	Air medium	

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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				(0.01~10)L/min; DN25~DN15	$U_{rel}=0.15\%$ (PistonDevice)		
				(0.1~12) L/min; DN2~DN15	$U_{rel}=0.64\%$ (SoapFilmmethod)		
				(0.01~120)m ³ /h, DN10~DN100	$U_{rel}=0.12\%$ (0.1levelBellType)		
				(1~1723)m ³ /h; DN15~DN400	$U_{rel}=0.33\%$ (Means of Critical Flow Vezzles Nozzle)		
				(80~11200)m ³ /h; DN125~DN400	$U_{rel}=0.35\%$ (Mastermetermethod)		
				(20~7500)m ³ /h; DN50~DN300; (1.8~4.0) MPa	$U_{rel}=0.35\%$ (High pressure loop)		
30	*Floatmeter	Flow	V.R. of Rota Meter JJG257	(0.001~0.1) L/min; DN2~DN15(gas)	$U=1.1\%$ FS(SoapFilmmethod)		
				(0.1~12) L/min; DN2~DN15 (gas)	$U=0.64\%$ FS(SoapFilmmethod)		
				(0.01~10)L/min; DN2~DN15 (gas)	$U=0.12\%$ FS(PistonDevice)		
				(0.01~120)m ³ /h; DN10~DN100(gas)	$U=0.16\%$ FS(0.1levelBellType)		
				(1~1723)m ³ /h; DN15~DN100 (gas))	$U=1.1\%$ FS(Means of Critical Flow Vezzles Nozzle)		
				(0.012~5090)m ³ /h; DN6~DN150 (Water)	$U=0.20\%$ F.S.(Staticqualitymethod)		
				(0.00001~0.08)m ³ /h, DN2~DN15 (Water)	$U=0.24\%$ F.S.(Microflowmass method)		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				(0.012~5090)m ³ /h; DN6~DN150 (Water)	$U=0.28\%F.S.$ (Standardmeter method)		
				(0.53~565)m ³ /h,DN50~ DN200 (Water)	$U=0.70\%F.S.$ (Calibrationonsit e)		
31	Vortex Precession Flowmeters	Flow	Verification Regulation of Vortex Precession Flowmeters JJG1121	(80~11200)m ³ /h,DN125~ DN400(gas)	$U_{rel}=0.59\%$ (Mastermetermeth od)	Air medium	
				(1~1723)m ³ /h,DN15~ DN400	$U_{rel}=0.31\%$ (MeansofCriticalFl owVezzlesNozzlez)		
				(20~ 7500)m ³ /h,DN50~ DN300	$U_{rel}=0.35\%$ (Highpressureloop)		
				(1~650)m ³ /h,DN25~ DN100	$U_{rel}=0.57\%$ (mobiledevice)		
				(0.01~120)m ³ /h,DN25~ DN100	$U_{rel}=0.12\%$ (0.1levelBellType)		
32	Diaphragm Gas Meters	Flow	V.R. of Diaphragm Gas Meters JJG577	(1~160)m ³ /h	$U_{rel}=0.60\%$ (mobiledevice)	Air medium	
				(0.01~120)m ³ /h	$U_{rel}=0.13\%$ (0.1levelBellType)		
				(0.016~160) m ³ /h	$U_{rel}=0.38\%$ (Nozzles device)		
33	Hot Mass FlowMeters	Flow	Verification Rules for Thermal Gas Mass Flow Meter JJG1132	(1~1723)m ³ /h,DN15~ DN400	$U_{rel}=0.32\%$ (MeansofCriticalFl owVezzlesNozzlez)	Air medium	
				(80~ 11200)m ³ /h,DN125~ DN400	$U_{rel}=0.34\%$ (Mastermetermeth od)		
				(20~ 7500)m ³ /h,DN50~ DN300	$U_{rel}=0.35\%$ (Highpressureloop)		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				(1~650)m ³ /h,DN25~DN100	$U_{rel}=0.61\%$ (mobile device)		
				(0.01~10)L/min,DN2~DN15	$U_{rel}=0.16\%$ (standard meter device)		
				(0.01~120)m ³ /h,DN10~DN100	$U_{rel}=0.12\%$ (Piston Device)		
34	Critical Flow Venturi Nozzle	flow	V.R. of Critical Flow Venturi Nozzle JJG620	(0.01~120)m ³ /h	$U_{rel}=0.12\%$ (Class 0.1 Bell Plover)	Air medium	
				(0.01~10)L/min	$U_{rel}=0.11\%$ (Class 0.1 Piston)		
				(0.016~20)m ³ /h	$U_{rel}=0.11\%$ (p.V.T.t method)		
35	Hot Ball shaped Anemometer	wind speed	Metrological Verification Regulation of Hot Ball shaped Anemometer JJG(Js)0001	(0.3~50) m/s	$U=0.2\text{m/s}\sim 0.4\text{m/s}$		
36	Portable 3-cup Anemometers	wind speed	Verification Regulation of Portable 3-cup Anemometers JJG431	(0.3~50) m/s	$U=0.2\text{m/s}\sim 0.4\text{m/s}$		
37	Pitot Tube	wind speed	Verification Regulation of Pitot Tube JJG518	0.8~1.1	$U_{rel}=0.92\%$		
38	Contact Anemometer	wind speed	Verification Regulation of Contact Anemometer JJG613	(0.3~50) m/s	$U=0.2\text{m/s}\sim 0.4\text{m/s}$		
39	Portable Induction Anemometer	wind speed	Verification Regulation of Portable Induction Anemometer JJG515	(0.3~50) m/s	$U=0.2\text{m/s}\sim 0.4\text{m/s}$		
40	Thermo-anemometers	wind speed	Calibration Specification for Thermo-anemometers JJF 1939	(0.3~30) m/s	$U=0.2\text{m/s}\sim 0.4\text{m/s}$		
41	Ultrasonic Anemometers	wind speed	Calibration Specification for Ultrasonic Anemometers JJF 1934	(0.3~50) m/s	$U=0.2\text{m/s}\sim 0.4\text{m/s}$		



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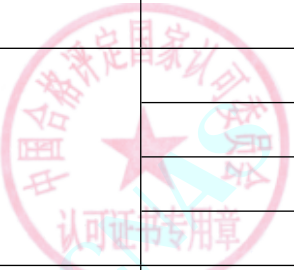
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
42	Cup Wind Speed Transducers of Automatic Weather Stations	wind speed	Calibration Specification for Cup Wind Speed Transducers of Automatic Weather Stations JJF 1935	(0.3~50) m/s	$U=0.2\text{m/s}\sim 0.4\text{m/s}$		
43	*HotWaterMeter	Flow	V.R. of Hot Water Meter JJG686	(0.005~600)m ³ /h, DN15~DN300 (Hotwater)	$U_{\text{rel}}=0.088\%$ (Staticqualitymet hod)		
				(0.53~10853)m ³ /h, DN25~DN2000 (water)	$U_{\text{rel}}=0.70\%$ (Calibrationonsite)		
44	Recorderforflowvelocityanddischarge	velocityofflow	CalibrationSpecificationforOnlineCurrentMeter JJF (JI) 120	(0.018~3)m/s	$U_{\text{rel}}=0.59\%$ (Standardmetermet hod)		
45	FlowIntegratingMeters	Flow	V.R. of Flow Intergration Meters JJG1003	(0.1~99999) m ³ /h	$U=0.08\%$ FS		
46	*Aqueousureasolutionfillingmachine	Flow	V.R. of Aqueous Urea Solution Dispensers JJG 1191	(2~40)L/min	$U_{\text{rel}}=0.8\%$		
47	SoapFilmFlowmeter	Capacity	V.R. of Soap Film Flowmeter JJG586	(10~6000) mL	$U_{\text{rel}}=0.05\%$ (ElectronicBalance)		
		Flow		(0.01~120) m ³ /h	$U_{\text{rel}}=0.12\%$ (Class 0.1 Bell Porver)		
		Flow		(0.01~10) L/min	$U_{\text{rel}}=0.12\%$ (Class 0.1 piston)		
48	WetGasMeters	Flow	Calibration Specification for Wet Gas Meters JJF1357	(0.01~120) m ³ /h	$U_{\text{rel}}=0.15\%$ (Class0.1BellJar)		
49	*WeirsandFlumesforFlowMeasurement	flowrate	Verification Regulation of Weirs and Flumes for Flow Measurement JJG711	(2.1~3900) m ³ /h	$U_{\text{rel}}=0.62\%$		
		Flow		(0~1000) mm	$U=0.5\text{mm}$		
50	*HeatMeters	Heat	Verification Regulation of Heat Meters JJG225	Total quantity method: (0.0115~93977)kW	$U_{\text{rel}}=0.71\%$ (Weightmethod)		

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		flowrate	V.R. of Calibration Instrument for Torque Wrenches JJG797	Total quantity method: (0.012~93977)kW	$U_{rel}=0.72\%$ (Standard meter Method)		
				Component method: (0.005~ 600)m ³ /h,DN15~DN300 (Hotwatermedium)	$U_{rel}=0.22\%$ (Standard meter Method)		
				Component method: (0.005~ 600)m ³ /h,DN15~DN300 (Hotwatermedium)	$U_{rel}=0.054\%$ (Weightmethod)		
		temperaturedi fference		Component method: (2~130) K	$U=13mk$		
		temperature		Component method: (4~180) °C	$U=0.07^{\circ}C$		
51	*Torque Wrenches	torque	V.R. of Calibration Instrument for Torque Wrenches JJG797	(1~3000)Nm	$U_{rel}=0.23\%$		
52	Working Glass Hydrometers	Density	V.R. of Working Glass Hydrometers JJG42	(650~2000)kg/m ³	$U=(0.2\sim4)kg/m^3$		
53	Standard Glass Hydrometers	Density	V.R. of Standard Glass Hydrometers JJG86	(650~1500)kg/m ³	$U=(0.12\sim0.4)kg/m^3$		
54	Locomotive Pipette	Capacity	V.R. of locomotivepipette JJG646	(0.1~10) μ L	$U=0.007\mu L$		
				(>10~100) μ L	$U=0.04\mu L$		
				(>100~1000) μ L	$U=0.12\mu L$		
				(>1~10)mL	$U=0.004mL$		
55	Micro Sampling Syringe	Capacity	V.R. of Tracesampler JJG(ji) 166	(0.1~10) μ L	$U=0.06\mu L$		



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				(>10～100) μ L	U=0.14 μ L		
				(>100～1000) μ L	U=1.0 μ L		
56	*On-line Oscillation Tube Liquid Density Meter	Density	V.R. of On-line Oscillation Tube Liquid Density meter JJG370	(650～1400)kg/m ³	U=0.4kg/m ³		
57	Laboratory Oscillation-type Liquid Density meters	Density	V.R. of Laboratory Oscillation-type Liquid Density meters JJG1058	(650～3000)kg/m ³	U=0.08kg/m ³		
58	C.S.for Butyrometers	Volume	C.S.for Butyrometers JJF (Ji) 111	Nominalvalue: 0.125mL	U=0.001mL		
59	Checker of Speed and Mileage Meter for Cars	Rotation Rate	V.R. of Checker of Speed and Mileage Meter for Cars JJG779	(100～600)r/min	U _{rel} =0.4%		
		(600～4000)r/min		U _{rel} =0.1%			
		Frequency		10Hz～1MHz	U _{rel} =8×10 ⁻⁵		
60	*Tension, Compression and Universal Testing Machines	Force Value	V.R. of Tension, Compression and Universal Testing Machines JJG139	1cN～10MN	U _{rel} =0.2%		
		Coaxiality		(0～25)%	U=5%		
		Length		Extensometer: (0～0.3)mm	U=0.40 μ m		
				Extensometer: (0.3～25)mm	U _{rel} =0.15%		
				Displacement: (1～5)mm	U=5 μ m		
				Displacement: (5～1000)mm	U _{rel} =0.15%		



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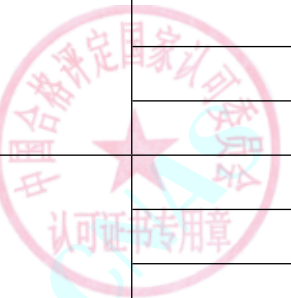
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
61	StandardDynamometers	ForceValue	V.R. of Standard Dynamometers JJG144	1cN~5MN	<i>U</i> _{rel} =0.1%		
62	ShoreADurometers	Hardness	V.R. of Shore A Durometers JJG304	(20~100)HA	<i>U</i> =0.22HA		
		Length		(0~3)mm	<i>U</i> =0.02mm		
		Force value		(2~10)N	<i>U</i> =30mN		
63	*StandardDevicesforRotationalSpeed	RotationalSpeed	V.R. of Standard Devices for Rotational Speed JJG326	(10~60000)r/min	<i>U</i> _{rel} =0.01%		
64	*ConstantRevolutionSpeedSource	RotationalSpeed	C.S. for Constant Revolution Speed Source JJF (ji) 146	(10~10000)r/min	<i>U</i> _{rel} =0.3%		
65	FordeTransducers	ForceValue	V.R. of Forde Transducers JJG391	20N~5MN	<i>U</i> _{rel} =0.1%		
66	*Oedometers	ForceValue	C.S.for Oedometers JJF1311	(100~10000)N	<i>U</i> _{rel} =0.3%		
		Length		(0~300)mm	<i>U</i> =0.02mm		
67	*ElectronicUniversalTestingMachine	Coaxiality	V.R.of Electronic Universal Testing Machine JJG475	(0~25)%	<i>U</i> =5%		
		ForceValue		1N~5MN	<i>U</i> _{rel} =0.2%		
		Speed		(0.1~500)mm/min	<i>U</i> _{rel} =0.15%		
		Length		Extensometer: (0~0.3)mm	<i>U</i> =0.40 μ m		
				Extensometer: (0.3~25)mm	<i>U</i> _{rel} =0.15%		
				Displacement: (1~5)mm	<i>U</i> =5 μ m		
				Displacement: (5~1000)mm	<i>U</i> _{rel} =0.15%		



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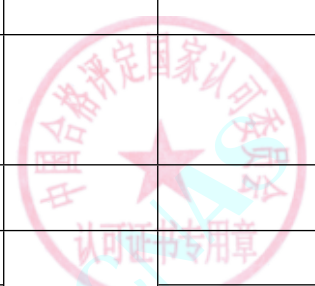
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
68	*Anchorage Testing Machines	Force Value	V.R. of Anchorage Testing Machines JJG1083	1N~10MN	<i>U</i> _{rel} =0.2%		
		Length		(0~0.3)mm	<i>U</i> =0.40 μ m		
				(0.3~25)mm	<i>U</i> _{rel} =0.15%		
69	*Working Force Measuring Machines for Special Purposes	Force Value	C.S. for Working Force Measuring Machines for Special Purposes JJF1134	1cN~10MN	<i>U</i> _{rel} =0.5%		
70	Adhesion Coefficient Testers	Force Value	C.S. for Adhesion Coefficient Testers JJF1551	(50~1000)N	<i>U</i> _{rel} =0.3%		
		Adhesion Coefficient		0.10~1.20	<i>U</i> =0.005		
71	*High Strength Bolt Testers	Force	C.S. for High Strength Bolt Testers JJF1478	(5~1000)kN	<i>U</i> _{rel} =0.3%		
		Torque		(100~3000)Nm	<i>U</i> _{rel} =0.3%		
72	*Static Torque Measuring Devices	Torque	V.R. of Static Torque Measuring Devices JJG995	(1~3000)Nm	<i>U</i> _{rel} =0.3%		
73	*Working Torque-meters	Torque	V.R. of Working Torque-meters JJG1146	(1~3000)Nm	<i>U</i> _{rel} =0.3%		
74	*Interface Tensiometers	Tension	C.S. for Interface Tensiometers JJF1464	(5~200)mN/m	<i>U</i> _{rel} =0.2%		
75	*Falling Weight Impact Testing Machines	Mass	C.S. for Falling Weight Impact Testing Machines JJF1445	(1~200)g	<i>U</i> =0.2mg		
				200g~20kg	<i>U</i> =1g		
		Length		(0~7.5)m	<i>U</i> =1mm		
76	*Pendulum Impact Testing Machines	Energy	V.R. of Pendulum Impact Testing Machines JJG145	(15~40)J(Dynamic)	<i>U</i> =1J		
				(40~330)J(Dynamic)	<i>U</i> _{rel} =3%		
				(0.5~750)J(Static)	<i>U</i> _{rel} =0.5%		



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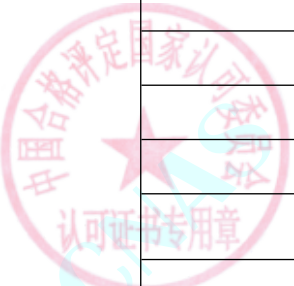
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		Pendulum Torque		(0.1~500)Nm	$U_{rel}=0.2\%$		
77	*Type A Barcol Hardness Testers	Hardness	V.R. of Type A Barcol Hardness Testers JJG610	(42~88)HBa	$U=0.8HBa$		
78	Shore D Durometer	Hardness	V.R. of Shore D Durometer JJG1039	(0~100)HD	$U=0.6HD$		
		Length		(0~3)mm	$U=0.005mm$		
		Force value		(2~50)N	$U=0.15N$		
79	*Metallic Webster Hardness Testing Machines	Hardness	V.R. of Metallic Webster Hardness Testing Machines JJG944	(5~18)HWA	$U=0.8HWA$		
80	*Portable Brinell Hardness Testers	Force	C.S. for Portable Brinell Hardness Testers JJF1595	(0.3~3.0)kN	$U_{rel}=0.5\%$		
		Hardness		(75~650)HB	$U_{rel}=2.5\%$		
81	*Pencil Hardness Testers	Mass	C.S. for Pencil Hardness Testers JJF(SH)007	(500~1000)g	$U=0.1g$		
		Angle		45°	$U=10'$		
82	*Ultrasonic Hardness Testers	Force	C.S. for Ultrasonic Hardness Testers JJF1436	(1~98)N	$U_{rel}=1.0\%$		
		Hardness		(50~1000)HV	$U_{rel}=3.5\%$		
83	Motor Vehicle Engine Speed Measuring Instruments	Rotate Speed	C.S. for Motor Vehicle Engine Speed Measuring Instruments JJF1375	(500~6000)r/min	$U_{rel}=0.1\%$		
84	*Elevator Overspeed Governor Testers	speed	C.S. for Elevator Overspeed Governor Testers JJF1374	(1~3.5)m/s	$U_{rel}=0.2\%$		
85	Glass Container	Capacity	V.R. of General Volumetric Glass JJG196, V.R. of Special glassware JJG10, V.R. of	(0.1~10)mL	$U=0.004mL$		
				(>~20)mL	$U=0.007mL$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
			Syringes for Medical Use JJG18	(>20~100)mL	$U=0.028\text{mL}$		
				(>100~200)mL	$U=0.07\text{mL}$		
				(>200~500)mL	$U=0.13\text{mL}$		
				(>500~1000)mL	$U=0.24\text{mL}$		
				(>1000~2000)mL	$U=0.26\text{mL}$		
86	BottleTop Dispenser	Capacity	C.S.for Bottle Top Dispenser JJF(Ji)181	(0.1~10)mL	$U=0.003\text{mL}$		
				(>10~200)mL	$U=0.02\text{mL}$		
87	Automated Dilution and Standard Solution Preparation Instrument	Capacity	C. S.for Automated Dilution and Standard Solution Preparation Instrument" JJF(Ji)189	(10~100) μL	$U=0.2 \mu\text{L}$		
				(>100~1000) μL	$U=0.7 \mu\text{L}$		
				(>1000~10000) μL	$U=0.002\text{mL}$		
88	Eudiometer in Oxygen Analyzers	Capacity	C.S.for Calibration Specification for Eudiometerin Oxygen Analyzers JJF(Ji)165	(0~100)mL	$U=0.01\text{mL}$		
89	Comprehensivecali brationdeviceforsam pler	flow	Calibration Specification for Gas Sampling Comprehensive Calibration Device JJF (冀) 3023- 2022,C.S. for Sampler Flow and Pressure Calibrator Z/JF- HYH-002	(5~50000)mL/min	$U_{\text{rel}}=0.27\%$		
				(50~1500)L/min	$U_{\text{rel}}=0.36\%$		
				(0.01~10) L/min	$U_{\text{rel}}=0.21\%$		
				(0.01~120) m3/h	$U_{\text{rel}}=0.30\%$ (Class 0.1Bell Jar)		
				(0.016~120)m3/h	$U_{\text{rel}}=0.37\%$ (Master Meter Method)		
		pressure		static: (-50~-0.01) kPa	$U_{\text{rel}}=0.4\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				static: (0.01~50) kPa	$U_{rel}=0.4\%$		
				dynamic(0.1~2000) Pa	$U_{rel}=0.1\%$		
90	*Measuring Instruments for Cereals Density	volume	V. R. of Measuring Instruments for Cereals Density JJG 264	(0.1~1000) mL	$U=0.08\text{mL}$		
		quality		1mg~1000g	$U=0.1\text{mg}$		
91	*Digital Weighted-Method Liquid Density Meters	Density	V.R. of Digital Weighted-Method Liquid Density Meters JJG999	(650~2000)kg/m ³	$U=0.5\text{ kg/m}^3$		
92	*Digital Density Refractive meter	density	Calibration method of digital density Refractive meter Z/JF-HXY-008	(650~2000)kg/m ³	$U=0.2\text{ kg/m}^3$		
		Refraction		n_D : (1.3330~1.6580)	$U=3 \times 10^{-4}$		
93	Liquid-medium Piston Gauge	Pressure	V.R. of Liquid-medium Piston Gauge JJG59	(0.04~160)MPa	$U_{rel}=0.006\%$		
94	*Precise Pressure Gauge and Vacuum Gauge	Pressure	V.R. of Elastic Element Precise Pressure Gauges and Vacuum Gauges JJG49	(-0.1~250)MPa	$U=0.1\%FS$		
95	*Elastic Element Pressure Gauges, Pressure-Vacuum Gauges and Vacuum Gauges for General Use	Pressure	V. R. of Elastic Element Pressure Gauges, Pressure-Vacuum Gauges and Vacuum Gauges for General Use JJG52	(-0.1~250)MPa	$U=0.5\%FS$		
96	*Bursting Strength Testers for Paper (Board)	Pressure	Calibration Specification of Bursting Strength Testers for Paper(Board) JJF1811	(0~6)MPa	$U=0.1\%FS$		
97	*Gasoline Vapor Recovery Detectors	Flow	Calibration Specification of Gasoline Vapor Recovery Detectors JJF 1948	(0.5~120) L/min	$U_{rel}=0.8\%$		
				(0.01~120) m ³ /h	$U_{rel}=0.12\%$		
		Time		(0~3600)s	$U=0.1s$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		Pressure		(0.001~20)kPa	$U_{rel}=0.1\%$		
				(-20~-0.001)kPa	$U_{rel}=0.1\%$		
98	Mass Comparators	Mass	C.S.for Mass Comparators JJF1326	(1~100)mg	$U=(0.003\sim0.006)\text{mg}$		
				100mg~6g	$U=(0.006\sim0.02)\text{mg}$		
				(6~50)g	$U=(0.02\sim0.04)\text{mg}$		
				(50~500)g	$U=(0.04\sim0.09)\text{mg}$		
				500g~5kg	$U=(0.09\sim3.0)\text{mg}$		
				(5~100)kg	$U=(3.0\sim41)\text{mg}$		
				(100~2000)kg	$U=(0.041\sim12)\text{g}$		
				(2000~5000)kg	$U=(12\sim28)\text{g}$		
99	*Goriolis Mass Flow Meters	Flow	V.R. of oriolis Mass Flow Meters JJG1038	(0.01~120)m ³ /h, DN10~DN100(gas)	$U_{rel}=0.12\%$ (0.1levelBellType)		
				Air: (1~1723)m ³ /h, DN15~DN400	$U_{rel}=0.34\%$ (MeansofCriticalFlowVezzlesNozzlez)		
				gas: (80~11200)m ³ /h, DN125~DN400	$U_{rel}=0.34\%$ (Standardmetermethod)		
				Air: (20~7500)m ³ /h, DN50~DN300, (1.8~4.0) MPa	$U_{rel}=0.35\%$ (High pressure loop)		
				(0.012~5090)m ³ /h, DN6~DN800 (Water)	$U_{rel}=0.054\%$ (Staticqualitymethod)		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
100	*Turbine Flowmeter	Flow	V.R. of Turbine Flowmeter JJG1037	(0.00001~0.08)m³/h, DN2~DN15 (Water)	$U_{rel}=0.054\%$ (Microflow quality method)		
				(0.012~5090)m³/h, DN6~DN800 (Water)	$U_{rel}=0.20\%$ (Standard meter method)		
				(0.53~2714) m³/h, DN25~DN400 (water)	$U_{rel}=0.7\%$ (Calibration on site)		
				(1~650)m³/h, DN25~DN100(gas)	$U_{rel}=0.54\%$ (mobile device)		
				(0.01~120)m³/h, DN10~DN100(gas)	$U_{rel}=0.12\%$ (0.1 level Bell Type)		
				Air: (1~1723)m³/h, DN15~DN400	$U_{rel}=0.33\%$ (Means of Critical Flow Vezzles Nozzles)		
				Air: (80~11200)m³/h, DN125~DN400	$U_{rel}=0.35\%$ (Master meter method)		
				Air: (20~7500)m³/h, DN50~DN300, (1.8~4.0) MPa	$U_{rel}=0.35\%$ (High pressure loop)		
				(0.012~5090)m³/h, DN6~DN800 (Water)	$U_{rel}=0.057\%$ (Static quality method)		
				(0.00001~0.08)m³/h, DN2~DN15 (Water)	$U_{rel}=0.056\%$ (Microflow quality method)		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
101	*Ultrasonic Flowmeters	Flow	V.R. of Ultrasonic Flowmeter JJG1030, calibration specification for DN1000~DN2000 online liquid ultrasonic flowmeter JJF (冀) 196	(0.012~5090)m ³ /h, DN6~DN800 (Water)	$U_{rel}=0.22\%$ (Standard meter method)		
				(0.53~4241) m ³ /h, DN25~DN500 (water)	$U_{rel}=0.7\%$ (Calibration on site)		
				(0.016~160) m ³ /h	$U_{rel}=0.34\%$ (Nozzles device)		
				(1~650)m ³ /h, DN20~DN100(gas)	$U_{rel}=0.56\%$ (mobile device)		
				(0.01~120)m ³ /h, DN10~DN100(gas)	$U_{rel}=0.12\%$ (0.1 level Bell Type)		
				Air: (1~1723)m ³ /h, DN15~DN400	$U_{rel}=0.31\%$ (Means of Critical Flow Nozzles)		
				Air: (80~11200)m ³ /h, DN125~DN400	$U_{rel}=0.33\%$ (Master meter method)		
				Air: (20~7500)m ³ /h, DN50~DN300, (1.8~4.0) MPa	$U_{rel}=0.35\%$ (High pressure loop)		
				(0.012~5090)m ³ /h, DN6~DN800 (Water)	$U_{rel}=0.057\%$ (Static quality method)		
				(0.00001~0.08)m ³ /h, DN2~DN15 (Water)	$U_{rel}=0.057\%$ (Microflow quality method)		
				(0.012~5090)m ³ /h, DN6~DN800 (Water)	$U_{rel}=0.21\%$ (Standard meter method)		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
102	*Differential Pressure Flowmeter	Flow	V.R. of Differential Pressure Type Flowmeter JJG640	(0.53~10853) m ³ /h, DN25~DN2000	$U_{rel}=0.5\%$ (Calibrationonsite)		
				(0.016~160) m ³ /h	$U_{rel}=0.34\%$ (Nozzles device)		
				(1~650)m ³ /h,DN25~DN100(gas)	$U_{rel}=0.56\%$ (mobiledevice)		
				(0.01~120)m ³ /h,DN10~DN100(gas)	$U_{rel}=0.12\%$ (0.1levelBellType)		
				(0.01~10)L/min,DN2~DN15(gas)	$U_{rel}=0.16\%$ (PistonDevice)		
				Air: (1~1723)m ³ /h,DN15~DN400	$U_{rel}=0.58\%$ (Volumetricmetho d)		
				Air: (80~11200)m ³ /h,DN125~DN400	$U_{rel}=0.59\%$ (Mastermetermeth od)		
				Air: (20~7500)m ³ /h,DN50~DN300, (1.8~4.0) MPa	$U_{rel}=0.40\%$ (High pressure loop)		
				(0.012~5090)m ³ /h,DN6~DN800 (Water)	$U_{rel}=0.086\%$ (Staticqualitymet hod)		
				(0.00001~0.08)m ³ /h,DN2~DN15 (Water)	$U_{rel}=0.068\%$ (Microflowqualit ymethod)		
				(0.012~5090)m ³ /h,DN6~DN800 (Water)	$U_{rel}=0.23\%$ (Standardmetermet hod)		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				(0.53~10853) m ³ /h, DN25~DN2000	$U_{rel}=0.70\%$ (Calibrationonsite)		
103	*Vortex-sheddingFloemeter	Flow	V.R. of Vortex-shedding Floemeter JJG1029	(0.012~ 5090)m ³ /h,DN6~DN800 (Water)	$U_{rel}=0.057\%$ (Staticqualitymet hod)		
				(0.00001~ 0.08)m ³ /h,DN2~DN15 (Water)	$U_{rel}=0.056\%$ (Microflowqualit ymethod)		
				(0.012~ 5090)m ³ /h,DN6~DN800 (Water)	$U_{rel}=0.21\%$ (Standardmetermet hod)		
				(0.53~4241) m ³ /h, DN25~DN500	$U_{rel}=0.70\%$ (Calibrationonsite)		
				Air: (1~ 1723)m ³ /h,DN15~ DN400	$U_{rel}=0.45\%$ (MeansofCriticalFl owVezzlesNozzlez)		
				Air: (80~ 11200)m ³ /h,DN125~ DN400	$U_{rel}=0.46\%$ (Mastermetermeth od)		
				Air: (20~ 7500)m ³ /h,DN50~ DN300, (1.8~4.0) MPa	$U_{rel}=0.35\%$ (High pressure loop)		
104	Orifice Flowmeters	Flow	C.S. for Orifice Flowmeters JJF 2033	(0.016~120)m ³ /h	$U_{rel}=0.35\%$ (Mastermetermeth od)		
				(0.016~160) m ³ /h	$U_{rel}=0.34\%$ (Nozzles device)		
105	*ColdWaterMeter	Flow	V.R.ofColdWaterMeter JJG162	(0.012~ 5090)m ³ /h,DN6~DN800 (Water)	$U_{rel}=0.10\%$ (Staticqualitymeth od)		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				(0.00001~0.08)m ³ /h, DN2~DN15 (Water)	$U_{rel}=0.10\%$ (Microflowqualitymethod)		
				(0.012~5090)m ³ /h, DN6~DN800 (Water)	$U_{rel}=0.22\%$ (Standardmetermet hod)		
				(0.53~10853) m ³ /h, DN25~DN2000	$U_{rel}=0.70\%$ (Calibrationonsite)		
106	*ElectromagneticFlowmeter	Flow	V.R. of Electromagnetic Flowmeter JJG1033,online calibration specification for largediameter electromagnetic flowmeters JJF (冀) 182	(0.012~5090)m ³ /h, DN6~DN800	$U_{rel}=0.057\%$ (Staticqualitymet hod)		
				(0.00001~0.08)m ³ /h, DN2~DN15 (水介质)	$U_{rel}=0.052\%$ (Microflowqualit ymethod)		
				(0.012~5090)m ³ /h, DN6~DN800	$U_{rel}=0.22\%$ (Standardmetermet hod)		
				(0.53~10853) m ³ /h, DN25~DN2000	$U_{rel}=0.70\%$ (Calibrationonsite)		
107	*LiquidDisplacementMeters	Flow	V.R. of Liquid Positive Displacement FlowMeter JJG667	(0.012~5090)m ³ /h, DN6~DN800 (Water)	$U_{rel}=0.054\%$ (Staticqualitymet hod)		
				(0.00001~0.08)m ³ /h, DN2~DN15 (Water)	$U_{rel}=0.054\%$ (Microflowqualit ymethod)		
				(0.012~5090)m ³ /h, DN6~DN800 (Water)	$U_{rel}=0.20\%$ (Standardmetermet hod)		
				(0.53~4241) m ³ /h, DN25~DN500	$U_{rel}=0.70\%$ (Calibrationonsite)		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
108	*Liquid Level Gauges	Pressure	Verification Regulation of Liquid Level Gauges JJG971	(0.2~98) m	$U=0.3\text{mm}$		
				(-90~110) kPa	$U_{\text{rel}}=0.1\%$		
109	*Calibration Specification for Active Piston Provers	Flow	Calibration Specification for Active Piston Provers JJF1586	(2~500)L	$U_{\text{rel}}=0.05\%$		
110	Compensated Micro-manometer	Pressure	V. R. of Compensated Micro-manometer JJG158	(-2500~2500)Pa	$U=0.6\text{Pa}$		
111	Immersion Oscillation-type Electronic Liquid Density Meters	Density	C. S. for Immersion Oscillation-type Electronic Liquid Density Meters JJF 1866	(650~2000)kg/m ³	$U=0.2\text{kg/m}^3$		
112	Differential Pressure Liquid Density Meters	Density	C.S. for Differential Pressure Liquid Density Meters JJF 2029	(650~2000)kg/m ³	$U=0.4\text{kg/m}^3$		
113	Aneroid Barometer (Barograph)	Pressure	V.R. of Aneroid Barometer & Aneroid Barograph JJG272	(500~1060)hPa	$U=0.19\text{hPa}$		
114	Digital Barometer	Pressure	V.R. of Digital Barometers JJG1084	(10~1200)hPa.a	$U=0.19\text{hPa}$		
115	Moisture Receivers	Capacity	Calibration Method for Moisture Receivers Z/JF-HXH-005	(0.01~0.3)mL	$U=0.004\text{mL}$		
				(>0.3~1)mL	$U=0.008\text{mL}$		
				(>1~25)mL	$U=0.016\text{mL}$		
116	Ultrasonic Gas Meters	Flow	V.R. of Ultrasonic Gas Meters JJG 1190	(1~650)m ³ /h	$U_{\text{rel}}=0.6\%(\text{mobile device})$		
				(0.01~120)m ³ /h	$U_{\text{rel}}=0.13\%(0.1\text{level Bell Type})$		
				(0.016~160)m ³ /h	$U_{\text{rel}}=0.38\%(\text{Nozzles device})$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
117	Fanning Mill Anemometers	wind speed	Calibration Specification for Fanning Mill Anemometers JJF 1971	(0.3~50)m/s	$U=0.2\text{m/s}\sim 0.4\text{m/s}$		
118	Environmental Vibration Instruments	Acceleration	V.R. of Environmental Vibration Instruments JJG 921	(0.1~10) m/s ² , (1~80)Hz (0.1~10) m/s ² (Reference Point: 16Hz)	$U_{\text{rel}}=3.0\%$ $U_{\text{rel}}=2.0\%$		
119	Vibration Meters	Acceleration	Verification Regulation of Vibration Meters JJG 676	Reference Point, (100m/s ² , 160Hz,	$U_{\text{rel}}=1.2\%$		
				Pass Band: (2~100) m/s ² (20Hz~2000Hz)	$U_{\text{rel}}=2.1\%$		
		Velocity		(2~200) mm/s (20Hz~2000Hz)	$U_{\text{rel}}=2.1\%$		
		Displacement		(10~1000) μm (20Hz~160Hz)	$U_{\text{rel}}=2.1\%$		
		Frequency		(20~2000)Hz	$U=0.5\text{Hz}$		
120	*Mechanical Vibration Genetator for Testing	Frequency	Verification Regulation of Mechanical Vibration Genetator for Testing JJG 189	(5~50)Hz	$U=0.3\text{Hz}$		
				(>50~2000)Hz	$U=0.7\text{Hz}$		
		Acceleration		(10~100) m/s ² , (5~2000)Hz	$U_{\text{rel}}=3.3\%$		
		Displacement		(0.01~2)mm, (5~100)Hz	$U_{\text{rel}}=5\%$		
		Distortion		0.03%~30%, (5~2000)Hz	$U_{\text{rel}}=10\%$		
121	*Electrodynamic Vibration Testing Systems	Frequency	Verification Regulation of Electrodynamic Vibration Testing Systems JJG 948	(5~100)Hz	$U=0.016\text{Hz}$		
				(>100~5000)Hz	$U_{\text{rel}}=0.016\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		Acceleration		(10~100) m/s ² , (5~2000)Hz	$U_{rel}=3.3\%$		
		Distortion		0.03%~20%, (5~2000)Hz	$U=2\%$		
122	Piezoelectric Accelerometer	Acceleration	Verification Regulation of Piezoelectric Accelerometer JJG 233	Reference Point, 100m/s ² , 160Hz	$U_{rel}=1.0\%$		
				Passband: (2~100) m/s ² , (20Hz~2000Hz)	$U_{rel}=1.9\%$		
123	*Hydraulic Vibration Testing System	Frequency	Verification Regulation of Hydraulic Vibration Testing System JJG 638	(5~50)Hz	$U=0.3\text{Hz}$		
				(>50~2000)Hz	$U_{rel}=0.5\%$		
		acceleration		(10~100) m/s ² , (5~2000)Hz	$U_{rel}=3.3\%$		
		Displacement		(0.01~2)mm, (5~100)Hz	$U_{rel}=3.3\%$		
		Distortion		0.03%~20%, (5~2000)Hz	$U_{rel}=10\%$		
124	*Medical Centrifuges	Rotation rate	C. S for Medical Centrifuges JJF 2004	(20~20000)r/min	$U_{rel}=0.22\%$		
		Time		(0~1800)s	$U=0.42\text{s}$		
		Temperature		(-40~80)°C	$U=0.76\text{°C}$		
125	*Syringe Pumps and Infusion Pumps	Flow	C.S.for Syringe Pumps and Infusion Pumps JJF 1259	(5~<20)ml/h	$U_{rel}=2.4\%$		
				(20~200)ml/h	$U_{rel}=1.6\%$		
				(>200~1000)ml/h	$U_{rel}=2.6\%$		
		Pressure		(50~200)kPa	$U=3.3\text{kPa}$		



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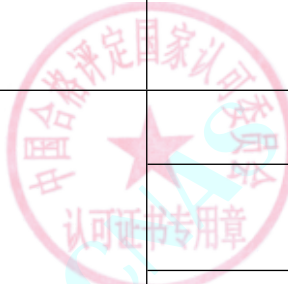
No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
126	Le Chatelier Flask for Determining Density of Hydraulic Cement	Volume	C. S. for Le Chatelier Flask for Determining Density of Hydraulic Cement JJF(Ji) 190	(0.1~24)mL	U=0.016mL		
IV Acoustics and Vibration Measuring Instruments							
1	*Ultrasonic Power Meter for Milliwatt Level	Sound Power	Verification Regulation of Ultrasonic Power Meter for Milliwatt Level JJG 665	(1~500)mW	$U_{rel}=6.0\%$		
2	*Ultrasonic Flaw Detectors	Attenuation	V.R.of Ultrasonic Flaw Detectors JJG 746	(1~80) dB, (0.5~ 15) MHz	U=0.42dB		
		Level Linear		1%~100%, (0.5~15) MHz	U=0.6%		
		Vertical linearity		5%~100%, (0.5~15) MHz	U=1.7%		
3	Sound Level Meters	Sound Pressure Level	Verification Regulation of Sound Level Meters JJG188	Acoustic Signal:(30~ 124)dB, (10~400) Hz	U=0.5dB		
				Acoustic Signal:(30~ 124)dB, (500~3150) Hz	U=0.4dB		
				Acoustic Signal:(30~ 124)dB, (4~20) kHz	U=0.5dB		
				Electrical Signal: (10~ 140) dB, (10Hz~ 20kHz)	U=0.2dB		
				Busrt Signal: (10~ 140) dB, (0.25ms~ 1s) ,4kHz	U=0.2 dB		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
		Time-weighted sound level		S: (1~50)dB/s,4kHz	U=0.4dB/s		
		F: (1~50)dB/s,4kHz		U=3.0dB/s			
		Steady State Electrical Signal: (10~140) dB, (20~8000) Hz		U=0.2 dB			
		Busrt Signal: (10~140) dB, (0.25ms~1s)		U=0.2 dB			
4	*Ultrasonic Source for Medical Ultrasonic Diagnostic Equipment	Sound Power	V.R.of Ultrasonic Source for Medical Ultrasonic Diagnostic Equipment JJG 639	(2~500)mW	U _{rel} =10%		
5	Audiological Equipment Pure-tone Audiometers	Frequency	Verification Regulation of Audiological Equipment Pure-tone Audiometers JJG 388	(125~8000) Hz	U=1Hz		
		RETSPL		(-10~110) dB, (125~8000) Hz	U=1.3dB		
		RETFL		(-10~70) dB, (250~6000) Hz	U=2.5dB		
		Total Harmonic Distortion		0.05%~100%	U=10%FS		
6	Personal Sound Exposure Meters	Sound Pressure Level	V.R.of Personal Sound Exposure Meters JJG 980	Acoustic Signal:(30~124)dB, (63~400) Hz	U=0.5dB		
				Acoustic Signal:(30~130)dB, (500~3150) Hz	U=0.4dB		
				Acoustic Signal:(30~124)dB, (4~8) kHz	U=0.5dB		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
		Sound Exposure		Electrical Signal: (10~140) dB, (63Hz~8kHz)	U=0.2dB		
				Acoustic Signal:(0.3~80.0)Pa ² h, (63~8000) Hz	U _{rel} =11%		
				Electrical Signal:0.3Pa ² h~80.0 Pa ² h,4kHz	U _{rel} =11%		
				Burst Signal:(0.3~80.0)Pa ² h, (0.25~1000) ms	U _{rel} =13%		
7	*Ultrasonic Source for Ultrasonic Doppler Fetal Monitor	Sound Power	V.R.of Ultrasonic Source for Ultrasonic Doppler Fetal Monitor JJG 394	(2~500)mW	U _{rel} =8.2%		
		Heart Rate		(65~210)min ⁻¹	U _{rel} =1.7%		
8	*Ultrasonic Source of Ultrasonic Doppler Foetal Meters	Sound Power	V.R.of Ultrasonic Source of Ultrasonic Doppler Foetal Meters JJG 893	(2~500)mW	U _{rel} =8.2%		
9	*Large Multi-channel Ultrasonic Flaw Detectors	Linearity of time base	C.S.for Large Multi-channel Ultrasonic Flaw Detectors JJF 1862	1%~100%	U=0.6%		
V Electromagnetism Measuring Instruments							
1	*Amperemeter\Voltmeter\Wattmeter	DC current	V.R. of Amperemeters, Voltmeters, Wattmeters and Ohmmeters JJG124	10μA~50A	U _{rel} =3×10 ⁻⁴		
		AC current		1mA~50A, 50Hz	U _{rel} =3×10 ⁻⁴		
				50A~100A, 50Hz	U _{rel} =8×10 ⁻⁴		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		DC Voltage		10mV~600V	$U_{rel}=3 \times 10^{-4}$		
		AC voltage		100mV~600V, 50Hz	$U_{rel}=3 \times 10^{-4}$		
		DC power		15W~6kW	$U_{rel}=3 \times 10^{-4}$		
		AC power		15W~6kW, 50Hz	$U_{rel}=3 \times 10^{-4}$		
2	*Electric Meters for Measuring Alternating-current Electrical Energy	Electric energy	V.R.of Electrical Meters for Measuring Alternating- current Electrical Energy JJG596	Single-phase load and three-phase blance: (30~400)V, 0.005A, $\cos \phi=(1.0, 0.5L, 0.8C, 0.5C)$	$U_{rel}=0.022\%$		
				Single-phase load and three-phase blance: (30~400)V, (0.01~ 0.02) A, $\cos \phi$ =(1.0, 0.5L, 0.8C, 0.5C)	$U_{rel}=0.020\%$		
				Single-phase load and three-phase blance: (30~400)V, (0.05~ 0.1) A, $\cos \phi$ =(1.0, 0.5L, 0.8C, 0.5C)	$U_{rel}=0.014\%$		
				Single-phase load and three-phase blance: (30~400)V, (0.2~ 100) A, $\cos \phi$ =(1.0, 0.5L, 0.8C, 0.5C)	$U_{rel}=0.013\%$		
				Three-phase unbalanced load : (30~400) V, (0.05~0.1) A, $\cos \phi$ =(1.0, 0.5L, 0.8C, 0.5C)	$U_{rel}=0.016\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				Three-phase unbalanced load : (30~400) V, (0.2~10) A, $\cos \phi$ =(1.0,0.5L,0.8C,0.5C)	$U_{rel}=0.014\%$		
				Three-phase unbalanced load : (30~400) V, (20~100) A, $\cos \phi$ =(1.0,0.5L,0.8C,0.5C)	$U_{rel}=0.015\%$		
				Unbalancedload: (57.7~400) V, (0.01~100) A, $\cos \phi$ =1.0	$U_{rel}=0.08\%$		
				Unbalancedload: (57.7~400) V, (0.01~100) A, $\cos \phi$ =0.5L	$U_{rel}=0.10\%$		
		Time/Day		(-50~50)s/d	$U=0.01s/d$		
3	Reference Meters for Electric Energy	Electric Energy	V.R. of Reference Meters for Electrical Energy JJG1085	Single-phase load and three-phase blance: (30~400) V,0.005A, $\cos \phi$ =(1.0,0.5L,0.8C,0.5C)	$U_{rel}=0.022\%$		
				Single-phase load and three-phase blance: (30~400) V, (0.01~ 0.02) A, $\cos \phi$ =(1.0,0.5L,0.8C,0.5C)	$U_{rel}=0.020\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				Single-phase load and three-phase balance: (30~400) V, (0.05~0.1) A, $\cos \phi$ =(1.0,0.5L,0.8C,0.5C)	$U_{rel}=0.014\%$		
				Single-phase load and three-phase balance: (30~400) V, (0.2~100) A, $\cos \phi$ =(1.0,0.5L,0.8C,0.5C)	$U_{rel}=0.013\%$		
				Three-phase unbalanced load : (30~400) V, (0.05~0.1) A, $\cos \phi$ =(1.0,0.5L,0.8C,0.5C)	$U_{rel}=0.016\%$		
				Three-phase unbalanced load: (30~400) V, (0.2~10) A, $\cos \phi$ =(1.0,0.5L,0.8C,0.5C)	$U_{rel}=0.014\%$		
				Three-phase unbalanced load: (30~400) V, (20~100) A, $\cos \phi$ =(1.0,0.5L,0.8C,0.5C)	$U_{rel}=0.015\%$		
4	*Verification Equipment for Electrical Energy Meter	Electric Energy	V.R. of Verification Equipment for A.C. Electrical Energy Meter JJG597	Single-phase load and three-phase balance: (30~400) V, 0.005A, $\cos \phi$ =(1.0,0.5L,0.8C,0.5C)	$U_{rel}=0.022\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				Single-phase load and three-phase balance: (30~400) V, (0.01~0.02) A, $\cos \phi$ =(1.0, 0.5L, 0.8C, 0.5C)	$U_{rel}=0.020\%$		
				Single-phase load and three-phase balance: (30~400) V, (0.05~0.1) A, $\cos \phi$ =(1.0, 0.5L, 0.8C, 0.5C)	$U_{rel}=0.014\%$		
				Single-phase load and three-phase balance: (30~400) V, (0.2~100) A, $\cos \phi$ =(1.0, 0.5L, 0.8C, 0.5C)	$U_{rel}=0.013\%$		
				Three-phase unbalanced load: (30~400) V, (0.05~0.1) A, $\cos \phi$ =(1.0, 0.5L, 0.8C, 0.5C)	$U_{rel}=0.016\%$		
				Three-phase unbalanced load: (30~400) V, (0.2~10) A, $\cos \phi$ =(1.0, 0.5L, 0.8C, 0.5C)	$U_{rel}=0.014\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
			ilac-M	Three-phase unbalanced load: (30~400) V, (20~100) A, $\cos \phi$ =(1.0,0.5L,0.8C,0.5C)	$U_{rel}=0.015\%$		
		AC indication error		(57.7~380)V, (0.005~100) A,	$U_{rel}=0.03\%$		
		Waveform Distortion		(0.001~100) %	$U_{rel}=0.05\%$		
5	*AC standard power source	Power indication error	V.R.of Standard AC Power Source JJG(Military Industry)6	(57.7~380)V,(0.005~100)A,(45Hz~65Hz)	$U_{rel}=0.02\%$		
		Error of current indication		(0.005~100)A,(45Hz~65Hz)	$U_{rel}=0.02\%$		
		Error or voltage indication		(57.7~380)V,(45Hz~65Hz)	$U_{rel}=0.02\%$		
		Phase indication error		0 ° ~360 °	$U_{rel}=0.02\%$		
6	High Insulation Resistance Meters	Resistance	V.R. of High Insulation Resistance Meters JJG690	100 Ω ~ 10M Ω	$U_{rel}=0.24\%$		
				10M Ω ~ 100M Ω	$U_{rel}=0.6\%$		
				100M Ω ~ 1G Ω	$U_{rel}=1.2\%$		
				1G Ω ~ 1T Ω	$U_{rel}=2.4\%$		
		Voltage		10V~1000V	$U_{rel}=0.012\%$		
7	*Earth-Continuity Testers	AC resistance	V.R. of Earth-Continuity Testers JJG984	100 $\mu \Omega$ ~ 11.11 Ω ,50Hz	$U_{rel}=0.12\%$		
		DC resistance		100 $\mu \Omega$ ~ 11.11 Ω	$U_{rel}=0.06\%$		

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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
		AC current		1A~60A,50Hz	<i>U</i> _{rel} =0.15%		
		DC current		1A~60A	<i>U</i> _{rel} =0.1%		
8	*Earth Resistance Meters	Resistance	V.R. of Earh Resistance Meters JJG366	100m Ω ~1 Ω	<i>U</i> _{rel} =0.6%		
				1 Ω ~10k Ω	<i>U</i> _{rel} =0.12%		
9	*Clamp Earth Resistance Meters	Resistance	V.R. of Clamp Earth Resistance Meters JJG1054	100m Ω ~1 Ω	<i>U</i> _{rel} =0.6%		
				1 Ω ~10k Ω	<i>U</i> _{rel} =0.12%		
10	Insulation Resistance Meters	Resistance	V.R. of Megohmmeter JJG622	100 Ω ~10M Ω	<i>U</i> _{rel} =0.24%		
				10M Ω ~100M Ω	<i>U</i> _{rel} =0.6%		
				100M Ω ~1G Ω	<i>U</i> _{rel} =1.2%		
				1G Ω ~1T Ω	<i>U</i> _{rel} =2.4%		
		Voltage		10V~10kV	<i>U</i> _{rel} =1.2%		
11	Electronic Insulation Resistance Meters	Resistance	V.R. of Electronic Insulating Resistance Meters JJG1005	100 Ω ~10M Ω	<i>U</i> _{rel} =0.24%		
				10M Ω ~100M Ω	<i>U</i> _{rel} =0.6%		
				100M Ω ~1G Ω	<i>U</i> _{rel} =1.2%		
				1G Ω ~1T Ω	<i>U</i> _{rel} =2.4%		
		Voltage		10V~10kV	<i>U</i> _{rel} =1.2%		
12	*LeakageCurrentTester	Current	V.R. of Leakage Current Tester JJG843	10 μ A~100 mA	<i>U</i> _{rel} =0.06%		
				100 μ A~100 mA(50 Hz)	<i>U</i> _{rel} =0.06%		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
		Voltage	V.R. of Medical Leakage Current Testers JJG1188	100 μ A~50 mA(20 Hz~1MHz)	<i>U</i> _{rel} =0.7%		
				10 V~1000 V	<i>U</i> _{rel} =1.2×10 ⁻³		
				10 V~1000 V (50Hz)	<i>U</i> _{rel} =1.2×10 ⁻³		
		Resistance		500 Ω ~2.5 k Ω	<i>U</i> _{rel} =1.3×10 ⁻⁴		
				200 Ω ~2.5 k Ω (20 Hz~1 MHz)	<i>U</i> _{rel} =1.3×10 ⁻³		
		DC Votlage		10V~250V	<i>U</i> _{rel} =0.06%		
13	*Medical Leakage Current Testers	Current	V.R. of Medical Leakage Current Testers JJG1188	10 μ A~20 mA	<i>U</i> _{rel} =6×10 ⁻⁴		
				100 μ A~20 mA(50 Hz,60 Hz)	<i>U</i> _{rel} =6×10 ⁻⁴		
		Resistance		500 Ω ~2 k Ω	<i>U</i> _{rel} =1.3×10 ⁻⁴		
				500 Ω ~2 k Ω (10 Hz~1 MHz)	<i>U</i> _{rel} =1.3×10 ⁻³		
		Frequency Response		-70 dB~0 dB(10 Hz~1MHz)	<i>U</i> =0.09 dB		
				Votlage	AC:10 V~600 V(50 Hz,60 Hz)		
14	D.C.Potentiometers	Voltage	V.R. of D.C. Potentiometers JJG123	10nV~100 μ V	<i>U</i> _{rel} =2.5×10 ⁻³		
				100 μ V~1mV	<i>U</i> _{rel} =2.6×10 ⁻⁴		
				1mV~10mV	<i>U</i> _{rel} =3×10 ⁻⁵		
				10mV~100mV	<i>U</i> _{rel} =1.4×10 ⁻⁵		
				100mV~2.1V	<i>U</i> _{rel} =2.5×10 ⁻⁶		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
15	Standard Cell	Voltage	V.R. of Standard Cell JJG153	1.017901V~1.02000V	$U=12\ \mu\text{V}$		
16	DC Resistor	Resistance	V.R. of D.C. Resistors JJG166	1 Ω	$U_{\text{rel}}=1.2\times 10^{-6}$		
				100m Ω , 10 Ω , 100 Ω , 1k Ω , 10k Ω	$U_{\text{rel}}=3.6\times 10^{-6}$		
				1m Ω , 10m Ω , 100k Ω	$U_{\text{rel}}=7.1\times 10^{-6}$		
				100k $\Omega \sim 10\text{M } \Omega$	$U_{\text{rel}}=2\times 10^{-5}$		
				10M $\Omega \sim 100\text{M } \Omega$	$U_{\text{rel}}=1\times 10^{-4}$		
17	D.C.Bridges	Resistance	V.R. of D.C. Bridge JJG125	100 $\mu\ \Omega$	$U_{\text{rel}}=0.12\%$		
				1m Ω	$U_{\text{rel}}=0.06\%$		
				10m Ω	$U_{\text{rel}}=0.025\%$		
				100m $\Omega \sim 100\text{k } \Omega$	$U_{\text{rel}}=0.012\%$		
				10 Ω , 100 Ω , 1k Ω , 10k Ω	$U_{\text{rel}}=1\times 10^{-5}$		
18	D.C.Comparison Bridges	Resistance	V.R. of D.C. Comparison Bridges JJG546	1 Ω	$U_{\text{rel}}=1.2\times 10^{-6}$		
				10 $\Omega \sim 1\text{k } \Omega$	$U_{\text{rel}}=3.6\times 10^{-6}$		
				10k Ω	$U_{\text{rel}}=7.1\times 10^{-6}$		
19	*Instrument for Transformer Test Device	Ratio Difference	V.R. of Transformer Test Set JJG169	0.01%~100%	$U_{\text{rel}}=0.3\%$		
		Phase Difference		0.05' ~ 500'	$U_{\text{rel}}=0.3\%$		
20	*Voltage Transformers	Voltage ratio	V.R. of Instrument Voltage Transformers JJG314	-0.1~0.1, 1000V/(1 $\times$ 10 ⁻³ ~1000)V	$U=1.2\times 10^{-6}$		



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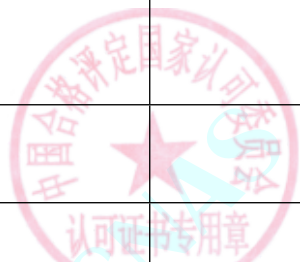
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		PhaseDifference		$(-0.1 \sim 0.1)$ rad, 1000V/($1 \times 10^{-3} \sim 1000$)V	$U=1.2 \times 10^{-6}$ rad		
		VoltageRatio		$-0.1 \sim 0.1$, (6~35)kV/100V,(6~35)kV/ $\sqrt{3}/100/\sqrt{3}$ 3V,(6,10)kV/100/ $\sqrt{3}$ V, (20%U _b)	$U=0.005\%$		
				$-0.1 \sim 0.1$, (6~35)kV/100V,(6~35)kV/ $\sqrt{3}/100/\sqrt{3}$ 3V,(6,10)kV./100/ $\sqrt{3}$ 3V,(50%U _b)	$U=0.004\%$		
				$-0.1 \sim 0.1$, (6~35)kV/100V,(6~35)kV/ $\sqrt{3}/100/\sqrt{3}$ 3V,(6,10)kV/100/ $\sqrt{3}$ 3V,(80%~120%)U _b	$U=0.003\%$		
		PhaseDifference		$(-500 \sim 500)'$, (6~35)kV/100V,(6~35)kV/ $\sqrt{3}/100/\sqrt{3}$ 3V,(6,10)kV/100/ $\sqrt{3}$ 3V,(20%U _b)	$U=0.16'$		
				$(-500 \sim 500)'$, (6~35)kV/100V,(6~35)kV/ $\sqrt{3}/100/\sqrt{3}$ 3V,(6,10)kV/100/ $\sqrt{3}$ 3V,(50%U _b)	$U=0.12'$		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
		VoltageRatio		$(-500\sim 500)'$, $(6\sim 35)\text{kV}/100\text{V}$, $(6\sim 35)\text{kV}/\sqrt{3}/100/\sqrt{3}\text{V}$, $(6,10)\text{kV}/100/\sqrt{3}\text{V}$, $(80\%\sim 120\%)\text{Ub}$	$U=0.09'$		
				$-0.1\sim 0.1$, $(110\sim 500)\text{kV}/\sqrt{3}/100/\sqrt{3}\text{V}$, $(20\%\text{Ub})$	$U=0.05\%$		
				$-0.1\sim 0.1$, $(110\sim 500)\text{kV}/\sqrt{3}/100/\sqrt{3}\text{V}$, $(50\%\text{Ub})$	$U=0.04\%$		
				$-0.1\sim 0.1$, $(110\sim 500)\text{kV}/\sqrt{3}/100/\sqrt{3}\text{V}$, $(80\%\sim 120\%)\text{Ub}$	$U=0.03\%$		
		PhaseDifference		$(-500\sim 500)'$, $(110\sim 500)\text{kV}/\sqrt{3}/100/\sqrt{3}\text{V}$, $(20\%\text{Ub})$	$U=1.5'$		
				$(-500\sim 500)'$, $(110\sim 500)\text{kV}/\sqrt{3}/100/\sqrt{3}\text{V}$, $(50\%\text{Ub})$	$U=1.1'$		
				$(-500\sim 500)'$, $(110\sim 500)\text{kV}/\sqrt{3}/100/\sqrt{3}\text{V}$, $(80\%\sim 120\%)\text{Ub}$	$U=0.8'$		
21	Dielectric Strength Detector of Insulating Oils	Voltage	Dielectric Strength Detector of Insulating Oils JJG(Ji)112	$(1\sim 100)\text{kV}$	$U_{\text{rel}}=0.6\%\sim 0.9\%$		
22	*TransformersTurnRatioTestSets	Transformers Ratio	Trans formers Turn Ratio Test Sets JJG970	$1\sim 10000$	$U_{\text{rel}}=0.008\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
23	Contactless Electrostatic Voltage Measuring Instruments	DC Voltage	Calibration Specification for Contactless Electrostatic Voltage Measuring Instruments JJF1517	(0.1~20) kV	$U_{rel}=1.3\%$		
24	*Third-harmonic Generator	Voltage	C.S. for Triple-frequency Generators JJF2001	(1~1000) V	$U_{rel}=0.1\%$		
		Frequency		(50~200) Hz	$U_{rel}=0.1\%$		
25	Testing Instrument of Transformer Secondary Loop Voltage Drops and Loads	Difference In Ratio	Calibration Specification for Testing Instrument of Transformer Secondary Loop Voltage Drops and Loads JJF1619	(0.01~100) %	$U_{rel}=0.6\%$		
		Phase Difference		(0.05~500) °	$U_{rel}=0.6\%$		
		Impedance		(0.001~10) Ω	$U_{rel}=0.6\%$		
		Admittance		(0.01~10) mS	$U_{rel}=0.6\%$		
26	*High Voltage Resonant Test Device	Alternate Voltage	Verification Regulation of High-voltage Divider at Power Frequency JJG496	(0.1~100) kV	$U_{rel}=0.6\%$		
		Frequency		20Hz~300Hz	$U_{rel}=0.1\%$		
27	Withstanding Voltage Tester Calibrators	Alternate Voltage	C.S. for withstanding voltage tester calibrator JJF (Ji) 3006	(0.1~15) kV	$U_{rel}=0.6\% \sim 0.9\%$		
		DC Voltage		(0.1~15) kV	$U_{rel}=0.14\% \sim 0.16\%$		
		Alternate Current		(0.1~200) mA	$U_{rel}=0.6\% \sim 0.9\%$		
		Direct current		(0.1~200) mA	$U_{rel}=0.09\% \sim 0.6\%$		
		Time		10s~10min	$U_{rel}=0.6\%$		



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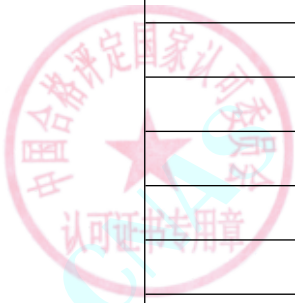
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
28	*High-voltage Divider at Power Frequency	Alternate Voltage	Verification Regulation of High-voltage Divider at Power Frequency JJG496	(0.1～500)kV	<i>U</i> _{rel} =0.15%～0.6%		
29	Withstanding Voltage Testers	Alternate voltage	Verification Regulation of Withstanding Voltage Testers JJG795	(0.1～15)kV	<i>U</i> _{rel} =0.6%～0.9%		
		DC Voltage		(0.1～15)kV	<i>U</i> _{rel} =0.14%～0.16%		
		Alternate current		(0.1～200)mA	<i>U</i> _{rel} =0.6%～0.9%		
		Direct current		(0.1～200)mA	<i>U</i> _{rel} =0.09%～0.6%		
		Time		(0.003～24)h	<i>U</i> _{rel} =0.6%		
30	Process Calibrators (Electrical part)	Input DC Voltage	C.S. for Process Calibrators JJF1472	20mV～200mV	<i>U</i> _{rel} =1.5×10 ⁻⁵		
				200mV～2V	<i>U</i> _{rel} =7×10 ⁻⁶		
				2V～20V	<i>U</i> _{rel} =4×10 ⁻⁶		
				20V～200V	<i>U</i> _{rel} =6×10 ⁻⁶		
				200V～300V	<i>U</i> _{rel} =8×10 ⁻⁶		
		Input DC current		20μA～200μA	<i>U</i> _{rel} =1×10 ⁻⁴		
				200μA～2mA	<i>U</i> _{rel} =5×10 ⁻⁵		
				2mA～20mA	<i>U</i> _{rel} =5×10 ⁻⁵		
				20mA～100mA	<i>U</i> _{rel} =5×10 ⁻⁵		
				Input DC resistance	1Ω, 10Ω, 100Ω, 1kΩ, 10kΩ, 100kΩ		<i>U</i> _{rel} =1×10 ⁻⁵



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
		Output DC Voltage	C.S. for Electrical Meters JJF1284	1M Ω ,10M Ω	$U_{rel}=2 \times 10^{-5}$		
				100M Ω	$U_{rel}=5 \times 10^{-5}$		
				20mV~200mV	$U_{rel}=1.5 \times 10^{-5}$		
				200mV~2V	$U_{rel}=7 \times 10^{-6}$		
				2V~20V	$U_{rel}=4 \times 10^{-6}$		
				20V~200V	$U_{rel}=6 \times 10^{-6}$		
				200V~1000V	$U_{rel}=8 \times 10^{-6}$		
		Output DC current		20μA~200μA	$U_{rel}=1 \times 10^{-4}$		
				200μA~100mA	$U_{rel}=5 \times 10^{-5}$		
				Output frequency	1Hz~50kHz		$U_{rel}=1.2 \times 10^{-5}$
31	CalibratorsforElectricalMeters	C.S. for Electrical Meters JJF1284	DC Voltage		20mV~200mV	$U_{rel}=1.5 \times 10^{-5}$	
				200mV~2V	$U_{rel}=7 \times 10^{-6}$		
				2V~20V	$U_{rel}=4 \times 10^{-6}$		
				20V~200V	$U_{rel}=6 \times 10^{-6}$		
				200V~1000V	$U_{rel}=8 \times 10^{-6}$		
	DcCurrent		20μA~200μA	$U_{rel}=1 \times 10^{-4}$			
			200μA~2A	$U_{rel}=5 \times 10^{-5}$			
			2mA~20mA	$U_{rel}=5 \times 10^{-5}$			
			20mA~200mA	$U_{rel}=5 \times 10^{-5}$			



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
		Resistance	ilac-MRA CNAS	200mA～2A	$U_{rel}=9\times10^{-5}$	合格评定国家认可 证书专用章	
				2A～20A	$U_{rel}=1\times10^{-4}$		
				20A～100A	$U_{rel}=1\times10^{-4}$		
				1Ω～100kΩ	$U_{rel}=1\times10^{-5}$		
				100kΩ～10MΩ	$U_{rel}=2\times10^{-5}$		
				10MΩ～100MΩ	$U_{rel}=5\times10^{-5}$		
		AC current		100μA～220μA(40Hz～1kHz)	$U_{rel}=1.5\times10^{-4}$		
				100μA～220μA(1kHz～5kHz)	$U_{rel}=3\times10^{-4}$		
				100μA～220μA(5kHz～10kHz)	$U_{rel}=1.2\times10^{-3}$		
				220μA～2.2mA(40Hz～1kHz)	$U_{rel}=2\times10^{-4}$		
				220μA～2.2mA(1kHz～5kHz)	$U_{rel}=2.2\times10^{-4}$		
				220μA～2.2mA(5kHz～10kHz)	$U_{rel}=1.8\times10^{-3}$		
				2.2mA～22mA(40Hz～1kHz)	$U_{rel}=1.5\times10^{-4}$		
				2.2mA～22mA(1kHz～5kHz)	$U_{rel}=2.5\times10^{-4}$		
				2.2mA～22mA(5kHz～10kHz)	$U_{rel}=1.6\times10^{-3}$		
				22mA～220mA(40Hz～1kHz)	$U_{rel}=1.5\times10^{-4}$		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				22mA~220mA(1kHz~5kHz)	$U_{rel}=2.5 \times 10^{-4}$		
				22mA~220mA(5kHz~10kHz)	$U_{rel}=1.6 \times 10^{-3}$		
				220mA~2.2A(40Hz~1kHz)	$U_{rel}=2.8 \times 10^{-4}$		
				220mA~2.2A(1kHz~5kHz)	$U_{rel}=5 \times 10^{-4}$		
				220mA~2.2A(5kHz~10kHz)	$U_{rel}=8 \times 10^{-3}$		
				2.2A~20A(40Hz~1kHz)	$U_{rel}=5 \times 10^{-4}$		
				2.2A~20A(1kHz~5kHz)	$U_{rel}=1.2 \times 10^{-3}$		
				2.2A~20A(5kHz~10kHz)	$U_{rel}=4.5 \times 10^{-3}$		
				20A~100A (60Hz~5kHz)	$U_{rel}=1 \times 10^{-4}$		
				20mV~220mV(40Hz~20kHz)	$U_{rel}=9 \times 10^{-5}$		
		AC voltage		20mV~220mV(20kHz~50kHz)	$U_{rel}=2.1 \times 10^{-4}$		
				20mV~220mV(50kHz~100kHz)	$U_{rel}=5 \times 10^{-4}$		
				20mV~220mV(100kHz~300kHz)	$U_{rel}=9.5 \times 10^{-4}$		
				20mV~220mV(300kHz~500kHz)	$U_{rel}=1.5 \times 10^{-3}$		

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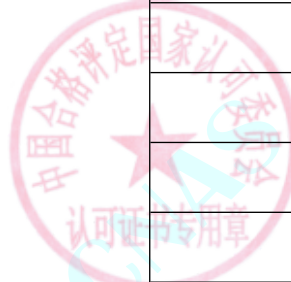
No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				20mV~220mV(500kHz~1MHz)	$U_{rel}=2.8 \times 10^{-3}$		
				220mV~2.2V(40Hz~20kHz)	$U_{rel}=6 \times 10^{-5}$		
				220mV~2.2V(20kHz~50kHz)	$U_{rel}=9 \times 10^{-5}$		
				220mV~2.2V(50kHz~100kHz)	$U_{rel}=1.5 \times 10^{-4}$		
				2.2V~22V(40Hz~20kHz)	$U_{rel}=6 \times 10^{-5}$		
				2.2V~22V(20kHz~50kHz)	$U_{rel}=8 \times 10^{-5}$		
				2.2V~22V(50kHz~100kHz)	$U_{rel}=1.5 \times 10^{-4}$		
				2.2V~22V(100kHz~300kHz)	$U_{rel}=3 \times 10^{-4}$		
				2.2V~22V(300kHz~500kHz)	$U_{rel}=1.5 \times 10^{-3}$		
				2.2V~22V(500kHz~1MHz)	$U_{rel}=2 \times 10^{-3}$		
				22V~220V(40Hz~20kHz)	$U_{rel}=6 \times 10^{-5}$		
				22V~220V(20kHz~50kHz)	$U_{rel}=9 \times 10^{-5}$		
				22V~220V(50kHz~100kHz)	$U_{rel}=1.6 \times 10^{-4}$		
				220V~1000V(40Hz~1kHz)	$U_{rel}=9 \times 10^{-5}$		
32	TestersforRelaying	AC voltage	V.R. of Testers for Relaying Protection JJG1112	5V~120V(40Hz~1kHz)	$U_{rel}=0.023\%$		

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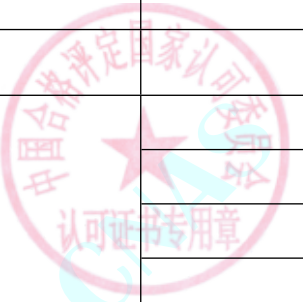
No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date	
	Protection	AC current		5mA~50A(40Hz~1kHz)	<i>U</i> _{rel} =0.023%			
		DC Voltage		5V~120V	<i>U</i> _{rel} =0.023%			
		DC current		5mA~50A	<i>U</i> _{rel} =0.023%			
		Time measurement		1ms~100s	<i>U</i> =5.8 μ s			
		Phase		0~359.999°	<i>U</i> =0.08°			
33	PowerMeter/ElectricalParametersMeter/Transformercharacteristictester	AC voltage	C.S. for Digital AC Electrical Parameters Meter JJF1491	1.5V~15V(45Hz~65Hz)	<i>U</i> _{rel} =0.1%			
				15V~30V(45Hz~65Hz)	<i>U</i> _{rel} =0.06%			
				30V~100V(45Hz~65Hz)	<i>U</i> _{rel} =0.03%			
				100V~300V(45Hz~65Hz)	<i>U</i> _{rel} =0.05%			
				300V~600V(45Hz~65Hz)	<i>U</i> _{rel} =0.08%			
		AC current		600V~1000V(45Hz~65Hz)	<i>U</i> _{rel} =0.1%			
				2mA~20mA(45Hz~65Hz)	<i>U</i> _{rel} =0.1%			
				20mA~50mA(45Hz~65Hz)	<i>U</i> _{rel} =0.06%			
				50mA~100mA(45Hz~65Hz)	<i>U</i> _{rel} =0.04%			
				100mA~1A(45Hz~65Hz)	<i>U</i> _{rel} =0.03%			
				1A~2A(45Hz~65Hz)	<i>U</i> _{rel} =0.03%			



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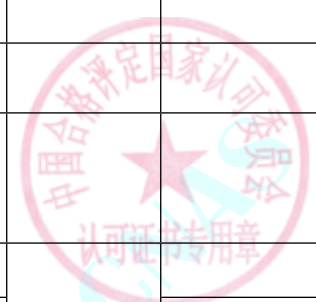
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		AC power	V.R. of AC Digital Powermeter JJG780	2A~10A(45Hz~65Hz)	$U_{rel}=0.05\%$		
				10A~25A(45Hz~65Hz)	$U_{rel}=0.1\%$		
				25A~100A(45Hz~65Hz)	$U_{rel}=0.1\%$		
				100mW~300mW(45Hz~65Hz)	$U_{rel}=0.5\%$		
				300mW~30W(45Hz~65Hz)	$U_{rel}=0.1\%$		
				30W~1kW(45Hz~65Hz)	$U_{rel}=0.1\%$		
				1kW~3kW(45Hz~65Hz)	$U_{rel}=0.05\%$		
				3kW~15kW(45Hz~65Hz)	$U_{rel}=0.1\%$		
				15kW~60KW(45Hz~65Hz)	$U_{rel}=0.1\%$		
				45Hz~65Hz	$U_{rel}=0.1\%$		
		Frequency		45Hz~65Hz	$U_{rel}=0.1\%$		
		Factor(Phase)		0° ~360° (45Hz~65Hz)	$U=0.01^\circ$		
34	AC Digital Powermeter	AC power	V.R. of AC Digital Powermeter JJG780	1W~12kW, 50Hz	$U_{rel}=0.05\%$		
35	*Clamp Ammeters	Current	C.S. for Clamp Ammeters JJF1075	100mA~20A	$U_{rel}=0.2\%$		
				20A~2000A	$U_{rel}=0.4\%$		
				100mA~20A, 50Hz	$U_{rel}=0.2\%$		
				20A~2000A, 50Hz	$U_{rel}=0.4\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
36	D.C. low Resistance Meters	Resistance	V.R. of D.C. low Resistance Meters JJG837	1 μ Ω ~ 10 μ Ω	U _{rel} =1.2%		
				10 μ Ω ~ 100 μ Ω	U _{rel} =0.6%		
				100 μ Ω ~ 1m Ω	U _{rel} =0.12%		
				1m Ω ~ 10m Ω	U _{rel} =0.06%		
				10m Ω ~ 20k Ω	U _{rel} =0.012%		
37	Loop Resistance Tester and DC Resistance Tester	Resistance	V.R. of Loop Resistance Tester and DC Resistance Meters JJG1052	1 μ Ω ~ 60 Ω (1A ~ 600A)	U _{rel} =0.03%		
		Current		100 μ Ω ~ 100k Ω (5mA ~ 1A)	U _{rel} =0.012%		
				0.1A ~ 600A	U _{rel} =0.03%		
38	Surface Resistance Tester	Resistance	C.S. for Surface Resistance Tester JJF1285	100 Ω ~ 10M Ω	U _{rel} =0.24%		
		AC voltage		10M Ω ~ 100M Ω	U _{rel} =0.6%		
				100M Ω ~ 1G Ω	U _{rel} =1.2%		
				1G Ω ~ 1000G Ω	U _{rel} =2.4%		
				10V ~ 1000V	U _{rel} =1.2%		
39	Peak Voltmeter	Voltage	V.R. of AC Peak Voltmeters JJG 1168	10mV ~ 1000V (1Hz ~ 1kHz)	U _{rel} =0.1%		
40	Four-probe Resistivity Measuring Instrument	Resistivity	V.R. of Resistivity Measuring Instruments with Four-Probe Array Method JJG508	100 μ Ω .cm ~ 10k Ω .cm	U _{rel} =1.5%		
41	*Comprehensive Tester for Electrical Safety Performance	Leakage current	Calibration Method of Comprehensive Test Instrument for Electrical	0.2mA ~ 20mA	U _{rel} =0.1%		
				0.2mA ~ 20mA (45Hz ~ 65Hz)	U _{rel} =0.12%		



No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		Test voltage	Apparatus Safety Performance Z/JF-DCD-001	10V~250V	$U_{rel}=0.1\%$		
				10V~250V (45Hz~65Hz)	$U_{rel}=0.12\%$		
		Insulation resistance		100 Ω ~ 10M Ω	$U_{rel}=0.24\%$		
				10M Ω ~ 100M Ω	$U_{rel}=0.6\%$		
				100M Ω ~ 1G Ω	$U_{rel}=1.2\%$		
				1G Ω ~ 1T Ω	$U_{rel}=2.4\%$		
		DC Voltage		10V~10kV	$U_{rel}=0.12\%$		
		Grounding Resistance		1m Ω ~ 11.11 Ω (45Hz~65Hz)	$U_{rel}=0.12\%$		
				1m Ω ~ 11.11 Ω	$U_{rel}=0.06$		
		(AC/DC) Current		1A~60A (45Hz~65Hz)	$U_{rel}=0.15\%$		
				1A~60A	$U_{rel}=0.1\%$		
		Earth resistance		1m Ω ~ 10m Ω	$U_{rel}=12\%$		
				10m Ω ~ 100m Ω	$U_{rel}=2.4\%$		
				100m Ω ~ 1 Ω	$U_{rel}=0.6\%$		
				1 Ω ~ 10k Ω	$U_{rel}=0.12\%$		
		AC and DC Voltage		100V~15kV(45Hz~65Hz)	$U_{rel}=0.12\%$		
				100V~15kV	$U_{rel}=0.12\%$		
		Time		1s~99s	$U=0.6s$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
42	Resistance Strain Gauge Indicators	Dependent variable	V.R. of Resistance Strain Gauge Indicators JJG623	$0.1 \mu \xi \sim 10^5 \mu \xi$	$U_{rel}=U0.06\%$		
43	High Voltage Switch Operation Characteristic Testers	Time	V.R. of High Voltage Switch Operation Characteristic Testers JJG1120	1ms~10ms	$U_{rel}=6 \times 10^{-3}$		
				10ms~100ms	$U_{rel}=6 \times 10^{-4}$		
				100ms~1s	$U_{rel}=6 \times 10^{-5}$		
				1s~200s	$U_{rel}=6 \times 10^{-6}$		
		Speed		0.2m/s~5m/s	$U_{rel}=0.24\%$		
44	Zinc Oxide Arrester Tester	Reference voltage	C.S. of Resistive Current Tester of Zinc Oxide Surge Arrester JJF (Ji) 186	100mV~220V	$U_{rel}=0.5\%$		
		Full current		100 μ A~20mA	$U_{rel}=0.5\%$		
		Resistive current		100 μ A~20mA	$U_{rel}=0.5\%$		
		Capacitive current		100 μ A~20mA	$U_{rel}=0.5\%$		
45	Detector of On-load Tap-changers	Resistance	C.S. for Detector of On-load Tap-changers JJF(Ji)113	100m Ω ~ 1 Ω	$U_{rel}=1.2\%$		
				1 Ω ~ 10 Ω	$U_{rel}=0.06\%$		
				10 Ω ~ 100 Ω	$U_{rel}=0.012\%$		
46	*Second Three-Wheel Bending Tester	AC Voltage	C.S. for Multifunction Standard Sources Z/JF-DCD-004	10mV~450V(45Hz~65Hz)	$U_{rel}=0.1\%$		
		AC Current		1A~35A(45Hz~65Hz)	$U_{rel}=0.1\%$		
47	*Battery Comprehensive Tester/Battery	DC Voltage	C.S. for DC Stabilized Power Supplies JJF1597	10mV~1000V	$U_{rel}=0.005\%$		
		DC Current		0.1A~100A	$U_{rel}=0.006\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
	Charging Tester/Battery Discharge Tester/DC Stabilized Power Supplies			100A~1000A	$U_{rel}=0.006\%$		
				1000A~2000A	$U_{rel}=0.006\%$		
48	*Welding Power Sources of DC Electric Welding Machines	DC Voltage	C.S. for the Power Supply of DC Electric Welder JJF 1985	10V~141V	$U_{rel}=0.12\%$		
		DcCurrent		1A~1000A	$U_{rel}=0.6\%$		
49	DC High Voltage Dividers	DC Voltage	Verification Regulation of DC High Voltage Dividers JJG1007	(0.1~500)kV	$U_{rel}=0.16\%$		
50	Magneto meters Based Magnetic Force	Magnetic flux density	Calibration Specification for Magnetometers Based Magnetic Force JJF1656	(-10~10)mT	$U=0.16mT$		
51	Pressure test device for insulating shoes(boots) and gloves	AC Voltage	Pressure test device for insulating shoes(boots) and gloves Z/JF-DCG-003	(0.1~50) kV	$U_{rel}=0.3\%$		
		Electric current		(0.1~200) mA	$U_{rel}=0.3\%$		
52	Multimeter	DC Voltage	C.S. for Multimeters JJF1587	10mV~200mV	$U_{rel}=1.5 \times 10^{-5}$		
				200mV~2V	$U_{rel}=7 \times 10^{-6}$		
				2V~20V	$U_{rel}=4 \times 10^{-6}$		
				20V~200V	$U_{rel}=6 \times 10^{-6}$		
				200V~1000V	$U_{rel}=8 \times 10^{-6}$		
		AC Voltage		10mV~220mV (10Hz~20Hz)	$U_{rel}=2.5 \times 10^{-4}$		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				10mV~220mV(20Hz~40Hz)	$U_{rel}=1.0 \times 10^{-4}$		
				10mV~220mV(40Hz~20kHz)	$U_{rel}=9.0 \times 10^{-5}$		
				10mV~220mV(20kHz~50kHz)	$U_{rel}=2.1 \times 10^{-4}$		
				10mV~220mV(50kHz~100kHz)	$U_{rel}=5.0 \times 10^{-4}$		
				10mV~220mV(100kHz~300kHz)	$U_{rel}=9.5 \times 10^{-4}$		
				10mV~220mV(300kHz~500kHz)	$U_{rel}=1.5 \times 10^{-3}$		
				10mV~220mV(500kHz~1MHz)	$U_{rel}=2.8 \times 10^{-3}$		
				220mV~2.2V(10Hz~20Hz)	$U_{rel}=3.0 \times 10^{-4}$		
				220mV~2.2V(20Hz~40Hz)	$U_{rel}=1.0 \times 10^{-4}$		
				220mV~2.2V(40Hz~20kHz)	$U_{rel}=6.0 \times 10^{-5}$		
				220mV~2.2V(20kHz~50kHz)	$U_{rel}=9.0 \times 10^{-5}$		
				220mV~2.2V(50kHz~100kHz)	$U_{rel}=1.5 \times 10^{-4}$		
				220mV~2.2V(100kHz~300kHz)	$U_{rel}=6.0 \times 10^{-4}$		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				220mV~2.2V(300kHz~500kHz)	$U_{rel}=1.5 \times 10^{-3}$		
				220mV~2.2V(500kHz~1MHz)	$U_{rel}=2.5 \times 10^{-3}$		
				2.2V~22V(10Hz~20Hz)	$U_{rel}=2.6 \times 10^{-4}$		
				2.2V~22V(20Hz~40Hz)	$U_{rel}=1.1 \times 10^{-4}$		
				2.2V~22V(40Hz~20kHz)	$U_{rel}=6.0 \times 10^{-5}$		
				2.2V~22V(20kHz~50kHz)	$U_{rel}=8.0 \times 10^{-5}$		
				2.2V~22V(50kHz~100kHz)	$U_{rel}=1.5 \times 10^{-4}$		
				2.2V~22V(100kHz~300kHz)	$U_{rel}=3.0 \times 10^{-4}$		
				2.2V~22V(300kHz~500kHz)	$U_{rel}=1.5 \times 10^{-3}$		
				2.2V~22V(500kHz~1MHz)	$U_{rel}=2.0 \times 10^{-3}$		
				22V~220V(10Hz~20Hz)	$U_{rel}=2.5 \times 10^{-4}$		
				22V~220V(20Hz~40Hz)	$U_{rel}=1.0 \times 10^{-4}$		
				22V~220V(40Hz~20kHz)	$U_{rel}=6.0 \times 10^{-5}$		
				22V~220V(20kHz~50kHz)	$U_{rel}=9.0 \times 10^{-5}$		
				22V~220V(50kHz~100kHz)	$U_{rel}=1.6 \times 10^{-4}$		

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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				22V~220V(100kHz~300kHz)	$U_{rel}=1.0 \times 10^{-3}$		
				22V~220V(300kHz~500kHz)	$U_{rel}=5.0 \times 10^{-3}$		
				22V~220V(500kHz~1MHz)	$U_{rel}=9.0 \times 10^{-3}$		
				220V~1000V(40Hz~50Hz)	$U_{rel}=3.5 \times 10^{-4}$		
				220V~1000V(50Hz~1kHz)	$U_{rel}=9.0 \times 10^{-5}$		
		Resistance		1 Ω , 10 Ω , 100 Ω , 1k Ω , 10k Ω , 100k Ω	$U_{rel}=1 \times 10^{-5}$		
				1M Ω , 10M Ω	$U_{rel}=2 \times 10^{-5}$		
				100M Ω	$U_{rel}=5 \times 10^{-5}$		
		DCCurrent		20 μ A~200 μ A	$U_{rel}=1 \times 10^{-4}$		
				200 μ A~2mA	$U_{rel}=5 \times 10^{-5}$		
				2mA~20mA	$U_{rel}=5 \times 10^{-5}$		
				20mA~200mA	$U_{rel}=5 \times 10^{-5}$		
				200mA~2A	$U_{rel}=9 \times 10^{-5}$		
				2A~11A	$U_{rel}=1 \times 10^{-4}$		
				11A~100A	$U_{rel}=2 \times 10^{-4}$		
		AC Current		1mA~22mA (10Hz~20Hz)	$U_{rel}=3.0 \times 10^{-4}$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				1mA~22mA (20Hz~40Hz)	$U_{rel}=1.8 \times 10^{-4}$		
				1mA~22mA (40Hz~1kHz)	$U_{rel}=1.5 \times 10^{-4}$		
				1mA~22mA (1kHz~5kHz)	$U_{rel}=2.5 \times 10^{-4}$		
				1mA~22mA (5kHz~10kHz)	$U_{rel}=1.6 \times 10^{-3}$		
				22mA~220mA (10Hz~20Hz)	$U_{rel}=2.6 \times 10^{-4}$		
				22mA~220mA (20Hz~40Hz)	$U_{rel}=1.8 \times 10^{-4}$		
				22mA~220mA (40Hz~1kHz)	$U_{rel}=1.5 \times 10^{-4}$		
				22mA~220mA (1kHz~5kHz)	$U_{rel}=2.5 \times 10^{-4}$		
				22mA~220mA (5kHz~10kHz)	$U_{rel}=1.6 \times 10^{-3}$		
				220mA~2.2A (20Hz~1kHz)	$U_{rel}=2.8 \times 10^{-4}$		
				220mA~2.2A (1kHz~5kHz)	$U_{rel}=5.0 \times 10^{-4}$		
				220mA~2.2A (5kHz~10kHz)	$U_{rel}=8.0 \times 10^{-3}$		
				2.2A~11A (40Hz~1kHz)	$U_{rel}=5.0 \times 10^{-4}$		
				2.2A~11A (1kHz~5kHz)	$U_{rel}=1.2 \times 10^{-3}$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date		
				2.2A~11A (5kHz~10kHz)	<i>U</i> _{rel} =4.5×10 ⁻³				
				11A~100A (40Hz~1kHz)	<i>U</i> _{rel} =1.5×10 ⁻⁴				
				11A~100A (1kHz~10kHz)	<i>U</i> _{rel} =6.0×10 ⁻⁴				
53	*Industry frequency single-phase meter	Phase	V.R. of Industry Frequency Single-Phase Meter JJG440	-180° ~+180°	<i>U</i> =0.1°				
54	*Variable Frequency Electric Quantity Analyzer	Voltage	C.S. for Variable Frequency Electric Quantity Analyzer JJF1559	50mV~220mV(10Hz~1.5kHz)	<i>U</i> _{rel} =0.04%				
				220mV~220V(10Hz~40Hz)	<i>U</i> _{rel} =0.04%				
				220mV~220V(40Hz~1.5kHz)	<i>U</i> _{rel} =0.02%				
				220V~1000V (50Hz~1kHz)	<i>U</i> _{rel} =0.02%				
		Current		100mA~220mA(10Hz~1.5kHz)	<i>U</i> _{rel} =0.04%				
				220mA~2.2A(20Hz~1kHz)	<i>U</i> _{rel} =0.05%				
				220mA~2.2A(1000Hz~1.5kHz)	<i>U</i> _{rel} =0.07%				
				2.2A~10.9999A(50Hz~1kHz)	<i>U</i> _{rel} =0.1%				
				2.2A~10.9999A(1kHz~1.5kHz)	<i>U</i> _{rel} =0.2%				
				11A~20A(50Hz~1000Hz)	<i>U</i> _{rel} =0.2%				



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		Phase	ilac-M	20A~100A(50Hz~300Hz)	$U_{rel}=0.2\%$		
				20A~100A(300Hz~1kHz)	$U_{rel}=0.2\%$		
				0°~360° (50Hz~65Hz)	$U=0.12^\circ$		
				0°~360° (65Hz~500Hz)	$U=0.3^\circ$		
				0°~360° (500Hz~1kHz)	$U=0.6^\circ$		
				1W~20kW(50Hz~1kHz)	$U_{rel}=0.2\%$		
55	AC&DC Resistance Simulators	DC Resistance	C.S. for AC&DC Resistance Simulators JJF1723	1 $\mu\Omega$ ~ 200 Ω	$U_{rel}=0.006\%$		
		AC Resistance		1 $\mu\Omega$ ~ 200 Ω , 50Hz	$U_{rel}=0.02\%$		
		DC Current		0.1A~1000A	$U_{rel}=0.006\%$		
		AC Current		0.1A~1000A,50Hz	$U_{rel}=0.02\%$		
56	Dc Shunt	Current	V.R. of DC Shunts JJG1069	25 $\mu\Omega$ ~ 20m Ω (5A~2000A)	$U_{rel}=0.006\%$		
57	High Voltage and high Value D.C. Resistor	Resistance	V.R. of High Voltage and high Value D.C.Resistor JJG1072	100 Ω ~ 100M Ω	$U_{rel}=0.06\%$	合格评定国家认可 CNAS 认可证书专用章	
				100M Ω ~ 10G Ω	$U_{rel}=0.24\%$		
				10G Ω ~ 100G Ω	$U_{rel}=0.6\%$		
				100G Ω ~ 10T Ω	$U_{rel}=1.2\%$		
58	D.C. Resistance Box	Resistance	V.R. of D.C. Resistance Box JJG982	100 $\mu\Omega$ ~ 100m Ω	$U_{rel}=1\%$		



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				100 μ Ω ~ 100m Ω	<i>U</i> _{rel} =0.1%		
				1 Ω ~ 10 Ω	<i>U</i> _{rel} =0.01%		
				10 Ω ~ 100 Ω	<i>U</i> _{rel} =0.005%		
				100 Ω ~ 10M Ω	<i>U</i> _{rel} =0.001%		
59	Calibration Devicefor Electrocal diagraph and Electroencephalo-graph	Voltage	V.R. of Calibration Devicefor Electrocardiagraph and Electroencephal-o-graph JJG749	0.5mV~ 10V	<i>U</i> _{rel} =0.20%		
		Period		50ms~ 10s	<i>U</i> _{rel} =0.004%		
		Distortion		0.1%~ 30%（20Hz~ 200Hz）	<i>U</i> =12%		
60	*Calibrator	DC Voltage	C.S. for Multifunction Standard Sources JJF1638	10mV~ 200mV	<i>U</i> _{rel} =1.5× 10 ⁻⁵		
				200mV~ 2V	<i>U</i> _{rel} =7× 10 ⁻⁶		
				2V~ 20V	<i>U</i> _{rel} =4× 10 ⁻⁶		
				20V~ 200V	<i>U</i> _{rel} =6× 10 ⁻⁶		
				200V~ 1000V	<i>U</i> _{rel} =8× 10 ⁻⁶		
		AC Voltage		10mV~ 220mV(20Hz~ 20kHz)	<i>U</i> _{rel} =9× 10 ⁻⁵		
				10mV~ 220mV(20kHz~ 50kHz)	<i>U</i> _{rel} =2.1× 10 ⁻⁴		
				10mV~ 220mV(50kHz~ 100kHz)	<i>U</i> _{rel} =5× 10 ⁻⁴		
				220mV~ 2.2V(20Hz~ 20kHz)	<i>U</i> _{rel} =6× 10 ⁻⁵		
				220mV~ 2.2V(20kHz~ 50kHz)	<i>U</i> _{rel} =9× 10 ⁻⁵		



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				220mV~2.2V(50kHz~100kHz)	$U_{rel}=1.5 \times 10^{-4}$		
				2.2V~22V(20Hz~20kHz)	$U_{rel}=6 \times 10^{-5}$		
				2.2V~22V(20kHz~50kHz)	$U_{rel}=8 \times 10^{-5}$		
				2.2V~22V(50kHz~100kHz)	$U_{rel}=1.5 \times 10^{-4}$		
				2.2V~22V(100kHz~300kHz)	$U_{rel}=3.0 \times 10^{-4}$		
				2.2V~22V(300kHz~500kHz)	$U_{rel}=1.5 \times 10^{-3}$		
				2.2V~22V(500kHz~1MHz)	$U_{rel}=2.0 \times 10^{-3}$		
				22V~220V(20Hz~20kHz)	$U_{rel}=6.0 \times 10^{-5}$		
				22V~220V(20kHz~50kHz)	$U_{rel}=9.0 \times 10^{-5}$		
				22V~220V(50kHz~100kHz)	$U_{rel}=1.6 \times 10^{-4}$		
				220V~1000V(20Hz~1kHz)	$U_{rel}=9 \times 10^{-5}$		
		DC Current		20μA~200μA	$U_{rel}=1 \times 10^{-4}$		
				200μA~2mA	$U_{rel}=5 \times 10^{-5}$		
				2mA~20mA	$U_{rel}=5 \times 10^{-5}$		
				20mA~200mA	$U_{rel}=5 \times 10^{-5}$		
				200mA~2A	$U_{rel}=9 \times 10^{-5}$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				2A~20A	$U_{rel}=1 \times 10^{-4}$		
				20A~100A	$U_{rel}=1 \times 10^{-4}$		
				100μA~220μA (20Hz~1kHz)	$U_{rel}=1.5 \times 10^{-4}$		
				100μA~220μA(1kHz~5kHz)	$U_{rel}=3.0 \times 10^{-4}$		
				100μA~220μA(5kHz~10kHz)	$U_{rel}=1.2 \times 10^{-3}$		
				220μA~2.2mA(20Hz~1kHz)	$U_{rel}=2.0 \times 10^{-4}$		
				220μA~2.2mA(1kHz~5kHz)	$U_{rel}=2.2 \times 10^{-4}$		
				220μA~2.2mA(5kHz~10kHz)	$U_{rel}=1.8 \times 10^{-3}$		
				2.2mA~22mA(20Hz~1kHz)	$U_{rel}=1.5 \times 10^{-4}$		
				2.2mA~22mA(1kHz~5kHz)	$U_{rel}=2.5 \times 10^{-4}$		
				2.2mA~22mA(5kHz~10kHz)	$U_{rel}=1.6 \times 10^{-3}$		
				22mA~220mA(20Hz~1kHz)	$U_{rel}=1.5 \times 10^{-4}$		
				22mA~220mA(1kHz~5kHz)	$U_{rel}=2.5 \times 10^{-4}$		
				22mA~220mA(5kHz~10kHz)	$U_{rel}=1.6 \times 10^{-3}$		
				220mA~2.2A(20Hz~1kHz)	$U_{rel}=2.8 \times 10^{-4}$		
		AC Current					



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
61	Power Quality Analyzer		V.R. of code for power quality analyzer DL/T1028	220mA~2.2A(1kHz~5kHz)	$U_{rel}=5.0 \times 10^{-4}$		
				220mA~2.2A(5kHz~10kHz)	$U_{rel}=8.0 \times 10^{-3}$		
				2.2A~20A(20Hz~1kHz)	$U_{rel}=5.0 \times 10^{-4}$		
				2.2A~20A(1kHz~5kHz)	$U_{rel}=1.2 \times 10^{-3}$		
				2.2A~20A(5kHz~10kHz)	$U_{rel}=4.5 \times 10^{-3}$		
				20A~100A (60Hz~5kHz)	$U_{rel}=1 \times 10^{-4}$		
				1 Ω ~ 100k Ω	$U_{rel}=1 \times 10^{-5}$		
		DC Resistance		100k Ω ~ 10M Ω	$U_{rel}=2 \times 10^{-5}$		
				10M Ω ~ 10G Ω	$U_{rel}=5 \times 10^{-5}$		
		AC Voltage	V.R. of code for power quality analyzer DL/T1028	50V~90V(45Hz~65Hz)	$U_{rel}=0.08\%$		
				90V~180V(45Hz~65Hz)	$U_{rel}=0.02\%$		
				180V~360V(45Hz~65Hz)	$U_{rel}=0.01\%$		
				360V~650V(45Hz~65Hz)	$U_{rel}=0.02\%$		
		AC Current		0.2A~2A(45Hz~65Hz)	$U_{rel}=0.02\%$		
				2A~10A(45Hz~65Hz)	$U_{rel}=0.01\%$		
				10A~20A(45Hz~65Hz)	$U_{rel}=0.01\%$		



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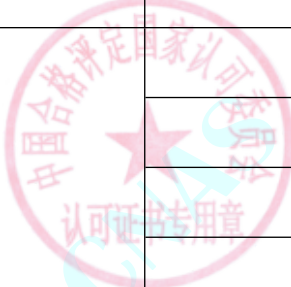
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				20A~80A(45Hz~65Hz)	$U_{rel}=0.02\%$		
		AC Power		10W~180W(45Hz~65Hz)	$U_{rel}=0.1\%$		
				180W~7.2kW(45Hz~65Hz)	$U_{rel}=0.01\%$		
				7.2kW~28.8kW(45Hz~65Hz)	$U_{rel}=0.05\%$		
		Phase		$0^{\circ} \sim 360^{\circ}$	$U=0.01^{\circ}$		
		Harmonic Voltage		0.5V~27V (100Hz~3kHz)	$U=0.01V$		
				27V~54V (100Hz~3kHz)	$U=0.05V$		
				54V~108V (100Hz~3kHz)	$U=0.1V$		
				108V~195V (100Hz~3kHz)	$U=0.2V$		
		Harmonic Current		200mA~300mA (100Hz~3kHz)	$U=0.0003A$		
				300mA~600mA (100Hz~3kHz)	$U=0.0005A$		
				600mA~1.5A (100Hz~3kHz)	$U=0.001A$		
				1.5A~3A (100Hz~3kHz)	$U=0.003A$		
				3A~6A (100Hz~3kHz)	$U=0.005A$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date	
				6A~15A (100Hz~3kHz)	<i>U</i> =0.01A			
				15A~24A, (100Hz~3kHz)	<i>U</i> =0.02A			
		Shoter Flicker		Pst=1	<i>U</i> _{rel} =0.3%			
62	Power Transmitter	Voltage	Power Frequency A.C.Electrical Quantities Measuring Transducers JJG126	1V~10V(45Hz~65Hz)	<i>U</i> _{rel} =0.05%			
				10V~100V(45Hz~65Hz)	<i>U</i> _{rel} =0.05%			
				100V~600V(45Hz~65Hz)	<i>U</i> _{rel} =0.03%			
		Current		2mA~20mA(45Hz~65Hz)	<i>U</i> _{rel} =0.05%			
				20mA~100mA(45Hz~65Hz)	<i>U</i> _{rel} =0.05%			
				100mA~1A(45Hz~65Hz)	<i>U</i> _{rel} =0.03%			
				1A~10A(45Hz~65Hz)	<i>U</i> _{rel} =0.03%			
		Power		10W~4kW(45Hz~65Hz)	<i>U</i> _{rel} =0.05%			
63	*Verificationon Equipment of Electrical Measuring Device	AC Voltage	C. S. for Verification Equipment of Electrical Measuring Devices JJF1923	20mV~220mV(45Hz~65Hz)	<i>U</i> _{rel} =9×10 ⁻⁵			
				220mV~220V(45Hz~65Hz)	<i>U</i> _{rel} =6.0×10 ⁻⁵			
				220V~1000V(45Hz~65Hz)	<i>U</i> _{rel} =9.0×10 ⁻⁵			
		AC Current		20μA~20mA(45Hz~65Hz)	<i>U</i> _{rel} =2×10 ⁻⁴			



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				20mA~100A(45Hz~65Hz)	$U_{rel}=1 \times 10^{-4}$		
		Active power		Single-phase load and three-phase balance: (30~600) V, (0.2~100) A, $\cos \phi=(1.0, 0.5L, 0.5C)$	$U_{rel}=1 \times 10^{-4}$		
				Three-phase unbalanced load: (30~600) V, (0.2~100) A, $\cos \phi=(1.0, 0.5L, 0.5C)$	$U_{rel}=2 \times 10^{-4}$		
		Phase		$0^{\circ} \sim 360^{\circ}$	$U=0.1^{\circ}$		
		Frequency		45Hz~65Hz	$U_{rel}=1 \times 10^{-4}$		
		DC Voltage		20mV~200mV	$U_{rel}=1.5 \times 10^{-5}$		
				200mV~2V	$U_{rel}=7 \times 10^{-6}$		
				2V~200V	$U_{rel}=4 \times 10^{-6}$		
				20V~200V	$U_{rel}=6 \times 10^{-6}$		
				200V~1000V	$U_{rel}=8 \times 10^{-6}$		
		DC Current		20 μ A~200 μ A	$U_{rel}=1 \times 10^{-4}$		
				200 μ A~2mA	$U_{rel}=5 \times 10^{-5}$		
				2mA~20mA	$U_{rel}=5 \times 10^{-5}$		
				20mA~200mA	$U_{rel}=5 \times 10^{-5}$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
				200mA~2A	$U_{rel}=9 \times 10^{-5}$		
				2A~20A	$U_{rel}=1 \times 10^{-4}$		
				20A~100A	$U_{rel}=1 \times 10^{-4}$		
64	Clamp Ammeters for Measurement of Leakage Currents	DC Current	V.R. of Clamp Ammeters for Measurement of Leakage Currents JJG(Ji)3007	1mA~60A	$U_{rel}=0.2\%$		
		AC Current		10mA~60A, 50Hz	$U_{rel}=0.2\%$		
65	*AC Charging Spot for Electric Vehicles	Electric Energy	V.R. of AC Charging Spot for Electric Vehicles JJG1148	10V~480V, 10mA~2A	$U_{rel}=0.09\%$		
		Time		(0.1~99999)s	$U=0.3s$		
66	*Off-board Charger for Electric Vehicles		V.R. of Off-board Charger for Electric Vehicles JJG1149	30V~750V, 5A~250A	$U_{rel}=0.15\%$		
				(0.1~99999)s	$U=0.3s$		
67	*Verification Equipment for DC Electrical Energy Meter		V.R. of Verification Equipment for DC Electrical Energy Meters JJG 1186	1mV~1000V 1mA~600A	$U_{rel}=0.013\%$		
68	*Reference Meters for DC Electrical Energy		V.R. of Reference Meters for DC Electrical Energy JJG 1187	1mV~1000V 1mA~600A	$U_{rel}=0.013\%$		
69	*Magnetic Yoke Detectors	magnetizing current	C. S. for Magnetic Yoke Detectors JJF1458	(0.1~20)A	$U=0.3A$		
		lifting force		(0.1~300)N	$U=12N$		
70	*Magnetic Particle Flaw Detectors	circumferential magnetizing current	C. S. for Magnetic Particle Flaw Detectors JJF1273	1A~10kA	$U_{rel}=1.0\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		length wise magnetizing current		1A~10kA	$U_{rel}=1.0\%$		
71	*Eddy Current Flaw Detector	Excitation source voltage	Eddy Current Flaw Detector JIG (MinHang) 0061	40mV~20V	$U_{rel}=4.6 \times 10^{-2}$		
		Excitation source frequency		10Hz~20MHz	$U_{rel}=2.4 \times 10^{-5}$		
72	*Current Transformers	Current Ratio	V.R. of Instrument Current Transformers JJG313	0.1A/5A~5000A/5A, 5%Ib	$U=0.005\%$		
				0.1A/5A~5000A/5A, (20%~120%)Ib	$U=0.003\%$		
		Phase Difference		(0~500)' , 5%Ib	$U=0.2'$		
				(0~500)' , (20%~120%)Ib	$U=0.09'$		
73	*Current Calibration Specification for Burden Box of Instrument Transformers	impedance	C. S. for Burden Box of Instrument Transformers JJF1264	(0.0001~199.9) Ω	$U_{rel}=0.6\%$		
74	*Voltage Calibration Specification for Burden Box of Instrument Transformers	admittance	C. S. for Burden Box of Instrument Transformers JJF1264	(0.0001~199.9) mS	$U_{rel}=0.6\%$		
75	*Strong current generator	Current	C. S. of High Current Generator JJF(Jixie)1037	(0.5~5000) A	$U_{rel}=0.6\%$		
76	*Instrument for measuring the comprehensive	Transformers Ratio	C.S. of transformer characteristic testers JJF (Ji) 172	1~10000	$U_{rel}=0.02\%$		
		Current		(0.1~1000) A	$U_{rel}=0.6\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
	characteristic of mutual inductor	Voltmeter		(0.1～1000) V	<i>U</i> _{rel} =0.3%		
77	Electrostatic voltmeter	AC Voltage	V.R of high voltage electrostatic voltmeter JJG494	(0.6～110)kV	<i>U</i> _{rel} =0.6%		
		DC Voltage		(0.6～200) kV	<i>U</i> _{rel} =0.6%		
78	Tesla-Meter	Magnetic field intensity	C.S. of (1mT～2.5T) magnetometers JJF1832	1mT～50mT	<i>U</i> _{rel} =1%		
				50mT～2T	<i>U</i> _{rel} =0.1%		
79	*Charge Meters	Charge quantity	C.S. for Charge Meters JJF2018	10nC～20 μ C	<i>U</i> _{rel} =6×10 ⁻⁴		
80	Clamp gauge check coil	Current for DC	Calibration method for Clamp gauge check coil Z/JF-DCD-003	10A～1000A	<i>U</i> _{rel} =0.1%		
		Current for AC		10A～1000A, 50Hz	<i>U</i> _{rel} =0.2%		
81	Power Frequency Grounding Resistance Tester	Resistance	V.R. of Power Frequency Ground Impedance Testers for Large Grounding Grid JJG 1180	0.1 Ω ～200 Ω	<i>U</i> _{rel} =0.3%		
82	*Vibrating Wire Readout	Temperature	C.S. for Temperature Parameter of Vibrating Wire Readout JJF(Ji) 163	(-30～85) °C	<i>U</i> =0.1 °C		
		Resistance		(320～53200) Ω	<i>U</i> = (1～7) Ω		
VI Radio Measuring Instruments							
1	*Analogue Oscilloscope	Voltage	V.R. of Analogue Oscilloscope JJG262	1mV/div～5V/div	<i>U</i> _{rel} =0.16%		
		Scanning Time Coefficient		0.5ns/div～5s/div	<i>U</i> _{rel} =0.08%		
		Bandwidth		20MHz～300MHz	<i>U</i> _{rel} =2.5%		
				300MHz～500MHz	<i>U</i> _{rel} =3.6%		



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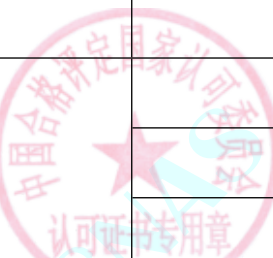
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
		Rise time		350ps~17.5ns	<i>U</i> _{rel} =3%		
2	*Distortion Meters	Distortion	C.S. for Distortion Meters JJF1852	0.3%~100%	<i>U</i> _{rel} =1.2%		
		Voltage		0.1%~0.3%	<i>U</i> _{rel} =5.8%		
		Frequency Response		1mV~100V(1kHz)	<i>U</i> _{rel} =0.6%		
				1V (10Hz~1MHz)	<i>U</i> _{rel} =0.7%		
3	*Digital Storage Oscilloscope	Amplitude	C.S. of Digital Storage Oscilloscope JJF1057	1mV/div~10V/div	<i>U</i> _{rel} =0.16%		
		Time		0.5ns/div~5s/div	<i>U</i> _{rel} =0.08%		
		Bandwidth		20MHz~300MHz	<i>U</i> _{rel} =2.5%		
				300MHz~550MHz	<i>U</i> _{rel} =3.6%		
				550MHz~1GHz	<i>U</i> _{rel} =4.7%		
		Rise time		350ps~17.5ns	<i>U</i> _{rel} =3%		
4	Function Generators	Frequency	V.R. of Function Generators JJG840	10Hz~250MHz	<i>U</i> _{rel} =1.3×10 ⁻⁷		
		Amplitude		5mV~100V(10Hz~100kHz)	<i>U</i> _{rel} =1.2×10 ⁻³		
		DC Voltage		20mV~1000V	<i>U</i> _{rel} =0.001%		
		Sine Wave Total Distortion Factor		0.01%~30%(20Hz~2kHz)	<i>U</i> _{rel} =5%		
5	Insulating Oil Dielectric Dissipation Factor	Dielectric Loss Factor	C.S. for Insulating Oil Dielectric Dissipation Factor and Volume Resistivity	0.001%~0.01%	<i>U</i> _{rel} =12%		
				0.01%~0.1%	<i>U</i> _{rel} =1.2%		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
	and Volume Resistivity Testers		Testers JJF1618	0.1%~10%	$U_{rel}=0.6\%$		
		Capacitance		25pF,50pF,100pF,200pF	$U_{rel}=0.06\%$		
		Volume Resistivity		2M Ω .m~20M Ω .m	$U_{rel}=0.24\%$		
				20M Ω .m~200M Ω .m	$U_{rel}=0.6\%$		
				200M Ω .m~2G Ω .m	$U_{rel}=1.2\%$		
				2G Ω .m~400G Ω .m	$U_{rel}=2.4\%$		
		AC and DC Voltage		10V~5kV(45Hz~65Hz)	$U_{rel}=0.36\%$		
				10V~1kV	$U_{rel}=0.012\%$		
6	High Voltage Dielectric Loss Tester	Dielectric Loss Factor	V.R. of High Voltage Dielectric Loss Tester JJG1126	0.001%~0.01%	$U_{rel}=12\%$		
				0.01%~0.1%	$U_{rel}=1.2\%$		
				0.1%~10%	$U_{rel}=0.6\%$		
		Capacitance		100pF~500nF	$U_{rel}=0.06\%$		
7	Winding Deformation Tester	Frequency	Calibration method of Winding Deformation Tester Z/JF-DCD-002	1kHz~2MHz	$U_{rel}=1.2\times 10^{-7}$		
8	A.C.Resistance Boxes	Resistance	C.S. for A.C.Resistance Boxes JJF1636	1m Ω ~100m Ω (50Hz~10kHz)	$U_{rel}=1.3\%$		
				100m Ω ~1 Ω (50Hz~10kHz)	$U_{rel}=0.13\%$		
				1 Ω ~100k Ω (50Hz~10kHz)	$U_{rel}=0.025\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
9	Capacitor(box)	Capacitance	V.R. of Standard Capacitors JJG183	10nF~ 10pF(1kHz),10pF~ 1mF(120Hz~1kHz)	<i>U</i> _{rel} =0.025%		
10	Inductor(box)	Inductance	V.R. of Standard Inductors JJG726	100 μ H~1H(1kHz)	<i>U</i> _{rel} =0.025%		
11	Digital LCR Measuring Instrument	Inductance	C.S. of Digital LCR Measuring Instrument JJF(Ji)159	1 μ H~10 μ H(1kHz)	<i>U</i> _{rel} =6.5%		
				10 μ H~100 μ H(1kHz)	<i>U</i> _{rel} =0.65%		
				100 μ H~1mH(1kHz)	<i>U</i> _{rel} =0.12%		
				1mH~1H(1kHz)	<i>U</i> _{rel} =0.06%		
		Capacitance		1pF~10pF(1kHz)	<i>U</i> _{rel} =6%		
				10pF~100pF(1kHz)	<i>U</i> _{rel} =0.65%		
				100pF~1 μ F(1kHz)	<i>U</i> _{rel} =0.12%		
				1 μ F~ 1F(100Hz,120Hz,1kHz)	<i>U</i> _{rel} =0.025%		
				1m Ω ~100m Ω (50Hz~ 10kHz)	<i>U</i> _{rel} =1.2%		
				100m Ω ~1 Ω (50Hz~ 10kHz)	<i>U</i> _{rel} =0.6%		
				1 Ω ~10 Ω (50Hz~ 10kHz)	<i>U</i> _{rel} =0.13%		
				10 Ω ~100 Ω (50Hz~ 10kHz)	<i>U</i> _{rel} =0.06%		
		Resistance		100 Ω ~100k Ω (50Hz~ 10kHz)	<i>U</i> _{rel} =0.013%		
12	Capacitive Current Meters	Capacitance	C.S. for Capacitive Current Meters JJF(Zhe)1137	100pF~250 μ F(45Hz~ 65Hz)	<i>U</i> _{rel} =0.05%		

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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
13	*Low-frequency Volt-meter	Voltage	C.S. for Low-frequency Volt-meter JJF1925	10mV~100V(1kHz)	U _{rel} =0.6%		
		Frequency Response		1V (10Hz~1MHz)	U _{rel} =0.7%		
14	Alternating Current Bridge	Inductance	V.R. of Alternating Current Bridge JJG441	10 μ H~1H (1kHz)	U _{rel} =0.13%		
		Capacitance		1H(100Hz)	U _{rel} =0.13%		
				100pF~10nF(50Hz~ 400Hz)	U _{rel} =0.5%		
				100pF~10nF(400Hz~ 2kHz)	U _{rel} =0.26%		
				100pF~10nF(2kHz~ 10kHz)	U _{rel} =0.5%		
				10nF~1 μ F(50Hz~ 400Hz)	U _{rel} =0.26%		
				10nF~1 μ F(400Hz~ 2kHz)	U _{rel} =0.13%		
				10nF~1 μ F(2kHz~ 10kHz)	U _{rel} =0.26%		
				1 μ F~5 μ F(50Hz~ 2kHz)	U _{rel} =0.13%		
				1 μ F~5 μ F(2kHz~ 4kHz)	U _{rel} =0.26%		
1 μ F~5 μ F(4kHz~ 10kHz)	U _{rel} =0.3%						
15	*High Voltage Capacitance Bridges	Dielectric loss factor	V.R. of High Voltage Capacitance Bridges JJG563	0.001%~0.01%	U _{rel} =12%		
				0.01%~0.1%	U _{rel} =1.2%		
				0.1%~10%	U _{rel} =0.6%		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
16	Components Lightning of Testers	DC Voltage	C.S. for Components Lightning of Testers JJF(Gui)18	10V~1999V	U _{rel} =0.06%		
		DC Current		10 μ A~100 μ A	U _{rel} =0.5%		
				100 μ A~1mA	U _{rel} =0.2%		
VII Time and Frequency Measuring Instruments							
1	Universal Counters	Internal Time Base Output Frequency	V.R. of Universal Counters JJG349	1MHz	U _{rel} =2.0×10 ⁻¹⁰		
				5MHz	U _{rel} =1.4×10 ⁻¹⁰		
				10MHz	U _{rel} =1.3×10 ⁻¹⁰		
		Frequency Measurement		1Hz~100MHz	U _{rel} =3.7×10 ⁻¹⁰		
				100MHz~1GHz	U _{rel} =4.8×10 ⁻¹⁰		
		Period Measurement		10 μ s~10s	U _{rel} =3.7×10 ⁻¹⁰		
				Time Interval	0.2 μ s~10s		U=0.04 μ s
2	*Stopwatches	Time Interval	V.R. of Stopwatches JJG237	Mechanical stopwatches: 1s~900s	U=0.06s		
				Mechanical Stopwatches: 900s~ 3600s	U=0.10s		
				Electronic Stopwatches: 1s~3600s	U=0.01s		
				Electronic Stopwatches: 1d	U=0.07s		
3	*Electronic time relay	Time Interval	C.S. for Electronic time relay JJF1282	0.01s~99.99s	U=0.01s		
				100s~1800s	U=0.1s		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				1800s~9999s	$U=0.5s$		
4	Crystal Oscillators inside the Electrical Measurement Instruments	Internal Time Base Output Frequency	C.S. for Crystal Oscillator inside the Electrical Measurement Instruments JJF1984	1MHz	$U_{rel}=2.0 \times 10^{-10}$		
				5MHz	$U_{rel}=1.4 \times 10^{-10}$		
				10MHz	$U_{rel}=1.3 \times 10^{-10}$		
5	Time Interval Generators	Time Interval	Calibration Specification for Time Interval Generators JJF1902	1ns~10000s	$U=1ns$		
		Pulserisetime		1ns~10ns	$U=0.3ns$		
		Bias voltage		-10V~+10V	$U=0.02V$		
		Internal Time Base Output Frequency		1MHz	$U_{rel}=2.0 \times 10^{-10}$		
				5MHz	$U_{rel}=1.4 \times 10^{-10}$		
				10MHz	$U_{rel}=1.3 \times 10^{-10}$		
6	Time Calibrators	Time Interval	V.R. of Time Calibrators JJG 601	100 μs ~1d	$U_{rel}=1 \times 10^{-9}$		
		Internal Time Base Output Frequency		1MHz	$U_{rel}=2.0 \times 10^{-10}$		
				5MHz	$U_{rel}=1.4 \times 10^{-10}$		
				10MHz	$U_{rel}=1.3 \times 10^{-10}$		
7	*Frequency Meters	Frequency	V.R. of Frequency Meters JJG603	10Hz~10kHz	$U_{rel}=0.1\%$		
8	Residual Current Operated Protective Device Operated Characteristic Tester	Current	C.S. for Residual Current Operated protective Device Operated Characteristic Tester JJF1283	5mA~2.5A(45Hz~65Hz)	$U_{rel}=0.15\%$		
		Time		10ms~5s	$U_{rel}=0.03\%$		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
VIII Optics Measuring Instruments							
1	*LaserforMedicine	LaserPower	V.R. of Lasers for Medicine JJG581	0.1mW~2W (190nm~1.06 μ m)	$U_{rel}=4.7\%$		
		(2~200) W (190nm~1.06 μ m)		$U_{rel}=4.0\%$			
		laser energy		1mJ~2J (190nm~1.06 μ m)	$U_{rel}=4.0\%$		
				2J~200J (190nm~1.06 μ m)	$U_{rel}=4.0\%$		
2	Focimeters	vetexpower	V.R. of Focimeters JJG580	(-25~+25)m ⁻¹	$U=0.03m^{-1}$		
3	TrialCaseLenses	vetexpower	V.R. of Trial Case Lenses JJG579	(-20~+20)m ⁻¹	$U=0.03m^{-1}$		
4	*eyeRefractometer s	indication error of SPH	V.R. of Eye Refractometers JJG892	(-10~+10)m ⁻¹	$U=0.08m^{-1}$		
		(<-10 或 >+10)m ⁻¹		$U=0.09m^{-1}$			
		indication error of zero		0m ⁻¹	$U=0.08m^{-1}$		
		indication error of objective eye refractometers cylinder axis		(0~180)°			
		indication error of objective eye refractometers cylinder		(0~6)m ⁻¹	$U=0.08m^{-1}$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		indication error of objective eye refractometers pupil distance	ilac-MRA CNAS CHINA NATIONAL ACCREDITATION SERVICE FOR CONFORMITY ASSESSMENT SCHEDULE OF ACCREDITATION CERTIFICATE	55mm、65mm、75mm	$U=1.2\text{mm}$		
		ray pupil illuminance		$(7\sim 3000)\text{lx}$	$U_{\text{rel}}=1.3\%$		
		indication error of corneal curvature radius		$(6.5\sim 9.4)\text{mm}$	$U=0.007\text{mm}$		
		indication error of corneal axis		$(0\sim 180)^\circ$	$U=1.0^\circ$		
5	Luminance Meter	Brightness	V.R. of Brightness Meter JJG211	Imaging luminance Meter $(5\sim 1000)\text{cd/m}^2$, Brightness Meter for Screen $(16\sim 1000)\text{cd/m}^2$	$U_{\text{rel}}=2.0\%$		
6	Illuminometer	Illumination	Illuminance Meter JJG245	$(7\sim 4000)\text{lx}$	$U_{\text{rel}}=1.0\%$		
7	Abbe Refractometer	Refraction	V.R. of Abbe Refractometer JJG625	$n_D 1.4700-1.6724$	$U=0.8\times 10^{-4}$	合格评定 国家认证认可监督管理委员会 CNAS 认可证书专用章	
		averaged dispersion		$n_F-n_C, 0.00704-0.02087$	$U=1.3\times 10^{-4}$		
8	Hazemeter	Haze	Calibration Specification for Hazemeter JJF1303	$(1-30)$	$U=0.30$		
		Haze, transmittance		$0.1\sim 1.0$	$U=0.009$		
9	Ultraviolet irradiance meter	Ultraviolet irradiance	Ultraviolet irradiance meter JJG879	UVA1: $(10\sim 2000)\mu\text{W/cm}^2$	$U_{\text{rel}}=12\%$		



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	radiometer			UVB、UV310: (10~1000) $\mu\text{W}/\text{cm}^2$	$U_{\text{rel}}=12\%$		
				UVC:(10~1000) $\mu\text{W}/\text{cm}^2$	$U_{\text{rel}}=10\%$		
10	Reflectometers	reflectivity	calibration Specification for Reflectometers JJF1232	$R_Y: 60\sim 95$	$U=2.0$		
11	standard light box	illuminance	Calibration Specification for Standard Light Sources	(10~3000) lx	$U_{\text{rel}}=2.0\%$		
		colour temperature	Boxes JJF(Textile) 055	(2000~7000)K	$U_{\text{rel}}=2.0\%$		
12	*Solar Simulators	spectral match		0.2~3, (300nm~1100nm)	$U_{\text{rel}}=8\%$		
		irradiance non-uniformity	Calibration Specification for Solar Simulators JJF1615	0.001~1.0, (300nm~1100nm)	$U_{\text{rel}}=3\%$		
		irradiance instability		0.002~1.0, (300nm~1100nm)	$U_{\text{rel}}=3\%$		
13	*Standard Neutral Filters of Automobile Test Equipment	Transmittance	Calibration Specification for Standard Neutral Filters of Automobile Test Equipment JJF2046	0%~100%	$U=0.6\%$		
14	reference filter for calibration spectrophotometer	Wavelength	Reference Filter for Calibration Spectrophotometer JJG1034	200nm~900nm	$U=0.3\text{nm}$		
		Transmittance		0.01~1.00	$U_{\text{rel}}=0.6\%$		
		Absorbance		0~5	$U_{\text{rel}}=1.1\%$		
15	Beer colorimeter	Beer color value	Beer colorimeter JJG923	(1.52~7.0) EBC	$U=0.25\text{EBC}$		
16	*UV Analyzer	radiation intensity	Calibration Specification for UV Analyzers JJF1936	UV-365 (1~2000) $\mu\text{W}/\text{cm}^2$	$U_{\text{rel}}=18\%$		
				UV-254 (1~1000) $\mu\text{W}/\text{cm}^2$	$U_{\text{rel}}=18\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
17	*SpecularGlossMetersandGlossPlates	Glossvalue	Specular Gloss Metersand Gloss Plates JJG696	(1.0-120.0)GU	$U=1.2GU$		
				(1.0-120.0)GU	$U=1.2GU$		
18	MotorvehicleheadlampTestercalibrator	luminousintensity	Calibrator for Headlamp Tester of Motorvehicle JJG967	(5000-150000) cd	$U_{rel}=1.8\%$		
		Opticalaxisangle		(0~3)°	$U=1.1'$		
19	*OpticalStepTablet	Transmittance (Optical) density	Optical Step Tablet JJG452	(0,2.0]	$U=0.02$		
				(2,4.0]	$U=0.025$		
				(4,5.0]	$U=0.03$		
20	*DiffuseTransmissionVisualDensitometers	Transmission OpticalStep	Diffuse Transmission Visual Densitometers JJG920	(0,2.0]	$U=0.02$		
				(2,4.0]	$U=0.025$		
				(4,5.0]	$U=0.03$		
21	*medicalImagefilmobservationdevice	Brightness	Calibration Specification for Medical imaging film observation device JJF(JI) 198	(100~1000) cd/m ²	$U_{rel}=3.2\%$		
22	ColorStandardPlates	Stimulusvalue	V.R. of Color Standard Plates JJG453	0.1~100.0	$U=1.0$		
		Chromaticcoordinates		x,y:(0~1)	$U=0.005$		
23	WhitenessMeters	whiteness	V.R.ofWhitenessMeters JJG512	R ₄₅₇ : 0.1~100.0	$U=1.1$		
24	ColorimetersandColorDifferenceMeters	Stimulusvalue	V.R. of Colorimeters and Color Difference Meters JJG595	0.0~100.0	$U=1.0$		
		Chromaticcoordinates		x,y:(0~1)	$U=0.0052$		



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25	*ClarityTestEquip ment	illumination	Calibration Specification for Clarity Test Equipment JJF1287	(1000~4000)lx	$U_{rel}=6\%$		
26	LEDStandardlights ource	luminous flux	C.S for Single Low Power LED JJF1501	(10~2000)lm	$U_{rel}=3.0\%$		
		AverageLED Luminousinte nsity		(10~3000)cd	$U_{rel}=2.0\%$		
		Colorparamet ers		x,y:(0~1)	$U=0.006$		
27	Electroluminescen cedefectdetections ystemforsolarmodu le	spatialresoluti on	Calibration specification for electroluminescencedefectdet ectionsystemforsolarmodule Z/JF-HJG-002	(0.50~2.00) mm	$U=0.13\text{mm}$		
		forwardcurren t		(1~10) A	$U_{rel}=0.4\%$		
28	PhotovoltaicSolarI rradianceMeter	Irradiance	Calibration Specification for Photovoltaic SolarIrradianceMeter Z/JF- HJG-004	(10-1000)W/m ²	$U_{rel}=1.5\%$		
		Temperaturedevi ation		(-40~60) °C	$U=0.2^{\circ}\text{C}$		
29	Colour Temperature Meters	Colour Temperature	Calibration Specification for Color Temperature Meters JJF2100	(2000~2856)K	$U=20\text{K}$		
				(>2856K~3200)K	$U=30\text{K}$		
				(>3200~9000)K	$U=40\text{K}$		
		Chromaticcoo rdinates		x,y:(0~1)	$U=0.006$		
		Rendering Index		10~100	$U=2$		
30	Spectral Illuminance Meters	Illumination	Calibration Specification for Spectral Illuminance Meters JJF1989	(7~3000)lx	$U_{rel}=1.0\%$		
		Wavelength		(200~1200)nm	$U=1\text{nm}$		



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		Colority		x,y:(0.1~0.9)	$U=0.003$		
31	*Ultraviolet Test Chamber for Photovoltaic Modules	Ultraviolet irradiance	Calibration Specification for Ultraviolet Test Chamber for Photovoltaic Modules JJF2062	$(0.1 \sim 2000) \mu W/cm^2$	$U_{rel}=16\%$		
32	0.1mW~200W Laser Power Meters	Power	0.1mW~200W Laser Power Meters JJG249	$(0.1mW \sim 200W)$	$U_{rel}=2.4\%$		
33	Standard Lamp of Luminous Intensity	Luminous Intensity	Standard Lamp of Luminous Intensity JJG246	$(10 \sim 1500)cd$	$U_{rel}=1.2\%$		
34	Phoropters	indication error of SPH	V.R. of Phoropters (Eye Chart Included) JJG 1097	$(-6 \sim +6)m^{-1}$	$U=0.03m^{-1}$		
				$(+6 \sim +15)m^{-1}$ 和 $(-6 \sim -15)m^{-1}$	$U=0.06m^{-1}$		
				$(-15 \sim -20)m^{-1}$ 和 $(+15 \sim +20)m^{-1}$	$U=0.08m^{-1}$		
		indication error of cylinder power		$(-10 \sim +10)m^{-1}$	$U=0.04m^{-1}$		
		error of optical center		$(0 \sim 1)cm/m$	$U=0.06cm/m$		
		error of cylinder axis		$(0 \sim 180)^\circ$	$U=1.0^\circ$		
35	*Eye Chart Included	error of optotype size	V.R. of Phoropters (Eye Chart Included) JJG 1097	$(3 \sim 80)mm$	$U=0.02mm$		
		lighting of eye chart		$(1 \sim 3000)lx$	$U_{rel}=1.3\%$		
				$(10 \sim 1000)cd/m^2$	$U_{rel}=2.2\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
IX Chemistry Measuring Instruments							
1	Dissolved Oxygen Meter	Dissolved Oxygen Concentration	V.R. of Dissolved Oxygen Meter JJG291	(0~20)mg/L	$U=0.08\text{mg/L}$		
		Temperature		(0~50)°C	$U=0.1^\circ\text{C}$		
		Time		(0~3600)s	$U=0.1\text{s}$		
2	*Determinators for Total Sulfur in Coal	Total Sulfur	V.R. of Determinators for Total Sulfur in Coal JJG1006	(0.47~1.00)%	$U=0.04\%$		
				(1.00~4.00)%	$U=0.12\%$		
				(4.00~4.50)%	$U=0.18\%$		
		Temperature		(300~1300)°C	$U=2.5^\circ\text{C}$		
3	Wood Moisture Content Measuring Meters	Moisture Content	V.R. of Wood Moisture Content Measuring Meters JJG986	6%~28%	$U=0.6\%$		
4	*Dust Samplers	Flow	V.R. of Dust Samplers JJG520	(0.1~150)L/min	$U_{\text{rel}}=1.1\%$		
		Time		(0~3600)s	$U=0.1\text{s}$		
5	*Total Suspended Particulate Sampler	Flow	V.R. of Total Suspended Particulate Sampler JJG943	(5~140)L/min	$U_{\text{rel}}=1.2\%$		
				(140~260)L/min	$U_{\text{rel}}=1.1\%$		
				(0.8~1.2)m³/min	$U_{\text{rel}}=1.3\%$		
		Temperature		(0~50)°C	$U=0.3^\circ\text{C}$		
		Air inlet size deviation		(0.1~150)mm	$U=0.01\text{mm}$		
		Time		(0~3600)s	$U=0.1\text{s}$		



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		Pressure		(800~1060)hPa	$U=0.25\text{kPa}$		
6	*Monoxide Monitor and Carbon Monoxide Infrared Gas Analyzer	Concentration	V.R. of Monoxide and Carbon Dioxide Infrared Gas Analyzer JJG635	CO: (10~4000) $\mu\text{mol/mol}$	$U_{\text{rel}}=1.6\%$		
				CO ₂ : (0.1~20)%mol/mol	$U_{\text{rel}}=1.2\%$		
		Time		(0~3600)s	$U=0.1\text{s}$		
7	*Flue Gas Analyzers	Concentration	V.R. of Flue Gas Analyzers JJG968	O ₂ : (0.1~30)%	$U_{\text{rel}}=0.7\%$		
				SO ₂ : (10~5000) $\mu\text{mol/mol}$	$U_{\text{rel}}=1.6\%$		
				NO: (10~5000) $\mu\text{mol/mol}$	$U_{\text{rel}}=1.2\%$		
				NO ₂ : (10~5000) $\mu\text{mol/mol}$	$U_{\text{rel}}=1.1\%$		
				CO: (10~5000) $\mu\text{mol/mol}$	$U_{\text{rel}}=0.9\%$		
				H ₂ S: (10~500) $\mu\text{mol/mol}$	$U_{\text{rel}}=1.7\%$		
				CO ₂ (0.1~30)%mol/mol	$U_{\text{rel}}=1.0\%$		
		Time		(0~3600)s	$U=0.1\text{s}$		
8	*Ion Chromatograph	TheLeastconcentration	V.R. of Ion Chromatograph JJG823	$\leq 0.02 \mu\text{g/mL(Cl}^-)$ 电导检测器: electricalconductivitydetector:	$U=0.0034 \mu\text{g/mL}$		
				electricalconductivitydetector: $\leq 0.02 \mu\text{g/mL(Li}^+)$	$U=0.0040 \mu\text{g/mL}$		
				UVVisdetector, $\leq 0.02 \mu\text{g/mL(NO}_2^-)$	$U=0.0038 \mu\text{g/mL}$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
				Electrochemical Detector : ≤0.02 μ g/mL(I ⁻)	<i>U</i> =0.0043 μ g/mL		
9	*Chemical Oxygen Demand (COD) Meters	Concentration	V.R. of Chemical Oxygen Demand(COD)Meters JJG975	Type A: (0.1~150)mg/L	<i>U</i> _{rel} =2.1%		
				Type A: (150~1000)mg/L	<i>U</i> _{rel} =1.0%		
				Type B: (1~1000)mg/L	<i>U</i> =0.7mg/L		
		Temperature		(100~250)℃	<i>U</i> =0.1℃		
		Time		(0~3600)s	<i>U</i> =0.1s		
10	*Turbidimeters	Turbidity	V.R. of Turbidimeters JJG880	(0.1~400)NTU	<i>U</i> _{rel} =3.6%		
11	Grain moisture meter	MoistureContent	V.R. of Instrument for Measuring the Moisture Contentof Grain with Capacitance and Resistance Methods JJG891	5%~35%	<i>U</i> =0.15%		
12	*Oil Contentin Water Analyzers	Concentration	V.R. of Oil Contentin Water Analyzers JJG950	(0.1~10)mg/L	<i>U</i> =0.17mg/L		
				(10~1000)mg/L	<i>U</i> _{rel} =3.4%		
13	*Ammonia-Nitrogen Automatic Analyzers	Concentration	V.R. of Ammonia-NitrogenAutomatic Analyzers JJG631	(0.5~2)mg/L	<i>U</i> =0.10mg/L		
				(2~150)mg/L	<i>U</i> _{rel} =2.0%		
14	*Volatile Organic Compounds PhotoIonization Detectors	Concentration	C.S. for Volatile Organic Compounds PhotoIonization Detectors JJF1172	(1~10000) μ mol/mol	<i>U</i> _{rel} =2.5%		
		Time		(0~3600)s	<i>U</i> =0.1s		
15	*Chemiluminescent NO/NOx Analyzers	Concentration	V.R. of Chemiluminescent NO/NOx Analyzers JJG801	(10~300) μ mol/mol	<i>U</i> _{rel} =1.2%		

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		Time		(0~3600)s	<i>U</i> =0.1s				
16	*Ambient Air Quality Continuous Automated Monitoring System	flow	C.S. for Ambient Air Quality Continuous Automated Monitoring System JJF (Ji) 119	flow: (0.1~100)mL/min	<i>U</i> _{rel} =0.32%				
				flow: (0.1~10)L/min	<i>U</i> _{rel} =0.32%				
				flow: (10~30)L/min	<i>U</i> _{rel} =1.4%				
		concentration		SO ₂ : (50~500)nmol/mol	<i>U</i> _{rel} =2.4%				
				NO: (20~500)nmol/mol	<i>U</i> _{rel} =2.0%				
				CO: (5~50) μmol/mol;	<i>U</i> _{rel} =1.8%				
				O ₃ : (200~800)nmol/mol	<i>U</i> _{rel} =1.9%				
				Particulate matter: (100~2000) μg (persquarecentimeter)	<i>U</i> =3.5 μg (persquarecentimeter)				
				mass	(0~3600)s			<i>U</i> =0.1s	
					(0~50)℃			<i>U</i> =0.3℃	
		Pressure			(800~1060)hPa			<i>U</i> =0.3kPa	
		17		Formaldehyde Gas Analyzer	concentration			V.R. of Formaldehyde Gas Analyzer JJG1022	(20~1300)nmol/mol
time	(0~3600)s		<i>U</i> =0.1s						
18	Smoke Telescope	ringelmannblackness	C.S. for Ringelmann smoke Telescope JJF(Ji)144	0~5	<i>U</i> =0.04				
19	*Water Quality On-line of Total Phosphorus and	concentration	V.R. of Water Quality On-line of Total Phosphorus and Total Nitrogen JJG1094	Totalphosphorus: (0.03~0.5)mg/L	<i>U</i> =0.009mg/L				



№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
	Total Nitrogen			Totalphosphorus: (0.5~50)mg/L	<i>U</i> _{rel} =1.0%		
				Totalnitrogen: (0.2~2)mg/L	<i>U</i> =0.008mg/L		
				Totalnitrogen: (2~100)mg/L	<i>U</i> _{rel} =1.2%		
				Theinstrument: 0~14	<i>U</i> =0.02		
				ElectricMeter: 0~14	<i>U</i> =0.01		
				(0.1~2000)mV	<i>U</i> _{rel} =0.004%		
				(-2000~-0.1)mV	<i>U</i> _{rel} =0.004%		
				(5~40)°C	<i>U</i> =0.1°C		
20	*On-line pH Meters	pHValue	C.S. for On-line pH Meters JJF1547				
		electricpotential					
		temperature					
21	*Dust Concentration Measuring Instruments	concentration	V.R. of Dust Concentration Measuring Instruments JJG846	(0.5~1000)mg/m³	<i>U</i> _{rel} =10%		
22	*Continuous Emission Monitoring Systems of Flue Gas Emitted from Sataionary Source	concentration	C.S.forContinuousEmissionMonitoringSystemsofFlueGasEmittedfromStationarySource JJF1585	O₂: (0.1~25)%	<i>U</i> _{rel} =0.7%	Except for Equipment under operating conditions	
				SO₂: (10~5000) μmol/mol	<i>U</i> _{rel} =1.6%		
				NO: (10~5000) μmol/mol	<i>U</i> _{rel} =1.1%		
		time		(0~3600)s	<i>U</i> =0.1s		
23	*Fourier Transform Infrared Spectrometers	Wavenumber	C.S.for Fourier Transform Infrared Spectrometers JJF1319	(4000~900) cm ⁻¹	<i>U</i> =0.57cm ⁻¹		
24	*Particle Analyzer	ParticleCount	Calibrstion Specification for Particulate Analyzer JJF1290	(1000~2100)particle/mL	<i>U</i> _{rel} =3%		



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25	*Atomic Absorption Spectrophotometer	Detection limit	V.R. of Atomic Absorption Spectrophotometer JJG694	Flame atomizer: $\leq 0.02 \mu\text{g/ml}(\text{Cu})$	$U=0.001 \mu\text{g/ml}$		
				Graphite furnace atomizer: $\leq 4\text{pg}(\text{Cd})$	$U=0.3\text{pg}$		
		Wavelength		(200~900)nm	$U=0.1\text{nm}$		
26	*Liquid Chromatography-Mass Spectrometers	signal to noise ratio	C.S. for Liquid Chromatography-Mass Spectrometers JJF1317	triple quadrupole, ESI+: reserpine: $\geq 30:1$	$U_{\text{rel}}=8\%$		
				triple quadrupole, ESI-: reserpine: $\geq 10:1$	$U_{\text{rel}}=8\%$		
				triple quadrupole, APCI+: reserpine: $\geq 30:1$	$U_{\text{rel}}=8\%$		
				ion trap, single quadrupole, ESI+: reserpine: $\geq 10:1$	$U_{\text{rel}}=8\%$		
				ion trap, single quadrupole, ESI-: reserpine: $\geq 10:1$	$U_{\text{rel}}=8\%$		
				ion trap, single quadrupole, APCI+: reserpine: $\geq 10:1$	$U_{\text{rel}}=8\%$		
27	*Silicate Analyzers	Concentration	C.S. for Silicate Analyzer JJF1539	(2.0~100) $\mu\text{g/L}$	$U=2.3\mu\text{g/L}$		
				(>100~100000) $\mu\text{g/L}$	$U_{\text{rel}}=4\%$		
28	*Fluorescence Spectrophotometer	detection limit	V.R. of Fluorescence Spectrophotometer JJG537	Class A: Quinine sulfate, $\leq 5 \times 10^{-10}\text{g/ml}$	$U_{\text{rel}}=4\%$		
				Class B: $\leq 1 \times 10^{-8}\text{g/ml}$	$U_{\text{rel}}=4\%$		
		Wavelength		(240~550)nm	$U=0.6\text{nm}$		
29	*Double beam UV/VIS spectrophotometer	Wavelength	V.R. of Ultraviolet, Visible, Near-Infrared Spectrophotometers JJG178	(240~810)nm	$U=0.3\text{nm}$		

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		Transmission Ratio		(5~35)%	$U=0.4\%$		
30	*Visible spectrophotometer	Wavelength	V.R. of Ultraviolet,	(340~700)nm	$U=0.5\text{nm}$		
		Transmission Ratio	Visible, Near-Infrared Spectrophotometers JJG178	(5~35)%	$U=0.5\%$		
31	*Gas Chromatographs	sensitivity		TCD sensitivity: benzene, methane, $\geq 800\text{mV.mL/mg}$	$U_{\text{rel}}=4.2\%$		
		detection limit	V.R. of Gas Chromatograph JJG700	FID detection limit: N-hexadecane, CH_4 : $\leq 0.5\text{ng/s}$	$U_{\text{rel}}=5.6\%$		
				FPD detection limit: $\leq 0.5\text{ng/s(S)}$	$U_{\text{rel}}=3.6\%$		
				FPD detection limit: $\leq 0.1\text{ng/s(P)}$	$U_{\text{rel}}=5.6\%$		
				NPD detection limit: $\leq 5\text{pg/s(N)}$	$U_{\text{rel}}=5.6\%$		
				NPD detection limit: $\leq 10\text{pg/s(P)}$	$U_{\text{rel}}=5.6\%$		
				ECD detection limit: Hexachlorocyclohexane, $\leq 5\text{pg/mL}$	$U_{\text{rel}}=5.8\%$		
32	*Gas Chromatography-Mass Spectrometries	signal to noise ratio	C.S. for Gas Chromatography-Mass Spectrometries JJF1164	EI+Octafluoronaphthalene: $\geq 10: 1$	$U_{\text{rel}}=8\%$		
				CI+: Benzophenone: $\geq 10: 1$	$U_{\text{rel}}=8\%$		



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				CI-: Octafluoronaphthalene: $\geq 10: 1$	$U_{\text{rel}}=8\%$		
33	*Osmometers	Osmolarity	V.R. of Osmometers JJG1089	(100~400) $\text{mOsmol} \cdot \text{kg}^{-1}$ (400~700) $\text{mOsmol} \cdot \text{kg}^{-1}$	$U=2.0 \text{mOsmol} \cdot \text{kg}^{-1}$ $U_{\text{rel}}=0.6\%$		
34	*Polarimeter and Polarimetric Saccharimeters	Optical Rotation Sugardegree	V.R. of Polarimeter and Polarimetric Saccharimeters JJG536	(-71~+71) ° (-206~+206) ° Z	$U=0.007^\circ$ $U=0.021^\circ \text{ Z}$		
35	Routine Capillary Viscometers	Kinematic Viscosity	V.R. of Routine Capillary Viscometers JJG155	(1~10) mm^2/s (10~200) mm^2/s (200~5000) mm^2/s (5000~100000) mm^2/s	$U_{\text{rel}}=0.3\%$ $U_{\text{rel}}=0.5\%$ $U_{\text{rel}}=0.6\%$ $U_{\text{rel}}=0.7\%$		
36	*Rotational Viscometers	Dynamic Viscosity	V.R. of Rotational Viscometers JJG1002	(1~10) mm^2/s (10~200) mm^2/s (200~1×10 ⁴) mm^2/s (1×10 ⁴ ~1×10 ⁵) mm^2/s	$U_{\text{rel}}=0.5\%$ $U_{\text{rel}}=2.0\%$ $U_{\text{rel}}=3.0\%$ $U_{\text{rel}}=6.0\%$		
37	Flow Cup Viscometers	Kinematic Viscosity	V. R. of Flow Cup Viscometers JJG 743	(1~10) mm^2/s (10~200) mm^2/s (200~1×10 ⁴) mm^2/s (1×10 ⁴ ~1×10 ⁵) mm^2/s	$U_{\text{rel}}=0.5\%$ $U_{\text{rel}}=0.7\%$ $U_{\text{rel}}=3.0\%$ $U_{\text{rel}}=6.0\%$		



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38	*Sulfur Hydrogen Gas Detectors	Concentration of gas	V.R. of Sulfur Hydrogen Gasdetectors JJG695	$(0.2 \sim 500) \times 10^{-6} \text{ mol/mol}$	$U_{\text{rel}}=2.4\%$		
		time		(0~3600)s	$U=0.2\text{s}$		
39	*Electrochemical Oxygen Meter	Concentration of gas	V.R. of Electrochemical Oxygen Meter JJG365	$(5 \sim 30) \% \text{ mol/mol}$	$U=1.1\% \text{ FS}$		
		time		(0~3600)s	$U=0.2\text{s}$		
40	*Paramagnetic Oxygen Analyzers	Concentration of gas	V.R. of Paramagnetic Oxygen Analyzers JJG662	$(5 \sim 100) \%$	$U=1.1\% \text{ FS}$		
		time		(0~3600)s	$U=0.2\text{s}$		
41	*Zirconia Oxygen Analyzers	Concentration of gas	V.R. of Zirconia Oxygen Analyzers JJG535	$(0.1 \sim 100) \%$	$U=1.1\% \text{ FS}$		
		time		(0~3600)s	$U=0.2\text{s}$		
42	*Micro Oxygen Analyzers	Concentration of gas	V.R. of Micro Oxygen Analyzers JJG945	$(2 \sim 1000) \mu \text{ mol/mol}$	$U_{\text{rel}}=1.4\%$		
		time		(0~3600)s	$U=0.2\text{s}$		
43	*Chlorine Alarm Detector	Concentration of gas	C.S. for Chlorine Alarm Detectors JJF1433	$(0.1 \sim 100) \mu \text{ mol/mol}$	$U_{\text{rel}}=3\%$		
		time		(0~3600)s	$U=0.2\text{s}$		
44	*Detector of Combustible Gases	Concentration of gas	V.R. of Detector of Combustible Gases JJG693	methane: $(0.01 \sim 60) \% \text{ mol/mol}$	$U=0.28\% \text{ FS}$		
				H ₂ : $(400 \sim 4000) \mu \text{ mol/mol}$	$U=0.8\% \text{ FS}$		
				hydrogen: $(10 \sim 60) \% \text{ LEL}$	$U=0.50\% \text{ FS}$		
				ISOBUTANE: $(10 \sim 60) \% \text{ LEL}$	$U=0.50\% \text{ FS}$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		time	V.R. of Carbon Monoxide Detector JJG915	acetylene: (10~60)%LEL	$U=0.50\%FS$		
				propane: (10~60)%LEL	$U=0.50\%FS$		
				(0~3600)s	$U=0.2s$		
				(1~2000) $\mu\text{mol/mol}$	$U_{rel}=1.8\%$		
45	*Carbon Monoxide Detector	Concentration of gas	V.R. of Carbon Monoxide Detector JJG915	(0~3600)s	$U=0.2s$		
		time					
46	*Liquid Chromatographs	Minimum detectable concentration	V.R. of Liquid Chromatograph JJG705	The Least concentration of Ultraviolet test: $\leq 5 \times 10^{-8} \text{g/ml}$ (Naphthalene)	$U_{rel}=5.3\%$		
				diode array test: $\leq 5 \times 10^{-8} \text{g/ml}$ (Naphthalene)	$U_{rel}=5.3\%$		
				The Least concentration of fluorescence test: $5 \times 10^{-9} \text{g/ml}$ (Naphthalene)	$U_{rel}=5.2\%$		
				The Least concentration of refractometer test: $5.0 \mu\text{g/ml}$ (Cholesterol)	$U_{rel}=6.0\%$		
				The Least concentration of Evaporative light test: $5.0 \mu\text{g/ml}$ (Cholesterol)	$U_{rel}=6.6\%$		
		Flow		(0.1~2) mL/min	$U_{rel}=0.1\%$		
47	*Reading spectroscopic instruments	Detection limit	V.R. of Emission Spectrometer JJG768	C: $\leq 0.02\%$	$U_{rel}=23\%$		
				Mn: $\leq 0.02\%$	$U_{rel}=23\%$		
				Ni: $\leq 0.02\%$	$U_{rel}=23\%$		

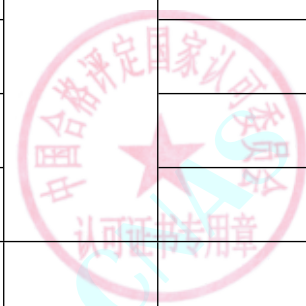


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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				Si: $\leq 0.02\%$	$U_{\text{rel}}=24\%$		
				Cr: $\leq 0.01\%$	$U_{\text{rel}}=28\%$		
				V: $\leq 0.01\%$	$U_{\text{rel}}=23\%$		
		Wavelength		(120~800)nm	$U=0.02\text{nm}$		
48	*ELISA Analytical Instruments	Absorbency	V.R. of ELISA Analytical Instruments JJG861	0.2~1.5	$U=0.005$		
49	*Atomic Fluorescence Spectrophotometers	detection limit	V.R. of Atomic Fluorescence Spectrophotometer JJG939	As: $\leq 0.4\text{ng}$	$U=0.02\text{ng}$		
				Sb: $\leq 0.4\text{ng}$	$U=0.04\text{ng}$		
50	*Elemental Analyzers	Concentration	C.S. for Elemental Analyzers JJF1321	Azotometer: (0.05~47) %	$U_{\text{rel}}=1.3\%$		
				CHN Analyzer C: (0.01~82.00) %	$U_{\text{rel}}=1.4\%$		
				CHN Analyzer H: (0.01~5.00) %	$U_{\text{rel}}=3.8\%$		
				CHN Analyzer N: (0.01~1.5) %	$U_{\text{rel}}=6.0\%$		
				ONH Analyzer O: (0.0001~0.5) %	$U_{\text{rel}}=4.2\%$		
				ONH Analyzer N: (0.0001~2) %	$U_{\text{rel}}=4.6\%$		
				ONH Analyzer H: (0.0001~0.001) %	$U_{\text{rel}}=5.0\%$		
51	*Automatic Potentiometric Titrators	electric potential	V.R. of Automatic Potentiometric Titrators JJG814	(-2000~2000)mV	$U=0.7\text{mV}$		
		capacity		(0~100)mL	$U=0.01\text{mL}$		



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		concentration		0.1mol/L	$U_{rel}=0.5\%$		
52	*Flame Photometer	concentration	V.R. of Flame Photometer JJG630	K ⁺ : (0~0.200)mmol/L Na ⁺ : (0~0.200)mmol/L	$U=0.002\text{mmol/L}$ $U=0.003\text{mmol/L}$		
53	*Quadrupole Inductively Coupled Plasma Mass Spectrometers	detectionlimit	C.S. for Quadrupole Inductively Coupled Plasma Mass Spectrometers JJF1159	Be: $\leq 30\text{ng/L}$ In: $\leq 30\text{ng/L}$ Bi: $\leq 30\text{ng/L}$	$U_{rel}=7.0\%$ $U_{rel}=9.8\%$ $U_{rel}=9.0\%$		
54	*Automatic Amino Acid Analyzer	MinimAmount of Substance	V.R. of Automatic Amino Acid Analyzer JJG1064	$\leq 1.0\text{nmol(Histidine)}$	$U_{rel}=9.0\%$		
55	*Instrument for KF Coulometry Titration	concentration	V.R. of Instrument for KF Coulometry Titration JJG1044	(10~1000)ug (1000~5000)ug	$U_{rel}=2.0\%$ $U_{rel}=1.3\%$		
56	*Electrode Salinometer	Concentration	V.R. of Electrode Salinometer JJG761	Salinity: 5~40	$U=0.008$		
57	*Antibiotics Potency Analyzers	diameter absorbance temperature	C.S. for Antibiotics Potency Analyzers JJF1614	Diameter, 18mm~22mm Absorption, 0.3~1.0 (20~40)°C	$U=0.02\text{mm}$ $U=0.007$ $U=0.2^\circ\text{C}$		
58	*Residual Chlorine Meters	Concentration	C.S. for Residual Chlorine Meters JJF1609	(0.01~2.0)mg/L	$U_{rel}=2.1\%$		
59	*Total Organic Carbon Analyzer	concentration concentration	V.R. of Total Organic Carbon Analyzer JJG821	Inorganic carbon: (20~1000)mg/L organic carbon: (20~1000)%	$U_{rel}=2.4\%$ $U_{rel}=2.4\%$		
60	*Time-of-flight Mass Spectrometers	Mass to charge ratio	C.S. for Time-of-Flight Mass Spectrometers JJF1528	Relative molecular mass: 189.1~66446	$U=3 \times 10^{-5}$		

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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
				Relative mass to charge ratio: 172~4071	$U=3 \times 10^{-5}$		
		signal to noise ratio		$S/N \geq 10: 1$	$U_{rel}=15\%$		
61	*Industry Electrolytic Conductivity Meters	Electrical Conductivity	V.R. of Industry Electrolytic Conductivity Meters JJG(Ji)062	The electronic unit: $0.05 \mu S \cdot cm^{-1} \sim 100 mS \cdot cm^{-1}$ The instrument: (127~1410) $\mu S \cdot cm^{-1}$	$U_{rel}=0.06\%$ $U_{rel}=0.46\%$		
62	*Bacterial Endotoxin Analyzers	Temperature	C.S. for Bacterial Endotoxin Analyzers JJF1529	37°C	$U=0.12^\circ C$		
63	*Kinematic Viscosity Tester	Concentration	C.S. for Kinematic Viscosity Tester JJF1274	(1~10 ⁵) mm ² /s	$U_{rel}=3.4\%$		
		Temperature		(20~100) °C	$U=0.2^\circ C$		
64	*Water Quality Synthetical Analyse Instrument	pH value	Calibration Method of Water Quality Synthetical Analyse Instrument Z/JF-HFY-001	(0~14)pH	$U=0.003pH$		
		conductivity		(0.05~10000) $\mu S/cm^{-1}$	$U_{rel}=0.06\%$		
		dissolved oxygen		(0~20)mg/L	$U=0.2mg/L$		
		temperature		(0~50)°C	$U=0.2^\circ C$		
		turbidity		(0.1~400)NTU	$U_{rel}=3.3\%$		
65	*Phosphate Analyzers	Concentration	C.S. for Phosphate Analyzers JJF1567	(0~1000) mg/L	$U=0.3mg/L$		
66	*Flow Analyzers with Spectrophotography	Concentration	C.S. for Flow Analyzers with Spectrophotography JJF1568	Cyanogen in water: $\leq 0.002mg/L$ Hydroxybenzene in water: $\leq 0.002mg/L$ Phosphorus: $\leq 0.01mg/L$	$U=0.0003mg/L$ $U=0.0003mg/L$ $U=0.0020mg/L$		



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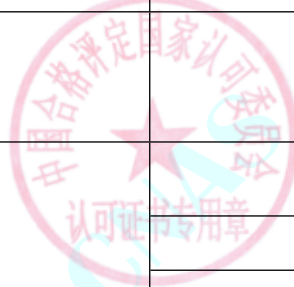
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
				Sulfide: $\leq 0.005\text{mg/L}$	$U=0.0020\text{mg/L}$		
				Hexavalent chromium: $\leq 0.004\text{mg/L}$	$U=0.0003\text{mg/L}$		
				Total nitrogen: $\leq 0.04\text{mg/L}$	$U=0.002\text{mg/L}$		
				Ammonia nitrogen: $\leq 0.04\text{mg/L}$	$U=0.002\text{mg/L}$		
				Anionic surfactant: $\leq 0.05\text{mg/L}$	$U=0.002\text{mg/L}$		
		wavelength		(190~1100) nm	$U=1.6\text{nm}$		
67	*Bromine Number and Bromine Index Meters	Concentration	C.S. for Bromine Number and Bromine Index JJF1569	Bromineindex: (0.2~20) mg/100g	$U=2.3\text{mg}/100\text{g}$		
				Bromineindex: (20~1000) mg/100g	$U=6.5\text{mg}/100\text{g}$		
				Bromineprice: (0.1~20) g/100g	$U=2.4\text{g}/100\text{g}$		
				Bromineprice: (20~300) g/100g	$U=3.8\text{g}/100\text{g}$		
68	*Gel Permeation Chromatographs	Concentration	V.R. of Gel Permeation Chromatographs JJG342	1kg/mol~1Mg/mol	$U_{\text{rel}}=9\%$		
		Temperature		(0~50)°C	$U=0.2^\circ\text{C}$		
		Flow		(0.1~2) mL/min	$U_{\text{rel}}=0.5\%$		
69	*Static Light Scattering Particle Size Analyzers	Particulatesize	C.S. for Static Light Scattering Particle Size Analyzers JJF1211	(1.0~5.0) μm	$U_{\text{rel}}=2.0\%$		
				(5.0~20.0) μm	$U_{\text{rel}}=2.0\%$		
				(20~120) μm	$U_{\text{rel}}=2.0\%$		



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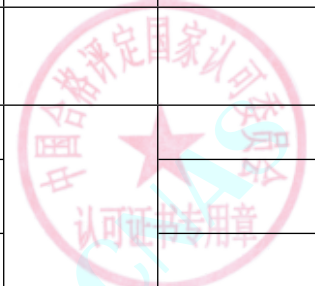
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
70	*Oscilloscopic Polarograph	Detectionlimit	V.R. of Oscilloscopic Polarograph JJG748	≤20 μ g/L	U=0.2 μ g/L		
71	*Industrial Analyzers	quality	V.R. of Industrial Analyzers JJG1140	1g	U=0.7mg		
		temperature		(100~1100) °C	U=3℃		
		Ashcontent		(0.1~15) %	U=0.9%		
				(15~30) %	U=0.7%		
		Volatilematter		(30~50) %	U=0.4%		
				(0.1~20) %	U=1.8%		
(20~40) %	U=0.7%						
72	*Alarmsand Detectors of Chloroethylene Gas	concentration	V.R. of Alarmsand Detectors of Chloroethylene Gas JJG1125	(0~50)μmol/mol	U=0.84μmol/mol		
		time		(50~100)μmol/mol	U _{rel} =2.1%		
				(0~3600)s	U=0.2s		
73	*Alarmer Detectors of Sulfur Hexafluoride	concentration	C.S. for Alarmer Detectors of Sulfur Hexafluoride JJF1263	(1~1000)μmol/mol	U _{rel} =1.2%		
		time		(0~3600)s	U=0.2s		
74	*Kar IFischer Volumetric Titrators for Water Content	concentration	V. R. of Karl Fischer Volumetric Titrators for Water Content JJG1154	(1~20)mg	U _{rel} =2.0%		
75	*Liquid Chromatograph-Atomic Fluorescence Spectrometers	Minimumdetectionquantity	V. R. of Liquid Chromatograph-Atomic Fluorescence Spectrometers JJG1151	As(V)<1.0ng; MMA<0.7ng; DMA<0.7ng	U _{rel} =9.4%		
		Pumpflow		(0.5~1.5) mL/min	U _{rel} =0.2%		
		linear		0.995~1.000	U _{rel} =5.2%		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
76	*Friability tester	Lengeh	Calibration Method of Friabilitytester Z/JF-HFY-003	143mm	$U=0.2\text{mm}$		
		Time		4min	$U=0.6\text{s}$		
		Frequency		(0~100)r/min	$U=0.7\text{r/min}$		
77	*Raman Spectrometers	Spectral resolution	C.S. for Raman Spectrometers JJF1544	$\leq 3\text{cm}^{-1}$	$U=0.2\text{cm}^{-1}$		
		Shift		(80~4000) cm^{-1}	$U=1.5\text{cm}^{-1}$		
		Intensity		0.05~1.0	$U_{\text{rel}}=9.0\%$		
78	*Pesticide Residue Detectors	Transmittance	C.S. for Pesticide Residue Detectors JJF1729	10%~30%	$U_{\text{rel}}=1.0\%$		
		Wavelength		(350~450)nm	$U=2\text{nm}$		
		Sensitivity		$\geq 50\%$	$U=5\%$		
79	*Water Hardness Meters	Concentration	C.S. for Water Hardness Meters JJF 1949	(1~4500)mg/L	$U=3\%$		
		Temperature		0°C~50°C	$U=0.2^\circ\text{C}$		
80	*McFarland Bacterial Turbidity Analyzers	Concentration	C.S. for McFarland Bacterial Turbidity Analyzers JJF1825	(0~4)MCF	$U=(0.08\sim 0.23)\text{MCF}$		
81	*Raw-Milk Freezing Point Testers	Freezing Point	C.S. for Raw-Milk Freezing Point Testers JJF1816	(-400~-600) m°C	$U_{\text{rel}}=0.40\%$		
82	*Dissolution testers	Angle	Calibration method of Dissolution testers Z/JF-HFY-002	Levelness: (0~360) $^\circ$	$U=0.2^\circ$		
		Length		verticality: (0~360) $^\circ$	$U=0.2^\circ$		
				Coaxiality: (0~10)mm	$U=0.4\text{mm}$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
			ilac-MRA CHINA NATIONAL ACCREDITATION SERVICE FOR CONFORMITY ASSESSMENT SCHEDULE OF ACCREDITATION CERTIFICATE	Swingvalue: (0~10) mm	$U=1.4\text{mm}$		
				depth: (0~150) mm	$U=1.2\text{mm}$		
		Rotation rate		(20~20000) r/min	$U_{\text{rel}}=0.2\%$		
		Temperature		(5~60) °C	$U=0.2\text{°C}$		
83	*Plate Electrophoresis Apparatus	voltage	C.S. for Plate Electrophoresis Apparatus JJF1654	(0.01~1000) V	$U_{\text{rel}}=1\%$		
		Current		(10~1000) mA	$U_{\text{rel}}=0.8\%$		
84	*Dead-stop Titration Instruments	voltage	Calibration method of Dead-stop Titration Instruments Z/JF-HFY-004	(0.1~200) mV	$U_{\text{rel}}=2\%$		
85	*Ultraviolet Fluorescence Sulfur Analyzers	Concentration	C.S. for Ultraviolet Fluorescence Sulfur Analyzers JJF1685	(1~10) mg/L	$U_{\text{rel}}=3.2\%$		
				(> 10~100) mg/L	$U_{\text{rel}}=2.2\%$		
				(> 100~1000) mg/L	$U_{\text{rel}}=2.6\%$		
		Detection limit		<10mg/L	$U=0.01\text{mg/L}$		
86	*Thin Layer Chromatography Scanners	concentration	C.S. for Thin Layer Chromatography Scanners JJF1712	(0.01~0.04)mg/mL	$U=0.0019\text{mg/mL}$		
87	*Total Hydrocarbon Methane and Non-Methane Total Hydrocarbon Analyzers	concentration	C.S. for Total Hydrocarbon Methane and Non-Methane Total Hydrocarbon Analyzers JJF (Ji) 188	(1~20000) $\mu\text{mol/mol}$	$U_{\text{rel}}=1.5\%$		
		Time		(0~3600)s	$U=0.1\text{s}$		



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88	*On-line turbidimeters	Turbidity	Calibration method of On-line turbidimeters Z/JF-HYH-006	(0.1～100)NTU	<i>U</i> _{rel} =3.5%		
89	*On-line Automatic Monitors of Permanganate Index	concentration	C. S. for On-line Automatic Monitors of Permanganate Index JJF 1875	(0.1～5)mg/L	<i>U</i> =0.05mg/L		
				(5～200)mg/L	<i>U</i> _{rel} =3%		
90	*Smoke velocity meters	Temperature	Calibration method of Smoke velocity meters Z/JF-HYH-008	(0～250)℃	<i>U</i> =1.1℃		
		Pressure		static: (-50～-0.01)kPa	<i>U</i> _{rel} =0.6%		
				static: (0.01～50)kPa	<i>U</i> _{rel} =0.6%		
				dynamic: (0.1～2000)Pa	<i>U</i> _{rel} =0.2%		
				flowrate	(0.5～30)m/s		
91	*Digital Display Air Samplers	Flow	V. R. of Digital Display Air Samplers JJG (JI) 142	(0.001～6.0)L/min	<i>U</i> _{rel} =1.6%		
		Temperature		(0～50)℃	<i>U</i> =0.2℃		
		Pressure		(800～1060)hPa	<i>U</i> =0.25kPa		
		Time		(0～3600)s	<i>U</i> =0.1s		
92	Smoke moisture content testers	Temperature	Calibration method of Smoke moisture content testers Z/JF-HYH-009	(0～250)℃	<i>U</i> =1.1℃		
		Humidity		(20～98)%RH	<i>U</i> _{rel} =3.6%		
93	*Carbon Dioxide Incubator	Temperature	Calibration method of Carbon Dioxide Incubator Z/JF-HYH-010	(0～80)℃	<i>U</i> =0.2℃		
		concentration		CO ₂ : (0～10)%	<i>U</i> =0.21%		
94	*Flue Gas Samplers	Flow	V. R. of Flue Gas Samplers JJG1169	(0.1～2.0)L/min	<i>U</i> _{rel} =1.3%		



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		Temperature		(0~50)℃	U=0.3℃					
		Pressure		(800~1060)hPa	U=0.3kPa					
				(-50~-0.01)kPa	U _{rel} =0.6%					
				(0.01~50)kPa	U _{rel} =0.6%					
				Time	(0~3600)s					
95	*Sulfur Dioxide Gas Detectors	Concentration	V.R.of Sulfur Dioxide Gas Detectors JJG551	(1~1500) μ mol/mol	U=1.6%FS					
		time		(0~3600)s	U=0.2s					
96	*Ammonia Gas Detectors	Concentration	V.R. of Ammonia Gas Detectors JJG1105	(0.1~1000) μmol/mol	U _{rel} =2.6%					
		time		(0~3600)s	U=0.2s					
97	*Alarmer Detectors of Benzene	concentration	C.S.for Alarmer Detectors of Benzene JJF1674	(0~10)μmol/mol	U=0.09μmol/mol					
				(10~100)μmol/mol	U _{rel} =2.4%					
		time		(0~3600)s	U=0.2s					
98	*Hydrogen Chloride Gas Detectors and Alarms	Concentration	C.S.for Hydrogen Chloride Gas Detectors and Alarms JJF1888	(0.1~100)μmol/mol	U _{rel} =2.5%					
		time		(0~3600)s	U=0.2s					
99	*Hydrogen Cyanide Gas Detectors and Alarms	Concentration	Calibration Method for Hydrogen Cyanide Gas Detectors and Alarms Z/JF-HXB-004	(0.1~100)μmol/mol	U _{rel} =4%					
		time		(0~3600)s	U=0.2s					
100	*Tetrahydrothiophene Gas Detectors and Alarms	Concentration	Calibration Method for Tetrahydrothiophene Gas Detectors and Alarms Z/JF-HXB-002	(0.1~100)μmol/mol	U=0.29μmol/mol					
		time		(0~3600)s	U=0.2s					



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
101	*Nitric Oxide and Nitrogen Dioxide Gas Detectors and Alarms	Concentration	Calibration Method for Nitric Oxide and Nitrogen Dioxide Gas Detectors and Alarms Z/JF-HXB-003	(0.1~100) $\mu\text{mol/mol}$	$U_{\text{rel}}=2.2\%$		
		time		(0~3600)s	$U=0.2\text{s}$		
102	*Laboratory pH Meters	pH	V.R. of Laboratory pH Meter JJG119	The electric meter: (0~14)	$U=0.001$	Except for 0.001 level to Instrument	
		electric potential		The instrument: (4~10)	$U=0.01$		
				(-2000~2000) mV	$U=0.1\text{mV}$		
		Temperature		(5~60) $^{\circ}\text{C}$	$U=0.2^{\circ}\text{C}$		
103	*Verifying Meter for pH Meters	voltage	V.R. of Verifying Meter for pH Meters JJG919	(-2000~2000)mV	$U=0.002\%\text{FS}$		
		pH		(0~14)	$U=0.0002$		
104	*ICP Spectrometer	Detection limit	V.R. of Emission Spectrometer JJG768	Zn: $\leq 0.01\text{mg/L}$	$U_{\text{rel}}=22\%$		
				Mn: $\leq 0.005\text{mg/L}$	$U_{\text{rel}}=22\%$		
				Ni: $\leq 0.03\text{mg/L}$	$U_{\text{rel}}=22\%$		
				Cu: $\leq 0.02\text{mg/L}$	$U_{\text{rel}}=22\%$		
				Cr: $\leq 0.02\text{mg/L}$	$U_{\text{rel}}=22\%$		
				Ba: $\leq 0.005\text{mg/L}$	$U_{\text{rel}}=22\%$		
		Wavelength		196nm~767nm	$U=0.01\text{nm}$		
105	*Carbon-Sulfur Analyzers	Consistence	V.R. of Carbon-Sulfur Analyzer JJG395	C: (0.005~0.010)%	$U=0.0005\%$		
				C: (0.010~0.100)%	$U=0.002\%$		
				C: (0.100~1.00)%	$U=0.003\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
				C: (1.00~4.00)%	U=0.004%		
				S: (0.003~0.010)%	U=0.0003%		
				S: (0.010~0.100)%	U=0.003%		
				S: (0.100~0.200)%	U=0.003%		
106	*Wavelength Dispersive X-Ray Fluorescence Spectrometers	Counting rate	V.R.of Wavelength Dispersive X-Ray Fluorescence Spectrometers JJG810	(0.1~3000)kCPS	U _{rel} =0.08%		
107	*Dynamic Light Scattering Particle Size Analyzers	Particle size	V. R. of Dynamic Light Scattering Particle Size Analyzers JJG1104	(10~100) nm	U _{rel} =2.6%		
				(200~300) nm	U _{rel} =1.0%		
				(400~500) nm	U _{rel} =1.0%		
				(600~1500) nm	U _{rel} =0.9%		
		Temperature		(0~90)°C	U=0.2°C		
108	*Energy Dispersive X-Ray Fluorescence Spectrometers	Concentration	C.S.for Energy Dispersive X-Ray Fluorescence Spectrometers JJF 2024	Cd: (8.7~107)mg/kg	U _{rel} =10%		
				Cr: (97.3~1122)mg/kg	U _{rel} =9%		
				Hg: (91.5~1096)mg/kg	U _{rel} =10%		
				Pb: (93.1~1122)mg/kg	U _{rel} =10%		
109	*Nucleic Acids Analyzers	Concentration	C. S. for Nucleic Acids Analyzers JJF 1817	(0.1~40)ng/μL	U _{rel} =6.8%		
110	*Acid-Alkali Meter	Concentration	Calibration Method for Acid-Alkali Meter Z/JF-HXH-001	NaCl: (0.1~20)%	U _{rel} =1.6%		
				HCl: (0.1~20)%	U _{rel} =1.6%		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
				NaOH: (0.1~20)%	$U_{rel}=1.6\%$		
111	*Copper and Iron Conent Analyzers	Concentration	Calibration Method for CopperandIron Conent Analyzers Z/JF-HXH-004	Cu: (0.1~200) μ g/L	$U_{rel}=1.4\%$		
				Fe: (0.1~200) μ g/L	$U_{rel}=1.4\%$		
112	*Laboratory Ion Meters	pX	V. R. of Laboratory Ion Meters JJG757	The electric meter pX: (0~14)	$U=0.004$		
		electricpotenti al		The instrument pX: (2~4)	$U=0.02$		
				(-2000~2000) mV	$U=0.1\text{mV}$		
		Temperature		(5~45)°C	$U=0.2^\circ\text{C}$		
113	*Oxidation- reduction Potential Meters	electricpotenti al	C.S.for Oxidation-Reduction PotentialMeters JJF (Ji) 3027	(-2000~2000) mV	$U=0.1\text{mV}$		
114	*Colony Counters	Counte	C. S. for Colony Counters JJF 1751	(20~300)CFU	$U_{rel}=3\%$		
		Length		(0.1~5)mm	$U=0.04\text{mm}$		
115	*Transformer Oiland Water Soluble Acid	pH	C. S. for Transformer Oiland Water Soluble Acid JJF(Ji)127	Theinstrument: pH(4~ 10)	$U=0.02$		
116	*Semiautomatic Clinical Chemistry Analyzers	absorbancy	V.R. of Semiautomatic Clinical Chemistry Analyzers JJG464	0.001~1.0	$U=0.004$		
117	*Electrolyte Analyzers	concentration	V.R. of Electrolyte Analyzers JJG1051	K+: (1.50~ 7.50)mmol/L	$U_{rel}=5\%$		
				Na+: (100.0~ 180.0)mmol/L	$U_{rel}=5\%$		
				Cl-: (80.0~ 160.0)mmol/L	$U_{rel}=5\%$		



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				Li+: (0.40~2.00)mmol/L	$U_{rel}=6\%$		
				iCa2+: (0.50~2.50)mmol/L	$U_{rel}=5\%$		
118	*Portable Blood Glucose Meters	Concentration	C.S. for Portable Blood Glucose Meters JJF1383	Blood sugar: (2.0~18.0) mmol/L	$U_{rel}=4\%$		
119	*Electrolytic Conductivity Meters	Electrical Conductivity	V.R. of Electrolytic Conductivity Meters JJG376	The electronic unit: 0.05 μ S.cm-1~100mS.cm-1	$U_{rel}=0.06\%$		
		The instrument: (127~1410) μ S.cm-1		$U_{rel}=0.46\%$			
		Temperature		(0~50)°C	$U=0.2^{\circ}\text{C}$		
120	*Samplers for Stack Dust	Flow	V.R. of Samplers for Stack Dust JJG680	(5~10)L/min	$U_{rel}=1.5\%$		
				(10~100)L/min	$U_{rel}=1.2\%$		
		Time		(0~3600)s	$U=0.1\text{s}$		
		Temperature		(0~250)°C	$U=0.3^{\circ}\text{C}$		
		Pressure		static: (-50~0.01)kPa	$U_{rel}=0.6\%$		
				static: (0.01~50)kPa	$U_{rel}=0.6\%$		
				dynamic: (0.1~2000)Pa	$U_{rel}=0.2\%$		
				(Before the flow meter: (-50~0.01)kPa	$U_{rel}=0.6\%$		
121	*Air Sampler	Flow	V.R. of Air Sampler JJG 956	(1~6000)mL/min	$U_{rel}=1.4\%$		
		Temperature		(0~50)°C	$U=0.2^{\circ}\text{C}$		
		Pressure		(800~1060)hPa	$U=0.25\text{kPa}$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		Time		(0~3600)s	$U=0.1s$		
122	*Mercury Analyzers	detection limit	V.R. of Mercury Analyzers JJG548	absorptiontype, $\leq 1.0ng$	$U=0.12ng$		
				fluorescence: $\leq 0.1ng$	$U=0.002ng$		
123	Ozone Gas Analyzers	concentration	V.R. of Ozone Gas Analyzers JJG1077	(0.1~1000) nmol/mol	$U_{rel}=2.1\%$		
				(1~400) μ mol/mol	$U_{rel}=2.3\%$		
		time		(0~3600)s	$U=0.1s$		
124	*High-load Ambient Air Samplers	flow	V.R. of High-load Ambient Air Samplers JJG (Ji) 3016	(10~260)L/min	$U_{rel}=1.2\%$		
		temperature		(0~50)°C	$U=0.3^{\circ}C$		
		Pressure		(800~1060)hPa	$U=0.3kPa$		
		Time		(0~3600)s	$U=0.1s$		
		Length		(0.1~150)mm	$U=0.01mm$		
125	*Ambient Air Semi-Volatile Organic Compounds Samplers	Flow	V.R. for Ambient Air Semi-Volatile Organic Compounds Samplers JJG (Ji) 187	(0.1~1200)L/min	$U_{rel}=1.3\%$		
		Temperature		(0~50)°C	$U=0.3^{\circ}C$		
		Pressure		(800~1060)hPa	$U=0.3kPa$		
		Time		(0~3600)s	$U=0.1s$		
126	*Ambient Air online Monitoring Instruments	concentration	C. S. for Ambient Air online Monitoring Instruments JJF 1907	SO ₂ : (50~500)nmol/mol	$U_{rel}=2.4\%$		
				NO ₂ : (20~500)nmol/mol	$U_{rel}=2.0\%$		
				CO: (5~50) μ mol/mol;	$U_{rel}=1.8\%$		



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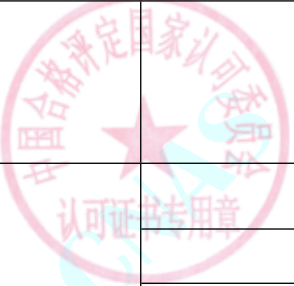
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
				O ₃ : (200~800)nmol/mol	U _{rel} =1.9%		
		time		(0~3600)s	U=0.1s		
127	*Organic High Resolution Magnetic Sector Mass Spectrometers	signal-to-noiseratio	C. S. for Organic High Resolution Magnetic Sector Mass Spectrometers JJF 1930	Hexachlorobenzene: ≥ 1000	U _{rel} =15%		
128	On-line dissolved oxygen Meters	Concentration	V.R. of On-line dissolved oxygen Meters JJG(Ji)183	(0~20)mg/L	U=0.04mg/L		
		Temperature		(0~50)°C	U=0.1°C		
		Time		(0~3600)s	U=0.1s		
129	*PM10 Mass Concentration Measurement Instruments	concentration	Calibration Method for PM10 Mass Concentration Measurement Instruments Z/JF-HJH-013	(10~1000) μg/m ³	U _{rel} =12%		
		flow		(10~260)L/min	U _{rel} =1.4%		
		Temperature		(0~50)°C	U=0.3°C		
		Pressure		(800~1060)hPa	U=0.3kPa		
130	*PM2.5 Mass Concentration Measurement	concentration	C. S. for PM2.5 Mass Concentration Measurement JJF1659	(10~1000) μg/m ³	U _{rel} =12%		
		flow		(10~260)L/min	U _{rel} =1.4%		
		Temperature		(0~50)°C	U=0.3°C		
		Pressure		(800~1060)hPa	U=0.3kPa		
131	*Single Wavelength Dispersive X-Ray Fluorescence Chlorine	Concentration	Calibration Method of Single Wavelength Dispersive X-Ray Fluorescence Chlorine Analyzers Z/JF-HXY-006	(5~1000) mg/kg	U _{rel} = (1.2~4.2) %		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
	Analyzers	Detection limit		$\leq 5\text{mg/kg}$	$U=0.5\text{mg/kg}$		
132	*Sulfur X-ray Fluorescence Spectrometry Analyzers	Concentration	C.S. for Sulfur X-ray Fluorescence Spectrometry Analyzers JJF 1952	$(5\sim 500)\text{ mg/L}$	$U=(0.2\sim 12)\text{ mg/L}$		
		Concentration		$(500\sim 2000)\text{ mg/L}$	$U_{\text{rel}}=(1.6\sim 2.4)\%$		
		Detection limit		$\leq 5\text{mg/L}$	$U=0.5\text{mg/L}$		
133	*Engler Viscosimeter	Time	V.R. of Engler Viscosimeter JJG742	$(50\sim 52)\text{ s}$	$U_{\text{rel}}=0.9\%$		
134	*Single beam UV/VIS spectrophotometer	Wavelength	V.R. of Ultraviolet, Visible, Near-Infrared Spectrophotometers JJG178	$(240\sim 810)\text{nm}$	$U=0.3\text{nm}$		
		Transmittance		$(5\sim 35)\%$	$U=0.4\%$		
135	Funnel Viscometers	Time	Calibration Method of Funnel Viscometers Z/JF-HXY-009	$(14\sim 27)\text{ s}$	$U_{\text{rel}}=0.9\%$		
136	*Conductivity Total Organic Carbon Analyzer	Concentration	Calibration Method of Conductivity Total Organic Carbon Analyzer Z/JF-HXY-010	$(0.1\sim 25)\text{ mg/L}$	$U_{\text{rel}}=2\%$		
137	*insulation oleic acid value tester	Concentration	Calibration method of insulation oleic acid value tester Z/JF-HXB-001	$(0.0001\sim 1.0000)\text{ mg/g}$	$U_{\text{rel}}=4.6\%$		
138	*On-line Automatic Determinator of Chemical Oxygen Demand (COD)	Concentration	V.R. of On-line Automatic Determinator of Chemical Oxygen Demand (COD) JJG1012	$(16\sim 1000)\text{mg/L}$	$U_{\text{rel}}=1.0\%$		
139	*Disintegration Analyzers	disintegration time limited	C.S. for Disintegration Analyzers JJF1449	$(500\sim 900)\text{s}$	$U_{\text{rel}}=12\%$		
		Length		55mm	$U=0.02\text{mm}$		
		Temperature		37°C	$U=0.3^{\circ}\text{C}$		



№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
140	*Determinators of Fluorine/Chlorine in Coal	Concentration	C.S. for Determinators of Fluorine/Chlorine in Coal JJF1968	Fluorine: (50~500) μ g/g	Fluorine: $U=20 \mu$ g/g		
				Fluorine: (500~2000) μ g/g	Fluorine: $U=4\%$		
				Chlorine: (0.010~0.050) %	Chlorine: $U=0.004\%$		
				Chlorine: (0.050~0.300) %	Chlorine: $U=0.7\%$		
141	*Gas Chromatographs of Liquor Analysis	Detectionlimit	C.S. for Gas Chromatographs of Liquor Analysis JJF 2022	$\leq 5.0 \times 10^{-3}$ mg/mL	$U_{rel}=19\%$		
142	*Gas Chromatographs with Sulfur Chemiluminescence Detector	Detectionlimit	C.S. for Gas Chromatographs with Sulfur Chemiluminescence Detector JJF 1953	≤ 10 pg/s	$U_{rel}=25\%$		
143	*Discharge Helium Ionization Gas Chromatographs	Detectionlimit	Calibration method of Discharge Helium Ionization Gas Chromatographs Z/JF-HXY-001	≤ 5 pg/mL	$U_{rel}=14\%$		
144	*Digital Polymerase Chain Reaction Analyzer	Concentration	C.S. for Digital Polymerase Chain Reaction Analyzer JJF2055	10%~100%	$U=12.4\%$		
		Temperature		(0~120)°C	$U=1.2^{\circ}\text{C}$		
145	*Real-Time Fluorescent Quantitative Polymerase Chain Reaction Analyzer	Intensity	C.S. for Real-Time Fluorescent Quantitative Polymerase Chain Reaction Analyzer JJF (Jin) 04	10%~100%	$U=12\%$		
		Temperature		(0~120)°C	$U=1.2^{\circ}\text{C}$		
146	*Fourier transform infrared spectrometer	concentration	Calibration method of Fourier Transform Infrared Gas Analyzer Z/JF-HJH-017	NH ₃ : (0.1~100) μ mol/mol	$U_{rel}=2.4\%$		

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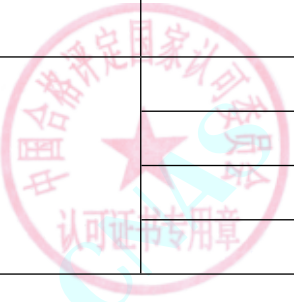
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
				HCl(0.1~100)μmol/mol	$U_{rel}=2.4\%$		
147	*Oil Content Analyzers of Ultraviolet Spectrophotometric Method	Concentration	Calibration Specification for Oil Content Analyzers of Ultraviolet Spectrophotometric Method JJF (冀) 202	(0.1~1000)mg/L	$U_{rel}=2.4\%$		
148	*Automatic Atmospheric Distillation Testers	temperature	C.S. for Automatic Atmospheric Distillation Testers JJF 2065	recovered: 109.5℃~331.8℃ evaporating: 81.9℃~159.2℃	$U=0.7℃\sim6℃$ $U=1.6℃\sim3℃$		
149	*Seawater pH Analyzers	pH Value	Calibration Specification for Seawater pH Analyzers JJF 1792	0~14	$U=0.02$		
		temperature		(5~40)℃	$U=0.1℃$		
150	*Filter-Type Smoke Meters	FNS	V.R. of Filter-Type Smoke Meters JJG 847	(1.0~9.5)BSU	$U=0.21BSU$		
151	*Differential Scanning Calorimeters	temperature	V.R. of Differential Scanning Calorimeters JJG 936	(156.52~327.77)℃	$U=0.6℃$		
		Calories		(23.02~60.24) J/g	$U_{rel}=2\%$		
152	*bomb calorimeters	Calorific value	Verification Regulation of bomb calorimeters JJG 672	26458J/g	$U=37J/g$		
153	*Pour Point and Cloud Point Testers of Petroleum Products	Temperature	Calibration Specification for Pour Point and Cloud Point Testers of Petroleum Products JJF 1869	Pour Point: (-80~100)℃	$U=4.2℃$	合格评定 国家认可 中国合格评定国家认可委员会 认可证书专用章	
				Cloud Point: (-80~100)℃	$U=2.2℃$		
154	*Melting-point Measurement Instrument	temperature	V.R. of Melting-point Measurement Instrument JJG 701	(52~286)℃	$U=0.2℃$		
155	*Polymerase Chain Reaction	Temperature	Calibration Specification for Polymerase Chain Reaction	(0~120)℃	$U=(0.2\sim1.0)℃$		

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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
	Analyzers (PCR)	concentration	Analyzers JJF1527	$(1.11 \times 10^1 \sim 1.04 \times 10^7)$ copies/ μ L	$U_{rel}=6.2\% \sim 9.3\%$		
156	*Open/Closed Cup Flash Point Rester	Temperature	C.S. for Open/Closed Cup Flash Point Rester JJF1384	Closed: $(70 \sim 110) ^\circ\text{C}$	$U=5.0^\circ\text{C}$		
				Closed $(110 \sim 200) ^\circ\text{C}$	$U=6.0^\circ\text{C}$		
				Open: $(115 \sim 250) ^\circ\text{C}$	$U= (6.1 \sim 8.5) ^\circ\text{C}$		
157	Handheld Sugar Meter	sugar content	Hand Saccharimeter (Content-meter) and Hand Refractometer JJG820	$0.1\% \sim 80\%$	$U=0.3\%$		
158	*(Automatic) Nucleic Acid Extractors	Temperature	Calibration Specification for (Automatic) Nucleic Acid Extractors JJF 1874	$(50 \sim 95) ^\circ\text{C}$	$U=1.0^\circ\text{C}$		
		Frequency		$(0.5 \sim 30)\text{Hz}$	$U=0.3\text{Hz}$		
		Volume		$(50 \sim 200) \mu\text{L}$	$U=1.2 \mu\text{L}$		
		Concentration		1002mg/kg	$U=125\text{mg/kg}$		
159	*Blood Viscometers	viscosity	C.S. for blood Viscometers JJF1316	$(1 \sim 20) \text{mPa} \cdot \text{s}$	$U_{rel}=5\%$		
160	*Rapid Nucleic Acid Detectors	Temperature	C.S. for Rapid Nucleic Acid Detectors JJF (Ji) 200	$(30 \sim 100) ^\circ\text{C}$	$U=0.40^\circ\text{C}$		
161	*C-reactive Protein Analyzers	Concentration	C.S. for C-reactive Protein Analyzers JJF 2057	$(1 \sim 81.5)\text{mg/L}$	$U_{rel}=10\%$		
162	*Automatic water samplers	volume	Calibration method of automatic water samplers Z/JF-HYH-007	$(0.1 \sim 200)\text{mL}$	$U_{rel}=3.0\%$		
				$(200 \sim 2000)\text{mL}$	$U_{rel}=2.8\%$		
		Temperature		$(0 \sim 50) ^\circ\text{C}$	$U=0.3^\circ\text{C}$		
		time		$(0 \sim 3600)\text{s}$	$U=0.1\text{s}$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
163	Natural Gas Calorific Value Meter	Calorific Value	C.S. for Natural Gas Calorific Value Meter JJF (Ji) 207	(30~48)MJ/m ³	$U_{rel}=0.44\%$		
164	*Ozone Aging Test Chambers	Temperature	Calibration Specification for Ozone Aging Test Chambers JJF 2051	(0~100) °C	$U=0.3^{\circ}\text{C}$		
		humidity		10%RH~100%RH	$U=2.4\%\text{RH}$		
		concentration		(0.1~400) $\mu\text{mol/mol}$	$U_{rel}=6.2\%$		
165	*Rotary Agitator	Temperature	Calibration Method for Rotary Agitator Z/JF-HJH-011	(0~80)°C	$U=0.3^{\circ}\text{C}$		
		RotateSpeed		(0~100)r/min	$U=0.4\text{r/min}$		
166	*Water Vapor Transmission	Temperature	Calibration Specification for Water Vapor Transmission Rate Testor JJF(Ji)191	(-40~140) °C	$U=0.12^{\circ}\text{C}$		
		humidity		5%RH~95%RH	$U=1.2\%\text{RH}$		
		Water Vapor Transmission Rate		(1.8~4.4) g/(m ² •24h)	$U=0.9\text{g}/(\text{m}^2\cdot 24\text{h})$		
167	*Gas Transmittance Meter	Temperature	Calibration method for Gas Transmittance Meter Z/JF-RGG-002	(-40~140) °C	$U=0.12^{\circ}\text{C}$		
		gas transmittance rate		(4.7~11.2) cm ³ /(m ² •24h•0.1MPa)	$U=(1.4\sim 2.2)\text{cm}^3/(\text{m}^2\cdot 24\text{h}\cdot 0.1\text{MPa})$		
168	*Oxygen Transmittance Meter	Temperature	Calibration method for Oxygen Transmittance Meter Z/JF-RGG-003	(-40~140) °C	$U=0.12^{\circ}\text{C}$		
		oxygen transmission rate		(12.3~62.8) cm ³ /(m ² •24h)	$U=(1.2\sim 3.2)\text{cm}^3/(\text{m}^2\cdot 24\text{h})$		
169	*Water Colorimeters	Colorimeter	C.S. for Water Colorimeters JJF1689	Digital display: (0~70)PCU	$U=1\text{PCU}$		
				visual: (0~70)PCU	$U=6\text{PCU}$		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
X Ionizing Radiation Measuring Instruments							
1	*Medical Diagnostic X-Ray Radiation Source	Airkermarate	V.R. of Medical Diagnostic X-ray Radiation Source JJG744	40 μ Gy/s $\sim$ 1Gy/min	$U_{rel}=5.0\%$		
		voltage		(60 $\sim$ 120)kV	$U_{rel}=4.4\%$		
2	*Medical Diagnostic X-ray Radiation Source for Medical Digital Subtraction Angiography	Airkermarate	V.R. of Medical Diagnostic X-ray Radiation Source for Medical Digital Subtraction Angiography JJG1067	40 μ Gy/s $\sim$ 1Gy/min	$U_{rel}=5.0\%$		
		voltage		(60 $\sim$ 120)kV	$U_{rel}=5.4\%$		
3	*Medical Electron Accelerator Radiation Source	Absorbed Dose	V.R. of Medical Electron Accelerator Radiation Source JJG589	(0.01 $\sim$ 10)Gy	$U_{rel}=3.4\%$		
4	*Medical Radiation Source for ^{60}Co Teletherapy	Absorbed Dose	V.R. of Medical Radiation Source for ^{60}Co Teletherapy JJG1027	(0.01 $\sim$ 10)Gy	$U_{rel}=3.4\%$		
5	*Radioactivity Meters	Radioactivity	Verification Regulation of Radioactivity Meters JJG377	$(3.7 \times 10^5 \sim 3.7 \times 10^{10})\text{Bq}$	$U_{rel}=5.0\%$		
6	α, β Surface Contamination Monitors	surface emission rate	Verification Regulation for α, β Surface Contamination Monitors JJG478	$\alpha: (10^3 \sim 10^5)/(\text{min} \cdot 2\pi \text{sr})$	$U_{rel}=4.0\%$		
				$\beta: (10^4 \sim 10^6)/(\text{min} \cdot 2\pi \text{sr})$	$U_{rel}=4.0\%$		
7	*Radiation Source used in 60kV $\sim$ 300kV X-ray Radiotherapy	Absorbed Dose	V.R. of Radiation Source used in 60kV $\sim$ 300kV X-ray Radiotherapy JJG1053	(0.01 $\sim$ 10)Gy	$U_{rel}=3.4\%$		
8	*Medical X-ray Radiation Sources for Mammographic Equipment	Absorbed Dose	Medical X-ray Radiation Sources for Mammographic Equipment JJG1145	0.01mGy $\sim$ 1Gy	$U_{rel}=5.1\%$		
		Voltage		(20 $\sim$ 50)kV	$U_{rel}=2.4\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
9	*X,gamma-rayDensitometryforBoneMineralDensity	Airkermarate	X、gamma-ray Densitometry for Bone Mineral Density JJG1050	(0.01~0.1)Gy/min	$U_{rel}=12\%$		
10	*MedicalDiagnosticX-raySourceforDentalPanorama	Airkermarate	Medical DiagnosticX-ray Source for Dental Panorama JJG1101	40 μ Gy/s~1Gy/min	$U_{rel}=5.7\%$		
		Voltage		(60~120)kV	$U_{rel}=4.5\%$		
11	* γ RaySpectrometers	radioactivity	C.S of γ Ray Spectrometers of Scintillation Detctors JJF1744	$(2 \times 10^2 \sim 9 \times 10^3)$ Bq	$U_{rel}=10\%$		
12	*LowBackgroundAlpha/BetaMeasuringInstruments	detectionefficiency	V.R. of Low Background Alpha/Beta Measuring Instruments JJG853	$\alpha : (2 \times 10^4 \sim 1.2 \times 10^5)(\text{min} \cdot 2 \pi \text{ sr})^{-1}$	$U_{rel}=4\%$		
				$\beta : (2 \times 10^4 \sim 1.2 \times 10^5)(\text{min} \cdot 2 \pi \text{ sr})^{-1}$	$U_{rel}=4\%$		
13	*X-raySecurityInspectionEquipment	Leakageradiation	Calibration Specification forX-ray Security Inspection Equipment JJF1275	(0.3~10)mGy/h	$U_{rel}=13\%$		
14	*X-rayRadiationSourcesforMedicalComputedRadiographySystemandDigitalRadiographySystem	Airkerma	V.R. of X-ray Radiation Sources for Medical Computed Radiography Systemand Digital Radiography System JJG1078	(0.1~100)mGy	$U_{rel}=5.0\%$		
		voltage		(60~120)kV	$U_{rel}=4.4\%$		
15	*X-RayFlawDetectors	airkermarate	V.R. of X-Ray Flaw Detectors JJG40	(0.01~0.1)Gy/min	$U_{rel}=10\%$		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
16	*Medical Diagnostic X-ray Radiation Source for Spiral Computed Tomography(CT)	Dose	V.R.of Medical Diagnostic X-ray Radiation Source for Spiral Computed Tomography(CT) JJG 961	(1~100)mGy	$U_{rel}=5.0\%$		
XI Medical Science Special Measuring Instruments							
1	*Electrocardiograph	Voltage	V.R.of Electrocardiograph JJG 543	Calibration Voltage: 1mV, 1Hz	$U_{rel}=1.6\%$		
				Voltage Measurement: (0.5~5)mV, 10Hz	$U_{rel}=1.6\%$		
				Polarization Voltage: ± 300 mV	$U_{rel}=1.6\%$		
				Amplitude-Frequency Characteristics: 1mV, (0.5~75)Hz	$U_{rel}=2.4\%$		
		Time		time interval: (0.1~5)s	$U_{rel}=2.3\%$		
2	*Digital Electrocardiographs	Voltage	V.R.of Digital Electrocardiographs JJG 1041	Calibration Voltage: 1mV, 2.5Hz	$U_{rel}=1.6\%$		
				Voltage Measurement: (0.03~5)mV, 0.75Hz	$U_{rel}=1.6\%$		
				Polarization Voltage: ± 300 mV	$U_{rel}=1.6\%$		
		Time		Time Interval: 0.05s~3.84s, 1mV	$U_{rel}=2.3\%$		
		HeartRate		(30~200) min ⁻¹	$U_{rel}=1.2\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
3	*Ambulatory Electrocardiograph s	Voltage	V.R. of Ambulatory Electrocardiographs JJG 1042	Calibration Voltage: 1mV, 1Hz	$U_{rel}=1.6\%$		
				Voltage Measurement: (0.05 ~ 6)mV, (6.7 ~ 10)Hz	$U_{rel}=1.6\%$		
				Frequency Response: 1mV, (0.5 ~ 40)Hz	$U_{rel}=1.6\%$		
				Sensitivity: 1mV, 10Hz, (1 ~ 100)mm/mV	$U_{rel}=1.6\%$		
4	*Electroencephalo graphs	Voltage	V.R. of Electroencephalographs JJG 1043	CMRR	$U=2.2\text{dB}$		
				Scanning Speed	$U_{rel}=2.2\%$		
				25mm/s	$U_{rel}=2.2\%$		
		Time		Calibration Voltage: 2 μ V ~ 1mV, 1s	$U_{rel}=1.6\%$		
5	*Digital Electroencephalogr aphs	Voltage	V.R. of Digital Electroencephalographs JJG 954	Voltage Measurement: 2 μ V ~ 2mV, 0.1s	$U_{rel}=1.6\%$		
				Amplitude-Frequency Characteristics: 2 μ V ~ 2mV, (1 ~ 60)Hz	$U_{rel}=1.6\%$		
				time interval: 0.05s ~ 5s	$U_{rel}=2.3\%$		
		Time		Voltage Measurement: 2 μ V ~ 5mV, 0.1s	$U_{rel}=2.1\%$		
6	*Ventilators	CMRR	Calibration Specification for Ventilators JJF 1234	Time Interval: (0.1 ~ 5) s	$U_{rel}=2.3\%$		
		Tidal Volume		(80 ~ 100)dB	$U=2.2\text{dB}$		
				(400 ~ 800)mL	$U_{rel}=4.0\%$		

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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date	
		Ventilation Frequency		(10~40)min ⁻¹	<i>U</i> _{rel} =4.0%			
		Pressure		Airway peak-pressure:(1.0~3.0)kPa	<i>U</i> =0.07kPa			
				PEEP:(1.0~2.0)kPa	<i>U</i> =0.07kPa			
				Oxygen Concentration	21%~100%			<i>U</i> =5.0%
7	*Medical Magnetic Resonance Image	Magnetic Density	C.S.for Medical Magnetic Resonance Image JJF(Ji) 3002	(0.1~3.0)T	<i>U</i> _{rel} =3.0%			
		Length		spatial linearity:(10~120)mm	<i>U</i> _{rel} =0.32%			
8	*Cardiac Defibrillators	Energy	Calibration Specification for Cardiac Defibrillators JJF 1149	(2~360)J	<i>U</i> _{rel} =2.8%			
		Voltage		Voltage Measurement: (0.5~2)mV,0.4s	<i>U</i> _{rel} =1.6%			
				Amplitude-Frequency Characteristics: 1mV,(1~25)Hz	<i>U</i> _{rel} =1.6%			
		Scanning Speed		25mm/s	<i>U</i> _{rel} =2.2%			
		Heart Rate		(30~200)min ⁻¹	<i>U</i> _{rel} =1.0%			
		Pulse Frequency		(40~200)min ⁻¹	<i>U</i> =1.0min ⁻¹			
		Pulse Width		(20~50)ms	<i>U</i> _{rel} =2.3%			
		Pulse Current Amplitude		(4~150)mA	<i>U</i> _{rel} =2.3%			
9	*Hemodialysis Equipment	Conductivity	Calibration Specification for Hemodialysis Equipment JJF 1353	(1.4~12.8)mS/cm	<i>U</i> _{rel} =3.0%			
		Temperature		(25~40)°C	<i>U</i> =0.2°C			

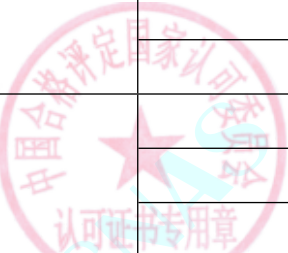


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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
		Pressure		Vein(artery) Pressure:(-40~60)kPa	U=0.32kPa		
				Dialysate Pressure: (1~100)kPa	U=0.78kPa		
		Flow		Dialysate Flow:(400~700)mL/min	U _{rel} =3.0%		
				Dewatered Water:500mL/h、1000mL/h	U=33mL/h		
		pH		6~8	U=0.03		
		Mass		2kg、10kg	U=1.5g		
10	*Electrosurgical Generator	Current	Calibrator Specification for Electrosurgical Generator JJF 1217	High-Frequency Leakage Current:(18~497)mA,(300kHz~1MHz)	U=3.0mA		
		Power		(50~395)W,(300~500)kHz	U _{rel} =3.7%		
11	*Medical Element Analyzer	Concentration	Calibration Specification for Medical Element Analyzer JJF (JI) 126	Pb:(10~30) μ g/L	U _{rel} =10%		
				Cd:(0.3~0.9) μ g/L	U _{rel} =8%		
				Cu:(0.05~0.15) μ g/mL	U _{rel} =2%		
12	*Automatic Chemistry Analyzers	Absorbancy	Calibration Specification for Automatic Chemistry Analyzers JJF 1720	0.1~1.0	U=0.004		
		Concentration		ALT: (30~190)U/L	U _{rel} =6%		
				GLU: (2~16)mmol/L	U _{rel} =3%		
13	*Automatic Urinary Sediment Analyzers	Concentration	Calibration Specification for Automatic Urinary Sediment Analyzers JJF 1823	RBC: (150~2000) μ L ⁻¹	U _{rel} =12%		

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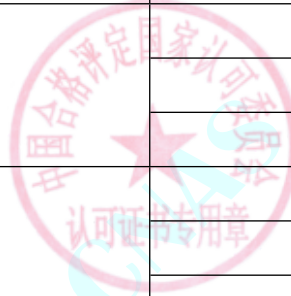
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
				WBC: (150~2000) μL^{-1}	$U_{\text{rel}}=11\%$		
14	*Glycohemoglobin Analyzers	Concentration	Calibration Specification for Glycohemoglobin Analyzers JJF 1841	4.0%~11.0%	$U_{\text{rel}}=16\%$		
15	*Automatic Closed Luminescence Immunoassay Analyzers	Concentration	Calibration Specification for Automatic Closed Luminescence Immunoassay Analyzers JJF 1752	Insulin:(0.1~150)pmol/L	$U_{\text{rel}}=5\%$		
				AFP:25IU/mL	$U=1.5\text{IU/mL}$		
				TSH:(0.5~40) $\mu\text{IU/mL}$	$U_{\text{rel}}=23\%$		
				HBsAg:(0.2~4)IU/mL	$U_{\text{rel}}=35\%$		
16	*Micro-spectrophotometers	Concentration	Calibration Specification for Micro-spectrophotometers JJF 1836	Salmonsperm DNA,(10~2200)mg/kg	$U_{\text{rel}}=8\%$		
				Bovine Serum Albumin:(0.030~2.0)mg/ml	$U_{\text{rel}}=16\%$		
17	*Cardiopulmonary Resuscitators	Frequency	Calibration Specification for Cardiopulmonary Resuscitators JJF 1748	Pressure Frequency:(100~120) min^{-1}	$U_{\text{rel}}=4.6\%$		
		Depth		Single Blow Frequency:(10~20) min^{-1}	$U=4.6\text{min}^{-1}$		
		Volume		(30~50)mm	$U_{\text{rel}}=1.6\%$		
				Tidal Volum: (200~1200)ml	$U_{\text{rel}}=6.2\%$		
18	*Medical Suction Equipment	Pressure	Calibration Specification for Medical Suction Equipment JJF 1810	(-90~-20)kPa	$U=0.98\text{kPa}$		
19	*Multifunction Patient Monitoring Instruments	Heart Rate	V.R.of Multifunction Patient Monitoring Instruments Cardiac Monitor JJG 1163	(30~200) min^{-1}	$U_{\text{rel}}=3.2\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
	Cardiac Monitor	Voltage		Voltage Measurement: (0.5~2)mV,2Hz	<i>U</i> _{rel} =1.6%		
				Amplitude-Frequency Characteristics: 1mV,(1~25)Hz	<i>U</i> _{rel} =3.2%		
		Scanning Speed		25mm/s,50mm/s	<i>U</i> _{rel} =2.2%		
		Blood Pressure		(6~40)kPa	<i>U</i> =0.26kPa		
		Pulse Rate		(30~200)min ⁻¹	<i>U</i> _{rel} =2.4%		
		Ventilation Frequency		(3~60)min ⁻¹	<i>U</i> =1min ⁻¹		
		Concentration		CO ₂ :5%	<i>U</i> _{rel} =1.4%		
		20		*Pulmonary Function Measuring Instrument	Volume		
Flow	FVC:(1~8)L		<i>U</i> _{rel} =2.1%				
	PEF:(4~11)L/s		<i>U</i> _{rel} =3.4%				
	MVV:(30~100)L/min		<i>U</i> _{rel} =2.8%				
21	*Dry biochemistry analyzers	Concentration	C.S. for Dry Biochemistry Analyzers JJF2036	ALT: (64.7~197.6)U/L	<i>U</i> _{rel} =4%		
				GLU: (3~13)mmol/L	<i>U</i> _{rel} =4%		
				K ⁺ : (1.92~7.20)mmol/L	<i>U</i> _{rel} =3%		
22	*Fully Automated ELISA Analyzers	volume	C.S. for Fully Automated ELISA Analyzers JJF2089	(20~200) μ L	<i>U</i> =0.24 μ L		
		Temperature		(35.5~38.5)℃	<i>U</i> =0.6℃		
		Absorbance		0.2~2.0	<i>U</i> =0.01		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
23	*Blood Coagulation Analyzers	Temperature	C.S.for Blood Coagulation Analyzers JJF 1945	(0~50)℃	U=0.2℃		
		Concentration		2.7g/L	U _{rel} =4.0%		
24	*Multifunctional Blood Gas Analyzers	pH	C.S.for Multifunctional Blood Gas Analyzers JJF 2054	pH: 6.83~6.98	U=0.02		
		concentration		K ⁺ : (1.50~7.50)mmol/L	U _{rel} =2.7%		
				Na ⁺ : (100.0~180.0)mmol/L	U _{rel} =1.9%		
				Cl ⁻ : (80.0~160.0)mmol/L	U _{rel} =3.0%		
				iCa ²⁺ : (0.50~2.50)mmol/L	U _{rel} =4.4%		
				HGB:(50~180) g/L	U _{rel} =2.8%		
				CO ₂ :(2.8~11.2)	U _{rel} =1.9%		
				O ₂ :(2.8~25.6)%	U _{rel} =1.7%		
25	*Automated Blood Bacteria Culture Analyzers	Temperature	C.S. for Automated Blood Bacteria Culture Analyzers JJF 1937	(20~50)℃	U=0.2℃		
		illuminan		(10~3000)lx	U _{rel} =10%		
26	*Ultrasound Bone Sonometers	speed of sound	C.S. for Ultrasound Bone Sonometers JJF1649	radius:(2622~2670)m/s	U _{rel} =1.1%		
				calcaneus:(1524~1579)m/s	U _{rel} =1.2%		
27	*Medical Imaging Diagnosis Display Systems	Brightness	C.S. for Medical Imaging Diagnosis Display Systems JJF 1746	(10~1000) cd/m ²	U _{rel} =3.2%		
		Colorimeter		x,y:(0~1.0)	U=0.008		
28	*Blood Cell Analyzers	Concentration	V.R. of Blood Cell Analyzers JJG714	RBC,(2.27~5.23)×10 ¹² peace/L	U _{rel} =3%		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
				WBC:(3.25~18.0)×10 ⁹ peace/L	<i>U</i> _{rel} =3%		
				HGB:(60~166)g/L	<i>U</i> _{rel} =3%		
				PLT:(69.0~470.0)×10 ⁹ peace/L	<i>U</i> _{rel} =4%		
29	*Urine Analyzers	SG	C.S. for Urine Analyzers JJF1129	1.006~1.026	<i>U</i> =0.004		
		Concentration		Urineprotein: (0.1~3.0)g/L	<i>U</i> _{rel} =11%		
				urinesuga:(0.1~56)mmol/L	<i>U</i> _{rel} =13%		
				pH: (5.5~7.5)	<i>U</i> _{rel} =6%		
				UrineRBC: (30~180)/μL	<i>U</i> _{rel} =9%		
				UrineWBC: (40~260)/μL	<i>U</i> _{rel} =7%		
30	*baby incubator	temperature	C.S. for baby incubator JJF1260	(20~40) °C	<i>U</i> =(0.18~0.20)°C		
		Humidity		20%RH~60%RH	<i>U</i> =1.8%RH~1.6%RH		
				60%RH~80%RH	<i>U</i> =1.6%RH~2.2%RH		
		Noise		(30~130) dB	<i>U</i> =1.6dB		
		oxygencontent		(30~40) %	<i>U</i> =2%		
31	*Sphygmomanometer	Pressure	V.R. of Sphygmomanometer JJG270	(0~40)kPa	<i>U</i> =0.16kPa		
32	*Non-contact Tonometers	Error of indication	V.R. of Non-contact Tonometers JJG 1143	(0.93~6.65)kPa	<i>U</i> =0.16kPa		
XII Electronic and Electronic Appliance Special Measuring Instruments							



No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
1	Electrostatic Discharge Simulators	Output Voltage	C.S. for Electrostatic Discharge Simulators JJF1397	100V~15kV	$U_{rel}=3\%$		
		Contact Discharge Current		0.1A~30A	$U_{rel}=5\%$		
		risetime		600ps~1.0ns	$U_{rel}=6\%$		
		30nsand60nscurrent		0.1A~30A	$U_{rel}=5\%$		
2	*Surge Simulators	Open-circuit Voltage Peak Value	C.S. for Surge Simulators JJF1741	100V~4.4kV	$U_{rel}=4\%$		
		Open circuit voltage front time		0.8 μ s~1.6 μ s	$U_{rel}=7\%$		
		Open circuit voltage duration		16 μ s~60 μ s	$U_{rel}=5\%$		
		Open circuit voltage under shoot		30V~1.4kV	$U_{rel}=6\%$		
		Peak short-circuit current		100A~4kA	$U_{rel}=4\%$		
		Short circuit current waveform time		1 μ s~30 μ s	$U_{rel}=7\%$		
		Short circuit current duration		1 μ s~50 μ s	$U_{rel}=5\%$		
		Short circuit current under shoot		30V~1.4kV	$U_{rel}=6\%$		
3	*Pluse Magnetic Field Generator	peak current	Calibration method of Pluse Magnetic Field Generator	1A~2kA	$U_{rel}=3\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		Output current rise time	Z/JF-HYX-003	4.4 μ s ~ 8.4 μ s	$U_{rel}=3\%$		
		Duration of output current		1 μ s ~ 21 μ s	$U_{rel}=3\%$		
		magnetic density		1 A/m ~ 1800 A/m	$U_{rel}=5\%$		
4	*Electrical Fast Transient/Burst Simulators	Pulse voltage peak	C.S. for Electrical Fast Transient/Burst Simulators JJF 1672	100V ~ 4.6kV	$U_{rel}=4\%$		
		Pulse rise time		3.5ns ~ 6.5ns	$U_{rel}=9\%$		
		Pulse duration		35ns ~ 150ns	$U_{rel}=7\%$		
		Pulse repetition frequency		1kHz ~ 120kHz	$U_{rel}=2\%$		
		Burst duration		0.6ms ~ 18ms	$U_{rel}=2\%$		
		Burst period		240ms ~ 360ms	$U_{rel}=2\%$		
5	*Voltage Dips, Short Interruptions and Voltage Variations Test Generators	Output Voltage	C.S. for Voltage Dips, Short Interruptions and Voltage Variations Test Generators JJF 1673	1V ~ 500V	$U_{rel}=2\%$		
		Load adjustment rate		0.01% ~ 5%	$U_{rel}=5\%$		
		voltage rise time		1 μ s ~ 50 μ s	$U_{rel}=7\%$		
		voltage drop time		1 μ s ~ 50 μ s	$U_{rel}=7\%$		
		Voltage overshoot		0.1% ~ 10%	$U_{rel}=9\%$		
		Voltage undershoot		0.1% ~ 10%	$U_{rel}=9\%$		
		duration time		1ms ~ 60s	$U_{rel}=5\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
		phaseangle		0.1° ~360°	<i>U</i> _{rel} =4%		
		Interval time		1ms~ 60s	<i>U</i> _{rel} =5%		
		Peak impulse current		250A~1000A(Rated current≤16A),500A~1000A(Rated current 16A~100A)	<i>U</i> _{rel} =5%		
6	Battery Internal Resistance Testers	Resistance	C.S. for Battery Internal Resistance Testers JJF1620	1m Ω ~ 10m Ω	<i>U</i> _{rel} =12%		
				1m Ω ~ 10m Ω	<i>U</i> _{rel} =1.2%		
				0.1 Ω ~ 1 Ω	<i>U</i> _{rel} =0.6%		
				1 Ω ~ 10 Ω	<i>U</i> _{rel} =0.12%		
				10 Ω ~ 3k Ω	<i>U</i> _{rel} =0.06%		
		DC Voltage		100mV~800V	<i>U</i> _{rel} =0.002%		
7	Proof Tracking Index Testers	DC Voltage	C.S. for Proof Tracking Index Testers JJF(Zhe)1087	100mV~600V	<i>U</i> _{rel} =0.032%		
8	DC electronic loads	Voltage	C.S. for DC Electronic Loads JJF1462	0.1V~ 1000V	<i>U</i> _{rel} =0.002%		
		Current		1mA~ 10A	<i>U</i> _{rel} =0.002%		
				(10~ 100) A	<i>U</i> _{rel} =0.002%		
				(100~ 1000) A	<i>U</i> _{rel} =0.006%		
				Resistance	0.1 Ω ~ 100k Ω		
9	*Damped Oscillatory Wave Simulators	Open-circuit Voltage Peak Value	C.S. for Damped Oscillatory Wave Simulators JJF2016	100V~4.4kV	<i>U</i> _{rel} =4%		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		Open-circuit voltage rise time		3.5ns~6.5ns, 60ns~90ns	$U_{rel}=3\%$		
		Open-circuit voltage oscillation frequency		90kHz~110kHz, 900kHz~1.1MHz, 2.7MHz~33MHz	$U_{rel}=2\%$		
		Repetition rate		36 次/s~440 次/s, 4500 次/s~5500 次/s	$U_{rel}=2\%$		
		Voltage Decay		0%~100%	$U_{rel}=4\%$		
		Duration of burst		4ms~60ms, $\geq 2s$	$U_{rel}=2\%$		
		Period of burst		240ms~360ms	$U_{rel}=2\%$		
		Peak short circuit current		1A~15A, 4A~96A	$U_{rel}=3\%$		
		Short-circuit current rise time		1ns~330ns	$U_{rel}=5\%$		
		Short circuit current oscillation frequency		2.1MHz~39MHz	$U_{rel}=2\%$		
		Short circuit current attenuation		10V~4kV	$U_{rel}=3\%$		
		Residual damping oscillation voltage		37.5V~2.5kV	$U_{rel}=4\%$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (<i>k</i> =2)	Note	Effective Date
		Undesired damped oscillatory voltage		1V~375V	<i>U</i> _{rel} =%		
10	*Power Frequency Magnetic Field Simulators	magnetic density	C.S. for Power Frequency Magnwtic Field Simulators	1A/m~300A/m	<i>U</i> _{rel} =5%		
		Current	JJF1737	0.3A~350A	<i>U</i> _{rel} =3%		
11	*Holiday Detector	Voltage	C.S. for Holiday Detector JJG(Lu)101	(0.1~30) kV	<i>U</i> _{rel} =0.6%		
12	*Impulse Voltage Testers	Peak voltage	C.S. for Impulse Voltage Testers for Winding Interturn Insulation JJF1691	(0.1~15) kV	<i>U</i> _{rel} =0.6%		
13	*Impulse Voltage Dividers	Partial pressure ratio	C.S. for Impulse Measuring Systems-Impulse Voltage-Part 1:Impulse Voltage Dividers JJF2028	100~10000	<i>U</i> _{rel} =1.6%		
		Voltage amplitude		(10~2000)kV	<i>U</i> _{rel} =1.6%		
		Time		10ns~20 μ s	<i>U</i> _{rel} =4%		
14	*Sparktester	Voltage	Calibration method of Sparktester Z/JF-DCL-002	(0.1~25) kV	<i>U</i> _{rel} =0.6%		
15	*Partial discharge detecting system	Voltage	Calibration Method of Partial discharge detecting system voltage Z/JF-DCL-001,C. S. for Partial Discharge Testers Based Pulse Current Method JJF1616	(0.1~120)kV	<i>U</i> _{rel} =1.2%		
		cut-offfrequency		10kHz~500kHz	<i>U</i> _{rel} =0.04%		
		coulometry		(0.1~1000)pC	<i>U</i> _{rel} =1.3%		
X III Construction and Transportation Special Measuring Instruments							
1	*Steel Bar Tarnish Measuring Instruments	DC Voltage	C.S. for Steel Bar Tarnish Measuring Instruments JJF1341	10mV~20mV	<i>U</i> _{rel} =0.5%		
				20mV~200mV	<i>U</i> _{rel} =0.2%		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		DC Voltage	V.R. of Rebound Test Hammer JJG817	200mV~1000mV	$U_{rel}=5 \times 10^{-4}$		
				10mV~1V	$U_{rel}=0.29\%$		
				1V~19V	$U_{rel}=0.2\%$		
				1.9V~10V	$U_{rel}=2 \times 10^{-4}$		
		DC Current		10 μ A~2A	$U_{rel}=6 \times 10^{-4}$		
2	Rebound Test Hammer	Stiffness	V.R. of Rebound Test Hammer JJG817	(60~1000)N/m	$U=5\text{N/m}$		
		Rebound rate		70~90	$U=0.3$		
		Length		(0~150)mm	$U=0.02\text{mm}$		
		Force value		(0.2~1)N	$U=0.06\text{N}$		
3	*Mixer for mixing mortars	Rotational Speed	C.S. for Mixer of Mixing Mortars JJF2094, V.R. of Mixer for mixing mortars JJG(Ji) 3008	(50~300)r/min	$U=0.2\text{r/min}$		
		Time		(0~3600)s	$U=0.2\text{s}$		
		Length		(0~300)mm	$U=0.2\text{mm}$		
4	Carbonization Depth Measuring Instruments and Calipers	Length	C. S. for Carbonization Depth Measuring Instruments and Calipers JJF1721	Carbonization Depth Measuring Instruments, (0~8)mm	$U=0.08\text{mm}$		
				Carbonization Depth Measuring Calipers, (0~70)mm	$U=0.01\text{mm}$		
5	Apparatus for Determining Penetration of	Needle body diameter	C. S. for Apparatus for Determining Penetration of Bituminous Materials	(0~2)mm	$U=0.003\text{mm}$		
		Angle		(0~20)°	$U=6'$		



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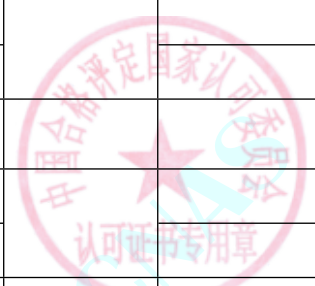
№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
	Bituminous Materials	Length measuring device indication error	JJF1208	(0~100)mm	$U=0.03\text{mm}$		
6	*Mechanical Sieve Shaker	Frequency	C.S. for mechanical sieve shaker SL411	$(100\sim 300)\text{min}^{-1}$	$U=2\text{min}^{-1}$		
7	Apparatus for Concrete Slump Test	Length	V. R. of Apparatus for Concrete Slump Test JJG(Ji)087	$(90\sim 210)\text{mm}$	$U=0.1\text{mm}$		
8	Needle and Flake Gages	Length	C. S. for Needle and Flake Gages JJF1593	$(2\sim 83)\text{mm}$	$U=0.04\text{mm}$		
9	Concrete Shrinkage Dilatometer	Length	C. S. for Concrete Shrinkage Dilatometer JJF (Ji) 139	Measuring Rod: $(100\sim 540)\text{mm}$	$U=7\text{ }\mu\text{m}$		
				Dial Gauges: $(0\sim 10)\text{mm}$	$U=6\text{ }\mu\text{m}$		
				$(100\sim 600)\text{mm}$	$U_{\text{rel}}=0.002\%$		
10	*Apparatus to Measure Water Permeability of Concrete	Pressure	Calibration Specification of Apparatus to Measure Water Permeability of Concrete JJF1812	$(0\sim 4)\text{MPa}$	$U=0.01\text{MPa}$		
11	*Compaction Instrument of Soil	Mass	V.R. of Compaction Instrument of Soil JJG(JT)058	$(0.2\sim 12)\text{kg}$	$U=1\text{g}$		
		Length		$(0\sim 1)\text{m}$	$U=0.5\text{mm}$		
12	*Paint Film Scrub Resistance Testers	Length	C.S. for Paint Film Scrub Resistance Testers JJF(SH)001	$(0\sim 150)\text{mm}$	$U=0.5\text{mm}$		
		Mass		450g	$U=0.1\text{g}$		
		Frequency		37min^{-1}	$U=0.3\text{min}^{-1}$		
13	Pile Dynamic Measuring Instrument	Acceleration	Verification Regulation of Pile Dynamic Measuring Instrument JJG 930	Reference Point, $100\text{m/s}^2, 160\text{Hz}$	$U_{\text{rel}}=1.2\%$		
				Passband: $(2\sim 100)\text{m/s}^2$ $(20\text{Hz}\sim 2000\text{Hz})$	$U_{\text{rel}}=2.1\%$		



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No	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty (k=2)	Note	Effective Date
		Time		0.04ms~0.1s	$U_{rel}=2\%$		
14	*Los Angeles Testing Machine	Rotational Speed	V.R. of Los Angeles Testing Machine JJG (JT) 108	(20~1000)r/min	$U=0.3r/min$		
		Length		(0~150)mm	$U=0.03mm$		
		Mass		(0.02~10)kg	$U=0.1g$		
15	*Cement Paste mixer	Rotational Speed	V.R. of Cement Paste mixer JJG (Ji) 3005	(50~300)r/min	$U=0.2r/min$		
		Time		(0~3600)s	$U=0.2s$		
		Length		(0~300)mm	$U=0.2mm$		
16	*Testing Machines of Resistance to Internal Pressure of Plastics Pipe	Pressure	Calibration Specification of Testing Machines of Resistance to Internal Pressure of Plastics Pipe JJF1628	(0~16)MPa	$U=0.1\%FS$		
17	*Perforation Resistance Tester	Force	V.R. of Perforation Resistance Tester JJG(Ji)057	(0.2~1.2)kN	$U_{rel}=0.6\%$		
		Length		(0~150)mm	$U=0.05mm$		
18	*Jolting Table for Compacting Mortars	Length	V.R. of Jolting Table for Compacting Mortars JJG (Ji) 40	(0~2)m	$U=0.5mm$		
		Time		(1~300)s	$U=0.3s$		
19	*Asphalt Centrifugal Extractor	Rotational Speed	V.R. of Asphalt Centrifugal Extractor JJG (JT) 132	(1000~20000)r/min	$U_{rel}=0.15\%$		
20	*Marshall Stability Test Machine	Speed	V.R. of Marshall Stability Test Machine JJG (Ji) 44	(10~100)mm/min	$U=0.2mm/min$		
		Force Value		(1~100)kN	$U_{rel}=0.3\%$		
21	*concrete Vibrating table test	Vibrating	C.S. for concrete Vibrating table test JJF(Ji)123	(0.3~0.7)mm	$U=0.05mm$		



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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
		Frequency		(40~60)Hz	$U=0.8\text{Hz}$		
22	*Cement Fineness Negative Pressure Screen Analyzers	Pressure	Calibration Specification of Cement Fineness Negative Pressure Screen Analyzers JJF1827	(-100~0)hPa	$U=0.5\%\text{FS}$		
23	*Measuring Instrument for Cement Bright Degumming Equipment	acceleration	V.R. of Measuring Instrument for Cement Bright Degumming Equipment JJG974	(4.9~100)m/s ²	$U_{\text{rel}}=1.5\%$		
		Frequency		(20~2000)Hz	$U_{\text{rel}}=1.5\%$		
		Amplitude		(0.1~5)mm	$U_{\text{rel}}=1.5\%$		
		Rotational Speed		(50~1000)r/min	$U_{\text{rel}}=0.1\%$		
		Time		(0~3600)s	$U=0.05\text{s}$		
24	*Mud Density Meters	Density	V.R. of Mud Density Meters JJG 1045	(700~3000)kg/m ³	$U=0.5\text{kg/m}^3$		
25	*Flow Table for Determine Cement Mortar Fluidity	Mass	V.R. of Flow Table for Determine Cement Mortar Fluidity JJG(JT)096	200g~12kg	$U=2\text{g}$		
		Time		25s	$U=0.2\text{s}$		
		Length		(0~300)mm	$U=0.05\text{mm}$		
26	Instrument of Testing Mortar-strength by Penetration Resistance Method	Force	C.S. for Instrument of Testing Mortar-strength by Penetration Resistance Method JJF1372	(500~1200)N	$U_{\text{rel}}=0.5\%$		
		Length		(0~50)mm	$U=0.03\text{mm}$		
27	Nonmetal Building Materials Plastic Limit Measuring Instruments	Length	C. S. for Nonmetal Building Materials Plastic Limit Measuring Instruments JJF1090	(0~200)mm	$U=0.01\text{mm}$		
		Angle		(0~90)°	$U=3'$		

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№	Instrument	Measurand	Calibration Method	Range	Expanded Uncertainty ($k=2$)	Note	Effective Date
28	*Coefficient of Friction Tester	Force value	C.S. for Coefficient of Friction Tester JJF(Ji)125	10cN~300N	$U_{\text{rel}}=0.6\%$		
		Velocity		(1~500)mm/min	$U=0.3\text{mm/min}$		
		Mass		(0.2~210)g	$U=0.01\text{g}$		
29	*Mortar Setting Time Meter	Force value	C.S. for Mortar Setting Time Meter JJF(Ji)197	(1~100)N	$U_{\text{rel}}=0.5\%$		
		Length		(0~150)mm	$U=0.05\text{mm}$		



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