

PT. CALTESYS INDONESIA

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Temperature

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications	
1	Liquid In Glass Thermometer	-30 °C ~ 0 °C	0.26 °C	0.30 °C	in house procedure TG-01 ASTM E 77 - 1998	
		0 °C ~ 100 °C	0.11 °C	0.21 °C		
		100 °C ~ 200 °C	0.11 °C	0.21 °C		
2	Temperature Sensor with display unit	-30 °C ~ 0 °C	0.25 °C	0.30 °C	in house procedure TI-01 JIS Z 8710 - 1993	
		0 °C ~ 100 °C	0.09 °C	0.20 °C		
		100 °C ~ 200 °C	0.09 °C	0.20 °C		
		200 °C ~ 600 °C	2.5 °C	0.85 °C		
3	Temperature Indicator (without sensor) for Thermocouple Sensor :				in house procedure INTC-01 ASTM E 220-2007	
		K-type	-270 °C ~ 1372 °C	0.09 °C		0.37 °C
		J-type	-210 °C ~ 1200 °C	0.09 °C		0.32 °C
		T-type	-270 °C ~ 400 °C	0.09 °C		0.16 °C
		E-type	-270 °C ~ 1000 °C	0.08 °C		0.12 °C
		R-type	-50 °C ~ 1768 °C	0.13 °C		0.72 °C
		S-type	-50 °C ~ 1768 °C	0.12 °C		0.72 °C
	B-type	0 °C ~ 1820 °C	0.6 °C	1.4 °C		
	for Resistance Thermometer Sensor	-200 °C ~ 800 °C	0.08 °C	0.21 °C	in house procedure RTD-01 ASTM E 644 - 2011	
4	Thermocouple	-30 °C ~ 0 °C	0.26 °C	0.31 °C	in house procedure EVT-01 ASTM E 220-2007	
		0 °C ~ 200 °C	0.25 °C	0.24 °C		
		200 °C ~ 600 °C	1.9 °C	0.83 °C		
		600 °C ~ 1000 °C	3.4 °C	3.9 °C		
5	Resistance Thermometer	-30 °C ~ 0 °C	0.25 °C	0.31 °C	In house procedure TTP-01 ASTM E 644 - 2011	
		0 °C ~ 200 °C	0.09 °C	0.24 °C		
6	Temperature Enclosure	Water Bath	ambient °C ~ 100 °C	0.09 °C	0.6 °C	in house procedure WOB-01,OB-01,FN-01 AS 2853 - 1986
		Oilbath	0 °C ~ 200 °C	0.09 °C	0.63 °C	
		Refrigerator	-30 °C ~ 0 °C	0.86 °C	0.45 °C	
			0 °C ~ 25 °C	0.74 °C	0.63 °C	
		Inkubator, Oven	25 °C ~ 200 °C	0.94 °C	0.83 °C	
		Oven	200 °C ~ 500 °C	2.1 °C	1.1 °C	
Furnace	500 °C ~ 1000 °C	3.4 °C	3.5 °C			
7	Thermohygrometer	30 % ~ 95 %	2.4 %RH	2.8 %RH	In house procedure THM-01 JIS B 7920 - 2000	
		15 °C ~ 40 °C	0.52 °C	1.2 °C		
8	Thermometer Radiasi (infrared)	0 °C ~ 100 °C	1.6 °C	1.3 °C	In house procedure IRT-01 JIS C 1612 - 2000	
		100 °C ~ 200 °C	1.5 °C	1.7 °C		
		200 °C ~ 300 °C	1.5 °C	1.9 °C		
		300 °C ~ 400 °C	1.2 °C	2.0 °C		
		400 °C ~ 500 °C	1.3 °C	2.0 °C		
9	Climatic Chamber	-30 °C ~ 100 °C	0.9 °C	-	In house procedure MKSP CC-01	
		40 % ~ 95 %	1.4 %RH	-		
		15 °C ~ 40 °C	-	0.5 °C		
		30 % ~ 90 %	-	2.6 %RH		

Massa

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
10	Weights (conventional mass)	0.001 g	0.0081 mg	0.02 mg	in house procedure MW-01 CSIRO 2004
		0.002 g	0.0079 mg	0.02 mg	
		0.005 g	0.0079 mg	0.02 mg	
		0.01 g	0.0082 mg	0.02 mg	
		0.02 g	0.0094 mg	0.02 mg	
		0.05 g	0.0091 mg	0.02 mg	
		0.1 g	0.0090 mg	0.02 mg	

Mass (continued)

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
		0.2 g	0.011 mg	0.02 mg	
		0.5 g	0.012 mg	0.03 mg	
		1 g	0.014 mg	0.03 mg	
		2 g	0.014 mg	0.04 mg	
		5 g	0.017 mg	0.05 mg	
		10 g	0.022 mg	0.06 mg	
		20 g	0.030 mg	0.08 mg	
		50 g	0.052 mg	0.10 mg	
		100 g	0.072 mg	0.17 mg	
		200 g	0.10 mg	0.31 mg	
		500 g	0.77 mg	1.7 mg	
		1 kg	0.80 mg	2.2 mg	
		2 kg	10.4 mg	6.4 mg	
		5 kg	10.6 mg	6.9 mg	
		10 kg	0.076 g	0.07 g	
		20 kg	0.082 g	0.11 g	
		30 kg	0.10 g	0.12 g	
11	Balance (electronic, mechanic)	0 g ~ 22 g	0.038 mg	0.11 mg	in house procedure MWB-03 CSIRO 2004
		22 g ~ 52 g	0.077 mg	0.13 mg	
		52 g ~ 110 g	0.15 mg	0.21 mg	
		110 g ~ 220 g	0.27 mg	0.39 mg	
		220 g ~ 320 g	0.41 mg	1.7 mg	
		320 g ~ 520 g	0.65 mg	1.7 mg	
		520 g ~ 1010 g	1.4 mg	2.4 mg	
		1010 g ~ 2200 g	4.1 mg	6.8 mg	
		2200 g ~ 3200 g	8.9 mg	7.8 mg	
		3200 g ~ 5200 g	12 mg	8.8 mg	
		5 kg ~ 11 kg	0.071 g	0.06 g	
		11 kg ~ 31 kg	0.10 g	0.11 g	
		31 kg ~ 60 kg	0.67 g	0.75 g	
		60 kg ~ 100 kg	1.3 g	0.9 g	
		100 kg ~ 300 kg	7.2 g	6.6 g	
		300 kg ~ 500 kg	40 g	7.0 g	
		500 kg ~ 1000 kg	0.077 kg	0.1 kg	
		1000 kg ~ 3000 kg	1.2 kg	0.5 kg	
		3000 kg ~ 5000 kg	2.3 kg	2.3 kg	
		5000 kg ~ 10000 kg	3.5 kg	3.5 kg	

Volume

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
12	Piston Pipette	0.01 mL	0.24 uL	0.12 uL	in house procedure PIP-01 ISSN 1368-6550
		0.05 mL	0.24 uL	0.15 uL	
		0.1 mL	0.26 uL	0.2 uL	
		0.2 mL	0.29 uL	0.4 uL	
		0.5 mL	0.46 uL	1 uL	
		1 mL	0.87 uL		
13	Volumetric Glassware; Volumetric Measures	0.5 mL	1.75 uL	2 uL	in house procedure MVL-01 ASTM E 542-01, 2012
		1 mL	2.1 uL	2 uL	
		2 mL		2 uL	
		3 mL		3.3 uL	
		4 mL		3.3 uL	
		5 mL	3.6 uL	3.3 uL	
		10 mL		6.7 uL	
		25 mL	11 uL	0.014 mL	
		50 mL	12 uL	0.025 mL	
		100 mL	31 uL	0.045 mL	
		500 mL	86.9 uL	0.20 mL	
		1000 mL	0.16 mL	0.38 mL	
		5000 mL	0.81 mL	1.9 mL	
		20000 mL	4.7 mL	7.9 mL	

Density

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
14	Hydrometer	0.650 g/ml ~ 1.000 g/ml	0.0012 g/ml	-	in house procedure HD-01 AS 2026-1994
		1.000 g/ml ~ 1.500 g/ml	0.0014 g/ml	-	
		1.500 g/ml ~ 1.850 g/ml	0.0026 g/ml	-	

Force

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
15	Universal Testing Machine	0 kN ~ 1 kN	0.8 %	0.6 %	in house procedure UTM-01 ASTM E4 - 2013
		0 kN ~ 5 kN	0.6 %	0.6 %	
		0 kN ~ 20 kN	0.6 %	0.6 %	
		0 kN ~ 100 kN	0.6 %	0.7 %	
		0 kN ~ 300 kN	0.6 %	-	
16	Push Pull Gauge	0 gf ~ 200 gf	0.09 gf	-	in house procedure PP-01 ASTM E4 - 2013
		0 gf ~ 500 gf	0.5 gf	0.29 gf	
		0 gf ~ 1000 gf	1.1 gf	0.59 gf	
		0 kgf ~ 2 kgf	0.002 kgf	-	
		0 kgf ~ 5 kgf	0.005 kgf	-	
		0 kgf ~ 10 kgf	0.01 kgf	8.2 gf	
		0 kgf ~ 20 kgf	0.02 kgf	0.007 kgf	
		0 kgf ~ 50 kgf	0.05 kgf	0.11 kgf	
		0 kgf ~ 100 kgf	0.11 kgf	0.57 kgf	
				1 kgf = 9.80665 N	
17	Load Cell / Proving Ring	1 kN	0.60 %	-	In house procedure LC-01 ISO 376 : 2011
		5 kN	0.31 %	-	
		20 kN	0.32 %	-	
		100 kN	0.31 %	-	
		300 kN	0.31 %	-	
18	Durometer Calibrator	Type A 0 N ~ 10 N	0.03 N	-	In house procedure LC-01 ISO 376 : 2011
		Type D 0 N ~ 45 N	0.07 N	-	

Torque

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
19	Torque Wrench	1 Nm ~ 12 Nm	0.12 Nm	0.12 Nm	in house procedure TW - 01 ISO 6789 : 2003
		12 Nm ~ 25 Nm	0.32 Nm	0.16 Nm	
		25 Nm ~ 50 Nm	0.6 Nm	0.16 Nm	
		50 Nm ~ 100 Nm	0.96 Nm	0.31 Nm	
		100 Nm ~ 500 Nm	4.0 Nm	3.4 Nm	
		500 Nm ~ 1100 Nm	8.3 Nm	8.9 Nm	
20	Torque Meter	0 Nm ~ 1 Nm	0.0005 Nm	0.0011 Nm	in house procedure TWM - 01 BS 7882 : 2008
		1 Nm ~ 5 Nm	0.004 Nm	0.026 Nm	
		5 Nm ~ 10 Nm	0.008 Nm	0.026 Nm	
		10 Nm ~ 20 Nm	0.02 Nm	0.07 Nm	
		20 Nm ~ 50 Nm	0.04 Nm	0.07 Nm	
		50 Nm ~ 100 Nm	0.09 Nm	1.3 Nm	
		100 Nm ~ 400 Nm	0.31 Nm	4.5 Nm	
		400 Nm ~ 1000 Nm	0.85 Nm	11 Nm	

Pressure

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
21	Dead Weight Tester	100 PSI ~ 16000 PSI	0.050 %	-	in house procedure TK DWT-01 Euramet cg-3 v-1.0
22	Pressure Test Gauge (pneumatic)	-0.1 bar ~ -1 bar	0.001 bar	0.001 bar	in-house procedure TK TGG-01
		0.7 bar ~ 7 bar	0.001 bar	0.003 bar	
		4 bar ~ 40 bar	0.01 bar	0.02 bar	
23	Pressure Test Gauge (hydraulic)	1 bar ~ 60 bar	0.02 bar	-	in house procedure TK TGG-01 DKD-R 6-1
		1 bar ~ 100 bar	0.03 bar	-	
		1 bar ~ 250 bar	0.1 bar	-	
		1 bar ~ 600 bar	0.2 bar	-	
		1 bar ~ 1000 bar	0.7 bar	-	
	Pressure Test Gauge (hydraulic)	25 Psi ~ 500 Psi	-	0.79 Psi	in house procedure TK TGG-01 DKD-R 6-1
		501 Psi ~ 1000 Psi	-	0.95 Psi	
		1001 Psi ~ 1500 Psi	-	1.16 Psi	

Pressure (continued)

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
		1501 Psi ~ 2000 Psi	-	1.40 Psi	
		2001 Psi ~ 3000 Psi	-	1.67 Psi	
		3001 Psi ~ 4000 Psi	-	2.51 Psi	
		4001 Psi ~ 5000 Psi	-	3.07 Psi	
24	Pressure Gauge (pneumatic)	0 mBar ~ 1 mBar	-	0.01 mBar	in house procedure TK PG-01 DKD-R 6-1
		1 mBar ~ 7 mBar	-	0.07 mBar	
		0 mBar ~ 5 mBar	0.031 mBar	-	
		5 mBar ~ 50 mBar	0.032 mBar	-	
		0.1 bar ~ 1 bar	0.006 bar	0.01 bar	
		1 bar ~ 5 bar	0.09 bar	0.06 bar	
		5 bar ~ 10 bar	0.09 bar	0.07 bar	
		10 bar ~ 25 bar		0.16 bar	
		25 psi ~ 300 psi	0.8 psi	0.47 bar	
				(1 psi = 6894.76 Pa)	
25	Pressure Gauge (hydraulic)	0 bar ~ 60 bar	0.5 bar	0.47 bar	in house procedure TK PG-01 DKD-R 6-1
		60 bar ~ 100 bar	0.7 bar	0.49 bar	
		100 bar ~ 250 bar	1.7 bar	1.5 bar	
		250 bar ~ 600 bar	3.5 bar	5.1 bar	
		600 bar ~ 1000 bar	6.4 bar	5.1 bar	
				(1 bar = 10 ⁵ Pa)	
26	Vacuum Gauge	0 cmHg ~ -70 cmHg	0.5 cmHg	0.64 cmHg	in house procedure TK VG-01 DKD-R 6-2
				(1 cmHg = 1 333, 224 Pa)	
27	Pressure Transmitter	-0.1 bar ~ -0.9 bar	0.05 %	-	in house procedure TK TGG-02 DKD-R 6-1
		0.7 bar ~ 7 bar	0.04 %	-	
		4 bar ~ 40 bar	0.04 %	-	
		1 bar ~ 60 bar	0.05 %	-	
		60 bar ~ 100 bar	0.05 %	-	
		100 bar ~ 250 bar	0.05 %	-	
		250 bar ~ 600 bar	0.05 %	-	
600 bar ~ 1000 bar	0.05 %	-			
28	Barometer	940 mbar a ~ 1060 mbar a	1.6 mbar a	-	in-house procedure BR-01

Hardness

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
29	Hardness Tester	41.0 HR B (low)	0.35 HR B	0.22 HR B	In house procedure HT - 01 JIS B 7726 - 1997
		64.9 HR B (medium)	0.35 HR B	0.19 HR B	
		95.6 HR B (high)	0.35 HR B	0.34 HR B	
		29.0 HR C (low)	0.35 HR C	0.04 HR C	
		43.8 HR C (medium)	0.35 HR C	0.17 HR C	
		63.0 HR C (high)	0.35 HR C	0.22 HR C	
		215 HV ₁₀	2.5 HV ₁₀	4.7 HV ₁₀	
		430 HV ₁₀	5.0 HV ₁₀	6.8 HV ₁₀	
		751 HV ₁₀	8.7 HV ₁₀	7.5 HV ₁₀	
		112 HB W	2.4 HB W	2.3 HB W	
		248 HB W	5.2 HB W	3.0 HB W	
		591 HB W	12.3 HB W	3.3 HB W	
30	Durometer	10 HS ~ 90 HS	0.62 HS	0.97 HS	In house procedure HDT - 01 ASTM D 2240-05 (2010)

Length

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
31	Gauge Block	0.5 mm ~ 10 mm	0.076 μm	-	in house procedure ML30
		10 mm ~ 25 mm	0.083 μm	-	
		25 mm ~ 50 mm	0.10 μm	-	
		50 mm ~ 75 mm	0.13 μm	-	
		75 mm ~ 100 mm	0.16 μm	-	
32	Outside Micrometer	0 mm ~ 25 mm	0.83 μm	0.93 μm	in house procedure ML16 JIS B 7502 - 1994
		25 mm ~ 50 mm	0.85 μm	0.85 μm	
		50 mm ~ 75 mm	0.88 μm	0.88 μm	
		75 mm ~ 100 mm	1.1 μm	1.1 μm	

Length (continued)

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications	
		100 mm ~ 125 mm	1.2 µm	1.2 µm		
		125 mm ~ 150 mm	1.3 µm	1.3 µm		
		150 mm ~ 175 mm	1.4 µm	1.4 µm		
		175 mm ~ 200 mm	1.5 µm	1.5 µm		
		200 mm ~ 225 mm	1.6 µm	1.6 µm		
		225 mm ~ 250 mm	1.7 µm	1.7 µm		
		250 mm ~ 275 mm	2.4 µm	2.4 µm		
		275 mm ~ 300 mm	2.6 µm	2.6 µm		
		300 mm ~ 350 mm	3.2 µm	3.2 µm		
		350 mm ~ 400 mm	3.6 µm	3.6 µm		
		400 mm ~ 450 mm	4.5 µm	4.5 µm		
		450 mm ~ 500 mm	5.2 µm	5.2 µm		
		500 mm ~ 600 mm	7.3 µm	7.3 µm		
		600 mm ~ 700 mm	8.0 µm	8.0 µm		
		700 mm ~ 800 mm	8.9 µm	8.9 µm		
		800 mm ~ 900 mm	10 µm	10 µm		
		900 mm ~ 1000 mm	11 µm	11 µm		
1000 mm ~ 1100 mm	12 µm	12 µm				
1100 mm ~ 1200 mm	13 µm	13 µm				
1200 mm ~ 1300 mm	14 µm	14 µm				
1300 mm ~ 1400 mm	15 µm	15 µm				
1400 mm ~ 1500 mm	16 µm	16 µm				
33	Inside Micrometer				in house procedure ML 15 JIS B 7502 - 1994	
	Caliper Type	5 mm ~ 25 mm	2.4 µm	1.7 µm		
		25 mm ~ 50 mm	3.6 µm	2.0 µm		
		50 mm ~ 75 mm	3.9 µm	2.3 µm		
		75 mm ~ 100 mm	4.4 µm	2.7 µm		
		100 mm ~ 125 mm	4.9 µm	3.0 µm		
		125 mm ~ 150 mm	5.3 µm	1.7 µm		
		150 mm ~ 175 mm	5.8 µm	3.3 µm		
		175 mm ~ 200 mm	6.2 µm	3.3 µm		
		200 mm ~ 225 mm	6.6 µm	4.0 µm		
		225 mm ~ 250 mm	7.0 µm	4.0 µm		
		250 mm ~ 275 mm	7.4 µm	5.0 µm		
		275 mm ~ 300 mm	9.9 µm	5.0 µm		
		Tubular Type	25 mm ~ 50 mm	1.2 µm		- µm
			50 mm ~ 75 mm	1.2 µm		1.8 µm
	75 mm ~ 100 mm		1.3 µm	1.8 µm		
	100 mm ~ 125 mm		1.4 µm	2.0 µm		
	125 mm ~ 150 mm		1.4 µm	2.0 µm		
	150 mm ~ 175 mm		1.6 µm	2.3 µm		
	175 mm ~ 200 mm		1.6 µm	2.3 µm		
	200 mm ~ 225 mm		1.6 µm	2.6 µm		
	225 mm ~ 250 mm		1.9 µm	2.6 µm		
	250 mm ~ 275 mm		1.9 µm	3.0 µm		
	275 mm ~ 300 mm		1.9 µm	3.0 µm		
	300 mm ~ 325 mm		2.2 µm	3.0 µm		
	325 mm ~ 350 mm		2.2 µm	3.0 µm		
	350 mm ~ 375 mm		2.2 µm	3.3 µm		
	375 mm ~ 400 mm		2.2 µm	3.3 µm		
	400 mm ~ 425 mm		2.5 µm	3.3 µm		
	425 mm ~ 450 mm		2.5 µm	3.3 µm		
	450 mm ~ 475 mm	2.6 µm	3.6 µm			
	475 mm ~ 500 mm	2.6 µm	3.6 µm			
	500 mm ~ 525 mm	5.6 µm	3.6 µm			
	525 mm ~ 550 mm	5.8 µm	3.6 µm			
	550 mm ~ 575 mm	6 µm	4.0 µm			
	575 mm ~ 600 mm	6.2 µm	4.0 µm			
	600 mm ~ 625 mm	6.4 µm	4.0 µm			
	625 mm ~ 650 mm	6.6 µm	4.3 µm			
	650 mm ~ 675 mm	3.3 µm	4.3 µm			

Length (continued)

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications	
		675 mm ~ 700 mm	3.3 µm	4.3 µm		
		700 mm ~ 725 mm	3.6 µm	4.6 µm		
		725 mm ~ 750 mm	3.6 µm	4.6 µm		
		750 mm ~ 775 mm	3.6 µm	4.6 µm		
		775 mm ~ 800 mm	3.7 µm	5.0 µm		
		800 mm ~ 825 mm	3.7 µm	5.0 µm		
		825 mm ~ 850 mm	3.7 µm	5.0 µm		
		850 mm ~ 875 mm	3.8 µm	5.3 µm		
		875 mm ~ 900 mm	3.8 µm	5.3 µm		
		900 mm ~ 925 mm	4.1 µm	5.3 µm		
		925 mm ~ 950 mm	4.1 µm	5.7 µm		
		950 mm ~ 975 mm	4.2 µm	5.7 µm		
		975 mm ~ 1000 mm	4.2 µm	6.0 µm		
		1000 mm ~ 1100 mm	4.6 µm	6.0 µm		
		1100 mm ~ 1200 mm	4.9 µm	6.3 µm		
1200 mm ~ 1300 mm	5.3 µm	6.7 µm				
1300 mm ~ 1400 mm	5.7 µm	6.7 µm				
1400 mm ~ 1500 mm	6.1 µm	6.7 µm				
34	Depth Micrometer	0 mm ~ 25 mm	1.1 µm	1.2 µm	in house procedure ML 10 JIS B 7544 - 1994	
		25 mm ~ 50 mm	1.2 µm	1.5 µm		
		50 mm ~ 75 mm	1.3 µm	1.8 µm		
		75 mm ~ 100 mm	1.4 µm	2 µm		
		100 mm ~ 125 mm	1.5 µm	2.3 µm		
		125 mm ~ 150 mm	1.6 µm	2.5 µm		
		150 mm ~ 175 mm	1.7 µm	-		
		175 mm ~ 200 mm	1.8 µm	-		
		200 mm ~ 225 mm	1.9 µm	-		
		225 mm ~ 250 mm	2 µm	-		
		250 mm ~ 275 mm	2.1 µm	-		
275 mm ~ 300 mm	2.2 µm	-				
35	Three Point Internal Micrometer/ Holtest	2.5 mm ~ 3 mm	1.1 µm	-	In house procedure ML 26 JIS B 7502 - 1994	
		3 mm ~ 4 mm	1.1 µm			
		4 mm ~ 5 mm	1.1 µm			
		5 mm ~ 6 mm	1.2 µm			
		6 mm ~ 8 mm	1.2 µm			
		8 mm ~ 10 mm	1.2 µm			
		10 mm ~ 12 mm	1.3 µm			
		12 mm ~ 16 mm	1.3 µm			
		16 mm ~ 20 mm	1.3 µm			
		20 mm ~ 25 mm	1.4 µm			
		25 mm ~ 30 mm	1.4 µm			
		30 mm ~ 40 mm	1.5 µm			
		40 mm ~ 50 mm	1.5 µm			
		50 mm ~ 62 mm	1.6 µm			
		62 mm ~ 75 mm	1.6 µm			
75 mm ~ 87 mm	1.8 µm					
87 mm ~ 100 mm	1.8 µm					
36	Calliper	Digital - Resolusi : 0.01 mm	0 mm ~ 150 mm	13 µm	13 µm	in house procedure ML 17 JIS B 7507 - 1994
			0 mm ~ 200 mm	15 µm	15 µm	
			0 mm ~ 300 mm	20 µm	20 µm	
			0 mm ~ 600 mm	27 µm	27 µm	
			0 mm ~ 1000 mm	33 µm	33 µm	
			0 mm ~ 1500 mm	38 µm	38 µm	
		Analog - Resolusi : 0.02 mm	0 mm ~ 150 mm	17 µm	13 µm	
			0 mm ~ 200 mm	18 µm	15 µm	
			0 mm ~ 300 mm	22 µm	20 µm	
			0 mm ~ 600 mm	29 µm	27 µm	
			0 mm ~ 1000 mm	35 µm	33 µm	
			0 mm ~ 1500 mm	39 µm	38 µm	
		Analog - Resolusi : 0.05 mm	0 mm ~ 150 mm	31 µm	- µm	

Length (continued)

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
	Dial - Resolusi : 0.01 mm	0 mm ~ 200 mm	32 µm	- µm	
		0 mm ~ 300 mm	34 µm	- µm	
		0 mm ~ 600 mm	39 µm	- µm	
		0 mm ~ 1000 mm	43 µm	- µm	
		0 mm ~ 1500 mm	47 µm	- µm	
	Dial - Resolusi : 0.02 mm	0 mm ~ 150 mm	13 µm	18 µm	
		0 mm ~ 200 mm	15 µm	22 µm	
		0 mm ~ 300 mm	20 µm	25 µm	
		0 mm ~ 150 mm	16 µm	21 µm	
		0 mm ~ 200 mm	18 µm	25 µm	
0 mm ~ 300 mm	22 µm	33 µm			
37	Height Gauge				in house procedure ML 09 JIS B 7517 - 1993
Digital/Dial-Resolusi : 0.01 mm/0.005 mm	0 mm ~ 300 mm	13 µm	18 µm		
	0 mm ~ 450 mm	20 µm	25 µm		
	0 mm ~ 600 mm	27 µm	25 µm		
	0 mm ~ 1000 mm	40 µm	30 µm		
	0 mm ~ 1500 mm	-	36 µm		
Analog-Resolusi : 0.05 mm	0 mm ~ 300 mm	27 µm	-		
	0 mm ~ 450 mm	30 µm	-		
	0 mm ~ 600 mm	33 µm	-		
	0 mm ~ 1000 mm	46 µm	-		
38	Dial Indicator				in house procedure ML 04 JIS B 7533 - 1990
Resolusi : 0.001 mm	0 mm ~ 1 mm	1.5 µm	1.5 µm		
	0 mm ~ 3 mm	2.0 µm	2.0 µm		
	0 mm ~ 5 mm	3.0 µm	3.0 µm		
Resolusi : 0.01 mm	0 mm ~ 5 mm	4.3 µm	4.3 µm		
	0 mm ~ 10 mm	5.4 µm	5.4 µm		
	0 mm ~ 25 mm	8.1 µm	8.1 µm		
39	Dial Gauge Tester				in house procedure ML 05 JIS B 7502 - 1994
0 mm ~ 5 mm	0.8 µm	0.53 µm			
0 mm ~ 25 mm	1.3 µm	1.3 µm			
40	Cylinder Gauge (Bore Gauge)				In house procedure ML 18 JIS B 7515 - 1982
Anvil	0 mm ~ 1 mm	1.3 µm	1.5 µm		
0 mm ~ 800 mm	2.6 µm	2.5 µm			
41	Thread Plug Gauge: average diameter	M 1 ~ M 150	5.2 mm	5.1 mm	In house procedure ML 02 JIS B 0261 - 2004
Thread Plug Gauge: Major & minor diameter	M 1 ~ M 150	1.2 mm	1.2 mm		
Thread Plug Gauge: Pitch Angel	M 1 ~ M 150	3.9 sec	3.5 sec		
42	Plug Gauge				In house procedure ML 28 JIS B 7420 - 1997
Plug Gauge	0 mm ~ 50 mm	2.7 µm	-		
	50 mm ~ 300 mm	4.5 µm	-		
Plug Gauge	0 mm ~ 25 mm	-	2.6 µm		
	25 mm ~ 250 mm	-	4.8 µm		
43	Ring Gauge				In house procedure ML 21 JIS B 7420 - 1997
Ring Gauge	0 mm ~ 125 mm	4.5 µm	-		
	125 mm ~ 300 mm	5.0 µm	-		
Ring Gauge	0 mm ~ 250 mm	-	2.5 µm		
44	Feeler Gauge	0 mm ~ 10 mm	2 µm	2.6 µm	in house procedure ML 11 JIS B 7524 - 2008
45	Pin Gauge	0 mm ~ 10 mm	2.7 µm	-	In house procedure ML 01 JIS B 7420 - 1997
Pin Gauge	0 mm ~ 10 mm	-	2.7 µm		
46	Snap Gauge				In house procedure ML 07 JIS B 7420 - 1997
Snap Gauge	0 mm ~ 25 mm	0.91 µm	1.3 µm		
	25 mm ~ 50 mm	1.1 µm	1.3 µm		
	50 mm ~ 100 mm	1.2 µm	1.5 µm		
	100 mm ~ 150 mm	1.3 µm	-		
	150 mm ~ 200 mm	1.4 µm	-		
47	Gap Gauge	0 mm ~ 300 mm	4.5 µm	4.9 µm	in house procedure ML 29 JIS B 7420 - 1997
48	Bevel Protractor	0 ° ~ 90 °	0.6 menit	-	in house procedure ML 13 BS 1685 - 2008
49	Theodolite: Angular Scale verification	0 ° ~ 360 °	5 sec	5 sec	In house procedure ML 08
Liquid level sensitivity	0 mm/m ~ 0.5 mm/m	0.02 mm/m	0.02 mm/m	ISO 17123-2	

Length (continued)

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications	
50	Measuring Microscope: Scale deviation	200 mm x 200 mm	3.3 µm		in house procedure ML 19 JIS B 7153	
		0 ° ~ 360 °	0.05 menit			
	Measuring Microscope: Scale deviation	300 mm x 300 mm	-	3.1 µm		
		0 ° ~ 360 °	-	0.05 menit		
51	Measuring Projector (Profile Projector) Scale deviation	0 ° ~ 360 °	3.0 menit	4 menit	in house procedure ML 20 JIS B 7184 - 1999	
		200 mm x 200 mm	3.3 µm	3.1 µm		
52	Autolevel: optic level verification Liquid level sensitivity	100 mm/m ~ 300 mm/m	5 sec	4.6 sec	In house procedure ML 12 JIS B 7511	
		0 mm/m ~ 0.5 mm/m	0.02 mm/m	0.02 mm/m		
53	Steel Ruler	0 mm ~ 1000 mm	0.34 mm	0.34 mm	in house procedure ML 03 JIS B 7516 – 2005	
54	Roll Meter * (Lingkup ini Non KAN)	0 m ~ 1 m	0.7 mm	0.7 mm	In house procedure ML 06 JIS B 7512 – 2005 JIS B 7522 – 2005	
		1 m ~ 10 m	2 mm	2.9 mm		
		10 m ~ 20 m	3 mm	3.0 mm		
		20 m ~ 100 m	7 mm	7.2 mm		
		100 m ~ 200 m	10 mm	12 mm		
55	Water Pass	0.02 mm/m ~ 10 mm/m	0.01 mm/m	0.012 mm/m	In house procedure ML 31 DIN 877-1986	
56	Test Sieve	0 mm ~ 10 mm	4.4 µm	5.9 µm	In house procedure ML 22 ASTM E11- 13	
57	Coating Thickness	0 mm ~ 8 mm	2.8 µm	1.4 µm	In house procedure ML 23 ASTM B 499-2009	
58	Scale Loupe	0 mm ~ 20 mm	4.0 µm	6.8 µm	In house procedure ML 25 JIS B 7153 - 1995	
59	Thickness Film	0 mm ~ 10 mm	2.7 µm	2.6 µm	In house procedure ML 27 JIS B 7524 – 2008	
60	Graticule/ Calibration Grid	0 mm ~ 200 mm	4.5 µm	4.7 µm	In house procedure ML 25 JIS B 7153 - 1995	
61	Thickness Gauge	Resolusi 0.001 mm Resolusi 0.01 mm Resolusi 0.1 mm	0 mm ~ 1 mm	1.3 µm	1.3 µm	in house procedure ML 14 JIS B 7503 – 2011
			0 mm ~ 10 mm	5.8 µm	5.8 µm	
			0 mm ~ 25 mm	5.8 µm	5.8 µm	
			0 mm ~ 50 mm	5.8 µm	5.8 µm	
			0 mm ~ 100 mm	5.8 µm	5.8 µm	
62	Standar Scale	0 mm ~ 300 mm	4.5 µm	4.8 µm	in house procedure ML 46 JIS B 7541 – 2001	
63	Head Micrometer	0 mm ~ 25 mm	1.1 µm	1.3 µm	in house procedure ML 44 JIS B 7502 - 1994	
64	Pitch Gage	0.2 mm ~ 10 mm	4.4 µm	3.7 µm	in house procedure ML 47 JIS B 0261 - 2004	
65	Depth Gauge	Digital - Resolusi : 0.01 mm Analog - Resolusi : 0.02 mm Analog - Resolusi : 0.05 mm	0 mm ~ 150 mm	10 µm	18 µm	in house procedure ML 48 JIS B 7544 - 1994
			0 mm ~ 200 mm	13 µm	-	
			0 mm ~ 300 mm	20 µm	-	
			0 mm ~ 150 mm	24 µm	-	
			0 mm ~ 200 mm	27 µm	-	
			0 mm ~ 300 mm	33 µm	-	
			0 mm ~ 150 mm	34 µm	-	
			0 mm ~ 200 mm	40 µm	-	
0 mm ~ 300 mm	45 µm	-				
66	Taper Gauge	0 mm ~ 200 mm	4.5 µm	4.7 µm	in house procedure ML 38 User Manual 2Dpak II-Mitutoyo	
67	Ultrasonic Thickness Meter	0.5 mm ~ 100 mm	6 µm	5.8 µm	in house procedure ML 37 ASTM E 797-2010	
68	Radius Gauge	0.1 mm ~ 150 mm	4.5 µm	-	in house procedure ML 42, Uncertainty and Dimensional Calibration, Journal of Research of NIST	
	Radius Gauge	0.1 mm ~ 200 mm	-	5.6 µm		
69	Angle Block	0.2 ° 90 °	3.3 sec	3.5 sec	in house procedure ML 24 NBSIR 80-1967	

Length (continued)

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
70	3-Wire	0.17 mm ~ 3.2 mm	4.4 μm	3.7 μm	in house procedure ML 43
71	Setting Bar	0 mm ~ 300 mm	3.2 μm	4.8 μm	in house procedure ML 33 JIS B 7420
72	Step Gauge	20 mm ~ 600 mm	4.5 μm	3.8 μm	in house procedure ML 34
73	Straight Edge (Straightness) (Ketinggian) (Lebar)	0 mm ~ 500 mm	4.1 μm	-	in house procedure ML 36 JIS B 7514
			6.6 μm	-	
			6.6 μm	-	
74	Square (Squareness)	0 mm ~ 500 mm	3.6 μm	-	in house procedure ML 35 JIS B 7526
75	V- Block (Flatness-Permukaan bawah) (Flatness-Permukaan V) (Keparallelan-permukaan bawah & cylinder permukaan V block) (Kemiringan-jalur V dari permukaan bawah) (Keparallelan-diantara permukaan sis & cylinder permukaan V block)	0 mm ~ 150 mm	2.7 μm	2.6 μm	in house procedure ML-40 JIS B 7540
76	Surface Plate	1000 mm x 1000 mm	0.4 μm	-	in house procedure ML-39 JIS B 7513
77	Roughness Tester	0.05 μmRa ~ 12.5 μmRa	0.04 μmRa	-	in house procedure ML 41 User Manual 'Surface Roughness Tester-SJ-40-Mitutoyo'
78	Microscope	0.002 mm ~ 10 mm	1.5 μm	-	in house procedure ML 32 JIS B 7153
		0.35 x ~ 100 x	0.12 %	-	
79	Welding Gauge Panjang (Skala Linier) Panjang (Skala Taper) Sudut	0 mm ~ 300 mm	4.5 μm	-	in-house procedure MKSP ML-48
		0 mm ~ 200 mm	4.5 μm	-	
		0° ~ 90°	3.4 detik	-	
80	Ultrasonic Standard Block Panjang Diameter Sudut	0 mm ~ 300 mm	4.5 μm	-	in-house procedure MKSP ML-49
		0 mm ~ 300 mm	4.5 μm	-	
		0° ~ 90°	3.4 detik	-	
81	Counter Meter Panjang	0 m ~ 9999 m	29 mm	-	in-house procedure MKSP ML-51

Electrical

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
82	DC Current Source	0.1 mA ~ 10 mA	0.9 μA	-	in house procedure MKSP ECL-01-2002, Kalibrasi DC Current Source
		10 mA ~ 100 mA	9 μA	-	
		100 mA ~ 1 A	0.12 mA	-	
		1 A ~ 3 A	1.4 mA	-	
83	DC High Current Source	10 A ~ 200 A	6.6 A	-	In house procedure ECL 16
		200 A ~ 400 A	10 A	-	
		400 A ~ 600 A	16 A	-	
		600 A ~ 800 A	22 A	-	
		800 A ~ 1000 A	29 A	-	
84	AC High Current Source	f = 50 Hz ~ 60 Hz			In house procedure ECL 16
		10 A ~ 200 A	6.7 A	-	
		200 A ~ 400 A	8.3 A	-	
		400 A ~ 600 A	14 A	-	
		600 A ~ 800 A	18 A	-	
85	AC Current Source	f = 45 Hz ~ 1kHz			in house procedure MKSP ECL-01-2002
		0.1 A ~ 1 A	0.6 mA	-	
		1 A ~ 3 A	2.8 mA	-	
86	DC Ammeter	2 μA ~ 200 μA	71 nA	-	in-house procedure MKSP ECL-03
		0.2 mA ~ 2 mA	0.16 μA	-	
		2 mA ~ 20 mA	1.2 μA	-	
		20 mA ~ 200 mA	0.25 mA	-	
		0.2 A ~ 2 A	1 mA	-	
		2 A ~ 10 A	1.9 mA	-	
	10 A ~ 20 A	22 mA	-		

Electrical (continued)

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications	
87	AC Ammeter	f = 45 Hz ~ 1 kHz				in-house procedure MKSP ECL-02
		10	μA ~ 200 μA	0.8 μA	-	
		0.2	mA ~ 2 mA	0.26 μA	-	
		2	mA ~ 20 mA	0.2 μA	-	
		20	mA ~ 200 mA	41 μA	-	
		200	mA ~ 2 A	0.12 mA	-	
		2	A ~ 10 A	1.8 mA	-	
		f = 45 Hz ~ 500 Hz				
10	A ~ 20 A	11 mA	-			
88	DC Voltage Source	1	mV ~ 100 mV	14 μV	-	in house procedure MKSP ECL-01-2002, Kalibrasi DC Voltage Source
		100	mV ~ 1 V	19 μV	-	
		1	V ~ 10 V	60 μV	-	
		10	V ~ 100 V	3.3 mV	-	
		100	V ~ 1000 V	26 mV	-	
89	DC HV Source	0	kV ~ 1 kV	0.06 kV	-	In house procedure ECL 12
		1	kV ~ 5 kV	0.06 kV	-	
		5	kV ~ 10 kV	0.11 kV	-	
		10	kV ~ 15 kV	0.18 kV	-	
		15	kV ~ 20 kV	0.32 kV	-	
		20	kV ~ 25 kV	0.42 kV	-	
90	AC Voltage Source	f = 10 Hz ~ 20kHz				in house procedure MKSP ECL-01-2002, Kalibrasi AC Voltage Source
		1	mV ~ 100 mV	0.2 μV	-	
		100	mV ~ 1 V	0.5 mV	-	
		1	V ~ 10 V	4.7 mV	-	
		10	V ~ 100 V	44 mV	-	
100	V ~ 750 V	61 mV	-			
91	AC HV Source	f = 50 Hz				In house procedure ECL 11
		0	kV ~ 1 kV	0.15 kV	-	
		1	kV ~ 5 kV	0.25 kV	-	
		5	kV ~ 10 kV	0.53 kV	-	
		10	kV ~ 15 kV	0.8 kV	-	
		15	kV ~ 20 kV	0.99 kV	-	
20	kV ~ 25 kV	1.4 kV	-			
92	DC Voltmeter	0	mV ~ 200 mV	4 μV	-	in-house procedure MKSP ECL-03
		200	mV ~ 2000 mV	14 μV	-	
		2	V ~ 20 V	60 μV	-	
		20	V ~ 200 V	4 mV	-	
		200	V ~ 500 V	8 mV	-	
500	V ~ 1000 V	43 mV	-			
93	AC Voltmeter	45 Hz ~ 10 kHz				in-house procedure MKSP ECL-04
		0	mV ~ 200 mV	51 μV	-	
		200	mV ~ 2 V	0.2 mV	-	
		2	V ~ 20 V	1 mV	-	
		20	V ~ 200 V	53 mV	-	
		200	V ~ 700 V	0.1 V	-	
		45 Hz ~ 1 kHz				
700	V ~ 1000 V	0.18 V	-			
94	Resistor	1	Ω ~ 10 Ω	6 mΩ	-	in house procedure MKSP ECL-01-2002
		10	Ω ~ 100 Ω	9 mΩ	-	
		100	Ω ~ 1000 Ω	0.12 Ω	-	
		1	kΩ ~ 10 kΩ	0.38 Ω	-	
		10	kΩ ~ 100 kΩ	4 Ω	-	
		100	kΩ ~ 1 MΩ	0.15 kΩ	-	
		1	MΩ ~ 10 MΩ	3.9 kΩ	-	
		10	MΩ ~ 100 MΩ	69 kΩ	-	
95	Ohm Meter	0.1	Ω	6 mΩ	-	in-house procedure MKSP ECL-05
		1	Ω	6 mΩ	-	
		10	Ω	6.1 mΩ	-	
		100	Ω	6.4 mΩ	-	
		1	kΩ	0.04 Ω	-	
10	kΩ	0.3 Ω	-			

Electrical (continued)

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
		100 kΩ	2.8 Ω	-	
		1 MΩ	0.1 kΩ	-	
		10 MΩ	1.6 kΩ	-	
		100 MΩ	0.13 MΩ	-	
		1000 MΩ	1.3 MΩ	-	
96	Capacitance Meter	f = 1 kHz			in-house procedure ECL 09
		1 nF	61 pF	-	
		10 nF	0.1 nF	-	
		20 nF	0.3 nF	-	
		50 nF	0.75 nF	-	
		100 nF	0.17 nF	-	
		1 μF	44 nF	-	
		10 μF	0.4 μF	-	
		100 μF	5.1 μF	-	
97	Inductance Meter	f = 1 kHz			in-house procedure MKSP ECL-08
		1 mH	0.058 mH	-	
		10 mH	0.059 mH	-	
		19 mH	0.063 mH	-	
		29 mH	0.070 mH	-	
		50 mH	0.087 mH	-	
		100 mH	1.2 mH	-	
		1 H	0.059 mH	-	
		10 H	0.12 mH	-	
98	AC Watt Meter	V = 20 V ~ 1000 V; I ≥ 1 A f = 45 Hz ~ 400 Hz; cos φ = 1			in-house procedure ECL 10
		0 kW ~ 1 kW	0.2 W	-	
		1 kW ~ 10 kW	1.7 W	-	
		10 kW ~ 100 kW	5.2 W	-	
		100 kW ~ 1000 kW	13 W	-	
99	Insulation Tester				In house procedure ECL 13
		1 kΩ	0.7 Ω	-	
		10 kΩ	4.5 Ω	-	
		100 kΩ	45 Ω	-	
		1 MΩ	0.73 kΩ	-	
		10 MΩ	4.6 kΩ	-	
		100 MΩ	71 kΩ	-	
		1 GΩ	1 MΩ	-	
		10 GΩ	7.4 MΩ	-	
		100 GΩ	0.13 GΩ	-	
		1 TΩ	30 GΩ	-	
100	DC Clamp Meter	f = 50 Hz ~ 60 Hz			In house procedure ECL 15
		10 A ~ 50 A	0.55 A	-	
		50 A ~ 100 A	0.79 A	-	
		100 A ~ 200 A	0.95 A	-	
		200 A ~ 500 A	1.8 A	-	
		500 A ~ 800 A	3.9 A	-	
		800 A ~ 1000 A	3.9 A	-	
		f = 50 Hz ~ 60 Hz			
101	AC Clamp Meter				In house procedure ECL 14
		10 A ~ 50 A	0.31 A	-	
		50 A ~ 100 A	0.41 A	-	
		100 A ~ 200 A	1.1 A	-	
		200 A ~ 500 A	1.8 A	-	
		500 A ~ 800 A	3.3 A	-	
		800 A ~ 1000 A	3.4 A	-	
102	Oscilloscope - DC Voltage Amplitude				in house procedure MKSP ECL-17-2013
		10 mV/Div	0.24 mV/Div	-	
		50 mV/Div	0.50 mV/Div	-	
		100 mV/Div	0.86 mV/Div	-	
		0.5 V/Div	3.8 mV/Div	-	
		1 V/Div	7.4 mV/Div	-	
		5 V/Div	37 mV/Div	-	
		10 V/Div	73 mV/Div	-	
		30 V/Div	12 V/Div	-	

Electrical (continued)

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
103	Oscilloscope - AC Voltage Amplitude	10 Hz ~ 10 kHz			in house procedure MKSP ECL-18-2013
		5 mVpp	0.21 mVpp	-	
		10 mVpp	0.24 mVpp	-	
		50 mVpp	0.50 mVpp	-	
		100 mVpp	0.85 mVpp	-	
		0.5 Vpp	3.8 mVpp	-	
		1 Vpp	7.4 mVpp	-	
		5 Vpp	37 mVpp	-	
		10 Vpp	46 mVpp	-	
104	Oscilloscope - Time Base	1 µs	5.8 ns	-	in house procedure MKSP ECL-19-2013
		3 µs	5.8 ns	-	
		5 µs	5.8 ns	-	
		10 µs	5.8 ns	-	
		30 µs	5.8 ns	-	
		50 µs	5.9 ns	-	
		100 µs	6.1 ns	-	
		300 µs	13 ns	-	
		500 µs	31 ns	-	
		1 ms	0.06 µs	-	
		3 ms	0.13 µs	-	
		5 ms	0.31 µs	-	
		10 ms	0.61 µs	-	
		30 ms	1.30 µs	-	
50 ms	3.06 µs	-			
105	Oscilloscope - Time Base	50 kHz	0.0041 kHz	-	in house procedure MKSP ECL-19-2013
		10 MHz	0.66 kHz	-	
		50 MHz	3.3 kHz	-	
		100 MHz	6.6 kHz	-	
		150 MHz	7.6 kHz	-	
		200 MHz	8.8 kHz	-	
		250 MHz	10 kHz	-	
		300 MHz	12 kHz	-	
		350 MHz	13 kHz	-	

WAKTU DAN FREKWENSI

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
106	Stopwatch	1 menit ~ 5 menit	0.84 s	0.83 s	in-house procedure MKSP STP - 01 Kalibrasi Stopwatch
		5 menit ~ 10 menit	0.84 s	0.83 s	
		10 menit ~ 60 menit	0.84 s	0.83 s	
		1 jam ~ 5 jam	0.84 s	0.83 s	
		5 jam ~ 10 jam	0.84 s	0.83 s	
		10 jam ~ 24 jam	0.84 s	0.83 s	
107	Frequency Source	0 Hz ~ 10 Hz	0.12 Hz	-	in-house procedure ECL 01
		10 Hz ~ 100 Hz	0.12 Hz	-	
		100 Hz ~ 500 Hz	1.2 Hz	-	
		500 Hz ~ 1 kHz	1.2 Hz	-	
		1 kHz ~ 10 kHz	12 Hz	-	
		10 kHz ~ 20 kHz	24 Hz	-	
		20 kHz ~ 50 kHz	60 Hz	-	
107	Frequency Meter	50 kHz ~ 100 kHz	0.12 kHz	-	in house procedure ECL 07
		100 Hz	4.2 mHz	-	
		1 kHz	1.2 kHz	-	
		10 kHz	0.012 kHz	-	
		20 kHz	0.012 kHz	-	
		50 kHz	0.012 kHz	-	
		100 kHz	0.12 kHz	-	
108	RPM-Meter (optical sensor)	100 rpm ~ 500 rpm	0.6 rpm	-	in house procedure TCH - 01
		500 rpm ~ 1000 rpm	0.6 rpm	-	

WAKTU DAN FREKWENSI (continued)

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
		1000 rpm ~ 5000 rpm	1.0 rpm	-	
		5000 rpm ~ 10000 rpm	1.6 rpm	-	
		10000 rpm ~ 20000 rpm	2.6 rpm	-	
		20000 rpm ~ 50000 rpm	5.9 rpm	-	
		50000 rpm ~ 60000 rpm	11 rpm	-	

PHOTOMETRY

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
109	Luxmeter	5 lux ~ 20 lux	2.0 lux	-	In house procedure LX - 01
		50 lux ~ 200 lux	2.0 lux	-	
		200 lux ~ 1000 lux	2.0 lux	-	
110	Glossmeter	69.0 Gloss ~ 110.0 Gloss	1.5 Gloss	-	In house procedure GM - 01
		82.0 Gloss ~ 106.0 Gloss	1.5 Gloss	-	
		92.0 Gloss ~ 103.0 Gloss	1.5 Gloss	-	

INSTRUMEN ANALISA

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
111	Spectrophotometer Panjang Gelombang	279.35 nm	0.9 nm	0.9 nm	In house procedure FTM - 01
		360.85 nm			
		453.60 nm			
		536.35 nm			
		637.65 nm			
	Transmittance	786.30 nm	1.4 %T	0.76 %T	
		0.0 %T			
		9.8 %T			
		49.9 %T			
		52.2 %T			
	SRE	100 %T	0.5 %T	0.52 %T	
SRE 220					
SRE 340					
	SRE 400				
112	pH Meter	4 pH, 7 pH, 10 pH	0.015 pH	0.015 pH	in-house procedure MKSP PH-01
113	Viscosity	5 cP ~ 100000 cP	1.1 %	-	In house procedure VIS -01
114	Conductivity	84 μS	1 μS/cm	1.1 μS/cm	In house procedure CD - 01
		84 μS/cm ~ 1.4 mS/cm	5 μS/cm	5.1 μS/cm	
		1.4 mS/cm ~ 5 mS/cm	21 μS/cm	21 μS/cm	
		5 mS/cm ~ 12.8 mS/cm	51 μS/cm	0.21 mS/cm	
		12.8 mS/cm ~ 111.8 mS/cm	0.4 mS/cm		
115	Refractometer	0 %Brix ~ 60 %Brix	0.13 %Brix	0.13 %Brix	In house procedure RFT - 01

ALAT KESEHATAN

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
1	Alat Bedah Frekwensi Tinggi (ESU) Power Cutting Power Coagulating	0 W ~ 400 W	0.58 W	0.58 W	in-house procedure (MD-01)
		0 W ~ 400 W	0.58 W	0.58 W	
2	Alat Hisap Medik (Suction Pump/Suction Unit) Suction Thorax	0 mmHg ~ 700 mmHg	4.09 mmHg	4.09 mmHg	In-house procedure (MD-02)
3	Anaesthesia Unit	0 lpm ~ 25 lpm	0.58 lpm	0.58 lpm	In-house procedure (MD-03)
		0 % Vapor ~ 12 %Vapor	0.58 % Vapor	0.58 % Vapor	
4	Bed Side Monitor (Patient Monitor) Blood Pressure Saturasi O2 Pulse Rate Heart Rate Respirasi	0 mmHg ~ 295 mmHg	0.82 mmHg	0.82 mmHg	In-house procedure (MD-04)
		75 % ~ 100 %	0.82 %	0.82 %	
		30 bpm ~ 250 bpm	0.82 bpm	0.82 bpm	
		30 bpm ~ 300 bpm	0.82 bpm	0.82 bpm	
		15 brpm ~ 120 brpm	0.82 brpm	0.82 brpm	
5	Blood Pressure Monitor (Tensimeter elektrik)	0 mmHg ~ 295 mmHg	0.82 mmHg	0.82 mmHg	In-house procedure (MD-05)
6	Blood Solution Warmer (Blood Warmers, Fluid Solution Warmers)	0 °C ~ 50 °C	0.5 °C	0.5 °C	In-house procedure (MD-06)
7	Cardiotocograph	30 bpm ~ 240 bpm	0.65 bpm	0.65 bpm	In-house procedure (MD-11)
8	Defibrillator (DC Shock) Energy Heart Rate	0.1 joule ~ 360 joule	0.59 Joule	0.59 Joule	In-house procedure (MD-08)
		30 bpm ~ 240 bpm	0.82 bpm	0.82 bpm	
9	Defibrillator Monitor Energy Heart Rate Saturasi O2 Pulse Rate Respirasi	0.1 joule ~ 360 joule	0.59 Joule	0.59 Joule	In-house procedure (MD-09)
		30 bpm ~ 300 bpm	0.82 bpm	0.82 bpm	
		75 % ~ 100 %	0.82 %	0.82 %	
		30 bpm ~ 250 bpm	0.82 bpm	0.82 bpm	
		15 brpm ~ 120 brpm	0.82 brpm	0.82 brpm	
10	Dental Unit Vacuum Pressure	0 mmHg ~ -700 mmHg	4.09 mmHg	4.09 mmHg	In-house Procedure (MD-10)
		0 mmHg ~ 5000 mmHg	1.04 mmHg	1.04 mmHg	
11	Echocardiograph Fetal Heart rate	~			In-house procedure (MD-11)
		30 bpm ~ 240 bpm	0.65 bpm	0.65 bpm	
12	Electrocardiograf (EKG Recorder) Heart Rate Sensitivitas Kecepatan Kertas	~			In-house procedure (MD-12)
		30 bpm ~ 300 bpm	0.82 bpm	0.82 bpm	
		0 mm/mV ~ 20 mm/mV	0.93 mm/mV	0.93 mm/mV	
13	Electrocardiograph Monitor (ECG Monitor) Heart Rate	~			In-house procedure (MD-13)
		30 bpm ~ 300 bpm	0.82 bpm	0.82 bpm	
14	ENT Treatment Vacuum Pressure	0 mmHg ~ -700 mmHg	4.09 mmHg	4.09 mmHg	In-house procedure (MD-14)
		0 mmHg ~ 5000 mmHg	1.04 mmHg	1.04 mmHg	
15	Examination Lamp (Lampu Tindakan) Head Lamp / Ligh Source / Operating Lamp Celing Type	0 lux ~ 200 Klux	0.5 lux	0.5 lux	In-house procedure (MD-15)
16	Fetal Detektor (Doppler) Fetal Heart rate	30 bpm ~ 240 bpm	0.65 bpm	0.65 bpm	In-house procedure (MD-17)
17	Incubator Perawatan (Infant Incubator, Baby Incubator) Kebisingan Flow rate Kelembaban	25 °C ~ 40 °C	0.15 °C	0.15 °C	In-house procedure (MD-17)
		30 dbA ~ 80 dbA	-	-	
		0 m/s ~ 0.5 m/s	-	-	
		0 % ~ 90 %	-	-	
18	Infant Warmer	25 °C ~ 40 °C	0.15 °C	0.15 °C	In-house procedure (MD-18)
19	Infusion Pump Flow rate Pressure	0.5 ml/H ~ 1000 ml/H	0.29 ml/H	0.29 ml/H	In-house procedure (MD-19)
		0 psi ~ 45 psi	0.06 psi	0.06 psi	
20	Nebulizer Flow Time	0 lpm ~ 25 lpm	0.58 lpm	0.58 lpm	In-house procedure (MD-20)
		0 menit ~ 9 jam	0.58 menit	0.58 menit	
21	Phototherapy Unit	0 μW/cm ² ~ 1999 μW/cm ²	0.01 μW/cm ²	0.01 μW/cm ²	In-house procedure (MD-21)
22	Pulse Oxymeter (Saturasi Oxigen)	75 % ~ 100 %	0.82 %	0.82 %	In-house procedure (MD-22)

ALAT KESEHATAN (continued)

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
23	Spirometer	0 L ~ 3 L	0.43 mL	0.43 mL	In-house procedure (MD-23)
24	Sphygmomanometer (Tensimeter Air Raksa)	0 mmHg ~ 300 mmHg	0.87 mmHg	0.87 mmHg	In-house procedure (MD-24)
25	Ultrasonography (USG) Jarak Kedalaman Pengukuran Dead Zone Pengukuran Gray Scale Target (θ) Pengukuran Axial-Lateral Target	0 mm ~ 150 mm	0.06 mm	0.06 mm	In-house procedure (MD-25)
26	Ventilator Tidal volume Minute vol Breath rate I : E ratio PIP PEEP MAP IPP Peak Inspirasi Flow FIO2	0 (L) ~ 200 (L) 0 (L) ~ 200 (L) 2 (bpm) ~ 150 (bpm) 0.58 0 (cmH2O) ~ 120 (cmH2O) -5 (cmH2O) ~ 40 (cmH2O) 0 (cmH2O) ~ 80 (cmH2O) 0 (cmH2O) ~ 120 (cmH2O) 0 lpm ~ 150 lpm 0 (%) ~ 100 (%)	0.58 (L) 0.58 (L) 0.58 (bpm) 0.58 0.58 (cmH2O) 0.58 (cmH2O) 0.58 (cmH2O) 0.58 (cmH2O) 0.58 (cmH2O) 0.58 lpm 0.58 (%)	0.58 (L) 0.58 (L) 0.58 (bpm) 0.58 0.58 (cmH2O) 0.58 (cmH2O) 0.58 (cmH2O) 0.58 (cmH2O) 0.58 (cmH2O) 0.58 lpm 0.58 (%)	In-house procedure (MD-26)
27	X-Ray dental Panoramic Kuat Cahaya Lampu Kolimator Ketepatan Berkas Kolimasi Akurasi kV Akurasi waktu Expose Reproduksibilitas Expose Linieritas mA/mAs Keluaran Radiasi Berkas Utama (mR) HVL	0 lux ~ 200 lux 0 mm ~ 300 mm 35 KVp ~ 155 KVp 0.1 ms ~ 2000 s 30 Gy ~ 1000 Gy ~ 0.1 mR/min ~ 1000 mR/min 1.2 mAl ~ 14 mAl	0.5 lux - 0.07 Kv 0.07 s 0.07 Gy 0.07 mAs 0.07 Gy 0.09 mmAl	0.5 lux - 0.07 Kv 0.07 s 0.07 Gy 0.07 mAs 0.07 Gy 0.09 mmAl	In-house Procedure (MD-27)
28	X-Ray Dental Unit Ketepatan Berkas Kolimasi Akurasi kV Akurasi waktu Expose Reproduksibilitas Expose Linieritas mA/mAs Keluaran Radiasi Berkas Utama (mR) HVL	0 mm ~ 300 mm 35 KVp ~ 155 KVp 0.1 ms ~ 2000 s 30 Gy ~ 1000 Gy ~ 0.1 mR/min ~ 1000 mR/min 1.2 mAl ~ 14 mAl	- 0.07 Kv 0.07 s 0.07 Gy 0.07 mAs 0.07 Gy 0.09 mmAl	- 0.07 Kv 0.07 s 0.07 Gy 0.07 mAs 0.07 Gy 0.09 mmAl	In-house Procedure (MD-28)
29	X-Ray General Purpose Kuat Cahaya Lampu Kolimator Ketepatan Berkas Kolimasi Akurasi kV Akurasi waktu Expose Reproduksibilitas Expose Linieritas mA/mAs Keluaran Radiasi Berkas Utama (mR) HVL	0 lux ~ 200 lux 0 mm ~ 300 mm 35 KVp ~ 155 KVp 0.1 ms ~ 2000 s 30 Gy ~ 1000 Gy ~ 0.1 mR/min ~ 1000 mR/min 1.2 mAl ~ 14 mAl	0.5 lux - 0.07 Kv 0.07 s 0.07 Gy 0.07 mAs 0.07 Gy 0.09 mmAl	0.5 lux - 0.07 Kv 0.07 s 0.07 Gy 0.07 mAs 0.07 Gy 0.09 mmAl	In-house Procedure (MD-29)
30	X-Ray Mamography Ketepatan Berkas Kolimasi Akurasi kV Akurasi waktu Expose Reproduksibilitas Expose Linieritas mA/mAs Keluaran Radiasi Berkas Utama (mR) HVL	0 mm ~ 300 mm 35 KVp ~ 155 KVp 0.1 ms ~ 2000 s 30 Gy ~ 1000 Gy ~ 0.1 mR/min ~ 1000 mR/min 1.2 mAl ~ 14 mAl	- 0.07 Kv 0.07 s 0.07 Gy 0.07 mAs 0.07 Gy 0.09 mmAl	- 0.07 Kv 0.07 s 0.07 Gy 0.07 mAs 0.07 Gy 0.09 mmAl	In-house Procedure (MD-30)
31	X-Ray Mobile C-Arm Ketepatan Berkas Kolimasi Akurasi kV Akurasi waktu Expose Reproduksibilitas Expose Linieritas mA/mAs Keluaran Radiasi Berkas Utama (mR) HVL	0 mm ~ 300 mm 35 KVp ~ 155 KVp 0.1 ms ~ 2000 s 30 Gy ~ 1000 Gy ~ 0.1 mR/min ~ 1000 mR/min 1.2 mAl ~ 14 mAl	- 0.07 Kv 0.07 s 0.07 Gy 0.07 mAs 0.07 Gy 0.09 mmAl	- 0.07 Kv 0.07 s 0.07 Gy 0.07 mAs 0.07 Gy 0.09 mmAl	In-house Procedure (MD-31)

ALAT KESEHATAN (continued)

No.	Instrument to be calibrated	Measurement Range	CMC - Jakarta	CMC - Surabaya	Methods/Specifications
32	X-Ray Mobile Unit	~			
	Kuat Cahaya Lampu Kolimator	0 lux ~ 200 lux	0.5 lux	0.5 lux	In-house Procedure (MD-32)
	Ketepatan Berkas Kolimasi	0 mm ~ 300 mm	-	-	
	Akurasi kV	35 KVp ~ 155 KVp	0.07 Kv	0.07 Kv	
	Akurasi waktu Expose	0.1 ms ~ 2000 s	0.07 s	0.07 s	
	Reproduksibilitas Expose	30 Gy ~ 1000 Gy	0.07 Gy	0.07 Gy	
	Linieritas mA/mAs	~	0.07 mAs	0.07 mAs	
	Keluaran Radiasi Berkas Utama (mR)	0.1 mR/min ~ 1000 mR/min	0.07 Gy	0.07 Gy	
	HVL	1.2 mA ~ 14 mA	0.09 mmAl	0.09 mmAl	
33	Ventilator Anaesthesia				
	Vaporizer	0 % Vapor ~ 12 % Vapor	0.58 % Vapor	0.58 % Vapor	In-house procedure (MD-33)
	Tidal volume	0 (L) ~ 200 (L)	0.58 (L)	0.58 (L)	
	Minute vol	0 (L) ~ 200 (L)	0.58 (L)	0.58 (L)	
	Breath rate	2 (bpm) ~ 150 (bpm)	0.58 (bpm)	0.58 (bpm)	
	I : E ratio		0.58	0.58	
	PIP	0 (cmH2O) ~ 120 (cmH2O)	0.58 (cmH2O)	0.58 (cmH2O)	
	PEEP	-5 (cmH2O) ~ 40 (cmH2O)	0.58 (cmH2O)	0.58 (cmH2O)	
	MAP	0 (cmH2O) ~ 80 (cmH2O)	0.58 (cmH2O)	0.58 (cmH2O)	
	IPP	0 (cmH2O) ~ 120 (cmH2O)	0.58 (cmH2O)	0.58 (cmH2O)	
	Peak Inspirasi Flow	0 lpm ~ 150 lpm	0.58 lpm	0.58 lpm	
	FIO2	0 (%) ~ 100 (%)	0.58 (%)	0.58 (%)	
34	Syringe Pump				
	Flow Rate	0.5 ml/H ~ 1000 ml/H	0.29 ml/H	0.29 ml/H	In-house procedure (MD-35)
	Pressure	0 psi ~ 45 psi	0.06 psi	0.06 psi	
35	Oxygen Therapy/ Flow Meter	0 lpm ~ 25 lpm	0.58 lpm	0.58 lpm	In-house procedure (MD-36)
36	Treadmill	30 bpm ~ 240 bpm	0.82 bpm	0.82 bpm	In-house procedure (MD-37)
		1 mil/H ~ 10 mil/H	0.05 mil/H	0.05 mil/H	
37	Paparan Radiasi X-Ray	0.1 µSv/hr ~ 500 mSv/hr	-	-	In-house Procedure (MD-40)

Notes:

Calibration & Measurement Capability is stated as *Expanded Uncertainty* at approximately 95% confidence level, calculated using *coverage factor* of $k = 2$, includes uncertainty contribution due to reference standards used by the laboratory, measurement process at the laboratory, and contribution due to typical characteristic of nearly ideal device under calibration respective to the laboratory

The actual characteristic of device under calibration shall also be considered for individual calibration certificate issued by the laboratory