CERTIFICATE OF ACCREDITATION

LK-384-IDN

Date of issue : 22 June 2022

Date of expiry : 21 June 2027

Granted to

PT Esco Bintan Indonesia

at

Jl. Asoka Blok D6-D10, Bintan Industrial Estate, Lobam Pulau Bintan, Kabupaten Bintan, Kepulauan Riau

which has shown its competence as

CALIBRATION LABORATORY

by implementing consistently

SNI ISO/IEC 17025:2017 (ISO/IEC 17025:2017)
General Requirements for the Competence of Testing and Calibration Laboratories

for the scope of accreditation as specified in the annex

KOMITE AKREDITASI NASIONAL

Dokumen ini telah ditandatangani secara elektronik menggunakan Sertifikat Elektronik yang diterbitkan BSrE

Drs. KUKUH S. ACHMAD, M.Sc

CHAIRMAN

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AMENDEMENT TO THE ANNEX TO ACCREDITATION CERTIFICATE LK 384 IDN - SNI ISO/IEC 17025 : 2017 (ISO/IEC 17025:2017)

AMD 1

Laboratory Name	: PT Esco Bintan Indonesia	Issue date: 22 June 2022
Address	: Jl. Asoka Blok D6-D10, Bintan Industrial Estate, Lobam - Pulau Bintan, Kabupaten Bintan, Kepulauan Riau	Expiry date: 21 June 2027
	Phone. (0770) 696033 Email : calibration.lab@escoglobal.com	1st Amendement: 22 May 2024

CALIBRATION MEASUREMENT AND CAPABILITY (CMC) CALIBRATION LABORATORY

No.	Measuring Group	Tools or materials or standards being calibrated or measured	Range	Expanded Uncertainty*)	Calibration methods/standard documents and techniques used	Remarks
1	Temperature and Humidity	Temperature sensor with display unit			INM/GTM-T/01 Ver. 1	
		Termocouple	-80 °C ~ 0 °C	0.25 °C		
			0 °C ~ 37 °C	0.25 °C		
			37 °C ~ 90 °C	0.26 °C		
			90 °C ~ 180 °C	0.26 °C		
			180 °C ~ 200 °C	0.26 °C		
			200 °C ~ 300 °C	0.49 °C		
		PRT	-80 °C ~ 0 °C	0.071 °C		
			0 °C ~ 37 °C	0.091 °C		
			37 °C ~ 90 °C	0.091 °C		
			90 °C ~ 140 °C	0.091 °C		
2	Temperature and Humidity	Oven	50 °C ~ 280 °C	1.2 °C	TLAS G-20 : 2008	
3	Temperature and Humidity	Freezer	-40 °C ~ -80 °C	1.9 °C	TLAS G-20 : 2008	
4	Temperature and Humidity	Chamber	20 °C ~ 50 °C	2.5 °C	TLAS G-20 : 2008	
5	Temperature and Humidity	Thermogygrometer	20 ^{0}C	0.72 ^{0}C	DKD-R 5-8:2019	
			25 ^{0}C	0.68 ^{0}C		
			30 ^{0}C	0.78 ^{0}C		
		%RH at 30˚C	40 %RH	2.1 %RH		
			60 %RH	2.4 %RH		
			80 %RH	2.4 %RH		

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No.	Measuring Group	Tools or materials or standards being calibrated or measured	Range	Expanded Uncertainty*)	Calibration methods/standard documents and techniques used	Remarks
6	Mass	Electronical balance	0 g ~ 500 g	0.08 g	MSL TG-25 : 2018	
			500 g ~ 1500 g	0.10 g		
			1500 g ~ 2000 g	0.13 g		
			2000 g ~ 3000 g	0.16 g		
7	Pressure	Bourdon pressure gauge	0 bar ~ 20 bar	0.0080 bar	DKD-R 6-1:2018	1 bar = 10^5 Pa 1 Torr = 133.32 Pa 1 inH_2O = 248.84 Pa
			-5 mbar ~ 5 mbar	0.40 mbar		
			-2 inH_2O ~ 0 inH_2O	0.03 inH_2O		
			0 inH_2O ~ 2 inH_2O	0.03 inH_2O		
		Electrical Pressure Transmitter	0 bar ~ 2 bar	5.9 mbar		
			2 bar ~ 4 bar	6.1 mbar		
			4 bar ~ 6 bar	6.1 mbar		
			6 bar ~ 8 bar	5.9 mbar		
			8 bar ~ 10 bar	7.6 mbar		
		Pressure Transmitter & Transducer with electrical output				
		P Out	0 Torr ~ 2 Torr	0.01 Torr		
			2 Torr ~ 4 Torr	0.02 Torr		
			4 Torr ~ 6 Torr	0.02 Torr		
			6 Torr ~ 8 Torr	0.02 Torr		
			8 Torr ~ 10 Torr	0.02 Torr		
		P Out	-500 Pa ~ 0 Pa	2.2 Pa		
			0 Pa ~ 500 Pa	2.3 Pa		
8	Length	Caliper	0 mm ~ 100 mm	0.013 mm	JIS B 7507 2016	
			100 mm ~ 150 mm	0.058 mm		

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CALIBRATION MEASUREMENT AND CAPABILITY (CMC) CALIBRATION LABORATORY

No.	Measuring Group	Tools or materials or standards being calibrated or measured	Range	Expanded Uncertainty*)	Calibration methods/standard documents and techniques used	Remarks
9	Acoustic	Sound Level Meter			SNSU PK.A-01:2020	
		63 Hz	94 dB	0.41 dB		
		125 Hz	94 dB	0.38 dB		
		250 Hz	94 dB	0.46 dB		
		500 Hz	94 dB	0.31 dB		
		1000 Hz	94 dB	0.38 dB		
		2000 Hz	94 dB	0.38 dB		
		4000 Hz	94 dB	0.46 dB		
		8000 Hz	94 dB	0.55 dB		
10	Electricity	AC Voltage f : 50 Hz	25 V ~ 50 V	0.26 V	EURAMET/cg-15/v. 3.0 (2015)	
			50 V ~ 100 V	0.36 V		
			100 V ~ 150 V	0.48 V		
			150 V ~ 200 V	0.59 V		
			200 V ~ 240 V	0.68 V		
11	Electricity	AC Voltage f : 60 Hz	25 V ~ 50 V	0.26 V	EURAMET/cg-15/v. 3.0 (2015)	
			50 V ~ 100 V	0.36 V		
			100 V ~ 150 V	0.48 V		
			150 V ~ 200 V	0.59 V		
			200 V ~ 240 V	0.68 V		

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CALIBRATION MEASUREMENT AND CAPABILITY (CMC) CALIBRATION LABORATORY

No.	Measuring Group	Tools or materials or standards being calibrated or measured	Range			Expanded Uncertainty*)	Calibration methods/standard documents and techniques used	Remarks
12	Electricity	DC Voltage	0.6 V	~	3 V	0.0051 V	EURAMET/cg-15/v. 3.0 (2015)	
			3 V	~	6 V	0.0064 V		
			6 V	~	9 V	0.011 V		
			9 V	~	12 V	0.08 V		
			12 V	~	15 V	0.08 V		
			15 V	~	24 V	0.08 V		
13	Electricity	Resistance	1 Ω	~	5 Ω	0.057 Ω	EURAMET/cg-15/v. 3.0 (2015)	
			5 Ω	~	10 Ω	0.057 Ω		
			10 Ω	~	20 Ω	0.057 Ω		
			20 Ω	~	50 Ω	0.057 Ω		
			50 Ω	~	100 Ω	0.058 Ω		
			100 Ω	~	150 Ω	0.064 Ω		
			150 Ω	~	500 Ω	0.084 Ω		
			500 Ω	~	1000 Ω	0.13 Ω		
			1000 Ω	~	10000 Ω	1.2 Ω		
			10000 Ω	~	100000 Ω	12 Ω		

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No.	Measuring Group	Tools or materials or standards being calibrated or measured	Range	Expanded Uncertainty*)	Calibration methods/standard documents and techniques used	Remarks
14	Electricity	DC Current	0.1 A ~ 0.5 A	0.013 A	EURAMET/cg-15/v. 3.0 (2015)	
			0.5 A ~ 1 A	0.014 A		
			1 A ~ 1.5 A	0.076 A		
			1.5 A ~ 2 A	0.076 A		
			2 A ~ 2.5 A	0.076 A		
			2.5 A ~ 3 A	0.077 A		
			3 A ~ 3.5 A	0.12 A		
			3.5 A ~ 4 A	0.12 A		
			4 A ~ 4.5 A	0.12 A		
			4.5 A ~ 5 A	0.12 A		
15	Electricity	AC Current f : 50 ~ 60 Hz	0.1 A ~ 0.5 A	0.05 A	EURAMET/cg-15/v. 3.0 (2015)	
			0.5 A ~ 1 A	0.059 A		
			1 A ~ 1.5 A	0.070 A		
			1.5 A ~ 2 A	0.082 A		
			2 A ~ 2.5 A	0.093 A		
			2.5 A ~ 3 A	0.10 A		
			3 A ~ 3.5 A	0.12 A		
			3.5 A ~ 4 A	0.13 A		
			4 A ~ 4.5 A	0.14 A		
			4.5 A ~ 5 A	0.15 A		

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No.	Measuring Group	Tools or materials or standards being calibrated or measured	Range	Expanded Uncertainty*)	Calibration methods/standard documents and techniques used	Remarks
16	Electricity	AC Voltage Supply f : 50 Hz	25 V 25 V ~ 50 V 50 V ~ 100 V 100 V ~ 150 V 150 V ~ 200 V 200 V ~ 240 V	0.18 V 0.23 V 0.35 V 0.46 V 0.57 V 0.66 V	WI-CAL-07	
		f : 60 Hz	25 V 25 V ~ 50 V 50 V ~ 100 V 100 V ~ 150 V 150 V ~ 200 V 200 V ~ 240 V	0.18 V 0.23 V 0.35 V 0.46 V 0.57 V 0.66 V	WI-CAL-07	
		f : 1 kHz	25 V 25 V ~ 50 V 50 V ~ 100 V 100 V ~ 150 V 150 V ~ 200 V 200 V ~ 250 V	0.080 V 0.11 V 0.11 V 0.11 V 0.11 V 0.11 V	EURAMET/cg-15/v. 3.0 (2015)	
17	Electricity	Frequency Supply	50 Hz 50 Hz ~ 60 Hz 60 Hz ~ 100 Hz	0.077 Hz 0.081 Hz 0.098 Hz	WI-CAL-07	
			10 kHz	0.59 kHz	EURAMET/cg-15/v. 3.0 (2015)	

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No.	Measuring Group	Tools or materials or standards being calibrated or measured	Range	Expanded Uncertainty*)	Calibration methods/standard documents and techniques used	Remarks
18	Electricity	AC Current Supply f : 50 Hz	0.5 A ~ 1.0 A	0.81 A	WI-CAL-07	
			1.0 A ~ 1.5 A	0.073 A		
			1.5 A ~ 2.0 A	0.081 A		
			2.0 A ~ 2.5 A	0.089 A		
			2.5 A ~ 3.0 A	0.10 A		
			3.0 A ~ 3.5 A	0.11 A		
			3.5 A ~ 4.0 A	0.12 A		
			4.0 A ~ 4.5 A	0.13 A		
			4.5 A ~ 5.0 A	0.14 A		
		f = 1 kHz	0.5 A ~ 1.0 A	0.081 A	EURAMET/cg-15/v. 3.0 (2015)	
			1.0 A ~ 1.5 A	0.081 A		
			1.5 A ~ 2.0 A	0.081 A		
			2.0 A ~ 2.5 A	0.081 A		
			2.5 A ~ 3.0 A	0.081 A		
			3.0 A ~ 3.5 A	0.081 A		
			3.5 A ~ 4.0 A	0.081 A		
			4.0 A ~ 4.5 A	0.081 A		
			4.5 A ~ 5.0 A	0.081 A		

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No.	Measuring Group	Tools or materials or standards being calibrated or measured	Range	Expanded Uncertainty*)	Calibration methods/standard documents and techniques used	Remarks
19	Electricity	DC Voltage Supply	0 V ~ 4 V 4 V ~ 8 V 8 V ~ 12 V 12 V ~ 16 V 16 V ~ 20 V 20 V ~ 24 V	0.0059 V 0.0063 V 0.0068 V 0.0075 V 0.0082 V 0.0091 V	WI-CAL-21	
20	Electricity	DC Current Supply	0.1 A ~ 0.5 A 0.5 A ~ 1.0 A 1.0 A ~ 1.5 A 1.5 A ~ 2.0 A	0.014 A 0.015 A 0.016 A 0.016 A	WI-CAL-21	
21	Flow	Thermal Anemometer Air Velocity	0.2 m/s ~ 1 m/s 1 m/s ~ 3 m/s 3 m/s ~ 5 m/s 5 m/s ~ 7 m/s 7 m/s ~ 10 m/s	0.018m/s+0.2% 0.036m/s+0.2% 0.077m/s+0.2% 0.14m/s+0.5% 0.28m/s+0.2%	EURAMET/cg-25/v.1:2021	

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22	Analytical Instruments	Gas analyzer				
		CO_2	2 cmol/mol	0.06 cmol/mol	SOP-CAL-14	
			5 cmol/mol	0.08 cmol/mol		
			10 cmol/mol	0.11 cmol/mol		
		O_2	2 cmol/mol	0.07 cmol/mol		
			5 cmol/mol	0.11 cmol/mol		
			10 cmol/mol	0.21 cmol/mol		

Notes :

1) *) The extended uncertainty is stated at the 95% confidence level with a coverage factor k = 2 which is the best uncertainty that can be achieved in routine calibration services with the laboratory's resources.
2) This Amendement may not be duplicated except as a whole, without written approval from KAN

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