PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

Perry Johnson Laboratory Accreditation, Inc. has assessed the Laboratory of:

EKO Instruments Co., Ltd.

1-21-8 Hatagaya Shibuya-ku, Tokyo 151-0072

(Hereinafter called the Organization) and hereby declares that Organization is accredited in accordance with the recognized International Standard:

ISO/IEC 17025:2017

This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system
(as outlined by the joint ISO-ILAC-IAF Communiqué dated April 2017):

Calibration of rotational viscometer, pyrheliometer, pyranometer and silicon-pyranometer
(As detailed in the supplement)

Accreditation claims for such testing and/or calibration services shall only be made from addresses referenced within this certificate. This Accreditation is granted subject to the system rules governing the Accreditation referred to above, and the Organization hereby covenants with the Accreditation body's duty to observe and comply with the said rules.

For PJLA:

Tracy Szerszen
President

Perry Johnson Laboratory
Accreditation, Inc. (PJLA)
755 W. Big Beaver, Suite 1325
Troy, Michigan 48084

Initial Accreditation	*Issue Date:*	*Expiration Date:*
May 8, 2013	June 15, 2021	July 31, 2023

Accreditation No.:	*Certificate No.:*
74158	L21-364

The validity of this certificate is maintained through ongoing assessments based on a continuous accreditation cycle. The validity of this certificate should be confirmed through the PJLA website: www.pjlabs.com

Certificate of Accreditation: Supplement

EKO Instruments Co., Ltd.
1-21-8 Hatagaya Shibuya-ku, Tokyo 151-0072
Contact Name: Minoru Kita Phone: 03-3469-6711

Accreditation is granted to the facility to perform the following calibrations:

Mechanical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Rotational viscometer LV Model Spindle 61 [F]	6 mPa·s to 6 000 mPa·s	37 mPa·s	'Rotational Viscometer Calibration Operating Instructions (LM-03)' On basis of: Clause 9 of JISZ8803 Standard solution for viscometer calibration on the basis of JISZ8809 JS500 JS2000 JS14000 JS1000 JS52000 JS160000 B Type Rotational viscometer
Rotational viscometer LV Model Spindle 62 [F]	30 mPa·s to 30 000 mPa·s	183 mPa·s	
Rotational viscometer LV Model Spindle 63 [F]	120 mPa·s to 120 000 mPa·s	732 mPa·s	
Rotational viscometer LV Model Spindle 64 [F]	600 mPa·s to 600 000 mPa·s	3 700 mPa·s	
Rotational viscometer RV Model Spindle 02 [F]	40 mPa·s to 40 000 mPa·s	320 mPa·s	
Rotational viscometer RV Model Spindle 03 [F]	100 mPa·s to 100 000 mPa·s	810 mPa·s	
Rotational viscometer RV Model Spindle 04 [F]	200 mPa·s to 200 000 mPa·s	1 600 mPa·s	
Rotational viscometer RV Model Spindle 05 [F]	400 mPa·s to 400 000 mPa·s	3 200 mPa·s	
Rotational viscometer RV Model Spindle 06 [F]	1 000 mPa·s to 1 000 000 mPa·s	8 100 mPa·s	
Rotational viscometer HA Model Spindle 02 [F]	80 mPa·s to 80 000 mPa·s	1 600 mPa·s	
Rotational viscometer HA Model Spindle 03 [F]	200 mPa·s to 200 000 mPa·s	4 000 mPa·s	
Rotational viscometer HA Model Spindle 04 [F]	400 mPa·s to 400 000 mPa·s	8 000 mPa·s	
Rotational viscometer HA Model Spindle 05 [F]	800 mPa·s to 800 000 mPa·s	16 000 mPa·s	
Rotational viscometer HA Model Spindle 06 [F]	2 000 mPa·s to 2 000 000 mPa·s	40 000 mPa·s	
Rotational viscometer HB Model Spindle 02 [F]	320 mPa·s to 320 000 mPa·s	6 400 mPa·s	
Rotational viscometer HB Model Spindle 03 [F]	800 mPa·s to 800 000 mPa·s	16 000 mPa·s	
Rotational viscometer HB Model Spindle 04 [F]	1 600 mPa·s to 1 600 000 mPa·s	32 000 mPa·s	
Rotational viscometer HB Model Spindle 05 [F]	3 200 mPa·s to 3 200 000 mPa·s	64 000 mPa·s	
Rotational viscometer HB Model Spindle 06 [F]	8 000 mPa·s to 8 000 000 mPa·s	160 000 mPa·s	

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Accreditation is granted to the facility to perform the following calibrations:

Optical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Pyrheliometer (outdoor calibration) ISO9060:2018 Class A[F]	700 W/m² to 1 200 W/m²	0.60 % of reading	Pyrheliometer and Pyranometer Calibration Operating Instructions (Clause 2) (LM-10) On basis of: WMO-No.8:2018 and ISO9059:1990 Standard Pyrheliometer (MS-57) Data logger (CR1000X)
Pyrheliometer (indoor calibration) ISO9060:2018 Class A[F]	700 W/m² to 1 200 W/m²	0.58 % of reading	Pyrheliometer Indoor Calibration Operating Instructions (Clause 2) (LM-10A) On basis of: WMO-No.8:2018 and ISO9847:1992 Standard Pyrheliometer (MS-57) Digital multi-meter (34401A)
Pyranometer ISO9060:2018 Class A[F]	700 W/m² to 1 400 W/m²	0.59 % of reading	Pyrheliometer and Pyranometer Calibration Operating Instructions (Clause 3) (LM-10) On basis of: WMO-No.8:2018 and ISO9847:1992 Class A : Standard pyranometer (MS-802) and (MS-80) Class B : Standard pyranometer (MS-60) Class C : Standard pyranometer (MS-40) Digital multi-meter (34401A)
Pyranometer ISO9060:2018 Class B[F]		0.79 % of reading	
Pyranometer ISO9060:2018 Class C[F]		0.85 % of reading	
Silicon-pyranometer (ML-01), (ML-02) ISO9060:2018 Class C[F]	700 W/m² to 1 400 W/m²	1.8 % of reading	Pyrheliometer and Pyranometer Calibration Operating Instructions (Clause 3) (LM-10) On basis of: WMO-No.8:2018 and ISO9847:1992 Standard silicon-pyranometer (ML-01) Digital multi-meter (34401A)

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Accreditation is granted to the facility to perform the following calibrations:

1. The CMC (Calibration and Measurement Capability) stated for calibrations included on this scope of accreditation represent the smallest measurement uncertainties attainable by the laboratory when performing a more or less routine calibration of a nearly ideal device under nearly ideal conditions. It is expressed at a confidence level of 95 % using a coverage factor *k* (usually equal to 2). The actual measurement uncertainty associated with a specific calibration performed by the laboratory will typically be larger than the CMC for the same calibration since capability and performance of the device being calibrated and the conditions related to the calibration may reasonably be expected to deviate from ideal to some degree.
2. The laboratories range of calibration capability for all disciplines for which they are accredited is the interval from the smallest calibrated standard to the largest calibrated standard used in performing the calibration. The low end of this range must be an attainable value for which the laboratory has or has access to the standard referenced. Verification of an indicated value of zero in the absence of a standard is common practice in the procedure for many calibrations but by its definition it does not constitute calibration of zero capacity.
3. The presence of a superscript F means that the laboratory performs calibration of the indicated parameter at its fixed location. Example: Outside Micrometer^{F} would mean that the laboratory performs this calibration at its fixed location.