Lab. No.: 3416

Organization	：	Thermoway Industrial Co., Ltd
Laboratory	：	Calibration Laboratory
Lab. Address	：	7F., No. 129, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)

Accreditation Criteria	：	ISO/IEC 17025:2017；CNS 17025:2018
Accreditation Number	：	3416
Originally Accredited	：	September 21, 2017
Effective Period	：	September 21, 2023 to September 20, 2026
Accredited Scope	：	Calibration Field, see described in the Appendix

The Appendix forms an integral part of this Certificate, which shall be invalid when use without the Appendix

Accreditation Number ：3416

Laboratory Head ：TU, Yu-Shuan

Temperature/Humidity

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KE1002 Platinum Resistance Thermometer	Standard Platinum Resistance Thermometer/WZPB-1 Digital multimeter /KEITHLEY/2700	In-house method: Calibration process for Platinum Thermocouple (Document No.: CL3002)	-100	°C	-40	°C		0.15	°C
			>-40	°C	0	°C		0.13	°C
			>0	°C	100	°C		0.14	°C
			>100	°C	400	°C		0.28	°C
Approval Signatory: TU, Yu-Shuan									
KE1004 Thermocouple	1.System 1: Standard Platinum Resistance Thermometer/WZPB-1 Digital multimeter /KEITHLEY/2700 2.System 2: Type S Thermocouple /THERMOWAY S-TYPE/T-02 Digital multimeter /Yokogawa/7562-02	In-house method: Calibration process for Type R, S and B Thermocouple (Document No.: CL3003) In-house method: Calibration process for Type K, N, E, J, T Thermocouple (Document No.: CL3004)	0	°C	400	°C	System 1: R Type thermocouple	0.22	°C
			>400	°C	900	°C	System 2: R type thermocouple	0.90	°C
			>900	°C	1100	°C	System 2: R type thermocouple	0.89	°C
			>1100	°C	1554	°C	System 2: R type thermocouple	1.7	°C
			0	°C	400	°C	System 1: S type thermocouple	0.34	°C
			>400	°C	1000	°C	System 2: S type thermocouple	1.1	°C
			>1000	°C	1200	°C	System 2: S type thermocouple	2.1	°C
			>1200	°C	1554	°C	System 2: S type thermocouple	2.0	°C
			450	°C	500	°C	System 2: B type thermocouple	1.7	°C
			>500	°C	1100	°C	System 2: B type thermocouple	1.5	°C
			>1100	°C	1554	°C	System 2: B type thermocouple	2.1	°C
			-100	°C	0	°C	System 1: K type thermocouple	0.28	°C
			>0	°C	400	°C	System 1: K type thermocouple	0.27	°C
			>400	°C	1100	°C	System 2: K type thermocouple	0.92	°C
			>1100	°C	1350	°C	System 2: K type thermocouple	2.1	°C
			-100	°C	-40	°C	System 1: E type thermocouple	0.23	°C

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KE1004 Thermocouple	1.System 1: Standard Platinum Resistance Thermometer/WZPB-1 Digital multimeter /KEITHLEY/2700 2.System 2: Type S Thermocouple /THERMOWAY S-TYPE/T-02 Digital multimeter /Yokogawa/7562-02	In-house method: Calibration process for Type R, S and B Thermocouple (Document No.: CL3003) In-house method: Calibration process for Type K, N, E, J, T Thermocouple (Document No.: CL3004)	>-40	°C	0	°C	System 1: E type thermocouple	0.25	°C
			>0	°C	400	°C	System 1: E type thermocouple	0.29	°C
			>400	°C	900	°C	System 2: E type thermocouple	0.51	°C
			>900	°C	1000	°C	System 2: E type thermocouple	1.2	°C
			-100	°C	-40	°C	System 1: J type thermocouple	0.18	°C
			>-40	°C	0	°C	System 1: J type thermocouple	0.31	°C
			>0	°C	400	°C	System 1: J type thermocouple	0.66	°C
			>400	°C	900	°C	System 2: J type thermocouple	0.80	°C
			>900	°C	1000	°C	System 2: J type thermocouple	1.3	°C
			-100	°C	-40	°C	System 1: N type thermocouple	0.19	°C
			>-40	°C	0	°C	System 1: N type thermocouple	0.29	°C
			>0	°C	400	°C	System 1: N type thermocouple	0.30	°C
			>400	°C	1100	°C	System 2: N type thermocouple	0.52	°C
			>1100	°C	1300	°C	System 2: N type thermocouple	0.84	°C
			-100	°C	-40	°C	System 1: T type thermocouple	0.27	°C
			>-40	°C	0	°C	System 1: T type thermocouple	0.28	°C
			>0	°C	400	°C	System 1: T type thermocouple	0.41	°C
Approval Signatory: TU, Yu-Shuan									
KE1005 Thermocouple Thermometer	1.System 1: Standard Platinum Resistance Thermometer/WZPB-1 Digital multimeter /KEITHLEY/2700 2.System 2: Type S Thermocouple /THERMOWAY S-TYPE/T-02 Digital multimeter /Yokogawa/7562-02	In-house method: Calibration Process for Thermocouple Thermometer (Document No.: CL3018)	0	°C	400	°C	System 1: TYPE R	1.1	°C
			>400	°C	1100	°C	System 2: TYPE R	2.5	°C
			>1100	°C	1554	°C	System 2: TYPE R	3.2	°C
			0	°C	400	°C	System 1: TYPE S	1.1	°C
			>400	°C	1100	°C	System 2: TYPE S	2.6	°C
			>1100	°C	1554	°C	System 2: TYPE S	3.0	°C
			450	°C	500	°C	System 2: TYPE B	1.9	°C
			>500	°C	1100	°C	System 2: TYPE B	1.8	°C
			>1100	°C	1150	°C	System 2: TYPE B	2.5	°C
			1150	°C	1554	°C	System 2: TYPE B	2.3	°C
			-100	°C	-40	°C	System 1: TYPE K	0.67	°C

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KE1005 Thermocouple Thermometer	1.System 1: Standard Platinum Resistance Thermometer /WZPB-1 Digital multimeter /KEITHLEY/2700 2.System 2: Type S Thermocouple /THERMOWAY S-TYPE/T-02 Digital multimeter /Yokogawa/7562-02	In-house method: Calibration Process for Thermocouple Thermometer (Document No.: CL3018)	>-40	°C	0	°C	System 1: TYPE K	0.68	°C
			>0	°C	400	°C	System 1: TYPE K	0.79	°C
			>400	°C	1100	°C	System 2: TYPE K	1.6	°C
			>1100	°C	1200	°C	System 2: TYPE K	1.9	°C
			>1200	°C	1250	°C	System 2: TYPE K	2.4	°C
			-100	°C	-40	°C	System 1: TYPE N	0.70	°C
			>-40	°C	0	°C	System 1: TYPE N	0.75	°C
			>0	°C	400	°C	System 1: TYPE N	0.73	°C
			>400	°C	1100	°C	System 2: TYPE N	1.5	°C
			>1100	°C	1200	°C	System 2: TYPE N	1.6	°C
			>1200	°C	1250	°C	System 2: TYPE N	1.7	°C
			-100	°C	-40	°C	System 1: TYPE E	0.67	°C
			>-40	°C	0	°C	System 1: TYPE E	0.61	°C
			>0	°C	400	°C	System 1: TYPE E	0.66	°C
			400	°C	900	°C	System 2: TYPE E	1.2	°C
			900	°C	1000	°C	System 2: TYPE E	1.5	°C
			-100	°C	-40	°C	System 1: TYPE J	0.69	°C
			>-40	°C	0	°C	System 1: TYPE J	0.66	°C
			>0	°C	400	°C	System 1: TYPE J	0.7	°C
			>400	°C	850	°C	System 2: TYPE J	1.3	°C
			>850	°C	1000	°C	System 2: TYPE J	1.6	°C
			-100	°C	-40	°C	System 1: TYPE T	0.69	°C
			>-40	°C	0	°C	System 1: TYPE T	0.62	°C
			>0	°C	400	°C	System 1: TYPE T	0.65	°C
Approval Signatory: TU, Yu-Shuan									
KE1006 Temperature Indicator	Temperature calibrator /OMEGA CL3001	In-house method: Calibration process for Temperature Thermometer (Document No.: CL3014)	-100	°C	800	°C	RTD	0.34	°C
			0	°C	1750	°C	Type R	2.9	°C
			0	°C	1750	°C	Type S	2.8	°C
			600	°C	1750	°C	Type B	0.7	°C

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KE1006 Temperature Indicator	Temperature calibrator /OMEGA CL3001	In-house method: Calibration process for Temperature Thermometer (Document No.: CL3014)	-100	°C	1000	°C	Type E	0.8	°C
			-100	°C	1200	°C	Type J	0.8	°C
			-100	°C	1350	°C	Type K	0.7	°C
			-100	°C	1300	°C	Type N	0.8	°C
			-200	°C	400	°C	Type T	0.7	°C
Approval Signatory: TU, Yu-Shuan									
KE1008 Tempature Simulator	Temperature calibrator /OMEGA CL3001	In-house method: Calibration process for Temperature Thermometer (Document No.: CL3014)	-100	°C	800	°C	RTD	0.38	°C
			0	°C	1750	°C	TYPE R	2.8	°C
			0	°C	1750	°C	TYPE S	2.8	°C
			600	°C	1750	°C	TYPE B	0.5	°C
			-100	°C	1000	°C	TYPE E	0.6	°C
			-100	°C	1200	°C	TYPE J	0.7	°C
			-100	°C	1350	°C	TYPE K	0.7	°C
			-100	°C	1300	°C	TYPE N	0.8	°C
			-200	°C	400	°C	TYPE T	0.7	°C
Approval Signatory: TU, Yu-Shuan									
KE1009 Temperature Calibrator	Temperature calibrator /OMEGA CL3001	In-house method: Calibration process for Temperature Thermometer (Document No.: CL3014)	-100	°C	800	°C	RTD	0.50	°C
			0	°C	1750	°C	TYPE R	4.0	°C
			0	°C	1750	°C	TYPE S	3.9	°C
			600	°C	1750	°C	TYPE B	0.8	°C
			-100	°C	1000	°C	TYPE E	0.8	°C
			-100	°C	1200	°C	TYPE J	1.0	°C
			-100	°C	1350	°C	TYPE K	0.9	°C
			-100	°C	1300	°C	TYPE N	1.0	°C
			-200	°C	400	°C	TYPE T	0.9	°C
Approval Signatory: TU, Yu-Shuan									

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KE1010 Temperature Controlled Chamber (on-site calibration included)	RTD/Thermoway/PT 100 Thermocouple /Thermoway/Thermocouple Paperless Recorder /Thermoway/PR20 Paperless Recorder /Thermoway/PR10	In-house method: Calibration process for Site Calibration (Document No.: CL3015)	-80	℃	-40	℃		1.4	℃
			>-40	℃	400	℃		1.6	℃
			>400	℃	700	℃		3.4	℃
			>700	℃	1000	℃		4.1	℃
			>1000	℃	1200	℃		6.5	℃
Approval Signatory: TU, Yu-Shuan									
KE1011 Sensor/Indicator of Temperature Controlled Chamber (on-site calibration included)	Temperature Calibrator /Eurotron/Microcal 200 Temperature Calibrator /Yokogawa/CA150	In-house method: Calibration process for Site Calibration (Document No.: : CL3015)	0	℃	400	℃	TYPE R	1.4	℃
			>400	℃	1200	℃	TYPE R	3.0	℃
			0	℃	400	℃	TYPE S	1.4	℃
			>400	℃	1200	℃	TYPE S	3.0	℃
			600	℃	1200	℃	TYPE B	3.0	℃
			-80	℃	400	℃	TYPE E	1.4	℃
			>400	℃	1200	℃	TYPE E	3.0	℃
			-80	℃	400	℃	TYPE J	1.4	℃
			>400	℃	1200	℃	TYPE J	3.0	℃
			-80	℃	400	℃	TYPE K	1.4	℃
			>400	℃	1200	℃	TYPE K	3.0	℃
			-80	℃	400	℃	TYPE N	1.4	℃
			>400	℃	1200	℃	TYPE N	3.0	℃
			-80	℃	400	℃	TYPE T	1.4	℃
Approval Signatory: TU, Yu-Shuan									

Note：Smallest uncertainty represents an expanded uncertainty using a coverage factor approximately 95 % level of confidence.
(Null Below)