

International Accreditation Service
CERTIFICATE OF ACCREDITATION

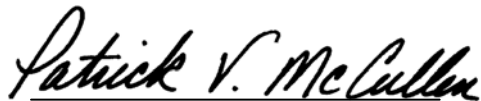
This is to signify that

UNITED CALIBRATION CORP

5802 ENGINEER DRIVE
HUNTINGTON BEACH, CALIFORNIA 92649

Calibration Laboratory CL-128

has met the requirements of the IAS Accreditation Criteria for Calibration Laboratories (AC204), has demonstrated compliance with the ANS/ISO/IEC Standard 17025:2005, *General criteria for the competence of testing and calibration laboratories*, and has been accredited commencing May 1, 2010, for the calibration discipline(s) listed in the approved scope of accreditation. The laboratory meets IAS program requirements in the field of calibration.



Patrick V. McCullen
Vice President



C. P. Ramani, P.E.
President

(see attached scope of accreditation for fields of testing and accredited test methods)

Print Date: 06/22/2010

This accreditation certificate supersedes any IAS accreditation certificate bearing an earlier date. The certificate becomes invalid upon suspension, cancellation or revocation of accreditation. See the IAS Accreditation Listings on the web at www.iasonline.org for current accreditation information, or contact IAS directly at (562) 699-0541.

Page 1 of 8
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International Accreditation Service
SCOPE OF ACCREDITATION

United Calibration Corp CL-128

United Calibration Corp
 5802 Engineer Drive
 Huntington Beach, CA 92649

Paul M. Mumford
 Quality Manager
 (714) 638-2322

MEASUREMENT AREA	RANGE & RESOLUTION	BEST MEASUREMENT CAPABILITY ¹ (BMC) (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
<i>Mechanical</i> Force – Compression and Tension	0-5,115 lbf 0-500,000 lbf	0.01% indicated value 0.05% indicated value	Dead weight tester, ASTM E 74 Master Load Cells, ASTM E 74
Machine and specimen alignment	0-100% Bending	2.1% Bending	12,000 lbf alignment bar, data acquisition system, ASTM E 1012
Crosshead speed	Up to 40 in per min	0.001 in per 0.12 minute	Stopwatch, Dial Indicator, ASTM E 4, UCC Procedure 315

May 1, 2010
 Commencement Date

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Page 2 of 8
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International Accreditation Service

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United Calibration Corp CL-128

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<i>Mechanical (continued)</i> Crosshead displacement	0 to 2" 0 to 20"	0.001" 0.003"	Dial indicator, UCC Procedure 310 Height gage, UCC Procedure 310
Pressure gages	Up to 5 PSI >5 to 500 PSI >500 to 5000 PSI	0.15% indicated value 0.05% indicated value 0.06% indicated value	Pressure transducer, UCC procedure 320
Brinnell hardness	95 to 200 HBW >200 to 300 HBW >300 to 400 HBW >400 to 500 HBW >500 to 600 HBW >600 to 650 HBW	1 HBW 2 HBW 3 HBW 4 HBW 5 HBW 6 HBW	Direct verification of force, ASTM E 10
Rockwell hardness	HRA Scale HRBW Scale HRC Scale HRD Scale HREW Scale	0.6 HRA 0.7 HRBW 0.4 HRC 0.2 HRD 0.6 HREW	ASTM Standard E 18, indirect verification, hardness blocks

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Page 3 of 8
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Rockwell hardness (continued)	HRFW Scale HRGW Scale HRHW Scale HRKW Scale HRRW Scale HRVW Scale HR45N Scale HR15WW Scale HR15XW Scale HR30YW Scale HR30N Scale HR30TW Scale HR30WW Scale HR30XW Scale HR30YW Scale HR45TW Scale HR45WW Scale HR45XW Scale	0.5 HRFW 0.3 HRGW 0.5 HRHW 0.7 HRKW 0.3 HRRW 0.5 HRVW 0.5 HR45N 0.37 HR15WW 0.51 HR15XW 0.8 HR30YW 0.3 HR30N 0.46 HR30TW 0.56 HR30WW 0.71 HR30XW 0.6 HR30YW 0.58 HR45TW 0.71 HR45WW 0.6 HR45XW	ASTM Standard E 18, indirect verification, hardness blocks
Force Depth	3 to 150kg Up to 0.5µm	3g 0.1µm	ASTM Standard E 18, direct verification, hardness blocks

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Page 4 of 8
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<i>Rockwell hardness (continued)</i> Extensometers	0-2 in/0.0001 in >2 to 10 in/0.0001 in	0.00001 in 0.002 in	Heidenhain MT 25, ASTM E 83 Height Gage, Gage Blocks, ASTM E 83
Calipers	0-6 in/0.0005 in	0.0006 in	Gage Blocks, UCC procedure 211
Scales	Up to 100kg	See NOTE	Class F weights, UCC Procedure 200
<i>Electrical – DC/LF</i> Optical tachometer	0-60,000 rpm	1 rpm	Martell MC-1200 with LED source, UCC Procedure 325
DC Current - Measure	0-20 mA >20 to 100 mA >100 mA to 1 A >1 to 3 A	0.05% Reading plus 2 µA Range 0.05% Reading plus 0.08 mA Range 0.08% Reading plus 80 µA Range 0.12% Reading plus 120 µA Range	Keithley 2700

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Page 5 of 8
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<i>Electrical – DC/LF (continued)</i> Resistance - Measure	100 Ω 1000 Ω 10 K Ω 100 K Ω 1 M Ω 10 M Ω 100 M Ω	0.01 % reading + 0.002 Ω 0.01 % reading + 0.006 Ω 0.01% reading + 0.06 Ω 0.01% reading + 1 Ω 0.01% reading + 10 Ω 0.04% reading + 100 Ω 0.04% reading + 3000 Ω	Keithley 2700
DC Voltage - Measure	0 TO 10 mV 0 TO 100 mV 0 to 1 V 0 TO 10 V 0 TO 100 V	0.006% Reading + 40 nV 0.004% Reading + 0.5 μV 0.0032 % Reading + 3 μV 0.0032% Reading + 30 μV 0.0052% Reading + 500 μV	Keithley 2182
<i>Thermal</i> Thermocouples Type K Type J Type T Type E Type R Type S	-200 TO 1200 °C -200 TO 1370 °C -200 TO 400 °C -200 TO 950 °C 0 TO 1750 °C 0 TO 1750 °C	0.2 °C 0.3 °C 0.2 °C 0.2 °C 1.2 °C 1.2 °C	Martel MC 1200, UCC Procedure 160

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Page 6 of 8
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<i>Thermal (continued)</i>			
Thermocouples			
Type B	600 TO 1800 °C	1.2 °C	Martel MC 1200, UCC Procedure 160
Type C	0 TO 2316 °C	0.6 °C	
Type XK	-200 TO 800 °C	0.2 °C	
Type BP	0 TO 2500 °C	0.9 °C.	
Type L	-200 TO 900 °C	0.2 °C	
Type U	-200 TO 400 °C	0.25 °C	
Type N	-200 TO 1300 °C	0.4 °C	
Laboratory thermometers	10 to 50°C	0.3°C	Dry Block, Standard thermometer, UCC Procedure 160
Resistance thermometry	-100 to 600°C	0.1°C	PT 100 RTD, UCC Procedure 160

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Page 7 of 8
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<i>Thermal (continued)</i> Relative Humidity – Measure	40-80% 10-90%	2.5% 5%	Digital Hygrometer, UCC Procedure 460 <u>340</u>
Ovens, furnaces, and presses	-100°C to 1800°C	0.375% reading plus 1°C	Keithley 2700 and thermocouples, UCC Procedure 140

¹ "Best Measurement Capability" is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or of nearly ideal measuring instruments. Best Measurement Capabilities are expressed as uncertainties at approximately the 95% level of confidence, usually using a coverage factor of $k=2$. The measurement uncertainty of a specific calibration performed by the laboratory may be greater than the least uncertainty due to the behavior of the customer's device, to the environment (if the calibration is performed in the field), and to influences from the circumstances of the specific calibration.

NOTE: Calibration parameters are performed primarily on-site at customer locations. The uncertainty of scale/balance calibration is highly dependent on local conditions, such as scale resolution and sensitivity, scale cleanliness, local gravity, temperature and humidity, dust, vibration, etc.; therefore, any statement of uncertainty is misleading. The class of the best weights used by the laboratory is shown in the Technique column. Use of weights in combination, whether in the same class or different classes, will increase measurement uncertainty resulting from the additive effect of weight tolerances, as defined in ASTM E 617.

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Page 8 of 8
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NOTES FROM INTERNATIONAL ACCREDITATION SERVICE (I.A.S.) REGARDING EXPIRATION DATE FOR SCOPE/ACCREDITATION

IAS typically does not include expiration dates on the certificates of accreditation. IAS states that an accredited laboratory in good standing will be on the website and therefore customers should check the IAS website, for a couple of reasons.

First, should a laboratory for whatever reason lose or withdraw accreditation, the customers will know the current status.

Second, this approach avoids the pitfalls that occur with the expiration date, in that extensions of the expiration date are not required, providing greater flexibility in the assessment schedule for both IAS and the laboratory, and greatly reducing the paperwork for both IAS and the laboratory.

However, IAS is aware of the need for our laboratories to provide their customers an expiration date as may be required for their various supplier approval systems.

For an initial accreditation with IAS, the certificate is valid for one year; subsequent to the Surveillance assessment, the certificates are valid for two years.

Best regards,

Hershal C. Brewer, CCT
Senior Accreditation Officer
International Accreditation Service
5360 Workman Mill Road
Whittier, CA 90601