



# United Calibration Corporation

Established 1964

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## Certificate of Calibration

CERTIFICATE NO. 12345-5

**ZYX Corporation**  
**111 Main Street**  
**Huntington Beach, CA 92649**  
**Laboratory**

### Calibrate Extensometer in Accordance with ASTM E 83-02

**System Under Test:** United SFM-20 S/N 0602542  
**Device Under Test:** United EZ .2-2 Extensometer S/N 1233, ID 36t3  
**Location Work Performed:** UCC Huntington Beach CA  
**Extensometer Gage Length:** 2  
**Units:** in  
**Indicator or Recorder:** Resolution = 0.0001 sec  
**Date Performed:** 7/5/2001  
**Calibration Due Date:** 7/5/2002  
**Calibration Range:** 0 to 0.2 in

#### Summary of Results

**Gage Length (Measured):** 2.00  
**Accuracy Classification:** ASTM E83 Class B2  
**Check if Bidirectional:**

**Temp (Deg F):** 77  
**Rel Humidity (%):** 30  
**Extensometer Position:** Vertical

As found condition for UUT meets the requirements of ASTM E 83 for Class B2 Extensometers. No adjustments required.

This document certifies that the equipment identified above has been calibrated in accordance with the requirements of ASTM E 83-02 and UCC Procedure 115 using standards which are traceable to standards maintained by NIST.

#### Standards Used:

ID# 0448: Starrett Dial Indicator, 2 in, S/N , Calibrated 12/20/2001 by Southern California Edison, Calibration Due Date: 12/20/2007, Uncertainty 0.0002 in.  
ID# 0487: Extensometer Gage Length Standard, 12 in, S/N , Calibrated 6/6/2002 by Southern California Edison, Calibration Due Date: 6/6/2004, Uncertainty = 0.001 in.

UNITED CALIBRATION CORPORATION maintains a quality system which meets the requirements of ISO/IEC Guide 17025, ANSI/NCSL Z540-1 and ISO-9002.

Accredited by NVLAP for the specific scope of accreditation under lab code 200521. Calibration results relate only to items tested and calibrated.

#### Performed By:

Chuck Ozbat  
Certified Calibration Engineer

#### Approved Signatory:

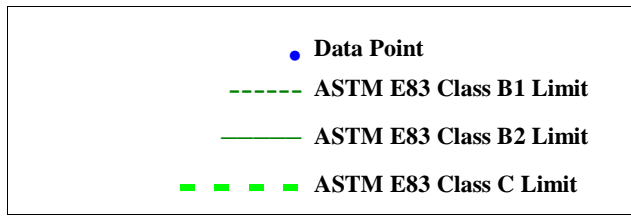
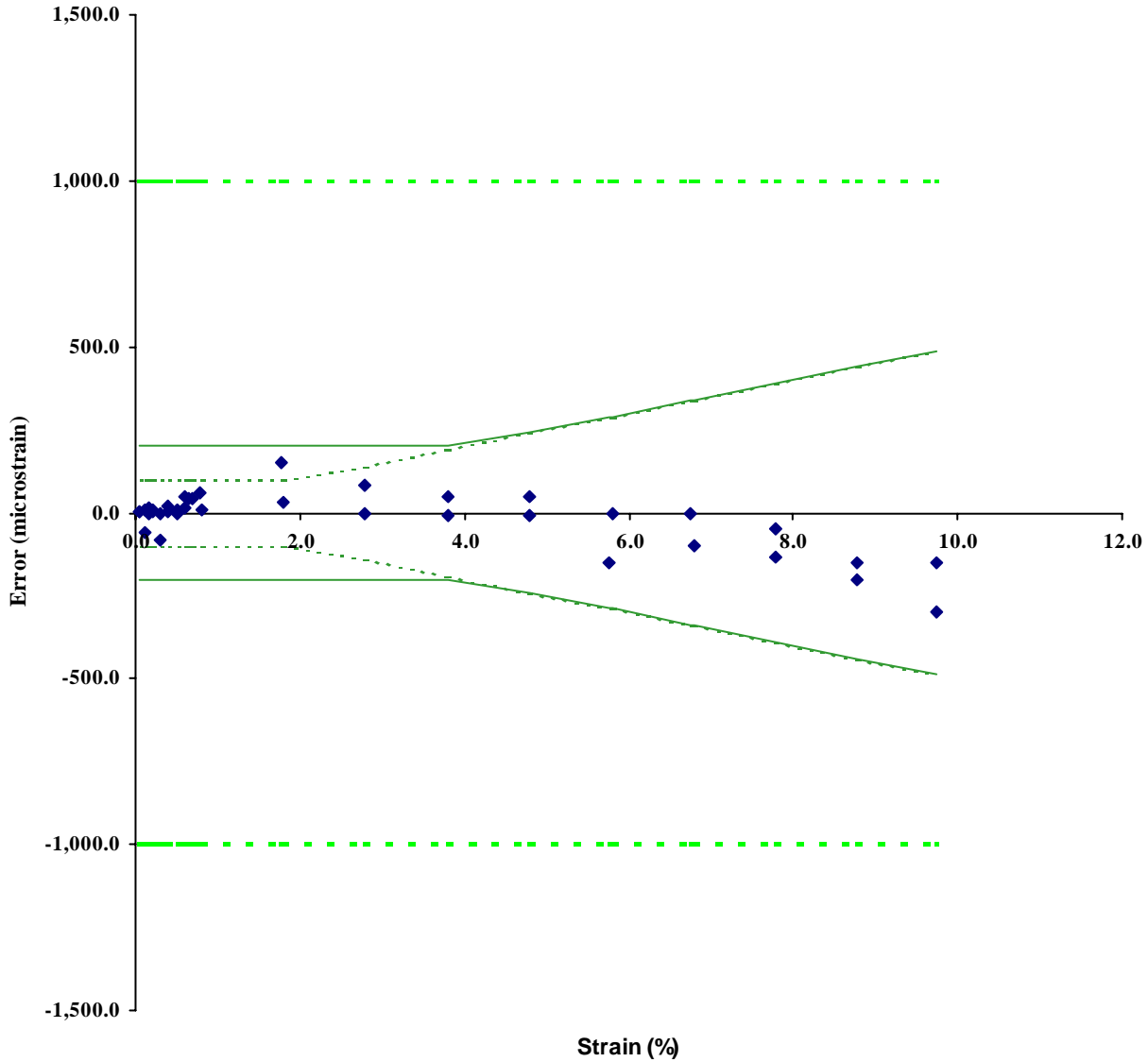
Jere H. Watson  
Technical Director

UNITED CALIBRATION CORPORATION

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**Extensometer Error**



**Run # 1 (As Found)**

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Strain (%)	Std Reading (in)	UUT Reading (in)	Error ( $\mu$ strain)	Error (%) of Std
0.0	0	0	0.0	
0.05	.00101	.0010210	5.5	1.09
0.11	.002207	.002084	-61.5	-5.57
0.16	.0031	.0031331	16.55	1.07
0.21	.00425	.0042699	9.95	0.47
0.31	.0062	.00603	-85.0	-2.74
0.4	.00793	.00794	5.0	0.13
0.5	.00994	.00996	10.0	0.2
0.6	.0119	.01193	15.0	0.25
0.69	.0138	.01388	40.0	0.58
0.79	.0158	.01592	60.0	0.76
1.79	.0357	.0360	150.0	0.84
2.79	.0557	.0557	0.0	0.0
3.79	.0758	.0759	50.0	0.13
4.8	.096	.0961	50.0	0.1
5.76	0.1153	0.115	-150.0	-0.26
6.75	0.135	0.135	0.0	0.0
7.78	0.1556	0.1555	-50.0	-0.06
8.78	0.1756	0.1753	-150.0	-0.17
9.74	0.1948	0.1945	-150.0	-0.15

**Run # 2**

Strain (%)	Std Reading (in)	UUT Reading (in)	Error ( $\mu$ strain)	Error (%) of Std	Repeatability (in)
0.0	0	0	0.0		0.0
0.05	.001039	.001041	1.0	0.19	0.00001
0.1	.00209	.002102	6.0	0.57	0.00014
0.16	.00315	.00315	0.0	0.0	0.00003
0.22	.0043	.004309	4.5	0.21	0.00001
0.3	.00607	.00607	0.0	0.0	0.00017
0.4	.00798	.00802	20.0	0.5	0.00003
0.5	0.01	.0100	0.0	0.0	0.00002
0.6	0.0119	0.012	50.0	0.84	0.00007
0.65	.01292	0.013	40.0	0.62	0.0
0.8	0.01596	.01598	10.0	0.13	0.0001
1.79	.03584	.03590	30.0	0.17	0.00024
2.79	0.0557	.05586	80.0	0.29	0.00016
3.8	.07593	.07591	-10.0	-0.03	0.00012
4.8	.09599	.09597	-10.0	-0.02	0.00012
5.79	0.1159	0.1159	0.0	0.0	0.0003
6.79	0.1358	0.1356	-100.0	-0.15	0.0002
7.79	0.15577	0.1555	-135.0	-0.17	0.00017
8.79	0.1757	0.1753	-200.0	-0.23	0.0001
9.74	0.1949	0.1943	-300.0	-0.31	0.0003

Uncertainty of calibration  $U = 0.0053$  in  
 Uncertainty calculations are performed in accordance with UCC Procedure UP-01.

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