

Instron has been a leading provider in measuring and calibrating strain and is an active participant in the development of ASTM E83, ISO 9513 and ISO 5893 Strain measurement standards. This service ensures that testing parameters are being met and that associated results are being calculated accurately.

BASIC STRAIN CALIBRATION REQUIREMENTS

Extensometer system calibrations are covered by many different national and international standards, the basic requirements for these standards include:

- Extensometers are calibrated with the readout device, which they are used with during testing.
- Classification of an extensometer will be made using a combination of gauge length accuracy, strain/displacement accuracy, and test system resolution.
- Each calibration run will consist of a minimum of 5 displacement values appropriately spaced between the minimum and maximum displacement test values, not including zero, at least 2 times.
- For multi-range extensometers, each range used must be calibrated.
- Extensometers are to be calibrated with all combinations of interchangeable parts that are anticipated to be used for testing, such as lenses.
- It is recommended that extensometers be calibrated annually.

CALIBRATION CERTIFICATES


Instron calibration certificates provide you with the documentation necessary to prove compliance with industry testing standards and auditing authorities.


Our certificates are quality-compliant and carry a unique certificate number and date.

CERTIFICATE OF CALIBRATION

ISSUED BY: INSTRON CALIBRATION LABORATORY

DATE OF ISSUE: 16-Feb-2021 CERTIFICATE NUMBER: E119021621100234







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APPROVED SIGNATORY



Digitally signed by Kraystof Drag
DN: cn=Kraystof Drag, o=Instron, ou=UK Laboratory - Poland, ou=Calibration Laboratory, ou=A Division of Illinois Tool Works, Inc. (ITW, Inc.), cn=Kraystof Drag, email=Kraystof_Drag@instron.com, Date: 2021.02.18 17:13:52 +01'00'

Type of Calibration: Strain
Relevant Standard: ISO 9513:2012/Cor 1:2013
Date of Calibration: 16-Feb-2021

*** VERIFICATION RESULTS ***

System ID:	Customer Asset No.: Instron-123456
Transducer Serial No.: 2663-821/1234	Customer Asset No.: Instron-123456
Indicator 1. - Digital Readout: Bluehill3 Ver.3.65 (mm)	
PASSED Class 1: 100% Range in Tension mode (Increasing)	

System Class for a range is the maximum classification value of the four parameters: gauge length, system resolution, bias error and the calibration apparatus.

Customer		Temperature	
Name:	Customer EU	Starting Temperature:	21.6 °C
Address:	6834 Materials Testing Street Norwood MA 02062 USA	Ending Temperature:	21.7 °C
Contact:	Joe Bloggs		
Email:	Joe.Bloggs@customer.com		

Machine		Transducer	
Manufacturer:	Instron	Manufacturer:	Instron
Range Type:	Single	Travel (Tension):	50 mm
Condition:	Good	Travel (Compression):	10 mm
		Gauge Length:	10 mm
		Variable Gauge Length:	Yes

Methodology

The assessment of the testing machine was conducted on site at the above customer location in accordance with ISO 9513:2012/Cor 1:2013 "Metallic materials - Calibration of extensometer systems used in uniaxial testing" using Instron procedure ICA-8-51.

The system was calibrated in the 'As Found' condition with no adjustments or repairs carried out. This is also the 'As Left' condition.

Instron CalproCR Version 3.46

The results indicated on this certificate and the following report relate only to the items calibrated. If there are methods or data included that are not covered by the NVLAP accreditation it will be identified in the comments. Any limitations of use as a result of this calibration will be indicated in the comments. This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government. This report shall not be reproduced, except in full, without the approval of the issuing laboratory.

The certificate contains a complete description of equipment being verified.

Method of conformance to relevant quality standards clearly stated for risk reduction during audits and other regulatory evaluations.

Data summary table provided for ease of understanding data.

NVLAP symbol and the Accredited Laboratory Combined ILAC MRA Mark provides international recognition and acceptance.

Each readout device is classified as pass/fail on the certificate.

Maintain 6 years of factory backup data.

All calibration standards used provide metrological traceability to National Standards (e.g. NIST, NPL, etc).

Data - Indicator 1. - Digital Readout: Bluehill3 Ver.3.65 (mm)							
% of Range	Run 1		Run 2		Uncertainty of Measurement*		Coverage Factor
	Indicated (mm)	Applied (mm)	Indicated (mm)	Applied (mm)	Relative %	(+/- mm)	
100% Range - Tension (Increasing) - from 1.001 mm to 50.2773 mm							
0	0.0000	0.00000	0.0000	0.00000			
2	1.0112	1.01240	0.9996	1.00100	0.18	0.0018	2
4	1.9930	2.00100	1.9992	2.00100	0.18	0.0036	2
8	4.0204	4.04210	3.9939	4.01510	0.18	0.0072	2
14	6.9774	7.01470	6.9988	7.04040	0.18	0.013	2
20	9.9467	10.00930	9.9532	10.01960	0.18	0.018	2
40	19.875	20.00840	19.962	20.07280	0.18	0.036	2
60	30.129	30.31220	29.995	30.18220	0.18	0.054	2
80	39.785	40.03850	40.011	40.27020	0.18	0.072	2
100	49.728	50.08820	49.903	50.27730	0.18	0.090	2

Calculated errors will determine the ISO standard class or conformance to ASTM guidelines.



BENEFITS OF INSTRON CALIBRATION

The calibration of strain devices can be challenging. Instron has highly accurate equipment required to provide accredited calibrations that meet or exceed the standards of ASTM E83, ISO 9513 and ISO 5893.

Instron is accredited by NVLAP under Lab Code 200301-0. This ensures that Instron has proven technical competence and necessary quality systems in place to ensure consistent calibration processes which maximize customer confidence.

- All global calibration laboratory procedures follow latest versions of ISO or ASTM calibration standards.
- Service engineers around the globe use Calpro CR software which has been developed and validated to ensure compliance with calibration standards and eliminate common data transfer errors.
- Our field calibration kits are carefully monitored by our global calibration laboratory for expiration to ensure the integrity of your data.
- Our field service engineers are audited in accordance with our accreditation to ISO 17025 by NVLAP under Lab Code 200301-0 a signatory of the International Laboratory Accredited Cooperation Mutual Recognition Arrangement (ILAC MRA).

WHAT TYPES OF EXTENSOMETERS CAN INSTRON CALIBRATE?

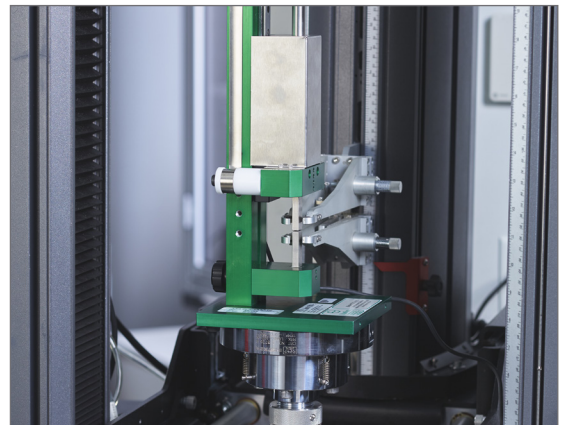
Instron Professional Services can calibrate a wide range of extensometers including; Instron Axial and Biaxial Clip on Extensometers, Averaging Extensometers, COD Gauges, Deflectometers, Long Travel Extensometers, Automatic Extensometers, Non-Contacting Video Extensometers, and a wide variety of third-party extensometers and strain measuring devices.

WHY CALIBRATE YOUR STRAIN READING?

Calibration of your strain measurement devices improves the effectiveness of your equipment which leads to greater confidence in your testing results.

You should calibrate your instrument's strain measuring device if any of the following apply to you:

- Strain is critical to your testing needs and is reported in the test results.
- Strain readings must be precise and repeatable.
- The material or component under test is strain rate sensitive.
- Even if strain is not a critical parameter, if it is being measured and the data is being used in any way, calibrating strain is a good testing practice to ensure readings are repeatable and accurate.





STANDARD STRAIN CALIBRATION

Instron's Standard Strain calibration meets all ASTM and ISO requirements by providing:

- Extensometry classified in accordance with ASTM or ISO standards according to system resolution, gauge length accuracy and displacement accuracy.
- Calibration of Extensometer gauge length(s).
- Calibration of Extensometer displacement values from 10% -100% of the extensometer range.

ENHANCED STRAIN CALIBRATION

Instron's Enhanced Strain calibration meets all ASTM and ISO requirements by providing:

- Extensometry classified in accordance with ASTM or ISO standards according to system resolution, gauge length accuracy and displacement accuracy.
- Calibration of Extensometer gauge length(s).
- Calibration of Extensometer displacement values from customer defined value (minimum 0.0002") to 100% of the extensometer range.

DO I NEED THE ENHANCED SERVICE IF THE TEST STANDARDS REQUIREMENTS ARE MET WITH THE STANDARD SERVICE?

Instron's Enhanced Calibration Services are helping organizations mitigate additional risk by providing additional, and more thorough calibration beyond what is required by the ASTM or ISO standards.

This service may benefit you if:

YOUR TESTING METHODS ARE CHANGING FREQUENTLY

- For example, if new test methods are frequently being written, you may be at risk of collecting extensometry data for gauge lengths or extensometry ranges that you haven't had calibrated.

YOUR REQUIREMENTS ARE CHANGING FREQUENTLY

- If your testing standards, or your auditing entities are frequently changing or becoming stricter in their requirements of your testing operations.

YOU COLLECT TEST DATA NEAR THE BOUNDARIES OF YOUR CALIBRATIONS

- If data is being collected near the boundary of your most recent calibration, you may be at risk of capturing data that falls out of the calibrated range, particularly at the low end (below 10%).

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