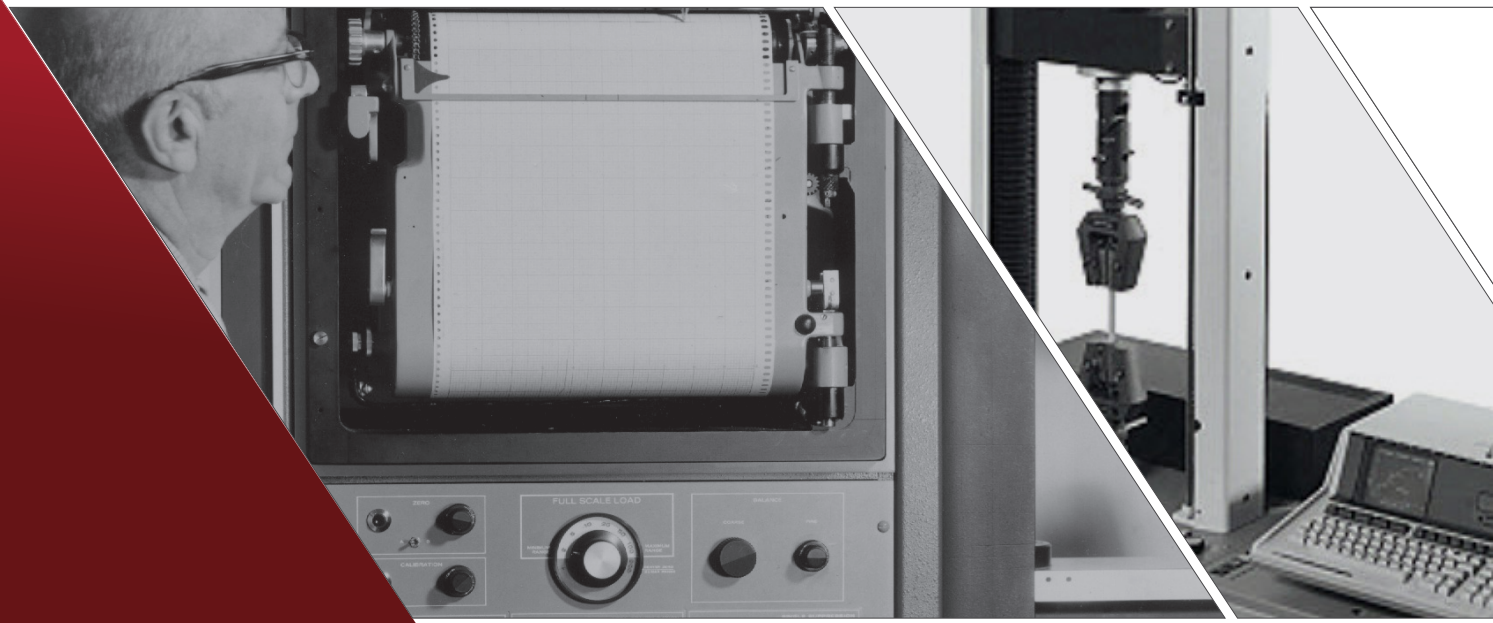
# Bluehill® Universal

## The Next Generation of Testing Software

INSTRON®

The digital revolution of the 1980s and 1990s introduced us to personal computers, operating systems, and the internet. These monumental changes catalyzed an evolution in Universal Testing Machines to embrace digital electronics, moving operators away from a world of dials, pushbuttons, and controls to a world of right and left clicks.




TRUSTED
SINCE 1946

Today, the evolution of consumer devices and the use of smartphones has once again changed the way we view the world. We expect all of our devices and systems to have endless computing and communications power, with simple interfaces controlled with the touch of a finger.

# BLUEHILL® UNIVERSAL

Simpler. Smarter. Safer.

Bluehill Universal is the testing industry's most powerful and advanced testing software. Its intuitive workflows are designed to simplify operator training, increase testing efficiency, and minimize safety hazards.

## Live Displays

Configure unlimited Live Displays to show force, displacement, time, and results to provide users with immediate feedback on current test status.

## Graphs and Control Charts

Graphs, most typically displaying force vs. displacement data or stress vs. strain data, can easily be viewed in more detail by pinching to zoom. Multiple graphs can be displayed in the workspace, including control charts in a completely customizable layout.

## Results Table

Using subsample, users have the ability to sort results by all parameters including operator name, specimen break location, and specific specimen properties.

## Specimen Selector

Specimen selector allows users to view and manage tests quickly and easily. Press on any specimen to view the graph, results, test inputs, and status, with options to exclude or delete if permissible.

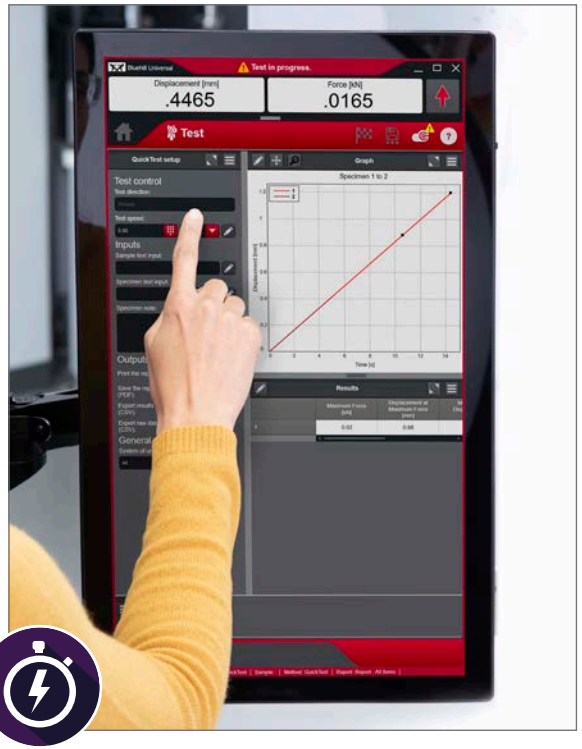
# SIMPLER

## Bluehill® Universal

Bluehill® Universal's streamlined functionality keeps testing workflows simple for new or infrequent users and helps high-volume labs remain efficient.

### Pre-loaded Templates

Bluehill Universal features an extensive library of pre-configured methods for some of the most commonly used ASTM, ISO, and EN standards. The methods are packaged in modules that are specific to your testing application.



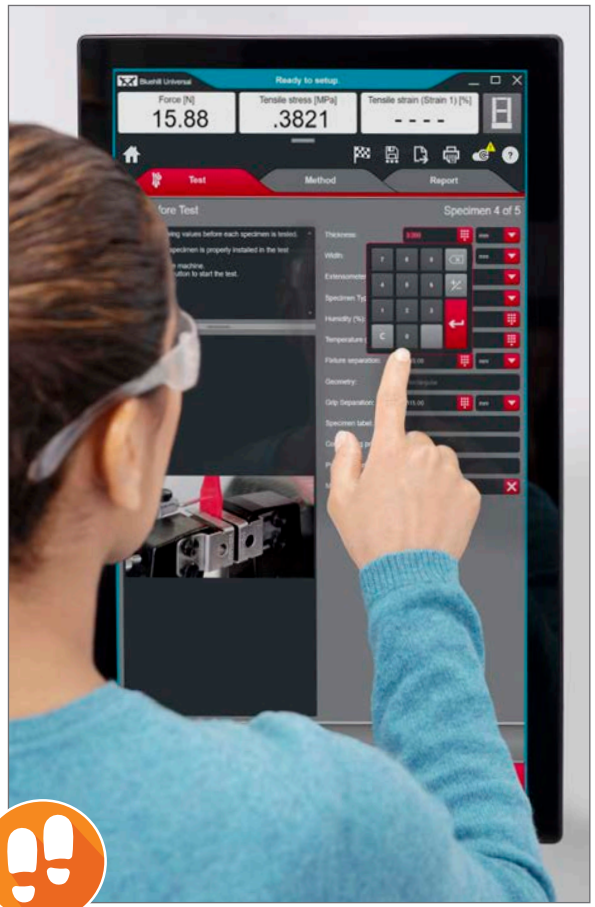

### QuickTest

For when you need results fast, QuickTest allows users to enter a few simple parameters and run their test within seconds.

### Integrated Specimen Measurement

Connect micrometers and calipers directly to the system to effortlessly import specimen dimensions into Bluehill Universal.

SCAN THE QR CODE
to learn more and see
Bluehill Universal in action.

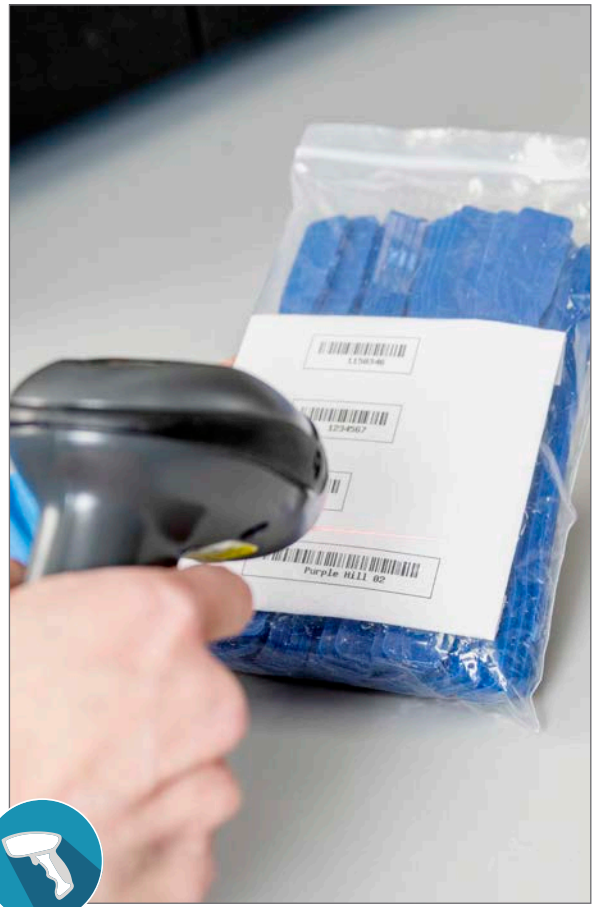



## Workflow

Users can be guided through the entire testing process with step-by-step instructions, ensuring that your tests remain repeatable, simple, and error-free. The prompts are customizable with your own text and images.

## Pass/Fail

Quickly visualize whether or not a test has passed or failed based on the acceptance criteria set in the test method.



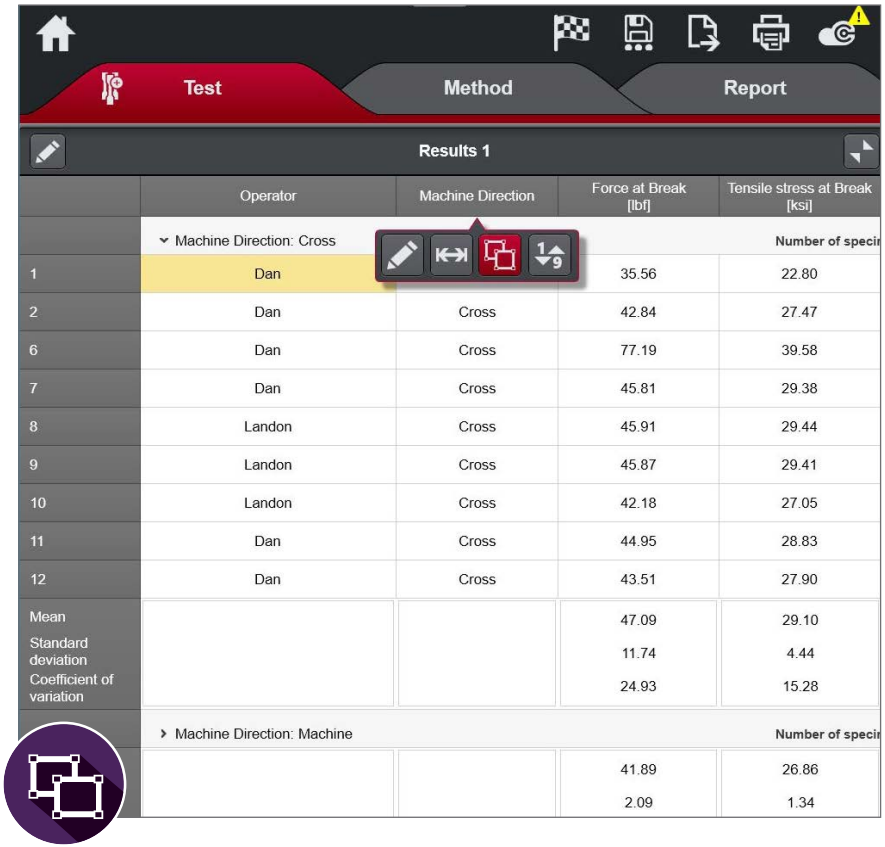
## Barcode Scanner

Quickly and accurately enter sample or specimen information into Bluehill Universal by using a barcode or QR scanner.

# SMARTER

## Bluehill® Universal

Simplicity doesn't mean sacrificing advanced features. Bluehill Universal offers customizable modules that give you the power and flexibility to run tests at any level of complexity.




| | Operator | Machine Direction | Force at Break [lbf] | Tensile stress at Break [ksi] |
|---|---|---|---|---|
| | Machine Direction: Cross | | | Number of specir |
| 1 | Dan | | 35.56 | 22.80 |
| 2 | Dan | Cross | 42.84 | 27.47 |
| 6 | Dan | Cross | 77.19 | 39.58 |
| 7 | Dan | Cross | 45.81 | 29.38 |
| 8 | Landon | Cross | 45.91 | 29.44 |
| 9 | Landon | Cross | 45.87 | 29.41 |
| 10 | Landon | Cross | 42.18 | 27.05 |
| 11 | Dan | Cross | 44.95 | 28.83 |
| 12 | Dan | Cross | 43.51 | 27.90 |
| Mean | | | 47.09 | 29.10 |
| Standard deviation | | | 11.74 | 4.44 |
| Coefficient of variation | | | 24.93 | 15.28 |
| | Machine Direction: Machine | | | Number of specir |
| | | | 41.89 | 26.86 |
| | | | 2.09 | 1.34 |

### Subsample

The Results table allows you to sort specimens into groups by shared traits such as material ID, machine direction, or operator name. Once sorted, results can be configured to display group statistics for each selected calculation.

### TestProfiler Option

Build simple cyclic tests that include ramps, holds, and triangle waves. Conditional logic allows you to create looping patterns that help you simulate real life scenarios with your tests.

## TestCam Option

Connect a USB webcam to experience point-by-point video playback, allowing you to view the test even after it has finished.

## Analysis Option

Replay, re-analyze, or make modifications to previously tested specimens without having to repeat the entire testing process.

# SMARTER

## Bluehill® Universal

### Expression Builder

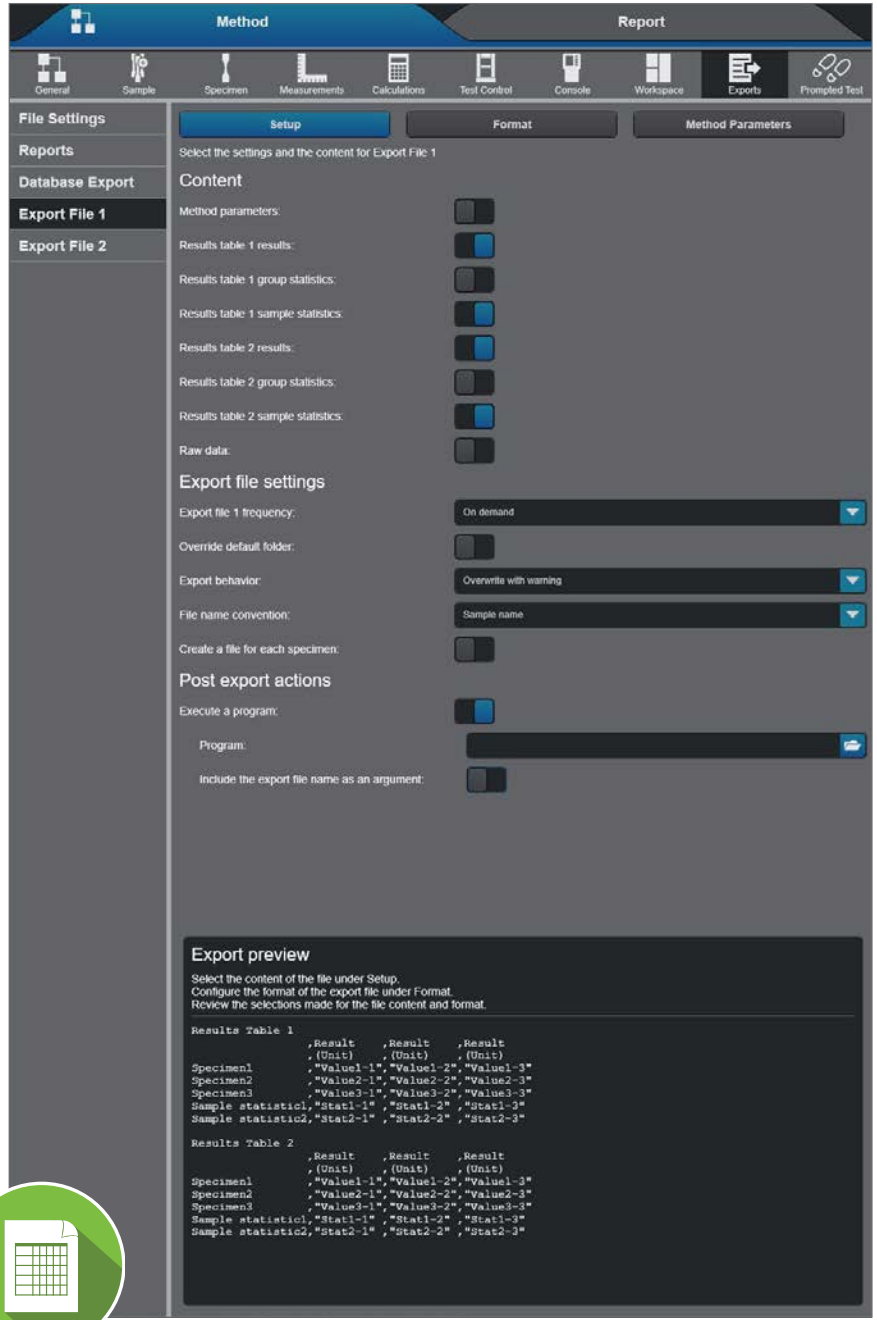
Build your own test method functions using a list of pre-defined variables. Users can write functions for detecting test events, defining new calculations, making measurements, or setting domains for calculations. For example, ASTM D790 for the flexural testing of plastics requires the test speed to be set as a function of the support span, specimen depth, and a straining rate of 0.01. Using Expression Builder, Bluehill can automatically calculate test speed per each specimen based on these parameters.

### Export Setup Tab

The Setup tab allows users to choose which content to export, including test method parameters and results. The export preview allows users to easily review the content, format, frequency, and behavior of their export. This includes enabling the system to execute an external program after data export.

### Export Format Tab

In the Format tab, users choose their preferred output file format. The format can be a CSV file or a custom text file, allowing for complete flexibility to integrate with a lab information management system (LIMS).


Method
Report
General
Sample
Specimen
Measurements
Calculations
Test Control
Console
Workspace
Exports
Prompted Test
File Settings
Reports
Database Export
Export File 1
Export File 2
Setup
Format
Method Parameters
Select the settings and the content for Export File 1
Content
Method parameters:
Results table 1 results:
Results table 1 group statistics:
Results table 1 sample statistics:
Results table 2 results:
Results table 2 group statistics:
Results table 2 sample statistics:
Raw data:
Export file settings
Export file 1 frequency:
On demand
Override default folder:
Export behavior:
Overwrite with warning
File name convention:
Sample name
Create a file for each specimen:
Post export actions
Execute a program:
Program:
Include the export file name as an argument:
Export preview
Select the content of the file under Setup.
Configure the format of the export file under Format.
Review the selections made for the file content and format.
Results Table 1
,Result ,Result ,Result
,(Unit) ,(Unit) ,(Unit)
Specimen1 ,"Value1-1","Value1-2","Value1-3"
Specimen2 ,"Value2-1","Value2-2","Value2-3"
Specimen3 ,"Value3-1","Value3-2","Value3-3"
Sample statistic1,"Stat1-1" ,"Stat1-2" ,"Stat1-3"
Sample statistic2,"Stat2-1" ,"Stat2-2" ,"Stat2-3"
Results Table 2
,Result ,Result ,Result
,(Unit) ,(Unit) ,(Unit)
Specimen1 ,"Value1-1","Value1-2","Value1-3"
Specimen2 ,"Value2-1","Value2-2","Value2-3"
Specimen3 ,"Value3-1","Value3-2","Value3-3"
Sample statistic1,"Stat1-1" ,"Stat1-2" ,"Stat1-3"
Sample statistic2,"Stat2-1" ,"Stat2-2" ,"Stat2-3"

Method
Report
General
Sample
Specimen
Measurements
Calculations
Test Control
Console
Workspace
Exports
Prompted Test
File Settings
Reports
Database Export
Export File 1
Export File 2
Setup
Format
Method Parameters
Select the format for exporting the content of Export File 1
Output format:
Custom text file
File extension:
txt
Export column names:
Export units:
Append units to column name:
Show section titles:
Show row indicator:
Show acceptance range indicator:
Layout:
Horizontal
Section separator:
CRLF
Row separator:
CRLF
Column separator:
List separator
Value quoting character:
Quotes
Decimal symbol:
Use system symbol
Encoding type:
Default
Export preview
Select the content of the file under Setup.
Configure the format of the export file under Format.
Review the selections made for the file content and format.
Results Table 1
,Result ,Result ,Result
,(Unit) ,(Unit) ,(Unit)
Specimen1 ,"Value1-1","Value1-2","Value1-3"
Specimen2 ,"Value2-1","Value2-2","Value2-3"
Specimen3 ,"Value3-1","Value3-2","Value3-3"
Sample statistic1,"Stat1-1" ,"Stat1-2" ,"Stat1-3"
Sample statistic2,"Stat2-1" ,"Stat2-2" ,"Stat2-3"
Results Table 2
,Result ,Result ,Result
,(Unit) ,(Unit) ,(Unit)
Specimen1 ,"Value1-1","Value1-2","Value1-3"
Specimen2 ,"Value2-1","Value2-2","Value2-3"
Specimen3 ,"Value3-1","Value3-2","Value3-3"
Sample statistic1,"Stat1-1" ,"Stat1-2" ,"Stat1-3"
Sample statistic2,"Stat2-1" ,"Stat2-2" ,"Stat2-3"

# SAFER

## Bluehill® Universal

Bluehill Universal features integrated safety coaching compatible with all 6800 and 3400 Series systems. A highlighted border on the dashboard's interface changes color depending on the status of the system, providing a clear warning to anyone using or approaching the test space that a test is in process.

### Setup

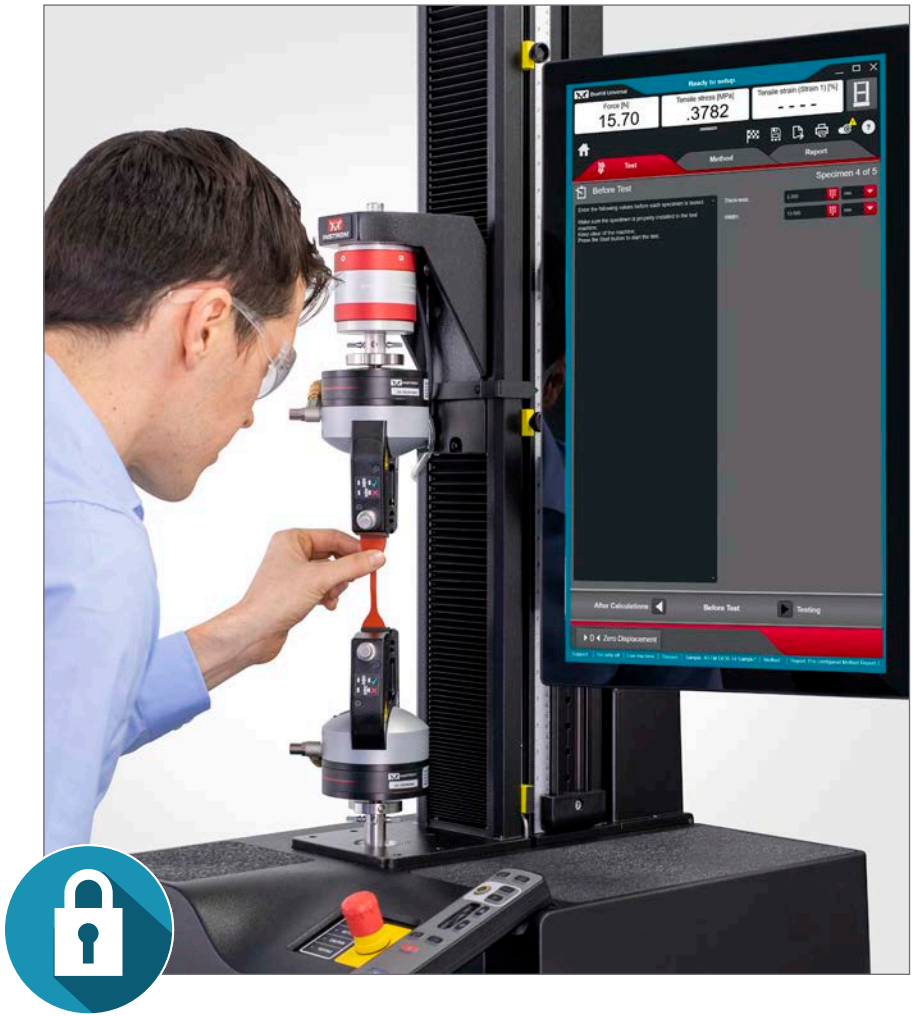
When an operator is setting up a test, the software's border is blue to signify that the testing system is in the Setup state. While in Setup, the software limits the crosshead to a safer jog speed and reduces the pneumatic grip closing pressure when paired with Instron's Smart-close Air Control Kit.

### Caution

When an operator is ready to test, the frame is unlocked and enters a Caution state. Bluehill Universal software uses a yellow border and clear warning to indicate that the system is now fully enabled. If the operator does not press Start within two seconds, the system automatically returns to Setup mode.

### Testing

When Start is pressed in the Caution state, the system enters the Testing state, changing the border and warning color to red. The warning message disappears after two seconds but will return if the test is left unattended for five minutes or more.

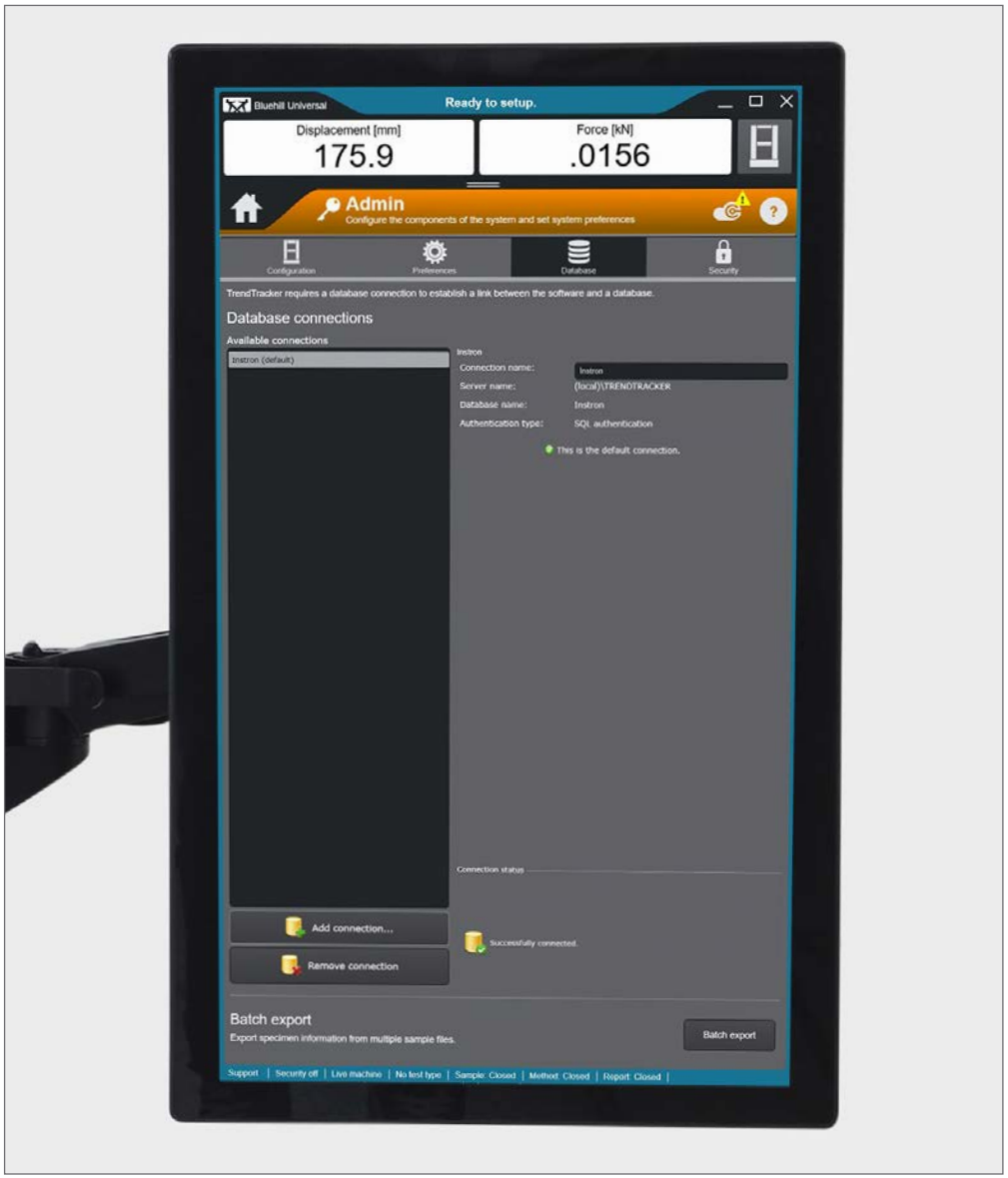


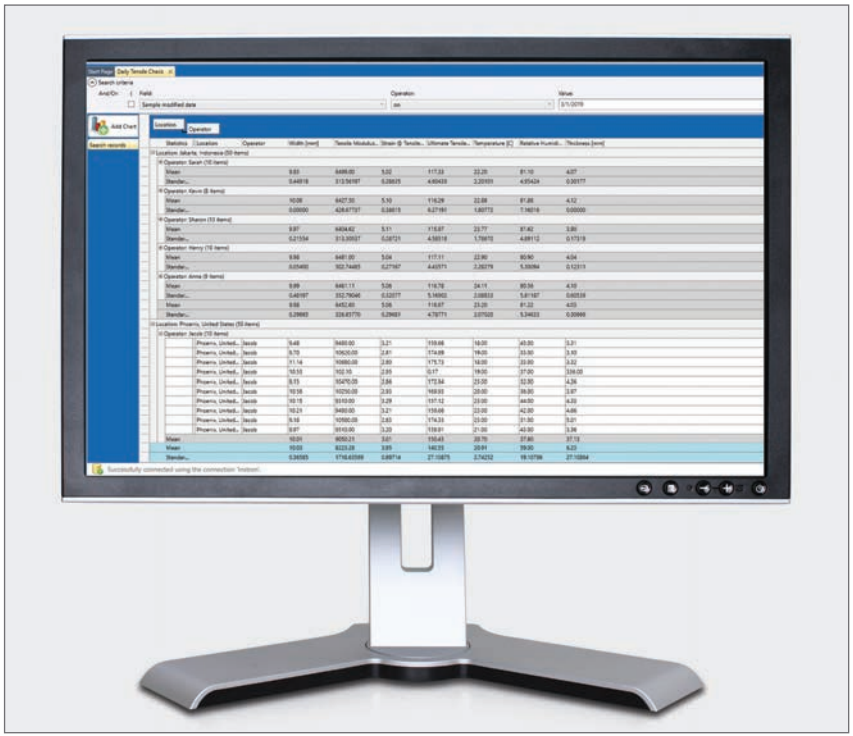
Ready to test.
Force [N]
15.77
Tensile stress [MPa]
.3795
Test
Method
Before Test
WARNING
Keep clear of test area.
Crush hazard.
After Calculations
Before Test
Zero Displacement

Test in progress.
Force [N]
15.80
Tensile stress [MPa]
.3802
Test
Method
Graph 1
WARNING
Keep clear of test area.
Crush hazard.
Zero Displacement

# DATA ANALYSIS AND REPORTS

## Bluehill® Universal



### TrendTracker™ Viewer Option

The TrendTracker viewer allows users to query off of the results in the TrendTracker database.

### Data Analysis with TrendTracker™

Export Bluehill results directly to a TrendTacker database. Users can establish multiple database connections in Bluehill Universal, then select the TrendTracker database in the appropriate method. Batch export allows users to dump previously tested Bluehill data directly into the TrendTracker database.

## Report Generator

Create customized report templates that ensure a professional and consistent style for reporting test results. Reports can be generated, printed, and emailed with the press of a button. Report format options include Word, PDF, and HTML.

INSTRON

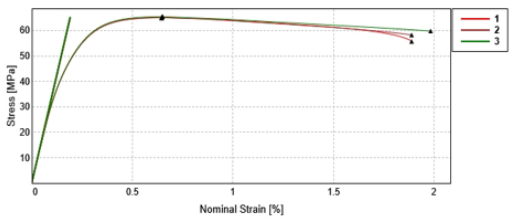
10/30/2019

Instron Applications Laboratory

ASTM D638-14 Standard Test Method for Tensile Properties of Plastics

| | |
|---|---|
| ID of material tested | |
| Conditioning procedure | |
| Preparation method | |
| Sample size | 5 |
| System of units | SI |
| Extensometer Class | Class B-2 |
| Primary source | Strain 1 |
| Specimen Type | Type I |
| Control mode 1 | Displacement |
| Rate 1 | 50.00 mm/min |
| Temperature (C) | 23.0 |
| Humidity (%) | 50.0 |
| Method revision date | 12/2014 |

ASTM D638-14: Stress vs. Nominal Strain



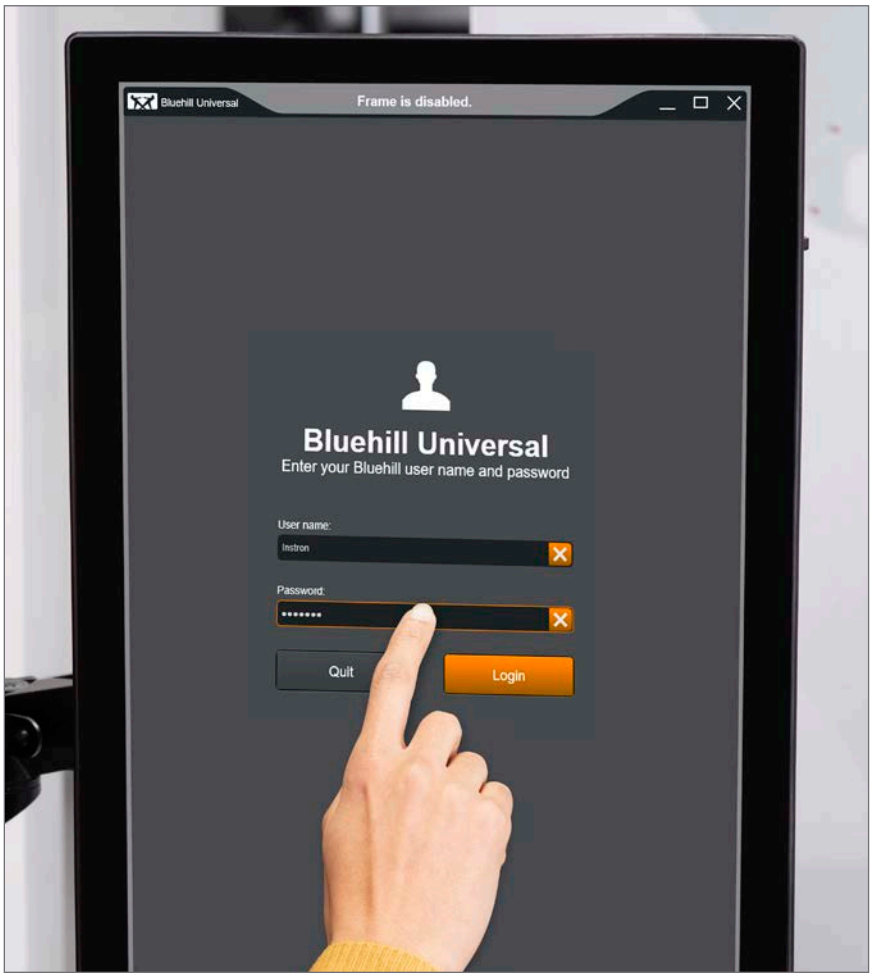

| | Width [mm] | Thickness [mm] | Modulus of Elasticity (Young's Modulus) [MPa] | Modulus (Secant 1 %) [MPa] | Tensile Strength [MPa] | Tensile Strength at Yield [MPa] | % Elongation at Yield [%] | % Elongation at Break [%] | Nominal Strain at Break [%] | Tensile Strength at Break [MPa] |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13.00 | 3.200 | 2960 | 2790 | 65.1 | 65.1 | 7.42 | 21.72 | 1.89 | 55.8 |
| 2 | 13.00 | 3.200 | 2950 | 2780 | 65.0 | 65.0 | 7.41 | 21.71 | 1.89 | 58.2 |
| 3 | 13.00 | 3.200 | 2960 | 2810 | 65.4 | 65.4 | 7.46 | 22.77 | 1.98 | 59.7 |
| Mean | 13.00 | 3.200 | 2960 | 2790 | 65.2 | 65.2 | 7.43 | 22.07 | 1.92 | 57.9 |
| S.D. | 0.000 | 0.000 | 6.69 | 13.928 | 0.205 | 0.205 | 0.028 | 0.610 | 0.053 | 2.017 |

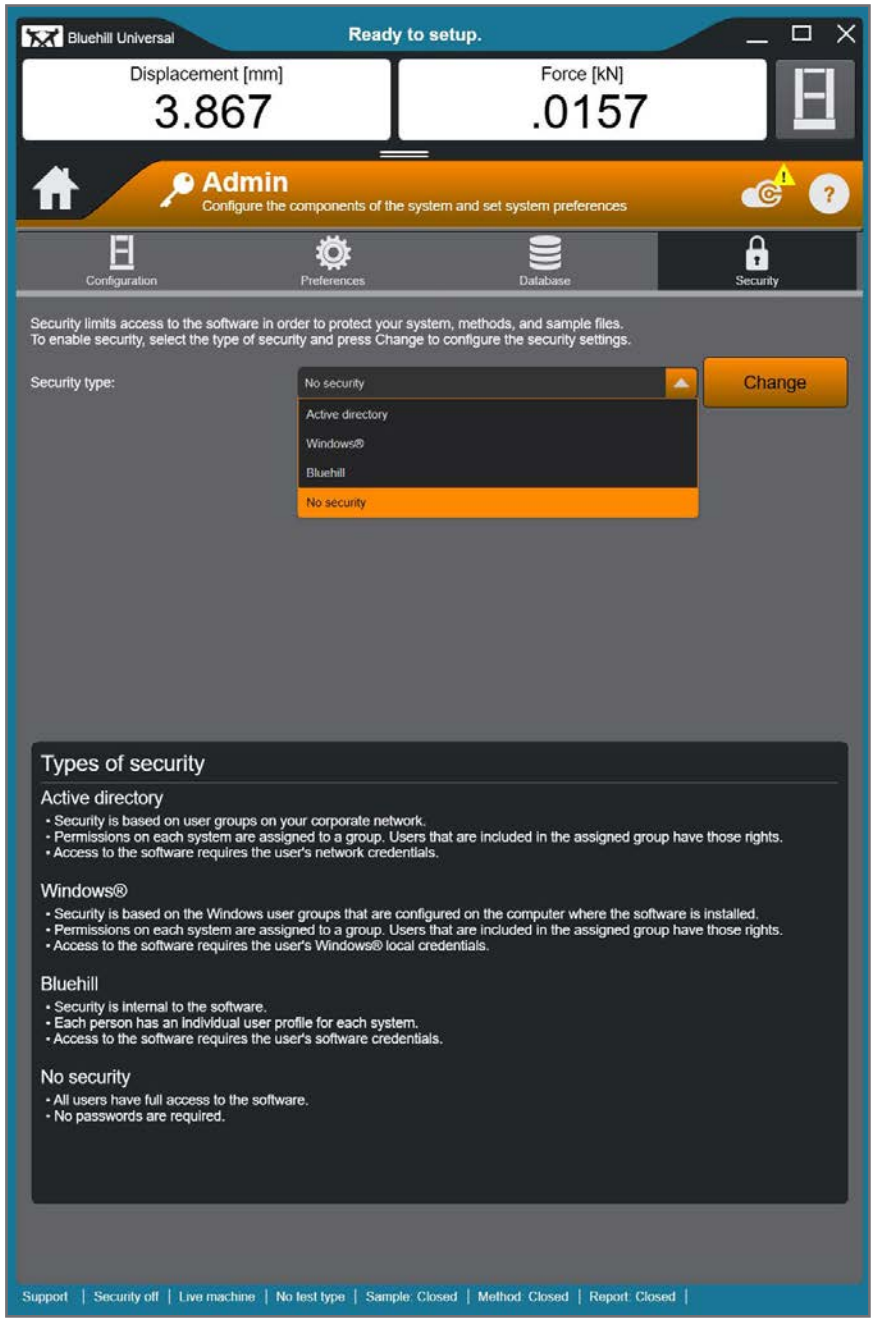
Page 1 of 1

# SECURITY

## Bluehill® Universal

Bluehill Security allows lab managers to configure permissions in the software, granting access to trained personnel and limiting access where needed. Bluehill users can choose from three different security options that offer various levels of integration with your organization's existing security network.






## Active Directory

Link usernames and passwords in Bluehill Universal to usernames and passwords on your corporate network. Active Directory ensures that your Bluehill login information meets your corporate IT standards for password length, expiration, and character requirements. With Active Directory security, laboratories can allow consistent access to Instron equipment between labs, regardless of location. It is ideal for organizations with multiple Instron systems and system operators, as security is easily configured by selecting user groups.

## Windows®

When using local Windows to manage permissions in Bluehill Universal, usernames and passwords in Bluehill are linked to usernames and passwords on your local computer. Instead of meeting network-level standards, Bluehill passwords are required to meet the standards set on the local computer. Windows Security is ideal for laboratories with dozens of Instron operators where Active Directory cannot be used, as security can still be easily configured by selecting user groups.

## Bluehill

Set up users by creating unique usernames and passwords directly in Bluehill Universal. Since an individual profile must be created and configured for each person in a lab, Bluehill's internal security is ideal for laboratories with few Instron systems and a small group of system operators.

## No Security

Not all laboratories require the use of security. For example, research and development labs often change Bluehill method, sample, and system-level parameters constantly, and do not need to restrict permissions.

# TRACEABILITY

## Bluehill® Universal Traceability Module

Bluehill Universal's Traceability Module enables users to meet the audit requirements associated with FDA 21 CFR Part 11, ISO 17025, NADCAP, and others. Through seamless integration of electronic approvals, revision history, and an automated audit trail, this powerful add-on combines with Bluehill's built-in security to provide unmatched data traceability.

### Revision History

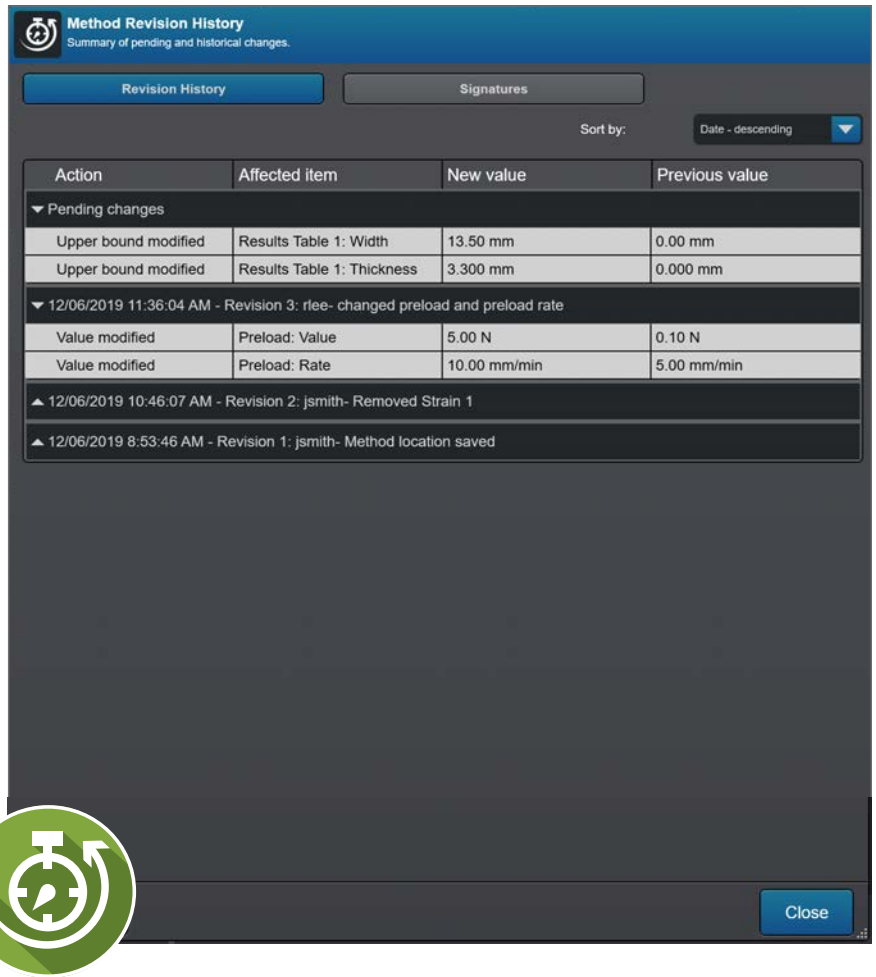
View the full revision history of Bluehill methods, tested samples, and report templates. Each revision contains the details of its affected item, including a time stamp, both the previous and the new value, as well as the name of the users involved with initiating and, if required, approving the change.

### Electronic Approval

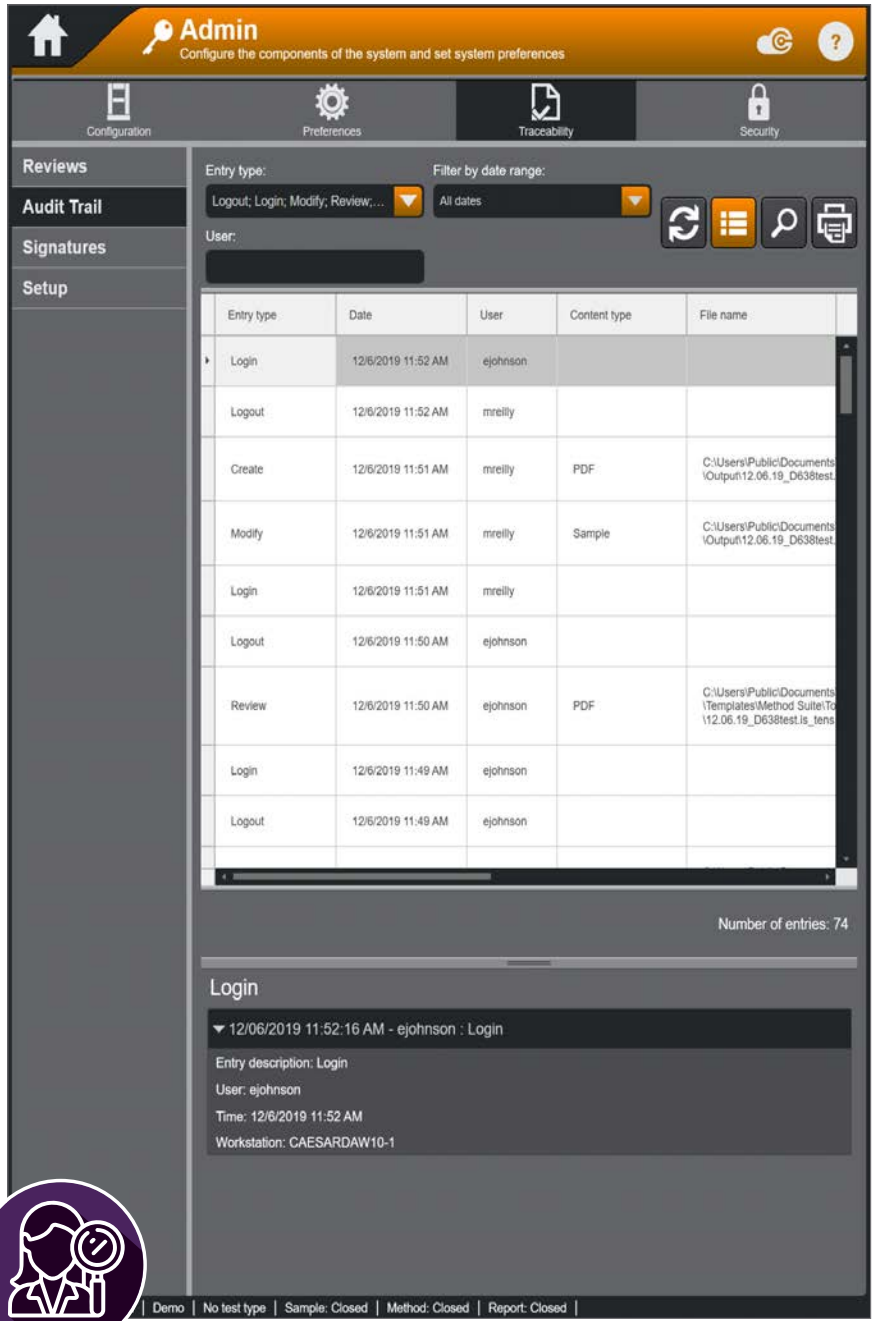
Configure primary, secondary, and tertiary electronic signatures to ensure method revisions and test data are reviewed before a change is implemented or data is publicized.

### Audit Trail

Track system level usage, additions, modifications, and deletions in a secure and searchable audit trail. System level activities range from starting a new test sample to failing a login attempt.



Admin
Configure the components of the system and set system preferences
Configuration
Preferences
Traceability
Security
Reviews
Audit Trail
Signatures
Setup
Traceability reviews
Filter:
My to review
Date
User
Content type
File name
12/6/2019 11:51 AM
mreilly
PDF
C:\Users\Public\Documents\Instron\Bluehill Universal \Output\12.06.19_D638test.is_tens.pdf
12/6/2019 11:36 AM
rlee
Method
C:\Users\caesarda\Desktop\Bluehill Method Folder\ASTM D638-14 Method.im_tens
Number of entries: 2
Create PDF
12/06/2019 11:51:47 AM - mreilly : Report file created
User: mreilly
Entry description: Report file created
Time: 12/6/2019 11:51 AM
Workstation: CAESARDAW10-1
C:\Users\Public\Documents\Instron\Bluehill Universal\Output\12.06.19_D638test.is_tens.pdf
Comment: sample finished - no observations
Secondary signature:
Tertiary signature:
Review status: Pending
Review status: Pending
Review date:
Review date:
Workstation:
Workstation:
Comment:
Comment:
Details
Temperature (C) 23.0
Humidity (%) 50.0
Method revision date 12/2014
ASTM D638-14: Stress vs. Nominal Strain
Stress [MPa]
Tensile strain (Displacement) [%]
Approve
Reject
Demo | No test type | Sample: Closed | Method: Closed | Report: Closed |


Admin
Configure the components of the system and set system preferences
Configuration
Preferences
Traceability
Security
Reviews
Audit Trail
Signatures
Setup
Entry type:
Logout; Login; Modify; Review;...
Filter by date range:
All dates
User:
Entry type
Date
User
Content type
File name
Login
12/6/2019 11:52 AM
ejohnson
Logout
12/6/2019 11:52 AM
mreilly
Create
12/6/2019 11:51 AM
mreilly
PDF
Modify
12/6/2019 11:51 AM
mreilly
Sample
Login
12/6/2019 11:51 AM
mreilly
Logout
12/6/2019 11:50 AM
ejohnson
Review
12/6/2019 11:50 AM
ejohnson
PDF
Login
12/6/2019 11:49 AM
ejohnson
Logout
12/6/2019 11:49 AM
ejohnson
Number of entries: 74
Login
12/06/2019 11:52:16 AM - ejohnson : Login
Entry description: Login
User: ejohnson
Time: 12/6/2019 11:52 AM
Workstation: CAESARDAW10-1
Demo | No test type | Sample: Closed | Method: Closed | Report: Closed |

# INSTRON® CONNECT

## The Next Generation of Technical Support

Instron's unrivaled application expertise and best-in-class service establishes us as the leader in customer satisfaction. Instron Connect introduces a powerful communication platform that brings our support engineers even closer to your organization.

### Faster Remote Technical Support

Instron connect enables secure screen-sharing with our technical support experts. You can also submit service requests, test methods for review, and sample data files directly through the system.

### Reduce Risk with Scheduled Reminders

Maintain your lab's certification with calibration reminders and easy scheduling to avoid unnecessary downtime.

### Keep up to date with Current Features

Automatic software update notifications help you keep your Instron system running in optimal condition.

## Secure Screen Sharing

Allow faster and simpler visual access to your system's user interface by Instron® Technical Support. The remote support engineer's actions can be observed in real time on your monitor.

## Advanced Capabilities

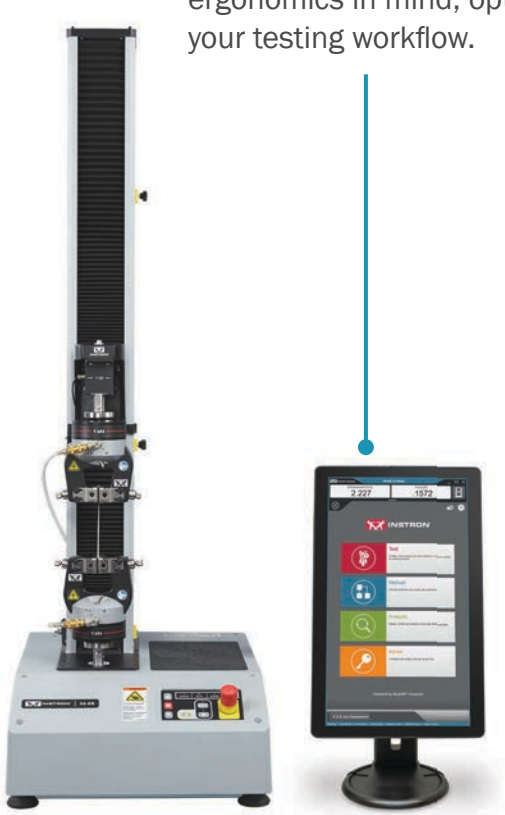
Effortlessly upload Instron files to clarify support questions. Utilize the remote audio capability directly through your system providing a simpler and quicker way to get in touch with Instron support.

# SYSTEM COMPATIBILITY

## Bluehill® Universal

Bluehill Universal is available with an Operator Dashboard on new 6800 and 3400 systems, as well as existing 6800, 3400, 5900, 3300, 5500, 59R and IS02 static testing systems. ElectroPuls™ and 8800 dynamic systems can also take advantage of Bluehill Universal's versatility and ease-of-use when running static tests.

An easy-to-use touch interface, built from the ground up with ergonomics in mind, optimizes your testing workflow.



All Operator Dashboard mounting options allow for vertical and angular adjustment to suit any operator.

The Operator Dashboard saves space in your lab or production line by eliminating the need for a table and desktop PC.

# THE WORLD STANDARD

**We stake our reputation on the integrity of data. From the measurement of primary test data to result generation, we design and manufacture the full data integrity chain (e.g. load cells, sensor conditioning, and software). Additionally, we calibrate more than 90,000 of these sensors annually with the lowest accumulated uncertainty.**

## 30,000+

We service and calibrate more than 30,000 Instron systems in active use worldwide every year.

## 96%

96% of the Fortune 100 list of the world's largest manufacturing companies use Instron test systems.

## 18,000+

Instron systems have been cited in more than 18,000 patents since 1975.

**www.instron.com**

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