CLEMEX intelligent microscopy

CMT.Lite

The Truly Flexible Solution in Microhardness

. Compatible with Most Testers
. Automated Measurements
. Free Run

400 µm

CLEMEX intelligent microscopy

A Commitment to
Excellence in Imaging

For nearly 20 years, Clemex has been providing integrated solutions for Image Analysis in microscopy to meet the specific needs of customers worldwide. This is our expertise and our commitment.

Clemex is known for its reliability, its high-quality products, and its after-sales service. Customer satisfaction is important to us.

Clemex CMT.Lite meets a need in the hardness testing industry, one that is in constant evolution, and in keeping with international standards. Clemex CMT.Lite is the best in its class, combining flexibility in retrofitting and accuracy of measurement.

This makes it the tool of choice for any hardness tester, old or new.

Intelligent
Clemex CMT.Lite :

> Layout Tools

> Annotation Tools

> Easy Detection

> Precision
  . Precise Imaging
  . Focus Meter

> Multi-directional
  traverses

> Results
  . Multiple Conversion Tables
  . Error-Free Validation
  . Report Generation

> Samples

Complete Turnkey Solution for
Micro and Macro Hardness Testers

The Clemex CMT.Lite comes either as a Desktop or Laptop solution. Retrofit any hardness tester right out of the box in seconds with no software installation hassles. In addition to the ready-to-run computer, the kit includes a high-resolution camera and adapters for most testers in the market.

> Retrofit Any Tester
Turn your existing microhardness tester, old or new, into an automatic measuring instrument thanks to Clemex CMT.Lite.

> Automatic Measurements
Clemex CMT.Lite measures indents precisely and in a manner that is reproducible. The system automatically cumulates and displays data in the Results window.

> Free Run
No need to map out a pattern, simply position the sample, indent, click to measure, and then go to the next area of interest and repeat the operation.

> High Resolution Camera
With its revolutionary camera, the Clemex CMT.Lite is the only system that gives you a resolution of 1.3 megapixels: that's 300% more than the competition.
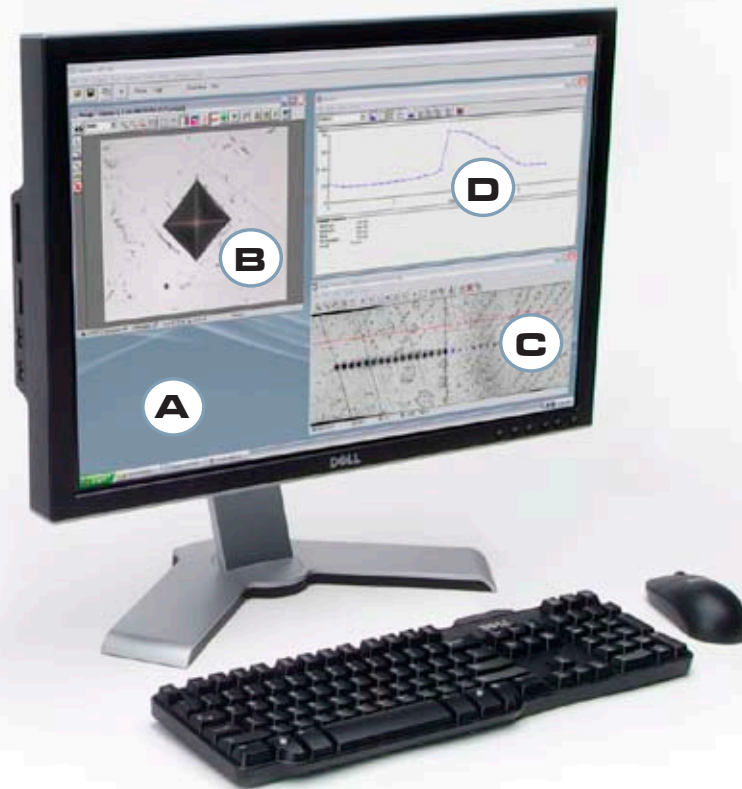
Retrofit your tester with Clemex CMT.Lite

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Intelligent Workspace Layout

The workspace layout is user-friendly and provides a detailed overview of the sample as well as all the necessary annotation, and measuring tools.

Full HD 1080

A HD Resolution
Maximize your workspace by running in a high-resolution environment of 1920 x 1000 pixels, or more.

B Image Window
The intuitive Image Window interface allows easy viewing of sample surface and indents.

C Stage Pattern Window
Create or modify traverses and/or patterns and their positions, then move the stage as prompted by the software.

D Results Window
Results are clearly displayed in graphical or tabular form. Track and review specific indents.

Intelligent Free Run

The Free Run feature allows you make more than one indent on a sample, anywhere, at will, and obtain statistically relevant results. No need to map out a pattern; simply position the sample, indent, click to measure, and then go to the next area you want to indent on the sample.

Measurements are automatically cumulated and displayed in the Results window, no matter how many indents are done.

STEP 1

Place the Sample

Place the sample in the sample-holder or just flat on the stage platen.

STEP 2

Position the Indent

Position the stage precisely using Clemex CMT.Lite's built-in cross-hairs, and then make the indent in the area of interest.
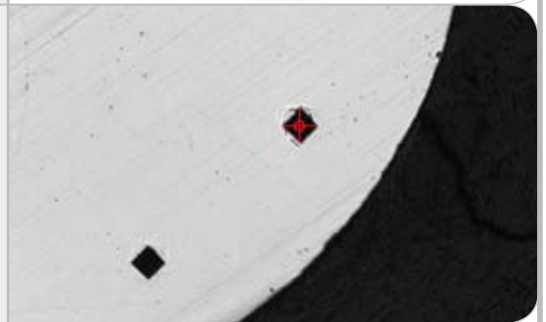
STEP 3

Measure

Rotate turret to the measuring objective and click on the Measure button. Results are automatically tabulated. Repeat Steps 2 and 3 as many times as necessary.
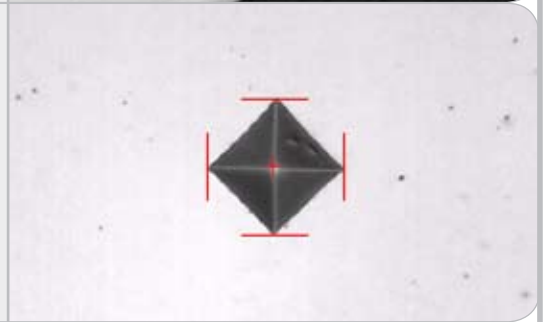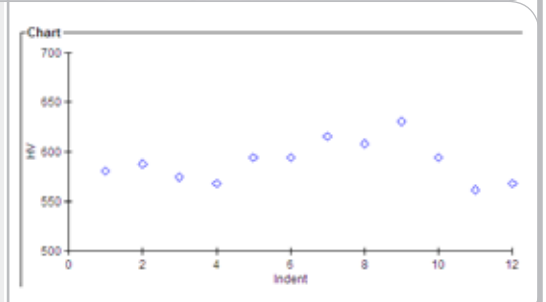
STEP 4

Get Results

Review results in graphical and/or tabular format. Export results to the spreadsheet application of your choice, or simply print standard or customized reports.
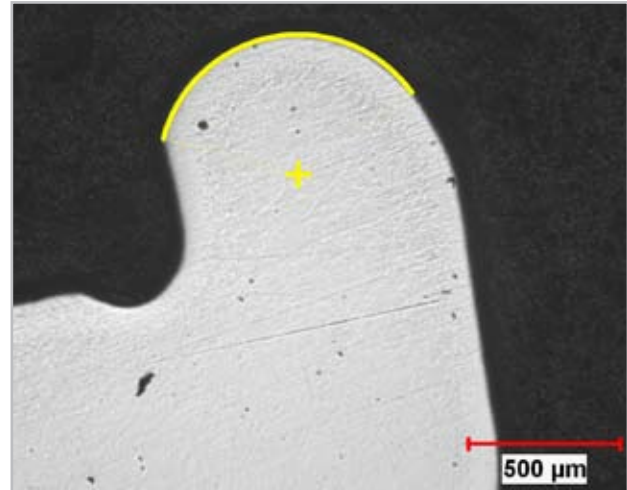
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Intelligent Annotation Tools

Positioning reference points and measuring where traverses are to be placed is made easy using the annotation tools in Clemex CMT.Lite. Conveniently located on the side of the Image Window, these tools perform multiple functions:

- Finding the center of the sample
- Drawing straight and/or parallel lines
- Adding ticker marks
- Adding measurements for report purposes
- And more…

No matter the complexity of the pattern layout, combining intelligent mosaics with annotation tools allows traverses and/or patterns to be positioned precisely where they are needed.
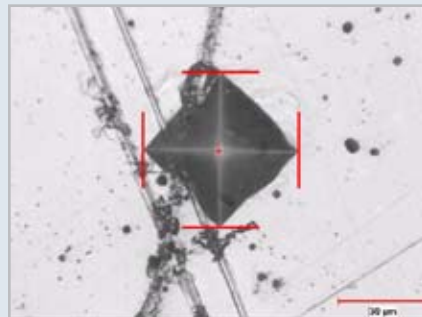
Background-Independent Detection

From perfectly polished to rough and etched samples, Clemex CMT.Lite has the edge over traditional microhardness testers. Using its unique auto-detection capabilities, Clemex CMT.Lite measures indents on any sample surface. For extreme cases, indents can be measured manually with cursors.
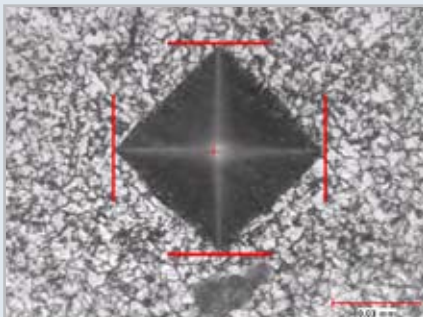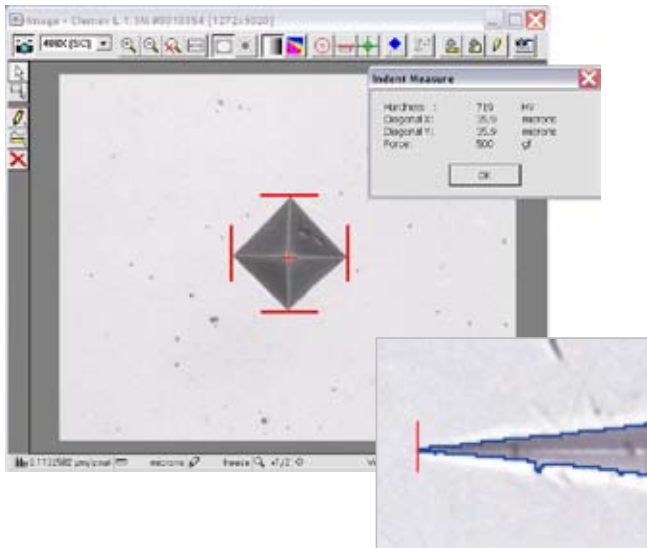
Etched Sample

Roughly polished sample
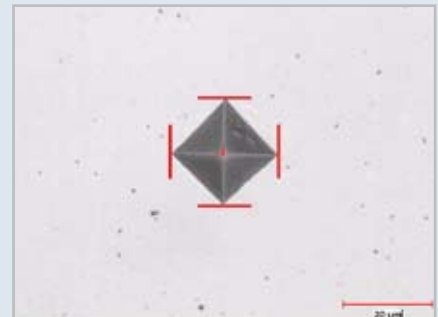
Clean sample

# Intelligent Precision

Precise Imaging

Using a high-resolution digital camera, Clemex CMT.Lite acquires images with a resolution of 1.3 megapixels; that's **300% more** than the competition. Additionally, indent diagonals are measured from tip to tip using dimensional calibration based on a high precision stage micrometer - unlike subjective calibration methods used by some systems.

Clemex CMT.Lite produces the sharpest images and finest details ever seen in microhardness testing. This means precise and repeatable results.

Focus Meter

Clemex CMT.Lite not only offers higher resolution images than the competition, it can compare how sharp an image is compared to previously viewed images. Used in conjunction with your manual focus, the Focus Meter takes the subjectivity out of focusing the image, and provides the best and sharpest image possible.
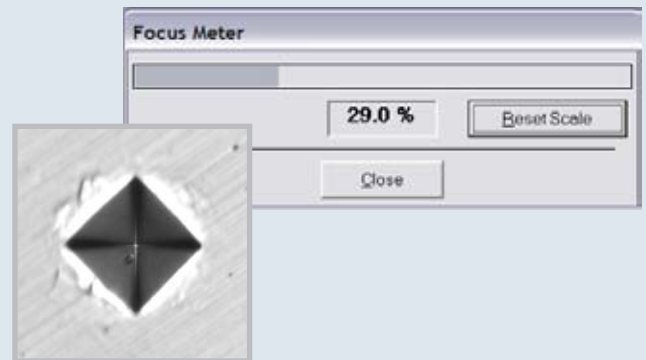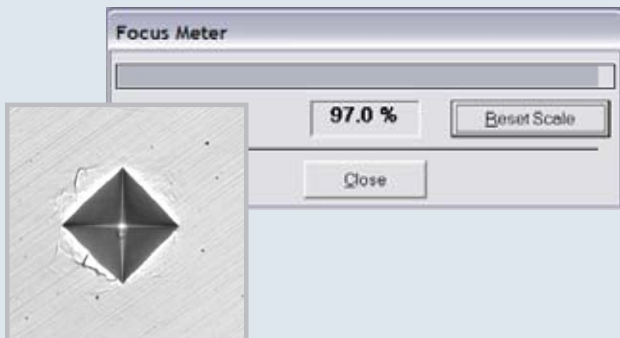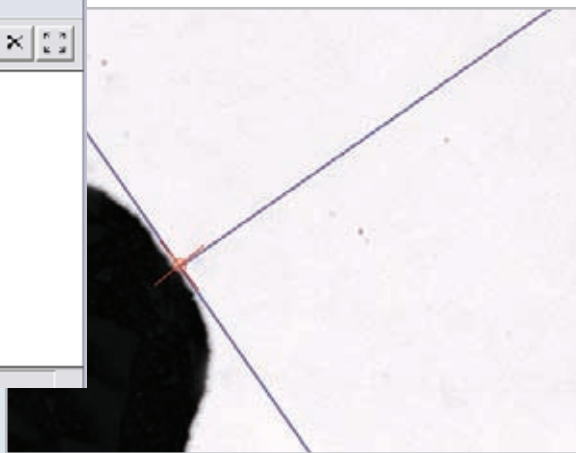
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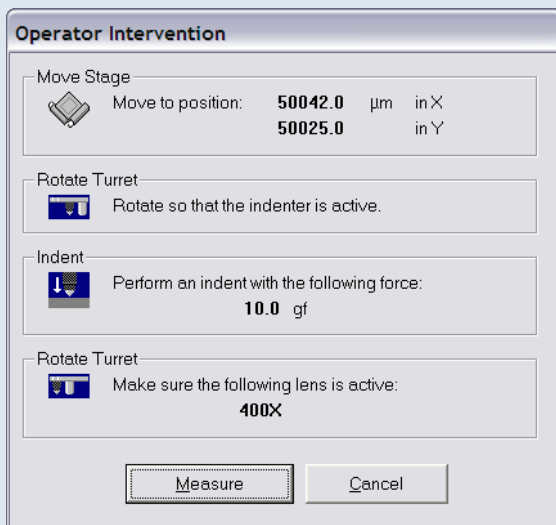## Multidirectional Traverses

Build single or multiple traverses/patterns. Clemex CMT.Lite will tell you exactly where to position the stage micrometer to follow traverses horizontally, vertically, even angled.
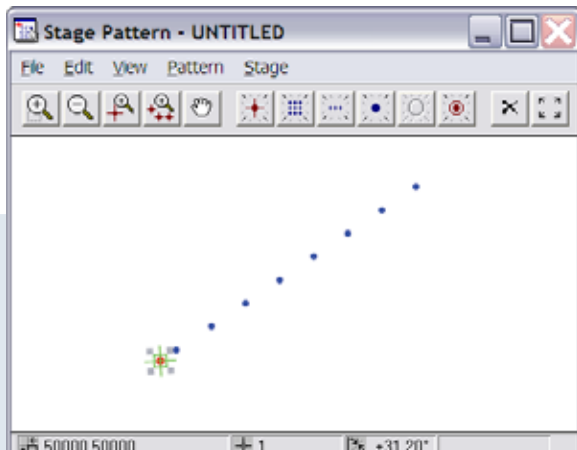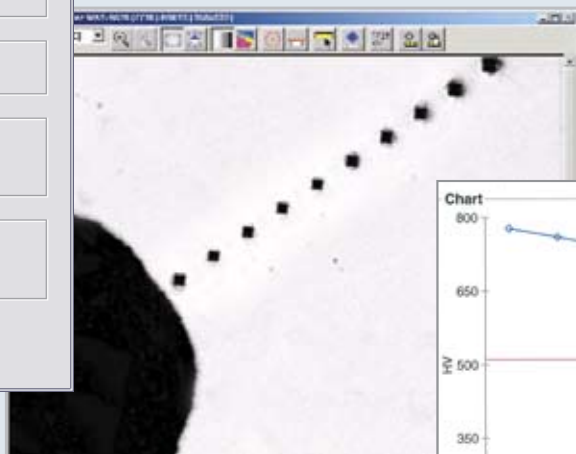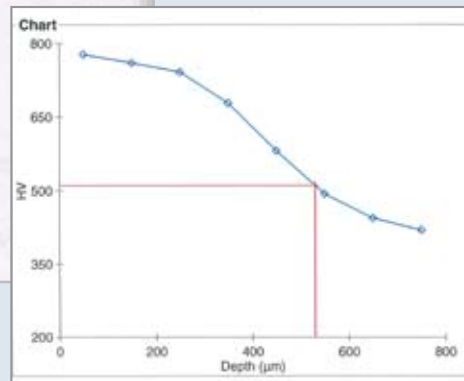

Stage Pattern Design

T-Bar Rotation tool

Clemex CMT.Lite shows indent position
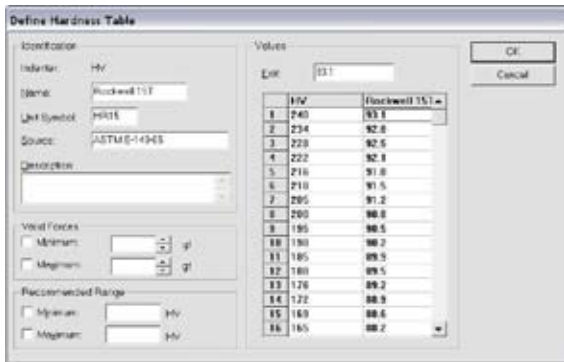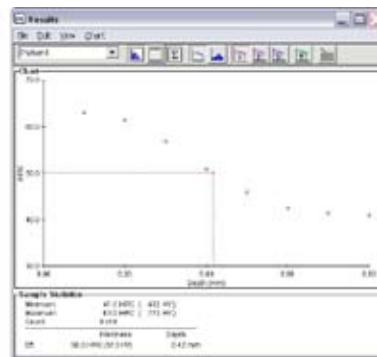

Indents

Case Depth

Intelligent Results

Multiple Conversion Tables

Clemex CMT.Lite's native hardness measurements are in HV or HK. Conversion tables for HRA, HRB, and HRC scales are in compliance with ASTM E-140 standards. Up to six additional custom conversion tables can be defined. Case depths are calculated automatically by selecting a case hardness value. A total of 4 case depths can be displayed simultaneously on the same graph.


Custom Conversion Table

Case Depth in HRC

Error-Free Validation

Compliance with ISO 6507, ASTM E 384, and other standards, is simplified with built-in validation functions. Indenting and measuring certified test blocks prior to the actual analysis routine, or at any predetermined time, guarantees that the instrument is in perfect operating condition. Clemex CMT.Lite uses invariant dimensional calibration, as opposed to empirically trying to match a test block by trial and error.
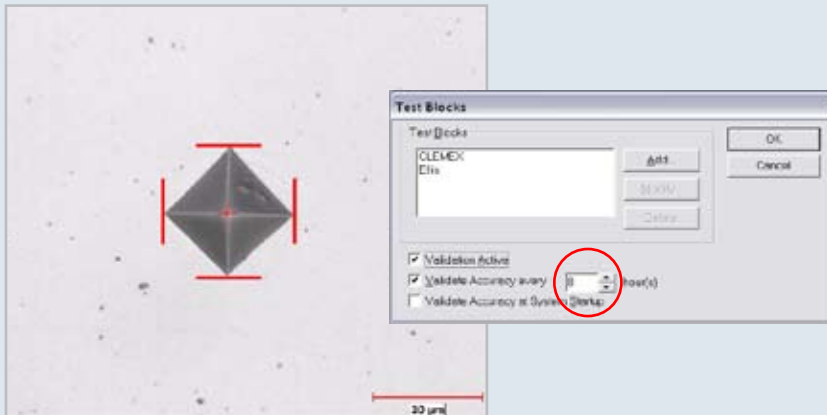

Validation set each 8 hours

Unique Clemex self-level vise with built-in Test Block holder.

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Report Generation

Print results directly from Clemex CMT.Lite or export data to the spreadsheet program of your choice for further statistical analysis. Images and histograms can be copied easily and laid out in standard, or customized, MS Office templates.
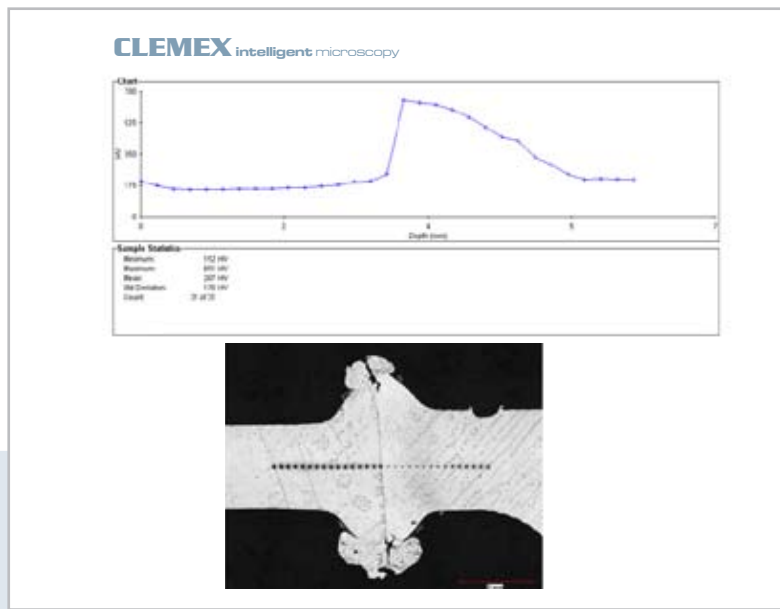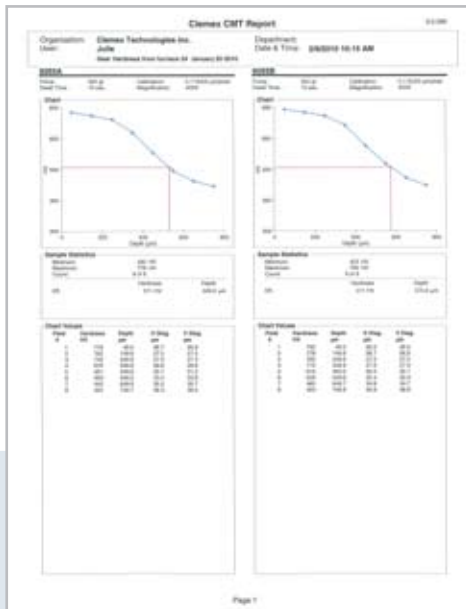
Samples

Clemex sample holders have unique designs, allowing users to analyze mounted or unmounted samples. Holding multiple samples, some holders accommodate a test block, allowing users to validate the calibration of the microhardness tester at any time without having to remove the sample. Samples are easily removed or inserted with a simple slide-in drawer system.

Special holders are purchased separately

Clemex CMT.Lite
Specifications
(Single or Dual)

Hardware

International Standards:	ASTM E-384, , EN ISO 6507/1-3
Camera :	Camera, B/W, USB2 (1.3 megapixel) with cable

Clemex CMT.Lite Software

Detection :	Auto and semi-auto with cursors
Hardness scale :	HV, HK, HRC, HRB, HRA, ASTM E-140, and 6 user-defined
Number of pattern & traverses :	99
Number of indents :	any number
Diagonals by Measurements :	Image Analysis, ASTM E-384, EN ISO 6507 compliant
Data display :	Diagonals d1/d2 (µm), hardness value HV/HK, test load (N/gf), dwell time (S), XY position
Statistics :	Mean value, Maximum/Minimum value, Standard Deviation, Case Depth (5 values), graphical display
Interface :	RS232 for supported tester
Operating System :	Windows 2000, XP Professional and Windows 7 ready

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www.clemex.com

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