



VICKERS / KNOOP / BRINELL / ROCKWELL MICRO HARDNESS TESTER

QNESS 60 A+ EVO

qatm.com/products/hardness-testing/micro-hardness-tester/qness-60-a-evo/

QNESS 60 A+ EVO

MICRO HARDNESS TESTER

The Vickers / Knoop / Brinell / Rockwell hardness tester series Qness 60 EVO takes micro hardness testing to a whole new level: The high-end laboratory devices of the latest generation combine the best of both worlds – hardness testing and microscopy without compromise and with maximum operating convenience.

The revolutionary optical system with color camera provides reproducible and reliable results every time.

The innovative “EVO” model of this Vickers / Knoop / Brinell / Rockwell hardness tester promises perfect automation and comes with a high-precision positioning control for all three axis systems with glass scales.

Flexible XYZ progressions for thousands of analysis points allow for exceptionally high throughput without operator intervention.

QATM micro hardness testers seamlessly integrate with the Verder Scientific IoT platform, featuring remote real-time monitoring, live notifications, effortless backups and automatic software updates.



QNESS 60 A+ EVO

PRODUCT ADVANTAGES

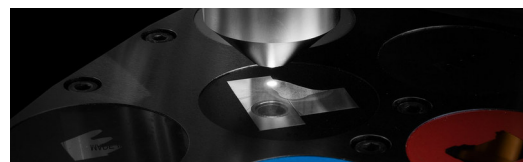
- Wide test force range (0.25 g – 62.5 kg)
- Ready to Test package, includes:
ASTM+DAkkS certified Vickers diamond and
5x / 20x / 50x lenses
- Dynamic test turret with 8-position tool
changer
- Qpix Control2 Software with innovative 3D
operation
- Modular activation of INSPECT microscopy
features
- Fully automated, unmanned test and
analysis cycles
- XYZ axis control with direct optical path
measuring system (table position accuracy
of +/- 2 µm)
- Variant A+ only: Sample image camera with
automatic image acquisition (52 x 39 mm)

QNESS 60 A+ EVO

REVOLUTIONARY OPTIC SYSTEM

The QATM-developed, in-house manufactured lens system sets new standards. As well as providing crystal clear image quality for hardness testing, Koehler illumination uses white LED light and motor-operated aperture shuttering to produce ideal contrast, even for high magnification images.

Experienced metallurgists agree the image quality provided by the Qness 10 / 60 A+ is comparable in all aspects with that of established sophisticated microscopes.



QNESS 60 A+ EVO

TEST METHODS & FORCE RANGE

QATM hardness testers accurately analyze according to all standard test methods and cover a wide spectrum. The electronically controlled, fully automated test cycles ensure fast, precise hardness testing, as well as fast method changes and automatic detection of the focal plane.

**BRINELL**

DIN EN ISO 6506, ASTM E-10

HBW 1/1 · HBW 1/2.5 · HBW 1/5 · HBW 1/10 · HBW 1/30 · HBW 2.5/6.25 · HBW 2.5/31.25 · HBW 2.5/62.5 · HBW 5/25 · HBW 5/62.5

ROCKWELL

DIN EN ISO 6508, ASTM E-18

HRA · HRF · HR15-N/T · HR30-N/T · HR45-N/T

VICKERS

DIN EN ISO 6507, ASTM E-92, ASTM E-384

HV 0.00025* · HV 0.0005* · HV 0.001 · HV 0.002 · HV 0.003 · HV 0.005 · HV 0.01 · HV 0.02 · HV 0.025 · HV 0.05 · HV 0,1 · HV 0,2 · HV 0,3 · HV 0,5 · HV 1 · HV 2 · HV 2,5 · HV 3 · HV 5 · HV 10 · HV 20 · HV 30 · HV 50 · HV 60

KNOOP

DIN EN ISO 4545, ASTM E-92, ASTM E-384

HK 0.001 · HK 0.002 · HK 0.005 · HK 0.01 · HK 0.015 · HK 0.02 · HK 0.025 · HK 0.05 · HK 0.1 · HK 0.2 · HK 0.3 · HK 0.5 · HK 11 · HK 2

Integrated conversions: DIN EN ISO 18265, DIN EN ISO 50150, ASTM E-140. * not according to standards

QNESS 60 A+ EVO

MICROSCOPY & ANALYSIS WITH QPIX INSPECT



PHASE ANALYSIS

DIN 9042, ASTM E-562, ASTM E-1245

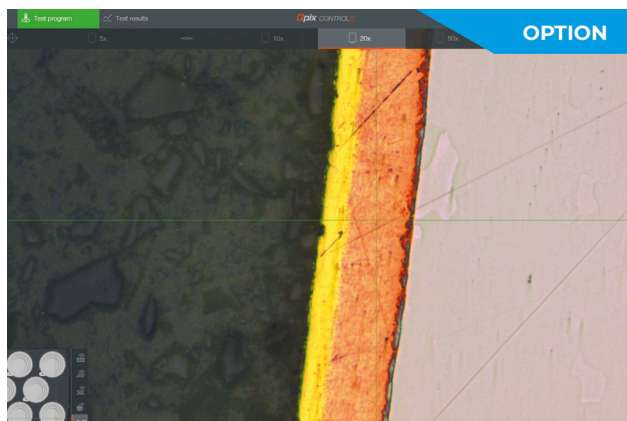
- | Automatic image object dimensioning
- | Provides analysis results as percentage proportions of a surface or as nominal surface values as tables or diagrams



PARTICLE SIZE DETERMINATION

DIN EN ISO 643, ASTM E-112

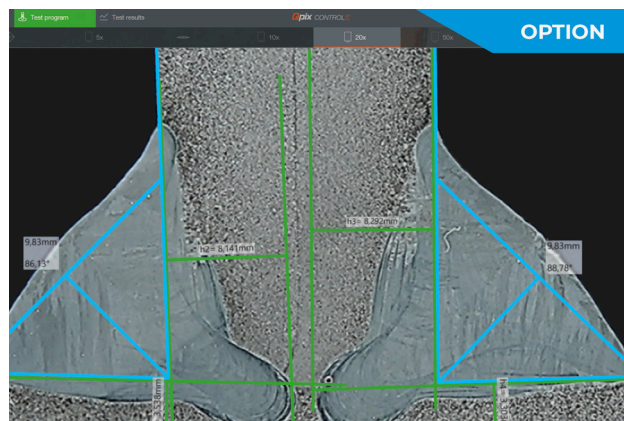
- | Particle size determined via linear or circular section method
- | Results of the analysis provided as tables or diagrams



LAYER THICKNESS MEASUREMENT

DIN EN ISO 1463

- | Semi-automated gauging of horizontal, vertical and radial layers.



WELD SEAM MEASUREMENT

DIN EN ISO 5817

- | Standardised measurement and evaluation of weld seams
- | Automatic good/bad evaluation and report generation

QNESS 60 A+ EVO

INNOVATIVE OPERATION

**TEST SPACE LIGHTNING**

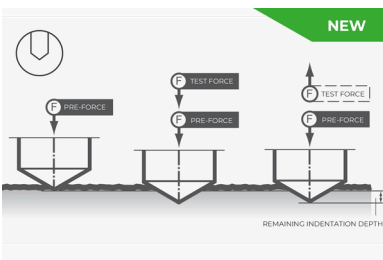
All devices are equipped with the new LED work space lighting: Simplified positioning of samples for single-piece tests.

**VERTICAL CONCEPT WITH 2 Z-AXES**

There are decisive benefits in distributing vertical movement across 2 axes. Via the first Z-axis there is dynamic motion control, allowing the indenter to be positioned towards the test surface quickly and conveniently at up to 30mm/s. The additional second Z-axis in the QATM system offers a high-resolution positioning system for greater precision in force application and focusing.

**8-POSITION TOOL CHANGER**

Up to 8 different test diamonds or lenses can be mounted to the ultra-modern turret of the Vickers / Knoop / Brinell hardness tester. The compact structure is angled at 20° to guarantee excellent test room visibility.

**NEW ROCKWELL TEST METHOD**

In addition to the Vickers, Knoop and Brinell optical methods, Rockwell measurements can now also be carried out with the new micro hardness testers. A special Rockwell test module has been developed for this purpose.

QNESS 60 A+ EVO

INTELLIGENT OPERATION



CAS TECHNOLOGY

Innovative Collision Avoiding System (CAS) technology protects the mechanical parts in the device using predictive 3D motion calculations to visualize the effects of collisions and operation errors.



DIGITAL CALIPER

The digital caliper is compatible with the Qpix Control2 system and reads the dimensions, height and diameter of components wirelessly and at the push of a button, entering them into the software. The test head height control in the A+ hardness tester enables the test height to be reached completely automatically with no need for manual input.

ILLUMINATED STATUS DISPLAY

BRINGS LIGHT INTO THE DARK

The illuminated QATM logo displays the current device status at a glance. The range of flash intervals indicates whether the device is operating automatically or is free to be used for new tasks for staff all around the lab. Furthermore, not only does the LED test space lighting, installed as standard, allow samples and sample holders to be set up correctly, in the A+ version it guarantees uniform light intensity for sample imaging.

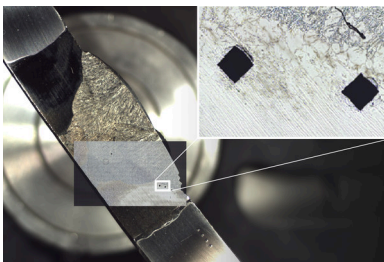


QNESS 60 A+ EVO

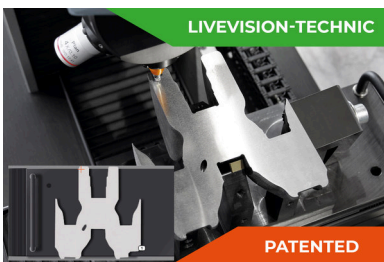
PIONEERING TECHNOLOGY

**SAMPLE IMAGE CAMERA**

In a few seconds the image of the sample is shot with the additional camera (field of view 52 x 39 mm). The image provides excellent navigational support within the software, particularly in combination with DOUBLE-VIEW TECHNOLOGY.

**HIGH-RESOLUTION SAMPLE IMAGE (HRI)**

If high-quality images of larger areas are required (e.g. for weld seam measurements), the area can be scanned using the HRI function. The Qpix Control 2 software automatically combines the individual images into one large overall image.

**CUSTOMER-SPECIFIC SAMPLE HOLDER**

Identical samples can be set up in the software in scale as a 3D model.

**EXACT POSITIONING AND A LARGE TEST SPACE**

All 3 axes are equipped with incremental measuring system. The axes and turret can be positioned to an accuracy of 4 µm, so the perfect solution for classic micro hardness testing. Series measurements can be repeatedly and accurately approached.

QNESS 60 A+ EVO

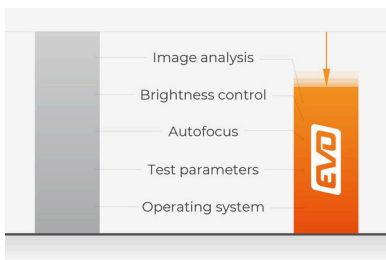
UNIQUE IMPLEMENTATION

**DIFFERENT TEST HEIGHTS**

The unique construction of the highly-dynamic tool changer turret allows the positioning of test pieces at various heights within the test area. Innovative CAS technology protects the unit from collisions.

**EVEN LARGER WORK ROOM**

The optional large slide doubles the test table surface area to 300 x 120 mm. If required, the test height can also be extended from 150 mm to 260 mm.

**OPTIMIZED PERFORMANCE AND SILENCED DESIGN**

Optimized testing parameters and shorter intervals for serial autofocus, brightness regulation and image analysis, facilitate unbeatable cycle times during everyday operation involving hardness testing devices of the new micro hardness tester product line; and it's even faster than the previous model.

**COMPREHENSIVE RANGE OF BASIC FUNCTIONS**

Optimized autofocus system · Automatic brightness regulation · Automatic image evaluation for hardness testing with multiple evaluation modes · Built-in protocol generator

QNESS 60 A+ EVO

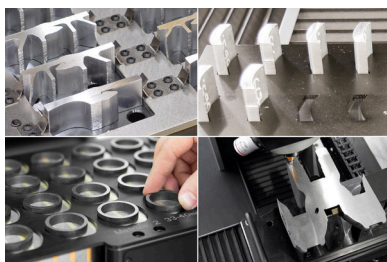
SAMPLE HANDLING

**EMBEDDED SAMPLES**

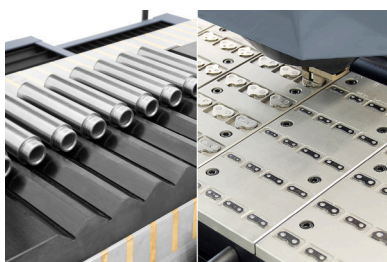
The secure clamping of samples thanks to a redesigned holder with a built-in clamping force limiter, simplifies sample centering and positioning. Available with 1, 4 or 8 holding positions and adapter rings for a large range of metric and imperial sample diameters.

**NON-EMBEDDED SAMPLES**

Components of almost all geometrical shapes can be fitted into the universal sample holder. Four clamping bolts can be set variably in various T-slots.

**SPECIAL CLAMPING DEVICES**

QATM is the right stop for advice on complex requirements and clamping devices! It would be our pleasure to advise, devise, customize and implement a solution for you. Only the right component clamping solution can guarantee reliable results.

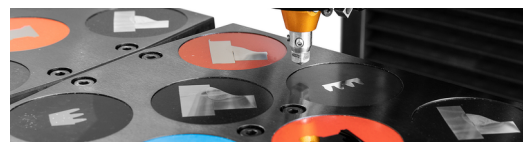
**IDENTICAL SAMPLE TESTS**

An entire range of relevant data, such as test patterns, test methods and user fields can be activated via pre-defined sample magazines. QATM can provide the most suitable clamping setup, matrices and cassette systems for every requirement.

QNESS 60 A+ EVO

FULL AUTOMATION

QATM sample holders are designed to ensure maximum throughput. 'A+' device test tables include enough space for an 8-fold sample holder as standard; up to two holders can be used in parallel with the optional 300 mm slide.



PRISMS

QATM prisms also enable round components to be tested with our devices. Benefit: Integration of the 3D model in the software automatically determines the center of the component and the highest point of each piece.



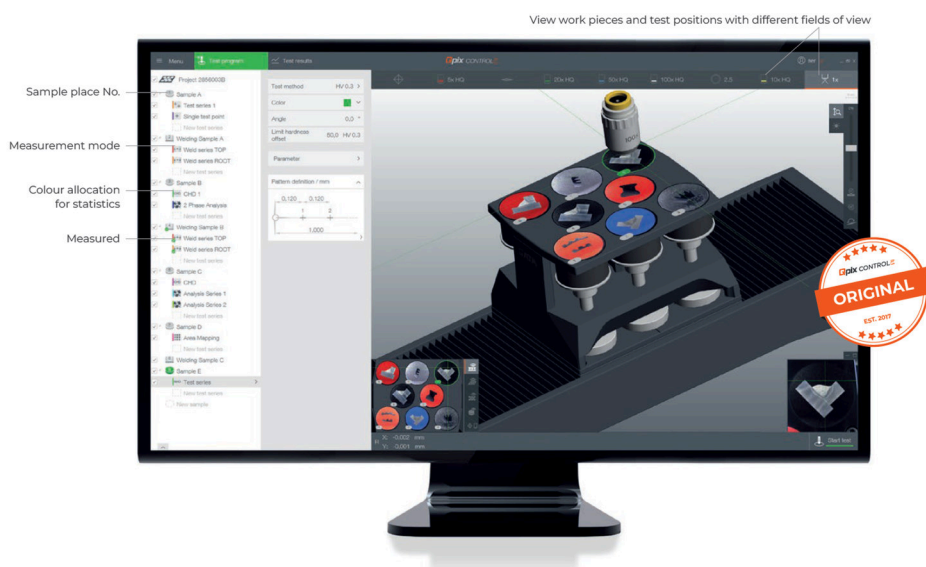
VICES

The clearly-organized, large and robust test room facilitates universality. Additionally, clamping samples straight into conventional vices reduces the effort required to prepare the sample, and expands the range of possible future test applications.

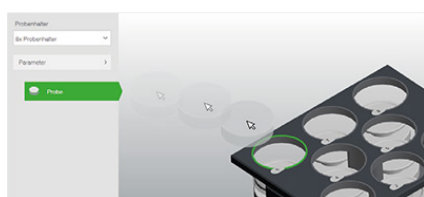
REVOLUTIONARY 3D OPERATING CONCEPT

QPIX CONTROL2 SOFTWARE

Intuitive, clearly organized and professional: Qpix Control2 is a pc-operated, next-generation software for Brinell / Knoop / Vickers / Rockwell hardness testers, developed based on customer feedback and input for maximum user-friendliness. The controlled test head benefits from automatic height adjustment and contactless exploration, complete integration of the sample holder, CAD compatibility with 3D imaging and a whole range of easily understood 3D control elements and views included in the software.

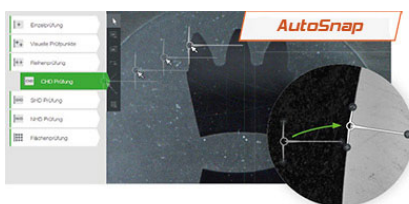


LOAD SAMPLES, LOAD ROW, START 3 STEPS TO THE RESULT



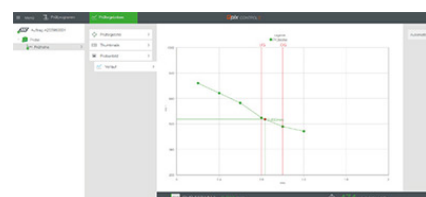
1 | LOAD SAMPLES

The machine moves automatically to sample holder height. Image of sample is taken automatically.



2 | LOAD ROW

Drag the row of test points to the desired position. The serial Auto-Snap function corrects the starting point of the test row automatically.

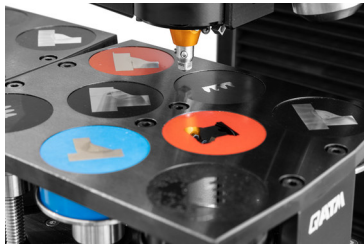


3 | START TEST SEQUENCE

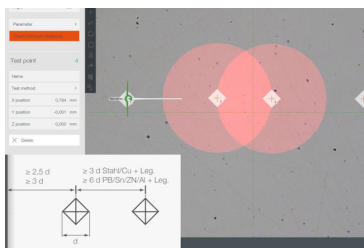
The test sequence is executed according to the applicable hardness testing standards.

QPIX CONTROL2

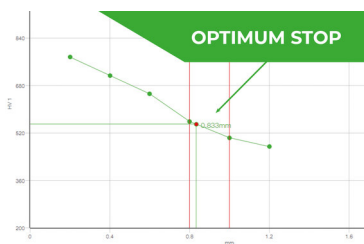
INNOVATIVE SOFTWARE FUNCTIONS

**FULLY AUTOMATIC HARDNESS TESTING**

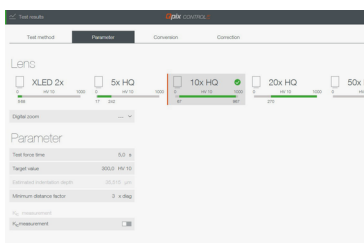
Several progressions and samples are created and completed “unmanned” (i.e. 60 progressions on 8 different samples in one test run).

**AUTOMATIC MINIMUM DISTANCE**

The distances between the test points are generated fully automatically to the minimum standard distance. If the distance is less than required by the standard, the affected test points are highlighted accordingly.

**SAVE TIME WITH OPTIMUM STOP**

Time-saving test mode ‘Complete all indentations – then evaluate’ and ‘Optimum Stop’ to complete test series as soon as the lower hardness limit has been undercut.

**SIMPLIFIED LENS SELECTION**

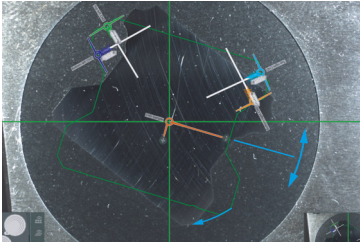
Based on the selected method (e.g. HV10), the suitable hardness range is displayed for each lens, which can be measured. The most suitable lens is also highlighted.

**DUAL SYSTEM**

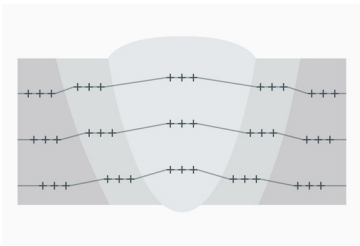
With the Qpix Control 2 software, several QATM devices (for example a Qeye 800 and a Qness 60 A+ EVO) can be operated with the same PC system.

QPIX CONTROL2

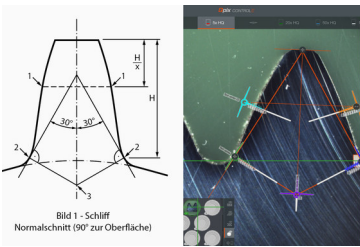
SPECIALISED SOFTWARE FUNCTIONS

**TEMPLATE FUNCTION**

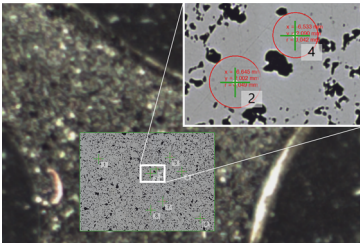
Ideal for repeated tests / components. Alignment of 'test point mappings' directly on the work piece with reference lines and bench marks. The sample image can be used in a clearly-structured test report.

**WELD SAMPLE TESTING AND ANALYSIS**

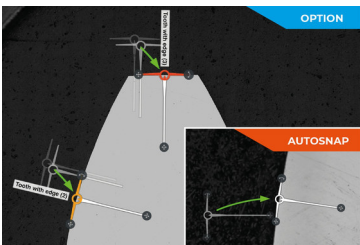
Serial provision of 'Advanced Welding' functions facilitates the simple, norm-compliant (e.g. EN ISO 9015 & EN ISO 22826) integration of test mapping for Brinell / Knoop / Vickers hardness testing.

**TOOTH FLANK TESTING**

The time-consuming creation of test points, especially with tooth flank testing, is minimized by means of pre-defined templates. The A+ version enables the entire normed procedure between HV30 and HV1 to be done by one single device.

**MODULE FOR SINTERED COMPONENTS**

The software automatically searches for a position in the selected area where a hardness test indentation can be placed so that it is placed at a suitable location.

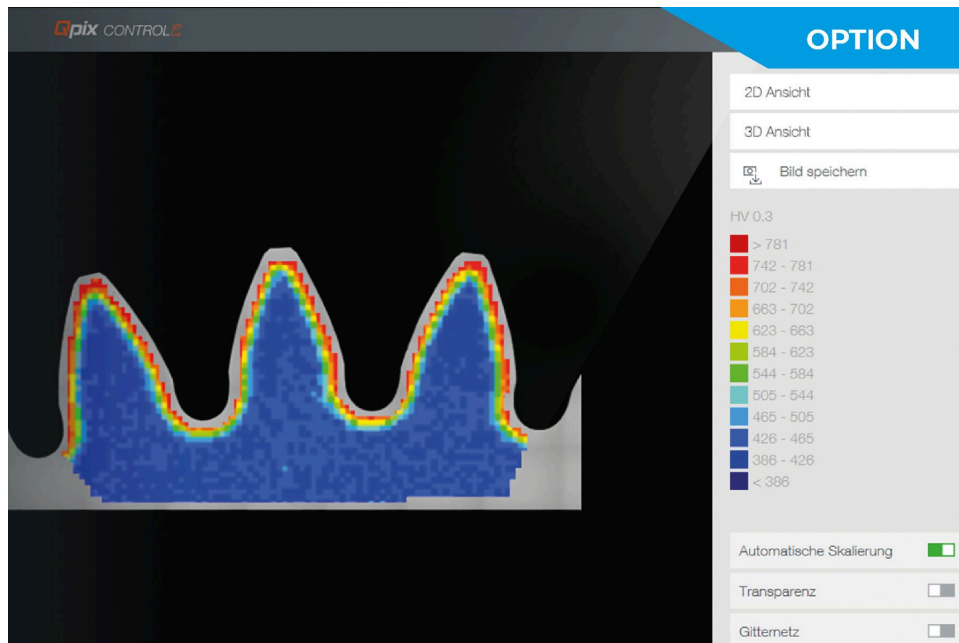
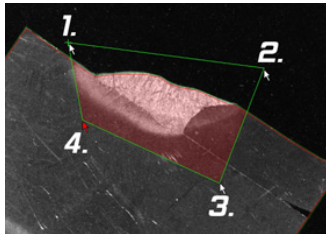
**EDGE RECOGNITION**

Edge recognition involves automatic adaption of test row starting points to the sample edge when using the according project and templates.

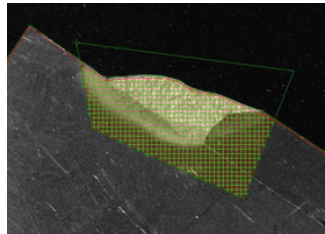
OPTIONAL SOFTWARE MODULE

2D/3D HARDNESS CHART

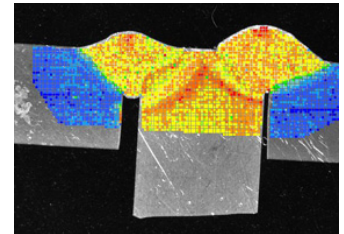
The optional software module '2D/3D hardness chart' is the perfect aid for the detailed determination of hardness distribution over the total cross section, especially for heat-treated materials. This is extremely important in material exploration, and also for weld testing or in damage analysis.



1 | CREATE AREA



2 | DEFINE GRID



3 | DISPLAY IN 2D

OPTIONAL UPGRADE

IPC TECHNOLOGY / ROTATABLE INDENTER

The operator can select the route and points for the Knoop indenter along each contour, either manually, via the software setting, or fully automatically. The compact indenter unit with a built-in rotation drive facilitates fully automated hardness testing in layers or along the edge of the workpiece.

STRUCTURAL ANALYSIS MADE EASY

QPIX INSPECT

The intuitive and user-friendly Qpix INSPECT software functionality provides a comprehensive toolbox for microscopic evaluations and result documentation. The multifunctional software can be customized for customer-specific measuring tasks and complemented with add-on modules.

INSPECT PHASE ANALYSIS

- | Evaluation of phase fractions according to DIN 9042, ASTM E-562 and ASTM E-1245
- | Automatic image object dimensioning

INSPECT LAYER THICKNESS MEASUREMENT

- | Determination of layer thickness according to DIN EN ISO 1463
- | Semi-automated gauging of horizontal, vertical and radial layers

INSPECT PARTICLE SIZE DETERMINATION

- | Particle size determined according to DIN EN ISO 643 and ASTM E-112 via linear or circular section method
- | Results of the analysis provided as tables or diagrams

INSPECT WELD SEAM MEASUREMENT

- | Standardised measurement and evaluation of weld seams
- | Automatic good/bad evaluation and report generation.

INDUSTRY 4.0

QCONNECT FOR CONNECTED TOMORROWS

Qconnect is the interface in QATM Qpix Control2 software, providing customers with a full portfolio of inter-device connectivity - from serial production, open XML interfaces (bi-directional) and pre-specified plug-in solutions, such as the QDAS Plug-In+, through to customer-specific connectivity solutions implemented completely by QATM.

REPORT, PRINT, PDF, XML IE, CSV, TXT, WORD, EXCEL, AUTO EXPORTER, MAIL, Q-DAS, AMS IE, IOT, LIMS, OPCUA, PCI IE (ERP, BABTEC, ORACLE, SAP)

IOT – INTERNET OF THINGS

REMOTE ACCESS TO YOUR DEVICES

All QATM hardness testers with QpixControl2 and QpixT2 software seamlessly integrate into the Verder Scientific IoT platform, providing enhanced functionality and seamless connectivity.

- | **Real-time Monitoring:** Monitor your machinery in real time, from anywhere in the world.
- | **Live Notifications:** Be ahead of the curve with immediate alerts and updates.
- | **Effortless Backup:** Simplify your data protection.
- | **Automatic & Free Software Updates:** Verder Scientific IoT ensures your customers' machines are consistently equipped with the latest software.

APPROVED QUALITY

CALIBRATION & MONITORING

CALIBRATION MANAGER

The QATM Calibration Manager reminds operators of the necessary tests at freely definable intervals. Test results are added to the ongoing statistical record at the push of a button.

PREMIUM HARDNESS TEST BLOCKS

Premium quality in comprehensive variety. Independent DAkkS (ISO/IEC 17025) calibration according to DIN EN ISO and ASTM including software for periodic norm-compliant tests.

LOGIN VIA NFC

The Qpix Control 2 software supports user login using an external NFC reader. Depending on the NFC tag/card, the customer's existing access cards can also be programmed in, for example.



TECHNICAL DATA

Test force range	0.25 gf - 62.5 kgf (0.00245 - 612.92 N)
Test method	Vickers, Knoop, Brinell, Rockwell
Test sequence	Fully automated / electronic force application
Z-axis	Dynamic, automated (CAS-Technic)
Z-axis travelling distance	150 mm (5.91"); Option: 260 mm (10.2")
Throat depth	170 mm (6.69")
Tool positions	8-fold motorized tool changer max. 3 hardness testing modules, max. 7 lenses
Camera system	5 Mpixel - CMOS color, USB3.0
Optical system	Upright microscope with Koehler lighting
Aperture diaphragm	motorized
Lenses	XLED 2x, 2.5x, 5x, 10x, 20x, 50x, 100x
Lens types	Standard (Achromat) and High Quality (Semi-apochromat) for hardness testing and microscopy XLED for optimised Brinell hardness testing
Field of view (acc. to equipment)	0.074x0.055 mm (100x) to 2.80x2.10 mm (XLED 2)

QNESS 60 A+ EVO

TECHNICAL DATA CONTINUED

Sample image camera	5 Mpixel - CMOS color, USB3.0 52 x 39 mm (2.05 x 1.54")
Test anvil / XY cross slide	Automatic cross slide
Table size	150 x 120 mm (5.91 x 4.72"); Option 300 x 120 mm (11.8 x 4.72")
Positioning accuracy	+/- 0.2 µm
Traverse path at cross slide	X 150, Y 150 mm (5.91 x 5.91"); Option: X 300 x Y 150 mm (11.8 x 5.91")
Control elements	Emergency stop, Start button, Joystick X/Y/Z
Software	Qpix Control2
Max. workpiece weight	50 kg (110 lbs)
Weight of basic device	60 kg (132.3 lbs)
Included basic equipment	Indenter Vickers ASTM + DAkkS; Lens HQ 5x, HQ 20x, HQ 50x
Interfaces	1 x USB 3.0
Power connection	100 – 240 V ~1/N/PE, 45-65 Hz

QATM CONSUMABLES

PERFECT HARDNESS TESTING

Hardness testing is more reliable, safe and efficient when processed with the right ingredients: knowledge, care and the right choice of consumables and instruments.

QNESS 60 A+ EVO

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qatm.com/contact/contact-form/?prefilltext=contact_form.request&product=Q01QA0209B

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