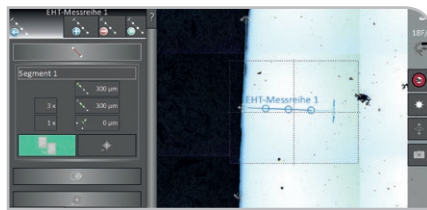
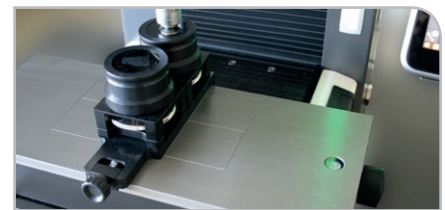


Carat 930



Carat-software



Carat-sample holder



**E-LAB**

An e-Lab-ready device can be connected to a PC with a network. Preparation procedures are thus reproducible and interchangeable.

**CONTENT**

HARDNESS TESTING AND IMAGE ANALYSIS

**CARAT 930** ..... 5.2 – 5.6

**FUNCTION**

» workplace with passive vibration cushioned table see 4.2

**ARTICLE**



**EQUIPMENT**

The complete device consists of a basic module and its equipment. When compiling a complete unit, the selection of the respective equipment is required. A device thus consists of several article numbers. The numbering in the ‚Specifications‘ correspond to the equipment.



**OPTION**

Options if desired, have to be selected in ordering equipment. They can not be easily retrofitted.



**ACCESSORIES**

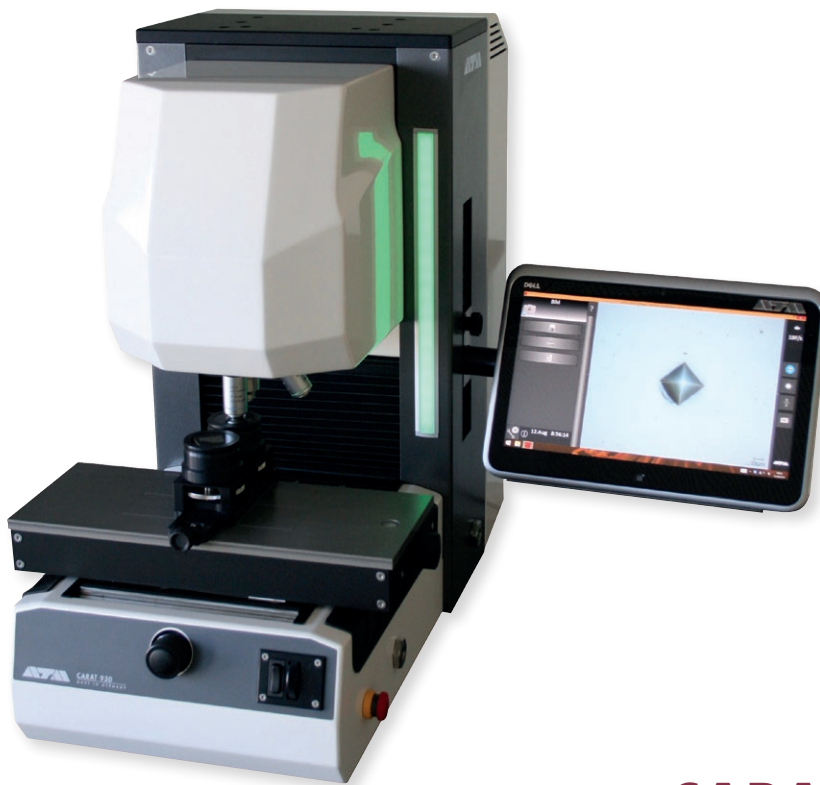
Accessories can be selected independently of the ordering equipment.

**MADE IN GERMANY**

All components used by us, as well as the construction design correspond to the normal device requirements for industry in Germany and EC Safety Regulations.

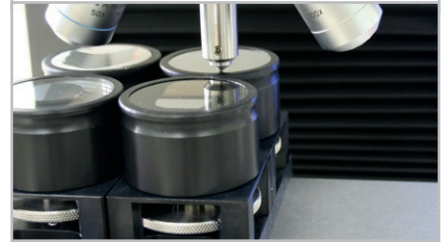
The units are finished in service friendly modular construction. Technical changes reserved.





### STABLE CONSTRUCTION

The vibration-damped cast Aluminium body comprises a robust basis for the high load-bearing Carat table with automatic X/Y axis and automatic Z axis with 8-times objective revolver (LED illumination). Plane parallel samples in the Carat sample clamping system and the fast lock vice 50 can be changed quickly and precisely using the "easy-clamp function".



## CARAT 930

The latest technology and intuitive application make the CARAT 930 into an extraordinary product for micro-hardness testing and optical evaluation.

Measurements are performed highly precisely and easily through

new, unrivalled methods.

Our robust basic unit can be optimally suited to your requirements with our own in-house software modules and the Carat sample clamping system.

### INTUITIVE OPERATION

Software has been developed to accommodate either touch or mouse in a 64-bit-Version (WIN 7/8). The tablet PC is best programmable for intuitive, up to date operation at the basic module attached to an adjustable bracket. All axes can be travelled via control module at the basic unit. Even the X & Y axes are controllable per joystick, adapting their speed to the individual objective. A scrolling wheel facilitates the especially fine dynamic travel of the Z axis. A button is available for rapid scroll.

### FULLY AUTOMATIC HARDNESS TESTING

The force transducer with microprocessor-controlled force regulation covers a loading range from 0.49 – 294.2 N with electronically-controlled load application. The corresponding software module carries out an evaluation such as with test load acc. to standard HV 0.05 – HV 30 (total test range 1g – 30 kg) with many series of measurement options. Outcomes can be issued individually in a dynamic report generator with value tables and hardness sequence curves.



### SOFTWARE

The dynamic live image presents a clearly arranged and flexible image of the sample via objective-independent image-in-image function and periphery-scan. The automatic brightness regulation and auto-focus support a rapid image result which can be accelerated even more by the automatic level recognition with automatic quick-focusing. In case of unevenness, focus on the sample can be reconstructed through planar scan.

BASIC MODULE



CARAT 930



Order No.: M0600000

- » basic equipment for hardness testing and optical evaluation
- » automatic Z-axis
- » integrated joystick with dynamic travel speed regulation for X-/Y-axis
- » fine dynamic scroll wheel and high-speed scroll key for controlling the Z-axis
- » safety concept
- » integrated levelling & transport assistant
- » vibration-damped cast Aluminium body
- » software package **Carat collect**
  - Win 7/8 (64-bit)-based
  - dynamic live-image with objective-independent image-in-image function
  - automatic brightness control
  - automatic focus
  - live image pick-up (save image and copy to clipboard), load images
  - intuitive operation with touch & mouse function
  - periphery scan for overview images (dynamic live image cut out is integrated)
  - focus reconstruction via planar scan
  - default image formats: jpg, png, tif etc.
  - e-Lab compatible
  - use of remote diagnosis and online operator support (using available Internet access)



CARAT-TABLE

EQUIPMENT



- » highly load bearing Carat-table with automatic X-/Y-axis

Equipment 1

Order No.: A0600031

X-axis	160 mm
Y-axis	100 mm
max. load	60 kg

Equipment 2

Order No.: A0600032

X-axis	250 mm
Y-axis	100 mm
max. load	60 kg

PC



Equipment 1

**Without PC**

Order No.: A0600004

Equipment 2

**Tablet-PC**

Order No.: A0600005

- » with height-adjustable bracket on the basic module
- » company LAN connection possible via WiFi

Equipment 3

**PC**

Order No.: A0600006

- » incl. 24"-monitor and mouse/keyboard

OPTICS



Equipment 1

Order No.: A0600014

- » motor-driven Carat 8 objective revolver
- » LED-illumination



## CAMERA

Equipment 1  
**Standard USB-camera**  
 Order No.: A0600017

1280x1024 px

Equipment 2  
**High resolution USB-camera**  
 Order No.: A0600018

1600x1200 px

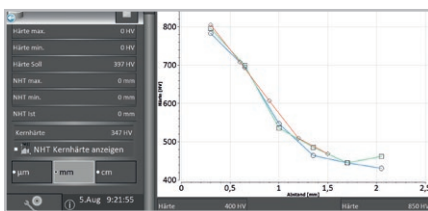
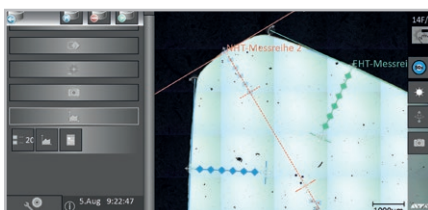


## OPTION

## AUTOMATIC CARAT-LEVEL RECOGNITION



Order No.: A0600015  
 » fully automatic quick-focus system



## CARAT 930 HARDNESS TESTING MODULE ACC. TO VICKERS



Order No.: A0600010  
 » force sensor with microprocessor-controlled force regulation for load range 0.49 -294.2 N  
 » fully-automatic & manual image evaluation and hardness calculation acc. to Vickers (DIN EN ISO 6507, ASTM E-384)  
 » test load acc. to the standard HV 0.05 – HV 30 (total test range: 1 g – 30 kg)  
 » electronically controlled load application  
 » compilation of single measuring points and definable series of measurements  
 » allocation of various characteristics (plane impression, finished impression, faulty impression) to single measuring points  
 » saving and accessing of already configured measurement series

## EQUIPMENT

## FREEHAND-MEASUREMENT SERIES-MODULE



Order No.: A0600026

## SOFTWARE (WIN7/8, 64 BIT)

## CARAT COLLECT (ADDITIONAL LICENCE)



Order No.: A0600020  
 » dynamic live image with objective-independent image-in-image function  
 » automatic brightness control  
 » automatic focus  
 » live image pick-up (save image and copy to clipboard), load images  
 » intuitive operation with touch & mouse function  
 » planar scan for overview images (dynamic live image cut-out is integrated)  
 » focus reconstruction via planar scan  
 » default image formats: jpg, png, tif etc.  
 » one licence each

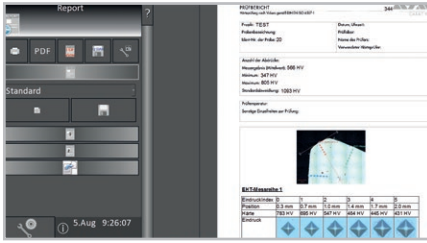
## CARAT SELECT



Order No.: A0600021  
 » measuring functions: lines, angle, areas, circles, polygon with dimensioning



SOFTWARE (WIN7/8, 64 BIT)



CARAT CONNECT



Order No.: A0600022

- » report generator
- » issue of overview images, value tables and diagrams
- » for hardness testing report acc. to DIN EN ISO 6507 and ASTM E -384
- » issue format: pdf
- » individually adapted and simple report compilation
- » dynamic overview image generator, e.g. for changing live image section

ACCESSORIES

NETWORKING/WLAN



Order No.: A0600024

- » commissioning of remote service (Internet connection required)
- » incl. 5 hours for installation

OBJECTIVE



Overview objective		2.5x	5x	10x	20x	40x	50x	100x
1.6x	N Plan*	Z0600012	Z0600013	Z0600014	Z0600015	Z0600016	Z0600017	Z0600018
	Z0600001		Z0600003	Z0600004	Z0600005	Z0600006		
	Hi Plan**							

\* high quality, \*\* medium quality

INDENTER



**Load A = HV 0,01**  
Order No.: Z0600020

**Load B = HV 0,2**  
Order No.: Z0600021

**Load C = HV 5**  
Order No.: Z0600022

CARAT CLAMPING SYSTEM



**Carat-clamping plate**

- Order No.: Z0600030
- » base with Easy-clamping function for Carat-table
  - » suitable to Carat-sample clamp and fast lock vice 50



**Carat-sample holder**

- Order No.: Z0600031
- » sample is fixed flat under the appropriate clamping ring

**Carat-clamping ring**

Ø 32 mm  
Order No.: Z0600033



Ø 40 mm  
Order No.: Z0600034



Ø 50 mm  
Order No.: Z0600035



Ø 25,5 mm  
Order No.: Z0600032



Ø 30 mm  
Order No.: Z0600036

Ø 38 mm  
Order No.: Z0600038

» other sizes on request



SPECIFICATIONS

CARAT 930 – completely equipped for hardness testing

Load for load range*	0.49 – 294.2 N
Test method (DIN EN ISO 6507, ASTM E-384)*	HV 0.05 - HV 30
Total test range	1g – 30 kg
CARAT-TABLE	
X-axis	1 160 mm
	2 250 mm
Y-axis	100 mm
max. load	60 kg
Z-axis	150 mm

Power supply	
CARAT 930	100 - 240V 50/60 Hz (1 Ph/N/PE)
Tablet-PC	100 - 240V 50/60 Hz (1 Ph/N/PE)
PC	230V 50/60 Hz (1 Ph/N/PE)
Monitor	110 – 240V 50/60 Hz (1Ph/N/PE)
WxHxD approx.	375 x 650 x 670 mm
Weight approx.	65 kg

