



**Physical Test Solutions**

Innovative Solutions in Material Test Equipment

# Microhardness Testers



MICROHARDNESS  
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# Microhardness Testers

Physical Test Solutions (PTS) offers a comprehensive line-up of microhardness testers ranging from manual to digital to semi-automatic, to meet the performance and price necessities for the application. Many of the microhardness include an automatic turret.

## Platinum Series Microhardness Testers

The **Platinum** series is the top-of-the-line tester from **PTS**. For microhardness tests, model MMT-X1 constitutes a true cutting edge solution that has the following features:

- ◆ Clear TFT LCD touch panel
- ◆ Four measuring modes (Fracture Toughness Function = KC, Light Load Brinell Hardness Calculation Function, X Bar and Cylindrical Correction Function).
- ◆ “Help function” that ensures the most suitable and accurate measuring requirements.
- ◆ Load mechanism and structure provides accurate positioning and repeatability.
- ◆ Ingenious turret mechanism capable of handling up to 2 indenters and 4 objective lenses mounted on the turret at the same time.
- ◆ The unit has the largest workspace in the market capable of for testing samples of 120 mm maximum height and 160 mm maximum depth.
- ◆ Minimum reading of 0.01µm minimum reading at 200X ~ 1000X with X3 and X7 models only.

### Specifications:

- ◆ Test Load: 5, 10, 25, 50, 100, 200, 300, 500, 1000 gf
- ◆ Automatic Loading and releasing mechanism
- ◆ Load applying speed: 50 µ m/sec
- ◆ Dwell time: 5-40 sec
- ◆ Indenter: Standard: 1 (HV), Option: 2 (HV,HK)
- ◆ Objective lens: Standard: 2 (x400, x100)
- ◆ Option: Max. 4 (x5-x100)
- ◆ Eyepiece lens: Standard x10
- ◆ Total Magnification: Standard (x400,x100)
- ◆ Maximum measuring length: 250 µ m
- ◆ Minimum graduation: 0.5 µ m
- ◆ Minimum measuring unit: 0.1 µ m
- ◆ Manual turret
- ◆ Manual readout of Hardness conversion: ASTM (E-140)
- ◆ GO / No Go Function
- ◆ Maximum specimen height: 120 mm
- ◆ Maximum specimen depth: 160 mm
- ◆ Accuracy: according to JIS B7725 and ASTM E-384

Dimensions: W250 X D520 X H530 mm

Weight: 35 Kg

Power supply: Single phase AC100-240V 50/60Hz



### Standard Accessories:

- ✓ Manual X-Y stage (built in)
- ✓ Precision vice (Max. opening: 50mm)
- ✓ Standard test block (HMV700)
- ✓ Diamond Indenter
- ✓ Mechanical type measuring microscope
- ✓ 40 X Object lens (built in)
- ✓ 10 X Object lens (built in)
- ✓ Level adjusting leg, level
- ✓ Light source bulb (12V 18W)
- ✓ Spare fuse (100-120 3A, 200-240 2A) (2)
- ✓ Machine cover and auxiliary tools (1 set )

# Platinum Series Vickers Hardness Testers

For Vickers tests, the **Platinum** series has model VMT-7 S.

## Specifications:

- ◆ Test load: 0.3, 0.5, 1, 5, 10, 20 Kgf
- ◆ Automatic loading and releasing mechanism
- ◆ Automatic turret
- ◆ Load Applying Speed 85  $\mu$  m/sec
- ◆ Dwell time: 5-99 sec
- ◆ Minimum measuring unit: 0.1  $\mu$  m
- ◆ Maximum measuring length: 600.0  $\mu$  m
- ◆ Magnification: x200
- ◆ Data output: Centronics (standard)
- ◆ RS232C or serial output selectable
- ◆ Data Memory: Maximum 256 test data
- ◆ Hardness conversion in compliance with ASTM (E-40)
- ◆ Go / N0 go operation with upper and lower limit setting and HI/OK/LOW display
- ◆ Data statistics: Data output and display: Maximum value, minimum value, dispersion (R), mean value, standard deviation
- ◆ RS232C communication line: Baud Rate 1200/2400/4800/9600 bps selectable, Error detection, Parity even/Parity none/selectable
- ◆ Accuracy: conform to JIS B7725 and ASTM E-92
- ◆ Maximum specimen height: 260 mm
- ◆ Maximum specimen depth: 165 mm

Dimensions: W220 X D580 X D770 mm.

Weight: 70 Kg.

Power supply: Single phase AC100 - 240V 50/60 Hz



## Standard Accessories:

- ✓ Hardness standard block
- ✓ Diamond indenter (built in)
- ✓ Electronic measuring microscope
- ✓ Object lens (x20)
- ✓ Anvil 60mm flat
- ✓ V-shape anvil
- ✓ Small level
- ✓ Light source bulb (12V, 18V) (2)
- ✓ Spare fuse 100-120 3A, 200-240 2A (2)
- ✓ Level adjusting leg (4)
- ✓ Auxiliary tools and machine cover



Leveling Device



Touch panel display



Vickers Test Bloc

# Bronze Series Microhardness and Vickers Hardness Testers

The **PTS Bronze** series of microhardness and Vickers hardness testers provides quality solutions at affordable prices. The Bronzed series of microhardness and Vickers models constitutes one of the most comprehensive lines of microhardness and Vickers hardness testers. The **Bronze** series includes manual models, direct reading models and computer readout models:

## Manual Microhardness Testers

### MHTB

Our most basic microhardness tester is a manual unit with automation test load application. Hardness numbers are obtained by taking the readings and going to the tables. The unit has three selectable dwell times of 10, 15 and 30 seconds and total magnification of 500X and 125X.

#### Specifications:

- ◆ Measuring range: 5-3000HV
- ◆ Test force: 0.09807, 0.2452, 0.4904, 0.9807, 1.961, 2.942, 4.904, 9.807N, (10, 25, 50, 100, 200, 300, 500, 1000 gf)
- ◆ Automatic test and load application
- ◆ Dwell time 10, 15, 30 seconds
- ◆ Manual HV readings via filar micrometer
- ◆ eyepiece and hardness tables
- ◆ Microscope magnification: 500X, 125X
- ◆ Minimum scale value of measuring microscope: 0.125µm
- ◆ Maximum height of test piece: 75mm
- ◆ Throat depth: 100mm

#### Standard Accessories

- ✓ Coordinate anvil
- ✓ Thin shaft anvil
- ✓ Thin plate anvil
- ✓ Large V-notch anvil
- ✓ Small V-notch anvil
- ✓ Diamond pyramid penetrator
- ✓ Test block



**MHTB**

Power supply: 220V or 110V AC, 50/60Hz

Dimensions: 340×160×375 mm

Weight: approximately .40 kg

### MHTM-MT

This microhardness tester also provides digital readout for load and dwell times and in addition has a motorized turret

#### Specifications

- ◆ Motorized turret for Lens/Indenter switch
- ◆ Test force 9.807, 4.903, 2.942, 1.961, 0.9807, 0.4903, 0.2452, 0.0981 N, (1000, 500, 300, 200, 100, 50, 25, 10 gf)
- ◆ Programmable application, duration and removal of load

- ◆ Dwell time 5 - 60 sec selectable, (In step of) 5 seconds
- ◆ Measuring range: 5 HV - 3000 HV
- ◆ Microscope Objective: 40x; 10x, Eyepiece: 15x
- ◆ Minimum detection 0.025  $\mu\text{m}$
- ◆ Measuring mode Reading with Eyepiece and from tables
- ◆ Maximum Specimen height, 75 mm
- ◆ Standard hardness block
- ◆ Sheet metal specimen clamp
- ◆ Thin cylinder clamp
- ◆ Parallel-jaw vice
- ◆ SDE-100 Digital imaging eyepiece and Software



**MHTM-MT**

Power supply: 110/220 VAC, 50/60 Hz  
 Dimensions: 54 x 50 x 64 cm (Packing size)  
 Gross weight: 45 Kg

### **MHTSM-MT**

This is a semi-manual microhardness tester with a motorized turret that features an LCD screen that provides hardness scale (HV or HK) information, date, dwell time, brightness and operates the motorized turret. After taking the D1 (D2) from eyepiece micrometer and entering them, the hardness value is displayed on the LCD screen. A built-in printer prints measured data (HV or HK hardness values, maximum, minimum, average, standard deviation, etc.)

### **SPECIFICATIONS**

- ◆ Test force: 9.807, 4.903, 2.942, 1.961, 0.9807, 0.4903, 0.2452, 0.0981 N, (1000, 500, 300, 200, 100, 50, 25, 10 gf)
- ◆ Program-controlled load application and dwell time
- ◆ Dwell time: 5 – 60 sec selectable, (5 sec. steps)
- ◆ Measuring range: 5 HV – 3000 HV
- ◆ Microscope Objective: 40x; 10x(observation only), Eyepiece: 15x
- ◆ Total magnification: 600x; 150x (observation only)
- ◆ Minimum measurement: 0.025  $\mu\text{m}$  Measurement/Photo switch Optical path
- ◆ Reading with Eyepiece and digital display and from tables
- ◆ Maximum test height: 90 mm
- ◆ Digital microscopic eyepiece, Adaptor, USB port and Software for viewing and editing images on a computer.



**MHTSM-MT**

### **Standard Accessories**

- ◆ Objective 40x,10x,
- ◆ Vickers indenter (Built on tester)
- ◆ Hardness test block
- ◆ Sheet specimen clamp
- ◆ Thin cylinder clamp
- ◆ Parallel-jaw vice
- ◆ SDE-100 Digital imaging eyepiece and Software

Power supply: 220 VAC, 50/60 Hz  
 Dimensions 54 x 50 x 64 cm  
 Gross weight 45 Kg

# Direct Reading Microhardness Testers with Motorized Turrets

## MHTD-MT

This is a direct reading model that features a motorized turret and a digital imaging camera and software that send digital images to a computer via a USB port.

### Specifications

- ◆ Test force: 9.807, 4.903, 2.942, 1.961, 0.9807, 0.4903, 0.2452, 0.0981 N, (1000, 500, 300, 200, 100, 50, 25, 10 gf)
- ◆ Program-controlled load application and dwell time
- ◆ Dwell time: 5 – 60 sec selectable, (5 sec. steps)
- ◆ Measuring range: 5 HV – 3000 HV
- ◆ Microscope Objective: 40x; 10x(observation only),
- ◆ Eyepiece: 15x
- ◆ Total magnification: 600x; 150x (observation only)
- ◆ Minimum measurement: 0.025  $\mu\text{m}$
- ◆ Measurement/Photo switch Optical path
- ◆ Max. Test height: 90 mm
- ◆ Digital microscopic eyepiece, Adaptor, USB port and Software for viewing and editing images on a computer

### Standard Accessories

- ◆ Objective 40x,10x,
- ◆ Vickers indenter
- ◆ Hardness test block
- ◆ Sheet specimen clamp
- ◆ Thin cylinder clamp
- ◆ Parallel-jaw vice
- ◆ Printer
- ◆ SDE-100 Digital imaging eyepiece and Software

Power supply: 110/220 VAC, 50/60 Hz

Dimensions: 54 x 50 x 64 cm (Packing size)

Gross weight: 47 Kg



## MHTLCD-MT

An esthetical streamline unit with LCD display and motorized turret, this tester is loaded with useful features.

### Features

- ◆ LCD display of: Hardness values, Diagonal lengths, Load, Dwell time, Min, Max, Average, Divergence, Standard deviations, converted HRC HRA values.
- ◆ Test results are provided with the built-in printer.
- ◆ Automatic motorized turret
- ◆ Touch buttons and the LCD screen to set hardness scale (HV or HK), date, dwell time, brightness, operate turret, etc.
- ◆ After taking the D1 (D2) from eyepiece micrometer and entering them, the hardness value is displayed on LCD.
- ◆ Built-in printer prints measured data (HV or HK hardness values, Max, Min, Average, standard deviation, etc.)



### Specifications

- ◆ Test force: 9.807, 4.903, 2.942, 1.961, 0.9807, 0.4903, 0.2452, 0.0981 N (1000, 500, 300, 200, 100, 50, 25, 10 gf)
- ◆ Program-controlled load application and dwell time
- ◆ Dwell time: 5 – 60 sec selectable, (5 sec. steps)
- ◆ Measuring range: 5 HV – 3000 HV
- ◆ Microscope Objective: 40x; 10x(observation only), Eyepiece: 15x
- ◆ Total magnification: 600x; 150x (observation only)
- ◆ Minimum measurement: 0.025  $\mu$ m
- ◆ Measurement/Photo switch Optical path
- ◆ Max. Test height: 90 mm
- ◆ Digital microscopic eyepiece, Adaptor, USB port and Software for viewing and editing images on a computer



### Standard Accessories

- ✓ Objective 40x, 10x,
- ✓ Vickers indenter (Built on tester)
- ✓ Hardness test block
- ✓ Sheet specimen clamp
- ✓ Thin cylinder clamp
- ✓ Parallel-jaw vice
- ✓ SDE-100 Digital imaging eyepiece and Software

Built-in Printer

Power supply      220 VAC, 50/60 Hz  
Dimensions        54 x 50 x 64 cm  
Gross weight      45 Kg

# Microhardness Testers with Computer Readout

## MHTCR-MT-LCD

An automatic tester with LCD display and loaded with features.

### FEATURES

- ◆ LCD display of: Hardness values, Diagonal lengths, Load, Dwell time, Min, Max, Average, Divergence, Standard deviations, converted HRC HRA values, etc.
- ◆ Test results are provided with the built-in printer.
- ◆ Automatic motorized turret
- ◆ Touch buttons and the LCD screen to set hardness scale (HV or HK), date, dwell time, brightness, operate turret, etc.
- ◆ After taking the D1 (D2) from eyepiece micrometer and entering them, the hardness value is displayed on LCD.
- ◆ Built-in printer prints measured data (HV or HK hardness values, Max, Min, Average, standard deviation, etc.)

### SPECIFICATIONS

- ◆ Test force: 9.807, 4.903, 2.942, 1.961, 0.9807, 0.4903, 0.2452, 0.0981 N (1000, 500, 300, 200, 100, 50, 25, 10 gf)
- ◆ Program-controlled load application and dwell time
- ◆ Dwell time: 5 – 60 sec selectable, (5 sec. steps)
- ◆ Measuring range: 5 HV – 3000 HV
- ◆ Microscope Objective: 40x; 10x(observation only), Eyepiece: 15x
- ◆ Total magnification: 600x; 150x (observation only)
- ◆ Minimum measurement: 0.025  $\mu\text{m}$
- ◆ Measurement/Photo switch Optical path
- ◆ Maximum test height: 90 mm
- ◆ Digital microscopic eyepiece, Adaptor, USB port and Software for viewing and editing images on a computer



### Standard Accessories

- ✓ Objective 40x, 10x,
- ✓ Vickers indenter (Built on tester)
- ✓ Hardness test block
- ✓ Sheet specimen clamp
- ✓ Thin cylinder clamp
- ✓ Parallel-jaw vice
- ✓ SDE-100 Digital imaging eyepiece and Software

### Microhardness Software

- Image acquisition, reading from files, pasting from clipboard.
- Saves images and data in built-in image database.
- Report generation and print out of images and data.
- Hardness Calculation according to ASTM E 384 (Vickers, Knoop) and ASTM E 92 (Vickers).

Power supply: 220V or 110V AC, 50/60Hz

Dimensions: Main tester: 54 x 50 x 64 cm (Packing size)

# Vickers Hardness Testers

## VHTM-MT-5/10/30

A stylish Vickers hardness tester, this unit comes in three models with capacities of 5 Kg., 10 Kg., and 30 Kg. In addition to providing digital display of load and dwell time, this unit also has a motorized turret.

### Features and Specifications:

- ◆ Motorized turret
- ◆ Test force: 4.903, 9.807 19.61, 29.42, 49.03, 98.07 N
- ◆ Symbol HV0.5, HV1, HV2, HV3, HV5, HV10
- ◆ Automatic Load application, removal of load
- ◆ Dwell time 5 - 60 seconds in steps of 5 seconds
- ◆ Measuring range: 5 HV - 3000 HV
- ◆ Microscope Objective: 20 x(For measurement), 10x (For observation). Eyepiece: 15 x
- ◆ Maximum diagonal length: 0.32 mm
- ◆ Minimum division: 0.05  $\mu$ m
- ◆ Optical path Measurement / Photo switch
- ◆ Manual reading from hardness Tables
- ◆ Maximum test height: 160 mm
- ◆ Throat distance 135 mm

Power: 110/220 VAC, 50/60 Hz  
Dimensions: Net:22 x 54x65 cm,  
Packing:32x62x75cm  
Weight: Main tester: 38 Kg Gross: 60 Kg



### Standard Accessories

- ✓ Objective 20x,10x,
- ✓ Vickers indenter(Installed)
- ✓ Standard hardness block
- ✓ X-Y stage
- ✓ Sheet specimen clamp small circular stage

## VHTD-MT-5/10/30

A direct reading Vickers tester that features a motorized turret and a digital display and print-out of hardness values, average, divergence and standard deviation.

### Features and Specifications:

- ◆ Digital display and print-out of Hardness values, Average, divergence, standard deviation
- ◆ Motorized turret
- ◆ Test force: 4.903, 9.807 19.61, 29.42, 49.03, 98.07 N
- ◆ Symbol HV0.5, HV1, HV2, HV3, HV5, HV10
- ◆ Automatic Load application, removal of load
- ◆ Dwell time 5 - 60 sec. In steps of 5 seconds
- ◆ Measuring range 5 HV - 3000 HV
- ◆ Microscope Objective: 20x(For measurement), 10x(For observation) Eyepiece: 15x
- ◆ Maximum diagonal length: 0.32 mm
- ◆ Minimum division 0.05  $\mu$ m



## VHTD-MT-5/10/30

- ◆ Optical path Measurement / Photo switch
- ◆ Maximum test height: 160 mm
- ◆ Throat distance 135 mm

Power: 110/220 VAC, 50/60 Hz

Dimensions: Net:22 x 54 x 65 cm, Packing: 32x62x75cm

Weight: Main tester: 38 Kg Gross: 60 Kg

## Standard Accessories

- ✓ Objective 20x, 10x,
- ✓ Vickers indenter(Installed)
- ✓ Hardness test block
- ✓ X-Y stage
- ✓ Sheet specimen clamp
- ✓ Small circular stage
- ✓ Printer

## VHTCR-MT-5/10/30

A computerized Vickers tester that features automatic test and load application, digital readout of load, dwell time and has a motorized turret. The unit is enhanced with a Video Test Software that provides image acquisition, reading from files, and pasting from clipboard. The software saves images and data in built-in image database, has report generation and print out of images and data. Hardness values are calculated according to ASTM E 384 for Vickers and Knoop, and ASTM E 92 for Vickers.

## Features and Specifications:

- ◆ Motorized turret
- ◆ Test force: 4.903, 9.807 19.61, 29.42, 49.03, 98.07 N
- ◆ Symbol HV0.5, HV1, HV2, HV3, HV5, HV10
- ◆ Automatic Load application, removal of load
- ◆ Dwell time 5 - 60 seconds in step of 5 seconds
- ◆ Measuring range: 5 HV - 3000 HV
- ◆ Microscope Objective: 20x(For measurement), 10x (For observation)  
Eyepiece: 15x
- ◆ Maximum diagonal length: 0.32 mm
- ◆ Minimum division 0.05  $\mu$ m
- ◆ Optical path Measurement / Photo switch
- ◆ Manual reading from hardness Tables
- ◆ Maximum test height: 160 mm
- ◆ Throat distance 135 mm



## Standard Accessories

- ✓ Objective 20x, 10x,
- ✓ Vickers indenter(Installed)
- ✓ Hardness test block
- ✓ X-Y stage
- ✓ Sheet specimen clamp
- ✓ Small circular stage

## Microhardness Software

- Image acquisition, reading from files, pasting from clipboard.
- Saves images and data in built-in image database.
- Report generation and print out of images and data.
- Hardness Calculation according to ASTM E 384 (Vickers, Knoop) and ASTM E 92 (Vickers).

Power: 110/220 VAC, 50/60 Hz

Dimensions: Net:22 x 54x65 cm, Packing:32x62x75cm

Weight: Main tester: 38 Kg Gross: 60 Kg

# Sales Offices

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