



MICRO VICKERS
Hardness Testers

HTMV 1000MDT V3.0

Fully Automatic Micro-Vickers Hardness Tester

- > Automatic Micro Vickers hardness tester adopts precision optics, high mechanical features and perfect indentation for high accuracy measurements. With digital measuring eyepiece directly shows the hardness value and show on the screen, moreover test mode, test force, indentation length, dwell time, test numbers and conversion scale can be displayed. Test results can be saved for checking or be printed out by printer.
- > All the testing parameters can be selected on the side touch screen panel computer
- > CCD image acquisition system
- > Separate screen for better view of results.

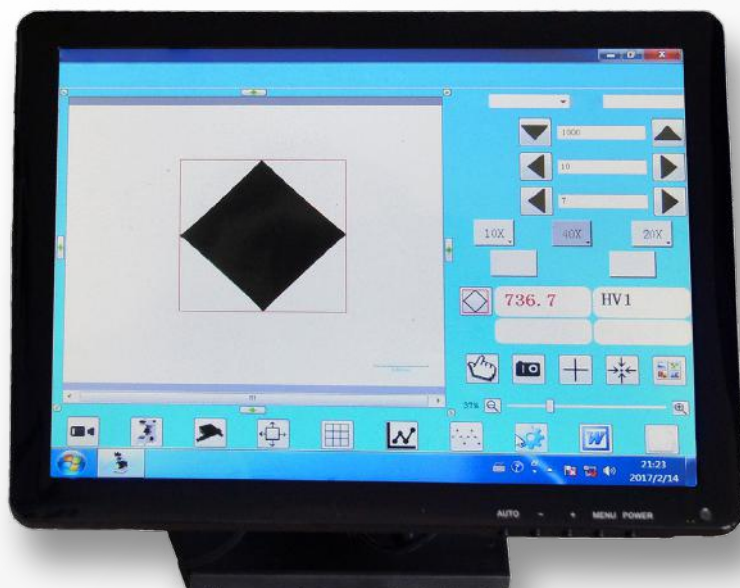
- > With two indenters and three objectives, automatic recognition and shifting between objective and indenter, automatically get the Vickers or Knoop hardness value
- > Hardness scale conversion
- > With USB, VGA and LAN interfaces, the hardness measurement can be printed out by USB interface
- > Automatically save the measuring data, generate the hardness-depth curve and save as WORD or EXCEL document
- > Motorized X-Y test table, automatic focusing and automatic measuring

Application

- > Suitable for ferrous metal, non-ferrous metals, IC thin sections, coatings, ply-metals, glass, ceramics, agate, precious stones, thin plastic sections etc.

Reference standard

- > ISO 6507, ASTM E384, JIS Z2244



Displayed value repeatability %			
Standard hardness range	HV5-HV100	HV0.2- HV5	<HV0.2
≤225HV	≤3	≤6	≤9
>225HV	≤2	≤4	≤5

Displayed value tolerance %																
Hardness	Hardness HV															
	50	100	150	200	250	300	350	400	450	500	600	700	800	900	1000	1500
HV 0.01																
HV 0.015	10															
HV 0.02	8															
HV 0.025	8	10														
HV 0.05	6	8	9	10												
HV 0.1	5	6	7	8	8	9	10	10	11							
HV 0.2		4		6		8		9		10	11	11	12	12		
HV 0.3		4		5		6		7		8	9	10	10	11	11	
HV 0.5		3		5		5		6		6	7	7	8	8	9	11
HV 1		3		4		4		4		5	5	5	6	6	6	8
HV 2		3		3		3		4		4	4	4	4	5	5	6
HV 3		3		3		3		3		3	4	4	4	4	4	5
HV 5		3		3		3		3		3	3	3	3	3	4	4
HV 10		3		3		3		3		3	3	3	3	3	3	3
HV 20		3		3		3		3		3	3	3	3	3	3	3
HV 30		3		3		2		2		2	2	2	2	2	2	2
HV 50		3		3		2		2		2	2	2	2	2	2	2
HV 100				3		2		2		2	2	2	2	2	2	2

1: When the indentation diagonal length is less than 0.020 mm, the table does not display the value.
 2: For intermediate values, the maximum allowable error can be obtained by interpolation.
 3: About the Micro Hardness Tester value in the table is 0.001mm or indentation diagonal length of the average of 2% of the maximum permissible error given, please select the bigger.

Model	HTMV 1000MDT V3.0
Test force control	Weights - Load electronic controlled
Load selection	Right side handle
Main-load	10gf, 25gf, 50gf, 100gf, 200gf, 300gf, 500gf, 1000gf
Dwell time	0-60s
Loading Time	12s
Load applying speed (indenter descending speed)	0.04mm/s
Test force tolerance	±1%
Test cycle type	Fully-automatic type: Focus, load, dwell, unload, measurement of the indentation, show of the hardness value
Hardness scales	HV0.01, HV0.025, HV0.05, HV0.1, HV0.2, HV0.3, HV0.5, HV1 Optional: HK0.01, HK0.025, HK0.05, HK0.1, HK0.2, HK0.3, HK0.5, HK1
Hardness test range	1HV~2967HV
Hardness resolution	0.1HV
Repeatability Hef/%	Vickers: Table 1 Knoop: Table 3
Scale conversion	HV, HK, HRA, HRB, HRC, HRD, HRE, HRF, HRG, HRK, HR15N, HR30N, HR45N, HR15T, HR30T, HR45T, HS, HBW - According to ASTM E140
Turret type	Automatic
CCD camera pixel	1.3 Million
Microscope eyepiece	10x
Objective	10x, 40x
CCD Min. measurement unit	0.025µm (40x objective) (10x objective is for observation purpose only)
CCD Max. measurement length	170µm (40x objective) (10x objective is for observation purpose only)
Measurable min. indent/indentation	10µm
Optical path	2 ways eyepiece
Optical function	Optical diaphragm/field aperture / color filter
Illumination	Halogen lamp
Auto-focus time	3 s
Indenters	Diamond Micro-Vickers indenter
N. of indenters	1
Nose cone support diameter	3mm
Indent measure algorithms	Automatic
Auto reading time	0.3 sec/1 indent

Model	HTMV 1000MDT V3.0
Specimen detection	Yes
Movement program patterns	Zigzag, circle, arc, straight line, random, teaching etc.
Vertical test capacity	185mm
Horizontal test capacity	130mm
Anvils dimensions	Motorized cross test table size: 110x110mm, flat clamping test table size:76x80mm, thin specimen test table size: ø 76mm, Filament clamping test table size: ø 60mm
Max. weight on anvil	50kg
X-Y travel	50x50mm
X axis speed	high: 1mm/s, low: 0.25mm/s
X axis resolution	0.002mm
Y axis speed	high: 1mm/s, low: 0.25mm/s
Y axis resolution	0.002mm
Z axis movement	Motorized
Z axis resolution	0.00125mm
Z axis speed	high: 1mm/s, low: 0.0625mm/s
Display type	Touch screen
Display dimensions	15" external touch pad 8" built in tester touch screen
Input mode	By tap touch
Displayed data	Hardness value, D1, D2, dwell time, test number, conversion scale, test force, date and time, indentation, objective
Statistics or functions	Max, min, average value, report, hardness curve
Data memory	Internal SSD 64GB storage
Data output	Word, Excel format
Energy saving mode	Yes
Interfaces	2x USB, 1x VGA, 1x LAN, 1x RS232 (15pin)
Safety devices	Emergency stop button
Operation temperature	23±5°C
Operation rel. humidity	≤65%
Weight	52kg
Dimensions	560x335x675mm
Power supply	230V, 50Hz
Voltage variance	±10%
Absorbed Power	500W

Hardness Knopp - Displayed value repeatability %		
Standard hardness range	Displayed value repeatability %	
	HK0.01~HK0.5	HK0.5~HK2
100~250HK	9	8
>225~650HK	5	5
>650HK	4	4

Hardness Knopp - Displayed value tolerance %										
Hardness Scale	Max allowed tolerance of display value %									
	Hardness value (HK)									
	50	100	150	200	250	300	350	400	450	
HK0.01	5	6	7	9	9	10	11	-	-	
HK0.025	5	5	5	6	6	7	7	8	8	
HK0.05	5	5	5	5	5	5	5	6	6	
HK0.1	5	5	5	5	5	5	5	5	5	
HK0.2	5	5	5	5	5	5	5	5	5	
HK0.3	5	5	5	5	5	5	5	5	5	
HK0.5	5	5	5	5	5	5	5	5	5	
HK1	5	5	5	5	5	5	5	5	5	

Note: table 3 and 4 valid only for optional Knoop hardness testing.

Standard accessories		
Model	Description	Q.ty
MVT-DE10X	10x digital measuring eyepiece	1 pc
MVT-10XOB	10x objective	1 pc
MVT-40XOB	40x objective	1 pc
MVI-136	Diamond Micro-Vickers indenter	1 pc
MVT-MCTT110	Motorized cross test table 110x110mm	1 pc
MVT-FLCTT7680	Flat clamping test table 76x80mm	1 pc
MVT-TSTT76	Thin specimen test table ø 76mm	1 pc
MVT-FICTT60	Filament clamping test table ø 60mm	1 pc
MVT-ETS15	External 15" touchscreen	1 pc
HB-700800HV1	Hardness block 700-800 HV1	1 pc
HB-400500HV0.2	Hardness block 400-500 HV0.2	1 pc
HB-700800HK1	Hardness block 700-800 HK1	1 pc
MVT-HL1520	Halogen lamp 12V, 15-20W	1 pc
MVT-4RS	Horizontal regulating screw	4 pcs
MVT-LV	Level	1 pc
MVT-TSRC	Touch screen remote control	1 pc
MVT-TP	Touch pen	1 pc
MVT-MSE	Mouse	1 pc
MVT-SKUSB	USB storage key	1 pc
MVT-PC	Power cable	1 pc
MVT-6WS	Weights	6 pcs
MVT-WA	Weight axis	1 pc
MVT-SK	Service keys	1 set
MVT-ADC	Anti-dust cover	1 pc

Optional accessories	
Model	Description
MVT-KDI	Diamond Knoop indenter
MVT-DCTT120120	Digital cross test table 120x120mm
MVT-LTT108	Large plane test table ø 108mm
MVT-VTT40	V-shaped test table ø 40mm
MVT-LTT108	Large plane test table ø 108mm
MVT-WB	Work bench
MVT-EXPR	External printer

Vickers hardness blocks	
Model	Range
HB-V0.05/200-750	200-750 HV 0.05
HB-V0.1/200-750	200-750 HV 0.1
HB-V0.2/200-750	200-750 HV 0.2
HB-V0.3/200-750	200-750 HV 0.3
HB-V0.5/200-750	200-750 HV 0.5
HB-V1/200-750	200-750 HV 1

Knoop hardness blocks	
Model	Range
HB-K0.05/200-750	200-750 HK 0.05
HB-K0.1/200-750	200-750 HK 0.1
HB-K0.2/200-750	200-750 HK 0.2
HB-K0.3/200-750	200-750 HK 0.3
HB-K0.5/200-750	200-750 HK 0.5
HB-K1/200-750	200-750 HK 1

HTMV 1000MD V2.0



Automatic Micro-Vickers Hardness Tester

> Automatic Micro-Vickers Hardness Tester integrated with state of art technologies, optics, mechanical features, electronic control, digital imaging, image analysis, computer processing. Automatic test table, automatic and manual reading, hardening depth, film thickness, distance between two points of metals and some non-metallic materials and various films. Sample surface morphology function.

Application

> Suitable for ferrous metal, non-ferrous metals, IC thin sections, coatings, ply-metals, glass, ceramics, agate, precious stones, thin plastic sections etc.

Reference standard

> ISO 6507, ASTM E384, JIS Z2244



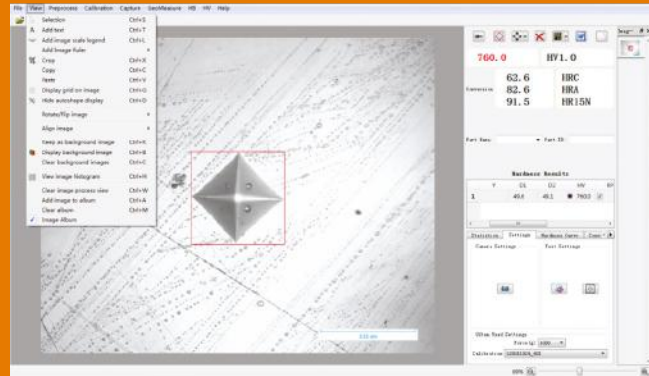
Displayed value repeatability %			
Standard hardness range	HV5~HV100	HV0.2~ <HV5	>HV0.2
≤225HV	≤3	≤6	≤9
>225HV	≤2	≤4	≤5

Parameters:

- > Operating system: WIN XP, WIN7
- > Digital imaging system
- > High resolution: 130 million pixel
- > High speed acquisition: 1280x1024 resolution, 25 FPS
- > High definition: Black and white images are clear and defined
- > Target surface size: 1/2"

X-Y automatic test table

- > Table size: 100x100x50 mm
- > Maximum travel: 50x50 mm
- > Minimum step: Less than 1µm
- > Movement speed: Adjustable
- > Control mode: Manual control, electric control, computer control



X-Y test table - computer control mode

- > Location movement: Test table directly moves to the software input coordinates
- > Point movement: Selecting a point on the sample, the table moves to place it below the indenter
- > Directional movement: Click the eight directions to move the test table with setted up movements
- > Arbitrary movement: Click any directions to move the test table with setted up movements for sample surface study
- > Variable speed movement: Two speeds (fast and slow) test table moving, adjustable
- > Other function: Original position arbitrary setting, automatic reset, mechanical limit, etc.

Measuring method

- > Automatic mode—Automatic test table moving (X and Y direction) + automatic

- > Manual mode 1—Automatic loading + manual eyepiece scribed line measurement
- > Manual mode 2—Manual test table moving + manual focus + Automatic / manual measurement

Automatic / manual reading

- > Automatic reading time: Single indentation reading time is about 300 milliseconds
- > Automatic measurement precision: 0.1µm
- > Automatic measurement repeatability: ±0.8%
- > Manual reading: Manual pick, automatic search points, 4 points measurement, 2 diagonal measurement

Results save / output

- > Save / output : measurement data and parameters, including D1, D2, HV, X, Y, etc.
- > Save / output : effective hardening layer depth curve report, image.

Displayed value tolerance %		Hardness HV															
Hardness		50	100	150	200	250	300	350	400	450	500	600	700	800	900	1000	1500
HV 0.01																	
HV 0.015	10																
HV 0.02	8																
HV 0.025	8	10															
HV 0.05	6	8	9	10													
HV 0.1	5	6	7	8	8	9	10	10	11								
HV 0.2		4		6		8		9		10	11	11	11	12	12		
HV 0.3		4		5		6		7		8	9	10	10	11	11		
HV 0.5		3		5		5		6		6	7	7	8	8	9	11	
HV 1		3		4		4		4		5	5	5	6	6	6	8	
HV 2		3		3		3		4		4	4	4	4	5	5	6	
HV 3		3		3		3		3		3	4	4	4	4	4	5	
HV 5		3		3		3		3		3	3	3	3	3	4	4	
HV 10		3		3		3		3		3	3	3	3	3	3	3	
HV 20		3		3		3		3		3	3	3	3	3	3	3	
HV 30		3		3		2		2		2	2	2	2	2	2	2	
HV 50		3		3		2		2		2	2	2	2	2	2	2	
HV 100				3		2		2		2	2	2	2	2	2	2	

1: When the indentation diagonal length is less than 0.020 mm, the table does not display the value.
 2: For intermediate values, the maximum allowable error can be obtained by interpolation.
 3: About the Micro Hardness Tester value in the table is 0.001mm or indentation diagonal length of the average of 2% of the maximum permissible error given, please select the bigger.

Software function:

- > **System linkage:** System - hardness tester linkage through communication interface.
- > **Pressure linkage:** When converting test force, the system perceives the test force change and displays in real time.
- > **Turret linkage:** Software shifting controls between objective and indenter without manual control.
- > **Loading linkage:** Automatic loading control.
- > **Measuring linkage:** The software controls the turret, and after loading, directly reading the Vickers hardness value.
- > **Light source linkage:** Manual focus.
- > **Image acquisition:** Real time indentation display, saving and printing.
- > **Automatic measurement:** Automatically detect the four indentation vertices.

- > **Automatic point search:** The system automatically finds the best vertices, greatly reduce the human error.
- > **Diagonal measurement:** By just one mouse click on the top left and lower right corner of the indentation the hardness value will be displayed.
- > **Four point measurement:** Selecting the four indentation points the hardness value will be displayed.
- > **Hardness conversion:** According to international standard, automatically convert the hardness value between Brinell, Rockwell, Vickers and Knoop with real-time display.
- > **Graphic report:** Automatic record of measurement data, automatic generation of hardness-depth curves, saving or printing reports generated as Word documents.
- > **Results statistics:** Output the multiple measured indentation results in Excel format and automatically counts the measurement number, maximum value, minimum value, average value, variance, etc. of hardness.
- > **Automatic displacement:** Equipped with high precision X-Y automatic test table.
- > **Automatic identification:** Leading indentation automatic identification technology, read D1 / D2 and HV value in 0.3 seconds.
- > **Stable performance:** The indentation of non mirror polishing, uneven light, not in the center can be read automatically.
- > **Powerful functions:** Manual reading, automatic reading, hardness conversion, depth-hardness curve, indentation image, picture and text reports.
- > **Automatic scanning:** Automatically scan the sample edge and shape.

Model	HTMV 1000MD V2.0
Test force control	Weights - Load electronic controlled
Load selection	Right side handle
Main loads	10gf, 25gf, 50gf, 100gf, 200gf, 300gf, 500gf, 1000gf
Dwell time	0-60s
Loading time	12s
Load applying speed (indenter descending speed)	0.04mm/s
Test force tolerance	±1%
Test cycle type	Semi-automatic type: manual - focus Automatic - load, dwell, unload, measurement of the indentation, show of the hardness value
Hardness scales	HV0.01, HV0.025, HV0.05, HV0.1, HV0.2, HV0.3, HV0.5, HV1 Optional: HK0.01, HK0.025, HK0.05, HK0.1, HK0.2, HK0.3, HK0.5, HK1
Hardness test range	1HV~2967HV
Hardness resolution	0.1HV
Repeatability hef/%	Table 1
Scale conversion	HV, HK, HRA, HRB, HRC, HRD, HRE, HRF, HRG, HRK, HR15N, HR30N, HR45N, HR15T, HR30T, HR45T, HS, HBW - According to ASTM E140
Turret type	Automatic
CCD camera pixel	1.3 Million
Microscope eyepiece	10x
Objectives	10x, 40x
Microscope min. measurement unit	0.0625µm (40x objective) (10x objective is for observation purpose only)
Microscope max. measurement length	200µm (40x objective) (10x objective is for observation purpose only)
CCD min. measurement unit	0.025µm (40x objective) (10x objective is for observation purpose only)
CCD max. measurement length	170µm (40x objective) (10x objective is for observation purpose only)
Measurable min. indent/indentation	10µm
Optical path	2 ways eyepiece
Optical function	optical diaphragm / field aperture / color filter
Illumination	Halogen lamp
Indenters	Diamond Micro-Vickers indenter
N. of indenters	1
Nose cone support diameter	3mm
Measurable min. indent/indentation	0.01mm
Indent measure algorithms	Automatic
Auto reading time	0.3 sec/1 indent
Specimen detection	Yes

Model	HTMV 1000MD V2.0
Movement program patterns	Zigzag, circle, arc, straight line, random, teaching etc.
Vertical test capacity	100mm
Horizontal test capacity	98mm
Anvils dimensions	Motorized cross test table, size: 110x110mm, Flat clamping test table size: 76x80mm, thin specimen test table size: ø 76mm, Filament clamping test table size: ø 60mm
Max. weight on anvils	50kg
X-Y travel	50x50mm
X axis speed	High: 1mm/s, low: 0.25mm/s
X axis resolution	0.002mm
Y axis speed	High: 1mm/s, low: 0.25mm/s
Y axis resolution	0.002mm
Z axis movement	Manual
Z axis resolution	Manual
Z axis speed	Manual
Display type	LCD
Display dimensions	4.3"
Input mode	PC o control panel keyboard (HV mode)
Displayed data	Hardness value, D1, D2, dwell time, test number, conversion scale, test force, date and time, indentation, objective
Statistics or functions	Max, min, average value, report, hardness curve
Data storage	500GB PC hard disk
Data output	Word, Excel format
Energy saving mode	Yes
Interfaces	Main body machine: 1x RS232, Control box: 1x USB, 1x XY interface, 1x RS232, (1x Z interface)
Printer	Built-in printer - External Ink-Jet printer
Safety devices	Emergency switch
Operation temperature	23±5° C
Operation rel. humidity	≤65%
Weight	31kg
Dimensions	480x325x545mm
Power supply	230V, 50Hz
Voltage variance	±10%
Absorbed power	500W

Standard accessories		
Model	Description	Q.ty
MVT-DE10X	10x digital measuring eyepiece	1 pc
MVT-10XOB	10x objective	1 pc
MVT-40XOB	40x objective	1 pc
MVI-136	Diamond Micro-Vickers indenter	1 pc
MVT-MCTT110	Motorized cross test table 110x110mm	1 pc
MVT-FLCTT7680	Flat clamping test table 76x80mm	1 pc
MVT-TSTT76	Thin specimen test table ø 76mm	1 pc
MVT-FICTT60	Filament clamping test table ø 60mm	1 pc
HB-700800HV1	Hardness block 700-800 HV1	1 pc
HB-400500HV0.2	Hardness block 400-500 HV0.2	1 pc
MVT-CCDC	CCD camera	1 set
MVT-1.5XAD	1.5x adapter	1 pc
MVT-JSKAX	Joystick	1 pc
MVT-MTTCB	Motorized test table control box	1 pc
MVT-CNCBS	Control cables	1 set
VT-SDUSB	USB softdog	1 pc
MVT- MEASOFT	Measuring software	1 pc
MVT-PCMP	Computer (Hard disk: 500Gb, memory: 2G, 19" LCD screen)	1 set
MVT-PRNT	Ink jet printer	1 pc
MVT-RS232CBL	RS232 cables	1 pc
MVT-HL1520	Halogen lamp 12V, 15-20W	1 pc
MVT-4RS	Horizontal regulating screw	4 pcs
MVT-LV	Spirit level	1 pc
MVT-PC	Power cable	1 pc
MVT-6WS	Weights	6 pcs
MVT-WA	Weight axis	1 pc
MVT-SK	Service keys	1 set
MVT-ADC	Anti-dust cover	1 pc

Optional accessories	
Model	Description
MVT-KDI	Diamond Knoop indenter
MVT-DCTT120120	Digital cross test table 120x120mm
MVT-LTT108	Large plane test table ø 108mm
MVT-VTT40	V-shaped test table ø 40mm
MVT-WB	Work bench
MVT-APP	Additional printer paper roll

Vickers hardness blocks	
Model	Range
HB-V0.05/200-750	200-750 HV 0.05
HB-V0.1/200-750	200-750 HV 0.1
HB-V0.2/200-750	200-750 HV 0.2
HB-V0.3/200-750	200-750 HV 0.3
HB-V0.5/200-750	200-750 HV 0.5
HB-V1/200-750	200-750 HV 1

Knoop hardness blocks	
Model	Range
HB-K0.05/200-750	200-750 HK 0.05
HB-K0.1/200-750	200-750 HK 0.1
HB-K0.2/200-750	200-750 HK 0.2
HB-K0.3/200-750	200-750 HK 0.3
HB-K0.5/200-750	200-750 HK 0.5
HB-K1/200-750	200-750 HK 1

HTMV 1000MDT

Digital Micro-Vickers Hardness Tester

- > Micro Vickers hardness tester controlled by touch screen panel computer. With CCD image acquisition system, dynamic indentation image, image lock and hardness automatically displayed with high precision and stability.
- > Windows 7 operating system, can be connected to output devices such as external screen and printer;
- > Automatic recognition and shifting between objective and indenter;
- > Lifting screw worm and gear structure with smooth transmission;
- > Automatic test force loading, dwell and unloading;
- > CCD image acquisition system, clear images;
- > Hardness scale conversion;
- > Automatic data save, hardness-depth curve generation report in
- > Optional digital X-Y test table

INTERNAL STORAGE



Application

- > Suitable for ferrous metal, non-ferrous metals, IC thin sections, coatings, ply-metals, glass, ceramics, agate, precious stones, thin plastic sections etc.

Reference standard

- > ISO 6507, ASTM E384, JIS Z2244

Displayed value repeatability %			
Standard hardness range	HV5~HV100	HV0.2~ <HV5	>HV0.2
≤225HV	≤3	≤6	≤9
>225HV	≤2	≤4	≤5

Displayed value tolerance %																
Hardness	Hardness HV															
	50	100	150	200	250	300	350	400	450	500	600	700	800	900	1000	1500
HV 0.01																
HV 0.015	10															
HV 0.02	8															
HV 0.025	8	10														
HV 0.05	6	8	9	10												
HV 0.1	5	6	7	8	8	9	10	10	11							
HV 0.2		4		6		8		9		10	11	11	12	12		
HV 0.3		4		5		6		7		8	9	10	10	11	11	
HV 0.5		3		5		5		6		6	7	7	8	8	9	11
HV 1		3		4		4		4		5	5	5	6	6	6	8
HV 2		3		3		3		4		4	4	4	4	5	5	6
HV 3		3		3		3		3		3	4	4	4	4	4	5
HV 5		3		3		3		3		3	3	3	3	3	4	4
HV 10		3		3		3		3		3	3	3	3	3	3	3
HV 20		3		3		3		3		3	3	3	3	3	3	3
HV 30		3		3		2		2		2	2	2	2	2	2	2
HV 50		3		3		2		2		2	2	2	2	2	2	2
HV 100				3		2		2		2	2	2	2	2	2	2

1) When the indentation diagonal length is less than 0.020 mm, the table does not display the value.
 2) For intermediate values, the maximum allowable error can be obtained by interpolation.
 3) About the Micro Hardness Tester value in the table is 0.001mm or indentation diagonal length of the average of 2% of the maximum permissible error given, please select the bigger.



Model	HTV 1000MDT
Test force control	Weights - Load electronic controlled
Load selection	Right side handle
Main loads	10gf, 25gf, 50gf, 100gf, 200gf, 300gf, 500gf, 1000gf
Dwell time	0-60s
Loading time	12s
Load applying speed (indenter descending speed)	0.04mm/s
Test force tolerance	±1%
Test cycle type	Semi-Automatic type: manual - focus Automatic - load, dwell, unload, measurement of the indentation, show of the hardness value
Hardness scales	HV0.01, HV0.025, HV0.05, HV0.1, HV0.2, HV0.3, HV0.5, HV1 Optional: HK0.01, HK0.025, HK0.05, HK0.1, HK0.2, HK0.3, HK0.5, HK1
Hardness test range	1HV~2967HV
Hardness resolution	0.1HV
Accuracy: Repeatability heff/%	Table 1
Scale conversions available(display)	HV, HK, HRA, HRB, HRC, HRD, HRE, HRF, HRG, HRK, HR15N, HR30N, HR45N, HR15T, HR30T, HR45T, HS, HBW - According to ASTM E140
Turret type	Automatic
CCD camera pixel	1.3 Million
Microscope Eyepiece	10x
Objectives	10x, 40x
CCD min. measurement unit	0.025µm (40x objective) (10x objective is for observation purpose only)
CCD max. measurement length	170µm (40x objective) (10x objective is for observation purpose only)
Measurable min. indent/indentation	10µm
Optical path	2 ways eyepiece
Optical function	Optical diaphragm / field aperture / color filter
Illumination	Halogen lamp
Indenters	Diamond Micro-Vickers indenter
N. of indenters	1
Nose cone support diameter	3mm
Indent measure algorithms	Automatic

Standard accessories

Model	Description	Q.ty
MVT-DE10X	10x digital measuring eyepiece	1 pc
MVT-10XOB	10x objective	1 pc
MVT-40XOB	40x objective	1 pc
MVI-136	Diamond Micro-Vickers indenter	1 pc
VT-DCTT120120	Digital cross test table 120x120mm	1 pc
MVT-FLCTT7680	Flat clamping test table 76x80mm	1 pc
MVT-TSTT76	Thin specimen test table ø 76mm	1 pc
MVT-FICTT60	Filament clamping test table ø 60mm	1 pc
HB-700800HV1	Hardness block 700-800 HV1	1 pc
HB-400500HV0.2	Hardness block 400-500 HV0.2	1 pc
MVT-HL1520	Halogen lamp 12V, 15-20W	1 pc
MVT-4RS	Horizontal regulating screw	4 pcs
MVT-LV	Level	1 pc
MVT-TSRC	Touch screen remote control	1 pc
MVT-TP	Touch pen	1 pc
MVT-MSE	Mouse	1 pc
MVT-SKUSB	USB storage key	1 pc
MVT-PC	Power cable	1 pc
MVT-SK	Service keys	2 pc
MVT-6WS	Weights	6 pcs
MVT-WA	Weight axis	1 pc
MVT-ADC	Anti-dust cover	1 pc

Model	HTV 1000MDT
Auto reading time	0.3 sec/1 indent
Vertical test capacity	185mm
Horizontal test capacity	130mm
Anvils dimensions	Digital cross test table size: 120x120mm, clamping test table size: 76x80mm, thin specimen test table size: ø 76mm, Filament clamping test table size: ø 60mm
Max. weight on anvils	50kg
X-Y travel	25x25mm
X axis speed	Manual
X axis resolution	0.003mm
Y axis speed	Manual
Y axis resolution	0.003mm
Z axis movement	Manual
Z axis resolution	Manual
Z axis speed	Manual
Display type	Touch screen
Display dimensions	8"
Input mode	By tap touch
Displayed data	Hardness value, D1, D2, dwell time, test number, conversion scale, test force, date and time, indentation, objective
Statistics or functions	Max, min, average value, report, hardness curve
Data storage	Internal SSD 64GB storage
Data output	Word, Excel format
Energy saving mode	Yes
Interfaces	3x USB, 1x VGA, 1x LAN
Safety devices	Emergency switch
Operation temperature	23±5° C
Operation rel. humidity	≤65%
Weight	48kg
Dimensions	560x335x675mm
Power supply	230V, 50Hz
Voltage variance	±10%
Absorbed power	500W

Optional accessories

Model	Description
MVT-KDI	Diamond Knoop indenter
MVT-LTT108	Large plane test table ø 108mm
MVT-VTT40	V-shaped test table ø 40mm
MVT-WB	Work bench
MVT-EXPR	External printer

Vickers hardness blocks

Model	Range
HB-V0.05/200-750	200-750 HV 0.05
HB-V0.1/200-750	200-750 HV 0.1
HB-V0.2/200-750	200-750 HV 0.2
HB-V0.3/200-750	200-750 HV 0.3
HB-V0.5/200-750	200-750 HV 0.5
HB-V1/200-750	200-750 HV 1

Knoop hardness blocks

Model	Range
HB-K0.05/200-750	200-750 HK 0.05
HB-K0.1/200-750	200-750 HK 0.1
HB-K0.2/200-750	200-750 HK 0.2
HB-K0.3/200-750	200-750 HK 0.3
HB-K0.5/200-750	200-750 HK 0.5
HB-K1/200-750	200-750 HK 1

HTMV 1000K

Digital Micro-Vickers & Knoop Hardness Tester

> Digital Micro-Vickers Hardness Tester adopts precision optics, high mechanical features and perfect indentation for high accuracy measurements. New type of automatic turret mechanism, equipped with Micro-Vickers and Knoop indenters with independent alignment device which ensures centered indentations. Test mode, test force, indentation length, dwell time, test numbers and conversion scale can be displayed. Test results can be saved for checking or be printed out by the built-in printer. Optional LCD video measuring device and CCD image automatic measuring system compatible.

SPECIFIC FOR KNOOP



Application

> Suitable for ferrous metal, non-ferrous metals, IC thin sections, coatings, ply-metals, glass, ceramics, agate, precious stones, thin plastic sections etc.

Reference standard

> ISO 6507, ASTM E384, JIS Z2244

Displayed value repeatability %

Standard hardness range	HV5~HV100	HV0.2~ <HV5	>HV0.2
≤225HV	≤3	≤6	≤9
>225HV	≤2	≤4	≤5

Displayed value tolerance %

Hardness	Hardness HV															
	50	100	150	200	250	300	350	400	450	500	600	700	800	900	1000	1500
HV 0.01																
HV 0.015	10															
HV 0.02	8															
HV 0.025	8	10														
HV 0.05	6	8	9	10												
HV 0.1	5	6	7	8	8	9	10	10	11							
HV 0.2		4		6		8		9		10	11	11	12	12		
HV 0.3		4		5		6		7		8	9	10	10	11	11	
HV 0.5		3		5		5		6		6	7	7	8	8	9	11
HV 1		3		4		4		4		5	5	5	6	6	6	8
HV 2		3		3		3		4		4	4	4	4	5	5	6
HV 3		3		3		3		3		3	4	4	4	4	4	5
HV 5		3		3		3		3		3	3	3	3	3	4	4
HV 10		3		3		3		3		3	3	3	3	3	3	3
HV 20		3		3		3		3		3	3	3	3	3	3	3
HV 30		3		3		2		2		2	2	2	2	2	2	2
HV 50		3		3		2		2		2	2	2	2	2	2	2
HV 100				3		2		2		2	2	2	2	2	2	2

1) When the indentation diagonal length is less than 0.020 mm, the table does not display the value.
 2) For intermediate values, the maximum allowable error can be obtained by interpolation.
 3) About the Micro Hardness Tester value in the table is 0.001mm or indentation diagonal length of the average of 2% of the maximum permissible error given, please select the bigger.



Model	HTMV 1000K
Test force control	Weights - Load electronic controlled
Load selection	Right side handle
Main loads	10gf, 25gf, 50gf, 100gf, 200gf, 300gf, 500gf, 1000gf
Dwell time	0~95s
Loading time	12s
Load applying speed (indenter descending speed)	0.04mm/s
Test force tolerance	±1%
Test cycle type	Semi-automatic type: Manual - focus, measure of indentation Automatic - load, dwell, unload, show of the hardness value (after measure step)
Hardness scales	HV0.01, HV0.025, HV0.05, HV0.1, HV0.2, HV0.3, HV0.5, HV1 HK0.01, HK0.025, HK0.05, HK0.1, HK0.2, HK0.3, HK0.5, HK1
Hardness test range	1HV~2967HV
Hardness resolution	0.1 HV 0.1 HK
Repeatability hef/%	Vickers: Table 1 Knoop: Table 3*
Scale conversion	HV, HK, HRA, HRB, HRC, HRD, HRE, HRF, HRG, HRK, HR15N, HR30N, HR45N, HR15T, HR30T, HR45T, HS, HBW - According to ASTM E140
Turret type	Automatic
Microscope eyepiece	10x
Objectives	10x, 20x, 40x (Micro-Vickers) 40x (Knoop)
Microscope min. measurement unit	0.03µm (20x objective), 0.015µm (40x objective) (10x objective is for observation purpose only)
Microscope max. measurement length	400µm (20x objective), 200µm (40x objective) (10x objective is for observation purpose only)
Measurable min. indent/indentation	10µm
Optical path	2 ways eyepiece
Illumination	Halogen lamp
Indenters	Diamond Micro-Vickers indenter, Diamond Knoop indenter
N. of indenters	2

Standard accessories

Model	Description	Q.ty
MVT-DE10X	10x digital measuring eyepiece	1 pc
MVT-10XOB	10x objective	1 pc
MVT-20XOB	20x objective	1 pc
MVT-40XOB	40x objective Micro-Vickers Spec.	1 pc
MVT-40XOBK	40x objective Knoop Spec.	1 pc
MVI-136	Diamond Micro-Vickers indenter	1 pc
MVT-KDI	Diamond Knoop indenter	1 pc
MVT-CTT100100	Cross test table 100x100 mm	1 pc
MVT-FLCTT7680	Flat clamping test table 76x80mm	1 pc
MVT-TSTT76	Thin specimen test table ø 76mm	1 pc
MVT-FICTT60	Filament clamping test table ø 60mm	1 pc
HB-700800HV1	Hardness block 700-800 HV1	1 pc
HB-400500HV0.2	Hardness block 400-500 HV0.2	1 pc
HB-700800HK1	Hardness block 700-800 HK1	1 pc
MVT-HL1520	Halogen lamp 12V, 15-20W	1 pc
MVT-CFLS	Color filter for light source	1 pc
MVT-4RS	Horizontal regulating screw	4 pcs
MVT-LV	Spirit level	1 pc
MVT-PC	Power cable	1 pc
MVT-SK	Service keys	1 set
MVT-7WS	Weights	7 pcs
MVT-SCW	Suction cup for weights	1 pc
MVT-ADC	Anti-dust cover	1 pc

Model	HTMV 1000K
Nose cone support diameter	3mm
Vertical test capacity	90mm
Horizontal test capacity	120mm
Anvils dimensions	Cross test table, size: 100x100mm, clamping test table size: 76x80mm, thin specimen test table size: ø 76mm, Filament clamping test table size: ø 60mm
Max. weight on anvils	10kg
X-Y travel	25x25mm
Speed X, Y, Z axis	Manual
X axis resolution	0.01mm
Y axis resolution	0.01mm
Z axis movement	Manual
Z axis resolution	Manual
Display type	LCD
Display dimensions	4.3"
Input mode	Control panel keyboard
Displayed data	Hardness value, D1, D2, dwell time, test number, conversion scale, test force, date and time
Statistics or functions	Max, min, average value
Data storage	Temporary session memory, 96 tests
Data output	Hyperterminal session format (.HT)
Energy saving mode	Yes
Printer	Built-in printer
Interfaces	1x RS232
Safety devices	Emergency switch
Operation temperature	23±5° C
Operation rel. humidity	≤65%
Weight	35kg
Dimensions	495x305x550mm
Power supply	230V, 50Hz
Voltage variance	±10%
Absorbed power	500W

Optional accessories

Model	Description
MVT-DCTT120120	Digital cross test table 120x120mm
MVT-LTT108	Large plane test table ø 108mm
MVT-VTT40	V-shaped test table ø 40mm
MVT-CCDMS	CCD measuring system
MVT-LCDMD	LCD measuring device
MVT-WB	Work bench
MVT-APP	Additional printer paper roll

Vickers hardness blocks

Model	Range
HB-V0.05/200-750	200-750 HV 0.05
HB-V0.1/200-750	200-750 HV 0.1
HB-V0.2/200-750	200-750 HV 0.2
HB-V0.3/200-750	200-750 HV 0.3
HB-V0.5/200-750	200-750 HV 0.5
HB-V1/200-750	200-750 HV 1

Knoop hardness blocks

Model	Range
HB-K0.05/200-750	200-750 HK 0.05
HB-K0.1/200-750	200-750 HK 0.1
HB-K0.2/200-750	200-750 HK 0.2
HB-K0.3/200-750	200-750 HK 0.3
HB-K0.5/200-750	200-750 HK 0.5
HB-K1/200-750	200-750 HK 1

Note: For Knoop hardness tables please refer to page 323

HTMV 2000M

Digital Micro-Vickers Hardness Tester

> Digital Micro-Vickers Hardness Tester adopts precision optics, high mechanical features and perfect indentation for high accuracy measurements. With digital measuring eyepiece directly shows the hardness value and show on the screen, moreover test mode, test force, indentation length, dwell time, test numbers and conversion scale can be displayed. Test results can be saved for checking or be printed out by the built-in printer. Optional Knoop indenter can be installed. Optional LCD video measuring device and CCD image automatic measuring system compatible.

Application

> Suitable for ferrous metal, non-ferrous metals, IC thin sections, coatings, ply-metals, glass, ceramics, agate, precious stones, thin plastic sections etc.

Reference standard

> ISO 6507, ASTM E384, JIS Z2244



Displayed value repeatability %			
Standard hardness range	HV5~HV100	HV0.2~ <HV5	>HV0.2
≤225HV	≤3	≤6	≤9
>225HV	≤2	≤4	≤5

Displayed value tolerance %																
Hardness	Hardness HV															
	50	100	150	200	250	300	350	400	450	500	600	700	800	900	1000	1500
HV 0.01																
HV 0.015	10															
HV 0.02	8															
HV 0.025	8	10														
HV 0.05	6	8	9	10												
HV 0.1	5	6	7	8	8	9	10	10	11							
HV 0.2		4		6		8		9		10	11	11	12	12		
HV 0.3		4		5		6		7		8	9	10	10	11	11	
HV 0.5		3		5		5		6		6	7	7	8	8	9	11
HV 1		3		4		4		4		5	5	5	6	6	6	8
HV 2		3		3		3		4		4	4	4	4	5	5	6
HV 3		3		3		3		3		3	4	4	4	4	4	5
HV 5		3		3		3		3		3	3	3	3	3	4	4
HV 10		3		3		3		3		3	3	3	3	3	3	3
HV 20		3		3		3		3		3	3	3	3	3	3	3
HV 30		3		3		2		2		2	2	2	2	2	2	2
HV 50		3		3		2		2		2	2	2	2	2	2	2
HV 100				3		2		2		2	2	2	2	2	2	2

1) When the indentation diagonal length is less than 0.020 mm, the table does not display the value.
 2) For intermediate values, the maximum allowable error can be obtained by interpolation.
 3) About the Micro Hardness Tester value in the table is 0.001mm or indentation diagonal length of the average of 2% of the maximum permissible error given, please select the bigger.



Model	HTMV 2000M
Test force control	Weights - Load electronic controlled
Load selection	Right side handle
Main loads	10gf, 25gf, 50gf, 100gf, 200gf, 300gf, 500gf, 1000gf, 2000gf
Dwell time	0-60s
Loading time	12s
Load applying speed (indenter descending speed)	0.04mm/s
Test force tolerance	±1%
Test cycle type	Semi-automatic type: Manual - focus, measure of indentation Automatic - load, dwell, unload, show of the hardness value (after measure step)
Hardness scales	HV0.01, HV0.025, HV0.05, HV0.1, HV0.2, HV0.3, HV0.5, HV1, HV2 Optional: HK0.01, HK0.025, HK0.05, HK0.1, HK0.2, HK0.3, HK0.5, HK1, HK2
Hardness test range	1HV-2967HV
Hardness resolution	0.1HV
Repeatability hef/%	Table 1
Scale conversion	HK, HRA, HRB, HRC, HRD, HRE, HRF, HRG, HRK, HR15N, HR30N, HR45N, HR15T, HR30T, HR45T, HS, HB - According to ASTM E140
Turret type	Automatic
Microscope eyepiece	10x
Objectives	10x, 40x
Microscope min. measurement unit	0.0625µm (40x objective) (10x objective is for observation purpose only)
Microscope max. measurement length	200µm (40x objective) (10x objective is for observation purpose only)
Measurable min. indent/indentation	10µm
Optical path	2 ways eyepiece
Illumination	Halogen lamp
Indenters	Diamond Micro-Vickers indenter
N. of indenters	1
Nose cone support diameter	3mm

Code	Standard Accessories	Qty
MVT-DE10X	10x digital measuring eyepiece	1 pc
MVT-10XOB	10x objective	1 pc
MVT-40XOB	40x objective	1 pc
MVI-136	Diamond Micro-Vickers indenter	1 pc
MVT-CTT100100	Cross test table 100x100 mm	1 pc
MVT-FLCTT7680	Flat clamping test table 76x80mm	1 pc
MVT-TSTT76	Thin specimen test table ø 76mm	1 pc
MVT-FICTT60	Filament clamping test table ø 60mm	1 pc
HB-700800HV1	Hardness block 700-800 HV1	1 pc
HB-400500HV0.2	Hardness block 400-500 HV0.2	1 pc
MVT-HL1520	Halogen lamp 12V, 15-20W	1 pc
MVT-4RS	Horizontal regulating screw	4 pcs
MVT-LV	Spirit level	1 pc
MVT-PC	Power cable	1 pc
MVT-SK	Service keys	1 set
MVT-7WS2K	Weights	7 pcs
MVT-WA2K	Weight axis	1 pc
MVT-ADC	Anti-dust cover	1 pc

Model	HTMV 2000M
Vertical test capacity	100mm
Horizontal test capacity	98mm
Anvils dimensions	Cross test table, size: 100x100mm, flat clamping test table size: 76x80mm, thin specimen test table size: ø 76mm, Filament clamping test table size: ø 60mm
Max. sample anvils	10kg
X-Y travel	25x25mm
X axis speed	Manual
X axis resolution	0.01mm
Y axis speed	Manual
Y axis resolution	0.01mm
Z axis movement	Manual
Z axis resolution	Manual
Z axis speed	Manual
Display type	LCD
Display dimensions	4.3"
Input mode	Control panel keyboard
Displayed data	Hardness value, D1, D2, dwell time, test number, conversion scale, test force, date and time, light
Statistics or functions	Max, min, average value
Data storage	Temporary session memory, 96 tests
Data output	Hyperterminal session format (.HT)
Energy saving mode	Yes
Printer	Built-in printer
Interfaces	1x RS232
Safety devices	Emergency switch
Operation temperature	23±5° C
Operation rel. humidity	≤65%
Weight	32kg
Dimensions	480x325x545mm
Power supply	230V, 50Hz
Voltage variance	±10%
Absorbed power	500W

Optional accessories

Model	Description
MVT-KDI	Diamond Knoop indenter
MVT-DCTT120120	Digital cross test table 120x120mm
MVT-LTT108	Large plane test table ø 108mm
MVT-VTT40	V-shaped test table ø 40mm
MVT-CCDMS	CCD measuring system
MVT-LCDMD	LCD measuring device
MVT-WB	Work bench
MVT-APP	Additional printer paper roll

Vickers hardness blocks

Model	Range
HB-V0.05/200-750	200-750 HV 0.05
HB-V0.1/200-750	200-750 HV 0.1
HB-V0.2/200-750	200-750 HV 0.2
HB-V0.3/200-750	200-750 HV 0.3
HB-V0.5/200-750	200-750 HV 0.5
HB-V1/200-750	200-750 HV 1
HB-V2/175-750	175-750 HV 2

Knoop hardness blocks

Model	Range
HB-K0.05/200-750	200-750 HK 0.05
HB-K0.1/200-750	200-750 HK 0.1
HB-K0.2/200-750	200-750 HK 0.2
HB-K0.3/200-750	200-750 HK 0.3
HB-K0.5/200-750	200-750 HK 0.5
HB-K1/200-750	200-750 HK 1
HB-K2/200-750	200-750 HK 2

HTMV 1000MD

Digital Micro-Vickers Hardness Tester

> Digital Micro-Vickers Hardness Tester adopts precision optics, high mechanical features and perfect indentation for high accuracy measurements. With digital measuring eyepiece directly shows the hardness value and show on the screen, moreover test mode, test force, indentation length, dwell time, test numbers and conversion scale can be displayed. Test results can be saved for checking or be printed out by the built-in printer. Optional Knoop indenter can be installed. Optional LCD video measuring device and CCD image automatic measuring system compatible.



AUTOMATIC TURRET

Application

> Suitable for ferrous metal, non-ferrous metals, IC thin sections, coatings, ply-metals, glass, ceramics, agate, precious stones, thin plastic sections etc.

Reference standard

> ISO 6507, ASTM E384, JIS Z2244

Displayed value repeatability %			
Standard hardness range	HV5~HV100	HV0.2~ <HV5	>HV0.2
≤225HV	≤3	≤6	≤9
>225HV	≤2	≤4	≤5

Displayed value tolerance %																
Hardness	Hardness HV															
	50	100	150	200	250	300	350	400	450	500	600	700	800	900	1000	1500
HV 0.01																
HV 0.015	10															
HV 0.02	8															
HV 0.025	8	10														
HV 0.05	6	8	9	10												
HV 0.1	5	6	7	8	8	9	10	10	11							
HV 0.2		4		6		8		9		10	11	11	12	12		
HV 0.3		4		5		6		7		8	9	10	10	11	11	
HV 0.5		3		5		5		6		6	7	7	8	8	9	11
HV 1		3		4		4		4		5	5	5	6	6	6	8
HV 2		3		3		3		4		4	4	4	4	5	5	6
HV 3		3		3		3		3		3	4	4	4	4	4	5
HV 5		3		3		3		3		3	3	3	3	3	4	4
HV 10		3		3		3		3		3	3	3	3	3	3	3
HV 20		3		3		3		3		3	3	3	3	3	3	3
HV 30		3		3		2		2		2	2	2	2	2	2	2
HV 50		3		3		2		2		2	2	2	2	2	2	2
HV 100				3		2		2		2	2	2	2	2	2	2

1) When the indentation diagonal length is less than 0.020 mm, the table does not display the value.
 2) For intermediate values, the maximum allowable error can be obtained by interpolation.
 3) About the Micro Hardness Tester value in the table is 0.001mm or indentation diagonal length of the average of 2% of the maximum permissible error given, please select the bigger.



Model	HTMV 1000MD
Test force control	Weights - Load electronic controlled
Load selection	Right side handle
Main loads	10gf, 25gf, 50gf, 100gf, 200gf, 300gf, 500gf, 1000gf
Dwell time	0-60s
Loading time	12s
Load applying speed (indenter descending speed)	0.04mm/s
Test force tolerance	±1%
Test cycle type	Semi-Automatic Type: Manual - focus, measure of Indentation Automatic - load, dwell, unload, show of the hardness value (after measure step)
Hardness scales	HV0.01, HV0.025, HV0.05, HV0.1, HV0.2, HV0.3, HV0.5, HV1 Optional: HK0.01, HK0.025, HK0.05, HK0.1, HK0.2, HK0.3, HK0.5, HK1
Hardness test range	1HV-2967HV
Hardness resolution	0.1HV
Repeatability hef/%	Table 1
Scale conversion	HK, HRA, HRB, HRC, HRD, HRE, HRF, HRG, HRK, HR15N, HR30N, HR45N, HR15T, HR30T, HR45T, HS, HB - According to ASTM E140
Turret type	Automatic
Microscope eyepiece	10x
Objectives	10x, 40x
Microscope min. measurement unit	0.0625µm (40x objective) (10x objective is for observation purpose only)
Microscope max. measurement length	200µm (40x objective) (10x objective is for observation purpose only)
Measurable min. indent/indentation	10µm
Optical path	2 ways eyepiece
Illumination	Halogen lamp
Indenters	Diamond Micro-Vickers indenter
N. of indenters	1

Model	HTMV 1000MD
Nose cone support diameter	3mm
Vertical test capacity	100mm
Horizontal test capacity	98mm
Anvils dimensions	Cross test table, size: 100x100mm, flat clamping test table size: 76x80mm, thin specimen test table size: ø 76mm, Filament clamping test table size: ø 60mm
Max. weight on anvils	10kg
X-Y travel	25x25mm
X axis speed	Manual
X axis resolution	0.01mm
Y axis speed	Manual
Y axis resolution	0.01mm
Z axis movement	Manual
Z axis speed	Manual
type of display	LCD
Display dimensions	4.3"
Input mode	Control panel keyboard
Displayed data	Hardness value, D1, D2, dwell time, test number, conversion scale, test force, date and time, light
Statistics or functions	Max, min, average value
Data storage	Temporary session memory, 96 tests
Data Output	Hypertextual session format (.HT)
Energy saving mode	Yes
Printer	Built-in printer
Interfaces	1x RS232
Safety devices	Emergency switch
Operation temperature	23±5° C
Operation rel. humidity	≤65%
Weight	31kg
Dimensions	480x325x545mm
Power supply	230V, 50Hz
Voltage variance	±10%
Absorbed power	500W

Code	Standard Accessories	Qty
MVT-DE10X	10x digital measuring eyepiece	1 pc
MVT-10XOB	10x objective	1 pc
MVT-40XOB	40x objective	1 pc
MVI-136	Diamond Micro-Vickers indenter	1 pc
MVT-CTT100100	Cross test table 100x100mm	1 pc
MVT-FLCTT7680	Flat clamping test table 76x80mm	1 pc
MVT-TSTT76	Thin specimen test table ø 76mm	1 pc
MVT-FICTT60	Filament clamping test table ø 60mm	1 pc
HB-700800HV1	Hardness block 700-800 HV1	1 pc
HB-400500HV0.2	Hardness block 400-500 HV0.2	1 pc
MVT-HL1520	Halogen lamp 12V, 15-20W	1 pc
MVT-4RS	Horizontal regulating screw	4 pcs
MVT-LV	Spirit level	1 pc
MVT-PC	Power cable	1 pc
MVT-SK	Service keys	1 set
MVT-GWS	Weights	6 pcs
MVT-WA	Weight axis	1 pc
MVT-ADC	Anti-dust cover	1 pc

Optional accessories	
Model	Description
MVT-KDI	Diamond Knoop indenter
MVT-DCTT120120	Digital cross test table 120x120mm
MVT-LTT108	Large plane test table ø 108mm
MVT-VTT40	V-shaped test table ø 40mm
MVT-CCDMS	CCD measuring system
MVT-LCDMD	LCD measuring device
MVT-WB	Work bench
MVT-APP	Additional printer paper roll

Vickers hardness blocks	
Model	Range
HB-V0.05/200-750	200-750 HV 0.05
HB-V0.1/200-750	200-750 HV 0.1
HB-V0.2/200-750	200-750 HV 0.2
HB-V0.3/200-750	200-750 HV 0.3
HB-V0.5/200-750	200-750 HV 0.5
HB-V1/200-750	200-750 HV 1

Knoop hardness blocks	
Model	Range
HB-K0.05/200-750	200-750 HK 0.05
HB-K0.1/200-750	200-750 HK 0.1
HB-K0.2/200-750	200-750 HK 0.2
HB-K0.3/200-750	200-750 HK 0.3
HB-K0.5/200-750	200-750 HK 0.5
HB-K1/200-750	200-750 HK 1

HTMV I1000M

Digital Micro-Vickers Hardness Tester

> Digital Micro-Vickers Hardness Tester adopts precision optics, high mechanical features and perfect indentation for high accuracy measurements. With digital measuring eyepiece directly shows the hardness value and show on the screen, moreover test mode, test force, indentation length, dwell time, test numbers and conversion scale can be displayed. Optional Knoop indenter can be installed. Optional LCD video measuring device and CCD image automatic measuring system compatible.



Application

> Suitable for ferrous metal, non-ferrous metals, IC thin sections, coatings, ply-metals, glass, ceramics, agate, precious stones, thin plastic sections etc.

Reference standard

> ISO 6507, ASTM E384, JIS Z2244

Displayed value repeatability %			
Standard hardness range	HV5~HV100	HV0.2~ <HV5	>HV0.2
≤225HV	≤3	≤6	≤9
>225HV	≤2	≤4	≤5

Displayed value tolerance %																
Hardness	Hardness HV															
	50	100	150	200	250	300	350	400	450	500	600	700	800	900	1000	1500
HV 0.01																
HV 0.015	10															
HV 0.02	8															
HV 0.025	8	10														
HV 0.05	6	8	9	10												
HV 0.1	5	6	7	8	8	9	10	10	11							
HV 0.2		4		6		8		9		10	11	11	12	12		
HV 0.3		4		5		6		7		8	9	10	10	11	11	
HV 0.5		3		5		5		6		6	7	7	8	8	9	11
HV 1		3		4		4		4		5	5	5	6	6	6	8
HV 2		3		3		3		4		4	4	4	4	5	5	6
HV 3		3		3		3		3		3	4	4	4	4	4	5
HV 5		3		3		3		3		3	3	3	3	3	4	4
HV 10		3		3		3		3		3	3	3	3	3	3	3
HV 20		3		3		3		3		3	3	3	3	3	3	3
HV 30		3		3		2		2		2	2	2	2	2	2	2
HV 50		3		3		2		2		2	2	2	2	2	2	2
HV 100				3		2		2		2	2	2	2	2	2	2

1) When the indentation diagonal length is less than 0.020 mm, the table does not display the value.
 2) For intermediate values, the maximum allowable error can be obtained by interpolation.
 3) About the Micro Hardness Tester value in the table is 0.001mm or indentation diagonal length of the average of 2% of the maximum permissible error given, please select the bigger.



Model	HTMV I1000M
Test force control	Weights - Load electronic controlled
Load selection	Right side handle
Main loads	10gf, 25gf, 50gf, 100gf, 200gf, 300gf, 500gf, 1000gf
Dwell time	0-60s
Loading time	12s
Load applying speed (indenter descending speed)	0.04mm/s
Test force tolerance	±1%
Test cycle type	Semi-automatic type: Manual - focus, measure of indentation Automatic - load, dwell, unload, show of the hardness value (after measure step)
Hardness scales	HV0.01, HV0.025, HV0.05, HV0.1, HV0.2, HV0.3, HV0.5, HV1 Optional: HK0.01, HK0.025, HK0.05, HK0.1, HK0.2, HK0.3, HK0.5, HK1
Hardness test range	1HV-2967HV
Hardness resolution	0.1HV
Repeatability hef/%	Table 1
Scale conversion	HK, HRA, HRB, HRC, HRD, HRG, HRK, HR15N, HR30N, HR45N, HR15T, HR30T, HR45T, HBW - According to ASTM E 140
Turret type	Automatic
Microscope eyepiece	10x
Objectives	10x, 40x
Microscope min. measurement unit	0.0625µm (40x objective) (10x objective is for observation purpose only)
Microscope max. measurement length	200µm (40x objective) (10x objective is for observation purpose only)
Measurable min. indent/indentation	10µm
Optical path	2 ways eyepiece
Illumination	Halogen lamp
Indenters	Diamond Micro-Vickers indenter
N. of indenters	1
Nose cone support diameter	3mm
Measurable min. indent/indentation	0.01mm

Code	Standard Accessories	Qty
MVT-DE10X	10x digital measuring eyepiece	1 pc
MVT-10XOB	10x objective	1 pc
MVT-40XOB	40x objective	1 pc
MVI-136	Diamond Micro-Vickers indenter	1 pc
MVT-CTT100100	Cross test table 100x100 mm	1 pc
MVT-FLCTT7680	Flat clamping test table 76x80mm	1 pc
MVT-TSTT76	Thin specimen test table ø 76mm	1 pc
MVT-FICTT60	Filament clamping test table ø 60mm	1 pc
HB-700800HV1	Hardness block 700-800 HV1	1 pc
HB-400500HV0.2	Hardness block 400-500 HV0.2	1 pc
MVT-HL1520	Halogen lamp 12V, 15-20W	1 pc
MVT-4RS	Horizontal regulating screw	4 pcs
MVT-LV	Spirit level	1 pc
MVT-PC	Power cable	1 pc
MVT-SK	Service keys	1 set
MVT-GWS	Weights	6 pcs
MVT-WA	Weight axis	1 pc
MVT-ADC	Anti-dust cover	1 pc

Model	HTMV I1000M
Vertical test capacity	100mm
Horizontal test capacity	98mm
Anvils dimensions	Cross test table, size: 100x100mm, fork-shaped test table size: 76x80mm, Thin specimen test table size: ø 76mm, Fine wire test table size: ø 60mm
Max. weight on anvils	10kg
X-Y travel	25x25mm
X axis speed	Manual
X axis resolution	0.01mm
Y axis speed	Manual
Y axis resolution	0.01mm
Z axis movement	Manual
Z axis resolution	Manual
Z axis speed	Manual
Display type	LCD
Display dimensions	3"
Input mode	Control panel keyboard
Displayed data	Hardness value, D1, D2, dwell time, test number, conversion scale
Data output	Hyperterminal format session file (.HT)
Energy saving mode	Yes
Printer	Built-in printer
Interfaces	1x RS232
Safety devices	Emergency switch
Operation temperature	23±5° C
Operation rel. humidity	≤65%
Weight	31kg
Dimensions	480x325x545mm
Power supply	230V, 50Hz
Voltage variance	±10%
Absorbed power	500W

Optional accessories	
Model	Description
MVT-KDI	Diamond Knoop indenter
MVT-DCTT120120	Digital cross test table 120x120mm
MVT-LTT108	Large plane test table ø 108mm
MVT-VTT40	V-shaped test table ø 40mm
MVT-CCDMS	CCD measuring system
MVT-LCDMD	LCD measuring device
MVT-WB	Work bench
MVT-APP	Additional printer paper roll

Vickers hardness blocks	
Model	Range
HB-V0.05/200-750	200-750 HV 0.05
HB-V0.1/200-750	200-750 HV 0.1
HB-V0.2/200-750	200-750 HV 0.2
HB-V0.3/200-750	200-750 HV 0.3
HB-V0.5/200-750	200-750 HV 0.5
HB-V1/200-750	200-750 HV 1

Knoop hardness blocks	
Model	Range
HB-K0.05/200-750	200-750 HK 0.05
HB-K0.1/200-750	200-750 HK 0.1
HB-K0.2/200-750	200-750 HK 0.2
HB-K0.3/200-750	200-750 HK 0.3
HB-K0.5/200-750	200-750 HK 0.5
HB-K1/200-750	200-750 HK 1

CCD Image Automatic Measuring system



CAMERA AND MEASURING SW HARDNESS TESTER

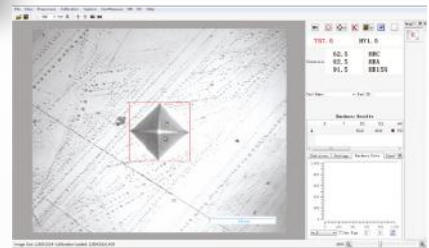
CCD Image Automatic Measuring system

Main Function:

CCD Image automatic measuring system for Micro Vickers, Knoop and carburizing layer tests.

Equipped with CCD camera allow direct observation and measure of the indentation on the display. With its measuring software a single point measurement, random multipoint measurement, data statistical measurement, arbitrary two-point or multipoint measurement are possible and automatically display the depth, statistical calculations, conversions, display curves, data and images management, record and reports in Word or Excel documents.

Operating system: WIN7, WIN10



Standard Configuration:

1. Computer (Hard disk: 500G, memory: 2G, 19" LCD screen) 1 set
2. Ink jet printer 1 set
3. 1.30 Million Pixel CCD camera + 1.5x adapter 1 set
4. Measuring software + USB softdog 1 pc

**LCD Video
Measuring device**



LCD Video measuring device

Main Function:

LCD Video measuring device is composed by video measuring device, 8" color LCD monitor and connections components. With this device, the indentation can be directly showed on the monitor.

The measurement is more accurate. Avoids visual fatigue and human-made error, increasing working efficiency.

Standard Configuration:


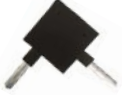





1. 8" Color LCD monitor
2. Video measuring device
3. Video connection cable

Micro Vickers Accessories



Indenters

Code	Description	
MVI-136	Diamond Vickers indenter	
MVT-KDI	Diamond Knoop indenter	

Test tables

Code	Description	
MVT-DCTT120120	Digital cross test table 120x120mm	
MVT-CTT100100	Cross test table 100x100mm	
MVT-FLCTT7680	Flat clamping test table 76x80mm	
MVT-TSTT76	Thin specimen test table ø 76mm	
MVT-FICTT60	Filament clamping test table ø 60mm	
MVT-LTT108	Large test table ø 108mm	
MVT-VTT40	V-shaped test table ø 40mm	

Additional options

Code	Description	
MVT-WB	Work bench	
MVT-APP	Additional printer paper roll	

Hardness blocks

Code	Scale	Range
HB-V0.05/200-750	HV 0.05	200-750
HB-V0.1/200-750	HV 0.1	200-750
HB-V0.2/200-750	HV 0.2	200-750
HB-V0.3/200-750	HV 0.3	200-750
HB-V0.5/200-750	HV 0.5	200-750
HB-V1/200-750	HV 1	200-750
HB-V2/175-750	HV2	175-750
HB-K0.05/200-750	HK 0.05	200-750
HB-K0.1/200-750	HK 0.1	200-750
HB-K0.2/200-750	HK 0.2	200-750
HB-K0.3/200-750	HK 0.3	200-750
HB-K0.5/200-750	HK 0.5	200-750
HB-K1/200-750	HK 1	200-750
HB-K2/200-750	HK 2	200-750