



## Data Sheet

HTMV 1000MDT V3.0

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### 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



With two indenters and three objectives, automatic recognition and shifting between objective and indenter, automatically get the Vickers or Knoop hardness value

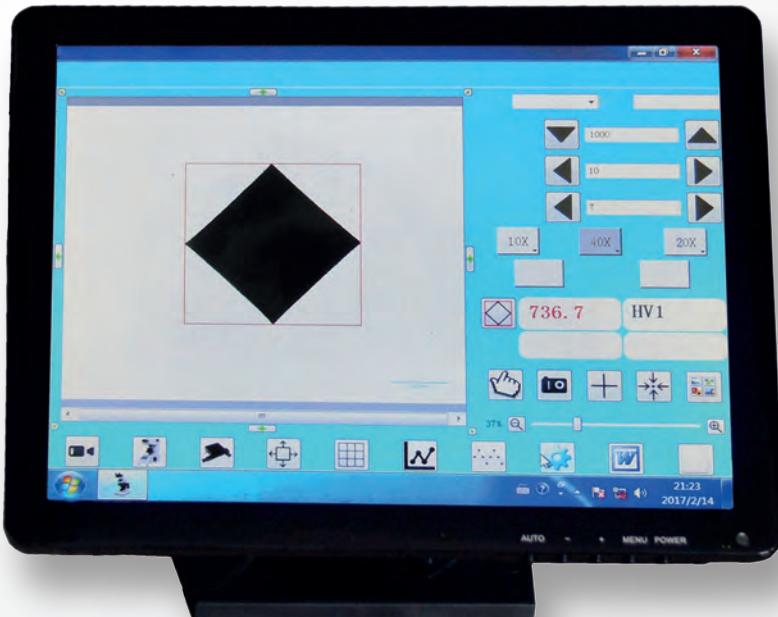
- > Hardness scale conversion
- > With USB, VGA and LAN interfaces, the hardness measurement can be printed out by USB interface
- > Automatically save the measuring data, generate the hardness-depth curve and save as WORD or EXCEL document
- > Motorized X-Y test table, automatic focusing and automatic 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



**Table 1 - Hardness Vickers**

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

**Table 2 - Hardness Vickers**

Hardness	Displayed value tolerance %															
	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 tollerance	±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 diaphram/field apperture / 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

**Table 3 - Hardness Knopp**

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

**Table 4 - Hardness Knopp**

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



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