



## Data Sheet

HTMV 1000K

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### 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.



#### 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**

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

**Table 2**

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 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



**DEVCO S.r.l.**

Via Marzabotto, 59 20037 Paderno Dugnano (MI)  
Tel +39 0283591153 - Fax. +39 0295441300  
[www.devcosrl.it](http://www.devcosrl.it) - e-mail: [info@devcosrl.it](mailto:info@devcosrl.it)

[www.echo-lab.it](http://www.echo-lab.it)