

HM-200 Series

SERIES 810 – Micro-Vickers Hardness Testing Machines

- The latest electromagnetic force motor used in the loading mechanism enables the test force to be freely selected over the wide range of 0.05 gf to 2 kgf. It is also possible to freely set the time for loading and load dwell time. Now the benefits of absolute control over the indentation size in Vickers hardness testing can be realized. The HM-200 series always offers the test force most appropriate for the specimen material and shape.
- The objectives used enable a very comfortable working distance between the objective and the specimen surface. This greatly reduces the possibility of collision between the specimen and the objective during focussing operations. (For example, for 50X objectives: 1.1 mm for conventional models; 2.5 mm for HM-200 series models.)
- Newly designed 'MH Plan' objectives are optimized for measuring indentation images. The lineup includes 6 long working distance objectives: 10X, 20X, 50X and 100X for measuring indentation images, and 2X and 5X for enabling wide-range measurement around indentations. LEDs are used in the illumination system for their advantages of longer life, lower heat generation and higher energy efficiency than the traditional incandescent bulb.

MeasurLink ENABLED
Data Management Software by Mitutoyo



System A



System B



System C

Specifications

Model	HM-210		HM-220	
	A	B/C/D	A	B/C/D
Code No.	810-401E	810-404E	810-406E	810-409E
Indentation measurement	Measuring eyepiece	Automatic (AVPAK-20)	Measuring eyepiece	Automatic (AVPAK-20)
Main unit operation	Touch panel	PC	Touch panel	PC
Fixed test forces	10, 20, 30, 50, 100, 200, 300, 500, 1000 gf		0.05, 0.1, 0.2, 0.3, 0.5, 1, 2, 3, 5, 10, 20, 30, 50, 100, 200, 300, 500, 1000, 2000 gf	
Arbitrary test force	One setting can be saved, default is HVO.025 (25 gf)			
Test force control	Force generation by electromagnetic and automatic control (load, dwell, unload)			
Turret drive	Motor-driven			
Control unit	Touch screen type	—	Touch screen type	—
Indenters	A maximum of two can be installed. (One indenter shaft with diamond indenter is provided as standard in the main unit.)			
Objectives	A maximum of four can be installed in turret. (A 50X objective is provided as standard.)			
Dimensions (W x D x H)*1	315 x 671 x 595 mm	315 x 586 x 741 mm	315 x 671 x 595 mm	315 x 586 x 741 mm
Mass (main unit)	38.5 kg	37.4 kg	38.5 kg	37.4 kg
Power supply	220-240 VAC			

*1 Excluding protrusions and stage.

Technical Data

Test force range	HM-210A: 9 steps + arbitrary test force HM-220A: 19 steps + arbitrary test force
Load dwell time:	0 - 999s
Max. specimen height	System A/B: 133 mm (stage size: 25 x 25 mm) System C: 112 mm (stage size: 25 x 25 mm) System D: 72 mm (stage size: 25 x 25 mm)
Max. specimen depth:	160 mm (from the centre of indenter)
Optical path:	4-port turret, infinity-corrected objectives
Resolution:	0.1 μm when using objectives less than 50X (0.01 μm when using objectives of 50X or more)
Data output:	Serial (RS-232), Digimatic and USB 2.0 interfaces
Functions:	Calculation of Vickers/Knoop*2 hardness and ceramic fracture toughness based on IF method (JIS R1697), 3 display formats (standard, list, simple), GO/±NG judgement, test condition guide, curve and user correction, hardness corresponding value, statistics calculation

*2 For Knoop hardness test, Knoop indenter (optional) is required.

Optional Accessories

Code No.	Description
375-056	Micro-scale
810-013	Specimen (thin plate) holder
810-017	Vice (100 mm)
810-018	Rotary table
810-019	Specimen tilting holder
810-020	Universal specimen holder
810-085	Adjustable specimen (thin plate) holder
810-095	Rotatable specimen stage
810-641	Vibration isolator stand
11AAC104	Objective lens 2X
11AAC105	Objective lens 5X
11AAC106	Objective lens 10X
11AAC107	Objective lens 20X
11AAC108	Objective lens 100X
11AAC109	Indenter shaft (HM-210)
11AAC110	Indenter shaft (HM-220)
11AAC129	Measuring eyepiece (System B, C and D)

For Hardness Test Blocks refer to page M-10 for details.

For Indenters refer to page M-10 for details.

Systems

System A (HM-210A/HM-220A):

All-in-one model with simple colour touch-panel operation.

System B (HM-210B/HM-220B):

A system equipped with automatic reading function with AVPAK software.

System C (HM-210C/HM-220C):

In addition to the functions of System B, System C is equipped with an electric stage.

System D (HM-210D/HM-220D):

In addition to the functions of System B and System C, System D is equipped with the auto focus function.