

FT-ZERO Series

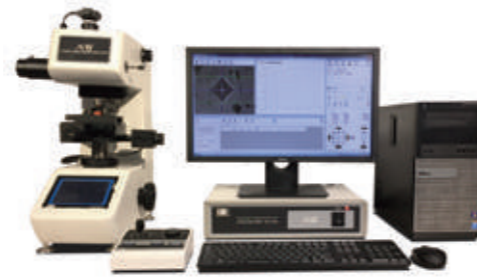
FULLY-AUTOMATIC MEASURING SYSTEM

ARS-F

Auto-Focus, Auto-Reading, Auto-Stage

Light-and-dark image processing protects this system against the influence of metals or damage.

Automatic measurement can be done with high accurate repeatability exceeding any skilled technician.



ITEM	ARS-F
SYSTEM CONFIGURATION	1.5M or 5M Pixel camera, Camera attachment, personal computer, printer, 23-inch LC monitor, connecting cable, exclusive control, and data processing software
MIN. MEASUREMENT UNIT	0.1 μm
MEASUREMENT SCALE	HV (Vickers), HK (Knoop)
MEASURING METHOD	Light-and-dark image processing system
REPEATABILITY	±0.5% / approx. HV500 Load:500gf
MANUAL MEASUREMENT	Video line system
AUTOMATIC READING TIME	Approx. 0.3 sec / 1 indentation
MIN. READ INDENTATION DIAMETER	10 μm (diagonal length)
AGE DIMENSION	110 × 110
STAGE MOVEMENT	X50 × Y50 × Z-axis with joystick controller
MIN. STAGE MOVEMENT UNIT	1 μm
DATA PROCESSING	Graph display, color conversion data, maximum value, minimum value, average, conversion, hardened layer depth, etc.

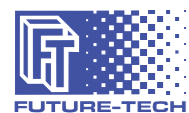
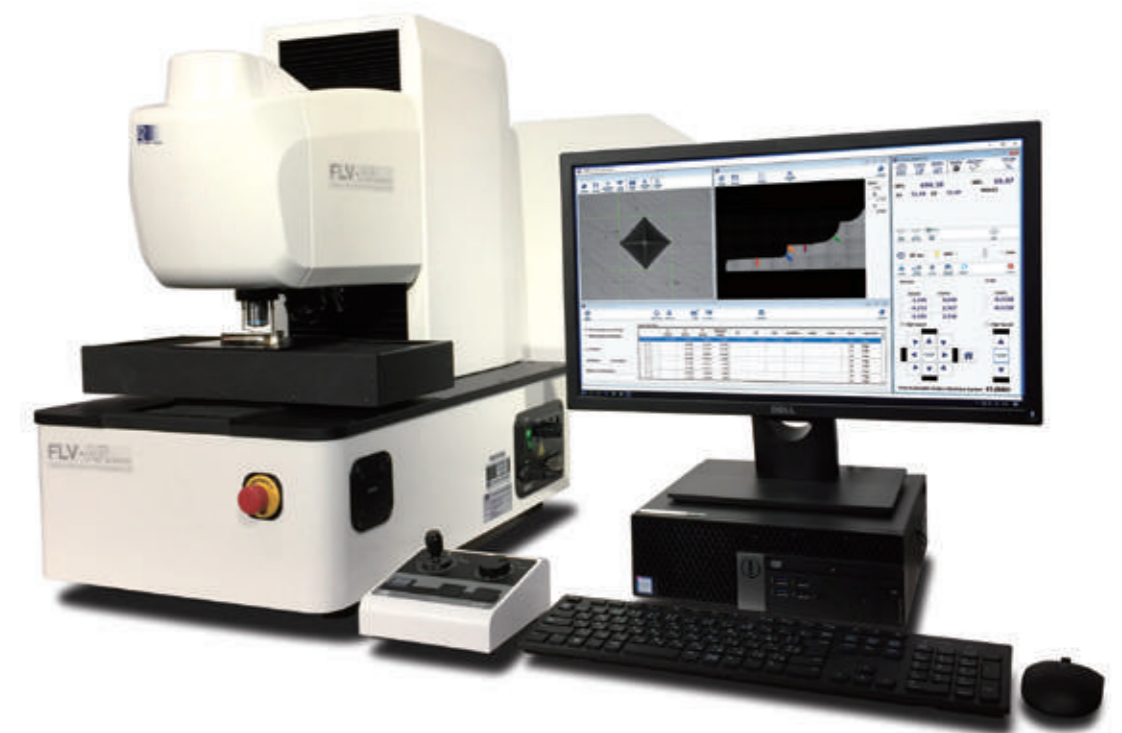
- Applicable models
- FM-110
 - FM-110e
 - FM-310
 - FM-310e
 - FM-810
 - FM-810e
 - FV-110
 - FV110e
 - FV-310
 - FV310e
 - FV-810
 - FV-810e

- By combining with Hardness Tester, stage control is automated in indent/multi-point measurement to reduce the dispersion caused by each operator.
- This system is very effective for large-scale rationalization and energy saving.

LOAD-CELL TYPE AUTOMATIC VICKERS HARDNESS TESTER

FLV-AR Series

Controlled by high performance software FT-ZERO



FUTURE-TECH CORP.

<http://www.ft-hardness.com>

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JCSS 0228
 当社は、認定標準として、ISO 17025 (ISO/IEC 17025) を用い、認定文書—ISO/IEC 17011 に従って運営されているJCSSの下で認定されています。
 JCSSを運営している認定機関 (Japan) は、アジア太平洋経済共同体協定力機構 (APLAC) 及び国際試験所認定協力機構 (ILAC) の相互承認に署名しています。
 当社は、国際PMA対応JCSS認定事業者です。
 JCSS 0228は、当社の認定番号です。



FLV-AR Series

Fully-Automatic Microhardness / Vickers Hardness Testing System has been evolved!!

- Innovative elevating type head and wide test load range is adopted.
- Advanced intelligent system of high speed sample profiling function.
- Improvement of high speed, high accuracy, excellent in operability, reading efficiency and repeatability.
- Reliable hardness test as close as human eyes and sensitivity.

Features

Load-cell type loading mechanism

- 15 steps test load and additional test load can be optionally set by "unit 10g".
- There are 2 models. 10gf ~ 10kgf (FLV10) and 50gf ~ 50kgf (FLV50)

Load apply mechanism by elevating type head

- Large heavy sample and multiple samples can be set at once.
- Work table doesn't require a hole for elevation screw and do not need to choose the place to install the tester.

High resolution camera

- Camera resolution is selectable 1.3M pixel and 5M pixel (option).
- 1.25x object lens can be optionally adopted.
- 1.25x object lens can perform the high precision alignment in wide area which wide view camera cannot perform.

Sample surface inclination/slope correction function

- Z axis shall be controlled along with surface inclination by selecting 3 positions' angle setting.
- This function is to improve the accuracy of load apply and measurement position. Moreover to shorten the auto focus time, and prevent accidental contact of sample and lens/indenter. (Built-in safety device).

Measurement image saving function

- Measured indentation image can be checked quickly. Easily and quickly edit the data by re-measuring the saved image.

Large motorized XY stage

- Built-in large stage.
- It can be prevented the inclination of stage which shall be created by large heavy sample, and performs highly accurate load apply. It is also quiet.
- It is possible to move the stage to the center by double clicking and move the stage finely by dragging. Easy to align the sample's original position and it can drastically shorten the setting time.

Various measuring pattern

- Fully automated test cycle (indent, measuring, recoding data) by selecting measuring pattern.
- Random measuring combined with sample profiling function, and measuring function which traces edge of sample as standard feature.

Function which traces edge of sample as standard feature

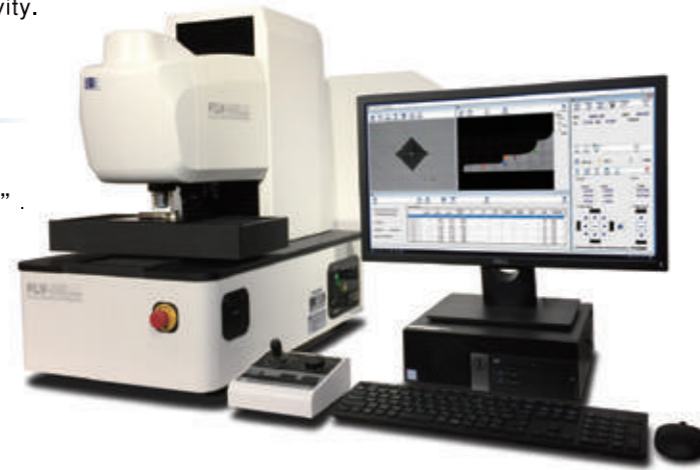
- Straight/Zigzag/Circle/Arc/Line Set/Random/Matrix/Teaching etc...
- We will meet users' needs.

Image processing software

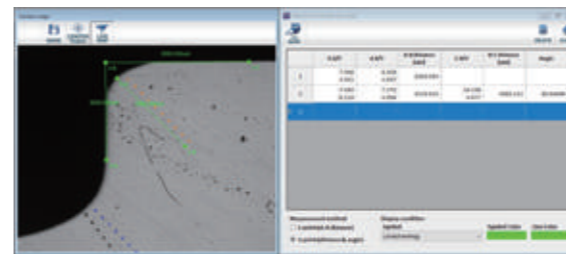
- Capability of reading unclear indents on un-mirror surface has been improved by more advanced image processing software.

Various data output format and statistical processing

- For the measuring of carburizing / induction hardening, the selected hardness case depth shall be displayed and recorded on the chart once the multiple measuring is completed.
- Multiple measuring data, Hardness chart, Case depth, Max. value, Min. value, Mean value, Dispersion, Standard deviation, OK-NG criteria, Conversion data etc... various data output shall be available.
- Display and output of color profile picture linked with hardness values are standard function.
- Excel data transfer function. Test result shall be exported to the original report Form.

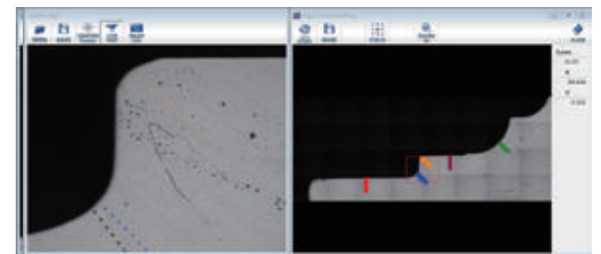


DISTANCE & ANGLE MEASUREMENT FUNCTION



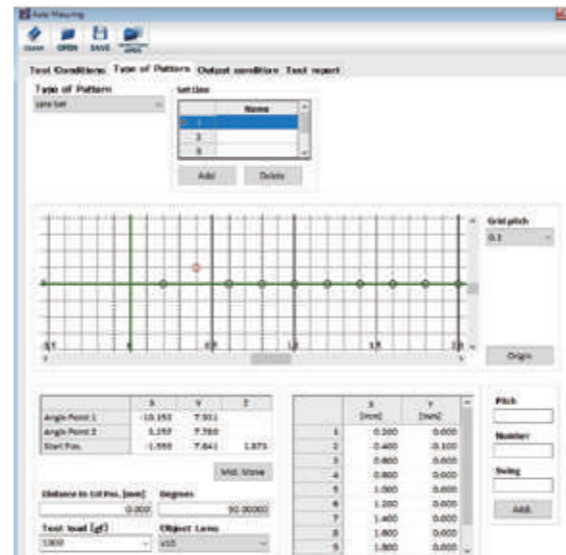
Only click between two points can measure the distance and click three points can measure the angle easy.

IMAGE OF PROFILING FUNCTION



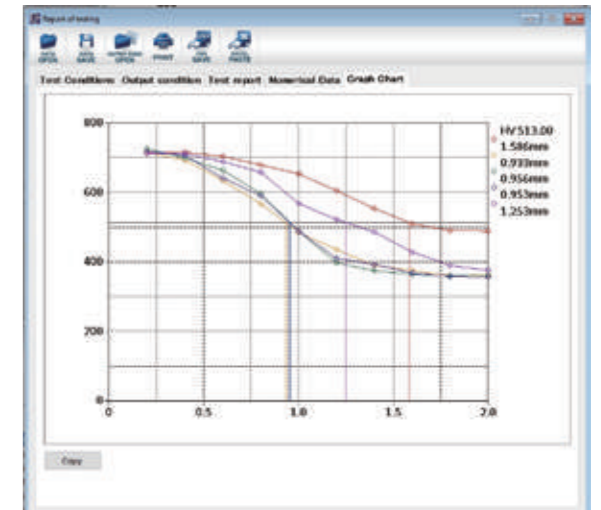
The original position set is very simple by this function to recognize a shape of sample automatically.

PATTERN SETTING



Easily set the complicated pattern by clicking a graph. Test load and measurement lens can set it at a Line of each.

REPORT GRAPH CHART



Measurement data can save it in CSV form and transfer it to an original report.

STANDARD ACCESSORIES

MODEL	AUTOMATIC VICKERS HEADNESS TESTING SYSTEM FLV-AR series		
ITEM	CODE No.	SPECIFICATIONS	No.
HARDNESS STANDARD BLOCK	V-039	500HV	1
PRECISION VISE	V-027	Max.Opening : 50mm	1
DIAMOND INDENTER (BUILT-IN)	V-013	For Vickers (HV)	1
OBJECT LENS (BUILT-IN)	LV-017	×50	1
	LV-018	×10	1
LEVEL ADJUSTING LEG	LV-052	For Hardness Tester	4
LEVEL	M-066	For Label Adjustment	—
INDENTER COVER (BUILT-IN)	LV-053	For Hardness Tester	1
MACHINE COVER	LV-055	For Hardness Tester	1
POWER CORD	M-051	For Hardness Tester	1
AUXILIARY TOOLS	LV-057	Screwdriver, Wrench, etc.	1
ACCESSORY BOX	LV-056	For Hardness Tester	1
INSTRUCTION MANUAL	—	—	1

FLV-AR Series



- A super-wide range from 10gf to 10kgf
- Auto-Focus
- Auto-Reading
- Auto-Stage (ARS-F)



MODEL		FLV-10AR	FLV-10ARS-F
ITEM		SPECIFICATIONS	
TEST LOAD	VICKERS	HV 0.01, 0.02, 0.025, 0.05, 0.1, 0.2, 0.3, 0.5, 1, 2, 2.5, 3, 4, 5, 10 kgf	
	KNOOP	HK 0.05, 0.1, 0.2, 0.3, 0.5, 1, 2 kgf	
	BRINELL	HBW 1/1, 1/2.5, 1/5, 1/10, 1/30, 2.5/6.25 mm/kgf	
	OPTIONAL LOAD SETTING	Possible to set max 64 kinds of test load in a range of 0.05~50kgf by min 0.01kgf.	
LOADING SYSTEM		0.05~50kgf Test Load : Automatic Direct Loading System with Load-Cell closed-loop feedback	
LOAD-CELL TYPE		0.01~10kgf : by Double Load-Cell (Apply Test Load by 10gf)	
FOCUSING METHODS		Automatic Operation (by integrated Auto-Reading Software) / Manual Operation (by motorized Positioning System)	
TURRET ROTATION		Automatic-Motorized (by integrated Auto-Reading Software)	
MEASUREMENT OF INDENTATION		Automatic Reading / Manual Reading (by integrated Auto-Reading Software)	
LOAD APPLYING SPEED		Initial Descending Speed (to 0.15mm level on specimen surface) : Approx. 180 μm/s Effective Loading Speed : Approx. 30 μm/s for under 1kgf Test Load and Approx. 80 μm/s for over 1kgf Test Load	
DWELL TIME		5~99sec	
INDENTER		For Vickers Test (HV) : 1pc For Knoop Test (HK) and Brinell Test (HBW) : Tungsten Ball φ1mm, φ2.5mm (OPTION)	
OBJECTIVE LENS		Infinity Corrected Long Working Distance (LWD) Lens 2pcs : X10 & X50 Infinity Corrected LWD Lenses / Max. 5pcs : X1.25, X2.5, X5, X20, X40, X100 (OPTION)	
INDENTATION MEASUREMENT SYSTEM	CAMERA	Automatic measurement by Built-in Type 1.3Mpixel, 5Mpixel (OPTION)	
SYSTEM CONTROL	SOFT WARE	FT-ZERO (Windows 10 / 64bit) / Display Size 23"	
	OUTPUT SIGNAL	USB (RS232C Converter : built-in)	
	DIMENSIONS	Manual 110×110 mm	Auto 150×150 mm
	X-Y STAGE MOVEMENT	Manual (X)50×(Y)50mm	Auto (X)180×(Y)110mm with joystick controller
MAX. HEIGHT OF SPECIMEN		110mm From Manual Stage Top	110mm From Auto Stage Top
MAX. DEPTH OF SPECIMEN		180mm	
LIGHT SOURCE	BULB	LED Illumination	
	FILTER	Manual Adapting / Removing	
	APERTURE DIAPHRAGM	Flexible Type Aperture (OPTION)	
ACCURACY		For Vickers Test : Conforming to JIS B-7725, JIS B-7734, ASTM E-384 and ISO/ DIS6507-2	
SAFETY DEVICE		Protection Cover on Turret for Indenter & Each Objective Lens	
DIMENSIONS		H720 × W415 × D650 mm	
WEIGHT		Approx 90kg	
POWER SUPPLY		1P AC100~115V / AC240V (50/60Hz) : Selectable by SW	

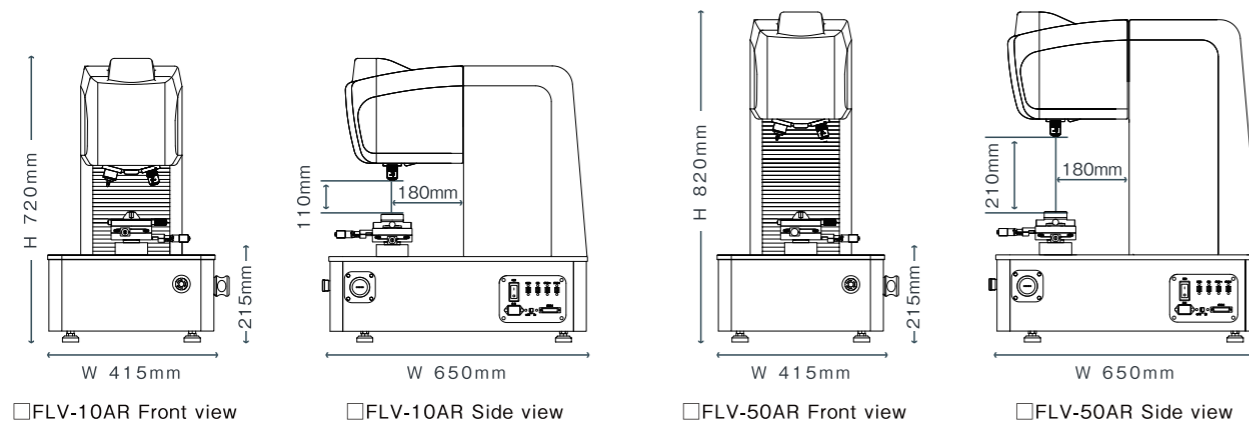
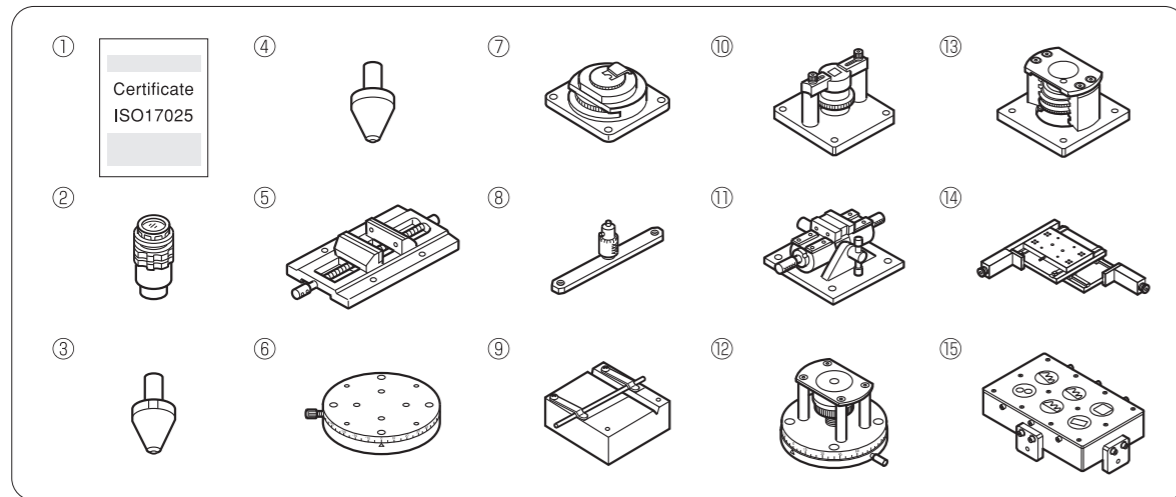
- A super-wide range from 50gf to 50kgf
- Auto-Focus
- Auto-Reading
- Auto-Stage (ARS-F)



MODEL		FLV-50AR	FLV-50ARS-F
ITEM		SPECIFICATIONS	
TEST LOAD	VICKERS	HV 0.05, 0.1, 0.2, 0.25, 0.3, 0.5, 1, 2, 2.5, 3, 4, 5, 10, 20, 30, 50 kgf	
	KNOOP	HK 0.05, 0.1, 0.2, 0.3, 0.5, 1, 2 kgf	
	BRINELL	HBW 1/1, 1/2.5, 1/5, 1/10, 1/30, 2.5/6.25, 2.5/15.6, 2.5/31.25 mm/kgf	
	OPTIONAL LOAD SETTING	Possible to set max 64 kinds of test load in a range of 0.05~50kgf by min 0.01kgf.	
LOADING SYSTEM		0.05~50kgf Test Load : Automatic Direct Loading System with Load-Cell closed-loop feedback	
LOAD-CELL TYPE		0.05~50kgf : by Double Load Cell (Apply Test Load by 10gf)	
FOCUSING METHODS		Automatic Operation (by integrated Auto-Reading Software) / Manual Operation (by motorized Positioning System)	
TURRET ROTATION		Automatic-Motorized (by integrated Auto-Reading Software)	
MEASUREMENT OF INDENTATION		Automatic Reading / Manual Reading (by integrated Auto-Reading Software)	
LOAD APPLYING SPEED		Initial Descending Speed (to 0.15mm level on specimen surface) : Approx. 180 μm/s Effective Loading Speed : Approx. 30 μm/s for under 1kgf Test Load and Approx. 80 μm/s for over 1kgf Test Load	
DWELL TIME		5~99sec	
INDENTER		For Vickers Test (HV) : 1pc For Knoop Test (HK) and Brinell Test (HBW) : Tungsten Ball φ1mm, φ2.5mm (OPTION)	
OBJECTIVE LENS		Infinity Corrected Long Working Distance (LWD) Lens 2pcs : X10 & X50 Infinity Corrected LWD Lenses / Max. 5pcs : X1.25 X2.5, X5, X20, X40 or X100 (OPTION)	
INDENTATION MEASUREMENT SYSTEM	CAMERA	Automatic measurement by Built-in Type 1.3Mpixel, 5Mpixel (OPTION)	
SYSTEM CONTROL	SOFT WARE	FT-ZERO (Windows 10 / 64bit) / Display Size 23"	
	OUTPUT SIGNAL	USB (RS232C Converter : built-in)	
	DIMENSIONS	Manual 110×110 mm	Auto 150×150 mm
	X-Y STAGE MOVEMENT	Manual MAX MOVEMENT : (X)50×(Y)50mm	AUTO MAX MOVEMENT : (X)180×(Y)110mm with joystick controller
MAX. HEIGHT OF SPECIMEN		210mm From Manual Stage Top	210mm From Auto Stage Top
MAX. DEPTH OF SPECIMEN		180mm	
LIGHT SOURCE	BULB	LED Illumination	
	FILTER	Manual Adapting / Removing	
	APERTURE DIAPHRAGM	Flexible Type Aperture (OPTION)	
ACCURACY		For Vickers Test : Conforming to JIS B-7725, JIS B-7734, ASTM E-384 and ISO/ DIS6507-2	
SAFETY DEVICE		Protection Cover on Turret for Indenter & Each Objective Lens	
DIMENSIONS		H820 × W415 × D650 mm	
WEIGHT		Approx 95kg	
POWER SUPPLY		1P AC100~115V / AC240V (50/60Hz) : Selectable by SW	

FLV-AR Series OPTIONAL ACCESSORIES

CODE No.	ITEM	MODEL / CONTENTS
M - 0 6 2	Calibration Certificate	① ISO17025
L V - 0 1 5	Object Lens	× 100
L V - 0 1 6		× 40
L V - 0 1 7		× 20
L V - 0 1 9		× 5
L V - 0 2 0		× 2.5
L V - 0 2 1		× 1.25
M - 0 1 4	Knoop Indenter	③ Rhombic diamond indenter for Knoop Hardness (HK)
M - 0 6 3	For Brinell Hardness Test Tungsten Carbide Ball Indenter	④ ϕ 1mm
M - 0 2 8	Precision Vise	⑤ Max. Opening : 100mm
M - 0 2 9	Rotary Table	⑥ Graduation of rotary angle : 5° Table dia : 128mm (Mounted onto X-Y stage)
M - 0 3 0	Thin Specimen Measuring Device	⑦ Specimen thickness : 5mm max.
M - 0 3 1	Fine Specimen Measuring Device	⑧ Specimen dia : ϕ 5mm max. (For measuring cross section)
M - 0 3 2		⑨ Specimen dia : ϕ 5mm max. (For measuring cylindrical surface)
M - 0 3 3	Specimen Inclining Device	⑩ Specimen height : 5*20mm. (For measuring mounted specimen)
M - 0 3 4	Universal Specimen Vise	⑪ Max. Opening : 45mm
—	Rotary Mounted Specimen Inclining Device	⑫ Specimen height : 5*30mm
—	Mounted Specimen Inclining Device	⑬ Specimen height : 5*30mm
M - 0 9 0	Automatic X-Y Stage	⑭ Movement : X150mm× Y80mm
M - 0 9 1	Fixing Jig for Six Mounted Specimens	⑮ For 32 ϕ , 38 ϕ , and 40 ϕ
M - 0 4 3	Vibration Insulation Stage	⑯ Vibration-proof rubber type
M - 0 6 5	Dual Indenter Turret	⑰ Used when two HV/HK indenters are mounted at the same time. Specify this turret when ordering.Replacement is permitted only in our company's factory.



FT-ZERO Series

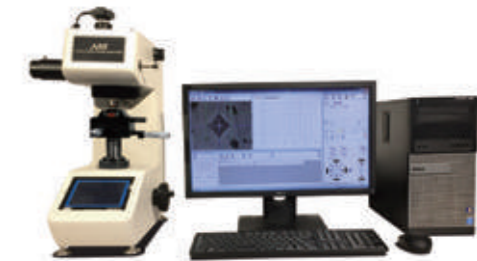
AUTOMATIC INDENTATION MEASURING SYSTEM

AR

Indentation measurement is automated!!

Light-and-dark image processing protects this system against the influence of metals or damage.

Automatic measurement can be done with high accurate repeatability exceeding any skilled technician.



ITEM	AR
SYSTEM CONFIGURATION	1.5M or 5M Pixel camera, Camera attachment, personal computer, printer, 23-inch LC monitor, connecting cable, exclusive control, and data processing software
MIN. MEASUREMENT UNIT	0.1 μ m
MEASUREMENT SCALE	HV (Vickers), HK (Knoop)
MEASURING METHOD	Light-and-dark image processing system
RIPEATABILITY	\pm 0.5% / approx. HV500 Load:500gf
MANUAL MEASUREMENT	Video line system
AUTOMATIC READING TIME	Approx. 0.3 sec / 1 indentation
MIN. READ INDENTATION DIAMETER	10 μ m (diagonal length)
DATA PROCESSING	Graph display, color conversion data, maximum value, minimum value, average, conversion, hardened layer depth, etc.

- Applicable models
- FM-110
 - FM-110e
 - FM-310
 - FM-310e
 - FM-810
 - FM-810e
 - FV-110
 - FV-110e
 - FV-310
 - FV-310e
 - FV-810
 - FV-810e

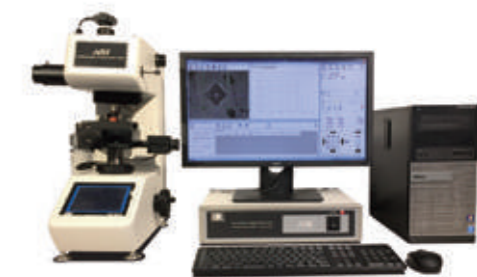
AUTOMATIC INDENTATION MEASUREMENT / AUTOMATIC X-Y STAGE SYSTEM

ARS

Indentation measurement is automated!!

Stage control is automated!!

Light-and-dark image processing realizes the automation of indentation measurement and stage movement!



ITEM	ARS
SYSTEM CONFIGURATION	1.5M or 5M Pixel camera, Camera attachment, control box, personal computer, printer, 23-inch LC monitor, connecting cable, exclusive control, and data processing software
MIN. MEASUREMENT UNIT	0.1 μ m
MEASUREMENT SCALE	HV (Vickers) / HK (Knoop)
MEASURING METHOD	Light-and-dark image processing system
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AGE DIMENSION	110 × 110
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MIN. STAGE MOVEMENT UNIT	1 μ m
DATA PROCESSING	Graph display, color conversion data, maximum value, minimum value, average, conversion, hardened layer depth, etc.

- Applicable models
- FM-310
 - FM-310e
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 - FM-810e
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 - FV-310e
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 - FV-810e