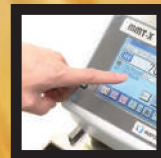
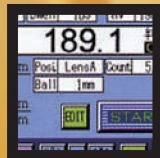
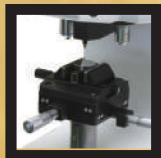


# mmT-X

DIGITAL MICRO HARDNESS TESTERS



## ► MMT-X Feature

- The new function deploy, color LCD touch panel.
- The turret which mounted two indenter, four objective lenses.
- Testing area of industry maximum class.
- Wide test force range.
- Line up in LCD model.
- $0.01\text{ }\mu\text{m}$  measuring.(Magnification X200~X1000)
- LED light source.

# mmT-X

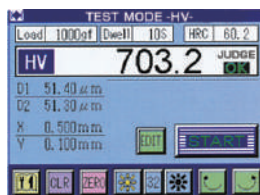
DIGITAL MICRO HARDNESS TESTERS

## Operation Color LCD touch panel

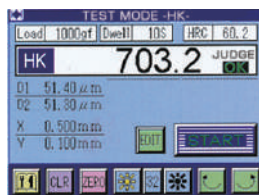
Visibility and operativity improve by color LCD touch panel.  
Equipped with the assist function that can identify the most suitable measurement condition.

(Correspondence model:X3,X7)

### HV testing mode (Vickers Hardness)

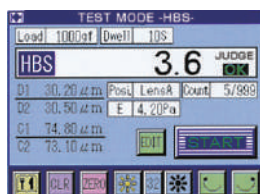


### HK testing mode (Knoop Hardness)



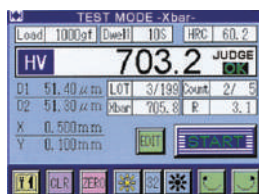
\*Knoop indenter(option) is required.

### Light-load brinell mode



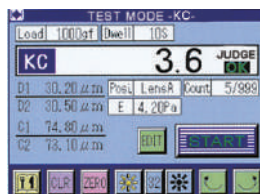
Ball indenter(option) is required.

### Xbar mode

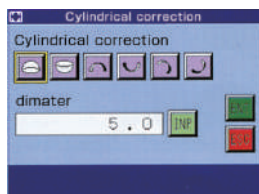


This mode can display the mean and difference immediately.

### Fracture toughness KC testing mode.

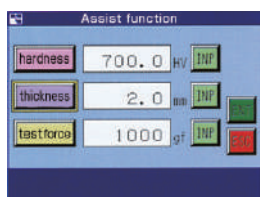


### Cylindrical correction mode :



This mode can set spherical surface and cylindrical correction.

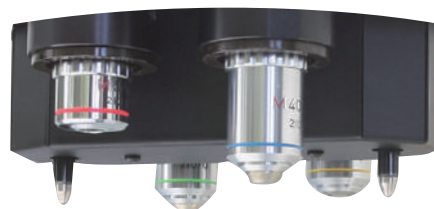
### Assist function



This mode can identify the testing condition which is optimum is carried. The testing condition which is optimum can be confirmed by satisfying 2 from 3 condition of thickness, hardness, test load.

## Function

The turret which mounted two indenter, four objective lenses.



Two indenter and four objective lenses are realized following conventional stable loading mechanism. The measuring that reliability is high can be done in various test condition.

(All mode correspondence)

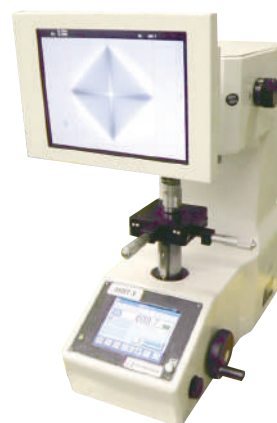
Measuring unit 0.01 μm was realized by corresponding to high magnification of measuring, total magnification 200×-1000×.

(Correspondence model:X3,X7)

## Operation Line up in LCD model.

Clear specimen surface image magnified on TFT LCD monitor is displayed. Fatigue by the long operation is decreased. The integrated structure, there is no eye movement. Because the Measurement knob is placed in the measurement panel, you can significantly reduce the fatigue of working long hours.

(Correspondence model:X3,X7)



## Function

Testing area of industry maximum class.

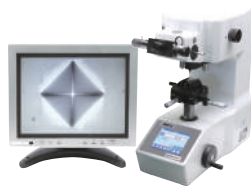
By a new design, testing range of specimen height 120mm and specimen depth 160mm was secured.

(All mode correspondence)





## TV measuring device



### TVL

The 10.4inch TFT LCD monitor is attached.  
(All mode correspondence)

## LCD model



### LCD

Tablet PC integrated.  
(Correspondence model:X3,X7)

## TV measuring device Set Model

| Item / Model          | MMT-X□-TVL                |
|-----------------------|---------------------------|
| CCD camera            | 1/2"CCD camera            |
| Monitor               | 10.4" TFT LCD             |
| Monitor magnification | ≒ 1200×                   |
| Min.scale             | 0.01μm                    |
| Data display          | Display on touch panel ※1 |
| Output                | Monitor output(NTSC)      |

## LCD integrated model

| Item / Model          | MMT-X□-LCD         |
|-----------------------|--------------------|
| CCD camera            | 1/2" CMOS camera   |
| Monitor               | Tablet PC          |
| Monitor magnification | ≒ 1600×            |
| Min.scale             | 0.1μm              |
| Data display          | Display on monitor |

※Number of hardness tester is in a part of □ of a model name. LCD integrated model is only digital model.(X3,X7)

※1 X1 do not have a data display function.

## Automatic System



### Automatic reading system PMT series

PC system of the automatic reading function deployment.In addition to automatic reading,data processing and operation of hardness testers\* can be operated in the PC side.



### Automatic stage system AMT-S series

PC system of the automatic stage deployment.Excellent measurement by the stage control box in the operation can be done.



### Automatic stage-reading system AMT-PS series

PC system of the automatic reading and stage function deployment.Variou measuring patterns can be set.



### Automatic stage-reading-focus system AMT-FS series

PC system of the reading,automatic stage,auto focus.Serial operation of position move - Loading - auto focus - auto reading are done in all automatic.

Automatic focus

※Hardness tester models that can control is the only digital models.

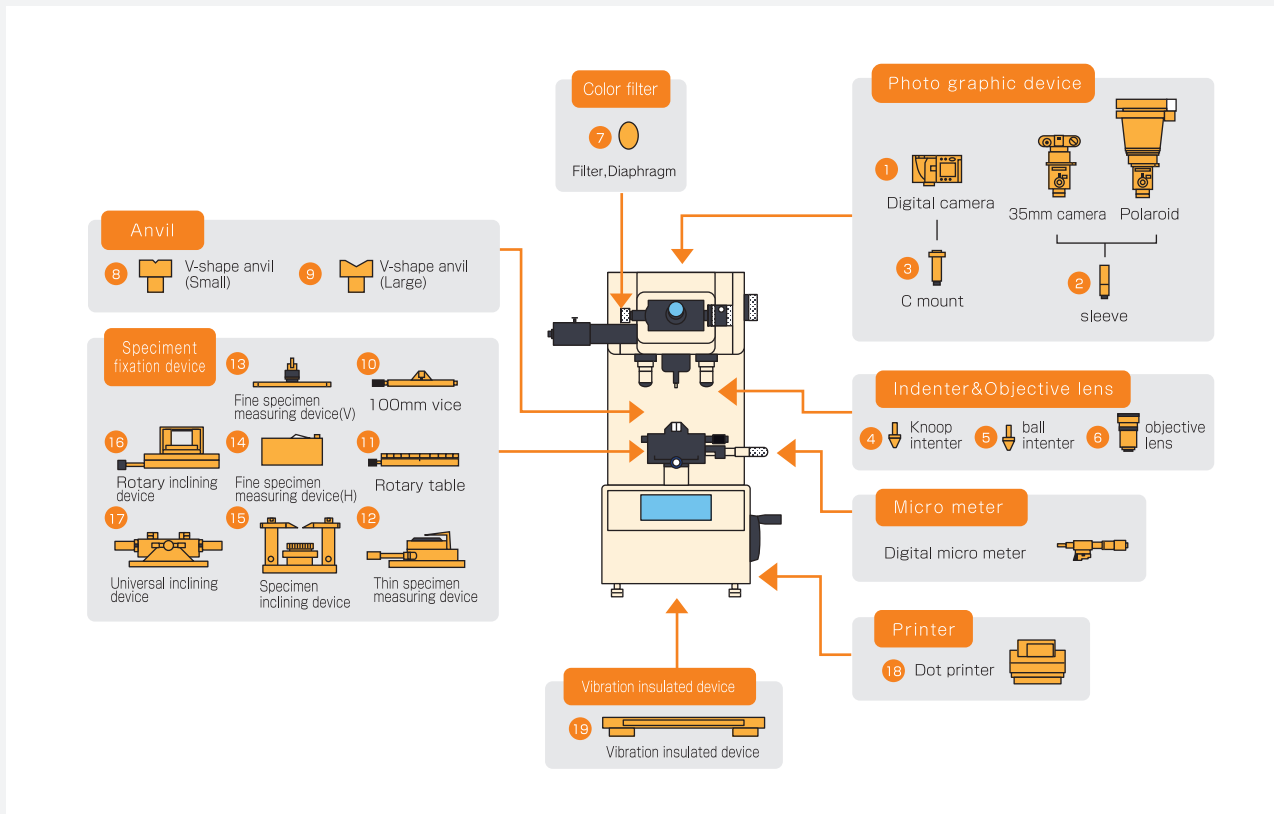
## Automatic System

| Item / Model         | PMT-X□                       | AMT-X□S                                                        | AMT-X□PS | AMT-X□FS |
|----------------------|------------------------------|----------------------------------------------------------------|----------|----------|
| Correspondence model | X1,X3,X7                     | X3,X7                                                          | X3,X7    | X7       |
| Auto reading         | ○                            | —                                                              | ○        | ○        |
| Data processing      | ○                            | ○                                                              | ○        | ○        |
| Auto stage           | —                            | ○                                                              | ○        | ○        |
| Auto focus           | —                            | —                                                              | —        | ○        |
| Stage control box    | —                            | ○                                                              | ○        | ○        |
| PC                   | PC/AT convertible            |                                                                |          |          |
| Monitor              | 19" TFT monitor              |                                                                |          |          |
| OS                   | Windows 10 Pro (64bit) later |                                                                |          |          |
| Other                | X-Y data input option        | Corresponding exclusive fully automatic system ※please consult |          |          |

※Number of hardness tester is in a part of □ of a model name.Please use an exclusive catalog on the details.

※Windows is a registered trademark by Microsoft USA in USA and other countries.

# Option



## Factory Setting Option

| ID Code | Item                     | Specification                             | Model | Note                                                           |
|---------|--------------------------|-------------------------------------------|-------|----------------------------------------------------------------|
| LB      | Test Force type          | Type B(1~2000gf 12step)                   | All   | Standard:Type A                                                |
| AP      | Test Force change device | Automatic change(Pannel operation)        | X3,X7 |                                                                |
| ID      | Indenter                 | Two simultaneous installation(HV,HK)      | All   |                                                                |
| T3,T4   | Objective lens           | T3:3 objective lens / T4:4 objective lens | All   | Standard:2 lens                                                |
| DM      | Micrometer               | Digital micrometer                        | X3,X7 | Displaying a coordinate value on touch panel & cable accessory |

※Specify the above option at the time of the order. An exchange becomes possible only in our company factory later.

## Optional Accessories

| Code No.  | Item                                 | Contents                                                                                                                     |
|-----------|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| M201      | Photographic device:Digital camera ① | Nikon Microsystem(Digital camera,relay lens,accessory)                                                                       |
| M211      | Camera sleeve ②                      | For polaroid camera or 35mm camera.                                                                                          |
| M212      | C mount ③                            | For digital camera or automatic system.                                                                                      |
| M002      | Knoop indenter(HK) ④                 | Effectively measures thin material.                                                                                          |
| M003      | Ball indenter(HB) ⑤                  | For light-load brinell test.( $\phi 1\text{mm}$ cemented carbide steel ball)                                                 |
| M071~075  | Objective lens ⑥                     | 100X(M071), 40X(M072), 50X(M080), 20X(M073), 10X(M074), 5X(M075)                                                             |
| M076      | Eyeiece                              | 15X                                                                                                                          |
| M081      | Color filter ⑦                       | $\phi 20\text{mm}$ yellow,blue,red(standard:green)                                                                           |
| M082      | Aperture diaphragm ⑦                 | 1mm~6mm(1mm pitch,6 size)                                                                                                    |
| M020      | V-shape anvil(Small) ⑧               | For measuring the cylindrical surface together with vice. $\phi 2\text{mm} \sim \phi 6\text{mm}$                             |
| M021      | V-shape anvil(Large) ⑨               | For measuring the cylindrical surface together with vice. $\phi 8\text{mm} \sim \phi 50\text{mm}$                            |
| M012      | Precision vice ⑩                     | Max. opening:100mm                                                                                                           |
| M013      | Rotary table ⑪                       | 360° rotation.This table is usually on the micro test table with precision vice.                                             |
| M014      | Thin specimen measuring device ⑫     | Specimen thickness:0.05~5mm                                                                                                  |
| M015      | Fine specimen measuring device(V) ⑬  | Vertical type.Specimen diameter:0.1~4mm                                                                                      |
| M016      | Fine specimen measuring device(H) ⑭  | Horizontal type.Specimen diameter:0.5~4mm                                                                                    |
| M017      | Specimen inclining device ⑮          | The mesuring surface always shows a horizontal level.Specimen height:5~21mm                                                  |
| M018      | Rotary inclining device ⑯            | Specimen diameter :1inch, 1 1/4inch, 1 1/2inch select one size as you want                                                   |
| M019      | Universal inclining device ⑰         | When the specimen is inclined or curved,this device is effective to get the correct level.                                   |
| C001      | Dot printer ⑱                        | From CBM-910 II hardness tester adding up results to data output.                                                            |
| M171~M175 | Vibration insulated device ⑲         | On the desk type(Rubber cushion type:M171,Manual air type:M172, Auto air type:M173,Compound mount type:M175),Desk type(M174) |
| M102      | Table for Knoop hardness number      | For HK 5gf~50kgf                                                                                                             |

## Standard Accessories

| Code No. | Item / Model                                                  | MMT-X7 | MMT-X3 | MMT-X1 |
|----------|---------------------------------------------------------------|--------|--------|--------|
| M031     | Manual X-Y stage(Built in/Max.movement:25mm/Min scale:0.01mm) |        | 1      |        |
| M011     | Precision vice(Max.opening:50mm)                              |        | 1      |        |
| M061     | Standard test block(700HVM0.2)                                |        | 1      |        |
| M001     | Diamond indenter                                              |        | 1      |        |
| M041     | Measuring microscope:Electronic type                          | 1      |        | —      |
| M042     | Measuring microscope:Mechanical type                          | —      |        | 1      |
| M072     | Object lens 40×(Built in)                                     |        | 1      |        |
| M074     | Object lens 10×(Built in)                                     |        | 1      |        |
| M111     | Level adjusting leg                                           |        | 4      |        |
| M300     | Level                                                         |        | 1      |        |
| M094     | Spare fuse(100~220V5A)                                        |        | 2      |        |
| C031     | Power code(3P-2.0m)                                           |        | 1      |        |
| M161     | Machine cover                                                 |        | 1      |        |
| —        | Auxiliary tool kit                                            |        | 1      |        |
| —        | Instruction manual(Basic&Application)                         |        | 1      |        |
| —        | Inspection sheet                                              |        | 1      |        |
| M101     | Table for Vickers hardness number(5gf~50kgf)                  | —      |        | 1      |

## Data processing software

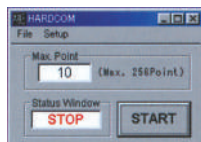
### Hardness Data Communication Software(Optional)

## HARDCOM SERIES

### Testing data are transmitted to Microsoft Excel directly.

Testing data can be managed if software is installed in the personal computer.

(Microsoft Excel is separately necessary.)



### Connection method

Hardness meter output(RS232C)-PC input(RS232C or USB)  
 ※USB serial converters standard attachment・Corresponds to USB2.0

### Data processing function

Testing data, test condition, statistics data and graph drawing are equipped.

### Measurement position data can be input.

Testing position data are indicated by connecting a digital micro-meter.

(Digital micro-meter is separately necessary.)

### Support an exclusive format.

The input part of the testing condition is freely revokable.

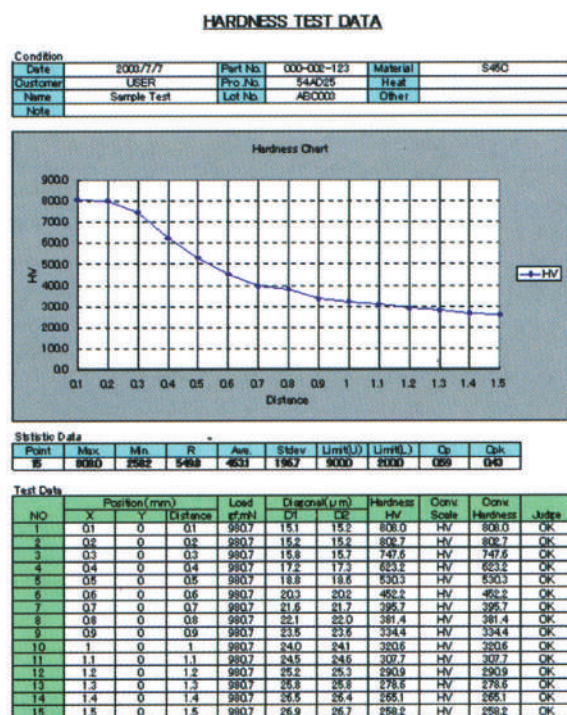
Our company will produce it if there is hope by a special form.

Code No. S001 Standard Software

Code No. S002 Software with the position data input function.

Corresponding model:MMT-X3,X7・VMT-X3,X7・RMT-1,3

※RMT series does not have the functionality of a data entry position.



※Microsoft and Windows are registered trademark by Microsoft USA in USA and other details.  
 ※Contents of this brochure June 2018. Specifications and appearance may change without notice.



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