

# HARDNESS Measurement



**enpax**

# HARDNESS Measurement



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## EPX 5500 Portable Hardness Tester

**EXP5500** is a small, light and portable tester. It is most suitable for testing of heavy, big or outdoor metal parts. It can measure in any direction and also easy to be used and accurate on curved test surfaces. Especially, it can automatically compensate effect of weight which according to the test direction.

**EXP5500** uses wireless to communicate with printer, operates with touch screen and test data could be linked into PC.

**EXP5500** Conforms to the Standard **ASTM A956 & DIN 50156** (in preparation)



### Specifications

|                        |                                                                                                                                   |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| HL display range       | 170~960HLD                                                                                                                        |
| Repeatability          | 6HLD                                                                                                                              |
| Testing direction      | All direction                                                                                                                     |
| Optional Impact Device | D, DC, DL, D+15, C, G (automatic identification)                                                                                  |
| Display                | 3.9" 240*320(touch screen), Bright and clear LCD display with back light                                                          |
| Multi-language menu    | English, Korean, Deutsch, French, Italian, Spanish, Russian, Polish, Chinese Simplified, Chinese Traditional                      |
| Power                  | 3.7V (rechargeable li-ion battery)                                                                                                |
| Charging power supply  | DC5.5V/1A                                                                                                                         |
| Printer                | Wireless Mini-printer (Cable no needed)                                                                                           |
| Communication          | RS232 to PC for transfer data                                                                                                     |
| Operating environment  | Temperature : -20°C~+50°C; Humidity:20%~85%                                                                                       |
| Storage environment    | Temperature : -30°C~+70°C; Humidity:5%~95%                                                                                        |
| Dimensions             | 135mm*83mm*24mm                                                                                                                   |
| Weight                 | 350g (include D type impact device)                                                                                               |
| Accessories            | Display Unit, Impact Device D, Test Block, Mini-printer, Charger, Little Support Ring, Cleaning Brush, USB Cable, PC Software CD. |
| Certificate            | CE                                                                                                                                |
| Options                | Impact Device DC; DL; D+15; C; G                                                                                                  |



## *Epx300* Portable Hardness Tester

**EPX300 Portable Hardness Tester** is a small, light and portable tester.

**EPX300** is most suitable for testing of heavy, big or outdoor metal parts.

**EPX300** conforms to the Standard **ASTM A956** , **DIN 50156** .



### Specifications

|                              |                                                                                                       |
|------------------------------|-------------------------------------------------------------------------------------------------------|
| <b>Accuracy</b>              | ± 6 HL                                                                                                |
| <b>Scales</b>                | HRC, HRB, HB, HV, HSD, MPa                                                                            |
| <b>Display</b>               | LCD display with backlight                                                                            |
| <b>Testing direction</b>     | All direction                                                                                         |
| <b>Impact Device</b>         | D, DC(optional)                                                                                       |
| <b>Printer</b>               | Wireless Mini-printer                                                                                 |
| <b>Power</b>                 | 4.5V (3 AAA batteries)                                                                                |
| <b>Operating environment</b> | -10~+40℃, 20%~85%RH                                                                                   |
| <b>Storage environment</b>   | -30~+80℃, 5%~95%RH                                                                                    |
| <b>Dimensions</b>            | 152mm*83mm*27mm                                                                                       |
| <b>Weight</b>                | Approx.190g                                                                                           |
| <b>Accessories</b>           | Display Unit, Impact Device D, Test Block, Mini-printer, Charger, Little Support Ring, Cleaning Brush |
| <b>Certificate</b>           | CE                                                                                                    |



## ETIPx series Portable Hardness Tester

### FEATURES:

- Self contained (Impact Device integrated): no cables.
- Integrated impact direction sensor.
- Highly accurate ( $\pm 4\text{HL}$ ) in any impact direction ( $360^\circ$ ) – automatically.
- Integrated display of results for all common hardness scales.
- Large, high contrast LCD for optimum viewing in all conditions.
- Easy calibration.
- Full USB communication with PC, software included free of charge.
- Internal storage of data with day and time.
- Battery: Rechargeable Li-ion, charges through device USB port.
- Intelligent sleep mode.
- Standards and Guidelines applied: DIN 50156 (2007), DGZfP Guideline MC 1 (2008), VDI / VDE Guideline 2616 Paper 1 (2002), ISO 18625 (2003), ASTM A956 (2006), GB/T 17394 (1998), JB/T 9378 (2001), JJG 747 (1999), CNAL T0299 (2008), JIS B7731 (2000).
- Printer: Wireless mini-printer.



### Application

| MODEL       |        | ETIPD                                              | ETIPDC                                                                    | ETIPC                                                                              | ETIPDL                                                   | ETIPD+15                                          |
|-------------|--------|----------------------------------------------------|---------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------------------------------|---------------------------------------------------|
| Application |        | The majority of your hardness testing assignments. | Very confined spaces, e.g. holes, cylinders or for internal measurements. | Surface hardened components, coatings, thin walled or impact sensitive components. | For extremely confined spaces or at the base of grooves. | Measurements in grooves and on recessed surfaces. |
| Test Range  | HLD    | 170~900                                            |                                                                           |                                                                                    |                                                          |                                                   |
|             | HLDC   |                                                    | 170~900                                                                   |                                                                                    |                                                          |                                                   |
|             | HLC    |                                                    |                                                                           | 350~960                                                                            |                                                          |                                                   |
|             | HLDL   |                                                    |                                                                           |                                                                                    | 560~950                                                  |                                                   |
|             | HLD+15 |                                                    |                                                                           |                                                                                    |                                                          | 481~850                                           |
|             | HRC    | 20~68                                              |                                                                           | 20.0~69.5                                                                          | 20.6~68.2                                                | 19.3~67.9                                         |
|             | HRB    | 13~101                                             |                                                                           | 38.4~99.5                                                                          | 37.0~99.9                                                |                                                   |
|             | HB     | 19~655                                             |                                                                           | 80~683                                                                             | 81~646                                                   | 80~638                                            |
|             | HV     | 80~955                                             |                                                                           | 80~996                                                                             | 80~950                                                   | 180~818                                           |
|             | HSD    | 32~100                                             |                                                                           | 31.9~102                                                                           | 30.6~96.8                                                | 33.3~99.3                                         |



## Specifications

| MODEL                  | ETIPD                                                                                                                                   | ETIPDC       | ETIPC         | ETIPDL        | ETIPD+15      |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|---------------|---------------|
| Accuracy               | ±4HL                                                                                                                                    |              |               |               |               |
| Testing Direction      | All direction ( Automatic identification)                                                                                               |              |               |               |               |
| Communication          | USB with PC                                                                                                                             |              |               |               |               |
| Power                  | Li-Ion Battery, Rechargeable                                                                                                            |              |               |               |               |
| Operating environment  | Temperature: -10~+60℃; Humidity: 20%~85%                                                                                                |              |               |               |               |
| Storage environment    | Temperature: -30~+80℃; Humidity: 5%~95%.                                                                                                |              |               |               |               |
| Dimensions (mm)        | 147 x 35 x 22.                                                                                                                          | 86 x 35 x 22 | 141 x 35 x 22 | 202 x 35 x 22 | 162 x 35 x 22 |
| Weight                 | 100 g                                                                                                                                   | 75 g         | 100 g         | 125g.         | 125g          |
| Standards & Guidelines | DIN 50156, DGZfP Guideline MC 1, VDI / VDE Guideline 2616, ISO 18625, ASTM A956, GB/T 17394, JB/T 9378, JJG 747, CNAL T0299, JIS B7731. |              |               |               |               |



## ETIPG series Portable Hardness Tester

ETIPGI is recommended for the exclusive measurement of solid and heavy components in the Brinell range. Unit G places low demands on measuring location surface finish. Typical applications: forgings or solid castings.

### Features

- Impact Device integrated.
- Direction sensor integrated.
- Highly accurate ( $\pm 6\text{HL}$ ) in any impact direction ( $360^\circ$ ) – automatically.
- Integrated display of results for HB, HRB hardness scales.
- Large, high contrast LCD for optimum viewing in all conditions.
- Easy calibration.
- Full USB communication with PC, software included free of charge.
- Internal storage of data with day and time.
- Battery: Rechargeable Li ion, charges through device USB port.
- Intelligent sleep mode.
- Standards and Guidelines applied: DIN 50156 (2007), DGZfP Guideline MC 1 (2008), VDI / VDE Guideline 2616 Paper 1 (2002), ISO 18625 (2003), ASTM A956 (2006), GB/T 17394 (1998), JB/T 9378 (2001), JJG 747 (1999), CNAL T0299 (2008), JIS B7731 (2000).
- Printer: Wireless mini-printer.
- Operating environment: Temperature:  $-10\sim+60^\circ\text{C}$ ; Humidity: 20%~85%.
- Storage environment: Temperature:  $-30\sim+80^\circ\text{C}$ ; Humidity: 5%~95%.
- Dimensions: 254 x 52 x 32 mm.
- Weight: 230g.



### Measuring Range

| Material       | HLG     | HRB | HB      |
|----------------|---------|-----|---------|
| Steel          | 300-750 | -   | 90-646  |
| Grey cast iron | 340-600 | -   | 92-326  |
| Ductile Iron   | 340-600 | -   | 127-364 |



## EHS series Digital Durometer

**EHS series** Digital Durometer is Suitable for measuring the hardness of rubber, plastic and other non-metallic materials.

### Features

- Calibration Certificate Included
- Conforms to ASTM D 2240, GB/T 531.1, ISO7619-1
- A large, easy-to-read LCD display with backlight
- Measurement mode: Averaging mode, Max Mode, Max-Average mode.
- Measurement data can be stored, browsing and batch printing.
- Printing: Wireless mini-printer.



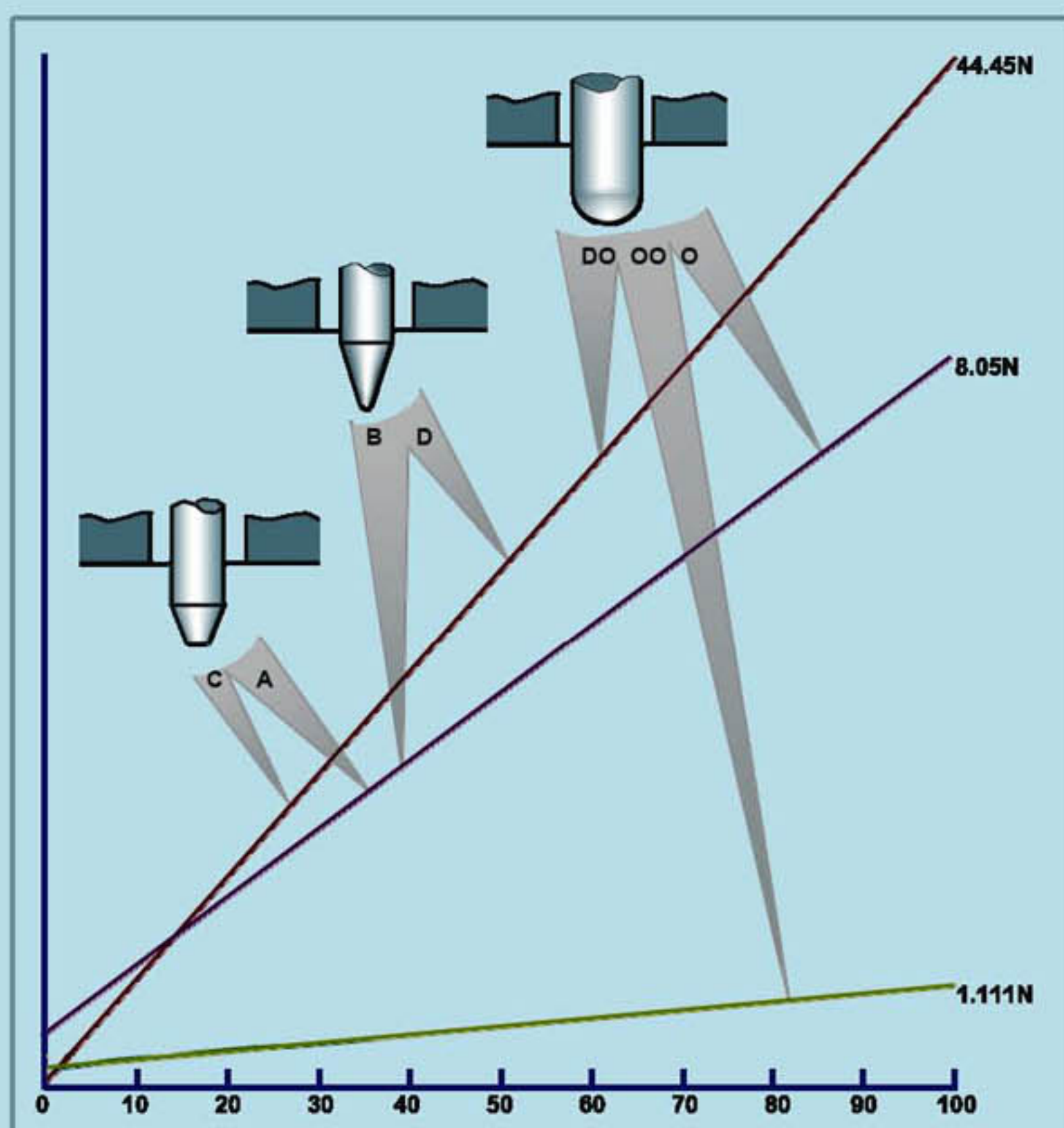
### Models

| Model | Type | Indenter | Application                                                                                                                                                       |
|-------|------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EHS1A | A    |          | Soft vulcanized rubber, natural rubber, nitriles, thermoplastic elastomers, flexible polyacrylics and thermosets, wax, felt, and leathers                         |
| EHS5C | C    |          | Medium-hard rubber, thermoplastic elastomers, medium-hard plastics, and thermoplastics                                                                            |
| EHS5D | D    |          | Hard rubber, thermoplastic elastomers, harder plastics, and rigid thermoplastics                                                                                  |
| EHS1B | B    |          | Moderately hard rubber, thermoplastic elastomers, paper products, and fibrous materials                                                                           |
| EHSoo | OO   |          | Soft rubber, thermoplastic elastomers, very soft plastics and thermoplastics, medium-density textile windings                                                     |
| EHSo  | O    |          | Extremely soft rubber, thermoplastic elastomers, sponge, extremely soft plastics and thermoplastics, foams, low-density textile windings, human and animal tissue |
| EHSdo | DO   |          | Moderately hard rubber, thermoplastic elastomers, and very dense textile windings                                                                                 |



## Specifications

|                       |                                      |
|-----------------------|--------------------------------------|
| Accuracy              | $\leq \pm 1 \text{ H}$               |
| Resolution            | 0.1 H                                |
| Display               | 128*64 dot matrix LCD with Backlight |
| Memory                | 500 readings                         |
| Power                 | 1.5V*3 (AAA alkaline batteries)      |
| Operating Environment | -10 to 40°C, 20 to 80%RH             |
| Dimensions            | 150X50.5X29mm                        |
| Weight:               | 170g                                 |



## Optional

Thermal wireless printer,

Test stand

|          | EXTRA SOFT                                                                          |    |                                                                                     |    | SOFT                                                                                |    | MEDIUM SOFT                                                                           |    | MEDIUM HARD                                                                           |    | HARD                                                                                  |    | EXTRA HARD                                                                            |    |                                                                                       |    |    |
|----------|-------------------------------------------------------------------------------------|----|-------------------------------------------------------------------------------------|----|-------------------------------------------------------------------------------------|----|---------------------------------------------------------------------------------------|----|---------------------------------------------------------------------------------------|----|---------------------------------------------------------------------------------------|----|---------------------------------------------------------------------------------------|----|---------------------------------------------------------------------------------------|----|----|
| SHORE OO | 20                                                                                  | 30 | 40                                                                                  | 50 | 60                                                                                  | 70 | 80                                                                                    | 90 | 95                                                                                    |    |                                                                                       |    |                                                                                       |    |                                                                                       |    |    |
| SHORE A  |                                                                                     |    |                                                                                     |    | 10                                                                                  | 20 | 30                                                                                    | 40 | 50                                                                                    | 60 | 70                                                                                    | 80 | 90                                                                                    | 95 | 100                                                                                   |    |    |
| SHORE D  |                                                                                     |    |                                                                                     |    |                                                                                     |    |                                                                                       |    |                                                                                       |    | 22                                                                                    | 25 | 35                                                                                    | 45 | 55                                                                                    | 65 | 75 |
| SHORE C  |                                                                                     |    |                                                                                     |    |                                                                                     |    |                                                                                       |    | 20                                                                                    | 30 | 40                                                                                    | 60 | 70                                                                                    | 80 | 90                                                                                    | 95 |    |
|          |  |    |  |    |  |    |  |    |  |    |  |    |  |    |  |    |    |
|          | Chewing Gum                                                                         |    | Racquet Ball                                                                        |    | Rubber Band                                                                         |    | Eraser                                                                                |    | Tire                                                                                  |    | Shoe Heel                                                                             |    | Wheel                                                                                 |    | Helmet                                                                                |    |    |



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# EHMA series Digital Rockwell Hardness Indicator

**EHM150A : Rockwell hardness indicator**

**EHM45A : Superficial Rockwell hardness indicator**



## Features

- Replace common dial Rockwell indicator, digitizing with the most economical and convenient way.
- Measuring and displaying in all of Rockwell scales.
- Compatible with traditional operations and humanized function design, can improve the test efficiency greatly.
- Variety of data management and processing functions.

## Specifications

| Scale                  | EHM150A                                              | HRC、HRA、HRB、HRD、HRE、HRF、HRG、HRK、HRH |
|------------------------|------------------------------------------------------|-------------------------------------|
|                        | EHM45A                                               | HR15N、HR30N、HR45N、HR15T、HR30T、HR45T |
| Resolution             | 0.1 HR                                               |                                     |
| Displayer              | 128 x 64 MatrixLCDwith backlight                     |                                     |
| Memory                 | 500 readings                                         |                                     |
| Conversion             | HB、HV                                                |                                     |
| Power                  | Ni-MHbatteries. Charger AC : 100 ~ 240V ; DC : 5V 1A |                                     |
| Operation Environment  | 0°C~50°C , 20%~85% RH                                |                                     |
| Dimension              | Φ114x 37 mm , Mounting part Φ108 x16mm               |                                     |
| Weight                 | 420 grs                                              |                                     |
| Standard configuration | Digital indicator, Charger                           |                                     |
| Standard               | GB/T 230, ASTM E18, ISO 6508                         |                                     |



# EHMB series Digital Rockwell Hardness Indicator

**EHM150B : Rockwell hardness indicator**

**EHM45B : Superficial Rockwell hardness indicator**



## Features

- Replace common dial Rockwell indicator, digitizing with the most economical and convenient way.
- Measuring and displaying in all of Rockwell scales.
- Compatible with traditional operations and humanized function design, can improve the test efficiency greatly.
- Variety of data management and processing functions.
- Conversion, Minimum Thickness Calculation....

## Specifications

| Scale                  | EHM150B                                                                             | HRC、HRA、HRB、HRD、HRE、HRF、HRG、HRK、HRH                                                       |
|------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
|                        | EHM45B                                                                              | HR15N、HR30N、HR45N、HR15T、HR30T、HR45T、HR15W、HR30W、HR45W、HR15X、HR30X、HR45X、HR15Y、HR30Y、HR45Y |
| Resolution             | 0.1 HR                                                                              |                                                                                           |
| Displayer              | 128 x 64 Matrix LCD with backlight                                                  |                                                                                           |
| Memory                 | 1000 readings                                                                       |                                                                                           |
| Conversion             | HB、HV                                                                               |                                                                                           |
| Communication          | Wireless Printing Port, USB Port (to PC)                                            |                                                                                           |
| Power                  | Ni-MH batteries, Charger AC : 100~240V ; DC : 5V 1A                                 |                                                                                           |
| Operation Environment  | 0°C ~ 50°C , 20% ~ 85% RH                                                           |                                                                                           |
| Dimension              | Φ 114x 37 mm , Mounting part Φ 108 x 16mm                                           |                                                                                           |
| Weight                 | 420 grs                                                                             |                                                                                           |
| Standard configuration | Digital indicator, Charger , USB Data Cable, User's Manual, Software(Free download) |                                                                                           |
| Optional               | Wireless Mini Printer                                                               |                                                                                           |
| Standard               | GB/T 230, ASTM E18, ISO 6508                                                        |                                                                                           |



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# EHMC series

## Digital Rockwell Hardness Measurement Controller



### Features

- Comprehensive control, display, measurement solution for digital Rockwell hardness tester..
- All scales for Rockwell hardness.
- All function for Rockwell hardness test.

### Specifications

|                       |                |                                                                                                                       |
|-----------------------|----------------|-----------------------------------------------------------------------------------------------------------------------|
| Scale                 |                | <b>Rockwell hardness:</b> C, A, B, D, E, F, G, K, H, M, L, R;<br><b>Superficial Rockwell hardness:</b> N, T, W, X, Y. |
| Accuracy              |                | ≤0.5HR                                                                                                                |
| Resolution            |                | 0.1HR                                                                                                                 |
| Displayer             |                | 128 x 64 Matrix LCD with backlight                                                                                    |
| Language              |                | Chinese, English                                                                                                      |
| Level Ratio           |                | 5: 1/ 10: 1                                                                                                           |
| Memory                |                | 1000readings                                                                                                          |
| Standard              |                | GB/T 230, ASTM E18, ISO 6508,<br>GB/T 3398.2, ASTM D785, ISO 2039.2                                                   |
| Power                 |                | 5VDC/200mA                                                                                                            |
| Operation Environment |                | 0°C~50°C, 20%~85% RH                                                                                                  |
| Dimension             |                | Φ114x 37 mm , Mounting part Φ108 x16mm                                                                                |
| Weight                |                | 405 gr                                                                                                                |
| Main Function         | Zeroing        | Manual/Automatic                                                                                                      |
|                       | Reading Lock   | Manual/Automatic/Timing(fro plastics test)                                                                            |
|                       | Conversion     | HV, HB                                                                                                                |
|                       | Status Display | Loading/Holding/Unloading                                                                                             |
|                       | Statistic      | Points, Mean, Range                                                                                                   |
|                       | Dwell          | 0~99 sec                                                                                                              |
| Interface             | Power          | DC connector                                                                                                          |
|                       | Print          | RS232 (Wireless Optional)                                                                                             |
|                       | Data Port      | USB                                                                                                                   |
|                       | IO Port        | IO interface. Input 5, output 3.                                                                                      |
| Optional              |                | Wireless Printer, Control Cable, Control Driver                                                                       |





## *EST-HS1M1* Durometer Test Stand



### Optional Accessories

| Description             | Order No. | Note                        |
|-------------------------|-----------|-----------------------------|
| <b>Dead Weights 450</b> | 1290101   | 4500gr.For durometer D,B,DO |
| <b>Dead Weights 6</b>   | 1290102   | 60gr. For durometer OO      |



# **HARDNESS**

## **Measurement**



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**DS100130701**