

EDX-POCKET are designed for on-site analysis in the wild, featuring small, light, precise, rapid, beautiful, safe, convenient, waterproof & long-standby time. Equipped with digital multi-channel technology, it greatly improves the detection limit and stability of the instrument, expanding the application fields. The products has passed strict testing and inspection, and all index are accorded with the related technological requirements, reaching the international advanced level.



## EDX-POCKET4-3, Handheld Hazardous Elements Analyzer

### Performance Advantage

#### Perfect performance as desktop

Small power integral end-window miniature X-ray tube, large dimensional beryllium window Silicon Drift Detector (SDD, the best detector in the world), and miniature digital signal multi-channel processor, greatly reduce the testing time and testing deviation, & improve the testing precision, requiring similar performance as the desktop.

#### Small & light body, easy for carry

Operation of on-site and in-situ detection at anytime or anywhere.

#### Rapid & nondestructive detection

1-2secs for rapid detection, more than 10secs for precise detection, whose results are similar to the results gotten in lab. No destruction to samples.

#### Detection of light elements

Helium-charging system (optional) greatly expands measurable range (analyze elements from Mg), satisfying the requirements of customers for light elements detection.

#### HD camera for convenient observation

Observation of testing position at any time.

#### Direct testing

It can directly analyze on the surface of the analyses, without needing of preparing samples.

#### Simple deviation calibration

Built-in intensity calibration method ensures simple deviation calibration caused by different geometry shapes and none homogeneous structure density.

#### Professional software for easy operation

It is equipped with professional hazardous elements analysis software. Combining FP with EC software, it is easy for operation and acquiring wider application fields.

#### Faster data transmission

Built-in system, HD touch screen (resolution 640x480), digital multi-channel technology, and SPI data transmission technology, effectively accelerate the data transmission and improves the counting ability.

#### Multiple safety protection, caring for health

Automatically shut-down of X-ray light tube within 2 seconds with no sample in testing; the radiation level is far lower than the international safety standard; compliment away test safety cover.

#### Powerful battery & convenient charging

Compliment away two Lithium batteries (7800mAH), it can continuously work for 8 hours all together. It is convenient for charging because of wide voltage AC charger and Onboard charger.

#### Multiple protections

Waterproof and dust proof function provide the ability of working under high temperature and humidity. Its body is manufactured with high strength military material, which is moisture proof, shockproof, and pressure resistant.

#### Simultaneously testing elements

It can detect the elements such as Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, As, Se, Cd, Sb, Hg, Pb. And it can detect more elements according to the customers' requirements.

### Application Fields

- For RoHS & hazardous elements testing of super huge articles
- For on-site testing of electronic components and parts
- For on-site random testing of various kinds of toys, children's products, and gifts
- For packing material testing and verifying
- For various kinds of batteries hazardous substance testing and verifying
- For hazardous elements testing in cloth, shoes material etc.
- For hazardous elements testing in electroplate liquids
- For hazardous elements testing in jewelry, ornaments etc.

### Testing Advantages for Application

#### 1. Testing super huge articles

Due to the huge size of the specimen it can not be tested by common desktop instrument. This problem has been solved by this handheld instrument.

#### 2. Testing toys

Because of various kinds of toys, it is impossible for repeated sampling in labs. Now this handheld analyzer is applied for on-site testing. Thus it greatly reduces the production cycle.

#### 3. Testing package materials

Because of the large sizes and large amounts of printing ink, it is impossible for rapid & comprehensive testing with desktops. Now these problems can be solved by handheld analyzer.



### Application:

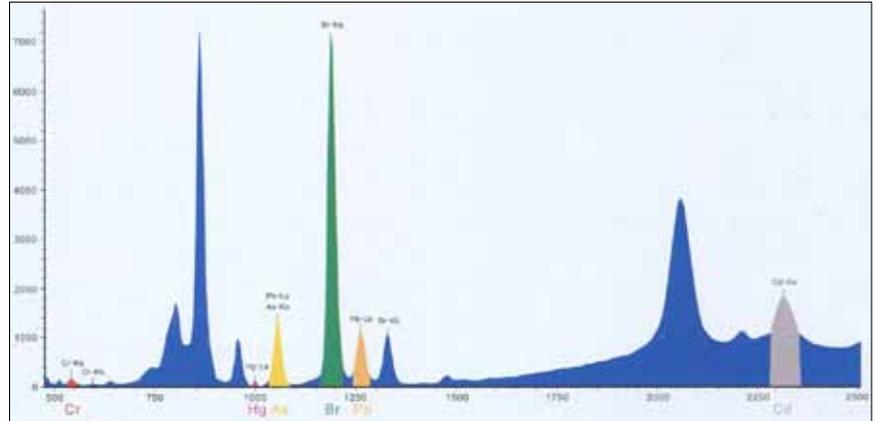
EDX-Pocket-III is widely used in toy safety testing, electrical and electronic and RoHS testing etc. After the issue of European Union toy statement, the instrument quickly finds its position in toy safety testing. It can be used for quantitative & qualitative testing for electronic components and parts; for third-party assessment to electronic components and raw material suppliers; for testing and verifying of packing material; for RoHS testing of various kinds of batteries; for testing of various kinds of toys, children's products, and gifts; for unlimited testing of big objects; for accurate positioning of precise components; for nondestructive testing of valuables.

### Application Advantages for RoHS:

- Equipped with newest SOD (minimum resolution < 139eV), it achieves more precise testing to trace hazardous elements.
- Equipped with HD camera, it supports more accurate positioning, achieving precise testing to tiny articles, such as pins.
- Newly software provides more effective algorithm & more functions, increasing testing precision of hazardous elements.
- Helium-charging system (Optional) greatly expands testing precision to halogen, especially Cl elements.

### Testing Data:

EC681 K Testing Result



| Content Unit                            | PPM           | EC681K  |         |        |        |        |         |
|---|---------------|---------|---------|--------|--------|--------|---------|
| Number                                  | Working Curve | As      | Br      | Cd     | Cr     | Hg     | Pb      |
| 1                                       | PE            | 30.5568 | 775.628 | 140.4  | 24.194 | 103.15 | 100.973 |
| 2                                       | PE            | 30.4782 | 770.526 | 140.08 | 24.764 | 100.52 | 99.2205 |
| 3                                       | PE            | 31.5777 | 766.347 | 135.44 | 24.294 | 98.674 | 102.973 |
| 4                                       | PE            | 29.9576 | 769.997 | 136.38 | 25.216 | 100.2  | 100.845 |
| 5                                       | PE            | 30.3706 | 769.872 | 133.74 | 24.216 | 101.08 | 102.973 |
| 6                                       | PE            | 30.6149 | 771.922 | 134.2  | 23.975 | 100.79 | 103.976 |
| 7                                       | PE            | 30.391  | 771.009 | 135.32 | 24.5   | 100.99 | 101.487 |
| 8                                       | PE            | 30.3195 | 768.284 | 136.61 | 25.167 | 99.502 | 99.5987 |
| 9                                       | PE            | 30.6208 | 769.656 | 135.56 | 24.196 | 103.65 | 97.705  |
| 10                                      | PE            | 30.8942 | 768.275 | 133.53 | 24.699 | 98.026 | 103.761 |
| <b>True value</b>                       |               | 29.1    | 770     | 137    | 23.7   | 98     | 100     |
| <b>Average value</b>                    |               | 30.5781 | 770.152 | 136.13 | 24.522 | 100.66 | 101.351 |
| <b>Standard Deviation S<sub>n</sub></b> |               | 0.40532 | 2.363   | 2.2759 | 0.4059 | 1.6701 | 1.9819  |
| <b>Triple S<sub>n</sub> Value</b>       |               | 1.21595 | 7.08901 | 6.8276 | 1.2178 | 5.0104 | 5.94569 |
| <b>Range R<sub>pm</sub></b>             |               | 1.62    | 9.28    | 6.87   | 1.24   | 5.62   | 6.27    |
| <b>Relative Standard Deviation</b>      |               | 1.33%   | 0.31%   | 1.67%  | 1.66%  | 1.66%  | 1.96%   |
| <b>Testing Deviation Σ (%)</b>          |               | 5.08%   | 0.02%   | -0.64% | 3.47%  | 2.71%  | 1.35%   |



**EDX-POCKET4-5**

### Application Field

EDX-POCKET-V is widely used for various kinds of alloy analysis.

The analytical precision is 2 to 3 times more precise than common alloy analyzer. And testing samples include solid, debris, or any other tangible alloy objects.

It can accurately analyze all kinds of high & low alloy steel, stainless steel, tool steel, chromium/ molybdenum steel, nickel alloy, cobalt alloy, nickel/cobalt heat resistant alloy, titanium alloy, copper alloy, bronze, zinc alloy, tungsten alloy etc. Through determination of other alloy elements, it also can identify the light alloys such as Al, Mg and can be used for reliable identification and confirmation of material. It can be applied for incoming material determination in iron & steel smelting, boiler and other high-temperature and high-pressure industries, to ensure the quality of the material. It also can be used for alloy content analysis in shipbuilding, aerospace and other high-tech industries, to ensure the quality and safety of the product. It can be applied in power plant and other national economy and people's livelihood industries for components determination and safety of the devices. While according to scrap metals recycling and utilization industries, it can quickly analyze and categorize a large number of scrap metals, offering the necessary information for both sides in purchasing & selling. It is the powerful weapon for metal & steel identification in renewable and re usage of scrap metals resources industry, which greatly contributes to the development of resource recycling industry. It also can be applied for recovery of steel backlogged in warehouse, classification of various metals in salvage station, and cutting of turnery and debris.

### EDX-POCKET4-5, Handheld Alloy & Stainless Steel Analyzer

#### Performance Advantage

##### Perfect performance as desktop

Small power integral end-window miniature X-ray tube, large dimensional beryllium window Silicon Drift Detector (SDD, the best detector in the world), and miniature digital signal multi-channel processor, greatly reduce the testing time and testing deviation, and improve the testing precision, requiring similar performance as the desktop.

##### Small & light body, easy for carry

Small body. Easy to carry. Convenient for wild work. Can operate on-site and in-situ analysis at anytime or anywhere.

##### Rapid & nondestructive detection

1-2secs for rapid detection, More than 10secs for precise detection, whose results are similar to the results gotten in lab, No destruction to samples.

##### Detection of light elements

Helium-charging system (optional) greatly expands measurable range (analyze elements from Mg), satisfying the requirements of customers for light elements detection.

##### Direct testing

It can directly analyze on the surface of the analytes, without needing of preparing samples.

##### Simple deviation calibration

Built-in intensify calibration method ensures simple deviation calibration caused by different geometry shapes and none homogeneous structure density.

##### HD camera for convenient observation

Observation of testing position at any time.

##### Professional software for easy operation

It is equipped with professional alloy analysis software. Combining FP with EC software, it is easy for operation and acquiring wider application fields.

##### Faster data transmission

Built-in system, HD touch screen (resolution 640x480), digital multi-channel technology, and SPI data transmission technology, effectively accelerate the data transmission and improve counting ability.

##### Multiple safety protection, caring for health

Automatically shut-down of X-ray light tube within 2 seconds with no sample in testing; the radiation level is far lower than the international safety standard; compliment away test safety cover.

##### Powerful battery & convenient charging

Compliment away two Lithium batteries (7800mAh), it can continuously work for 8 hours all together. It is convenient for charging because of wide voltage AC charger and Onboard charger.

##### Multiple protections

Waterproof and dust proof function provide the ability of working under high temperature and humidity. Its body is manufactured with high strength military material, which is moisture proof, shockproof, and pressure resistant.



**Application Case**

**1. Reliability Analysis**

Simply trigger the instrument; the results of material contents will come out. Now you do not need the material reports, the only need that is to have our fourth generational handheld EDX-POCKET-V. With 10 seconds of nondestructive testing to the sample, you can know the quality and quantity of the material, which can prevent the cheat from the material provider.

**2. Quality Guarantee/Quality Control**

During the process of alloy material production and machinery equipment manufacturing, material identification and element testing is indivisible. To prevent the lost caused by the mixture of raw material, the fourth generational EDX-POCKET-V provides professional nondestructive testing, which effectively prevent the lost from mixture of raw material.

**3. Recovery of Scrap Metal**

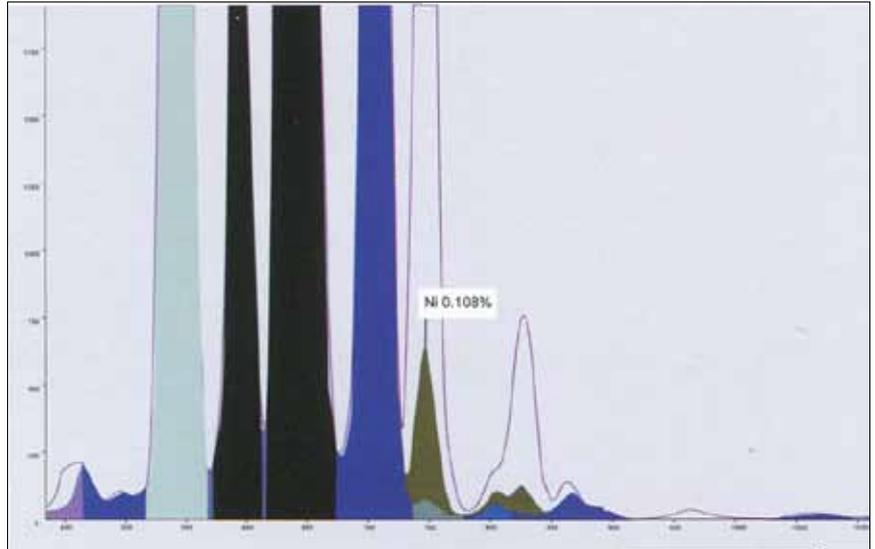
The fourth generational EDX-POCKET-V provides the immediate nondestructive testing from titanium alloy to nickel alloy, widely applied for classification of various kinds of alloy material.

**Core Application Field**

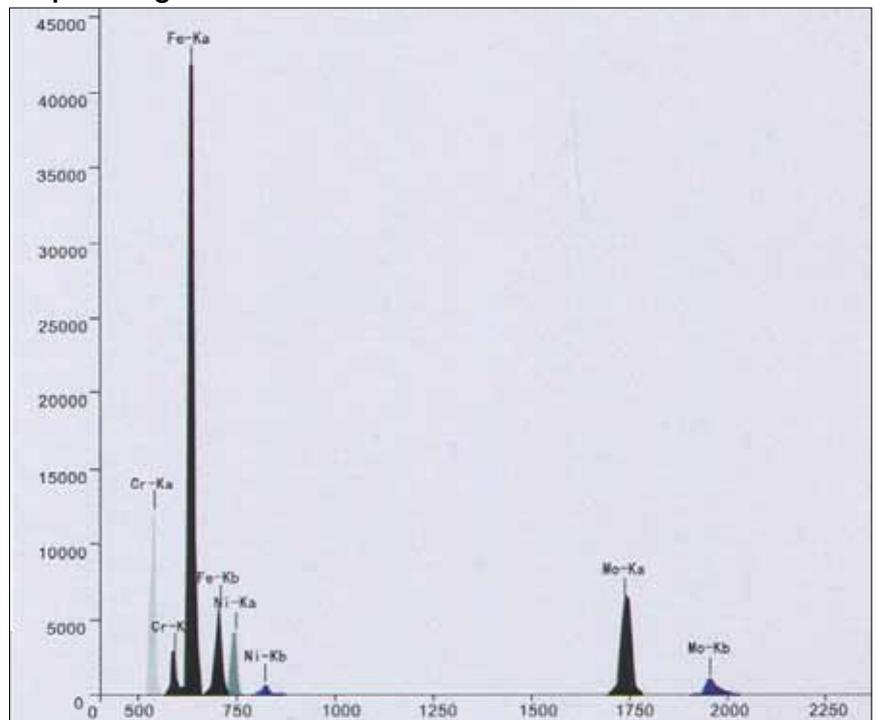
Iron and steel Recovery of scrap metals Machinery manufacture & process Boiler pressure vessel.

**Analytical precision**

Measurement Precision of Main Elements in Stainless Steel (304) Testing for 10 seconds.



**Amplified Figure of Ni Content as 0.108% in Stainless Steel**



**Figure of Stainless Steel (316) Sample**

| Sample                                 | Cr     | Mn    | Ni    | Cu    | Mo    |
|--|--------|-------|-------|-------|-------|
| <b>Average value</b>                   | 18.232 | 0.926 | 8.072 | 1.236 | 0.288 |
| <b>Standard Deviation</b>              | 0.072  | 0.055 | 0.086 | 0.043 | 0.008 |
| <b>Relative Standard Deviation (%)</b> | 0.395  | 5.936 | 1.067 | 3.506 | 2.693 |

**Alloy Testing Advantages**

- Rapid nondestructive testing. 1-2secs for rapid detection. More than 10secs for precise detection, whose results are similar to the results gotten in lab
- Professional alloy analysis software, which is easy for operation by commons. Free switch between Chinese and English interface.
- Multiple alloy analysis modes, including "quantitative analysis (ppm)", "qualitative analysis" etc. Built-in multi-calibration methods can calibrate deviation caused by different geometric states
- Unique adjustable fundamental parameter technology provides more analytical modes and more precise modes for customers.
- Dynamic information-match function displays testing results, sample numbers, and matching information on the interface simultaneously, which can be switched between each other.



## EDX-POCKET4-9, Heavy Metals in Soil Handheld Analyzer

### Performance Advantage

#### Perfect performance as desktop

Small power integral end-window miniature X-ray tube, large dimensional beryllium window Silicon Drift Detector (SDD, the best detector in the world), and miniature digital signal multi-channel processor, greatly reduce the testing time and testing deviation, and improve the testing precision, requiring similar performance as the desktop.

#### Small & light body, easy for carry

Operation of on-site and in-situ detection at anytime or anywhere.

#### Rapid & nondestructive detection

1-2secs for rapid detection, More than 10secs for precise detection, whose results are similar to the results gotten in lab, No destruction to samples.

#### Detection of light elements

Helium-charging system (optional) greatly expands measurable range (analyze elements from Mg), satisfying the requirements of customers for light elements detection.

#### HD camera for convenient observation

Observation of testing position at any time.

#### Direct testing

It can directly analyze on the surface of the sample, without needing of preparing samples.

#### Professional software for easy operation

It is equipped with professional alloy analysis software. Combining FP with EC software, it is easy for operation and acquiring wider application fields.

#### Simple deviation calibration

Built-in intensity calibration method ensures simple deviation calibration caused by different geometry shapes and none homogeneous structure density.

#### Faster data transmission

Built-in system, HD touch screen (resolution 640x480), digital multi-channel technology, and SPI data transmission technology, effectively accelerate the data transmission and improve counting ability.

#### Powerful battery & convenient charging

Compliment away two Lithium batteries (7800mAh), it can continuously work for 8 hours all together. It is convenient for charging because of wide voltage AC charger and Onboard charger.

#### Simultaneously testing elements

It can detect the elements such as Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, As, Se, Cd, Sb, Hg, Pb. And it can detect more elements according to the customers' requirements.

#### Multiple safety protection, caring for health

Automatically shut-down of X-ray light tube within 2 seconds with no sample in testing; the radiation level is far lower than the international safety standard; compliment away test safety cover.

#### Multiple protections

Waterproof and dust proof function provide the ability of working under high temperature and humidity. Its body is manufactured with high strength military material, which is moisture proof, shockproof, and pressure resistant.

### Applications in Environmental Protection

EDX-POCKET-IX is applied for in-situ testing and repair analysis in soil pollution. It features the characteristics of small & light body, which can be held in hands by common people when measuring. It has been widely applied in various kinds of geologies. Testing samples include slag, rock, soil, mud, with forms of solids, liquids, dust, etc.

### Application Advantages for Heavy Metals

- Applied for soil pollution testing caused by mercury, cadmium, lead, arsenic, copper, zinc, nickel, cobalt, & vanadium
- Detecting & mapping pollution areas
- Rapid discovering and solving abnormal conditions
- Rapid tracing of abnormal pollution and effectively searching and circling pollution areas
- Rapid on-site & in-situ testing of heavy metals in soil
- Rapid classifying various kinds of residential lands, commercial lands and industrial lands into 3 levels, named level 1, level 2 and level 3
- Connection of PDA to GIS system for drawing maps
- Equipped with digital multi-channel technology, it operates more rapid qualitative and quantitative analysis. Designed with high statistical counting rate, it greatly improves the stability of the instrument which is much more important for heavy metals testing, because of the low content of heavy metals in soil.
- Outstanding resolution greatly reduces the interference of arsenic and iron to lead and nickel. Its extremely low detection limit perfectly fits to heavy metals detection for environmental protection.



### Application Cases:

**1. Heavy metals detection in soil**  
Simply trigger the instrument, and you will know the trace metal elements in soil.

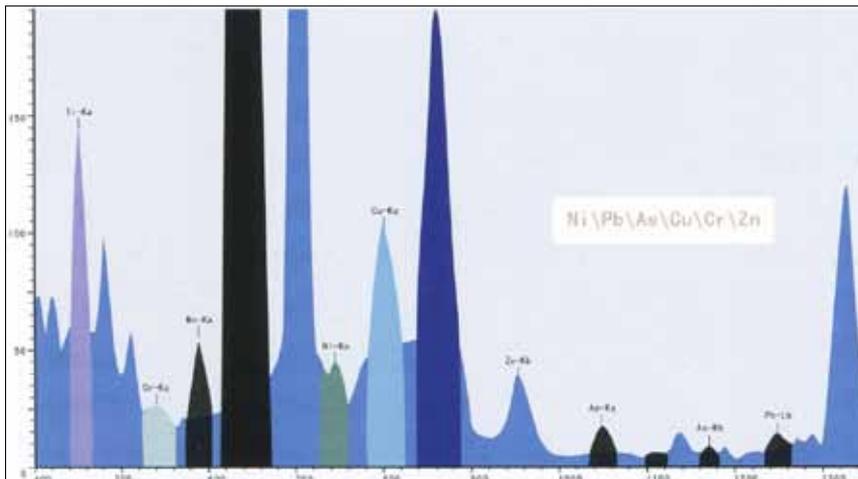
**2. Emergency treatment after heavy metal pollution**

Can quickly on-site trace the pollution and circle the polluted boundary.

**3. Screening of heavy metals polluted samples in large amounts**

The fourth generational handheld EDX-POCKET-IX can circle the key pollution areas in very short time, for key management.

Can rapidly distinguish the polluted areas and non-polluted areas .It improves the screening and productive rate integrally, & greatly reduces the cost of chemical examination and transportation.



The figure of sample testing for 30 seconds

### Analytical Precision: Measuring precision of main elements in GBW07425 testing for 30 seconds.

| Sample             | Ti   | V     | Cr    | Mn   | Fe   | Co    | Ni   | Cu    | Zn   | As    | Se   | Sb     | Hg   | Pb    | Cd   |
|--------------------|------|-------|-------|------|------|-------|------|-------|------|-------|------|--------|------|-------|------|
| 07425_1            | 3811 | 73    | 52    | 566  | 2.95 | 10    | 26   | 25    | 63   | 6     | 0    | 1      | 0    | 26    | 0    |
| 07425_2            | 4056 | 72    | 54    | 541  | 2.95 | 9     | 28   | 18    | 72   | 5     | 0    | 0      | 0    | 28    | 0    |
| 07425_3            | 3724 | 68    | 45    | 555  | 2.92 | 11    | 28   | 25    | 69   | 8     | 0    | 1      | 0    | 20    | 0    |
| 07425_4            | 3980 | 51    | 65    | 602  | 2.94 | 12    | 29   | 27    | 70   | 7     | 0    | 0      | 0    | 26    | 0    |
| 07425_5            | 4036 | 62    | 51    | 580  | 2.95 | 10    | 28   | 29    | 75   | 5     | 0    | 0      | 0    | 27    | 0    |
| 07425_6            | 4044 | 75    | 55    | 564  | 2.95 | 14    | 25   | 16    | 64   | 5     | 0    | 0      | 0    | 25    | 0    |
| 07425_7            | 3794 | 63    | 58    | 575  | 2.97 | 14    | 30   | 26    | 70   | 5     | 0    | 0      | 0    | 24    | 0    |
| Average value      | 3939 | 65    | 55    | 570  | 3.00 | 12    | 28   | 24    | 70   | 6     | 0    | 0      | 0    | 25    | 0    |
| Standard deviation | 144  | 9     | 7     | 21   | 0    | 2     | 2    | 5     | 4    | 1     | 0    | 0      | 0    | 3     | 0    |
| RSD/%              | 3.64 | 13.14 | 12.28 | 3.72 | 0.51 | 17.71 | 5.98 | 22.32 | 5.19 | 22.79 | 0.00 | 244.95 | 0.00 | 11.31 | 0.00 |

### Performance index:

| Models                  | EDX-Pocket-III/V/VII/IX   |
|-------------------------|---|
| Measuring range         | Mg to U   |
| Processor and RAM       | CUP: 667MHz RAM:256M Maximum expanded storage: 32G Standard configuration: 2G , for storage of large amounts of data                              |
| Analytical Range        | ppm-99.99%  |
| Testing time            | 3-30 seconds  |
| GPS, WIFI               | Built-in GPS & WIFI system  |
| Battery                 | Chargeable lithium battery, with capacity of 7800mAh, continuously providing 8 working hours; Equip with wide voltage (110V-220V) general adapter |
| Testing object          | Solid, liquid, powder   |
| Detector                | 25mm <sup>2</sup> ,SDD  |
| Detector resolution     | Minimum resolution: 139eV   |
| Excitation source       | Target: Ag High voltage: 5-40kv Tube current: 1-100 μA  |
| Collimator and filter   | Collimator kinds: 2 (4.0mm & 2.0mm dia.) Filter types: 6 Automatic switch: YES  |
| Video system            | CMOS HD camera  |
| Screen                  | Semi-transmission & semi-reflection LCD touch screen, resolution 640x480  |
| Detection limit         | Detection limit: ppm level  |
| Safety                  | Self-contained password administration  |
| Testing window          | Ø12mm   |
| Gas charging system     | Optional Helium charging system   |
| Operational environment | Humidity ~90%   |
|                         | Temperature: -20°C~+50°C  |
| Size                    | 234x306x82mm(LxHxW)   |
| Weight                  | Net weight:1.6kg Battery: 0.3kg   |



## EDX-POCKET4-7, Handheld Mineral Analyzer

The new generational EDX-POCKET-VII Series are designed according to the applications of on-site X-ray analysis in the wild, featuring small and light body, which can be held in hands by common people when measuring. It is super small, super light, super beautiful, super safe, super convenient, super long standby time, super waterproof, super precise and super fast. Digital multi-channel technology make the instrument have better detection limit, better stability, and wider application fields.

This Series of products has passed strict testing and inspection, and all index are accorded with the related technological requirements, reaching the international advanced level.

### Performance Advantage

#### Perfect performance as desktop

Introducing three core technology of small power window integrated miniature X-ray tube, large dimension beryllium window electric-cooling SDD detector (the best detector in the world), and miniature digital signal multi-channel processor, greatly reduce the testing time and test deviation, and improve the detection precision, which make it have the similar performance as the desktop.

#### Small body, easy to carry and operate

Small body. Easy to carry. Convenient for wild work. Can operate on-site and in-situ analysis at anytime or anywhere.

#### Nondestructive detection

No destruction to samples.

#### Fast detection

Instrument not only can operate fast detection with handheld type within 1-2 seconds, but also can operate longtime precise detection with desktop type, having the similar precision as the laboratory detection after 10 seconds.

#### Newly added light elements detection function

Compared to handheld X-ray fluorescence analyzer of the third generation ,it is added the gas charging system, which can charge helium at ordinary pressure .Thus it can detect the elements from Mg, greatly expanded the detecting range of elements, satisfying the requirements of customers according to light elements detection.

#### Direct testing

It can detect the sample directly, no need of samples. It can analyze various kinds of samples, including electronic products, alloy samples, geological and mining, soil, rock, residues, small solid particles, liquid sediments etc.

#### HD camera, more accurate testing

Built-in HD camera, can observe the testing position at any time, which is very important of mineral sample testing.

#### Easy for calibration of deviation

Multi-testing modes installation & free adding of infinite modes, coordinating with automatic testing mode matching functions, it achieves the easy test for one key. Built-in intensify calibration methods, it can calibrate the deviation caused by different geometry shapes & none homogeneous structure density.

#### Professional software, easy to operate

RoHS elements analyzer, alloy analyzer, mineral analyzer, & heavy metals in soil analyzer all are installed with professional software. Brand new software interface and core, combined FP with EC, it has wider application fields.

#### The collimator filter, improving 3 times of efficiency

On the basis of the combination of collimator and filter, increase them from 4 groups to 12 groups, increasing 3 times.

#### Faster data transmission

Embedded Window CE system, HD touch screen (resolution 640x480), digital multi-channel technology, and SPI data transmission, effectively improve the data transmission ability and counting ability, mastering testing data in every environment.

#### Radiation protection, care for health

Triple safety protection function, automatic sensation, automatically shut-down of X light pipe within 2 seconds with no sample in testing; The radiation level is far lower than the international safety standard when working, with no radiation leakage; accompanied with test safety cover.

#### Strong power, convenient to charge

Lithium battery, with maximum capacity of 7800mAH, can continuously work for 8 hours, whose endurance are 2 times longer compared to last three generations .And equip with wide voltage ac charger or vehicular charger ,which ensure the test at any place or any time.

#### Warning instructions prevent for mistaken operation

Equipped with warning instruction system, green light flashes when the power is on and the yellow light flashed when testing, which prevent for mistaken operation.

#### Multiple protection and durable

The instrument has waterproof and dust proof function and can continuously work under high temp. and humidity. Its protection boxes are manufactured with high strength military material, which enjoy with well moisture proof, shockproof, and pressure resistant functions.

**Performance index:**

| Index                                 | Description  |
|---------------------------------------|--|
| <b>model</b>                          | The 4 th generation EDX analyzer-EDX-POCKET Series   |
| <b>Analysis method</b>                | Energy dispersive X-ray fluorescence analysis method   |
| <b>Measuring range of elements</b>    | Mg to U  |
| <b>Simultaneously detect elements</b> | Simultaneously detect tens of elements   |
| <b>Processor and RAM</b>              | CUP: 667MHz, RAM:256M , Maximum expanded storage: 32G, Standard configuration: 2G , can store large amounts of data.   |
| <b>Content range</b>                  | ppm~99.99%   |
| <b>Testing time</b>                   | 3-30 seconds   |
| <b>GPS, WIFI</b>                      | Built-in system  |
| <b>Battery time</b>                   | Lithium battery, which can be charged, with maximum capacity of 7800mAH, can continuously work for 8 hours; Equipped with wide voltage (110V-220V) general adapter, can work under alternating current |
| <b>Testing object</b>                 | Solid, liquid, powder  |
| <b>Detector</b>                       | 25mm <sup>2</sup> 0.3mil, SDD detector   |
| <b>Detector resolution</b>            | Lowest resolution can be 139eV   |
| <b>Excitation source</b>              | 40KV/100uA-Ag anode window miniature X light tube and high voltage source  |
| <b>Collimator and filter</b>          | Collimator of 4.0 or 2.0 diameter, automatic switch of 6 types filter groups. 12 kinds of groups, world's most compound mode, can satisfy various kinds of samples testing                             |
| <b>Video system</b>                   | HD camera  |
| <b>Screen</b>                         | TFT-LCD touch screen, resolution 640x480   |
| <b>Detection limit</b>                | Lowest detection limit accounts to ppm level   |
| <b>Testing window</b>                 | 12mm   |
| <b>Safety</b>                         | Self-contained password manager mode   |
| <b>Gas charging system</b>            | Helium charging at ordinary pressure system  |
| <b>Data transmission</b>              | Digital multi-channel technology, SPI data transmission, quick analysis, high counting rate, waterproof miniature USB, which can be connected to desktop computer                                      |
| <b>Humidity</b>                       | ≤90%   |
| <b>Temperature</b>                    | -20°C ~ +50°C  |
| <b>Size</b>                           | 234×306×82mm (L×H×W)   |
| <b>Weight</b>                         | 1.9Kg (with battery), 1.6Kg (without battery)  |

Mineral exploration industry is at the stage of low successful investing rate, upmost risks, & uncertainly profit returns, which brings high risks to investment. With the changes of China's mineral resources detection and mining work strategy from denotative development in the past to connotative development, the government begins to attach importance on effective investment of mineral exploration, promoting the diversification of investment, and reduces the financial investment while encouraging commercial mineral exploration and development.

The framework of China's commercial mineral resources exploration industry has been formed primarily, and the mining right system has been improved gradually .The market is forming and the commercial mineral exploration activities are beginning, which greatly strengthen the exploration and investigation on

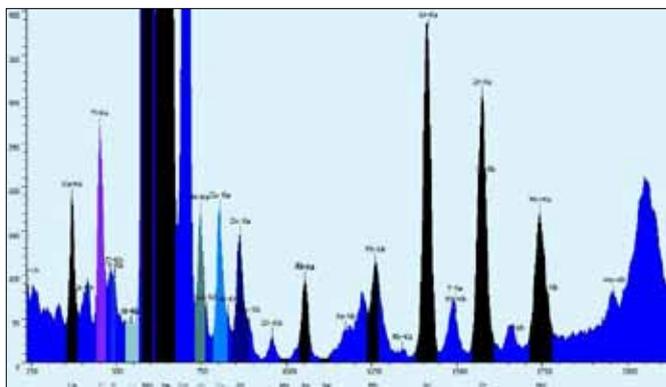
mineral industry. However, to these mineral companies, unlike the national geology exploration bureau, the tools for exploration are not that complete, which restrict the development of these companies if chemical titration method is still used for sample testing, which are with low efficiency and many errors because of human operating.

However, the various analyzers produced by MRC can help the mineral exploration for these companies, improving efficiency, precision, and reducing testing time, which greatly promote the development of mineral exploration.

EDX-POCKET-VII is applied for mineral exploration, in situ testing analysis, & soil content analysis. With the features of small, light, quick analysis, high precision and handheld, it has been widely applied for element sample testing and analysis of various ores and slag. Samples include all natural ores, slag, rocks, soil, slurry from sulfur to uranium, with forms of solid, liquid, and powder.

- Quick category of ore samples. Auto multi-element qualitative and quantitative analysis. Various ore samples choosing and free adding of infinite samples
- Built-in intensified calibration methods, can calibrate the deviation caused by different geometric states and uneven structure density.
- With GPS function, applied in geological exploration and mineral in-situ testing, it can record the data into GPS. In the wild, it can search the satellite signal at any time, recording the longitude, latitude, altitude, and satellite number when testing, and save these data accompanied with the test report.
- It can quickly test a big range of mining area, effectively detect the land belt mode, and survey and map the distribution of ores and mines, doing help for mining rich mineral area in primary.
- Test raw ore, concentrate, and tails when washing the ores.
- Determination of the raw ores & concentrates when purchasing
- Determination of light elements, such as Mg, Al, Si, P, S etc
- Equipped with HD camera, can directly visual requested detection of mineral vein and mineralized points.

- **Geological soil detect**  
Simply trigger the instrument, knowing the trace metal element content.
- **Application of finding ores in the wide**  
Can quickly on-spot follow the abnormalities of mineralization and circle the boundary of ore body. According to the low grade industrial requirements, it can simply get the grade conclusion of boundary. It also can scan and analyze the rock core samples.
- **Mine project analysis**  
The fourth generational handheld Genius 7000 can circle the core mineral vein in very short time for key mining and can quickly tell the grades of ores, sub prime ores, and non-ores .It also can improve the productive rate of the mine and greatly reduce the expenses of chemical examination & transportation.



### Analytical Precision:

#### Measuring Precision of the Main Elements in International Polymetallic Nodule Sample Testing for 30 Seconds.

| Sample                    | Ti     | V      | Mn     | Fe     | Co     | Ni     | Cu     |
|---------------------------|--------|--------|--------|--------|--------|--------|--------|
| 07249-1                   | 1.027  | 0.055  | 20.85  | 18.75  | 0.352  | 0.347  | 0.267  |
| 07249-2                   | 1.052  | 0.053  | 20.85  | 18.76  | 0.351  | 0.350  | 0.249  |
| 07249-3                   | 1.066  | 0.055  | 20.89  | 18.72  | 0.347  | 0.354  | 0.265  |
| 07249-4                   | 1.024  | 0.054  | 20.89  | 18.74  | 0.347  | 0.337  | 0.280  |
| 07249-5                   | 1.035  | 0.058  | 20.85  | 18.71  | 0.359  | 0.346  | 0.261  |
| 07249-6                   | 1.032  | 0.053  | 20.86  | 18.76  | 0.350  | 0.344  | 0.273  |
| 07249-7                   | 1.056  | 0.057  | 20.85  | 18.70  | 0.353  | 0.353  | 0.275  |
| <b>Positive Value</b>     | 1.043  | 0.059  | 20.92  | 18.71  | 0.350  | 0.360  | 0.280  |
| <b>Average Value</b>      | 1.042  | 0.055  | 20.862 | 18.734 | 0.351  | 0.347  | 0.267  |
| <b>Standard Deviation</b> | 0.0161 | 0.0018 | 0.0195 | 0.0244 | 0.0039 | 0.0059 | 0.0104 |
| <b>RSD/%</b>              | 1.55   | 3.35   | 0.09   | 0.13   | 1.12   | 1.71   | 3.88   |

| Sample                    | Zn     | As     | Pb     | Ca     | Sr     | Zr     | Mo     |
|---------------------------|--------|--------|--------|--------|--------|--------|--------|
| 07249-1                   | 0.056  | 0.018  | 0.097  | 2.020  | 0.122  | 0.064  | 0.037  |
| 07249-2                   | 0.056  | 0.018  | 0.096  | 2.063  | 0.122  | 0.064  | 0.037  |
| 07249-3                   | 0.055  | 0.018  | 0.097  | 2.050  | 0.123  | 0.064  | 0.037  |
| 07249-4                   | 0.054  | 0.018  | 0.100  | 2.074  | 0.121  | 0.065  | 0.038  |
| 07249-5                   | 0.055  | 0.018  | 0.098  | 2.040  | 0.120  | 0.063  | 0.037  |
| 07249-6                   | 0.055  | 0.018  | 0.096  | 2.062  | 0.122  | 0.064  | 0.037  |
| 07249-7                   | 0.056  | 0.017  | 0.083  | 2.072  | 0.122  | 0.063  | 0.037  |
| <b>Positive Value</b>     | 0.057  | 0.018  | 0.095  | 2.010  | 0.120  | 0.065  | 0.037  |
| <b>Average Value</b>      | 0.055  | 0.018  | 0.095  | 2.054  | 0.122  | 0.064  | 0.037  |
| <b>Standard Deviation</b> | 0.0007 | 0.0003 | 0.0058 | 0.0193 | 0.0010 | 0.0005 | 0.0005 |
| <b>RSD/%</b>              | 1.29   | 1.89   | 6.05   | 0.94   | 0.80   | 0.79   | 1.45   |

Apparatus is used to determine the Heat Deflection Temperature or the Vicat Softening Point. All the specimens are charged with a constant load and immersed in a bath, where temperature is increased at a standard velocity. The attained heat resistance rate of plastic materials is a widely required parameter for product characterization, for quality control, as well as for evaluating their conformity to the previewed applications.

The optional software system enables to produce graphs showing the deformation of each specimen & temperature increase versus time. This tester may be used for tests conforming to the following standards: ISO 75, ISO 306, ASTM 0648, ASTM 01525, G81T 1633, G81T 1634. Housing made of steel. Stainless steel inner bath. The designed volume ensures a very good thermal exchange.

#### Technical Parameters:

Operating temperature: ambient temperature to 300°C • Heating rate: (120±10) °C/h or (50±5) °C/h • The Max Temperature Error: ±0.5°C • Distortion Range: -0.1 mm >- 1.1 mm • The Max. Distortion Error: 0.01 mm • Test Stations: 2, 3, 4, 6 • Heating Medium: methyl silicon oil • Power Supply: 110V/220V 60HZ/50HZ.



**HDT-300B4**

#### HDT-300B Series

Touch Screen Display.

Test stations: 2,4,6.

Enables to produce graphs showing the deformation of each specimen and temperature increase versus time.

Temp. Measuring point: one.



**HDT-300M4**

#### HDT-300M Series

LED Display

Test stations: 2, 4, 6

Temp. Measuring point: one.



**HDT-300C4**

#### HDT-300C Series

Touch Screen Display.

Test stations: 2, 4, 6.

Enables to produce graphs showing the deformation of each specimen and temperature increase versus time.

Temp. Measuring point: one each station.

## MFI-400 Series, Melt Flow Indexers

This type of Melt Flow Indexer is a new & affordable tabletop instrument that tests the melt mass-flow rate (MFR) & melt volume-flow rate (MVR) of a wide range of thermoplastic raw materials, in the form of granules, strips of film etc. This test method is particularly useful for quality control tests on thermoplastics. MVR will be found particularly useful when comparing materials of different filler content & when comparing filled with unfilled thermoplastics. The MFR can be determined from MVR measurements provided the melt density at the test temperature & pressure is known. The tester is far superior to all national and international standard of Melt Flow Rates requirements, including ISO1133, ASTM D1238 & GB/T 3682 method A & B. High Accuracy The built-in microprocessor maintains temperature control to within  $\pm 0.5^{\circ}\text{C}$ , with rapid ramp-up to the set point. Extruded material is automatically cut off by the built-in scraper mechanism at preset intervals, controllable to  $\pm 0.1$  second. Ease to operate! Testing Melt Flow Rate has never been so economical or easy to do! The tester is supplied completely with the accessories & weights necessary for maintenance & operation. Nothing else to buy—just plug it in & start a test.

**Technical Parameters:** Operating temperature:  $120^{\circ}\text{C}$ – $450^{\circ}\text{C}$  • Temperature control accuracy:  $\leq 0.5^{\circ}\text{C}$  • Temperature display resolution:  $0.1^{\circ}\text{C}$  • Temperature rising time:  $<30$  min • Power supply: 220V/50Hz or 110V/60Hz.



It allows for testing melt mass-flow rate (MFR) according to the standards ISO1133, ASTM 01238 method A. The clear multi-line LCD display & tactile-feedback membrane keypad allows fast, accurate inputting of test parameters and providing continuous display of settings during testing.



It allows for testing the melt mass-flow rate (MFR) and melt volume-flow rate (MVR) according to the standards ASTM 01238, ISO1133, with the additional function of printing the test result by a built-in micro-printer.

## MFI-400C Series

**MFI-400C Software:** Two languages are provided: English and Chinese. MFI-400C Software has the functions of setting parameters, constant temperature control, cutting sample, calibration, setting test time, displaying test datum & result, calculating melt density, as well as checking & printing test datum. Password verify is necessary for some main operations in case of mishandle.



### MFR and MVR, Loading the Weight Automatically

It allows for testing the melt mass-flow rate (MFR) and melt volume-flow rate (MVR), Melt density test according to the standards ASTM 01238, ISO1133. The clear multi-line Touch screen allows fast, accurate input of test parameters and providing continuous display of setting during testing, printing the test result by a micro-printer. With the additional function of loading the Weight automatically.



### MFR and MVR, Loading the Weight Manually

It allows for testing the melt mass-flow rate (MFR) & melt volume-flow rate (MVR), Melt density test according to the standards ASTM 01238, ISO1133. The clear multi-line Touch screen allow fast, accurate input of test parameters and providing continuous display of setting during testing, with the additional function of printing the test result by a micro-printer.

### MFR and MVR, Loading the Weight Manually

It allows for testing the melt mass-flow rate (MFR) according to the standards ASTM 01238, ISO1133. The clear multi-line Touch screen allows fast, accurate input of test parameters and providing continuous display of setting during testing.

## QG-1 Series, Metallurgical Specimen Cutter



Specimen cutting is the first step during metallurgical sample preparation. QG-1 adopts high speed rotating thin grinding wheel to cut specimen, & it is equipped with cooling system to prevent the heat damage during cutting. The operation of QG-1 is awfully easy & the maintenance is extremely convenient.

| Model                      | QG-15                     | QG-13                     |
|----------------------------|---------------------------|---------------------------|
| <b>Max. sample section</b> | 50 x 50 mm                | 35 x 35 mm                |
| <b>Grinding wheel size</b> | φ300 x 2 x φ32 mm         | φ250 x 2 x φ32 mm         |
| <b>Rotate speed</b>        | 2800 r/min                |                           |
| <b>Electromotor</b>        | Y90L-2, 2.6KW, 380V, 50Hz | Y802-2, 1.2KW, 380V, 50Hz |
| <b>Dimensions</b>          | 740 x 465 x 390 mm        | 650 x 400 x 350 mm        |
| <b>Net weight</b>          | 70Kg                      | 55Kg                      |

## Q-3A, Metallurgical Specimen Cutter



Q-3A is suitable for cutting the specimens of metal and rock materials, which facilitates the observation of metallographic and rock structure. Q-3A is equipped with cooling system that can cool down the specimen during cutting so as to prevent overheating and damaging. The operation of Q-3A is awfully easy and the maintenance is extremely convenient, it is an indispensable device for the factories, research institutions and college labs to prepare metallurgical specimen.

### Technical specification:

- Max. Cutting Width: 60mm
- Max. Cutting Height: 80mm
- Max. Cutting Diameter: cp50mm
- Specifications of Abrasive Wheel: 250 x 2 x 32 mm
- Weight: 130kg

## Q-5/Q-5A, Metallurgical Specimen Cutter



Q-5 & Q-5A is used to chiefly cut the specimen with cylinder-shaped, multi-angular and ordinary metallurgical specimens with convex space. With a double-cover fully-sealed structure and double clipping clamp structure, which can guarantee the absolute safety under the state of cutting. Equipped with double deck stage, the cutting speed can be controllable. What is more, it is installed with a strongly cooling system so as to avoid the damages to the structure of the specimen caused by over-heating during cutting operation, thus enlarging the cutting space while avoiding the hurt to the specimen surface. With the above-mentioned merits on both operation and maintenance, it is an excellent machine to cut the specimens with irregular shaper.

### QG-5 Technical specifications:

- Maximum cutting section: 120x120mm
- Rotary cutting speed: 2800r/min
  - Cutting disk size: φ400 x 3 x φ32mm
  - Cutting power: 4KW/380V/50Hz
  - Machine Dimensions: 760x850x1400mm
  - Net weight: 380Kg.

### QG-5A Technical specifications:

- Maximum cutting section: 100x100mm
- Rotary cutting speed: 2800r/min
  - Cutting disk size: φ350 x 2.5 x φ32mm
  - Cutting power: 4KW/380V/50Hz
  - Machine Dimensions: 800x660x1380mm
  - Net weight: 315Kg.

## Q-100B/Q-80Z , Auto Metallurgical Specimen Cutter



- LCD displays all the cutting data.
- The diameters of specimens to be cut range from 5 to 8mm (1008:100mm) and the cutting capacity reaches 100x200mm.
- Manual cutting and automatic cutting can be changed over at random.
- Large cutting chamber & tempered-glass view window.
- Non-burnt movable cutting mode which greatly improves cutting quality.
- Automatic retract at the end of cutting operation.
- Dual-direction feed which increase the depth of cutting.

| Model                       | Q-80Z                       | Q-100B        |
|-----------------------------|-----------------------------|---------------|
| Power supply                | 3 phases/4 wires; 380V/50Hz |               |
| Rotary cutting speed        | 2100 rpm                    |               |
| Cutting disk size           | 350mm x 2.5mm x 32mm        |               |
| Max. Cutting diameter       | Φ80mm                       | φ100mm        |
| Max. Cutting capacity       | 80mm x 200mm                | 100mm x 200mm |
| Motor power                 | 22.2KW                      | 23KW          |
| Dimensions of cutting table | 310mm x 280mm               |               |
| Overall dimension           | 930x700x610mm               |               |

## MP-1B/MP-2B, Metallurgical Specimen Grinder/Polisher

MP-18 and MP-28 can be used for coarse grinding, fine grinding, rough polishing and fine polishing. It is the perfect metallographic specimen machines for the metallurgical specimen preparation.



### Single disc Polisher/Grinder MP-1B

#### Technical Specifications

- Diameter of grinding disc: 230mm
- Diameter of polishing disc: 200mm
- Rotation speed of grinder/polishing disc: 50-1000rpm
- Power: 250W /220V 150Hz
- Dimension: 615x380x270mm
- Net weight: 30Kg



### Double disc Polisher/Grinder MP-2B

#### Technical Specifications

- Diameter of grinding disc: 230mm
- Diameter of polishing disc: 200mm
- Rotation speed of grinder/polishing disc: 50-1000rpm
- Power: 550W / 220V 150Hz
- Dimension: 690x715x310mm
- Net weight: 45Kg

By change the grinding/polishing disc, MP-1S single disc polisher/grinder can be used for coarse grinding, fine grinding, coarse polishing and fine polishing MP-1S operates steadily in low noise, easily change speed and grind/polish units.



MP-1

#### MP-1, Single Disc, Dual Speed Metallurgical Specimen Preparation Grinder/Polisher With Polishing Head

##### Technical Specifications:

- Grinding disc diameter: 250mm
- Sand paper diameter: 230mm
- Polishing disc diameter: 220mm
- Abrasive disc diameter: 220mm
- Rotation speed: 500/1000rpm
- Power supply: 380V/50Hz
- Dimension: 360x480x680
- Net Weight: 70Kg



MP-1S

#### MP-1S, Single Disc, Stepless Speed Metallurgical Specimen Preparation Grinder/Polisher With Polishing Head

##### Technical Specifications:

- Grinding disc diameter: 250mm
- Sand paper diameter: 230mm
- Polishing disc diameter: 220mm
- Abrasive disc diameter: 220mm
- Rotation speed: 500-1000rpm
- Power supply: 220V/50Hz
- Dimension: 360x480x680
- Net Weight: 70Kg



MAPAO200M3/M5

#### MAPAO200M3/M5, Single Disc, Stepless Speed Automatic Specimen Metallurgical With Polishing Head

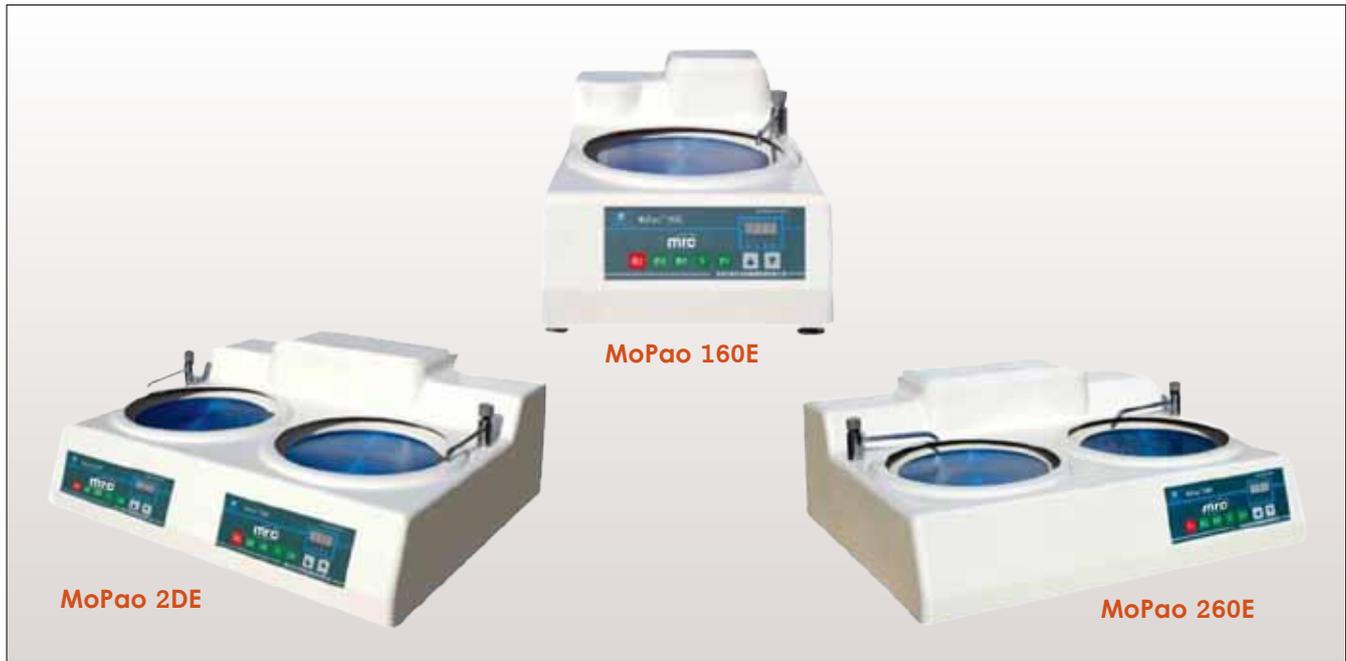
- Applying high-intensity FRP shell, rugged durability.
- Adopting low-noise high-torque brushless motors, operate smoothly.
- Sophisticated rotary balance, to ensure the plainness of specimen.
- Leak-proof design of Main spindle, bearing durability.

##### Technical Specifications:

- Grinding/polishing disc diameter: 200mm.
- Rotation speed: 0-600rpm.
- Power supply: 250W/220V/50Hz.
- Inlay molds: 3ENEA available; diameter: cp25 / cp30mm.
- Cooling pipe: 1 PC.
- Dimension: 350x440x540 mm.
- Net Weight: 60Kg.

## MOPAO2DE/260E/160E, Medium Speed Metallurgical Specimen Grinder/Polisher With Polishing Head

- This grinder polisher is the most economical and applied machine for metallographic specimens. Full Series of styles can fit multiple specimen preparation.
- Designed & manufactured according to international advanced methodology & qualification of metallographic specimens.
- Equipped with beautiful and applied glass fiber crust; pure stainless steel, rustless forever.
- Two optional styles equipped with diameter of 200mm, 250mm, and disk respectively.
- Both of style of single-disk and double-disk equipped with stepless speed change and multiple-step constant speed system.
- E-style machine equipped with stepless speed change and dual step constant speed system simultaneously, and can be switched each other. The turnaround of plates can be selected.



| Model      | Plate number | Diameter of plate | Rotate speed                      | Remark              |                                    |
|------------|--------------|-------------------|-----------------------------------|---------------------|------------------------------------|
| MoPao 160  | 1            | 200/250mm         | 150/300<br>(dual-speed)           | 380V/50Hz, 3 phases |                                    |
| MoPao 260  | 2            |                   |                                   |                     |                                    |
| MoPao 300  | 1            | 300mm             | 50-600<br>(stepless speed change) | 220V/50Hz           |                                    |
| MoPao 160E | 1            | 200/250mm         |                                   |                     |                                    |
| MoPao 260E | 2            | 200/250mm         |                                   |                     |                                    |
| MoPao 300E | 1            | 300mm             |                                   |                     |                                    |
| MoPao 2DE  | 2            | 200/250mm         | 150/300                           | 380V50Hz; 3 phases  | 2 motors; isolative control system |
| MoPao 2D   | 2            |                   |                                   | 220V/50Hz           |                                    |

## SAD-11, Abrasive Band Grinding Machine (Double Abrasive Band)



SAD-11 apply abrasive band to grind and polish the specimen for spectral measurement, different bonds can be replaced timely, conveniently and easily.

### Technical specifications:

- Roller center distance: 255mm
- With cooling water device
- Abrasive band: width 100mm, perimeter 920 mm
- Rotation speed: 1400r/min
- Power supply: 550W / 380 V 150Hz
- Dimension: 550x600x310mm

In metallographic testing laboratory, it is the indispensable procedures about sample's pre-rubbing, grinding and polishing during the cause of metallographic sample preparation.

YMP-2 Series of grinder/polisher is developed and designed after extensive market surveys in many aspects and absorb users' requirements. It's a newly developed product with novel appearance. It starts steady with high-speed and low noise and it can meet different specimen preparation requirements.

It can improve the quality of grinding, polishing and preparing efficiency of the specimen.



#### YMP-2, Dual-Disc-Stepless-Speed Metallurgical Preparation Polisher/Grinder

##### Technical Specifications:

- Diameter of grinding disc: 250mm
- Diameter of sand paper: 230mm
- Diameter of polishing disc: 220mm
- Rotation speed: 50-1400r/min
- Power: 350W/220V/50Hz ; 350W/110V/60Hz
- Dimension: 700x610x330mm
- Net weight: 80Kg



#### Dual-Disc-Four-Speed Metallurgical Preparation Polisher/Grinder YMP-2A

##### Technical Specifications:

- Diameter of grinding disc: 250mm
- Diameter of sand paper: 230mm
- Diameter of polishing disc: 220mm
- Grinding speed: 500 /1000 r/min, 300/600 r/min
- Power: 370W/380V/50Hz
- Dimension: 700x610x330mm
- Net weight: 80Kg



#### Dual-Disc-Dual-Speed Metallurgical Preparation Polisher/Grinder YMP-2B

##### Technical Specifications:

- Diameter of grinding disc: 250mm
- Diameter of sand paper: 230mm
- Diameter of polishing disc: 220mm
- Grinding speed: 500,1000r/min,
- Power: 550W/380V50Hz
- Dimension: 700x610x330mm
- Net weight: 80Kg



XQ-1

### XQ-1, Manual Mechanic Mounting Press

XQ-1 is manual mechanic mounting press with 3 different size of mounting mould, the temperature and heating time can be setup and shown manual on the panel.

#### Technical specifications:

- Mould diameter:  $\varnothing$ 22mm;  $\varnothing$ 30mm;  $\varnothing$ 45mm
- Input voltage: 220V/50Hz; 110V/60Hz
- Power: Max. 650W
- Dimension: 340x260x430mm
- Weight: 33kg



ZXQ-1

### ZXQ-1, Automatic Mounting Press

Mounting press is used for inlay the irregular metallurgical specimens. ZXQ-1 is an auto-machine, it can setup with the heating temperature, mounting time and force.

#### Technical specifications:

- Mould diameter:  $\varnothing$ 22mm;  $\varnothing$ 30mm;  $\varnothing$ 45mm
- Voltage: 220V50HZ; 110V/60HZ
- Power: Max.1000W
- Pressure: 0-2MPa
- Temperature: 0-300°C
- Mounting time: 0-99 minutes and 0-59 seconds can be setup
- Dimension: 380x350x420mm
- Weight: 100Kg
- Automatic/Manual operation is available



ZXQ-5

### ZXQ-5, Automatic Mounting Press

Mounting press is used for inlay the irregular metallurgical specimens. ZXQ-5 is an auto-machine, it can setup with the heating temperature, mounting time and force. Four different size of mould is available for mounting, and it can inlay two specimens simultaneously.

#### Technical specifications:

- Mould diameter:  $\varnothing$ 25mm;  $\varnothing$ 30mm;  $\varnothing$ 40mm;  $\varnothing$ 50mm
- Voltage: 220V50HZ; 110V/60HZ
- Power: Max.1800W
- Pressure: 0-2MPa
- Temperature: 0-300°C
- Mounting time: 0-99 minutes and 0-59 seconds can be setup
- Dimension & Weight: 615x510x500mm & 110Kg
- Cooling system: By water



QC-601

**QC-601 Series, Manual Thermo Press Forming Machine**

Put the plastic (or rubber) material inside the casting mold, in between the upper & lower heating plate, implement pressure and temperature, to form the material into a standard shape to be a sample to serve for test, or to be an example of color comparison, also to be example before mass-production.

| Model                           | QC-601   |
|---------------------------------|--|
| Pressure                        | 10, 30/50ton   |
| Temperature                     | Normal atmospheric temperature ~ 300°C   |
| Timer                           | 0 ~ 999Min.  |
| Size of Heating-plate           | 300×300mm  |
| Distance between heating-plates | 84mm Max.  |
| Cooling method                  | Cooling water, recycling around upper mold and lower mold, force the mold and specimen cool down |
| Attachment                      | forming mold for specimen, one set.  |
| Dimensions (mm)                 | 470×620×1280   |
| Weight                          | 230kg  |
| Power source                    | single phase. 220V/50HZ or 60HZ  |



SHORE A

SHORE C

SHORE D

**SHORE Series, Durometers**

SHORE A - widely used to test common rubber, complex rubber, soft rubber, elastomers, wax and so on.  
 SHORE D - widely used to test hard rubber, hard colophony, grass, plastic, print board, fibre & so on.  
 SHORE C - Durometer is suit for measuring the hardness of materials, which the pressure degree is 50%, the stress need above 0.5kg/cm<sup>2</sup>, and many other similar hardness material.  
 It is widely used in testing various foam, sponge, microporous material and so on.

| Model       | SHORE A      | SHORE C   | SHORE D   |
|-------------|--------------|-----------|-----------|
| Range       | 10~90 HA     | 10~90 HW  | 10~90 HD  |
| Head dim.   | Φ0.79mm      | SR 2.5 mm | SR 0.1 mm |
| Head stroke | 2.5 mm       |           |           |
| Dimension   | 115x60x25 mm |           |           |
| Weight      | 0.5 Kgs      |           |           |



HLX-AC

HLX-D

**HLX Series, Constant Load Test Stands**



SHR-150M

**SHR-150M, Manual Rockwell Hardness Tester**

SHR-150M is an effective and affordable Rockwell testing machine with high accuracy, reliability and durability, and it is applied in the workshops and measurement departments for determining the Rockwell hardness of ferrous and non-ferrous metals. SHR-150M adopts mechanical test cycle without any need of electricity, load force 60, 100, 150Kg is selected by dial knob, test force is manually loaded in handle, and tested result: HRA, HRB, HRC is showed on the analogue gauge.

| Model                        | SHR-150M                      |
|------------------------------|-------------------------------|
| Preliminary test force       | 10Kgf(98.07N)                 |
| Hardness analogue resolution | 0.5HR                         |
| Max. Height of Specimen      | 170mm                         |
| Instrument Throat            | 140mm                         |
| Dimension (mm)               | L520xW240xH700                |
| Gross/Net Weight             | 120/90Kg                      |
| Accuracy                     | GB/T230.2; ASTM E-18; ISO6508 |



HT Series

### HT/HB Series Digital Torque Meter

HT Series Digital Torque Meter is an intellectualized measure instrument, which is specially designed for testing and measuring different of torque. HT is main used for kinds motorized or air screwdriver, torque screwdriver, torque wrench, torque driver, measure and calibrate torque testing, and parts fracture test.

It is widely applied in electric industry, machinery industry, light industry, automobile industry, scientific research and so on.



HB Series

### Specifications:

- High accuracy and resolution
- Peak hold function
- Peak automatic clearance function
- Tolerance limit (up and down limit)
- Automatic power off function
- 3 units available: N.m, kgf.cm, lbf.in
- Reset acceleration of gravity function
- Full range 150% overload
- Large memory
- Inductive background light
- USB output
- Match synchronous analysis software

| Model      | HT/HB-10  | HT/HB-20  | HT/HB-50 | HT/HB-100 | HT/HB-200 |
|------------|-----------|-----------|----------|-----------|-----------|
| Capacity   | 1.0000N.m | 2.0000N.m | 5.00N.m  | 10.00N.m  | 20.0N.m   |
| Resolution | 0.0005N.m | 0.001N.m  | 0.002N.m | 0.05N.m   | 0.1N.m    |
| Accuracy   | ±0.5%     |           |          |           |           |



QC-619T

### QC-619T, Abrasion Tester

The main function is to use specified Grinding Wheel with specified Load to rub the surface of specimen, and after a setup number of timer of abrasive, evaluate the following conditions of the surface after test, and ratio the endurance characteristic of abrasion for this material.

- Worn out condition
- The loss of the weight
- The loss of the physical volume
- The thickness that been worn out, etc.
- Use NBS standard gum to ratio the endurance characteristic of abrasion for this material.

### Specification:

- Machine Dimension: 33 x 43 x 30cm
- Machine Weight: 30 kg
- Power Supply: 240V 50Hz
- Rotary Speed: 60RPM (Or to be specified)
- Counter: LCD display, 6Digit (Optional Setting), Auto-Brake
- Load (Weights) : 250g, 500g, 1000g (Free assorting by user)
- Grinding Wheel specification: (As customer specifies)
- The cleft between

Grinding Wheel and Specimen Plate-Holder: 37 ~ 38mm • Grinding Wheel: Diameter 2", thickness 1/2" • Pitch of Left and Right Grinding Wheel: 63.5mm • Specimen size: Ø100mm, center hole: Ø8mm, thickness: 0.5~3mm (Adjustable), available for soft/hard material • Accessories: Vacuum cleaner 1Set, Specimen cutter 1Pc (A), Wrench 1Pc (K), Grind Wheel 1Set (B), Sand Paper 5Pcs (C) • Attachment: Warranty Certificate, Instruction Manual each one piece.



**VB12, Φ300 Vertical Profile Projector Vexus**

**Applied-fields:**

Vexus VB12 Series digital measuring profile projector integrated optical, mechanical and electronic high efficiency measuring instrument. Image is the same direction with work piece, erect and direct viewing. It is widely use in the field of mechanic, electronic, rubber industry, and college, research institute and the measuring checking department for checking product quality. VB12 can inspect all kinds of surface and outline of 3 complicated work-pieces such as Template, Pressing work-pieces, Cam, Screw thread, Gear, etc.

**Characteristics:**

- Sturdy metal design with fashionable shape;
- Excellent optical path with sharp image: magnification error < 0.08%;
- Large travel stage with precise accuracy: 3+L/75;
- DRO DP300 with powerful measurement and process functions;
- Z-axis focus system adopts double rails lifting structure;
- Drawing, PC measurement report and SPC analyze Easily.

| Model                               | Reverse image Obverse image                                   | VB 12-1550<br>VB 12-1550Z | VB 12-2010<br>VB 12-2010Z |
|-------------------------------------|---|---------------------------|---------------------------|
| <b>Worktable</b>                    | Metal stage dimension   | 340x152mm                 | 350x170mm                 |
|                                     | Glass stage dimension   | 196x96mm                  | 246x120mm                 |
|                                     | Stage travel: X-axis  | 150mm                     | 200mm                     |
|                                     | Stage travel: Y-axis  | 50mm                      | 100mm                     |
|                                     | Stage travel: Z-axis  | 90mm(for focusing)        | 90mm(for focusing)        |
|                                     | Accuracy  | ≤3+L/75(um)               |                           |
| Resolution of X and Y-scale:0.001mm |   |                           |                           |
| <b>Screen</b>                       | Screen diameter: Ø312mm,effective range> Ø300(with * reticle) |                           |                           |
|                                     | Screen Rotary range of screen:0~360°                          |                           |                           |
|                                     | Resolution of rotary indication:1' or 0.01°                   |                           |                           |
| <b>Objective</b>                    | Magnification   | 10x(std.) / 20x(opt.)     | 50x(opt.) / 100x(opt.)    |
|                                     | Object view-field   | Ø30mm / Ø15mm             | Ø6mm / Ø3mm               |
|                                     | Work distance   | 77.7mm / 44.3mm           | 38.4mm / 25.3mm           |
|                                     | Measuring height  | 90mm                      |                           |
| <b>Digital readout</b>              | DP300 multifunction data processing system                    |                           |                           |
| <b>Illumination</b>                 | Surface and Contour Illumination:24V/150W halogen lamp        |                           |                           |
| <b>Power</b>                        | AC110V/60Hz;220V/50Hz,400W                                    |                           |                           |
| <b>Cooling</b>                      | Forced cooling(3-axis-fans)                                   |                           |                           |
| <b>Dimension(mm)</b>                |   | L800×W550×H1150           | L800×W550×H1150           |
| <b>Instrument net weight</b>        |   | 150kg                     | 170kg                     |

**Standard delivery:**

Main instrument with worktable; DRO DP100; 10X objective & transmitted mirror; mini-printer.

**Optional accessories:**

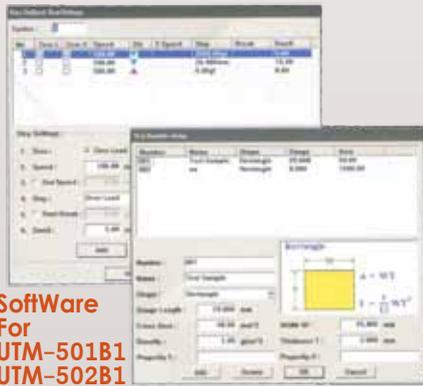
20x, 50x & 100x objective & mirror; footswitch; angle & radius over-chart; Rotary-table; measuring software; working cupboard.

**Recommended working cupboard: JT02B:**

Loading≥250kg, Dimension: L1000×W560×H800(mm).



UTM-503B1



SoftWare For UTM-501B1 UTM-502B1

## UTM-501B1/502B1/503B1, Computerized Universal Testing Machine

UTM-501B1 serial, apply to metal rod, concrete, fabric etc. Floor type, is more stable and convenient for operating. Strong structural & small volume, transmission efficiency more than 70%, less energy loss and high precision, operate easily, 501B1 & 502B1 could connect to computer.

### Specifications:

- The seal plates are treated by anode hardening, and the ball screws are equipped with dust-proof cover to extend its lifetime and precision. Hardware protection: Up/down limit, emergency stop button.
- Servo-motor driven, precise decelerators and ball screws is used to reduce the noisy, loss of transmission.
- LCD display screen can use to operate the machine without connecting with computer.
- Load Cell comply with ASTM-E4 standard which accuracy is limited within 1.0 % and adopt bridge circuit to sense the load force and export data. Load cell also includes memory lock to memorize various parameters. Machine can detects the parameter automatically when switching different load cells.
- With external I/O junction to expand functions
- Inching control.
- Various grips and extensometers are available.

### Function of Software:

- Data sampling rate: Max. 60Hz.
- Full-computerized control to run the test or Jog button control
- Compatible with Window XP or Vista system, but the memory requires 512MB.
- USB interface for bidirectional transmission
- Multi-curves display and real-time plot
- various unit of measurement are available
- Flexible form to manage database.
- Free to name the data file.
- Testing screen is selective to display data, graph or for both at the same time.
- Data processing: file saving, setting loading, report printing and data comparing.
- Graph display: strain v.s. elongation, strain v.s. time and so on.
- tensile test, compression test, bending test, peel test, adhesive test...
- Deformation of machine is revised automatically to ensure test data closing to the precise value.
- Software protection: Overload, over-displacement protection.

| Model                | UTM-501B1  | UTM-502B1  | UTM-503B1           |
|----------------------|--|--|---------------------|
| Max. Capacity        | 300 KN (30,000 kgf)  | 200 KN (20,000 kgf)                              | 100 KN (10,000 kgf) |
| Force resolution     | 1/10000  | 1/10000  | 1/10000             |
| Travel resolution    | 0.005 mm   | 0.005 mm   | 0.005 mm            |
| Speed                | 0.2~300 mm/min   | 0.2~300 mm/min                                   | 0.3~350 mm/min      |
| Motor power          | 3.0kw  | 2.0kw  | 1.0kw               |
| Speed accuracy       | ±0.5%  | ±0.5%  | ±0.5%               |
| Motor style          | AC servo motor   | AC servo motor                                   | AC servo motor      |
| Testing Space        | 550 mm   | 550 mm   | 550 mm              |
| Dimension            | 124x68x220(H) cm   | 120x65x220(H) cm                                 | 115x65x220(H) cm    |
| Weight               | 950 kg   | 900 kg   | 800 kg              |
| Power supply         | 3Ø200~240 V AC, 15A  | 3Ø200~240 V AC, 15A                              | 1Ø200~240 V AC, 15A |
| PC-Port              | USB  | USB  | USB                 |
| Data Sampling Rate   | 5K Hz  | 5K Hz  | 5K Hz               |
| Optional accessories | UTM-TECH B1 Software<br>Grips<br>Extensometer UTM-515, UTM-558<br>PC | UTM-TECH software<br>Grips<br>Extensometer<br>PC | -                   |
| Stroke(w/o grips)    | 1000 mm  | 1000 mm  | 1000 mm             |



UTM-505B1

**UTM-505B1, Universal Material Testing Machine**

Universal material testing machine are mainly applied to testing the physical features of raw materials, finished-products, and semi-products. Universal material tester can perform tensile testing, compression testing, bending testing and acquire testing data like elongation, extension rate, stress and strain...etc. Universal material testing machine can go with various testing accessories like grips, ovens, extensometers and load cells to perform various measuring & testing. This tensile tester can be operated individually or by computer to control the tester.

It's new floor type Universal Material Testing Machine which applied by latest design and producing skill to have strong structure, saving transmission power and electric current without specific power system. Undoubtedly we still keep the advantage for testing precision, simply operation, expand strong. It's the best choice for material testing machine.

**UTM-506B1, Material Testing Machine**

Material testing machines can analysis the whole testing result including elongation, stress, strain, break value and average value. It can also fit to different specimen shape or be required to destroy the specimen and record the entire testing process and analysis the physical features of the specimen like tension force, bending strength, wear-resisting, impact, torque force, abrasion, fatigue, hardness, peeling force, viscosity...etc. We also supply the specimen maker equipment like pneumatic specimen press, hardness specimen cutting device, electrical forming machine. These equipment can make the standard specimen to get precise result during test.

This is a new tabletop Material Testing Machine which applied by latest design and producing skill to have strong structure and lightweight. Undoubtedly we still keep the advantage for testing precision, simply operation, expand strong. It's the best choice for material testing machine. We have a Series B1 type: 503B1/505B1/508B1/513B1. The specification and function of them are the same expect external different.



UTM-506B1 (Extend)



UTM-506B1

| Model              | UTM-505B1         | UTM-506B1         | UTM-506B1 (Extend) |
|--------------------|-------------------|-------------------|--------------------|
| Max. Capacity      | 50 KN (5,000 kgf) | 10 KN (1,000 kgf) | 10 KN (1,000 kgf)  |
| Force resolution   | 1/10000           | 1/10000           | 1/10000            |
| Travel resolution  | 0.005 mm          | 0.005 mm          | 0.005 mm           |
| Speed              | 0.5~500 mm/min    | 1~1000 mm/min     | 1~1000 mm/min      |
| Motor power        | 750w              | 400w              | 400w               |
| Speed accuracy     | ±0.5%             | ±0.5%             | ±0.5%              |
| Motor style        | AC servo motor    | AC servo motor    | AC servo motor     |
| Testing Space      | 420 mm            | 350 mm            | 350 mm             |
| Dimension          | 88x58x193(H) cm   | 72x51x132(H) cm   | 72x51x172(H) cm    |
| Weight             | 356 kg            | 120 kg            | 140 kg             |
| Power supply       | 1Ø200~240 V AC    | 1Ø200~240 V AC    | 1Ø200~240 V AC     |
| PC-Port            | USB               | USB               | 1/10000            |
| Data Sampling Rate | 5K Hz             | 5K Hz             | 5K Hz              |
| Stroke(w/o grips)  | 1100 mm           | 700 mm            | 1200 mm            |



UTM-508B1

Material testing machines can analysis the whole testing result including elongation, stress, strain, break value and average value. It can also fit to different specimen shape or be required to destroy the specimen and record the entire testing process and analysis the physical features of the specimen like tension force, bending strength, wear-resisting, impact, torque force, abrasion, fatigue, hardness, peeling force, viscosity...etc. We also supply the specimen maker equipment like pneumatic specimen press, hardness specimen cutting device, electrical forming machine. These equipment can make the standard specimen to get precise result during test.

### UTM-508B1, Material Testing Machine

It's a light type Material Testing Machine which applied by latest design and producing skill to have strong structure and lightweight. Undoubtedly we still keep the advantage for testing precision, simply operation, expand strong. It's the best choice for material testing machine. We have a Series B1 type: 503B1/505B1/506B1/513B1/. The specification and function of them are the same expect external different.



UTM-513B1

### UTM-513B1, Universal Testing Machines

This is a new light type device which adopts latest design & skill to have strong but smaller & lighter structure. Still keep the advantages of testing precision, simply operation, extend strong. It is the best choice for small capacity.



UTM-508E

### UTM-508E, Material Testing Machine

This light type Material Testing Machine which takes newest designed concept and technology to be the smallest and lightweight. It has lots of advantage, such us test exactly, operated simply, strong expand, etc. It's the best choice for small capacity testing.

| Model              | UTM-508B1      | UTM-513B1      | UTM-508E         |
|--------------------|----------------|----------------|------------------|
| Max. Capacity      | 5 KN (500 kgf) | 5 KN (500 kgf) | 500 N (50 kgf)   |
| Force resolution   | 1/10000        | 1/10000        | 1/10000          |
| Travel resolution  | 0.005 mm       | 0.005 mm       | 0.005 mm         |
| Speed              | 1~1000 mm/min  | 1~1000 mm/min  | 6~600 mm/min     |
| Motor power        | 400w           | 400w           | -                |
| Speed accuracy     | ±0.5%          | ±0.5%          | ±0.75%           |
| Throat depth       | 70mm           | 70mm           | 50mm             |
| Motor style        | AC servo motor | AC servo motor | Step motor       |
| Testing Space      | 140 mm         | 140 mm         | 100 mm           |
| Dimension          | 50x53x145 cm   | 50x53x100 cm   | 42x28x88 cm      |
| Weight             | 80 kg          | 65 kg          | 27 kg            |
| Power supply       | 220 V AC       | 220 V AC       | 100~240 V AC, 3A |
| PC-Port            | USB            | USB            | USB              |
| Data Sampling Rate | 5K Hz          | 5K Hz          | 2K Hz            |
| Stroke(w/o grips)  | 800 mm         | 400 mm         | 350 mm           |



**UTM-528K4, Electronic Test Stand**

UTM-528K4 test stand is designed to be available to mount with different brand/type of force gauge. The test stand is provided with displacement display, test speed is digital setting up, for small specimen, is the best choice as it is light and small without take space. You can manually operate the test stand to test automatically, or connect with computer to control the stand for going multi-functional material test and analyze.

| Model                    | UTM-528K4                                     |
|--------------------------|---|
| <b>Max. Capacity</b>     | 500 N (50 kgf)                                |
| <b>Force resolution</b>  | According to the specification of force gauge |
| <b>Travel resolution</b> | 0.05 mm                                       |
| <b>Speed</b>             | 3~600 mm/min                                  |
| <b>Speed accuracy</b>    | ±0.75%  |
| <b>Motor style</b>       | Step motor                                    |
| <b>Testing Space</b>     | 55 mm   |
| <b>Dimension</b>         | 42x28x88(H) cm                                |
| <b>Weight</b>            | 27 kg   |
| <b>Power supply</b>      | 100~240 V AC, 3A                              |
| <b>Stroke(w/o grips)</b> | 400 mm  |



**UTM-513B2/508B2, Universal Testing Machine Single column (2KN)**

UTM-513B2 & UTM-508B2 type; B2 controller serial is simplest type, controller and machine movement operate independently, provided with output signal of stop machine, collocate with different type flexible. Provided with data output function, can connect to computer and do analyses, statistics, save data with special software. Single column types include various stroke models and capacity for choosing, and apply to metal, rubber, plastic, fabric, leather, paper, component material etc. This can provide more economic solution for testing and satisfy testing requirement of finished product and semi-finished product.

**UTM-506B2/506B2(extend), Testing Machine (5KN)**

UTM-506B2 include standard, extend length type, and conform with various testing request to providing best test state for the different between specification of specimen, testing environment, testing force etc. This type is suitable for testing within 5KN capacity. Table type, convenient to operate, small volume and strong structure won't occupy space, transmission efficiency more than 85%, less energy loss and high precision, operate easily, could connect to computer.



| Model                        | UTM-513B2  | UTM-508B2   | UTM-506B2       | UTM-506B2 (Extend) |
|------------------------------|--|---|-----------------|--------------------|
| <b>Max. Capacity</b>         | 2 KN (200 kgf)                                   | 2 KN (200 kgf)  | 5 KN (500 kgf)  | 5 KN (500 kgf)     |
| <b>Force resolution</b>      | 1/10000  | 1/10000   | 1/10000         | 1/10000            |
| <b>Travel resolution</b>     | 0.005 mm   | 0.005 mm  | 0.005 mm        | 0.005 mm           |
| <b>Speed</b>                 | 25~500 mm/min                                    | 25~500 mm/min   | 25~500 mm/min   | 25~500 mm/min      |
| <b>Speed of force 200kg</b>  | 15~500 mm/min                                    | 12~500 mm/min   | -               | -                  |
| <b>Speed of force 500kg</b>  | 25~500 mm/min                                    | -   | 15~500 mm/min   | 15~500 mm/min      |
| <b>Speed of force 1000kg</b> | -  | -   | 50~500 mm/min   | 50~500 mm/min      |
| <b>Throat depth</b>          | 70 mm  | 70 mm   | -               | -                  |
| <b>Testing Space</b>         | -  | -   | 420 mm          | 420 mm             |
| <b>Motor power</b>           | 120w   | 120w  | 120w            | 120w               |
| <b>Motor style</b>           | DC motor   | DC motor  | DC motor        | DC motor           |
| <b>Effective width</b>       | Ø140 mm  | Ø140 mm   | Ø420 mm         | Ø420 mm            |
| <b>Dimension</b>             | 55x55x104(H) cm                                  | 55x55x150(H) cm   | 97x58x150(H) cm | 97x58x184(H) cm    |
| <b>Weight</b>                | 65 kg  | 80 kg   | 150 kg          | 175 kg             |
| <b>Power supply</b>          | 200~240 V AC                                     | 200~240 V AC  | 200~240 V AC    | 200~240 V AC       |
| <b>PC-Port</b>               | USB  | USB   | USB             | USB                |
| <b>Data Sampling Rate</b>    | 1K Hz  | 1K Hz   | 1K Hz           | 1K Hz              |
| <b>Stroke(w/o grips)</b>     | 400 mm   | 800 mm  | 800 mm          | 1000 mm            |
| <b>Optional Accessories</b>  | UTM-TECH Software<br>Grips<br>Extensometer<br>PC | UTM-TECH B2 Software<br>Grips<br>Extensometer UTM-515/UTM-558<br>PC | -               | -FF                |

# MATERIAL TESTING 10kg, Horizontal Tensile Testing Machine

## UTM-507E Horizontal Tensile Tester



UTM-507E

This machine is suitable for 180 degree peel test of tape and electronic packing belt.

It can perform friction test and tensile test of small force as well.

The horizontal type tester offers a better solution for some special requirements that a vertical type tester can not do.



| Model No.                   | UTM-507E                     |
|-----------------------------|------------------------------|
| Load Capacity               | 100N (10kgf)                 |
| Stroke (w/o Grips)          | 300mm                        |
| Position Control Resolution | 0.005mm                      |
| Max. Speed                  | 500mm/min                    |
| Min. Speed                  | 5mm/min                      |
| Speed Accuracy              | ±0.75%                       |
| Motor Style                 | Step Motor                   |
| Language                    | Chinese / English Selectable |
| Pc-Port                     | USB                          |
| Data Sampling Rate          | 2KHZ                         |
| Resolution Of Force         | 1/10,000                     |
| Load Cell Accuracy          | ±1.0%                        |
| Dimension                   | 92x30x38 cm                  |
| Weight                      | 36kg                         |
| Power Supply                | 100~240VAC, 3A               |

### Software:

#### Software of computerized serial

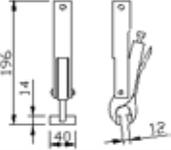
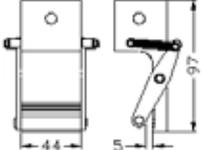
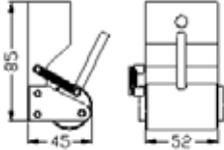
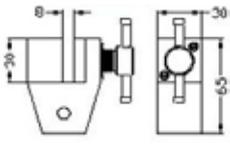
- Setting testing condition and operate directly through computer.
- Setting various testing mould, e.g. tension test, compression test, bending test, peel test, creep test, test, spring test, foam test, user defined test etc.
- Various unit selectable: Unit is interchangeable between Metric system and English system, also can set the decimal place of each unit.

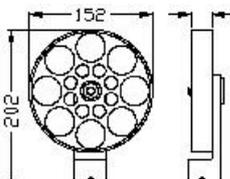
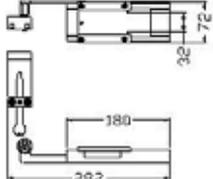
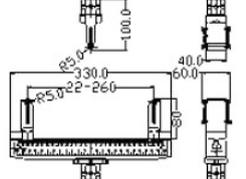
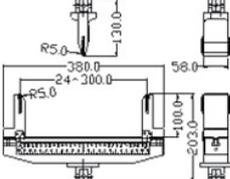
- Force (kN, N, tonf [SI, long, short], kgf, gf, lbf, ozf)
- Length (m, cm, mm, ft, in)
- Stress (GPa, MPa, kPa, Pa, kN/m<sup>2</sup>, N/m<sup>2</sup>, N/cm<sup>2</sup>, N/mm<sup>2</sup>, kgf/mm<sup>2</sup>, gf/cm<sup>2</sup>, gf/mm<sup>2</sup>, lbf/ft<sup>2</sup>, lbf/in, kpsi, psi)
- Time (min, sec, msec)
- Speed (cm/min, cm/sec, mm/min, mm/sec, in/min, in/sec).

- Protection mode: Over load protection, over displacement protection.
- Display X-Y, X-T, Stress-Strain curve and data synchronously.
- Analyze data, statistics, save data by computer.
- Connect with computer by USB.

#### Software of Electronic serial

- Connect with computer by USB.
- Setting various testing mould, e.g. tensile, compression, bending, peel test etc.
- Display X-Y, X-T, Stress-Strain curve and data synchronous.
- Analyze data, statistics, save data by computer.

| Model              | UTM-GR-A010  | UTM-GR-A020  | UTM-GR-A030   | UTM-GR-B010  |
|--------------------|--|--|---|--|
| Image              |   |   |  |   |
| Max. Capacity      | 2KN  | 2KN  | 2KN   | 200KN  |
| Specimen Width     | 40mm   | 44mm   | 52mm  | 30mm   |
| Specimen Thickness | 1~12mm   | 0.1~5mm  | 0.1~5mm   | 0.1~5mm  |
| Grip Weight        | 984g   | 687g   | 876g  | 212g   |
| Grip Material      | Steel  | Steel  | Steel   | Aluminium Alloy  |
| Temperature Limits | -30°C~+200°C   | -30°C~+200°C   | -30°C~+200°C  | -10°C~+100°C   |
| Min Load Cell      | 200N   | 200N   | 200N  | 20N  |
| Applicable Adapter | GR-02  | GR-02  | GR-02   | GR-02  |
| Application        | Rubber / Plastic / Fabric  | Ductile Rubber / Ductile Plastic   | Ductile Rubber / Ductile Plastic  | Tapes, Films / Paper   |
| Diagram            |  |  |  |  |

| Model              | UTM-GR-B020   | UTM-GR-B030   | UTM-GR-C010  | UTM-GR-C020   |
|--------------------|---|---|--|---|
| Image              |  |  |  |  |
| Max. Capacity      | 200N  | 200N  | 5KN  | 10KN  |
| Specimen Width     | 25.4mm  | 32mm  | 40mm   | 58mm  |
| Specimen Thickness | 0.1~3mm   | 0.01~3mm  | -  | -   |
| Specimen Distance  | -   | -   | 22~260mm   | 24~300mm  |
| Grip Weight        | 949g  | 1110g   | up 901g / down 5342g   | up 1960 / down 11510g   |
| Grip Material      | Aluminum Alloy  | Steel   | Steel  | Steel   |
| Temperature Limits | -10°C~+100°C  | -10°C~+100°C  | -30°C~+200°C   | -30°C~+200°C  |
| Min Load Cell      | -   | -   | 200N   | 500N  |
| Applicable Adapter | GR-02   | GR-02   | GR-02 / GR-03  | GR-02 / GR-03   |
| Application        | Tapes / Films / Ductile Circuit Board   | Tapes / Films / Ductile Circuit Board   | Metal / Wood / glasses / Rigid Plastic   | Metal / Wood / glasses / Rigid Plastic  |
| Anvil Radius       | -   | -   | R=5mm (adjustable)   | R=5mm (adjustable)  |
| Diagram            |  |  |  |  |

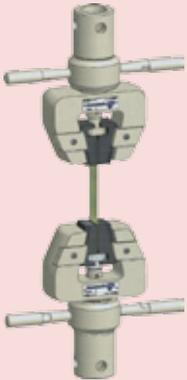
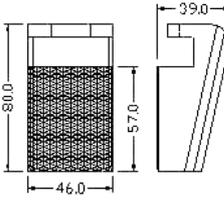
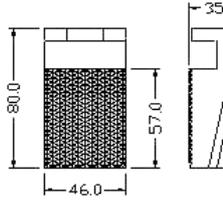
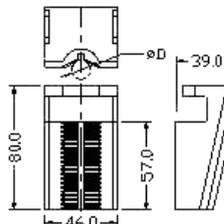
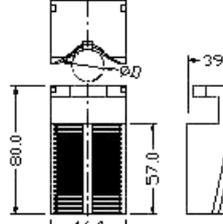
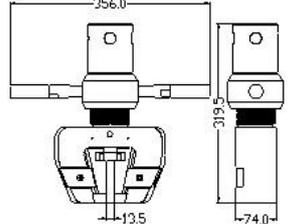
| Model              | UTM-GR-D01A                            | UTM-GR-D01D                            | UTM-GR-D01G                            | UTM-GR-D020       |
|--------------------|--|--|--|-------------------|
| Image              |  |  |  |                   |
| Max. Capacity      | 2KN                                    | 2KN                                    | 2KN                                    | 2KN               |
| Specimen Width     | 78mm                                   | 78mm                                   | 78mm                                   | 60mm              |
| Specimen Thickness | 0.2~5mm                                | 0.2~5mm                                | 0.2~5mm                                | 0.2~5mm           |
| Grip Weight        | 1600g                                  | 1600g                                  | 1600g                                  | 2142g             |
| Grip Material      | Steel                                  | Steel                                  | Steel                                  | Steel             |
| Jaw Face           | Crosshatch                             | Rubber Faced                           | Waved                                  | -                 |
| Temperature Limits | -30°C~+200°C                           | -30°C~+200°C                           | -30°C~+200°C                           | 0°C~+200°C        |
| Min Load Cell      | 200N                                   | 200N                                   | 200N                                   | 200N              |
| Applicable Adapter | GR-02                                  | GR-02                                  | GR-02                                  | GR-02             |
| Application        | Textile / Rubber / Plastic             | Paper / Textile / Rubber / Plastic     | Textile                                | Textile / Plastic |
| Other Spec.        | GR-D01B: A=50.8mm<br>GR-D01C: A=25.4mm | GR-D01E: A=50.8mm<br>GR-D01F: A=25.4mm | GR-D01H: A=20.8mm<br>GR-D01I: A=25.4mm | -                 |
| Diagram            |  |  |  |                   |

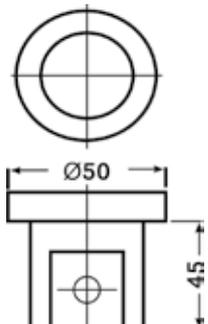
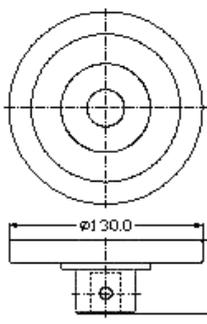
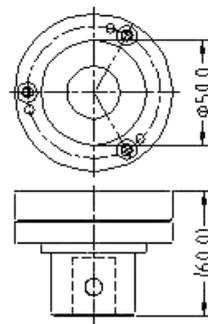
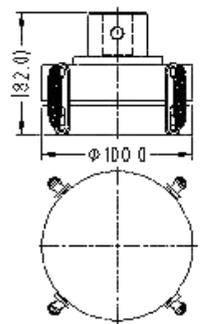
| Model              | UTM-GR-D030       | UTM-GR-D040       | UTM-GR-E010 |
|--------------------|-------------------|-------------------|-------------|
| Image              |                   |                   |             |
| Max. Capacity      | 5KN               | 1KN               | 200KN       |
| Specimen Width     | 50mm              | 78mm              | -           |
| Specimen Thickness | 0.5~25mm          | 1~45mm            | -           |
| Grip Weight        | 2800g             | 2100g             | 432g        |
| Grip Material      | Steel             | Steel             | Steel       |
| Temperature Limits | 0°C~+100°C        | 0°C~+200°C        | 0°C~+100°C  |
| Min Load Cell      | 500N              | 200N              | 20N         |
| Applicable Adapter | GR-02             | GR-02             | GR-02       |
| Application        | Textile / Plastic | Big Size Specimen | Yarn        |
| Diagram            |                   |                   |             |

| Model              | UTM-GR-E020            | UTM-GR-E030        | UTM-GR-E040    | UTM-GR-E050       |
|--------------------|------------------------|--------------------|----------------|-------------------|
| Image              |                        |                    |                |                   |
| Max. Capacity      | 2KN                    | 500KN              | 100KN          | 2KN               |
| Specimen Width     | 51mm                   | 26mm               | -              | -                 |
| Specimen Thickness | 0.2~3mm                | 0.1~2mm            | -              | -                 |
| Grip Weight        | 1120g                  | 585g               | 245g           | 1400g             |
| Grip Material      | Steel                  | Steel              | Aluminum Alloy | Steel             |
| Temperature Limits | -30°C~+200°C           | -30°C~+200°C       | -30°C~+200°C   | -30°C~+200°C      |
| Min Load Cell      | 200N                   | 50N                | 20N            | 100N              |
| Applicable Adapter | GR-02                  | GR-02              | GR-02          | GR-02 / M12       |
| Application        | Webbing / Packing belt | Yarn / Wire / Film | Yarn           | Wire / Nylon line |
| Specimen Diameter  | -                      | -                  | Ø0.5~Ø1mm      | Ø0.5~Ø2mm         |
| Diagram            |                        |                    |                |                   |

| Model              | UTM-GR-F010   | UTM-GR-F01A TYPE JAW  | UTM-GR-F01B TYPE JAW                                     |
|--------------------|---------------|---|--|
| Image              |               | <p>Standard Specimen<br/>Specimen Thickness: 0.2~10mm<br/>A: Interchangeable Jaw Face<br/>B: Jaw Face Support</p> | <p>Thickened Specimen<br/>Specimen Thickness: 9~18mm</p> |
|                    |               | Application: metal Sheet / Wire / Plastic   |  |
| Max. Capacity      | 100KN         | UTM-GR-F01F TYPE JAW  | UTM-GR-F01G TYPE JAW                                     |
| Specimen Width     | 30mm          |   |  |
| Specimen Thickness | 1~12mm        |   |  |
| Grip Weight        | 5246g         |   |  |
| Grip Material      | Steel         |   |  |
| Temperature Limits | -30°C~+200°C  |   |  |
| Min Load           | 1KN           |   |  |
| Applicable Adapter | GR-02 / GR-03 |   |  |
| Diagram            |               | <p>Rod Specimen<br/>Specimen: Dia.(D) Ø6~Ø14mm</p>  | <p>Rod Specimen<br/>Specimen: Dia.(D) Ø13~Ø20mm</p>      |
|                    |               | Application: Metal Rod / Plastic Rod / Rod or Tube Shape Materials  |  |

| Model  | UTM-GR-F020                        | UTM-GR-F02A TYPE JAW  | UTM-GR-F02B TYPE JAW                              |
|--|------------------------------------|---|---|
| Image  |                                    |   |   |
|  |                                    | Standard Specimen<br>Specimen thickness: 0.2~11mm                   | Thickened Specimen<br>Specimen Thickness: 10~21mm |
| Application: Wire / Rigid Plastic / Plate Material |                                    |   |   |
| Max. Capacity                                      | 50KN                               | UTM-GR-F02F TYPE JAW  | UTM-GR-F02G TYPE JAW                              |
| Specimen Width                                     | 40mm                               |   |   |
| Specimen Thickness                                 | 0.1~5mm                            |   |   |
| Grip Weight  | 10163g                             | Rod Specimen<br>Specimen: Dia. $\varnothing$ 7~17 $\varnothing$ mm  |   |
| Grip Material                                      | Steel                              | Rod Specimen<br>Specimen: Dia. $\varnothing$ 16~ $\varnothing$ 26mm |   |
| Temperature Limits                                 | -30 $^{\circ}$ C~+200 $^{\circ}$ C | Application: Metal Rod / Plastic Rod / Rod or Tube Materials        |   |
| Min Load   | 1KN                                |   |   |
| Applicable Adapter                                 | GR-03                              |   |   |
| Diagram  |                                    |   |   |
| Model  | UTM-GR-F030                        | UTM-GR-F03A TYPE JAW  | UTM-GR-F03B TYPE JAW                              |
| Image  |                                    |   |   |
|  |                                    | Standard Specimen<br>Specimen Thickness: 1~11mm                     | Thickened Specimen<br>Specimen Thickness: 10~19mm |
| Application: Wire / Plastic Material               |                                    |   |   |
| Max. Capacity                                      | 100KN                              | UTM-GR-F03F TYPE JAW  | UTM-GR-F03G TYPE JAW                              |
| Specimen Width                                     | 46mm                               |   |   |
| Grip Weight  | 17522g                             |   |   |
| Grip Material                                      | Steel                              | Rod Specimen: Dia.(D)<br>$\varnothing$ 8~17 $\varnothing$ mm        |   |
| Temperature Limits                                 | -30 $^{\circ}$ C~+200 $^{\circ}$ C | Rod Specimen: Dia.(D)<br>$\varnothing$ 16~ $\varnothing$ 25mm       |   |
| Min Load   | 2KN                                | Application: Metal Rod / Plastic Rod / Rod or Tube Materials        |   |
| Applicable Adapter                                 | GR-04                              |   |   |
| Diagram  |                                    |   |   |

| Model              | UTM-GR-F040  | UTM-GR-F04A TYPE JAW   | UTM-GR-F04B TYPE JAW  |
|--------------------|--|--|---|
| Image              |   |  |  |
|                    |  | Standard Specimen<br>Specimen Thickness: 1~11mm                                    | Thickened Specimen<br>Specimen Thickness: 10~19mm                                   |
|                    |  | Application: Wire / Metal Sheet  |   |
| Max. Capacity      | 200KN  | UTM-GR-F04F TYPE JAW   | UTM-GR-F04G TYPE JAW  |
| Specimen Width     | 46mm   |  |  |
| Grip Weight        | 19150g   | Rod Specimen: Dia.(D)<br>Ø9~17Ømm  | Rod Specimen: Dia.(D)<br>Ø6~Ø25mm   |
| Grip Material      | Steel  |  |   |
| Temperature Limits | -30°C~+200°C   |  |   |
| Min. Load          | 5KN  |  |   |
| Applicable Adapter | GR-04  |  |   |
| Diagram            |  | Application: Metal Rod / Plastic Rod   |   |

| Model              | UTM-GR-G010   | UTM-GR-G01A   | UTM-GR-G020   | UTM-GR-G030   |
|--------------------|---|---|---|---|
| Image              |  |  |  |  |
| Max. Capacity      | 5KN   | 10KN  | 5KN   | 20KN  |
| Max. Diameter      | 50mm  | 130mm   | 90mm  | 100mm   |
| Grip Weight        | 400g  | 1700g   | 1518g   | 3269g   |
| Grip Material      | Steel   | Steel   | Steel   | Steel   |
| Temperature Limits | -70°C~+200°C  | -70°C~+200°C  | -70°C~+200°C  | -30°C~+200°C  |
| Min. Load Cell     | 50N   | 200N  | 100N  | 500N  |
| Applicable Adapter | GR-02 / GR-01   | GR-02 / GR-03 / GR-04   | GR-02   | GR-02 / GR-03   |
| Application        | Can / Brittle Material  | Can / Brittle Material  | Spring / Foam   | Concrete Material   |
| Diagram            |  |  |   |  |

| Model              | UTM-GR-G040   | UTM-GR-G050                 | UTM-GR-H010                           | UTM-GR-H020          |
|--------------------|---------------|-----------------------------|---------------------------------------|----------------------|
| Image              |               |                             |                                       |                      |
| Max. Capacity      | 500N          | 5KN                         | 200N                                  | 20N                  |
| Specimen Width     | -             | -                           | 30mm                                  | 16mm                 |
| Specimen Thickness | -             | 0.28~0.55mm                 | 0.1~3mm                               | 0.1~3mm              |
| Grip Weight        | 1320g         | 7442g                       | 480g                                  | 190g                 |
| Grip Material      | Steel         | Steel                       | Aluminum Alloy                        | Aluminum Alloy       |
| Temperature Limits | -30°C~+200°C  | 0°C~+100°C                  | 0°C~+40°C                             | 0°C~+40°C            |
| Min Load Cell      | -             | 500N                        | 20N                                   | 10N                  |
| Applicable Adapter | GR-02         | GR-02                       | GR-02                                 | GR-02                |
| Application        | Spring / Foam | Tappi T818 Paper Ring Crush | Plastic / Rubber Sheet / Wire / Paper | Plastic Sheet / Wire |
| Air Supply         | -             | -                           | 40~80Psi                              | 40~80Psi             |
| Max. Diameter      | Ø55mm         | -                           | -                                     | -                    |
| Specimen Size      | -             | 12.7 x 152.4mm              | -                                     | -                    |
| Diagram            |               |                             |                                       |                      |

| Model              | UTM-GR-I010   | UTM-GR-H030                                 | UTM-GR-H040    | UTM-GR-H050      |
|--------------------|---------------|---|----------------|------------------|
| Image              |               |   |                |                  |
| Max. Capacity      | 500N          | 1KN   | 1KN            | 5KN              |
| Specimen Width     | -             | 51mm  | -              | 50mm             |
| Specimen Thickness | -             | 0.1~12mm                                    | 0.1~4mm        | 0.5~12mm         |
| Grip Weight        | 1320g         | 2250g                                       | 2503g          | 9337g            |
| Grip Material      | Steel         | Aluminum Alloy                              | Aluminum Alloy | Steel            |
| Temperature Limits | -30°C~+200°C  | 0°C~+40°C                                   | 0°C~+40°C      | 0°C~+40°C        |
| Min Load Cell      | -             | 200N  | 200N           | 1KN              |
| Applicable Adapter | GR-02         | GR-02                                       | GR-02          | GR-02            |
| Application        | Spring / Foam | Fabric / Paper / Leather / Plastic / Rubber | Nylon Line     | Plastic / Rubber |
| Air Supply         | -             | 40~80Psi                                    | 40~80Psi       | 40~80Psi         |
| Test Area          | 60 x60mm      | -   | -              | -                |
| Diagram            |               |   |                |                  |

| Model              | UTM-GR-I030   | UTM-GR-J010                     | UTM-GR-J020                     |
|--------------------|---------------|---------------------------------|---------------------------------|
| Image              |               |                                 |                                 |
| Max. Capacity      | 500N          | 10KN                            | 20KN                            |
| Specimen Width     | -             | 50mm                            | 81mm                            |
| Specimen Thickness | -             | 0.5~3mm                         | 0.5~3mm                         |
| Specimen Diameter  | 1~9mm         | -                               | -                               |
| Grip Weight        | 782g          | 4900g                           | 11522g                          |
| Grip Material      | Steel         | Steel                           | Steel                           |
| Temperature Limits | 0°C~+100°C    | -30°C~+200°C                    | -30°C~+200°C                    |
| Min Load Cell      | 100N          | 2KN                             | 2KN                             |
| Applicable Adapter | GR-02 / GR-03 | GR-02 / GR-03                   | GR-02 / GR-03                   |
| Application        | Rod Material  | Webbing / High-Tension Material | Webbing / High-Tension Material |
| Diagram            |               |                                 |                                 |

| Model              | UTM-GR-K010                                | UTM-GR-K020          | UTM-GR-K030                               | UTM-GR-K03B                               | UTM-GR-L030          |
|--------------------|--|----------------------|---|---|----------------------|
| Image              |  |                      |   |   |                      |
| Max. Capacity      | 1KN  | 200N                 | 500N                                      | 100N                                      | -                    |
| Specimen Diameter  | -  | Ø0.5~Ø2.5mm          | -   | -   | -                    |
| Button Dia.        | -  | -                    | -   | -   | Ø5~Ø15mm             |
| Specimen Width     | 50mm                                       | -                    | -   | -   | -                    |
| Jaw Face Width     | -  | -                    | 25.4mm                                    | 12mm                                      | -                    |
| Specimen Thickness | 0.5~4mm                                    | -                    | 0.2~5mm                                   | 0.2~3mm                                   | -                    |
| Grip Weight        | 1727g                                      | Up 470g / Down 1748g | 710g                                      | 253g                                      | Up 925g / Down 3648g |
| Grip Material      | Steel                                      | Steel                | Steel                                     | Steel                                     | Steel                |
| Temperature Limits | -30°C~+200°C                               | -30°C~+200°C         | -30°C~+200°C                              | -30°C~+200°C                              | 0°C~+200°C           |
| Min Load Cell      | 50N  | 20N                  | 50N                                       | 10N                                       | 20N                  |
| Applicable Adapter | GR-02                                      | GR-02 / MB+GR-02     | M12 / GR-02                               | M6 / GR-02                                | M6 / GR-02           |
| Application        | Zipper / Specimen-Fix One Side and Pull up | Spring               | Smaller Specimen / Ductile Sheet Material | Smaller Specimen / Ductile Sheet Material | Button               |
| Diagram            |  |                      |   |   |                      |

| Model            | UTM-GR01         | UTM-GR02   | UTM-GR03      | UTM-GR04               |
|------------------|------------------|--|---------------|------------------------|
| Image            |                  |  |               |                        |
| Max. Capacity    | 1000N            | 20KN   | 50KN          | 200KN                  |
| Adapter Material | Steel            | Steel  | Steel         | Steel                  |
| Application      | QC-528 / QC-508E | QC-528 / QC-508E / QC-513 / QC-508 / QC-506 / QC-505 | QC-505 Series | QC-503 / QC-502 Series |
| Diagram          |                  |  |               |                        |



### UTM-515, Extensometer

Extensometer is the essential equipment for measuring the elongation of specimen. It used in tensile test and sense the elongation when testing is processing. Extensometer is helpful to analysis test data at the same time, including force, elongation, time and so on.

MRC supply long extensometer and short extensometer according to different test materials. Long extensometer applies on rubber and plastic material. Short extensometer applies on metal and brittle material.

### How To Install On The Machine



### Long Extensometer

| Model         | UTM-515                                   |             |
|---------------|---|-------------|
| Type (Length) | A: Standard                               | B: Extended |
| Accuracy      | 0.1mm                                     |             |
| Resolution    | 0.025mm                                   |             |
| Drag Fore     | Max/0.25N                                 |             |
| Stroke        | 700mm                                     | 1100mm      |
| Gauge Length  | 15~50mm                                   |             |
| Output Signal | AB Phase                                  |             |
| Mounting Way  | Fixed Holder / Revolvable Holder (option) |             |

**Short Extensometer**



| Model                 | UTM-556             | UTM-558                             |
|-----------------------|---------------------|-------------------------------------|
| Gauge Length          | 50mm                | 25mm / 50mm                         |
| Elongation            | 50%                 | 100% / 50%                          |
| Length Resolution     | 0.001mm             | 0.01mm                              |
| Output Signal         | 2 mV/V              | AB Phase Differential Motion Output |
| Max. Output Frequency | -                   | 64KHZ                               |
| Power Supply          | DC 5-10V            | DC 5V±5%                            |
| Application           | A Series Controller | B1-A Series Controller              |
| Weight                | -                   | 175g                                |

**Chamber For Environmental Test**



Temperature and humidity can make great impact on physical properties of the test material. Therefore, materials which are used in specific condition need even more to pass through specific environmental test.

MRC offer various acquirments for environmental test, including high temperature test, low temperature test and humidity test. These chambers can be installed on universal testing machine to preform test under certain environmental conditions. These serial almost adapt double column type, it can also be used on single column type to meet special request.

**Oven**

- Inner size: Standard type 200x200x500mm.
- Temperature range: +50°C ~ +200°C.
- Attached stand with track to connect with universal testing machine.
- Attached extend shaft of thermal discharge type to reduce the effect of temperature to tester.

**Note: Temperature and inner size could be specified by customer.**

**Freezing Chamber**

- Inner size: Standard type 200x200x500mm.
- Temperature range: low temperature range: 0°C ~ -60°C, high temperate range: up to +150°C.
- Attached stand with track to connect with universal testing machine.
- Attached extend shaft of thermal discharge type to reduce the effect of temperature to tester.

**Note: Temperature and inner size could be specified by customer.**

**Humidity And Temperature Chamber**

- Inner size: Standard type 300x300x500mm.
- Temperature range: low temperature range: 0°C ~ -60°C, high temperature range: up to +150°C.
- Humidity range: 25-90%
- Attached stand with track to connect with universal testing machine.
- Attached extend shaft of thermal discharge type to reduce the effect of temperature to tester.

**Note: Temperature and inner size could be specified by customer.**