This equipment is mainly used for tensile, compressive, bending, tearing and peeling tests of metal wires, metal foils, plastic films, wires and cables, adhesives, artificial boards, wires and cables, waterproof materials and other industries. It is widely applied in material inspection and analysis in industries such as factories and mines, quality supervision, aerospace, mechanical manufacturing, wires and cables, rubber and plastics, textiles, construction materials and home appliances.

**Features:**
Embedded PC and streamlined design, saving more space and looking more aesthetically pleasing.
The entire machine frame structure is made of new aviation aluminum, which is very sturdy, lightweight and has higher stability.
The motor-driven microscope with a humanized design enables the focus to move smoothly along an arc path, providing a broader and clearer field of view.
If necessary, chip pressure testing can be performed to reduce R&D and production costs.
The resolution of any measurement module is 100ppm, ensuring the testing accuracy of each measurement module.
System accuracy: 0.15%.
Optional digital image acquisition system can store pictures of defective products, facilitating error traceability and comparison.
Royce has over 20 years of R&D experience and is currently one of the most precise tensile testing machines on the market.

**Electric Microscope**
Just press the switch on the front panel to adjust the microscope to a comfortable height. The motor-driven microscope smoothly moves along the arc path of its focus. There are no knobs for adjustment and no digital tables for reference.

**Large-scale servo X/Y**
The X-axis movement exceeds 300mm, and the Y-axis movement exceeds 150mm, making the Royce 650 easily adaptable to 300mm wafers, lead frames, and large electronic components. High-speed axes allow for ball shear testing and rapid test piece positioning.
Ultra-small pitch
High-precision optics and sub-micron X and Y resolution provide high repeatability for ultra-small pitch testing. An optional 128X magnification microscope is available for on-site monitoring.
**Integrated computer suitable for small cleanrooms**
Cleanrooms are expensive. The 650 integrates a high-standard, high-precision Windows PC, along with an easy-to-use package, in addition to the worktable. Your IT department will also appreciate the system coming from the same source.
**Rich data reports**
The reports can be generated in CSV, XLS or PDF format. Built on SQL databases, they can be queried and used with the Royce query tool. Data can be exported to network drives, printers, built-in DVD-CD R/W drives, USB drives provided to users, or RS232 serial ports.

**Multi-level access**
Process engineers should have full access to the operation and installation of machines. However, production operators' access should be restricted. To accommodate the access needs of various users, process engineers can set permission levels for each type of user. Many different permissions can be set, but two or three are usually sufficient. Access permissions are automatically set when users log in.

**Multiple languages**
With just a click of the mouse, the language can be switched. Multiple languages are supported, including Traditional Chinese, Simplified Chinese, Japanese, Korean, German, French, and English. Other languages can also be easily installed.
The die shear force and bump pull force of 200KGF
The exceptionally strong chassis and tooling of 650 allow for a die shear force and bump pull force of 200kgf, and ensure the requirements for future testing.

**Optional Hi-Mag digital image acquisition card**
The installation of the digital image acquisition card option, training for the operator and communication with customers and suppliers regarding issues are all very useful. The zoom lens field of view ranges from 890um to 130um (approximately 800X to 2700X on a 17" monitor) with a 2M pixel USB camera. Feature measurements of the displayed image are performed using built-in software. Captured images can be saved, printed or sent via email.

**High-precision range modules**
The system is used to its fullest extent, and each test module can be used for multiple forces. For example, a 100gf test module can operate at 50gf, 25gf and 10gf, and with a resolution of 100ppm in each measurement. The system is advancing laboratory experiments to meet the application requirements of space flight.

**System Features**
Supports multiple world languages;
Compact design with high-integrated Windows PC built-in;
Test accuracy 10 times higher than any test machine;
Die shear force up to 200kg;
One-click adjustment of microscope height;
Extra-large working area for measuring 300mm wafers or substrates;
Ultra-durable test module with calibration memory and protection tools;
Rich options for data output and analysis;
Built-in SQL database query editing function;
User access permission levels can be set;
Ergonomic joystick control;
High-speed solder ball shear force test;
Bump push force up to 200kg;
Supports cavity and fine pitch pull force tests;
Ball push force supports a series of BGA applications;
Three-point test strength for thin wafers;

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **系统说明System Description** |  |  |  |  |
| 计算机 computer | 高性能工业电脑，内置DVD-CD RW驱动器、USB、网络端口High-performance industrial computer, with built-in DVD-CD RW drive, USB and network ports. |  |  |  |
| 存储器 Memory | 32G |  |  |  |
| 伺服马达驱动X/YServo motor drives X/Y | 标准，305mm×155mmStandard, 305mm × 155mm |  |  |  |
| X、Y分辨率 X, Y resolution | 1微米 1 micron |  |  |  |
| Z轴分辨率 Z-axis resolution | 0.1微米 0.1 micron |  |  |  |
| 系统精度 System accuracy | 0.15% |  |  |  |
| 步进精度 Stepping accuracy | 1微米到25微米 From 1 micron to 25 microns |  |  |  |
| 环形高度测量 Circular height measurement | 是 Yes |  |  |  |
| 力度曲线 Force curve | 是 Yes |  |  |  |
| 符合标准 Meet the standards | Mil Std 883，Mil Std 750，ASTM F1269，JESD22-B117，JESD22- B116 and CE Certified. ROHS compliant. |  |  |  |
|  |  |  |  |  |
| 测试模块 Test module | 范围 scope | 可选范围 Range of options |
| 线拉力 Tension of the wire | 100gf | 50gf | 20gf | 10gf |
| 1kgf | 500gf | 200gf | 100gf |
| 10kgf | 5kgf | 2kgf | 1kgf |
| 管芯剪切力Die shear force | 20kgf | 10kgf | 5kgf | 2kgf |
| 200kgf | 100kgf | 50kgf | 20kgf |
| 线邦定剪切力Linear binding shear force | 250gf | 100gf | 50gf | 25gf |
| 1kgf | 500gf | 200gf | 100gf |
| 5kgf | 2kgf | 1kgf | 500gf |
| 粘片强度3点测试Three-point test of die bonding strength | 10kgf | 5kgf | 2kgf | 1kgf |
| 金球推力 Golden ball thrust | 100gf | 5gf | 20gf | 10gf |
| 夹拉力 Clamping force | 1kgf | 500gf | 200gf | 100gf |
|  | 10kgf | 5kgf | 2kgf | 1kgf |
|  |  |  |  |  |
|  |  |  |  |  |
| **主机规格 Host specifications** |  |  |  |  |
| 规格（mm）Specification (mm) | 560(H)×432(W)×585（D） |  |  |  |
| 重量 weight | 55kg |  |  |  |
| 电源 Power supply | 90～264VAC，47～63Hz |  |  |  |
| 气源 Air source | 4.0～5.5bar |  |  |  |
| 真空 vacuum | 500mm Hg |  |  |  |