mrc **Laboratory Equipment Manufacturer**
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THE INTERNATIONAL CERTIFICATION NETWORK

User Manual

UTM-65A/B
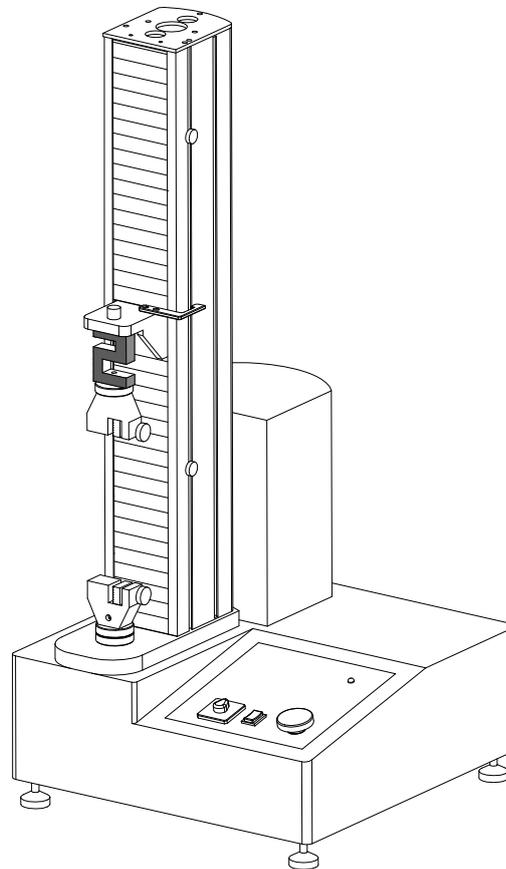
Universal Testing Machine

Introduction

To user:

  We appreciate it very much that you choose our product. Please read our manual carefully before you use it. We provide one year quality assurance and the consummation after-sale service. If during the using process, you discover any question, please promptly relate with us.

               Thanks your trust and the support sincerely!

Special statement:

- ■ This manual is not the requiremnet basis for the buyer.

- ■ This operation manual final explanation power belongs to this company.

Catalogue

【User Introduction】

1.1.Please read this manual carefully before you operate equipment and check equipment state which may cause damage through transports when you open packing.

1.2.Please carry on the experimental operation strictly according to the testing method which the instruction book gives.

1.3.Please operate the equipment in the equipment parameter area.

1.4.Instrument damage which causes because of the operators contrary operation, this company will not undertake any responsibility.

1.5.Personal injuries which causes because of the operators contrary operation, this company will not undertake any responsibility.

1.6.If instrument stops using for a long time, should check insulation resistance and also make sure safety ground before power on.

1.7.This instrument appears the breakdown in the use process, the user should relate promptly with this company, obtains us to maintenance and technical support.

【Warning labels】

In this manual, in view of the security considerations, please make sure that the user's attention, and use the following important display items, in order to prevent the occurrence of danger or accident, please be sure to observe the following danger, warning signs to remind:

No	Logo	Meaning		No	Logo	Meaning
1	⚡	Be careful to get an electric shock.		4	⚠	Be careful operation.
2	⏚	Must be grounded!		5	🚫	It is prohibited to use flammable items.
3	🔧	Regular maintenance		6	🚫	Untouchable

【 Equipment Structure】

upper cover plate

upper limit screw

Dust curtain

stand column

Sliding block

Limit baffle

Load Cell

Up Grip

Electromotor cover

Down Grip

Lower Limit Screw

Power Switch

Down Grip Fixture

inching switch

Down Platen

Base

Power light

Foot

Emergency stop button
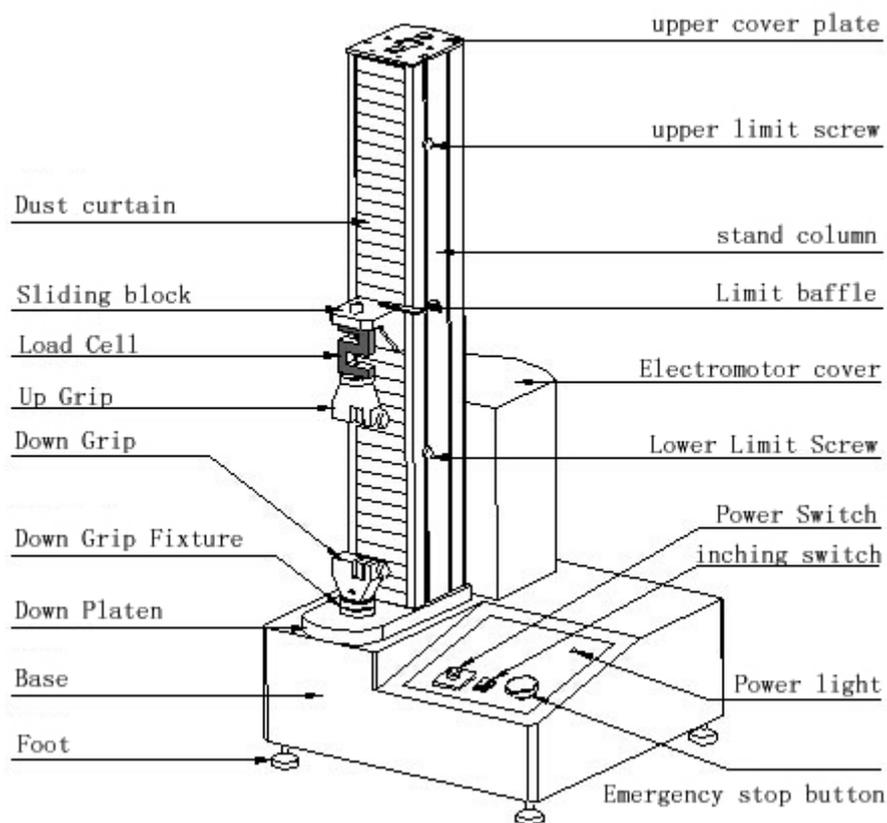
【Environmental Conditions】

◆ Working Enviroment Temperature：20±15 （Adhesive industry 23±2 ）；

◆ Working Environment Humidity：80％（Adhesive industry 65％±5％），No condensation phenomenon；

◆ Power supply voltage is less than the rated voltage±10％，To ensure products can be normal used and ensured accuracy of test,suggest installing the voltage-stabilized source then use the machine；

◆ This product should be installed on the basis of the stable level，Levelness should be better than 0.2mm/1000mm；

◆ This product is properly installed, surrounding the surface should be not less than 0.7 m space；

◆ Prohibited in the presence of corrosive gas, vibration and magnetic field under the condition of using this product.

【Technical Parameters】

Warning: it is strictly prohibited to exceed the rated load testing sensor, otherwise will completely damaged sensor！

Specification	UTM-65A	UTM-65B
Resolution	1/250000	1/150000
Test Speed	0.1-500mm/min	50-500mm/min
Load Cell Capacity	2kg、5kg、10kg、20kg、50kg、100kg、200kg、500kg	
Force Accuracy	＜±0.5%	
Test Stroke	650mm（Not include grips）	
Dimension	500×500×1250mm（L×W×H）	
Weight	About 50kg	
Power	AC220V 50/60HZ	

Note:The sample max force can not exceed the machine load cell capacity.

【 Computer Configuration】

※Central processing unit (CPU) is Intel Celeron(Celeron) abouve 2GHz.

※Memory at least 512MB,Suggest using above 1GB.

※Hard-disk space is above 2GB.

※Monitor resolution is above 1024×768.

※Printer is compatible with the operating system. （If you need the output test report.）

※Applicable for Microsoft operating system Windows XP.

※If need to output Word test report,must install MicroSoft Word 2003.

【**Software CD**】There are two documents in the CD：

※ TM2101Vx.xx**---**This file is TM2101,Green software that no need to install,you can put it in the anywhere in the computer.

※ DriverV8.6**----**This file is drive program,must install this driver in the computer,then can run TM2101 software.

【**Software set up**】

| Double-click DriverV8.6 | → | Double-click Setup | → | Press Next | → | Choose I accept the License |

| → | Double-click Setup | → | PressNext | → | PressNext | → | Press Finish |

Restart computer ? → | Confirm | → | Copy TM2101V2.xx files in CD to computer anywhere | → | Double -click TM2101V2.xx |

→ | Right click TestMaster | Sent to the desktop → | Finish set up |
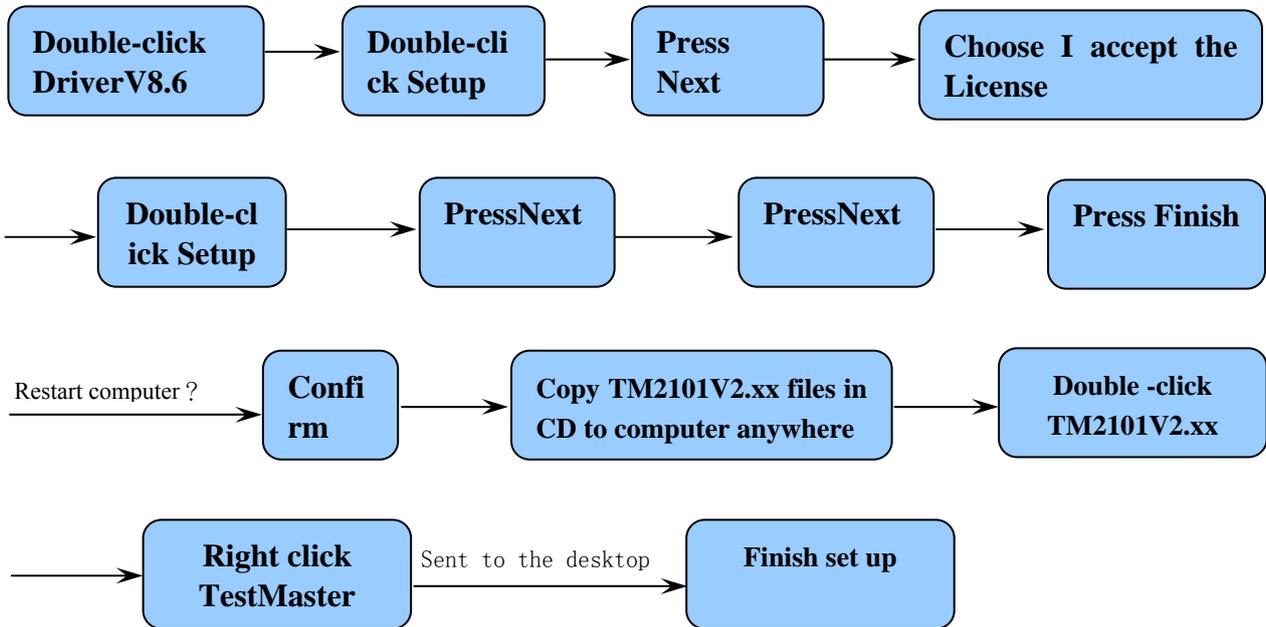
【**Software upgrading**】Example：From TM2101V2.41 update to TM2101V2.42

| Copy TM2101V2.42 To anywhere | → | Open old TM2101V2.41 | → | Copy data | → |

| Open TM2101V2.42 | → | Paste data to TM2101V2.42 | → | Delete desktop TestMaster(old) | → |

| Open TM2101V2.42 | → | Right click TestMater | → | Sent to the desktop | → | Finish update |
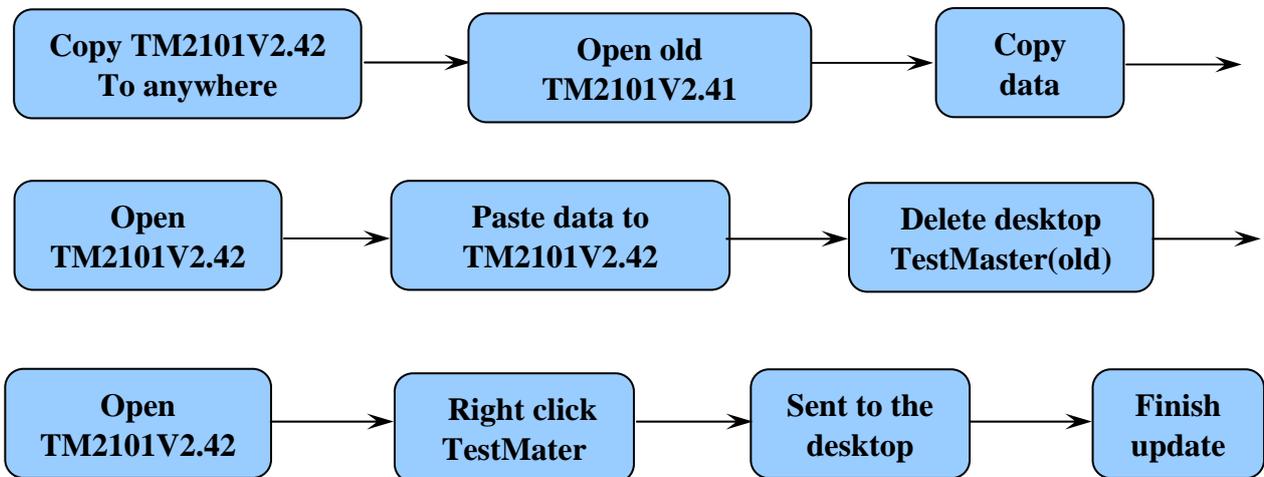
【**Setting before test**】

◆ Select sample data or edit a new sample,such as below：

| User Settings | Force-Elong. | Force-Time | Elong.-Time | Stress-Strain | Force-Elong. |

SpecimenSelect Rubber ▼ [Edit]

✓ Rubber
Rubber2
Metal

Name		hape	GaugeLength (mm)	Area (mm^2)	Width (mm)	Thickness (mm)
Rubber		ctangle	100.000	1.000	1.000	1.000
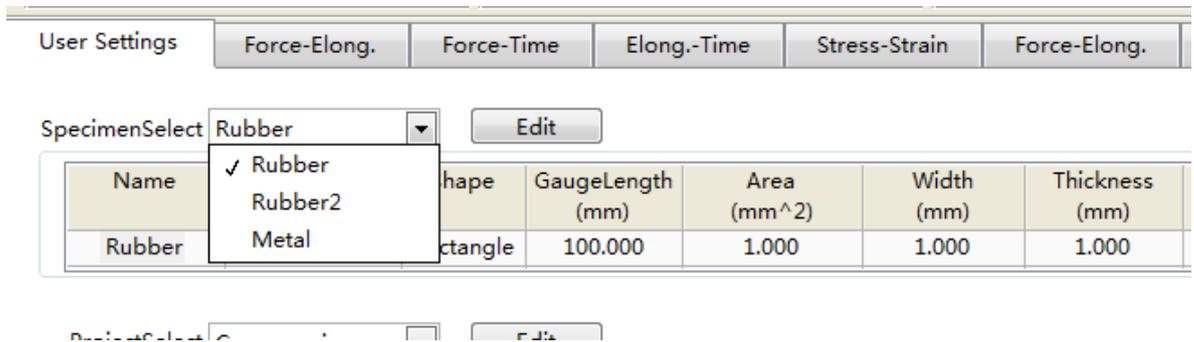
◆ Choose test methods or edit a new test methods,such as below:

ProjectSelect Compression Test ▼ [Edit]

Tensile Test
Peel Test
✓ Compression Test

Stage	Direction		hift Condition	ControlValue	PauseTime	ControlPara	extProces	Cy
1	Compress		Elong.>=	50.000mm	0.000min	100.00	End	
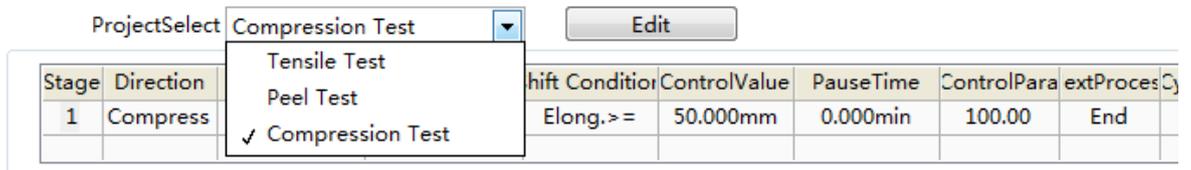
◆ Choose test result or edit a new test result,such as below：
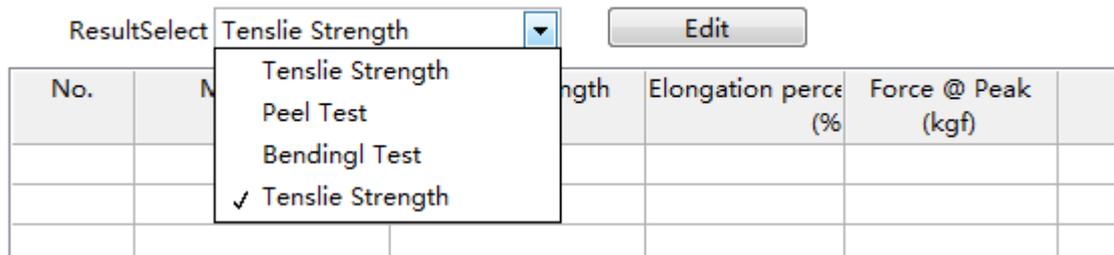
【**Execute test**】

Click **Test** button,Start test,the button in machine will turn to green in suction state,it means it is in testing,and wait the testing finish automatically.

【**Test result**】

Finishing test,the test result will save automatically,and Will automatically get the test results.And you can choose other test result item to obtain other test item result.

【**Menu Introduction**】

※**Unit system**

Press menu **Setting** → **Unit**

In the unit setting,you can choose unit,choose unit accuracy.Unit system determines the units of the whole system,all the test result is based on the unit.
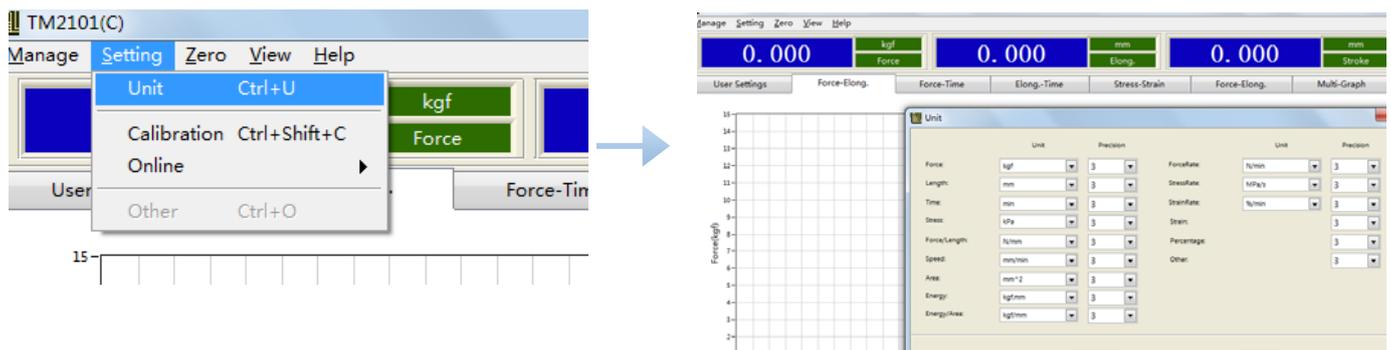
※Connect computer

Press **Setting**→ **Online** ，Choose correct COM connector to connect computer,such as below：
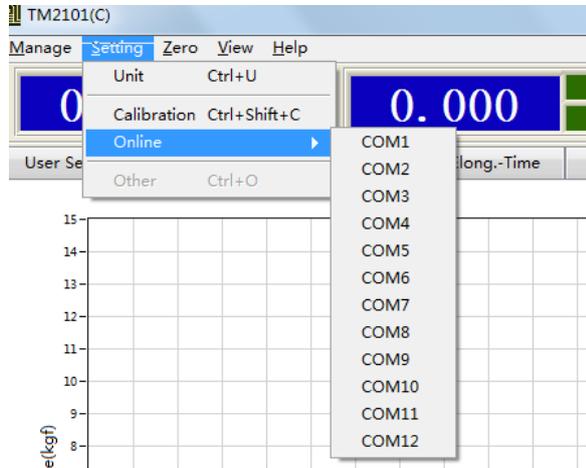
If connect failure,windows will pop up failure,if connect successfully,it will not pop up.The software will be online automatically in the first time,if connect in success,the software will connect automatically at this COM connector.It can only test in online success.

※Read Data From Machine

Press **Setting** → **Calibration**

When you first use the machine and software,you need to calibrate the machine,Read the date from machine to software.Input password rixine,Click ReadFromChip,then OK to save it.
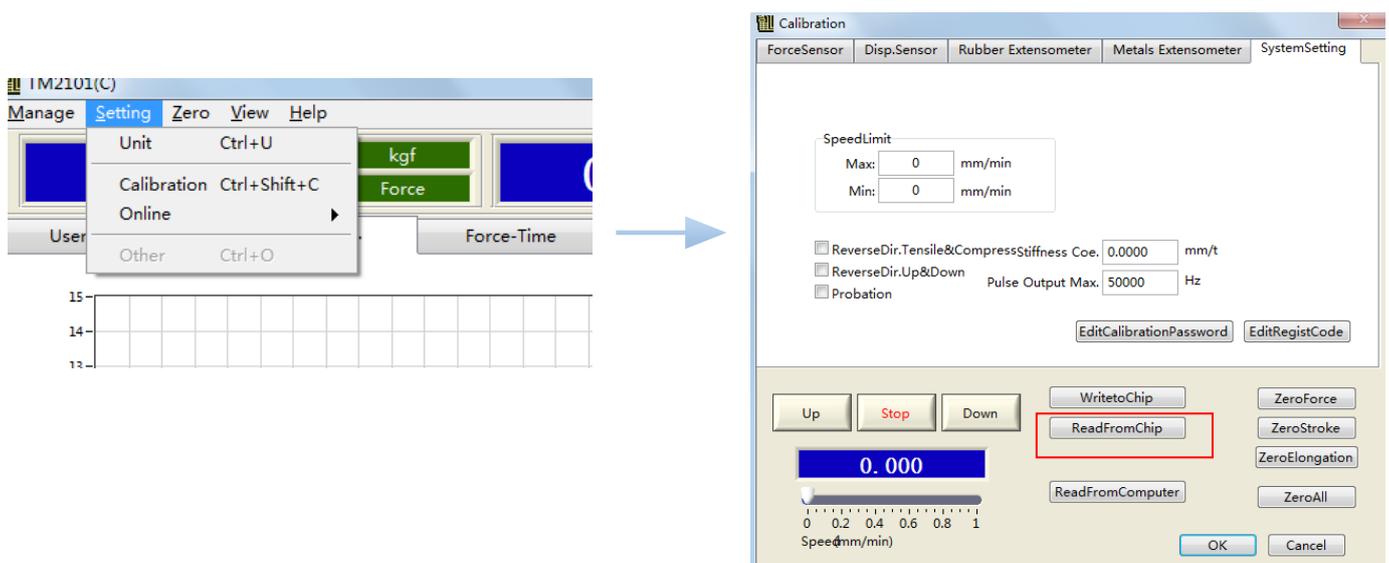
※**Calibration**(About one year a time,once you find the test data is not accurate,you need to calibration the machine)

- ◆ Click Setting → Calibration ，Input password rixine,to enter the menu to calibrate.
- ◆ Press **Force Sensor** ；
- ◆ The Measurement is used to input the load cell size,it means max capacity.
- ◆ Click **Clear** ,Write 0 into the standard weight（it is 0 calibration）,
- ◆ Click **Snap** ；
- ◆ Input the correct standard weight in the standard weight.
- ◆ Put on the weight，after stable,click **Snap** ,
- ◆ At last click **Write to chip** ,
- ◆ Click **OK** ,return to the main menu,take off the weight,click **Clear** ,then put on the weights again to verify the force value,If the deviation is larger,Repeat the calibration steps.
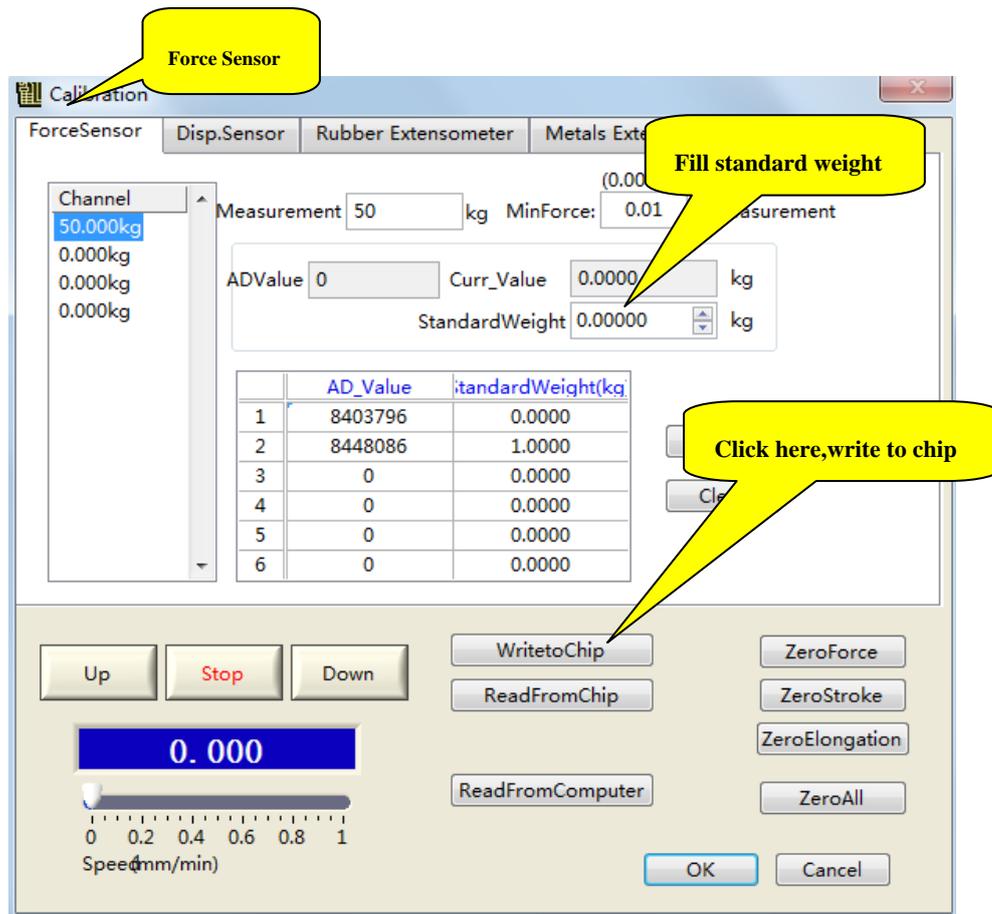
※Language Switcher

Click **View**→**Language** ，can change language,there is Simple language,traditional Chinese and English.

※Material Edit

According to **Specimen select** ,you can choose the sample you need,or you can click **Edit** to modify the specimen:
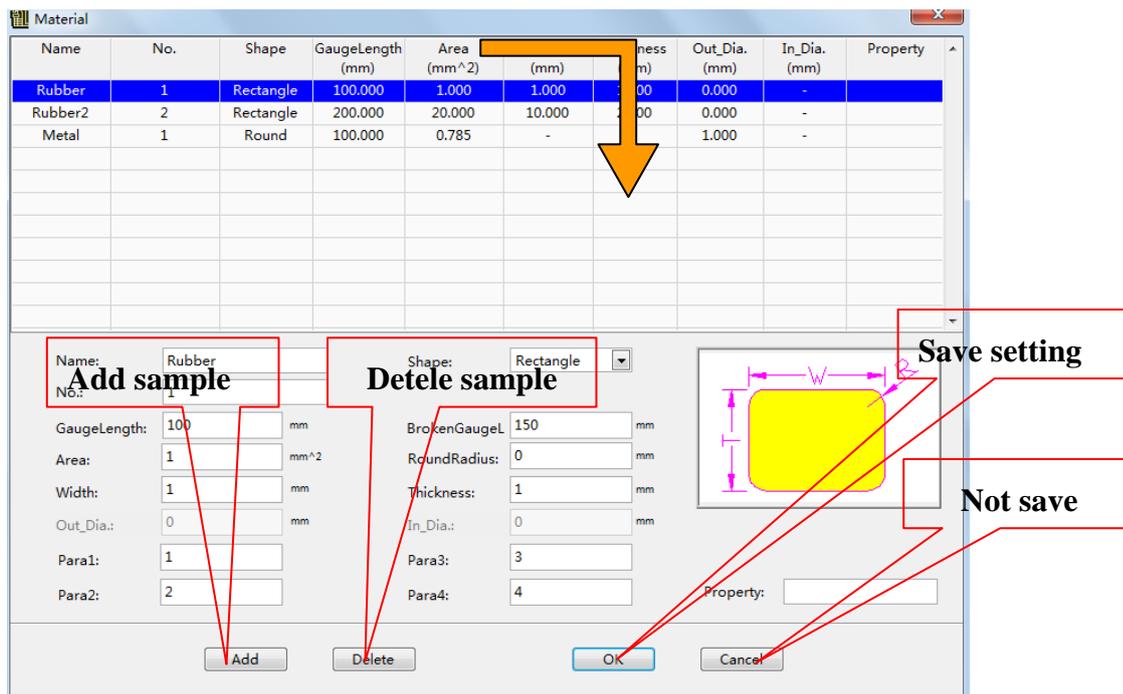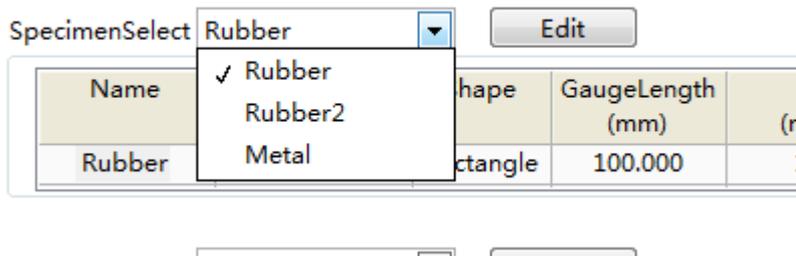
※Control methods

According to [**Project Select**] to choose the test methods,or click [**Edit**] to modify or add the test methods.Such as below:

Control mode value：It is control methods.

Switching condition value：To achieve a certain way the required conditions.

Conversion condition：It is up to the percentage value switching conditions began to transform into the next action.

Name list：Lists all the existing test methods

Pre-tightening force：default for maximum speed if not selected

Add: Add a new test method

Delete: delete the selected test method

Confirm:save all the changes

Cancell:don't save the changes

※Controls parameter

According to **Project Selected** ,you can choose one test methods.Then click **Edit** Then will appear below chart:
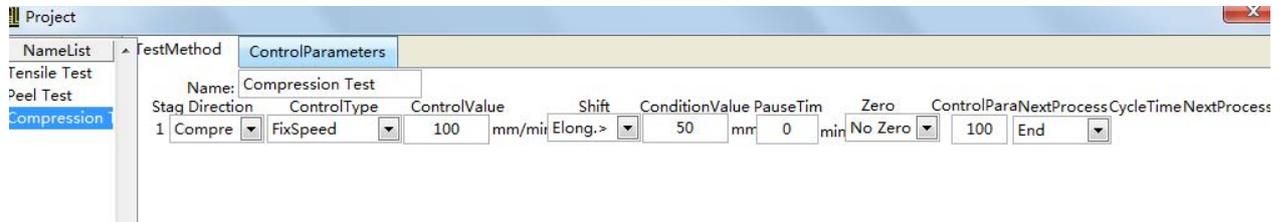
Click **Control Parameters** will appear below following dialog:
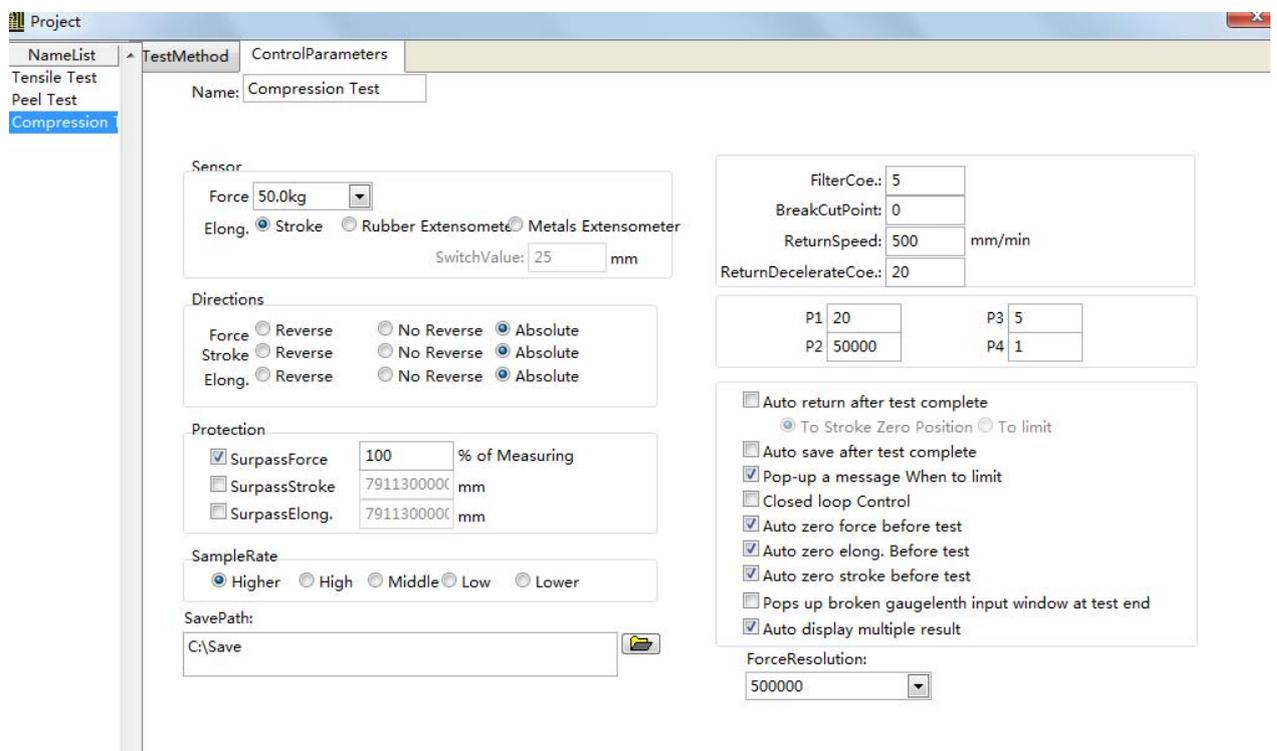
Sensors: the choice of force and displacement sensors

Direction: strength, stroke, and the displacement value is taken negative or take absolute value.

Protection: when the force value exceeds the protection value,the machine will stop automatically,choose it,it means the protection function is starting.

Sampling rate: mining point number per second, for a long time constant load test can choose low sampling rate.

Save the path test results: the test data will be stored in the directory path.

Filter coefficients: filtering unstable data, to 0 or 1 said no filtering.

Fracture to remove points: remove the last few sample point when the sample is broken.

Force resolution: the higher the resolution, the higher the precision.

Name list: lists all the existing test methods.

Use the default value: use the default system control parameters

Add: add a set of control parameters

Delete: delete a selected set of control parameters

Confirm:save all the changes

Cancellation: don't save the changes

※Test Result

According to **Result Select** select a group test result,or click **Edit** to add or edit the test result,such as below：
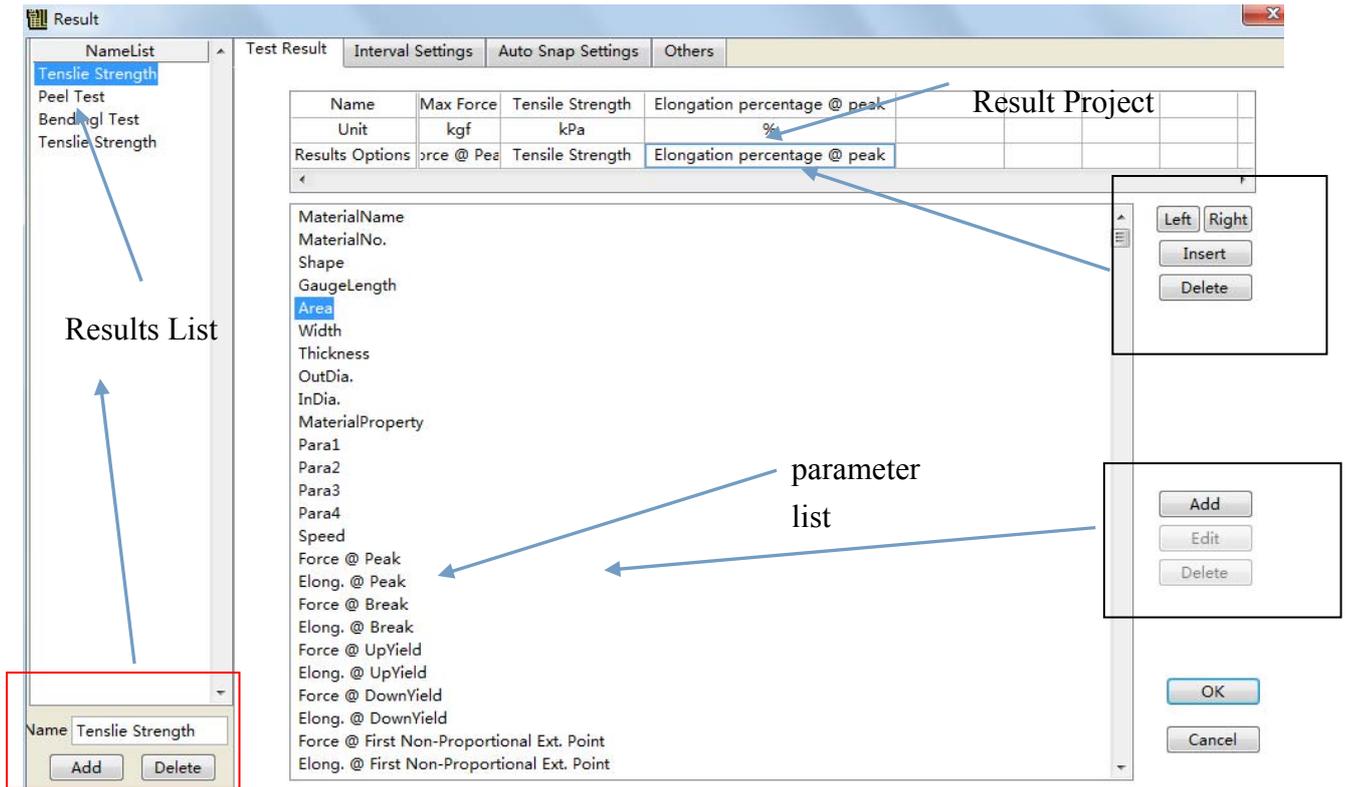
Name list: lists all the existing test results

Add: add a set of test results

Delete: delete a selected set of test results

Confirm:save all the changes

Cancel: don't save the changes

Interval setting, automatic take Settings, and other tabs can fill in according to the demand.

※Word Report generation

Finish testing,click **Add record** ,choose the saved raw data,and then click **Word** report to generate a word report,this report to named again then can save,or can not save directly.

※Word Report template modify,

a、Such as below photos,choose **Test Result**，Will occur **Edit** item,
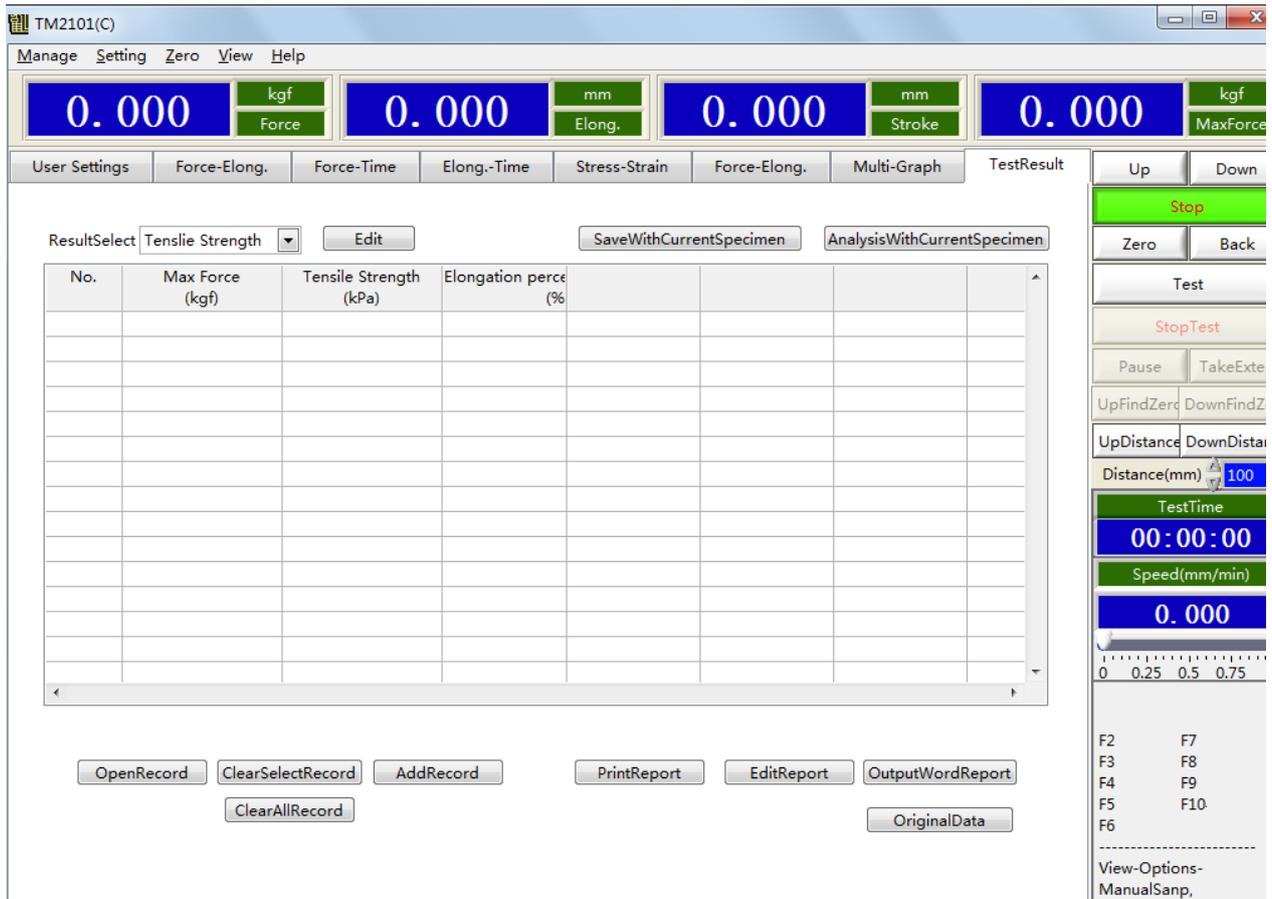
b．Click **Edit** ，The dialog box diagram below appears,click **Others** → **Open** :
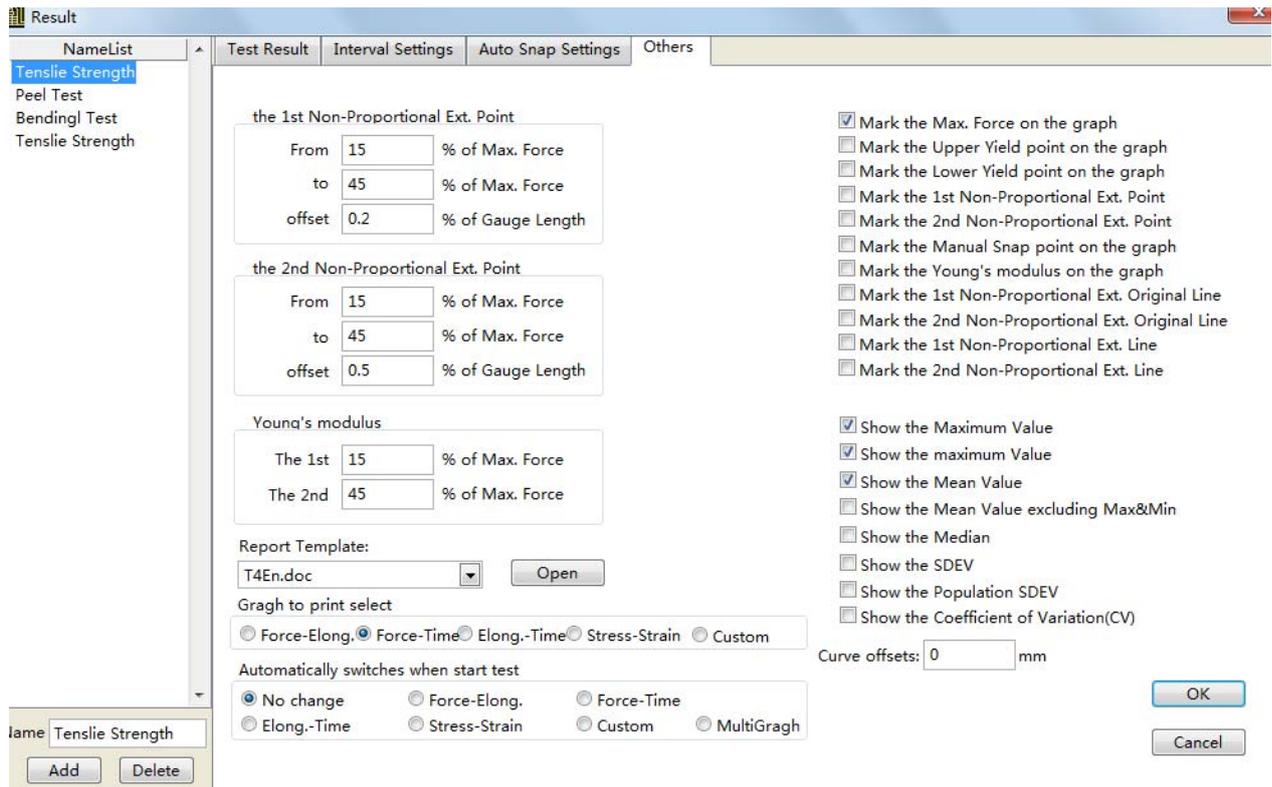
c · Click **Open**   open the Word Report template，you can modify the report template,and then save

it.Note:You can not delete the table in the report template,or it the error will occur.Such as below:
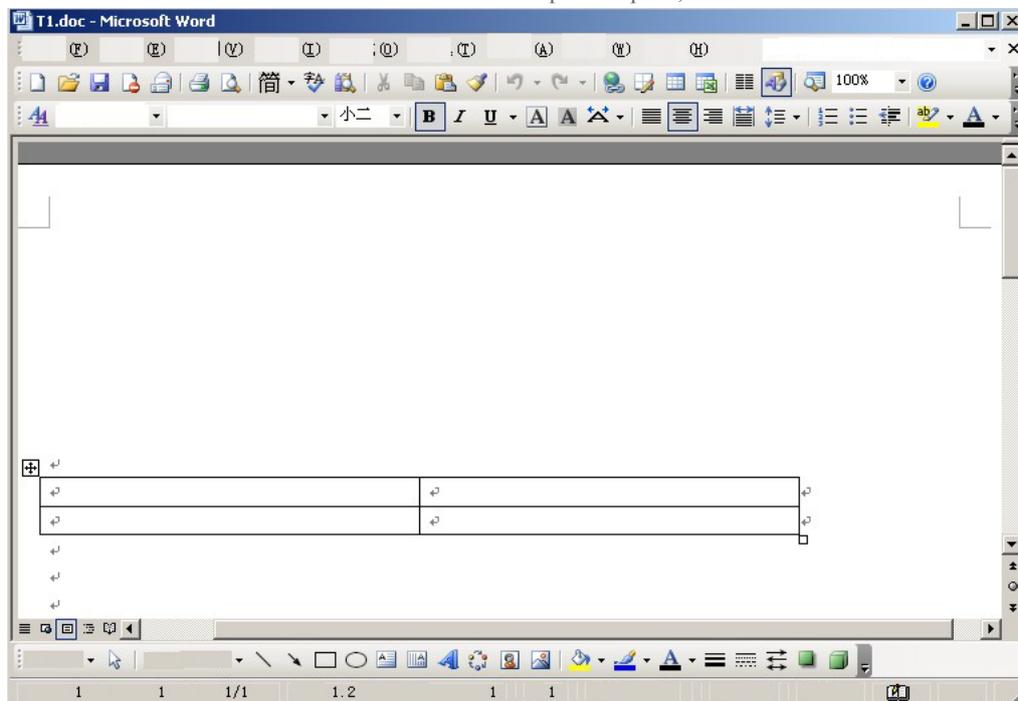
【Appendix 1: the commonly used test methods】

Tensile Test   Compression Test   180 angle peel test   peel test

90 angle peel test   3 point bending test   loop tack test
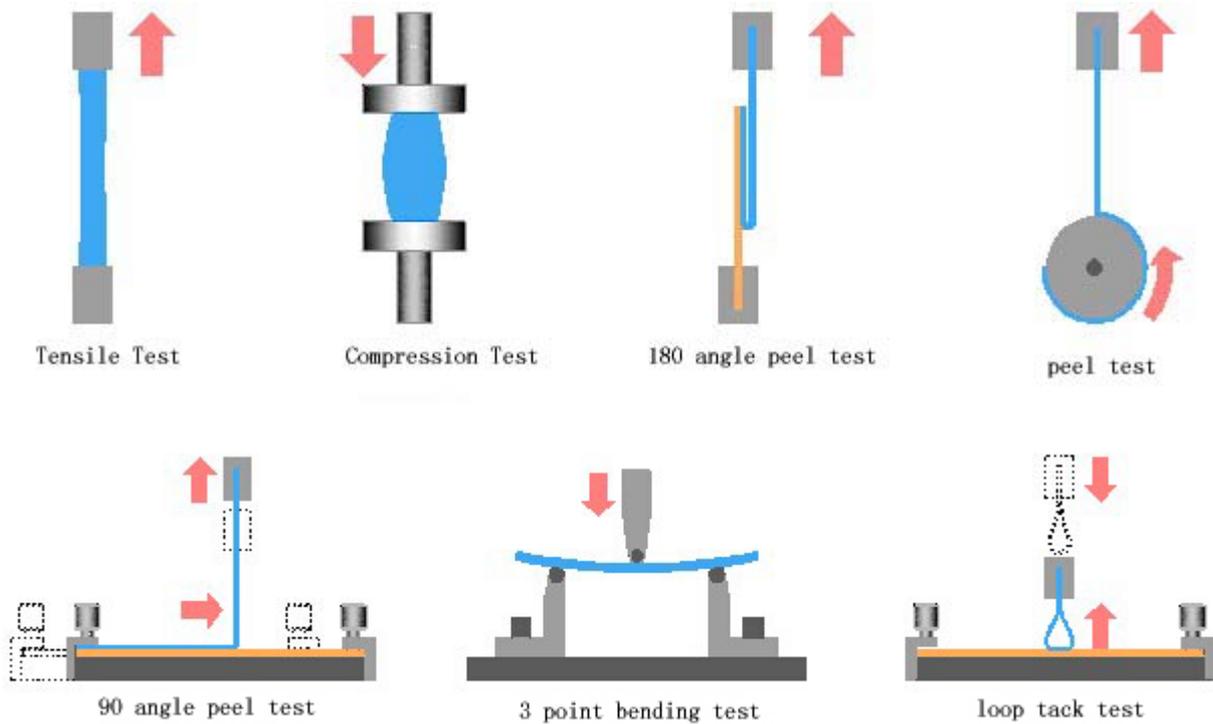
【Appendix 2: commonly used shortcut】

Shortcuts	Function	Shortcuts	Function
F2	Up	Ctrl + Q	Exit
F3	Down	Ctrl + U	System of units
F4	Stop	Ctrl + Shift + C	calibration
F5	Clear	Ctrl + F	Power to zero
F6	Return	Ctrl + S	Stroke to zero
F7	Start Test	Ctrl + E	Displacement to zero
F8	Finish Test	Ctrl + Shift + Z	All return to zero
F9	Pause/continue testing	Ctrl + Shift + O	options
F10	Manual take	Ctrl + Shift + A	activation
Ctrl + R	Registered	Ctrl + H	help
Ctrl + L	Login		

【The appendix 3: common failures and solutions】

※ Click test and reminder"Online failure"

Online failure shows that the software failed to connected to the machine successfully,Check whether the serial port is connected with the computer,Whether the machine electricity,In ensuring the cables without problems,Click menu"Setting" "Online",Choose COM to connect the machine,if you do not know the COM connector,can choose COM connector one by one until succeed.If still can not connect successfully,exit the software and close the machine power,and restart to connect.

※ Does the software always pop up over a period of time "has been to use period, please contact the manufacturer", how should solve?

※ Software is over a period of time, please contact the manufacturer, registration code, to register the software can be normal use.

※ Click"Up"or"Down"，the running speed is different from the setting speed.

※ Please do "User preference"->" controls parameter"->" Speed Feedback Control System"delete"√"，If there is no joint displacement encoder or displacement has not been calibrated,please do not open "Speed Feedback Control System".

※ Click"Test",the machine just run for a while, sample just force went down.

※ Please do"User preference"->"controls parameter"->"Initial judgment proportion"set the value bigger,Don't judge fracture when below this value,So as not to in the first test for wrong judgment when fracture and downtime.

※ I didn't connect the encoder,can the machine automatically return?

No encoder, the machine will not travel value, the machine return is accomplished by value detection trip back to the trip of zero, all couldn't return without travel value, meet the encoder is necessary to return function.

※ Click"Up"or"Down"，the machine running direction and does not conform to the Settings, the direction is opposite .

※ Please do "Setting"->"Calibration"->"System Settings" has "Up and down the reverse direction"choose "√",and then click "Write to card"。

MRC LTD.   TEL： 972-3-5595252   FAX：972-3-5594529   22
Email: mrc@mrclab.com

※ In test methods choose"Tensile"Or "Compression" ,machine run direction and does not conform

to the Settings, the direction is opposite .

※ Please do"Setting"->"Calibration"->"System Settings""Reverse tension compression

direction"choose"√",then click "write to card",

【**Appendix 4: part of the test results calculation formula**】

◆ **Ring Stiffness**S_i＝（$0.0186+0.025Y_i/d_i$）F_i/L_iY_i

According to standard GB/T 9647-2003 the determination of thermoplastic pipe ring

stiffness is calculated,use above formula to calculate a,b,c sample ring stiffness.

F_i ----- Relative to the pipe 3.0% deformation force value,the unit is KN.

L_i ----- Sample length，the unit is m.

Y_i ----- Deformation，unit is m,equal to 3.0% deformation,such as:$Y/d_i = 0.03$

When you fill the sample information,please fill the inner diameter into the gauge

length,input the pipe length in the Width,fill 3 in the"Take constant elongation" of "take the

set point automatically".

◆ **Elasticity modulus** = Elastic period of any two points of stress difference/strain difference

According to GB8653-1988 calculation，Calculation of elastic modulus in two points"Test

result"→"Others" to set.

◆ **Tensile Strength** = Max force/Area.

◆ **Break length gauge**:Length gauge after sample break,need to input by hand.

◆ **Percentage elongation after breaking** = (gauge length after breaking-original gauge

length)/original gauge.

◆ **Upper Yield strength**= The upper force on the yield point/Area.

◆ **Lower Yield strength**= The lower force on the yield point/Area.

Explanation:For there is no obvious yield of materials,usually take 0.2% stress of plastic

strain as its yield strength,the first rule non-proportional elongation strenth is

Rp0.2.

- **Regulation non-pr**oportional elongation strength =non-proportional elongation point force /area.

- **Regulation total elongation strength** = total elongation point force/ area.

- **Shear strength** = Max force / (gauge length*width).

- **Shear modulus** = (Elastic Young's modulus * Area / gauge length) * thickness / (gauge length * width).

- **Max bending strength** = 3 * Max force * gauge length / (2 * width * thickness* thickness).

- **Flexural Modulus**=(elastic Young's modulus*area/gauge length)*gauge length*gauge length*gauge length/(4*width*width*width*width)

【Annex 5: random attachment packing list】

Name	CD	Grips	Peel steel plates	Power line	Data line
Qty	1	1	3	1	1

【The appendix 6: contact us】

If there is any problem when you use the machine,please contact us,We will serve you wholeheartedly.In order to help solve the problem,please write send email to us,we will solve it as soon as possible.

Product Warranty Card

Thank you for choosing our products, in order to ensure that your products will be able to get our high quality after-sales service, so please check the following and fill in the following form:

Product Name：_____

Product No： S/NO._____

Product Model：_____

Guarantee time：_____   _____Year 1 Month To ___   Year 1Month，Guarntee time One year.

（Above information,above please verify it. ）

User name：_____   Tel：_____

User address：_____   Fax：_____

Date used：_____Year_____Month____Date   Inspection：_____

（Above information,user please fill it.）

Product warranty record：

Date	Fault phenomenon	Solve Result	Handling person	Inspection

Attention item：

※The guarantee time is one year.During this time,if your machine has any problem,you can consult us for free(Except the consumables).

※The following situations is not in the scope of the warranty,We will take the charges.

    1.Equipment failure or damage due to force majeure factors,

    2.Because of equipment failure or damage caused by user's improper operation,

    3.Because of the change of user removed, modified, equipment structure, circuit, or as a result of customer modify equipment related parameters of equipment failure.