

# UTM Series

Computer Control Hydraulic Universal Testing Machines



EPCC / PRODUCTS / APPLICATION / SOFTWARE / ACCESSORIES / CONSUMABLES / SERVICES

**Analytical Technologies Limited**

An ISO 9001 Certified Company

[www.analyticalgroup.net](http://www.analyticalgroup.net)

## ▶▶ Application

For static and cuasi-static test (low frequency fatigue) for high loads in many types of tests. Specially indicated to switch test mode, thanks to its dual space design.

## ▶▶ Double test space frame

With high structural stiffness,4 columns and 2 screws with double testing space  
The upper space is intended for tensile tests, and the lower for compression, shear, bending, folding, etc.Manufactured according to Standards EN 10002-2; ASTM E4, ISO 7500-1; DIN 51221 and BS1610 guide. Mobile crossbar separates the two test zones and is positionable in height by means of two spindles driven by an integrated electric motor frame.

## ▶▶ Types of specimens and materials

The versatility of the machine allows the testing of specimens and materials such as:

- Round
- Metals
- Flat
- Polimers
- Shouldered
- Composites
- Folding
- High and low temperatures
- Threaded
- Cables, Chains, Ropes, building materials, etc.

## ▶▶ Testing Modes

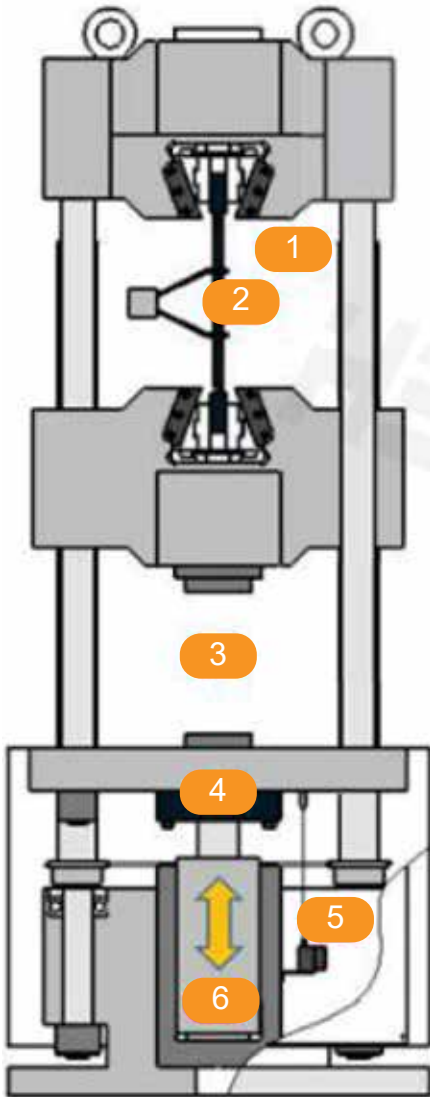
By using the right accessories, you can perform (among others) the following tests:

- Tensile
- Extrusion
- Compression
- Peeling
- Bending
- Shear test
- Folding
- High and low temperatures
- Punching
- Brinell Hardness (30 kN)

## ▶▶ Host feature:

- Rigid 4-column load frame construction providing superior axial and lateral stiffness and minimum maintenance, low reaction at specimen failure.
- With chrome plated columns for easy cleaning and longest life.
- Lead screw dust cover: Prevent foreign objects and dust from entering the precision lead screw, and improve the durability of the screw and drive mechanism

### Common sense: The differences between UTM



UTM Series is computer controlled servo hydraulic universal testing machine. The space adjusting, & test processes could be controlled by the software and the test result could be transferred to the software in the computer for further analysis. It is the most advanced series in hydraulic universal testing machines.

UTM Series is computer display manual control hydraulic universal testing machine. The space adjusting & force loading could be executed by manual control. The test result could also be transferred to the software for further analysis.

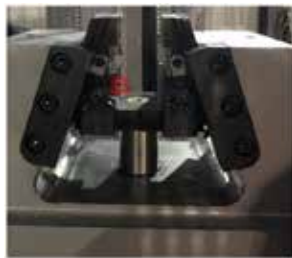
- 1. Space for Tension test
- 2. Extensometer Measure Elongation
- 3. Space for Compression/Bend/Shear/Flexure
- 4. Load Cell
- 5. Displacement Sensor
- 6. Oil Cylinder (Piston)

### ▶▶ Front-Opening Hydraulic Grips

Front-Opening front wedge grips make it easy to insert and remove specimens for increased productivity and operator safety. Interchangeable design allows limited number of jaw faces to accommodate a large range of specimen sizes



• Half-Opening



• Full-Opening



• Strand Tensile testing



• Compression Testing

▶▶ Oil source design

Our company	Other companies
	
<p>The entire steel plate is directly mounted and fixed to the workbench, which improves the firmness, durability and ease of use, and eliminates the noise generated by the sample.</p>	



**Manual control box:** Stainless steel hand control box: more durable, can control the rise and fall of moving beams and cylinders, clamping and loosening of jaws



The US SUN cartridge valve effectively reduces the probability of oil leakage in the hydraulic system and improves the stability of the hydraulic system.

**USA SUN Cartridge valve**



**External independent controller :** The external independent controller replaces the traditional test machine PCI or PCIE board and power amplifier. It effectively avoids data loss caused by computer damage or loss, saves maintenance costs, and is more convenient to install and replace.

**Other companies :** PCI plate card



- **DV** : Customers can add cameras, the software has a recording function: can effectively record and play back the entire test experiment process
- **Power strip, oil pressure indication, computer USB connection** : The pressure gauge is divided into clamping pressure and system pressure, which can indicate the working pressure in real time.
- **Equipped with monitoring system** : provides a stable output power. When the power supply is abnormal (missing phase, wrong phase sequence, wrong wiring) the indicator light of the monitoring system will be off.

## ►► Specifications

Model	UTM-100D	UTM-200D UTM-300D	UTM-600Dt	UTM-1000D/E	UTM-1200D	UTM-2000D
Control Way	Constant stress uniform deformation constant displacement three closed loop control and program control dealing					
Number of Screw drivers	4					
Max. Load(KN)	100	200/300	600	1000	1200	2000
Load Accuracy	≤± 1%/ ≤± 0.5%					
Load Range	2%~100%FS					
Load Resolution	1/300000					
Deformation Measurement Range	2%~100%FS					
Deformation Accuracy	≤±1%					
Displacement Resolution	0.01mm					
Testing speeds (mm/min)	0.1~118	0.1~123	0.1~123	0.1~70	0.1~70	0.1~70
Adjustable crosshead speed(mm/min)	450	450	350	350	320	320
Displacement Error	≤±0.5%					
Max. Piston Stroke(mm)	200	200	200	200/250	250	250
Max. Tension Test Space (mm)	780	780	900	950/980	930	1250
Max. Compression Test Space	550	550	650	700	640	850
Column Effective Spacing(mm)	485	485	500	560/580	610	800
Clamping Method	Hydraulic Automatic Clamp					
Flat Specimen Clamping Width(mm)	80*80	80*80	90*90	100*100	120*110	150*120
Compression Plate Size	Φ 160mm					
Bending Roller Distance	450mm					
Width Of Bending Rollers	120mm					
Power Supply	3-phase, AC380V, 50Hz (Can Be Customized)					

- **Load Measurement Accuracy:**  $\pm 0.5\%$  of reading to 1/50 of load weighing system capacity meets or exceeds the requirements of the following standards: ISO 75001, EN 10002-2, ASTM E4, JIS B7721.
- **Strain Measurement Accuracy:**  $\pm 0.5\%$  of reading to 1/50 of full scale with most ASTM E83 class B or ISO 9513 class 0.5 extensometers meets or exceeds ASTM E83, ISO 9513, and EN 10002-4.
- **Speed Accuracy:** Set speed < 10% Max. Speed:  $\pm 1\%$  Set speed "10% Max. speed:  $\pm 0.5\%$   
Position measurement accuracy:  
 $\pm 0.5$  of reading or 0.001 mm, whichever is greater
- **Power supply:** Standard optional voltages 220/240VAC, 50-60 Hz, Power must be free of spikes and surges exceeding 10% of the nominal voltage.
- **Operating Temperature :** 0 to +38°C (+32 to +100°F)
- **Humidity Range :** 10% to 90% non-ondensing,

## ►► Accessories

- **Tensile fixture**

Grip capacity	Grip type	Standard grip Range(mm)	Optional grip Range(mm)
300kN 600kN 1000kN 2000kN	Round samples	$\Phi 10-\Phi 20, \Phi 20-\Phi 32$ $\Phi 13-\Phi 26, \Phi 26-\Phi 40$ $\Phi 13-\Phi 26, \Phi 26-\Phi 40$ $\Phi 15-\Phi 30, \Phi 30-\Phi 55, \Phi 55-\Phi 70$	$\Phi 4-\Phi 10$ $\Phi 6-\Phi 13$ $\Phi 6-\Phi 13$
300kN 600kN 1000kN 2000kN	Flat samples	0-15mm 0-15mm 0-20mm 10-40mm	15-30mm 15-30mm 20-40mm 40-70mm
1000kN	Strand Tensile	9.5-21.6mm	9.5-21.6mm



Tensile fixture



Compression fixture



Bend fixture

- **Compression fixture**

Grip capacity	Sizes	Operational temperature °C
300-2000kN	$\Phi 160\text{mm}$	0-40



Shear fixture



Chain tensile



bolt tensile fixture

- **Bend fixture**

Grip capacity	Sizes	Operational temperature °C
300-2000kN	$\Phi 10\text{mm}$ or other	0-40



- **Shear fixture**

Grip capacity	Sizes	Operational temperature °C
300-2000kN	$\Phi 10\text{mm}$ or other	0-40

- **Bolt/ Stud/Nut tensile fixture**

Grip capacity	Sizes	Operational temperature °C
300-2000kN	M10\M12\M14\M16\M18\ M20\M22\M24\M27\M30	0-40



Controller



DOLI

• **Other Accessories**

Item	Standard	Optional
External independent Controller	Our company ETC225	DOLI
Servo control valve	Germany-HYTOS	ITALY ATOS valve
Moter	WNM	ABB
Pump	ITALY 'MARZOCCHI" pump	Germany ECKERLE
Plug-in valve	USA SUN	/
Load sensor	Pressure cell	Spoke shape load cell
Test software	Our company	DOLI
Camera	/	√
Hand-held controller	Our company	DOLI
Computer	HP	Other Brand
Printer	HP	Other Brand
Safety door	√	/



Germany-HYTOS



ITALY ATOS valve



'MARZOCCHI" pump



Germany ECKERLE



USA SUN



Pressure cell



Load cell

►► **Precise measurement of displacement (Optional)**

• **Electric Extensometer-YYU series :**

Standard: EN ISO 3376 , ASTM D 6775-02 , ISO 37

Specifications:

Gauge length:10, 25, 50mm

Total travel:800mm

For textiles, plastics and rubbers etc.



• **MF automatic extensometer-MFL-300B,500B :**

EN 10002 Class 0.5

Stroke:300mm; 500mm

Gauge length: 10 ... 300 mm ;10 ... 300 mm

Resolution: 1 or 0.1 μm

Linearity:0.005 %



• **Long Gauge Length Extensometers – Model 3543 :**

Excitation: 5 to 10 VDC recommended, 12 VDC or VAC max.

Output: 2 to 4 mV/V nominal, depending on model

Linearity: ≤0.15% of full scale measuring range

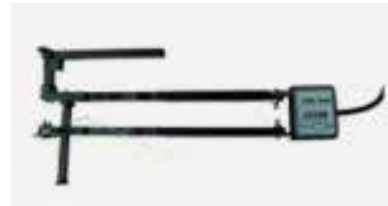
Temperature Range: Standard is -40 to +100 °C

Cable: Ultra-flexible cable, 2.5 m (8 ft) standard



- **Electric Extensometer for Pre-stressed :**

Gauge length:600mm  
 Max deformation:5,10,25mm  
 Strain gauge resistance: 350 ohms  
 Output sensitivity: about 2mV/V  
 Bridge voltage value: acuities 6V (dc, ac all can)



- **Axial Extensometer – Model 3542 :**

Excitation: 5 to 10 VDC recommended,  
 12 VDC or VAC max.  
 Output: 2 to 4 mV/V, nominal  
 Linearity:  $\leq 0.15\%$   
 Temperature Range: -40 +100 °C  
 Cable: Integral, ultra-flexible cable, 2.5 m (8 ft) standard



- **High Temperature Extensometers – Model 3549 :**

Excitation: 5 to 10 VDC recommended, 12 VDC or  
 VAC max. Output: 1.5 to 2 mV/V,  
 Linearity:  $\leq 0.15\%$   
 Temperature Range: Standard (-ST) is to  
 1200 °C (2200 °F),  
 Cable: Integral, ultra-flexible cable, 2.5 m (8 ft) standa



- **Video Extensometers-Mercury RT :**

Features: Non-contact;2D and 3D measurement  
 Range: ISO 9513 Class 0.2, 0.5, 1, 2,  
 ASTM E 83 Class A, B-1, B-2, C, D, E  
 FOV:2-2000mm  
 Gage length:0.01-800 %  
 Resolution:0.1-50\*\* um  
 Analog output: 10-16 bit  
 Digital output:RS232/422/485, TCP/IP  
 Data rate: 0.1-10 000 Hz



▶▶ **Testing in Controlled Environments (Optional)**

- **High and low Temperature test chamber-HDT-70 :**

Temperature range:  
 -70°C~280°C(compressor)  
 Inner chamber size:  
 250\*200\*600  
 Can be customized according to  
 customer requirements





- **High Temperature test chamber :**

Temperature range:

+20°C~150

Inner chamber size:

250\*200\*600

Can be customized according to customer requirements



- **High and low Temperature test chamber-HDT-70 :**

Temperature range:

+20°C~150

Inner chamber size:

250\*200\*600

Can be customized according to customer requirements



- **High Temperature Electric Furnace :**

Temperature range: +200-1100°C

Heating method:

Three sections of electric wire heating

Dimension: Φ300\*420mm

Heath Inner Diameter: Φ80mm\*360mm



- **Measurement controller HCT-225 :**

External independent controller:

It replaces the traditional PCI or PCIE board and power amplifier of the testing machine

Advantages:

Fasier installation and replacement

Improve the USB communication between the controller and computer, communication speed and system stability.



▶▶ **Operation Software -PREF TEST**

Test process: Selection a test--Enter the test scheme selection--Input the sample information--Start to test--end of the test

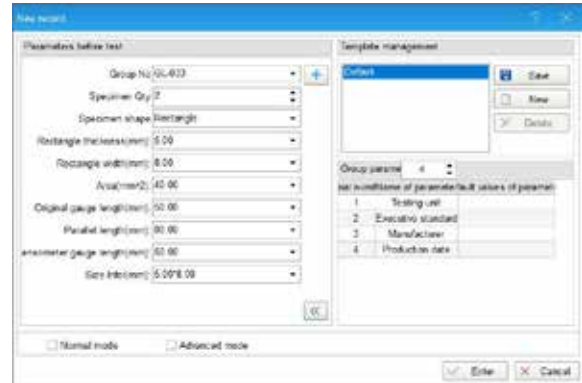


Fig.1 Test Selection Interface

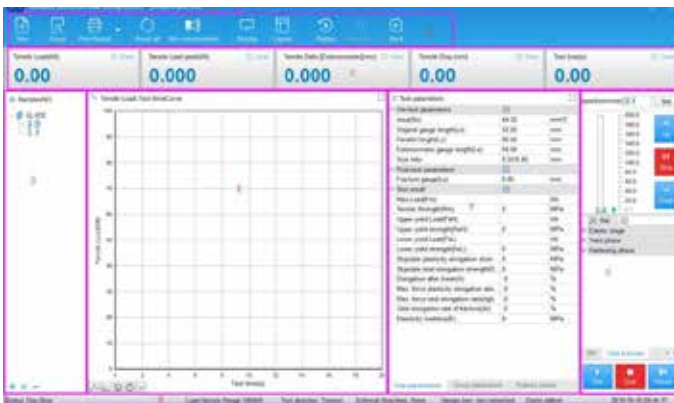


Fig 3. Start to test

►► **PREF Test software**

- Pack, running under Windows™, specially developed by KASON to be used in universal testing machines.
- In metal tensile test, Can automatically obtain  $F_{el}$ ,  $F_{eh}$ ,  $F_p$ ,  $F_t$ ,  $F_m$ ,  $R_{el}$ ,  $R_{eh}$ ,  $R_p$ ,  $R_t$ ,  $A_{gt}$ ,  $Z$ ,  $A$ ,  $R_m$ , etc, Also can carry on the artificial recognition of for  $F_{el}$ ,  $F_m$ , etc. and print the results accordingly.
- Curve point traversal functions: Through the mouse click on the curve of force and deformation values, to obtain various parameters of each point.
- Automatic analysis: Finish test, the system automatically analysis, statistical test results.
- Recording function: can effectively record and play
- back the entire test experiment process



Fig 3. Test report

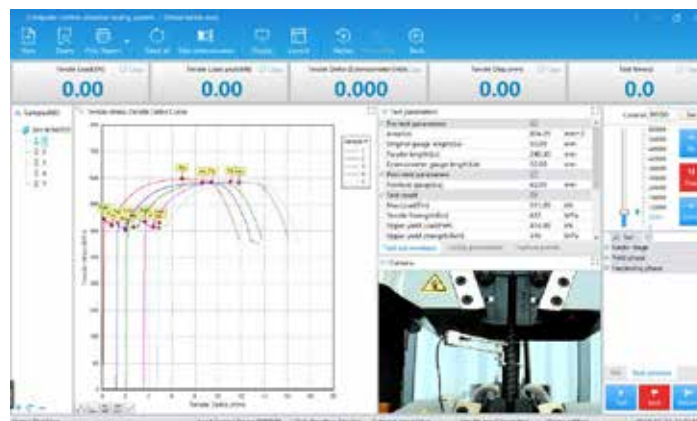


Fig 4. Record video

## Regulatory compliances



## Corporate Social Responsibility

Analytical Foundation is a nonprofit organization (NGO) found for the purpose of:



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1. Research & Innovation Scientist's awards/QC Professional Award : Quality life is possible by innovation only and the innovation is possible by research only, hence ANALYTICAL FOUNDATION is committed to identify such personalities for their contributions across various field of Science and Technology and awarding them yearly. To participate for award, send us your details of research / testing / publication at [Info@analyticalfoundation.org](mailto:Info@analyticalfoundation.org)

2. Improving quality of life by offering YOGA Training courses, Work shops/Seminars etc.

3. ANALYTICAL FOUNDATION aims to DETOXYFY human minds,souls and body by means of yoga, Meditation, Ayurveda, Health Care, Awards, Media, Events, Camps etc.

## Reach us @



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