

United Testing Systems

Electromechnical Universal Test Machines
Tension - Compression - Materials Testing

www.unitedtesting.com



WELCOME TO SMART TESTING

For more than 50 years, United Testing Systems has been internationally recognized for the design and manufacture of universal testing machines (UTM's) that are known for rugged construction, high-quality, versatility and proven performance.

United's PC-controlled, electromechanical "SMART" test systems are designed to perform basic tension and compression tests as well as the most advanced materials test with an unrivaled combination of quality, value and performance.

Available in both floor and table model configurations, United electromechanical UTM's cover a range from 2.5kN up to 600kN.

United's "SMART" systems incorporate robust yet accurate mechanics, state-of-the-art DSP control technology and powerful, yet easy to use software that puts you in control of your test procedures.

A "SMART" UTM from United provides your lab or production facility with a powerful, high-quality and reliable solution for the most basic or advanced test application.

Need A Custom Designed System?

Where other UTM manufacturers shy away from modifying their standard size test frames, United embraces the challenge. United has a long history of designing and building custom frames to meet specific application requirements. Our team of engineers can design test frames that are taller, wider, oriented horizontally, or capable of testing multiple samples at once.



DIGITAL SIGNAL PROCESSOR (DSP) TECHNOLOGY

United "SMART" systems incorporate advanced DSP at the component level for optimal A/D conversion and precise servo-control. Our DATUM-5i, Windows® based software provides the users with industry-leading system control and data quality.

WINDOWS® BASED SOFTWARE THAT PUTS YOU IN CONTROL

United has historically been a leader in digital innovations in material testing applications. United introduced the very first UTM system with integrated computer control in 1974, and followed this in 1982 with the very first PC-driven UTM system.

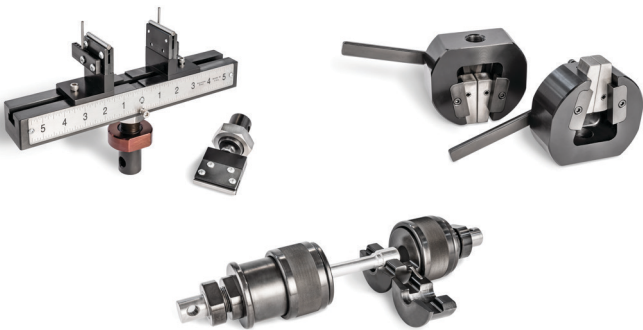
United's current **DATUM-5i** software is provided with every "SMART" testing system, pre-installed on a Windows® PC with several pre-written test procedures included.

DATUM-5i provides users with industry-leading value in a simple, easy to use package. Users have the option of working with pre-defined test templates, or they can easily develop their own testing templates using the intuitive software tools.

Pre-written templates are available for all major ASTM, ISO, and related testing standards. Less common test methods or custom templates can also be supplied by consulting with our software engineers.



Grips & Fixtures For All Test Procedures



Universal Test Machines

2.5kN - 600kN Electromechanical Models
(550 Lbf. - 134,000 Lbf.)



Floor Model UTM's

Floor model systems are designed to sit on lab or factory floors and are available in a variety of capacities to meet your specific test requirements. Optional accessories are also available such as Safety Enclosures, Environmental Chambers and a complete line of grips and fixtures.

Capacity (kN)	Capacity (Lbf.)	Number of Columns
100	22,000	Dual Column
150	33,500	Dual Column
300	67,000	Dual Column
600	134,000	Dual Column



Environmental Chambers



Safety Enclosures



Table Model UTM's

Table model systems are designed to be used on a lab bench or on one of United's optional Floor Stands. Table model systems are available in a variety of capacities to meet your specific test requirement. A complete line of grips and fixtures is available for your specific test requirement.

Capacity (kN)	Capacity (Lbf.)	Number of Columns
2.5	550	Single Column
5	1,100	Dual Column
10	2,200	Dual Column
20	4,400	Dual Column
25	5,500	Dual Column
30	6,700	Dual Column
50	11,200	Dual Column
100	22,000	Dual Column



Floor Stand

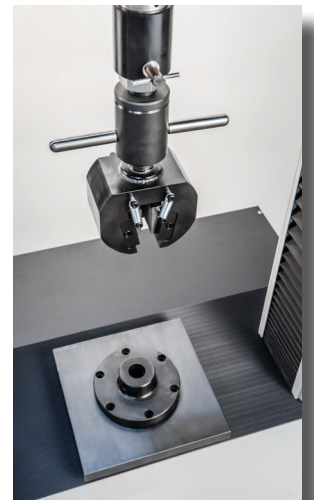
ADDITIONAL SYSTEM SPEC'S & FEATURES

STANDARD INSTRUMENTATION AND CONTROL FEATURES INCLUDE

- Pre-load, Test, Stop and Return operations initiated with one keystroke.
- Pre-set common parameters such as Pre-load, Force, Test Speed and Return Speed.
- Ergonomic, manual jog controls allow fast and accurate crosshead setup.
- Test speeds may be selected "on the fly" with instant crosshead response.
- Programmable test limits based on position, load or strain.
- Automatic Stop or Return-to-home following sample break.
- User-selectable area compensation features for accurate Strain calculations
- Repetitive cycling (fatigue) test modes standard:
 - Position, strain or load
 - Cycle Counting
 - Record limit values
 - Auto stop on failure or over-limit values
- Standard system supports one load cell and one extensometer input channel. Additional channels are available.
- Wide variety of grips and fixtures to accommodate all standard and custom test applications.
- Environmental chambers for high or low temperature testing applications are available.
- Extra frame height and/or width for special applications can be designed.

SPECIFICATIONS COMMON TO ALL UNITED SMART SYSTEMS:

- **Lateral Motion:** $\pm 0.25\text{mm}$ (0.01 in.) maximum over full crosshead travel
- **Speed Accuracy:** $\pm 0.1\%$ of set speed for all forces within the capacity of the machine
- **Position Resolution:** $0.6\mu\text{m}$ standard ($0.06\mu\text{m}$ with optional highresolution encoder)
- **Position Accuracy:** The greater of 0.025mm (0.001 in.) or 0.025% of movement
- **Position Repeatability:** $\pm 0.005\text{mm}$ (0.0002 in.)
- **Drive Resolution:** Same as Position Resolution



FORCE MEASUREMENT FEATURES:

- Accuracy: \pm the larger of 0.5% of reading or 0.01% of capacity.
- Repeatability: \pm the larger of 0.25% of reading or 0.005% of capacity.
- United SMART series machines together with United self-identifying load cells meet or exceed all current international standards, including the the following common industry standards:

Document	Grade/Class	Range Limits
ASTM E4	None	1% - 110% capacity
BS 1610	0.5	1% - 110% capacity
DIN 51221	1	1% - 110% capacity
AFNOR A03-501	0	1% - 110% capacity
ISO 7500/1	0	1% - 110% capacity
EN 10002-2	0.5	1% - 110% capacity
JIS B7721		1% - 110% capacity

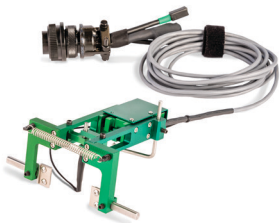


United offers a wide selection of load cells for a variety of tension and compression applications.

United load cells come with factory calibration certificates in either Imperial or Metric Units. Load cells are calibrated per **ASTM E-4** from 1% to 100% of the rated capacity.

*Detailed specifications for a particular load cell are provided upon request.

STRAIN MEASUREMENT



United "SMART" testing machines utilize Epsilon ® brand extensometers that meet or exceed all current international testing standards such as **ASTM E83** and **ISO 9513**.

Dozens of different extensometer models are available with hundreds of potential configurations based on Gauge Length and Strain Rate;

Contact/clip-on, High-elongation, Non-contacting (Video & Laser), Miniature/low-profile, Extra-long gauge length, High-temperature, Rock, concrete and asphalt extensometers, Bolt proof, lap shear and specialty extensometers and Deflection Gages for bend and flex applications.

All extensometers are individually calibrated and supplied with **ISO 17025** accredited test certificates.

Detailed specifications using Epsilon ® extometers are available on request, based on specific extensometer model required.

United Table Model Universal Test Machine Specifications

	DSTM-2.5kN	DSTM-5kN/10kN	DSTM-20kN	DTM-30kN	DTM-50kN	DTM-100kN
Capacity (kN)	2.5	5/10	20	30	50	100
Capacity (Lbf)	562	1125/2250	4500	6750	11250	22500
Capacity (Kgf)	255	510/1020	2040	3060	5100	10200
Full & Return Speeds (Note 1, inch/min)	40	40	20	20	20	20
Full & Return Speeds (Note 1, mm/min)	1016	1016	508	508	508	508
Minimum Speed (Note 1, inch/min)	0.00007	0.00007	0.00007	0.00007	0.00007	0.00007
Minimum Speed (Note 1, mm/min)	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017
Maximum Force at Full Speed (Note 1, LBF)	450	1125/2250	4500	6750	11250	22500
Maximum Speed at Max Force (Note 1, inch/min)	40	40	20	20	20	20
Maximum Speed at Full Speed (Note 1, mm/min)	1016	1016	508	508	508	508
Total Vertical Test Space (Note 2, inch)	33	42	42	42	42	42
Total Vertical Test Space (Note 2, mm)	838	1066	1066	1066	1066	1066
Clearance Between Columns (Note 3, inch)	n/a	16	16	22	22	22
Clearance Between Columns (Note 3, mm)	n/a	406	406	560	560	560
Frame Stiffness (KLBF/in)	5	200	200	800	800	800
Frame Stiffness (KLBF/mm)	0.14	35	35	140	140	140
Approximate Dimensions & Weights						
Height (inch)	54	63	63	64	64	64
Height (mm)	1372	1600	1600	1625	1625	1625
Width (inch)	12	25	25	35	35	35
Width (mm)	305	635	635	889	889	889
Depth (inch)	24	15	15	26	26	26
Depth (mm)	610	381	381	660	660	660
Weight (Kg)	68	160	160	364	364	364
Weight (Lbs)	150	350	350	800	800	800

Notes

1. Special speeds are available.
2. Max travel is max vertical space minus cross-head, load cell and fixtures. Extra tall systems are available.
3. Extra width and/or height loadframes available. Consult your United representative for further information
4. United Testing Systems is pleased to offer industry-leading extensometer systems from Epsilon Technology Corp, Jackson, WY, USA. www.epsilontech.com.

United Floor Model Universal Test Machine Specifications

	DFM-100kN	DFM-150kN	DFM-300kN	DFM-600kN
Capacity (kN)	100	150	300	600
Capacity (Lbf)	22,500	33,750	67,500	135,000
Capacity (Kgf)	10,200	15,300	30,600	61,200
Full & Return Speeds (Note 1, inch/min)	20	20	20	20
Full & Return Speeds (Note 1, mm/min)	508	508	508	508
Minimum Speed (Note 1, inch/min)	0.00007	0.00007	0.00007	0.00007
Minimum Speed (Note 1, mm/min)	0.0017	0.0017	0.0017	0.0017
Maximum Force at Full Speed (Note 1, LBF)	22,500	33,750	67,500	121,500
Maximum Speed at Max Force (Note 1, inch/min)	2	2	2	2
Maximum Speed at Full Speed (Note 1, mm/min)	50	50	50	50
Total Vertical Test Space (Note 2, inch)	60	60	60	60
Total Vertical Test Space (Note 2, mm)	1,525	1,525	1,525	1,525
Clearance Between Columns (Note 3, inch)	22	22	22	28
Clearance Between Columns (Note 3, mm)	560	560	560	710
Frame Stiffness (KLBF/in)	800	800	1,500	3,000
Frame Stiffness (KLBF/mm)	140	140	260	525
Approximate Dimensions & Weights				
Height (inch)	94	94	105	109
Height (mm)	2,388	2,388	2,667	2,769
Width (inch)	36	36	39	47
Width (mm)	914	914	991	1,194
Depth (inch)	27	27	42	44
Depth (mm)	696	686	1,067	1,118
Weight (Kg)	950	950	1,800	4,750
Weight (Lbs)	2,094	2,094	3,968	10,471

Notes

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DATUM-5i SOFTWARE

UNLIMITED FLEXIBILITY FOR TENSION, COMPRESSION, & MATERIALS TESTING APPLICATIONS

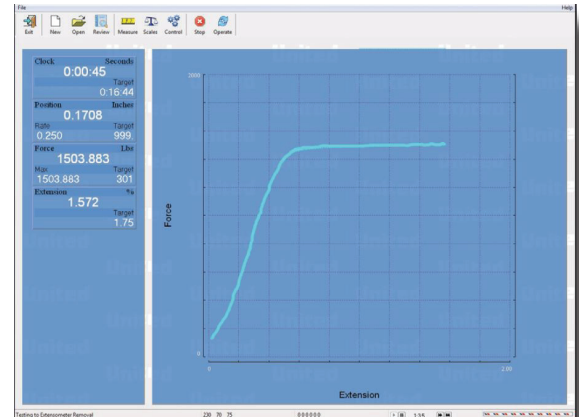
DATUM-5i is a robust and easy to use software platform for basic tension and compression applications as well as advanced materials testing procedures.

DATUM-5i is a Windows® based software platform giving it built-in flexibility and stability.

Programs, test procedures and test data are integrated into a Microsoft Access® database for easy storage and retrieval. Access® is a very powerful relational database and report generator, so sharing data between other Microsoft Office® applications is generally a breeze.

The report generator allows users to create presentation quality test reports, complete with graphs. The relational database allows users to construct queries to obtain statistical data summaries based on any sample data recorded at test time.

* SEE SOFTWARE BROCHURE FOR MORE INFORMATION.



The screenshot shows the 'Test Results' report generator interface. It displays a table of test data for 'Tensile Properties of Plastics' and a summary table at the bottom.

Test No.	Report No.	Specimen ID	Customer Name	Report Date
270	242	B-2	United Calibration Corp	6/7/2001
271	242	B-0	United Calibration Corp	6/7/2001
259	241	14	RTI	6/7/2001
235	239	1-1	RTI	6/7/2001
245	209	Bar T-1	XYZ Corp	6/9/1998
247	209	Bar T-2	XYZ Corp	6/9/1998
248	209	Bar T-3	XYZ Corp	6/9/1998
249	209	Bar T-4	XYZ Corp	6/9/1998
250	209	Bar T-5	XYZ Corp	6/9/1998
251	209	Bar T-6	XYZ Corp	6/9/1998
252	209	Bar T-7	XYZ Corp	6/9/1998
253	209	Bar T-8	XYZ Corp	6/9/1998
245	208	Test 1	Robm & Haas	6/9/1998

Yield Lbs	Yield (Lbs / in ²)	Tensile (Lbs)	Tensile (Lbs / in ²)	Total Elong (%)	Tan Mod (ksi)
131.4	9.230	150.8	10.590	126.0	235

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