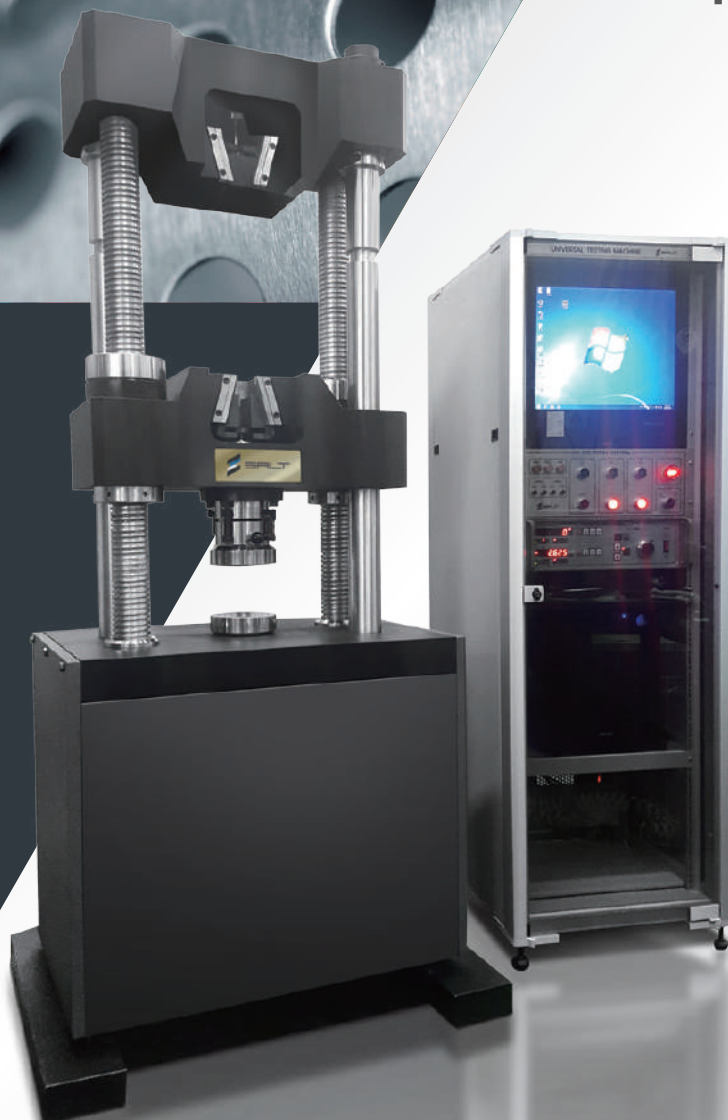


Technology and Art,
Dignity and Dynamics
impress customers at last.



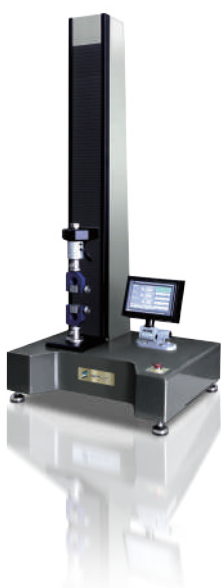
 ST-1004

Contents

⚡ ST-1004 UTM

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Product Specifications	04
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⚡ ST-1000



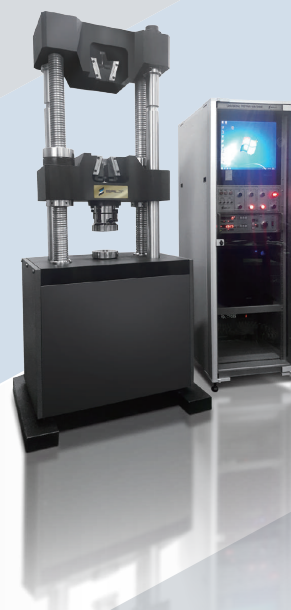
⚡ ST-1001



⚡ ST-1002



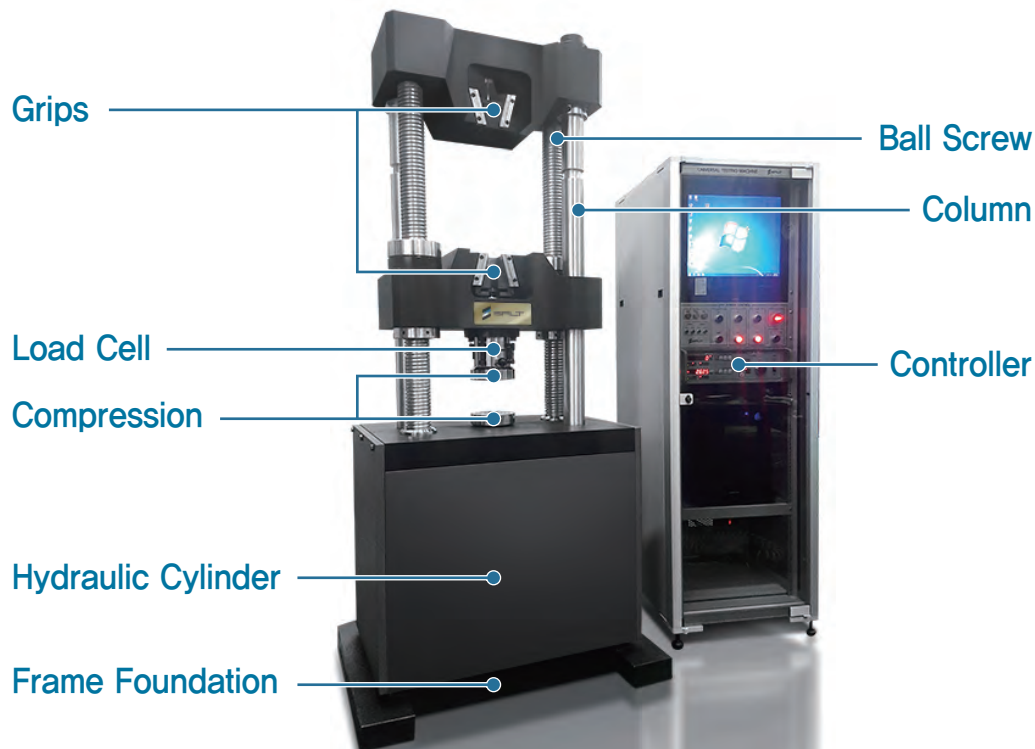
⚡ ST-1004



⚡ ST-1000 Series

Universal Testing Machine

Salts Hydraulic Universal Testing Machines offer a dynamic range of testing applications. Tensile, compression, flexural/bending, shear, creep etc. For testing materials such as metals, concrete, wood, composites, FRP etc. The ST-1004 is engineered with durability, accuracy and repeatability in mind as well as ease of use and safety. The ST-1004 hydraulic actuated frames are made to have the highest in-class rigidity and frame stiffness.



ST-1004 Features

- ✓ Model capacity: 300kN~2000kN
- ✓ 2 & 4 guide post models
- ✓ High precision load cell, class 1 and class 0.5 calibration
- ✓ 1/300,000 force resolution / 0.01mm/min speed accuracy
- ✓ 0.01~80mm/min test speed (upgradable option)
- ✓ Interchangeable tensile insert grip system
- ✓ Overload protection limit sensor
- ✓ Emergency power cut off button
- ✓ User friendly wireless remote for chuck and crosshead control
- ✓ Hydraulic power unit and control rack
- ✓ Light-Salt UTM test Software

ST-1004

Hydraulic Universal Testing Machine
Capacity 500kN-2000kN



Model	ST-1004 (2 post guide)		
Frame Capacity	300kN	500kN	1000kN
Load Accuracy	$\leq \pm 0.5\%$		
Calibration	Class 1 / Class 0.5		
Digital Display Resolution	1/300,000		
Stroke resolution	0.001mm		
Tensile Test Room (WxH)mm	490 x 700	480 x 680	515 x 700
Tensile Grip (WxH)mm	30 x 60	40 x 60	40 x 90
Compression Test Room (WxH mm)	490 x 600	480 x 580	515 x 600
Columns	4 Columns (2 post guides, 2 bolt screws)		
Column to Column	490	480	515
Max Ram Stroke (mm)	200		
Test Speed (mm/min)	0.01 ~ 80 (upgradable)		
Cylinder Stroke Sensor	Position Meter		
Hydraulic Pump Capacity	2cc	2.7cc	4.4cc
Load sensor	300kN Load Cell	500kN Load Cell	1000kN Load Cell
Controller	Digital servo controller		
Transfer Screw	Ball Screw / Guide bar		
Crosshead Speed	400 mm/min		
Speed accuracy	0.01mm/min		
Safety Device	Load limit, Stroke Limit, Emergency stop		
Power Supply	AC 380V 3ph		
Frame Dimensions (WxDxH mm)	980 x 700 x 2040	1010 x 790 x 2101	1175 x 855 x 2288
Hydraulic Unit (WxDxH)mm	$\leq 700 \times 700 \times 850$		$\leq 1000 \times 800 \times 1200$
Computer System Control Unit (WxDxH)mm	650 x 700 x 1800		
Total Weight (Approx.)	2300kg	2500kg	3300kg
Computer Software OS	Windows, Light-Salt UTM Software Version 12.6.0		
Extensometer	Encoder type, Strain gauge type, Position meter type (Optional)		
Environmental Chamber	Temperature control - 100°C ~ 150°C (Optional)		
High temperature furnace	Room temp. ~ 1200°C (Optional)		

Product Specifications

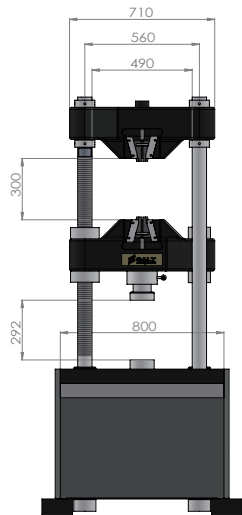
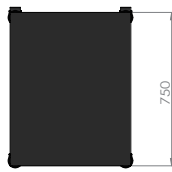
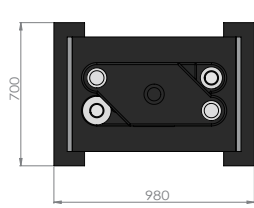
ST-1004

Hydraulic Type Universal Testing Machine
Capacity 300kN-2000kN

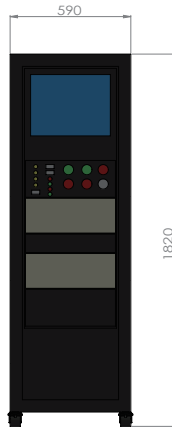


Model	ST-1004 (4 Post)		
Frame Capacity	1000kN	1500kN Tensile 2000kN Comp.	2000kN
Load Accuracy	$\leq \pm 0.5\%$		
Calibration	Class 1 / Class 0.5		
Digital Display Resolution	1/300,000		
Stroke resolution	0.001mm		
Tensile Test Room (WxH)mm	615 x 1000	585 x 1000	690 x 850
Tensile Grip (WxH)mm	65 x 70	65 x 90	65 x 90
Compression Test Room (WxH mm)	615 x 800	585 x 800	690 x 750
Columns	6 Columns (4 post guide, 2 bolt screws)		
Column to Column	615	585	690
Max Ram Stroke (mm)	200		
Test Speed (mm/min)	0.01 ~ 80 (upgradable)		
Cylinder Stroke Sensor	Position Meter		
Hydraulic Pump Capacity	4.4cc	7cc	7cc
Load sensor	1000kN Load Cell	2000kN Load Cell	2000kN Load Cell
Controller	Digital servo controller		
Transfer Screw	Ball Screw / Guide bar		
Crosshead Speed	400 mm/min		
Speed accuracy	0.01mm/min		
Safety Device	Load limit, Stroke Limit, Emergency stop		
Power Supply	AC 380V 3ph		
Frame Dimensions (WxDxH mm)	1170 x 850 x 2950	1400 x 1350 x 2950	1400 x 1350 x 3200
Hydraulic Unit (WxDxH)mm	$\leq 1000 \times 800 \times 1200$		
Computer System Control Unit (WxDxH)mm	650 x 700 x 1800		
Total Weight (Approx.)	4500kg	6000kg	8000kg
Computer Software OS	Windows, Light-Salt UTM Software Version 12.6.0		
Extensometer	Encoder type, Strain gauge type, Position meter type (Optional)		
Environmental Chamber	Temperature control - 100°C ~ 150°C (Optional)		
High temperature furnace	Room temp. ~ 1200°C (Optional)		

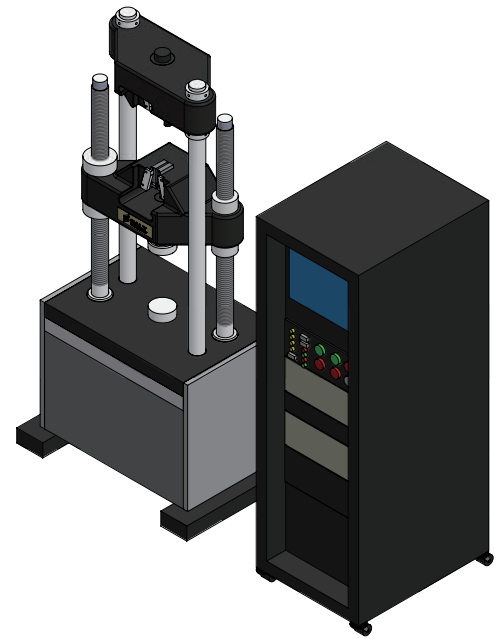
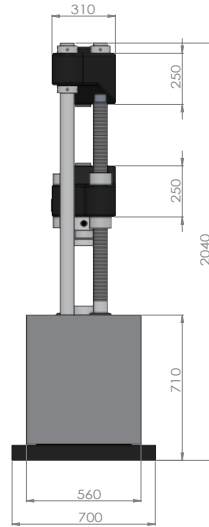
Technical Specification



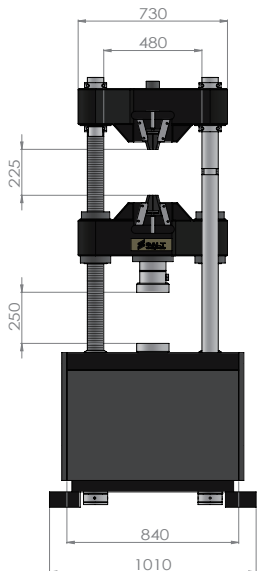
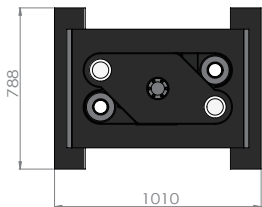
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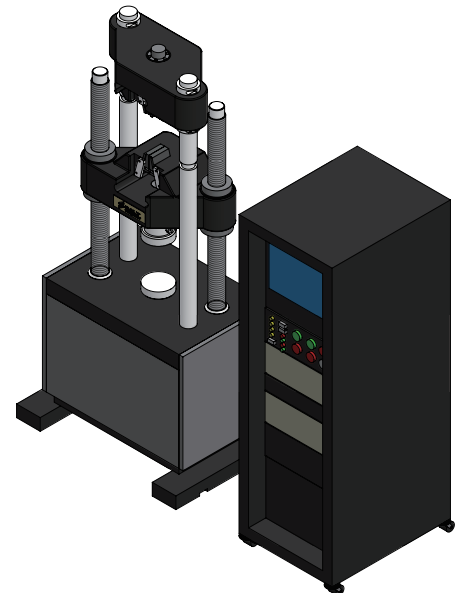
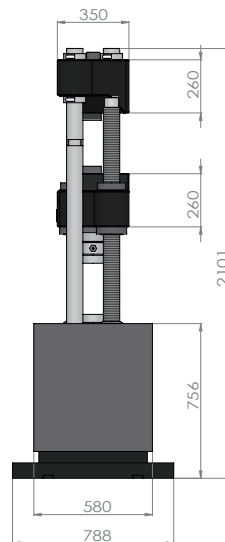
ST-1004 (300kN)
Hydraulic Universal Testing Machine



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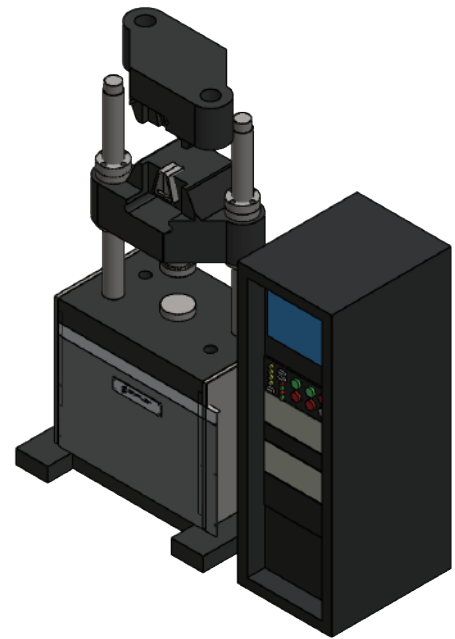
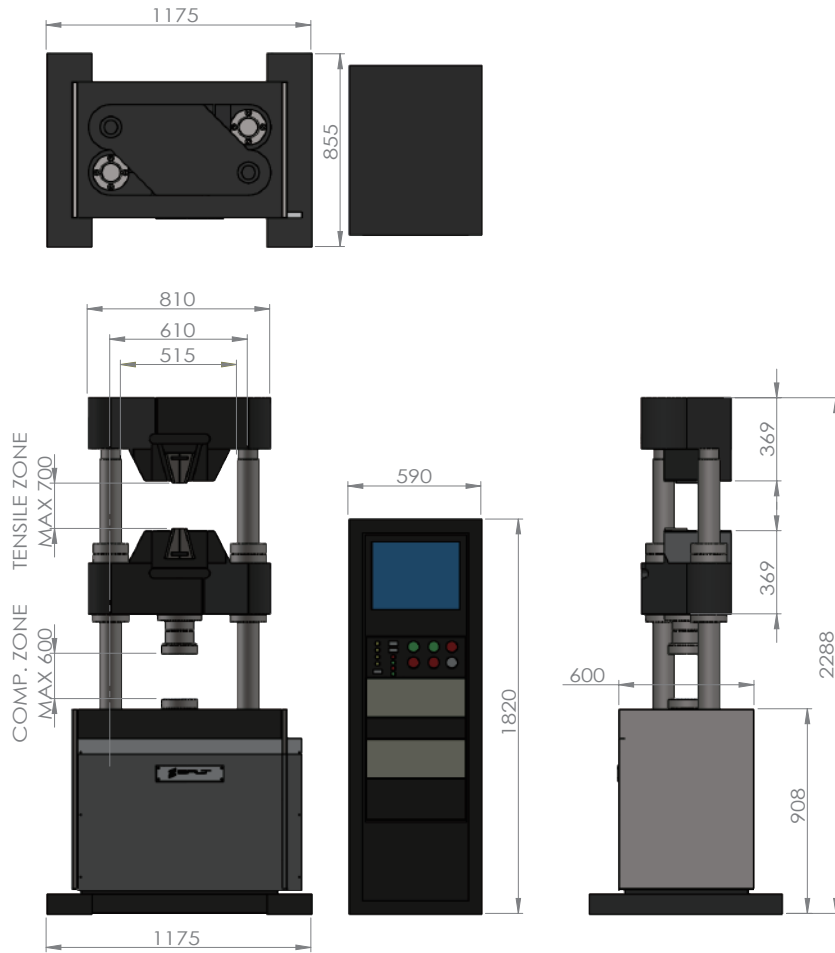


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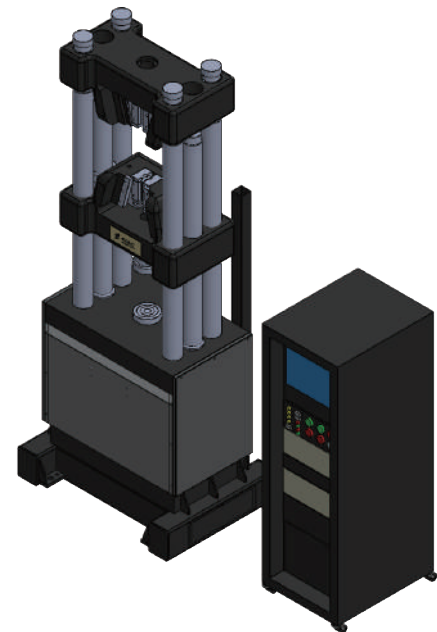
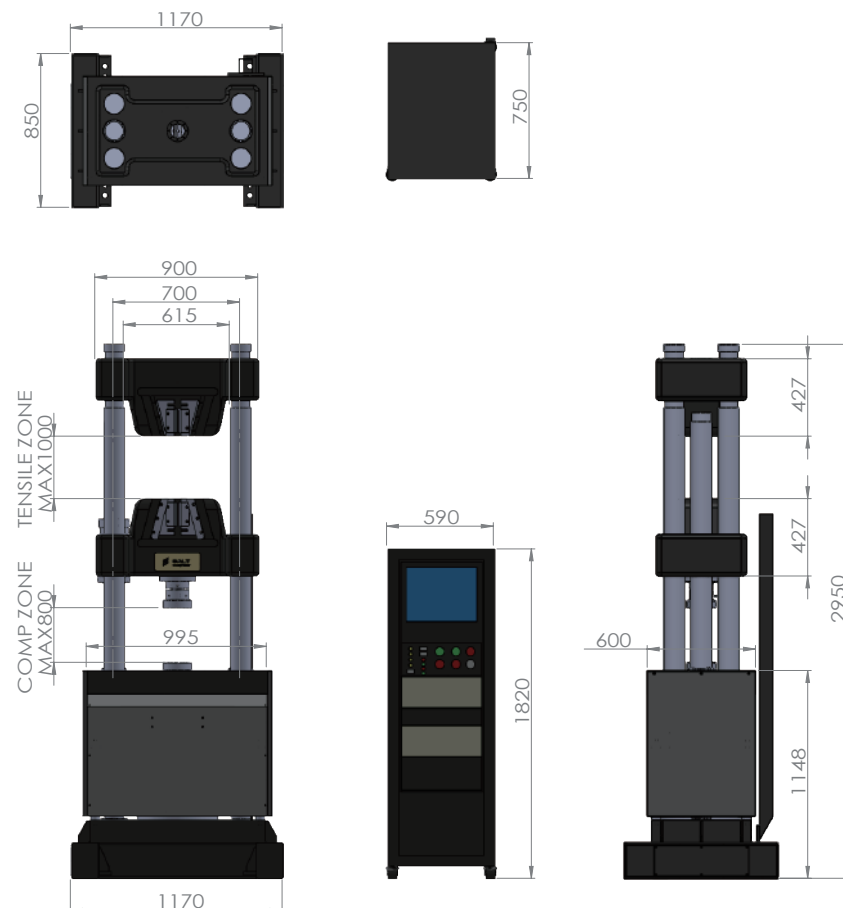


ST-1004 (500kN)
Hydraulic Universal Testing Machine

Technical Specification

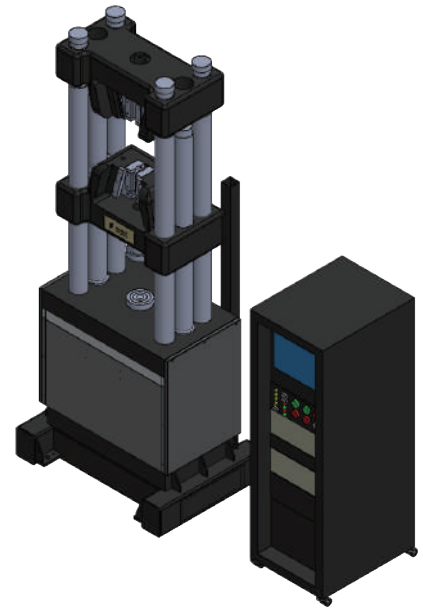
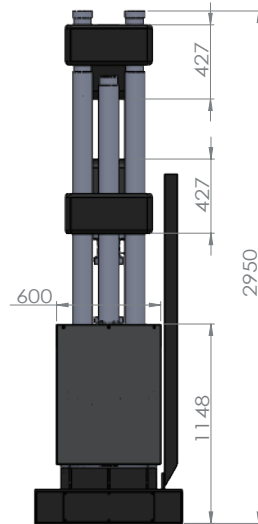
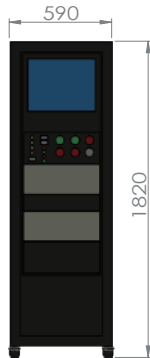
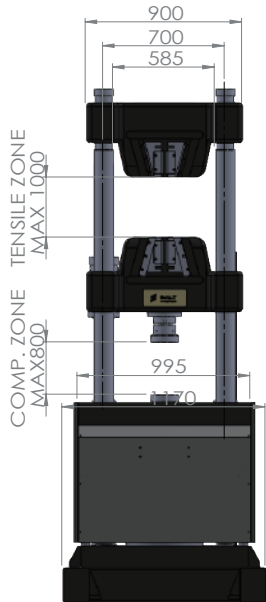
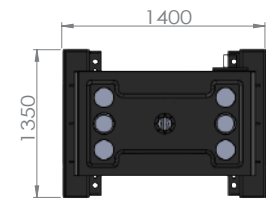


ST-1004(1000kN) 2 POST GUIDE
Hydraulic Universal Testing Machine

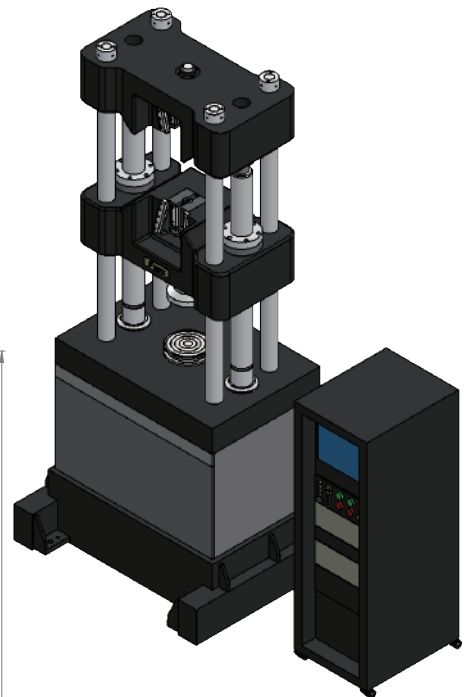
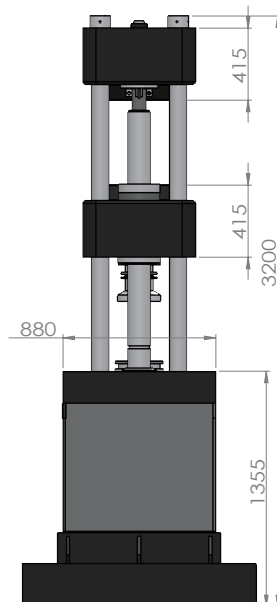
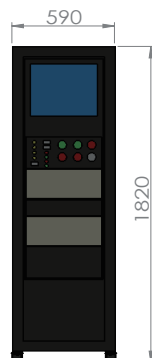
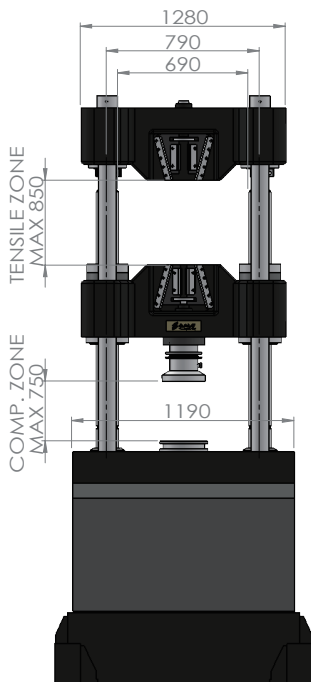
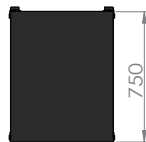
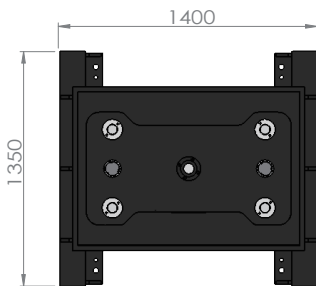


ST-1004(1000kN) 4 POST GUIDE
Hydraulic Universal Testing Machine

Technical Specification



ST-1004 Hybrid
(Tensile 1500kN / Comp. 2000kN)
Hydraulic Universal Testing Machine



ST-1004(2000kN)
Hydraulic Universal Testing Machine

Accessories and grip information



Specification		ST-1004-300kN	ST-1004-500kN	ST-1004-1000kN	ST-1004-2000kN
Tensile Test	Max Tensile Distance	600	500	800	950
	Grip inserts for round specimen (mm)	Ø8 ~ Ø25	Ø8 ~ Ø25	Ø10 ~ Ø20	Ø10 ~ Ø30
		Ø25 ~ Ø40	Ø25 ~ Ø50	Ø20 ~ Ø40	Ø30 ~ Ø55
			Ø40 ~ Ø50	Ø40 ~ Ø60	Ø55 ~ Ø65
		Custom sizes and inserts available			
	Grip inserts for flat specimen (mm)	0 ~ 15	0 ~ 15	0 ~ 30	10 ~ 35
		15 ~ 30	15 ~ 40	30 ~ 60	35 ~ 70
	Tensile grip width	30mm	40mm	65mm	65mm
	Length of tensile grips (Standard)	60mm	60mm	70mm	90mm
Stranded wire model (Not general model)	Length of tensile grips (Stranded wire)			225mm	235mm
	Grip inserts			Ø9 ~ Ø13 Ø13 ~ Ø16	Ø9 ~ Ø13 Ø13 ~ Ø16
	Max tensile distance			1100	1300
Compression	Test stroke (mm)	600	580	800	1000
	Dia Plate (mm)	Ø120	Ø160	Ø180	Ø200
Transverse & bending test	Max bending distance (mm)	450	450	450	500
	Punch tip radius (r)	15	25	25	35
	Punch width (mm)	150			
	Roller diameter	Ø30	Ø50	Ø50	Ø70

Hydraulic Servo Value UTM

Hydraulic Servo Valve UTM



Our Hydraulic UTMs features the open hydraulic chuck system. Changing the tensile jaw faces are intuitive and simple. The open chuck system is individually controlled via wireless remote for ease of use, convenience and safety. With the wireless chuck remote, gripping samples in the tensile zone is much easier, safer and can be done by one operator.



SALT UTM Software

All input outputs are relayed through a dedicated touch screen controller. Fully independent closed-loop system is paired with Salts innovative Hydraulic control UTM software.



Salt Co.'s Hydraulic UTMs are equipped with the best in class hydraulic components. The power packs and hydraulic power units control the load precisely and accurately.

Breaking Point Extensometer

Salt Co.'s ST-S-BPH extensometer is perfect for use with the ST-1004 as it offers the durability for testing steel and composites through breaking point stresses. The ST-S-BPH Breaking point extensometer can be mounted onto the ST-1004 frame.



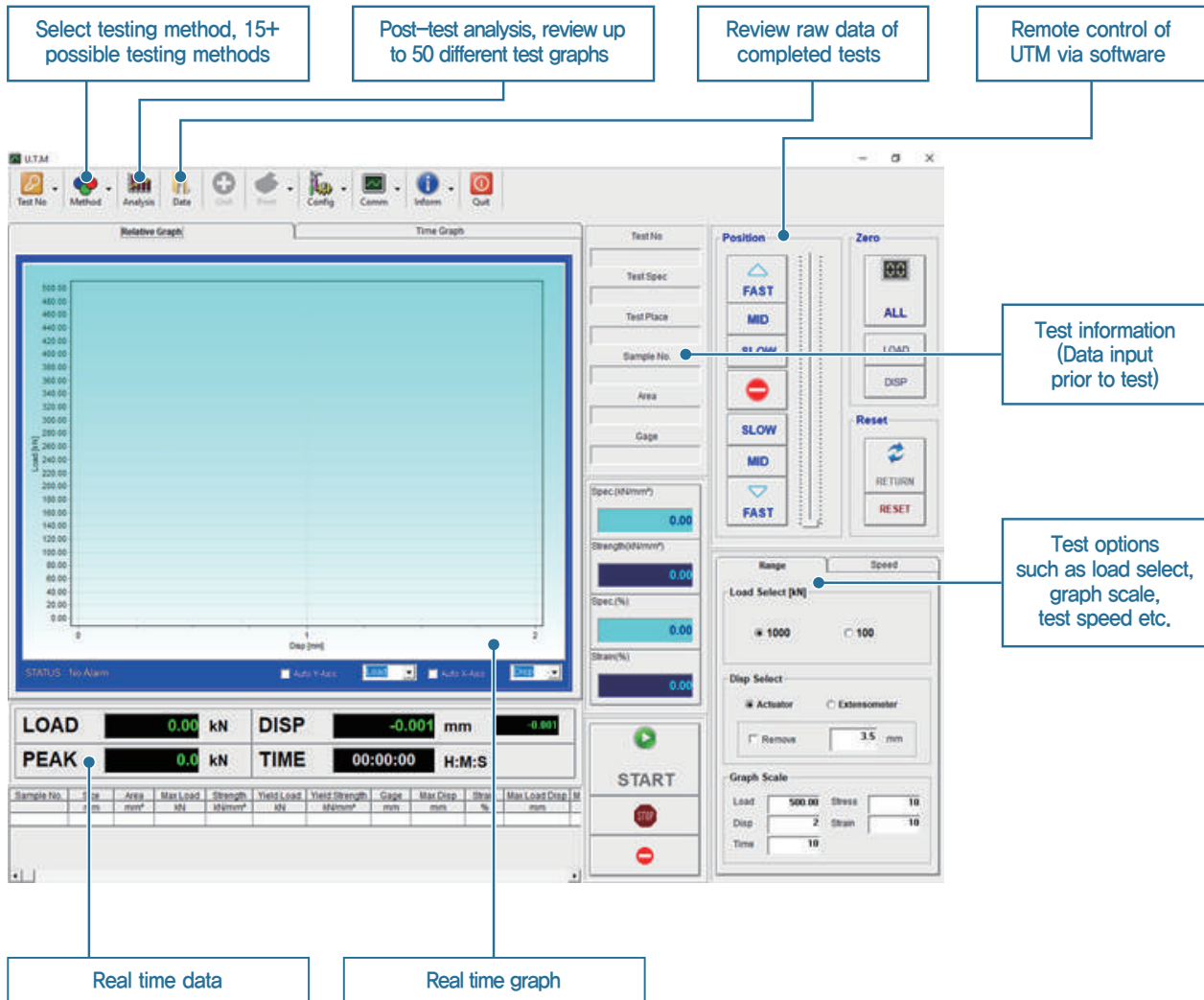
High Elongation Extensometer

Encoder resolution	2500 Pulse, 0.005mm
Gauge length	20–200mm
Measurement distance	up to 600mm
Width of specimen	35mm (general model)
Application	Steel, composites, metals, stranded wire, rebar etc.

Light-Salt Testing Software

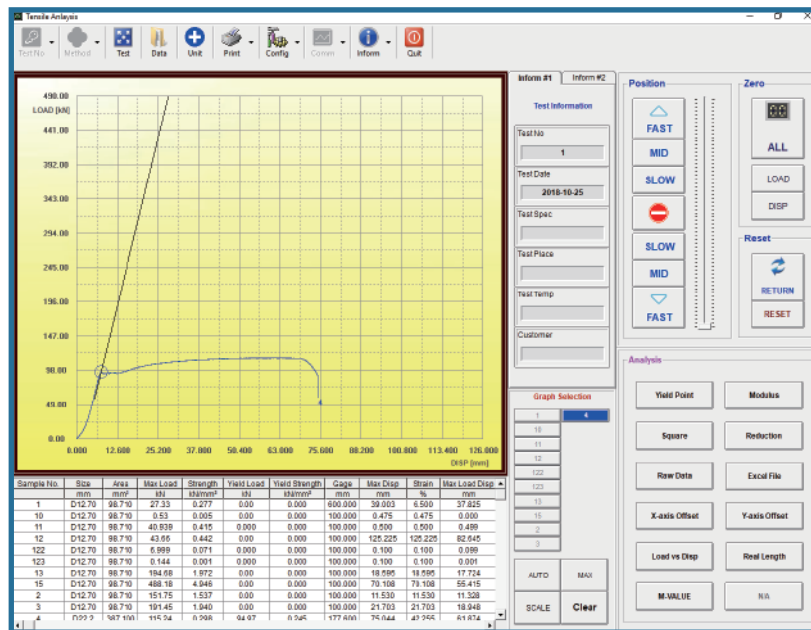
- ✓ Light-Salt testing software, close loop. Control of load, displacement, extension, stress and strain.
- ✓ Remote control via software, text execution, data analysis available through RS-232 port
- ✓ Software updates and modification installation available via email or remote support

Software testing screen



Light-Salt Software exclusively for the ST-1000 Series enables users to find the intrinsic characteristics of various materials - such as stress, strain, modulus, yield point etc. These are the main measures of material property tests such as tensile, compression, flexural, cyclic, fatigue etc. Software can be modified for special tests and measurements upon user's requirements and may be analyzed post-test.

Test Analysis Screen



- ✓ Diverse and robust configurations for automatic test end options, graph options, PID values, crosshead movement speeds etc.
- ✓ 15+ different Testing Methods including cyclic, creep, relaxation, keeping etc.
- ✓ View data and graphs of previously ran tests
- ✓ Determine and analyze data points such as yield point, breaking point, modulus etc.

Device Configuration

The screenshot displays the 'Test Configuration' window. It contains several sections for configuring the test setup:

- Test End Option:** Control, Keeping / Cyclic Test, Move Speed, Capacity, Point.
- Indicator Selection:**
 - Usersys-430, Usersys-FND, ☒ Pulun System, P/ES-500A, MT-2013
 - 430LCD, D-200, P2011, Master Mode
- Test Method Selection:**
 - ☒ Tensile, ☒ Compression, ☒ Bending [3Point], ☐ Bending [4Point], ☐ Cyclic, ☒ Keeping
 - ☐ Insulator Comp., ☐ CBR, ☐ Ring Stiffness, ☐ Tearing, ☐ Indirect Tensile, ☐ Tile Bending
 - ☐ Marshall, ☐ Strain Comp., ☐ Poisson Ratio
- Test Direction:** 1Way, Both, - Sign, Down
- Power Type:** Mech., Up, Single, ☒ Double
- Function:**
 - ☒ Series Test, ☐ Non Zero, ☒ Ind. Tare, ☐ Ind. Return, ☐ Calibration, ☐ Rem GripLoad, ☐ Test Mode, ☐ Load Control
- Auto/Manu:** ☒ Auto, ☐ Manu
- Load Sensor:** ☒ Loadcell, ☐ Presscell
- Elongation:** ☒ Use, ☒ Remove
- Ind. Screen Saver:** ☐ Use, 1 min
- Strain Rate Control:** ☐ Use, 10 ms, 30 ms, 3, 115200

Light-Salt Testing Software

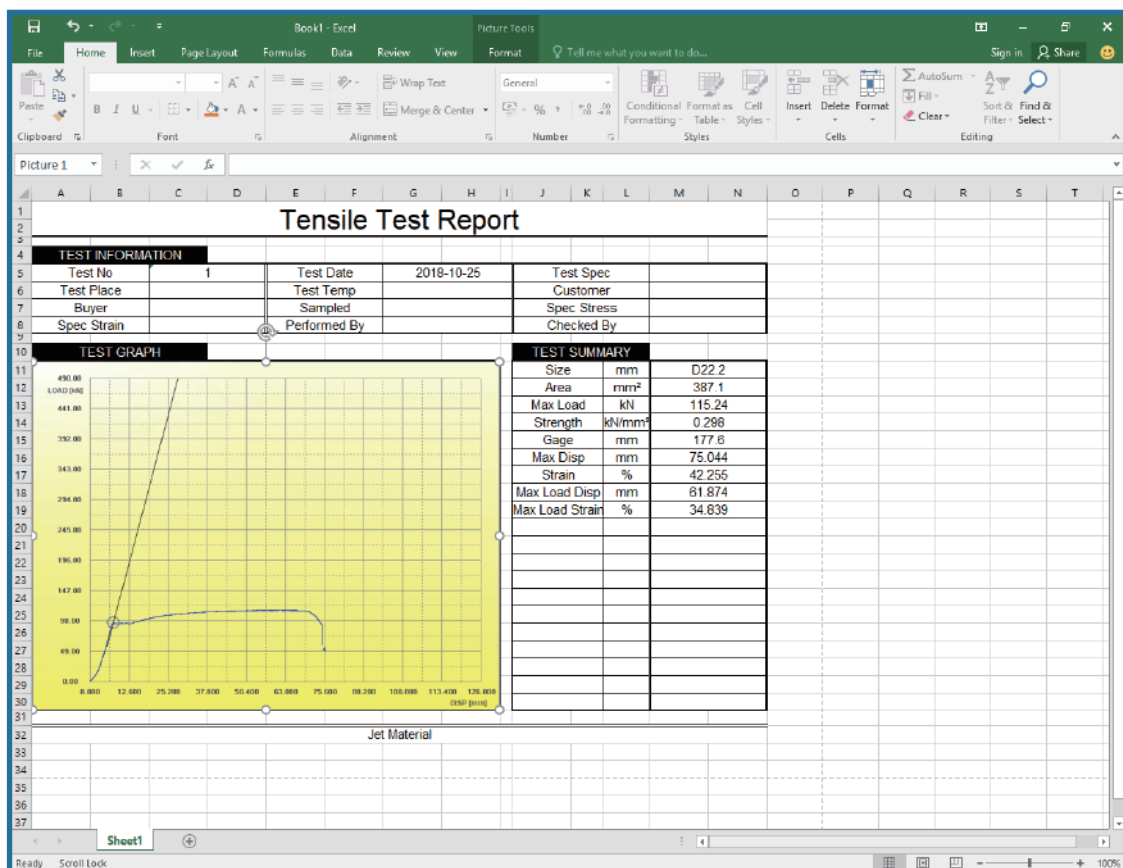
Test report print options

The 'Report Print' dialog box shows the title 'Tensile Test Report' and a 'Remarks' section. Below is an 'Approval' section with a dropdown set to '4' and buttons for 'Operator', 'Check', 'Confirm', and 'Approval'. At the bottom, there are fields for 'Name: Jet Material' and 'Form:'. Icons for printing, searching, and exiting are at the bottom right.

The 'Item Selection' dialog box shows a 'Test Method' dropdown set to 'Tensile Item'. It has two columns of checkboxes: 'Display Item' and 'Print Item'. Both columns have identical lists of items, including Size, Area, Max Load, Strength, Yield Load, Yield Strength, Gauge, Max Drop, Strain, Max Load Drop, Max Load Str, Modulus, Reduction, True Strength, True Strain, M100, M200, M300, Test Time, and Status. 'APPLY' and 'EXIT' buttons are at the bottom.

- ✓ Test report printing options include direct to printer or excel file export.
- ✓ Test report data can be configured to show only necessary data and to exclude unused data.

Export to Excel



Raw data

Data Point View

Raw Data

No.	Time [sec]	Load [kN]	Disp [mm]	Strength [kN/mm²]	Strain [%]	True Strength [kN/mm²]	True Strain [%]
43716	779.149	352.20	10.377	3.568	10.377	3.938	2.432
43717	779.163	352.21	10.377	3.568	10.377	3.938	2.432
43718	779.179	352.22	10.377	3.568	10.377	3.939	2.432
43719	779.191	352.22	10.378	3.568	10.378	3.939	2.432
43720	779.197	352.23	10.378	3.568	10.378	3.939	2.432
43721	779.211	352.24	10.378	3.568	10.378	3.939	2.432
43722	779.233	352.25	10.378	3.569	10.378	3.939	2.432
43723	779.251	352.25	10.378	3.569	10.378	3.939	2.432
43724	779.257	352.25	10.379	3.569	10.379	3.939	2.432
43725	779.271	352.27	10.379	3.569	10.379	3.939	2.432
43726	779.293	352.28	10.379	3.569	10.379	3.939	2.432
43727	779.295	352.28	10.380	3.569	10.380	3.939	2.432
43728	779.307	352.29	10.380	3.569	10.380	3.939	2.432
43729	779.329	352.30	10.381	3.569	10.381	3.940	2.432
43730	779.348	352.31	10.381	3.569	10.381	3.940	2.432
43731	779.365	352.32	10.382	3.569	10.382	3.940	2.432
43732	779.384	352.33	10.382	3.569	10.382	3.940	2.432
43733	779.401	352.33	10.382	3.569	10.382	3.940	2.432
43734	779.408	352.34	10.383	3.569	10.383	3.940	2.432
43735	779.428	352.35	10.383	3.570	10.383	3.940	2.432
43736	779.444	352.35	10.384	3.570	10.384	3.940	2.432
43737	779.449	352.36	10.384	3.570	10.384	3.940	2.432
43738	779.474	352.37	10.384	3.570	10.384	3.940	2.432
43739	779.480	352.37	10.385	3.570	10.385	3.940	2.432
43740	779.500	352.38	10.385	3.570	10.385	3.941	2.432
43741	779.516	352.38	10.385	3.570	10.385	3.941	2.432
43742	779.521	352.39	10.386	3.570	10.386	3.941	2.432
43743	779.545	352.40	10.386	3.570	10.386	3.941	2.432
43744	779.564	352.41	10.386	3.570	10.386	3.941	2.432
43745	779.580	352.41	10.386	3.570	10.386	3.941	2.432
43746	779.584	352.42	10.387	3.570	10.387	3.941	2.432
43747	779.603	352.42	10.387	3.570	10.387	3.941	2.432
50024	1124.609	461.31	66.618	4.673	66.618	7.797	4.214

View Rate [Hz] Count 96474 / 96474 File Direct Conversion

STOP All Copy Cell Copy Excel File Text File Exit

- Raw data analysis for detailed test data
- Exportable to excel and customizable to show user required data

Uniform calibration with keeping test method

Calibration uniformity worldwide



Precise and accurate input and output

WHY Customers Select SALT Products?

The keeping test function of Salt Co.'s software is not only for recording data and testing, but it can be used for world wide uniformity during calibration.

Calibration of any U.T.M is necessary as it must be precise and accurate when measuring and recording data. The keeping test method makes calibration easy and uniform. No matter where the machine is calibrated or who does the calibration, the keeping test method ensures no variation from the machine so the calibrator can do their jobs more efficiently.

- Keeping test calibration method for easier uniformity when calibrating Salt Co., UTMs.
- Keeping test is the basis for creep test and relaxation test method.
- Over 15 different testing methods including tensile, compression, bending, keeping, tearing, CBR etc.
- All UTMs go out with a KOLAS Class 1 / Class 0.5 calibration. Yearly calibration can be done from anywhere internationally with this method.



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