

UniVert Series

Precision Benchtop
Mechanical Testing

Wide Force
Range with
Interchangeable
Force Sensing

One Platform
For Many
Testing Modes

Intuitive
Research-Grade
Workflows and
Outputs



Biomaterials Testing | Hydrogels | Tissue Biomechanics
Mechanobiology | Polymers | Material Mechanics

*Capture high-quality mechanical data, run post-test
analysis, and generate publication-ready
figures all on one platform*


CellScale
biomaterials testing

Choose Your UniVert Model

Select your configuration based on target force range and required workflows



UniVert S

Compact mechanical tester for up to 200N linear force

Speed upgrade (S2) available



UniVert 1kN

Extends force range capabilities into high-force mechanical testing

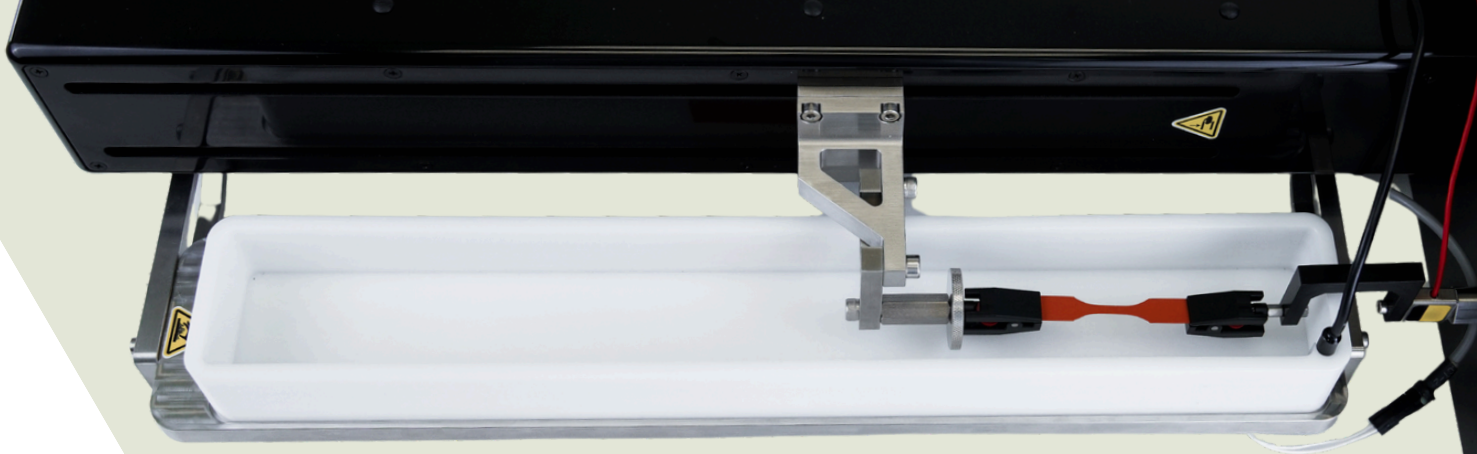
Specification		S (S2)	1kN
Dimensions	(cm)	22 x 22 x 54	30 x 22 x 60
Weight	(kg)	8	20
Force Range	(N)	0.02 - 200	0.02 - 1000
Force Accuracy		0.2% of load cell capacity	
Stroke	(mm)	300*	300*
Max Velocity	(mm/s)	20 (100)	20
Max Acceleration	(mm/s ²)	1(2)	1
Max Frequency	(Hz)	2 (10)	2
Max Data Rate	(Hz)	100 (500)	100

* Longer Stroke available on request

Configure Your Workflow

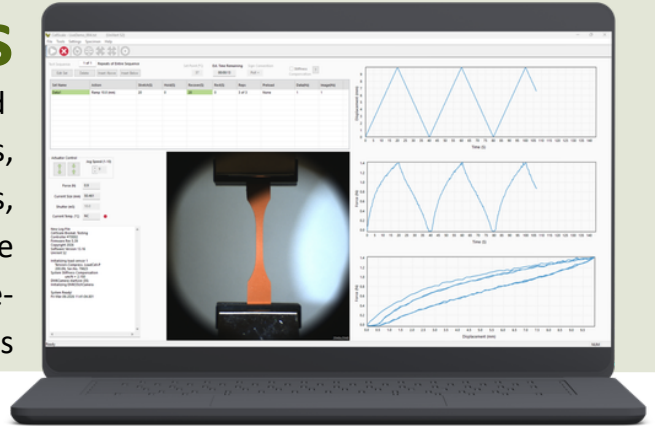
- **Force Sensing:**
Select the Eclipse Ultra Low Force Sensor, low, medium, or high force load cells up to 1000N, matched to expected loads and material stiffness
- **Fixtures:**
Configure for tension, compression, and bending, and add a secondary test axis for torsion, pressure, or shear testing. Add an X-Y table for automated multi-location tests.
- **Environmental Control:**
Test in hydrated and temperature-controlled conditions (up to 40°C) with a media bath, in a vertical or horizontal setup
- **Digital Image Correlation:**
Combine force and displacement data with non-contact, image-based strain measurement
- **Accessories:**
Choose grips, platens, stages, and custom fixtures to match specimen geometry and protocols
- **Integrated Software:**
Set up test methods, control and monitor test inputs/outputs, collect data, calculate mechanical metrics, generate plots, and export publication-ready figures





Typical Outputs

Force-time and displacement-time traces, stress-strain curves, viscoelastic response curves, and time-synchronized images



Mechanical Tests

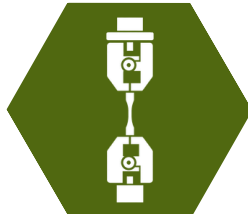
Use the UniVert for general-purpose mechanical tests and specialized workflows with purpose-built fixtures

Compression



bulk gels, scaffolds, tissue punches, porous materials

Tension



films, fibers, sutures, soft tissue strips, elastomers

Shear



lap shear, adhesive shear strength, hydrogel interface testing

Ultra-Low Force



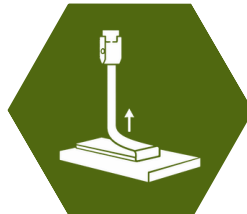
very soft hydrogels, delicate tissues, fragile constructs

Bending / Flexure



strips, beams, bones, thin polymer components

Peel



adhesive peel strength, bonded interfaces, layered materials

Torsion



twist response, rotational stiffness, compliant components

Puncture



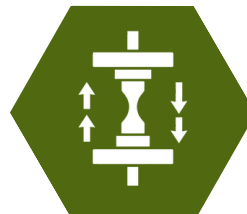
membranes, thin tissues, films, barrier materials

Pressure



vascular tissue, tubular biomaterials, inflation, compliance, burst testing

Fatigue



conditioning, hysteresis, durability response

Viscoelastic



time-dependent mechanics, creep, stress relaxation

UniVert Applications

Soft Tissues, Engineered Tissues, Orthopedic Materials

Pair mechanical loading with deformation measurement to quantify strain localization, anisotropy trends, and sample-to-sample variability in cardiovascular, bone, or musculoskeletal tissue

Hydrogels, Bioinks, Scaffolds, Matrices

Measure stiffness, nonlinear response, and time-dependent behaviour to support formulation decisions, material comparisons, and evaluate crosslinking, printing parameters, and degradation trends

Polymers, Elastomers, Adhesives, Membranes

Characterize compliance, durability, modulus, and failure behaviour; compare materials and evaluate design iterations for elastomeric materials, thin films, and device-relevant components

Common Sample Types



3D
Bioprints



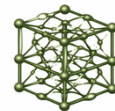
Hydrogels



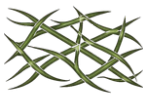
Tendons



Bones

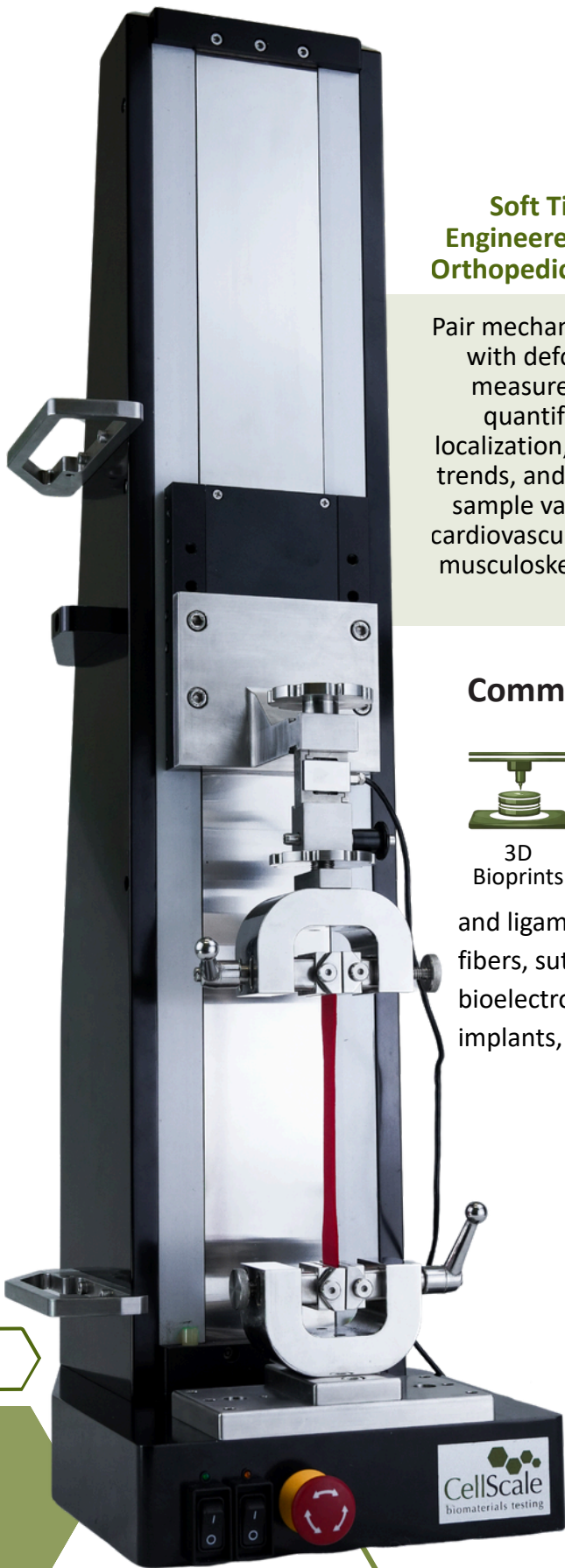





Scaffolds



Membranes

and ligaments, muscles, cardiac tissue, films, fibers, sutures, elastomers, bioinks, ECM, bioelectronics, adhesives, compliant polymers, implants, synthetic tissues, and many more!



 www.cellscale.com
 +1-519-342-6870
 5-564 Weber Street N
Waterloo, ON N2L 5C6
Canada

Book A Demo!

Talk with our team about sample handling, fixture selection, and recommended configurations for your protocols and research

