

# 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

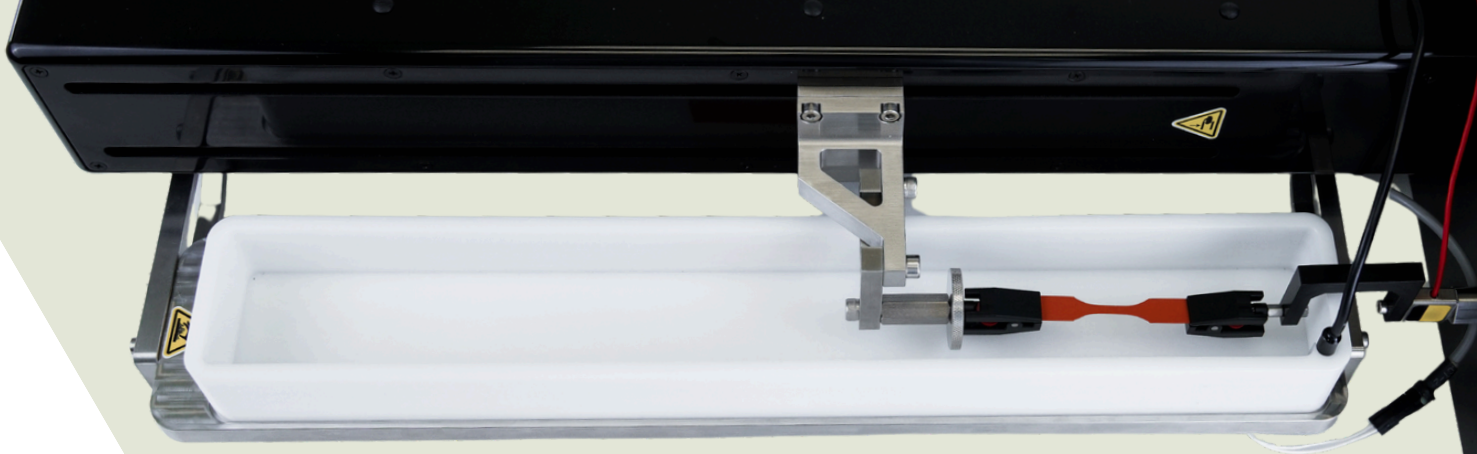
Specification		S (S2)	1kN
Dimensions	(cm)	22 x 22 x 54	30 x 22 x 60
Weight	(kg)	8	20
Force Range	(N)	0.02 - 200	0.02 - 1000
Force Accuracy		0.2% of load cell capacity	
Stroke	(mm)	300*	300*
Max Velocity	(mm/s)	20 (100)	20
Max Acceleration	(mm/s <sup>2</sup> )	1(2)	1
Max Frequency	(Hz)	2 (10)	2
Max Data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

\* Longer Stroke available on request

## Configure Your Workflow

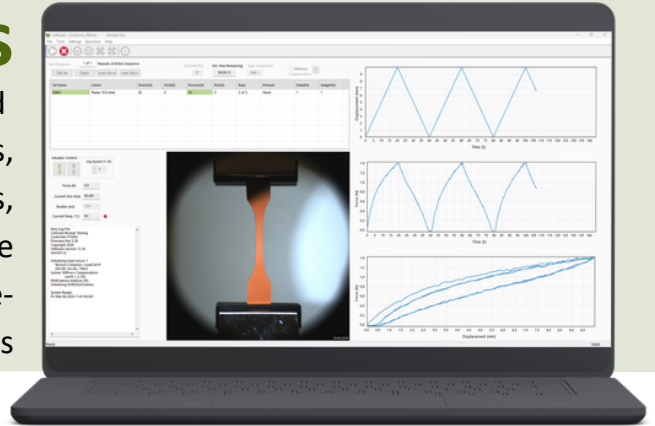
- **Force Sensing:**  
Select the Eclipse Ultra Low Force Sensor, low, medium, or high force load cells up to 1000N, matched to expected loads and material stiffness
- **Fixtures:**  
Configure for tension, compression, and bending, and add a secondary test axis for torsion, pressure, or shear testing. 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

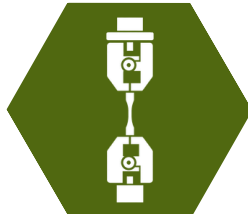
Use the UniVert for general-purpose mechanical tests and specialized workflows with purpose-built fixtures

### 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



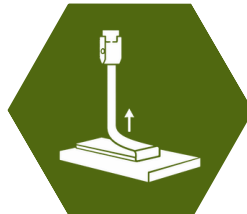
very soft hydrogels, delicate tissues, fragile constructs

### Bending / Flexure



strips, beams, bones, thin polymer components

### Peel



adhesive peel strength, bonded interfaces, layered materials

### Torsion



twist response, rotational stiffness, compliant components

### Puncture



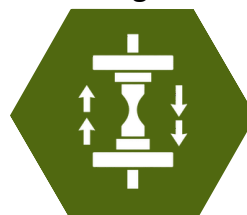
membranes, thin tissues, films, barrier materials

### 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



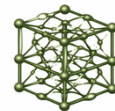
Hydrogels



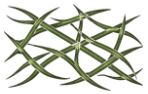
Tendons



Bones

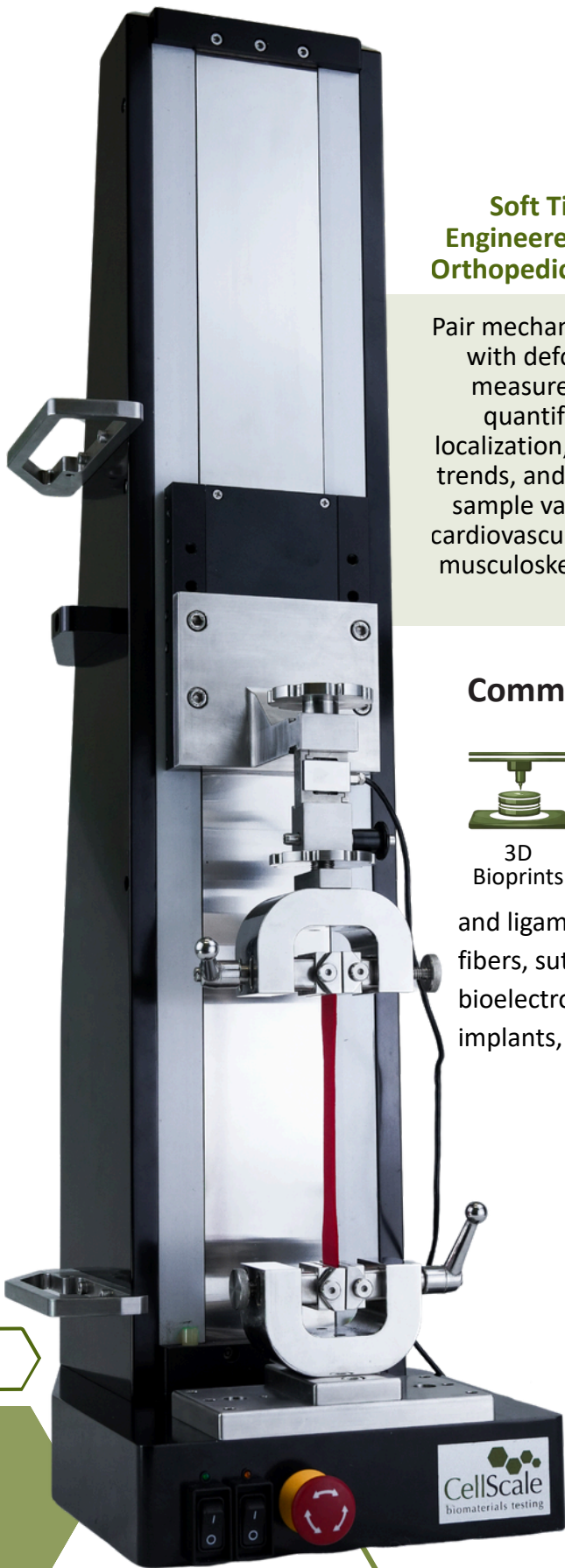





Scaffolds



Membranes

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



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## Book A Demo!

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

