8800 Servohydraulic Testing Systems
Instron® 8800 Building on Success with Servohydraulic Systems

Instron 8800 provides a level of accuracy and data integrity unattained by other servohydraulic testing systems. The advanced control, data handling features and expandable architecture in the 8800 Controller ensure protection of you, your specimens, your test data, and your investment into the future. Combined with proven load frames suited to applications ranging from biomechanics to thermomechanical fatigue, the 8800 sets a new standard for the future.

**Controller Philosophy**

Available in a range of configurations, including the single-channel console and the fully-featured 8800 multi-channel tower, the controller uses the new HS488® high-speed industry standard GPIB interface. This enables data transfer rates up to 8 MB per second, catering to the most demanding of waveforms. Instron’s unified controller philosophy emphasizes system performance and component commonality, minimizing operator training, extending software flexibility, and simplifying servicing requirements.

**A Choice of Interface**

With the 8800, we believe in giving you the ability to choose. The 8800 Controller is available as either a desktop and tower version—both can be provided with a full-featured hardware interface, or with the Microsoft® Windows® based console software for easy-to-use additional features. Alternatively, you can combine the two interfaces for maximum flexibility.

**A Leap in Force Measurement Technology**

The 8800 system is the world’s first commercially available range of dynamically-compensated load cells. The Dynacell™ true dynamic load cell incorporates dynamic compensation, which minimizes the effects of inertia on the force measurement. This is particularly important in tests where the load cell is subjected to rapid or prolonged acceleration, such as high-frequency testing.

**A Comprehensive Range of Applications**

A full range of application software packages are also available. The application suite covers test requirements from fatigue crack propagation to stress corrosion. The consistent design of the applications makes the package easy to learn.

Intron’s 8800 offers a choice of interface, including an operator panel, or software running in a Microsoft Windows environment.
The design of the Instron 8800 range of controllers makes the best possible use of hardware, firmware and software. All safety-critical functions, such as hydraulic control, are carried out entirely in the hardware—the most reliable medium of all. Real-time priority functions, such as limits, events, PID loop, cross-compensation, data logging, amplitude control, adaptive control, filtering and cycle counting, are carried out in firmware, where fast response time can be relied upon—limit actions in 8800 firmware are applied in under one millisecond.

Software provides test definition, data storage, analysis, and presentation facilities.

Automatic Transducer Recognition and Calibration

Systems without transducer identification allows you to run tests with an uncalibrated transducer, resulting in invalid data. Instron’s 8800 protects you from this type of error. When you change a load cell or extensometer, all you have to do is plug it in. The 8800 Controller automatically recognizes its characteristics, including full-scale, and will not allow you to start a test until you have calibrated it. Limits providing overload protection are set automatically. Sensors manufactured by other suppliers can also be connected to the 8800, and, when fitted with an Instron plug, have the same recognition capability as Instron devices. Calibration of a transducer is a simple process requiring only a few clicks of the mouse. A calibration wizard within the console software guides you systematically through either an automatic or a more detailed manual calibration procedure. This applies to all transducers that can be accommodated by the system, such as strain gages, accelerometers, LVDTs, load cells, and pressure transducers.

Data Acquisition

Each control axis can have up to four transducer conditioners. Each conditioner board includes data acquisition and the option of control capabilities. This means that these boards do not take up valuable slots in the controller, protecting your options for further expansion.

19-Bit Resolution

Instron 8800 signal conditioning provides 19-bit resolution over the full scale of the position, load and strain transducers. In addition to ensuring that no data can be lost due to improper range selection, Instron 8800 provides better resolution, repeatability and accuracy than lower quality fixed range controllers. This is true whether your test requires 1% or 99% of the transducers full scale capacity.

Specimen Protection

Using the Instron 8800 specimen protect feature, the actuator is moved in position control while an outer load, control-loop ensures that the actuator cannot produce a force that exceeds a pre-set level. This is particularly useful during test set up in protecting your test specimen from overload.

Advanced Example of Testing Control

A key principle in the design of Instron® 8800 is protection. It ensures that not only are the operator, test specimen and system itself protected from inadvertent or unavoidable errors, but that your financial investment is protected through fixture-proofing.
Interface Solutions Designed for Ease of Use

Whether you need the flexibility to change test types quickly or you want to specialize in a small number of applications, Instron® 8800 covers the options.

The 8800 provides a choice between a manual operator interface and the console software interface, both of which allow simple and rapid user familiarization and operation.

Console Software

The interface to the Instron 8800, the console software gives you the set up facilities required to prepare your system to carry out a test.

By using any of the applications from the 8800 applications suite, you can conduct more demanding tests, such as low cycle fatigue, da/dN, KIC and JIC.  8800 console runs in Microsoft® Windows®.  The philosophy is one of simplicity, to create a test control environment in which you know where you are and where you are going, with status information clearly visible.

The Instron 8800 control handset allows you to work close to your machine without the necessity of moving from your computer or operator panel. It allows manual positioning of the actuator using a combination of up/down buttons and a fine positioning thumb wheel.

Optimization

Instron 8800 provides several easy-to-use features to allow the controller to be optimized for maximum accuracy.

Automatic Loop Shaping

At the touch of a button, the Instron 8800 automatically optimizes the control loop parameters.

Amplitude Control

Automatically adjust the demand from the waveform generator to match the required amplitude and mean.

Adaptive Control

During the test, the 8800 continuously and automatically tunes the control-loop parameters for unsurpassed accuracy.
Fast, Flexible Software - Accomplish More With Less

Instron’s application suite covers a broad spectrum of testing requirements. It includes flexible programs for general purpose testing, and programs for specific applications. An important philosophy in the design of the Instron suite is continuity. Earlier versions of applications run directly on the 8800 system, protecting your investment in your laboratory software.

The software applications are designed with the fewest number of screens needed to get the job done. You save time because it takes less time to set up and run tests. Consistent use of software controls, screen layouts and test workflow make applications easy to learn and use. All data, graphical and numerical, may be exchanged with any other Windows® programs including spreadsheets, word processors and databases, allowing you to create personalized reports. All the applications are compatible with both the operator panel and console software.

WaveMatrix™ Software for Cyclic Testing

Instron WaveMatrix software is designed for fatigue and dynamic testing, of materials and components. A highly visual environment with integrated tabular screen allows the user to run ramps, cyclic waveforms and complex multi-axial tests.

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Low-Cycle and Creep Fatigue Testing

The Instron 8800 series of testing systems feature the high stiffness and precision alignment of the 8801 system ensuring consistent sample loading for reliable results.

100 kN to 500 kN
The 8802 is a two-column, single-axis load frame capable of accommodating actuators from 10 kN to 250 kN capacity.

500 kN to 2.5 MN
The 8804, 8805 and 8806 machines are configurable four-column, single-axis load frames. The 8804 accommodates actuators of 500 kN capacity, the 8805 accommodates hydrostatic/labyrinth bearing actuators of 500 kN, and hydrostatic bearing actuators of 1000 kN capacity; and the 8806 accommodates hydrostatic bearing actuators of 1000 kN and 2500 kN capacity.

Tabletop Fatigue Testing

The 8870 series comprises of axial models ranging from 5 kN to 25 kN capacity, and biaxial models of capacities up to 100 kN, all with the actuator conveniently located in the crosshead for easy table mounting.

High-Capacity Testing

With a wide range of machine sizes, capacities and orientations, Instron® can offer custom design expertise in all high-capacity applications from 500 kN to 100 MN. The 8800 Series of high-capacity testing systems are fatigue rated to 2.5 MN. They have precision-aligned frames, high stiffness load frames, and a range of high-capacity actuators and grips and fixtures. For higher capacity tests, load frames are configured to suit specific applications, taking into account the testing equipment, the laboratory space and load configuration.

Fatigue Testing

The Instron 8800 series of servohydraulic testing frames are used for higher capacity fatigue and static testing of biomedical, advanced materials and manufactured components, where more working space, higher maximum actuator movement and more customization may be needed or desirable.

Technically Advanced Load Frames

Instron® load frames, actuators and hydraulic components have evolved through use in the field over the last 40 years.

Design choices encompass options such as two and four-column frames, hydrostatic and labyrinth actuator bearings, tension torsion systems and electric actuator systems. Chosen in capacity range from table-mounted frames through to multi-megawatt installations. Older Instron load frames, and those manufactured by other companies, can also be enhanced by upgrading to an Instron 8800 controller. Typical load frames are shown on this page.

25 kN to 100 kN
The Instron 8801 is an easy-to-use, precise and versatile servohydraulic testing system. The high stiffness and precise alignment of the Instron 8801 system ensure consistent sample loading for reliable results.

100 kN to 500 kN
The 8802 is a two-column, single-axis load frame capable of accommodating actuators from 10 kN to 250 kN capacity.

500 kN to 2.5 MN
The 8804, 8805 and 8806 machines are configurable four-column, single-axis load frames. The 8804 accommodates actuators of 500 kN capacity, the 8805 accommodates hydrostatic/labyrinth bearing actuators of 500 kN, and hydrostatic bearing actuators of 1000 kN capacity; and the 8806 accommodates hydrostatic bearing actuators of 1000 kN and 2500 kN capacity.

Thermo-Mechanical Fatigue (TMF) Testing

Induction or radio frequency (RF) heating is the preferred method for the majority of TMF tests.

High Rate Testing

High-speed light testing at 20 m/s.
Upgrade Systems

Experience the benefits of the Instron® 8800 systems on your existing load frames with an upgrade system.

At Instron, we are experts in upgrading materials testing systems. Through our retrofit packages, we upgrade Instron and non-Instron load frames with the latest digital electronics and application software. The result is a superior system at a fraction of the cost of a new machine.

Instron has upgraded more test equipment than anyone in the industry - more than 5,000 systems and still counting. An Instron upgrade ensures your testing system will be outfitted with the industry’s most advanced software and electronics. Furthermore, your investment will be supported by Instron’s worldwide network of experienced service engineers.

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