LF5105
FATIGUE TESTING SYSTEM

The LF5105 new generation servohydraulic fatigue load frame is engineered as truly universal servohydraulic fatigue testing platforms, engineered to meet comprehensive testing requirements from static validation to dynamic durability. Its compact 100kN load frame integrates a high-stiffness two-column structure, crosshead control, and automatic safety locking mechanism, delivering exceptional performance and safety while significantly reducing laboratory footprint.

The hydraulic actuator is strategically positioned below the deck, providing operators with ergonomic specimen installation and test observation height, complemented by an intuitive deck-level control panel for streamlined and efficient human-machine interaction.

Typical Specimens:

The LF5105 is a future-ready testing platform for advanced materials, capable of performing comprehensive mechanical property evaluations on composites, high-performance steels, aluminum alloys, superalloys, and other cutting-edge materials through tension, compression, bending, low-cycle/high-cycle fatigue, crack propagation, and fracture mechanics testing.

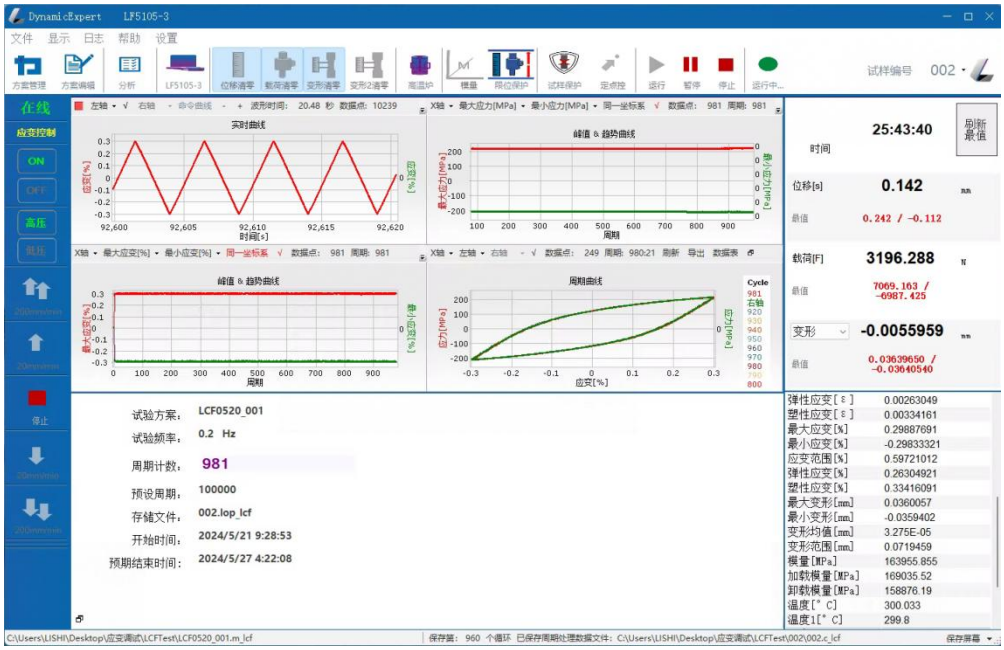
Features:

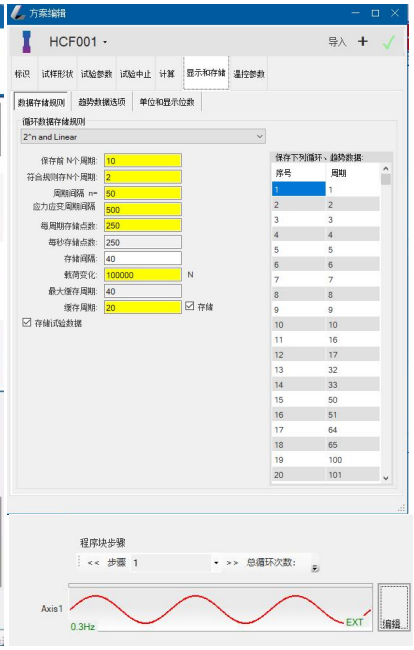
- **Hydrostatic Bearing Actuator：** Delivers zero-friction, high-response performance that ensures exceptional long-term dynamic precision and reliability.
- **Silent Servo Hydraulic Power Unit：** Features low-noise, energy-efficient operation that enhances both energy performance and laboratory comfort.
- **High-Performance Servo Control：** Provides fully digital multi-channel closed-loop control for precise reproduction of even the most complex load waveforms.
- **Intelligent Test Control Software：** Dynamic ExperTest Software seamlessly integrates test configuration, real-time monitoring, and comprehensive data analysis, offering pre-configured standards with full customization capabilities.
- **Coaxial Alignment System：** Integrated alignment technology effectively minimizes eccentric forces, ensuring optimal load alignment and superior testing accuracy.
- **Ergonomic Safety Design：** Low-position actuator configuration optimizes operator access while comprehensive multi-level safety systems provide complete protection.

High Resolution Control System

- Data acquisition rate: 10000Hz
- Closed-loop control rate: 10000Hz
- 32-bit measurement and 24-bit digital-to-analog converter
- With one analog signal input channel and one digital signal input channel
- 3 expandable slots: Each channel supports TEDS sensor recognition.Each channel input signal can be analog output and Strain control capable

Versatile and Intuitive TestMaster Software





"DyammicExpert" is a proprietary comprehensive test software developed for dynamic testing comprising test modules for (HCF) high cycle fatigue (HCF), low cycle fatigue (LCF), fracture toughness (K1C, J1C, CTOD), crack growth, thermal mechanical fatigue, etc.
It supports most dynamic testing standards.

- For metals: ASTM E466, ISO 1099, ISO 12106, ASTM E606, ASTM E647, ISO 12108, ASTM E1820, ISO 12135, ASTM E1290, ISO 15653, ASTM E561, etc.
- For composite: ISO 13003, ASTM D6873, ASTM D3479, ASTM D3039, ASTM D3479

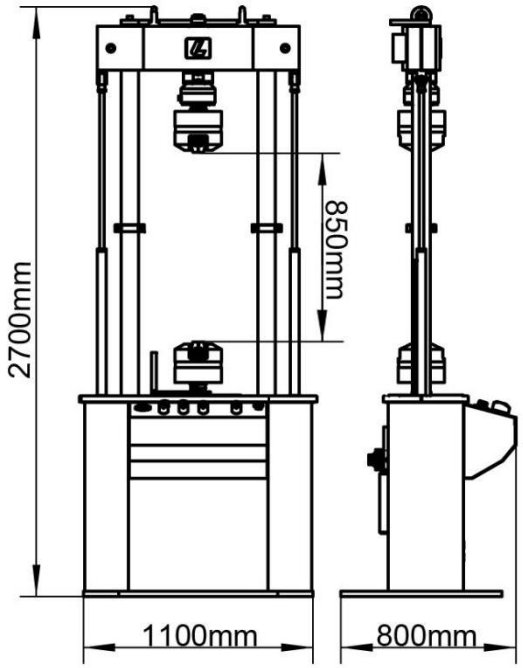
The software features a simple and intuitive test setup interface, flexible graphic display, configurable real-time calculation, powerful data storage and assorted waveform executions.
Setting up and running test is made easy with user-friendly utilities like:

- Adaptive auto PID tuning
- Specimen protection function
- Auto detecting improper parameter value input during test setup
- Real-time tracking the trend of parameter values and auto stopping tests when parameters exceed pre-set limit and instantly recording moment status data
- Without stopping the test, test parameters can be adjusted in real time, such as switching control modes, changing test frequencies, strain amplitudes, etc.
- Pause/resume, for example, to check on specimen conditions, without affecting test results

Included in the software is powerful post-test calculation and statistical analysis according to the test standards, interpret data and derive results, such as S-N, ε-N curve fitting for HCF and LCF, test validation for K1C, J1C, CTOD, △K-da/dN curve fitting for crack growth.
Its reporting function features flexible report layout configuration and choice of exporting to Excel or Word format with embedded chart graphics.

Key Specifications

Model	LF5105
Maxiumum Force Capacity	100kN
Maxiumum vertical test space not included Grip	1200mm
Actuator stroke	±75mm
Column Spacing	540mm
Diameter of frame columns	80mm
Configuration	100kN Servo-hydraulic Load Frame (Actuator Base Mount)
	Extra stiff corrosion resistant load frame with reinforced crosshead
	Hydraulic powered crosshead lift with automatic lock
	Anti-rotation actuation guide
Frame stiffness	5×10^{8} N/mm
Power Supply	380VAC, 50Hz
External Dimensions (mm)	2700(H) x 1050(W) x 800(D)
Weight	1150kg



Wide Selection of Accessories

- Variety of test fixtures
- Environmental Chambers and High Temperature Furnace
- Clip-on Extensometers
- Automatic Extensometers
- Non-Contact Optical Extensometers