Minimum Specifications for Universal Materials Fatigue Testing Machine

Complete “turn-key” system comprising

1) Test stand

Two-column vertical floor-standing assembly with adjustable cross-head

±10 kN load capacity

Test opening: 60” vertical x 24” (daylight)

Overall dimensions must fit through a door frame of (31 x 74 inches)

2) Actuation and control

±10 kN actuator capacity; 50-mm (2 inch) stroke

8-mm peak-to-peak amplitude @ 5 Hertz frequency

displacement sensor with 50-mm range. 0.25% precision

closed-loop control of axial displacement or load

Actuation power supply (if pneumatic, manifold including on/off pressure control solenoid, pneumatic servo valve; if hydraulic, pump, manifold and switching; if linear motor, electrical power) preferably for 110V single phase.

3) servo controller/data acquisition

±10kN fatigue-rated load cell with traceable calibration removeably mounted to crosshead

Signal conditioning for included load cell and displacement transducer with computer controlled offset and gain, 16-bit resolution and low-pass filtering as required

Expansion capability for inputs from at least 4 sensors (load cells, LVDTs (AC and DC), pressure sensors, thermocouples, or other analog input signals; control from any system sensor with bumpless transfer switching between inputs

Capability for 4 analog outputs, 4 digital inputs and 4 digital outputs

4 kHz loop rate; full access to PID parameters; Peak/Valley/Mean compensation on system control

Automatic interlock shutdown

4) data acquisition system

Windows Software for control including calculated channels with user defined equations, automatic unit conversions (SI/English), user specified real-time plotting, user configurable meters, gages etc. and easily created customized test procedures

Waveform library including Ramp, Ramp + Dwell, Sine, Haversine, Triangular, and Square; Timed, Level Crossing, and Peak/Valley data acquisition

Data shall be exportable as text files

5) Computer to run acquisition/control software:

Minimum 2.9 GHz processor, 8 GB memory, 640 GB hard drive, communications; lcd display

6) All cabling and interconnects