



## FlexTest® SE Controller

Easy-to-use, single-channel controller for a variety of test applications

### Versatile capabilities

- » Bumpless start
- » Hydraulics-on mode-switching
- » Auto-zeroing
- » Auto-tuning
- » Saving and restoring PID settings
- » Online scope to observe signals
- » Digital display of measurements
- » Digital universal conditioners
- » Full-range calibrations
- » Adaptive controls

The FlexTest SE controller is an easy to use, one or two channel servocontroller that excels in a wide range of general testing applications. It is a cost-effective choice for monotonic, cyclic and block-cycle testing, and can also be operated with computer supervision to provide data acquisition and perform more advanced tests. These controllers also can be linked to run multi-channel tests.

With a design based on decades of MTS expertise in servohydraulic testing, the FlexTest SE controller integrates seamlessly with VME-based hardware and proven software from MTS.

It provides real-time closed-loop control, including transducer conditioning and function generation, to drive various types of servactuators. The VME-based hardware includes a processor, two- or three-stage valve drivers, two or three digital universal conditioners (DUCs), an analog input channel (for data or program input), three analog output channels, four pairs of digital I/O, a multi-position handle and an Ethernet port.

be certain.

## Flexible, Versatile Performance

### Exceptional ease of use

To improve usability, FlexTest SE controllers feature a multi-color display with easy-to-read graphics and dedicated menu keys that provide direct access to test setup and execution functions. These controllers are extremely user-friendly, whether they are operated in standalone or computer-supervised configurations. This convenience means test professionals spend less time on setup and more time testing.

- » Dedicated menu keys offer instant access to primary test control functions
- » Sharp display with wide viewing angles is easy-to-read in lab lighting
- » Scope offers quarter-, half- or full-screen viewing
- » Multiple trace colors help differentiate signals

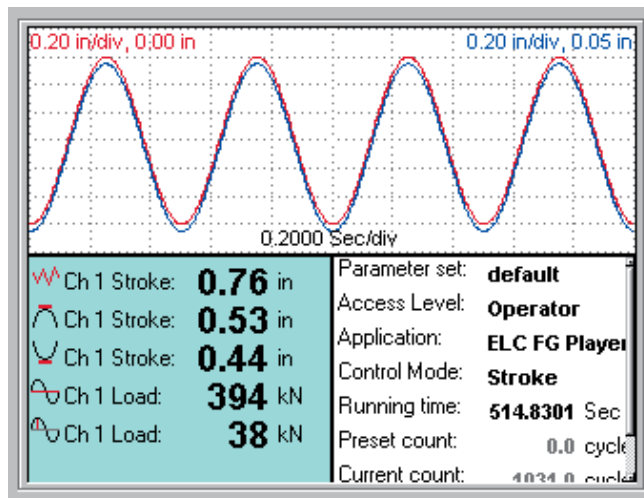


### Standalone and remote operation

In standalone configurations, the FlexTest SE controller can run cyclic, block-cyclic and monotonic tests, generating sine, square or triangular waveforms. It allows you to save and restore configuration settings, and offers automatic or manual tuning. You can also save and restore PID tuning settings. Full-range conditioning eliminates the need to select ranges. Other convenient features include bumpless startup, mode-switching with hydraulics on, and adaptive amplitude and phase control. This lightweight controller is also easy to relocate in the lab.

When you connect a FlexTest SE controller to a PC, you can use MTS Series 793 software to customize and automate tests, as well as acquire and store test data. You can also play out and acquire time history drive and response files from MTS RPC® (Remote Parameter Control) Pro software, or operate the controller with the software to develop, iterate and analyze time history data. Other capabilities with remote control include report generation, networking with other PCs and remote test status monitoring.

- » Real-time calibrated measurements
- » Small or large digits
- » Up to six meters
- » Readings shown in preferred engineering units or volts
- » Selectable significant digits for each meter
- » Timed, min.-max., amplitude-mean or peak-valley data
- » Command, compensated command, any output, any input, error or frequency



**TYPICAL SINGLE-CHANNEL FLEXTTEST SE CONFIGURATION**

- » One valve driver (two-stage or three-stage)
- » Two digital universal conditioners (DUCs)
- » One analog input (for data signal or external program)
- » Three analog outputs
- » Digital inputs and outputs for interlock and run/stop

*Popular options include:*

- » PC with Ethernet and MTS Series 793 software
- » Additional DUC
- » Additional A/D inputs
- » Rack mount kit
- » Cables for linking FlexTest SE controllers

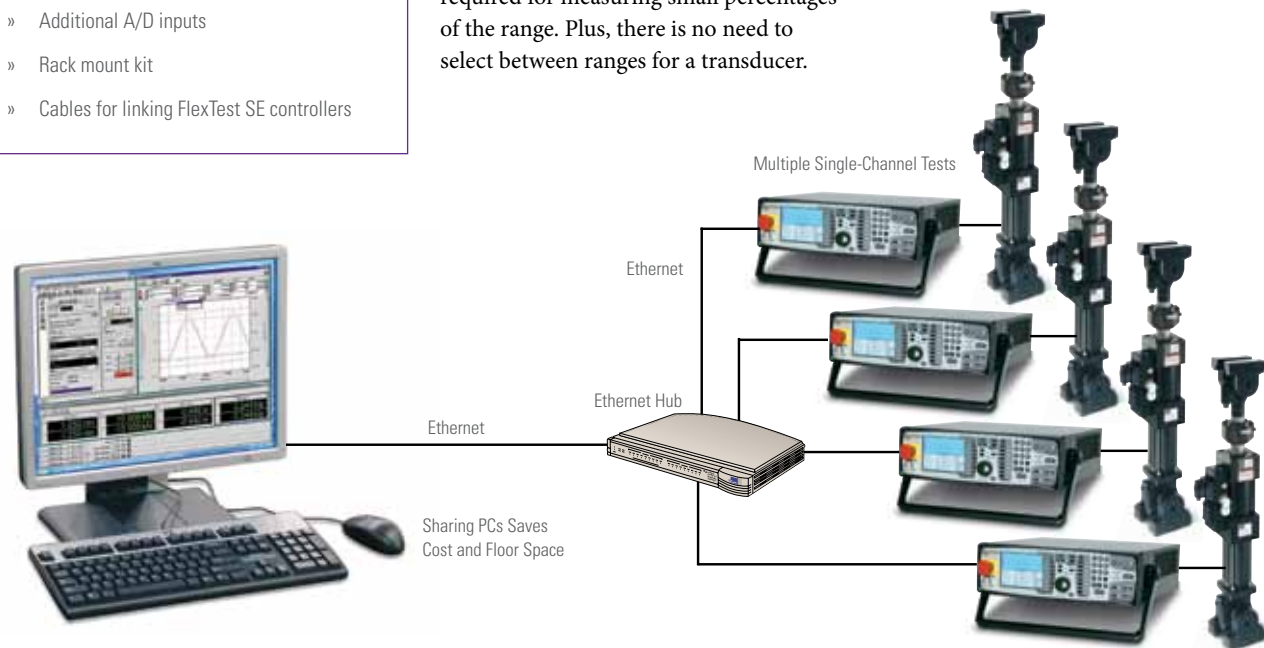
**Proven, reliable technology**

FlexTest SE controllers are based on MTS Series 493 hardware and designed to work with MTS Series 793 software. Both the VME-based hardware and proven software platform are used worldwide in thousands of FlexTest controllers.

Plus, FlexTest SE controllers incorporate 493.25 Digital Universal Conditioners (DUCs), which work with AC or DC transducers. So, you can use the same DUC to condition an LVDT for one test and a load cell for the next test. As full-range conditioners, these DUCs accurately cover the full scale of the transducer while providing the resolution and repeatability required for measuring small percentages of the range. Plus, there is no need to select between ranges for a transducer.

**Multiple software choices**

When used with a PC, the FlexTest SE controller employs MTS Series 793 software and a Windows® operating system. This allows you to define new tests and analyze results of prior and current tests while other tests are still in progress. It is also easy to integrate your FlexTest SE control system with your local network to share data.



Station Desktop Organizer software simplifies the task of operating multiple FlexTest SE controllers from a single PC. Switching from one station view to another is easy.



Adaptive control lets you link several FlexTest SE controllers to perform multi-channel testing. You can also use a FlexTest 60 or FlexTest 100 controller to supervise several linked FlexTest SE controllers running a multi-channel simulation.

## Specifications\*

### GRAPHICS DISPLAY

1/4 VGA active matrix TFT

### PROGRAM GENERATION

Frequency range 0.01 to 400 Hz

Waveforms: haversine, square, triangle

Accepts external function generation source

Block-cyclic, sine sweep

### SERVO CONTROL

Control based on feedback from any connected transducer

DDC loop closure; 1 KHz or 2 KHz typical for durability applications

Automatic or manual tuning PIDF with forward loop filter

### ADAPTIVE COMPENSATION

PVC (Peak Valley Control) amplitude compensation

Null Pacing amplitude compensation

### DIGITAL UNIVERSAL CONDITIONER

Full-range conditioning typically set to full scale of transducer

Sampled at 100 KHz

Resolution: 22-24 bits, depending on update rate

For resistive- or reactive-type transducers

Supports 4- or 8-wire connections

Excitation: balanced constant-voltage or constant-current 0 to 20 V

Interlocks: hardware excitation fail, software conditioner saturation

### 2-STAGE VALVE DRIVER

Dual-balance differential current source

Max. output: 25 or 50 mA (selectable),  $\pm 20$  V across 1 K-Ohm load

Dither: adjustable 0 to 5 V p-p, frequency adjustable, 1 to 4915 Hz

### 3-STAGE VALVE DRIVER

Maximum output: 50 mA,  $\pm 20$  V across 1 K-Ohm load

Dither: adjustable 0 to 5 V p-p, frequency adjustable, 1 to 4915 Hz

Excitation: balanced AC 100 mA max.  $\pm 20$  V AC, at 9.8 KHz

Input: differential AC-coupled with adjustable gain and zero

Feedback: proportional and differential

### HYDRAULICS

Hydraulic service manifold: 1.0 A @ 24 V

### ANALOG INPUT

Input voltage: 22 V p-p max.

Resolution: 16-bit

### ANALOG OUTPUT

Output voltage:  $\pm 10$  volts max.

Maximum load: 2000 Ohm, 1000 pf

### DI/O (4 INPUTS AND 4 OUTPUTS)

One I/O pair for hydraulic interlock

One I/O pair for run/stop (can be redefined by user)

Two I/O pair for user definition

Input on voltage: 2.7-26 V DC @ 0.5 mA min.

Input resistant: 2K Ohm

Output: open collector, open emitter; 30 V DC max.,  $V_{ce}$  (max.) = 1V @ 6 mA,

I<sub>c</sub> (max.) = 20 mA; 4 outputs

### DATA ACQUISITION (WITH PC AND MTS SERIES 793 SOFTWARE)

Timed, peak/valley, max./min., level-crossing, cyclic/logarithmic and ability to slave data channels to a master signal

Rate: 1 KHz or 2 KHz typical for durability applications

Simultaneous sample and hold

RPC Pro time history data acquisition

### DIMENSIONS

Height: 13 cm (5.2 in)

Width: 43 cm (17 in)

Depth: 43 cm (17 in)

Weight: 8.6 kg (19 lb)

Rack-mount chassis fits standard 19-inch rack

### ENVIRONMENTAL

Temperature: 5° to 40° C (41° to 104° F)

Relative humidity: 10% to 85% non-condensing

### POWER INPUT

Input voltage\*\*: Universal input 100-240 V AC; 47-63 Hz

Input surge: < 50 A max. for 1/2 cycle

Static current: ~4 A at 115 V AC, ~2 A at 230 V AC

Circuit protection: short-circuit protection by duty cycle fold-back with automatic recovery

### STANDARDS

EMC: EN 50082-2 Electromagnetic compatibility, Generic immunity standard, Part 2; Industrial environment

EMC: EN 55011 Limits and Methods of Measurement of Radio Interference Characteristics of Industrial, Scientific and Medical (ISM) Equipment

Safety: EN 61010-1 Safety requirements for electrical equipment for measurement, control and laboratory use

*\*Specifications subject to change without notice.*

*\*\*Power input voltage specifications conform to CE compliance. The specification allows for  $\pm 10\%$  of the values stated. The actual operating voltage is 90 – 264 V AC.*

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