Model 3500

Product **Overview**

The 3500-servo controller provides a robust solution for performing dependable tests on critical test specimen. The system incorporates an intuitive Windows™ based operator interface providing the test professional a powerful, yet straightforward software. Advanced soft-start and safety control features protect both specimen and operator.

SERVICE LIFE

Our engineers have developed a controller which uses easily upgradeable hardware and proven control software to prevent continual reinvestment in controller hardware.

FLEXIBILITY

One controller supports up to eight channels and four independent stations, it is easily configurable with the ability to store and retrieve different test rig set-ups. Optional data acquisition interface allows a wide range of commercially available signal conditioning.

SIMPLICITY

Test labs need to provide accurate data as quickly and efficiently as possible. The 3500 is focused on providing simple execution of advanced tests. Intuitive set-up and industry convention have been incorporated. Contextual help screens guide operators through test set-up and operation. Station and channel configurations do not require hardware or jumper changes.

SAFETY

Redundant hardware E-stop circuit using an EIN 954-11 compliant relay allows test labs to set up OSHA compliant test systems. Configurable limits provide shut-down in case of a fault.

MULTI-STATION CONTROL

One click switching between stations allows easy control of multiple test systems. Utilizing multiple monitors reduces confusion of one control and multiple test systems. Flexible DVMs allow the operator to view the test status of all channels and stations at one time.

EASILY UPGRADE OLDER EQUIPMENT

The 3500 controller can be interfaced with older actuators and transducers. For example, we caneasily interface with 200ma servo valves and valves requiring +/-10VDC command signal with 24VDC power.

Key Features

- Easy test creation and ability to recall test files
- Ability to store and easily recall different system set-up files
- Automatically zeros DC error when enabling hydraulics for bumpless start
- (3) online scopes to monitor signals
- Configurable digital displays and DVMs
- Amplitude and setpoint control
- Dual mode amplitude and setpoint control
- Ability to perform block cycle tests with nested loop hundreds of steps long
- Calibration date tracking
- Full function generation, including tapered wave-forms
- Amplitude and setpoint ramping
- Bumpless transfer (Mode switch) capability
- Full range conditioning and low noise levels provide high levels of accuracy when measuring small percentages of transducer range
- Only one valve driver for 2 stage, 3 stage, multiple valve arrangements and even voltage driven servo valves
- Single step ramp and partial cycle capability
- .000001 Hz to 500 Hz function generation
- .1 to 4 kHz data acquisition rate easily saved in .csv format
- (3) configurable access levels to protect sensitive settings
- Test Wizard allows unsurpassed ease and protection of adjustment to complicated test set-up
- Sampling up to 250 KHz (single channel) with up-sampling and down-sampling to eliminate high frequency noise

- Intuitive Windows™ functionality allows the operator flexibility in monitoring operating tests through the Test Status Window and the user configured DVMs.

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Software Overview:

TEST CONTROL PANEL

The Test control panel always resides on top of other screens and applications allowing operators immediate "one click"access to all stations.

SYSTEM SET-UP is easily accomplished through an intuitive tree structure which can be saved as a configuration allowing easy recall of previous system arrangements.

TEST SET-UP is easily done through a single screen which visually displays step details and test sequence through a tree structure.

DATA ACQUISITION is easily configured for each step of the test. Options include storage from .1 to 4 Khz. on a continuous or interval basis.

TEST WIZARD is a method which allows a senior technition the ability to defiine a complicated test sequence but allow others to make minor changes safely and easily.

SCOPES allow monitoring of all input signals with a wide variety of options and display modes.
Included functions are:

- Input selection and ability to change colors
- Up to (4) traces per graph
- Freeze and zoom capabilities
- Two cursors with numeric readouts
- Ability to save and retrieve graph set-ups

- Adjustable time scale
- Manual, one-time auto-scale and continuous auto-scale
- X-Y plotting capability
- Trigger options: no trigger, trigger on input, continuous and single trigger
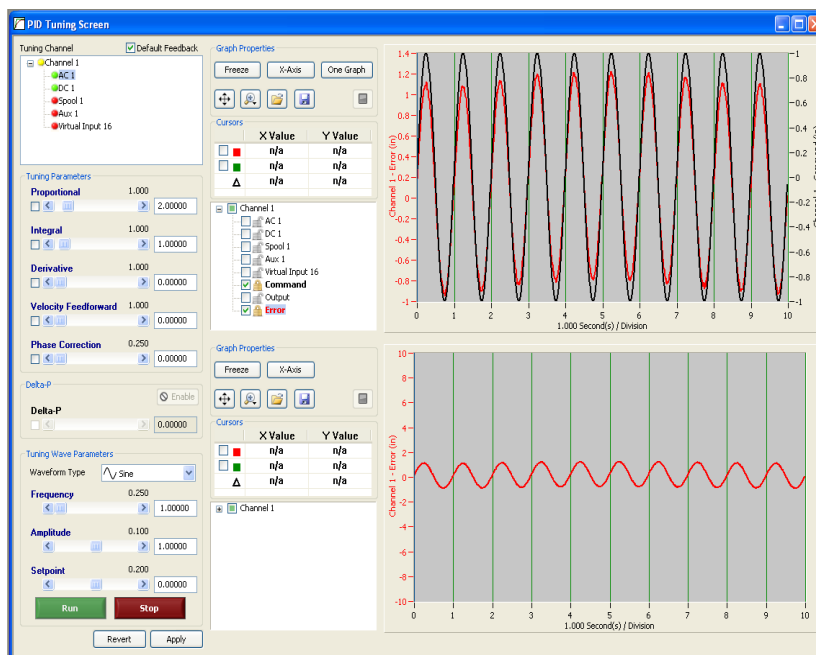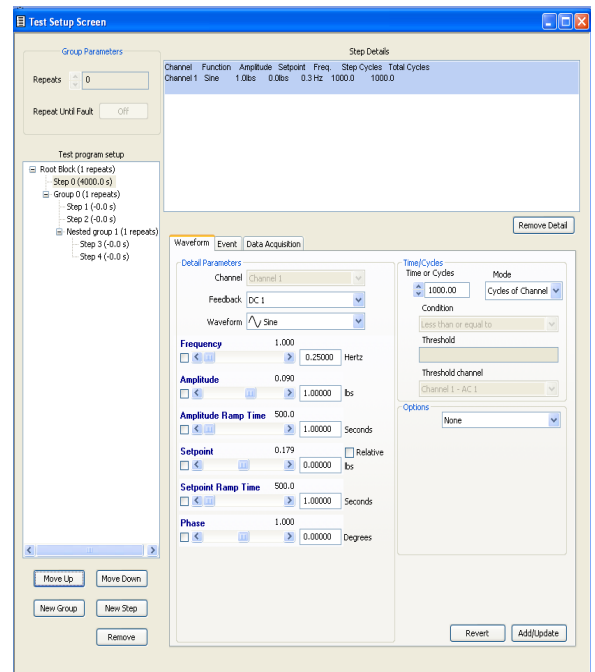
PID TUNING SCREEN includes two graphs which provides the operators easier monitoring of many input signals, and the ability to utilize two graph formats on one screen.

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Option **List**

- VR vibration package
- Sine-on-Sine
- Virtual transducers with math and filter functions
- Rack mount kit
- Multiple station capability
- Additional signal conditioning channels

HARDWARE OPTIONS

65727 Signal conditioning board

- (2) additional AC inputs
- (2) additional DC inputs (adjustable gain 1 thru 700)
- (6) additional digital inputs
- (6) additional digital outputs

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71422 Signal Conditioning Expansion

- Used with 65727 signal conditioning board
- (4) 8B input module slots
- (2) input with pass-throughs, -OR- (4) inputs

71827 Signal conditioning Option

- (16) additional 8B input modules slots
- (8) input with pass-throughs, -OR- (16) inputs
- (2) additional 8B output modules
- (6) additional digital inputs
- (6) additional digital outputs

SOFTWARE OPTIONS

- Sine on sine
- Time history file playback
- Virtual inputs
- Multi-station capabilities

Specifications

Control	• PIDF control • 4 KHz. Loop rate • 16-bit ADC. (.0015% Full Scale) • Acceleration (Delta P) compensation • Optional VR add-on for vibration systems
Signal Conditioning	• DC signal conditioning with hardware gain adjustable form 1:1 up to 700:1 • BNC input for ±10 V inputs • AC (LVDT) conditioning Excitation Frequency: 10kHz, 5kHz, 3kHz • Excitation voltage: 2.1 to 21 VAC • Optional input filters • Encoder conditioning with homing capability • Optional 8B module signal conditioning • Optional 8B module signal pass-through capability
Valve Output	• +/-50ma to +/-200ma valve output • +/-10 VDC valve output • Ability to power solenoid driven servo valves • High slew-rate output • Adjustable dither amplitude and frequency
Digital Input/Output	• 24V digital output • Open contact digital output • TTL and 24V digital inputs
Hydraulic Control Manifold (HCM)	• 24V digital output for high and low pressure per channel • Industry standard off-low-high • functionality
Hydraulic Pump System (HPS)	• 24V digital output for high and low pressure • Pump interlock functionality
Safety	• E-Stop on front panel • Remote E-Stop
Remote Control	• TCP/IP Remote control
Data Acquisition	• Selectable data acquisition rate .1 to 4 kHz • Continuous or interval options • Saves to .csv file • Ability to store large files
Zero Offset	• Ability to offset input to compensate for heavy fixtures or other static loads