WaveMatrix™ | Advanced Control 2495-915E1

What is it?

Advanced Control is an upgrade to WaveMatrix that offers additional control modes and waveform types.

What can it do for you?

- Solve challenging materials testing requirements with a versatile control suite
- Control fatigue tests of non-linear, low-force materials using mixed-mode control
- Perform outer-loop control using virtual channels created with 'Calculations Module', e.g. Cycle Energy
- Execute a variety of frequency sweeps ideal for Dynamic Mechanical Analysis (DMA)
- Detect and correct for phase lag in cyclic waveforms using Automatic Phase Compensation

When do I need 'Advanced Control' for my testing?

- Testing specimens with material properties that change significantly during cyclic testing
- Low force, load control tests where standard techniques compromise waveform integrity
- Biaxial fatigue tests that require peak torque and axial load to occur simultaneously
- Exploring materials or component properties that are frequency dependent

What do you need?

The Advanced Control Module can be easily added to an existing WaveMatrix license or a new system.

If you are upgrading your software, we can offer additional training to ensure you can get the most out of the powerful new features.

Specifications

| Catalog Number	
2495-915	WaveMatrix
2495-915E1	WaveMatrix Advanced Control Module
2495-965E1	Upgrade for Existing WaveMatrix Software Installations

*Contact Instron® for upgrades on older systems

Products for Materials Testing

What is Mixed-Mode control?

Typically, a test is run in position, load, or strain control. While testing specimens with non-linear or compliant properties in load or strain control has always been a challenge, mixed-mode control allows the operator to optimize results by combining multiple control channels. A common example is to use position as the primary control channel while adaptive control algorithms target peak values in another channel, such as load. Any combination of control modes and target channels can be used, including calculated channels.

What are the advantages?

• Improved waveform shape and waveform integrity with non-linear specimens

• Improved peak accuracy and performance at low forces

• Apply amplitude control techniques to sample data waveforms e.g. impulse waveforms

• Build complex test methods by combining mixed-mode control with calculated channels
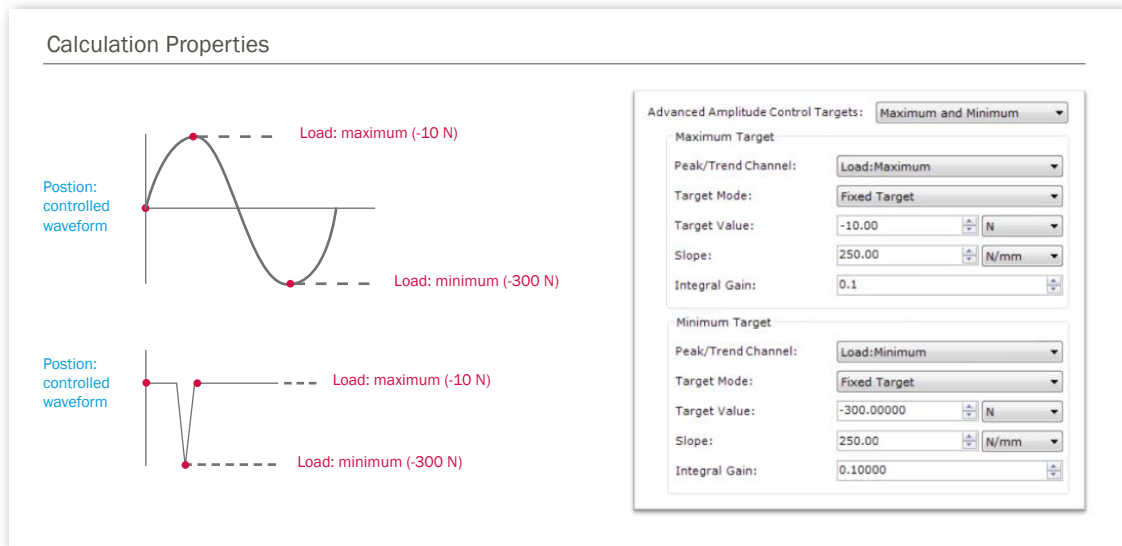
Mixed-Mode Control with 'Calculated Channels'

• Combine functionality of 'Advanced Control' with the 'Calculations Module' for unique capability

• Advanced amplitude control allows users to control waveforms based on calculated channels

• Optimize test results by targeting peaks and trends of calculated channels, e.g. Max Cycle Energy

Automatic Phase Compensation

• Automatic detection of phase angle and phase lag correction for cyclic waveforms

• Beneficial when testing viscoelastic materials in which strain and stress are not always in phase

• Simple to ensure simultaneous peak torque and axial loading during biaxial fatigue

Frequency Sweep

• Perform frequency sweeps within a single step in WaveMatrix to study frequency-dependent materials

• Ramp up or down in test frequency, choosing to take either linear or octave steps in frequency

• Option to use built-in hold back functions to ensure the peak waveform targets are met

• Ideal for use with DMA calculations, which are included with the 'Calculations Module'

• Compatible with all cyclic waveforms shapes and control modes, e.g. Position, Load and Strain

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