System Two Cascade Plus
Audio Test and Measurement System

Unmatched Performance
Turn on High Performance Testing with System Two Cascade Plus

Audio Precision's System Two Cascade Plus, a PC-controlled audio test and measurement system, is the newest generation of the company's award-winning System Two. Already the recognized worldwide standard for design and test of audio equipment, Cascade Plus brings the improved distortion and noise specifications required to test the latest advances in converter technology.

True Dual Domain architecture provides uncompromised performance for both analog and digital signals, and the DSP-based analysis techniques offer a wide array of high speed, precise measurements.

- **Unparalleled Precision**
- **PC-Control and Programmability**
- **Unparalleled Speed**
- **Comprehensive Digital Interface Testing**
- **Flexible Configuration Options**

System Two Cascade Plus. Proven, reliable, high performance from the industry's preeminent audio test and measurement company.
PC Control and Programmability: APWIN

APWIN is a comprehensive PC-based real-time interface for control and display of System Two Cascade Plus, and a development system for automated audio testing.

Operating on all Windows® Operating Systems, it provides a graphical user interface capable of generating a wide variety of test signals, displaying readings, graphs, and data tables, storing setups and test data, and comparing data to test limits.

The flexible panel-based architecture offers the configurability to address a wide range of uses from benchtop engineering to automated production test.

- APWIN includes advanced programming capabilities for complete control of the instrument and the user interface via OLE. The fully functioned BASIC programming language supports complex, branched test procedures as well as simpler step-by-step routines.
- APWIN conforms to the standards of Microsoft Windows®, allowing graphs and data to be directly pasted in applications like Word and Excel.
- Learn Mode provides a fast and convenient way to generate automated test procedures without any programming experience.
- The graphical dialog editor enables drag and drop design of custom user interfaces with seamless integration into the BASIC procedure editor.
- The complete OLE command structure is accessible to Visual Basic®, enabling the programmer to integrate System Two Cascade Plus with a wide variety of other equipment and applications.
- APWIN offers an IEEE-488 interface for compatibility with other automated test instruments.
Unparalleled Speed

System Two Cascade Plus offers an array of powerful, time-saving tools to speed your testing requirements.

Synchronous Multitone Testing provides response, distortion, noise, crosstalk, and phase measurements from a single sub-second acquisition. The program material-like multi-sinewave stimulus can be tailored to a wide variety of high speed testing applications, and the synchronous analysis provides the necessary selectivity to measure low frequencies and noise in the presence of signal.

The Fast RMS Detector speeds sine wave sweeps by making measurements in as little as one cycle of a sine wave. This can provide an order of magnitude improvement in speed over normal RMS measurements.

A sophisticated data settling algorithm allows the engineer to optimize the tradeoff between testing speed and measurement accuracy.

Individual settling parameters are stored for every available measurement.

The Dual-Channel Harmonic Distortion Analyzer can simultaneously measure the fundamental and up to four individual harmonics. Sweeps using this analyzer can rapidly characterize frequency or amplitude dependent distortion mechanisms.

Quasi-anechoic Measurements of transducers and acoustics using Maximum Length Sequence (MLS) noise signals produce impulse, frequency, and phase response graphs in less than a second.

Extensive Library of noise weighting and band-limiting filters allow noise measurements to virtually any international standard. User-defined software-implemented filters can be created and downloaded by a supplied utility.
Comprehensive Digital Interface Testing

Cascade Plus' Digital I/O capabilities combined with its Digital Signal Analyzer allow complete measurement and characterization of digital interface pulse streams.

All digital I/O capabilities are functional over the full range of sample rates from 8 kHz to over 200 kHz.

Jitter—Measure the peak or average jitter amplitude, view the jitter waveform, or display the jitter spectrum or a histogram of the jitter amplitude. Add jitter of various types and amplitudes to the generated pulse stream and measure the effect on the receiver and the resulting audio signal.

Eye Patterns are a triggered oscilloscope view of the minimum pulse stream amplitude vs. time, computed over thousands of data cells. The eye opening provides a quick check of signal amplitude, signal-to-noise ratio, rise and fall times, and jitter.

The introduction of impairments to the digital interface pulse stream allows evaluation of the susceptibility of receivers to sub-standard signals. Variable impairment capabilities include sample rate, pulse amplitude, pulse rise and fall times, long cable simulation, addition of normal mode noise or common mode signals, and controlled amounts of jitter.

Histograms display the probability distribution of pulse stream parameters like timing (jitter), amplitude, sample rate, and bit width.

The interface signal and the jitter waveform can be viewed either in the time domain (oscilloscope view) or the frequency domain (FFT spectrum).

Complete control and display of interface information including sample rate, amplitude, active data bits, error flags, and status bytes displayed in both hex and high-level English terminology.
SWR-2122 family of high performance signal switchers/multiplexers, and the DCX-127 DC/Ohms/low speed digital logic multifunction module. SMPTE/DIN, cm (tw-in tone or difference tone) and DIM/IM (dynamic/transient intermodulation distortion) standards. The W&F option measures analog wow and flutter to the IEC/DIN, NAB, JIS, and scrape flutter standards, weighted or unweighted. Three-year extended warranty (adds three more years to standard warranty in lieu of factory warranty). The GPIB option adds an IEEE-488 interface to the instrument. The SYS-2700 is a digital I/O only instrument that lacks the low-distortion analog I/O sections.

The APWIN/APIB interface is available in three different formats for use in ISA, PCI, or PCMCIA slots on the PC.

Three major internal analog options may be fitted to all instruments except the SYS-2700. The BUR option adds analog domain generation of burst sine waves with controllable burst duration, interval and amplitude between bursts. It also includes analog square waves to 20 kHz, and analog random and pseudorandom white and pink noise, and bandpass filtered pink noise.

The analog IMD option analyzes analog domain devices for intermodulation distortion to the SMPTE/CGI, CGI (tw-in tone or difference tone) and IDM/TIM (dynamic/transient intermodulation distortion) standards. The W&F option measures analog wow & flutter to the B/CGI, NAB, JIS, and scrape flutter standards, weighted or unweighted.

The GPIB option adds an IEEE-488 interface to the instrument. (APIB interface is still present but APIB PC interface card and APWIN software not included.)

The APWIN/APIB interface is available in three different formats for use in ISA, PCI, or PCMCIA slots on the PC.

Each instrument (except the 2700) can accept up to 7 analog filter cards, selectable from a large assortment of low pass, bandpass, and psophometric weighting filters. Other external accessories include the Programmable Serial Interface Adapter (PSIA) for connecting to devices that use non-standard serial interfaces, the SWR-2122 family of high performance signal switchers/multiplexers, and the DCX-127 DC/Ohms/low speed digital logic multifunction module.