Power of real-time multi-channel analysis packed into

Compact WCA®

AD-3651

Noise & vibration analyzer, from in-vehicle order tracking to MIMO analysis

- Compact-True ISO A4 Size (210 x 297mm)
- 24-bit ADC
- Dynamic Range 100dB
- Real-Time Octave Analysis
- Multi Tacho Inputs
- Throughput Acquisition to Disk (standard)
- Multi-Input Multi-Output (MIMO) Analysis (standard)
- Powered by DC, AC, or Backup Battery

User Interface with Professional Performance

User-friendly GUI based on the field-proven WCA series, with greater ease of operation. A workflow-orientated menu will help the operator reduce the time for system setup and boost testing productivity.

## Powerful Analysis Software

Multi-Analysis Software WCA Pro

WCA Pro, the base software for Compact WCA, has user interface of Windows operability. WCA Pro provides real-time FFT analysis for noise & vibration testing. Optional licenses for integrating real-time octave analysis and tracking analysis are available. The system comes standard with throughput acquisition, allowing continuous recording of time history data to disk and repeated playback analyses. Off-line playback analysis with a standalone PC is also possible (option).
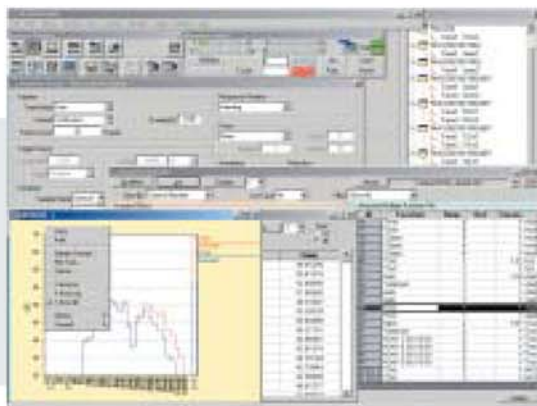
WCA Pro Integral Menus

FFT Analysis / MIMO Analysis

The testing efficiency of real-time multi-channel FFT analysis is ensured by ease of operation and well designed Compact WCA data management. A variety of post-processing tools are also available. A signal generator for 1 or 2 channels (up to 4 channels in a 32-ch system) is optionally available. The standard system includes MIMO (Multi-Input Multi-Output) analysis, which calculates multiple structural responses caused by multiple excitation forces.
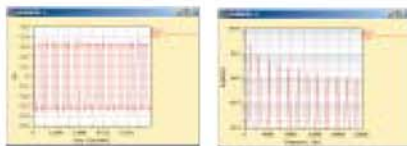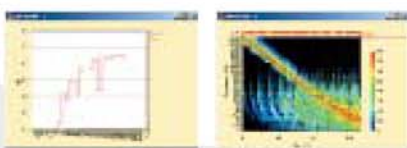
Time   Spectrum

Real-Time Octave Analysis

1/1, 1/3, 1/6 and 1/12 octave analyses are supported. Simultaneous measurements with FFT analysis are possible.
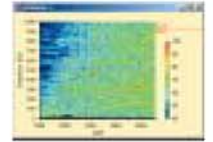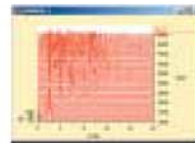
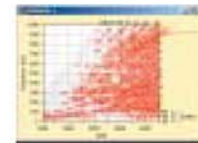1/3 Octave   1/3 Octave Map

Tracking Analysis

A wide range of analyses, such as order ratio analysis, RPM tracking, time tracking, octave tracking, phase tracking, Campbell plot, are supported. Multi tacho analysis is also available.

Color Spectrogram

3D Map   Campbell   2D tracking

Flexible Menu Customization / Routine Automation

COM support capability enables complete control of the Compact WCA system with external application software such as Microsoft Excel. Customized menu design and automated routine processing are possible.

Throughput to Disk

Time history data can be recorded on the hard disk of the PC for playback analyses. Off-line analysis on a standalone PC is also available with off-line license. The recorded throughput data can be exported in WAV format.

Impressive performance in a compact p

Compact Front-end of True ISO A4 Size (210 x 297mm)

Configuration with up to 16 channels housed in an A4-sized single front-end hardware. Use anywhere; on-board vehicles, in the field or in the lab, using DC or AC power both available with optional battery backup to protect data loss during power interruptions.

Scalable and Flexible

The Compact WCA system is scalable from 4, 8 to 16 channels in a single A4 size front-end. Expansion to a 32-ch configuration is obtained by a synchronized connection of two 16-channel front-ends. Flexibility is provided to allow two separate mainframes with 4, 8, or 16 channels to be operated as a single 8, 16, or 32 channel system, and vice versa, by synchronizing the dual mainframes. The front-end hardware is connected to a PC via LAN (100Base-T).
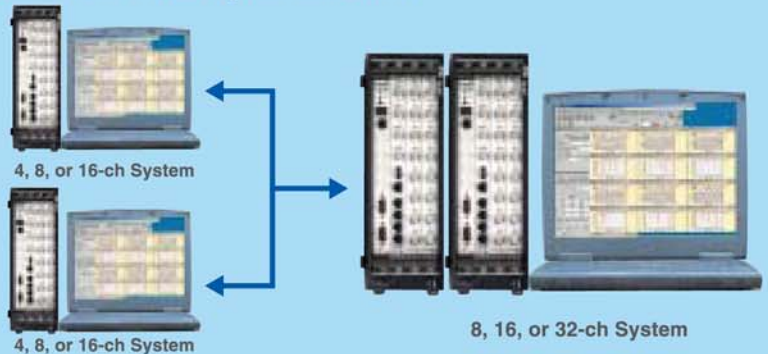
System Configurations

■ Single Front-end

4, 8, or 16-ch System

■ Dual Front-ends Synchronization

4, 8, or 16-ch System

4, 8, or 16-ch System

8, 16, or 32-ch System

Data Integrity and Compatibility

Compact WCA saves and recalls data in an MFU file format that integrates multiple collected functions and facilitates the operator's data handling. Complete data compatibility with the WCAonPC / AD-3600 series is ensured by use of the same MFU file format. Thus all prior analysis data remains upward compatible with Compact WCA. In addition, a compatible user interface eliminates the need for additional training of WCAonPC / AD-3600 users.

package ——— Compact WCA ®

▌Input Section

Number of Inputs	4, 8, 16, 32 (32 by synchronized dual front-end connection)
Input Impedance	1MΩ
Input Coupling	AC, DC, ICP
Input Range	-20dBVrms to +20dBVrms
Trigger Source	Input Channel, External Input (Optional), SG (Optional)

▌Analysis Section

Frame Size	64, 128, 256, 512, 1024, 2048, 4096, 8192, 16384, 32768, 65536
Frequency Range	1Hz to 40kHz
Real-time Analysis Frequency	20kHz or higher on 16 channels (when a suitable PC is used)
A/D Converter	24 bits
Dynamic Range	100dB (Typical)

▌Analytical Functions

Time Function, Time Averaging Function, Spectrum, Auto-Power Spectrum, Complex Spectrum, Energy Spectrum Density Function, Power Spectrum Density Function, Cross Spectrum, Phase Spectrum, Frequency Response Function (H1,H2,H3,Hv), Ordinary FRF, Coherence Function, Multiple Coherence Function, Partial Coherence Function, 1/1,1/3,1/6,1/12 Octave

▌Display

Plot Window	Max. 16 windows for simultaneous display
Overlaying	Max. 8 traces (2D display)
Display Scaling	Auto/fixed scale, X-axis linear/log, Y-axis linear/log/dB, Z-axis linear/log/dB
Format	2D display (Amplitude, Bode plot, Nyquist plot, Co-Quad plot, Orbit) 3D display (Map, Campbell plot, Color spectrogram)

▌Block Arithmetic Functions

+, -, *, /, Complex conjugate number, Discrete fourier transform, Fast fourier transform, Inverse discrete fourier transform, Inverse fast fourier transform, Time-domain differentiation/integration, Frequency-domain differentiation/integration, Trigonometric function, Hilbert, Inverse Hilbert, Exponent, Logarithm, Natural logarithm, Amplitude, Phase, Square root, Envelope, Averaging, Acoustic weighting, Smoothing, Interpolation, 1/1; 1/3; 1/6; 1/12 octave

▌Data Save and Recall

Analyzer conditions, Plot conditions, MFU files

▌Print Output

Plot window, List display window

▌Copy and Paste

Plot window (Enhanced Metafile), Data list

▌Cursor

2D Cursor	Single cursor (X, Y cursor, Peak fit, Damping factor, Harmonic, THD) Dual Cursor (Band cursor, Delta cursor, Overall, Max/min values)
3D Cursor	X, Y cursor (Cursor cut in 2D slice possible)

▌Data Management (Function Storage)

MFU file read-in/read-out, Plot (graphic) display, Data value list display (dB/Lin), Data value editing, Data attributes editing (channel label, coordinates, etc)

▌Order Tracking (Optional)

Processing	Constant ratio RPM tracking, Constant band RPM tracking, Order tracking analysis band width (frequency/order), Octave band tracking (1/1, 1/3, octave), Phase tracking, Cross spectrum, Transfer function, Spectrum map, Campbell plot, Color spectrogram
Max. Analysis Order	1600 degrees (at internal sampling)
Analysis Order Range	6.25,12.5,25,50,100,200,400 degrees
3D Cursor	Spectrum map, Campbell plot, 2D slice from color spectrogram (order, frequency, record)

▌Real-time Octave Analysis (Optional)

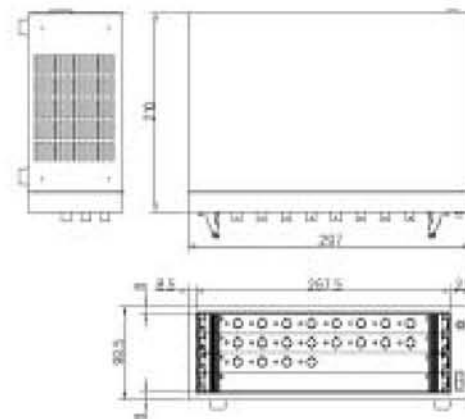|	
Analysis Function	1/1, 1/3, 1/6, 1/12 octave
Filter Method	Digital filter
Standards	1/1oct (ANSI S1.11, JIS C1513 Type II) 1/3oct (ANSI S1.11, JIS C1513 Type III)
Number of Bands	1/1oct 16Hz to 16kHz (11 bands) 1/3oct 12.5Hz to 20kHz (33 bands) 1/6oct 10.6Hz to 18.8kHz (66 bands) 1/12oct 10.3Hz to 19.4kHz (132 bands)
Averaging	No averaging, Linear, Exponential, Peak
Time Weighting	0.001 to 1000 seconds

▌Signal Generator (Optional)

Number of Outputs	1 to 4 (3 to 4 by synchronized dual front-end connection)
Output Impedance	50Ω
Signal Output Voltage	±2.5V max.
DA Converter	24 bits
Signal Frequency	40 kHz max.
Waveforms	Sine wave, Pure random
Waveform Attributes	Burst control, Lump control, Sweep control

▌Dimensions/Weight

External Dimensions	100(H) x 297 (W) x 210 (D) mm (protrusions excluded)
Weight	3 to 5kg
Power Supply	11 to 17V DC, AC adapter, Backup battery (Optional)

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Specifications subject to change without notice

(Unit: mm, Protrusions excluded)

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