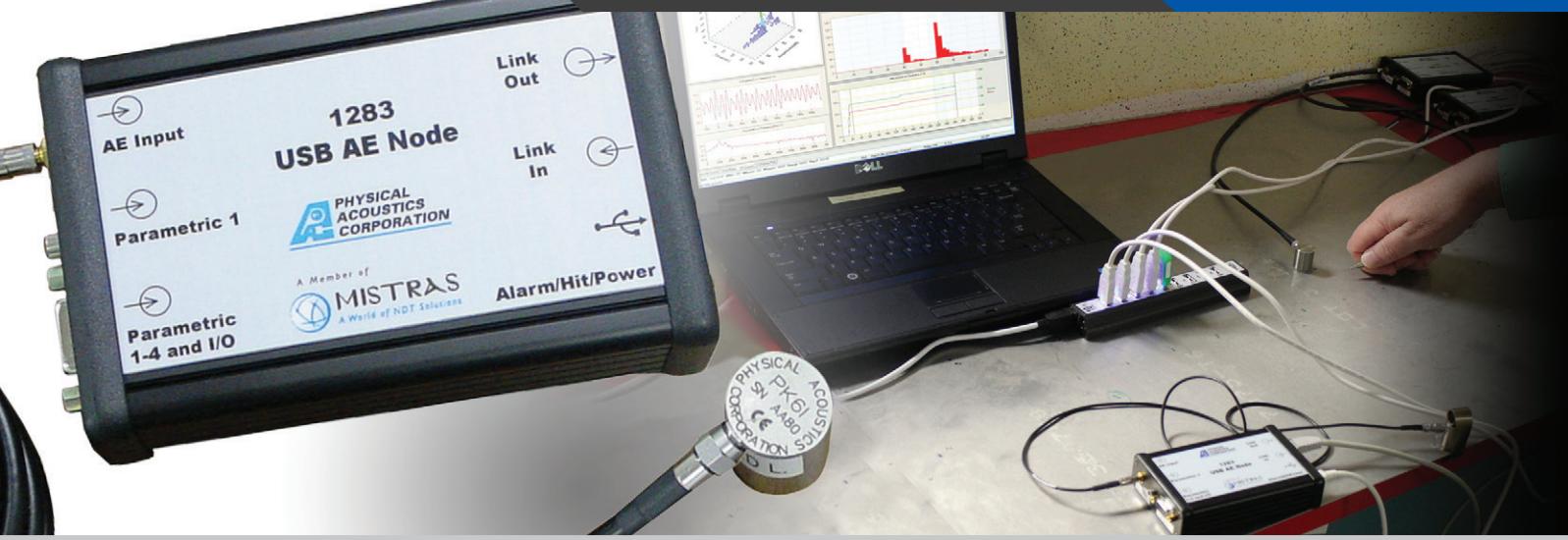
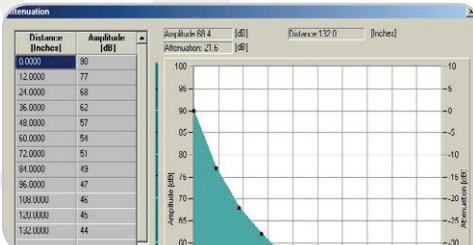
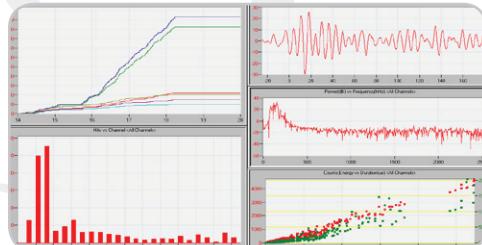


PRODUCTS & SYSTEMS DIVISION
PRODUCT BULLETIN


USB AE Node



The USB AE Node is a full-featured, low-cost Acoustic Emission System that plugs conveniently into the USB port of a user's PC or laptop. The AE System has all the capabilities, features and performance users can expect from their larger Acoustic Emission systems combined with portability and accessibility that USB connectivity provides. The system can be expanded to 4 channels (synchronized).

EASY LAPTOP & PC CONNECTION; LOW-COST AE SYSTEM; FREE LABVIEW/C++ DRIVER

The USB AE Node is a single channel Acoustic Emission (AE) Digital Signal Processor with full AE hit-and-time-based features, including waveforms. Through the USB Connector, the AE Node is easily interfaced to a Notebook or PC running Windows 7, 8 and XP™ and Physical Acoustics Corporation's (PAC) well known AEwin™ or AEwin Lite™. The USB AE nodes can be connected to available USB ports of a notebook which also supplies the power needed to operate the USB AE Node.

The AE Node can accept single ended or differential sensors amplified by an internal low noise preamplifier. Additionally, PK Series low power integral preamp sensors can be used for long distance connections.

AEWIN FOR USB AE NODE SOFTWARE

Extracted Hit Features:

- Time of first threshold crossing
- Peak amplitude
- Energy
- Envelope strength
- Duration
- Rise time
- Counts
- True Energy
- RMS
- ASL
- Counts to peak
- Parametrics (1-2)

Time-Based Features:

- Parametrics (1-4)
- ASL
- RMS
- True Energy
- Waveform Collection

FEATURES

- Powered and operated through USB Port
- Rugged surface mount (SMT) construction
- Built-in internal preamplifier and power for external preamplifiers
- 18 bit resolution, 20MHz sampling frequency
- With analog and programmable digital filters
- Waveform and Location Options
- Free LabView/C++ driver available for customer program development

SPECIFICATIONS

AE Input:1 Channel/USB node (4 nodes/system)
Sampling Frequency:20 MHz
AE Digitizing:18 bits
Parametric Inputs:CH 1, +/- 10V, 16 bits CH 2-4, 0-10V, 16 bits
Digital I/O:2
Preamplifier:Built-in
OS:Win XP, VISTA, Win 7, and Win 8
Case Size:L 5.25" x W 3.25" x H 1.25" (133 x 83 x 32mm)
Weight:0.5 lbs. (0.23kg)
Power Requirements:USB Powered (5V) < 100 mA/running
Power Consumption:< 0.5 watt

For more information:

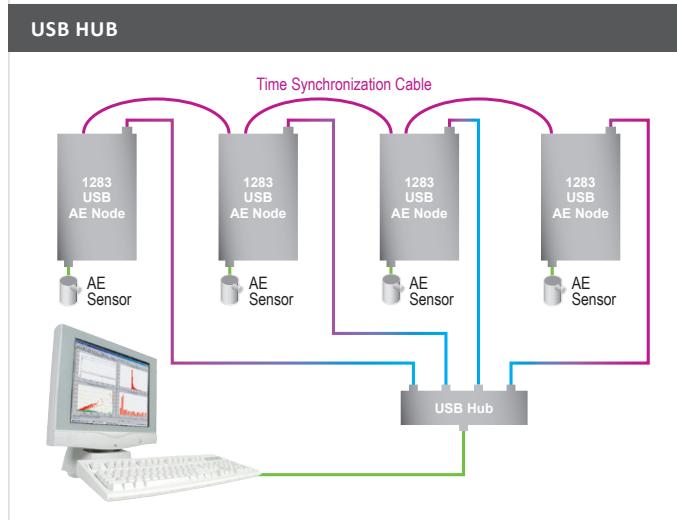
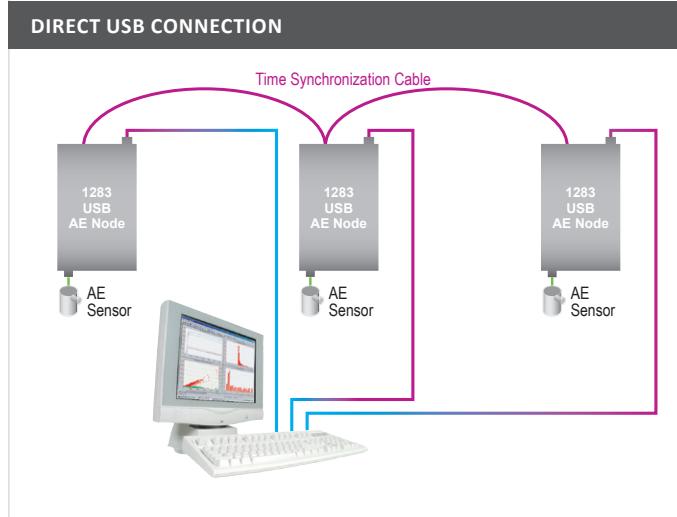
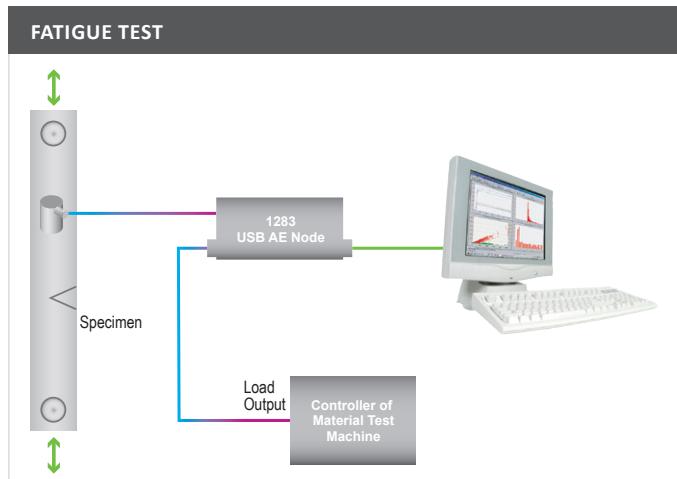
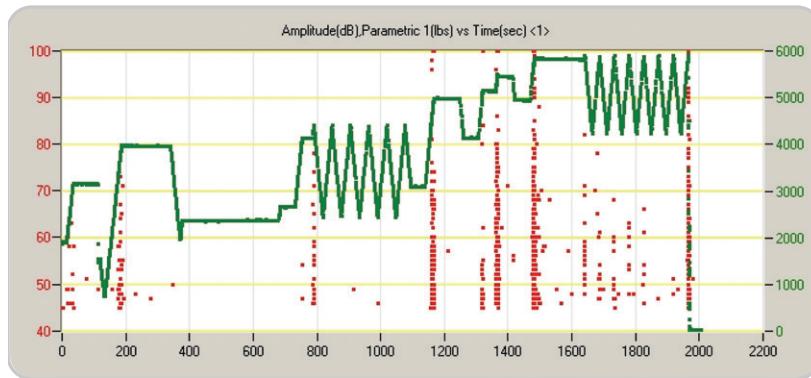
Please call 1-609-716-4000 or visit us on the web at www.mistrasgroup.com.

Application of USB AE Node to Fatigue and Tension/Compression Tests

Fatigue and tension/compression tests have been widely conducted in industries, universities and research institutes. Although strain gauge is widely used in the test to monitor strain or stress change of materials, initial cracks or internal structure failure is hardly identified with strain monitoring or visual inspection. Defects might have already been generated in the tested materials well before they are visually observed.

Although it is well known that acoustic emission (AE) technology can be used to monitor initiation of cracks or internal defects, applications of AE technology to fatigue and tension/compression tests was limited because of the cost and complexity of an AE system. Now, with a newly innovated USB AE node, a single channel AE system is just palm size. It can be readily plugged into a USB port of a laptop or a desktop PC to perform AE test without using external power and preamplifier. AE test can be as convenient as a mouse click.

Cracks or internal defects can be identified soon after they are initiated. In addition, a load sensor or cycle counter can also be connected to a parametric channel of the USB AE node (Figure 1) to make historical trending record in conjunction with the AE so that the load magnitude, the testing time or fatigue cycle of crack initiation can be recorded in the same time and displayed in the same graph (See graph below). Free LabView/C++ driver is available for customers to develop their own application programs.



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