



AED-2000M Acoustic Emission Multiplexer

Applications:

- Leak Detection
 - Piping
 - Valves
 - Heat Exchangers
 - Feedwater Heaters
 - Pressure Vessels
 - Boilers
- Cavitation detection in pumps and piping
- Machinery health monitoring (rotating equipment)
- Partial discharge detection in transformers
- Crack detection in piping, pressure vessels, concrete.
- Insect pest detection in grain, wood structures
- Geologic structures—slope stability, earthen dams, rocks



AED-2000M Acoustic Emission Multiplexer

Features:

- 32-channel multiplexed input
- 1 kHz to 1 MHz bandwidth
- Built-in PC-104 computer
 - Hard drive data storage
 - Windows XP software
 - Real-time data acquisition and graphics displays
 - Ethernet ports (1Gb, 10/100 Mb)
 - 4 USB ports
- Six parametric inputs
- Three alarm outputs (relay closures, voltage, audio)
- RMS and Thresholded Events/Counts signal processing
- Up to four Channel Groups
- Flexible gain/threshold by channel
- LCD status display



AED-2000M Acoustic Emission Multiplexer

AED-2000M Rear Panel

- Alarm outputs— Three relay closures, Three 5V CMOS voltage
- Six parametric inputs—Four 4-20 mA inputs, two voltage inputs (scaleable +/- 10 V)
- Hold input (5 V)
- Two ethernet ports—1 Gb & 10/100 Mb
- Four USB 2.0 ports
- VGA monitor display connector
- Two COM ports
- Power module—110-230V, 50-60 Hz



AED-2000M Acoustic Emission Multiplexer

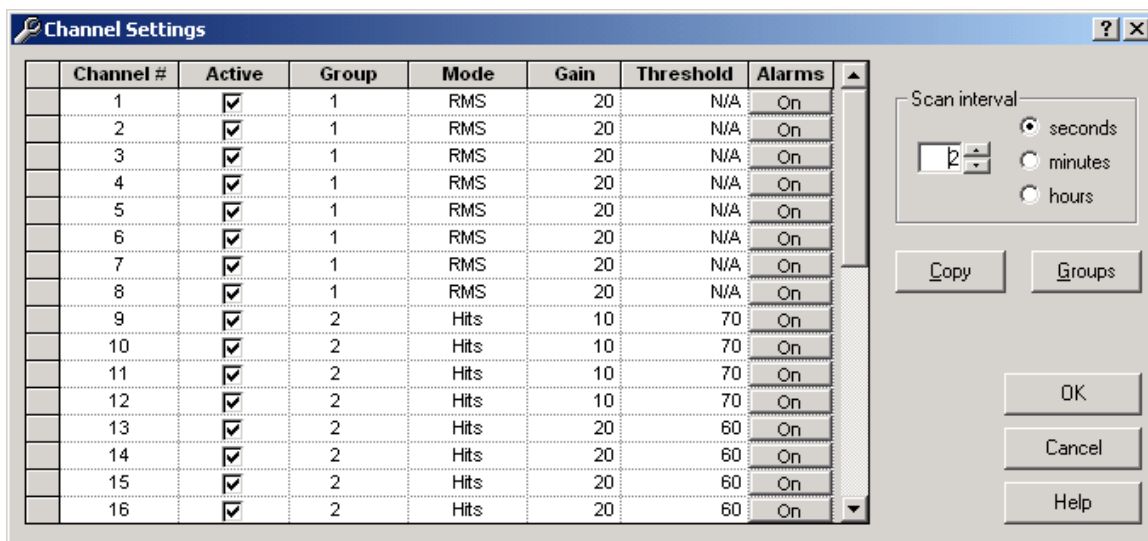
Shippable rack-mount configuration with
pull out keyboard/monitor

AED-2000M Acoustic Emission Multiplexer

Software Features

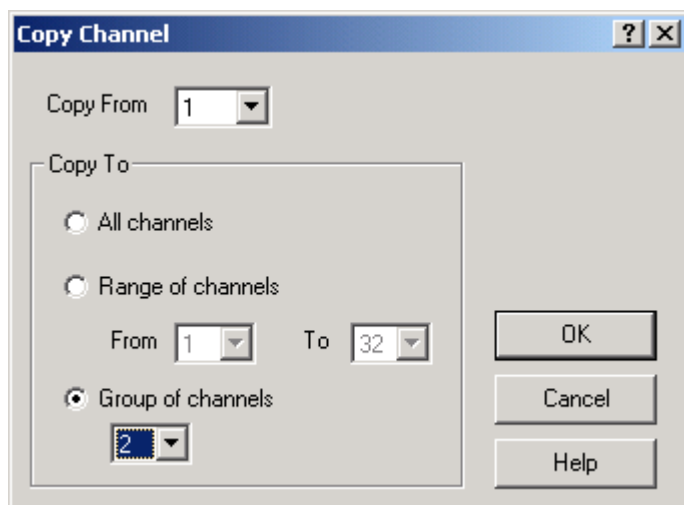
- Windows XP Operating System
- Flexible channel selections
 - Selectable multiplexing period (2 secs min)
 - One to four channel groups
 - Hits/Counts or RMS primary signal processing by group
 - Independent gain and threshold by channel
- Real time graphics
 - Time-based trend plots by channel
 - Group bar graphs by channel
 - Parametric trend plots
- Flexible alarm conditions
 - 3 alarm lines
 - Hits, counts, or RMS alarm conditions
- File controls
 - Day, week, month auto file restart
 - Selectable retention time on disk
 - Message log file with data
 - ASCII data files

AED-2000M Software Features



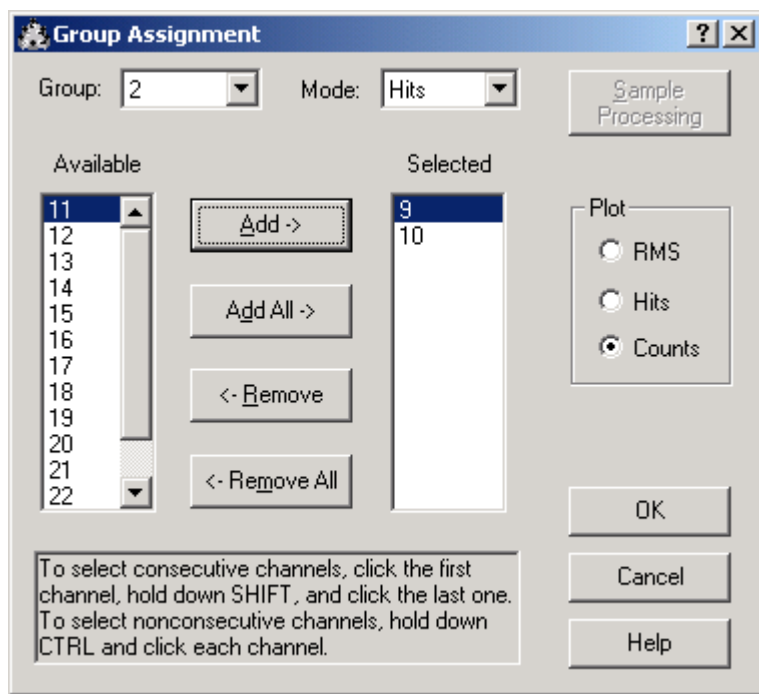
The Channel Settings dialog box displays a table of 16 channels with columns for Channel #, Active, Group, Mode, Gain, Threshold, and Alarms. The 'Active' column has checkboxes, 'Group' has dropdowns, 'Mode' has dropdowns, 'Gain' has text boxes, 'Threshold' has text boxes, and 'Alarms' has dropdowns. To the right, there is a 'Scan interval' section with radio buttons for seconds, minutes, and hours, and a numeric input field. Below this are buttons for Copy, Groups, OK, Cancel, and Help.

| Channel # | Active | Group | Mode | Gain | Threshold | Alarms |
|-----------|-------------------------------------|-------|------|------|-----------|--------|
| 1 | <input checked="" type="checkbox"/> | 1 | RMS | 20 | N/A | On |
| 2 | <input checked="" type="checkbox"/> | 1 | RMS | 20 | N/A | On |
| 3 | <input checked="" type="checkbox"/> | 1 | RMS | 20 | N/A | On |
| 4 | <input checked="" type="checkbox"/> | 1 | RMS | 20 | N/A | On |
| 5 | <input checked="" type="checkbox"/> | 1 | RMS | 20 | N/A | On |
| 6 | <input checked="" type="checkbox"/> | 1 | RMS | 20 | N/A | On |
| 7 | <input checked="" type="checkbox"/> | 1 | RMS | 20 | N/A | On |
| 8 | <input checked="" type="checkbox"/> | 1 | RMS | 20 | N/A | On |
| 9 | <input checked="" type="checkbox"/> | 2 | Hits | 10 | 70 | On |
| 10 | <input checked="" type="checkbox"/> | 2 | Hits | 10 | 70 | On |
| 11 | <input checked="" type="checkbox"/> | 2 | Hits | 10 | 70 | On |
| 12 | <input checked="" type="checkbox"/> | 2 | Hits | 10 | 70 | On |
| 13 | <input checked="" type="checkbox"/> | 2 | Hits | 20 | 60 | On |
| 14 | <input checked="" type="checkbox"/> | 2 | Hits | 20 | 60 | On |
| 15 | <input checked="" type="checkbox"/> | 2 | Hits | 20 | 60 | On |
| 16 | <input checked="" type="checkbox"/> | 2 | Hits | 20 | 60 | On |



The Copy Channel dialog box allows copying settings from one channel to another. It features a 'Copy From' dropdown set to 1, a 'Copy To' section with radio buttons for 'All channels', 'Range of channels', and 'Group of channels'. The 'Range of channels' option has 'From' and 'To' dropdowns set to 1 and 32. The 'Group of channels' option has a dropdown set to 2. Buttons for OK, Cancel, and Help are at the bottom.

- Easily configure each channel for
 - signal processing
 - group assignment
 - alarms
- Copy channel setups quickly



The Group Assignment dialog box shows the configuration for a specific group. The 'Group' dropdown is set to 2 and the 'Mode' dropdown is set to Hits. There are 'Sample Processing' and 'Plot' buttons. The 'Plot' section has radio buttons for RMS, Hits, and Counts. Below are two lists: 'Available' (channels 11-22) and 'Selected' (channels 9, 10). Buttons for 'Add >', 'Add All >', '<- Remove', and '<- Remove All' are between the lists. At the bottom are OK, Cancel, and Help buttons. A text box at the bottom left provides instructions on how to select channels.

To select consecutive channels, click the first channel, hold down SHIFT, and click the last one. To select nonconsecutive channels, hold down CTRL and click each channel.

AED-2000M Software Features

Acoustic Emission Detector (AED-2000M)

File View Setup Chart Operation Window Help

Data Logger

| Date | Time | Chan | Mode | RMS | Hits/ Min RMS | Counts/ Max RMS | Total Hits | Total Counts | Param1 | Param2 |
|-----------|------------|------|------|-------|------------------|--------------------|---------------|-----------------|--------|--------|
| 2/20/2007 | 8:10:32 AM | 25 | Hits | 8.03 | 6,575 | 51,575 | 6,575 | 51,575 | 2,258 | 1,124 |
| 2/20/2007 | 8:10:35 AM | 26 | Hits | 8.38 | 6,994 | 53,794 | 6,994 | 53,794 | 2,838 | 2,637 |
| 2/20/2007 | 8:10:38 AM | 27 | Hits | 8.73 | 7,425 | 56,025 | 7,425 | 56,025 | 3,324 | 3,265 |
| 2/20/2007 | 8:10:41 AM | 28 | Hits | 9.08 | 7,868 | 58,268 | 7,868 | 58,268 | 2,729 | 3,457 |
| 2/20/2007 | 8:10:44 AM | 29 | Hits | 9.43 | 8,323 | 60,523 | 8,323 | 60,523 | 3,275 | 1,557 |
| 2/20/2007 | 8:10:47 AM | 30 | Hits | 9.78 | 8,790 | 62,790 | 8,790 | 62,790 | 2,885 | 3,797 |
| 2/20/2007 | 8:10:50 AM | 31 | Hits | 10.13 | 9,269 | 65,069 | 9,269 | 65,069 | 2,682 | 1,802 |
| 2/20/2007 | 8:10:53 AM | 32 | Hits | 10.48 | 9,760 | 67,360 | 9,760 | 67,360 | 1,995 | 2,584 |
| 2/20/2007 | 8:10:56 AM | 1 | RMS | 1.13 | 1.03 | 1.23 | | | 3,282 | 3,000 |
| 2/20/2007 | 8:10:59 AM | 2 | RMS | 1.38 | 1.18 | 1.58 | | | 4,490 | 1,079 |
| 2/20/2007 | 8:11:02 AM | 3 | RMS | 0.63 | 0.33 | 0.93 | | | 1,135 | 1,379 |
| 2/20/2007 | 8:11:05 AM | 4 | RMS | 0.88 | 0.48 | 1.28 | | | 3,938 | 4,553 |
| 2/20/2007 | 8:11:08 AM | 5 | RMS | 1.13 | 0.63 | 1.63 | | | 2,512 | 2,075 |
| 2/20/2007 | 8:11:11 AM | 6 | RMS | 1.38 | 0.78 | 1.98 | | | 1,688 | 2,264 |
| 2/20/2007 | 8:11:14 AM | 7 | RMS | 1.63 | 0.93 | 2.33 | | | 1,595 | 2,542 |
| 2/20/2007 | 8:11:17 AM | 8 | RMS | 1.88 | 1.08 | 2.68 | | | 3,991 | 2,955 |
| 2/20/2007 | 8:11:20 AM | 9 | Hits | 3.03 | 2,151 | 18,351 | 2,151 | 18,351 | 2,033 | 3,506 |
| 2/20/2007 | 8:11:23 AM | 10 | Hits | 3.38 | 2,450 | 20,450 | 2,450 | 20,450 | 3,723 | 2,630 |

Message Logger

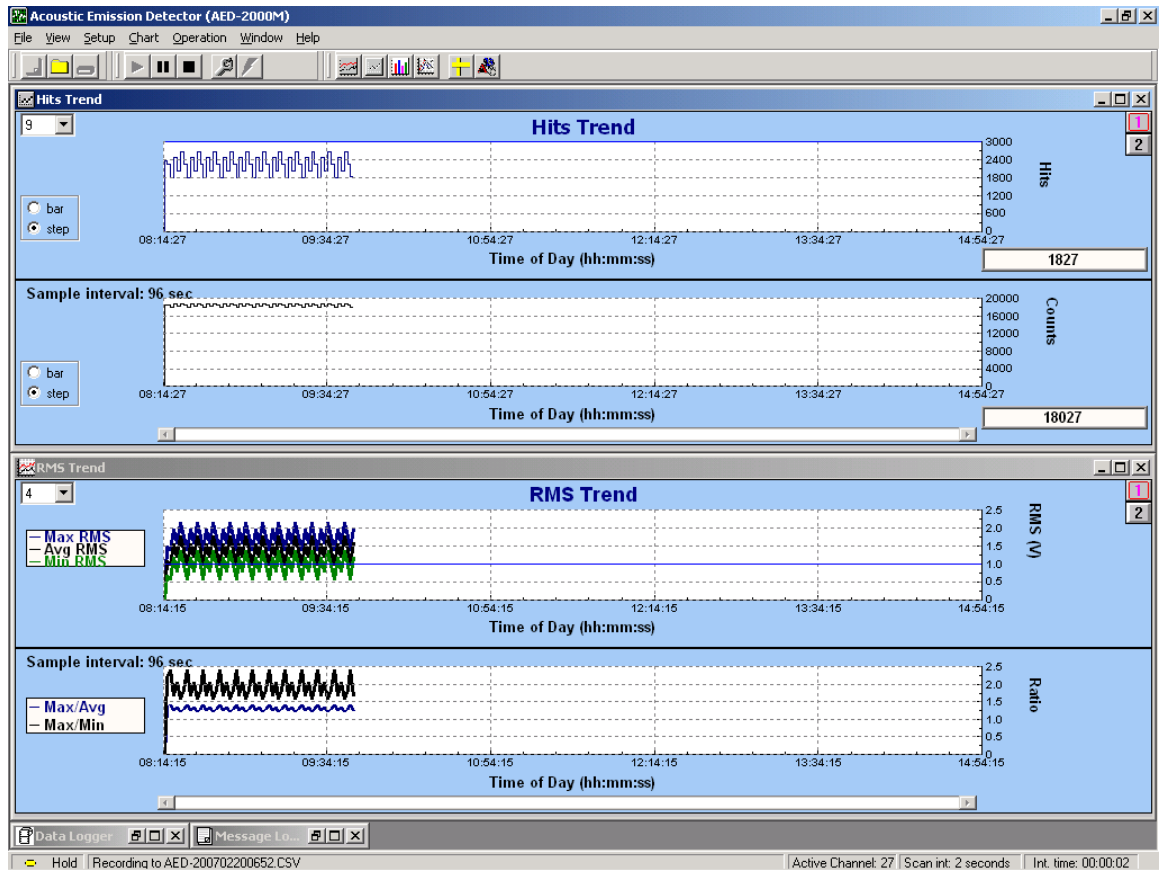
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2/20/2007 6:52:29 AM Channel 17 Mode=RMS Thresh(dB)=40 Instrument gain=40 Preamp gain=40 Total gain=80
2/20/2007 6:52:29 AM Channel 18 Mode=RMS Thresh(dB)=40 Instrument gain=40 Preamp gain=40 Total gain=80
2/20/2007 6:52:29 AM Channel 19 Mode=RMS Thresh(dB)=60 Instrument gain=20 Preamp gain=40 Total gain=60
2/20/2007 6:52:29 AM Channel 20 Mode=RMS Thresh(dB)=60 Instrument gain=20 Preamp gain=40 Total gain=60
2/20/2007 6:52:29 AM Channel 21 Mode=RMS Thresh(dB)=60 Instrument gain=20 Preamp gain=40 Total gain=60
2/20/2007 6:52:29 AM Channel 22 Mode=RMS Thresh(dB)=60 Instrument gain=20 Preamp gain=40 Total gain=60
2/20/2007 6:52:29 AM Channel 23 Mode=RMS Thresh(dB)=60 Instrument gain=20 Preamp gain=40 Total gain=60
2/20/2007 6:52:29 AM Channel 24 Mode=RMS Thresh(dB)=60 Instrument gain=20 Preamp gain=40 Total gain=60
2/20/2007 6:52:30 AM Channel 25 Mode=Hits Thresh(dB)=60 Instrument gain=20 Preamp gain=40 Total gain=60
2/20/2007 6:52:30 AM Channel 26 Mode=Hits Thresh(dB)=60 Instrument gain=20 Preamp gain=40 Total gain=60
2/20/2007 6:52:30 AM Channel 27 Mode=Hits Thresh(dB)=60 Instrument gain=20 Preamp gain=40 Total gain=60
2/20/2007 6:52:30 AM Channel 28 Mode=Hits Thresh(dB)=60 Instrument gain=20 Preamp gain=40 Total gain=60
2/20/2007 6:52:30 AM Channel 29 Mode=Hits Thresh(dB)=60 Instrument gain=20 Preamp gain=40 Total gain=60
2/20/2007 6:52:30 AM Channel 30 Mode=Hits Thresh(dB)=60 Instrument gain=20 Preamp gain=40 Total gain=60
2/20/2007 6:52:30 AM Channel 31 Mode=Hits Thresh(dB)=60 Instrument gain=20 Preamp gain=40 Total gain=60
2/20/2007 6:52:30 AM Channel 32 Mode=Hits Thresh(dB)=60 Instrument gain=20 Preamp gain=40 Total gain=60
2/20/2007 6:52:30 AM Group 1 Mode=RMS Sample processing= sample and store Plot=RMS Channels=1,2,3,4,5,6,7,8
2/20/2007 6:52:30 AM Group 2 Mode=Hits Sample processing= accumulate and store Plot=Counts Channels=9,10,11,12,13,14,15,16
2/20/2007 6:52:30 AM Group 3 Mode=RMS Sample processing= sample and store Plot=RMS Channels=17,18,19,20,21,22,23,24
2/20/2007 6:52:30 AM Group 4 Mode=Hits Sample processing= accumulate and store Plot=Hits Channels=25,26,27,28,29,30,31,32
2/20/2007 6:52:31 AM Hold on
    
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Hold Recording to AED-200702200652.CSV Active Channel: 11 Scan int: 2 seconds Int. time: 00:00:02

- Data logger window shows individual data samples as stored to file (ASCII format)
- Message logger file records all significant test details automatically

AED-2000M Software Features



- Real-time time-based trend plots
- Selectable by channel
- Hits mode
 - Hits, counts & Avg RMS
- RMS mode
 - RMS Min, Max, Avg
 - RMS Max/Avg ratio
 - RMS Max/Min ratio

AED-2000M Software Features



- Bar Chart Trend Graphics

- Independent by channel group and channel
- Selected signal processing (hits, counts, rms)
- Color selection of alarm condition