MISTRAS
A World of NDT Solutions
Products & Systems Division

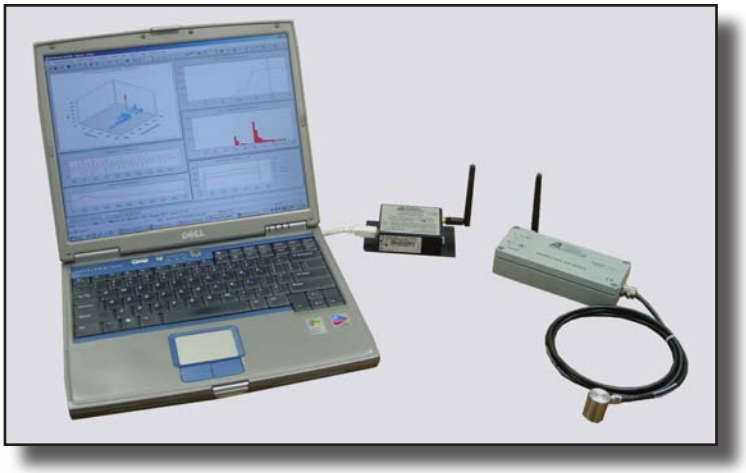
PHYSICAL ACOUSTICS CORPORATION

1282 Acoustic Emission Wireless Node & System

A simplified, cost effective wireless solution

MISTRAS Software & Systems has invested heavily into wireless technology for Acoustic Emission and is fully committed to ongoing development in growing and improving our technology and product line.

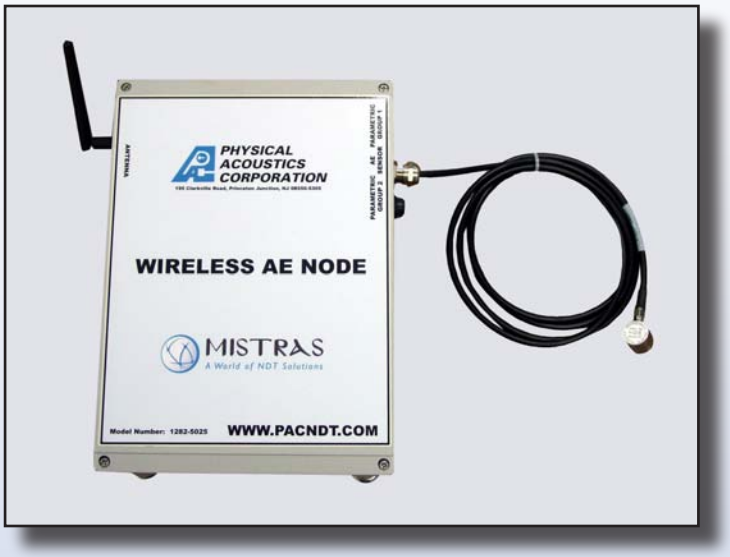
Our 1282, Low Power Wireless AE Node is a single channel Acoustic Emission system which communicates to a base station module without wires, using the Zigbee wireless transmission standard. The 1282 uses wireless communications to connect to the AE data collection and analysis computer. This offers the distinct advantage of simplifying and reducing installation costs compared to a wired system.



1282 Acoustic Emission Wireless Node & System

1282 with Sensor and USB Base Station

One 1282 wireless node is needed for each AE channel to be processed, while only one Wireless Base station module (and computer) is needed to communicate and control all the 1282 AE wireless nodes, with up to 8 (or more) nodes (or channels) for each base station. The AE Wireless nodes and base station use the ZigBee/IEEE 802.15.4 compliant wireless standard that satisfies the unique needs of low-cost, low-power, wireless sensor networks. The modules are easy-to-use, have an internal rechargeable battery for up to 72 hours of continuous operation, require minimal power for long term monitoring applications, and provide reliable delivery of AE data. *Its small form factor saves valuable space.*



1282 Wireless Node with Extended Battery Life

Each AE Wireless Node is a complete, AE, single, independent channel, micro-computer operated, AE system. A single AE sensor, is connected to the 1282 wireless AE node and attached to the structure being tested. The 1282 is rated for outdoor use, and wide temperature operation, so there are few environmental restrictions for its placement. The 1282 wireless AE node (and its antenna) is placed at a location where there will be a minimum of RF wave-path blockages between the 1282 and the base station unit.

The PAC Wireless Base Station module is placed in close enough proximity to be able to detect and communicate with each of the AE Wireless nodes. Typically this can be anywhere between 40 meters to 500 meters. The base station module is connected to a computer via the USB bus and the user can directly monitor and control a test at the AE base station computer.

1282 AE Wireless Node Specifications

Physical and Environmental Specifications

1282 Outdoor Case Dimensions:	6" (152 mm) x 2.5"(64 mm) x 1.4"(36 mm)
1282 Outdoor Case Rating:	NEMA-4, water resistant
1282 Weight:	0.9 lbs. (0.4 Kg) with outdoor case
Operating Temperature:	-40° - 158° F (-40° - 75° C)
Storage Temperature:	-40° - 185° F (-40° - 85° C)

Electrical Operating Specifications

Power Requirements:	4.5-18 volts DC
Power Consumption:	100 mW typical 400 mW High
Low Power mode: (AE hit, parametric wake up)	50 mW typical
Sleep Power mode: (Timer wake up)	10 mW typical

Zigbee Wireless Specifications

Wireless Transmission Standard:	Zigbee, (IEEE 804.15.4 compliant)
Typical Wireless Range:	40-100 meters (Standard Zigbee, 1-2 mW) 100–500 meters (High Power Zigbee, 50 mW)
Maximum number of channels per base station:	8
Interface Data Rate	115 Kbps
AE Data Sets rate:	200 Hits/sec. maximum communications rate

Zigbee Base Station Module

Dimensions:	4.5"(114 mm) x 2.75"(70 mm) x 1.125"(29 mm)
Weight:	5.25 oz. (150g)
Data Connection to Processing Computer:	USB
Power Supply:	USB Powered
Operating Temperature:	0 - 70° C

Analog Signal Processing

Preamplification	Internal 26 dB for passive AE sensors or optional Control for external PK-XXI low power Integral Preamp Sensors
AE System Bandwidth	1.0 kHz to 250 kHz
Dynamic Range:	> 55 dB (< 15 dBAE to 99 dBAE)
Noise: (min/max threshold)	< 20 dBAE /sensor (20-250 kHz)

Selectable or Programmable High & Low Pass Filters:

High Pass Filters:	1 kHz, 20 kHz or Plug-In
Low Pass Anti-alias Filters:	250 kHz or Plug-In
Plug-In Filter:	2 mm 6 pin connector with 1 digital control For Low, high or band pass

Digital Signal Processing

A/D Conversion Rate:	18 bit, up to 1.0 MSPS ADCs
Digital FIR Filter:	Digital Low Pass or Bandpass Filter
Standard Hit Based Features:	Time of Hit, Time to Peak, Peak Amplitude, Signal Strength, Duration, Rise Time, Counts, True Energy, RMS, ASL Parametric Input
Standard Time Based Features (TDD):	ASL, RMS Parametrics, Peak Amplitude, Energy Rate
ASL/RMS Time Constant:	50 mSec. To 0.5 Sec.

Parametric Inputs:

Analog Parametric Inputs:	8 Channel Parametric channel, 0-4 volt input range, 16 bit A/D conversion at Time Driven Data (TDD) rates up to 10 per second.
Analog Parametric Output:	2 channels, 16 bit, 0 - 4.00 volts
Temperature Parametric:	On board, internal temp sensor +/- 3 degrees C

MISTRAS Software & Systems, is a team of skilled researchers, engineers, technicians and manufacturing personnel dedicated to the development on practical and cost saving solutions to your challenging inspection needs.

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