

**Lower maintenance
cost and
increasing yield**



Acoustic emission measuring chain

For high temperatures, rugged and hazardous environments, leakage monitoring, plastic deformation, crack detection down to particle size determination ...



Rugged, watertight and high temperature Acoustic Emission Sensor 8152C connected to the modular 5125C coupler.

A measuring chain configuration for each acoustic emission application

Acoustic Emission (AE) measuring chains are especially well suited for measuring surface acoustic waves above 50 kHz on components, structures or systems. AE results from various events including flow perturbation or cavitation, leaks, plastic deformation of materials, crack formation, fracturing, friction or fatigue.

High frequency acoustic emission solutions

Kistler AE measuring chains have been used in a wide variety of applications for many years. Among them is non-destructive testing and permanent online monitoring of continuous processes such as joining operations, cutting processes and pipe/valve leakage.

High temperature and hazardous environments

Temperatures up to 165° C (330° F) are often encountered in applications such as power generation monitoring. In addition, ATEX certifications are compulsory to work in hazardous environments where explosive gases and dust are always present. Such as in Petro-Chemical industries, these measuring chains can be used to detect leaks in piping, valve seal failure, flow turbulence or even the monitoring of coal particle size distribution in coal power plants.

Rotating machinery, pressure vessels or flow turbulence monitoring

The AE measuring chain is ideal for Industrial monitoring and R&D applications. Industries include Aerospace, Automotive,

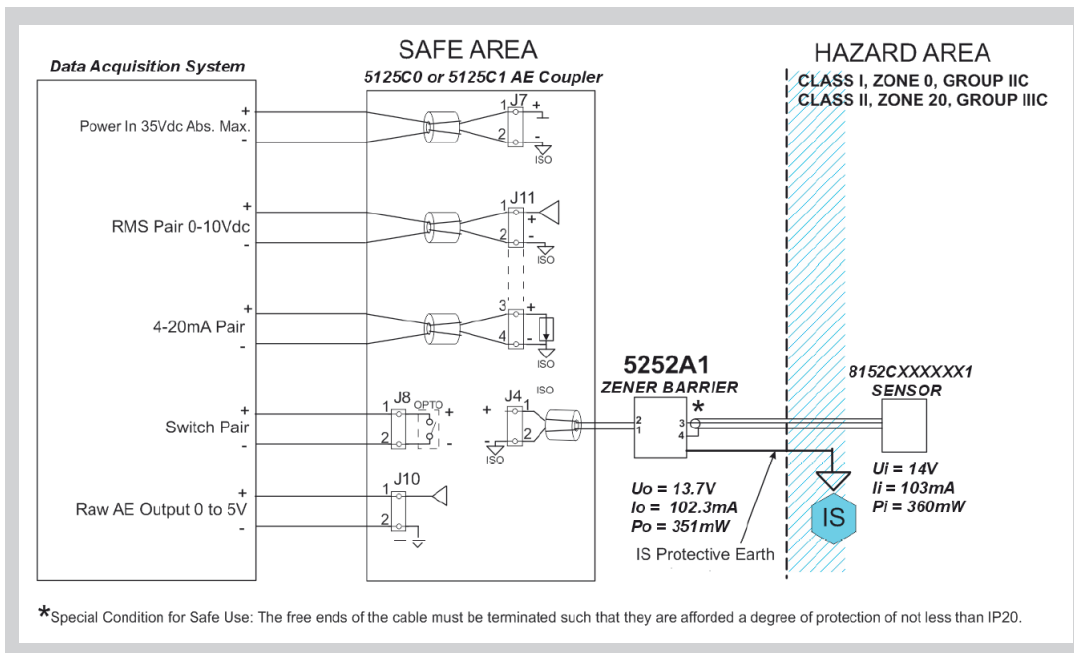
Petrochemical and Power Generation where there is a need to monitor bearing based machinery, pressure vessels or flow turbulence with high frequency acoustic signatures. Unlike the usage of vibration sensors, AE measurements provide the means to inherently reject high vibratory signals from the environment to detect fatigue and failure events of interest.

An IEPE sensor suited for industrial environment

The high temperature operation up to 165 °C (330 °F), a case isolated design as well as braided protective conduit option allow

Key benefits of the products

- Early failure detection and preventative maintenance of rotating machinery
- Leak detection and localization
- Detect material stress and fatigue
- Monitoring of complex systems and operation in high vibratory environments
- Conforming to CE Standard, ATEX/CSA Zone 0 or ATEX/CSA Zone 2 versions available
- Long sensor lifetime thanks to a rugged Industrial design



Measuring Chain diagram in configuration with 8152C Sensor in Hazard Area Zone 0, Type 5125C Coupler in a Safe Area using Kistler 5252A Zener Barrier

for usage of the 8152C sensor in very harsh environments typical of Industrial Condition Monitoring. Its very dedicated design also makes it insensitive to electric and magnetic fields as well as vibratory environments. Last but not least unique center hole M6 or 1/4-28" bolt screw mounting or rugged magnetic clamp allow for a permanent and secure installation in such environments. The 8152C... also features an integral impedance converter which makes it compatible with IEPE Data Acquisition Systems.

ATEX/CSA Zone 0 or 2 certified measuring chain

Type 8152C and 5125C sensor can be provided with a Zone 0 or Zone 2 Certification option in Europe & North America. A specific Zener Barrier has been developed by Kistler to allow the full bandwidth of the real time Acoustic Emission signal to be used.

Output options and alarm switch

The AE-Piezotron Coupler, with built-in RMS converter and alarm switch, has been specially designed for the processing of high frequency sound emission signals from Kistler AE-Piezotron sensors. In the case of non ATEX versions, the unit is delivered with a gain set to x10, while the gain can be set with a jumper to x1 or x100 by the user depending on the signal amplitude. The amplifier has two series connected second order filters defaulted with a 50 kHz highpass filter and a 1 MHz low-pass

filter. The low-pass and high-pass filters can be modified by plugging in alternate filters. The integration time constant of the RMS converter can be freely selected by the user and a default value of 1.2 ms is delivered.

An alarm switch can be set with a potentiometer. The switching threshold set point can be monitored by monitoring the resistance at the 'Alarm Switch' output with a DMM. On a non ATEX Coupler, three analog output signals (Filtered Raw AE Out [0±5 Vpeak], RMS Out [0 ... 10 V or 4 ... 20 mA Out]), as well as a digital output signal (alarm switch), are available at the connectors.

Key features at a glance

- High sensitivity and wide frequency range 50 - 900 kHz
- High operating temperature range: -55 ... 165° C (-65 ... 330 °F)
- Inherent high-pass characteristic
- Insensitive to electric and magnetic fields
- Insensitive to vibratory environments
- Ground isolated: prevents ground loops
- 6 MHz Cut off frequency Zener Barrier for AE raw signal available

Kistler Group

Eulachstrasse 22
8408 Winterthur
Switzerland
Tel. +41 52 224 11 11

Kistler Group includes the Kistler Holding AG and
all its subsidiaries in Europe, Asia, Americas and Australia.

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www.kistler.com

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