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Transducers for acoustical impulse measurements

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The measurement of impulsive noise signals as for example from gunshots or airbag deployments requires special considerations when selecting transducer. The high frequency content in short impulses requires high bandwidth to correctly capture high rise times and small dimensions of the transducer to avoid diffraction. For high level impulses with very rapid rise time, the wide frequency range requires the use of preamplifiers with high slew rate capabilities and the capacitance and length of cables must be considered carefully. Slew rate limitations and bandwidth limitations can drastically change the peak value of an impulse. It is thus necessary to consider the whole measurement chain from transducer to AD-converter to ensure the correct measurement of the impulse.