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2.2. Metrological characteristics of sensors2.2.1. Systematic errors; 2.2.2. Random uncertainties; 2.2.3. Analyzing random errors and uncertainties; 2.2.3.1. Evaluating random uncertainties. Standard deviations. Variances; 2.2.3.2. Decisions about random uncertainties; 2.2.3.3. Reliability, accuracy, precision; 2.3. Sensor calibration; 2.3.1. Simple calibration; 2.3.2. Multiple calibration; 2.3.3. Linking international measurement systems; 2.4. Band pass and response time; 2.4.1. Harmonic response; 2.4.2. Response time; 2.5. Passive sensor conditioners
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3.1.5. Radiation exchanges between a source and a detector

Sommario/riassunto

This title presents the general principles of instrumentation processes. It explains the theoretical analysis of physical phenomena used by standard sensors and transducers to transform a physical value into an electrical signal. The pre-processing of these signals through electronic circuits - amplification, signal filtering and analog-to-digital conversion - is then detailed, in order to provide useful basic information. Attention is then given to general complex systems. Topics covered include instrumentation and measurement chains, sensor modeling, digital signal processing and diagnosti