

Basics of Metrology and Calibration

Metrology is the science of measurement, embracing both experimental and theoretical determinations at any level of uncertainty in any field of science and technology.” In essence, metrology is simply the theoretical and practical use of the science of measurement.

Metrology can be used for many different functions, depending on multiple variables including the purpose of the study or project. Commonly, the concept of metrology is utilized to qualify, verify and validate test data.

Calibration is basically divided into three, based on the system relationship under **calibration**. Transducer **calibration** which focuses on the transducer input-output relationship. Data system **calibration** which simulates or models the input of the entire measurement system. Physical end-to-end **calibration**.

The goal of **calibration** is to minimise any measurement uncertainty by ensuring the accuracy of test equipment. **Calibration** quantifies and controls errors or uncertainties within measurement processes to an acceptable level.

Calibration Types

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- Data system **calibration** which simulates or models the input of the entire measurement system.
- Physical end-to-end **calibration**. ...
- 2 Data system **calibration**. ...
- 3 Physical end-to-end **calibration**

A **calibration** indicates the error of the instrument and compensates for any lack of trueness by applying a correction. ... A **verification** indicates that the measurement error is smaller than a so called maximum permissible error.

The difference between values indicated by an instrument and those that are actual. Normally, a correction card is placed next to the instrument indicating the instrument **error**. Also called **calibration error**.