

5.3 Characteristics of Transducer

Accuracy: It is defined as the closeness with which the reading approaches an accepted standard value or ideal value or true value, of the variable being measured.

Ruggedness: The transducer should be mechanically rugged to withstand overloads. It should have overload protection.

Linearity: The output of the transducer should be linearly proportional to the input quantity under measurement. It should have linear input - output characteristic. –

Repeatability: The output of the transducer must be exactly the same, under same environmental conditions, when the same quantity is applied at the input repeatedly.

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High Stability and Reliability: The output of the transducer should be highly stable and reliable so that there will be minimum error in measurement. The output must remain unaffected by environmental conditions such as change in temperature, pressure, etc.

Sensitivity: The sensitivity of the electrical transducer is defined as the electrical output obtained per unit change in the physical parameter of the input quantity. For example, for a transducer used for temperature measurement, sensitivity will be expressed in $mV/^{\circ}C$. A high sensitivity is always desirable for a given transducer.

Dynamic Range: For a transducer, the operating range should be wide, so that it can be used over a wide range of measurement conditions.

Size: The transducer should have smallest possible size and shape with minimal weight and volume. This will make the measurement system very compact.

Speed of Response: It is the rapidity with which the transducer responds to changes in the measured quantity. The speed of response of the transducer should be as high as practicable.

Transducer Selection Factors

- Nature of measurement
- Loading effect
- Environmental considerations
- Measuring system
- Cost & Availability

